UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
AIR AND RADIATION

December 22, 2015

Mr. Jeff Simmons
Designated Representative, Denver Unit
Occidental Petroleum
5 Greenway Plaza, Suite 110
Houston, TX 77046

Re: Monitoring, Reporting and Verification (MRV) Plan for Denver Unit

Dear Mr. Simmons:

The United States Environmental Protection Agency (EPA) has reviewed the Monitoring, Reporting and Verification (MRV) Plan submitted for the Denver Unit as required by 40 CFR Part 98, Subpart RR of the Greenhouse Gas Reporting Program. The EPA is approving the MRV Plan submitted by Occidental Permian Ltd. for the Denver Unit as the final MRV plan. The MRV Plan Approval Number is 1011767-1. This decision is effective December 27, 2015 and appealable to EPA's Environmental Appeals Board under 40 CFR Part 78.

If you have any questions regarding this determination, please write to ghgreporting@epa.gov and a member of the Greenhouse Gas Reporting Program will respond.

Sincerely,

Julius Banks, Chief
Greenhouse Gas Reporting Branch

Technical Review of Subpart RR MRV Plan for the Denver Unit

December 2015

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Appendices

This report summarizes the EPA's technical evaluation of the Greenhouse Gas Reporting Program (GHGRP) Subpart RR Monitoring, Reporting, and Verification (MRV) Plan submitted by Occidental Permian Ltd., hereafter referred to as Oxy, operator of the Denver Unit.

1 Overview of Project

Oxy submitted an MRV Plan related to enhanced oil recovery (EOR) operations within the Denver Unit of the Wasson Field, in southwestern Yoakum and northwestern Gaines counties in West Texas. The field, discovered in 1936, is split into six units; the Denver Unit is the largest and is located in the geologic high point of the basin. Operations in the field target the San Andres Formation, which is found approximately 5,000 feet below the surface. The field primarily consists of dolomite that has undergone uplifting. Caps of anhydrite and impermeable dolomite in the Upper San Andres, Grayburg, Seven Rivers, Tansill, and Rustler formations have allowed the accumulation of oil and gas in the uplifted portions of the basin. Oxy operates the Denver Unit and three other units in the field, while the remaining two units are operated by other companies. All the units are currently undergoing water and carbon dioxide (CO_2) flooding. Water flooding began in the field in the 1960s, and CO_2 flooding began in 1983.

The MRV Plan provides a comprehensive description of the project. There are two CO_2 supply pipelines feeding the unit, each with its own custody meter. Flooding is done by water-alternating-gas (WAG) injection. There are three compressor stations for injecting CO_2 and three pump stations for water. Each injection well is equipped with a WAG skid that controls injection. As oil and gas are produced, they are sent to one of 32 satellite units where the gas is separated from the liquids. Gas is sent to a gas recovery plant and the liquid is sent to one of six large tank batteries where oil is separated from water. All gas from the satellite units and any off-gas from the tank batteries is sent to a gas recovery plant, where natural gas, hydrogen sulfide (H_2S), and CO_2 are separated. The natural gas is sold and the CO_2 is recycled back to the injection wells. There are custody meters on lines entering and exiting the recovery plant. A table of all Denver Unit wells is provided in Appendix 6 of the MRV Plan.

The MRV Plan provides an explanation of the site setting, process, and operation. Oxy estimates the total CO_2 storage capacity to be about 14,700 billion standard cubic feet (775 million metric tons). Oxy forecasts that, over the lifetime of EOR operations, stored CO_2 will fill approximately 25% of the storage capacity. Oxy calculates the total CO_2 storage space based on the volume of rock and porosity and assumes an irreducible water saturation of 0.15, an irreducible oil saturation of 0.10 and a CO_2 formation volume factor of 0.45. Oxy notes that its operational experience at the Denver Unit over three decades has created a strong understanding of the reservoir and its capacity. Figure 2 of the MRV Plan presents the cumulative annual forecasted volume of CO_2 stored and Oxy anticipates storage of approximately 603.5 billion standard cubic feet (31.8 million metric tons) by 2026.

The MRV Plan explains the monitoring timeframe of the project and the demonstration that would be made in order to discontinue reporting. The MRV Plan describes a "Specified Period" which includes all or some portion of the period 2016 through 2026. Oxy notes that the Specified Period is shorter than the period of production from the Denver Unit because CO_2 has been injected at the Denver Unit since

1983 and is expected to continue for roughly five decades after the Specified Periods ends. At the conclusion of the Specified Period, Oxy will submit a request for discontinuation of reporting when Oxy can provide a demonstration that the cumulative mass of CO_2 reported as sequestered during the Specified Period is not expected to migrate in the future in a manner likely to result in surface leakage. Oxy expects that it would be able to make this demonstration 2-3 years after injection for the Specified Period ceases and that it would be based upon predictive modeling supported by monitoring data.

The description of the project was determined to be reasonable and provided information to comply with 40 CFR 98.448(a)(6). Under 40 CFR 98.448(a)(6), information regarding the Underground Injection Control (UIC) well permit class for each injection well and well identification numbers must be provided. The MRV Plan notes that the injection wells are permitted as UIC Class II and Oxy provided a table of well identification numbers in Appendix 6 of the Plan.

In addition, the time period under which Oxy would be reporting under Subpart RR (the Specified Period) was determined to be reasonable and in compliance with 40 CFR 98.448(a)(7) and 40 CFR 98.441(b). Under 40 CFR 98.448(a)(7), the proposed date to begin collecting data for calculating the total amount of CO_2 sequestered must be provided. The MRV Plan notes the specified period would begin January 1, 2016 and that the MRV Plan will be implemented within 180 days of EPA approval. As described later in this technical review, the strategy for detecting and quantifying surface leakage of CO_2 and for establishing expected baselines for monitoring would be established by this time. The proposed date when the facility would cease reporting under Subpart RR was determined to comply with 40 CFR 98.441(b). We note that 40 CFR 98.441(b)(1) states that "the owner or operator of a facility may submit a request to discontinue reporting any time after the well or group of wells is plugged and abandoned in accordance with applicable requirements". However, because the word "may" is used in the regulation, Oxy is allowed to submit a request prior to the wells being plugged and abandoned. We also note that 40 CFR 98.441(b)(2)(ii) specifies the content of a request to discontinue reporting for UIC Class II wells. The request must contain "a demonstration that current monitoring and model(s) show that the injected CO_2 stream is not expected to migrate in the future in a manner likely to result in surface leakage". This is consistent with what Oxy is proposing to include in its cease reporting request.

2 Evaluation of the Delineation of the Maximum Monitoring Area (MMA) and Active Monitoring Area (AMA)

As part of the MRV Plan, the reporter must identify the maximum monitoring area (MMA) and active monitoring area (AMA), pursuant to 40 CFR 98.448(a)(1). Subpart RR defines maximum monitoring area as "the area that must be monitored under this regulation and is defined as equal to or greater than the area expected to contain the free phase CO_2 plume until the CO_2 plume has stabilized plus an all-around buffer zone of at least one-half mile." Subpart RR defines active monitoring area as "the area that will be monitored over a specific time interval from the first year of the period (n) to the last year in the period (t). The boundary of the active monitoring area is established by superimposing two areas: (1) The area projected to contain the free phase CO_2 plume at the end of year t, plus an all-around buffer zone of one-half mile or greater if known leakage pathways extend laterally more than one-half mile; (2) The area projected to contain the free phase CO_2 plume at the end of year t + 5." See 40 CFR 98.449.

Oxy has defined the MMA as the boundary of the Denver Unit plus a 0.5-mile-radius buffer and the AMA as the boundary of the Denver Unit. As stated by Oxy, factors considered included: the extent of free-phase CO_2 currently in the Denver Unit; the operational strategies used for fluid and pressure management; and the geologic structure of the unit. Given that CO_2 injection has been occurring in the Denver Unit for over 30 years, it is reasonable to consider the entire unit as the AMA for the entire monitoring period. In addition, given the geology of the area and operational practices in the field, it is reasonable to conclude that CO_2 will not travel vertically or laterally outside the unit.

The MRV Plan includes a description of the pattern-level modeling conducted for reservoir management and planning at the site. In addition to monitoring described in the plan, simulation models representing either a multi-pattern segment of the field, or a portion of a single pattern, will be used to identify any leaks. The production and injection performance of each pattern will be monitored and compared to predicted or simulated behavior, and those patterns where performance deviates in a statistically significant manner from the predicted behavior will be identified. Predictions will also be constructed and validated from the actual performance data of analog projects that already have received significant CO_2 injection. If actual performance differs in a noticeable way from predictions, reservoir engineers will use professional judgment formed by an analysis of technical data to determine where further attention is needed. The use of simulation models coupled with actual performance data for purposes of reservoir characterization is reasonable.

The delineation of the MMA and AMA was determined to be in compliance with 40 CFR 98.448(a)(1). The MMA and AMA described in the MRV Plan are clearly and explicitly delineated and, respectively, cover the maximum monitoring area and active monitoring area that is defined in 98.449.

3 Identification of Potential Surface Leakage Pathways

As part of the MRV Plan, the reporter must identify potential surface leakage pathways for CO_2 in the maximum monitoring area and the likelihood, magnitude, and timing, of surface leakage of CO_2 through these pathways pursuant to 40 CFR 98.448(a)(2). Oxy has identified the following possible leakage pathways in their MRV Plan:

- Existing wellbores, previous operations, and drilling through the CO_2 area;
- Faults and fractures;
- Natural or induced seismic activity;
- Pipeline/surface equipment;
- Lateral migration outside of the unit; and

- Diffuse leakage through the seal.

Existing Wellbores, Previous Operations, and Drilling Through the CO_2 Area

The MRV Plan indicates that there are over 2,000 Denver Unit wells, including active, shut-in, and temporarily and permanently abandoned wells completed in the Denver Unit. Oxy also provides counts and age/completion information for the wells that penetrate the Denver Unit but are completed in formations other than the San Andres (referred to as "non-Denver Unit" wells). There are in total of 885 Non-Denver Unit wells. Oxy operates all of the Denver Unit wells, while the active non-Denver Unit wells are operated by other parties.

Oxy provides tabulations of the wells based on their "age/completion" as follows: drilled after 1996; drilled in 1961-1996 (with production casing cemented to surface); drilled in 1972-1975 (using lightweight casing); and drilled before 1960. Approximately 79% of the Denver Unit wells are listed as active, approximately 14% have been plugged and abandoned, and approximately 7% are temporarily abandoned. Eight wells are reported as shut-in. The location of these wells cover the whole area of the unit.

Oxy notes that roughly two thirds of the wells are production wells and the remaining third are injection wells. The majority of the wells in the Denver Unit are oil production wells. WAG injection wells account for most of the remainder, and 14 wells are dedicated CO_2 injectors. Oxy's MRV Plan states that all wells in the oilfields, including both injection and production wells, are regulated by the Texas Railroad Commission (TRRC). Oxy notes that TRRC has primacy to implement the UIC Class II program in Texas, under TAC Title 16 Part 1 Chapter 3.3. The MRV Plan provides a summary of the regulations in Appendix 7 to the plan.

According to the MRV Plan, CO_2 flooding has taken place in the Denver Unit since 1983, and Oxy took over operations in 2000. Oxy 's standard practice for drilling new wells is to review the site's records, including TRRC's records and/or Oxy well files, to identify ensure that drilling do not cause damage or interfere with existing wells. Oxy states that they may conduct ground surveys to identify old, unknown wells in preparation for drilling a new well; they have concluded that there are no unknown wells within the Denver Unit. Oxy has indicated that the risk of drilling through the containment zone into the San Andres is very low because the TRRC regulations are followed and Oxy's visual inspection process, including both routines and flyovers, identifies any unapproved drilling activity in the Denver Unit. Oxy states in the unlikely event of selling the field to a new operator, Oxy's provisions ensure the secure storage of CO_2 during the specified period.

Faults and Fractures

The MRV Plan indicates a very low probability of leakage through subsurface features, such as faults and fractures, due to a lack of faults transecting the San Andres. Oxy describes several methods it used to determine whether faults and fractures exist and the likelihood of their leading to leaks of CO_2 out of the injection zone. One piece of evidence cited in Section 2.2.1 of the MRV Plan is that the accumulation of oil and gas in the Wasson Field is consistent with the presence of a competent caprock and a lack of transmissive faults or fractures. Another line of evidence presented is a seismic profile, described as showing faults that occur in units below the San Andres but that do not transect the San Andres. A third line of evidence is the site operating history, which Oxy states shows no indication of interaction of water or CO_2 with existing or new faults or fractures. The weight of evidence, including north-south and east-west seismic profile sections shown in Figure 5 and 6 of the plan, is consistent with a lack of faults and fractures that could compromise containment.

The accumulation of gas supports the concept of a competent caprock without pre-existing transmissive features under original reservoir conditions. Oxy has stated that reservoir pressure in the Denver Unit is managed by maintaining an injection to withdrawal ratio (IWR) of 1.0. IWR is the ratio of the volume of fluids injected to the volume of fluids (oil, water, and CO_2) produced. Oxy plans to maintain the IWR by monitoring fluid injection and ensuring that the reservoir pressure does not reach a level that would fracture the reservoir seal. Oxy notes the use of shutoff controls if fracture pressures are exceeded. Oxy also states in Section 2.2.1 of the MRV Plan that there was no evidence of CO_2 and water interaction with existing or new faults or fractures and if there was, it would lead to anomalies from expected performance which would lead to an investigation such as injection profile surveys and pressure measurements to identify the cause.

Natural and Induced Seismic Activity

In Section 4.4 of the MRV Plan, Oxy indicates that the likelihood of leakage from either a natural or induced seismic event is small. Oxy cites a paper by University of Texas and notes that no earthquakes have occurred in the Wasson Field. Assuming that the future operating and pressure conditions in the Wasson Field will be similar to what they have been over the last few decades, and Oxy's prior determination that there are no faults near the project site, leakage potential due to seismic activity would be expected to be minimal. Furthermore, if a seismic event were to cause subsurface leakage through the confining zone or at or around a well, Oxy's monitoring provisions (e.g., reservoir pressure, well pressure, and pattern monitoring) should detect this leak as well.

Pipeline/Surface Equipment

Oxy states that the current design and construction practices at the site, along with compliance with existing laws, will reduce the risk of unplanned leakage from surface facilities and therefore make the likelihood of a leak small. Oxy also plans to conduct field and areal inspections once a week for indicators of leakage. Oxy notes that they will account for any leakage according to the requirements in Subpart W of the GHGRP.

Lateral Migration Outside of the Unit

Oxy indicates that the likelihood of lateral migration is small. In Section 4.7 of the MRV Plan, Oxy states that CO_2 is buoyant and will not migrate down-dip and laterally outside the Denver Unit and that planned injection volumes and fluid management, and the careful placement and operation of wells along boundaries of other units will prevent lateral migration outside of the injection zone. Based on information in Section 2, the project site has a dome structure, and the basic premise that the CO_2 will remain at the top of the structure is reasonable, provided that the volume of CO_2 injected does not fill the dome to the point where there is leakage laterally along the lower confines of the structure. Oxy notes that the lateral leakage out of the unit will not occur because they maintain lease line agreements with the other operators to ensure that injection and production are balanced along the lease line and higher pressures in the surrounding areas ensure that Denver Unit fluids stay within the unit.

Diffuse Leakage Through the Seal

Oxy discusses diffuse leakage through the seal, concluding it is highly unlikely based upon: (1) the trapping of a gas cap over millions of years; (2) the injection pattern monitoring program, which will ensure that no breach of the seal will be created; (3) the impermeability of the seal; (4) the fact that wells are cemented across this horizon; (5) that changes in injection pressure would trigger an investigation into the cause; and (6) the presence of secondary confining zones above the primary confining zone. Oxy notes that the permeability of cores taken from the upper San Andres sealing zone were less than 0.01 md, permeabilities in the pay zones range from 1 to 10 md, and in anhydrite intervals they are zero. Collectively, these general concepts support a demonstration of low risk of leakage through the confining zone.

Summary of Findings

The MRV Plan was determined to be in compliance with 40 CFR 98.448(a)(2). The regulation requires that potential surface leakage pathways for CO_2 be identified, as well as the likelihood, magnitude, and timing of surface leakage of CO_2 through these pathways. The MRV Plan identifies, describes and reviews potential pathways for surface leakage, including the likelihood, magnitude, and timing of potential leakage. For example, in examining existing well bores as a potential leakage pathway, Oxy provides tabulations of active and inactive wells that are completed in or penetrate the Denver Unit; summarizes regulatory requirements for the wells, and describes operational practices for mitigating potential risks. As another example, Oxy examined the probability of leakage through subsurface features, such as faults and fractures, and determined. Oxy determined that there were no faults or fractures that transect the San Andreas Formation interval in the project area and provided several lines of evidence supporting this conclusion. Oxy determined that there are no leakage pathways at the Denver Unit that are likely to result in significant loss of CO_2 to the atmosphere.

4 Strategy for Detecting and Quantifying Surface Leakage of CO_2 and for Establishing Expected Baselines for Monitoring

Oxy's strategy for detecting and verifying potential subsurface leakage primarily includes pressure monitoring of injection wells, well maintenance, monitoring of production well performance, and field inspections (visual inspections and H_2S detection by Oxy staff). The MRV Plan describes Oxy's approach to these activities in Sections 4, 5 and 6 of the MRV Plan and summarizes them in Table 3 of the MRV Plan.

Known Potential Leakage Risks	Monitoring Methods and Frequency
Tubing Leak	Monitor changes in annulus pressure; MIT for injectors
Casing Leak	Weekly field inspection; MIT for injectors; extra attention to high risk wells
Wellhead Leak	Weekly field inspection
Loss of Bottom-hole pressure control	Blowout during well operations (weekly inspection but field personnel present daily)
Unplanned wells drilled	Weekly field inspection to prevent unapproved
Through San Andres	Drilling; compliance with TRRC permitting for planned wells.
Loss of seal in abandoned wells	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled
Pumps, values, etc.	Weekly field inspection
Leakage along faults	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled
Overfill beyond spill points	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled
Leakage through induced fractures	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled
Leakage due to seismic event	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled

Based on this detection strategy, if results of the monitoring activities fall outside their normal predicted ranges, Oxy will initiate an investigation to determine if a leak has occurred. Triggers provided in the MRV Plan for leakage investigation include pressure deviation in injection wells, deviations in production levels, triggering of personal H_2S monitors, and visual siting of clouds of ice crystals surrounding a leak.

Pressure monitoring of injection wells, along with the historical operational and monitoring data determining the baseline, is an established way to detect leaks in the injection wells. It may also be able to detect leaks through producing or abandoned wells or faults by comparing the monitoring results to modeled predictions. Annular pressures in injection wells should be close to zero in normal operating conditions because the annulus is isolated by the tubing and packer from injection fluids. Any higher pressure would indicate a potential leak in either the tubing or the packer and would trigger further investigation. Oxy states that if changes in pressure trigger a flag, the investigation follows a course of increasing detail as needed, starting with simple measures such as inspecting the well for faulty equipment (e.g., valves, flanges), and if the cause of the pressure change has not been determined Oxy will use modeling, injection data, production data, and other reports from an area to determine potential issues. Mechanical Integrity Tests (MITs) are also an established way to detect leaks along wellbores. Oxy states that all active injection wells undergo mechanical integrity testing, referred to as H-5 testing in Texas, every 5 years. Section 2.3.2 of the plan describes the test types and frequency for injection wells.

Visual sighting of clouds of ice crystals is a good way to detect leaks of pressurized supercritical CO_2 provided the observer is in place to notice the cloud when the leak occurs. Oxy notes that weekly field inspections take place. For visual inspections, the baseline would be normal visual conditions, namely the lack of clouds of ice crystals. Oxy's strategy to detect surface leakage also relies on the triggering of personal H_2S monitors worn by the staff. Wasson Field oil is indicated to contain small amounts of H_2S, therefore, it is assumed that any leakage of CO_2 would co-exist with some amount of this gas. Oxy states that their goal is to limit the amount of H_2S in the recycled CO_2 to less than 100 ppm and that the personal H_2S monitors can detect levels of H_2S as low as 0.1 ppm.

In Section 5.1.5 of the MRV Plan, Oxy discusses how leaks will be quantified, using a combination of measurements and engineering estimates. Oxy notes that while leakage events may occur, based on its operational experience they are few and typically of small duration and volume. To the extent possible, Oxy will use published emission factors, such as those included in Subpart W of the GHG Reporting Program, to quantify CO_2 volumes. If a leakage event were to occur, Oxy notes that it would take appropriate measures to prevent uncontrolled fluid flow and then develop an estimate of the leaked amount of CO_2 using data from the event (e.g., duration, magnitude, and field conditions) as well as modeling and engineering estimates.

The MRV Plan was determined to be in compliance with 40 CFR 98.448(a)(3) and 40 CFR 98.448(a)(4). 40 CFR 98.448(a)(3) requires that an MRV plan contain a strategy for detecting and quantifying any surface leakage of CO_2 and 40 CFR 98.448(a)(4) requires that an MRV plan include a strategy for establishing the expected baselines for monitoring CO_2 surface leakage. Oxy's MRV Plan describes a strategy for detecting and quantifying any surface leakage of CO_2 based on the identification of potential leakage risks. As described above, Oxy specifies monitoring methods and frequencies to detect potential leakage for various identified potential risks, describes how potential leakage would be quantified, and articulates baselines associated with the monitoring strategy. As noted above, Oxy has determined that there are no leakage pathways at the Denver Unit that are likely to result in significant loss of CO_2 to the atmosphere.

5 Considerations Used to Calculate Site-Specific Variables for the Mass Balance Equation

A reporter who is actively producing oil or natural gas is required to calculate the amount of CO_2 sequestered using equation RR-11 per 40 CFR 98.443(f)(1). The equation is:

$$CO_2 = CO_{2I} - CO_{2P} - CO_{2E} - CO_{2FI} - CO_{2FP}$$

Where:

CO_2 is the total annual CO_2 mass sequestered in subsurface geologic formations (metric tons) at the facility in the reporting year.

CO_{2I} is the total annual CO_2 mass injected (metric tons) in the well or group of wells covered by subpart RR in the reporting year.

CO_{2P} is the total annual CO_2 mass produced (metric tons) in the reporting year.

CO_{2E} is the total annual CO_2 mass emitted (metric tons) by surface leakage in the reporting year.

CO_{2FI} is the total CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the production wellhead and the flow meter used to measure production quantity, for which a calculation procedure is provided in subpart W.

CO_{2FP} is the total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the production wellhead and the flow meter used to measure production quantity, for which a calculation procedure is provided in subpart W.

Oxy explains its approach to calculating each of these variables in Sections 5 and 7 of the MRV Plan.

Calculation of Total Annual Mass Injected

Oxy will determine the amount of CO_2 injected using two custody meters on the Permian CO_2 supply pipeline (for CO_2 received via the pipeline) and one on the outlet of the Denver Unit CO_2 Recovery Plant (DUCRP) (for CO_2 that has been recycled). The use of three custody meters rather than using individual operational meters on each well is appropriate because the accuracy of the custody meters is greater than that of the operational meters. Meters are calibrated according to American Petroleum Institute (API) standards, American Gas Association (AGA) Report No. 3, Parts 2 and 3, or Gas Processors Association (GPA) standards 2261:2013 and GPA 2186 – 02 as appropriate. As all three meters are volumetric meters, Oxy will convert the volumetric flows into mass flows using the Span and Wagner equation of state and a density from the National Institute of Standards and Technology (NIST) database of thermodynamic properties. This approach complies with the Subpart RR requirements.

Knowing the concentration of CO_2 in the injected stream is necessary to determine the mass of CO_2 injected. Oxy notes that CO_2 composition is governed by contract and that it conducts routine sampling to determine composition. Oxy also notes that CO_2 entering the pipeline system must meet specifications for chemical composition and is treated by pipeline carriers and shippers as fungible. Oxy provides a typical volume weight averaged composition of injected CO_2 and notes that the standard deviation of the CO_2 concentration is less than 0.5% over the prior year and concentration of H_2S in the injected gas stream is below the measurement threshold and negligible.

Calculation of Total Annual Mass Produced

Oxy states that the volume of CO_2 produced will be calculated using volumetric flow meters at the inlet to the DUCRP. Oxy will use Equation RR-8 from 40 CFR 98.443 to calculate the total mass of CO_2 produced from the unit, and Equation RR-9 from 40 CFR 98.443 to calculate the mass of CO_2 produced, net of the mass of CO_2 entrained in oil leaving the Denver Unit prior to treatment of the remaining gas fraction at the DUCRP. The concentration of CO_2 in produced oil is measured at the centralized tank battery, while recycled CO_2 is calculated using the custody transfer meter at the outlet of the DUCRP.

Consistent with Subpart RR requirements, Oxy will convert meter volumes from measured conditions to standard temperature and pressure using the Span and Wagner equation of state and the NIST database of thermodynamic properties. The volume of CO_2 in produced oil will be calculated by measuring the concentration of CO_2 in the oil and multiplying by the volume of oil measured at the custody meter for sales.

Oxy's standard production well test process assesses the composition of all produced fluids and it is assumed that CO_2 stream composition is established at the DUCRP. Oxy collects flow, pressure, and gas composition data from the Denver Unit. Oxy states that CO_2 concentration is measured using the Gas Processors Association (GPA) standards 2261:2013 (Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography) and GPA 2186 – 02 (Method for the Extended Analysis of Hydrocarbon Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Temperature Programmed Gas Chromatography). As with the total mass injected, Oxy states that its flow meters are operated using the calibration and accuracy requirements in 40 CFR 98.3(i), as required by Subpart RR.

Calculation of Total Annual Mass Emitted as Equipment Leakage or Vented Emissions

Subpart RR allows Subpart W methods be used to calculate leaks from equipment between meters used to measure CO_2 injected and produced and the wellheads (i.e., equipment leaks that take place while the CO_2 is being measured, processed, or transported at the surface). Oxy's method for calculating total annual mass emitted from equipment and pipelines is consistent with the applicable requirements for equipment leakage under Subpart RR.

According to Oxy, there are approximately 2,200 wells in the unit that will need to be accounted for. Of these, approximately 600 wells are injection wells, with each well having an injection skid. These skids are fed by 16 injection manifolds, 3 compressor stations, and 3 water pumping stations. There are 32 satellite batteries where gas-liquid separation from produced fluids occurs.

In Section 4.6 of the MRV Plan, Oxy notes that the current design and construction practices at the site, along with compliance with existing laws, will reduce the risk of unplanned leakage from surface facilities and therefore make likelihood of a leak small. Oxy also plans to conduct visual and areal inspections for indicators of leakage (white clouds and ice).

The strategy presented in the MRV Plan for detection and verification of any potential equipment leaks includes the use of Subpart W methods for determining equipment leaks, and also incident investigations triggered by visual inspections and/or use of H_2S meters by Oxy staff. Oxy conducts aerial inspections of the pipeline and surface equipment in the Denver Unit once a week to detect any leakage. Oxy also collects flow, pressure, and gas composition data from the Denver Unit. Flow and pressure data are monitored through hourly scans by centralized data management systems. Alarms are triggered when data deviates by a specified amount from desired operational conditions. Alarms are investigated by qualified technicians who follow Oxy response and reporting protocols. Oxy will rely on Subpart W methods to determine leakage and vented emissions from surface equipment between the meter and the injection well.

Consistent with the Subpart RR requirements, Oxy will meet the requirement to account for leaks and vented emissions from equipment between the meters and wellheads using methods from Subpart W.

Oxy plans on using the methods listed in Subpart W for QA/QC of equipment leaks and venting. The use of Subpart W methods is appropriate.

Calculation of Total Annual Mass Emitted by Surface Leakage

For reporting of the total annual CO_2 mass sequestered under Subpart RR, potential surface leaks must be accounted for in the mass balance equation. Pursuant to 40 CFR 98.448(a)(2), an MRV Plan must describe the likelihood, magnitude, and timing of surface leakage of CO_2 through potential pathways. Subpart RR also requires that the MRV plan identify a strategy for establishing a baseline for monitoring CO_2 surface leakage, pursuant to 40 CFR 98.448(a)(4).

Oxy's strategy for calculating the total annual mass of CO_2 emitted by surface leakage was assessed and summarized in the previous section of this document and was determined to be in compliance with Subpart RR.

Summary of Findings

The MRV Plan was determined to be in compliance with 40 CFR 98.448(a)(5). 40 CFR 98.448(a)(5) requires that an MRV plan include a summary of the considerations that the facility intends to use to calculate site-specific variables for the mass balance equation. This includes, but is not limited to, considerations for calculating CO_2 emissions from equipment leaks and vented emissions of CO_2 between the injection flow meter and injection well and/or the production flow meter and production well, and considerations for calculating CO_2 in produced fluids. The MRV Plan summarizes and describes considerations related to site-specific variables for the mass balance equation, including as related to calculation of total annual mass injected, calculation of total annual mass produced, and calculation of total annual mass emitted as equipment leakage or vented emissions. The MRV Plan also describes how total annual mass emitted by surface leakage would be calculated.

6 Summary of Findings

The Subpart RR MRV Plan for the Denver Unit meets the requirements of 40 CFR 98.238. The regulatory provisions of 40 CFR 98.238(a), which specifies the requirements for MRV plans, are summarized below, along with a summary of relevant provisions in Oxy's MRV Plan.

Subpart RR MRV Plan Requirement	**Oxy MRV Plan**
40 CFR 98.448(a)(1): Delineation of the maximum monitoring area (MMA) and the active monitoring areas (AMA).	Section 3 of the MRV Plan describes the MMA and AMA. The MMA is delineated as the boundary of the Denver Unit plus a 0.5-mile-radius buffer and the AMA is the boundary of the Denver Unit. The monitoring area delineation takes into account site characterization and reservoir modeling along with pressure management considerations.

40 CFR 98.448(a)(2): Identification of potential surface leakage pathways for CO_2 in the MMA and the likelihood, magnitude, and timing, of surface leakage of CO_2 through these pathways.	Section 4 of the MRV Plan identifies and evaluates potential surface leakage pathways. The MRV Plan identifies the following potential pathways: existing wellbores, previous operations, and drilling through the CO_2 area; faults and fractures; natural or induced seismic activity; pipeline/surface equipment; lateral migration outside of the unit; and diffuse leakage through the seal. The MRV Plan analyzes the likelihood, magnitude, and timing of surface leakage through these pathways. Oxy determined that there are no leakage pathways at the Denver Unit that are likely to result in significant loss of CO_2 to the atmosphere.
40 CFR 98.448(a)(3): A strategy for detecting and quantifying any surface leakage of CO_2.	Section 5 of the MRV Plan describes how the facility would detect CO_2 leakage to the surface, such as monitoring of existing wells, field inspections, and pressure modeling and monitoring. The monitoring strategy is summarized in Table 3 of the MRV Plan. Section 5 of the MRV Plan also describes how surface leakage would be quantified.
40 CFR 98.448(a)(4): A strategy for establishing the expected baselines for monitoring CO_2 surface leakage.	Section 6 of the MRV Plan describes the baselines against which monitoring results will be compared to assess potential surface leakage.
40 CFR 98.448(a)(5): A summary of the considerations you intend to use to calculate site-specific variables for the mass balance equation.	Section 7 of the MRV Plan describes Oxy's approach to determining the amount of CO_2 sequestered using the Subpart RR mass balance equation, including as related to calculation of total annual mass injected, calculation of total annual mass produced, and calculation of total annual mass emitted as equipment leakage or vented emissions.
40 CFR 98.448(a)(6): For each injection well, report the well identification number used for the UIC permit (or the permit application) and the UIC permit class.	Appendix 6 provides well identification numbers for each well. The MRV Plan specifies that injection wells are permitted as UIC Class II.
40 CFR 98.448(a)(7): Proposed date to begin collecting data for calculating total amount sequestered according to equation RR-11 or RR-12 of this subpart.	The MRV Plan describes a specified period that will begin January 1, 2016. As noted in Section 8, Oxy anticipates that the MRV plan will be implemented within 180 days of EPA approval.

Appendix A: Final MRV Plan

Oxy Denver Unit CO_2 Subpart RR

Monitoring, Reporting and Verification (MRV) Plan

Final Version
December 2015

Table of Contents

Roadmap to the Monitoring, Reporting and Verification (MRV) Plan

Occidental Permian Ltd. (OPL) operates the Denver Unit in the Permian Basin for the primary purpose of enhanced oil recovery (EOR) using carbon dioxide (CO_2) flooding. OPL intends to inject CO_2 with a subsidiary purpose of establishing long-term containment of a measureable quantity of CO_2 in subsurface geological formations at the Denver Unit for an estimated period of ten years, the "Specified Period." The Specified Period includes all or some portion of the period 2016 through 2026. During the Specified Period, OPL will inject CO_2 that is purchased (fresh CO_2) from affiliates of Occidental Petroleum Corporation (OPC) or third parties, as well as CO_2 that is recovered (recycled CO_2) from the Denver Unit CO_2 Recovery Plant (DUCRP). OPL, OPC and their affiliates (together, Oxy) have developed this monitoring, reporting, and verification (MRV) plan in accordance with 40 CFR §98.440-449 (Subpart RR) to provide for the monitoring, reporting and verification of the quantity of CO_2 sequestered at the Denver Unit during the Specified Period.

In accordance with Subpart RR, flow meters are used to quantify the volume of CO_2 received, injected, produced, contained in products, and recycled. If leakage is detected, the volume of leaked CO_2 will be quantified using two approaches. First, Oxy follows the requirements in 40 CFR §98.230-238 (Subpart W) to quantify fugitive emissions, planned releases of CO_2, and other surface releases from equipment. Second, Oxy's risk-based monitoring program uses surveillance techniques in the subsurface and above ground to detect CO_2 leaks from potential leakage pathways in the subsurface. If a leak is identified, the volume of the release will be estimated. The CO_2 volume data, including CO_2 volume at different points in the injection and production process, equipment leaks, and surface leaks, will be used in the mass balance equations included 40 CFR §98.440-449 (Subpart RR) to calculate the volume of CO_2 stored on an annual and cumulative basis.

This MRV plan contains eleven sections:

- Section 1 contains general facility information.
- Section 2 presents the project description. This section describes the planned injection volumes, the environmental setting of the Denver Unit, the injection process, and reservoir modeling. It also illustrates that the Denver Unit is well suited for secure storage of injected CO_2.
- Section 3 describes the monitoring area: the Denver Unit in West Texas.

- Section 4 presents the evaluation of potential pathways for CO_2 leakage to the surface. The assessment finds that the potential for leakage through pathways other than the man-made well bores and surface equipment is minimal.
- Section 5 describes Oxy's risk-based monitoring process. The monitoring process utilizes Oxy's reservoir management system to identify potential leakage indicators in the subsurface. The monitoring process also entails visual inspection of surface facilities to locate leaks and personal H_2S monitors as a proxy for detecting potential leaks. Oxy's MRV efforts will be primarily directed towards managing potential leaks through well bores and surface facilities.
- Section 6 describes the baselines against which monitoring results will be compared to assess whether changes indicate potential leaks.
- Section 7 describes Oxy's approach to determining the volume of CO_2 sequestered using the mass balance equations in 40 CFR §98.440-449, Subpart RR of the Environmental Protection Agency's (EPA) Greenhouse Gas Reporting Program (GHGRP). This section also describes the site-specific factors considered in this approach.
- Section 8 presents the schedule for implementing the MRV plan.
- Section 9 describes the quality assurance program to ensure data integrity.
- Section 10 describes Oxy's record retention program.
- Section 11 includes several Appendices.

1. Facility Information

i) Reporter number – TBD

ii) All wells included in this report are permitted by the Texas Railroad Commission (TRRC), through TAC 16 Part 1 Chapter 3. The TRRC has primacy to implement the federal UIC Class II requirements and incorporated those provisions in TAC 16 Part 1 Chapter 3.

iii) All wells in the Denver Unit are identified by name, API number, status, and type. The list of wells as of August 2014 (roughly the date of MRV plan initial creation) is included in Appendix 6

2. Project Description

This section describes the planned injection volumes, environmental setting of the Denver Unit, injection process, and reservoir modeling conducted.

2.1 Project Characteristics

Using the modeling approaches described in section 2.4, Oxy has forecasted the total amount of CO_2 anticipated to be injected, produced, and stored in the Denver Unit as a result of its current and planned CO_2 EOR operations. Figure 1 shows the actual CO_2 injection, production, and stored volumes in the Denver Unit (main oil play plus the residual oil zone (ROZ)) for the period 1983 through 2013 (solid line) and the forecast for 2014 through 2111 (dotted line). The forecast is based on results from reservoir and recovery process modeling that Oxy uses to develop injection plans for each injection pattern, which is also described in section 2.4.

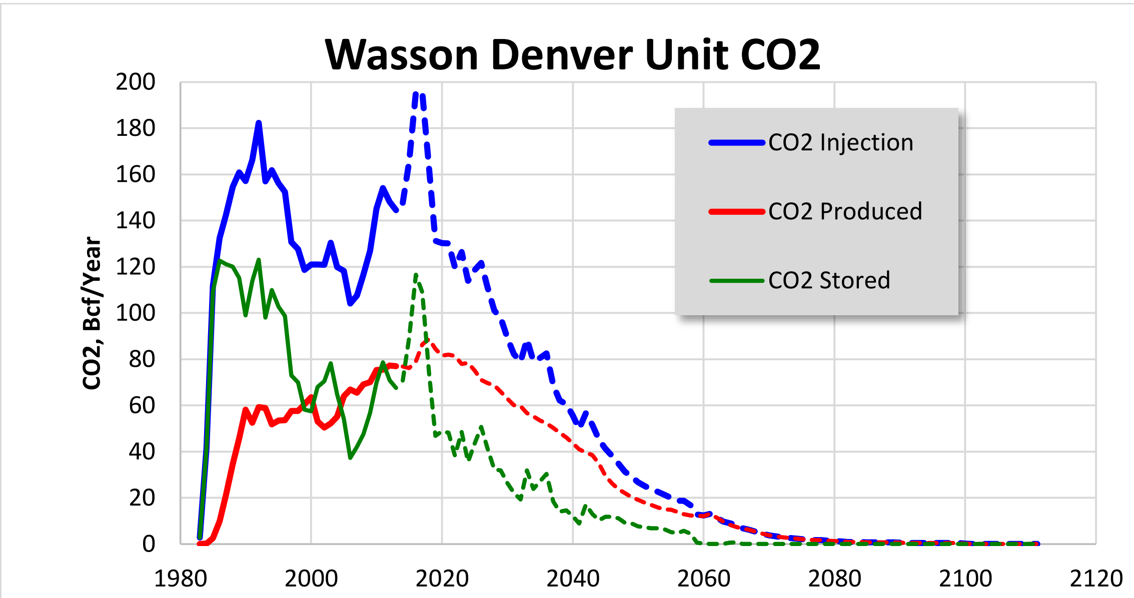


Figure 1 - Denver Unit Historic and Forecast CO_2 Injection, Production, and Storage 1980-2120

As discussed in Appendix 1 (**Background**), Oxy adjusts its purchase of fresh CO_2 to maintain reservoir pressure and to increase recovery of oil by extending or expanding the CO_2 flood. A volume of fresh CO_2 is purchased to balance the fluids removed from the reservoir and provide the solvency required to increase oil recovery. The data shows CO_2 injection, production, and storage through 2111 and anticipates new CO_2 storage volumes ending in 2059. Oxy has injected 4,035 Bscf of CO_2 (212.8 million metric tonnes (MMMT)) into the Denver Unit through the end of 2013. Of that amount, 1,593 Bscf (84.0 MMMT) was produced and 2,442 Bscf (128.8 MMMT) was stored.

Although exact storage volumes will be calculated using the mass balance equations described in Section 7, Oxy forecasts that the total volume of CO_2 stored over the lifetime of injection to be approximately 3,768 Bscf (200 MMMT), which represents approximately 25% of the theoretical storage capacity of the Denver Unit. For accounting purposes, the amount stored is the difference between the amount injected (including purchased and recycled CO_2) and the total of the amount produced less any

CO_2 that: i) leaks to the surface, ii) is released through surface equipment malfunction, or iii) is entrained or dissolved in produced oil.

Figure 2 presents the cumulative annual forecasted volume of CO_2 stored for a Specified Period 2016-2026. The cumulative amount stored is equal to the annual storage volume for that year plus the total of the annual storage volume(s) for the previous year(s) in a Specified Period. Hence the projected volume of CO_2 stored in the first year of the period specified in the graph is 70.7 Bscf (3.7 MMMT) and the cumulative in the second year is 160.1 Bscf (8.4 MMMT). In total, the eight-year volume is expected to be 603.5 Bscf (31.8 MMMT). This forecast illustrates the anticipated volume of subsidiary storage during a Specified Period; the actual amounts stored will be calculated as described in section 7 of this MRV plan.

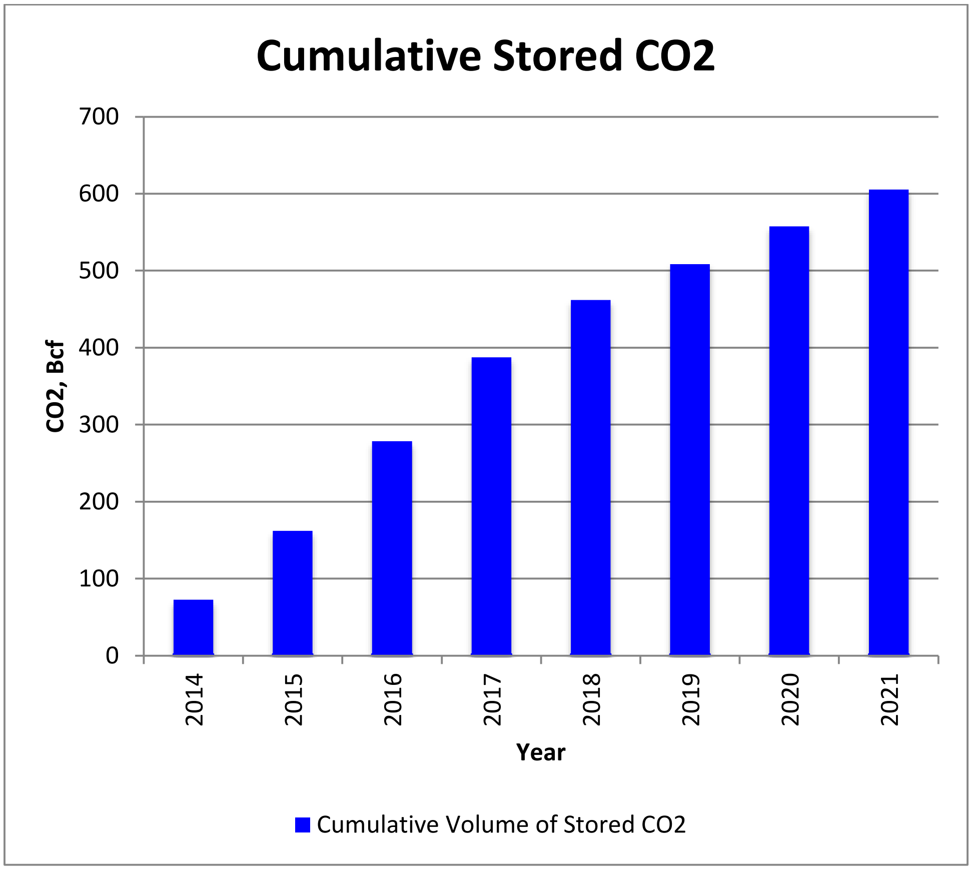


Figure 2 - Denver Unit CO_2 Storage Forecasted During the Specified Period 2016-2026

2.2 Environmental Setting

The project site for this MRV plan is the Denver Unit, located within the Wasson Field, in the Permian Basin.

2.2.1 Geology of the Wasson Field

The Wasson Field produces oil from the San Andres formation, a layer of permeable dolomites that were deposited in a shallow marine environment during the Permian Period, some 250 to 300 million years ago. This depository created a wide sedimentary basin, called the Permian Basin, which covers the western part of the Texas and the southeastern part of New Mexico. In the Permian Era this part of the central United States was under water.

The Wasson Field is located in southwestern Yoakum and northwestern Gaines counties of West Texas (See Figure 3), in an area called the Northwest Shelf. It is approximately five miles east of the New Mexico state line and 100 miles north of Midland, Texas as indicated with the red dot in Figure 3. The Wasson Field was discovered in 1936.

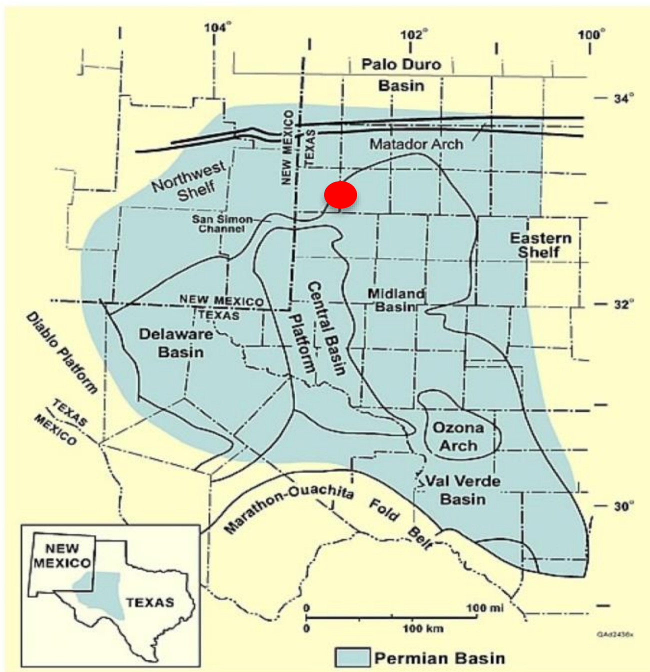


Figure 3 Permian Basin

With nearly 4,000 million barrels (MMB) of Original Oil in Place (OOIP), it is one of the largest oil fields in North America. In the years following its deposition, the San Andres formation has been buried under thick layers of impermeable rocks, and finally uplifted to form the current landscape. The process of burial and uplifting produced some unevenness in the geologic layers. Originally flat, there are now variations in elevation within the San Andres Formation across the Permian Basin. The relative high spots, such as the Wasson Field, have become the places where oil and gas have accumulated over the ensuing millions of years.

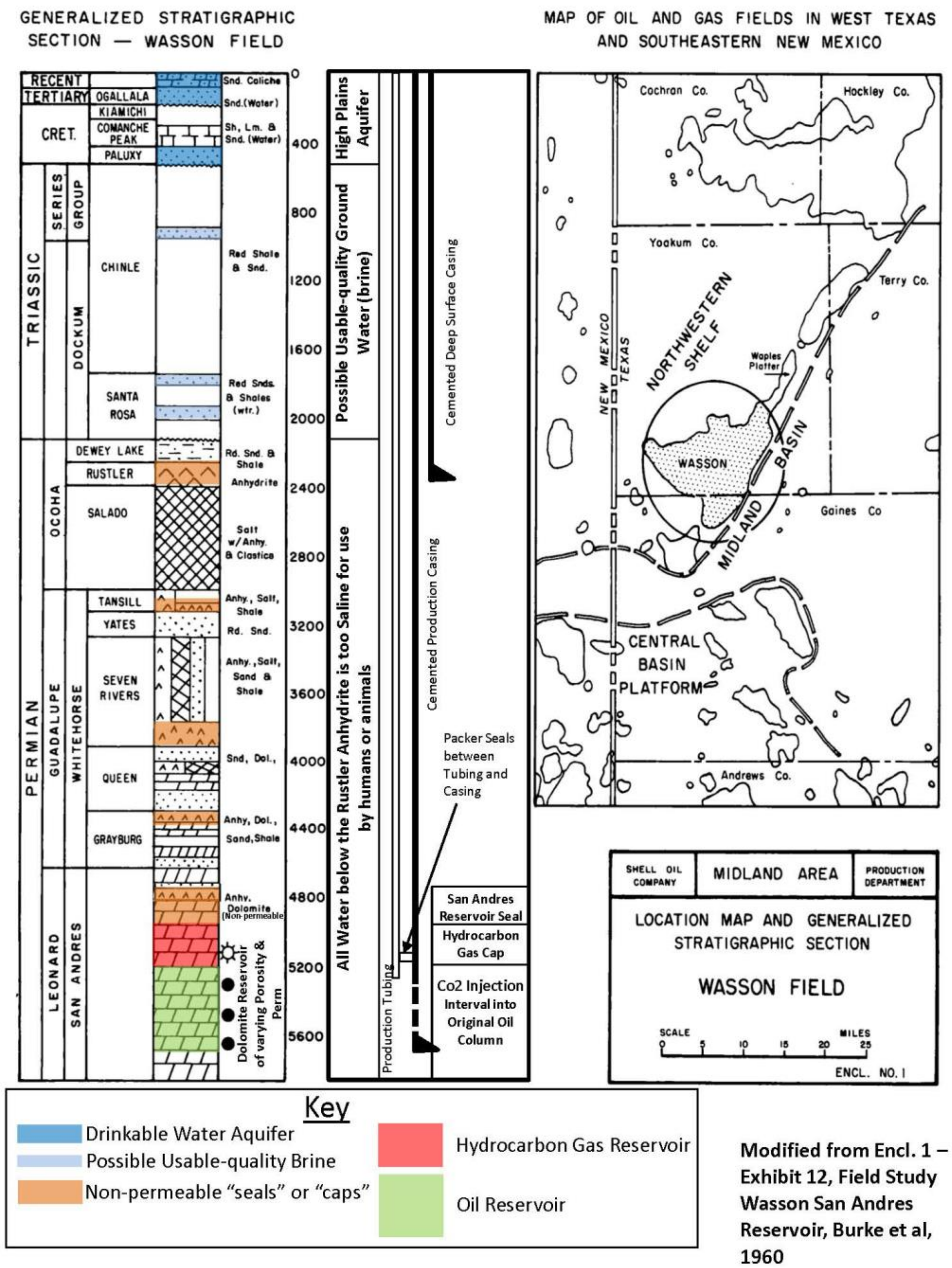
As indicated in Figure 4, the San Andres formation now lies beneath some 5,000 feet of overlying sediments. The San Andres reservoir is capped with nearly 400 feet of impermeable dolomite, referred to as the upper San Andres. This is the seal that has kept

oil and gas trapped in the lower San Andres formation for millions of years thus indicating it is clearly a seal of the highest integrity. Other zones also serve as seals. The properties of these seal intervals can be interpreted from logs run across the sealing intervals. Logs, such as SP (spontaneous potential) logs, gamma ray logs, and porosity logs, all indicate lack of permeability. Logs in multiple wells throughout Wasson confirm the presence of these seals over the entire field. These seals are highlighted in orange on Figure 4.

Between the surface and about 2,000 feet in depth there are intervals of underground sources of drinking water (USDW). These include the Ogallala and Paluxy aquifers, identified in blue in Figure 4. In addition other potentially useful brine intervals (having a higher dissolved solids content) are identified in light blue. TRCC, which has primacy to implement the UIC Class II program in Texas, requires that all wells drilled through these intervals confine fluids to the stratum in which they are encountered or injected. Wells are required to use casing and other measures to ensure confinement.[1]

[1] See Texas Administrative Code Title 16 Part 1 Chapter 3 Rule §3.7 found online at: http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=4&ti=16&pt=1&ch=3&rl=Y. For convenience, this rule is summarized in Appendix 7.

Figure 4 Stratigraphic Section at Wasson



There are no known faults or fractures affecting the Denver Unit that provide an upward pathway for fluid flow. Oxy has confirmed this conclusion in multiple ways. First and foremost, the presence of oil, especially oil that has a gas cap, is indicative of a good quality natural seal. Oil and, to an even greater extent gas, are less dense than the brine found in rock formations and tend to rise over time. Places where oil and gas remain trapped in the deep subsurface over millions of years, as is the case in the Wasson Field,

provide good proof that faults or fractures do not provide a pathway for upward migration out of the flooding interval. The existence of such faults or fractures in the Wasson Field would have provided a pathway for oil and gas and they would not be found there today.

Second, in the course of developing the field, seismic surveys have been conducted to characterize the formations and inform the reservoir models used to design injection patterns. These surveys show the existence of faulting well below the San Andres formation but none that penetrate the flooding interval. Figures 5 and 6 show north-south and east-west seismic sections through the Denver Unit. Faulting can be identified deeper in the section, but not at the San Andres level. This lack of faulting is consistent with the presence of oil and gas in the San Andres formation at the time of discovery.

Figure 5 Seismic Section North-South

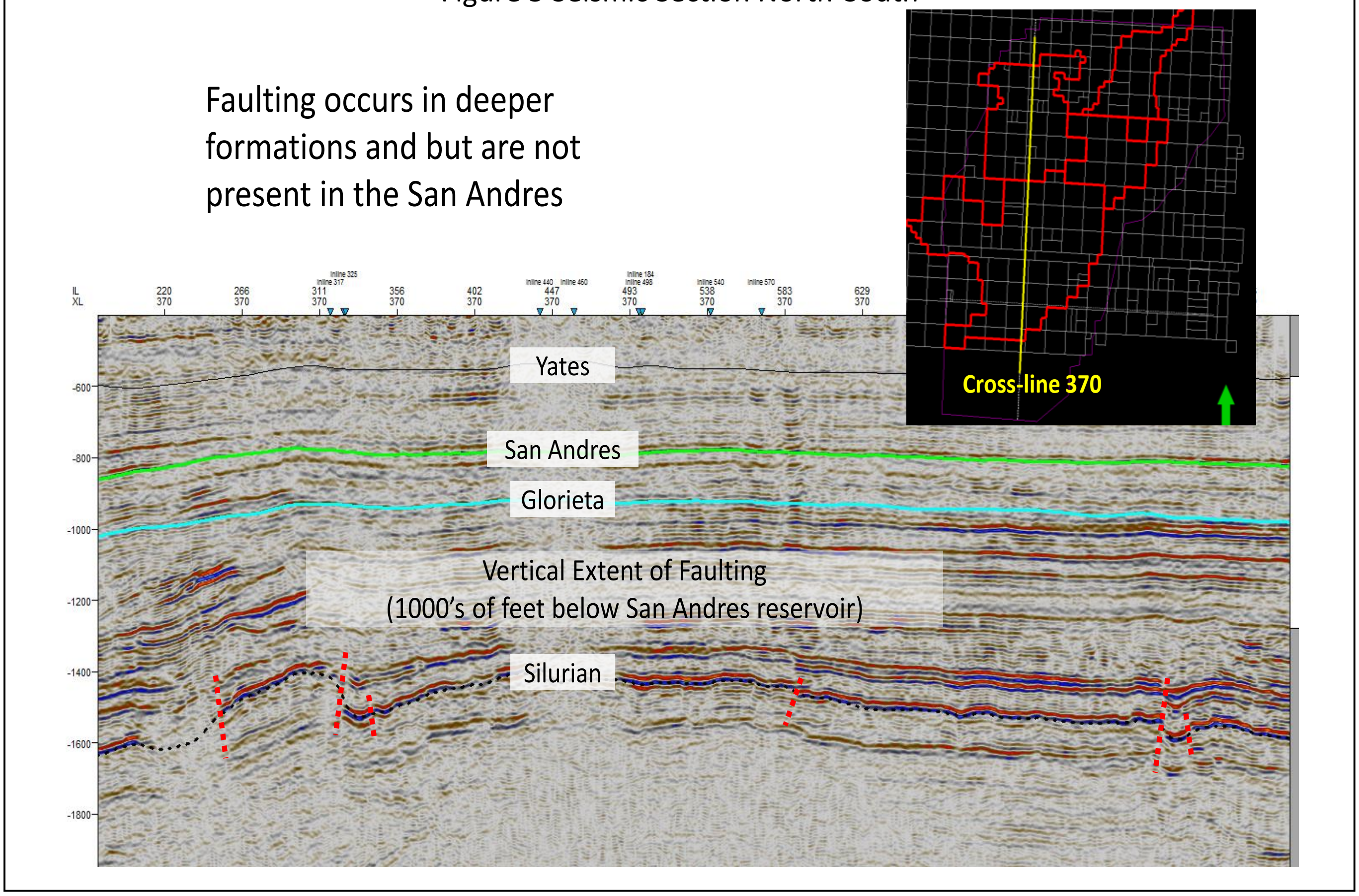
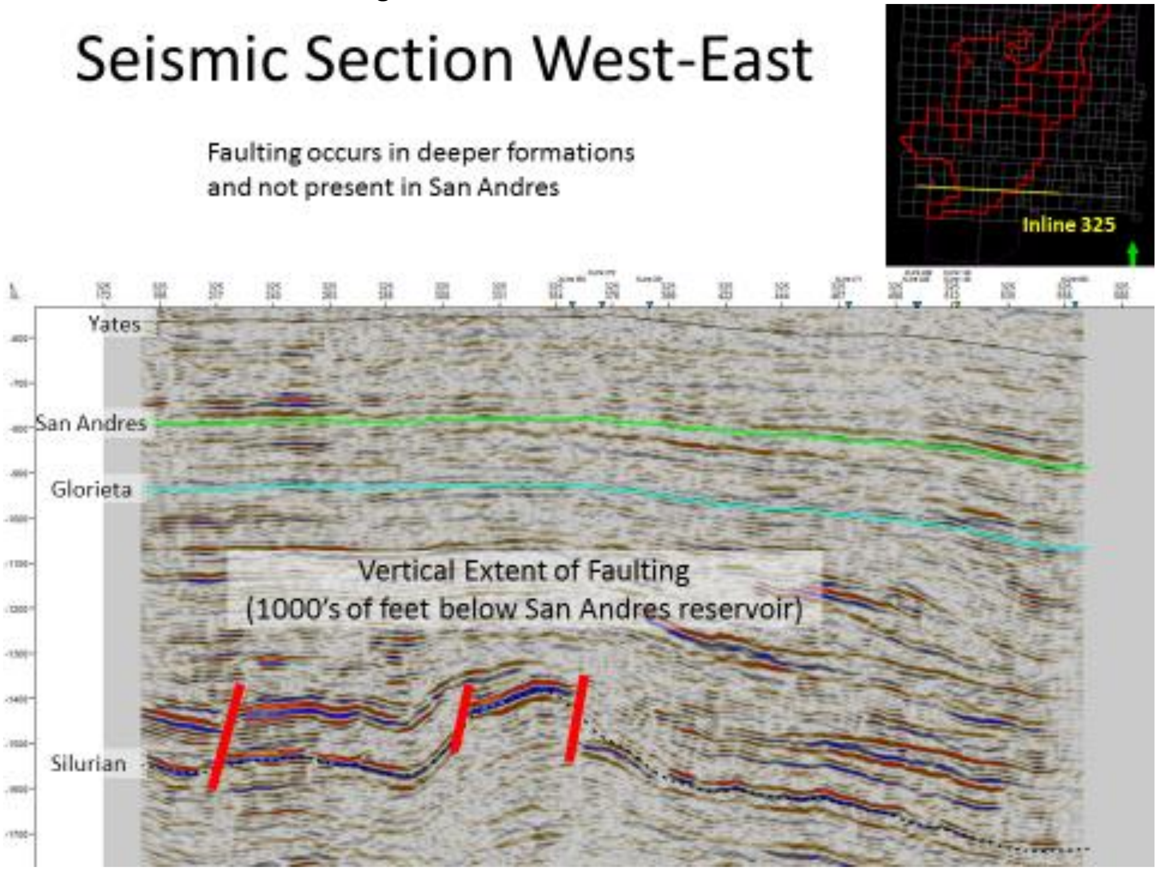


Figure 6 Seismic Section East-West



The Wasson seismic survey was a 3D shoot over most of Wasson conducted in 1994.

Leakage due to interaction with existing or new faults would lead to anomalies from expected performance. Such anomalies would lead to an investigation which may include measures such as injection profile surveys and pressure measurements to identify the cause. Poor performance could be attributed to inadequate pattern development, poor well conditions (e.g., scale buildup), conformance within the formation, or a potential leak. The investigation would identify the cause of the anomaly and guide the course of action. This is discussed further in Section 4.3 in the review of potential leakage pathways for injected CO_2.

And finally, the operating history at the Denver Unit confirms that there are no faults or fractures penetrating the flood zone. Fluids, both water and CO_2, have been successfully injected in the Denver Unit since the mid 1960's and there is no evidence of any interaction with existing or new faults or fractures. In fact, it is the absence of faults and fractures in the Denver Unit that make the reservoir such a strong candidate for CO_2 and water injection operations, and enable field operators to maintain effective control over the injection and production processes.

2.2.2 Operational History of the Denver Unit

The Denver Unit is a subdivision of the Wasson Field. It was established in the 1960s to implement water flooding. It is located in the southern part of the area of oil accumulation. The boundaries of the Denver Unit are indicated in the Wasson Field Map (see Figure 7).

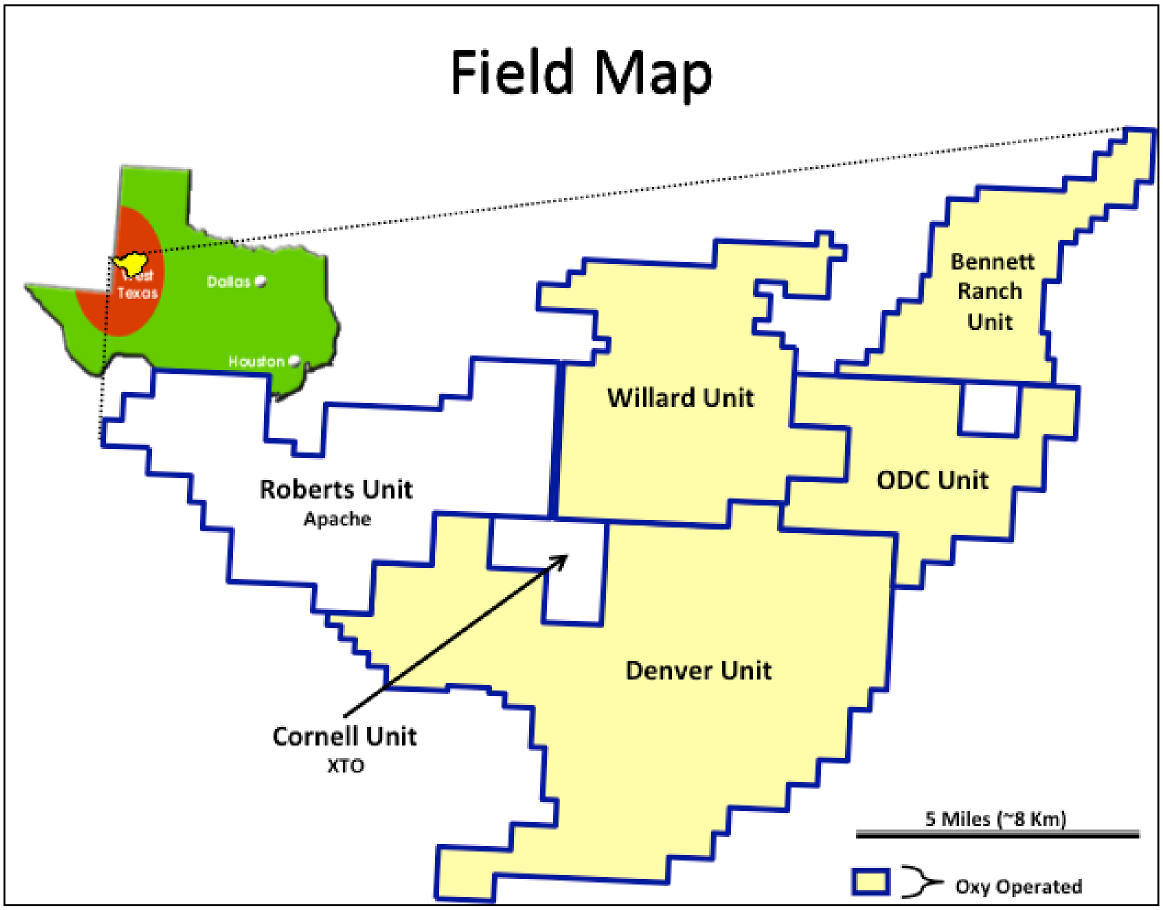


Figure 7 - Wasson Field Map

Water flooding works most efficiently with regular patterns over a large area. The Wasson Field was originally developed with numerous leases held by individuals and companies. To improve efficiency, a number of smaller leases were combined (or unitized) into larger legal entities (Units), which can be operated without the operational restrictions imposed by the former lease boundaries. In 1964, six such units were formed at Wasson to enable water flooding; the largest of these is the Denver Unit (See Figure 7).

CO_2 flooding of the Denver Unit began in 1983 and has continued and expanded since that time. The experience of operating and refining the Denver Unit CO_2 floods over three decades has created a strong understanding of the reservoir and its capacity to store CO_2.

2.2.3 The Geology of the Denver Unit within the Wasson Field

Figure 4 shows a vertical snapshot of the geology above and down to the Wasson field. Figure 8 is an aerial view of the structure of the field showing the depth of the top of the San Andres. As indicated in the discussion of Figure 4, the upper portion of the San Andres formation is comprised of impermeable anhydrite and dolomite sections that serve as a seal. In effect, they form the hard ceilings of an upside down bowl or dome. Below this seal the formation consists of permeable dolomites containing oil and gas. Figure 8 shows a two-dimensional picture of the structure of this formation.

The colors in the structure map in Figure 8 indicate changes in elevation, with red being highest level, (i.e., the level closest to the surface) and blue and purple being lowest level (i.e., the level deepest below the surface). As indicated in Figure 8, the Denver Unit is located at the highest elevation of the San Andres formation within the Wasson Field, forming the top of the dome. The rest of the Wasson field slopes downward from this area, effectively forming the sides of the dome. The elevated area formed a natural trap for oil and gas that migrated from below over millions of years. Once trapped in this high point, the oil and gas has remained in place. In the case of the Wasson Field, this oil and gas has been trapped in the San Andres formation for 50 to100 million years. Over time, fluids, including CO_2, in the Wasson would rise vertically until meeting the ceiling of the dome and would then follow it to the highest elevation in the Denver Unit. As such, the fluids injected into the Denver Unit would stay in the reservoir rather than move to adjacent areas.

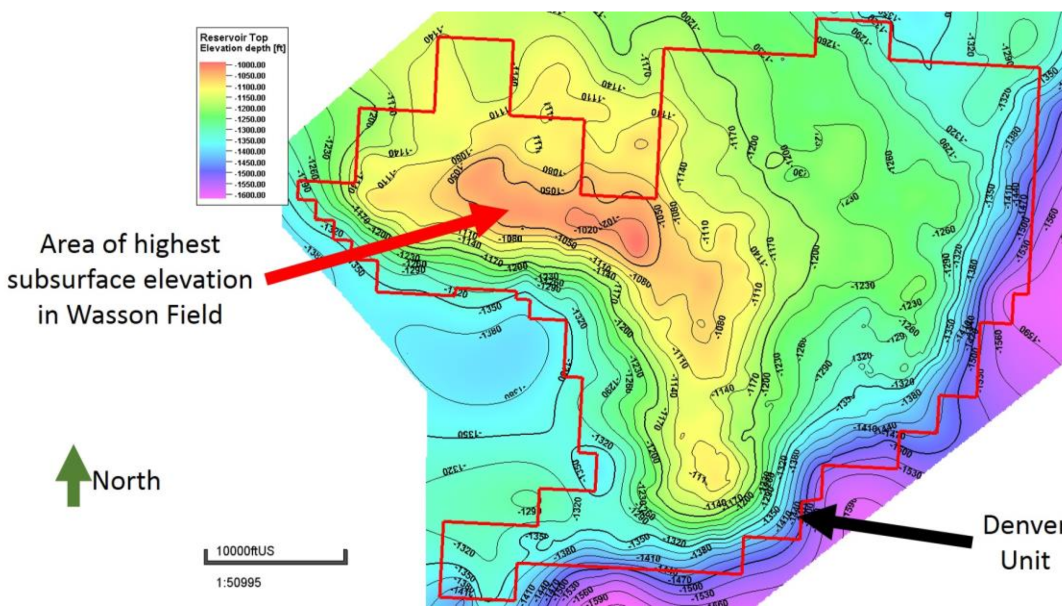


Figure 8 Structure Map on Top of San Andres Pay (F1)

Buoyancy dominates where oil and gas are found in a reservoir. Gas, being lightest, rises to the top and water, being heavier, sinks to the bottom. Oil, being heavier than gas but

lighter than water, lies in between. The cross section in Figure 9 shows saturation levels in the oil-bearing layers of the Wasson Field and illustrates this principle.

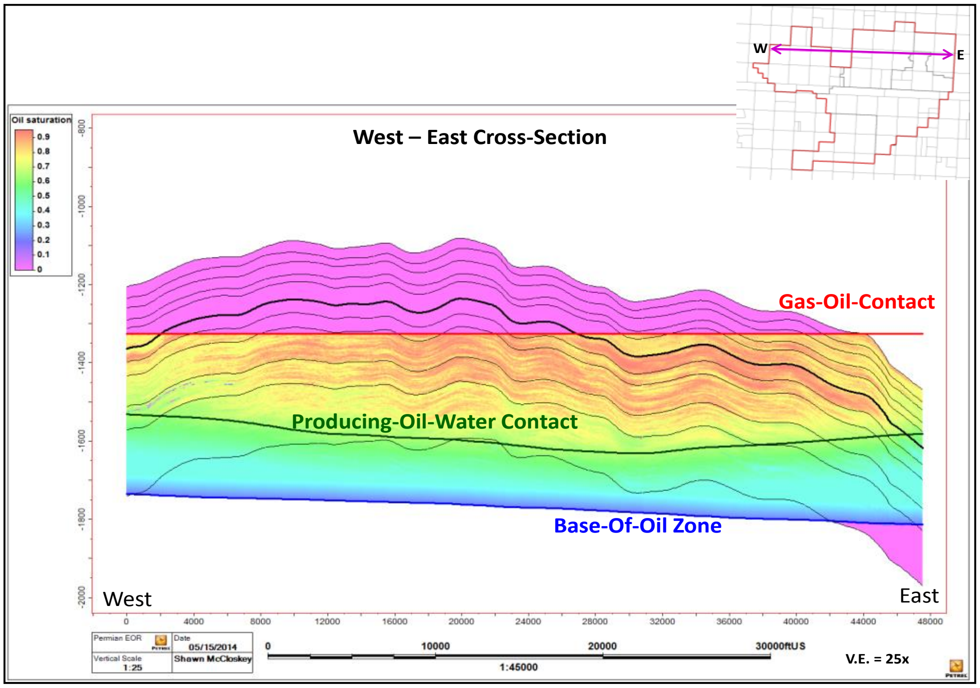


Figure 9 - Wasson Field Cross-Section Showing Saturation

At the time of discovery, natural gas was trapped at the structural high point of the Wasson Field, shown by pink area above the gas-oil contact line (in red) in the cross section (see Figure 9). This interface is found approximately 5,000 feet below the surface (or at -1,325 ft subsea). Above the gas-oil interface is the volume known as a "gas cap." As discussed in Section 2.2.1, the presence of a gas cap is evidence of the effectiveness of the seal formed by the upper San Andres. Gas is buoyant and highly mobile. If it could escape the Wasson field naturally, through faults or fractures, it would have done so over the millennia. Below the gas was an oil accumulation, which extended down to the producing oil-water contact (in black). The producing oil water contact was determined by early drilling to be the maximum depth where only oil was produced.

Below the level of the producing oil-water contact, wells produce a combination of oil and water. The uppermost region in this area is called the transition zone (TZ) and below that is the residual oil zone (ROZ). The ROZ was water flooded by nature millions of years ago, leaving a residual oil saturation.[2] This is approximately the same residual oil saturation remaining after water flooding in the water-swept areas of the main oil pay zone, and is also a target for CO_2 flooding.

When CO_2 is injected into an oil reservoir, it is pushed from injection wells to production wells by the high pressure of the injected CO_2. Once the CO_2 flood is complete and

[2] "Residual oil saturation" is the fraction of oil remaining in the pore space, typically after water flooding.

injection ceases, the remaining mobile CO_2 will rise slowly upward, driven by buoyancy forces. If the amount of CO_2 injected into the reservoir exceeds the secure storage capacity of the pore space, excess CO_2 could theoretically "spill" from the reservoir and migrate to other reservoirs in the Northwest Shelf. This risk is very low in the Denver Unit, because there is more than enough pore space to retain the CO_2. Oxy has calculated the total pore space within the Denver Unit, from the top of the reservoir down to the spill point, which is located at -1,675 ft subsea or roughly 5,000 – 5,500 feet below the surface, to be 8,848 MMB. At reservoir conditions the Denver Unit could hold about 14,700 Bscf (775 MMMT) CO_2 in the reservoir space above the spill point. Oxy forecasts that at the end of EOR operations stored CO_2 will fill approximately 25% of calculated storage capacity. The volume of CO_2 storage is based on the estimated total pore space within the Denver Unit from the top of the reservoir down to the spill point, or about 8,848 MMB. This is the volume of rock multiplied by porosity. CO_2 storage is calculated assuming an irreducible water saturation of 0.15, an irreducible oil saturation of 0.10 and a CO_2 formation volume factor of 0.45.

Top of F1 to -1675 ftss (shallowest BOZO Depth)	
Variables	Denver Unit Outline
Pore Volume [RB]	8,847,943,353
B_{CO2}	0.45
S_{wirr}	0.15
S_{orCO2}	0.1
Max CO_2	14,746,572,255
Max CO_2	14.7 TCF

$$CO_2(max) = Volume(RB) * (1 - S_{wirr} - S_{orCO2}) / B_{CO2}$$

The formation volume factor of CO_2 (B_{CO2}) is the ratio of reservoir volume in barrels to Mscf at standard conditions. At 1900 psi and 105 ^oF, the density of CO_2 is approximately 0.740 g/cc, which translates to a CO_2 formation volume factor of 0.45. (See Section 2.1 for additional forecast considerations.)

Given that the Denver Unit is the highest subsurface elevation within the Wasson Field, that the confining zone has proved competent over both millions of years and throughout decades of EOR operations, and that the field has ample storage capacity, Oxy is confident that stored CO_2 will be contained securely in the Denver Unit.

2.3 Description of CO_2 EOR Project Facilities and the Injection Process

Figure 10 shows a simplified flow diagram of the project facilities and equipment in the Denver Unit. CO_2 is delivered to the Wasson Field via the Permian pipeline delivery system. The CO_2 injected into the Denver Unit is supplied by a number of different

sources into the pipeline system. Specified amounts are drawn based on contractual arrangements among suppliers of CO_2, purchasers of CO_2, and the pipeline operator.

Once CO_2 enters the Denver Unit there are four main processes involved in EOR operations. These processes are shown in Figure 10 and include:

1. **CO_2 Distribution and Injection**. Purchased (fresh) CO_2 is combined with recycled CO_2 from the Denver Unit CO_2 Recovery Plant (DUCRP) and sent through the main CO_2 distribution system to various CO_2 injectors throughout the field.
2. **Produced Fluids Handling**. Produced fluids gathered from the production wells are sent to satellite batteries for separation into a gas/CO_2 mix and a water/oil mix. The water/oil mix is sent to centralized tank batteries where oil is separated from water. Produced oil is metered and sold; water is forwarded to the water injection stations for treatment and reinjection or disposal.
3. **Produced Gas Processing**. The gas/CO_2 mix separated at the satellite batteries goes to the DUCRP where the natural gas (NG), natural gas liquids (NGL), and CO_2 streams are separated. The NG and NGL move to commercial pipelines for sale. The majority of remaining CO_2 (e.g., the recycled CO_2) is returned to the CO_2 distribution system for reinjection.
4. **Water Treatment and Injection**. Water separated in the tank batteries is processed at water injection stations to remove any remaining oil and then distributed throughout the field either for reinjection along with CO_2 (the WAG or "water alternating gas" process) or sent to disposal wells.

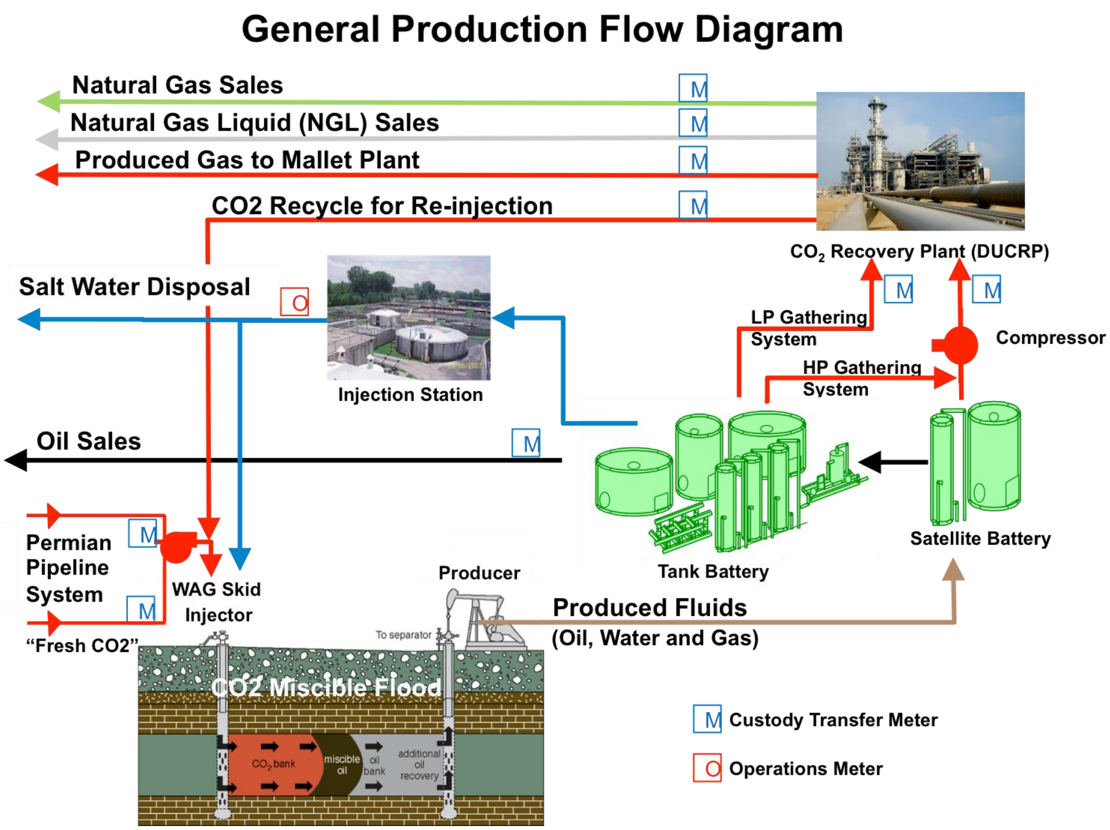


Figure 10 Denver Unit Facilities General Production Flow Diagram

2.3.1 CO_2 Distribution and Injection.

Oxy purchases CO_2 from the Permian pipeline delivery system and receives it through two custody transfer metering points, as indicated in Figure 10. Purchased CO_2 and recycled CO_2 are sent through the CO_2 trunk lines to injection manifolds. The manifolds are complexes of pipes that have no valves and do not exercise any control function. At the manifolds, the CO_2 is split into multiple streams and sent through distribution lines to individual WAG skids. There are volume meters at the inlet and outlet of DUCRP.

Currently, Oxy has 16 injection manifolds and approximately 600 injection wells in the Denver Unit. Approximately 400 MMscf of CO_2 is injected each day, of which approximately 47% is fresh CO_2, and the balance (53%) is recycled from DUCRP. The ratio of fresh CO_2 to recycled CO_2 is expected to change over time, and eventually the percentage of recycled CO_2 will increase and purchases of fresh CO_2 will taper off. As indicated in Section 2.1, Oxy forecasts ending purchases of fresh CO_2 for the Denver unit in 2059.

Each injection well has an individual WAG skid located near the wellhead (typically 150-200 feet away). WAG skids are remotely operated and can inject either CO_2 or water at various rates and injection pressures as specified in the injection plans. At any given time about half the injectors are injecting CO_2 and half are injecting water, in keeping with the injection plan for each one. The length of time spent injecting each fluid is a matter of continual optimization, designed to maximize oil recovery and minimize CO_2 utilization

in each injection pattern. A WAG skid control system is implemented at each WAG skid. It consists of a dual-purpose flow meter used to measure the injection rate of water or CO_2, depending on what is being injected. Data from these meters is sent to a control center where it is compared to the injection plan for that skid. As described in Sections 5 and 7, data from the WAG skid control systems, visual inspections of the injection equipment, and use of the procedures contained in 40 CFR §98.230-238 (Subpart W), will be gathered to complete the mass balance equations necessary to determine annual and cumulative volumes of stored CO_2.

2.3.2 Wells in the Denver Unit

As of August 2014, there are approximately 1,734 active wells in the Denver Unit as indicated in Figure 11; roughly two thirds of these wells are production wells and the remaining third are injection wells. In addition there are 448 inactive wells, bringing the total number of wells currently completed in the Denver Unit to 2,182. Table 1 shows these well counts in the Denver Unit by status.

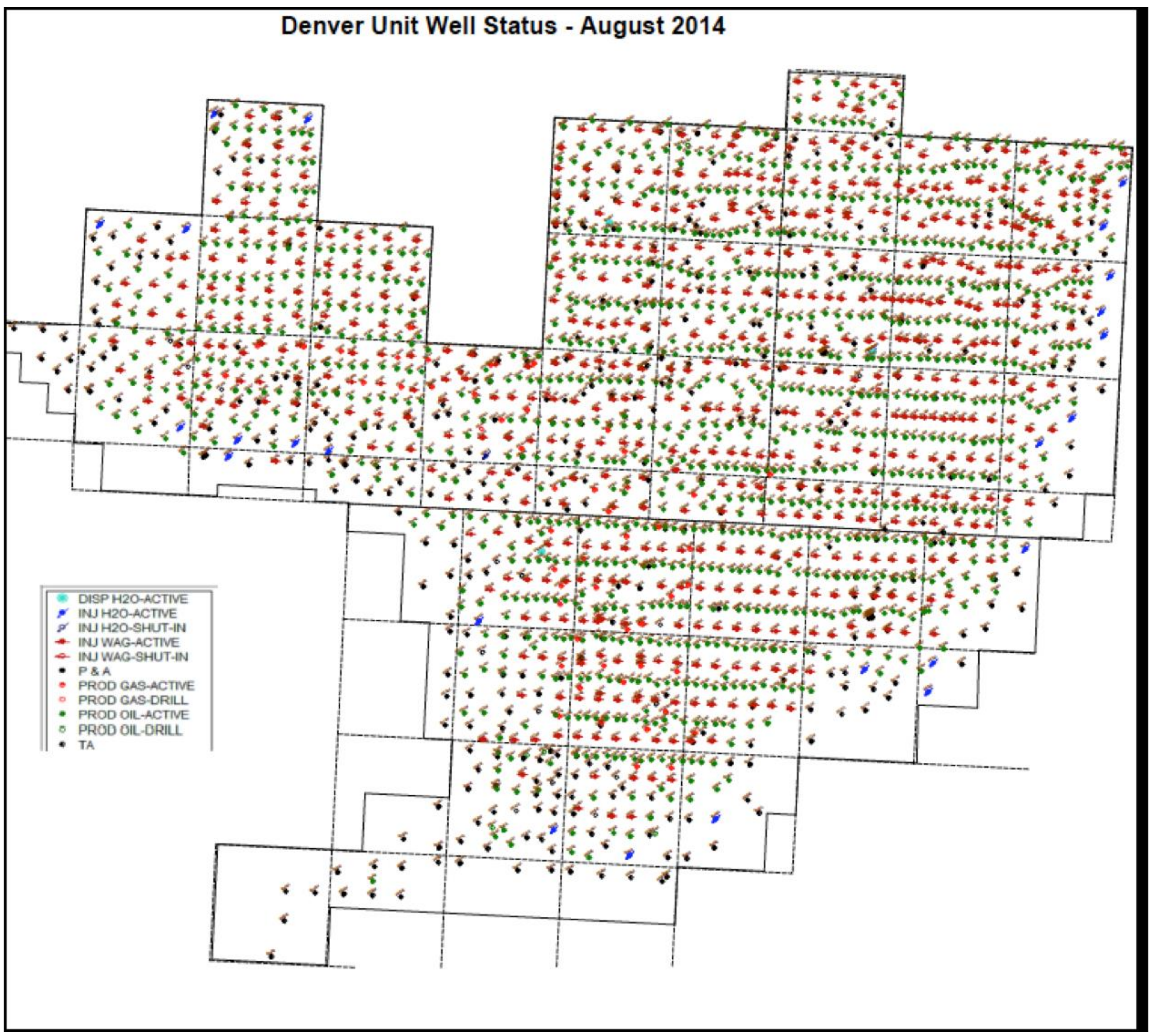


Figure 11 Denver Unit Wells - August 2014

Table 1 - Denver Unit Wells

Age/Completion of Well	*Active*	*Shut-in*	*Temporarily Abandoned*	*Plugged and Abandoned*
Drilled after 1996	619	3	23	3
Drilled 1961-1996 with production casing cemented to surface	388	2	58	49
Drilled between 1972-1975 – using lightweight casing	247	1	16	32
Drilled before 1960	480	2	47	212
TOTAL	***1734***	***8***	***144***	***296***

In addition to the wells completed in the Denver Unit, there are 885 wells that penetrate the Denver Unit but are completed in formations other than the San Andres. Table 2 shows these well counts by status: 498 of these wells are active and are operated by entities other than Oxy; the remaining wells are inactive and formerly operated by Oxy or others.

Table 2 – Non-Denver Unit Wells

	Oxy Operated			*Operated by Others*	
Age/Completion of Well	*Shut-In*	*Temporarily Abandoned*	*Plugged and Abandoned*	*Active*	*Inactive*
Drilled after 1996	2	16	1	181	10
Drilled 1961-1996 with production casing cemented to surface	4	69	94	214	89
Drilled between 1972-1975 – using lightweight casing	0	0	0	0	1
Drilled before 1960	0	28	29	103	44
TOTAL	***6***	***113***	***124***	***498***	***144***

Tables 1 and 2 categorize the wells in groups that relate to age and completion methods. The wells drilled after 1996 were completed using state-of-the-art standards. The term "State-of-the-art standards" refers to the use of regular weight casing cemented to surface. In 1996, Shell, which then operated the Denver Unit, as well as the major Clearfork leases that lie under the Denver Unit, implemented a policy that wells be cemented to surface following these standards. Oxy continues to follow that practice. The majority of wells drilled between 1961-1996 have production casings cemented to the surface. A subset of this group of wells uses lightweight casing. The last group covers older wellbores drilled before 1960. Oxy considers these categories when planning well maintenance projects. Further, Oxy keeps well workover crews on site in the Permian to maintain all active wells and to respond to any wellbore issues that arise.

All wells in oilfields, including both injection and production wells described in Tables 1 and 2, are regulated by TRRC, which has primacy to implement the UIC Class II

program in Texas, under TAC Title 16 Part 1 Chapter 3.[3] A list of wells, with well identification numbers, is included in Appendix 6.

TRRC rules govern well siting, construction, operation, maintenance, and closure for all wells in oilfields. Briefly current rules require, among other provisions:

- That fluids be constrained in the strata in which they are encountered;
- That activities governed by the rule cannot result in the pollution of subsurface or surface water;
- That wells adhere to specified casing, cementing, drilling well control, and completion requirements designed to prevent fluids from moving from the strata they are encountered into strata with oil and gas, or into subsurface and surface waters;
- That wells file a completion report including basic electric log (e.g., a density, sonic, or resistivity (except dip meter) log run over the entire wellbore);
- That all wells be equipped with a Bradenhead gauge, measure the pressure between casing strings using the Bradenhead gauge, and follow procedures to report and address any instances where pressure on the Bradenhead is detected;
- And that all wells follow plugging procedures that require advance approval from the Director and allow consideration of the suitability of the cement based on the use of the well, the location and setting of plugs.

In addition, Oxy implements a corrosion protection program to protect and maintain the steel used in injection and production wells from any CO_2-enriched fluids. Oxy currently employs methods to mitigate both internal and external corrosion of casing in wells in the Denver Unit.

Under the TRRC's program, wells to be used for fluid injection (as defined under EPA's UIC Class II program) must comply with additional requirements related to the Area of Review (AoR), casing design, special equipment for well monitoring, mechanical integrity testing (MIT) (using a pressure test), and monitoring / reporting. These current requirements are briefly described below.

AoR Review

According to EPA, the AoR refers to "the area around a deep injection well that must be checked for artificial penetrations, such as other wells, before a permit is issued. Well operators must identify all wells within the AoR that penetrate the injection or confining zone, and repair all wells that are improperly completed or plugged. The AoR is either a circle or a radius of at least ¼ mile around the well or an area determined by calculating the zone of endangering influence, where pressure due to injection may cause the migration of injected or formation fluid into a USDW."[4] These requirements thus require that Oxy locate and evaluate all wells located in the AoR. Thus, Oxy's reviews in the

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[3] See Appendix 7 for additional information.

[4] USEPA, Underground Injection Control Program Glossary, http://water.epa.gov/type/groundwater/uic/glossary.cfm.

Denver Unit include both wells operated by Oxy and other parties, drilled into the Denver Unit or other strata.

CO_2 flooding takes place throughout the Denver Unit. All of Oxy's injection wells are permitted for CO_2 flooding, after satisfying AoR requirements for the injection wells. Oxy is in compliance with all AoR requirements.

Mechanical Integrity Testing (MIT)

Oxy complies with the MIT requirements implemented by TRRC, which are designed to ensure that there is no significant leakage within the injection tubing, casing, or packer, as well as no leakage outside of the casing. All active injection wells undergo MIT testing (referred to as "H-5 testing") at the following intervals:

- Before injection operations begin;
- Every 5 years unless the permit states otherwise;
- After any workover that disturbs the seal between the tubing, packer, and casing;
- After any repair work on the casing; and
- When a request is made to suspend or reactivate the injection or disposal permit.

TRRC requires that the operator notify the TRRC district office at least 48 hours prior to conducting an H-5 test. Operators are required to use a pressure recorder and pressure gauge for the tests. The operator's field representative must sign the pressure recorder chart and submit it with the H-5 form. Casing test pressure must fall within 30-70% of the pressure recorder chart's full scale, and the pressure gauge must measure in increments that are no greater than 5% of the test pressure.

The current[5] requirements for conducting MIT include:

For Wells with Tubing

- The standard H-5 pressure test is the most common method.
- Pressure test the tubing-packer-casing at a pressure between 200 and 500 psi.
- The test pressure must stabilize within 10% of the required test pressure and remain stabilized for 30 minutes (60 minutes if testing with a gas-filled annulus)
- Maintain a minimum 200 psi pressure differential between the test pressure and tubing pressure.

For Wells without Tubing

- Pressure test immediately above injection perforations against a temporary plug, wireline plug, or tubing with packer.
- Indicate the type and depth of the plug.
- Must be tested to maximum permitted injection pressure that is not limited to 500 psi.

[5] The TRRC rules referenced here were accessed in August 2014 and are subject to change over time.

If a well fails an MIT, the operator must immediately shut in the well, provide notice to TRRC within 24 hours, file a Form H-5 with TRRC within 30 days, and make repairs or plug the well within 60 days. Casing leaks must be successfully repaired and the well retested or, if required, the well must be plugged. In such cases, the operator must submit a Form W-3A Notice of Intention to Plug and Abandon a well to the TRRC.

TRCC requires similar testing and response at injection wells that are more than 25 years old and have been idle for more than one year. This process is referred to as H-15 testing. For these wells, MIT is required every five years using either an annual fluid level test (valid for one year) or a hydraulic pressure test with a plug immediately above the perforations.

In the event of test failure at these idle wells, the process for reporting and correction is similar as for active wells, but the timeline is shorter. The operator must make repairs or plug the well within 30 days – not the 60 days allowed for an active well. Again, casing leaks must be successfully repaired and the well retested or plugged and, if plugging is required, a Form W-3A must be submitted to the TRRC.

Any well that fails an MIT cannot be returned to active status until it passes a new MIT.

2.3.3 Produced Fluids Handling

As injected CO_2 and water move through the reservoir, a mixture of oil, gas, and water (referred to as "produced fluids") flows to the production wells. Gathering lines bring the produced fluids from each production well to satellite batteries. Oxy has approximately 1,100 production wells in the Denver Unit and production from each is sent to one of 32 satellite batteries. Each satellite battery consists of a large vessel that performs a gas-liquid separation. Each satellite battery also has well test equipment to measure production rates of oil, water and gas from individual production wells. Oxy has testing protocols for all wells connected to a satellite. Most wells are tested every two months. Some wells are prioritized for more frequent testing because they are new or located in an important part of the field; some wells with mature, stable flow do not need to be tested as frequently; and finally some wells do not yield solid test results necessitating review or repeat testing.

After separation, the gas phase, which is approximately 80-85% CO_2 and contains 2,000-5,000 ppm H_2S, is transported by pipeline to DUCRP for processing as described below.

The liquid phase, which is a mixture of oil and water, is sent to one of six centralized tank batteries where oil is separated from water. The large size of the centralized tank batteries provides enough residence time for gravity to separate oil from water.

The separated oil is metered through the Lease Automatic Custody Transfer (LACT) unit located at each centralized tank battery and sold. The oil typically contains a small amount of dissolved or entrained CO_2. Analysis of representative samples of oil is

conducted once a year to assess CO_2 content. Since 2011, the dissolved CO_2 content has averaged 0.13% by volume in the oil.

The water is removed from the bottom of the tanks at the central tank batteries and sent to the water treatment facility. After treatment, the water is either re-injected at the WAG skids or disposed of into permitted disposal wells. Although Oxy is not required to determine or report the amount of dissolved CO_2 in this water, analyses have shown the water typically contains 40ppm (0.004%) CO_2.

Any gas that is released from the liquid phase rises to the top of the tanks and is collected by a Vapor Recovery Unit (VRU) that compresses the gas and sends it to DUCRP for processing.

Wasson oil is slightly sour, containing small amounts of hydrogen sulfide (H_2S), which is highly toxic. There are approximately 90 workers on the ground in the Denver Unit at any given time, and all field personnel are required to wear H_2S monitors at all times. Although the primary purpose of H_2S detectors is protecting employees, monitoring will also supplement Oxy's CO_2 leak detection practices as discussed in Sections 5 and 7.

In addition, the procedures in 40 CFR §98.230-238 (Subpart W) and the two-part visual inspection process described in Section 5 are used to detect leakage from the produced fluids handling system. As described in Sections 5 and 7 the volume of leaks, if any, will be estimated to complete the mass balance equations to determine annual and cumulative volumes of stored CO_2.

2.3.4 Produced Gas Handling

Produced gas is gathered from the satellite batteries and sent to centralized compressor stations and then to DUCRP in a high pressure gathering system. Produced gas collected from the tank battery by VRUs is either added to the high pressure gathering system or sent to DUCRP in a low pressure gathering system. Both gathering systems have custody transfer meters at the DUCRP inlet.

Once gas enters DUCRP, it undergoes compression and dehydration. Produced gas is first treated in a Sulferox unit to convert H_2S into elemental sulfur. Elemental sulfur is sold commercially and is trucked from the facility.

Other processes separate NG and NGLs into saleable products. At the end of these processes there is a CO_2 rich stream, a portion of which is redistributed (recycled) to again be injected. Oxy's goal is to limit the amount of H_2S in the recycled CO_2 to less than 100 ppm H_2S. Meters at DUCRP outlet are used to determine the total volume of the CO_2 stream recycled back into the EOR operations.

Separated NG is either used within the Denver Unit or delivered to a commercial pipeline for sale. The pipeline gas must meet quality standards and is measured using a flow meter

that is calibrated for commercial transactions. NGL is also measured using a commercial flow meter and sold for further processing.

As described in Section 2.3.4, data from 40 CFR §98.230-238 (Subpart W), the two-part visual inspection process for production wells and areas described in Section 5, and information from the personal H_2S monitors are used to detect leakage from the produced gas handling system. This data will be gathered to complete the mass balance equations necessary to determine annual and cumulative volumes of stored CO_2 as described in Sections 5 and 7.

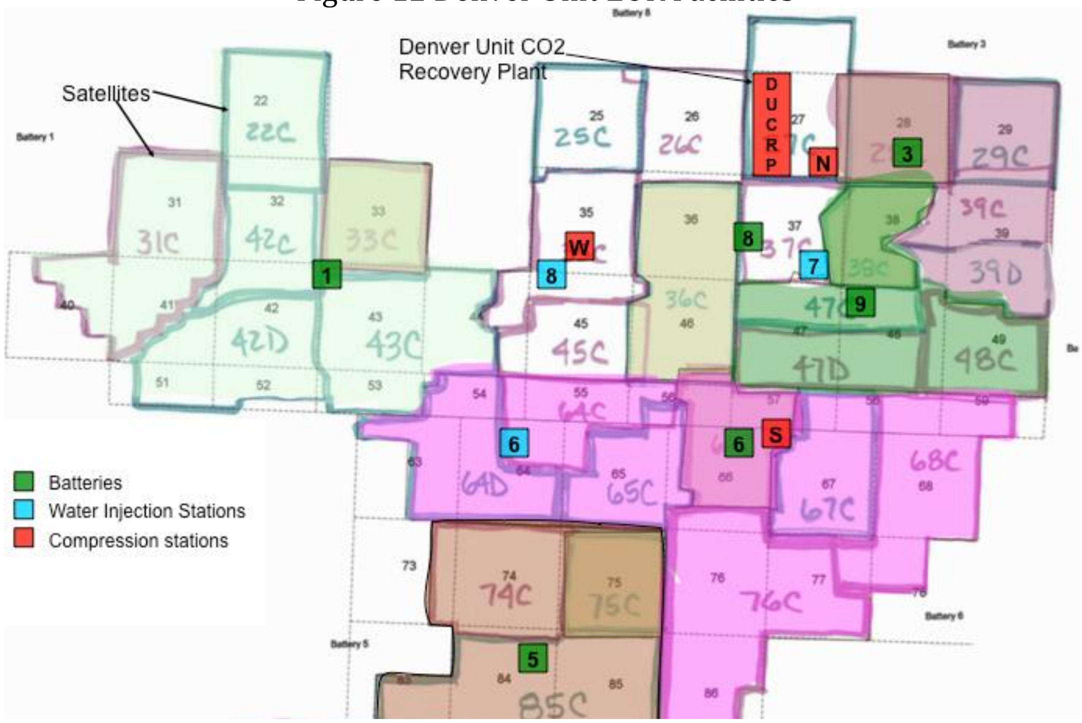
2.3.5 Water Treatment and Injection

Produced water collected from the tank batteries is gathered through a pipeline system and moved to one of three water treatment stations. Each facility consists of 10,000-barrel tanks where any remaining oil is skimmed from the water. Skimmed oil is returned to the centralized tank batteries. The water is filtered and sent to one of 10 large injection pumps. Pressurized water is distributed to the WAG skids for reinjection or to water disposal wells for injection into deeper permeable formations.

2.3.6 Facilities Locations

The locations of the various facilities in the Denver Unit are shown in Figure 12. As indicated above, there are 32 satellite batteries. The areas served by each satellite battery are shown in the highlighted areas and labeled with a number and letter, such as “31C” in the far west. The six centralized tank batteries are identified by the green squares. The three water treatment and injection stations are shown by the light blue squares. DUCRP is located by the large red rectangle to the north. Three compressor stations are shown by red squares.

Figure 12 Denver Unit EOR Facilities



TRRC requires that injections pressures be limited to prevent contamination of other hydrocarbon resources or pollution of subsurface or surface waters. In addition, EOR projects are designed by Oxy to ensure that mobilized oil, gas, and CO_2 do not migrate into adjoining properties that are owned by competing operators, who could then produce the fluids liberated by Oxy's EOR efforts. In the Denver Unit, Oxy uses two methods to contain fluids within the unit: reservoir pressure management and the careful placement and operation of wells along boundaries of other units.

Reservoir pressure in the Denver Unit is managed by maintaining an injection to withdrawal ratio (IWR)[6] of approximately 1.0. To maintain the IWR, Oxy monitors fluid injection to ensure that reservoir pressure does not increase to a level that would fracture the reservoir seal or otherwise damage the oil field. Similar practices are used for other units operated by Oxy within the Wasson Field. Most, if not all other Wasson Units, inject at pressures a little higher than Denver Unit and all maintain an IWR of at least one. In addition to the two methods mentioned above, higher pressures in the surrounding areas assure that Denver Unit fluids stay within the Unit.

Oxy also prevents injected fluids migrating out of the injection interval by keeping injection pressure below the fracture pressure which is measured using step-rate tests. In

[6] Injection to withdrawal ratio (IWR) is the ratio of the volume of fluids injected to the volume of fluids produced (withdrawn). Volumes are measured under reservoir conditions for all fluids. Injected fluids are CO_2 and water; produced fluids are oil, water, and CO_2. By keeping IWR close to 1.0, reservoir pressure is held constant, neither increasing nor decreasing.

these tests, injection pressures are incrementally increased (e.g., in "steps") until injectivity increases abruptly, which indicates that an opening (fracture) has been created in the rock. Oxy manages its operations to ensure that injection pressures are kept below the fracture pressure so as to ensure that the valuable fluid hydrocarbons and CO_2 remain in the reservoir.

The second way Oxy contains fluids within the Denver Unit is to drill wells along the lease lines that are designed to avoid loss of valuable fluids from the unit. To the north Oxy has established lease line agreements with the neighboring CO_2 units. These agreements provide for offsetting injectors or offsetting producers along the lease line that balance one another. For example, an injector on one side is offset and balanced by an injector on the other side. The two paired injectors are maintained on injection in such a way as to give Oxy and its partners sufficient assurance that a no-flow boundary is maintained at the Unit boundary. This restricts the flow of injected CO_2 or mobilized oil from one unit to the other. A similar dynamic is maintained for paired producers. To the east, south and west, there are no operations on the other side of the Denver Unit boundary. Near these boundaries, a row of water injectors or producers are maintained to keep CO_2 or mobilized oil from leaving the Denver Unit. As shown in Figure 7, Oxy operates the ODC and Willard Units to the north of the Denver Unit and therefore has first-hand knowledge of pressures on both sides of Unit boundaries.

In the case of the other, Oxy maintains lease line agreements with the other operators to assure injection and production is balanced along the lease line. In this way, Oxy is assured that CO_2 and mobilized oil do not escape the Denver Unit.

2.4 Reservoir Modeling

Oxy uses simulators to model the behavior of fluids in a reservoir, providing a mathematical representation that incorporates all information that is known about the reservoir. In this way, future performance can be predicted in a manner consistent with available data, including logs and cores, as well as past production and injection history.

Mathematically, reservoir behavior is modeled by a set of differential equations that describe the fundamental principles of conservation of mass and energy, fluid flow, and phase behavior. These equations are complex and must be solved numerically using high-powered computers. The solution process involves sub-dividing the reservoir into a large number of blocks arranged on a grid. Each block is assigned specific rock properties (porosity, permeability, saturations, compositions and pressure). The blocks are small enough to adequately describe the reservoir, but large enough to keep their number manageable. The computer uses the differential equations to determine how various physical properties change with time in each grid block. Small time steps are used to progress from a known starting point through time. In this way the computer simulates reservoir performance, consistent with fundamental physics and actual reservoir geometry. The simulation represents the flow of each fluid phase (oil, water

and gas), changes in fluid content (saturations), equilibrium between phases (compositional changes), and pressure changes over time.

Field-wide simulations are initially used to assess the viability of water and CO_2 flooding. Once a decision has been made to develop a CO_2 EOR project, Oxy uses detailed pattern modeling to plan the location and injection schedule for wells. For the purpose of operating a CO_2 flood, large-scale modeling is not useful as a management tool because it does not provide sufficiently detailed information about the expected pressure, injection volumes, and production at the level of an injection pattern.

In the case of the Denver Unit, field-wide modeling was conducted by the previous owners in the 1980's and 1990's. The outputs were used to determine plans to develop the site for CO_2 flooding more than 20 years ago. Oxy reviewed this large-scale modeling to inform their decision to acquire leases for the Denver Unit in 2000. However, since taking over operation of the Denver Unit in 2000, Oxy has used the more detailed pattern modeling to operate the CO_2 flood.

At the pattern level, the objective of a simulation is to develop an injection plan that maximizes the oil recovery, and minimizes the costs, of the CO_2 flood. The injection plan includes such controllable items as:

- The cycle length and WAG ratio to inject water or CO_2 in the WAG process, and
- The best rate and pressure for each injection phase.

Simulations may also be used to:

- Evaluate infill or replacement wells,
- Determine the best completion intervals,
- Verify the need for well remediation or stimulation, and
- Determine anticipated rates and ultimate recovery.

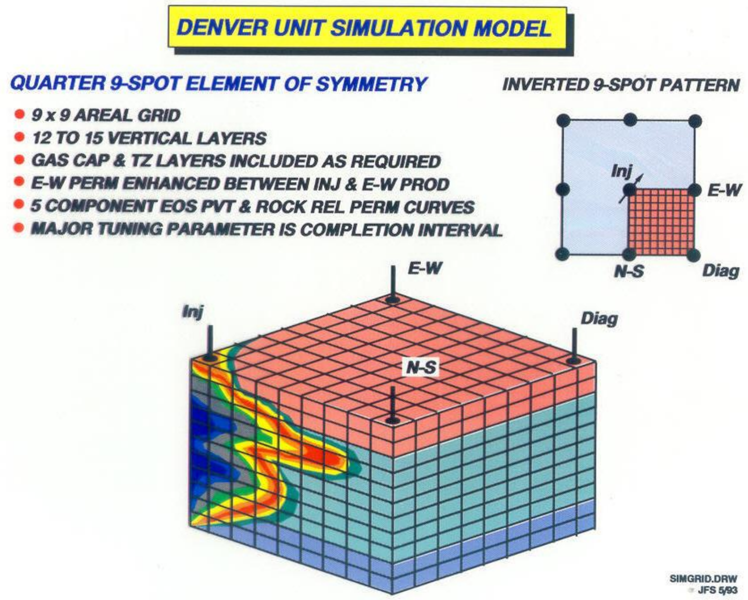
This pattern-level modeling provides Oxy with confidence that the injected CO_2 will stay in-zone to contact and displace oil, and that the flood pattern and injection scheme are optimized.

The pattern level simulator used by Oxy uses a commercially available compositional simulator, called MORE, developed by Roxar. It is called "compositional" because it has the capability to keep track of the composition of each phase (oil, gas, and water) over time and throughout the volume of the reservoir.

To build a simulation model, engineers and scientists input specific information on reservoir geometry, rock properties, and fluid flow properties. The input data includes:

- Reservoir geometry, including distance between wells, reservoir thickness and structural contours;
- Rock properties, such as permeability and porosity of individual layers, barriers to vertical flow, and layer continuity; and,
- Fluid flow properties including density and viscosity of each phase, relative permeability, capillary pressure, and phase behavior.

Figure 13 Denver Unit Simulation Model



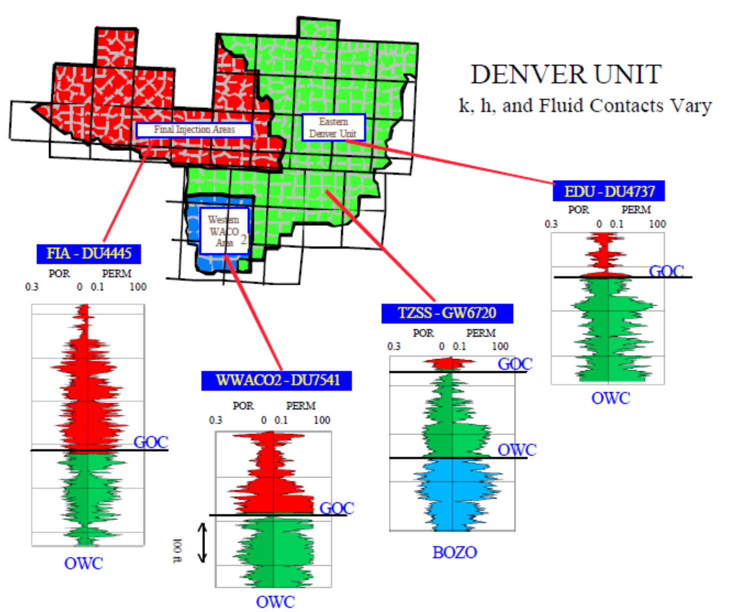
A representative pattern-level simulation model for the Denver Unit is illustrated in Figure 13. The model is representative of a portion of the field that is repeated many times throughout the field, in this case a fraction of an injection pattern. This fraction is an element of symmetry, meaning that the same geometry and the same process physics are repeated many times over the area of the field.

Layering

Within a flood pattern, one of the most important properties to model is the effect of layering. Reservoir rocks were originally deposited over very long periods of time. Because the environment tended to be uniform at any one point in time, reservoir properties tend to be relatively uniform over large areas. Depositional environment changes over time, however, and for this reason rock properties vary considerably with time or depth as they are deposited. Thus, rock properties are modeled as layers. Some layers have high permeability and some have lower permeability. Those with higher permeability take most of the injected fluids and are swept most readily. Those with lower permeability may be only partially contacted at the end of the flooding process. (The WAG process helps improve sweep efficiency.) As Figure 13 shows, the simulation is divided into 12 to 15 vertical grid blocks. Each layer of simulation grid blocks is used to model the depositional layering as closely as practical. Porosity and permeability have been measured on cores taken from the upper San Andres sealing zone. Measured permeabilities are less than 0.01 md. Permeabilities in the pay zones typically range from 1 to 10 md. Permeabilities in anhydrite intervals are zero. Anhydrites are one of the most common seal rocks for oil and gas reservoirs. Ultra-low permeability rocks do not contribute to flow and therefore do not need to be included in simulation models.

Reservoir quality varies markedly across the Unit. Thus, response to CO_2 flooding is also expected to vary within the Unit. Based on reservoir development and geological characteristics, the Unit is divided into three distinct areas: (a) Eastern Denver Unit, (b) WACO2, and (c) Final Injection Area. Figure 14 demonstrates the delineated areas and the typical porosity and permeability development found in each of the subgroups. CO_2 flooding in these areas is implemented according to their reservoir characteristics. The Eastern Denver Unit began CO_2 injection in 1984, received an initially large CO_2 slug size, then converted to a water alternating CO_2 injection scheme once a targeted CO_2 slug size was reached. The WACO2 area also began CO_2 injection in 1984. However, this area injected water alternating CO_2 from the beginning. Once the Eastern Denver Unit area began its alternating injection scheme, lower CO_2 injection rates were required in the developed portion of the field, allowing expansion of the flood into the Final Injection Area. Wells DU 4737 and DU 6720 typify the properties in the Eastern Denver Unit; well DU 7541 typifies the properties of the WACO2 area; and well DU 4445 is typical of the Final Injection Area.

Figure 14 – Area Sub-groups



The red lines in Figure 14 are intended to point to areas of the Unit that are similar to, or represented by, the selected wells. They do not point to the actual well locations. The red line for well 6720 points to the general location of the well, not necessarily the exact location. Lines for the other wells connect the well log to the label for the area they are representative of.

A structure map from Figure 8 has been modified below (Figure 15) to show the well locations indicated in Figure 14. According to this map, one would expect well 4445 to have the largest gas column and well 6720 the smallest gas column, consistent with the logs shown on Figure 14.

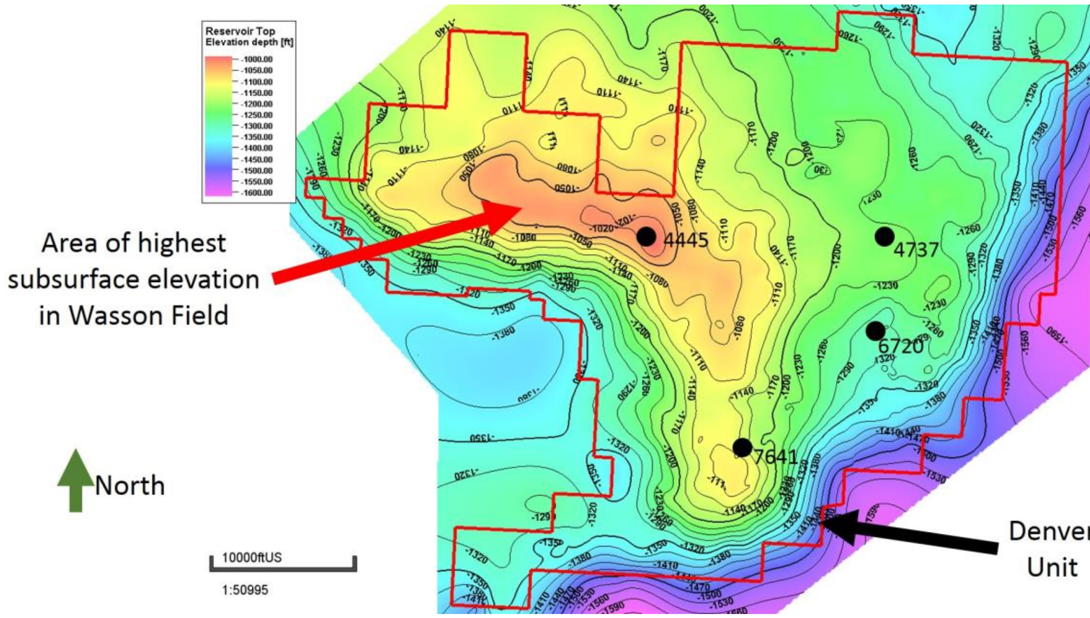


Figure 15 Modified Structure Map to Data Points from Figure 14

Predicted behavior for all patterns can be constructed in one of two ways: from simulation or from actual performance of a more mature analog project. Simulation models may represent either a multi-pattern segment of the field, or be an element of symmetry model representing a portion of a single pattern. Figure 13 illustrates an element of symmetry modeling approach that is used at the Denver Unit. Many such models have been constructed to capture the variation in geology throughout this large CO_2 project.

Predictions may also be constructed from the actual performance data of analog projects that already have received significant CO_2 injection.

Where simulation is used to generate the predictions, the simulation results should be validated by comparison with analog project performance if possible.

Prediction models forecast oil, water and CO_2 production, as well as CO_2 and water injection.

If actual performance differs in a noticeable way from prediction, reservoir engineers use professional judgment formed by an analysis of technical data to determine where further attention is needed. The appropriate response could be to change injection rates, to alter the prediction model or to find and repair fluid leaks.

3. Delineation of Monitoring Area and Timeframes

3.1 Active Monitoring Area

Because CO2 is present throughout the Denver Unit and retained within it, the Active Monitoring Area (AMA) is defined by the boundary of the Denver Unit. The following factors were considered in defining this boundary:

- Free phase CO_2 is present throughout the Denver Unit: More than 4,035 Bscf (212.8 MMMT) tons of CO_2 have been injected throughout the Denver Unit since 1983 and there has been significant infill drilling in the Denver Unit to complete additional wells to further optimize production. Operational results thus far indicate that there is CO_2 throughout the Denver Unit.
- CO_2 injected into the Denver Unit remains contained within that unit because of the fluid and pressure management impacts associated with CO_2 EOR. Namely, maintenance of an IWR of 1.0 assures a stable reservoir pressure; managed leaseline injection and production wells are used to retain fluids in the Denver Unit as indicated in Section 2.3.6; and operational results (such as normal pressures in the injection interval and injection and production rates within predicted ranges) indicate that injected CO_2 is retained in the Denver Unit.
- Furthermore, over geologic timeframes, stored CO_2 will remain in the Denver unit because it is the area with the highest elevation CO_2 will not migrate downdip as described in Section 2.2.3.

3.2 Maximum Monitoring Area

The Maximum Monitoring Area (MMA) is defined in 40 CFR §98.440-449 (Subpart RR) as including the maximum extent of the injected CO_2 and a half-mile buffer bordering that area. As described in the AMA section (Section 3.1), the maximum extent of the injected CO_2 is anticipated to be bounded by the Denver Unit. Therefore the MMA is the Denver Unit plus the half-mile buffer as required by 40 CFR §98.440-449 (Subpart RR).

3.3 Monitoring Timeframes

Oxy's primary purpose in injecting CO_2 is to produce oil that would otherwise remain trapped in the reservoir and not, as in UIC Class VI, "specifically for the purpose of geologic storage."[7] During the Specified Period, Oxy will have a subsidiary purpose of establishing the long-term containment of a measurable quantity of CO_2 in the San Andres formation at the Denver Unit. The Specified Period will begin January 1, 2016 and is anticipated to end prior to December 31, 2026. The Specified Period will be

[7] EPA UIC Class VI rule, EPA 75 FR 77291, December 10, 2010, section 146.81(b).

substantially shorter than the period of production from the Denver Unit because CO_2 has been injected at the Denver Unit since 1983 and is expected to continue for roughly five decades after the Specified Period ends. At the conclusion of the Specified Period, Oxy will submit a request for discontinuation of reporting when Oxy can provide a demonstration that current monitoring and model(s) show that the cumulative mass of CO_2 reported as sequestered during the Specified Period is not expected to migrate in the future in a manner likely to result in surface leakage. It is expected that it will be possible to make this demonstration within 2 – 3 years after injection for the Specified Period ceases and will be based upon predictive modeling supported by monitoring data. The demonstration will rely on two principles: 1) that just as is the case for the monitoring plan, the continued process of fluid management during the years of CO_2 EOR operation after the Specified Period will contain injected fluids in the Denver Unit, and 2) that the cumulative mass reported as sequestered during the Specified Period is a small fraction of the total that will be stored in the Denver Unit over the lifetime of operations. *See* 40 C.F.R. § 98.441(b)(2)(ii).

4. Evaluation of Potential Pathways for Leakage to the Surface

4.1 Introduction

In the 50 years since the Denver Unit was formed to facilitate water flooding, the reservoir has been studied and documented extensively. Based on the knowledge gained from that experience, this section assesses the potential pathways for leakage of stored CO_2 to the surface. The following potential pathways are reviewed:

- Existing Well Bores
- Faults and Fractures
- Natural and Induced Seismic Activity
- Previous Operations
- Pipeline/Surface Equipment
- Lateral Migration Outside the Denver Unit
- Drilling Through the CO_2 Area
- Diffuse Leakage Through the Seal

4.2 Existing Well Bores

As of August 2014, there are approximately 1,734 active wells in the Denver Unit – roughly two thirds are production wells and the remaining third are injection wells. In addition, there are 448 inactive wells, as described in Section 2.3.2.

Leakage through existing well bores is a potential risk at the Denver Unit that Oxy works to prevent by adhering to regulatory requirements for well drilling and testing; implementing best practices that Oxy has developed through its extensive operating

experience; monitoring injection/production performance, wellbores, and the surface; and by maintaining surface equipment.

As discussed in Section 2.3.2, regulations governing wells in the Denver Unit require that wells be completed and operated so that fluids are contained in the strata in which they are encountered and that well operation does not pollute subsurface and surface waters. The rules establish the requirements that all wells (injection, production, disposal) must comply with. Depending upon the purpose of a well, the requirements can include additional standards for AoR evaluation and MIT. In implementing these rules, Oxy has developed operating procedures based on its experience as one of the world's leading operators of EOR floods. Oxy's best practices include developing detailed modeling at the pattern level to guide injection pressures and performance expectations; utilizing diverse teams of experts to develop EOR projects based on specific site characteristics; and creating a culture where all field personnel are trained to look for and address issues promptly. Oxy's practices ensure that well completion and operation procedures are designed not only to comply with rules but also to ensure that all fluids (e.g., oil, gas, CO_2) remain in the Denver Unit until they are produced through an Oxy well – these include corrosion prevention techniques to protect the wellbore.

As described in section 5, continual and routine monitoring of Oxy's well bores and site operations will be used to detect leaks, including those from non-Oxy wells, or other potential well problems as follows:

- Pressures and flowrates are monitored continuously in all active injectors. The injection plans for each pattern are programmed into the injection WAG skid, as discussed in Section 2.3.1, to govern the rate, pressure, and duration of either water or CO_2 injection. Pressure monitors on the injection wells are programmed to flag pressures that significantly deviate from the plan. Leakage on the inside or outside of the injection wellbore would affect pressure and be detected through this approach. If such excursions occur, they are investigated and addressed. It is Oxy's experience that few excursions result in fluid migration out of the intended zone and that leakage to the surface is very rare.

- In addition to monitoring well pressure and injection performance, Oxy uses the experience gained over time to strategically approach well maintenance and updating. Oxy maintains well maintenance and workover crews onsite for this purpose. For example, the well classifications by age and construction method indicated in Table 1 inform Oxy's plan for monitoring and updating wells. Oxy uses all of the information at hand including pattern performance, and well characteristics to determine well maintenance schedules.

- Flowrates of oil, water and CO_2 are measured on all producers at least monthly, using the production well test process conducted when produced fluids are gathered and sent to a Satellite Battery. There is a routine cycle for each Satellite Battery, with each well being tested approximately once every two months. During this cycle, each production well is diverted to the well test equipment for a period of time sufficient to measure and sample produced fluids (generally 12-24 hours). This test allows Oxy to allocate a portion of the produced fluids measured at the Satellite Battery to each production well, assess the composition of produced fluids by location, and assess the performance of each well. Performance data are reviewed on a routine basis to ensure that CO_2 flooding is optimized. If production is off plan, it is investigated and any identified issues addressed. Leakage to the outside of production wells is not considered a major risk because of the reduced pressure in the casing. Further, the personal H_2S monitors would detect leaked fluids around production wells.

- Finally, as indicated in Section 5, all wells are observed by Oxy personnel or Oxy Contractors at least weekly. On any day, Oxy has approximately 90 employees in the field. Leaking CO_2 is very cold and leads to formation of bright white clouds and ice that are easily spotted. All field personnel are trained to identify leaking CO_2 and other potential issues at wellbores and in the field. In addition, aerial surveys are completed weekly. Any significant CO_2 leakage detected will be documented and reported, quantified and addressed as described in Section 5.

Based on its ongoing monitoring activities and review of the potential leakage risks posed by well bores, Oxy concludes that it is mitigating the risk of CO_2 leakage through well bores by detecting problems as they arise and quantifying any leakage that does occur. Section 4.10 summarizes how Oxy will monitor CO_2 leakage from various pathways and describes how Oxy will respond to various leakage scenarios. In addition, Section 5 describes how Oxy will develop the inputs used in the Subpart RR mass-balance equation (Equation RR-11). Any incidents that result in CO_2 leakage up the wellbore and into the atmosphere will be quantified as described in section 7.4.

4.3 Faults and Fractures

After reviewing geologic, seismic, operating, and other evidence, Oxy has concluded that there are no known faults or fractures that transect the San Andres Formation interval in the project area. While faults have been identified in formations that are 1,000's of feet below the San Andres formation, this faulting has been shown not to affect the San Andres or create potential leakage pathways.

Oxy has extensive experience in designing and implementing EOR projects to ensure injection pressures will not damage the oil reservoir by inducing new fractures or creating shear. As a safeguard, injection skids are set with automatic shutoff controls if injection pressures exceed fracture pressures.

4.4 Natural or Induced Seismicity

A few recent studies have suggested a possible relationship between CO_2 miscible flooding activities and seismic activity in certain areas. Determining whether the seismic activity is induced or triggered by human activity is difficult. Many earthquakes occur that are not near injection wells, and many injection wells do not generate earthquakes. Thus, the occurrence of an earthquake near a well is not proof of cause of human actions having had any influence.

To evaluate this potential risk at the Denver Unit, Oxy has reviewed the nature and location of seismic events in West Texas. Some of the recorded earthquakes in West Texas are far removed from any injection operation. These are judged to be from natural causes. Others are near oil fields or water disposal wells and are placed in the category of "quakes in close association with human enterprise." (See Frohlich, 2012)

Of the recorded earthquakes in the Permian Basin, none have occurred in the Wasson Field; the closest was nearly 80 miles away. Moreover, Oxy is not aware of any reported loss of injectant (waste water or CO_2) to the surface associated with any seismic activity.

The concern about induced seismicity is that it could lead to fractures in the seal providing a pathway for CO_2 leakage to the surface. Based on Oxy's review of seismic data, none of the recorded "earthquakes" in the Permian Basin have occurred in the Wasson Field; the closest was nearly 80 miles away. Moreover, Oxy is not aware of any reported loss of injectant (waste water or CO_2) to the surface associated with any seismic activity. Therefore, there is no direct evidence to suggest that natural seismic activity poses a significant risk for loss of CO_2 to the surface in the Permian Basin, and specifically in the Denver Unit. If induced seismicity resulted in a pathway for material amounts of CO_2 to migrate from the injection zone, other reservoir fluid monitoring provisions (e.g., reservoir pressure, well pressure, and pattern monitoring) would lead to further investigation.

4.5 Previous Operations

CO_2 flooding has taken place in the Denver Unit since 1983, and Oxy took over operations in 2000. Oxy and the prior operators have kept records of the site and have completed numerous infill wells. Oxy's standard practice for drilling new wells includes a rigorous review of nearby wells to ensure that drilling will not cause expensive damage in or interfere with existing wells. Oxy also follows AoR requirements under the UIC Class II program, which require identification of all active and abandoned wells in the AoR and implementation of procedures that ensure the integrity of those wells when applying for a permit for any new injection well.[8] Oxy reviews TRRC's records and/or Oxy well files and may conduct ground surveys to identify old, unknown wells as a part of any AoR review in preparation for drilling a new well. Based on review, Oxy has concluded that there are no unknown wells within the Denver Unit. Oxy's operational

[8] Current requirements are referenced in Appendix 7.

experience confirms this conclusion. Oxy has successfully optimized CO_2 flooding with infill wells because the confining zone has not been impaired by previous operations.

4.6 Pipeline / Surface Equipment

Damage to or failure of pipelines and surface equipment can result in unplanned losses of CO_2. Oxy anticipates that the use of prevailing design and construction practices and compliance with applicable laws will reduce to the maximum extent practicable the risk of unplanned leakage from surface facilities. The facilities and pipelines currently utilize and will continue to utilize materials of construction and control processes that are standard for CO_2 EOR projects in the oil and gas industry. Operating and maintenance practices currently follow and will continue to follow demonstrated industry standards. CO_2 delivery via the Permian pipeline system will continue to comply with all applicable laws. Finally, Oxy conducts aerial inspections of the pipeline and surface equipment in the Denver Unit once a week. Field personnel are trained to look for and report potential leaks from pipeline and surface equipment as part of their routine activities. Should leakage be detected from pipeline or surface equipment, the volume of released CO_2 will be quantified following the requirements of Subpart W of EPA's GHGRP.

4.7 Lateral Migration Outside the Denver Unit

It is highly unlikely that injected CO_2 will migrate downdip and laterally outside the Denver Unit because of the nature of the geology and of the planned injection. First, as indicated in Section 2.3.3.3 "Geology of the Denver Unit within the Wasson Field," the Denver Unit contains the highest elevation within the San Andres. This means that over long periods of time, injected CO_2 will tend to rise vertically towards the Upper San Andres and continue towards the point in the Denver Unit with the highest elevation. Second, the planned injection volumes and active fluid management during injection operations will prevent CO_2 from migrating laterally into adjoining units. Finally, Oxy will not be increasing the total volume of fluids in the Denver Unit. Based on site characterization and planned and projected operations Oxy estimates the total volume of stored CO_2 will be approximately 25% of calculated capacity.

4.8 Drilling Through the CO_2 Area

It is possible that at some point in the future, drilling through the containment zone into the San Andres could occur and inadvertently create a leakage pathway. Oxy's review of this issue concludes that this risk is very low for three reasons. First, any wells drilled in the oil fields of Texas are regulated by TRRC and are subject to requirements that fluids be contained in strata in which they are encountered.[9] Second, Oxy's visual inspection

[9] Current requirements are referenced in Appendix 7.

process, including both routine site visits and flyovers, is designed to identify unapproved drilling activity in the Denver Unit. Third, Oxy plans to operate the CO_2 EOR flood in the Denver Unit for several more decades, and will continue to be vigilant about protecting the integrity of its assets and maximizing the potential of resources (oil, gas, CO_2). In the unlikely event Oxy would sell the field to a new operator, provisions would be made to ensure the secure storage of the amount of CO_2 reported as a result of CO_2 EOR operations during the Specified Period.

4.9 Diffuse Leakage Through the Seal

Diffuse leakage through the seal formed by the upper San Andres is highly unlikely. The presence of a gas cap trapped over millions of years as discussed in Section 2.2.3 confirms that the seal has been secure for a very long time. Injection pattern monitoring program referenced in Section 2.3.1 and detailed in Section 5 assures that no breach of the seal will be created. The seal is highly impermeable, wells are cemented across the horizon, and unexplained changes in injection pressure would trigger investigation as to the cause. Further, if CO_2 were to migrate through the San Andres seal, it would migrate vertically until it encountered and was trapped by any of the four additional seals indicated in orange in Figure 4.

4.10 Monitoring, Response, and Reporting Plan for CO_2 Loss

As discussed above, the potential sources of leakage include fairly routine issues, such as problems with surface equipment (pumps, valves, etc.) or subsurface equipment (well bores), and unique events such as induced fractures. Table 3 summarizes some of these potential leakage scenarios, the monitoring activities designed to detect those leaks, Oxy's standard response, and other applicable regulatory programs requiring similar reporting.

Table 3 Response Plan for CO_2 Loss

Known Potential Leakage Risks	Monitoring Methods and Frequency	Anticipated Response Plan
Tubing Leak	Monitor changes in annulus pressure; MIT for injectors	Workover crews respond within days
Casing Leak	Weekly field inspection; MIT for injectors; extra attention to high risk wells	Workover crews respond within days
Wellhead Leak	Weekly field inspection	Workover crews respond within days
Loss of Bottom-hole pressure control	Blowout during well operations (weekly inspection but field personnel present daily)	Maintain well kill procedures
Unplanned wells drilled through San Andres	Weekly field inspection to prevent unapproved drilling; compliance with TRRC permitting for planned wells.	Assure compliance with TRRC regulations
Loss of seal in abandoned wells	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Re-enter and reseal abandoned wells
Pumps, values, etc.	Weekly field inspection	Workover crews respond within

		days
Leakage along faults	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Shut in injectors near faults
Overfill beyond spill points	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Fluid management along lease lines
Leakage through induced fractures	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Comply with rules for keeping pressures below parting pressure
Leakage due to seismic event	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Shut in injectors near seismic event

Sections 5.1.5-5.1.7 discuss the approaches envisioned for quantifying the volumes of leaked CO_2. Given the uncertainty concerning the nature and characteristics of leaks that will be encountered, it is not clear the method for quantifying the volume of leaked CO_2 that would be most appropriate. In the event leakage occurs, Oxy will determine the most appropriate method for quantifying the volume leaked and will report the methodology used as required as part of the annual Subpart RR submission.

Any volume of CO_2 detected leaking to surface will be quantified using acceptable emission factors such as those found in 40 CFR Part 98 Subpart W or engineering estimates of leak amounts based on measurements in the subsurface, Oxy's field experience, and other factors such as the frequency of inspection. As indicated in Sections 5.1 and 7.4, leaks will be documented, evaluated and addressed in a timely manner. Records of leakage events will be retained in the electronic environmental documentation and reporting system. Repairs requiring a work order will be documented in the electronic equipment maintenance system.

Available studies of actual well leaks and natural analogs (e.g., naturally occurring CO_2 geysers) suggest that the amount released from routine leaks would be small as compared to the amount of CO_2 that would remain stored in the formation.[10]

4.11 Summary

The structure and stratigraphy of the San Andres reservoir in the Denver Unit is ideally suited for the injection and storage of CO_2. The stratigraphy within the CO_2 injection zones is porous, permeable and very thick, providing ample capacity for long-term CO_2 storage. The San Andres formation is overlain by several intervals of impermeable geologic zones that form effective seals or "caps" to fluids in the San Andres formation (See Figure 4). After assessing potential risk of release from the subsurface and steps that have been taken to prevent leaks, Oxy has determined that the potential threat of

[10] See references to following reports of measurements, assessments, and analogs in Appendix 4: IPCC Special Report on Carbon Dioxide Capture and Storage; Wright – Presentation to UNFCC SBSTA on CCS; Allis, R., et al, "Implications of results from CO2 flux surveys over known CO2 systems for long-term monitoring; McLing - Natural Analog CCS Site Characterization Soda Springs, Idaho Implications for the Long-term Fate of Carbon Dioxide Stored in Geologic Environments.

leakage is extremely low. The potential leakage scenarios are summarized below, in order of likelihood:

- *Existing wellbores*: Because existing boreholes are a potential pathway for release of CO_2 to the surface, Oxy is primarily focused on mitigating this risk through a combination of using best practices in well design, completion and operation, and implementation of a rigorous program for subsurface performance and well bore monitoring. Oxy further has established approach to remedy or close wells if a problem arises. Together, these components mitigate the risk of leakage to the surface through boreholes. In addition to these proactive measures, the operating history is well documented and does not indicate manmade leakage pathways from past production activities or any significant likelihood that existing but unknown wellbores will be identified. Oxy will account for any CO_2 leakage via well bores as required under Subpart RR.

- *Pipeline/Surface Equipment*: Oxy follows regulatory requirements and best practices that together mitigate the risk of significant CO_2 leakage from pipelines and surface equipment. Oxy will account for any leakage according to the requirements in Subpart W of the EPA's GHGRP and will reflect any such leakage in the mass balance calculation.

- *Faults:* There are no faults or fractures present within or affecting the Denver Unit, and Oxy believes that the risk of leakage via this pathway is low. Should such leakage occur, Oxy would quantify it using measured or engineering estimates of relevant parameters (e.g., CO_2 flow rate, concentration, duration), and report CO_2 emissions under Subpart RR.

- *Natural and Induced Seismic Activity, Previous Operations, Lateral Migration Outside the Denver Unit, Dissolution of CO_2 into Formation Fluid and Subsequent Migration, Drilling through the CO_2 Area, and Diffuse Movement Through the Seal*: As explained above, Oxy concludes that these theoretical leakage pathways are very unlikely and are mitigated, to the extent practicable, through Oxy's operating procedures. As with faults, Oxy believes that the risk of leakage via these pathways is low. Should such leakage occur, Oxy would quantify it using measured or engineering estimates of relevant parameters (e.g., CO_2 flow rate, concentration, duration), and report CO_2 emissions under Subpart RR.

In summary, based on a careful assessment of the potential risk of release of CO_2 from the subsurface, Oxy has determined that there are no leakage pathways at the Denver Unit that are likely to result in significant loss of CO_2 to the atmosphere. Further, given the detailed knowledge of the field and its operating protocols, Oxy concludes that it would be able to both detect and quantify any CO_2 leakage to the surface that could arise both identified and unexpected leakage pathways.

5. Monitoring and Considerations for Calculating Site Specific Variables

5.1 For the Mass Balance Equation

5.1.1 General Monitoring Procedures

As part of its ongoing operations, Oxy collects flow, pressure, and gas composition data from the Denver Unit. Flow and pressure data is monitored through hourly scans by centralized data management systems. Alarms are triggered when data deviates by a specified amount from desired operational conditions. Alarms are investigated by qualified technicians who follow Oxy response and reporting protocols. Responses are described in the following sections (5.1.5-5.1.7).

The typical volume weight averaged composition of injected CO_2 is:

%N2	0.93813
% CO2	96.9484
%C1	0.76578
%C2	1.31588
%C3	0.00421
%IC4	0.00402
%NC4	0.00933
%IC5	0.00345
%NC5	0.00325

The standard deviation of the CO_2 concentration over the last year is less than 0.5%.

There is no significant amount of H_2S in the injected gas stream. It is below the measurement threshold. DUCRP sweetens the gas before returning it to the field.

As indicated in Figure 10, custody-transfer meters are used at the two points at which custody of the CO_2 from the Permian pipeline delivery system is transferred to Oxy and also at the points at which custody of oil is transferred to other parties. Meters measure flow rate continually. Fluid composition will be determined, at a minimum, quarterly, consistent with EPA GHGRP's Subpart RR, section 98.447(a). All meter and composition data are documented, and records will be retained for at least seven years.

Metering protocols used by Oxy follow the prevailing industry standard(s) for custody transfer as currently promulgated by the API, the American Gas Association (AGA), and the Gas Processors Association (GPA), as appropriate. This approach is consistent with EPA GHGRP's Subpart RR, section 98.444(e)(3). These meters will be maintained routinely, operated continually, and will feed data directly to the centralized data collection systems. The meters meet the industry standard for custody transfer meter accuracy and calibration frequency. These custody meters provide the most accurate way to measure mass flows.

Oxy maintains in-field process control meters to monitor and manage in-field activities on a real time basis. These are identified as operations meters in Figure 10. These meters provide information used to make operational decisions but are not intended to provide the same level of accuracy as the custody-transfer meters. The level of precision and accuracy for in-field meters currently satisfies the requirements for reporting in existing UIC permits. Although these meters are accurate for operational purposes, it is important to note that there is some variance between most commercial meters (on the order of 1-5%) which is additive across meters. This variance is due to differences in factory settings and meter calibration, as well as the operating conditions within a field. Meter elevation, changes in temperature (over the course of the day), fluid composition (especially in multi-component or multi-phase streams), or pressure can affect in-field meter readings. Unlike in a saline formation, where there are likely to be only a few injection wells and associated meters, at CO_2 EOR operations in the Denver Unit there will be approximately 2,000 injection and production wells and a comparable number of meters, each with an acceptable range of error. This is a site-specific factor that is considered in the mass balance calculations described in Section 7.

5.1.2 CO_2 Received

Oxy measures the volume of received CO_2 using commercial custody transfer meters at each of the two off-take points from the Permian pipeline delivery system. This transfer is a commercial transaction that is documented. CO_2 composition is governed by the contract and the gas is routinely sampled to determine composition. No CO_2 is received in containers.

5.1.3 CO_2 Injected into the Subsurface

Injected CO_2 will be calculated using the flow meter volumes at the custody transfer meters at the outlet to DUCRP and the CO_2 off-take points from the Permian pipeline delivery system.

5.1.4 CO_2 Produced, Entrained in Products, and Recycled

The following measurements are used for the mass balance equations in Section 7:

CO_2 produced is calculated using the volumetric flow meters at the inlet to DUCRP.

CO_2 is produced as entrained or dissolved CO_2 in produced oil, as indicated in Figure 10. The concentration of CO_2 in produced oil is measured at the centralized tank battery.

Recycled CO_2 is calculated using the volumetric flow meter at the outlet of DUCRP, which is a custody transfer meter.

5.1.5 CO_2 Emitted by Surface Leakage

As discussed in Section 5.1.6 and 5.1.7 below, Oxy uses 40 CFR Part 98 Subpart W to estimate surface leaks from equipment at the Denver Unit. Subpart W uses a factor-driven approach to estimate equipment leakage. In addition, Oxy uses an event driven process to assess, address, track, and if applicable quantify potential CO_2 leakage to the surface. Oxy will reconcile the Subpart W report and results from any event-driven quantification to assure that surface leaks are not double counted.

The multi-layered, risk-based monitoring program for event-driven issues has been designed to meet two objectives, in accordance with the leakage risk assessment in Section 4: 1) to detect anomalies before CO_2 leaks to the surface; and 2) to detect and quantify any leaks that do occur. This section discusses how this monitoring will be conducted and used to quantify the volumes of CO_2 leaked to the surface.

Monitoring for potential Leakage from the Injection/Production Zone:
Oxy will monitor both injection into and production from the reservoir as a means of early identification of potential anomalies that could indicate leakage from the subsurface.

Oxy uses pattern modeling based on extensive history-matched data to develop injection plans (fluid rate, pressure, volume) that are programmed into each WAG skid. If injection pressure or rate measurements are beyond the specified set points determined as part of each pattern injection plan, a data flag is automatically triggered and field personnel will investigate and resolve the problem. These excursions will be reviewed by well management personnel to determine if CO_2 leakage may be occurring. Excursions are not necessarily indicators of leaks; they simply indicate that injection rates and pressures are not conforming to the pattern injection plan. In many cases, problems are straightforward to fix (e.g., a meter needs to be recalibrated or some other minor action is required), and there is no threat of CO_2 leakage. In the case of issues that are not readily resolved, more detailed investigation and response would be initiated, and staff from other parts of Oxy would provide additional support. Such issues would lead to the development of a work order in Oxy's Maximo work order management system. This record enables the company to track progress on investigating potential leaks and, if a leak has occurred, quantifying the magnitude.

Likewise, Oxy develops a forecast of the rate and composition of produced fluids. Each producer well is assigned to one satellite battery and is isolated once during each monthly cycle for a well production test. This data is reviewed on a periodic basis to confirm that production is at the level forecasted. If there is a significant deviation from the forecast, well management personnel investigate. If the issue cannot be resolved quickly, more detailed investigation and response would be initiated. As in the case of the injection pattern monitoring, if the investigation leads to a work order in the Maximo system, this record will provide the basis for tracking the outcome of the investigation and if a leak has occurred, recording the quantity leaked to the surface. If leakage in the flood zone were detected, Oxy would use an appropriate method to quantify the involved volume of CO_2. This might include use of material balance equations based on known injected quantities and monitored pressures in the injection zone to estimate the volume of CO_2 involved. Given the extensive operating history of the Denver Unit, this technique would be expected to have a relatively large margin of error.

A subsurface leak might not lead to a surface leak. In the event of a subsurface leak, Oxy would determine the appropriate approach for tracking subsurface leakage to determine and quantify leakage to the surface. To quantify leakage to the surface, Oxy would estimate the relevant parameters (e.g., the rate, concentration, and duration of leakage) to quantify the leak volume. Depending on specific circumstances, these determinations may rely on engineering estimates.

In the event leakage from the subsurface occurred diffusely through the seals, the leaked gas would include H_2S that would trigger the alarm on the personal monitors worn by field personnel. The personal H_2S meters worn by field personnel can detect levels of H_2S as low as 0.1 PPM. Such a diffuse leak from the subsurface through the seals has not occurred in the Denver Unit. In the event such a leak was detected, field personnel from across Oxy would be used to determine how to address the problem. The team might use modeling, engineering estimates, and direct measurements to assess, address, and quantify the leakage.

Monitoring of Wellbores*:*

Oxy monitors wells through continual, automated pressure monitoring in the injection zone (as described in Section 4.2), monitoring of the annular pressure in wellheads, and routine maintenance and inspection.

Leaks from wellbores would be detected through the follow-up investigation of pressure anomalies, visual inspection, or the use of personal H_2S monitors.

Anomalies in injection zone pressure may not indicate a leak, as discussed above. However, if the investigation leads to a work order, field personnel will inspect the equipment in question and determine the nature of the problem. If it is a simple matter, the repair will be made and the volume of leaked CO_2 would be included in the 40 CFR Part 98 Subpart W report for the Denver Unit. If more extensive repair were needed, Oxy would determine the appropriate approach for quantifying leaked CO_2 using the relevant parameters (e.g., the rate, concentration, and duration of leakage). The work order would serve as the basis for tracking the event for GHG reporting.

Anomalies in annular pressure or other parameters detected during routine maintenance inspections would be treated in the same way. Annular pressures in injectors should be close to zero in normal operating conditions because the annulus is isolated by the tubing and packer from injection fluids. Any higher pressure would indicate a potential leak in either the tubing or the packer and would trigger further investigation. If changes in pressure trigger a flag, the investigation follows a course of increasing detail as needed. The investigation typically begins with simpler measures such as having a field technician inspect the well for faulty equipment (e.g., valves, flanges). Additional tests would be conducted on the well if the cause of the pressure change has not been determined. These tests can identify the nature and location of the problem. If the cause is still not determined, then an investigation involving a wider scope will be undertaken. If a simple repair addresses the issue, the volume of leaked CO_2 would be included in the 40

CFR Part 98 Subpart W report for the Denver Unit. If more extensive repairs were needed, a work order would be generated and Oxy would determine the appropriate approach for quantifying leaked CO_2 using the relevant parameters (e.g., the rate, concentration, and duration of leakage). The work order would serve as the basis for tracking the event for GHG reporting.

Because leaking CO_2 is very cold and leads to formation of bright white clouds and ice that are easily spotted, Oxy also employs a two-part visual inspection process in the general area of the Denver unit to detect unexpected releases from wellbores. First, field personnel visit the surface facilities on a routine basis. Inspections may include tank volumes, equipment status and reliability, lube oil levels, pressures and flow rates in the facility, and valve leaks. Field personnel inspections also check that injectors are on the proper WAG schedule and observe the facility for visible CO_2 or fluid line leaks. Second, Oxy uses airplanes to perform routine flyover inspections to look for unplanned activities in the field including trespass operations, disruption of buried pipelines, or other potential unapproved activities. The pilots also look for evidence of unexpected releases. If a pilot observes a leak or release, he or she contacts Oxy's surface operations with the location of the leak. Surface operations personnel then review the reports, conduct a site investigation, recommend appropriate corrective action, and ensure actions are completed.

Historically, Oxy has documented fewer than 4 unexpected release events each year at Denver Unit. A need for repair or maintenance identified in the visual inspections results in a work order being entered into Oxy's equipment and maintenance (Maximo) system. The time to repair any leak is dependent on several factors, such as the severity of the leak, available manpower, location of the leak, and availability of materials required for the repair. 80% of leaks are repaired within one day and the remaining 20% within several days.

Finally, Oxy uses the results from the H_2S monitors worn by all field personnel at all times, as a last method to detect leakage from wellbores. If an H_2S alarm is triggered, the first response is to protect the safety of the personnel, but the next step is to safely investigate the source of the alarm. As noted previously, Oxy considers H_2S a proxy for potential CO_2 leaks in the field. Thus, detected H_2S leaks will be investigated to determine, and if needed quantify, potential CO_2 leakage. If the problem resulted in a work order, this will serve as the basis for tracking the event for GHG reporting.

<u>Other Potential Leakage at the Surface:</u>

Oxy will utilize the same visual inspection process and H_2S monitoring system to detect other potential leakage at the surface as it does for leakage from wellbores. Oxy utilizes routine visual inspections to detect significant loss of CO_2 to the surface. Field personnel routinely visit surface facilities to conduct a visual inspection. Inspections may include review of tank level, equipment status, lube oil levels, pressures and flow rates in the facility, valve leaks, ensuring that injectors are on the proper WAG schedule, and also conducting a general observation of the facility for visible CO_2 or fluid line leaks. Oxy also uses airplanes to routinely conduct visual inspections from the air. If problems are detected, field personnel investigate then, if maintenance is required, generate a work order in the maintenance system, which is tracked through completion. In addition to these visual inspections, Oxy will use the results of the personal H_2S monitors worn by field personnel as a supplement for smaller leaks that may escape visual detection.

If CO_2 leakage to the surface is detected, it will be reported to surface operations personnel who will review the reports and conduct a site investigation. If maintenance is required, a work order will be generated in the Maximo system. The work order will describe the appropriate corrective action and be used to track completion of the maintenance action. The work order will also serve as the basis for tracking the event for GHG reporting and quantifying any CO_2 emissions.

5.1.6 CO_2 emitted from equipment leaks and vented emissions of CO_2 from surface equipment located between the injection flow meter and the injection wellhead.

Oxy evaluates and estimates leaks from equipment, the CO_2 content of produced oil, and vented CO_2, as required under 40 CFR Part 98 Subpart W.

5.1.7 Mass of CO_2 emissions from equipment leaks and vented emissions of CO_2 from surface equipment located between the production flow meter and the production wellhead

Oxy evaluates and estimates leaks from equipment, the CO_2 content of produced oil, and vented CO_2, as required under 40 CFR Part 98 Subpart W.

5.2 To Demonstrate that Injected CO_2 is not Expected to Migrate to the Surface

At the end of the Specified Period, Oxy intends to cease injecting CO_2 for the subsidiary purpose of establishing the long-term storage of CO_2 in the Denver Unit. After the end of the Specified Period, Oxy anticipates that it will submit a request to discontinue monitoring and reporting. The request will demonstrate that the amount of CO_2 reported under 40 CFR §98.440-449 (Subpart RR) is not expected to migrate in the future in a manner likely to result in surface leakage. At that time, Oxy will be able to support its request with seven or more years of data collected during the Specified Period as well as two to three years of data collected after the end of the Specified Period. This demonstration will provide the information necessary for the EPA Administrator to approve the request to discontinue monitoring and reporting and may include, but is not limited to:

i. Data comparing actual performance to predicted performance (purchase, injection, production) over the monitoring period;
ii. An assessment of the CO_2 leakage detected, including discussion of the estimated amount of CO_2 leaked and the distribution of emissions by leakage pathway;

iii. A demonstration that future operations will not release the volume of stored CO_2 to the surface;
iv. A demonstration that there has been no significant leakage of CO_2; and,
v. An evaluation of reservoir pressure in the Denver Unit that demonstrates that injected fluids are not expected to migrate in a manner to create a potential leakage pathway.

6. Determination of Baselines

Oxy intends to utilize existing automatic data systems to identify and investigate excursions from expected performance that could indicate CO_2 leakage. Oxy's data systems are used primarily for operational control and monitoring and as such are set to capture more information than is necessary for reporting in the Annual Subpart RR Report. Oxy will develop the necessary system guidelines to capture the information that is pertinent to possible CO_2 leakage. The following describes Oxy's approach to collecting this information.

Visual Inspections
As field personnel conduct routine inspections, work orders are generated in the electronic system for maintenance activities that cannot be addressed on the spot. Methods to capture work orders that involve activities that could potentially involve CO_2 leakage will be developed, if not currently in place. Examples include occurrences of well workover or repair, as well as visual identification of vapor clouds or ice formations. Each incident will be flagged for review by the person responsible for MRV documentation. (The responsible party will be provided in the monitoring plan, as required under Subpart A, 98.3(g).) The Annual Subpart RR Report will include an estimate of the amount of CO_2 leaked. Records of information used to calculate emissions will be maintained on file for a minimum of seven years.

Personal H_2S Monitors
H_2S monitors are worn by all field personnel. Alarm of the monitor triggers an immediate response to ensure personnel are not at risk and to verify the monitor is working properly. The person responsible for MRV documentation will receive notice of all incidents where H_2S is confirmed to be present. The Annual Subpart RR Report will provide an estimate the amount of CO_2 emitted from any such incidents. Records of information to calculate emissions will be maintained on file for a minimum of seven years.

Injection Rates, Pressures and Volumes
Oxy develops a target injection rate and pressure for each injector, based on the results of ongoing pattern modeling. The injection targets are programmed into the WAG skid controllers. High and low set points are also programmed into the controllers, and flags whenever statistically significant deviations from the targeted ranges are identified. The set points are designed to be conservative, because Oxy prefers to have too many flags rather than too few. As a result, flags can occur frequently and are often found to be

insignificant. For purposes of Subpart RR reporting, flags (or excursions) will be screened to determine if they could also lead to CO_2 leakage to the surface. The person responsible for the MRV documentation will receive notice of excursions and related work orders that could potentially involve CO_2 leakage. The Annual Subpart RR Report will provide an estimate of CO_2 emissions. Records of information to calculate emissions will be maintained on file for a minimum of seven years.

Production Volumes and Compositions
Oxy develops a general forecast of production volumes and composition which is used to periodically evaluate performance and refine current and projected injection plans and the forecast. This information is used to make operational decisions but is not recorded in an automated data system. Sometimes, this review may result in the generation of a work order in the maintenance system. The MRV plan manager will review such work orders and identify those that could result in CO_2 leakage. Should such events occur, leakage volumes would be calculated following the approaches described in Sections 4 and 5. Impact to Subpart RR reporting will be addressed, if deemed necessary.

7. Determination of Sequestration Volumes Using Mass Balance Equations

To account for the site conditions and complexity of a large, active EOR operation, Oxy proposes to modify the locations for obtaining volume data for the equations in Subpart RR §98.443 as indicated below.

The first modification addresses the propagation of error that would be created if volume data from meters at each injection and production well were utilized. This issue arises because each meter has a small but acceptable margin of error, this error would become significant if data were taken from the approximately 2,000 meters within the Denver Unit. As such, Oxy proposes to use the data from custody meters on the main system pipelines to determine injection and production volumes used in the mass balance.

The second modification addresses the DUCRP. Figure 16 shows the planned mass balance envelope overlaid as a pale blue onto the General Production Flow Diagram originally shown in Figure 10. The envelope contains all of the measurements relevant to the mass balance equation. Those process steps outside of the envelope do not impact the mass balance and are, therefore, not included. As indicated in Figure 16, only the volume of CO_2 recycled from DUCRP impacts the mass balance equation and it is the volume measured at the DUCRP outlet. The remainder of the CO_2 -- that is, the difference between the inlet measurement and the outlet measurement occurring at DUCRP -- does not have an impact on the mass balance of the Denver Unit and therefore is not included in the mass balance equations. This is because the purpose of the MRV plan under Subpart RR is to determine the amount of CO_2 stored at the project site, as well as the amount of CO_2 emitted from the project site. GHGR Reporting rule Subpart RR is not intended to account for CO_2 emissions throughout the CO_2 supply chain as those emissions are reported under other subparts of the GHG Reporting rule.

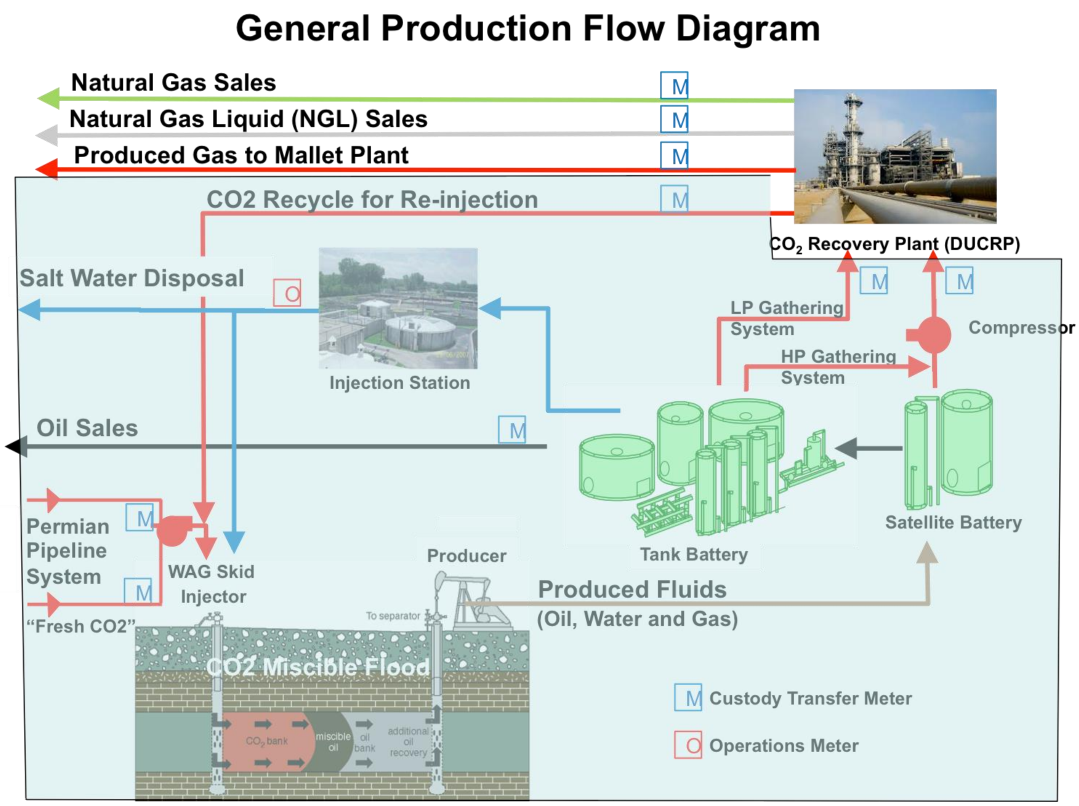


Figure 16 Material Balance Envelope (in blue)

The following sections describe how each element of the mass-balance equation (Equation RR-11) will be calculated.

7.1. Mass of CO_2 Received

Oxy will use equation RR-2 as indicated in Subpart RR §98.443 to calculate the mass of CO_2 received from each delivery meter immediately upstream of the Permian pipeline delivery system on the Denver Unit. The volumetric flow at standard conditions will be multiplied by the CO_2 concentration and the density of CO_2 at standard conditions to determine mass.

$$CO_{2T,r} = \sum_{p=1}^{4}(Q_{r,p} - S_{r,p}) * D * C_{CO_{2,p,r}} \qquad \text{(Eq. RR-2)}$$

where:

$CO_{2T,r}$ = Net annual mass of CO_2 received through flow meter r (metric tons).

$Q_{r,p}$ = Quarterly volumetric flow through a receiving flow meter r in quarter p at standard conditions (standard cubic meters).

$S_{r,p}$ = Quarterly volumetric flow through a receiving flow meter r that is redelivered to another facility without being injected into your well in quarter p (standard cubic meters).

D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682.

$C_{CO2,p,r}$ = Quarterly CO_2 concentration measurement in flow for flow meter r in quarter p (vol. percent CO_2, expressed as a decimal fraction).

p = Quarter of the year.

r = Receiving flow meters.

Given Oxy's method of receiving CO_2 and requirements at Subpart RR §98.444(a):

- All delivery to the Denver Unit is used within the unit so quarterly flow redelivered, $S_{r,p}$, is zero ("0") and will not be included in the equation.
- Quarterly CO_2 concentration will be taken from the gas measurement database

Oxy will sum to total Mass of CO_2 Received using equation RR-3 in 98.443

$$CO_2 = \sum_{r=1}^{R} CO_{2T,r} \quad \text{(Eq. RR-3)}$$

where:

CO_2 = Total net annual mass of CO_2 received (metric tons).

$CO_{2T,r}$ = Net annual mass of CO_2 received (metric tons) as calculated in Equation RR-2 for flow meter r.

r = Receiving flow meter.

7.2 Mass of CO_2 Injected into the Subsurface

The equation for calculating the Mass of CO_2 Injected into the Subsurface at the Denver Unit is equal to the sum of the Mass of CO_2 Received as calculated in RR-3 of 98.443 as described in Section 7.1 and the Mass of CO_2 recycled as calculated using measurements taken from the flow meter located at the output of the DUCRP. As previously explained, using data at each injection well would give an inaccurate estimate of total injection volume due to the large number of wells and the potential for propagation of error due to allowable calibration ranges for each meter.

The mass of CO_2 recycled will be determined using equations RR-5 as follows:

$$CO_{2,u} = \sum_{p=1}^{4} Q_{p,u} * D * C_{CO_{2,p,u}} \quad \text{(Eq. RR-5)}$$

where:

$CO_{2,u}$ = Annual CO_2 mass recycled (metric tons) as measured by flow meter u.

$Q_{p,u}$ = Quarterly volumetric flow rate measurement for flow meter u in quarter p at standard conditions (standard cubic meters per quarter).

D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682.

$C_{CO2,p,u}$ = CO_2 concentration measurement in flow for flow meter u in quarter p (vol. percent CO_2, expressed as a decimal fraction).
p = Quarter of the year.
u = Flow meter.

The total Mass of CO_2 received will be the sum of the Mass of CO_2 received (RR-3) and Mass of CO_2 recycled (modified RR-5).

$$CO_{2I} = CO_2 + CO_{2,u}$$

7.3 Mass of CO_2 Produced

The Mass of CO_2 Produced at the Denver Unit will be calculated using the measurements from the flow meters at the inlet to DUCRP rather than the metered data from each production well. Again, using the data at each production well would give an inaccurate estimate of total production due to the large number of wells and the potential for propagation of error due to allowable calibration ranges for each meter.

Equation RR-8 in 98.443 will be used to calculate the mass of CO_2 from all production wells as follows:

$$CO_{2,w} = \sum_{p=1}^{4} Q_{p,w} * D * C_{CO_{2,p,w}} \quad \text{(Eq. RR-8)}$$

Where:
$CO_{2,w}$ = Annual CO_2 mass produced (metric tons) through meter w.
$Q_{p,w}$ = Volumetric gas flow rate measurement for meter w in quarter p at standard conditions (standard cubic meters).
D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682.
$C_{CO2,p,w}$ = CO_2 concentration measurement in flow for meter w in quarter p (vol. percent CO_2, expressed as a decimal fraction).
p = Quarter of the year.
w = inlet meter to DUCRP.

Equation RR-9 in 98.443 will be used to aggregate the mass of CO_2 produced net of the mass of CO_2 entrained in oil leaving the Denver Unit prior to treatment of the remaining gas fraction in DUCRP as follows:

$$CO_{2P} = \sum_{w=1}^{W} CO_{2,w} + X_{oil} \quad \text{(Eq. RR-9)}$$

Where:
CO_{2P} = Total annual CO_2 mass produced (metric tons) through all meters in the reporting year.
$CO_{2,w}$ = Annual CO_2 mass produced (metric tons) through meter w in the reporting year.

X_{oil} = Mass of entrained CO_2 in oil in the reporting year measured utilizing commercial meters and electronic flow-measurement devices at each point of custody transfer. The mass of CO_2 will be calculated by multiplying the total volumetric rate by the CO_2 concentration.

7.4 Mass of CO_2 emitted by Surface Leakage

Oxy will calculate and report the total annual Mass of CO_2 emitted by Surface Leakage using an approach that is tailored to specific leakage events and relies on 40 CFR Part 98 Subpart W reports of equipment leakage. As described in Sections 4 and 5.1.5-5.1.7, Oxy is prepared to address the potential for leakage in a variety of settings. Estimates of the amount of CO_2 leaked to the surface will likely depend on a number of site-specific factors including measurements, engineering estimates, and emission factors, depending on the source and nature of the leakage.

Oxy's process for quantifying leakage will entail using best engineering principles or emission factors. While it is not possible to predict in advance the types of leaks that will occur, Oxy describes some approaches for quantification in Section 5.1.5-5.1.7. In the event leakage to the surface occurs, Oxy will quantify and report leakage amounts, and retain records that describe the methods used to estimate or measure the volume leaked as reported in the Annual Subpart RR Report. Further, Oxy will reconcile the Subpart W report and results from any event-driven quantification to assure that surface leaks are not double counted.

Equation RR-10 in 48.433 will be used to calculate and report the Mass of CO_2 emitted by Surface Leakage:

$$CO_{2E} = \sum_{x=1}^{X} CO_{2,x} \quad \text{(Eq. RR-10)}$$

where:

CO_{2E} = Total annual CO_2 mass emitted by surface leakage (metric tons) in the reporting year.

$CO_{2,x}$ = Annual CO_2 mass emitted (metric tons) at leakage pathway x in the reporting year.

x = Leakage pathway.

7.5 Mass of CO_2 sequestered in subsurface geologic formations.

Oxy will use equation RR-11 in 98.443 to calculate the Mass of CO_2 Sequestered in Subsurface Geologic Formations in the Reporting Year as follows:

$$CO_2 = CO_{2I} - CO_{2P} - CO_{2E} - CO_{2FI} - CO_{2FP} \quad \text{(Eq. RR-11)}$$

where:

CO_2 = Total annual CO_2 mass sequestered in subsurface geologic formations (metric tons) at the facility in the reporting year.
CO_{2I} = Total annual CO_2 mass injected (metric tons) in the well or group of wells covered by this source category in the reporting year.
CO_{2P} = Total annual CO_2 mass produced (metric tons) in the reporting year.
CO_{2E} = Total annual CO_2 mass emitted (metric tons) by surface leakage in the reporting year.
CO_{2FI} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead, for which a calculation procedure is provided in subpart W of this part.
CO_{2FP} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the production wellhead and the flow meter used to measure production quantity, for which a calculation procedure is provided in subpart W of this part.

7.6 Cumulative mass of CO_2 reported as sequestered in subsurface geologic formations

Oxy will sum of the total annual volumes obtained using equation RR-11 in 98.443 to calculate the Cumulative Mass of CO_2 Sequestered in Subsurface Geologic Formations.

8. MRV Plan Implementation Schedule

It is anticipated that this MRV plan will be implemented within 180 days of EPA approval. Other GHG reports are filed on March 31 of the year after the reporting year and it is anticipated that the Annual Subpart RR Report will be filed at the same time. As described in Section 3.3 above, Oxy anticipates that the MRV program will be in effect during the Specified Period, during which time Oxy will operate the Denver Unit with the subsidiary purpose of establishing long-term containment of a measurable quantity of CO_2 in subsurface geological formations at the Denver Unit. Oxy anticipates establishing that a measurable portion of the CO_2 injected during the Specified Period will be stored in a manner not expected to migrate resulting in future surface leakage. At such time, Oxy will prepare a demonstration supporting the long-term containment determination and submit a request to discontinue reporting under this MRV plan. *See* 40 C.F.R. § 98.441(b)(2)(ii).

9. Quality Assurance Program

9.1 Monitoring QA/QC

As indicated in Section 7, Oxy has incorporated the requirements of §98.444 (a) – (d) in the discussion of mass balance equations. These include the following provisions.

CO_2 Received and Injected

- The quarterly flow rate of CO_2 received by pipeline is measured at the receiving custody transfer meters.
- The quarterly CO_2 flow rate for recycled CO_2 is measured at the custody transfer meter located at the DUCRP outlet.

CO_2 Produced

- The point of measurement for the quantity of CO_2 produced from oil or other fluid production wells is a flow meter directly downstream of each separator that sends a stream of gas into a recycle or end use system.
- The produced gas stream is sampled at least once per quarter immediately downstream of the flow meter used to measure flow rate of that gas stream and measure the CO_2 concentration of the sample.
- The quarterly flow rate of the produced gas is measured at the custody transfer meters located at the DUCRP inlet.

CO_2 emissions from equipment leaks and vented emissions of CO_2

These volumes are measured in conformance with the monitoring and QA/QC requirements specified in subpart W of 40 CFR Part 98.

Flow meter provisions

The flow meters used to generate data for the mass balance equations in Section 7 are:

- Operated continuously except as necessary for maintenance and calibration.
- Operated using the calibration and accuracy requirements in 40 CFR §98.3(i).
- Operated in conformance with American Gas Association (AGA) standards found in AGA Report No. 3.
- National Institute of Standards and Technology (NIST) traceable.

Concentration of CO_2

As indicated in Appendix 2, CO_2 concentration is measured using the Gas Processors Association (GPA) standards 2261:2013 (Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography) and GPA 2186 – 02 (Method for the Extended Analysis of Hydrocarbon Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Temperature Programmed Gas Chromatography). Further, all measured volumes of CO_2 have been converted to standard cubic meters at a temperature of 60 degrees

Fahrenheit and at an absolute pressure of 1 atmosphere, including those used in Equations RR-2, RR-5 and RR-8 in Section 7.

9.2 Missing Data Procedures

In the event Oxy is unable to collect data needed for the mass balance calculations, procedures for estimating missing data in §98.445 will be used as follows:

- A quarterly flow rate of CO_2 received that is missing would be estimated using invoices or using a representative flow rate value from the nearest previous time period.
- A quarterly CO_2 concentration of a CO_2 stream received that is missing would be estimated using invoices or using a representative concentration value from the nearest previous time period.
- A quarterly quantity of CO_2 injected that is missing would be estimated using a representative quantity of CO_2injected from the nearest previous period of time at a similar injection pressure.
- For any values associated with CO_2 emissions from equipment leaks and vented emissions of CO_2 from surface equipment at the facility that are reported in this subpart, missing data estimation procedures specified in subpart W of 40 CFR Part 98 would be followed.
- The quarterly quantity of CO_2 produced from subsurface geologic formations that is missing would be estimated using a representative quantity of CO_2 produced from the nearest previous period of time.

9.3 MRV Plan Revisions

In the event there is a material change to the monitoring and/or operational parameters of the Oxy CO_2 EOR operations in the Denver Unit that is not anticipated in this MRV plan, the MRV plan will be revised and submitted to the EPA Administrator within 180 days as required in §98.448(d).

10. Records Retention

Oxy will follow the record retention requirements specified by §98.3(g). In addition, it will follow the requirements in Subpart RR §98.447 by maintaining the following records for at least seven years:

- Quarterly records of CO_2 received at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.

- Quarterly records of produced CO_2, including volumetric flow at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.
- Quarterly records of injected CO_2 including volumetric flow at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.
- Annual records of information used to calculate the CO_2 emitted by surface leakage from leakage pathways.
- Annual records of information used to calculate the CO_2 emitted from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.
- Annual records of information used to calculate the CO_2 emitted from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the production wellhead and the flow meter used to measure production quantity.

These data will be collected as generated and aggregated as required for reporting purposes.

11. Appendices

Appendix 1. Background

This appendix provides background information on the EOR project at the Denver Unit.

A1.1 Project Overview

Enhanced oil recovery (EOR) using carbon dioxide (CO_2) flooding is a mature technology that has been applied commercially since the early 1970s. It entails compressing CO_2 and injecting it into oil fields to restore pressure and mobilize trapped oil. The Permian Basin, spread across parts of Texas and New Mexico, is a geologic basin holding vast oil and gas resources that have been produced for almost a century. CO_2 EOR flooding has been practiced in the Permian Basin since the technique was first developed more than four decades ago. Today the area hosts a large integrated network of CO_2 sources, delivery pipelines, and CO_2 floods. Advances in geologic understanding and flooding techniques have led to a renewed economic interest in producing domestic oil and gas from the Permian Basin. As a result there is an increasing demand for CO_2 that could be met with anthropogenic sources.

A number of entities own or operate the different CO_2 and hydrocarbon production and delivery assets used in the Permian Basin. Occidental Petroleum Corporation and its affiliates (together, Oxy) are one of the largest of these entities. Figure A1-1 depicts the location of Oxy assets and operations in the Permian Basin. It shows that Oxy currently

owns or operates multiple sources of CO_2 (including natural and anthropogenic sources), almost 900 miles of major CO_2 pipelines, and approximately 30 CO_2 floods. The company handles a total of approximately 400 million cubic feet per day (MMscf/D) (20 thousand metric tonnes (MMT)) of CO_2 purchased (or "fresh") from a third party and recycled from the Denver Unit per day and produces approximately 25,000 barrels of oil per day (bopd). Through its work in the Permian Basin and in other CO_2 floods, Oxy has gained significant experience managing CO_2 EOR floods safely and profitability.

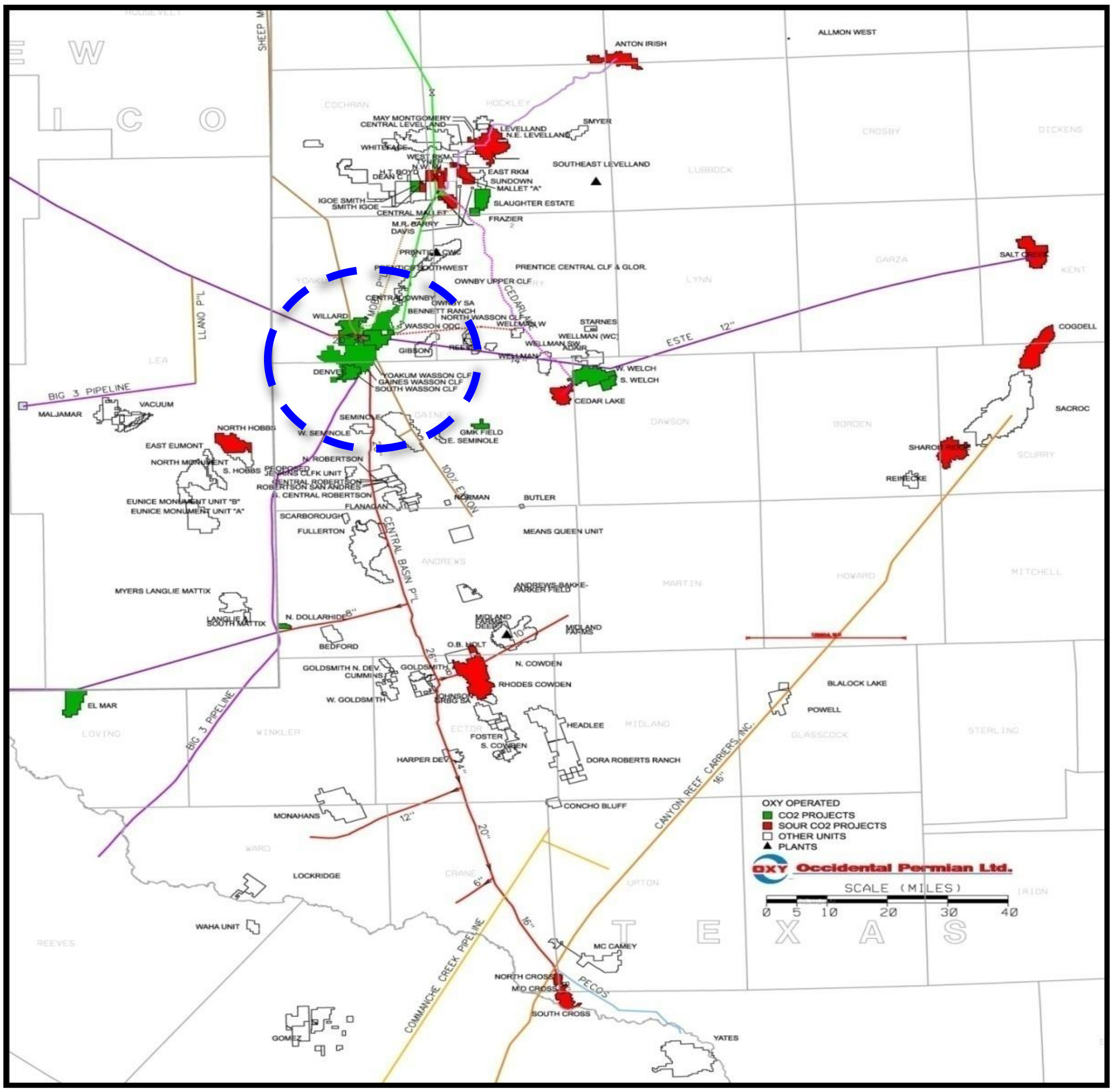


Figure A1-1 - Oxy CO_2 EOR Assets and Operations in the Permian Basin, Blue Circle Indicates Wasson Field Location

As described in the following section, in an effort to address its growing need for CO_2 in the Permian, Oxy invested in a natural gas processing plant that is capturing CO_2 that would otherwise be vented to the atmosphere. The captured CO_2 is fed into the pipeline delivery system that services the Permian Basin, including Oxy's CO_2 floods.

A1.2 CO_2 Transport through the Permian pipeline delivery system

The Permian pipeline delivery system (See Figure A1-2)[11] consists of major and minor pipelines that are used to move CO_2 to, around, and from the CO_2 floods. Each day, the pipeline system distributes approximately 1.8 Bscf (95 thousand metric tons (MMT) of fresh CO_2 that is purchased by the more than 60 CO_2 floods off taking from the system. Oxy and Kinder Morgan are the primary operators of the Permian pipeline delivery system, controlling a majority of the approximately 2,400 miles of major CO_2 pipeline in the system. There are a number of CO_2 sources connected to the system including both natural CO_2 reservoirs and anthropogenic CO_2 sources.

The Permian pipeline delivery system includes intra- and interstate pipelines in Texas, New Mexico, and Colorado. Minimum pipeline safety standards have been established by the US Department of Transportation (DOT) in 49 CFR Parts 190-199 and are implemented by DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) Office of Pipeline Safety (OPS). In all three states, OPS inspects and enforces the pipeline safety regulations for interstate gas and hazardous liquid pipeline operators. In addition, OPS oversees the intrastate pipelines in Colorado. The Texas Railroad Commission (TRRC) and New Mexico Public Regulation Commission Pipeline Safety Bureau are certified to oversee intrastate pipelines in their respective states. The pipeline safety requirements include standards for siting, construction, operation, and addressing accidents. There are no reporting requirements for such pipelines under EPA's GHGRP.

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[11] Source: based on image found at http://www.texasenergyfoundation.org/wp-content/uploads/2012/10/Figure-II-3.-Existing-CO_2-Pipelines-Permian-Basin.gif

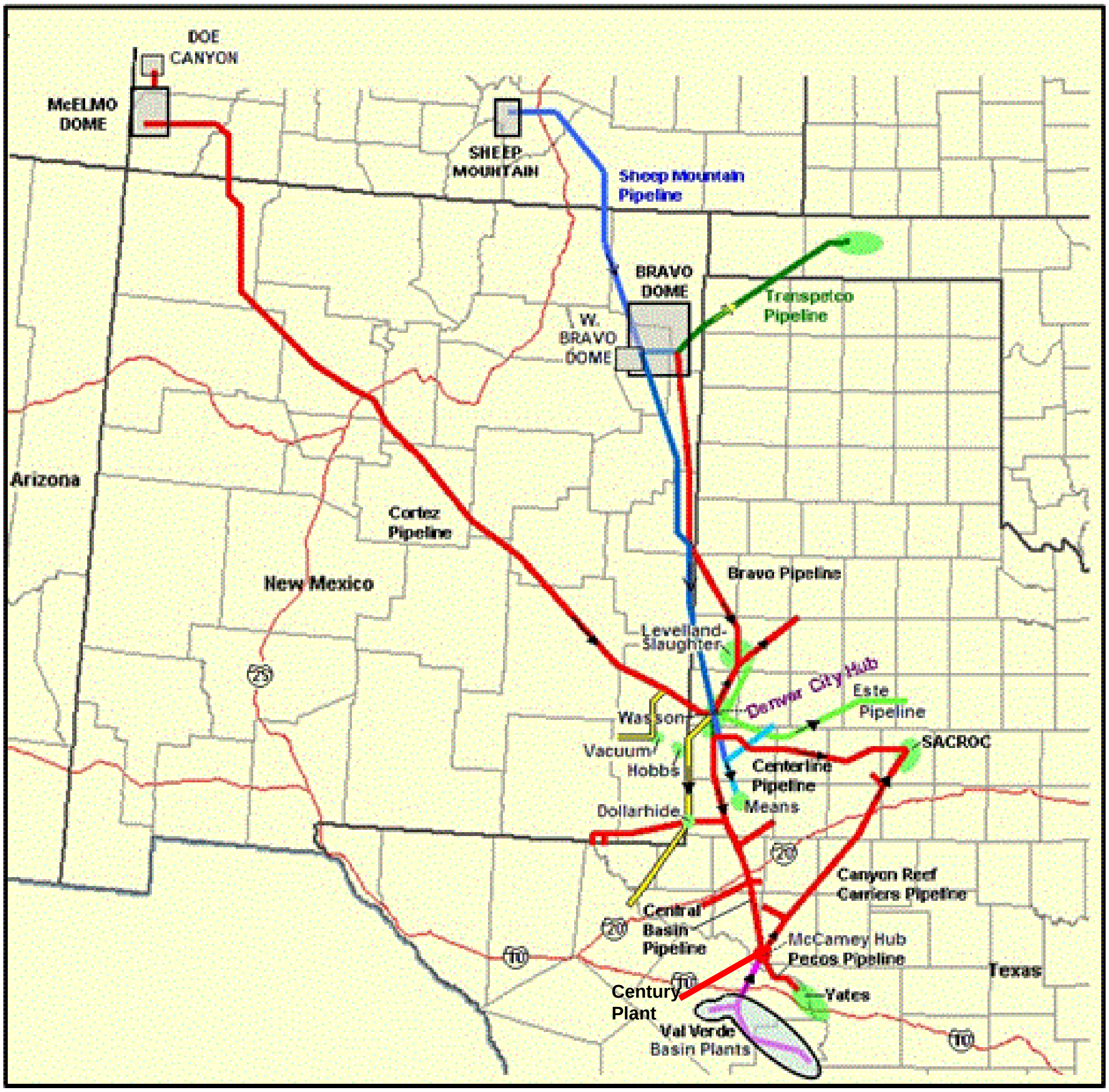

Figure A1-2 Permian Basin CO2 Pipeline Delivery System

All CO_2 entering the pipeline system must meet specifications for chemical composition and is treated by pipeline carriers and shippers as fungible. In Oxy's case, this means that contracts designate both the amounts of CO_2 that Oxy puts into the system and the amounts of CO_2 that Oxy draws from the system. CO_2 inputs and draws are measured using commercially calibrated flow meters at designated delivery points into and out of the pipeline system. Measured amounts typically are trued up against the contract amounts as specified in the particular contract. Oxy withdrew approximately 293 Bscf, or 15 million metric tons (MMMT), of fresh CO_2 from the Permian pipeline system in 2013 of which approximately 22% was injected in the Denver Unit.

A1.3 Oxy's EOR Experience

Oxy is an experienced CO_2 EOR operator and follows a rigorous, standardized process for assessing, developing, and operating CO_2 EOR projects. To profitably implement CO_2 miscible flooding,[12] the operator must optimize oil production while minimizing costs (e.g., CO_2, water, and energy). The miscible CO_2 flood at the Denver Unit has been successfully operated since 1983, demonstrating over this period that the reservoir is well characterized and that the CO_2 flood can be undertaken safely, profitably, and efficiently.

This Section provides a more thorough description of the process for selecting, developing, and managing fields for CO_2 floods, and a general description of CO_2 miscible flooding.

A1.3.1 Oxy's Process to Select, Develop, and Manage Fields for CO_2 Floods

Oxy is one of the largest and most respected CO_2 EOR operators in the world. The company has extensive experience in selecting and developing oil fields suitable for CO_2 floods and maintains standard practices for field selection, development, and management. Oxy's approach relies on frequent communication between operations staff with responsibility for specific geographic areas, and technical staff with responsibility for specific reservoirs, equipment, or functions. This organizational model provides multiple perspectives on field performance and stimulates identification of enhancement opportunities. Field technicians, who are trained in operating procedures, well surveillance, safety, and environmental protection, among other topics, are an integral part of the effective management of each field and work closely with contractors that perform specialized field services.

In designing CO_2 floods, Oxy first conducts an extensive study of the subsurface characteristics of the target oil reservoir. The reservoir characterization study entails a detailed geological and reservoir evaluation to determine the capability of the reservoir to effectively utilize CO_2 to increase oil recovery. Because CO_2 is an expensive injectant, the study includes a thorough analysis of the capability of the reservoir to maintain fluids within the targeted subsurface intervals, including an analysis of formation parting pressures and the ability of the reservoir strata to assimilate the injected CO_2.

Oxy typically creates a (or uses an existing) compositional reservoir simulation model that has been calibrated with actual reservoir data. Reservoir simulation models are used to evaluate potential development scenarios and determine the most viable options. When planning and operating a specific EOR project, Oxy uses pattern modeling. Once a CO_2 flood plan has been developed, it is subjected to thorough technical, operational, safety, environmental, and business reviews within Oxy. At this juncture, Oxy seeks the required regulatory approvals from the appropriate agencies. All of these steps were followed in the development of the CO_2 flood at the Denver Unit. Prior operators

[12] A miscible CO_2 flood employs the characteristic of CO_2 as mixable (or miscible) with crude oil (i.e., the two fluids can dissolve into each other). See Section 2.3.1.2 for additional explanation of miscible flooding.

developed reservoir-wide models. Oxy used this information to inform their decision to acquire leases for the Denver Unit. Since taking over operation of the Denver Unit in 2000, Oxy has conducted additional reservoir characterization studies and undertaken pattern modeling to design and operate the CO_2 flood.

A1.3.2 General Description of CO_2 Miscible Flooding

In a typical sedimentary formation, like the San Andres reservoir in the Denver Unit in the Wasson Field, primary production produces only a portion of the Original Oil-In-Place (OOIP). The percentage of oil recovered during "primary production" varies; in the Denver Unit, primary production recovered approximately 17% of the OOIP, and approximately 83% of the OOIP remained in the pore space in the reservoir.

Water injection may be applied as a secondary production method. This approach typically yields a sizeable additional volume of oil. In the Denver Unit, water injection led to the production of another 33% of the OOIP, leaving approximately 50% still in the pore space in the reservoir.

The oil remaining after water injection is the target for "tertiary recovery" through miscible CO_2 flooding. Typically, CO_2 flooding in the Permian Basin is used as a tertiary production method and it entails compressing CO_2 and injecting it into oil fields to mobilize trapped oil remaining after water flooding. Miscible CO_2 flooding can produce another 20% of the OOIP, leaving the fraction of oil remaining in the pore space in the reservoir at approximately 30%.

Under typical pressure and temperature conditions in a reservoir, CO_2 is a supercritical fluid (see Figure A1-3) that is miscible with crude oil. As injected CO_2 mixes with the oil, it acts like a solvent wash to sweep remaining oil from the pore space in the reservoir. The net effect is to further increase oil production from existing wells. As the oil is swept from the pore space, CO_2 and water fill the vacated pore space. The profitability of CO_2 EOR is dependent on the underlying costs of the commodities. Under current economic conditions, the combined cost of CO_2, water, and the necessary energy are less than the value of the produced oil, and the process is profitable to producers. However, those conditions can change quickly and have done so in the past.

The first commercial CO_2 injection project began in January 1972 in the SACROC (Scurry Area Canyon Reef Operators Committee) Unit of the Kelly-Snyder Field in Scurry County, West Texas. Following that early field test, CO_2 flooding has spread throughout the Permian Basin, the Gulf Coast and the Mid-continent areas. The industry currently recovers approximately 300,000 bopd from CO_2 flooding in the United States. In the supercritical fluid phase, CO_2 is neither a liquid nor a gas (See Figure A1-3). It has a density that is close to that of oil but less than that of water. However, it has a very low viscosity, which means CO_2 tends to bypass the oil and water it is displacing. The result is low process sweep efficiency and high gas production rates. One way to improve sweep and reduce gas production is to inject water along with the CO_2, which adds water to the pore spaces and slows the flow of CO_2. This is generally done with alternate injection of water and CO_2, or WAG (water alternating gas) injection. The WAG

approach is common in the Permian Basin, although there are several other ways to manage CO_2 flooding. The WAG approach improves how CO_2 flooding works by helping to maintain more stable flood fronts and reducing the rate at which CO_2 is produced through the production wells.

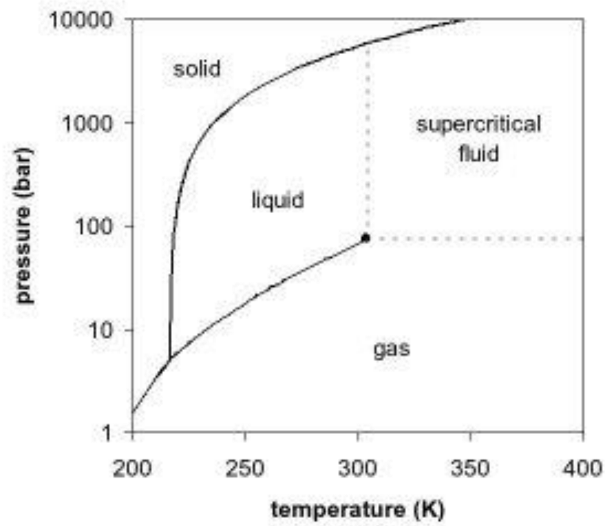

Figure A1-3 CO2 Phases

Because CO_2 is an inherently inefficient displacing agent, a portion of the injected CO_2 is co-produced along with oil and water. The remaining portion stays trapped in the pore space in the reservoir. The produced fluid is treated through a closed loop process to remove valuable products (like natural gas (NG), natural gas liquids (NGL) and sulfur) and to separate the CO_2 and water for recompression and re-injection. Fresh CO_2 is combined with recycled CO_2 to make up the amount of CO_2 that is injected. As a close approximation, the amount of purchased CO_2 is the amount that remains trapped (stored) in the pore space in the reservoir. As a standard practice, the volume of purchased CO_2 is calculated to be just sufficient to take the place of the oil and net water that has been produced. In this way, reservoir pressure is maintained.

Each injection well ("injector") is surrounded by a number of producing wells ("producers"), each of which responds to the amount and rate of injection. The injector and producer wells form a "pattern," typically either a five-spot pattern with four corner wells forming a square around the injector, or a nine-spot pattern with an additional producer located along each side of the square. Oxy uses pattern modeling, discussed in more detail in Section 3.1, to predict the fluid flow in the formation; develop an injection plan for each pattern; predict the performance of each pattern; and determine where to place infill wells to better manage production and injection over time. The resulting injection plan describes the expected volume and pressure for the injection of CO_2 and water introduced into each injection well.

Appendix 2. Conversion Factors

Oxy reports CO_2 volumes at standard conditions of temperature and pressure as defined in the State of Texas – 60 ^oF and 14.65 psi.

To convert these volumes into metric tonnes, a density is calculated using the Span and Wagner equation of state as recommended by the EPA. Density was calculated using the database of thermodynamic properties developed by the National Institute of Standards and Technology (NIST), available at http://webbook.nist.gov/chemistry/fluid/.

At State of Texas standard conditions, the Span and Wagner equation of state gives a density of 0.0026417 lb-moles per cubic foot. Using a molecular weight for CO_2 of 44.0095, 2204.62 lbs/metric ton and 35.314667 ft^3/m^3, gives a CO_2 density of 5.27346×10^{-2} MT/Mcf or 0.0018623 MT/m^3.

Note at EPA standard conditions of 60 ^oF and one atmosphere, the Span and Wagner equation of state gives a density of 0.0026500 lb-moles per cubic foot. Using a molecular weight for CO_2 of 44.0095, 2204.62 lbs/metric ton and 35.314667 ft^3/m^3, gives a CO_2 density of 5.29003×10^{-5} MT/ft^3 or 0.0018682 MT/m^3.

The conversion factor 5.27346×10^{-2} MT/Mcf has been used throughout to convert Oxy volumes to metric tons.

Appendix 3. Acronyms

AGA – American Gas Association
AMA – Active Monitoring Area
AoR – Area of Review
API – American Petroleum Institute
Bscf – billion standard cubic feet
B/D – barrels per day
bopd – barrels of oil per day
cf – cubic feet
CH_4 – Methane
CO_2 – Carbon Dioxide
CRP – CO_2 Removal Plant
CTB – Central Tank Battery
DOT – US Department of Transportation
DUCRP – Denver Unit CO_2 Recovery Plant
EOR – Enhanced Oil Recovery
EPA – US Environmental Protection Agency
ESD – Emergency Shutdown Device
GHG – Greenhouse Gas
GHGRP – Greenhouse Gas Reporting Program
HC – Hydrocarbon
H_2S – Hydrogen Sulfide
IWR -- Injection to Withdrawal Ratio
LACT – Lease Automatic Custody Transfer meter
LEL – Lower Explosive Limit
MIT – Mechanical Integrity Test
MMA – Maximum Monitoring Area
MMB – Million barrels
Mscf – Thousand standard cubic feet
MMscf – Million standard cubic feet
MMMT – Million metric tonnes
MMT – Thousand metric tonnes
MRV – Monitoring, Reporting, and Verification
MT -- Metric Tonne
NG—Natural Gas
NGLs – Natural Gas Liquids
OOIP – Original Oil-In-Place
OPC – Occidental Petroleum Corporation
OPL – Occidental Petroleum Ltd.
OPS – Office of Pipeline Safety
PHMSA – Pipeline and Hazardous Materials Safety Administration
PPM – Parts Per Million
RCF – Reinjection Compression Facility
ROZ – Residual Oil Zone
SACROC – Scurry Area Canyon Reef Operators Committee

ST – Short Ton
TRRC – Texas Railroad Commission
TSD – Technical Support Document
TVDSS – True Vertical Depth Subsea
TZ – Transition Zone
UIC – Underground Injection Control
USEPA – U.S. Environmental Protection Agency
USDW – Underground Source of Drinking Water
VRU -- Vapor Recovery Unit
WAG – Water Alternating Gas
WTO – West Texas Overthrust

Appendix 4. References

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Appendix 5. Glossary of Terms

This glossary describes some of the technical terms as they are used in this MRV plan. For additional glossaries please see the U.S. EPA Glossary of UIC Terms (http://water.epa.gov/type/groundwater/uic/glossary.cfm) and the Schlumberger Oilfield Glossary (http://www.glossary.oilfield.slb.com/).

Anhydrite -- Anhydrite is a mineral—anhydrous calcium sulfate, $CaSO_4$.

Bradenhead -- a casing head in an oil well having a stuffing box packed (as with rubber) to make a gastight connection
Contain / Containment – having the effect of keeping fluids located within in a specified portion of a geologic formation.

Dip -- Very few, if any, geologic features are perfectly horizontal. They are almost always tilted. The direction of tilt is called "dip." Dip is the angle of steepest descent measured from the horizontal plane. Moving higher up structure is moving "updip." Moving lower is "downdip." Perpendicular to dip is "strike." Moving perpendicular along a constant depth is moving along strike.

Dolomite -- Dolomite is an anhydrous carbonate mineral composed of calcium magnesium carbonate $CaMg(CO_3)_2$.

Downdip -- See "dip."

Formation -- A body of rock that is sufficiently distinctive and continuous that it can be mapped. At Wasson, for example, San Andres formation is a layer of permeable dolomites that were deposited in a shallow marine environment during the Permian Era, some 250 to 300 million years ago. The San Andres can be mapped over much of the Permian Basin.

Igneous Rocks -- Igneous rocks crystallize from molten rock, or magma, with interlocking mineral crystals.

Infill Drilling -- The drilling of additional wells within existing patterns. These additional wells decrease average well spacing. This practice both accelerates expected recovery and increases estimated ultimate recovery in heterogeneous reservoirs by improving the continuity between injectors and producers. As well spacing is decreased, the shifting flow paths lead to increased sweep to areas where greater hydrocarbon saturations remain.

Metamorphic Rocks -- Metamorphic rocks form from the alteration of preexisting rocks by changes in ambient temperature, pressure, volatile content, or all of these. Such changes can occur through the activity of fluids in the Earth and movement of igneous bodies or regional tectonic activity.

Permeability -- Permeability is the measure of a rock's ability to transmit fluids. Rocks that transmit fluids readily, such as sandstones, are described as permeable and tend to have many large, well-connected pores. Impermeable formations, such as shales and siltstones, tend to be finer grained or of a mixed grain size, with smaller, fewer, or less interconnected pores.

Phase -- Phase is a region of space throughout which all physical properties of a material are essentially uniform. Fluids that don't mix together segregate themselves into phases. Oil, for example, does not mix with water and forms a separate phase.

Pore Space -- See porosity.

Porosity -- Porosity is the fraction of a rock that is not occupied by solid grains or minerals. Almost all rocks have spaces between rock crystals or grains that is available to be filled with a fluid, such as water, oil or gas. This space is called "pore space."

Primary recovery -- The first stage of hydrocarbon production, in which natural reservoir energy, such as gasdrive, waterdrive or gravity drainage, displaces hydrocarbons from the reservoir, into the wellbore and up to surface. Initially, the reservoir pressure is considerably higher than the bottomhole pressure inside the wellbore. This high natural differential pressure drives hydrocarbons toward the well and up to surface. However, as the reservoir pressure declines because of production, so does the differential pressure. To reduce the bottomhole pressure or increase the differential pressure to increase hydrocarbon production, it is necessary to implement an artificial lift system, such as a rod pump, an electrical submersible pump or a gas-lift installation. Production using artificial lift is considered primary recovery. The primary recovery stage reaches its limit either when the reservoir pressure is so low that the production rates are not economical, or when the proportions of gas or water in the production stream are too high. During primary recovery, only a small percentage of the initial hydrocarbons in place are produced, typically around 10% for oil reservoirs. Primary recovery is also called primary production.

Saturation -- The fraction of pore space occupied by a given fluid. Oil saturation, for example, is the fraction of pore space occupied by oil.

Seal – A geologic layer (or multiple layers) of impermeable rock that serve as a barrier to prevent fluids from moving upwards to the surface.

Secondary recovery -- The second stage of hydrocarbon production during which an external fluid such as water or gas is injected into the reservoir through injection wells located in rock that has fluid communication with production wells. The purpose of secondary recovery is to maintain reservoir pressure and to displace hydrocarbons toward the wellbore. The most common secondary recovery techniques are gas injection and waterflooding.

Sedimentary Rocks -- Sedimentary rocks are formed at the Earth's surface through deposition of sediments derived from weathered rocks, biogenic activity or precipitation from solution. There are three main types of rocks – igneous, metamorphic and sedimentary.

Stratigraphic section -- A stratigraphic section is a sequence of layers of rocks in the order they were deposited.

Strike -- See “dip.”

Updip -- See “dip.”

Appendix 6. Well Identification Numbers

The following table presents the well name, API number, status and type for the wells in the Denver Unit as of August 2014. The table is subject to change over time as new wells are drilled, existing wells change status, or existing wells are repurposed. The following terms are used:

- Well Status
  - ACTIVE refers to active wells
  - DRILL refers to wells under construction
  - P&A refers to wells that have been closed (plugged and abandoned) per TAC 16.1.3
  - TA refers to wells that have been temporarily abandoned
  - SHUT_IN refers to wells that have been temporarily idled or shut-in
  - INACTIVE refers to wells that have been completed but are not in use
- Well Type
  - INJ_WAG refers to wells that inject water and CO_2 Gas
  - INJ_GAS refers to wells that inject CO_2 Gas
  - INJ_H2O refers to wells that inject water
  - PROD_GAS refers to wells that produce natural gas
  - PROD_OIL refers to wells that produce oil
  - DISP_H2O refers to wells used for water disposal

Well Name	API Number	Well Status	Well Type
DU-0001	42501000000000	ACTIVE	DISP_H2O
DU-0001B	42165313440000	ACTIVE	DISP_H2O
DU-0001SWD	42501324880000	ACTIVE	DISP_H2O
DU-0002	42501328930000	ACTIVE	DISP_H2O
DU-0003SWD	42165336580000	ACTIVE	DISP_H2O
DU-0004	42501363510000	DRILL	PROD_OIL
DU-1701	42501022100000	ACTIVE	INJ_WAG
DU-1702	42501022150000	ACTIVE	PROD_OIL
DU-1703	42501000700000	ACTIVE	INJ_WAG
DU-1704	42501000690000	ACTIVE	INJ_WAG
DU-1705	42501022120000	P & A	INJ_WAG
DU-1706	42501022110000	ACTIVE	PROD_OIL
DU-1707	42501000710000	ACTIVE	PROD_OIL
DU-1708	42501000720000	TA	INJ_WAG
DU-1709	42501301980000	ACTIVE	INJ_WAG
DU-1710	42501301970000	ACTIVE	PROD_OIL
DU-1711	42501303970000	ACTIVE	INJ_WAG
DU-1712	42501303960000	ACTIVE	PROD_OIL
DU-1713	42501303950000	ACTIVE	PROD_OIL
DU-1714	42501311220000	ACTIVE	PROD_OIL
DU-1715	42501311230000	ACTIVE	INJ_WAG
DU-1716	42501314560000	ACTIVE	PROD_OIL
DU-1717	42501313090000	ACTIVE	INJ_WAG
DU-1718	42501317050000	ACTIVE	INJ_WAG
DU-1719	42501340520000	ACTIVE	PROD_OIL
DU-1720	42501348490000	ACTIVE	PROD_OIL

DU-1721	42501348500000	ACTIVE	PROD_OIL
DU-1722	42501348510000	ACTIVE	PROD_OIL
DU-1723	42501348520000	ACTIVE	PROD_OIL
DU-1724	42501348530000	ACTIVE	PROD_OIL
DU-1725	42501348540000	ACTIVE	PROD_OIL
DU-1726	42501348550000	ACTIVE	PROD_OIL
DU-1727	42501352120000	ACTIVE	PROD_OIL
DU-1728	42501356810000	ACTIVE	INJ_WAG
DU-2201	42501018320000	P & A	INJ_H2O
DU-2202	42501018330000	ACTIVE	INJ_WAG
DU-2203	42501018260000	P & A	PROD_OIL
DU-2204	42501018250000	ACTIVE	INJ_H2O
DU-2205	42501018290000	ACTIVE	PROD_OIL
DU-2206	42501018410000	ACTIVE	PROD_OIL
DU-2207	42501018350000	P & A	PROD_OIL
DU-2208	42501018280000	P & A	PROD_OIL
DU-2208R	42501329970000	ACTIVE	INJ_WAG
DU-2209	42501018270000	ACTIVE	INJ_WAG
DU-2210	42501014570000	P & A	PROD_OIL
DU-2211	42501014590000	ACTIVE	PROD_OIL
DU-2212	42501018370000	TA	INJ_H2O
DU-2213	42501018360000	ACTIVE	INJ_WAG
DU-2214	42501018300000	ACTIVE	INJ_WAG
DU-2215	42501804810000	ACTIVE	INJ_WAG
DU-2216	42501028960000	ACTIVE	PROD_OIL
DU-2217	42501018400000	ACTIVE	INJ_WAG
DU-2218	42501018380000	ACTIVE	INJ_WAG
DU-2219	42501018390000	ACTIVE	INJ_WAG
DU-2220	42501018310000	ACTIVE	INJ_WAG
DU-2221	42501309150000	ACTIVE	PROD_OIL
DU-2222	42501309140000	ACTIVE	PROD_OIL
DU-2223	42501309130000	TA	PROD_OIL
DU-2224	42501309120000	ACTIVE	PROD_OIL
DU-2225	42501309110000	ACTIVE	PROD_OIL
DU-2226	42501309260000	P & A	PROD_OIL
DU-2227	42501309060000	ACTIVE	PROD_OIL
DU-2228	42501309620000	ACTIVE	PROD_OIL
DU-2229	42501315420000	P & A	PROD_OIL
DU-2232	42501316560000	P & A	INJ_GAS
DU-2233	42501325210000	ACTIVE	INJ_WAG
DU-2235	42501328580000	ACTIVE	PROD_OIL
DU-2236	42501329270000	ACTIVE	PROD_OIL
DU-2237	42501334570000	ACTIVE	PROD_OIL
DU-2238	42501341180000	ACTIVE	PROD_OIL
DU-2239	42501340990000	ACTIVE	INJ_H2O
DU-2240	42501352290000	ACTIVE	PROD_OIL
DU-2241	42501352110000	ACTIVE	PROD_OIL
DU-2242	42501347160000	ACTIVE	PROD_OIL
DU-2243	42501347110000	ACTIVE	PROD_OIL
DU-2244	42501349630000	ACTIVE	INJ_WAG
DU-2245	42501353570000	ACTIVE	PROD_OIL
DU-2246	42501359610000	ACTIVE	PROD_OIL
DU-2247	42501359580000	ACTIVE	PROD_OIL
DU-2248	42501359590000	ACTIVE	PROD_OIL

DU-2249	42501359600000	ACTIVE	PROD_OIL
DU-2250	42501359620000	ACTIVE	PROD_OIL
DU-2251	42501359660000	ACTIVE	PROD_OIL
DU-2252	42501359630000	ACTIVE	PROD_OIL
DU-2253	42501359970000	ACTIVE	PROD_OIL
DU-2254	42501359640000	ACTIVE	PROD_OIL
DU-2255	42501359650000	ACTIVE	PROD_OIL
DU-2256	42501359670000	ACTIVE	PROD_OIL
DU-2257	42501359980000	ACTIVE	PROD_OIL
DU-2501	42501023940000	P & A	INJ_H2O
DU-2502	42501024200000	ACTIVE	INJ_WAG
DU-2503	42501024250000	P & A	INJ_WAG
DU-2504	42501023790000	P & A	PROD_OIL
DU-2505	42501023840000	ACTIVE	INJ_WAG
DU-2506	42501024150000	P & A	PROD_OIL
DU-2507	42501023990000	P & A	PROD_OIL
DU-2508	42501023890000	ACTIVE	INJ_WAG
DU-2509	42501024550000	ACTIVE	PROD_OIL
DU-2510	42501024650000	ACTIVE	PROD_OIL
DU-2511	42501024600000	ACTIVE	PROD_OIL
DU-2512	42501024500000	ACTIVE	PROD_OIL
DU-2513	42501023740000	P & A	INJ_H2O
DU-2514	42501024090000	P & A	INJ_H2O
DU-2515	42501024040000	P & A	INJ_H2O
DU-2516	42501024350000	ACTIVE	INJ_WAG
DU-2517	42501023530000	ACTIVE	INJ_WAG
DU-2518	42501024440000	ACTIVE	PROD_OIL
DU-2519	42501024390000	ACTIVE	INJ_WAG
DU-2520	42501023680000	P & A	PROD_OIL
DU-2521	42501023630000	P & A	INJ_H2O
DU-2522	42501023570000	P & A	PROD_OIL
DU-2523	42501024300000	ACTIVE	PROD_OIL
DU-2524	42501023470000	ACTIVE	PROD_OIL
DU-2525	42501101690000	ACTIVE	PROD_OIL
DU-2526	42501302990000	ACTIVE	PROD_OIL
DU-2527	42501302970000	ACTIVE	PROD_OIL
DU-2528	42501302980000	ACTIVE	PROD_OIL
DU-2529	42501303940000	ACTIVE	PROD_OIL
DU-2530	42501307700000	ACTIVE	PROD_OIL
DU-2531	42501307710000	ACTIVE	INJ_WAG
DU-2532	42501311170000	ACTIVE	PROD_OIL
DU-2533	42501315440000	ACTIVE	PROD_OIL
DU-2534	42501316480000	ACTIVE	PROD_OIL
DU-2535	42501316520000	ACTIVE	PROD_OIL
DU-2536	42501325220000	ACTIVE	INJ_WAG
DU-2537	42501325960000	ACTIVE	INJ_WAG
DU-2538	42501327910000	ACTIVE	INJ_WAG
DU-2539	42501328570000	ACTIVE	INJ_WAG
DU-2540	42501329830000	TA	INJ_GAS
DU-2541	42501331180000	ACTIVE	INJ_WAG
DU-2542	42501333830000	ACTIVE	INJ_WAG
DU-2543	42501333870000	ACTIVE	INJ_WAG
DU-2544	42501334580000	ACTIVE	INJ_WAG
DU-2545	42501334420000	ACTIVE	INJ_WAG

DU-2546	42501336480000	ACTIVE	PROD_OIL
DU-2547	42501345130000	ACTIVE	PROD_OIL
DU-2548	42501345490000	ACTIVE	PROD_OIL
DU-2549	42501345620000	ACTIVE	PROD_OIL
DU-2550	42501346500000	ACTIVE	PROD_OIL
DU-2551	42501346770000	ACTIVE	PROD_OIL
DU-2552	42501346410000	ACTIVE	PROD_OIL
DU-2553	42501346760000	ACTIVE	PROD_OIL
DU-2554	42501346560000	ACTIVE	PROD_OIL
DU-2555	42501346420000	ACTIVE	PROD_OIL
DU-2556	42501346680000	ACTIVE	INJ_WAG
DU-2557	42501346780000	ACTIVE	PROD_OIL
DU-2558	42501347120000	ACTIVE	PROD_OIL
DU-2559	42501347130000	ACTIVE	PROD_OIL
DU-2560	42501353360000	ACTIVE	PROD_OIL
DU-2561	42501353380000	ACTIVE	PROD_OIL
DU-2562	42501353390000	ACTIVE	PROD_OIL
DU-2564GC	42501355190000	TA	PROD_GAS
DU-2601	42501023730000	P & A	INJ_H2O
DU-2602	42501023780000	ACTIVE	INJ_WAG
DU-2603	42501023830000	P & A	INJ_H2O
DU-2604	42501023880000	P & A	PROD_OIL
DU-2605	42501024080000	P & A	PROD_OIL
DU-2606	42501330140000	ACTIVE	INJ_WAG
DU-2607	42501330010000	ACTIVE	INJ_WAG
DU-2608	42501023930000	ACTIVE	INJ_WAG
DU-2609	42501023560000	P & A	PROD_OIL
DU-2610	42501023620000	ACTIVE	INJ_WAG
DU-2611	42501023670000	P & A	INJ_H2O
DU-2612	42501023540000	ACTIVE	INJ_WAG
DU-2613	42501024290000	P & A	INJ_H2O
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DU-2615	42501023460000	P & A	INJ_H2O
DU-2616	42501023980000	P & A	PROD_OIL
DU-2617	42501024240000	ACTIVE	PROD_OIL
DU-2618	42501024030000	ACTIVE	PROD_OIL
DU-2619	42501301960000	ACTIVE	PROD_OIL
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DU-2621	42501303000000	ACTIVE	PROD_OIL
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DU-2624	42501024490000	ACTIVE	PROD_OIL
DU-2625	42501024430000	TA	PROD_OIL
DU-2626	42501307690000	TA	INJ_H2O
DU-2627	42501309100000	ACTIVE	PROD_OIL
DU-2628	42501309090000	ACTIVE	PROD_OIL
DU-2629	42501311190000	ACTIVE	PROD_OIL
DU-2630	42501311270000	TA	PROD_OIL
DU-2631	42501314650000	ACTIVE	INJ_WAG
DU-2632	42501314540000	ACTIVE	INJ_WAG
DU-2633	42501315510000	ACTIVE	PROD_OIL
DU-2634	42501315450000	ACTIVE	PROD_OIL
DU-2635	42501327900000	P & A	INJ_WAG
DU-2636	42501328420000	ACTIVE	INJ_WAG

DU-2637	42501330250000	ACTIVE	PROD_OIL
DU-2638	42501329980000	ACTIVE	PROD_OIL
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DU-2640	42501330940000	TA	INJ_GAS
DU-2641	42501331710000	ACTIVE	INJ_WAG
DU-2642	42501333840000	ACTIVE	PROD_OIL
DU-2643	42501333860000	ACTIVE	PROD_OIL
DU-2644	42501334160000	ACTIVE	PROD_OIL
DU-2645	42501338480000	ACTIVE	INJ_WAG
DU-2646	42501342840000	ACTIVE	PROD_OIL
DU-2647	42501345500000	ACTIVE	PROD_OIL
DU-2648	42501345510000	ACTIVE	PROD_OIL
DU-2649	42501345120000	ACTIVE	PROD_OIL
DU-2650	42501345110000	ACTIVE	PROD_OIL
DU-2651	42501345170000	ACTIVE	PROD_OIL
DU-2652	42501345520000	ACTIVE	PROD_OIL
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DU-2654	42501345100000	ACTIVE	PROD_OIL
DU-2655	42501345090000	ACTIVE	PROD_OIL
DU-2656	42501345080000	ACTIVE	PROD_OIL
DU-2657	42501345690000	ACTIVE	INJ_WAG
DU-2658	42501345150000	ACTIVE	INJ_WAG
DU-2659	42501346430000	ACTIVE	PROD_OIL
DU-2660	42501346580000	ACTIVE	PROD_OIL
DU-2661	42501346460000	ACTIVE	PROD_OIL
DU-2662	42501348560000	ACTIVE	PROD_OIL
DU-2663	42501352140000	ACTIVE	INJ_WAG
DU-2664	42501352150000	ACTIVE	PROD_OIL
DU-2665	42501353400000	ACTIVE	PROD_OIL
DU-2666	42501353410000	ACTIVE	PROD_OIL
DU-2667	42501353370000	ACTIVE	INJ_WAG
DU-2668	42501353840000	ACTIVE	PROD_OIL
DU-2669	42501354900000	ACTIVE	PROD_OIL
DU-2670	42501356820000	ACTIVE	INJ_WAG
DU-2671	42501356830000	ACTIVE	INJ_WAG
DU-2672	42501356840000	ACTIVE	INJ_WAG
DU-2673	42501356850000	ACTIVE	INJ_WAG
DU-2674	42501356860000	ACTIVE	INJ_WAG
DU-2701	42501023770000	P & A	INJ_H2O
DU-2702	42501023720000	ACTIVE	INJ_WAG
DU-2703	42501023600000	ACTIVE	INJ_WAG
DU-2704	42501023550000	P & A	INJ_WAG
DU-2705	42501023820000	ACTIVE	PROD_OIL
DU-2706	42501024120000	P & A	PROD_OIL
DU-2707	42501024180000	ACTIVE	PROD_OIL
DU-2708	42501023920000	ACTIVE	PROD_OIL
DU-2709	42501023970000	ACTIVE	PROD_OIL
DU-2710	42501024070000	P & A	INJ_H2O
DU-2711	42501024230000	ACTIVE	PROD_OIL
DU-2712	42501024020000	ACTIVE	PROD_OIL
DU-2713	42501023660000	TA	PROD_OIL
DU-2714	42501024280000	P & A	PROD_OIL
DU-2715	42501023870000	P & A	PROD_OIL
DU-2716	42501023450000	ACTIVE	PROD_OIL

DU-2717	42501024720000	TA	PROD_OIL
DU-2718	42501024840000	ACTIVE	INJ_WAG
DU-2719	42501304350000	TA	PROD_OIL
DU-2720	42501304200000	ACTIVE	INJ_WAG
DU-2721	42501024830000	INACTIVE	PROD_OIL
DU-2722	42501024580000	ACTIVE	PROD_OIL
DU-2723	42501024810000	ACTIVE	INJ_WAG
DU-2724	42501024630000	ACTIVE	INJ_WAG
DU-2725	42501307720000	ACTIVE	PROD_OIL
DU-2726	42501309080000	ACTIVE	INJ_WAG
DU-2727	42501309070000	ACTIVE	INJ_WAG
DU-2728	42501314550000	ACTIVE	PROD_OIL
DU-2729	42501313080000	ACTIVE	INJ_WAG
DU-2730	42501313100000	ACTIVE	INJ_WAG
DU-2731	42501314490000	ACTIVE	PROD_OIL
DU-2732	42501315410000	P & A	INJ_H2O
DU-2733	42501315400000	ACTIVE	INJ_WAG
DU-2734	42501316500000	ACTIVE	PROD_OIL
DU-2735	42501319120000	ACTIVE	PROD_OIL
DU-2736	42501323100000	ACTIVE	INJ_WAG
DU-2737	42501322920000	ACTIVE	INJ_WAG
DU-2738	42501330000000	ACTIVE	INJ_WAG
DU-2739	42501329900000	ACTIVE	PROD_OIL
DU-2740	42501334430000	ACTIVE	PROD_OIL
DU-2741	42501101680000	ACTIVE	PROD_OIL
DU-2742	42501340510000	ACTIVE	PROD_OIL
DU-2743	42501341630000	ACTIVE	PROD_OIL
DU-2744	42501343490000	ACTIVE	PROD_OIL
DU-2745	42501343900000	ACTIVE	PROD_OIL
DU-2746	42501343720000	ACTIVE	PROD_OIL
DU-2747	42501343860000	ACTIVE	PROD_OIL
DU-2748	42501343870000	ACTIVE	INJ_WAG
DU-2749	42501343810000	ACTIVE	PROD_OIL
DU-2750	42501343730000	ACTIVE	PROD_OIL
DU-2751	42501343800000	ACTIVE	PROD_OIL
DU-2752	42501343880000	ACTIVE	PROD_OIL
DU-2753	42501343790000	ACTIVE	PROD_OIL
DU-2754	42501343780000	ACTIVE	PROD_OIL
DU-2755	42501343890000	ACTIVE	PROD_OIL
DU-2756	42501347940000	ACTIVE	PROD_OIL
DU-2757	42501348570000	ACTIVE	INJ_WAG
DU-2758	42501348580000	ACTIVE	INJ_WAG
DU-2759	42501356870000	ACTIVE	INJ_WAG
DU-2760	42501356880000	ACTIVE	INJ_WAG
DU-2761	42501356890000	ACTIVE	INJ_WAG
DU-2762	42501356900000	ACTIVE	INJ_WAG
DU-2801	42501023910000	ACTIVE	INJ_WAG
DU-2802	42501023860000	ACTIVE	INJ_WAG
DU-2803	42501023650000	INACTIVE	INJ_WAG
DU-2804	42501023960000	P & A	INJ_H2O
DU-2805	42501023490000	ACTIVE	INJ_WAG
DU-2806	42501024370000	ACTIVE	PROD_OIL
DU-2807	42501024060000	ACTIVE	PROD_OIL
DU-2808	42501023590000	ACTIVE	PROD_OIL

DU-2809	42501024320000	ACTIVE	INJ_WAG
DU-2810	42501024170000	ACTIVE	INJ_WAG
DU-2811	42501024410000	ACTIVE	INJ_WAG
DU-2812	42501024110000	ACTIVE	PROD_OIL
DU-2813	42501024270000	ACTIVE	PROD_OIL
DU-2814	42501023710000	P & A	PROD_OIL
DU-2815	42501024220000	ACTIVE	INJ_WAG
DU-2816	42501023520000	ACTIVE	PROD_OIL
DU-2817	42501024010000	ACTIVE	PROD_OIL
DU-2818	42501023760000	ACTIVE	PROD_OIL
DU-2819	42501023810000	P & A	PROD_OIL
DU-2820	42501302320000	ACTIVE	PROD_OIL
DU-2821	42501304260000	P & A	PROD_OIL
DU-2822	42501304380000	ACTIVE	INJ_WAG
DU-2823	42501304270000	ACTIVE	INJ_WAG
DU-2824	42501024670000	P & A	PROD_OIL
DU-2825	42501304340000	ACTIVE	INJ_WAG
DU-2826	42501304310000	ACTIVE	INJ_WAG
DU-2827	42501304250000	TA	INJ_WAG
DU-2828	42501304240000	ACTIVE	INJ_WAG
DU-2829	42501304230000	ACTIVE	PROD_OIL
DU-2830	42501304330000	ACTIVE	PROD_OIL
DU-2831	42501311180000	TA	PROD_OIL
DU-2832	42501313060000	ACTIVE	INJ_WAG
DU-2833	42501313050000	ACTIVE	PROD_OIL
DU-2834	42501315520000	ACTIVE	INJ_WAG
DU-2835	42501316640000	ACTIVE	INJ_WAG
DU-2836	42501322910000	ACTIVE	PROD_OIL
DU-2837	42501322960000	ACTIVE	PROD_OIL
DU-2838	42501331400000	ACTIVE	PROD_OIL
DU-2839	42501338260000	ACTIVE	INJ_WAG
DU-2840	42501340500000	ACTIVE	PROD_OIL
DU-2841	42501340480000	ACTIVE	PROD_OIL
DU-2842	42501342830000	ACTIVE	PROD_OIL
DU-2843	42501343080000	ACTIVE	INJ_WAG
DU-2844	42501343070000	ACTIVE	PROD_OIL
DU-2845	42501343090000	ACTIVE	PROD_OIL
DU-2846	42501343060000	ACTIVE	PROD_OIL
DU-2847	42501343050000	ACTIVE	PROD_OIL
DU-2848	42501343100000	ACTIVE	PROD_OIL
DU-2849	42501343040000	ACTIVE	PROD_OIL
DU-2850	42501343030000	ACTIVE	PROD_OIL
DU-2851	42501343690000	ACTIVE	PROD_OIL
DU-2852	42501343710000	ACTIVE	PROD_OIL
DU-2853	42501343700000	ACTIVE	PROD_OIL
DU-2854	42501343770000	ACTIVE	INJ_WAG
DU-2855	42501343760000	ACTIVE	PROD_OIL
DU-2856	42501343740000	ACTIVE	PROD_OIL
DU-2857	42501343750000	ACTIVE	PROD_OIL
DU-2858	42501343820000	ACTIVE	PROD_OIL
DU-2859	42501345140000	ACTIVE	PROD_OIL
DU-2860	42501346350000	ACTIVE	PROD_OIL
DU-2861	42501347190000	ACTIVE	PROD_OIL
DU-2862	42501347290000	ACTIVE	PROD_OIL

DU-2863	42501347200000	ACTIVE	PROD_OIL
DU-2864	42501347280000	ACTIVE	PROD_OIL
DU-2865	42501350120000	ACTIVE	PROD_OIL
DU-2866	42501350130000	ACTIVE	PROD_OIL
DU-2867	42501350140000	ACTIVE	PROD_OIL
DU-2868	42501362440000	ACTIVE	INJ_WAG
DU-2869	42501362450000	ACTIVE	INJ_WAG
DU-2870	42501362460000	ACTIVE	INJ_WAG
DU-2871	42501362470000	ACTIVE	INJ_WAG
DU-2872	42501362530000	ACTIVE	INJ_WAG
DU-2901	42501028320000	ACTIVE	INJ_WAG
DU-2902	42501028360000	ACTIVE	INJ_WAG
DU-2903	42501017280000	ACTIVE	INJ_WAG
DU-2904	42501017300000	ACTIVE	INJ_WAG
DU-2905	42501028400000	ACTIVE	PROD_OIL
DU-2906	42501028380000	ACTIVE	PROD_OIL
DU-2907	42501017250000	ACTIVE	INJ_WAG
DU-2908	42501017310000	ACTIVE	PROD_OIL
DU-2909	42501017270000	ACTIVE	PROD_OIL
DU-2910	42501017290000	ACTIVE	INJ_H2O
DU-2911	42501028340000	ACTIVE	INJ_WAG
DU-2912	42501028300000	ACTIVE	INJ_WAG
DU-2913	42501017130000	ACTIVE	INJ_WAG
DU-2914	42501017230000	ACTIVE	INJ_WAG
DU-2915	42501012030000	ACTIVE	PROD_OIL
DU-2916	42501012050000	P & A	PROD_OIL
DU-2917	42501021900000	ACTIVE	PROD_OIL
DU-2918	42501021860000	ACTIVE	PROD_OIL
DU-2919	42501012010000	ACTIVE	PROD_OIL
DU-2920	42501021820000	P & A	INJ_WAG
DU-2921	42501012020000	ACTIVE	INJ_WAG
DU-2922	42501021910000	ACTIVE	PROD_OIL
DU-2923	42501012040000	ACTIVE	PROD_OIL
DU-2924	42501021840000	TA	PROD_OIL
DU-2925	42501021880000	P & A	PROD_OIL
DU-2926	42501307750000	ACTIVE	INJ_WAG
DU-2927	42501307740000	ACTIVE	PROD_OIL
DU-2928	42501308190000	ACTIVE	INJ_WAG
DU-2929	42501307770000	ACTIVE	INJ_WAG
DU-2930	42501307730000	ACTIVE	PROD_OIL
DU-2931	42501311290000	ACTIVE	INJ_WAG
DU-2932	42501311280000	TA	PROD_OIL
DU-2933	42501311370000	ACTIVE	INJ_H2O
DU-2934	42501315640000	P & A	PROD_OIL
DU-2935	42501317010000	ACTIVE	PROD_OIL
DU-2936	42501317020000	P & A	PROD_OIL
DU-2937	42501322970000	ACTIVE	PROD_OIL
DU-2938	42501322950000	TA	PROD_OIL
DU-2939	42501328770000	ACTIVE	PROD_OIL
DU-2940	42501333890000	ACTIVE	PROD_OIL
DU-2941	42501333900000	ACTIVE	PROD_OIL
DU-2946	42501335130000	ACTIVE	INJ_WAG
DU-2947	42501340530000	ACTIVE	PROD_OIL
DU-2948	42501340490000	ACTIVE	PROD_OIL

DU-2949	42501340460000	ACTIVE	PROD_OIL
DU-2950	42501340470000	ACTIVE	PROD_OIL
DU-2951	42501341470000	ACTIVE	PROD_OIL
DU-2952	42501347210000	ACTIVE	PROD_OIL
DU-2953	42501347270000	ACTIVE	PROD_OIL
DU-2954	42501347260000	ACTIVE	PROD_OIL
DU-2955	42501347250000	ACTIVE	PROD_OIL
DU-2956	42501347240000	ACTIVE	PROD_OIL
DU-2957	42501347230000	ACTIVE	PROD_OIL
DU-2958	42501347220000	ACTIVE	PROD_OIL
DU-2959	42501348750000	ACTIVE	PROD_OIL
DU-2960	42501350150000	ACTIVE	PROD_OIL
DU-2961	42501350160000	ACTIVE	PROD_OIL
DU-2962	42501350170000	ACTIVE	PROD_OIL
DU-2963	42501352360000	ACTIVE	PROD_OIL
DU-2964	42501354020000	ACTIVE	PROD_OIL
DU-2966	42501354030000	ACTIVE	PROD_OIL
DU-2967	42501362480000	ACTIVE	INJ_WAG
DU-2968	42501362510000	ACTIVE	INJ_WAG
DU-2969	42501362490000	ACTIVE	INJ_WAG
DU-2970	42501362520000	ACTIVE	INJ_WAG
DU-2971	42501362500000	ACTIVE	INJ_WAG
DU-3101	42501001100000	ACTIVE	INJ_H2O
DU-3102	42501001110000	ACTIVE	PROD_OIL
DU-3103	42501001120000	P & A	INJ_H2O
DU-3104	42501001000000	ACTIVE	INJ_H2O
DU-3105	42501001090000	ACTIVE	PROD_OIL
DU-3106	42501001080000	ACTIVE	PROD_OIL
DU-3107	42501001040000	P & A	INJ_WAG
DU-3108	42501001010000	ACTIVE	INJ_WAG
DU-3109	42501001050000	TA	INJ_H2O
DU-3110	42501001070000	ACTIVE	INJ_WAG
DU-3111	42501001030000	ACTIVE	INJ_WAG
DU-3112	42501000990000	ACTIVE	INJ_WAG
DU-3113	42501001060000	TA	PROD_OIL
DU-3114	42501026740000	ACTIVE	INJ_WAG
DU-3115	42501001020000	ACTIVE	INJ_WAG
DU-3116	42501000980000	ACTIVE	INJ_WAG
DU-3117	42501307620000	ACTIVE	PROD_OIL
DU-3118	42501309270000	TA	PROD_OIL
DU-3119	42501309290000	ACTIVE	INJ_WAG
DU-3120	42501309280000	TA	PROD_OIL
DU-3121	42501309300000	TA	PROD_OIL
DU-3122	42501309050000	ACTIVE	PROD_OIL
DU-3123	42501309310000	ACTIVE	PROD_OIL
DU-3124	42501309320000	ACTIVE	PROD_OIL
DU-3126	42501309700000	ACTIVE	PROD_OIL
DU-3127	42501309770000	ACTIVE	PROD_OIL
DU-3128	42501315660000	P & A	PROD_OIL
DU-3129	42501315650000	ACTIVE	PROD_OIL
DU-3130	42501316840000	TA	PROD_OIL
DU-3131	42501316890000	ACTIVE	INJ_WAG
DU-3132	42501316950000	ACTIVE	PROD_OIL
DU-3133	42501319070000	ACTIVE	PROD_OIL

DU-3134	42501319130000	TA	PROD_OIL
DU-3135	42501328790000	TA	PROD_OIL
DU-3201	42501001230000	ACTIVE	INJ_WAG
DU-3202	42501001270000	ACTIVE	INJ_WAG
DU-3203	42501001290000	ACTIVE	INJ_WAG
DU-3204	42501001310000	ACTIVE	INJ_WAG
DU-3205	42501001250000	ACTIVE	INJ_WAG
DU-3206	42501001370000	ACTIVE	INJ_WAG
DU-3207	42501001450000	ACTIVE	INJ_WAG
DU-3208	42501001470000	ACTIVE	INJ_WAG
DU-3209	42501001330000	ACTIVE	INJ_WAG
DU-3210	42501001350000	ACTIVE	INJ_WAG
DU-3211	42501001430000	ACTIVE	INJ_WAG
DU-3212	42501001490000	ACTIVE	INJ_WAG
DU-3213	42501001210000	ACTIVE	INJ_WAG
DU-3214	42501001390000	ACTIVE	INJ_WAG
DU-3215	42501001410000	ACTIVE	INJ_WAG
DU-3216	42501026050000	ACTIVE	PROD_OIL
DU-3217	42501307640000	ACTIVE	PROD_OIL
DU-3218	42501309680000	ACTIVE	PROD_OIL
DU-3219	42501309690000	ACTIVE	PROD_OIL
DU-3220	42501309330000	ACTIVE	PROD_OIL
DU-3221	42501309650000	P & A	INJ_H2O
DU-3222	42501309760000	ACTIVE	PROD_OIL
DU-3223	42501309340000	ACTIVE	PROD_OIL
DU-3224	42501309660000	ACTIVE	PROD_OIL
DU-3225	42501309350000	ACTIVE	PROD_OIL
DU-3226	42501309670000	ACTIVE	PROD_OIL
DU-3227	42501309800000	ACTIVE	PROD_OIL
DU-3228	42501309360000	ACTIVE	PROD_OIL
DU-3229	42501309780000	ACTIVE	PROD_OIL
DU-3230	42501309750000	ACTIVE	PROD_OIL
DU-3231	42501309370000	ACTIVE	PROD_OIL
DU-3232	42501309720000	ACTIVE	PROD_OIL
DU-3233	42501316820000	ACTIVE	INJ_WAG
DU-3234	42501316870000	P & A	PROD_OIL
DU-3235	42501347390000	P & A	PROD_OIL
DU-3236	42501348090000	ACTIVE	PROD_OIL
DU-3237	42501358350000	ACTIVE	PROD_OIL
DU-3238	42501358360000	ACTIVE	PROD_OIL
DU-3239	42501358370000	ACTIVE	PROD_OIL
DU-3240	42501358380000	ACTIVE	PROD_OIL
DU-3241	42501358390000	ACTIVE	PROD_OIL
DU-3242	42501358400000	ACTIVE	PROD_OIL
DU-3243	42501358500000	ACTIVE	PROD_OIL
DU-3244	42501358430000	ACTIVE	PROD_OIL
DU-3245	42501358440000	ACTIVE	PROD_OIL
DU-3246	42501358420000	ACTIVE	PROD_OIL
DU-3247	42501358410000	ACTIVE	PROD_OIL
DU-3248	42501358460000	ACTIVE	PROD_OIL
DU-3249	42501359820000	ACTIVE	PROD_OIL
DU-3250	42501359840000	ACTIVE	PROD_OIL
DU-3251	42501359850000	ACTIVE	PROD_OIL
DU-3301	42501001260000	ACTIVE	INJ_WAG

DU-3302	42501001280000	ACTIVE	INJ_WAG
DU-3303	42501001360000	ACTIVE	INJ_WAG
DU-3304	42501001340000	ACTIVE	INJ_WAG
DU-3305	42501001480000	ACTIVE	INJ_WAG
DU-3306	42501001460000	ACTIVE	INJ_WAG
DU-3307	42501001380000	P & A	INJ_WAG
DU-3308	42501001320000	ACTIVE	INJ_WAG
DU-3309	42501001500000	ACTIVE	INJ_WAG
DU-3310	42501001440000	ACTIVE	INJ_WAG
DU-3311	42501001400000	P & A	PROD_OIL
DU-3312	42501001300000	P & A	INJ_H2O
DU-3313	42501026770000	P & A	INJ_WAG
DU-3314	42501001420000	ACTIVE	INJ_WAG
DU-3315	42501001240000	ACTIVE	INJ_WAG
DU-3316	42501001220000	ACTIVE	INJ_WAG
DU-3317	42501309500000	ACTIVE	PROD_OIL
DU-3318	42501309490000	ACTIVE	PROD_OIL
DU-3319	42501309480000	ACTIVE	PROD_OIL
DU-3320	42501309460000	ACTIVE	PROD_OIL
DU-3321	42501309470000	ACTIVE	PROD_OIL
DU-3322	42501309450000	ACTIVE	PROD_OIL
DU-3323	42501309220000	ACTIVE	PROD_OIL
DU-3324	42501309440000	ACTIVE	PROD_OIL
DU-3325	42501309430000	ACTIVE	PROD_OIL
DU-3326	42501309420000	P & A	INJ_H2O
DU-3327	42501309230000	ACTIVE	PROD_OIL
DU-3328	42501309410000	ACTIVE	PROD_OIL
DU-3329	42501309400000	ACTIVE	PROD_OIL
DU-3330	42501309390000	ACTIVE	PROD_OIL
DU-3331	42501309380000	ACTIVE	PROD_OIL
DU-3332	42501316860000	ACTIVE	PROD_OIL
DU-3333	42501316850000	ACTIVE	PROD_OIL
DU-3334	42501334560000	ACTIVE	PROD_OIL
DU-3335	42501334550000	ACTIVE	PROD_OIL
DU-3336	42501334540000	ACTIVE	PROD_OIL
DU-3337	42501334600000	ACTIVE	INJ_WAG
DU-3338	42501338130000	ACTIVE	INJ_WAG
DU-3340	42501347150000	ACTIVE	PROD_OIL
DU-3341	42501347140000	ACTIVE	PROD_OIL
DU-3342	42501347400000	ACTIVE	PROD_OIL
DU-3344	42501350740000	ACTIVE	INJ_WAG
DU-3345	42501352050000	ACTIVE	PROD_OIL
DU-3346	42501352060000	ACTIVE	PROD_OIL
DU-3347	42501353850000	ACTIVE	PROD_GAS
DU-3348	42501358450000	ACTIVE	PROD_OIL
DU-3349	42501358470000	ACTIVE	PROD_OIL
DU-3350	42501358480000	ACTIVE	PROD_OIL
DU-3351	42501358490000	ACTIVE	PROD_OIL
DU-3352	42501359530000	ACTIVE	PROD_OIL
DU-3353	42501359500000	ACTIVE	PROD_OIL
DU-3354	42501359510000	ACTIVE	PROD_OIL
DU-3355	42501359540000	ACTIVE	PROD_OIL
DU-3356	42501359550000	ACTIVE	PROD_OIL
DU-3357	42501359560000	ACTIVE	PROD_OIL

DU-3358	42501359680000	ACTIVE	PROD_OIL
DU-3359	42501359690000	ACTIVE	PROD_OIL
DU-3360	42501359750000	ACTIVE	PROD_OIL
DU-3361	42501359570000	ACTIVE	INJ_WAG
DU-3501	42501001660000	ACTIVE	PROD_OIL
DU-3502	42501001670000	ACTIVE	INJ_WAG
DU-3503	42501001680000	ACTIVE	INJ_WAG
DU-3504	42501001650000	P & A	INJ_H2O
DU-3505	42501000400000	ACTIVE	INJ_WAG
DU-3506	42501000430000	ACTIVE	PROD_OIL
DU-3507	42501000390000	ACTIVE	PROD_OIL
DU-3508	42501000410000	ACTIVE	PROD_OIL
DU-3509	42501000380000	P & A	PROD_OIL
DU-3510	42501000350000	ACTIVE	INJ_WAG
DU-3511	42501000440000	ACTIVE	INJ_WAG
DU-3512	42501000370000	ACTIVE	INJ_WAG
DU-3513	42501000420000	ACTIVE	INJ_WAG
DU-3514	42501000360000	P & A	PROD_OIL
DU-3515	42501030110000	ACTIVE	INJ_WAG
DU-3516	42501018490000	ACTIVE	PROD_OIL
DU-3517	42501029930000	ACTIVE	PROD_OIL
DU-3518	42501018500000	P & A	PROD_OIL
DU-3519	42501029940000	ACTIVE	PROD_OIL
DU-3520	42501018510000	P & A	INJ_H2O
DU-3521	42501029950000	P & A	INJ_H2O
DU-3522	42501022410000	ACTIVE	PROD_OIL
DU-3523	42501022460000	ACTIVE	INJ_WAG
DU-3524	42501022430000	ACTIVE	INJ_WAG
DU-3525	42501022470000	ACTIVE	INJ_WAG
DU-3526	42501022450000	P & A	PROD_OIL
DU-3527	42501022500000	ACTIVE	PROD_OIL
DU-3528	42501022420000	P & A	PROD_OIL
DU-3529	42501022490000	ACTIVE	PROD_OIL
DU-3530	42501022440000	ACTIVE	PROD_OIL
DU-3531	42501022480000	P & A	INJ_H2O
DU-3532	42501314430000	ACTIVE	PROD_OIL
DU-3533	42501315840000	ACTIVE	INJ_WAG
DU-3534	42501315890000	ACTIVE	PROD_OIL
DU-3535	42501316830000	ACTIVE	PROD_OIL
DU-3536	42501316900000	P & A	PROD_OIL
DU-3537	42501321020000	ACTIVE	INJ_WAG
DU-3538	42501326290000	ACTIVE	PROD_OIL
DU-3539	42501327780000	ACTIVE	PROD_OIL
DU-3540	42501329840000	ACTIVE	PROD_OIL
DU-3541	42501332190000	ACTIVE	INJ_WAG
DU-3542	42501333910000	ACTIVE	PROD_OIL
DU-3543	42501334530000	ACTIVE	PROD_OIL
DU-3544	42501334150000	ACTIVE	INJ_WAG
DU-3545	42501334120000	ACTIVE	PROD_OIL
DU-3546	42501343670000	ACTIVE	PROD_OIL
DU-3547	42501344710000	ACTIVE	PROD_OIL
DU-3548	42501344770000	ACTIVE	PROD_OIL
DU-3549	42501344760000	ACTIVE	PROD_OIL
DU-3550	42501344750000	ACTIVE	PROD_OIL

DU-3551	42501344740000	ACTIVE	PROD_OIL
DU-3552	42501344730000	ACTIVE	PROD_OIL
DU-3553	42501344720000	ACTIVE	PROD_OIL
DU-3554	42501345550000	ACTIVE	PROD_OIL
DU-3555	42501345840000	ACTIVE	PROD_OIL
DU-3556	42501345540000	ACTIVE	PROD_OIL
DU-3557	42501345560000	ACTIVE	PROD_OIL
DU-3558	42501346440000	ACTIVE	PROD_OIL
DU-3559	42501346450000	ACTIVE	PROD_OIL
DU-3560	42501346400000	ACTIVE	PROD_OIL
DU-3561	42501346550000	ACTIVE	INJ_WAG
DU-3562	42501346490000	ACTIVE	PROD_OIL
DU-3563	42501349480000	ACTIVE	INJ_WAG
DU-3564	42501349490000	ACTIVE	INJ_WAG
DU-3565	42501353770000	ACTIVE	PROD_OIL
DU-3566	42501359740000	ACTIVE	PROD_OIL
DU-3601	42501013790000	ACTIVE	INJ_WAG
DU-3602	42501014060000	ACTIVE	INJ_WAG
DU-3603	42501014070000	ACTIVE	INJ_WAG
DU-3604	42501014050000	ACTIVE	INJ_WAG
DU-3605	42501014100000	P & A	PROD_OIL
DU-3606	42501013840000	P & A	PROD_OIL
DU-3607	42501013990000	ACTIVE	PROD_OIL
DU-3608	42501013980000	ACTIVE	INJ_WAG
DU-3609	42501014120000	ACTIVE	INJ_WAG
DU-3610	42501014130000	ACTIVE	INJ_WAG
DU-3611	42501014080000	P & A	INJ_WAG
DU-3612	42501013880000	P & A	INJ_H2O
DU-3613	42501013820000	ACTIVE	PROD_OIL
DU-3614	42501013810000	ACTIVE	PROD_OIL
DU-3615	42501014110000	ACTIVE	INJ_WAG
DU-3616	42501014140000	ACTIVE	INJ_WAG
DU-3617	42501014090000	P & A	PROD_OIL
DU-3618	42501013900000	ACTIVE	INJ_WAG
DU-3619	42501013800000	ACTIVE	INJ_WAG
DU-3620	42501013930000	ACTIVE	PROD_OIL
DU-3621	42501014150000	ACTIVE	PROD_OIL
DU-3622	42501013860000	ACTIVE	PROD_OIL
DU-3623	42501304390000	ACTIVE	INJ_WAG
DU-3624	42501304090000	P & A	PROD_OIL
DU-3625	42501304100000	ACTIVE	PROD_OIL
DU-3626	42501304040000	ACTIVE	INJ_WAG
DU-3627	42501304060000	ACTIVE	PROD_OIL
DU-3628	42501304050000	ACTIVE	PROD_OIL
DU-3629	42501304130000	ACTIVE	PROD_OIL
DU-3630	42501308390000	ACTIVE	PROD_OIL
DU-3631	42501311240000	P & A	PROD_OIL
DU-3632	42501314620000	ACTIVE	INJ_WAG
DU-3633	42501315730000	TA	INJ_GAS
DU-3634	42501315740000	ACTIVE	PROD_OIL
DU-3635	42501315760000	ACTIVE	PROD_OIL
DU-3636	42501316800000	TA	PROD_OIL
DU-3637	42501316810000	ACTIVE	PROD_OIL
DU-3638	42501325930000	ACTIVE	PROD_OIL

DU-3639	42501327620000	ACTIVE	PROD_OIL
DU-3640	42501328540000	ACTIVE	PROD_OIL
DU-3641	42501328160000	TA	PROD_OIL
DU-3642	42501329990000	ACTIVE	INJ_WAG
DU-3644	42501334130000	ACTIVE	INJ_WAG
DU-3645	42501334140000	ACTIVE	PROD_OIL
DU-3646	42501343660000	ACTIVE	PROD_OIL
DU-3647	42501343650000	ACTIVE	PROD_OIL
DU-3648	42501345070000	ACTIVE	PROD_OIL
DU-3649	42501345060000	ACTIVE	PROD_OIL
DU-3650	42501345050000	ACTIVE	PROD_OIL
DU-3651	42501345570000	ACTIVE	PROD_OIL
DU-3652	42501345040000	ACTIVE	PROD_OIL
DU-3653	42501345030000	ACTIVE	PROD_OIL
DU-3654	42501345240000	ACTIVE	PROD_OIL
DU-3655	42501345230000	ACTIVE	PROD_OIL
DU-3656	42501345220000	ACTIVE	PROD_OIL
DU-3657	42501345210000	ACTIVE	PROD_OIL
DU-3658	42501345420000	ACTIVE	INJ_WAG
DU-3659	42501347180000	ACTIVE	PROD_OIL
DU-3660	42501349470000	ACTIVE	PROD_OIL
DU-3661	42501353880000	ACTIVE	PROD_OIL
DU-3666	42501354160000	ACTIVE	PROD_OIL
DU-3701	42501024260000	P & A	INJ_H2O
DU-3702	42501023480000	ACTIVE	INJ_WAG
DU-3703	42501024000000	P & A	PROD_OIL
DU-3704	42501024850000	P & A	PROD_OIL
DU-3705	42501024210000	ACTIVE	INJ_WAG
DU-3706	42501023850000	ACTIVE	INJ_WAG
DU-3707	42501023950000	ACTIVE	INJ_WAG
DU-3708	42501024100000	ACTIVE	INJ_WAG
DU-3709	42501024310000	ACTIVE	PROD_OIL
DU-3710	42501024050000	P & A	INJ_H2O
DU-3711	42501023800000	TA	PROD_OIL
DU-3712	42501023750000	ACTIVE	PROD_OIL
DU-3713	42501024400000	P & A	INJ_WAG
DU-3714	42501024160000	ACTIVE	INJ_WAG
DU-3715	42501023580000	ACTIVE	PROD_OIL
DU-3716	42501023640000	ACTIVE	PROD_OIL
DU-3717	42501023700000	ACTIVE	PROD_OIL
DU-3718	42501023900000	ACTIVE	PROD_OIL
DU-3719	42501304190000	ACTIVE	INJ_WAG
DU-3720	42501024760000	ACTIVE	INJ_WAG
DU-3721	42501304180000	ACTIVE	INJ_WAG
DU-3722	42501303990000	ACTIVE	PROD_OIL
DU-3723	42501304170000	ACTIVE	PROD_OIL
DU-3724	42501304140000	ACTIVE	PROD_OIL
DU-3725	42501304150000	ACTIVE	INJ_WAG
DU-3726	42501024800000	ACTIVE	PROD_OIL
DU-3727	42501304160000	ACTIVE	PROD_OIL
DU-3728	42501304070000	ACTIVE	INJ_WAG
DU-3729	42501304080000	ACTIVE	INJ_WAG
DU-3730	42501308100000	P & A	INJ_WAG
DU-3731	42501312020000	ACTIVE	PROD_OIL

DU-3733	42501312760000	P & A	INJ_H2O
DU-3735	42501312790000	P & A	PROD_OIL
DU-3736	42501314530000	TA	PROD_OIL
DU-3737	42501315530000	P & A	PROD_OIL
DU-3738	42501315540000	ACTIVE	INJ_WAG
DU-3739	42501316590000	P & A	PROD_OIL
DU-3740	42501316750000	P & A	PROD_OIL
DU-3741	42501316780000	P & A	PROD_OIL
DU-3742	42501316770000	P & A	PROD_OIL
DU-3743	42501316790000	P & A	PROD_OIL
DU-3746	42501320510000	ACTIVE	INJ_WAG
DU-3747	42501320370000	ACTIVE	PROD_OIL
DU-3748	42501332830000	ACTIVE	PROD_OIL
DU-3749	42501337960000	ACTIVE	PROD_OIL
DU-3750	42501342290000	ACTIVE	PROD_OIL
DU-3751	42501342230000	ACTIVE	PROD_OIL
DU-3752	42501342240000	ACTIVE	PROD_OIL
DU-3753	42501342250000	ACTIVE	PROD_OIL
DU-3754	42501342260000	ACTIVE	PROD_OIL
DU-3755	42501342300000	ACTIVE	PROD_OIL
DU-3756	42501342310000	ACTIVE	PROD_OIL
DU-3757	42501343020000	ACTIVE	INJ_WAG
DU-3758	42501343010000	ACTIVE	PROD_OIL
DU-3759	42501343230000	ACTIVE	PROD_OIL
DU-3760	42501343000000	ACTIVE	PROD_OIL
DU-3761	42501343110000	ACTIVE	PROD_OIL
DU-3762	42501343240000	ACTIVE	PROD_OIL
DU-3763	42501342990000	ACTIVE	PROD_OIL
DU-3764	42501342980000	ACTIVE	INJ_WAG
DU-3765	42501343120000	ACTIVE	PROD_OIL
DU-3766	42501343130000	ACTIVE	PROD_OIL
DU-3767	42501343210000	ACTIVE	PROD_OIL
DU-3768	42501345660000	ACTIVE	PROD_OIL
DU-3769	42501352130000	ACTIVE	INJ_WAG
DU-3770	42501354050000	ACTIVE	INJ_WAG
DU-3771	42501354230000	ACTIVE	INJ_WAG
DU-3801	42501022170000	ACTIVE	INJ_WAG
DU-3802	42501022220000	ACTIVE	INJ_WAG
DU-3803	42501028310000	ACTIVE	INJ_WAG
DU-3804	42501028350000	ACTIVE	INJ_WAG
DU-3805	42501022230000	ACTIVE	PROD_OIL
DU-3806	42501028370000	P & A	PROD_OIL
DU-3807	42501028390000	P & A	INJ_H2O
DU-3808	42501022190000	ACTIVE	INJ_WAG
DU-3809	42501022240000	ACTIVE	INJ_WAG
DU-3810	42501022210000	P & A	PROD_OIL
DU-3811	42501028290000	ACTIVE	INJ_WAG
DU-3812	42501028330000	ACTIVE	INJ_WAG
DU-3813	42501017180000	P & A	PROD_OIL
DU-3814	42501017200000	ACTIVE	PROD_OIL
DU-3815	42501006020000	ACTIVE	PROD_OIL
DU-3816	42501006080000	ACTIVE	PROD_OIL
DU-3817	42501017160000	ACTIVE	INJ_WAG
DU-3818	42501017240000	ACTIVE	INJ_WAG

DU-3819	42501006060000	ACTIVE	INJ_WAG
DU-3820	42501006120000	ACTIVE	INJ_WAG
DU-3821	42501017140000	ACTIVE	PROD_OIL
DU-3822	42501017220000	ACTIVE	PROD_OIL
DU-3823	42501006040000	ACTIVE	PROD_OIL
DU-3824	42501006100000	ACTIVE	PROD_OIL
DU-3825	42501302380000	ACTIVE	PROD_OIL
DU-3826	42501302370000	ACTIVE	PROD_OIL
DU-3827	42501304620000	ACTIVE	INJ_WAG
DU-3828	42501304450000	P & A	PROD_OIL
DU-3829	42501304440000	P & A	PROD_OIL
DU-3830	42501304430000	ACTIVE	PROD_OIL
DU-3831	42501304550000	ACTIVE	INJ_WAG
DU-3832	42501304560000	P & A	PROD_OIL
DU-3833	42501304610000	P & A	PROD_OIL
DU-3834	42501304570000	P & A	INJ_WAG
DU-3835	42501304580000	ACTIVE	INJ_WAG
DU-3836	42501304590000	ACTIVE	PROD_OIL
DU-3837	42501304600000	P & A	PROD_OIL
DU-3838	42501308680000	ACTIVE	INJ_WAG
DU-3839	42501316960000	ACTIVE	PROD_OIL
DU-3840	42501316980000	TA	PROD_OIL
DU-3841	42501317000000	TA	PROD_OIL
DU-3842	42501338970000	ACTIVE	PROD_OIL
DU-3843	42501340430000	ACTIVE	PROD_OIL
DU-3844	42501341460000	ACTIVE	PROD_OIL
DU-3845	42501341560000	ACTIVE	INJ_WAG
DU-3847	42501341620000	ACTIVE	PROD_OIL
DU-3848	42501341480000	ACTIVE	PROD_OIL
DU-3849	42501341490000	ACTIVE	PROD_OIL
DU-3850	42501341500000	ACTIVE	PROD_OIL
DU-3851	42501341510000	ACTIVE	PROD_OIL
DU-3852	42501341520000	ACTIVE	PROD_OIL
DU-3853	42501341610000	ACTIVE	PROD_OIL
DU-3854	42501341600000	ACTIVE	PROD_OIL
DU-3855	42501341530000	ACTIVE	PROD_OIL
DU-3856	42501341540000	ACTIVE	PROD_OIL
DU-3857	42501341550000	ACTIVE	PROD_OIL
DU-3858	42501341570000	ACTIVE	PROD_OIL
DU-3859	42501342220000	ACTIVE	PROD_OIL
DU-3860	42501342320000	ACTIVE	PROD_OIL
DU-3861	42501342210000	ACTIVE	PROD_OIL
DU-3862	42501342330000	ACTIVE	PROD_OIL
DU-3863	42501342340000	ACTIVE	PROD_OIL
DU-3864	42501342350000	ACTIVE	PROD_OIL
DU-3865	42501342360000	ACTIVE	PROD_OIL
DU-3866	42501342370000	ACTIVE	PROD_OIL
DU-3867	42501343540000	ACTIVE	PROD_OIL
DU-3868	42501348430000	ACTIVE	INJ_WAG
DU-3869	42501348710000	ACTIVE	PROD_OIL
DU-3870	42501353050000	ACTIVE	PROD_OIL
DU-3871	42501354100000	ACTIVE	INJ_WAG
DU-3872	42501354110000	ACTIVE	INJ_WAG
DU-3873	42501354060000	ACTIVE	INJ_WAG

DU-3874	42501354070000	ACTIVE	INJ_WAG
DU-3875	42501354080000	ACTIVE	INJ_WAG
DU-3876	42501354710000	ACTIVE	INJ_WAG
DU-3877	42501354740000	ACTIVE	INJ_WAG
DU-3878	42501354750000	ACTIVE	INJ_WAG
DU-3879	42501354760000	ACTIVE	INJ_WAG
DU-3880	42501354770000	ACTIVE	INJ_WAG
DU-3901	42501006090000	ACTIVE	INJ_WAG
DU-3902	42501006030000	ACTIVE	INJ_WAG
DU-3903	42501017170000	TA	INJ_H2O
DU-3904	42501017330000	ACTIVE	INJ_H2O
DU-3905	42501006130000	ACTIVE	PROD_OIL
DU-3906	42501006110000	ACTIVE	PROD_OIL
DU-3907	42501017150000	ACTIVE	PROD_OIL
DU-3908	42501017190000	ACTIVE	INJ_WAG
DU-3909	42501006070000	ACTIVE	INJ_WAG
DU-3910	42501006050000	ACTIVE	PROD_OIL
DU-3911	42501017210000	ACTIVE	PROD_OIL
DU-3912	42501017320000	ACTIVE	INJ_H2O
DU-3913	42501025380000	ACTIVE	PROD_OIL
DU-3914	42501025390000	TA	PROD_OIL
DU-3915	42501021830000	P & A	INJ_WAG
DU-3916	42501021870000	ACTIVE	INJ_H2O
DU-3917	42501025420000	P & A	PROD_OIL
DU-3918	42501025400000	ACTIVE	PROD_OIL
DU-3919	42501025410000	P & A	PROD_OIL
DU-3920	42501021850000	P & A	INJ_H2O
DU-3921	42501021890000	P & A	INJ_H2O
DU-3922	42501308710000	ACTIVE	INJ_WAG
DU-3923	42501308550000	ACTIVE	INJ_WAG
DU-3924	42501308560000	ACTIVE	PROD_OIL
DU-3925	42501308570000	ACTIVE	INJ_WAG
DU-3926	42501308580000	ACTIVE	PROD_OIL
DU-3927	42501308590000	ACTIVE	INJ_WAG
DU-3928	42501308600000	ACTIVE	PROD_OIL
DU-3929	42501311200000	ACTIVE	PROD_OIL
DU-3930	42501317030000	ACTIVE	PROD_OIL
DU-3932	42501330620000	ACTIVE	PROD_OIL
DU-3933	42501332900000	TA	PROD_OIL
DU-3934	42501332910000	ACTIVE	PROD_OIL
DU-3935	42501332920000	ACTIVE	INJ_WAG
DU-3936	42501332880000	ACTIVE	INJ_WAG
DU-3937	42501102150000	TA	INJ_WAG
DU-3938	42501100250000	TA	PROD_OIL
DU-3939	42501347020000	ACTIVE	PROD_OIL
DU-3940	42501347030000	ACTIVE	PROD_OIL
DU-3941	42501347000000	ACTIVE	PROD_OIL
DU-3942	42501347040000	ACTIVE	PROD_OIL
DU-3943	42501346990000	ACTIVE	PROD_OIL
DU-3944	42501347010000	ACTIVE	PROD_OIL
DU-3945	42501347310000	ACTIVE	INJ_WAG
DU-3946	42501352370000	ACTIVE	PROD_OIL
DU-3947	42501352380000	ACTIVE	PROD_OIL
DU-3948	42501352390000	ACTIVE	PROD_OIL

DU-3949	42501352400000	TA	PROD_OIL
DU-3950	42501352410000	ACTIVE	PROD_OIL
DU-3951	42501352420000	ACTIVE	PROD_OIL
DU-3955	42501354200000	ACTIVE	PROD_OIL
DU-3956	42501354780000	ACTIVE	INJ_WAG
DU-3957	42501354790000	ACTIVE	INJ_WAG
DU-3958	42501354800000	ACTIVE	INJ_WAG
DU-4001	42501017760000	P & A	INJ_H2O
DU-4002	42501021470000	TA	PROD_OIL
DU-4003	42501020180000	P & A	INJ_H2O
DU-4004	42501021380000	P & A	INJ_H2O
DU-4005	42501021390000	P & A	PROD_OIL
DU-4006	42501017770000	TA	INJ_H2O
DU-4007	42501331380000	TA	PROD_OIL
DU-4101	42501010410000	ACTIVE	PROD_OIL
DU-4102	42501000560000	ACTIVE	INJ_WAG
DU-4103	42501000530000	P & A	INJ_H2O
DU-4104	42501010400000	P & A	INJ_H2O
DU-4105	42501010440000	P & A	PROD_OIL
DU-4106	42501010420000	ACTIVE	INJ_WAG
DU-4107	42501000550000	P & A	INJ_H2O
DU-4108	42501000540000	ACTIVE	INJ_WAG
DU-4109	42501010450000	P & A	INJ_H2O
DU-4110	42501010430000	P & A	INJ_H2O
DU-4111	42501028280000	ACTIVE	INJ_WAG
DU-4112	42501028250000	ACTIVE	INJ_WAG
DU-4113	42501028260000	P & A	INJ_H2O
DU-4114	42501028270000	ACTIVE	INJ_H2O
DU-4115	42501319110000	ACTIVE	PROD_OIL
DU-4116	42501309730000	ACTIVE	PROD_OIL
DU-4117	42501314570000	ACTIVE	PROD_OIL
DU-4118	42501314440000	ACTIVE	PROD_OIL
DU-4119	42501315550000	ACTIVE	PROD_OIL
DU-4120	42501315580000	ACTIVE	INJ_WAG
DU-4121	42501319840000	P & A	PROD_OIL
DU-4122	42501319090000	ACTIVE	PROD_OIL
DU-4123	42501319060000	TA	PROD_OIL
DU-4124	42501327490000	ACTIVE	INJ_WAG
DU-4125	42501329250000	P & A	INJ_H2O
DU-4126	42501330670000	ACTIVE	PROD_OIL
DU-4127	42501330630000	ACTIVE	PROD_OIL
DU-4128	42501331370000	ACTIVE	PROD_OIL
DU-4129	42501331670000	TA	INJ_H2O
DU-4130	42501332070000	ACTIVE	PROD_OIL
DU-4131	42501333590000	ACTIVE	PROD_OIL
DU-4132	42501336450000	ACTIVE	INJ_WAG
DU-4133	42501348720000	ACTIVE	INJ_WAG
DU-4134GC	42501353860000	SHUT-IN	PROD_GAS
DU-4135	42501354360000	ACTIVE	PROD_OIL
DU-4136	42501355520000	SHUT-IN	PROD_GAS
DU-4137	42501362000000	ACTIVE	PROD_OIL
DU-4138	42501362550000	ACTIVE	PROD_OIL
DU-4139	42501362540000	ACTIVE	PROD_OIL
DU-4201	42501005920000	ACTIVE	INJ_WAG

DU-4202	42501005980000	P & A	PROD_OIL
DU-4203	42501016390000	ACTIVE	INJ_WAG
DU-4204	42501011070000	ACTIVE	INJ_WAG
DU-4205	42501005940000	ACTIVE	INJ_WAG
DU-4206	42501005970000	ACTIVE	INJ_WAG
DU-4207	42501005950000	ACTIVE	INJ_WAG
DU-4208	42501005930000	P & A	INJ_H2O
DU-4209	42501005960000	ACTIVE	INJ_WAG
DU-4210	42501011040000	P & A	INJ_H2O
DU-4211	42501006910000	P & A	INJ_H2O
DU-4212	42501006900000	P & A	PROD_OIL
DU-4213	42501015640000	P & A	PROD_OIL
DU-4214	42501011050000	ACTIVE	INJ_H2O
DU-4215	42501006920000	P & A	PROD_OIL
DU-4216	42501006930000	ACTIVE	INJ_H2O
DU-4217	42501309860000	ACTIVE	PROD_OIL
DU-4218	42501309820000	ACTIVE	PROD_OIL
DU-4219	42501309850000	ACTIVE	PROD_OIL
DU-4220	42501309830000	ACTIVE	PROD_OIL
DU-4221	42501309940000	ACTIVE	PROD_OIL
DU-4222	42501309970000	INACTIVE	PROD_OIL
DU-4223	42501309890000	ACTIVE	PROD_OIL
DU-4224	42501314460000	ACTIVE	INJ_WAG
DU-4225	42501314470000	ACTIVE	PROD_OIL
DU-4226	42501314480000	P & A	PROD_OIL
DU-4227	42501314510000	ACTIVE	INJ_WAG
DU-4228	42501315590000	ACTIVE	INJ_WAG
DU-4229	42501315560000	ACTIVE	PROD_OIL
DU-4230	42501315570000	ACTIVE	PROD_OIL
DU-4231	42501316940000	ACTIVE	PROD_OIL
DU-4232	42501316880000	ACTIVE	PROD_OIL
DU-4233	42501319080000	ACTIVE	PROD_OIL
DU-4234	42501319030000	ACTIVE	PROD_OIL
DU-4235	42501319390000	ACTIVE	PROD_GAS
DU-4236	42501319350000	TA	PROD_GAS
DU-4237	42501325940000	ACTIVE	PROD_OIL
DU-4238	42501325980000	ACTIVE	PROD_OIL
DU-4239	42501328560000	TA	PROD_OIL
DU-4240	42501331360000	ACTIVE	PROD_OIL
DU-4241	42501332080000	ACTIVE	PROD_OIL
DU-4242	42501333920000	ACTIVE	INJ_WAG
DU-4243	42501333630000	ACTIVE	PROD_OIL
DU-4244	42501333640000	ACTIVE	PROD_OIL
DU-4245	42501335930000	ACTIVE	INJ_WAG
DU-4246	42501346900000	ACTIVE	PROD_OIL
DU-4247	42501349650000	ACTIVE	PROD_OIL
DU-4250	42501353580000	ACTIVE	INJ_WAG
DU-4251	42501353590000	ACTIVE	INJ_WAG
DU-4252	42501353600000	ACTIVE	INJ_WAG
DU-4253	42501353710000	ACTIVE	INJ_WAG
DU-4254	42501354720000	ACTIVE	PROD_GAS
DU-4255	42501354730000	ACTIVE	PROD_GAS
DU-4257	42501360000000	ACTIVE	PROD_OIL
DU-4258	42501362010000	ACTIVE	PROD_OIL

DU-4259	42501361990000	ACTIVE	PROD_OIL
DU-4260	42501362050000	ACTIVE	PROD_OIL
DU-4301	42501006170000	ACTIVE	INJ_WAG
DU-4302	42501006310000	ACTIVE	INJ_WAG
DU-4303	42501006250000	ACTIVE	INJ_WAG
DU-4304	42501006210000	ACTIVE	INJ_WAG
DU-4305	42501006230000	P & A	PROD_OIL
DU-4306W	42501006290000	ACTIVE	INJ_WAG
DU-4307	42501006270000	ACTIVE	INJ_WAG
DU-4308	42501006190000	ACTIVE	INJ_WAG
DU-4309	42501006200000	ACTIVE	INJ_WAG
DU-4310	42501006280000	ACTIVE	INJ_WAG
DU-4311	42501006260000	ACTIVE	INJ_WAG
DU-4312	42501006180000	P & A	INJ_H2O
DU-4313	42501006220000	TA	PROD_OIL
DU-4314	42501006330000	P & A	PROD_OIL
DU-4315	42501006300000	ACTIVE	INJ_WAG
DU-4316	42501006240000	ACTIVE	INJ_WAG
DU-4317	42501307630000	ACTIVE	PROD_OIL
DU-4318	42501310030000	ACTIVE	PROD_OIL
DU-4319	42501309580000	ACTIVE	PROD_OIL
DU-4320	42501309240000	ACTIVE	PROD_OIL
DU-4321	42501309590000	ACTIVE	PROD_OIL
DU-4322	42501309600000	P & A	INJ_H2O
DU-4323	42501309250000	ACTIVE	PROD_OIL
DU-4324	42501309570000	ACTIVE	PROD_OIL
DU-4326	42501309960000	ACTIVE	PROD_OIL
DU-4327	42501309170000	P & A	INJ_H2O
DU-4328	42501309630000	ACTIVE	PROD_OIL
DU-4329	42501315620000	ACTIVE	INJ_WAG
DU-4330	42501315630000	ACTIVE	PROD_OIL
DU-4331	42501316910000	ACTIVE	PROD_OIL
DU-4332	42501316920000	ACTIVE	PROD_OIL
DU-4333	42501319100000	ACTIVE	INJ_H2O
DU-4334	42501328550000	P & A	PROD_OIL
DU-4335	42501333620000	TA	PROD_OIL
DU-4336	42501333610000	ACTIVE	PROD_OIL
DU-4337	42501335920000	ACTIVE	PROD_OIL
DU-4338	42501336460000	ACTIVE	INJ_WAG
DU-4339	42501345580000	TA	PROD_GAS
DU-4340	42501346920000	ACTIVE	PROD_GAS
DU-4341	42501346930000	TA	PROD_GAS
DU-4342	42501346940000	ACTIVE	PROD_GAS
DU-4343GC	42501352230000	ACTIVE	PROD_GAS
DU-4344GC	42501352070000	TA	PROD_GAS
DU-4346	42501353610000	ACTIVE	PROD_OIL
DU-4347	42501354370000	ACTIVE	PROD_GAS
DU-4348GC	42501354860000	TA	PROD_OIL
DU-4349	42501359760000	P & A	PROD_OIL
DU-4350	42501359770000	ACTIVE	PROD_OIL
DU-4351	42501359780000	ACTIVE	PROD_OIL
DU-4352	42501359790000	ACTIVE	PROD_OIL
DU-4353	42501359870000	ACTIVE	PROD_OIL
DU-4354	42501359880000	ACTIVE	PROD_OIL

DU-4355	42501359830000	ACTIVE	PROD_OIL
DU-4356	42501359810000	ACTIVE	PROD_OIL
DU-4357	42501359860000	ACTIVE	PROD_OIL
DU-4358	42501360710000	ACTIVE	PROD_OIL
DU-4401	42501025100000	ACTIVE	INJ_WAG
DU-4402	42501025080000	P & A	PROD_OIL
DU-4403	42501026990000	P & A	INJ_H2O
DU-4404	42501026980000	P & A	INJ_WAG
DU-4405	42501025090000	ACTIVE	INJ_WAG
DU-4406	42501023690000	P & A	PROD_OIL
DU-4407	42501027000000	P & A	PROD_OIL
DU-4408	42501001830000	ACTIVE	INJ_WAG
DU-4409	42501020880000	P & A	INJ_H2O
DU-4410	42501020890000	ACTIVE	PROD_OIL
DU-4411	42501001790000	P & A	INJ_H2O
DU-4412	42501001800000	ACTIVE	PROD_OIL
DU-4413	42501020910000	ACTIVE	PROD_OIL
DU-4414	42501020900000	P & A	PROD_OIL
DU-4415	42501001810000	SHUT-IN	INJ_H2O
DU-4416	42501001820000	P & A	PROD_OIL
DU-4417	42501308170000	ACTIVE	PROD_OIL
DU-4418	42501308150000	ACTIVE	INJ_WAG
DU-4419	42501308610000	P & A	PROD_OIL
DU-4420	42501308620000	ACTIVE	INJ_WAG
DU-4421	42501309990000	P & A	INJ_H2O
DU-4422	42501310540000	ACTIVE	PROD_OIL
DU-4423	42501310040000	ACTIVE	PROD_OIL
DU-4424	42501310050000	ACTIVE	PROD_OIL
DU-4425	42501310550000	ACTIVE	PROD_OIL
DU-4426	42501309980000	ACTIVE	INJ_WAG
DU-4427	42501310010000	ACTIVE	INJ_WAG
DU-4428	42501310340000	P & A	PROD_OIL
DU-4429	42501311250000	ACTIVE	PROD_OIL
DU-4430	42501315060000	ACTIVE	PROD_OIL
DU-4431	42501315080000	P & A	PROD_GAS
DU-4432	42501315090000	ACTIVE	INJ_WAG
DU-4433	42501315040000	ACTIVE	PROD_OIL
DU-4434	42501315070000	ACTIVE	PROD_OIL
DU-4435	42501315710000	ACTIVE	INJ_WAG
DU-4436	42501315850000	ACTIVE	PROD_OIL
DU-4437	42501316630000	TA	PROD_OIL
DU-4438	42501316990000	ACTIVE	PROD_GAS
DU-4439	42501319340000	TA	INJ_WAG
DU-4440	42501328780000	ACTIVE	PROD_OIL
DU-4441	42501332090000	ACTIVE	INJ_WAG
DU-4442	42501332100000	ACTIVE	PROD_OIL
DU-4443	42501332420000	ACTIVE	INJ_WAG
DU-4444	42501334610000	ACTIVE	INJ_WAG
DU-4445	42501336470000	ACTIVE	PROD_GAS
DU-4447	42501345430000	TA	PROD_GAS
DU-4448	42501345670000	ACTIVE	PROD_GAS
DU-4449	42501346260000	ACTIVE	PROD_GAS
DU-4450	42501346340000	ACTIVE	PROD_GAS
DU-4451	42501346570000	ACTIVE	PROD_OIL

DU-4452	42501346690000	ACTIVE	PROD_OIL
DU-4453	42501346510000	ACTIVE	INJ_WAG
DU-4454	42501346700000	ACTIVE	PROD_OIL
DU-4455	42501347090000	ACTIVE	PROD_OIL
DU-4456	42501347690000	ACTIVE	PROD_OIL
DU-4457	42501347700000	ACTIVE	PROD_OIL
DU-4458	42501347820000	ACTIVE	INJ_WAG
DU-4459	42501347710000	ACTIVE	PROD_OIL
DU-4460	42501347720000	ACTIVE	PROD_OIL
DU-4461GC	42501351660000	ACTIVE	PROD_GAS
DU-4463GC	42501354870000	ACTIVE	PROD_GAS
DU-4466	42501354590000	ACTIVE	PROD_GAS
DU-4467	42501355980000	DRILL	PROD_GAS
DU-4468	42501355950000	DRILL	PROD_GAS
DU-4501	42501014170000	ACTIVE	INJ_WAG
DU-4502	42501013780000	P & A	INJ_H2O
DU-4503	42501013890000	ACTIVE	INJ_WAG
DU-4504	42501013920000	ACTIVE	INJ_WAG
DU-4505	42501014160000	ACTIVE	INJ_WAG
DU-4506	42501013950000	P & A	INJ_H2O
DU-4507	42501014190000	ACTIVE	PROD_OIL
DU-4508	42501014200000	ACTIVE	PROD_OIL
DU-4509	42501014010000	P & A	INJ_H2O
DU-4510	42501013850000	P & A	INJ_H2O
DU-4511	42501014210000	ACTIVE	INJ_WAG
DU-4512	42501013910000	ACTIVE	INJ_WAG
DU-4513	42501013940000	P & A	INJ_H2O
DU-4514	42501014180000	P & A	PROD_OIL
DU-4515	42501014040000	P & A	PROD_OIL
DU-4516	42501014020000	P & A	INJ_H2O
DU-4517	42501013830000	ACTIVE	PROD_OIL
DU-4518	42501014000000	P & A	PROD_OIL
DU-4519	42501014030000	ACTIVE	INJ_WAG
DU-4520	42501013960000	ACTIVE	PROD_OIL
DU-4521	42501013870000	ACTIVE	PROD_OIL
DU-4522	42501807970000	P & A	PROD_OIL
DU-4523	42501307820000	ACTIVE	INJ_WAG
DU-4524	42501308160000	ACTIVE	PROD_OIL
DU-4525	42501308180000	ACTIVE	PROD_OIL
DU-4526	42501308330000	P & A	INJ_H2O
DU-4527	42501308420000	ACTIVE	PROD_OIL
DU-4528	42501308300000	ACTIVE	INJ_WAG
DU-4529	42501308400000	P & A	INJ_H2O
DU-4530	42501308410000	P & A	PROD_OIL
DU-4531	42501308520000	ACTIVE	INJ_WAG
DU-4532	42501308340000	ACTIVE	INJ_WAG
DU-4533	42501308370000	ACTIVE	INJ_WAG
DU-4534	42501308360000	ACTIVE	INJ_WAG
DU-4535	42501308690000	ACTIVE	PROD_OIL
DU-4536	42501308540000	ACTIVE	PROD_OIL
DU-4537	42501014320000	TA	PROD_OIL
DU-4538	42501314600000	ACTIVE	PROD_OIL
DU-4539	42501316930000	ACTIVE	PROD_OIL
DU-4540	42501329110000	ACTIVE	PROD_OIL

DU-4541	42501331680000	ACTIVE	INJ_WAG
DU-4542	42501331660000	ACTIVE	INJ_WAG
DU-4543	42501334440000	ACTIVE	INJ_WAG
DU-4544	42501342820000	ACTIVE	PROD_OIL
DU-4545	42501342810000	ACTIVE	PROD_OIL
DU-4546	42501343480000	ACTIVE	PROD_OIL
DU-4547	42501345870000	ACTIVE	PROD_GAS
DU-4548	42501345860000	TA	PROD_GAS
DU-4549	42501345850000	ACTIVE	PROD_GAS
DU-4550	42501347790000	ACTIVE	PROD_OIL
DU-4551	42501346710000	ACTIVE	PROD_OIL
DU-4552	42501346720000	ACTIVE	PROD_OIL
DU-4553	42501346730000	ACTIVE	PROD_OIL
DU-4554	42501346740000	ACTIVE	PROD_OIL
DU-4555	42501346520000	ACTIVE	PROD_OIL
DU-4556	42501346470000	ACTIVE	PROD_OIL
DU-4557	42501346480000	ACTIVE	PROD_OIL
DU-4558	42501346750000	ACTIVE	PROD_OIL
DU-4559	42501347770000	ACTIVE	PROD_OIL
DU-4560	42501346530000	ACTIVE	PROD_OIL
DU-4561	42501347800000	ACTIVE	PROD_OIL
DU-4562	42501347780000	ACTIVE	PROD_OIL
DU-4563	42501346540000	ACTIVE	INJ_WAG
DU-4564	42501346670000	ACTIVE	INJ_WAG
DU-4568GC	42501351020000	TA	PROD_GAS
DU-4569GC	42501351060000	TA	PROD_GAS
DU-4570GC	42501351030000	ACTIVE	PROD_GAS
DU-4571GC	42501351040000	TA	PROD_GAS
DU-4572GC	42501352880000	TA	PROD_GAS
DU-4573	42501354170000	ACTIVE	PROD_OIL
DU-4574	42501354240000	ACTIVE	PROD_OIL
DU-4575	42501354380000	TA	PROD_GAS
DU-4576	42501354390000	TA	PROD_GAS
DU-4601	42501027190000	P & A	INJ_H2O
DU-4602	42501025500000	ACTIVE	INJ_WAG
DU-4603	42501002280000	P & A	PROD_OIL
DU-4604	42501027180000	ACTIVE	PROD_OIL
DU-4605	42501023510000	ACTIVE	PROD_OIL
DU-4606	42501027200000	ACTIVE	PROD_OIL
DU-4607	42501025470000	ACTIVE	PROD_OIL
DU-4608	42501002290000	ACTIVE	INJ_WAG
DU-4609	42501027170000	P & A	INJ_H2O
DU-4610	42501025460000	ACTIVE	INJ_WAG
DU-4611	42501025490000	ACTIVE	PROD_OIL
DU-4612	42501002300000	ACTIVE	PROD_OIL
DU-4613	42501027160000	ACTIVE	PROD_OIL
DU-4614	42501025450000	ACTIVE	PROD_OIL
DU-4615	42501025520000	ACTIVE	INJ_WAG
DU-4616	42501002270000	ACTIVE	PROD_OIL
DU-4617	42501025150000	P & A	INJ_H2O
DU-4618	42501025480000	ACTIVE	PROD_OIL
DU-4619	42501023500000	ACTIVE	PROD_OIL
DU-4620	42501304320000	ACTIVE	PROD_OIL
DU-4621	42501025570000	ACTIVE	INJ_WAG

DU-4622	42501025560000	P & A	PROD_OIL
DU-4623	42501025550000	ACTIVE	PROD_OIL
DU-4624	42501025540000	ACTIVE	INJ_WAG
DU-4625	42501308220000	ACTIVE	PROD_OIL
DU-4626	42501308290000	TA	PROD_GAS
DU-4627	42501308280000	P & A	PROD_OIL
DU-4628	42501308350000	ACTIVE	INJ_WAG
DU-4629	42501308430000	ACTIVE	PROD_OIL
DU-4630	42501308230000	ACTIVE	INJ_WAG
DU-4632	42501308110000	P & A	PROD_OIL
DU-4633	42501314630000	TA	PROD_GAS
DU-4634	42501314640000	ACTIVE	PROD_OIL
DU-4635	42501315720000	ACTIVE	INJ_WAG
DU-4636	42501315750000	P & A	PROD_OIL
DU-4637	42501315910000	ACTIVE	INJ_WAG
DU-4638	42501315770000	ACTIVE	PROD_OIL
DU-4639	42501315900000	ACTIVE	PROD_OIL
DU-4640	42501316510000	ACTIVE	PROD_OIL
DU-4641	42501321030000	ACTIVE	PROD_OIL
DU-4642	42501325320000	ACTIVE	INJ_WAG
DU-4643	42501336490000	ACTIVE	INJ_WAG
DU-4644	42501341360000	ACTIVE	PROD_OIL
DU-4645	42501345880000	ACTIVE	PROD_OIL
DU-4646	42501345590000	ACTIVE	PROD_OIL
DU-4647	42501345200000	ACTIVE	PROD_OIL
DU-4648	42501345410000	ACTIVE	PROD_OIL
DU-4649	42501345190000	ACTIVE	PROD_OIL
DU-4650	42501345640000	ACTIVE	INJ_WAG
DU-4651	42501345600000	P & A	INJ_H2O
DU-4652	42501345610000	ACTIVE	INJ_WAG
DU-4653	42501345830000	ACTIVE	INJ_WAG
DU-4654	42501346080000	ACTIVE	INJ_WAG
DU-4655	42501347830000	ACTIVE	PROD_OIL
DU-4656	42501348140000	ACTIVE	PROD_OIL
DU-4657	42501348150000	ACTIVE	PROD_OIL
DU-4658	42501348160000	ACTIVE	PROD_OIL
DU-4659	42501348170000	ACTIVE	INJ_WAG
DU-4660	42501348180000	ACTIVE	INJ_WAG
DU-4661	42501348190000	ACTIVE	INJ_WAG
DU-4662	42501348360000	ACTIVE	PROD_OIL
DU-4663	42501348370000	ACTIVE	PROD_OIL
DU-4664	42501348200000	ACTIVE	PROD_OIL
DU-4665	42501348210000	ACTIVE	PROD_OIL
DU-4666	42501348220000	ACTIVE	PROD_OIL
DU-4667	42501347730000	ACTIVE	PROD_OIL
DU-4668GC	42501354890000	TA	PROD_GAS
DU-4701	42501028420000	P & A	INJ_H2O
DU-4702	42501028430000	P & A	PROD_OIL
DU-4703	42501008190000	ACTIVE	INJ_WAG
DU-4704	42501028950000	INACTIVE	INJ_WAG
DU-4705	42501008210000	ACTIVE	INJ_WAG
DU-4706	42501028940000	ACTIVE	PROD_OIL
DU-4707	42501028410000	P & A	INJ_H2O
DU-4708	42501028440000	ACTIVE	INJ_WAG

DU-4709	42501008200000	ACTIVE	INJ_WAG
DU-4710	42501008220000	ACTIVE	INJ_WAG
DU-4711	42501028000000	ACTIVE	PROD_OIL
DU-4712	42501027950000	ACTIVE	PROD_OIL
DU-4713	42501027960000	ACTIVE	PROD_OIL
DU-4714	42501027990000	ACTIVE	PROD_OIL
DU-4715	42501000520000	ACTIVE	INJ_WAG
DU-4716	42501018240000	ACTIVE	PROD_OIL
DU-4717	42501000510000	ACTIVE	PROD_OIL
DU-4718	42501027940000	ACTIVE	PROD_OIL
DU-4719	42501027980000	ACTIVE	PROD_OIL
DU-4720	42501027970000	P & A	PROD_OIL
DU-4721	42501302360000	ACTIVE	PROD_OIL
DU-4722	42501302350000	ACTIVE	INJ_WAG
DU-4723	42501304530000	ACTIVE	INJ_WAG
DU-4724	42501304520000	ACTIVE	PROD_OIL
DU-4725	42501304510000	ACTIVE	PROD_OIL
DU-4726	42501304500000	ACTIVE	PROD_OIL
DU-4727	42501304490000	P & A	PROD_OIL
DU-4728	42501304540000	ACTIVE	INJ_WAG
DU-4729	42501305260000	ACTIVE	PROD_OIL
DU-4730	42501305340000	ACTIVE	PROD_OIL
DU-4731	42501305330000	ACTIVE	INJ_WAG
DU-4732	42501305240000	ACTIVE	INJ_WAG
DU-4733	42501304980000	ACTIVE	INJ_WAG
DU-4734	42501305400000	ACTIVE	INJ_WAG
DU-4735	42501305270000	TA	PROD_OIL
DU-4736	42501308730000	ACTIVE	PROD_OIL
DU-4737	42501310060000	TA	PROD_OIL
DU-4738	42501310070000	TA	PROD_OIL
DU-4739	42501310080000	TA	PROD_OIL
DU-4740	42501321040000	ACTIVE	INJ_WAG
DU-4741	42501335460000	ACTIVE	PROD_OIL
DU-4742	42501340210000	ACTIVE	PROD_OIL
DU-4743	42501340200000	ACTIVE	PROD_OIL
DU-4744	42501340190000	ACTIVE	PROD_OIL
DU-4745	42501342530000	ACTIVE	PROD_OIL
DU-4746	42501342610000	ACTIVE	PROD_OIL
DU-4747	42501342600000	ACTIVE	PROD_OIL
DU-4748	42501342550000	ACTIVE	PROD_OIL
DU-4749	42501343390000	ACTIVE	INJ_WAG
DU-4750	42501343380000	ACTIVE	INJ_WAG
DU-4751	42501343250000	ACTIVE	PROD_OIL
DU-4752	42501343260000	ACTIVE	PROD_OIL
DU-4753	42501343270000	ACTIVE	PROD_OIL
DU-4754	42501343370000	ACTIVE	INJ_WAG
DU-4755	42501343300000	ACTIVE	PROD_OIL
DU-4756	42501343310000	ACTIVE	PROD_OIL
DU-4757	42501343340000	ACTIVE	PROD_OIL
DU-4758	42501343470000	ACTIVE	PROD_OIL
DU-4759	42501343320000	ACTIVE	PROD_OIL
DU-4760	42501343330000	ACTIVE	PROD_OIL
DU-4761	42501355470000	ACTIVE	PROD_GAS
DU-4762GC	42501355960000	DRILL	PROD_GAS

DU-4763	42501362030000	ACTIVE	INJ_WAG
DU-4801	42501000790000	P & A	INJ_H2O
DU-4802	42501000830000	ACTIVE	INJ_WAG
DU-4803	42501011910000	ACTIVE	INJ_WAG
DU-4804	42501011950000	ACTIVE	INJ_WAG
DU-4805	42501003520000	ACTIVE	PROD_OIL
DU-4806	42501000800000	ACTIVE	INJ_WAG
DU-4807	42501000840000	ACTIVE	INJ_WAG
DU-4808	42501011920000	ACTIVE	INJ_WAG
DU-4809	42501011970000	ACTIVE	INJ_WAG
DU-4810	42501000810000	ACTIVE	PROD_OIL
DU-4811	42501000850000	ACTIVE	PROD_OIL
DU-4812	42501011930000	ACTIVE	PROD_OIL
DU-4813	42501011960000	ACTIVE	PROD_OIL
DU-4814	42501000820000	ACTIVE	PROD_OIL
DU-4815	42501000860000	ACTIVE	PROD_OIL
DU-4816	42501011940000	P & A	PROD_OIL
DU-4817	42501011980000	P & A	INJ_H2O
DU-4818	42501302340000	ACTIVE	PROD_OIL
DU-4819	42501302330000	ACTIVE	INJ_WAG
DU-4820	42501304420000	ACTIVE	INJ_WAG
DU-4821	42501304410000	ACTIVE	INJ_WAG
DU-4822	42501304700000	ACTIVE	PROD_OIL
DU-4823	42501304690000	P & A	PROD_OIL
DU-4824	42501304670000	ACTIVE	PROD_OIL
DU-4825	42501304640000	ACTIVE	PROD_OIL
DU-4826	42501304650000	ACTIVE	PROD_OIL
DU-4827	42501304660000	ACTIVE	INJ_WAG
DU-4828	42501304710000	ACTIVE	INJ_WAG
DU-4829	42501304680000	TA	INJ_H2O
DU-4830	42501305320000	ACTIVE	INJ_WAG
DU-4831	42501305300000	ACTIVE	INJ_WAG
DU-4832	42501305290000	ACTIVE	INJ_WAG
DU-4833	42501305080000	ACTIVE	INJ_WAG
DU-4834	42501305120000	ACTIVE	INJ_WAG
DU-4835	42501305280000	ACTIVE	PROD_OIL
DU-4836	42501305110000	ACTIVE	PROD_OIL
DU-4837	42501317060000	P & A	PROD_OIL
DU-4838	42501333930000	ACTIVE	PROD_OIL
DU-4839	42501335410000	ACTIVE	PROD_OIL
DU-4840	42501337950000	ACTIVE	PROD_OIL
DU-4841	42501341210000	ACTIVE	PROD_OIL
DU-4842	42501341200000	ACTIVE	PROD_OIL
DU-4843	42501341230000	ACTIVE	INJ_WAG
DU-4844	42501341590000	ACTIVE	PROD_OIL
DU-4845	42501341700000	ACTIVE	PROD_OIL
DU-4846	42501341660000	ACTIVE	PROD_OIL
DU-4847	42501341670000	ACTIVE	PROD_OIL
DU-4848	42501341580000	ACTIVE	PROD_OIL
DU-4849	42501341650000	ACTIVE	PROD_OIL
DU-4850	42501341640000	ACTIVE	PROD_OIL
DU-4851	42501341680000	ACTIVE	PROD_OIL
DU-4852	42501341450000	ACTIVE	PROD_OIL
DU-4853	42501341690000	ACTIVE	PROD_OIL

DU-4854	42501342540000	ACTIVE	PROD_OIL
DU-4855	42501342270000	ACTIVE	PROD_OIL
DU-4856	42501342570000	ACTIVE	PROD_OIL
DU-4857	42501342590000	ACTIVE	PROD_OIL
DU-4858	42501342580000	ACTIVE	PROD_OIL
DU-4859	42501342560000	ACTIVE	PROD_OIL
DU-4860	42501342380000	ACTIVE	PROD_OIL
DU-4861	42501351520000	ACTIVE	INJ_WAG
DU-4862	42501351530000	ACTIVE	INJ_WAG
DU-4863	42501351540000	ACTIVE	INJ_WAG
DU-4864	42501351550000	ACTIVE	INJ_WAG
DU-4865	42501354880000	ACTIVE	PROD_OIL
DU-4901	42501012760000	P & A	INJ_WAG
DU-4902	42501012800000	ACTIVE	INJ_WAG
DU-4903	42501007300000	TA	PROD_OIL
DU-4904	42501007360000	P & A	INJ_H2O
DU-4905	42501012810000	ACTIVE	PROD_OIL
DU-4906	42501012770000	ACTIVE	INJ_WAG
DU-4907	42501007310000	ACTIVE	INJ_H2O
DU-4908	42501012780000	ACTIVE	PROD_OIL
DU-4909	42501012820000	ACTIVE	INJ_H2O
DU-4910	42501007320000	P & A	INJ_H2O
DU-4911	42501012790000	ACTIVE	PROD_OIL
DU-4912	42501007280000	ACTIVE	PROD_OIL
DU-4913	42501007330000	P & A	INJ_H2O
DU-4914	42501308910000	ACTIVE	INJ_WAG
DU-4915	42501308700000	ACTIVE	PROD_OIL
DU-4916	42501308940000	ACTIVE	INJ_WAG
DU-4917	42501308760000	ACTIVE	INJ_WAG
DU-4918	42501317080000	ACTIVE	PROD_OIL
DU-4919	42501317040000	ACTIVE	INJ_WAG
DU-4920	42501326300000	ACTIVE	PROD_OIL
DU-4921	42501327790000	ACTIVE	PROD_OIL
DU-4922	42501327920000	ACTIVE	PROD_OIL
DU-4923	42501327880000	ACTIVE	INJ_WAG
DU-4924	42501329160000	ACTIVE	PROD_OIL
DU-4925	42501332930000	ACTIVE	PROD_OIL
DU-4926	42501332890000	TA	PROD_OIL
DU-4927	42501346270000	ACTIVE	INJ_WAG
DU-4928	42501352430000	ACTIVE	PROD_OIL
DU-4929	42501352440000	ACTIVE	PROD_OIL
DU-5101	42501333580000	ACTIVE	PROD_OIL
DU-5201	42501808550000	P & A	PROD_OIL
DU-5202	42501003370000	ACTIVE	INJ_H2O
DU-5203	42501015660000	P & A	PROD_OIL
DU-5204	42501029510000	ACTIVE	INJ_WAG
DU-5205	42501029500000	P & A	INJ_H2O
DU-5206	42501103450000	P & A	INJ_H2O
DU-5301	42501029490000	TA	INJ_H2O
DU-5302	42501025060000	P & A	PROD_OIL
DU-5303	42501025050000	P & A	PROD_OIL
DU-5304	42501025040000	P & A	PROD_OIL
DU-5305	42501025070000	TA	INJ_H2O
DU-5306	42501015650000	P & A	INJ_H2O

DU-5307	42501015670000	P & A	INJ_H2O
DU-5308	42501319140000	P & A	INJ_WAG
DU-5309	42501325950000	ACTIVE	PROD_OIL
DU-5310	42501326020000	ACTIVE	PROD_OIL
DU-5311	42501329260000	ACTIVE	PROD_OIL
DU-5312	42501329180000	ACTIVE	PROD_OIL
DU-5313	42501329720000	ACTIVE	PROD_OIL
DU-5315	42501330680000	TA	PROD_OIL
DU-5316	42501331690000	P & A	PROD_OIL
DU-5317	42501354600000	ACTIVE	PROD_OIL
DU-5401	42501015630000	ACTIVE	INJ_WAG
DU-5402	42501024930000	P & A	INJ_H2O
DU-5403	42501022290000	ACTIVE	INJ_WAG
DU-5404	42501015620000	ACTIVE	INJ_WAG
DU-5405	42501024910000	ACTIVE	INJ_WAG
DU-5406	42501022280000	TA	INJ_H2O
DU-5407	42501308870000	SHUT-IN	INJ_WAG
DU-5408	42501308630000	ACTIVE	INJ_WAG
DU-5409	42501308670000	ACTIVE	INJ_WAG
DU-5410	42501311330000	TA	PROD_OIL
DU-5411	42501314420000	ACTIVE	PROD_OIL
DU-5412	42501314400000	TA	PROD_OIL
DU-5413	42501314410000	ACTIVE	PROD_OIL
DU-5414	42501317110000	P & A	PROD_OIL
DU-5415	42501319050000	TA	PROD_OIL
DU-5416	42501328860000	ACTIVE	PROD_OIL
DU-5501	42501022270000	P & A	INJ_WAG
DU-5502	42501024900000	ACTIVE	INJ_WAG
DU-5503	42501024920000	ACTIVE	INJ_WAG
DU-5504	42501022300000	P & A	INJ_H2O
DU-5505	42501024940000	TA	INJ_H2O
DU-5506	42501024960000	P & A	INJ_H2O
DU-5507	42501308660000	P & A	PROD_OIL
DU-5508	42501308510000	ACTIVE	PROD_OIL
DU-5509	42501308650000	ACTIVE	INJ_WAG
DU-5510	42501311320000	ACTIVE	PROD_OIL
DU-5511	42501311310000	ACTIVE	PROD_OIL
DU-5512	42501315050000	ACTIVE	PROD_OIL
DU-5513	42501314500000	ACTIVE	PROD_GAS
DU-5514	42501315780000	ACTIVE	INJ_WAG
DU-5515	42501315870000	ACTIVE	PROD_OIL
DU-5516	42501316250000	ACTIVE	INJ_WAG
DU-5517	42501319500000	P & A	PROD_OIL
DU-5519	42501320400000	TA	PROD_OIL
DU-5520	42501337970000	ACTIVE	INJ_WAG
DU-5521	42501344780000	ACTIVE	PROD_GAS
DU-5522	42501346240000	ACTIVE	PROD_GAS
DU-5523GC	42501353870000	ACTIVE	PROD_GAS
DU-5601	42501012680000	ACTIVE	PROD_OIL
DU-5602	42501012670000	P & A	PROD_OIL
DU-5603	42501012710000	ACTIVE	INJ_WAG
DU-5604	42501029960000	ACTIVE	INJ_WAG
DU-5605	42501012700000	ACTIVE	PROD_OIL
DU-5606	42501012690000	ACTIVE	INJ_WAG

DU-5607	42501012660000	P & A	INJ_H2O
DU-5608	42501028860000	ACTIVE	PROD_OIL
DU-5609	42501004920000	ACTIVE	INJ_WAG
DU-5610	42501305310000	ACTIVE	INJ_WAG
DU-5611	42501308140000	ACTIVE	PROD_OIL
DU-5612	42501309190000	ACTIVE	PROD_OIL
DU-5613	42501314520000	P & A	PROD_OIL
DU-5614	42501314580000	ACTIVE	PROD_OIL
DU-5615	42501315800000	ACTIVE	PROD_OIL
DU-5616	42501315670000	ACTIVE	PROD_OIL
DU-5617	42501330950000	ACTIVE	PROD_OIL
DU-5618	42165344300000	ACTIVE	INJ_WAG
DU-5619	42501342950000	ACTIVE	PROD_OIL
DU-5620	42501347600000	ACTIVE	PROD_OIL
DU-5621	42501347590000	ACTIVE	PROD_OIL
DU-5622GC	42501354510000	ACTIVE	PROD_GAS
DU-5623	42501355970000	DRILL	PROD_GAS
DU-5701	42501029970000	P & A	INJ_GAS
DU-5702	42501004940000	ACTIVE	INJ_WAG
DU-5703	42501004950000	ACTIVE	INJ_WAG
DU-5704	42501004970000	ACTIVE	INJ_WAG
DU-5705	42501029980000	ACTIVE	INJ_WAG
DU-5706	42501004930000	ACTIVE	INJ_WAG
DU-5707	42501005010000	ACTIVE	INJ_WAG
DU-5708	42501005020000	ACTIVE	INJ_WAG
DU-5709	42501305100000	ACTIVE	INJ_WAG
DU-5710	42501305090000	ACTIVE	INJ_WAG
DU-5711	42501304990000	ACTIVE	INJ_WAG
DU-5712	42501305190000	ACTIVE	INJ_WAG
DU-5713S	42501026000000	TA	PROD_OIL
DU-5714	42501314590000	ACTIVE	PROD_OIL
DU-5715	42501315680000	ACTIVE	PROD_OIL
DU-5716	42501315690000	ACTIVE	PROD_OIL
DU-5717	42501320500000	ACTIVE	PROD_OIL
DU-5718	42501320340000	ACTIVE	PROD_OIL
DU-5719	42501320470000	ACTIVE	PROD_OIL
DU-5720	42501343280000	ACTIVE	PROD_OIL
DU-5721	42501343290000	ACTIVE	PROD_OIL
DU-5722	42501343140000	ACTIVE	PROD_OIL
DU-5723	42501343150000	ACTIVE	PROD_OIL
DU-5724	42501343160000	ACTIVE	PROD_OIL
DU-5725	42501349450000	ACTIVE	INJ_WAG
DU-5801	42501004960000	ACTIVE	INJ_WAG
DU-5802	42501004980000	ACTIVE	INJ_WAG
DU-5803	42501004990000	ACTIVE	INJ_WAG
DU-5804	42501018910000	ACTIVE	INJ_WAG
DU-5805	42501005030000	P & A	INJ_WAG
DU-5806	42501005000000	ACTIVE	INJ_WAG
DU-5807	42501019040000	ACTIVE	INJ_WAG
DU-5808	42501305130000	ACTIVE	INJ_WAG
DU-5809	42501305200000	ACTIVE	INJ_WAG
DU-5810	42501305210000	ACTIVE	INJ_WAG
DU-5811	42501308750000	ACTIVE	INJ_WAG
DU-5812	42501308740000	ACTIVE	INJ_WAG

DU-5813	42501316490000	TA	PROD_OIL
DU-5814	42501316530000	TA	PROD_OIL
DU-5815	42501320480000	ACTIVE	PROD_OIL
DU-5816	42501320520000	ACTIVE	PROD_OIL
DU-5817	42501321010000	ACTIVE	PROD_OIL
DU-5818	42501320420000	P & A	PROD_OIL
DU-5819	42501320530000	ACTIVE	PROD_OIL
DU-5820	42501320490000	ACTIVE	PROD_OIL
DU-5821	42501343170000	ACTIVE	PROD_OIL
DU-5822	42501343180000	ACTIVE	PROD_OIL
DU-5823	42501343350000	ACTIVE	PROD_OIL
DU-5824	42501343190000	ACTIVE	PROD_OIL
DU-5825	42501343200000	ACTIVE	PROD_OIL
DU-5826	42501343360000	ACTIVE	PROD_OIL
DU-5827	42501354090000	ACTIVE	PROD_OIL
DU-5828	42501362320000	ACTIVE	INJ_WAG
DU-5901	42501019170000	ACTIVE	INJ_WAG
DU-5902	42501019280000	ACTIVE	INJ_WAG
DU-5903	42501007340000	P & A	INJ_H2O
DU-5904	42501030250000	ACTIVE	PROD_OIL
DU-5905	42501317070000	ACTIVE	PROD_OIL
DU-5906	42501320460000	ACTIVE	PROD_OIL
DU-6301	42165014090000	P & A	INJ_H2O
DU-6302	42165014060000	ACTIVE	PROD_OIL
DU-6303	42165014030000	ACTIVE	PROD_OIL
DU-6304	42165014070000	P & A	INJ_H2O
DU-6305	42165014020000	P & A	INJ_H2O
DU-6306	42165014040000	P & A	PROD_OIL
DU-6307	42165014110000	P & A	INJ_H2O
DU-6308	42165014080000	P & A	PROD_OIL
DU-6309	42165318700000	ACTIVE	PROD_OIL
DU-6310	42165367650000	ACTIVE	PROD_OIL
DU-6401	42165005420000	ACTIVE	PROD_OIL
DU-6402	42165005240000	ACTIVE	PROD_OIL
DU-6403	42165005450000	ACTIVE	PROD_OIL
DU-6404	42165005440000	ACTIVE	INJ_WAG
DU-6405	42165013870000	ACTIVE	PROD_OIL
DU-6406	42165013850000	ACTIVE	PROD_OIL
DU-6407	42165018770000	P & A	PROD_OIL
DU-6408	42165004910000	SHUT-IN	PROD_GAS
DU-6409	42165005410000	ACTIVE	PROD_OIL
DU-6410	42165005430000	ACTIVE	PROD_OIL
DU-6411	42165005360000	TA	PROD_OIL
DU-6412	42165005280000	ACTIVE	INJ_WAG
DU-6413	42165005340000	ACTIVE	INJ_WAG
DU-6414	42165005400000	ACTIVE	INJ_WAG
DU-6415	42165005330000	ACTIVE	PROD_OIL
DU-6416	42165005380000	ACTIVE	PROD_OIL
DU-6417	42165005390000	ACTIVE	INJ_WAG
DU-6418	42165005260000	ACTIVE	INJ_WAG
DU-6419	42165303820000	ACTIVE	PROD_OIL
DU-6420	42165303390000	ACTIVE	PROD_OIL
DU-6421	42165303380000	ACTIVE	INJ_WAG
DU-6422	42165303430000	ACTIVE	INJ_WAG

DU-6423	42165302990000	ACTIVE	INJ_WAG
DU-6424	42165303420000	ACTIVE	PROD_OIL
DU-6425	42165303410000	ACTIVE	INJ_WAG
DU-6426	42165303440000	ACTIVE	PROD_OIL
DU-6427	42165303060000	ACTIVE	PROD_OIL
DU-6428	42165303700000	ACTIVE	PROD_OIL
DU-6429	42165303400000	ACTIVE	PROD_OIL
DU-6430	42165303690000	ACTIVE	INJ_WAG
DU-6431	42165305430000	ACTIVE	PROD_OIL
DU-6432	42165315510000	ACTIVE	PROD_OIL
DU-6433	42165316150000	SHUT-IN	INJ_WAG
DU-6434	42165318690000	SHUT-IN	INJ_WAG
DU-6435	42165318780000	TA	PROD_OIL
DU-6436	42165320660000	ACTIVE	PROD_OIL
DU-6437	42165332400000	ACTIVE	PROD_OIL
DU-6438	42165333410000	ACTIVE	INJ_H2O
DU-6439	42165355920000	ACTIVE	PROD_OIL
DU-6440	42165355390000	ACTIVE	PROD_GAS
DU-6441	42165355930000	ACTIVE	PROD_OIL
DU-6442	42165355940000	ACTIVE	PROD_OIL
DU-6443	42165355950000	ACTIVE	PROD_OIL
DU-6444	42165355960000	ACTIVE	PROD_OIL
DU-6445	42165355970000	ACTIVE	PROD_OIL
DU-6446	42165355980000	ACTIVE	PROD_OIL
DU-6447	42165356520000	ACTIVE	PROD_GAS
DU-6448	42165357260000	TA	PROD_GAS
DU-6449GC	42165363500000	ACTIVE	PROD_GAS
DU-6450	42165363750000	ACTIVE	PROD_OIL
DU-6451	42165363760000	ACTIVE	PROD_OIL
DU-6452	42165363770000	ACTIVE	PROD_OIL
DU-6453GC	42165005290101	ACTIVE	PROD_GAS
DU-6454	42165366690000	SHUT-IN	PROD_GAS
DU-6501	42165007760000	ACTIVE	PROD_OIL
DU-6502	42165007940000	ACTIVE	PROD_OIL
DU-6503	42165007770000	ACTIVE	PROD_OIL
DU-6504	42165007730000	P & A	PROD_OIL
DU-6505	42165007750000	ACTIVE	PROD_OIL
DU-6506	42165007740000	ACTIVE	PROD_OIL
DU-6507	42165007790000	ACTIVE	PROD_OIL
DU-6508	42165813430000	ACTIVE	PROD_OIL
DU-6509	42165015330000	ACTIVE	INJ_WAG
DU-6510	42165015320000	ACTIVE	INJ_WAG
DU-6511	42165007890000	ACTIVE	INJ_WAG
DU-6512	42165007930000	ACTIVE	INJ_WAG
DU-6513	42165004740000	ACTIVE	PROD_OIL
DU-6514	42165004730000	ACTIVE	PROD_OIL
DU-6515	42165025140000	ACTIVE	PROD_OIL
DU-6516	42165025150000	ACTIVE	PROD_OIL
DU-6517	42165007950000	ACTIVE	INJ_WAG
DU-6518	42165007700000	TA	INJ_WAG
DU-6519	42165007970000	INACTIVE	INJ_WAG
DU-6520	42165007960000	ACTIVE	INJ_WAG
DU-6521	42165301980000	P & A	PROD_OIL
DU-6522	42165301990000	ACTIVE	INJ_WAG

DU-6523	42165302000000	ACTIVE	INJ_WAG
DU-6524	42165301940000	ACTIVE	PROD_OIL
DU-6525	42165302110000	P & A	INJ_WAG
DU-6526	42165302070000	ACTIVE	PROD_OIL
DU-6527	42165302090000	ACTIVE	PROD_OIL
DU-6528	42165302080000	ACTIVE	PROD_OIL
DU-6529	42165302980000	ACTIVE	PROD_OIL
DU-6530	42165303070000	ACTIVE	INJ_WAG
DU-6531	42165302820000	ACTIVE	INJ_WAG
DU-6532	42165302970000	ACTIVE	INJ_WAG
DU-6533	42165302810000	ACTIVE	INJ_WAG
DU-6534	42165302960000	ACTIVE	PROD_OIL
DU-6535	42165303660000	ACTIVE	INJ_WAG
DU-6536	42165315730000	ACTIVE	PROD_OIL
DU-6537	42165315740000	ACTIVE	PROD_GAS
DU-6538	42165320780000	ACTIVE	INJ_WAG
DU-6539	42165345960000	ACTIVE	PROD_OIL
DU-6540	42165007900000	ACTIVE	PROD_GAS
DU-6541	42165354760000	ACTIVE	PROD_OIL
DU-6542	42165353960000	ACTIVE	INJ_WAG
DU-6543	42165353950000	ACTIVE	PROD_OIL
DU-6544	42165354750000	ACTIVE	PROD_OIL
DU-6545	42165354740000	ACTIVE	PROD_OIL
DU-6546	42165353400000	ACTIVE	PROD_OIL
DU-6547	42165353410000	ACTIVE	PROD_OIL
DU-6548	42165353420000	ACTIVE	PROD_OIL
DU-6549	42165353760000	ACTIVE	PROD_GAS
DU-6550	42165354730000	ACTIVE	PROD_OIL
DU-6551	42165355480000	ACTIVE	PROD_GAS
DU-6552	42165356050000	ACTIVE	PROD_OIL
DU-6553	42165356040000	ACTIVE	PROD_OIL
DU-6554	42165355680000	ACTIVE	PROD_OIL
DU-6555	42165355690000	ACTIVE	PROD_OIL
DU-6556	42165356030000	ACTIVE	PROD_OIL
DU-6557	42165355700000	ACTIVE	PROD_OIL
DU-6558	42165355710000	ACTIVE	PROD_OIL
DU-6559	42165355720000	ACTIVE	PROD_OIL
DU-6560	42165356010000	ACTIVE	INJ_WAG
DU-6561	42165355610000	ACTIVE	INJ_WAG
DU-6562	42165356020000	ACTIVE	PROD_OIL
DU-6563	42165007850001	ACTIVE	PROD_OIL
DU-6564	42165357060000	ACTIVE	PROD_GAS
DU-6566	42165358080000	ACTIVE	PROD_OIL
DU-6567GC	42165363020000	TA	PROD_GAS
DU-6568GC	42165364530000	ACTIVE	PROD_GAS
DU-6569GC	42165363030000	ACTIVE	PROD_GAS
DU-6570GC	42165366460000	ACTIVE	PROD_GAS
DU-6571	42165367860000	ACTIVE	PROD_GAS
DU-6572	42165367870000	TA	PROD_GAS
DU-6573	42165015360001	ACTIVE	PROD_GAS
DU-6574	42165375940000	ACTIVE	INJ_WAG
DU-6575	42165376830000	ACTIVE	PROD_OIL
DU-6576	42165376840000	ACTIVE	PROD_OIL
DU-6601	42165005710000	ACTIVE	PROD_OIL

DU-6602	42165005790000	ACTIVE	PROD_OIL
DU-6603	42165005680000	ACTIVE	PROD_OIL
DU-6604	42165008540000	ACTIVE	PROD_OIL
DU-6605	42165007010000	ACTIVE	PROD_OIL
DU-6606	42165005730000	ACTIVE	PROD_OIL
DU-6607	42165005750000	ACTIVE	PROD_OIL
DU-6608	42165005780000	ACTIVE	PROD_OIL
DU-6609	42165007170000	ACTIVE	PROD_OIL
DU-6610	42165007230000	ACTIVE	PROD_OIL
DU-6611	42165005770000	ACTIVE	INJ_WAG
DU-6612	42165005740000	ACTIVE	INJ_WAG
DU-6613	42165007250000	ACTIVE	INJ_WAG
DU-6614	42165007290000	ACTIVE	INJ_WAG
DU-6615	42165005720000	ACTIVE	INJ_WAG
DU-6616	42165005760000	ACTIVE	INJ_WAG
DU-6617	42165007190000	ACTIVE	INJ_WAG
DU-6618	42165007210000	ACTIVE	INJ_WAG
DU-6619	42165301360000	ACTIVE	PROD_OIL
DU-6620	42165301600000	ACTIVE	INJ_WAG
DU-6621	42165301640000	ACTIVE	INJ_WAG
DU-6622	42165301500000	ACTIVE	INJ_WAG
DU-6623	42165301510000	ACTIVE	INJ_WAG
DU-6624	42165301520000	P & A	INJ_WAG
DU-6625	42165301370000	ACTIVE	INJ_WAG
DU-6626	42165301610000	ACTIVE	PROD_OIL
DU-6627	42165301910000	ACTIVE	INJ_WAG
DU-6628	42165301870000	ACTIVE	INJ_WAG
DU-6629	42165301850000	ACTIVE	PROD_OIL
DU-6630	42165301840000	P & A	PROD_OIL
DU-6631	42165301930000	P & A	PROD_OIL
DU-6632	42165301890000	ACTIVE	PROD_OIL
DU-6633	42165301920000	ACTIVE	PROD_OIL
DU-6634	42165301900000	ACTIVE	PROD_OIL
DU-6635	42165301860000	ACTIVE	INJ_WAG
DU-6636	42165301880000	ACTIVE	INJ_WAG
DU-6637	42165316130000	ACTIVE	PROD_OIL
DU-6638	42165345160000	ACTIVE	PROD_OIL
DU-6639	42165352270000	ACTIVE	PROD_OIL
DU-6640	42165353970000	ACTIVE	PROD_OIL
DU-6641	42165354410000	ACTIVE	PROD_OIL
DU-6642	42165354420000	ACTIVE	PROD_OIL
DU-6643	42165354430000	ACTIVE	PROD_OIL
DU-6644	42165354440000	ACTIVE	PROD_OIL
DU-6645	42165355620000	ACTIVE	PROD_OIL
DU-6646	42165355630000	ACTIVE	PROD_OIL
DU-6647	42165355640000	ACTIVE	PROD_OIL
DU-6648	42165355650000	ACTIVE	PROD_OIL
DU-6649	42165356800000	ACTIVE	PROD_OIL
DU-6650	42165356870000	ACTIVE	PROD_OIL
DU-6651	42165357370000	ACTIVE	PROD_OIL
DU-6652	42165357050000	ACTIVE	PROD_OIL
DU-6654	42165357250000	ACTIVE	PROD_OIL
DU-6655	42165357240000	ACTIVE	PROD_OIL
DU-6656	42165358110000	TA	PROD_GAS

DU-6657	42165367150000	ACTIVE	INJ_WAG
DU-6701	42165008600000	ACTIVE	PROD_OIL
DU-6702	42165007070000	P & A	PROD_OIL
DU-6703	42165007090000	P & A	PROD_OIL
DU-6704	42165007100000	ACTIVE	PROD_OIL
DU-6705	42165007020000	ACTIVE	PROD_OIL
DU-6706	42165007030000	P & A	PROD_OIL
DU-6707	42165007040000	ACTIVE	PROD_OIL
DU-6708	42165007110000	P & A	INJ_H2O
DU-6709	42165007080000	ACTIVE	INJ_WAG
DU-6710	42165007050000	P & A	PROD_OIL
DU-6711	42165007060000	TA	INJ_GAS
DU-6712	42165007120000	ACTIVE	INJ_WAG
DU-6713	42165008560000	ACTIVE	INJ_WAG
DU-6714	42165008580000	TA	PROD_OIL
DU-6715	42165008590000	ACTIVE	INJ_WAG
DU-6716	42165007140000	ACTIVE	INJ_WAG
DU-6717	42165301660000	ACTIVE	PROD_OIL
DU-6718	42165301690000	ACTIVE	PROD_OIL
DU-6719	42165301710000	ACTIVE	INJ_WAG
DU-6720	42165301680000	ACTIVE	INJ_WAG
DU-6721	42165301620000	ACTIVE	INJ_WAG
DU-6722	42165301630000	ACTIVE	INJ_WAG
DU-6723	42165302030000	ACTIVE	INJ_WAG
DU-6724	42165302040000	ACTIVE	INJ_WAG
DU-6725	42165302100000	P & A	PROD_OIL
DU-6726	42165302050000	P & A	PROD_OIL
DU-6727	42165301950000	ACTIVE	INJ_WAG
DU-6728	42165301960000	P & A	PROD_OIL
DU-6729	42165302060000	ACTIVE	PROD_OIL
DU-6730	42165304250000	ACTIVE	PROD_OIL
DU-6731	42165315500000	P & A	PROD_OIL
DU-6732	42165315710000	ACTIVE	PROD_OIL
DU-6733	42165318720000	ACTIVE	PROD_OIL
DU-6734	42165318740000	ACTIVE	PROD_OIL
DU-6735	42165318790000	ACTIVE	PROD_OIL
DU-6736	42165318730000	TA	PROD_OIL
DU-6737	42165318680000	ACTIVE	INJ_WAG
DU-6738	42165333270000	ACTIVE	PROD_OIL
DU-6739	42165333500000	ACTIVE	PROD_OIL
DU-6740	42165336120000	TA	INJ_WAG
DU-6744	42165334540000	ACTIVE	INJ_WAG
DU-6748	42165334610000	TA	INJ_GAS
DU-6750	42165334580000	ACTIVE	INJ_WAG
DU-6751	42165334590000	ACTIVE	INJ_WAG
DU-6755	42165334570000	TA	PROD_OIL
DU-6756T	42165334600000	TA	PROD_OIL
DU-6757	42165334560000	P & A	PROD_OIL
DU-6758	42165334550000	TA	PROD_OIL
DU-6759	42165347810000	ACTIVE	PROD_OIL
DU-6760	42165354450000	ACTIVE	PROD_OIL
DU-6761	42165354460000	ACTIVE	PROD_OIL
DU-6762	42165354500000	ACTIVE	PROD_OIL
DU-6763	42165354490000	ACTIVE	PROD_OIL

DU-6764	42165354480000	ACTIVE	PROD_OIL
DU-6765	42165356880000	ACTIVE	PROD_OIL
DU-6766	42165356810000	ACTIVE	PROD_OIL
DU-6767	42165356830000	ACTIVE	PROD_OIL
DU-6768	42165356790000	ACTIVE	PROD_OIL
DU-6769	42165356820000	ACTIVE	PROD_OIL
DU-6770	42165357230000	ACTIVE	PROD_OIL
DU-6771	42165357220000	ACTIVE	PROD_OIL
DU-6772	42165357310000	ACTIVE	PROD_OIL
DU-6774	42165357300000	ACTIVE	PROD_OIL
DU-6775	42165357040000	ACTIVE	PROD_OIL
DU-6776	42165357290000	ACTIVE	PROD_OIL
DU-6777	42165358310000	ACTIVE	INJ_WAG
DU-6778	42165358320000	ACTIVE	INJ_WAG
DU-6779	42165360930000	ACTIVE	PROD_OIL
DU-6780	42165361670000	ACTIVE	PROD_OIL
DU-6781	42165378160000	ACTIVE	PROD_OIL
DU-6782	42165378130000	ACTIVE	PROD_OIL
DU-6801	42165008390000	P & A	PROD_OIL
DU-6802	42165008380000	P & A	INJ_H2O
DU-6803	42165020380000	ACTIVE	PROD_OIL
DU-6804	42165020430000	ACTIVE	INJ_H2O
DU-6805	42165008420000	ACTIVE	PROD_OIL
DU-6806	42165008400000	ACTIVE	PROD_OIL
DU-6807	42165018920000	P & A	PROD_OIL
DU-6808	42165018910000	P & A	INJ_H2O
DU-6809	42165008410000	ACTIVE	INJ_WAG
DU-6810	42165008430000	ACTIVE	PROD_OIL
DU-6811	42165004310000	P & A	INJ_WAG
DU-6812	42165014010000	TA	INJ_GAS
DU-6813	42165011460000	ACTIVE	INJ_WAG
DU-6814	42165011470000	P & A	INJ_H2O
DU-6815	42165019990000	P & A	INJ_H2O
DU-6816	42165301740000	P & A	PROD_OIL
DU-6817	42165301790000	ACTIVE	INJ_WAG
DU-6818	42165301760000	P & A	INJ_WAG
DU-6819	42165301800000	ACTIVE	PROD_OIL
DU-6820	42165303760000	ACTIVE	PROD_OIL
DU-6821	42165315600000	ACTIVE	PROD_OIL
DU-6822	42165315480000	ACTIVE	PROD_OIL
DU-6823	42165320790000	ACTIVE	PROD_OIL
DU-6824	42165320670000	ACTIVE	PROD_OIL
DU-6825	42165331380000	ACTIVE	INJ_WAG
DU-6826	42165331360000	ACTIVE	INJ_WAG
DU-6827	42165332500000	ACTIVE	PROD_OIL
DU-6828	42165332390000	ACTIVE	PROD_OIL
DU-6829	42165333910000	ACTIVE	PROD_OIL
DU-6830	42165333450000	ACTIVE	PROD_OIL
DU-6831	42165339540000	ACTIVE	PROD_OIL
DU-6832	42165340850000	ACTIVE	PROD_OIL
DU-6833	42165348970000	ACTIVE	PROD_OIL
DU-6834	42165354470000	ACTIVE	PROD_OIL
DU-6835	42165354510000	ACTIVE	PROD_OIL
DU-6836	42165354520000	ACTIVE	PROD_OIL

DU-6837	42165356780000	ACTIVE	INJ_WAG
DU-6838	42165357390000	ACTIVE	PROD_OIL
DU-6839	42165378120000	ACTIVE	PROD_OIL
DU-7301	42165021460000	P & A	INJ_H2O
DU-7302	42165021440000	P & A	INJ_H2O
DU-7303	42165006510000	P & A	INJ_H2O
DU-7304	42165006520000	P & A	INJ_H2O
DU-7401	42165021550000	P & A	PROD_OIL
DU-7402	42165021530000	P & A	PROD_OIL
DU-7403	42165018790000	P & A	PROD_OIL
DU-7404	42165013890000	ACTIVE	PROD_OIL
DU-7405	42165018760000	ACTIVE	PROD_OIL
DU-7406	42165021580000	ACTIVE	PROD_OIL
DU-7407	42165013910000	ACTIVE	INJ_WAG
DU-7408	42165013880000	ACTIVE	INJ_WAG
DU-7409	42165021540000	ACTIVE	PROD_OIL
DU-7410	42165021450000	P & A	PROD_OIL
DU-7411	42165018780000	TA	PROD_OIL
DU-7412	42165013900000	ACTIVE	PROD_OIL
DU-7413	42165018750000	P & A	PROD_OIL
DU-7414	42165008370000	P & A	INJ_H2O
DU-7415	42165008290000	TA	PROD_OIL
DU-7416	42165008310000	ACTIVE	INJ_WAG
DU-7417	42165008250000	ACTIVE	INJ_WAG
DU-7418	42165008360000	P & A	PROD_OIL
DU-7419	42165008350000	TA	INJ_H2O
DU-7420	42165008330000	ACTIVE	PROD_OIL
DU-7421	42165008270000	ACTIVE	INJ_WAG
DU-7422	42165303460000	ACTIVE	INJ_WAG
DU-7423	42165303270000	P & A	INJ_WAG
DU-7424	42165302740000	INACTIVE	PROD_OIL
DU-7425	42165303600000	ACTIVE	PROD_GAS
DU-7426	42165303470000	ACTIVE	INJ_WAG
DU-7427	42165304230000	TA	PROD_OIL
DU-7428	42165305460000	ACTIVE	PROD_OIL
DU-7429	42165313680000	ACTIVE	INJ_WAG
DU-7430	42165315700000	ACTIVE	PROD_OIL
DU-7431	42165318710000	ACTIVE	PROD_OIL
DU-7432	42165318770000	INACTIVE	INJ_H2O
DU-7433	42165320600000	ACTIVE	PROD_OIL
DU-7434	42165331350000	ACTIVE	PROD_OIL
DU-7435	42165332890000	ACTIVE	PROD_OIL
DU-7436	42165333530000	ACTIVE	INJ_WAG
DU-7437	42165335240000	ACTIVE	PROD_OIL
DU-7438	42165353750000	ACTIVE	PROD_GAS
DU-7440	42165354070000	ACTIVE	PROD_OIL
DU-7441	42165354090000	ACTIVE	PROD_OIL
DU-7442	42165354080000	ACTIVE	PROD_OIL
DU-7443	42165354060000	ACTIVE	PROD_OIL
DU-7444	42165357140000	ACTIVE	PROD_GAS
DU-7445	42165376850000	ACTIVE	PROD_OIL
DU-7446	42165376880000	ACTIVE	PROD_OIL
DU-7448	42165380530000	DRILL	PROD_OIL
DU-7449	42165380540000	ACTIVE	PROD_OIL

DU-7450	42165380550000	ACTIVE	PROD_OIL
DU-7501	42165007540000	ACTIVE	PROD_OIL
DU-7502	42165007530000	ACTIVE	PROD_OIL
DU-7503	42165007590000	ACTIVE	PROD_OIL
DU-7504	42165007570000	ACTIVE	PROD_OIL
DU-7505	42165007520000	ACTIVE	PROD_OIL
DU-7506	42165007550000	ACTIVE	PROD_OIL
DU-7507	42165007580000	ACTIVE	PROD_OIL
DU-7508	42165007560000	ACTIVE	PROD_OIL
DU-7509	42165007600000	ACTIVE	INJ_WAG
DU-7510	42165005540000	ACTIVE	INJ_WAG
DU-7511	42165005470000	ACTIVE	INJ_WAG
DU-7512	42165005460000	ACTIVE	INJ_WAG
DU-7513	42165005530000	ACTIVE	INJ_WAG
DU-7514	42165005550000	ACTIVE	INJ_WAG
DU-7515	42165005480000	ACTIVE	INJ_WAG
DU-7516	42165001510000	ACTIVE	INJ_WAG
DU-7517	42165301530000	ACTIVE	PROD_OIL
DU-7518	42165301540000	ACTIVE	INJ_WAG
DU-7519	42165301550000	ACTIVE	INJ_WAG
DU-7520	42165301650000	ACTIVE	PROD_OIL
DU-7521	42165301670000	INACTIVE	INJ_WAG
DU-7522	42165302260000	ACTIVE	PROD_OIL
DU-7523	42165302280000	ACTIVE	PROD_OIL
DU-7524	42165303640000	P & A	PROD_OIL
DU-7525	42165303200000	ACTIVE	INJ_WAG
DU-7526	42165303800000	ACTIVE	INJ_WAG
DU-7527	42165303190000	ACTIVE	INJ_WAG
DU-7528	42165303680000	ACTIVE	INJ_WAG
DU-7529	42165303670000	ACTIVE	PROD_OIL
DU-7530	42165303180000	ACTIVE	INJ_WAG
DU-7531	42165303170000	ACTIVE	PROD_OIL
DU-7532	42165303160000	ACTIVE	PROD_OIL
DU-7533	42165303290000	ACTIVE	PROD_OIL
DU-7534	42165303280000	ACTIVE	PROD_OIL
DU-7535	42165302750000	ACTIVE	INJ_WAG
DU-7536	42165303260000	ACTIVE	INJ_WAG
DU-7537	42165306570000	ACTIVE	PROD_OIL
DU-7538	42165315530000	P & A	PROD_OIL
DU-7539	42165315520000	ACTIVE	PROD_OIL
DU-7540	42165319110000	TA	PROD_GAS
DU-7541	42165005490000	ACTIVE	PROD_OIL
DU-7542	42165348340000	TA	PROD_OIL
DU-7543	42165352320000	ACTIVE	PROD_OIL
DU-7544	42165352330000	ACTIVE	PROD_OIL
DU-7545	42165352340000	ACTIVE	PROD_OIL
DU-7546	42165352350000	ACTIVE	PROD_OIL
DU-7547	42165352360000	ACTIVE	PROD_OIL
DU-7548	42165352370000	ACTIVE	PROD_OIL
DU-7549	42165354050000	ACTIVE	PROD_OIL
DU-7550	42165354040000	ACTIVE	PROD_OIL
DU-7551	42165353430000	ACTIVE	PROD_OIL
DU-7552	42165353440000	ACTIVE	PROD_OIL
DU-7553	42165354030000	ACTIVE	PROD_OIL

DU-7554	42165354020000	ACTIVE	PROD_OIL
DU-7555	42165353450000	ACTIVE	PROD_OIL
DU-7556	42165353460000	ACTIVE	PROD_OIL
DU-7558	42165354010000	ACTIVE	PROD_OIL
DU-7562	42165353470000	ACTIVE	PROD_OIL
DU-7563	42165353480000	ACTIVE	PROD_OIL
DU-7564	42165353740000	ACTIVE	PROD_GAS
DU-7565	42165353730000	ACTIVE	PROD_GAS
DU-7566	42165353720000	ACTIVE	PROD_GAS
DU-7567	42165353710000	ACTIVE	PROD_GAS
DU-7568	42165357150000	ACTIVE	PROD_GAS
DU-7569	42165360090000	ACTIVE	PROD_OIL
DU-7571GC	42165363040000	ACTIVE	PROD_GAS
DU-7572GC	42165005520101	ACTIVE	PROD_GAS
DU-7573GC	42165363050000	ACTIVE	PROD_GAS
DU-7574	42165375990000	ACTIVE	INJ_WAG
DU-7575	42165376000000	ACTIVE	INJ_WAG
DU-7576	42165375970000	ACTIVE	INJ_WAG
DU-7577	42165375950000	ACTIVE	INJ_WAG
DU-7578	42165375960000	ACTIVE	INJ_WAG
DU-7601	42165007360000	ACTIVE	PROD_OIL
DU-7602	42165007270000	ACTIVE	PROD_OIL
DU-7603	42165008510000	ACTIVE	PROD_OIL
DU-7604	42165008460000	ACTIVE	PROD_OIL
DU-7605	42165007340000	ACTIVE	PROD_OIL
DU-7606	42165007320000	ACTIVE	PROD_OIL
DU-7607	42165008470000	ACTIVE	PROD_OIL
DU-7608	42165008520000	ACTIVE	PROD_OIL
DU-7609	42165007300000	ACTIVE	INJ_WAG
DU-7610	42165007380000	ACTIVE	INJ_WAG
DU-7611	42165008490000	P & A	INJ_GAS
DU-7612	42165008480000	ACTIVE	INJ_WAG
DU-7613	42165008450000	ACTIVE	PROD_OIL
DU-7614	42165008440000	P & A	INJ_WAG
DU-7615	42165007400000	ACTIVE	PROD_OIL
DU-7616	42165008500000	TA	PROD_OIL
DU-7617	42165301770000	ACTIVE	PROD_OIL
DU-7618	42165301810000	P & A	PROD_OIL
DU-7619	42165301820000	ACTIVE	INJ_WAG
DU-7620	42165301750000	ACTIVE	INJ_WAG
DU-7621	42165301730000	ACTIVE	INJ_WAG
DU-7622	42165301780000	ACTIVE	INJ_WAG
DU-7623	42165302010000	ACTIVE	INJ_WAG
DU-7624	42165302020000	ACTIVE	PROD_OIL
DU-7625	42165301970000	ACTIVE	INJ_WAG
DU-7626	42165302270000	ACTIVE	PROD_OIL
DU-7627	42165303550000	ACTIVE	INJ_WAG
DU-7628	42165303560000	ACTIVE	PROD_OIL
DU-7629	42165303540000	ACTIVE	INJ_WAG
DU-7630	42165303740000	ACTIVE	PROD_OIL
DU-7631	42165303720000	ACTIVE	PROD_OIL
DU-7632	42165303730000	ACTIVE	PROD_OIL
DU-7633	42165303520000	ACTIVE	INJ_WAG
DU-7634	42165316140000	ACTIVE	PROD_OIL

DU-7635	42165315470000	TA	PROD_OIL
DU-7636	42165007280000	P & A	PROD_OIL
DU-7637	42165353490000	ACTIVE	PROD_OIL
DU-7638	42165353500000	ACTIVE	PROD_OIL
DU-7639	42165353510000	ACTIVE	PROD_OIL
DU-7640	42165354000000	ACTIVE	PROD_OIL
DU-7641	42165357030000	ACTIVE	PROD_OIL
DU-7642	42165357020000	ACTIVE	PROD_OIL
DU-7643	42165357010000	ACTIVE	PROD_OIL
DU-7644	42165357130000	ACTIVE	PROD_OIL
DU-7645	42165357120000	ACTIVE	PROD_OIL
DU-7646	42165357110000	ACTIVE	PROD_OIL
DU-7647	42165357100000	ACTIVE	PROD_OIL
DU-7648	42165356840000	ACTIVE	PROD_GAS
DU-7649	42165358810000	ACTIVE	PROD_OIL
DU-7650	42165358800000	ACTIVE	PROD_OIL
DU-7651	42165358790000	ACTIVE	INJ_WAG
DU-7652	42165364710000	ACTIVE	PROD_OIL
DU-7653	42165367600000	ACTIVE	INJ_WAG
DU-7701	42165008620000	TA	PROD_OIL
DU-7702	42165006920000	ACTIVE	PROD_OIL
DU-7703	42165008640000	ACTIVE	PROD_OIL
DU-7704	42165008650000	ACTIVE	PROD_OIL
DU-7705	42165006960000	ACTIVE	PROD_OIL
DU-7706	42165006980000	TA	INJ_H2O
DU-7707	42165008660000	TA	INJ_H2O
DU-7708	42165008670000	TA	INJ_H2O
DU-7709	42165008630000	P & A	INJ_H2O
DU-7710	42165006970000	P & A	INJ_H2O
DU-7711	42165006990000	TA	INJ_H2O
DU-7712	42165008680000	P & A	INJ_H2O
DU-7713	42165007000000	P & A	INJ_H2O
DU-7714	42165304260000	ACTIVE	PROD_OIL
DU-7715	42165315630000	ACTIVE	INJ_H2O
DU-7716	42165318800000	ACTIVE	PROD_OIL
DU-7717	42165318760000	TA	PROD_OIL
DU-7718	42165320800000	ACTIVE	INJ_WAG
DU-7719	42165332380000	ACTIVE	PROD_OIL
DU-7720	42165346730000	TA	PROD_OIL
DU-7721	42165357070000	ACTIVE	PROD_OIL
DU-7801	42165018940000	ACTIVE	INJ_H2O
DU-7802	42165018950000	P & A	INJ_H2O
DU-7803	42165018960000	ACTIVE	INJ_H2O
DU-7804	42165333490000	ACTIVE	PROD_OIL
DU-7805	42165333480000	ACTIVE	PROD_OIL
DU-8301	42501005800000	P & A	INJ_H2O
DU-8302	42165001870000	P & A	INJ_H2O
DU-8303	42165014120000	P & A	INJ_H2O
DU-8401	42165004330000	TA	INJ_H2O
DU-8402	42165004340000	P & A	PROD_OIL
DU-8403	42165005220000	P & A	INJ_H2O
DU-8404	42165005210000	P & A	PROD_OIL
DU-8405	42165004320000	TA	INJ_H2O
DU-8406	42165004270000	P & A	PROD_OIL

DU-8407	42165005230000	ACTIVE	PROD_OIL
DU-8408	42165021500000	P & A	PROD_OIL
DU-8409	42165005120000	P & A	INJ_H2O
DU-8410	42165005100000	INACTIVE	INJ_WAG
DU-8411	42165005190000	TA	INJ_GAS
DU-8412	42165005160000	TA	INJ_H2O
DU-8413	42165005140000	P & A	PROD_OIL
DU-8414	42165005200000	TA	PROD_OIL
DU-8415	42165303480000	P & A	INJ_GAS
DU-8416	42165304350000	P & A	PROD_OIL
DU-8417	42165304360000	TA	INJ_GAS
DU-8418	42165304330000	P & A	PROD_OIL
DU-8419	42165304340000	P & A	INJ_GAS
DU-8420	42165304370000	ACTIVE	INJ_H2O
DU-8421	42165305420000	ACTIVE	PROD_OIL
DU-8422	42165311970000	ACTIVE	PROD_OIL
DU-8423	42165315650000	ACTIVE	PROD_OIL
DU-8424	42165316070000	TA	PROD_OIL
DU-8425	42165320650000	ACTIVE	PROD_OIL
DU-8426	42165320640000	ACTIVE	INJ_WAG
DU-8427	42165331340000	ACTIVE	PROD_OIL
DU-8428	42165331300000	TA	PROD_OIL
DU-8429	42165332900000	TA	PROD_OIL
DU-8431	42165333520000	TA	PROD_OIL
DU-8432	42165333460000	ACTIVE	PROD_OIL
DU-8433	42165357090000	TA	PROD_GAS
DU-8434	42165380560000	ACTIVE	PROD_OIL
DU-8435	42165380570000	DRILL	PROD_OIL
DU-8436	42165380620000	DRILL	PROD_OIL
DU-8439	42165380650000	ACTIVE	PROD_OIL
DU-8440	42165380630000	ACTIVE	PROD_OIL
DU-8441	42165380640000	DRILL	PROD_OIL
DU-8501	42165008180000	P & A	PROD_OIL
DU-8502	42165008240000	ACTIVE	PROD_OIL
DU-8503	42165008170000	ACTIVE	PROD_OIL
DU-8504	42165008200000	ACTIVE	PROD_OIL
DU-8505	42165008230000	TA	PROD_OIL
DU-8506	42165008050000	TA	INJ_H2O
DU-8507	42165008060000	ACTIVE	PROD_OIL
DU-8508	42165008080000	ACTIVE	PROD_OIL
DU-8509	42165033040000	P & A	PROD_OIL
DU-8510	42165008070000	ACTIVE	INJ_WAG
DU-8511	42165008100000	ACTIVE	INJ_WAG
DU-8512	42165008090000	TA	INJ_H2O
DU-8513	42165008210000	ACTIVE	PROD_OIL
DU-8514	42165008120000	P & A	PROD_OIL
DU-8515	42165008150000	ACTIVE	INJ_H2O
DU-8516	42165008190000	P & A	PROD_OIL
DU-8517	42165303650000	ACTIVE	PROD_OIL
DU-8518	42165303310000	ACTIVE	PROD_OIL
DU-8519	42165303010000	TA	INJ_GAS
DU-8520	42165303610000	ACTIVE	INJ_WAG
DU-8521	42165303620000	INACTIVE	INJ_WAG
DU-8522	42165303020000	ACTIVE	INJ_WAG

DU-8523	42165303110000	ACTIVE	INJ_WAG
DU-8524	42165303130000	ACTIVE	INJ_WAG
DU-8525	42165303080000	ACTIVE	PROD_OIL
DU-8526	42165303120000	TA	PROD_OIL
DU-8527	42165303630000	INACTIVE	INJ_WAG
DU-8528	42165303100000	ACTIVE	PROD_OIL
DU-8529	42165303090000	ACTIVE	PROD_OIL
DU-8530	42165304220000	ACTIVE	PROD_OIL
DU-8531	42165304310000	TA	PROD_OIL
DU-8532	42165304490000	ACTIVE	PROD_OIL
DU-8533	42165304300000	TA	INJ_H2O
DU-8534	42165305410000	ACTIVE	INJ_WAG
DU-8535	42165315640000	TA	PROD_OIL
DU-8536	42165315680000	ACTIVE	PROD_OIL
DU-8537	42165315670000	ACTIVE	PROD_OIL
DU-8538	42165353700000	TA	PROD_GAS
DU-8539	42165353770000	ACTIVE	PROD_GAS
DU-8540	42165353990000	ACTIVE	PROD_OIL
DU-8541	42165353980000	ACTIVE	PROD_OIL
DU-8542	42165360100000	ACTIVE	PROD_OIL
DU-8543	42165360110000	ACTIVE	PROD_OIL
DU-8544	42165360120000	ACTIVE	PROD_OIL
DU-8545	42165360130000	ACTIVE	PROD_OIL
DU-8546	42165368340000	ACTIVE	PROD_GAS
DU-8547	42165368330000	TA	PROD_GAS
DU-8548	42165380660000	DRILL	PROD_OIL
DU-8601	42165005590000	ACTIVE	PROD_OIL
DU-8602	42165005630000	P & A	PROD_OIL
DU-8603	42165007410000	P & A	INJ_H2O
DU-8604	42165005640000	ACTIVE	PROD_OIL
DU-8605	42165005610000	ACTIVE	PROD_OIL
DU-8606	42165007420000	P & A	PROD_OIL
DU-8607	42165005620000	P & A	PROD_OIL
DU-8608	42165005650000	ACTIVE	INJ_H2O
DU-8609	42165005660000	P & A	INJ_H2O
DU-8610	42165005600000	TA	INJ_H2O
DU-8611	42165104260000	TA	INJ_H2O
DU-8612	42165318750000	ACTIVE	PROD_OIL
DU-8613	42165304210000	ACTIVE	PROD_OIL
DU-8614	42165333510000	ACTIVE	PROD_OIL
DU-8615	42165367580000	ACTIVE	PROD_OIL
DU-8616	42165367590000	ACTIVE	PROD_OIL
DU-9201	42165009540000	TA	INJ_H2O
DU-9202	42165009560000	P & A	INJ_H2O
DU-9203	42165009620000	TA	INJ_H2O
DU-9204	42165352130000	TA	PROD_OIL
DU-9301	42165009630000	P & A	INJ_H2O
DU-9302	42165032270000	P & A	PROD_OIL
DU-9303	42165002110000	P & A	PROD_OIL
DU-9304	42165002560000	TA	INJ_H2O
DU-9305	42165002150000	P & A	PROD_OIL
DU-9306	42165002100000	TA	PROD_OIL
DU-9307	42165316060000	ACTIVE	PROD_OIL
DU-9308	42165002120000	P & A	INJ_H2O

DU-9401	42165012200000	P & A	INJ_H2O
DU-9402	42165012210000	P & A	INJ_H2O
DU-9403	42165012180000	P & A	INJ_H2O
DU-9501	42165002750000	P & A	INJ_H2O
DU-9502	42165002760000	TA	INJ_H2O
DU-9503	42165023240000	TA	INJ_H2O
DU-9504	42165023300000	P & A	PROD_OIL
DU-9505	42165104270000	P & A	INJ_H2O

Appendix 7. Summary of Key Regulations Referenced in MRV Plan

There are two primary regulations cited in this plan:

1. Texas Administrative Code Title 16 Part 1 Chapter 3 Oil & Gas Division
2. 40 CFR Parts 144, 145, 146, 147

For reference, TAC 16, Part 1 (3) was accessed September 1, 2014 at: http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=4&ti=16&pt=1&ch=3&rl=Y and the table of contents is included below.

Texas Administrative Code

TITLE 16 ECONOMIC REGULATION
PART 1 RAILROAD COMMISSION OF TEXAS
CHAPTER 3 OIL AND GAS DIVISION

Table of Contents

§3.27	Gas To Be Measured and Surface Commingling of Gas
§3.28	Potential and Deliverability of Gas Wells To Be Ascertained and Reported
§3.29	Hydraulic Fracturing Chemical Disclosure Requirements
§3.30	Memorandum of Understanding between the Railroad Commission of Texas (RRC) and the Texas Commission on Environmental Quality (TCEQ)
§3.31	Gas Reservoirs and Gas Well Allowable
§3.32	Gas Well Gas and Casinghead Gas Shall Be Utilized for Legal Purposes
§3.33	Geothermal Resource Production Test Forms Required
§3.34	Gas To Be Produced and Purchased Ratably
§3.35	Procedures for Identification and Control of Wellbores in Which Certain Logging Tools Have Been Abandoned
§3.36	Oil, Gas, or Geothermal Resource Operation in Hydrogen Sulfide Areas
§3.37	Statewide Spacing Rule
§3.38	Well Densities
§3.39	Proration and Drilling Units: Contiguity of Acreage and Exception Thereto
§3.40	Assignment of Acreage to Pooled Development and Proration Units
§3.41	Application for New Oil or Gas Field Designation and/or Allowable
§3.42	Oil Discovery Allowable
§3.43	Application for Temporary Field Rules
§3.45	Oil Allowables
§3.46	Fluid Injection into Productive Reservoirs
§3.47	Allowable Transfers for Saltwater Injection Wells
§3.48	Capacity Oil Allowables for Secondary or Tertiary Recovery Projects
§3.49	Gas-Oil Ratio
§3.50	Enhanced Oil Recovery Projects--Approval and Certification for Tax Incentive
§3.51	Oil Potential Test Forms Required
§3.52	Oil Well Allowable Production
§3.53	Annual Well Tests and Well Status Reports Required
§3.54	Gas Reports Required
§3.55	Reports on Gas Wells Commingling Liquid Hydrocarbons before Metering
§3.56	Scrubber Oil and Skim Hydrocarbons
§3.57	Reclaiming Tank Bottoms, Other Hydrocarbon Wastes, and Other Waste Materials
§3.58	Certificate of Compliance and Transportation Authority; Operator Reports
§3.59	Oil and Gas Transporter's Reports
§3.60	Refinery Reports
§3.61	Refinery and Gasoline Plants
§3.62	Cycling Plant Control and Reports
§3.63	Carbon Black Plant Permits Required
§3.70	Pipeline Permits Required
§3.71	Pipeline Tariffs
§3.72	Obtaining Pipeline Connections
§3.73	Pipeline Connection; Cancellation of Certificate of Compliance; Severance
§3.76	Commission Approval of Plats for Mineral Development
§3.78	Fees and Financial Security Requirements
§3.79	Definitions
§3.80	Commission Oil and Gas Forms, Applications, and Filing Requirements

§3.81	Brine Mining Injection Wells
§3.83	Tax Exemption for Two-Year Inactive Wells and Three-Year Inactive Wells
§3.84	Gas Shortage Emergency Response
§3.85	Manifest To Accompany Each Transport of Liquid Hydrocarbons by Vehicle
§3.86	Horizontal Drainhole Wells
§3.91	Cleanup of Soil Contaminated by a Crude Oil Spill
§3.93	Water Quality Certification Definitions
§3.95	Underground Storage of Liquid or Liquefied Hydrocarbons in Salt Formations
§3.96	Underground Storage of Gas in Productive or Depleted Reservoirs
§3.97	Underground Storage of Gas in Salt Formations
§3.98	Standards for Management of Hazardous Oil and Gas Waste
§3.99	Cathodic Protection Wells
§3.100	Seismic Holes and Core Holes
§3.101	Certification for Severance Tax Exemption or Reduction for Gas Produced From High-Cost Gas Wells
§3.102	Tax Reduction for Incremental Production
§3.103	Certification for Severance Tax Exemption for Casinghead Gas Previously Vented or Flared
§3.106	Sour Gas Pipeline Facility Construction Permit
§3.107	Penalty Guidelines for Oil and Gas Violations

Appendix B: Submissions and Responses to Requests for Additional Information

Oxy Denver Unit CO_2 Subpart RR

Monitoring, Reporting and Verification (MRV) Plan

Final Version
December 2015

Table of Contents

Roadmap to the Monitoring, Reporting and Verification (MRV) Plan

Occidental Permian Ltd. (OPL) operates the Denver Unit in the Permian Basin for the primary purpose of enhanced oil recovery (EOR) using carbon dioxide (CO_2) flooding. OPL intends to inject CO_2 with a subsidiary purpose of establishing long-term containment of a measureable quantity of CO_2 in subsurface geological formations at the Denver Unit for an estimated period of ten years, the "Specified Period." The Specified Period includes all or some portion of the period 2016 through 2026. During the Specified Period, OPL will inject CO_2 that is purchased (fresh CO_2) from affiliates of Occidental Petroleum Corporation (OPC) or third parties, as well as CO_2 that is recovered (recycled CO_2) from the Denver Unit CO_2 Recovery Plant (DUCRP). OPL, OPC and their affiliates (together, Oxy) have developed this monitoring, reporting, and verification (MRV) plan in accordance with 40 CFR §98.440-449 (Subpart RR) to provide for the monitoring, reporting and verification of the quantity of CO_2 sequestered at the Denver Unit during the Specified Period.

In accordance with Subpart RR, flow meters are used to quantify the volume of CO_2 received, injected, produced, contained in products, and recycled. If leakage is detected, the volume of leaked CO_2 will be quantified using two approaches. First, Oxy follows the requirements in 40 CFR §98.230-238 (Subpart W) to quantify fugitive emissions, planned releases of CO_2, and other surface releases from equipment. Second, Oxy's risk-based monitoring program uses surveillance techniques in the subsurface and above ground to detect CO_2 leaks from potential leakage pathways in the subsurface. If a leak is identified, the volume of the release will be estimated. The CO_2 volume data, including CO_2 volume at different points in the injection and production process, equipment leaks, and surface leaks, will be used in the mass balance equations included 40 CFR §98.440-449 (Subpart RR) to calculate the volume of CO_2 stored on an annual and cumulative basis.

This MRV plan contains eleven sections:

- Section 1 contains general facility information.
- Section 2 presents the project description. This section describes the planned injection volumes, the environmental setting of the Denver Unit, the injection process, and reservoir modeling. It also illustrates that the Denver Unit is well suited for secure storage of injected CO_2.
- Section 3 describes the monitoring area: the Denver Unit in West Texas.

- Section 4 presents the evaluation of potential pathways for CO_2 leakage to the surface. The assessment finds that the potential for leakage through pathways other than the man-made well bores and surface equipment is minimal.
- Section 5 describes Oxy's risk-based monitoring process. The monitoring process utilizes Oxy's reservoir management system to identify potential leakage indicators in the subsurface. The monitoring process also entails visual inspection of surface facilities to locate leaks and personal H_2S monitors as a proxy for detecting potential leaks. Oxy's MRV efforts will be primarily directed towards managing potential leaks through well bores and surface facilities.
- Section 6 describes the baselines against which monitoring results will be compared to assess whether changes indicate potential leaks.
- Section 7 describes Oxy's approach to determining the volume of CO_2 sequestered using the mass balance equations in 40 CFR §98.440-449, Subpart RR of the Environmental Protection Agency's (EPA) Greenhouse Gas Reporting Program (GHGRP). This section also describes the site-specific factors considered in this approach.
- Section 8 presents the schedule for implementing the MRV plan.
- Section 9 describes the quality assurance program to ensure data integrity.
- Section 10 describes Oxy's record retention program.
- Section 11 includes several Appendices.

1. Facility Information

i) Reporter number – TBD

ii) All wells included in this report are permitted by the Texas Railroad Commission (TRRC), through TAC 16 Part 1 Chapter 3. The TRRC has primacy to implement the federal UIC Class II requirements and incorporated those provisions in TAC 16 Part 1 Chapter 3.

iii) All wells in the Denver Unit are identified by name, API number, status, and type. The list of wells as of August 2014 (roughly the date of MRV plan initial creation) is included in Appendix 6

2. Project Description

This section describes the planned injection volumes, environmental setting of the Denver Unit, injection process, and reservoir modeling conducted.

2.1 Project Characteristics

Using the modeling approaches described in section 2.4, Oxy has forecasted the total amount of CO_2 anticipated to be injected, produced, and stored in the Denver Unit as a result of its current and planned CO_2 EOR operations. Figure 1 shows the actual CO_2 injection, production, and stored volumes in the Denver Unit (main oil play plus the residual oil zone (ROZ)) for the period 1983 through 2013 (solid line) and the forecast for 2014 through 2111 (dotted line). The forecast is based on results from reservoir and recovery process modeling that Oxy uses to develop injection plans for each injection pattern, which is also described in section 2.4.

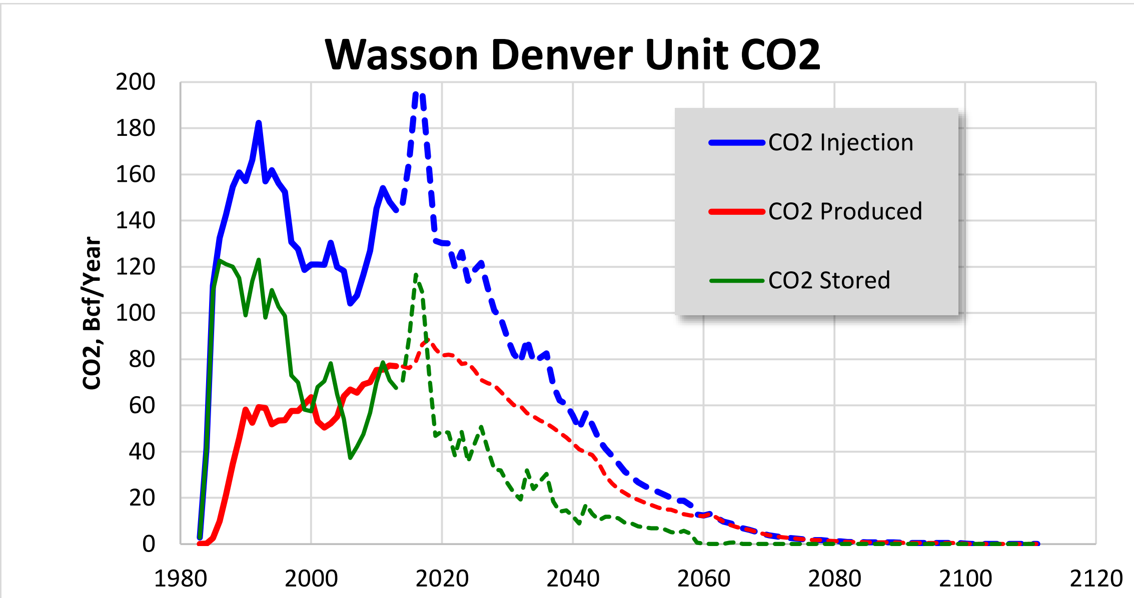


Figure 1 - Denver Unit Historic and Forecast CO_2 Injection, Production, and Storage 1980-2120

As discussed in Appendix 1 (**Background**), Oxy adjusts its purchase of fresh CO_2 to maintain reservoir pressure and to increase recovery of oil by extending or expanding the CO_2 flood. A volume of fresh CO_2 is purchased to balance the fluids removed from the reservoir and provide the solvency required to increase oil recovery. The data shows CO_2 injection, production, and storage through 2111 and anticipates new CO_2 storage volumes ending in 2059. Oxy has injected 4,035 Bscf of CO_2 (212.8 million metric tonnes (MMMT)) into the Denver Unit through the end of 2013. Of that amount, 1,593 Bscf (84.0 MMMT) was produced and 2,442 Bscf (128.8 MMMT) was stored.

Although exact storage volumes will be calculated using the mass balance equations described in Section 7, Oxy forecasts that the total volume of CO_2 stored over the lifetime of injection to be approximately 3,768 Bscf (200 MMMT), which represents approximately 25% of the theoretical storage capacity of the Denver Unit. For accounting purposes, the amount stored is the difference between the amount injected (including purchased and recycled CO_2) and the total of the amount produced less any

CO_2 that: i) leaks to the surface, ii) is released through surface equipment malfunction, or iii) is entrained or dissolved in produced oil.

Figure 2 presents the cumulative annual forecasted volume of CO_2 stored for a Specified Period 2016-2026. The cumulative amount stored is equal to the annual storage volume for that year plus the total of the annual storage volume(s) for the previous year(s) in a Specified Period. Hence the projected volume of CO_2 stored in the first year of the period specified in the graph is 70.7 Bscf (3.7 MMMT) and the cumulative in the second year is 160.1 Bscf (8.4 MMMT). In total, the eight-year volume is expected to be 603.5 Bscf (31.8 MMMT). This forecast illustrates the anticipated volume of subsidiary storage during a Specified Period; the actual amounts stored will be calculated as described in section 7 of this MRV plan.

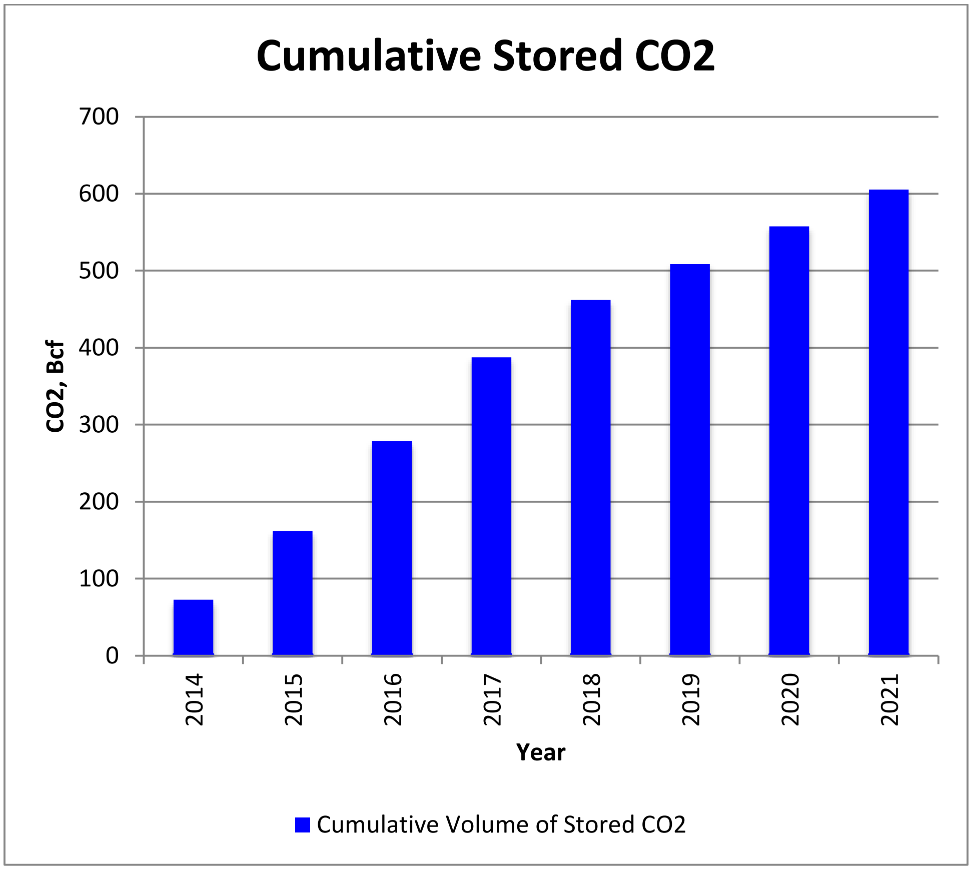


Figure 2 - Denver Unit CO_2 Storage Forecasted During the Specified Period 2016-2026

2.2 Environmental Setting

The project site for this MRV plan is the Denver Unit, located within the Wasson Field, in the Permian Basin.

2.2.1 Geology of the Wasson Field

The Wasson Field produces oil from the San Andres formation, a layer of permeable dolomites that were deposited in a shallow marine environment during the Permian Period, some 250 to 300 million years ago. This depository created a wide sedimentary basin, called the Permian Basin, which covers the western part of the Texas and the southeastern part of New Mexico. In the Permian Era this part of the central United States was under water.

The Wasson Field is located in southwestern Yoakum and northwestern Gaines counties of West Texas (See Figure 3), in an area called the Northwest Shelf. It is approximately five miles east of the New Mexico state line and 100 miles north of Midland, Texas as indicated with the red dot in Figure 3. The Wasson Field was discovered in 1936.

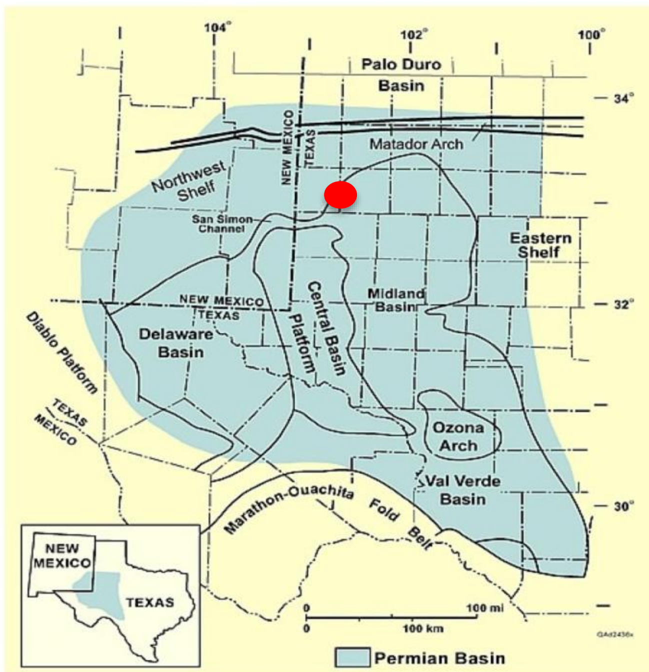


Figure 3 Permian Basin

With nearly 4,000 million barrels (MMB) of Original Oil in Place (OOIP), it is one of the largest oil fields in North America. In the years following its deposition, the San Andres formation has been buried under thick layers of impermeable rocks, and finally uplifted to form the current landscape. The process of burial and uplifting produced some unevenness in the geologic layers. Originally flat, there are now variations in elevation within the San Andres Formation across the Permian Basin. The relative high spots, such as the Wasson Field, have become the places where oil and gas have accumulated over the ensuing millions of years.

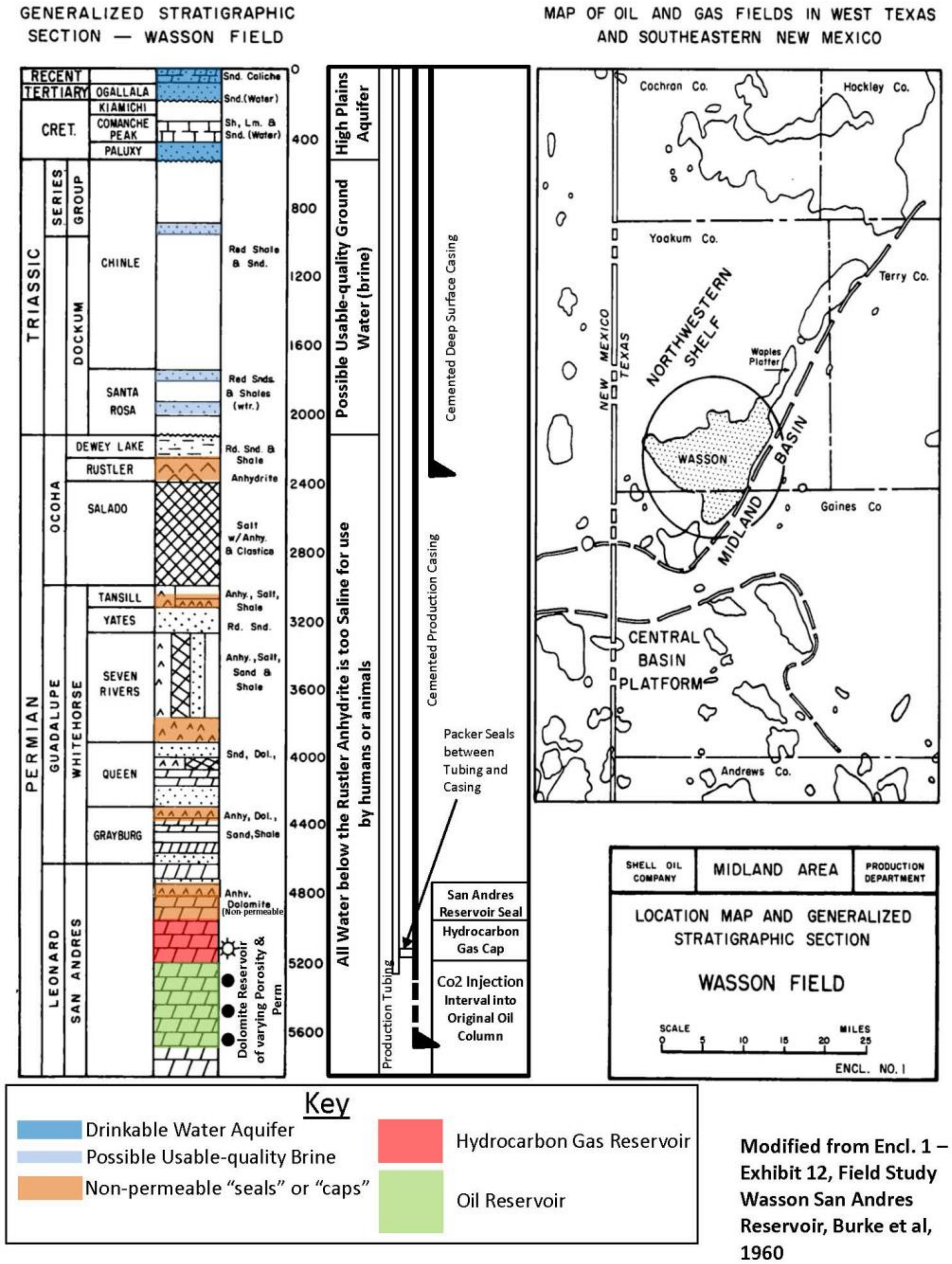
As indicated in Figure 4, the San Andres formation now lies beneath some 5,000 feet of overlying sediments. The San Andres reservoir is capped with nearly 400 feet of impermeable dolomite, referred to as the upper San Andres. This is the seal that has kept

oil and gas trapped in the lower San Andres formation for millions of years thus indicating it is clearly a seal of the highest integrity. Other zones also serve as seals. The properties of these seal intervals can be interpreted from logs run across the sealing intervals. Logs, such as SP (spontaneous potential) logs, gamma ray logs, and porosity logs, all indicate lack of permeability. Logs in multiple wells throughout Wasson confirm the presence of these seals over the entire field. These seals are highlighted in orange on Figure 4.

Between the surface and about 2,000 feet in depth there are intervals of underground sources of drinking water (USDW). These include the Ogallala and Paluxy aquifers, identified in blue in Figure 4. In addition other potentially useful brine intervals (having a higher dissolved solids content) are identified in light blue. TRCC, which has primacy to implement the UIC Class II program in Texas, requires that all wells drilled through these intervals confine fluids to the stratum in which they are encountered or injected. Wells are required to use casing and other measures to ensure confinement.[1]

[1] See Texas Administrative Code Title 16 Part 1 Chapter 3 Rule §3.7 found online at: http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=4&ti=16&pt=1&ch=3&rl=Y. For convenience, this rule is summarized in Appendix 7.

Figure 4 Stratigraphic Section at Wasson



There are no known faults or fractures affecting the Denver Unit that provide an upward pathway for fluid flow. Oxy has confirmed this conclusion in multiple ways. First and foremost, the presence of oil, especially oil that has a gas cap, is indicative of a good quality natural seal. Oil and, to an even greater extent gas, are less dense than the brine found in rock formations and tend to rise over time. Places where oil and gas remain trapped in the deep subsurface over millions of years, as is the case in the Wasson Field,

provide good proof that faults or fractures do not provide a pathway for upward migration out of the flooding interval. The existence of such faults or fractures in the Wasson Field would have provided a pathway for oil and gas and they would not be found there today.

Second, in the course of developing the field, seismic surveys have been conducted to characterize the formations and inform the reservoir models used to design injection patterns. These surveys show the existence of faulting well below the San Andres formation but none that penetrate the flooding interval. Figures 5 and 6 show north-south and east-west seismic sections through the Denver Unit. Faulting can be identified deeper in the section, but not at the San Andres level. This lack of faulting is consistent with the presence of oil and gas in the San Andres formation at the time of discovery.

Figure 5 Seismic Section North-South

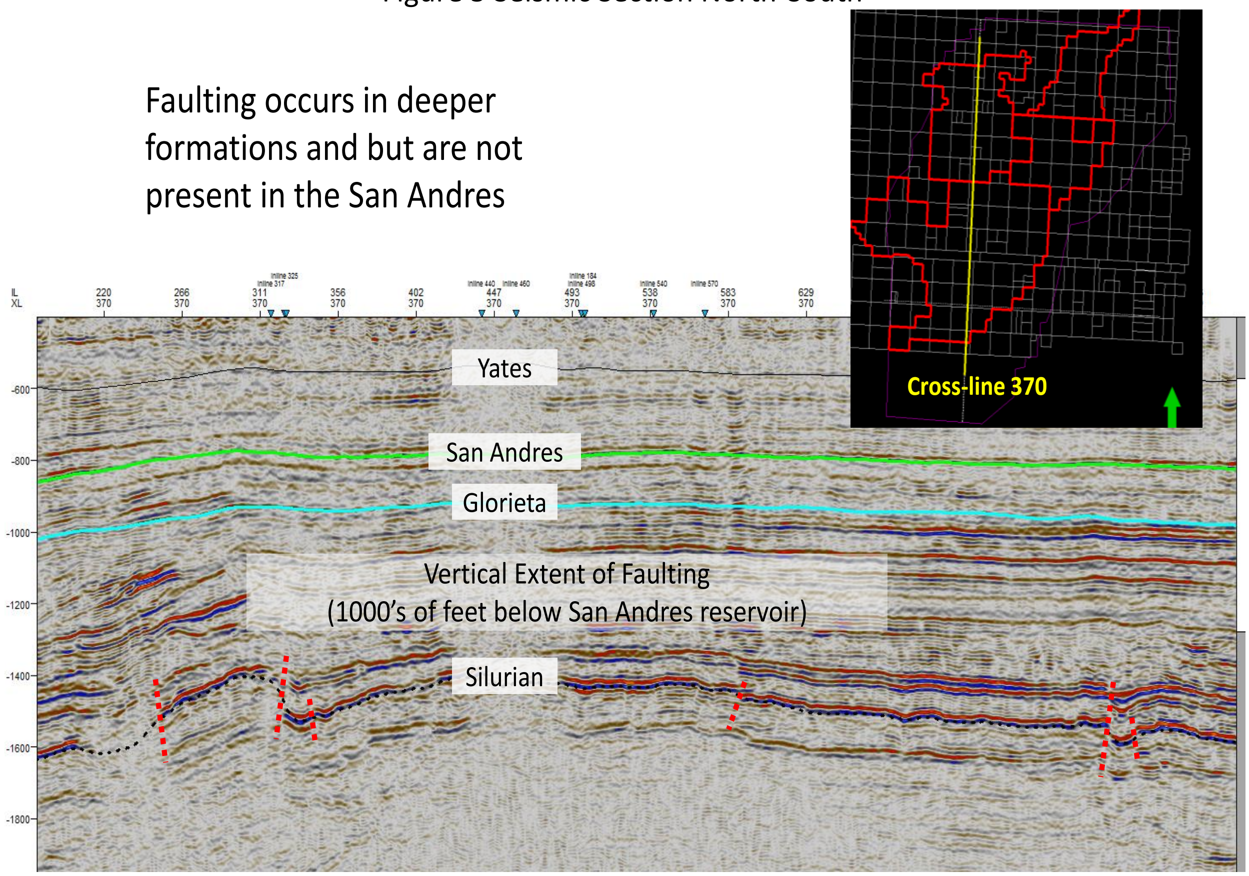
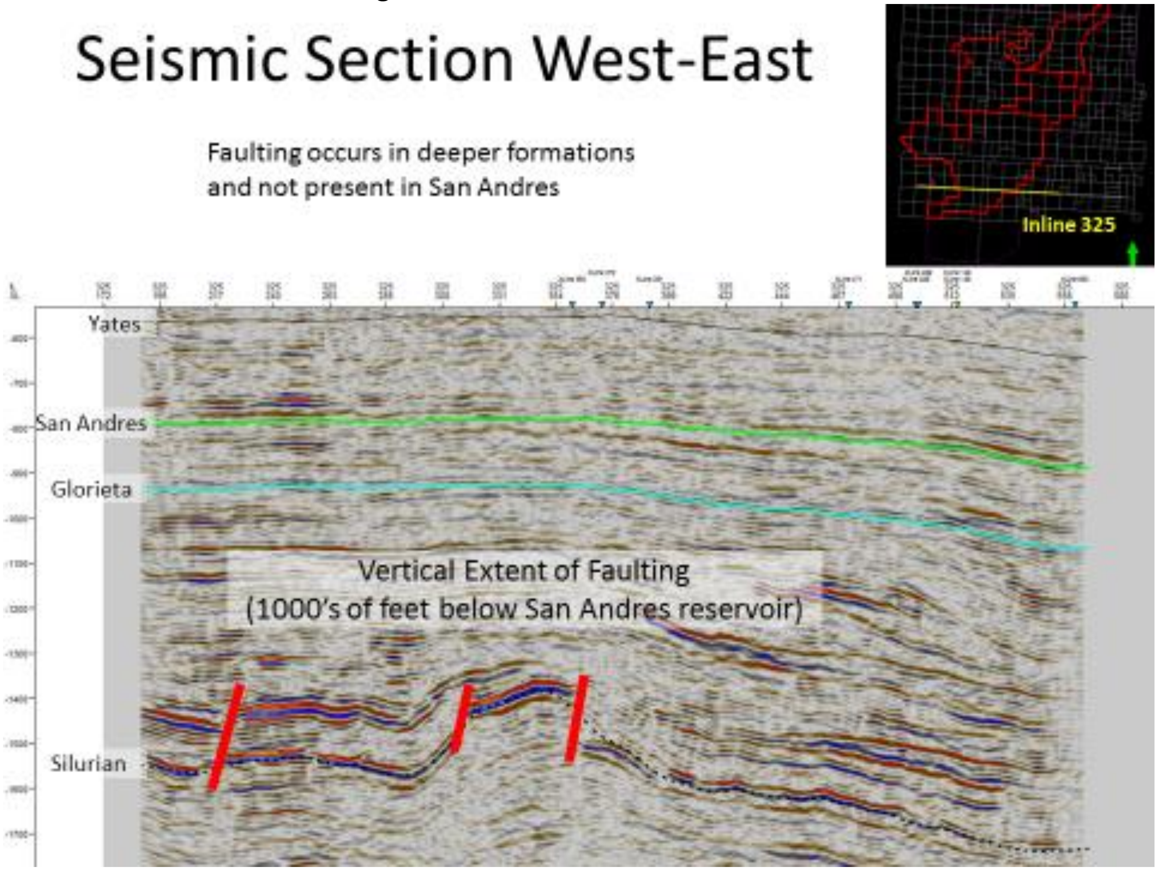


Figure 6 Seismic Section East-West



The Wasson seismic survey was a 3D shoot over most of Wasson conducted in 1994.

Leakage due to interaction with existing or new faults would lead to anomalies from expected performance. Such anomalies would lead to an investigation which may include measures such as injection profile surveys and pressure measurements to identify the cause. Poor performance could be attributed to inadequate pattern development, poor well conditions (e.g., scale buildup), conformance within the formation, or a potential leak. The investigation would identify the cause of the anomaly and guide the course of action. This is discussed further in Section 4.3 in the review of potential leakage pathways for injected CO_2.

And finally, the operating history at the Denver Unit confirms that there are no faults or fractures penetrating the flood zone. Fluids, both water and CO_2, have been successfully injected in the Denver Unit since the mid 1960's and there is no evidence of any interaction with existing or new faults or fractures. In fact, it is the absence of faults and fractures in the Denver Unit that make the reservoir such a strong candidate for CO_2 and water injection operations, and enable field operators to maintain effective control over the injection and production processes.

2.2.2 Operational History of the Denver Unit

The Denver Unit is a subdivision of the Wasson Field. It was established in the 1960s to implement water flooding. It is located in the southern part of the area of oil accumulation. The boundaries of the Denver Unit are indicated in the Wasson Field Map (see Figure 7).

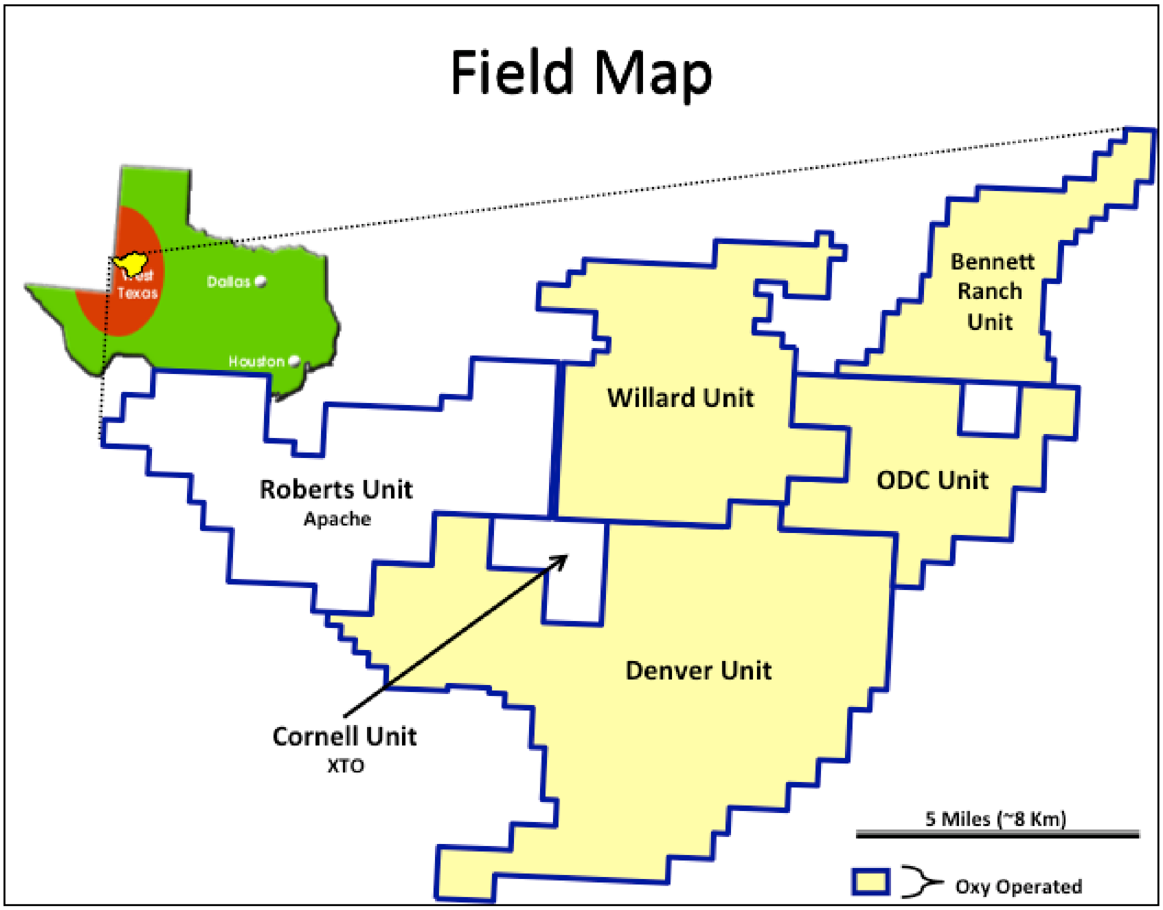


Figure 7 - Wasson Field Map

Water flooding works most efficiently with regular patterns over a large area. The Wasson Field was originally developed with numerous leases held by individuals and companies. To improve efficiency, a number of smaller leases were combined (or unitized) into larger legal entities (Units), which can be operated without the operational restrictions imposed by the former lease boundaries. In 1964, six such units were formed at Wasson to enable water flooding; the largest of these is the Denver Unit (See Figure 7).

CO_2 flooding of the Denver Unit began in 1983 and has continued and expanded since that time. The experience of operating and refining the Denver Unit CO_2 floods over three decades has created a strong understanding of the reservoir and its capacity to store CO_2.

2.2.3 The Geology of the Denver Unit within the Wasson Field

Figure 4 shows a vertical snapshot of the geology above and down to the Wasson field. Figure 8 is an aerial view of the structure of the field showing the depth of the top of the San Andres. As indicated in the discussion of Figure 4, the upper portion of the San Andres formation is comprised of impermeable anhydrite and dolomite sections that serve as a seal. In effect, they form the hard ceilings of an upside down bowl or dome. Below this seal the formation consists of permeable dolomites containing oil and gas. Figure 8 shows a two-dimensional picture of the structure of this formation.

The colors in the structure map in Figure 8 indicate changes in elevation, with red being highest level, (i.e., the level closest to the surface) and blue and purple being lowest level (i.e., the level deepest below the surface). As indicated in Figure 8, the Denver Unit is located at the highest elevation of the San Andres formation within the Wasson Field, forming the top of the dome. The rest of the Wasson field slopes downward from this area, effectively forming the sides of the dome. The elevated area formed a natural trap for oil and gas that migrated from below over millions of years. Once trapped in this high point, the oil and gas has remained in place. In the case of the Wasson Field, this oil and gas has been trapped in the San Andres formation for 50 to100 million years. Over time, fluids, including CO_2, in the Wasson would rise vertically until meeting the ceiling of the dome and would then follow it to the highest elevation in the Denver Unit. As such, the fluids injected into the Denver Unit would stay in the reservoir rather than move to adjacent areas.

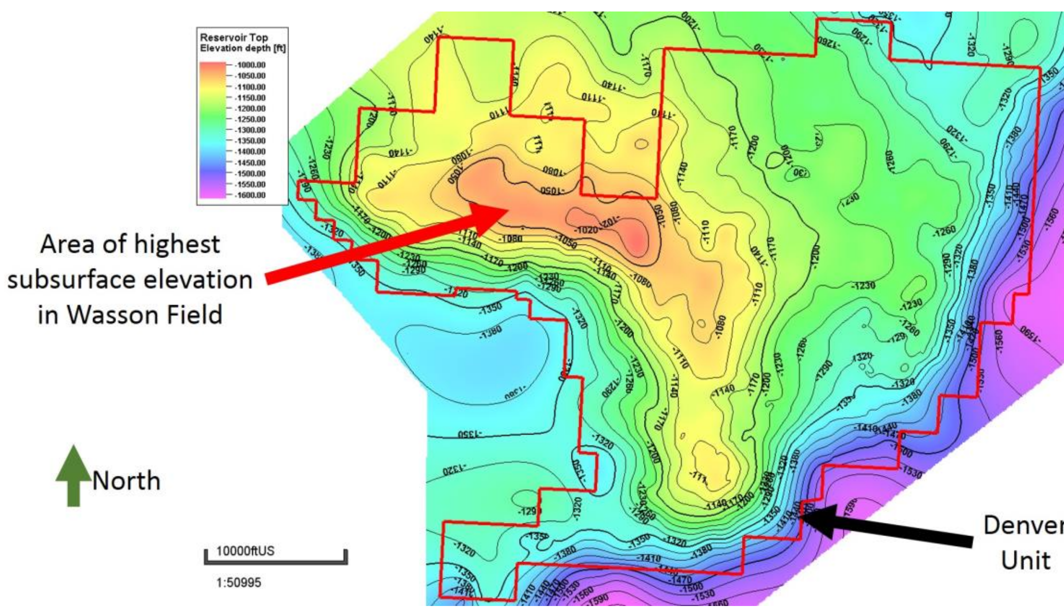


Figure 8 Structure Map on Top of San Andres Pay (F1)

Buoyancy dominates where oil and gas are found in a reservoir. Gas, being lightest, rises to the top and water, being heavier, sinks to the bottom. Oil, being heavier than gas but

lighter than water, lies in between. The cross section in Figure 9 shows saturation levels in the oil-bearing layers of the Wasson Field and illustrates this principle.

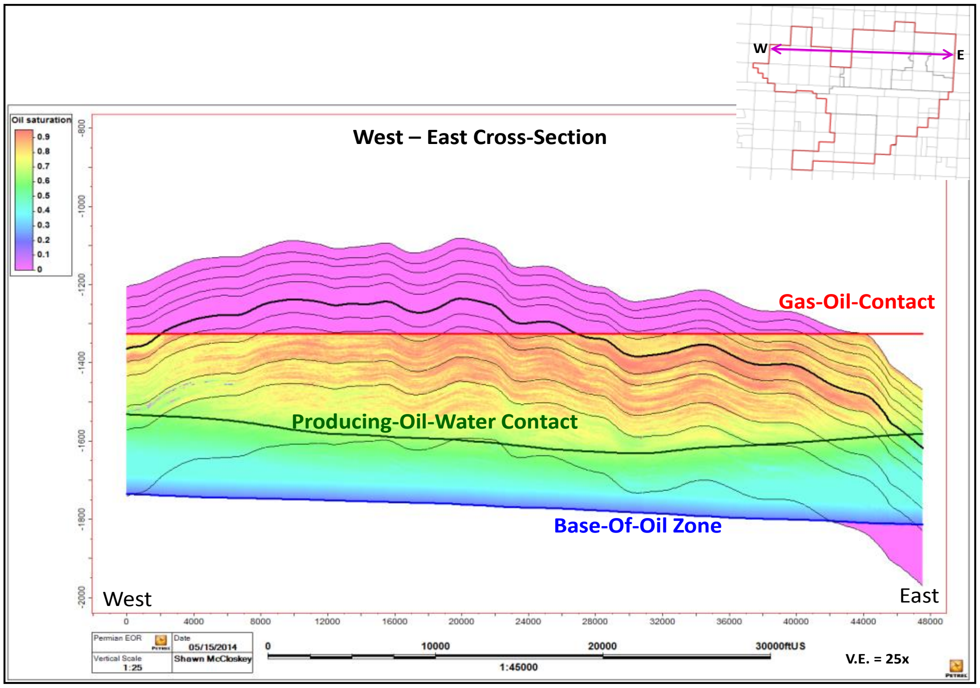


Figure 9 - Wasson Field Cross-Section Showing Saturation

At the time of discovery, natural gas was trapped at the structural high point of the Wasson Field, shown by pink area above the gas-oil contact line (in red) in the cross section (see Figure 9). This interface is found approximately 5,000 feet below the surface (or at -1,325 ft subsea). Above the gas-oil interface is the volume known as a "gas cap." As discussed in Section 2.2.1, the presence of a gas cap is evidence of the effectiveness of the seal formed by the upper San Andres. Gas is buoyant and highly mobile. If it could escape the Wasson field naturally, through faults or fractures, it would have done so over the millennia. Below the gas was an oil accumulation, which extended down to the producing oil-water contact (in black). The producing oil water contact was determined by early drilling to be the maximum depth where only oil was produced.

Below the level of the producing oil-water contact, wells produce a combination of oil and water. The uppermost region in this area is called the transition zone (TZ) and below that is the residual oil zone (ROZ). The ROZ was water flooded by nature millions of years ago, leaving a residual oil saturation.[2] This is approximately the same residual oil saturation remaining after water flooding in the water-swept areas of the main oil pay zone, and is also a target for CO_2 flooding.

When CO_2 is injected into an oil reservoir, it is pushed from injection wells to production wells by the high pressure of the injected CO_2. Once the CO_2 flood is complete and

[2] "Residual oil saturation" is the fraction of oil remaining in the pore space, typically after water flooding.

injection ceases, the remaining mobile CO_2 will rise slowly upward, driven by buoyancy forces. If the amount of CO_2 injected into the reservoir exceeds the secure storage capacity of the pore space, excess CO_2 could theoretically "spill" from the reservoir and migrate to other reservoirs in the Northwest Shelf. This risk is very low in the Denver Unit, because there is more than enough pore space to retain the CO_2. Oxy has calculated the total pore space within the Denver Unit, from the top of the reservoir down to the spill point, which is located at -1,675 ft subsea or roughly 5,000 – 5,500 feet below the surface, to be 8,848 MMB. At reservoir conditions the Denver Unit could hold about 14,700 Bscf (775 MMMT) CO_2 in the reservoir space above the spill point. Oxy forecasts that at the end of EOR operations stored CO_2 will fill approximately 25% of calculated storage capacity. The volume of CO_2 storage is based on the estimated total pore space within the Denver Unit from the top of the reservoir down to the spill point, or about 8,848 MMB. This is the volume of rock multiplied by porosity. CO_2 storage is calculated assuming an irreducible water saturation of 0.15, an irreducible oil saturation of 0.10 and a CO_2 formation volume factor of 0.45.

Top of F1 to -1675 ftss (shallowest BOZO Depth)	
Variables	**Denver Unit Outline**
Pore Volume [RB]	8,847,943,353
B_{CO2}	0.45
S_{wirr}	0.15
S_{orCO2}	0.1
Max CO_2	14,746,572,255
Max CO_2	14.7 TCF

$$CO_2(max) = Volume(RB) * (1 - S_{wirr} - S_{orCO2}) / B_{CO2}$$

The formation volume factor of CO_2 (B_{CO2}) is the ratio of reservoir volume in barrels to Mscf at standard conditions. At 1900 psi and 105 ^oF, the density of CO_2 is approximately 0.740 g/cc, which translates to a CO_2 formation volume factor of 0.45. (See Section 2.1 for additional forecast considerations.)

Given that the Denver Unit is the highest subsurface elevation within the Wasson Field, that the confining zone has proved competent over both millions of years and throughout decades of EOR operations, and that the field has ample storage capacity, Oxy is confident that stored CO_2 will be contained securely in the Denver Unit.

2.3 Description of CO_2 EOR Project Facilities and the Injection Process

Figure 10 shows a simplified flow diagram of the project facilities and equipment in the Denver Unit. CO_2 is delivered to the Wasson Field via the Permian pipeline delivery system. The CO_2 injected into the Denver Unit is supplied by a number of different

sources into the pipeline system. Specified amounts are drawn based on contractual arrangements among suppliers of CO_2, purchasers of CO_2, and the pipeline operator.

Once CO_2 enters the Denver Unit there are four main processes involved in EOR operations. These processes are shown in Figure 10 and include:

1. **CO_2 Distribution and Injection**. Purchased (fresh) CO_2 is combined with recycled CO_2 from the Denver Unit CO_2 Recovery Plant (DUCRP) and sent through the main CO_2 distribution system to various CO_2 injectors throughout the field.
2. **Produced Fluids Handling**. Produced fluids gathered from the production wells are sent to satellite batteries for separation into a gas/CO_2 mix and a water/oil mix. The water/oil mix is sent to centralized tank batteries where oil is separated from water. Produced oil is metered and sold; water is forwarded to the water injection stations for treatment and reinjection or disposal.
3. **Produced Gas Processing**. The gas/CO_2 mix separated at the satellite batteries goes to the DUCRP where the natural gas (NG), natural gas liquids (NGL), and CO_2 streams are separated. The NG and NGL move to commercial pipelines for sale. The majority of remaining CO_2 (e.g., the recycled CO_2) is returned to the CO_2 distribution system for reinjection.
4. **Water Treatment and Injection**. Water separated in the tank batteries is processed at water injection stations to remove any remaining oil and then distributed throughout the field either for reinjection along with CO_2 (the WAG or "water alternating gas" process) or sent to disposal wells.

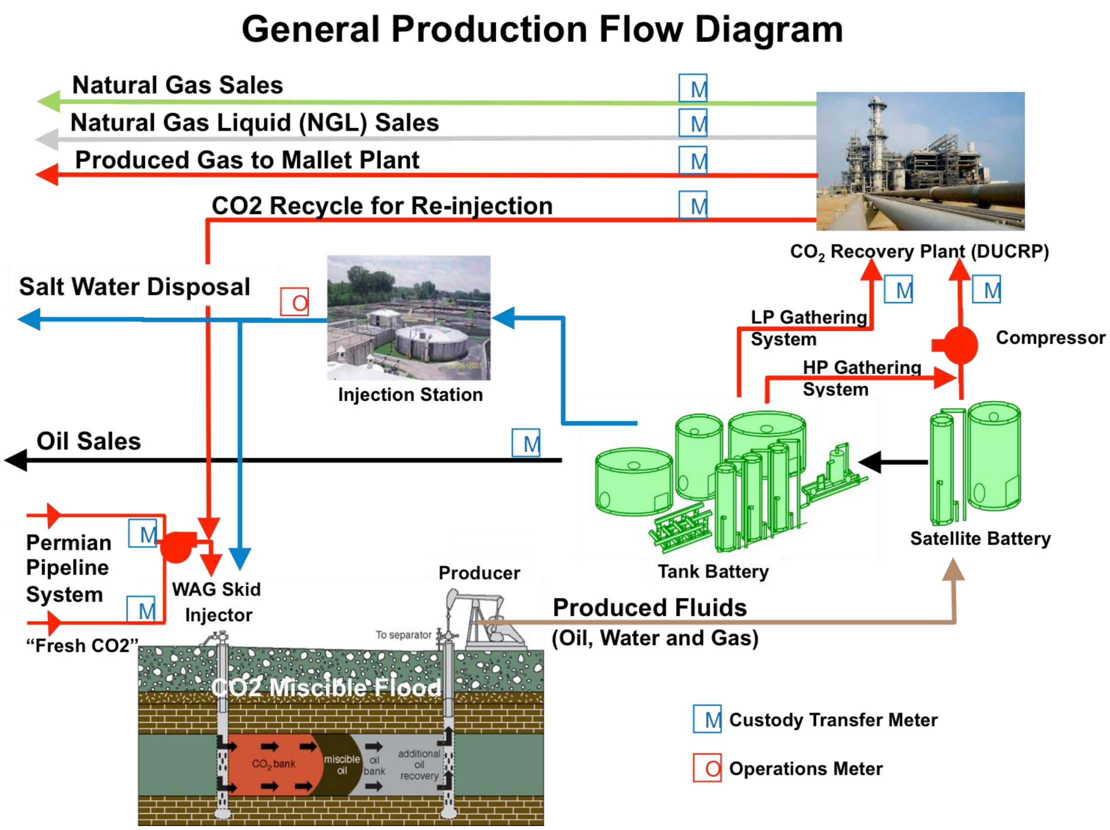


Figure 10 Denver Unit Facilities General Production Flow Diagram

2.3.1 CO_2 Distribution and Injection.

Oxy purchases CO_2 from the Permian pipeline delivery system and receives it through two custody transfer metering points, as indicated in Figure 10. Purchased CO_2 and recycled CO_2 are sent through the CO_2 trunk lines to injection manifolds. The manifolds are complexes of pipes that have no valves and do not exercise any control function. At the manifolds, the CO_2 is split into multiple streams and sent through distribution lines to individual WAG skids. There are volume meters at the inlet and outlet of DUCRP.

Currently, Oxy has 16 injection manifolds and approximately 600 injection wells in the Denver Unit. Approximately 400 MMscf of CO_2 is injected each day, of which approximately 47% is fresh CO_2, and the balance (53%) is recycled from DUCRP. The ratio of fresh CO_2 to recycled CO_2 is expected to change over time, and eventually the percentage of recycled CO_2 will increase and purchases of fresh CO_2 will taper off. As indicated in Section 2.1, Oxy forecasts ending purchases of fresh CO_2 for the Denver unit in 2059.

Each injection well has an individual WAG skid located near the wellhead (typically 150-200 feet away). WAG skids are remotely operated and can inject either CO_2 or water at various rates and injection pressures as specified in the injection plans. At any given time about half the injectors are injecting CO_2 and half are injecting water, in keeping with the injection plan for each one. The length of time spent injecting each fluid is a matter of continual optimization, designed to maximize oil recovery and minimize CO_2 utilization

in each injection pattern. A WAG skid control system is implemented at each WAG skid. It consists of a dual-purpose flow meter used to measure the injection rate of water or CO_2, depending on what is being injected. Data from these meters is sent to a control center where it is compared to the injection plan for that skid. As described in Sections 5 and 7, data from the WAG skid control systems, visual inspections of the injection equipment, and use of the procedures contained in 40 CFR §98.230-238 (Subpart W), will be gathered to complete the mass balance equations necessary to determine annual and cumulative volumes of stored CO_2.

2.3.2 Wells in the Denver Unit

As of August 2014, there are approximately 1,734 active wells in the Denver Unit as indicated in Figure 11; roughly two thirds of these wells are production wells and the remaining third are injection wells. In addition there are 448 inactive wells, bringing the total number of wells currently completed in the Denver Unit to 2,182. Table 1 shows these well counts in the Denver Unit by status.

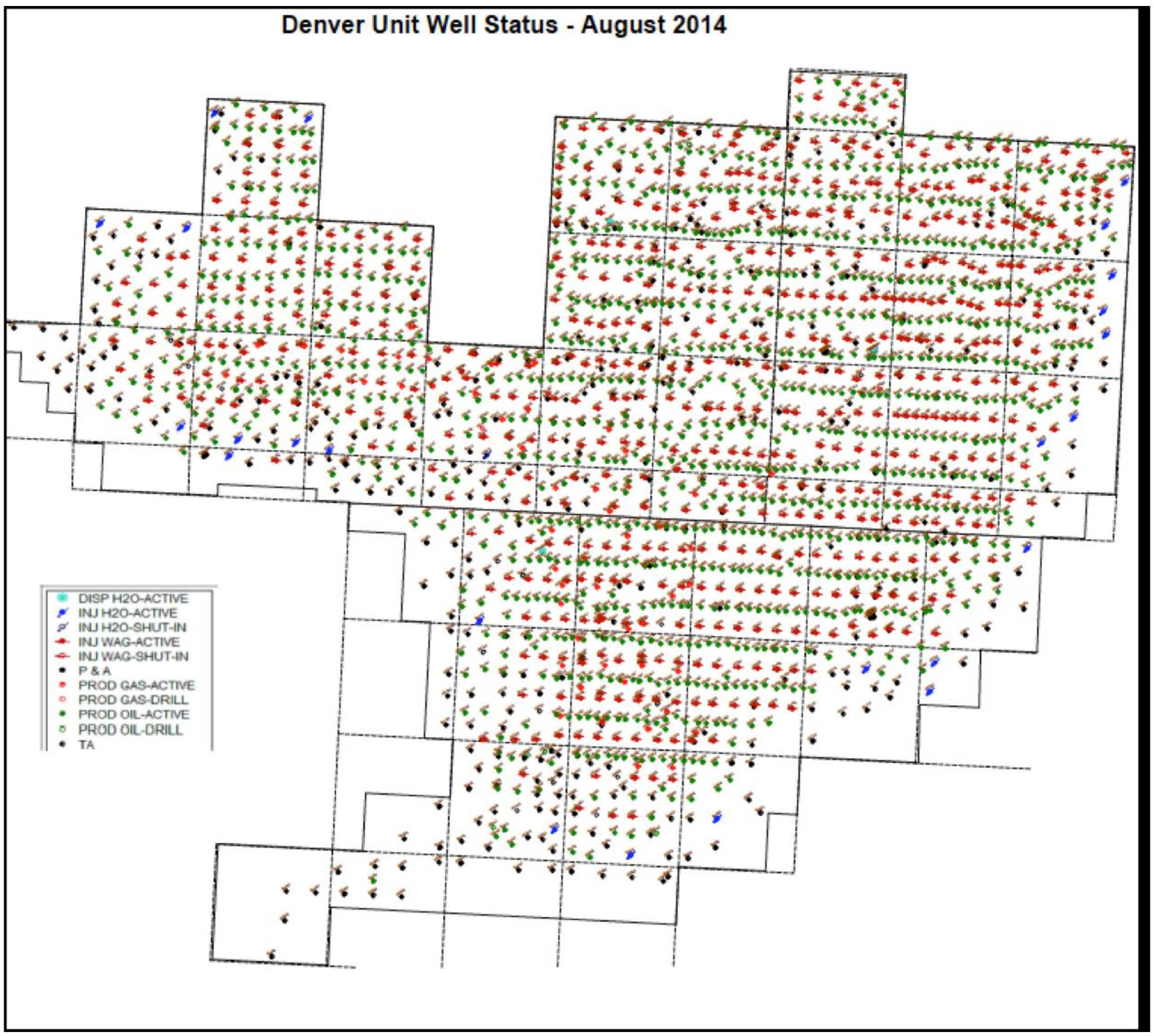


Figure 11 Denver Unit Wells - August 2014

Table 1 - Denver Unit Wells

Age/Completion of Well	*Active*	*Shut-in*	*Temporarily Abandoned*	*Plugged and Abandoned*
Drilled after 1996	619	3	23	3
Drilled 1961-1996 with production casing cemented to surface	388	2	58	49
Drilled between 1972-1975 – using lightweight casing	247	1	16	32
Drilled before 1960	480	2	47	212
TOTAL	***1734***	***8***	***144***	***296***

In addition to the wells completed in the Denver Unit, there are 885 wells that penetrate the Denver Unit but are completed in formations other than the San Andres. Table 2 shows these well counts by status: 498 of these wells are active and are operated by entities other than Oxy; the remaining wells are inactive and formerly operated by Oxy or others.

Table 2 – Non-Denver Unit Wells

	Oxy Operated			*Operated by Others*	
Age/Completion of Well	*Shut-In*	*Temporarily Abandoned*	*Plugged and Abandoned*	*Active*	*Inactive*
Drilled after 1996	2	16	1	181	10
Drilled 1961-1996 with production casing cemented to surface	4	69	94	214	89
Drilled between 1972-1975 – using lightweight casing	0	0	0	0	1
Drilled before 1960	0	28	29	103	44
TOTAL	***6***	***113***	***124***	***498***	***144***

Tables 1 and 2 categorize the wells in groups that relate to age and completion methods. The wells drilled after 1996 were completed using state-of-the-art standards. The term "State-of-the-art standards" refers to the use of regular weight casing cemented to surface. In 1996, Shell, which then operated the Denver Unit, as well as the major Clearfork leases that lie under the Denver Unit, implemented a policy that wells be cemented to surface following these standards. Oxy continues to follow that practice. The majority of wells drilled between 1961-1996 have production casings cemented to the surface. A subset of this group of wells uses lightweight casing. The last group covers older wellbores drilled before 1960. Oxy considers these categories when planning well maintenance projects. Further, Oxy keeps well workover crews on site in the Permian to maintain all active wells and to respond to any wellbore issues that arise.

All wells in oilfields, including both injection and production wells described in Tables 1 and 2, are regulated by TRRC, which has primacy to implement the UIC Class II

program in Texas, under TAC Title 16 Part 1 Chapter 3.[3] A list of wells, with well identification numbers, is included in Appendix 6.

TRRC rules govern well siting, construction, operation, maintenance, and closure for all wells in oilfields. Briefly current rules require, among other provisions:

- That fluids be constrained in the strata in which they are encountered;
- That activities governed by the rule cannot result in the pollution of subsurface or surface water;
- That wells adhere to specified casing, cementing, drilling well control, and completion requirements designed to prevent fluids from moving from the strata they are encountered into strata with oil and gas, or into subsurface and surface waters;
- That wells file a completion report including basic electric log (e.g., a density, sonic, or resistivity (except dip meter) log run over the entire wellbore);
- That all wells be equipped with a Bradenhead gauge, measure the pressure between casing strings using the Bradenhead gauge, and follow procedures to report and address any instances where pressure on the Bradenhead is detected;
- And that all wells follow plugging procedures that require advance approval from the Director and allow consideration of the suitability of the cement based on the use of the well, the location and setting of plugs.

In addition, Oxy implements a corrosion protection program to protect and maintain the steel used in injection and production wells from any CO_2-enriched fluids. Oxy currently employs methods to mitigate both internal and external corrosion of casing in wells in the Denver Unit.

Under the TRRC's program, wells to be used for fluid injection (as defined under EPA's UIC Class II program) must comply with additional requirements related to the Area of Review (AoR), casing design, special equipment for well monitoring, mechanical integrity testing (MIT) (using a pressure test), and monitoring / reporting. These current requirements are briefly described below.

<u>AoR Review</u>

According to EPA, the AoR refers to "the area around a deep injection well that must be checked for artificial penetrations, such as other wells, before a permit is issued. Well operators must identify all wells within the AoR that penetrate the injection or confining zone, and repair all wells that are improperly completed or plugged. The AoR is either a circle or a radius of at least ¼ mile around the well or an area determined by calculating the zone of endangering influence, where pressure due to injection may cause the migration of injected or formation fluid into a USDW."[4] These requirements thus require that Oxy locate and evaluate all wells located in the AoR. Thus, Oxy's reviews in the

[3] See Appendix 7 for additional information.
[4] USEPA, Underground Injection Control Program Glossary, http://water.epa.gov/type/groundwater/uic/glossary.cfm.

Denver Unit include both wells operated by Oxy and other parties, drilled into the Denver Unit or other strata.

CO_2 flooding takes place throughout the Denver Unit. All of Oxy's injection wells are permitted for CO_2 flooding, after satisfying AoR requirements for the injection wells. Oxy is in compliance with all AoR requirements.

Mechanical Integrity Testing (MIT)

Oxy complies with the MIT requirements implemented by TRRC, which are designed to ensure that there is no significant leakage within the injection tubing, casing, or packer, as well as no leakage outside of the casing. All active injection wells undergo MIT testing (referred to as "H-5 testing") at the following intervals:

- Before injection operations begin;
- Every 5 years unless the permit states otherwise;
- After any workover that disturbs the seal between the tubing, packer, and casing;
- After any repair work on the casing; and
- When a request is made to suspend or reactivate the injection or disposal permit.

TRRC requires that the operator notify the TRRC district office at least 48 hours prior to conducting an H-5 test. Operators are required to use a pressure recorder and pressure gauge for the tests. The operator's field representative must sign the pressure recorder chart and submit it with the H-5 form. Casing test pressure must fall within 30-70% of the pressure recorder chart's full scale, and the pressure gauge must measure in increments that are no greater than 5% of the test pressure.

The current[5] requirements for conducting MIT include:

For Wells with Tubing

- The standard H-5 pressure test is the most common method.
- Pressure test the tubing-packer-casing at a pressure between 200 and 500 psi.
- The test pressure must stabilize within 10% of the required test pressure and remain stabilized for 30 minutes (60 minutes if testing with a gas-filled annulus)
- Maintain a minimum 200 psi pressure differential between the test pressure and tubing pressure.

For Wells without Tubing

- Pressure test immediately above injection perforations against a temporary plug, wireline plug, or tubing with packer.
- Indicate the type and depth of the plug.
- Must be tested to maximum permitted injection pressure that is not limited to 500 psi.

[5] The TRRC rules referenced here were accessed in August 2014 and are subject to change over time.

If a well fails an MIT, the operator must immediately shut in the well, provide notice to TRRC within 24 hours, file a Form H-5 with TRRC within 30 days, and make repairs or plug the well within 60 days. Casing leaks must be successfully repaired and the well retested or, if required, the well must be plugged. In such cases, the operator must submit a Form W-3A Notice of Intention to Plug and Abandon a well to the TRRC.

TRCC requires similar testing and response at injection wells that are more than 25 years old and have been idle for more than one year. This process is referred to as H-15 testing. For these wells, MIT is required every five years using either an annual fluid level test (valid for one year) or a hydraulic pressure test with a plug immediately above the perforations.

In the event of test failure at these idle wells, the process for reporting and correction is similar as for active wells, but the timeline is shorter. The operator must make repairs or plug the well within 30 days – not the 60 days allowed for an active well. Again, casing leaks must be successfully repaired and the well retested or plugged and, if plugging is required, a Form W-3A must be submitted to the TRRC.

Any well that fails an MIT cannot be returned to active status until it passes a new MIT.

2.3.3 Produced Fluids Handling

As injected CO_2 and water move through the reservoir, a mixture of oil, gas, and water (referred to as "produced fluids") flows to the production wells. Gathering lines bring the produced fluids from each production well to satellite batteries. Oxy has approximately 1,100 production wells in the Denver Unit and production from each is sent to one of 32 satellite batteries. Each satellite battery consists of a large vessel that performs a gas-liquid separation. Each satellite battery also has well test equipment to measure production rates of oil, water and gas from individual production wells. Oxy has testing protocols for all wells connected to a satellite. Most wells are tested every two months. Some wells are prioritized for more frequent testing because they are new or located in an important part of the field; some wells with mature, stable flow do not need to be tested as frequently; and finally some wells do not yield solid test results necessitating review or repeat testing.

After separation, the gas phase, which is approximately 80-85% CO_2 and contains 2,000-5,000 ppm H_2S, is transported by pipeline to DUCRP for processing as described below.

The liquid phase, which is a mixture of oil and water, is sent to one of six centralized tank batteries where oil is separated from water. The large size of the centralized tank batteries provides enough residence time for gravity to separate oil from water.

The separated oil is metered through the Lease Automatic Custody Transfer (LACT) unit located at each centralized tank battery and sold. The oil typically contains a small amount of dissolved or entrained CO_2. Analysis of representative samples of oil is

conducted once a year to assess CO_2 content. Since 2011, the dissolved CO_2 content has averaged 0.13% by volume in the oil.

The water is removed from the bottom of the tanks at the central tank batteries and sent to the water treatment facility. After treatment, the water is either re-injected at the WAG skids or disposed of into permitted disposal wells. Although Oxy is not required to determine or report the amount of dissolved CO_2 in this water, analyses have shown the water typically contains 40ppm (0.004%) CO_2.

Any gas that is released from the liquid phase rises to the top of the tanks and is collected by a Vapor Recovery Unit (VRU) that compresses the gas and sends it to DUCRP for processing.

Wasson oil is slightly sour, containing small amounts of hydrogen sulfide (H_2S), which is highly toxic. There are approximately 90 workers on the ground in the Denver Unit at any given time, and all field personnel are required to wear H_2S monitors at all times. Although the primary purpose of H_2S detectors is protecting employees, monitoring will also supplement Oxy's CO_2 leak detection practices as discussed in Sections 5 and 7.

In addition, the procedures in 40 CFR §98.230-238 (Subpart W) and the two-part visual inspection process described in Section 5 are used to detect leakage from the produced fluids handling system. As described in Sections 5 and 7 the volume of leaks, if any, will be estimated to complete the mass balance equations to determine annual and cumulative volumes of stored CO_2.

2.3.4 Produced Gas Handling

Produced gas is gathered from the satellite batteries and sent to centralized compressor stations and then to DUCRP in a high pressure gathering system. Produced gas collected from the tank battery by VRUs is either added to the high pressure gathering system or sent to DUCRP in a low pressure gathering system. Both gathering systems have custody transfer meters at the DUCRP inlet.

Once gas enters DUCRP, it undergoes compression and dehydration. Produced gas is first treated in a Sulferox unit to convert H_2S into elemental sulfur. Elemental sulfur is sold commercially and is trucked from the facility.

Other processes separate NG and NGLs into saleable products. At the end of these processes there is a CO_2 rich stream, a portion of which is redistributed (recycled) to again be injected. Oxy's goal is to limit the amount of H_2S in the recycled CO_2 to less than 100 ppm H_2S. Meters at DUCRP outlet are used to determine the total volume of the CO_2 stream recycled back into the EOR operations.

Separated NG is either used within the Denver Unit or delivered to a commercial pipeline for sale. The pipeline gas must meet quality standards and is measured using a flow meter

that is calibrated for commercial transactions. NGL is also measured using a commercial flow meter and sold for further processing.

As described in Section 2.3.4, data from 40 CFR §98.230-238 (Subpart W), the two-part visual inspection process for production wells and areas described in Section 5, and information from the personal H_2S monitors are used to detect leakage from the produced gas handling system. This data will be gathered to complete the mass balance equations necessary to determine annual and cumulative volumes of stored CO_2 as described in Sections 5 and 7.

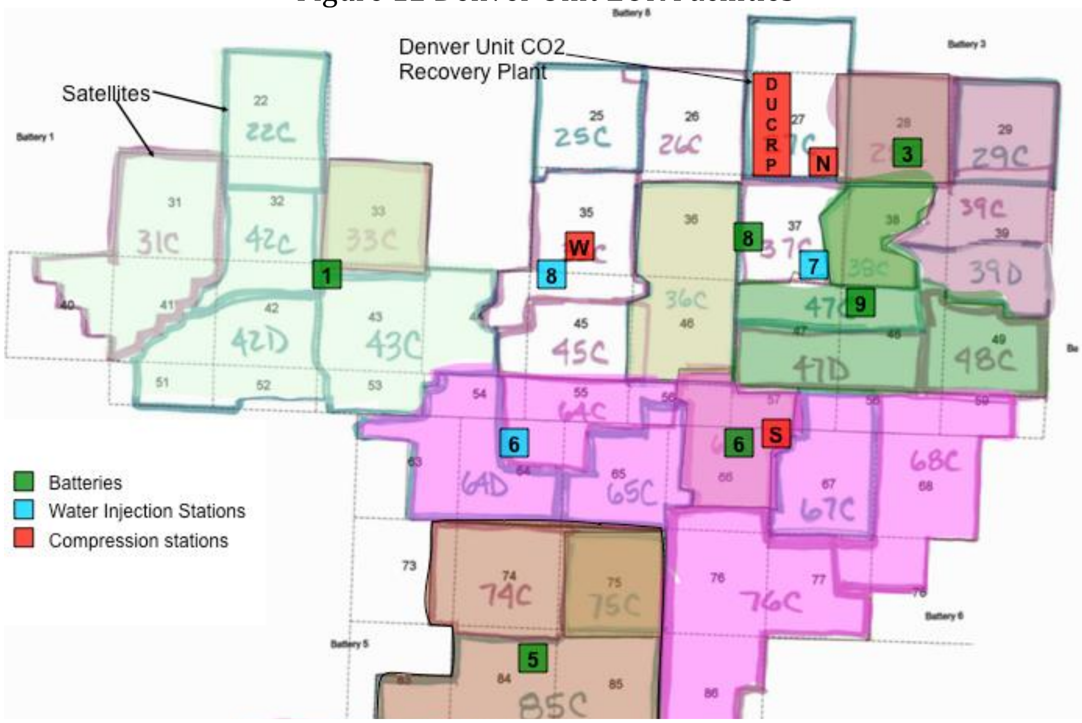
2.3.5 Water Treatment and Injection

Produced water collected from the tank batteries is gathered through a pipeline system and moved to one of three water treatment stations. Each facility consists of 10,000-barrel tanks where any remaining oil is skimmed from the water. Skimmed oil is returned to the centralized tank batteries. The water is filtered and sent to one of 10 large injection pumps. Pressurized water is distributed to the WAG skids for reinjection or to water disposal wells for injection into deeper permeable formations.

2.3.6 Facilities Locations

The locations of the various facilities in the Denver Unit are shown in Figure 12. As indicated above, there are 32 satellite batteries. The areas served by each satellite battery are shown in the highlighted areas and labeled with a number and letter, such as “31C” in the far west. The six centralized tank batteries are identified by the green squares. The three water treatment and injection stations are shown by the light blue squares. DUCRP is located by the large red rectangle to the north. Three compressor stations are shown by red squares.

Figure 12 Denver Unit EOR Facilities



TRRC requires that injections pressures be limited to prevent contamination of other hydrocarbon resources or pollution of subsurface or surface waters. In addition, EOR projects are designed by Oxy to ensure that mobilized oil, gas, and CO_2 do not migrate into adjoining properties that are owned by competing operators, who could then produce the fluids liberated by Oxy's EOR efforts. In the Denver Unit, Oxy uses two methods to contain fluids within the unit: reservoir pressure management and the careful placement and operation of wells along boundaries of other units.

Reservoir pressure in the Denver Unit is managed by maintaining an injection to withdrawal ratio (IWR)[6] of approximately 1.0. To maintain the IWR, Oxy monitors fluid injection to ensure that reservoir pressure does not increase to a level that would fracture the reservoir seal or otherwise damage the oil field. Similar practices are used for other units operated by Oxy within the Wasson Field. Most, if not all other Wasson Units, inject at pressures a little higher than Denver Unit and all maintain an IWR of at least one. In addition to the two methods mentioned above, higher pressures in the surrounding areas assure that Denver Unit fluids stay within the Unit.

Oxy also prevents injected fluids migrating out of the injection interval by keeping injection pressure below the fracture pressure which is measured using step-rate tests. In

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[6] Injection to withdrawal ratio (IWR) is the ratio of the volume of fluids injected to the volume of fluids produced (withdrawn). Volumes are measured under reservoir conditions for all fluids. Injected fluids are CO_2 and water; produced fluids are oil, water, and CO_2. By keeping IWR close to 1.0, reservoir pressure is held constant, neither increasing nor decreasing.

these tests, injection pressures are incrementally increased (e.g., in "steps") until injectivity increases abruptly, which indicates that an opening (fracture) has been created in the rock. Oxy manages its operations to ensure that injection pressures are kept below the fracture pressure so as to ensure that the valuable fluid hydrocarbons and CO_2 remain in the reservoir.

The second way Oxy contains fluids within the Denver Unit is to drill wells along the lease lines that are designed to avoid loss of valuable fluids from the unit. To the north Oxy has established lease line agreements with the neighboring CO_2 units. These agreements provide for offsetting injectors or offsetting producers along the lease line that balance one another. For example, an injector on one side is offset and balanced by an injector on the other side. The two paired injectors are maintained on injection in such a way as to give Oxy and its partners sufficient assurance that a no-flow boundary is maintained at the Unit boundary. This restricts the flow of injected CO_2 or mobilized oil from one unit to the other. A similar dynamic is maintained for paired producers. To the east, south and west, there are no operations on the other side of the Denver Unit boundary. Near these boundaries, a row of water injectors or producers are maintained to keep CO_2 or mobilized oil from leaving the Denver Unit. As shown in Figure 7, Oxy operates the ODC and Willard Units to the north of the Denver Unit and therefore has first-hand knowledge of pressures on both sides of Unit boundaries.

In the case of the other, Oxy maintains lease line agreements with the other operators to assure injection and production is balanced along the lease line. In this way, Oxy is assured that CO_2 and mobilized oil do not escape the Denver Unit.

2.4 Reservoir Modeling

Oxy uses simulators to model the behavior of fluids in a reservoir, providing a mathematical representation that incorporates all information that is known about the reservoir. In this way, future performance can be predicted in a manner consistent with available data, including logs and cores, as well as past production and injection history.

Mathematically, reservoir behavior is modeled by a set of differential equations that describe the fundamental principles of conservation of mass and energy, fluid flow, and phase behavior. These equations are complex and must be solved numerically using high-powered computers. The solution process involves sub-dividing the reservoir into a large number of blocks arranged on a grid. Each block is assigned specific rock properties (porosity, permeability, saturations, compositions and pressure). The blocks are small enough to adequately describe the reservoir, but large enough to keep their number manageable. The computer uses the differential equations to determine how various physical properties change with time in each grid block. Small time steps are used to progress from a known starting point through time. In this way the computer simulates reservoir performance, consistent with fundamental physics and actual reservoir geometry. The simulation represents the flow of each fluid phase (oil, water

and gas), changes in fluid content (saturations), equilibrium between phases (compositional changes), and pressure changes over time.

Field-wide simulations are initially used to assess the viability of water and CO_2 flooding. Once a decision has been made to develop a CO_2 EOR project, Oxy uses detailed pattern modeling to plan the location and injection schedule for wells. For the purpose of operating a CO_2 flood, large-scale modeling is not useful as a management tool because it does not provide sufficiently detailed information about the expected pressure, injection volumes, and production at the level of an injection pattern.

In the case of the Denver Unit, field-wide modeling was conducted by the previous owners in the 1980's and 1990's. The outputs were used to determine plans to develop the site for CO_2 flooding more than 20 years ago. Oxy reviewed this large-scale modeling to inform their decision to acquire leases for the Denver Unit in 2000. However, since taking over operation of the Denver Unit in 2000, Oxy has used the more detailed pattern modeling to operate the CO_2 flood.

At the pattern level, the objective of a simulation is to develop an injection plan that maximizes the oil recovery, and minimizes the costs, of the CO_2 flood. The injection plan includes such controllable items as:

- The cycle length and WAG ratio to inject water or CO_2 in the WAG process, and
- The best rate and pressure for each injection phase.

Simulations may also be used to:

- Evaluate infill or replacement wells,
- Determine the best completion intervals,
- Verify the need for well remediation or stimulation, and
- Determine anticipated rates and ultimate recovery.

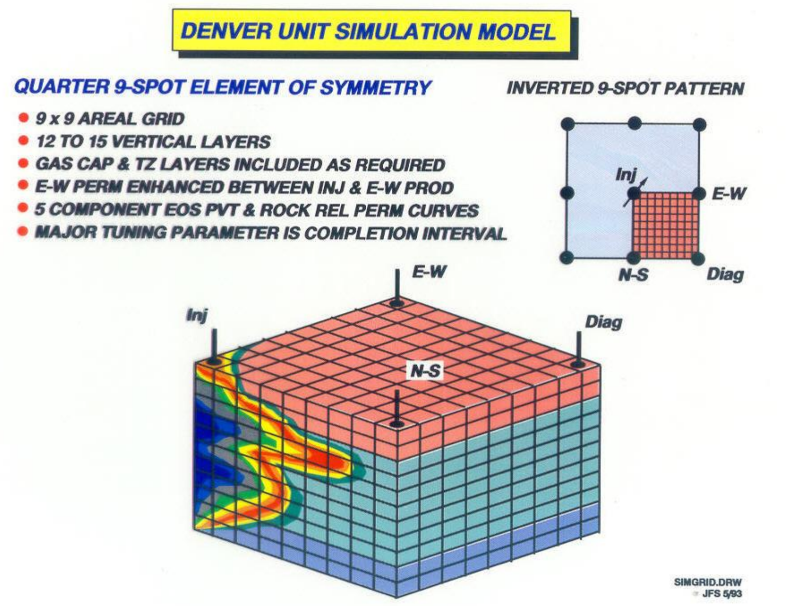
This pattern-level modeling provides Oxy with confidence that the injected CO_2 will stay in-zone to contact and displace oil, and that the flood pattern and injection scheme are optimized.

The pattern level simulator used by Oxy uses a commercially available compositional simulator, called MORE, developed by Roxar. It is called "compositional" because it has the capability to keep track of the composition of each phase (oil, gas, and water) over time and throughout the volume of the reservoir.

To build a simulation model, engineers and scientists input specific information on reservoir geometry, rock properties, and fluid flow properties. The input data includes:

- Reservoir geometry, including distance between wells, reservoir thickness and structural contours;
- Rock properties, such as permeability and porosity of individual layers, barriers to vertical flow, and layer continuity; and,
- Fluid flow properties including density and viscosity of each phase, relative permeability, capillary pressure, and phase behavior.

Figure 13 Denver Unit Simulation Model



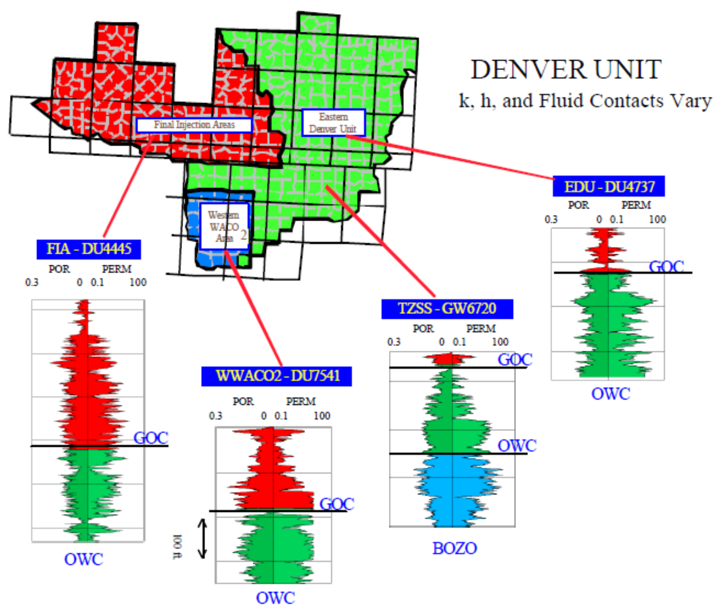
A representative pattern-level simulation model for the Denver Unit is illustrated in Figure 13. The model is representative of a portion of the field that is repeated many times throughout the field, in this case a fraction of an injection pattern. This fraction is an element of symmetry, meaning that the same geometry and the same process physics are repeated many times over the area of the field.

Layering

Within a flood pattern, one of the most important properties to model is the effect of layering. Reservoir rocks were originally deposited over very long periods of time. Because the environment tended to be uniform at any one point in time, reservoir properties tend to be relatively uniform over large areas. Depositional environment changes over time, however, and for this reason rock properties vary considerably with time or depth as they are deposited. Thus, rock properties are modeled as layers. Some layers have high permeability and some have lower permeability. Those with higher permeability take most of the injected fluids and are swept most readily. Those with lower permeability may be only partially contacted at the end of the flooding process. (The WAG process helps improve sweep efficiency.) As Figure 13 shows, the simulation is divided into 12 to 15 vertical grid blocks. Each layer of simulation grid blocks is used to model the depositional layering as closely as practical. Porosity and permeability have been measured on cores taken from the upper San Andres sealing zone. Measured permeabilities are less than 0.01 md. Permeabilities in the pay zones typically range from 1 to 10 md. Permeabilities in anhydrite intervals are zero. Anhydrites are one of the most common seal rocks for oil and gas reservoirs. Ultra-low permeability rocks do not contribute to flow and therefore do not need to be included in simulation models.

Reservoir quality varies markedly across the Unit. Thus, response to CO_2 flooding is also expected to vary within the Unit. Based on reservoir development and geological characteristics, the Unit is divided into three distinct areas: (a) Eastern Denver Unit, (b) WACO2, and (c) Final Injection Area. Figure 14 demonstrates the delineated areas and the typical porosity and permeability development found in each of the subgroups. CO_2 flooding in these areas is implemented according to their reservoir characteristics. The Eastern Denver Unit began CO_2 injection in 1984, received an initially large CO_2 slug size, then converted to a water alternating CO_2 injection scheme once a targeted CO_2 slug size was reached. The WACO2 area also began CO_2 injection in 1984. However, this area injected water alternating CO_2 from the beginning. Once the Eastern Denver Unit area began its alternating injection scheme, lower CO_2 injection rates were required in the developed portion of the field, allowing expansion of the flood into the Final Injection Area. Wells DU 4737 and DU 6720 typify the properties in the Eastern Denver Unit; well DU 7541 typifies the properties of the WACO2 area; and well DU 4445 is typical of the Final Injection Area.

Figure 14 – Area Sub-groups



The red lines in Figure 14 are intended to point to areas of the Unit that are similar to, or represented by, the selected wells. They do not point to the actual well locations. The red line for well 6720 points to the general location of the well, not necessarily the exact location. Lines for the other wells connect the well log to the label for the area they are representative of.

A structure map from Figure 8 has been modified below (Figure 15) to show the well locations indicated in Figure 14. According to this map, one would expect well 4445 to have the largest gas column and well 6720 the smallest gas column, consistent with the logs shown on Figure 14.

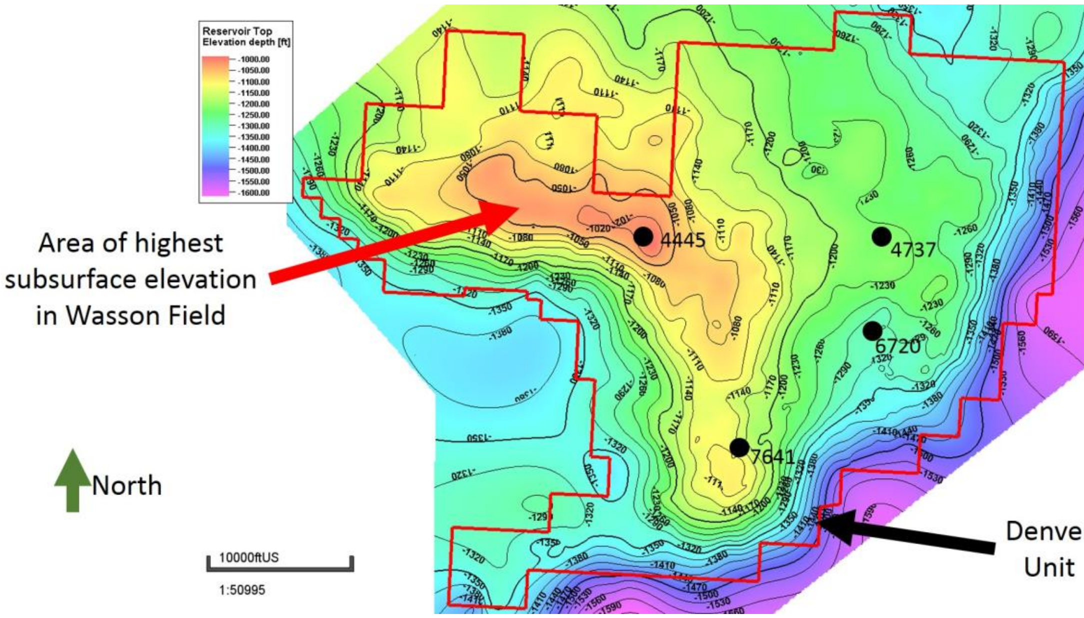


Figure 15 Modified Structure Map to Data Points from Figure 14

Predicted behavior for all patterns can be constructed in one of two ways: from simulation or from actual performance of a more mature analog project. Simulation models may represent either a multi-pattern segment of the field, or be an element of symmetry model representing a portion of a single pattern. Figure 13 illustrates an element of symmetry modeling approach that is used at the Denver Unit. Many such models have been constructed to capture the variation in geology throughout this large CO_2 project.

Predictions may also be constructed from the actual performance data of analog projects that already have received significant CO_2 injection.

Where simulation is used to generate the predictions, the simulation results should be validated by comparison with analog project performance if possible.

Prediction models forecast oil, water and CO_2 production, as well as CO_2 and water injection.

If actual performance differs in a noticeable way from prediction, reservoir engineers use professional judgment formed by an analysis of technical data to determine where further attention is needed. The appropriate response could be to change injection rates, to alter the prediction model or to find and repair fluid leaks.

3. Delineation of Monitoring Area and Timeframes

3.1 Active Monitoring Area

Because CO2 is present throughout the Denver Unit and retained within it, the Active Monitoring Area (AMA) is defined by the boundary of the Denver Unit. The following factors were considered in defining this boundary:

- Free phase CO_2 is present throughout the Denver Unit: More than 4,035 Bscf (212.8 MMMT) tons of CO_2 have been injected throughout the Denver Unit since 1983 and there has been significant infill drilling in the Denver Unit to complete additional wells to further optimize production. Operational results thus far indicate that there is CO_2 throughout the Denver Unit.
- CO_2 injected into the Denver Unit remains contained within that unit because of the fluid and pressure management impacts associated with CO_2 EOR. Namely, maintenance of an IWR of 1.0 assures a stable reservoir pressure; managed leaseline injection and production wells are used to retain fluids in the Denver Unit as indicated in Section 2.3.6; and operational results (such as normal pressures in the injection interval and injection and production rates within predicted ranges) indicate that injected CO_2 is retained in the Denver Unit.
- Furthermore, over geologic timeframes, stored CO_2 will remain in the Denver unit because it is the area with the highest elevation CO_2 will not migrate downdip as described in Section 2.2.3.

3.2 Maximum Monitoring Area

The Maximum Monitoring Area (MMA) is defined in 40 CFR §98.440-449 (Subpart RR) as including the maximum extent of the injected CO_2 and a half-mile buffer bordering that area. As described in the AMA section (Section 3.1), the maximum extent of the injected CO_2 is anticipated to be bounded by the Denver Unit. Therefore the MMA is the Denver Unit plus the half-mile buffer as required by 40 CFR §98.440-449 (Subpart RR).

3.3 Monitoring Timeframes

Oxy's primary purpose in injecting CO_2 is to produce oil that would otherwise remain trapped in the reservoir and not, as in UIC Class VI, "specifically for the purpose of geologic storage."[7] During the Specified Period, Oxy will have a subsidiary purpose of establishing the long-term containment of a measurable quantity of CO_2 in the San Andres formation at the Denver Unit. The Specified Period will begin January 1, 2016 and is anticipated to end prior to December 31, 2026. The Specified Period will be

[7] EPA UIC Class VI rule, EPA 75 FR 77291, December 10, 2010, section 146.81(b).

substantially shorter than the period of production from the Denver Unit because CO_2 has been injected at the Denver Unit since 1983 and is expected to continue for roughly five decades after the Specified Period ends. At the conclusion of the Specified Period, Oxy will submit a request for discontinuation of reporting when Oxy can provide a demonstration that current monitoring and model(s) show that the cumulative mass of CO_2 reported as sequestered during the Specified Period is not expected to migrate in the future in a manner likely to result in surface leakage. It is expected that it will be possible to make this demonstration within 2 – 3 years after injection for the Specified Period ceases and will be based upon predictive modeling supported by monitoring data. The demonstration will rely on two principles: 1) that just as is the case for the monitoring plan, the continued process of fluid management during the years of CO_2 EOR operation after the Specified Period will contain injected fluids in the Denver Unit, and 2) that the cumulative mass reported as sequestered during the Specified Period is a small fraction of the total that will be stored in the Denver Unit over the lifetime of operations. *See* 40 C.F.R. § 98.441(b)(2)(ii).

4. Evaluation of Potential Pathways for Leakage to the Surface

4.1 Introduction

In the 50 years since the Denver Unit was formed to facilitate water flooding, the reservoir has been studied and documented extensively. Based on the knowledge gained from that experience, this section assesses the potential pathways for leakage of stored CO_2 to the surface. The following potential pathways are reviewed:

- Existing Well Bores
- Faults and Fractures
- Natural and Induced Seismic Activity
- Previous Operations
- Pipeline/Surface Equipment
- Lateral Migration Outside the Denver Unit
- Drilling Through the CO_2 Area
- Diffuse Leakage Through the Seal

4.2 Existing Well Bores

As of August 2014, there are approximately 1,734 active wells in the Denver Unit – roughly two thirds are production wells and the remaining third are injection wells. In addition, there are 448 inactive wells, as described in Section 2.3.2.

Leakage through existing well bores is a potential risk at the Denver Unit that Oxy works to prevent by adhering to regulatory requirements for well drilling and testing; implementing best practices that Oxy has developed through its extensive operating

experience; monitoring injection/production performance, wellbores, and the surface; and by maintaining surface equipment.

As discussed in Section 2.3.2, regulations governing wells in the Denver Unit require that wells be completed and operated so that fluids are contained in the strata in which they are encountered and that well operation does not pollute subsurface and surface waters. The rules establish the requirements that all wells (injection, production, disposal) must comply with. Depending upon the purpose of a well, the requirements can include additional standards for AoR evaluation and MIT. In implementing these rules, Oxy has developed operating procedures based on its experience as one of the world's leading operators of EOR floods. Oxy's best practices include developing detailed modeling at the pattern level to guide injection pressures and performance expectations; utilizing diverse teams of experts to develop EOR projects based on specific site characteristics; and creating a culture where all field personnel are trained to look for and address issues promptly. Oxy's practices ensure that well completion and operation procedures are designed not only to comply with rules but also to ensure that all fluids (e.g., oil, gas, CO_2) remain in the Denver Unit until they are produced through an Oxy well – these include corrosion prevention techniques to protect the wellbore.

As described in section 5, continual and routine monitoring of Oxy's well bores and site operations will be used to detect leaks, including those from non-Oxy wells, or other potential well problems as follows:

- Pressures and flowrates are monitored continuously in all active injectors. The injection plans for each pattern are programmed into the injection WAG skid, as discussed in Section 2.3.1, to govern the rate, pressure, and duration of either water or CO_2 injection. Pressure monitors on the injection wells are programmed to flag pressures that significantly deviate from the plan. Leakage on the inside or outside of the injection wellbore would affect pressure and be detected through this approach. If such excursions occur, they are investigated and addressed. It is Oxy's experience that few excursions result in fluid migration out of the intended zone and that leakage to the surface is very rare.

- In addition to monitoring well pressure and injection performance, Oxy uses the experience gained over time to strategically approach well maintenance and updating. Oxy maintains well maintenance and workover crews onsite for this purpose. For example, the well classifications by age and construction method indicated in Table 1 inform Oxy's plan for monitoring and updating wells. Oxy uses all of the information at hand including pattern performance, and well characteristics to determine well maintenance schedules.

- Flowrates of oil, water and CO_2 are measured on all producers at least monthly, using the production well test process conducted when produced fluids are gathered and sent to a Satellite Battery. There is a routine cycle for each Satellite Battery, with each well being tested approximately once every two months. During this cycle, each production well is diverted to the well test equipment for a period of time sufficient to measure and sample produced fluids (generally 12-24 hours). This test allows Oxy to allocate a portion of the produced fluids measured at the Satellite Battery to each production well, assess the composition of produced fluids by location, and assess the performance of each well. Performance data are reviewed on a routine basis to ensure that CO_2 flooding is optimized. If production is off plan, it is investigated and any identified issues addressed. Leakage to the outside of production wells is not considered a major risk because of the reduced pressure in the casing. Further, the personal H_2S monitors would detect leaked fluids around production wells.

- Finally, as indicated in Section 5, all wells are observed by Oxy personnel or Oxy Contractors at least weekly. On any day, Oxy has approximately 90 employees in the field. Leaking CO_2 is very cold and leads to formation of bright white clouds and ice that are easily spotted. All field personnel are trained to identify leaking CO_2 and other potential issues at wellbores and in the field. In addition, aerial surveys are completed weekly. Any significant CO_2 leakage detected will be documented and reported, quantified and addressed as described in Section 5.

Based on its ongoing monitoring activities and review of the potential leakage risks posed by well bores, Oxy concludes that it is mitigating the risk of CO_2 leakage through well bores by detecting problems as they arise and quantifying any leakage that does occur. Section 4.10 summarizes how Oxy will monitor CO_2 leakage from various pathways and describes how Oxy will respond to various leakage scenarios. In addition, Section 5 describes how Oxy will develop the inputs used in the Subpart RR mass-balance equation (Equation RR-11). Any incidents that result in CO_2 leakage up the wellbore and into the atmosphere will be quantified as described in section 7.4.

4.3 Faults and Fractures

After reviewing geologic, seismic, operating, and other evidence, Oxy has concluded that there are no known faults or fractures that transect the San Andres Formation interval in the project area. While faults have been identified in formations that are 1,000's of feet below the San Andres formation, this faulting has been shown not to affect the San Andres or create potential leakage pathways.

Oxy has extensive experience in designing and implementing EOR projects to ensure injection pressures will not damage the oil reservoir by inducing new fractures or creating shear. As a safeguard, injection skids are set with automatic shutoff controls if injection pressures exceed fracture pressures.

4.4 Natural or Induced Seismicity

A few recent studies have suggested a possible relationship between CO_2 miscible flooding activities and seismic activity in certain areas. Determining whether the seismic activity is induced or triggered by human activity is difficult. Many earthquakes occur that are not near injection wells, and many injection wells do not generate earthquakes. Thus, the occurrence of an earthquake near a well is not proof of cause of human actions having had any influence.

To evaluate this potential risk at the Denver Unit, Oxy has reviewed the nature and location of seismic events in West Texas. Some of the recorded earthquakes in West Texas are far removed from any injection operation. These are judged to be from natural causes. Others are near oil fields or water disposal wells and are placed in the category of "quakes in close association with human enterprise." (See Frohlich, 2012)

Of the recorded earthquakes in the Permian Basin, none have occurred in the Wasson Field; the closest was nearly 80 miles away. Moreover, Oxy is not aware of any reported loss of injectant (waste water or CO_2) to the surface associated with any seismic activity.

The concern about induced seismicity is that it could lead to fractures in the seal providing a pathway for CO_2 leakage to the surface. Based on Oxy's review of seismic data, none of the recorded "earthquakes" in the Permian Basin have occurred in the Wasson Field; the closest was nearly 80 miles away. Moreover, Oxy is not aware of any reported loss of injectant (waste water or CO_2) to the surface associated with any seismic activity. Therefore, there is no direct evidence to suggest that natural seismic activity poses a significant risk for loss of CO_2 to the surface in the Permian Basin, and specifically in the Denver Unit. If induced seismicity resulted in a pathway for material amounts of CO_2 to migrate from the injection zone, other reservoir fluid monitoring provisions (e.g., reservoir pressure, well pressure, and pattern monitoring) would lead to further investigation.

4.5 Previous Operations

CO_2 flooding has taken place in the Denver Unit since 1983, and Oxy took over operations in 2000. Oxy and the prior operators have kept records of the site and have completed numerous infill wells. Oxy's standard practice for drilling new wells includes a rigorous review of nearby wells to ensure that drilling will not cause expensive damage in or interfere with existing wells. Oxy also follows AoR requirements under the UIC Class II program, which require identification of all active and abandoned wells in the AoR and implementation of procedures that ensure the integrity of those wells when applying for a permit for any new injection well.[8] Oxy reviews TRRC's records and/or Oxy well files and may conduct ground surveys to identify old, unknown wells as a part of any AoR review in preparation for drilling a new well. Based on review, Oxy has concluded that there are no unknown wells within the Denver Unit. Oxy's operational

[8] Current requirements are referenced in Appendix 7.

experience confirms this conclusion. Oxy has successfully optimized CO_2 flooding with infill wells because the confining zone has not been impaired by previous operations.

4.6 Pipeline / Surface Equipment

Damage to or failure of pipelines and surface equipment can result in unplanned losses of CO_2. Oxy anticipates that the use of prevailing design and construction practices and compliance with applicable laws will reduce to the maximum extent practicable the risk of unplanned leakage from surface facilities. The facilities and pipelines currently utilize and will continue to utilize materials of construction and control processes that are standard for CO_2 EOR projects in the oil and gas industry. Operating and maintenance practices currently follow and will continue to follow demonstrated industry standards. CO_2 delivery via the Permian pipeline system will continue to comply with all applicable laws. Finally, Oxy conducts aerial inspections of the pipeline and surface equipment in the Denver Unit once a week. Field personnel are trained to look for and report potential leaks from pipeline and surface equipment as part of their routine activities. Should leakage be detected from pipeline or surface equipment, the volume of released CO_2 will be quantified following the requirements of Subpart W of EPA's GHGRP.

4.7 Lateral Migration Outside the Denver Unit

It is highly unlikely that injected CO_2 will migrate downdip and laterally outside the Denver Unit because of the nature of the geology and of the planned injection. First, as indicated in Section 2.3.3.3 "Geology of the Denver Unit within the Wasson Field," the Denver Unit contains the highest elevation within the San Andres. This means that over long periods of time, injected CO_2 will tend to rise vertically towards the Upper San Andres and continue towards the point in the Denver Unit with the highest elevation. Second, the planned injection volumes and active fluid management during injection operations will prevent CO_2 from migrating laterally into adjoining units. Finally, Oxy will not be increasing the total volume of fluids in the Denver Unit. Based on site characterization and planned and projected operations Oxy estimates the total volume of stored CO_2 will be approximately 25% of calculated capacity.

4.8 Drilling Through the CO_2 Area

It is possible that at some point in the future, drilling through the containment zone into the San Andres could occur and inadvertently create a leakage pathway. Oxy's review of this issue concludes that this risk is very low for three reasons. First, any wells drilled in the oil fields of Texas are regulated by TRRC and are subject to requirements that fluids be contained in strata in which they are encountered.[9] Second, Oxy's visual inspection

[9] Current requirements are referenced in Appendix 7.

process, including both routine site visits and flyovers, is designed to identify unapproved drilling activity in the Denver Unit. Third, Oxy plans to operate the CO_2 EOR flood in the Denver Unit for several more decades, and will continue to be vigilant about protecting the integrity of its assets and maximizing the potential of resources (oil, gas, CO_2). In the unlikely event Oxy would sell the field to a new operator, provisions would be made to ensure the secure storage of the amount of CO_2 reported as a result of CO_2 EOR operations during the Specified Period.

4.9 Diffuse Leakage Through the Seal

Diffuse leakage through the seal formed by the upper San Andres is highly unlikely. The presence of a gas cap trapped over millions of years as discussed in Section 2.2.3 confirms that the seal has been secure for a very long time. Injection pattern monitoring program referenced in Section 2.3.1 and detailed in Section 5 assures that no breach of the seal will be created. The seal is highly impermeable, wells are cemented across the horizon, and unexplained changes in injection pressure would trigger investigation as to the cause. Further, if CO_2 were to migrate through the San Andres seal, it would migrate vertically until it encountered and was trapped by any of the four additional seals indicated in orange in Figure 4.

4.10 Monitoring, Response, and Reporting Plan for CO_2 Loss

As discussed above, the potential sources of leakage include fairly routine issues, such as problems with surface equipment (pumps, valves, etc.) or subsurface equipment (well bores), and unique events such as induced fractures. Table 3 summarizes some of these potential leakage scenarios, the monitoring activities designed to detect those leaks, Oxy's standard response, and other applicable regulatory programs requiring similar reporting.

Table 3 Response Plan for CO_2 Loss

Known Potential Leakage Risks	Monitoring Methods and Frequency	Anticipated Response Plan
Tubing Leak	Monitor changes in annulus pressure; MIT for injectors	Workover crews respond within days
Casing Leak	Weekly field inspection; MIT for injectors; extra attention to high risk wells	Workover crews respond within days
Wellhead Leak	Weekly field inspection	Workover crews respond within days
Loss of Bottom-hole pressure control	Blowout during well operations (weekly inspection but field personnel present daily)	Maintain well kill procedures
Unplanned wells drilled through San Andres	Weekly field inspection to prevent unapproved drilling; compliance with TRRC permitting for planned wells.	Assure compliance with TRRC regulations
Loss of seal in abandoned wells	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Re-enter and reseal abandoned wells
Pumps, values, etc.	Weekly field inspection	Workover crews respond within

		days
Leakage along faults	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Shut in injectors near faults
Overfill beyond spill points	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Fluid management along lease lines
Leakage through induced fractures	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Comply with rules for keeping pressures below parting pressure
Leakage due to seismic event	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Shut in injectors near seismic event

Sections 5.1.5-5.1.7 discuss the approaches envisioned for quantifying the volumes of leaked CO_2. Given the uncertainty concerning the nature and characteristics of leaks that will be encountered, it is not clear the method for quantifying the volume of leaked CO_2 that would be most appropriate. In the event leakage occurs, Oxy will determine the most appropriate method for quantifying the volume leaked and will report the methodology used as required as part of the annual Subpart RR submission.

Any volume of CO_2 detected leaking to surface will be quantified using acceptable emission factors such as those found in 40 CFR Part 98 Subpart W or engineering estimates of leak amounts based on measurements in the subsurface, Oxy's field experience, and other factors such as the frequency of inspection. As indicated in Sections 5.1 and 7.4, leaks will be documented, evaluated and addressed in a timely manner. Records of leakage events will be retained in the electronic environmental documentation and reporting system. Repairs requiring a work order will be documented in the electronic equipment maintenance system.

Available studies of actual well leaks and natural analogs (e.g., naturally occurring CO_2 geysers) suggest that the amount released from routine leaks would be small as compared to the amount of CO_2 that would remain stored in the formation.[10]

4.11 Summary

The structure and stratigraphy of the San Andres reservoir in the Denver Unit is ideally suited for the injection and storage of CO_2. The stratigraphy within the CO_2 injection zones is porous, permeable and very thick, providing ample capacity for long-term CO_2 storage. The San Andres formation is overlain by several intervals of impermeable geologic zones that form effective seals or "caps" to fluids in the San Andres formation (See Figure 4). After assessing potential risk of release from the subsurface and steps that have been taken to prevent leaks, Oxy has determined that the potential threat of

[10] See references to following reports of measurements, assessments, and analogs in Appendix 4: IPCC Special Report on Carbon Dioxide Capture and Storage; Wright – Presentation to UNFCC SBSTA on CCS; Allis, R., et al, "Implications of results from CO2 flux surveys over known CO2 systems for long-term monitoring; McLing - Natural Analog CCS Site Characterization Soda Springs, Idaho Implications for the Long-term Fate of Carbon Dioxide Stored in Geologic Environments.

leakage is extremely low. The potential leakage scenarios are summarized below, in order of likelihood:

- *Existing wellbores*: Because existing boreholes are a potential pathway for release of CO_2 to the surface, Oxy is primarily focused on mitigating this risk through a combination of using best practices in well design, completion and operation, and implementation of a rigorous program for subsurface performance and well bore monitoring. Oxy further has established approach to remedy or close wells if a problem arises. Together, these components mitigate the risk of leakage to the surface through boreholes. In addition to these proactive measures, the operating history is well documented and does not indicate manmade leakage pathways from past production activities or any significant likelihood that existing but unknown wellbores will be identified. Oxy will account for any CO_2 leakage via well bores as required under Subpart RR.

- *Pipeline/Surface Equipment*: Oxy follows regulatory requirements and best practices that together mitigate the risk of significant CO_2 leakage from pipelines and surface equipment. Oxy will account for any leakage according to the requirements in Subpart W of the EPA's GHGRP and will reflect any such leakage in the mass balance calculation.

- *Faults:* There are no faults or fractures present within or affecting the Denver Unit, and Oxy believes that the risk of leakage via this pathway is low. Should such leakage occur, Oxy would quantify it using measured or engineering estimates of relevant parameters (e.g., CO_2 flow rate, concentration, duration), and report CO_2 emissions under Subpart RR.

- *Natural and Induced Seismic Activity, Previous Operations, Lateral Migration Outside the Denver Unit, Dissolution of CO_2 into Formation Fluid and Subsequent Migration, Drilling through the CO_2 Area, and Diffuse Movement Through the Seal*: As explained above, Oxy concludes that these theoretical leakage pathways are very unlikely and are mitigated, to the extent practicable, through Oxy's operating procedures. As with faults, Oxy believes that the risk of leakage via these pathways is low. Should such leakage occur, Oxy would quantify it using measured or engineering estimates of relevant parameters (e.g., CO_2 flow rate, concentration, duration), and report CO_2 emissions under Subpart RR.

In summary, based on a careful assessment of the potential risk of release of CO_2 from the subsurface, Oxy has determined that there are no leakage pathways at the Denver Unit that are likely to result in significant loss of CO_2 to the atmosphere. Further, given the detailed knowledge of the field and its operating protocols, Oxy concludes that it would be able to both detect and quantify any CO_2 leakage to the surface that could arise both identified and unexpected leakage pathways.

5. Monitoring and Considerations for Calculating Site Specific Variables

5.1 For the Mass Balance Equation

5.1.1 General Monitoring Procedures

As part of its ongoing operations, Oxy collects flow, pressure, and gas composition data from the Denver Unit. Flow and pressure data is monitored through hourly scans by centralized data management systems. Alarms are triggered when data deviates by a specified amount from desired operational conditions. Alarms are investigated by qualified technicians who follow Oxy response and reporting protocols. Responses are described in the following sections (5.1.5-5.1.7).

The typical volume weight averaged composition of injected CO_2 is:

%N2	0.93813
% CO2	96.9484
%C1	0.76578
%C2	1.31588
%C3	0.00421
%IC4	0.00402
%NC4	0.00933
%IC5	0.00345
%NC5	0.00325

The standard deviation of the CO_2 concentration over the last year is less than 0.5%.

There is no significant amount of H_2S in the injected gas stream. It is below the measurement threshold. DUCRP sweetens the gas before returning it to the field.

As indicated in Figure 10, custody-transfer meters are used at the two points at which custody of the CO_2 from the Permian pipeline delivery system is transferred to Oxy and also at the points at which custody of oil is transferred to other parties. Meters measure flow rate continually. Fluid composition will be determined, at a minimum, quarterly, consistent with EPA GHGRP's Subpart RR, section 98.447(a). All meter and composition data are documented, and records will be retained for at least seven years.

Metering protocols used by Oxy follow the prevailing industry standard(s) for custody transfer as currently promulgated by the API, the American Gas Association (AGA), and the Gas Processors Association (GPA), as appropriate. This approach is consistent with EPA GHGRP's Subpart RR, section 98.444(e)(3). These meters will be maintained routinely, operated continually, and will feed data directly to the centralized data collection systems. The meters meet the industry standard for custody transfer meter accuracy and calibration frequency. These custody meters provide the most accurate way to measure mass flows.

Oxy maintains in-field process control meters to monitor and manage in-field activities on a real time basis. These are identified as operations meters in Figure 10. These meters provide information used to make operational decisions but are not intended to provide the same level of accuracy as the custody-transfer meters. The level of precision and accuracy for in-field meters currently satisfies the requirements for reporting in existing UIC permits. Although these meters are accurate for operational purposes, it is important to note that there is some variance between most commercial meters (on the order of 1-5%) which is additive across meters. This variance is due to differences in factory settings and meter calibration, as well as the operating conditions within a field. Meter elevation, changes in temperature (over the course of the day), fluid composition (especially in multi-component or multi-phase streams), or pressure can affect in-field meter readings. Unlike in a saline formation, where there are likely to be only a few injection wells and associated meters, at CO_2 EOR operations in the Denver Unit there will be approximately 2,000 injection and production wells and a comparable number of meters, each with an acceptable range of error. This is a site-specific factor that is considered in the mass balance calculations described in Section 7.

5.1.2 CO_2 Received

Oxy measures the volume of received CO_2 using commercial custody transfer meters at each of the two off-take points from the Permian pipeline delivery system. This transfer is a commercial transaction that is documented. CO_2 composition is governed by the contract and the gas is routinely sampled to determine composition. No CO_2 is received in containers.

5.1.3 CO_2 Injected into the Subsurface

Injected CO_2 will be calculated using the flow meter volumes at the custody transfer meters at the outlet to DUCRP and the CO_2 off-take points from the Permian pipeline delivery system.

5.1.4 CO_2 Produced, Entrained in Products, and Recycled

The following measurements are used for the mass balance equations in Section 7:

CO_2 produced is calculated using the volumetric flow meters at the inlet to DUCRP.

CO_2 is produced as entrained or dissolved CO_2 in produced oil, as indicated in Figure 10. The concentration of CO_2 in produced oil is measured at the centralized tank battery.

Recycled CO_2 is calculated using the volumetric flow meter at the outlet of DUCRP, which is a custody transfer meter.

5.1.5 CO_2 Emitted by Surface Leakage

As discussed in Section 5.1.6 and 5.1.7 below, Oxy uses 40 CFR Part 98 Subpart W to estimate surface leaks from equipment at the Denver Unit. Subpart W uses a factor-driven approach to estimate equipment leakage. In addition, Oxy uses an event driven process to assess, address, track, and if applicable quantify potential CO_2 leakage to the surface. Oxy will reconcile the Subpart W report and results from any event-driven quantification to assure that surface leaks are not double counted.

The multi-layered, risk-based monitoring program for event-driven issues has been designed to meet two objectives, in accordance with the leakage risk assessment in Section 4: 1) to detect anomalies before CO_2 leaks to the surface; and 2) to detect and quantify any leaks that do occur. This section discusses how this monitoring will be conducted and used to quantify the volumes of CO_2 leaked to the surface.

<u>Monitoring for potential Leakage from the Injection/Production Zone:</u>
Oxy will monitor both injection into and production from the reservoir as a means of early identification of potential anomalies that could indicate leakage from the subsurface.

Oxy uses pattern modeling based on extensive history-matched data to develop injection plans (fluid rate, pressure, volume) that are programmed into each WAG skid. If injection pressure or rate measurements are beyond the specified set points determined as part of each pattern injection plan, a data flag is automatically triggered and field personnel will investigate and resolve the problem. These excursions will be reviewed by well management personnel to determine if CO_2 leakage may be occurring. Excursions are not necessarily indicators of leaks; they simply indicate that injection rates and pressures are not conforming to the pattern injection plan. In many cases, problems are straightforward to fix (e.g., a meter needs to be recalibrated or some other minor action is required), and there is no threat of CO_2 leakage. In the case of issues that are not readily resolved, more detailed investigation and response would be initiated, and staff from other parts of Oxy would provide additional support. Such issues would lead to the development of a work order in Oxy's Maximo work order management system. This record enables the company to track progress on investigating potential leaks and, if a leak has occurred, quantifying the magnitude.

Likewise, Oxy develops a forecast of the rate and composition of produced fluids. Each producer well is assigned to one satellite battery and is isolated once during each monthly cycle for a well production test. This data is reviewed on a periodic basis to confirm that production is at the level forecasted. If there is a significant deviation from the forecast, well management personnel investigate. If the issue cannot be resolved quickly, more detailed investigation and response would be initiated. As in the case of the injection pattern monitoring, if the investigation leads to a work order in the Maximo system, this record will provide the basis for tracking the outcome of the investigation and if a leak has occurred, recording the quantity leaked to the surface. If leakage in the flood zone were detected, Oxy would use an appropriate method to quantify the involved volume of CO_2. This might include use of material balance equations based on known injected quantities and monitored pressures in the injection zone to estimate the volume of CO_2 involved. Given the extensive operating history of the Denver Unit, this technique would be expected to have a relatively large margin of error.

A subsurface leak might not lead to a surface leak. In the event of a subsurface leak, Oxy would determine the appropriate approach for tracking subsurface leakage to determine and quantify leakage to the surface. To quantify leakage to the surface, Oxy would estimate the relevant parameters (e.g., the rate, concentration, and duration of leakage) to quantify the leak volume. Depending on specific circumstances, these determinations may rely on engineering estimates.

In the event leakage from the subsurface occurred diffusely through the seals, the leaked gas would include H_2S that would trigger the alarm on the personal monitors worn by field personnel. The personal H_2S meters worn by field personnel can detect levels of H_2S as low as 0.1 PPM. Such a diffuse leak from the subsurface through the seals has not occurred in the Denver Unit. In the event such a leak was detected, field personnel from across Oxy would be used to determine how to address the problem. The team might use modeling, engineering estimates, and direct measurements to assess, address, and quantify the leakage.

Monitoring of Wellbores*:*
Oxy monitors wells through continual, automated pressure monitoring in the injection zone (as described in Section 4.2), monitoring of the annular pressure in wellheads, and routine maintenance and inspection.

Leaks from wellbores would be detected through the follow-up investigation of pressure anomalies, visual inspection, or the use of personal H_2S monitors.

Anomalies in injection zone pressure may not indicate a leak, as discussed above. However, if the investigation leads to a work order, field personnel will inspect the equipment in question and determine the nature of the problem. If it is a simple matter, the repair will be made and the volume of leaked CO_2 would be included in the 40 CFR Part 98 Subpart W report for the Denver Unit. If more extensive repair were needed, Oxy would determine the appropriate approach for quantifying leaked CO_2 using the relevant parameters (e.g., the rate, concentration, and duration of leakage). The work order would serve as the basis for tracking the event for GHG reporting.

Anomalies in annular pressure or other parameters detected during routine maintenance inspections would be treated in the same way. Annular pressures in injectors should be close to zero in normal operating conditions because the annulus is isolated by the tubing and packer from injection fluids. Any higher pressure would indicate a potential leak in either the tubing or the packer and would trigger further investigation. If changes in pressure trigger a flag, the investigation follows a course of increasing detail as needed. The investigation typically begins with simpler measures such as having a field technician inspect the well for faulty equipment (e.g., valves, flanges). Additional tests would be conducted on the well if the cause of the pressure change has not been determined. These tests can identify the nature and location of the problem. If the cause is still not determined, then an investigation involving a wider scope will be undertaken. If a simple repair addresses the issue, the volume of leaked CO_2 would be included in the 40

CFR Part 98 Subpart W report for the Denver Unit. If more extensive repairs were needed, a work order would be generated and Oxy would determine the appropriate approach for quantifying leaked CO_2 using the relevant parameters (e.g., the rate, concentration, and duration of leakage). The work order would serve as the basis for tracking the event for GHG reporting.

Because leaking CO_2 is very cold and leads to formation of bright white clouds and ice that are easily spotted, Oxy also employs a two-part visual inspection process in the general area of the Denver unit to detect unexpected releases from wellbores. First, field personnel visit the surface facilities on a routine basis. Inspections may include tank volumes, equipment status and reliability, lube oil levels, pressures and flow rates in the facility, and valve leaks. Field personnel inspections also check that injectors are on the proper WAG schedule and observe the facility for visible CO_2 or fluid line leaks. Second, Oxy uses airplanes to perform routine flyover inspections to look for unplanned activities in the field including trespass operations, disruption of buried pipelines, or other potential unapproved activities. The pilots also look for evidence of unexpected releases. If a pilot observes a leak or release, he or she contacts Oxy's surface operations with the location of the leak. Surface operations personnel then review the reports, conduct a site investigation, recommend appropriate corrective action, and ensure actions are completed.

Historically, Oxy has documented fewer than 4 unexpected release events each year at Denver Unit. A need for repair or maintenance identified in the visual inspections results in a work order being entered into Oxy's equipment and maintenance (Maximo) system. The time to repair any leak is dependent on several factors, such as the severity of the leak, available manpower, location of the leak, and availability of materials required for the repair. 80% of leaks are repaired within one day and the remaining 20% within several days.

Finally, Oxy uses the results from the H_2S monitors worn by all field personnel at all times, as a last method to detect leakage from wellbores. If an H_2S alarm is triggered, the first response is to protect the safety of the personnel, but the next step is to safely investigate the source of the alarm. As noted previously, Oxy considers H_2S a proxy for potential CO_2 leaks in the field. Thus, detected H_2S leaks will be investigated to determine, and if needed quantify, potential CO_2 leakage. If the problem resulted in a work order, this will serve as the basis for tracking the event for GHG reporting.

<u>Other Potential Leakage at the Surface:</u>
Oxy will utilize the same visual inspection process and H_2S monitoring system to detect other potential leakage at the surface as it does for leakage from wellbores. Oxy utilizes routine visual inspections to detect significant loss of CO_2 to the surface. Field personnel routinely visit surface facilities to conduct a visual inspection. Inspections may include review of tank level, equipment status, lube oil levels, pressures and flow rates in the facility, valve leaks, ensuring that injectors are on the proper WAG schedule, and also conducting a general observation of the facility for visible CO_2 or fluid line leaks. Oxy also uses airplanes to routinely conduct visual inspections from the air. If problems are

detected, field personnel investigate then, if maintenance is required, generate a work order in the maintenance system, which is tracked through completion. In addition to these visual inspections, Oxy will use the results of the personal H_2S monitors worn by field personnel as a supplement for smaller leaks that may escape visual detection.

If CO_2 leakage to the surface is detected, it will be reported to surface operations personnel who will review the reports and conduct a site investigation. If maintenance is required, a work order will be generated in the Maximo system. The work order will describe the appropriate corrective action and be used to track completion of the maintenance action. The work order will also serve as the basis for tracking the event for GHG reporting and quantifying any CO_2 emissions.

5.1.6 CO_2 emitted from equipment leaks and vented emissions of CO_2 from surface equipment located between the injection flow meter and the injection wellhead.

Oxy evaluates and estimates leaks from equipment, the CO_2 content of produced oil, and vented CO_2, as required under 40 CFR Part 98 Subpart W.

5.1.7 Mass of CO_2 emissions from equipment leaks and vented emissions of CO_2 from surface equipment located between the production flow meter and the production wellhead

Oxy evaluates and estimates leaks from equipment, the CO_2 content of produced oil, and vented CO_2, as required under 40 CFR Part 98 Subpart W.

5.2 To Demonstrate that Injected CO_2 is not Expected to Migrate to the Surface

At the end of the Specified Period, Oxy intends to cease injecting CO_2 for the subsidiary purpose of establishing the long-term storage of CO_2 in the Denver Unit. After the end of the Specified Period, Oxy anticipates that it will submit a request to discontinue monitoring and reporting. The request will demonstrate that the amount of CO_2 reported under 40 CFR §98.440-449 (Subpart RR) is not expected to migrate in the future in a manner likely to result in surface leakage. At that time, Oxy will be able to support its request with seven or more years of data collected during the Specified Period as well as two to three years of data collected after the end of the Specified Period. This demonstration will provide the information necessary for the EPA Administrator to approve the request to discontinue monitoring and reporting and may include, but is not limited to:

i. Data comparing actual performance to predicted performance (purchase, injection, production) over the monitoring period;
ii. An assessment of the CO_2 leakage detected, including discussion of the estimated amount of CO_2 leaked and the distribution of emissions by leakage pathway;

iii. A demonstration that future operations will not release the volume of stored CO_2 to the surface;
iv. A demonstration that there has been no significant leakage of CO_2; and,
v. An evaluation of reservoir pressure in the Denver Unit that demonstrates that injected fluids are not expected to migrate in a manner to create a potential leakage pathway.

6. Determination of Baselines

Oxy intends to utilize existing automatic data systems to identify and investigate excursions from expected performance that could indicate CO_2 leakage. Oxy's data systems are used primarily for operational control and monitoring and as such are set to capture more information than is necessary for reporting in the Annual Subpart RR Report. Oxy will develop the necessary system guidelines to capture the information that is pertinent to possible CO_2 leakage. The following describes Oxy's approach to collecting this information.

Visual Inspections
As field personnel conduct routine inspections, work orders are generated in the electronic system for maintenance activities that cannot be addressed on the spot. Methods to capture work orders that involve activities that could potentially involve CO_2 leakage will be developed, if not currently in place. Examples include occurrences of well workover or repair, as well as visual identification of vapor clouds or ice formations. Each incident will be flagged for review by the person responsible for MRV documentation. (The responsible party will be provided in the monitoring plan, as required under Subpart A, 98.3(g).) The Annual Subpart RR Report will include an estimate of the amount of CO_2 leaked. Records of information used to calculate emissions will be maintained on file for a minimum of seven years.

Personal H_2S Monitors
H_2S monitors are worn by all field personnel. Alarm of the monitor triggers an immediate response to ensure personnel are not at risk and to verify the monitor is working properly. The person responsible for MRV documentation will receive notice of all incidents where H_2S is confirmed to be present. The Annual Subpart RR Report will provide an estimate the amount of CO_2 emitted from any such incidents. Records of information to calculate emissions will be maintained on file for a minimum of seven years.

Injection Rates, Pressures and Volumes
Oxy develops a target injection rate and pressure for each injector, based on the results of ongoing pattern modeling. The injection targets are programmed into the WAG skid controllers. High and low set points are also programmed into the controllers, and flags whenever statistically significant deviations from the targeted ranges are identified. The set points are designed to be conservative, because Oxy prefers to have too many flags rather than too few. As a result, flags can occur frequently and are often found to be

insignificant. For purposes of Subpart RR reporting, flags (or excursions) will be screened to determine if they could also lead to CO_2 leakage to the surface. The person responsible for the MRV documentation will receive notice of excursions and related work orders that could potentially involve CO_2 leakage. The Annual Subpart RR Report will provide an estimate of CO_2 emissions. Records of information to calculate emissions will be maintained on file for a minimum of seven years.

Production Volumes and Compositions
Oxy develops a general forecast of production volumes and composition which is used to periodically evaluate performance and refine current and projected injection plans and the forecast. This information is used to make operational decisions but is not recorded in an automated data system. Sometimes, this review may result in the generation of a work order in the maintenance system. The MRV plan manager will review such work orders and identify those that could result in CO_2 leakage. Should such events occur, leakage volumes would be calculated following the approaches described in Sections 4 and 5. Impact to Subpart RR reporting will be addressed, if deemed necessary.

7. Determination of Sequestration Volumes Using Mass Balance Equations

To account for the site conditions and complexity of a large, active EOR operation, Oxy proposes to modify the locations for obtaining volume data for the equations in Subpart RR §98.443 as indicated below.

The first modification addresses the propagation of error that would be created if volume data from meters at each injection and production well were utilized. This issue arises because each meter has a small but acceptable margin of error, this error would become significant if data were taken from the approximately 2,000 meters within the Denver Unit. As such, Oxy proposes to use the data from custody meters on the main system pipelines to determine injection and production volumes used in the mass balance.

The second modification addresses the DUCRP. Figure 16 shows the planned mass balance envelope overlaid as a pale blue onto the General Production Flow Diagram originally shown in Figure 10. The envelope contains all of the measurements relevant to the mass balance equation. Those process steps outside of the envelope do not impact the mass balance and are, therefore, not included. As indicated in Figure 16, only the volume of CO_2 recycled from DUCRP impacts the mass balance equation and it is the volume measured at the DUCRP outlet. The remainder of the CO_2 -- that is, the difference between the inlet measurement and the outlet measurement occurring at DUCRP -- does not have an impact on the mass balance of the Denver Unit and therefore is not included in the mass balance equations. This is because the purpose of the MRV plan under Subpart RR is to determine the amount of CO_2 stored at the project site, as well as the amount of CO_2 emitted from the project site. GHGR Reporting rule Subpart RR is not intended to account for CO_2 emissions throughout the CO_2 supply chain as those emissions are reported under other subparts of the GHG Reporting rule.

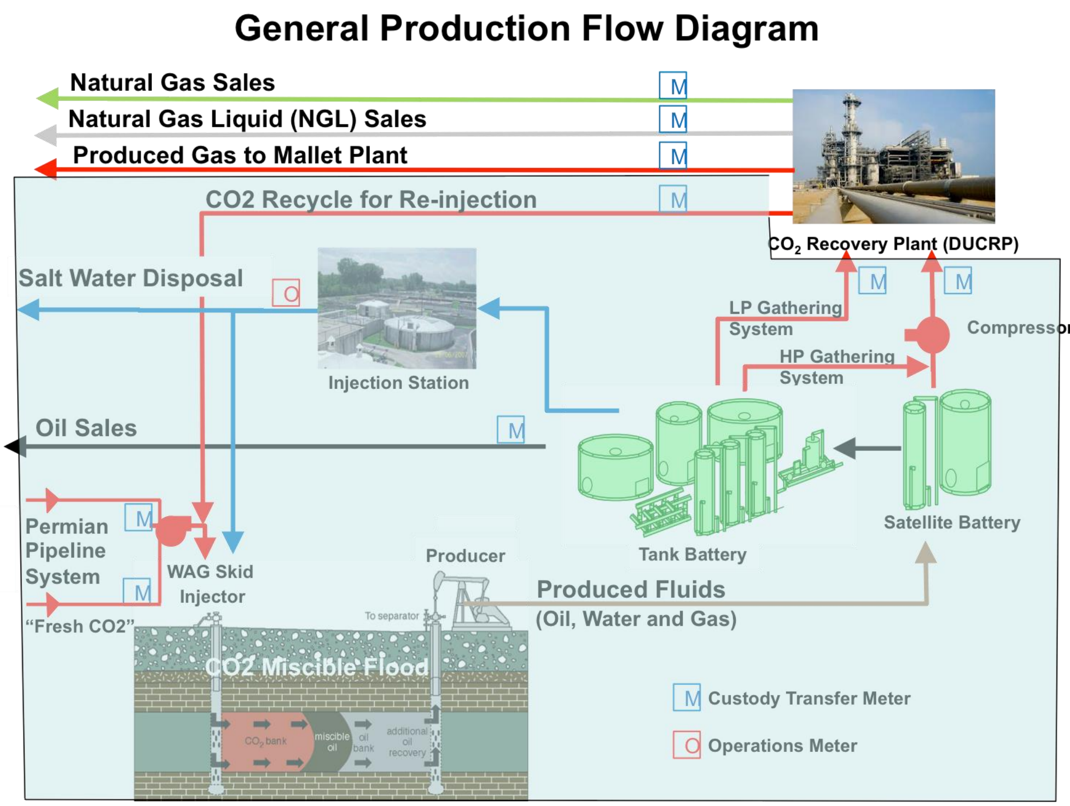


Figure 16 Material Balance Envelope (in blue)

The following sections describe how each element of the mass-balance equation (Equation RR-11) will be calculated.

7.1. Mass of CO_2 Received

Oxy will use equation RR-2 as indicated in Subpart RR §98.443 to calculate the mass of CO_2 received from each delivery meter immediately upstream of the Permian pipeline delivery system on the Denver Unit. The volumetric flow at standard conditions will be multiplied by the CO_2 concentration and the density of CO_2 at standard conditions to determine mass.

$$CO_{2T,r} = \sum_{p=1}^{4} (Q_{r,p} - S_{r,p}) * D * C_{CO_{2,p,r}} \qquad \text{(Eq. RR-2)}$$

where:

$CO_{2T,r}$ = Net annual mass of CO_2 received through flow meter r (metric tons).

$Q_{r,p}$ = Quarterly volumetric flow through a receiving flow meter r in quarter p at standard conditions (standard cubic meters).

$S_{r,p}$ = Quarterly volumetric flow through a receiving flow meter r that is redelivered to another facility without being injected into your well in quarter p (standard cubic meters).

D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682.

$C_{CO2,p,r}$ = Quarterly CO_2 concentration measurement in flow for flow meter r in quarter p (vol. percent CO_2, expressed as a decimal fraction).

p = Quarter of the year.

r = Receiving flow meters.

Given Oxy's method of receiving CO_2 and requirements at Subpart RR §98.444(a):

- All delivery to the Denver Unit is used within the unit so quarterly flow redelivered, $S_{r,p}$, is zero ("0") and will not be included in the equation.
- Quarterly CO_2 concentration will be taken from the gas measurement database

Oxy will sum to total Mass of CO_2 Received using equation RR-3 in 98.443

$$CO_2 = \sum_{r=1}^{R} CO_{2T,r} \quad \text{(Eq. RR-3)}$$

where:

CO_2 = Total net annual mass of CO_2 received (metric tons).

$CO_{2T,r}$ = Net annual mass of CO_2 received (metric tons) as calculated in Equation RR-2 for flow meter r.

r = Receiving flow meter.

7.2 Mass of CO_2 Injected into the Subsurface

The equation for calculating the Mass of CO_2 Injected into the Subsurface at the Denver Unit is equal to the sum of the Mass of CO_2 Received as calculated in RR-3 of 98.443 as described in Section 7.1 and the Mass of CO_2 recycled as calculated using measurements taken from the flow meter located at the output of the DUCRP. As previously explained, using data at each injection well would give an inaccurate estimate of total injection volume due to the large number of wells and the potential for propagation of error due to allowable calibration ranges for each meter.

The mass of CO_2 recycled will be determined using equations RR-5 as follows:

$$CO_{2,u} = \sum_{p=1}^{4} Q_{p,u} * D * C_{CO_{2,p,u}} \quad \text{(Eq. RR-5)}$$

where:

$CO_{2,u}$ = Annual CO_2 mass recycled (metric tons) as measured by flow meter u.

$Q_{p,u}$ = Quarterly volumetric flow rate measurement for flow meter u in quarter p at standard conditions (standard cubic meters per quarter).

D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682.

$C_{CO2,p,u}$ = CO_2 concentration measurement in flow for flow meter u in quarter p (vol. percent CO_2, expressed as a decimal fraction).
p = Quarter of the year.
u = Flow meter.

The total Mass of CO_2 received will be the sum of the Mass of CO_2 received (RR-3) and Mass of CO_2 recycled (modified RR-5).

$CO_{2I} = CO_2 + CO_{2,u}$

7.3 Mass of CO_2 Produced

The Mass of CO_2 Produced at the Denver Unit will be calculated using the measurements from the flow meters at the inlet to DUCRP rather than the metered data from each production well. Again, using the data at each production well would give an inaccurate estimate of total production due to the large number of wells and the potential for propagation of error due to allowable calibration ranges for each meter.

Equation RR-8 in 98.443 will be used to calculate the mass of CO_2 from all production wells as follows:

$$CO_{2,w} = \sum_{p=1}^{4} Q_{p,w} * D * C_{CO_{2,p,w}} \quad \text{(Eq. RR-8)}$$

Where:
$CO_{2,w}$ = Annual CO_2 mass produced (metric tons) through meter w.
$Q_{p,w}$ = Volumetric gas flow rate measurement for meter w in quarter p at standard conditions (standard cubic meters).
D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682.
$C_{CO2,p,w}$ = CO_2 concentration measurement in flow for meter w in quarter p (vol. percent CO_2, expressed as a decimal fraction).
p = Quarter of the year.
w = inlet meter to DUCRP.

Equation RR-9 in 98.443 will be used to aggregate the mass of CO_2 produced net of the mass of CO_2 entrained in oil leaving the Denver Unit prior to treatment of the remaining gas fraction in DUCRP as follows:

$$CO_{2P} = \sum_{w=1}^{W} CO_{2,w} + X_{oil} \quad \text{(Eq. RR-9)}$$

Where:
CO_{2P} = Total annual CO_2 mass produced (metric tons) through all meters in the reporting year.
$CO_{2,w}$ = Annual CO_2 mass produced (metric tons) through meter w in the reporting year.

X_{oil} = Mass of entrained CO_2 in oil in the reporting year measured utilizing commercial meters and electronic flow-measurement devices at each point of custody transfer. The mass of CO_2 will be calculated by multiplying the total volumetric rate by the CO_2 concentration.

7.4 Mass of CO_2 emitted by Surface Leakage

Oxy will calculate and report the total annual Mass of CO_2 emitted by Surface Leakage using an approach that is tailored to specific leakage events and relies on 40 CFR Part 98 Subpart W reports of equipment leakage. As described in Sections 4 and 5.1.5-5.1.7, Oxy is prepared to address the potential for leakage in a variety of settings. Estimates of the amount of CO_2 leaked to the surface will likely depend on a number of site-specific factors including measurements, engineering estimates, and emission factors, depending on the source and nature of the leakage.

Oxy's process for quantifying leakage will entail using best engineering principles or emission factors. While it is not possible to predict in advance the types of leaks that will occur, Oxy describes some approaches for quantification in Section 5.1.5-5.1.7. In the event leakage to the surface occurs, Oxy will quantify and report leakage amounts, and retain records that describe the methods used to estimate or measure the volume leaked as reported in the Annual Subpart RR Report. Further, Oxy will reconcile the Subpart W report and results from any event-driven quantification to assure that surface leaks are not double counted.

Equation RR-10 in 48.433 will be used to calculate and report the Mass of CO_2 emitted by Surface Leakage:

$$CO_{2E} = \sum_{x=1}^{X} CO_{2,x} \quad \text{(Eq. RR-10)}$$

where:

CO_{2E} = Total annual CO_2 mass emitted by surface leakage (metric tons) in the reporting year.

$CO_{2,x}$ = Annual CO_2 mass emitted (metric tons) at leakage pathway x in the reporting year.

x = Leakage pathway.

7.5 Mass of CO_2 sequestered in subsurface geologic formations.

Oxy will use equation RR-11 in 98.443 to calculate the Mass of CO_2 Sequestered in Subsurface Geologic Formations in the Reporting Year as follows:

$$CO_2 = CO_{2I} - CO_{2P} - CO_{2E} - CO_{2FI} - CO_{2FP} \quad \text{(Eq. RR-11)}$$

where:

CO_2 = Total annual CO_2 mass sequestered in subsurface geologic formations (metric tons) at the facility in the reporting year.
CO_{2I} = Total annual CO_2 mass injected (metric tons) in the well or group of wells covered by this source category in the reporting year.
CO_{2P} = Total annual CO_2 mass produced (metric tons) in the reporting year.
CO_{2E} = Total annual CO_2 mass emitted (metric tons) by surface leakage in the reporting year.
CO_{2FI} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead, for which a calculation procedure is provided in subpart W of this part.
CO_{2FP} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the production wellhead and the flow meter used to measure production quantity, for which a calculation procedure is provided in subpart W of this part.

7.6 Cumulative mass of CO_2 reported as sequestered in subsurface geologic formations

Oxy will sum of the total annual volumes obtained using equation RR-11 in 98.443 to calculate the Cumulative Mass of CO_2 Sequestered in Subsurface Geologic Formations.

8. MRV Plan Implementation Schedule

It is anticipated that this MRV plan will be implemented within 180 days of EPA approval. Other GHG reports are filed on March 31 of the year after the reporting year and it is anticipated that the Annual Subpart RR Report will be filed at the same time. As described in Section 3.3 above, Oxy anticipates that the MRV program will be in effect during the Specified Period, during which time Oxy will operate the Denver Unit with the subsidiary purpose of establishing long-term containment of a measurable quantity of CO_2 in subsurface geological formations at the Denver Unit. Oxy anticipates establishing that a measurable portion of the CO_2 injected during the Specified Period will be stored in a manner not expected to migrate resulting in future surface leakage. At such time, Oxy will prepare a demonstration supporting the long-term containment determination and submit a request to discontinue reporting under this MRV plan. *See* 40 C.F.R. § 98.441(b)(2)(ii).

9. Quality Assurance Program

9.1 Monitoring QA/QC

As indicated in Section 7, Oxy has incorporated the requirements of §98.444 (a) – (d) in the discussion of mass balance equations. These include the following provisions.

CO_2 Received and Injected

- The quarterly flow rate of CO_2 received by pipeline is measured at the receiving custody transfer meters.
- The quarterly CO_2 flow rate for recycled CO_2 is measured at the custody transfer meter located at the DUCRP outlet.

CO_2 Produced

- The point of measurement for the quantity of CO_2 produced from oil or other fluid production wells is a flow meter directly downstream of each separator that sends a stream of gas into a recycle or end use system.
- The produced gas stream is sampled at least once per quarter immediately downstream of the flow meter used to measure flow rate of that gas stream and measure the CO_2 concentration of the sample.
- The quarterly flow rate of the produced gas is measured at the custody transfer meters located at the DUCRP inlet.

CO_2 emissions from equipment leaks and vented emissions of CO_2

These volumes are measured in conformance with the monitoring and QA/QC requirements specified in subpart W of 40 CFR Part 98.

Flow meter provisions

The flow meters used to generate data for the mass balance equations in Section 7 are:

- Operated continuously except as necessary for maintenance and calibration.
- Operated using the calibration and accuracy requirements in 40 CFR §98.3(i).
- Operated in conformance with American Gas Association (AGA) standards found in AGA Report No. 3.
- National Institute of Standards and Technology (NIST) traceable.

Concentration of CO_2

As indicated in Appendix 2, CO_2 concentration is measured using the Gas Processors Association (GPA) standards 2261:2013 (Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography) and GPA 2186 – 02 (Method for the Extended Analysis of Hydrocarbon Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Temperature Programmed Gas Chromatography). Further, all measured volumes of CO_2 have been converted to standard cubic meters at a temperature of 60 degrees

Fahrenheit and at an absolute pressure of 1 atmosphere, including those used in Equations RR-2, RR-5 and RR-8 in Section 7.

9.2 Missing Data Procedures

In the event Oxy is unable to collect data needed for the mass balance calculations, procedures for estimating missing data in §98.445 will be used as follows:

- A quarterly flow rate of CO_2 received that is missing would be estimated using invoices or using a representative flow rate value from the nearest previous time period.
- A quarterly CO_2 concentration of a CO_2 stream received that is missing would be estimated using invoices or using a representative concentration value from the nearest previous time period.
- A quarterly quantity of CO_2 injected that is missing would be estimated using a representative quantity of CO_2injected from the nearest previous period of time at a similar injection pressure.
- For any values associated with CO_2 emissions from equipment leaks and vented emissions of CO_2 from surface equipment at the facility that are reported in this subpart, missing data estimation procedures specified in subpart W of 40 CFR Part 98 would be followed.
- The quarterly quantity of CO_2 produced from subsurface geologic formations that is missing would be estimated using a representative quantity of CO_2 produced from the nearest previous period of time.

9.3 MRV Plan Revisions

In the event there is a material change to the monitoring and/or operational parameters of the Oxy CO_2 EOR operations in the Denver Unit that is not anticipated in this MRV plan, the MRV plan will be revised and submitted to the EPA Administrator within 180 days as required in §98.448(d).

10. Records Retention

Oxy will follow the record retention requirements specified by §98.3(g). In addition, it will follow the requirements in Subpart RR §98.447 by maintaining the following records for at least seven years:

- Quarterly records of CO_2 received at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.

- Quarterly records of produced CO_2, including volumetric flow at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.
- Quarterly records of injected CO_2 including volumetric flow at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.
- Annual records of information used to calculate the CO_2 emitted by surface leakage from leakage pathways.
- Annual records of information used to calculate the CO_2 emitted from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.
- Annual records of information used to calculate the CO_2 emitted from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the production wellhead and the flow meter used to measure production quantity.

These data will be collected as generated and aggregated as required for reporting purposes.

11. Appendices

Appendix 1. Background

This appendix provides background information on the EOR project at the Denver Unit.

A1.1 Project Overview

Enhanced oil recovery (EOR) using carbon dioxide (CO_2) flooding is a mature technology that has been applied commercially since the early 1970s. It entails compressing CO_2 and injecting it into oil fields to restore pressure and mobilize trapped oil. The Permian Basin, spread across parts of Texas and New Mexico, is a geologic basin holding vast oil and gas resources that have been produced for almost a century. CO_2 EOR flooding has been practiced in the Permian Basin since the technique was first developed more than four decades ago. Today the area hosts a large integrated network of CO_2 sources, delivery pipelines, and CO_2 floods. Advances in geologic understanding and flooding techniques have led to a renewed economic interest in producing domestic oil and gas from the Permian Basin. As a result there is an increasing demand for CO_2 that could be met with anthropogenic sources.

A number of entities own or operate the different CO_2 and hydrocarbon production and delivery assets used in the Permian Basin. Occidental Petroleum Corporation and its affiliates (together, Oxy) are one of the largest of these entities. Figure A1-1 depicts the location of Oxy assets and operations in the Permian Basin. It shows that Oxy currently

owns or operates multiple sources of CO_2 (including natural and anthropogenic sources), almost 900 miles of major CO_2 pipelines, and approximately 30 CO_2 floods. The company handles a total of approximately 400 million cubic feet per day (MMscf/D) (20 thousand metric tonnes (MMT)) of CO_2 purchased (or "fresh") from a third party and recycled from the Denver Unit per day and produces approximately 25,000 barrels of oil per day (bopd). Through its work in the Permian Basin and in other CO_2 floods, Oxy has gained significant experience managing CO_2 EOR floods safely and profitability.

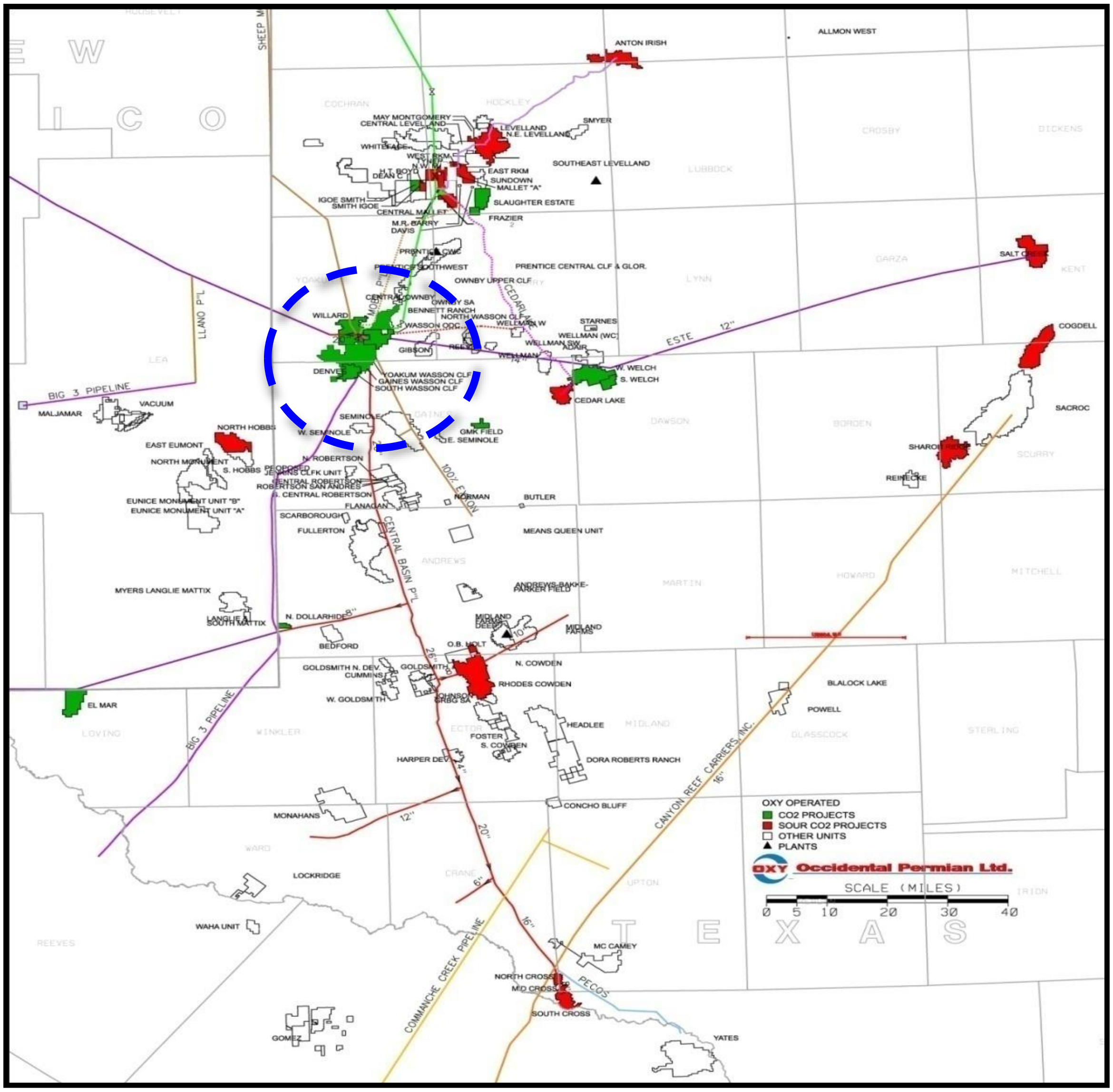


Figure A1-1 - Oxy CO_2 EOR Assets and Operations in the Permian Basin, Blue Circle Indicates Wasson Field Location

As described in the following section, in an effort to address its growing need for CO_2 in the Permian, Oxy invested in a natural gas processing plant that is capturing CO_2 that would otherwise be vented to the atmosphere. The captured CO_2 is fed into the pipeline delivery system that services the Permian Basin, including Oxy's CO_2 floods.

A1.2 CO_2 Transport through the Permian pipeline delivery system

The Permian pipeline delivery system (See Figure A1-2)[11] consists of major and minor pipelines that are used to move CO_2 to, around, and from the CO_2 floods. Each day, the pipeline system distributes approximately 1.8 Bscf (95 thousand metric tons (MMT) of fresh CO_2 that is purchased by the more than 60 CO_2 floods off taking from the system. Oxy and Kinder Morgan are the primary operators of the Permian pipeline delivery system, controlling a majority of the approximately 2,400 miles of major CO_2 pipeline in the system. There are a number of CO_2 sources connected to the system including both natural CO_2 reservoirs and anthropogenic CO_2 sources.

The Permian pipeline delivery system includes intra- and interstate pipelines in Texas, New Mexico, and Colorado. Minimum pipeline safety standards have been established by the US Department of Transportation (DOT) in 49 CFR Parts 190-199 and are implemented by DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) Office of Pipeline Safety (OPS). In all three states, OPS inspects and enforces the pipeline safety regulations for interstate gas and hazardous liquid pipeline operators. In addition, OPS oversees the intrastate pipelines in Colorado. The Texas Railroad Commission (TRRC) and New Mexico Public Regulation Commission Pipeline Safety Bureau are certified to oversee intrastate pipelines in their respective states. The pipeline safety requirements include standards for siting, construction, operation, and addressing accidents. There are no reporting requirements for such pipelines under EPA's GHGRP.

[11] Source: based on image found at http://www.texasenergyfoundation.org/wp-content/uploads/2012/10/Figure-II-3.-Existing-CO2-Pipelines-Permian-Basin.gif

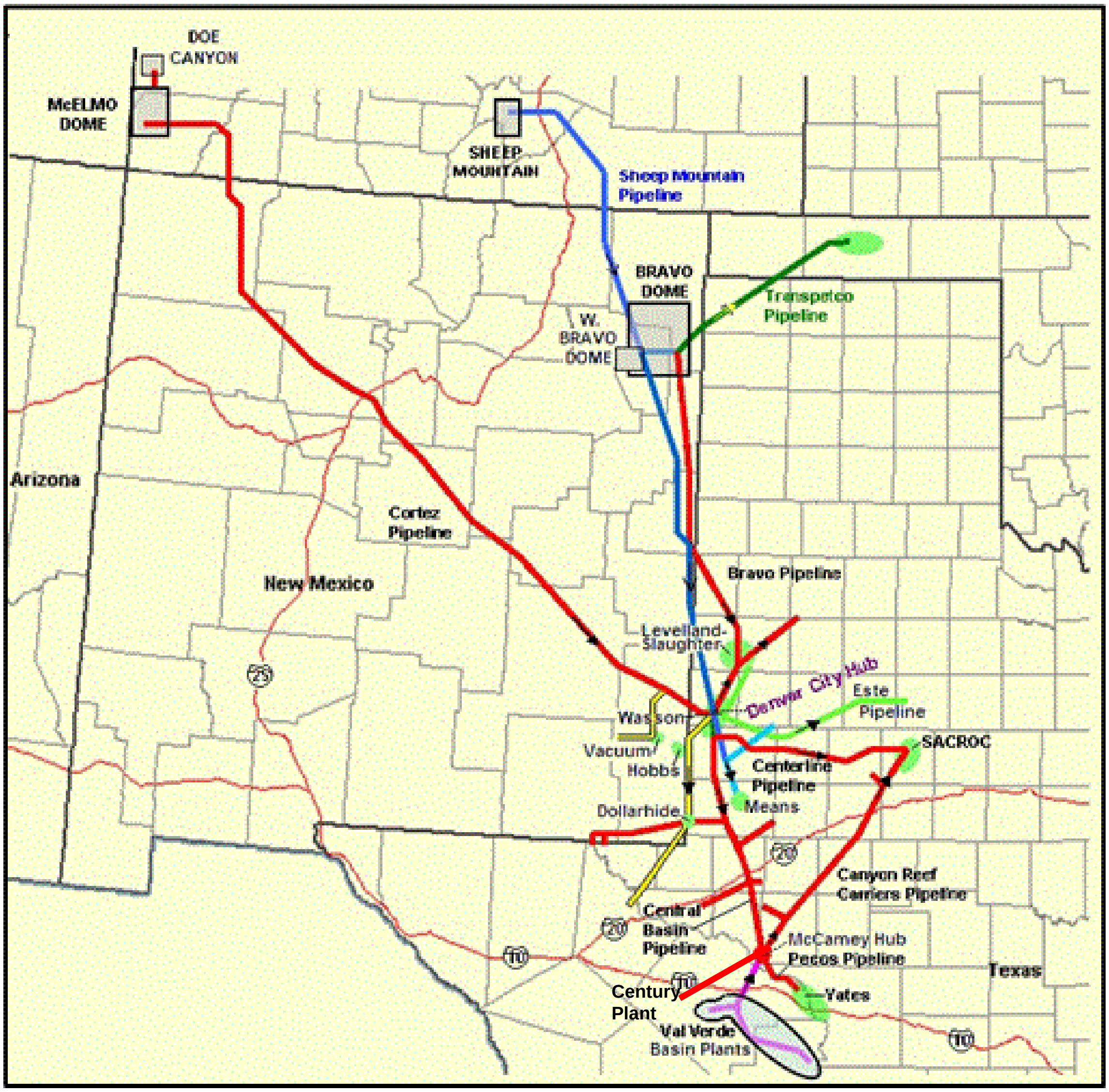


Figure A1-2 Permian Basin CO2 Pipeline Delivery System

All CO_2 entering the pipeline system must meet specifications for chemical composition and is treated by pipeline carriers and shippers as fungible. In Oxy's case, this means that contracts designate both the amounts of CO_2 that Oxy puts into the system and the amounts of CO_2 that Oxy draws from the system. CO_2 inputs and draws are measured using commercially calibrated flow meters at designated delivery points into and out of the pipeline system. Measured amounts typically are trued up against the contract amounts as specified in the particular contract. Oxy withdrew approximately 293 Bscf, or 15 million metric tons (MMMT), of fresh CO_2 from the Permian pipeline system in 2013 of which approximately 22% was injected in the Denver Unit.

A1.3 Oxy's EOR Experience

Oxy is an experienced CO_2 EOR operator and follows a rigorous, standardized process for assessing, developing, and operating CO_2 EOR projects. To profitably implement CO_2 miscible flooding,[12] the operator must optimize oil production while minimizing costs (e.g., CO_2, water, and energy). The miscible CO_2 flood at the Denver Unit has been successfully operated since 1983, demonstrating over this period that the reservoir is well characterized and that the CO_2 flood can be undertaken safely, profitably, and efficiently.

This Section provides a more thorough description of the process for selecting, developing, and managing fields for CO_2 floods, and a general description of CO_2 miscible flooding.

A1.3.1 Oxy's Process to Select, Develop, and Manage Fields for CO_2 Floods

Oxy is one of the largest and most respected CO_2 EOR operators in the world. The company has extensive experience in selecting and developing oil fields suitable for CO_2 floods and maintains standard practices for field selection, development, and management. Oxy's approach relies on frequent communication between operations staff with responsibility for specific geographic areas, and technical staff with responsibility for specific reservoirs, equipment, or functions. This organizational model provides multiple perspectives on field performance and stimulates identification of enhancement opportunities. Field technicians, who are trained in operating procedures, well surveillance, safety, and environmental protection, among other topics, are an integral part of the effective management of each field and work closely with contractors that perform specialized field services.

In designing CO_2 floods, Oxy first conducts an extensive study of the subsurface characteristics of the target oil reservoir. The reservoir characterization study entails a detailed geological and reservoir evaluation to determine the capability of the reservoir to effectively utilize CO_2 to increase oil recovery. Because CO_2 is an expensive injectant, the study includes a thorough analysis of the capability of the reservoir to maintain fluids within the targeted subsurface intervals, including an analysis of formation parting pressures and the ability of the reservoir strata to assimilate the injected CO_2.

Oxy typically creates a (or uses an existing) compositional reservoir simulation model that has been calibrated with actual reservoir data. Reservoir simulation models are used to evaluate potential development scenarios and determine the most viable options. When planning and operating a specific EOR project, Oxy uses pattern modeling. Once a CO_2 flood plan has been developed, it is subjected to thorough technical, operational, safety, environmental, and business reviews within Oxy. At this juncture, Oxy seeks the required regulatory approvals from the appropriate agencies. All of these steps were followed in the development of the CO_2 flood at the Denver Unit. Prior operators

[12] A miscible CO_2 flood employs the characteristic of CO_2 as mixable (or miscible) with crude oil (i.e., the two fluids can dissolve into each other). See Section 2.3.1.2 for additional explanation of miscible flooding.

developed reservoir-wide models. Oxy used this information to inform their decision to acquire leases for the Denver Unit. Since taking over operation of the Denver Unit in 2000, Oxy has conducted additional reservoir characterization studies and undertaken pattern modeling to design and operate the CO_2 flood.

A1.3.2 General Description of CO_2 Miscible Flooding

In a typical sedimentary formation, like the San Andres reservoir in the Denver Unit in the Wasson Field, primary production produces only a portion of the Original Oil-In-Place (OOIP). The percentage of oil recovered during "primary production" varies; in the Denver Unit, primary production recovered approximately 17% of the OOIP, and approximately 83% of the OOIP remained in the pore space in the reservoir.

Water injection may be applied as a secondary production method. This approach typically yields a sizeable additional volume of oil. In the Denver Unit, water injection led to the production of another 33% of the OOIP, leaving approximately 50% still in the pore space in the reservoir.

The oil remaining after water injection is the target for "tertiary recovery" through miscible CO_2 flooding. Typically, CO_2 flooding in the Permian Basin is used as a tertiary production method and it entails compressing CO_2 and injecting it into oil fields to mobilize trapped oil remaining after water flooding. Miscible CO_2 flooding can produce another 20% of the OOIP, leaving the fraction of oil remaining in the pore space in the reservoir at approximately 30%.

Under typical pressure and temperature conditions in a reservoir, CO_2 is a supercritical fluid (see Figure A1-3) that is miscible with crude oil. As injected CO_2 mixes with the oil, it acts like a solvent wash to sweep remaining oil from the pore space in the reservoir. The net effect is to further increase oil production from existing wells. As the oil is swept from the pore space, CO_2 and water fill the vacated pore space. The profitability of CO_2 EOR is dependent on the underlying costs of the commodities. Under current economic conditions, the combined cost of CO_2, water, and the necessary energy are less than the value of the produced oil, and the process is profitable to producers. However, those conditions can change quickly and have done so in the past.

The first commercial CO_2 injection project began in January 1972 in the SACROC (Scurry Area Canyon Reef Operators Committee) Unit of the Kelly-Snyder Field in Scurry County, West Texas. Following that early field test, CO_2 flooding has spread throughout the Permian Basin, the Gulf Coast and the Mid-continent areas. The industry currently recovers approximately 300,000 bopd from CO_2 flooding in the United States. In the supercritical fluid phase, CO_2 is neither a liquid nor a gas (See Figure A1-3). It has a density that is close to that of oil but less than that of water. However, it has a very low viscosity, which means CO_2 tends to bypass the oil and water it is displacing. The result is low process sweep efficiency and high gas production rates. One way to improve sweep and reduce gas production is to inject water along with the CO_2, which adds water to the pore spaces and slows the flow of CO_2. This is generally done with alternate injection of water and CO_2, or WAG (water alternating gas) injection. The WAG

approach is common in the Permian Basin, although there are several other ways to manage CO_2 flooding. The WAG approach improves how CO_2 flooding works by helping to maintain more stable flood fronts and reducing the rate at which CO_2 is produced through the production wells.

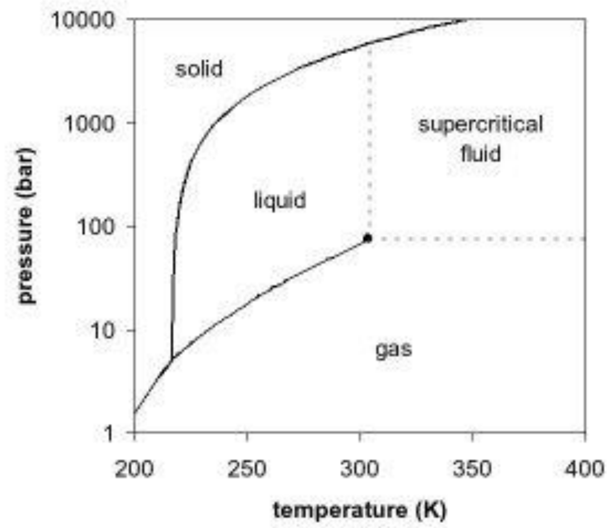


Figure A1-3 CO2 Phases

Because CO_2 is an inherently inefficient displacing agent, a portion of the injected CO_2 is co-produced along with oil and water. The remaining portion stays trapped in the pore space in the reservoir. The produced fluid is treated through a closed loop process to remove valuable products (like natural gas (NG), natural gas liquids (NGL) and sulfur) and to separate the CO_2 and water for recompression and re-injection. Fresh CO_2 is combined with recycled CO_2 to make up the amount of CO_2 that is injected. As a close approximation, the amount of purchased CO_2 is the amount that remains trapped (stored) in the pore space in the reservoir. As a standard practice, the volume of purchased CO_2 is calculated to be just sufficient to take the place of the oil and net water that has been produced. In this way, reservoir pressure is maintained.

Each injection well ("injector") is surrounded by a number of producing wells ("producers"), each of which responds to the amount and rate of injection. The injector and producer wells form a "pattern," typically either a five-spot pattern with four corner wells forming a square around the injector, or a nine-spot pattern with an additional producer located along each side of the square. Oxy uses pattern modeling, discussed in more detail in Section 3.1, to predict the fluid flow in the formation; develop an injection plan for each pattern; predict the performance of each pattern; and determine where to place infill wells to better manage production and injection over time. The resulting injection plan describes the expected volume and pressure for the injection of CO_2 and water introduced into each injection well.

Appendix 2. Conversion Factors

Oxy reports CO_2 volumes at standard conditions of temperature and pressure as defined in the State of Texas – 60 ^{o}F and 14.65 psi.

To convert these volumes into metric tonnes, a density is calculated using the Span and Wagner equation of state as recommended by the EPA. Density was calculated using the database of thermodynamic properties developed by the National Institute of Standards and Technology (NIST), available at http://webbook.nist.gov/chemistry/fluid/.

At State of Texas standard conditions, the Span and Wagner equation of state gives a density of 0.0026417 lb-moles per cubic foot. Using a molecular weight for CO_2 of 44.0095, 2204.62 lbs/metric ton and 35.314667 ft^3/m^3, gives a CO_2 density of 5.27346 x 10^{-2} MT/Mcf or 0.0018623 MT/m^3.

Note at EPA standard conditions of 60 ^{o}F and one atmosphere, the Span and Wagner equation of state gives a density of 0.0026500 lb-moles per cubic foot. Using a molecular weight for CO_2 of 44.0095, 2204.62 lbs/metric ton and 35.314667 ft^3/m^3, gives a CO_2 density of 5.29003 x 10^{-5} MT/ft^3 or 0.0018682 MT/m^3.

The conversion factor 5.27346 x 10^{-2} MT/Mcf has been used throughout to convert Oxy volumes to metric tons.

Appendix 3. Acronyms

AGA – American Gas Association
AMA – Active Monitoring Area
AoR – Area of Review
API – American Petroleum Institute
Bscf – billion standard cubic feet
B/D – barrels per day
bopd – barrels of oil per day
cf – cubic feet
CH_4 – Methane
CO_2 – Carbon Dioxide
CRP – CO_2 Removal Plant
CTB – Central Tank Battery
DOT – US Department of Transportation
DUCRP – Denver Unit CO_2 Recovery Plant
EOR – Enhanced Oil Recovery
EPA – US Environmental Protection Agency
ESD – Emergency Shutdown Device
GHG – Greenhouse Gas
GHGRP – Greenhouse Gas Reporting Program
HC – Hydrocarbon
H_2S – Hydrogen Sulfide
IWR -- Injection to Withdrawal Ratio
LACT – Lease Automatic Custody Transfer meter
LEL – Lower Explosive Limit
MIT – Mechanical Integrity Test
MMA – Maximum Monitoring Area
MMB – Million barrels
Mscf – Thousand standard cubic feet
MMscf – Million standard cubic feet
MMMT – Million metric tonnes
MMT – Thousand metric tonnes
MRV – Monitoring, Reporting, and Verification
MT -- Metric Tonne
NG—Natural Gas
NGLs – Natural Gas Liquids
OOIP – Original Oil-In-Place
OPC – Occidental Petroleum Corporation
OPL – Occidental Petroleum Ltd.
OPS – Office of Pipeline Safety
PHMSA – Pipeline and Hazardous Materials Safety Administration
PPM – Parts Per Million
RCF – Reinjection Compression Facility
ROZ – Residual Oil Zone
SACROC – Scurry Area Canyon Reef Operators Committee

ST – Short Ton
TRRC – Texas Railroad Commission
TSD – Technical Support Document
TVDSS – True Vertical Depth Subsea
TZ – Transition Zone
UIC – Underground Injection Control
USEPA – U.S. Environmental Protection Agency
USDW – Underground Source of Drinking Water
VRU -- Vapor Recovery Unit
WAG – Water Alternating Gas
WTO – West Texas Overthrust

Appendix 4. References

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Appendix 5. Glossary of Terms

This glossary describes some of the technical terms as they are used in this MRV plan. For additional glossaries please see the U.S. EPA Glossary of UIC Terms (http://water.epa.gov/type/groundwater/uic/glossary.cfm) and the Schlumberger Oilfield Glossary (http://www.glossary.oilfield.slb.com/).

Anhydrite -- Anhydrite is a mineral—anhydrous calcium sulfate, $CaSO_4$.

Bradenhead -- a casing head in an oil well having a stuffing box packed (as with rubber) to make a gastight connection
Contain / Containment – having the effect of keeping fluids located within in a specified portion of a geologic formation.

Dip -- Very few, if any, geologic features are perfectly horizontal. They are almost always tilted. The direction of tilt is called “dip.” Dip is the angle of steepest descent measured from the horizontal plane. Moving higher up structure is moving “updip.” Moving lower is “downdip.” Perpendicular to dip is “strike.” Moving perpendicular along a constant depth is moving along strike.

Dolomite -- Dolomite is an anhydrous carbonate mineral composed of calcium magnesium carbonate $CaMg(CO_3)_2$.

Downdip -- See “dip.”

Formation -- A body of rock that is sufficiently distinctive and continuous that it can be mapped. At Wasson, for example, San Andres formation is a layer of permeable dolomites that were deposited in a shallow marine environment during the Permian Era, some 250 to 300 million years ago. The San Andres can be mapped over much of the Permian Basin.

Igneous Rocks -- Igneous rocks crystallize from molten rock, or magma, with interlocking mineral crystals.

Infill Drilling -- The drilling of additional wells within existing patterns. These additional wells decrease average well spacing. This practice both accelerates expected recovery and increases estimated ultimate recovery in heterogeneous reservoirs by improving the continuity between injectors and producers. As well spacing is decreased, the shifting flow paths lead to increased sweep to areas where greater hydrocarbon saturations remain.

Metamorphic Rocks -- Metamorphic rocks form from the alteration of preexisting rocks by changes in ambient temperature, pressure, volatile content, or all of these. Such changes can occur through the activity of fluids in the Earth and movement of igneous bodies or regional tectonic activity.

Permeability -- Permeability is the measure of a rock's ability to transmit fluids. Rocks that transmit fluids readily, such as sandstones, are described as permeable and tend to have many large, well-connected pores. Impermeable formations, such as shales and siltstones, tend to be finer grained or of a mixed grain size, with smaller, fewer, or less interconnected pores.

Phase -- Phase is a region of space throughout which all physical properties of a material are essentially uniform. Fluids that don't mix together segregate themselves into phases. Oil, for example, does not mix with water and forms a separate phase.

Pore Space -- See porosity.

Porosity -- Porosity is the fraction of a rock that is not occupied by solid grains or minerals. Almost all rocks have spaces between rock crystals or grains that is available to be filled with a fluid, such as water, oil or gas. This space is called "pore space."

Primary recovery -- The first stage of hydrocarbon production, in which natural reservoir energy, such as gasdrive, waterdrive or gravity drainage, displaces hydrocarbons from the reservoir, into the wellbore and up to surface. Initially, the reservoir pressure is considerably higher than the bottomhole pressure inside the wellbore. This high natural differential pressure drives hydrocarbons toward the well and up to surface. However, as the reservoir pressure declines because of production, so does the differential pressure. To reduce the bottomhole pressure or increase the differential pressure to increase hydrocarbon production, it is necessary to implement an artificial lift system, such as a rod pump, an electrical submersible pump or a gas-lift installation. Production using artificial lift is considered primary recovery. The primary recovery stage reaches its limit either when the reservoir pressure is so low that the production rates are not economical, or when the proportions of gas or water in the production stream are too high. During primary recovery, only a small percentage of the initial hydrocarbons in place are produced, typically around 10% for oil reservoirs. Primary recovery is also called primary production.

Saturation -- The fraction of pore space occupied by a given fluid. Oil saturation, for example, is the fraction of pore space occupied by oil.

Seal – A geologic layer (or multiple layers) of impermeable rock that serve as a barrier to prevent fluids from moving upwards to the surface.

Secondary recovery -- The second stage of hydrocarbon production during which an external fluid such as water or gas is injected into the reservoir through injection wells located in rock that has fluid communication with production wells. The purpose of secondary recovery is to maintain reservoir pressure and to displace hydrocarbons toward the wellbore. The most common secondary recovery techniques are gas injection and waterflooding.

Sedimentary Rocks -- Sedimentary rocks are formed at the Earth's surface through deposition of sediments derived from weathered rocks, biogenic activity or precipitation from solution. There are three main types of rocks – igneous, metamorphic and sedimentary.

Stratigraphic section -- A stratigraphic section is a sequence of layers of rocks in the order they were deposited.

Strike -- See “dip.”

Updip -- See “dip.”

Appendix 6. Well Identification Numbers

The following table presents the well name, API number, status and type for the wells in the Denver Unit as of August 2014. The table is subject to change over time as new wells are drilled, existing wells change status, or existing wells are repurposed. The following terms are used:

- Well Status
  - ACTIVE refers to active wells
  - DRILL refers to wells under construction
  - P&A refers to wells that have been closed (plugged and abandoned) per TAC 16.1.3
  - TA refers to wells that have been temporarily abandoned
  - SHUT_IN refers to wells that have been temporarily idled or shut-in
  - INACTIVE refers to wells that have been completed but are not in use
- Well Type
  - INJ_WAG refers to wells that inject water and CO_2 Gas
  - INJ_GAS refers to wells that inject CO_2 Gas
  - INJ_H2O refers to wells that inject water
  - PROD_GAS refers to wells that produce natural gas
  - PROD_OIL refers to wells that produce oil
  - DISP_H2O refers to wells used for water disposal

Well Name	API Number	Well Status	Well Type
DU-0001	42501000000000	ACTIVE	DISP_H2O
DU-0001B	42165313440000	ACTIVE	DISP_H2O
DU-0001SWD	42501324880000	ACTIVE	DISP_H2O
DU-0002	42501328930000	ACTIVE	DISP_H2O
DU-0003SWD	42165336580000	ACTIVE	DISP_H2O
DU-0004	42501363510000	DRILL	PROD_OIL
DU-1701	42501022100000	ACTIVE	INJ_WAG
DU-1702	42501022150000	ACTIVE	PROD_OIL
DU-1703	42501000700000	ACTIVE	INJ_WAG
DU-1704	42501000690000	ACTIVE	INJ_WAG
DU-1705	42501022120000	P & A	INJ_WAG
DU-1706	42501022110000	ACTIVE	PROD_OIL
DU-1707	42501000710000	ACTIVE	PROD_OIL
DU-1708	42501000720000	TA	INJ_WAG
DU-1709	42501301980000	ACTIVE	INJ_WAG
DU-1710	42501301970000	ACTIVE	PROD_OIL
DU-1711	42501303970000	ACTIVE	INJ_WAG
DU-1712	42501303960000	ACTIVE	PROD_OIL
DU-1713	42501303950000	ACTIVE	PROD_OIL
DU-1714	42501311220000	ACTIVE	PROD_OIL
DU-1715	42501311230000	ACTIVE	INJ_WAG
DU-1716	42501314560000	ACTIVE	PROD_OIL
DU-1717	42501313090000	ACTIVE	INJ_WAG
DU-1718	42501317050000	ACTIVE	INJ_WAG
DU-1719	42501340520000	ACTIVE	PROD_OIL
DU-1720	42501348490000	ACTIVE	PROD_OIL

DU-1721	42501348500000	ACTIVE	PROD_OIL
DU-1722	42501348510000	ACTIVE	PROD_OIL
DU-1723	42501348520000	ACTIVE	PROD_OIL
DU-1724	42501348530000	ACTIVE	PROD_OIL
DU-1725	42501348540000	ACTIVE	PROD_OIL
DU-1726	42501348550000	ACTIVE	PROD_OIL
DU-1727	42501352120000	ACTIVE	PROD_OIL
DU-1728	42501356810000	ACTIVE	INJ_WAG
DU-2201	42501018320000	P & A	INJ_H2O
DU-2202	42501018330000	ACTIVE	INJ_WAG
DU-2203	42501018260000	P & A	PROD_OIL
DU-2204	42501018250000	ACTIVE	INJ_H2O
DU-2205	42501018290000	ACTIVE	PROD_OIL
DU-2206	42501018410000	ACTIVE	PROD_OIL
DU-2207	42501018350000	P & A	PROD_OIL
DU-2208	42501018280000	P & A	PROD_OIL
DU-2208R	42501329970000	ACTIVE	INJ_WAG
DU-2209	42501018270000	ACTIVE	INJ_WAG
DU-2210	42501014570000	P & A	PROD_OIL
DU-2211	42501014590000	ACTIVE	PROD_OIL
DU-2212	42501018370000	TA	INJ_H2O
DU-2213	42501018360000	ACTIVE	INJ_WAG
DU-2214	42501018300000	ACTIVE	INJ_WAG
DU-2215	42501804810000	ACTIVE	INJ_WAG
DU-2216	42501028960000	ACTIVE	PROD_OIL
DU-2217	42501018400000	ACTIVE	INJ_WAG
DU-2218	42501018380000	ACTIVE	INJ_WAG
DU-2219	42501018390000	ACTIVE	INJ_WAG
DU-2220	42501018310000	ACTIVE	INJ_WAG
DU-2221	42501309150000	ACTIVE	PROD_OIL
DU-2222	42501309140000	ACTIVE	PROD_OIL
DU-2223	42501309130000	TA	PROD_OIL
DU-2224	42501309120000	ACTIVE	PROD_OIL
DU-2225	42501309110000	ACTIVE	PROD_OIL
DU-2226	42501309260000	P & A	PROD_OIL
DU-2227	42501309060000	ACTIVE	PROD_OIL
DU-2228	42501309620000	ACTIVE	PROD_OIL
DU-2229	42501315420000	P & A	PROD_OIL
DU-2232	42501316560000	P & A	INJ_GAS
DU-2233	42501325210000	ACTIVE	INJ_WAG
DU-2235	42501328580000	ACTIVE	PROD_OIL
DU-2236	42501329270000	ACTIVE	PROD_OIL
DU-2237	42501334570000	ACTIVE	PROD_OIL
DU-2238	42501341180000	ACTIVE	PROD_OIL
DU-2239	42501340990000	ACTIVE	INJ_H2O
DU-2240	42501352290000	ACTIVE	PROD_OIL
DU-2241	42501352110000	ACTIVE	PROD_OIL
DU-2242	42501347160000	ACTIVE	PROD_OIL
DU-2243	42501347110000	ACTIVE	PROD_OIL
DU-2244	42501349630000	ACTIVE	INJ_WAG
DU-2245	42501353570000	ACTIVE	PROD_OIL
DU-2246	42501359610000	ACTIVE	PROD_OIL
DU-2247	42501359580000	ACTIVE	PROD_OIL
DU-2248	42501359590000	ACTIVE	PROD_OIL

DU-2249	42501359600000	ACTIVE	PROD_OIL
DU-2250	42501359620000	ACTIVE	PROD_OIL
DU-2251	42501359660000	ACTIVE	PROD_OIL
DU-2252	42501359630000	ACTIVE	PROD_OIL
DU-2253	42501359970000	ACTIVE	PROD_OIL
DU-2254	42501359640000	ACTIVE	PROD_OIL
DU-2255	42501359650000	ACTIVE	PROD_OIL
DU-2256	42501359670000	ACTIVE	PROD_OIL
DU-2257	42501359980000	ACTIVE	PROD_OIL
DU-2501	42501023940000	P & A	INJ_H2O
DU-2502	42501024200000	ACTIVE	INJ_WAG
DU-2503	42501024250000	P & A	INJ_WAG
DU-2504	42501023790000	P & A	PROD_OIL
DU-2505	42501023840000	ACTIVE	INJ_WAG
DU-2506	42501024150000	P & A	PROD_OIL
DU-2507	42501023990000	P & A	PROD_OIL
DU-2508	42501023890000	ACTIVE	INJ_WAG
DU-2509	42501024550000	ACTIVE	PROD_OIL
DU-2510	42501024650000	ACTIVE	PROD_OIL
DU-2511	42501024600000	ACTIVE	PROD_OIL
DU-2512	42501024500000	ACTIVE	PROD_OIL
DU-2513	42501023740000	P & A	INJ_H2O
DU-2514	42501024090000	P & A	INJ_H2O
DU-2515	42501024040000	P & A	INJ_H2O
DU-2516	42501024350000	ACTIVE	INJ_WAG
DU-2517	42501023530000	ACTIVE	INJ_WAG
DU-2518	42501024440000	ACTIVE	PROD_OIL
DU-2519	42501024390000	ACTIVE	INJ_WAG
DU-2520	42501023680000	P & A	PROD_OIL
DU-2521	42501023630000	P & A	INJ_H2O
DU-2522	42501023570000	P & A	PROD_OIL
DU-2523	42501024300000	ACTIVE	PROD_OIL
DU-2524	42501023470000	ACTIVE	PROD_OIL
DU-2525	42501101690000	ACTIVE	PROD_OIL
DU-2526	42501302990000	ACTIVE	PROD_OIL
DU-2527	42501302970000	ACTIVE	PROD_OIL
DU-2528	42501302980000	ACTIVE	PROD_OIL
DU-2529	42501303940000	ACTIVE	PROD_OIL
DU-2530	42501307700000	ACTIVE	PROD_OIL
DU-2531	42501307710000	ACTIVE	INJ_WAG
DU-2532	42501311170000	ACTIVE	PROD_OIL
DU-2533	42501315440000	ACTIVE	PROD_OIL
DU-2534	42501316480000	ACTIVE	PROD_OIL
DU-2535	42501316520000	ACTIVE	PROD_OIL
DU-2536	42501325220000	ACTIVE	INJ_WAG
DU-2537	42501325960000	ACTIVE	INJ_WAG
DU-2538	42501327910000	ACTIVE	INJ_WAG
DU-2539	42501328570000	ACTIVE	INJ_WAG
DU-2540	42501329830000	TA	INJ_GAS
DU-2541	42501331180000	ACTIVE	INJ_WAG
DU-2542	42501333830000	ACTIVE	INJ_WAG
DU-2543	42501333870000	ACTIVE	INJ_WAG
DU-2544	42501334580000	ACTIVE	INJ_WAG
DU-2545	42501334420000	ACTIVE	INJ_WAG

DU-2546	42501336480000	ACTIVE	PROD_OIL
DU-2547	42501345130000	ACTIVE	PROD_OIL
DU-2548	42501345490000	ACTIVE	PROD_OIL
DU-2549	42501345620000	ACTIVE	PROD_OIL
DU-2550	42501346500000	ACTIVE	PROD_OIL
DU-2551	42501346770000	ACTIVE	PROD_OIL
DU-2552	42501346410000	ACTIVE	PROD_OIL
DU-2553	42501346760000	ACTIVE	PROD_OIL
DU-2554	42501346560000	ACTIVE	PROD_OIL
DU-2555	42501346420000	ACTIVE	PROD_OIL
DU-2556	42501346680000	ACTIVE	INJ_WAG
DU-2557	42501346780000	ACTIVE	PROD_OIL
DU-2558	42501347120000	ACTIVE	PROD_OIL
DU-2559	42501347130000	ACTIVE	PROD_OIL
DU-2560	42501353360000	ACTIVE	PROD_OIL
DU-2561	42501353380000	ACTIVE	PROD_OIL
DU-2562	42501353390000	ACTIVE	PROD_OIL
DU-2564GC	42501355190000	TA	PROD_GAS
DU-2601	42501023730000	P & A	INJ_H2O
DU-2602	42501023780000	ACTIVE	INJ_WAG
DU-2603	42501023830000	P & A	INJ_H2O
DU-2604	42501023880000	P & A	PROD_OIL
DU-2605	42501024080000	P & A	PROD_OIL
DU-2606	42501330140000	ACTIVE	INJ_WAG
DU-2607	42501330010000	ACTIVE	INJ_WAG
DU-2608	42501023930000	ACTIVE	INJ_WAG
DU-2609	42501023560000	P & A	PROD_OIL
DU-2610	42501023620000	ACTIVE	INJ_WAG
DU-2611	42501023670000	P & A	INJ_H2O
DU-2612	42501023540000	ACTIVE	INJ_WAG
DU-2613	42501024290000	P & A	INJ_H2O
DU-2614	42501024340000	ACTIVE	INJ_WAG
DU-2615	42501023460000	P & A	INJ_H2O
DU-2616	42501023980000	P & A	PROD_OIL
DU-2617	42501024240000	ACTIVE	PROD_OIL
DU-2618	42501024030000	ACTIVE	PROD_OIL
DU-2619	42501301960000	ACTIVE	PROD_OIL
DU-2620	42501303010000	ACTIVE	PROD_OIL
DU-2621	42501303000000	ACTIVE	PROD_OIL
DU-2622	42501024540000	ACTIVE	PROD_OIL
DU-2623	42501304400000	P & A	PROD_OIL
DU-2624	42501024490000	ACTIVE	PROD_OIL
DU-2625	42501024430000	TA	PROD_OIL
DU-2626	42501307690000	TA	INJ_H2O
DU-2627	42501309100000	ACTIVE	PROD_OIL
DU-2628	42501309090000	ACTIVE	PROD_OIL
DU-2629	42501311190000	ACTIVE	PROD_OIL
DU-2630	42501311270000	TA	PROD_OIL
DU-2631	42501314650000	ACTIVE	INJ_WAG
DU-2632	42501314540000	ACTIVE	INJ_WAG
DU-2633	42501315510000	ACTIVE	PROD_OIL
DU-2634	42501315450000	ACTIVE	PROD_OIL
DU-2635	42501327900000	P & A	INJ_WAG
DU-2636	42501328420000	ACTIVE	INJ_WAG

DU-2637	42501330250000	ACTIVE	PROD_OIL
DU-2638	42501329980000	ACTIVE	PROD_OIL
DU-2639	42501330110000	ACTIVE	PROD_OIL
DU-2640	42501330940000	TA	INJ_GAS
DU-2641	42501331710000	ACTIVE	INJ_WAG
DU-2642	42501333840000	ACTIVE	PROD_OIL
DU-2643	42501333860000	ACTIVE	PROD_OIL
DU-2644	42501334160000	ACTIVE	PROD_OIL
DU-2645	42501338480000	ACTIVE	INJ_WAG
DU-2646	42501342840000	ACTIVE	PROD_OIL
DU-2647	42501345500000	ACTIVE	PROD_OIL
DU-2648	42501345510000	ACTIVE	PROD_OIL
DU-2649	42501345120000	ACTIVE	PROD_OIL
DU-2650	42501345110000	ACTIVE	PROD_OIL
DU-2651	42501345170000	ACTIVE	PROD_OIL
DU-2652	42501345520000	ACTIVE	PROD_OIL
DU-2653	42501345530000	ACTIVE	PROD_OIL
DU-2654	42501345100000	ACTIVE	PROD_OIL
DU-2655	42501345090000	ACTIVE	PROD_OIL
DU-2656	42501345080000	ACTIVE	PROD_OIL
DU-2657	42501345690000	ACTIVE	INJ_WAG
DU-2658	42501345150000	ACTIVE	INJ_WAG
DU-2659	42501346430000	ACTIVE	PROD_OIL
DU-2660	42501346580000	ACTIVE	PROD_OIL
DU-2661	42501346460000	ACTIVE	PROD_OIL
DU-2662	42501348560000	ACTIVE	PROD_OIL
DU-2663	42501352140000	ACTIVE	INJ_WAG
DU-2664	42501352150000	ACTIVE	PROD_OIL
DU-2665	42501353400000	ACTIVE	PROD_OIL
DU-2666	42501353410000	ACTIVE	PROD_OIL
DU-2667	42501353370000	ACTIVE	INJ_WAG
DU-2668	42501353840000	ACTIVE	PROD_OIL
DU-2669	42501354900000	ACTIVE	PROD_OIL
DU-2670	42501356820000	ACTIVE	INJ_WAG
DU-2671	42501356830000	ACTIVE	INJ_WAG
DU-2672	42501356840000	ACTIVE	INJ_WAG
DU-2673	42501356850000	ACTIVE	INJ_WAG
DU-2674	42501356860000	ACTIVE	INJ_WAG
DU-2701	42501023770000	P & A	INJ_H2O
DU-2702	42501023720000	ACTIVE	INJ_WAG
DU-2703	42501023600000	ACTIVE	INJ_WAG
DU-2704	42501023550000	P & A	INJ_WAG
DU-2705	42501023820000	ACTIVE	PROD_OIL
DU-2706	42501024120000	P & A	PROD_OIL
DU-2707	42501024180000	ACTIVE	PROD_OIL
DU-2708	42501023920000	ACTIVE	PROD_OIL
DU-2709	42501023970000	ACTIVE	PROD_OIL
DU-2710	42501024070000	P & A	INJ_H2O
DU-2711	42501024230000	ACTIVE	PROD_OIL
DU-2712	42501024020000	ACTIVE	PROD_OIL
DU-2713	42501023660000	TA	PROD_OIL
DU-2714	42501024280000	P & A	PROD_OIL
DU-2715	42501023870000	P & A	PROD_OIL
DU-2716	42501023450000	ACTIVE	PROD_OIL

DU-2717	42501024720000	TA	PROD_OIL
DU-2718	42501024840000	ACTIVE	INJ_WAG
DU-2719	42501304350000	TA	PROD_OIL
DU-2720	42501304200000	ACTIVE	INJ_WAG
DU-2721	42501024830000	INACTIVE	PROD_OIL
DU-2722	42501024580000	ACTIVE	PROD_OIL
DU-2723	42501024810000	ACTIVE	INJ_WAG
DU-2724	42501024630000	ACTIVE	INJ_WAG
DU-2725	42501307720000	ACTIVE	PROD_OIL
DU-2726	42501309080000	ACTIVE	INJ_WAG
DU-2727	42501309070000	ACTIVE	INJ_WAG
DU-2728	42501314550000	ACTIVE	PROD_OIL
DU-2729	42501313080000	ACTIVE	INJ_WAG
DU-2730	42501313100000	ACTIVE	INJ_WAG
DU-2731	42501314490000	ACTIVE	PROD_OIL
DU-2732	42501315410000	P & A	INJ_H2O
DU-2733	42501315400000	ACTIVE	INJ_WAG
DU-2734	42501316500000	ACTIVE	PROD_OIL
DU-2735	42501319120000	ACTIVE	PROD_OIL
DU-2736	42501323100000	ACTIVE	INJ_WAG
DU-2737	42501322920000	ACTIVE	INJ_WAG
DU-2738	42501330000000	ACTIVE	INJ_WAG
DU-2739	42501329900000	ACTIVE	PROD_OIL
DU-2740	42501334430000	ACTIVE	PROD_OIL
DU-2741	42501101680000	ACTIVE	PROD_OIL
DU-2742	42501340510000	ACTIVE	PROD_OIL
DU-2743	42501341630000	ACTIVE	PROD_OIL
DU-2744	42501343490000	ACTIVE	PROD_OIL
DU-2745	42501343900000	ACTIVE	PROD_OIL
DU-2746	42501343720000	ACTIVE	PROD_OIL
DU-2747	42501343860000	ACTIVE	PROD_OIL
DU-2748	42501343870000	ACTIVE	INJ_WAG
DU-2749	42501343810000	ACTIVE	PROD_OIL
DU-2750	42501343730000	ACTIVE	PROD_OIL
DU-2751	42501343800000	ACTIVE	PROD_OIL
DU-2752	42501343880000	ACTIVE	PROD_OIL
DU-2753	42501343790000	ACTIVE	PROD_OIL
DU-2754	42501343780000	ACTIVE	PROD_OIL
DU-2755	42501343890000	ACTIVE	PROD_OIL
DU-2756	42501347940000	ACTIVE	PROD_OIL
DU-2757	42501348570000	ACTIVE	INJ_WAG
DU-2758	42501348580000	ACTIVE	INJ_WAG
DU-2759	42501356870000	ACTIVE	INJ_WAG
DU-2760	42501356880000	ACTIVE	INJ_WAG
DU-2761	42501356890000	ACTIVE	INJ_WAG
DU-2762	42501356900000	ACTIVE	INJ_WAG
DU-2801	42501023910000	ACTIVE	INJ_WAG
DU-2802	42501023860000	ACTIVE	INJ_WAG
DU-2803	42501023650000	INACTIVE	INJ_WAG
DU-2804	42501023960000	P & A	INJ_H2O
DU-2805	42501023490000	ACTIVE	INJ_WAG
DU-2806	42501024370000	ACTIVE	PROD_OIL
DU-2807	42501024060000	ACTIVE	PROD_OIL
DU-2808	42501023590000	ACTIVE	PROD_OIL

DU-2809	42501024320000	ACTIVE	INJ_WAG
DU-2810	42501024170000	ACTIVE	INJ_WAG
DU-2811	42501024410000	ACTIVE	INJ_WAG
DU-2812	42501024110000	ACTIVE	PROD_OIL
DU-2813	42501024270000	ACTIVE	PROD_OIL
DU-2814	42501023710000	P & A	PROD_OIL
DU-2815	42501024220000	ACTIVE	INJ_WAG
DU-2816	42501023520000	ACTIVE	PROD_OIL
DU-2817	42501024010000	ACTIVE	PROD_OIL
DU-2818	42501023760000	ACTIVE	PROD_OIL
DU-2819	42501023810000	P & A	PROD_OIL
DU-2820	42501302320000	ACTIVE	PROD_OIL
DU-2821	42501304260000	P & A	PROD_OIL
DU-2822	42501304380000	ACTIVE	INJ_WAG
DU-2823	42501304270000	ACTIVE	INJ_WAG
DU-2824	42501024670000	P & A	PROD_OIL
DU-2825	42501304340000	ACTIVE	INJ_WAG
DU-2826	42501304310000	ACTIVE	INJ_WAG
DU-2827	42501304250000	TA	INJ_WAG
DU-2828	42501304240000	ACTIVE	INJ_WAG
DU-2829	42501304230000	ACTIVE	PROD_OIL
DU-2830	42501304330000	ACTIVE	PROD_OIL
DU-2831	42501311180000	TA	PROD_OIL
DU-2832	42501313060000	ACTIVE	INJ_WAG
DU-2833	42501313050000	ACTIVE	PROD_OIL
DU-2834	42501315520000	ACTIVE	INJ_WAG
DU-2835	42501316640000	ACTIVE	INJ_WAG
DU-2836	42501322910000	ACTIVE	PROD_OIL
DU-2837	42501322960000	ACTIVE	PROD_OIL
DU-2838	42501331400000	ACTIVE	PROD_OIL
DU-2839	42501338260000	ACTIVE	INJ_WAG
DU-2840	42501340500000	ACTIVE	PROD_OIL
DU-2841	42501340480000	ACTIVE	PROD_OIL
DU-2842	42501342830000	ACTIVE	PROD_OIL
DU-2843	42501343080000	ACTIVE	INJ_WAG
DU-2844	42501343070000	ACTIVE	PROD_OIL
DU-2845	42501343090000	ACTIVE	PROD_OIL
DU-2846	42501343060000	ACTIVE	PROD_OIL
DU-2847	42501343050000	ACTIVE	PROD_OIL
DU-2848	42501343100000	ACTIVE	PROD_OIL
DU-2849	42501343040000	ACTIVE	PROD_OIL
DU-2850	42501343030000	ACTIVE	PROD_OIL
DU-2851	42501343690000	ACTIVE	PROD_OIL
DU-2852	42501343710000	ACTIVE	PROD_OIL
DU-2853	42501343700000	ACTIVE	PROD_OIL
DU-2854	42501343770000	ACTIVE	INJ_WAG
DU-2855	42501343760000	ACTIVE	PROD_OIL
DU-2856	42501343740000	ACTIVE	PROD_OIL
DU-2857	42501343750000	ACTIVE	PROD_OIL
DU-2858	42501343820000	ACTIVE	PROD_OIL
DU-2859	42501345140000	ACTIVE	PROD_OIL
DU-2860	42501346350000	ACTIVE	PROD_OIL
DU-2861	42501347190000	ACTIVE	PROD_OIL
DU-2862	42501347290000	ACTIVE	PROD_OIL

DU-2863	42501347200000	ACTIVE	PROD_OIL
DU-2864	42501347280000	ACTIVE	PROD_OIL
DU-2865	42501350120000	ACTIVE	PROD_OIL
DU-2866	42501350130000	ACTIVE	PROD_OIL
DU-2867	42501350140000	ACTIVE	PROD_OIL
DU-2868	42501362440000	ACTIVE	INJ_WAG
DU-2869	42501362450000	ACTIVE	INJ_WAG
DU-2870	42501362460000	ACTIVE	INJ_WAG
DU-2871	42501362470000	ACTIVE	INJ_WAG
DU-2872	42501362530000	ACTIVE	INJ_WAG
DU-2901	42501028320000	ACTIVE	INJ_WAG
DU-2902	42501028360000	ACTIVE	INJ_WAG
DU-2903	42501017280000	ACTIVE	INJ_WAG
DU-2904	42501017300000	ACTIVE	INJ_WAG
DU-2905	42501028400000	ACTIVE	PROD_OIL
DU-2906	42501028380000	ACTIVE	PROD_OIL
DU-2907	42501017250000	ACTIVE	INJ_WAG
DU-2908	42501017310000	ACTIVE	PROD_OIL
DU-2909	42501017270000	ACTIVE	PROD_OIL
DU-2910	42501017290000	ACTIVE	INJ_H2O
DU-2911	42501028340000	ACTIVE	INJ_WAG
DU-2912	42501028300000	ACTIVE	INJ_WAG
DU-2913	42501017130000	ACTIVE	INJ_WAG
DU-2914	42501017230000	ACTIVE	INJ_WAG
DU-2915	42501012030000	ACTIVE	PROD_OIL
DU-2916	42501012050000	P & A	PROD_OIL
DU-2917	42501021900000	ACTIVE	PROD_OIL
DU-2918	42501021860000	ACTIVE	PROD_OIL
DU-2919	42501012010000	ACTIVE	PROD_OIL
DU-2920	42501021820000	P & A	INJ_WAG
DU-2921	42501012020000	ACTIVE	INJ_WAG
DU-2922	42501021910000	ACTIVE	PROD_OIL
DU-2923	42501012040000	ACTIVE	PROD_OIL
DU-2924	42501021840000	TA	PROD_OIL
DU-2925	42501021880000	P & A	PROD_OIL
DU-2926	42501307750000	ACTIVE	INJ_WAG
DU-2927	42501307740000	ACTIVE	PROD_OIL
DU-2928	42501308190000	ACTIVE	INJ_WAG
DU-2929	42501307770000	ACTIVE	INJ_WAG
DU-2930	42501307730000	ACTIVE	PROD_OIL
DU-2931	42501311290000	ACTIVE	INJ_WAG
DU-2932	42501311280000	TA	PROD_OIL
DU-2933	42501311370000	ACTIVE	INJ_H2O
DU-2934	42501315640000	P & A	PROD_OIL
DU-2935	42501317010000	ACTIVE	PROD_OIL
DU-2936	42501317020000	P & A	PROD_OIL
DU-2937	42501322970000	ACTIVE	PROD_OIL
DU-2938	42501322950000	TA	PROD_OIL
DU-2939	42501328770000	ACTIVE	PROD_OIL
DU-2940	42501333890000	ACTIVE	PROD_OIL
DU-2941	42501333900000	ACTIVE	PROD_OIL
DU-2946	42501335130000	ACTIVE	INJ_WAG
DU-2947	42501340530000	ACTIVE	PROD_OIL
DU-2948	42501340490000	ACTIVE	PROD_OIL

DU-2949	42501340460000	ACTIVE	PROD_OIL
DU-2950	42501340470000	ACTIVE	PROD_OIL
DU-2951	42501341470000	ACTIVE	PROD_OIL
DU-2952	42501347210000	ACTIVE	PROD_OIL
DU-2953	42501347270000	ACTIVE	PROD_OIL
DU-2954	42501347260000	ACTIVE	PROD_OIL
DU-2955	42501347250000	ACTIVE	PROD_OIL
DU-2956	42501347240000	ACTIVE	PROD_OIL
DU-2957	42501347230000	ACTIVE	PROD_OIL
DU-2958	42501347220000	ACTIVE	PROD_OIL
DU-2959	42501348750000	ACTIVE	PROD_OIL
DU-2960	42501350150000	ACTIVE	PROD_OIL
DU-2961	42501350160000	ACTIVE	PROD_OIL
DU-2962	42501350170000	ACTIVE	PROD_OIL
DU-2963	42501352360000	ACTIVE	PROD_OIL
DU-2964	42501354020000	ACTIVE	PROD_OIL
DU-2966	42501354030000	ACTIVE	PROD_OIL
DU-2967	42501362480000	ACTIVE	INJ_WAG
DU-2968	42501362510000	ACTIVE	INJ_WAG
DU-2969	42501362490000	ACTIVE	INJ_WAG
DU-2970	42501362520000	ACTIVE	INJ_WAG
DU-2971	42501362500000	ACTIVE	INJ_WAG
DU-3101	42501001100000	ACTIVE	INJ_H2O
DU-3102	42501001110000	ACTIVE	PROD_OIL
DU-3103	42501001120000	P & A	INJ_H2O
DU-3104	42501001000000	ACTIVE	INJ_H2O
DU-3105	42501001090000	ACTIVE	PROD_OIL
DU-3106	42501001080000	ACTIVE	PROD_OIL
DU-3107	42501001040000	P & A	INJ_WAG
DU-3108	42501001010000	ACTIVE	INJ_WAG
DU-3109	42501001050000	TA	INJ_H2O
DU-3110	42501001070000	ACTIVE	INJ_WAG
DU-3111	42501001030000	ACTIVE	INJ_WAG
DU-3112	42501000990000	ACTIVE	INJ_WAG
DU-3113	42501001060000	TA	PROD_OIL
DU-3114	42501026740000	ACTIVE	INJ_WAG
DU-3115	42501001020000	ACTIVE	INJ_WAG
DU-3116	42501000980000	ACTIVE	INJ_WAG
DU-3117	42501307620000	ACTIVE	PROD_OIL
DU-3118	42501309270000	TA	PROD_OIL
DU-3119	42501309290000	ACTIVE	INJ_WAG
DU-3120	42501309280000	TA	PROD_OIL
DU-3121	42501309300000	TA	PROD_OIL
DU-3122	42501309050000	ACTIVE	PROD_OIL
DU-3123	42501309310000	ACTIVE	PROD_OIL
DU-3124	42501309320000	ACTIVE	PROD_OIL
DU-3126	42501309700000	ACTIVE	PROD_OIL
DU-3127	42501309770000	ACTIVE	PROD_OIL
DU-3128	42501315660000	P & A	PROD_OIL
DU-3129	42501315650000	ACTIVE	PROD_OIL
DU-3130	42501316840000	TA	PROD_OIL
DU-3131	42501316890000	ACTIVE	INJ_WAG
DU-3132	42501316950000	ACTIVE	PROD_OIL
DU-3133	42501319070000	ACTIVE	PROD_OIL

DU-3134	42501319130000	TA	PROD_OIL
DU-3135	42501328790000	TA	PROD_OIL
DU-3201	42501001230000	ACTIVE	INJ_WAG
DU-3202	42501001270000	ACTIVE	INJ_WAG
DU-3203	42501001290000	ACTIVE	INJ_WAG
DU-3204	42501001310000	ACTIVE	INJ_WAG
DU-3205	42501001250000	ACTIVE	INJ_WAG
DU-3206	42501001370000	ACTIVE	INJ_WAG
DU-3207	42501001450000	ACTIVE	INJ_WAG
DU-3208	42501001470000	ACTIVE	INJ_WAG
DU-3209	42501001330000	ACTIVE	INJ_WAG
DU-3210	42501001350000	ACTIVE	INJ_WAG
DU-3211	42501001430000	ACTIVE	INJ_WAG
DU-3212	42501001490000	ACTIVE	INJ_WAG
DU-3213	42501001210000	ACTIVE	INJ_WAG
DU-3214	42501001390000	ACTIVE	INJ_WAG
DU-3215	42501001410000	ACTIVE	INJ_WAG
DU-3216	42501026050000	ACTIVE	PROD_OIL
DU-3217	42501307640000	ACTIVE	PROD_OIL
DU-3218	42501309680000	ACTIVE	PROD_OIL
DU-3219	42501309690000	ACTIVE	PROD_OIL
DU-3220	42501309330000	ACTIVE	PROD_OIL
DU-3221	42501309650000	P & A	INJ_H2O
DU-3222	42501309760000	ACTIVE	PROD_OIL
DU-3223	42501309340000	ACTIVE	PROD_OIL
DU-3224	42501309660000	ACTIVE	PROD_OIL
DU-3225	42501309350000	ACTIVE	PROD_OIL
DU-3226	42501309670000	ACTIVE	PROD_OIL
DU-3227	42501309800000	ACTIVE	PROD_OIL
DU-3228	42501309360000	ACTIVE	PROD_OIL
DU-3229	42501309780000	ACTIVE	PROD_OIL
DU-3230	42501309750000	ACTIVE	PROD_OIL
DU-3231	42501309370000	ACTIVE	PROD_OIL
DU-3232	42501309720000	ACTIVE	PROD_OIL
DU-3233	42501316820000	ACTIVE	INJ_WAG
DU-3234	42501316870000	P & A	PROD_OIL
DU-3235	42501347390000	P & A	PROD_OIL
DU-3236	42501348090000	ACTIVE	PROD_OIL
DU-3237	42501358350000	ACTIVE	PROD_OIL
DU-3238	42501358360000	ACTIVE	PROD_OIL
DU-3239	42501358370000	ACTIVE	PROD_OIL
DU-3240	42501358380000	ACTIVE	PROD_OIL
DU-3241	42501358390000	ACTIVE	PROD_OIL
DU-3242	42501358400000	ACTIVE	PROD_OIL
DU-3243	42501358500000	ACTIVE	PROD_OIL
DU-3244	42501358430000	ACTIVE	PROD_OIL
DU-3245	42501358440000	ACTIVE	PROD_OIL
DU-3246	42501358420000	ACTIVE	PROD_OIL
DU-3247	42501358410000	ACTIVE	PROD_OIL
DU-3248	42501358460000	ACTIVE	PROD_OIL
DU-3249	42501359820000	ACTIVE	PROD_OIL
DU-3250	42501359840000	ACTIVE	PROD_OIL
DU-3251	42501359850000	ACTIVE	PROD_OIL
DU-3301	42501001260000	ACTIVE	INJ_WAG

DU-3302	42501001280000	ACTIVE	INJ_WAG
DU-3303	42501001360000	ACTIVE	INJ_WAG
DU-3304	42501001340000	ACTIVE	INJ_WAG
DU-3305	42501001480000	ACTIVE	INJ_WAG
DU-3306	42501001460000	ACTIVE	INJ_WAG
DU-3307	42501001380000	P & A	INJ_WAG
DU-3308	42501001320000	ACTIVE	INJ_WAG
DU-3309	42501001500000	ACTIVE	INJ_WAG
DU-3310	42501001440000	ACTIVE	INJ_WAG
DU-3311	42501001400000	P & A	PROD_OIL
DU-3312	42501001300000	P & A	INJ_H2O
DU-3313	42501026770000	P & A	INJ_WAG
DU-3314	42501001420000	ACTIVE	INJ_WAG
DU-3315	42501001240000	ACTIVE	INJ_WAG
DU-3316	42501001220000	ACTIVE	INJ_WAG
DU-3317	42501309500000	ACTIVE	PROD_OIL
DU-3318	42501309490000	ACTIVE	PROD_OIL
DU-3319	42501309480000	ACTIVE	PROD_OIL
DU-3320	42501309460000	ACTIVE	PROD_OIL
DU-3321	42501309470000	ACTIVE	PROD_OIL
DU-3322	42501309450000	ACTIVE	PROD_OIL
DU-3323	42501309220000	ACTIVE	PROD_OIL
DU-3324	42501309440000	ACTIVE	PROD_OIL
DU-3325	42501309430000	ACTIVE	PROD_OIL
DU-3326	42501309420000	P & A	INJ_H2O
DU-3327	42501309230000	ACTIVE	PROD_OIL
DU-3328	42501309410000	ACTIVE	PROD_OIL
DU-3329	42501309400000	ACTIVE	PROD_OIL
DU-3330	42501309390000	ACTIVE	PROD_OIL
DU-3331	42501309380000	ACTIVE	PROD_OIL
DU-3332	42501316860000	ACTIVE	PROD_OIL
DU-3333	42501316850000	ACTIVE	PROD_OIL
DU-3334	42501334560000	ACTIVE	PROD_OIL
DU-3335	42501334550000	ACTIVE	PROD_OIL
DU-3336	42501334540000	ACTIVE	PROD_OIL
DU-3337	42501334600000	ACTIVE	INJ_WAG
DU-3338	42501338130000	ACTIVE	INJ_WAG
DU-3340	42501347150000	ACTIVE	PROD_OIL
DU-3341	42501347140000	ACTIVE	PROD_OIL
DU-3342	42501347400000	ACTIVE	PROD_OIL
DU-3344	42501350740000	ACTIVE	INJ_WAG
DU-3345	42501352050000	ACTIVE	PROD_OIL
DU-3346	42501352060000	ACTIVE	PROD_OIL
DU-3347	42501353850000	ACTIVE	PROD_GAS
DU-3348	42501358450000	ACTIVE	PROD_OIL
DU-3349	42501358470000	ACTIVE	PROD_OIL
DU-3350	42501358480000	ACTIVE	PROD_OIL
DU-3351	42501358490000	ACTIVE	PROD_OIL
DU-3352	42501359530000	ACTIVE	PROD_OIL
DU-3353	42501359500000	ACTIVE	PROD_OIL
DU-3354	42501359510000	ACTIVE	PROD_OIL
DU-3355	42501359540000	ACTIVE	PROD_OIL
DU-3356	42501359550000	ACTIVE	PROD_OIL
DU-3357	42501359560000	ACTIVE	PROD_OIL

DU-3358	42501359680000	ACTIVE	PROD_OIL
DU-3359	42501359690000	ACTIVE	PROD_OIL
DU-3360	42501359750000	ACTIVE	PROD_OIL
DU-3361	42501359570000	ACTIVE	INJ_WAG
DU-3501	42501001660000	ACTIVE	PROD_OIL
DU-3502	42501001670000	ACTIVE	INJ_WAG
DU-3503	42501001680000	ACTIVE	INJ_WAG
DU-3504	42501001650000	P & A	INJ_H2O
DU-3505	42501000400000	ACTIVE	INJ_WAG
DU-3506	42501000430000	ACTIVE	PROD_OIL
DU-3507	42501000390000	ACTIVE	PROD_OIL
DU-3508	42501000410000	ACTIVE	PROD_OIL
DU-3509	42501000380000	P & A	PROD_OIL
DU-3510	42501000350000	ACTIVE	INJ_WAG
DU-3511	42501000440000	ACTIVE	INJ_WAG
DU-3512	42501000370000	ACTIVE	INJ_WAG
DU-3513	42501000420000	ACTIVE	INJ_WAG
DU-3514	42501000360000	P & A	PROD_OIL
DU-3515	42501030110000	ACTIVE	INJ_WAG
DU-3516	42501018490000	ACTIVE	PROD_OIL
DU-3517	42501029930000	ACTIVE	PROD_OIL
DU-3518	42501018500000	P & A	PROD_OIL
DU-3519	42501029940000	ACTIVE	PROD_OIL
DU-3520	42501018510000	P & A	INJ_H2O
DU-3521	42501029950000	P & A	INJ_H2O
DU-3522	42501022410000	ACTIVE	PROD_OIL
DU-3523	42501022460000	ACTIVE	INJ_WAG
DU-3524	42501022430000	ACTIVE	INJ_WAG
DU-3525	42501022470000	ACTIVE	INJ_WAG
DU-3526	42501022450000	P & A	PROD_OIL
DU-3527	42501022500000	ACTIVE	PROD_OIL
DU-3528	42501022420000	P & A	PROD_OIL
DU-3529	42501022490000	ACTIVE	PROD_OIL
DU-3530	42501022440000	ACTIVE	PROD_OIL
DU-3531	42501022480000	P & A	INJ_H2O
DU-3532	42501314430000	ACTIVE	PROD_OIL
DU-3533	42501315840000	ACTIVE	INJ_WAG
DU-3534	42501315890000	ACTIVE	PROD_OIL
DU-3535	42501316830000	ACTIVE	PROD_OIL
DU-3536	42501316900000	P & A	PROD_OIL
DU-3537	42501321020000	ACTIVE	INJ_WAG
DU-3538	42501326290000	ACTIVE	PROD_OIL
DU-3539	42501327780000	ACTIVE	PROD_OIL
DU-3540	42501329840000	ACTIVE	PROD_OIL
DU-3541	42501332190000	ACTIVE	INJ_WAG
DU-3542	42501333910000	ACTIVE	PROD_OIL
DU-3543	42501334530000	ACTIVE	PROD_OIL
DU-3544	42501334150000	ACTIVE	INJ_WAG
DU-3545	42501334120000	ACTIVE	PROD_OIL
DU-3546	42501343670000	ACTIVE	PROD_OIL
DU-3547	42501344710000	ACTIVE	PROD_OIL
DU-3548	42501344770000	ACTIVE	PROD_OIL
DU-3549	42501344760000	ACTIVE	PROD_OIL
DU-3550	42501344750000	ACTIVE	PROD_OIL

DU-3551	42501344740000	ACTIVE	PROD_OIL
DU-3552	42501344730000	ACTIVE	PROD_OIL
DU-3553	42501344720000	ACTIVE	PROD_OIL
DU-3554	42501345550000	ACTIVE	PROD_OIL
DU-3555	42501345840000	ACTIVE	PROD_OIL
DU-3556	42501345540000	ACTIVE	PROD_OIL
DU-3557	42501345560000	ACTIVE	PROD_OIL
DU-3558	42501346440000	ACTIVE	PROD_OIL
DU-3559	42501346450000	ACTIVE	PROD_OIL
DU-3560	42501346400000	ACTIVE	PROD_OIL
DU-3561	42501346550000	ACTIVE	INJ_WAG
DU-3562	42501346490000	ACTIVE	PROD_OIL
DU-3563	42501349480000	ACTIVE	INJ_WAG
DU-3564	42501349490000	ACTIVE	INJ_WAG
DU-3565	42501353770000	ACTIVE	PROD_OIL
DU-3566	42501359740000	ACTIVE	PROD_OIL
DU-3601	42501013790000	ACTIVE	INJ_WAG
DU-3602	42501014060000	ACTIVE	INJ_WAG
DU-3603	42501014070000	ACTIVE	INJ_WAG
DU-3604	42501014050000	ACTIVE	INJ_WAG
DU-3605	42501014100000	P & A	PROD_OIL
DU-3606	42501013840000	P & A	PROD_OIL
DU-3607	42501013990000	ACTIVE	PROD_OIL
DU-3608	42501013980000	ACTIVE	INJ_WAG
DU-3609	42501014120000	ACTIVE	INJ_WAG
DU-3610	42501014130000	ACTIVE	INJ_WAG
DU-3611	42501014080000	P & A	INJ_WAG
DU-3612	42501013880000	P & A	INJ_H2O
DU-3613	42501013820000	ACTIVE	PROD_OIL
DU-3614	42501013810000	ACTIVE	PROD_OIL
DU-3615	42501014110000	ACTIVE	INJ_WAG
DU-3616	42501014140000	ACTIVE	INJ_WAG
DU-3617	42501014090000	P & A	PROD_OIL
DU-3618	42501013900000	ACTIVE	INJ_WAG
DU-3619	42501013800000	ACTIVE	INJ_WAG
DU-3620	42501013930000	ACTIVE	PROD_OIL
DU-3621	42501014150000	ACTIVE	PROD_OIL
DU-3622	42501013860000	ACTIVE	PROD_OIL
DU-3623	42501304390000	ACTIVE	INJ_WAG
DU-3624	42501304090000	P & A	PROD_OIL
DU-3625	42501304100000	ACTIVE	PROD_OIL
DU-3626	42501304040000	ACTIVE	INJ_WAG
DU-3627	42501304060000	ACTIVE	PROD_OIL
DU-3628	42501304050000	ACTIVE	PROD_OIL
DU-3629	42501304130000	ACTIVE	PROD_OIL
DU-3630	42501308390000	ACTIVE	PROD_OIL
DU-3631	42501311240000	P & A	PROD_OIL
DU-3632	42501314620000	ACTIVE	INJ_WAG
DU-3633	42501315730000	TA	INJ_GAS
DU-3634	42501315740000	ACTIVE	PROD_OIL
DU-3635	42501315760000	ACTIVE	PROD_OIL
DU-3636	42501316800000	TA	PROD_OIL
DU-3637	42501316810000	ACTIVE	PROD_OIL
DU-3638	42501325930000	ACTIVE	PROD_OIL

DU-3639	42501327620000	ACTIVE	PROD_OIL
DU-3640	42501328540000	ACTIVE	PROD_OIL
DU-3641	42501328160000	TA	PROD_OIL
DU-3642	42501329990000	ACTIVE	INJ_WAG
DU-3644	42501334130000	ACTIVE	INJ_WAG
DU-3645	42501334140000	ACTIVE	PROD_OIL
DU-3646	42501343660000	ACTIVE	PROD_OIL
DU-3647	42501343650000	ACTIVE	PROD_OIL
DU-3648	42501345070000	ACTIVE	PROD_OIL
DU-3649	42501345060000	ACTIVE	PROD_OIL
DU-3650	42501345050000	ACTIVE	PROD_OIL
DU-3651	42501345570000	ACTIVE	PROD_OIL
DU-3652	42501345040000	ACTIVE	PROD_OIL
DU-3653	42501345030000	ACTIVE	PROD_OIL
DU-3654	42501345240000	ACTIVE	PROD_OIL
DU-3655	42501345230000	ACTIVE	PROD_OIL
DU-3656	42501345220000	ACTIVE	PROD_OIL
DU-3657	42501345210000	ACTIVE	PROD_OIL
DU-3658	42501345420000	ACTIVE	INJ_WAG
DU-3659	42501347180000	ACTIVE	PROD_OIL
DU-3660	42501349470000	ACTIVE	PROD_OIL
DU-3661	42501353880000	ACTIVE	PROD_OIL
DU-3666	42501354160000	ACTIVE	PROD_OIL
DU-3701	42501024260000	P & A	INJ_H2O
DU-3702	42501023480000	ACTIVE	INJ_WAG
DU-3703	42501024000000	P & A	PROD_OIL
DU-3704	42501024850000	P & A	PROD_OIL
DU-3705	42501024210000	ACTIVE	INJ_WAG
DU-3706	42501023850000	ACTIVE	INJ_WAG
DU-3707	42501023950000	ACTIVE	INJ_WAG
DU-3708	42501024100000	ACTIVE	INJ_WAG
DU-3709	42501024310000	ACTIVE	PROD_OIL
DU-3710	42501024050000	P & A	INJ_H2O
DU-3711	42501023800000	TA	PROD_OIL
DU-3712	42501023750000	ACTIVE	PROD_OIL
DU-3713	42501024400000	P & A	INJ_WAG
DU-3714	42501024160000	ACTIVE	INJ_WAG
DU-3715	42501023580000	ACTIVE	PROD_OIL
DU-3716	42501023640000	ACTIVE	PROD_OIL
DU-3717	42501023700000	ACTIVE	PROD_OIL
DU-3718	42501023900000	ACTIVE	PROD_OIL
DU-3719	42501304190000	ACTIVE	INJ_WAG
DU-3720	42501024760000	ACTIVE	INJ_WAG
DU-3721	42501304180000	ACTIVE	INJ_WAG
DU-3722	42501303990000	ACTIVE	PROD_OIL
DU-3723	42501304170000	ACTIVE	PROD_OIL
DU-3724	42501304140000	ACTIVE	PROD_OIL
DU-3725	42501304150000	ACTIVE	INJ_WAG
DU-3726	42501024800000	ACTIVE	PROD_OIL
DU-3727	42501304160000	ACTIVE	PROD_OIL
DU-3728	42501304070000	ACTIVE	INJ_WAG
DU-3729	42501304080000	ACTIVE	INJ_WAG
DU-3730	42501308100000	P & A	INJ_WAG
DU-3731	42501312020000	ACTIVE	PROD_OIL

DU-3733	42501312760000	P & A	INJ_H2O
DU-3735	42501312790000	P & A	PROD_OIL
DU-3736	42501314530000	TA	PROD_OIL
DU-3737	42501315530000	P & A	PROD_OIL
DU-3738	42501315540000	ACTIVE	INJ_WAG
DU-3739	42501316590000	P & A	PROD_OIL
DU-3740	42501316750000	P & A	PROD_OIL
DU-3741	42501316780000	P & A	PROD_OIL
DU-3742	42501316770000	P & A	PROD_OIL
DU-3743	42501316790000	P & A	PROD_OIL
DU-3746	42501320510000	ACTIVE	INJ_WAG
DU-3747	42501320370000	ACTIVE	PROD_OIL
DU-3748	42501332830000	ACTIVE	PROD_OIL
DU-3749	42501337960000	ACTIVE	PROD_OIL
DU-3750	42501342290000	ACTIVE	PROD_OIL
DU-3751	42501342230000	ACTIVE	PROD_OIL
DU-3752	42501342240000	ACTIVE	PROD_OIL
DU-3753	42501342250000	ACTIVE	PROD_OIL
DU-3754	42501342260000	ACTIVE	PROD_OIL
DU-3755	42501342300000	ACTIVE	PROD_OIL
DU-3756	42501342310000	ACTIVE	PROD_OIL
DU-3757	42501343020000	ACTIVE	INJ_WAG
DU-3758	42501343010000	ACTIVE	PROD_OIL
DU-3759	42501343230000	ACTIVE	PROD_OIL
DU-3760	42501343000000	ACTIVE	PROD_OIL
DU-3761	42501343110000	ACTIVE	PROD_OIL
DU-3762	42501343240000	ACTIVE	PROD_OIL
DU-3763	42501342990000	ACTIVE	PROD_OIL
DU-3764	42501342980000	ACTIVE	INJ_WAG
DU-3765	42501343120000	ACTIVE	PROD_OIL
DU-3766	42501343130000	ACTIVE	PROD_OIL
DU-3767	42501343210000	ACTIVE	PROD_OIL
DU-3768	42501345660000	ACTIVE	PROD_OIL
DU-3769	42501352130000	ACTIVE	INJ_WAG
DU-3770	42501354050000	ACTIVE	INJ_WAG
DU-3771	42501354230000	ACTIVE	INJ_WAG
DU-3801	42501022170000	ACTIVE	INJ_WAG
DU-3802	42501022220000	ACTIVE	INJ_WAG
DU-3803	42501028310000	ACTIVE	INJ_WAG
DU-3804	42501028350000	ACTIVE	INJ_WAG
DU-3805	42501022230000	ACTIVE	PROD_OIL
DU-3806	42501028370000	P & A	PROD_OIL
DU-3807	42501028390000	P & A	INJ_H2O
DU-3808	42501022190000	ACTIVE	INJ_WAG
DU-3809	42501022240000	ACTIVE	INJ_WAG
DU-3810	42501022210000	P & A	PROD_OIL
DU-3811	42501028290000	ACTIVE	INJ_WAG
DU-3812	42501028330000	ACTIVE	INJ_WAG
DU-3813	42501017180000	P & A	PROD_OIL
DU-3814	42501017200000	ACTIVE	PROD_OIL
DU-3815	42501006020000	ACTIVE	PROD_OIL
DU-3816	42501006080000	ACTIVE	PROD_OIL
DU-3817	42501017160000	ACTIVE	INJ_WAG
DU-3818	42501017240000	ACTIVE	INJ_WAG

DU-3819	42501006060000	ACTIVE	INJ_WAG
DU-3820	42501006120000	ACTIVE	INJ_WAG
DU-3821	42501017140000	ACTIVE	PROD_OIL
DU-3822	42501017220000	ACTIVE	PROD_OIL
DU-3823	42501006040000	ACTIVE	PROD_OIL
DU-3824	42501006100000	ACTIVE	PROD_OIL
DU-3825	42501302380000	ACTIVE	PROD_OIL
DU-3826	42501302370000	ACTIVE	PROD_OIL
DU-3827	42501304620000	ACTIVE	INJ_WAG
DU-3828	42501304450000	P & A	PROD_OIL
DU-3829	42501304440000	P & A	PROD_OIL
DU-3830	42501304430000	ACTIVE	PROD_OIL
DU-3831	42501304550000	ACTIVE	INJ_WAG
DU-3832	42501304560000	P & A	PROD_OIL
DU-3833	42501304610000	P & A	PROD_OIL
DU-3834	42501304570000	P & A	INJ_WAG
DU-3835	42501304580000	ACTIVE	INJ_WAG
DU-3836	42501304590000	ACTIVE	PROD_OIL
DU-3837	42501304600000	P & A	PROD_OIL
DU-3838	42501308680000	ACTIVE	INJ_WAG
DU-3839	42501316960000	ACTIVE	PROD_OIL
DU-3840	42501316980000	TA	PROD_OIL
DU-3841	42501317000000	TA	PROD_OIL
DU-3842	42501338970000	ACTIVE	PROD_OIL
DU-3843	42501340430000	ACTIVE	PROD_OIL
DU-3844	42501341460000	ACTIVE	PROD_OIL
DU-3845	42501341560000	ACTIVE	INJ_WAG
DU-3847	42501341620000	ACTIVE	PROD_OIL
DU-3848	42501341480000	ACTIVE	PROD_OIL
DU-3849	42501341490000	ACTIVE	PROD_OIL
DU-3850	42501341500000	ACTIVE	PROD_OIL
DU-3851	42501341510000	ACTIVE	PROD_OIL
DU-3852	42501341520000	ACTIVE	PROD_OIL
DU-3853	42501341610000	ACTIVE	PROD_OIL
DU-3854	42501341600000	ACTIVE	PROD_OIL
DU-3855	42501341530000	ACTIVE	PROD_OIL
DU-3856	42501341540000	ACTIVE	PROD_OIL
DU-3857	42501341550000	ACTIVE	PROD_OIL
DU-3858	42501341570000	ACTIVE	PROD_OIL
DU-3859	42501342220000	ACTIVE	PROD_OIL
DU-3860	42501342320000	ACTIVE	PROD_OIL
DU-3861	42501342210000	ACTIVE	PROD_OIL
DU-3862	42501342330000	ACTIVE	PROD_OIL
DU-3863	42501342340000	ACTIVE	PROD_OIL
DU-3864	42501342350000	ACTIVE	PROD_OIL
DU-3865	42501342360000	ACTIVE	PROD_OIL
DU-3866	42501342370000	ACTIVE	PROD_OIL
DU-3867	42501343540000	ACTIVE	PROD_OIL
DU-3868	42501348430000	ACTIVE	INJ_WAG
DU-3869	42501348710000	ACTIVE	PROD_OIL
DU-3870	42501353050000	ACTIVE	PROD_OIL
DU-3871	42501354100000	ACTIVE	INJ_WAG
DU-3872	42501354110000	ACTIVE	INJ_WAG
DU-3873	42501354060000	ACTIVE	INJ_WAG

DU-3874	42501354070000	ACTIVE	INJ_WAG
DU-3875	42501354080000	ACTIVE	INJ_WAG
DU-3876	42501354710000	ACTIVE	INJ_WAG
DU-3877	42501354740000	ACTIVE	INJ_WAG
DU-3878	42501354750000	ACTIVE	INJ_WAG
DU-3879	42501354760000	ACTIVE	INJ_WAG
DU-3880	42501354770000	ACTIVE	INJ_WAG
DU-3901	42501006090000	ACTIVE	INJ_WAG
DU-3902	42501006030000	ACTIVE	INJ_WAG
DU-3903	42501017170000	TA	INJ_H2O
DU-3904	42501017330000	ACTIVE	INJ_H2O
DU-3905	42501006130000	ACTIVE	PROD_OIL
DU-3906	42501006110000	ACTIVE	PROD_OIL
DU-3907	42501017150000	ACTIVE	PROD_OIL
DU-3908	42501017190000	ACTIVE	INJ_WAG
DU-3909	42501006070000	ACTIVE	INJ_WAG
DU-3910	42501006050000	ACTIVE	PROD_OIL
DU-3911	42501017210000	ACTIVE	PROD_OIL
DU-3912	42501017320000	ACTIVE	INJ_H2O
DU-3913	42501025380000	ACTIVE	PROD_OIL
DU-3914	42501025390000	TA	PROD_OIL
DU-3915	42501021830000	P & A	INJ_WAG
DU-3916	42501021870000	ACTIVE	INJ_H2O
DU-3917	42501025420000	P & A	PROD_OIL
DU-3918	42501025400000	ACTIVE	PROD_OIL
DU-3919	42501025410000	P & A	PROD_OIL
DU-3920	42501021850000	P & A	INJ_H2O
DU-3921	42501021890000	P & A	INJ_H2O
DU-3922	42501308710000	ACTIVE	INJ_WAG
DU-3923	42501308550000	ACTIVE	INJ_WAG
DU-3924	42501308560000	ACTIVE	PROD_OIL
DU-3925	42501308570000	ACTIVE	INJ_WAG
DU-3926	42501308580000	ACTIVE	PROD_OIL
DU-3927	42501308590000	ACTIVE	INJ_WAG
DU-3928	42501308600000	ACTIVE	PROD_OIL
DU-3929	42501311200000	ACTIVE	PROD_OIL
DU-3930	42501317030000	ACTIVE	PROD_OIL
DU-3932	42501330620000	ACTIVE	PROD_OIL
DU-3933	42501332900000	TA	PROD_OIL
DU-3934	42501332910000	ACTIVE	PROD_OIL
DU-3935	42501332920000	ACTIVE	INJ_WAG
DU-3936	42501332880000	ACTIVE	INJ_WAG
DU-3937	42501102150000	TA	INJ_WAG
DU-3938	42501100250000	TA	PROD_OIL
DU-3939	42501347020000	ACTIVE	PROD_OIL
DU-3940	42501347030000	ACTIVE	PROD_OIL
DU-3941	42501347000000	ACTIVE	PROD_OIL
DU-3942	42501347040000	ACTIVE	PROD_OIL
DU-3943	42501346990000	ACTIVE	PROD_OIL
DU-3944	42501347010000	ACTIVE	PROD_OIL
DU-3945	42501347310000	ACTIVE	INJ_WAG
DU-3946	42501352370000	ACTIVE	PROD_OIL
DU-3947	42501352380000	ACTIVE	PROD_OIL
DU-3948	42501352390000	ACTIVE	PROD_OIL

DU-3949	42501352400000	TA	PROD_OIL
DU-3950	42501352410000	ACTIVE	PROD_OIL
DU-3951	42501352420000	ACTIVE	PROD_OIL
DU-3955	42501354200000	ACTIVE	PROD_OIL
DU-3956	42501354780000	ACTIVE	INJ_WAG
DU-3957	42501354790000	ACTIVE	INJ_WAG
DU-3958	42501354800000	ACTIVE	INJ_WAG
DU-4001	42501017760000	P & A	INJ_H2O
DU-4002	42501021470000	TA	PROD_OIL
DU-4003	42501020180000	P & A	INJ_H2O
DU-4004	42501021380000	P & A	INJ_H2O
DU-4005	42501021390000	P & A	PROD_OIL
DU-4006	42501017770000	TA	INJ_H2O
DU-4007	42501331380000	TA	PROD_OIL
DU-4101	42501010410000	ACTIVE	PROD_OIL
DU-4102	42501000560000	ACTIVE	INJ_WAG
DU-4103	42501000530000	P & A	INJ_H2O
DU-4104	42501010400000	P & A	INJ_H2O
DU-4105	42501010440000	P & A	PROD_OIL
DU-4106	42501010420000	ACTIVE	INJ_WAG
DU-4107	42501000550000	P & A	INJ_H2O
DU-4108	42501000540000	ACTIVE	INJ_WAG
DU-4109	42501010450000	P & A	INJ_H2O
DU-4110	42501010430000	P & A	INJ_H2O
DU-4111	42501028280000	ACTIVE	INJ_WAG
DU-4112	42501028250000	ACTIVE	INJ_WAG
DU-4113	42501028260000	P & A	INJ_H2O
DU-4114	42501028270000	ACTIVE	INJ_H2O
DU-4115	42501319110000	ACTIVE	PROD_OIL
DU-4116	42501309730000	ACTIVE	PROD_OIL
DU-4117	42501314570000	ACTIVE	PROD_OIL
DU-4118	42501314440000	ACTIVE	PROD_OIL
DU-4119	42501315550000	ACTIVE	PROD_OIL
DU-4120	42501315580000	ACTIVE	INJ_WAG
DU-4121	42501319840000	P & A	PROD_OIL
DU-4122	42501319090000	ACTIVE	PROD_OIL
DU-4123	42501319060000	TA	PROD_OIL
DU-4124	42501327490000	ACTIVE	INJ_WAG
DU-4125	42501329250000	P & A	INJ_H2O
DU-4126	42501330670000	ACTIVE	PROD_OIL
DU-4127	42501330630000	ACTIVE	PROD_OIL
DU-4128	42501331370000	ACTIVE	PROD_OIL
DU-4129	42501331670000	TA	INJ_H2O
DU-4130	42501332070000	ACTIVE	PROD_OIL
DU-4131	42501333590000	ACTIVE	PROD_OIL
DU-4132	42501336450000	ACTIVE	INJ_WAG
DU-4133	42501348720000	ACTIVE	INJ_WAG
DU-4134GC	42501353860000	SHUT-IN	PROD_GAS
DU-4135	42501354360000	ACTIVE	PROD_OIL
DU-4136	42501355520000	SHUT-IN	PROD_GAS
DU-4137	42501362000000	ACTIVE	PROD_OIL
DU-4138	42501362550000	ACTIVE	PROD_OIL
DU-4139	42501362540000	ACTIVE	PROD_OIL
DU-4201	42501005920000	ACTIVE	INJ_WAG

DU-4202	42501005980000	P & A	PROD_OIL
DU-4203	42501016390000	ACTIVE	INJ_WAG
DU-4204	42501011070000	ACTIVE	INJ_WAG
DU-4205	42501005940000	ACTIVE	INJ_WAG
DU-4206	42501005970000	ACTIVE	INJ_WAG
DU-4207	42501005950000	ACTIVE	INJ_WAG
DU-4208	42501005930000	P & A	INJ_H2O
DU-4209	42501005960000	ACTIVE	INJ_WAG
DU-4210	42501011040000	P & A	INJ_H2O
DU-4211	42501006910000	P & A	INJ_H2O
DU-4212	42501006900000	P & A	PROD_OIL
DU-4213	42501015640000	P & A	PROD_OIL
DU-4214	42501011050000	ACTIVE	INJ_H2O
DU-4215	42501006920000	P & A	PROD_OIL
DU-4216	42501006930000	ACTIVE	INJ_H2O
DU-4217	42501309860000	ACTIVE	PROD_OIL
DU-4218	42501309820000	ACTIVE	PROD_OIL
DU-4219	42501309850000	ACTIVE	PROD_OIL
DU-4220	42501309830000	ACTIVE	PROD_OIL
DU-4221	42501309940000	ACTIVE	PROD_OIL
DU-4222	42501309970000	INACTIVE	PROD_OIL
DU-4223	42501309890000	ACTIVE	PROD_OIL
DU-4224	42501314460000	ACTIVE	INJ_WAG
DU-4225	42501314470000	ACTIVE	PROD_OIL
DU-4226	42501314480000	P & A	PROD_OIL
DU-4227	42501314510000	ACTIVE	INJ_WAG
DU-4228	42501315590000	ACTIVE	INJ_WAG
DU-4229	42501315560000	ACTIVE	PROD_OIL
DU-4230	42501315570000	ACTIVE	PROD_OIL
DU-4231	42501316940000	ACTIVE	PROD_OIL
DU-4232	42501316880000	ACTIVE	PROD_OIL
DU-4233	42501319080000	ACTIVE	PROD_OIL
DU-4234	42501319030000	ACTIVE	PROD_OIL
DU-4235	42501319390000	ACTIVE	PROD_GAS
DU-4236	42501319350000	TA	PROD_GAS
DU-4237	42501325940000	ACTIVE	PROD_OIL
DU-4238	42501325980000	ACTIVE	PROD_OIL
DU-4239	42501328560000	TA	PROD_OIL
DU-4240	42501331360000	ACTIVE	PROD_OIL
DU-4241	42501332080000	ACTIVE	PROD_OIL
DU-4242	42501333920000	ACTIVE	INJ_WAG
DU-4243	42501333630000	ACTIVE	PROD_OIL
DU-4244	42501333640000	ACTIVE	PROD_OIL
DU-4245	42501335930000	ACTIVE	INJ_WAG
DU-4246	42501346900000	ACTIVE	PROD_OIL
DU-4247	42501349650000	ACTIVE	PROD_OIL
DU-4250	42501353580000	ACTIVE	INJ_WAG
DU-4251	42501353590000	ACTIVE	INJ_WAG
DU-4252	42501353600000	ACTIVE	INJ_WAG
DU-4253	42501353710000	ACTIVE	INJ_WAG
DU-4254	42501354720000	ACTIVE	PROD_GAS
DU-4255	42501354730000	ACTIVE	PROD_GAS
DU-4257	42501360000000	ACTIVE	PROD_OIL
DU-4258	42501362010000	ACTIVE	PROD_OIL

DU-4259	42501361990000	ACTIVE	PROD_OIL
DU-4260	42501362050000	ACTIVE	PROD_OIL
DU-4301	42501006170000	ACTIVE	INJ_WAG
DU-4302	42501006310000	ACTIVE	INJ_WAG
DU-4303	42501006250000	ACTIVE	INJ_WAG
DU-4304	42501006210000	ACTIVE	INJ_WAG
DU-4305	42501006230000	P & A	PROD_OIL
DU-4306W	42501006290000	ACTIVE	INJ_WAG
DU-4307	42501006270000	ACTIVE	INJ_WAG
DU-4308	42501006190000	ACTIVE	INJ_WAG
DU-4309	42501006200000	ACTIVE	INJ_WAG
DU-4310	42501006280000	ACTIVE	INJ_WAG
DU-4311	42501006260000	ACTIVE	INJ_WAG
DU-4312	42501006180000	P & A	INJ_H2O
DU-4313	42501006220000	TA	PROD_OIL
DU-4314	42501006330000	P & A	PROD_OIL
DU-4315	42501006300000	ACTIVE	INJ_WAG
DU-4316	42501006240000	ACTIVE	INJ_WAG
DU-4317	42501307630000	ACTIVE	PROD_OIL
DU-4318	42501310030000	ACTIVE	PROD_OIL
DU-4319	42501309580000	ACTIVE	PROD_OIL
DU-4320	42501309240000	ACTIVE	PROD_OIL
DU-4321	42501309590000	ACTIVE	PROD_OIL
DU-4322	42501309600000	P & A	INJ_H2O
DU-4323	42501309250000	ACTIVE	PROD_OIL
DU-4324	42501309570000	ACTIVE	PROD_OIL
DU-4326	42501309960000	ACTIVE	PROD_OIL
DU-4327	42501309170000	P & A	INJ_H2O
DU-4328	42501309630000	ACTIVE	PROD_OIL
DU-4329	42501315620000	ACTIVE	INJ_WAG
DU-4330	42501315630000	ACTIVE	PROD_OIL
DU-4331	42501316910000	ACTIVE	PROD_OIL
DU-4332	42501316920000	ACTIVE	PROD_OIL
DU-4333	42501319100000	ACTIVE	INJ_H2O
DU-4334	42501328550000	P & A	PROD_OIL
DU-4335	42501333620000	TA	PROD_OIL
DU-4336	42501333610000	ACTIVE	PROD_OIL
DU-4337	42501335920000	ACTIVE	PROD_OIL
DU-4338	42501336460000	ACTIVE	INJ_WAG
DU-4339	42501345580000	TA	PROD_GAS
DU-4340	42501346920000	ACTIVE	PROD_GAS
DU-4341	42501346930000	TA	PROD_GAS
DU-4342	42501346940000	ACTIVE	PROD_GAS
DU-4343GC	42501352230000	ACTIVE	PROD_GAS
DU-4344GC	42501352070000	TA	PROD_GAS
DU-4346	42501353610000	ACTIVE	PROD_OIL
DU-4347	42501354370000	ACTIVE	PROD_GAS
DU-4348GC	42501354860000	TA	PROD_OIL
DU-4349	42501359760000	P & A	PROD_OIL
DU-4350	42501359770000	ACTIVE	PROD_OIL
DU-4351	42501359780000	ACTIVE	PROD_OIL
DU-4352	42501359790000	ACTIVE	PROD_OIL
DU-4353	42501359870000	ACTIVE	PROD_OIL
DU-4354	42501359880000	ACTIVE	PROD_OIL

DU-4355	42501359830000	ACTIVE	PROD_OIL
DU-4356	42501359810000	ACTIVE	PROD_OIL
DU-4357	42501359860000	ACTIVE	PROD_OIL
DU-4358	42501360710000	ACTIVE	PROD_OIL
DU-4401	42501025100000	ACTIVE	INJ_WAG
DU-4402	42501025080000	P & A	PROD_OIL
DU-4403	42501026990000	P & A	INJ_H2O
DU-4404	42501026980000	P & A	INJ_WAG
DU-4405	42501025090000	ACTIVE	INJ_WAG
DU-4406	42501023690000	P & A	PROD_OIL
DU-4407	42501027000000	P & A	PROD_OIL
DU-4408	42501001830000	ACTIVE	INJ_WAG
DU-4409	42501020880000	P & A	INJ_H2O
DU-4410	42501020890000	ACTIVE	PROD_OIL
DU-4411	42501001790000	P & A	INJ_H2O
DU-4412	42501001800000	ACTIVE	PROD_OIL
DU-4413	42501020910000	ACTIVE	PROD_OIL
DU-4414	42501020900000	P & A	PROD_OIL
DU-4415	42501001810000	SHUT-IN	INJ_H2O
DU-4416	42501001820000	P & A	PROD_OIL
DU-4417	42501308170000	ACTIVE	PROD_OIL
DU-4418	42501308150000	ACTIVE	INJ_WAG
DU-4419	42501308610000	P & A	PROD_OIL
DU-4420	42501308620000	ACTIVE	INJ_WAG
DU-4421	42501309990000	P & A	INJ_H2O
DU-4422	42501310540000	ACTIVE	PROD_OIL
DU-4423	42501310040000	ACTIVE	PROD_OIL
DU-4424	42501310050000	ACTIVE	PROD_OIL
DU-4425	42501310550000	ACTIVE	PROD_OIL
DU-4426	42501309980000	ACTIVE	INJ_WAG
DU-4427	42501310010000	ACTIVE	INJ_WAG
DU-4428	42501310340000	P & A	PROD_OIL
DU-4429	42501311250000	ACTIVE	PROD_OIL
DU-4430	42501315060000	ACTIVE	PROD_OIL
DU-4431	42501315080000	P & A	PROD_GAS
DU-4432	42501315090000	ACTIVE	INJ_WAG
DU-4433	42501315040000	ACTIVE	PROD_OIL
DU-4434	42501315070000	ACTIVE	PROD_OIL
DU-4435	42501315710000	ACTIVE	INJ_WAG
DU-4436	42501315850000	ACTIVE	PROD_OIL
DU-4437	42501316630000	TA	PROD_OIL
DU-4438	42501316990000	ACTIVE	PROD_GAS
DU-4439	42501319340000	TA	INJ_WAG
DU-4440	42501328780000	ACTIVE	PROD_OIL
DU-4441	42501332090000	ACTIVE	INJ_WAG
DU-4442	42501332100000	ACTIVE	PROD_OIL
DU-4443	42501332420000	ACTIVE	INJ_WAG
DU-4444	42501334610000	ACTIVE	INJ_WAG
DU-4445	42501336470000	ACTIVE	PROD_GAS
DU-4447	42501345430000	TA	PROD_GAS
DU-4448	42501345670000	ACTIVE	PROD_GAS
DU-4449	42501346260000	ACTIVE	PROD_GAS
DU-4450	42501346340000	ACTIVE	PROD_GAS
DU-4451	42501346570000	ACTIVE	PROD_OIL

DU-4452	42501346690000	ACTIVE	PROD_OIL
DU-4453	42501346510000	ACTIVE	INJ_WAG
DU-4454	42501346700000	ACTIVE	PROD_OIL
DU-4455	42501347090000	ACTIVE	PROD_OIL
DU-4456	42501347690000	ACTIVE	PROD_OIL
DU-4457	42501347700000	ACTIVE	PROD_OIL
DU-4458	42501347820000	ACTIVE	INJ_WAG
DU-4459	42501347710000	ACTIVE	PROD_OIL
DU-4460	42501347720000	ACTIVE	PROD_OIL
DU-4461GC	42501351660000	ACTIVE	PROD_GAS
DU-4463GC	42501354870000	ACTIVE	PROD_GAS
DU-4466	42501354590000	ACTIVE	PROD_GAS
DU-4467	42501355980000	DRILL	PROD_GAS
DU-4468	42501355950000	DRILL	PROD_GAS
DU-4501	42501014170000	ACTIVE	INJ_WAG
DU-4502	42501013780000	P & A	INJ_H2O
DU-4503	42501013890000	ACTIVE	INJ_WAG
DU-4504	42501013920000	ACTIVE	INJ_WAG
DU-4505	42501014160000	ACTIVE	INJ_WAG
DU-4506	42501013950000	P & A	INJ_H2O
DU-4507	42501014190000	ACTIVE	PROD_OIL
DU-4508	42501014200000	ACTIVE	PROD_OIL
DU-4509	42501014010000	P & A	INJ_H2O
DU-4510	42501013850000	P & A	INJ_H2O
DU-4511	42501014210000	ACTIVE	INJ_WAG
DU-4512	42501013910000	ACTIVE	INJ_WAG
DU-4513	42501013940000	P & A	INJ_H2O
DU-4514	42501014180000	P & A	PROD_OIL
DU-4515	42501014040000	P & A	PROD_OIL
DU-4516	42501014020000	P & A	INJ_H2O
DU-4517	42501013830000	ACTIVE	PROD_OIL
DU-4518	42501014000000	P & A	PROD_OIL
DU-4519	42501014030000	ACTIVE	INJ_WAG
DU-4520	42501013960000	ACTIVE	PROD_OIL
DU-4521	42501013870000	ACTIVE	PROD_OIL
DU-4522	42501807970000	P & A	PROD_OIL
DU-4523	42501307820000	ACTIVE	INJ_WAG
DU-4524	42501308160000	ACTIVE	PROD_OIL
DU-4525	42501308180000	ACTIVE	PROD_OIL
DU-4526	42501308330000	P & A	INJ_H2O
DU-4527	42501308420000	ACTIVE	PROD_OIL
DU-4528	42501308300000	ACTIVE	INJ_WAG
DU-4529	42501308400000	P & A	INJ_H2O
DU-4530	42501308410000	P & A	PROD_OIL
DU-4531	42501308520000	ACTIVE	INJ_WAG
DU-4532	42501308340000	ACTIVE	INJ_WAG
DU-4533	42501308370000	ACTIVE	INJ_WAG
DU-4534	42501308360000	ACTIVE	INJ_WAG
DU-4535	42501308690000	ACTIVE	PROD_OIL
DU-4536	42501308540000	ACTIVE	PROD_OIL
DU-4537	42501014320000	TA	PROD_OIL
DU-4538	42501314600000	ACTIVE	PROD_OIL
DU-4539	42501316930000	ACTIVE	PROD_OIL
DU-4540	42501329110000	ACTIVE	PROD_OIL

DU-4541	42501331680000	ACTIVE	INJ_WAG
DU-4542	42501331660000	ACTIVE	INJ_WAG
DU-4543	42501334440000	ACTIVE	INJ_WAG
DU-4544	42501342820000	ACTIVE	PROD_OIL
DU-4545	42501342810000	ACTIVE	PROD_OIL
DU-4546	42501343480000	ACTIVE	PROD_OIL
DU-4547	42501345870000	ACTIVE	PROD_GAS
DU-4548	42501345860000	TA	PROD_GAS
DU-4549	42501345850000	ACTIVE	PROD_GAS
DU-4550	42501347790000	ACTIVE	PROD_OIL
DU-4551	42501346710000	ACTIVE	PROD_OIL
DU-4552	42501346720000	ACTIVE	PROD_OIL
DU-4553	42501346730000	ACTIVE	PROD_OIL
DU-4554	42501346740000	ACTIVE	PROD_OIL
DU-4555	42501346520000	ACTIVE	PROD_OIL
DU-4556	42501346470000	ACTIVE	PROD_OIL
DU-4557	42501346480000	ACTIVE	PROD_OIL
DU-4558	42501346750000	ACTIVE	PROD_OIL
DU-4559	42501347770000	ACTIVE	PROD_OIL
DU-4560	42501346530000	ACTIVE	PROD_OIL
DU-4561	42501347800000	ACTIVE	PROD_OIL
DU-4562	42501347780000	ACTIVE	PROD_OIL
DU-4563	42501346540000	ACTIVE	INJ_WAG
DU-4564	42501346670000	ACTIVE	INJ_WAG
DU-4568GC	42501351020000	TA	PROD_GAS
DU-4569GC	42501351060000	TA	PROD_GAS
DU-4570GC	42501351030000	ACTIVE	PROD_GAS
DU-4571GC	42501351040000	TA	PROD_GAS
DU-4572GC	42501352880000	TA	PROD_GAS
DU-4573	42501354170000	ACTIVE	PROD_OIL
DU-4574	42501354240000	ACTIVE	PROD_OIL
DU-4575	42501354380000	TA	PROD_GAS
DU-4576	42501354390000	TA	PROD_GAS
DU-4601	42501027190000	P & A	INJ_H2O
DU-4602	42501025500000	ACTIVE	INJ_WAG
DU-4603	42501002280000	P & A	PROD_OIL
DU-4604	42501027180000	ACTIVE	PROD_OIL
DU-4605	42501023510000	ACTIVE	PROD_OIL
DU-4606	42501027200000	ACTIVE	PROD_OIL
DU-4607	42501025470000	ACTIVE	PROD_OIL
DU-4608	42501002290000	ACTIVE	INJ_WAG
DU-4609	42501027170000	P & A	INJ_H2O
DU-4610	42501025460000	ACTIVE	INJ_WAG
DU-4611	42501025490000	ACTIVE	PROD_OIL
DU-4612	42501002300000	ACTIVE	PROD_OIL
DU-4613	42501027160000	ACTIVE	PROD_OIL
DU-4614	42501025450000	ACTIVE	PROD_OIL
DU-4615	42501025520000	ACTIVE	INJ_WAG
DU-4616	42501002270000	ACTIVE	PROD_OIL
DU-4617	42501025150000	P & A	INJ_H2O
DU-4618	42501025480000	ACTIVE	PROD_OIL
DU-4619	42501023500000	ACTIVE	PROD_OIL
DU-4620	42501304320000	ACTIVE	PROD_OIL
DU-4621	42501025570000	ACTIVE	INJ_WAG

DU-4622	42501025560000	P & A	PROD_OIL
DU-4623	42501025550000	ACTIVE	PROD_OIL
DU-4624	42501025540000	ACTIVE	INJ_WAG
DU-4625	42501308220000	ACTIVE	PROD_OIL
DU-4626	42501308290000	TA	PROD_GAS
DU-4627	42501308280000	P & A	PROD_OIL
DU-4628	42501308350000	ACTIVE	INJ_WAG
DU-4629	42501308430000	ACTIVE	PROD_OIL
DU-4630	42501308230000	ACTIVE	INJ_WAG
DU-4632	42501308110000	P & A	PROD_OIL
DU-4633	42501314630000	TA	PROD_GAS
DU-4634	42501314640000	ACTIVE	PROD_OIL
DU-4635	42501315720000	ACTIVE	INJ_WAG
DU-4636	42501315750000	P & A	PROD_OIL
DU-4637	42501315910000	ACTIVE	INJ_WAG
DU-4638	42501315770000	ACTIVE	PROD_OIL
DU-4639	42501315900000	ACTIVE	PROD_OIL
DU-4640	42501316510000	ACTIVE	PROD_OIL
DU-4641	42501321030000	ACTIVE	PROD_OIL
DU-4642	42501325320000	ACTIVE	INJ_WAG
DU-4643	42501336490000	ACTIVE	INJ_WAG
DU-4644	42501341360000	ACTIVE	PROD_OIL
DU-4645	42501345880000	ACTIVE	PROD_OIL
DU-4646	42501345590000	ACTIVE	PROD_OIL
DU-4647	42501345200000	ACTIVE	PROD_OIL
DU-4648	42501345410000	ACTIVE	PROD_OIL
DU-4649	42501345190000	ACTIVE	PROD_OIL
DU-4650	42501345640000	ACTIVE	INJ_WAG
DU-4651	42501345600000	P & A	INJ_H2O
DU-4652	42501345610000	ACTIVE	INJ_WAG
DU-4653	42501345830000	ACTIVE	INJ_WAG
DU-4654	42501346080000	ACTIVE	INJ_WAG
DU-4655	42501347830000	ACTIVE	PROD_OIL
DU-4656	42501348140000	ACTIVE	PROD_OIL
DU-4657	42501348150000	ACTIVE	PROD_OIL
DU-4658	42501348160000	ACTIVE	PROD_OIL
DU-4659	42501348170000	ACTIVE	INJ_WAG
DU-4660	42501348180000	ACTIVE	INJ_WAG
DU-4661	42501348190000	ACTIVE	INJ_WAG
DU-4662	42501348360000	ACTIVE	PROD_OIL
DU-4663	42501348370000	ACTIVE	PROD_OIL
DU-4664	42501348200000	ACTIVE	PROD_OIL
DU-4665	42501348210000	ACTIVE	PROD_OIL
DU-4666	42501348220000	ACTIVE	PROD_OIL
DU-4667	42501347730000	ACTIVE	PROD_OIL
DU-4668GC	42501354890000	TA	PROD_GAS
DU-4701	42501028420000	P & A	INJ_H2O
DU-4702	42501028430000	P & A	PROD_OIL
DU-4703	42501008190000	ACTIVE	INJ_WAG
DU-4704	42501028950000	INACTIVE	INJ_WAG
DU-4705	42501008210000	ACTIVE	INJ_WAG
DU-4706	42501028940000	ACTIVE	PROD_OIL
DU-4707	42501028410000	P & A	INJ_H2O
DU-4708	42501028440000	ACTIVE	INJ_WAG

DU-4709	42501008200000	ACTIVE	INJ_WAG
DU-4710	42501008220000	ACTIVE	INJ_WAG
DU-4711	42501028000000	ACTIVE	PROD_OIL
DU-4712	42501027950000	ACTIVE	PROD_OIL
DU-4713	42501027960000	ACTIVE	PROD_OIL
DU-4714	42501027990000	ACTIVE	PROD_OIL
DU-4715	42501000520000	ACTIVE	INJ_WAG
DU-4716	42501018240000	ACTIVE	PROD_OIL
DU-4717	42501000510000	ACTIVE	PROD_OIL
DU-4718	42501027940000	ACTIVE	PROD_OIL
DU-4719	42501027980000	ACTIVE	PROD_OIL
DU-4720	42501027970000	P & A	PROD_OIL
DU-4721	42501302360000	ACTIVE	PROD_OIL
DU-4722	42501302350000	ACTIVE	INJ_WAG
DU-4723	42501304530000	ACTIVE	INJ_WAG
DU-4724	42501304520000	ACTIVE	PROD_OIL
DU-4725	42501304510000	ACTIVE	PROD_OIL
DU-4726	42501304500000	ACTIVE	PROD_OIL
DU-4727	42501304490000	P & A	PROD_OIL
DU-4728	42501304540000	ACTIVE	INJ_WAG
DU-4729	42501305260000	ACTIVE	PROD_OIL
DU-4730	42501305340000	ACTIVE	PROD_OIL
DU-4731	42501305330000	ACTIVE	INJ_WAG
DU-4732	42501305240000	ACTIVE	INJ_WAG
DU-4733	42501304980000	ACTIVE	INJ_WAG
DU-4734	42501305400000	ACTIVE	INJ_WAG
DU-4735	42501305270000	TA	PROD_OIL
DU-4736	42501308730000	ACTIVE	PROD_OIL
DU-4737	42501310060000	TA	PROD_OIL
DU-4738	42501310070000	TA	PROD_OIL
DU-4739	42501310080000	TA	PROD_OIL
DU-4740	42501321040000	ACTIVE	INJ_WAG
DU-4741	42501335460000	ACTIVE	PROD_OIL
DU-4742	42501340210000	ACTIVE	PROD_OIL
DU-4743	42501340200000	ACTIVE	PROD_OIL
DU-4744	42501340190000	ACTIVE	PROD_OIL
DU-4745	42501342530000	ACTIVE	PROD_OIL
DU-4746	42501342610000	ACTIVE	PROD_OIL
DU-4747	42501342600000	ACTIVE	PROD_OIL
DU-4748	42501342550000	ACTIVE	PROD_OIL
DU-4749	42501343390000	ACTIVE	INJ_WAG
DU-4750	42501343380000	ACTIVE	INJ_WAG
DU-4751	42501343250000	ACTIVE	PROD_OIL
DU-4752	42501343260000	ACTIVE	PROD_OIL
DU-4753	42501343270000	ACTIVE	PROD_OIL
DU-4754	42501343370000	ACTIVE	INJ_WAG
DU-4755	42501343300000	ACTIVE	PROD_OIL
DU-4756	42501343310000	ACTIVE	PROD_OIL
DU-4757	42501343340000	ACTIVE	PROD_OIL
DU-4758	42501343470000	ACTIVE	PROD_OIL
DU-4759	42501343320000	ACTIVE	PROD_OIL
DU-4760	42501343330000	ACTIVE	PROD_OIL
DU-4761	42501355470000	ACTIVE	PROD_GAS
DU-4762GC	42501355960000	DRILL	PROD_GAS

DU-4763	42501362030000	ACTIVE	INJ_WAG
DU-4801	42501000790000	P & A	INJ_H2O
DU-4802	42501000830000	ACTIVE	INJ_WAG
DU-4803	42501011910000	ACTIVE	INJ_WAG
DU-4804	42501011950000	ACTIVE	INJ_WAG
DU-4805	42501003520000	ACTIVE	PROD_OIL
DU-4806	42501000800000	ACTIVE	INJ_WAG
DU-4807	42501000840000	ACTIVE	INJ_WAG
DU-4808	42501011920000	ACTIVE	INJ_WAG
DU-4809	42501011970000	ACTIVE	INJ_WAG
DU-4810	42501000810000	ACTIVE	PROD_OIL
DU-4811	42501000850000	ACTIVE	PROD_OIL
DU-4812	42501011930000	ACTIVE	PROD_OIL
DU-4813	42501011960000	ACTIVE	PROD_OIL
DU-4814	42501000820000	ACTIVE	PROD_OIL
DU-4815	42501000860000	ACTIVE	PROD_OIL
DU-4816	42501011940000	P & A	PROD_OIL
DU-4817	42501011980000	P & A	INJ_H2O
DU-4818	42501302340000	ACTIVE	PROD_OIL
DU-4819	42501302330000	ACTIVE	INJ_WAG
DU-4820	42501304420000	ACTIVE	INJ_WAG
DU-4821	42501304410000	ACTIVE	INJ_WAG
DU-4822	42501304700000	ACTIVE	PROD_OIL
DU-4823	42501304690000	P & A	PROD_OIL
DU-4824	42501304670000	ACTIVE	PROD_OIL
DU-4825	42501304640000	ACTIVE	PROD_OIL
DU-4826	42501304650000	ACTIVE	PROD_OIL
DU-4827	42501304660000	ACTIVE	INJ_WAG
DU-4828	42501304710000	ACTIVE	INJ_WAG
DU-4829	42501304680000	TA	INJ_H2O
DU-4830	42501305320000	ACTIVE	INJ_WAG
DU-4831	42501305300000	ACTIVE	INJ_WAG
DU-4832	42501305290000	ACTIVE	INJ_WAG
DU-4833	42501305080000	ACTIVE	INJ_WAG
DU-4834	42501305120000	ACTIVE	INJ_WAG
DU-4835	42501305280000	ACTIVE	PROD_OIL
DU-4836	42501305110000	ACTIVE	PROD_OIL
DU-4837	42501317060000	P & A	PROD_OIL
DU-4838	42501333930000	ACTIVE	PROD_OIL
DU-4839	42501335410000	ACTIVE	PROD_OIL
DU-4840	42501337950000	ACTIVE	PROD_OIL
DU-4841	42501341210000	ACTIVE	PROD_OIL
DU-4842	42501341200000	ACTIVE	PROD_OIL
DU-4843	42501341230000	ACTIVE	INJ_WAG
DU-4844	42501341590000	ACTIVE	PROD_OIL
DU-4845	42501341700000	ACTIVE	PROD_OIL
DU-4846	42501341660000	ACTIVE	PROD_OIL
DU-4847	42501341670000	ACTIVE	PROD_OIL
DU-4848	42501341580000	ACTIVE	PROD_OIL
DU-4849	42501341650000	ACTIVE	PROD_OIL
DU-4850	42501341640000	ACTIVE	PROD_OIL
DU-4851	42501341680000	ACTIVE	PROD_OIL
DU-4852	42501341450000	ACTIVE	PROD_OIL
DU-4853	42501341690000	ACTIVE	PROD_OIL

DU-4854	42501342540000	ACTIVE	PROD_OIL
DU-4855	42501342270000	ACTIVE	PROD_OIL
DU-4856	42501342570000	ACTIVE	PROD_OIL
DU-4857	42501342590000	ACTIVE	PROD_OIL
DU-4858	42501342580000	ACTIVE	PROD_OIL
DU-4859	42501342560000	ACTIVE	PROD_OIL
DU-4860	42501342380000	ACTIVE	PROD_OIL
DU-4861	42501351520000	ACTIVE	INJ_WAG
DU-4862	42501351530000	ACTIVE	INJ_WAG
DU-4863	42501351540000	ACTIVE	INJ_WAG
DU-4864	42501351550000	ACTIVE	INJ_WAG
DU-4865	42501354880000	ACTIVE	PROD_OIL
DU-4901	42501012760000	P & A	INJ_WAG
DU-4902	42501012800000	ACTIVE	INJ_WAG
DU-4903	42501007300000	TA	PROD_OIL
DU-4904	42501007360000	P & A	INJ_H2O
DU-4905	42501012810000	ACTIVE	PROD_OIL
DU-4906	42501012770000	ACTIVE	INJ_WAG
DU-4907	42501007310000	ACTIVE	INJ_H2O
DU-4908	42501012780000	ACTIVE	PROD_OIL
DU-4909	42501012820000	ACTIVE	INJ_H2O
DU-4910	42501007320000	P & A	INJ_H2O
DU-4911	42501012790000	ACTIVE	PROD_OIL
DU-4912	42501007280000	ACTIVE	PROD_OIL
DU-4913	42501007330000	P & A	INJ_H2O
DU-4914	42501308910000	ACTIVE	INJ_WAG
DU-4915	42501308700000	ACTIVE	PROD_OIL
DU-4916	42501308940000	ACTIVE	INJ_WAG
DU-4917	42501308760000	ACTIVE	INJ_WAG
DU-4918	42501317080000	ACTIVE	PROD_OIL
DU-4919	42501317040000	ACTIVE	INJ_WAG
DU-4920	42501326300000	ACTIVE	PROD_OIL
DU-4921	42501327790000	ACTIVE	PROD_OIL
DU-4922	42501327920000	ACTIVE	PROD_OIL
DU-4923	42501327880000	ACTIVE	INJ_WAG
DU-4924	42501329160000	ACTIVE	PROD_OIL
DU-4925	42501332930000	ACTIVE	PROD_OIL
DU-4926	42501332890000	TA	PROD_OIL
DU-4927	42501346270000	ACTIVE	INJ_WAG
DU-4928	42501352430000	ACTIVE	PROD_OIL
DU-4929	42501352440000	ACTIVE	PROD_OIL
DU-5101	42501333580000	ACTIVE	PROD_OIL
DU-5201	42501808550000	P & A	PROD_OIL
DU-5202	42501003370000	ACTIVE	INJ_H2O
DU-5203	42501015660000	P & A	PROD_OIL
DU-5204	42501029510000	ACTIVE	INJ_WAG
DU-5205	42501029500000	P & A	INJ_H2O
DU-5206	42501103450000	P & A	INJ_H2O
DU-5301	42501029490000	TA	INJ_H2O
DU-5302	42501025060000	P & A	PROD_OIL
DU-5303	42501025050000	P & A	PROD_OIL
DU-5304	42501025040000	P & A	PROD_OIL
DU-5305	42501025070000	TA	INJ_H2O
DU-5306	42501015650000	P & A	INJ_H2O

DU-5307	42501015670000	P & A	INJ_H2O
DU-5308	42501319140000	P & A	INJ_WAG
DU-5309	42501325950000	ACTIVE	PROD_OIL
DU-5310	42501326020000	ACTIVE	PROD_OIL
DU-5311	42501329260000	ACTIVE	PROD_OIL
DU-5312	42501329180000	ACTIVE	PROD_OIL
DU-5313	42501329720000	ACTIVE	PROD_OIL
DU-5315	42501330680000	TA	PROD_OIL
DU-5316	42501331690000	P & A	PROD_OIL
DU-5317	42501354600000	ACTIVE	PROD_OIL
DU-5401	42501015630000	ACTIVE	INJ_WAG
DU-5402	42501024930000	P & A	INJ_H2O
DU-5403	42501022290000	ACTIVE	INJ_WAG
DU-5404	42501015620000	ACTIVE	INJ_WAG
DU-5405	42501024910000	ACTIVE	INJ_WAG
DU-5406	42501022280000	TA	INJ_H2O
DU-5407	42501308870000	SHUT-IN	INJ_WAG
DU-5408	42501308630000	ACTIVE	INJ_WAG
DU-5409	42501308670000	ACTIVE	INJ_WAG
DU-5410	42501311330000	TA	PROD_OIL
DU-5411	42501314420000	ACTIVE	PROD_OIL
DU-5412	42501314400000	TA	PROD_OIL
DU-5413	42501314410000	ACTIVE	PROD_OIL
DU-5414	42501317110000	P & A	PROD_OIL
DU-5415	42501319050000	TA	PROD_OIL
DU-5416	42501328860000	ACTIVE	PROD_OIL
DU-5501	42501022270000	P & A	INJ_WAG
DU-5502	42501024900000	ACTIVE	INJ_WAG
DU-5503	42501024920000	ACTIVE	INJ_WAG
DU-5504	42501022300000	P & A	INJ_H2O
DU-5505	42501024940000	TA	INJ_H2O
DU-5506	42501024960000	P & A	INJ_H2O
DU-5507	42501308660000	P & A	PROD_OIL
DU-5508	42501308510000	ACTIVE	PROD_OIL
DU-5509	42501308650000	ACTIVE	INJ_WAG
DU-5510	42501311320000	ACTIVE	PROD_OIL
DU-5511	42501311310000	ACTIVE	PROD_OIL
DU-5512	42501315050000	ACTIVE	PROD_OIL
DU-5513	42501314500000	ACTIVE	PROD_GAS
DU-5514	42501315780000	ACTIVE	INJ_WAG
DU-5515	42501315870000	ACTIVE	PROD_OIL
DU-5516	42501316250000	ACTIVE	INJ_WAG
DU-5517	42501319500000	P & A	PROD_OIL
DU-5519	42501320400000	TA	PROD_OIL
DU-5520	42501337970000	ACTIVE	INJ_WAG
DU-5521	42501344780000	ACTIVE	PROD_GAS
DU-5522	42501346240000	ACTIVE	PROD_GAS
DU-5523GC	42501353870000	ACTIVE	PROD_GAS
DU-5601	42501012680000	ACTIVE	PROD_OIL
DU-5602	42501012670000	P & A	PROD_OIL
DU-5603	42501012710000	ACTIVE	INJ_WAG
DU-5604	42501029960000	ACTIVE	INJ_WAG
DU-5605	42501012700000	ACTIVE	PROD_OIL
DU-5606	42501012690000	ACTIVE	INJ_WAG

DU-5607	42501012660000	P & A	INJ_H2O
DU-5608	42501028860000	ACTIVE	PROD_OIL
DU-5609	42501004920000	ACTIVE	INJ_WAG
DU-5610	42501305310000	ACTIVE	INJ_WAG
DU-5611	42501308140000	ACTIVE	PROD_OIL
DU-5612	42501309190000	ACTIVE	PROD_OIL
DU-5613	42501314520000	P & A	PROD_OIL
DU-5614	42501314580000	ACTIVE	PROD_OIL
DU-5615	42501315800000	ACTIVE	PROD_OIL
DU-5616	42501315670000	ACTIVE	PROD_OIL
DU-5617	42501330950000	ACTIVE	PROD_OIL
DU-5618	42165344300000	ACTIVE	INJ_WAG
DU-5619	42501342950000	ACTIVE	PROD_OIL
DU-5620	42501347600000	ACTIVE	PROD_OIL
DU-5621	42501347590000	ACTIVE	PROD_OIL
DU-5622GC	42501354510000	ACTIVE	PROD_GAS
DU-5623	42501355970000	DRILL	PROD_GAS
DU-5701	42501029970000	P & A	INJ_GAS
DU-5702	42501004940000	ACTIVE	INJ_WAG
DU-5703	42501004950000	ACTIVE	INJ_WAG
DU-5704	42501004970000	ACTIVE	INJ_WAG
DU-5705	42501029980000	ACTIVE	INJ_WAG
DU-5706	42501004930000	ACTIVE	INJ_WAG
DU-5707	42501005010000	ACTIVE	INJ_WAG
DU-5708	42501005020000	ACTIVE	INJ_WAG
DU-5709	42501305100000	ACTIVE	INJ_WAG
DU-5710	42501305090000	ACTIVE	INJ_WAG
DU-5711	42501304990000	ACTIVE	INJ_WAG
DU-5712	42501305190000	ACTIVE	INJ_WAG
DU-5713S	42501026000000	TA	PROD_OIL
DU-5714	42501314590000	ACTIVE	PROD_OIL
DU-5715	42501315680000	ACTIVE	PROD_OIL
DU-5716	42501315690000	ACTIVE	PROD_OIL
DU-5717	42501320500000	ACTIVE	PROD_OIL
DU-5718	42501320340000	ACTIVE	PROD_OIL
DU-5719	42501320470000	ACTIVE	PROD_OIL
DU-5720	42501343280000	ACTIVE	PROD_OIL
DU-5721	42501343290000	ACTIVE	PROD_OIL
DU-5722	42501343140000	ACTIVE	PROD_OIL
DU-5723	42501343150000	ACTIVE	PROD_OIL
DU-5724	42501343160000	ACTIVE	PROD_OIL
DU-5725	42501349450000	ACTIVE	INJ_WAG
DU-5801	42501004960000	ACTIVE	INJ_WAG
DU-5802	42501004980000	ACTIVE	INJ_WAG
DU-5803	42501004990000	ACTIVE	INJ_WAG
DU-5804	42501018910000	ACTIVE	INJ_WAG
DU-5805	42501005030000	P & A	INJ_WAG
DU-5806	42501005000000	ACTIVE	INJ_WAG
DU-5807	42501019040000	ACTIVE	INJ_WAG
DU-5808	42501305130000	ACTIVE	INJ_WAG
DU-5809	42501305200000	ACTIVE	INJ_WAG
DU-5810	42501305210000	ACTIVE	INJ_WAG
DU-5811	42501308750000	ACTIVE	INJ_WAG
DU-5812	42501308740000	ACTIVE	INJ_WAG

DU-5813	42501316490000	TA	PROD_OIL
DU-5814	42501316530000	TA	PROD_OIL
DU-5815	42501320480000	ACTIVE	PROD_OIL
DU-5816	42501320520000	ACTIVE	PROD_OIL
DU-5817	42501321010000	ACTIVE	PROD_OIL
DU-5818	42501320420000	P & A	PROD_OIL
DU-5819	42501320530000	ACTIVE	PROD_OIL
DU-5820	42501320490000	ACTIVE	PROD_OIL
DU-5821	42501343170000	ACTIVE	PROD_OIL
DU-5822	42501343180000	ACTIVE	PROD_OIL
DU-5823	42501343350000	ACTIVE	PROD_OIL
DU-5824	42501343190000	ACTIVE	PROD_OIL
DU-5825	42501343200000	ACTIVE	PROD_OIL
DU-5826	42501343360000	ACTIVE	PROD_OIL
DU-5827	42501354090000	ACTIVE	PROD_OIL
DU-5828	42501362320000	ACTIVE	INJ_WAG
DU-5901	42501019170000	ACTIVE	INJ_WAG
DU-5902	42501019280000	ACTIVE	INJ_WAG
DU-5903	42501007340000	P & A	INJ_H2O
DU-5904	42501030250000	ACTIVE	PROD_OIL
DU-5905	42501317070000	ACTIVE	PROD_OIL
DU-5906	42501320460000	ACTIVE	PROD_OIL
DU-6301	42165014090000	P & A	INJ_H2O
DU-6302	42165014060000	ACTIVE	PROD_OIL
DU-6303	42165014030000	ACTIVE	PROD_OIL
DU-6304	42165014070000	P & A	INJ_H2O
DU-6305	42165014020000	P & A	INJ_H2O
DU-6306	42165014040000	P & A	PROD_OIL
DU-6307	42165014110000	P & A	INJ_H2O
DU-6308	42165014080000	P & A	PROD_OIL
DU-6309	42165318700000	ACTIVE	PROD_OIL
DU-6310	42165367650000	ACTIVE	PROD_OIL
DU-6401	42165005420000	ACTIVE	PROD_OIL
DU-6402	42165005240000	ACTIVE	PROD_OIL
DU-6403	42165005450000	ACTIVE	PROD_OIL
DU-6404	42165005440000	ACTIVE	INJ_WAG
DU-6405	42165013870000	ACTIVE	PROD_OIL
DU-6406	42165013850000	ACTIVE	PROD_OIL
DU-6407	42165018770000	P & A	PROD_OIL
DU-6408	42165004910000	SHUT-IN	PROD_GAS
DU-6409	42165005410000	ACTIVE	PROD_OIL
DU-6410	42165005430000	ACTIVE	PROD_OIL
DU-6411	42165005360000	TA	PROD_OIL
DU-6412	42165005280000	ACTIVE	INJ_WAG
DU-6413	42165005340000	ACTIVE	INJ_WAG
DU-6414	42165005400000	ACTIVE	INJ_WAG
DU-6415	42165005330000	ACTIVE	PROD_OIL
DU-6416	42165005380000	ACTIVE	PROD_OIL
DU-6417	42165005390000	ACTIVE	INJ_WAG
DU-6418	42165005260000	ACTIVE	INJ_WAG
DU-6419	42165303820000	ACTIVE	PROD_OIL
DU-6420	42165303390000	ACTIVE	PROD_OIL
DU-6421	42165303380000	ACTIVE	INJ_WAG
DU-6422	42165303430000	ACTIVE	INJ_WAG

DU-6423	42165302990000	ACTIVE	INJ_WAG
DU-6424	42165303420000	ACTIVE	PROD_OIL
DU-6425	42165303410000	ACTIVE	INJ_WAG
DU-6426	42165303440000	ACTIVE	PROD_OIL
DU-6427	42165303060000	ACTIVE	PROD_OIL
DU-6428	42165303700000	ACTIVE	PROD_OIL
DU-6429	42165303400000	ACTIVE	PROD_OIL
DU-6430	42165303690000	ACTIVE	INJ_WAG
DU-6431	42165305430000	ACTIVE	PROD_OIL
DU-6432	42165315510000	ACTIVE	PROD_OIL
DU-6433	42165316150000	SHUT-IN	INJ_WAG
DU-6434	42165318690000	SHUT-IN	INJ_WAG
DU-6435	42165318780000	TA	PROD_OIL
DU-6436	42165320660000	ACTIVE	PROD_OIL
DU-6437	42165332400000	ACTIVE	PROD_OIL
DU-6438	42165333410000	ACTIVE	INJ_H2O
DU-6439	42165355920000	ACTIVE	PROD_OIL
DU-6440	42165355390000	ACTIVE	PROD_GAS
DU-6441	42165355930000	ACTIVE	PROD_OIL
DU-6442	42165355940000	ACTIVE	PROD_OIL
DU-6443	42165355950000	ACTIVE	PROD_OIL
DU-6444	42165355960000	ACTIVE	PROD_OIL
DU-6445	42165355970000	ACTIVE	PROD_OIL
DU-6446	42165355980000	ACTIVE	PROD_OIL
DU-6447	42165356520000	ACTIVE	PROD_GAS
DU-6448	42165357260000	TA	PROD_GAS
DU-6449GC	42165363500000	ACTIVE	PROD_GAS
DU-6450	42165363750000	ACTIVE	PROD_OIL
DU-6451	42165363760000	ACTIVE	PROD_OIL
DU-6452	42165363770000	ACTIVE	PROD_OIL
DU-6453GC	42165005290101	ACTIVE	PROD_GAS
DU-6454	42165366690000	SHUT-IN	PROD_GAS
DU-6501	42165007760000	ACTIVE	PROD_OIL
DU-6502	42165007940000	ACTIVE	PROD_OIL
DU-6503	42165007770000	ACTIVE	PROD_OIL
DU-6504	42165007730000	P & A	PROD_OIL
DU-6505	42165007750000	ACTIVE	PROD_OIL
DU-6506	42165007740000	ACTIVE	PROD_OIL
DU-6507	42165007790000	ACTIVE	PROD_OIL
DU-6508	42165813430000	ACTIVE	PROD_OIL
DU-6509	42165015330000	ACTIVE	INJ_WAG
DU-6510	42165015320000	ACTIVE	INJ_WAG
DU-6511	42165007890000	ACTIVE	INJ_WAG
DU-6512	42165007930000	ACTIVE	INJ_WAG
DU-6513	42165004740000	ACTIVE	PROD_OIL
DU-6514	42165004730000	ACTIVE	PROD_OIL
DU-6515	42165025140000	ACTIVE	PROD_OIL
DU-6516	42165025150000	ACTIVE	PROD_OIL
DU-6517	42165007950000	ACTIVE	INJ_WAG
DU-6518	42165007700000	TA	INJ_WAG
DU-6519	42165007970000	INACTIVE	INJ_WAG
DU-6520	42165007960000	ACTIVE	INJ_WAG
DU-6521	42165301980000	P & A	PROD_OIL
DU-6522	42165301990000	ACTIVE	INJ_WAG

DU-6523	42165302000000	ACTIVE	INJ_WAG
DU-6524	42165301940000	ACTIVE	PROD_OIL
DU-6525	42165302110000	P & A	INJ_WAG
DU-6526	42165302070000	ACTIVE	PROD_OIL
DU-6527	42165302090000	ACTIVE	PROD_OIL
DU-6528	42165302080000	ACTIVE	PROD_OIL
DU-6529	42165302980000	ACTIVE	PROD_OIL
DU-6530	42165303070000	ACTIVE	INJ_WAG
DU-6531	42165302820000	ACTIVE	INJ_WAG
DU-6532	42165302970000	ACTIVE	INJ_WAG
DU-6533	42165302810000	ACTIVE	INJ_WAG
DU-6534	42165302960000	ACTIVE	PROD_OIL
DU-6535	42165303660000	ACTIVE	INJ_WAG
DU-6536	42165315730000	ACTIVE	PROD_OIL
DU-6537	42165315740000	ACTIVE	PROD_GAS
DU-6538	42165320780000	ACTIVE	INJ_WAG
DU-6539	42165345960000	ACTIVE	PROD_OIL
DU-6540	42165007900000	ACTIVE	PROD_GAS
DU-6541	42165354760000	ACTIVE	PROD_OIL
DU-6542	42165353960000	ACTIVE	INJ_WAG
DU-6543	42165353950000	ACTIVE	PROD_OIL
DU-6544	42165354750000	ACTIVE	PROD_OIL
DU-6545	42165354740000	ACTIVE	PROD_OIL
DU-6546	42165353400000	ACTIVE	PROD_OIL
DU-6547	42165353410000	ACTIVE	PROD_OIL
DU-6548	42165353420000	ACTIVE	PROD_OIL
DU-6549	42165353760000	ACTIVE	PROD_GAS
DU-6550	42165354730000	ACTIVE	PROD_OIL
DU-6551	42165355480000	ACTIVE	PROD_GAS
DU-6552	42165356050000	ACTIVE	PROD_OIL
DU-6553	42165356040000	ACTIVE	PROD_OIL
DU-6554	42165355680000	ACTIVE	PROD_OIL
DU-6555	42165355690000	ACTIVE	PROD_OIL
DU-6556	42165356030000	ACTIVE	PROD_OIL
DU-6557	42165355700000	ACTIVE	PROD_OIL
DU-6558	42165355710000	ACTIVE	PROD_OIL
DU-6559	42165355720000	ACTIVE	PROD_OIL
DU-6560	42165356010000	ACTIVE	INJ_WAG
DU-6561	42165355610000	ACTIVE	INJ_WAG
DU-6562	42165356020000	ACTIVE	PROD_OIL
DU-6563	42165007850001	ACTIVE	PROD_OIL
DU-6564	42165357060000	ACTIVE	PROD_GAS
DU-6566	42165358080000	ACTIVE	PROD_OIL
DU-6567GC	42165363020000	TA	PROD_GAS
DU-6568GC	42165364530000	ACTIVE	PROD_GAS
DU-6569GC	42165363030000	ACTIVE	PROD_GAS
DU-6570GC	42165366460000	ACTIVE	PROD_GAS
DU-6571	42165367860000	ACTIVE	PROD_GAS
DU-6572	42165367870000	TA	PROD_GAS
DU-6573	42165015360001	ACTIVE	PROD_GAS
DU-6574	42165375940000	ACTIVE	INJ_WAG
DU-6575	42165376830000	ACTIVE	PROD_OIL
DU-6576	42165376840000	ACTIVE	PROD_OIL
DU-6601	42165005710000	ACTIVE	PROD_OIL

DU-6602	42165005790000	ACTIVE	PROD_OIL
DU-6603	42165005680000	ACTIVE	PROD_OIL
DU-6604	42165008540000	ACTIVE	PROD_OIL
DU-6605	42165007010000	ACTIVE	PROD_OIL
DU-6606	42165005730000	ACTIVE	PROD_OIL
DU-6607	42165005750000	ACTIVE	PROD_OIL
DU-6608	42165005780000	ACTIVE	PROD_OIL
DU-6609	42165007170000	ACTIVE	PROD_OIL
DU-6610	42165007230000	ACTIVE	PROD_OIL
DU-6611	42165005770000	ACTIVE	INJ_WAG
DU-6612	42165005740000	ACTIVE	INJ_WAG
DU-6613	42165007250000	ACTIVE	INJ_WAG
DU-6614	42165007290000	ACTIVE	INJ_WAG
DU-6615	42165005720000	ACTIVE	INJ_WAG
DU-6616	42165005760000	ACTIVE	INJ_WAG
DU-6617	42165007190000	ACTIVE	INJ_WAG
DU-6618	42165007210000	ACTIVE	INJ_WAG
DU-6619	42165301360000	ACTIVE	PROD_OIL
DU-6620	42165301600000	ACTIVE	INJ_WAG
DU-6621	42165301640000	ACTIVE	INJ_WAG
DU-6622	42165301500000	ACTIVE	INJ_WAG
DU-6623	42165301510000	ACTIVE	INJ_WAG
DU-6624	42165301520000	P & A	INJ_WAG
DU-6625	42165301370000	ACTIVE	INJ_WAG
DU-6626	42165301610000	ACTIVE	PROD_OIL
DU-6627	42165301910000	ACTIVE	INJ_WAG
DU-6628	42165301870000	ACTIVE	INJ_WAG
DU-6629	42165301850000	ACTIVE	PROD_OIL
DU-6630	42165301840000	P & A	PROD_OIL
DU-6631	42165301930000	P & A	PROD_OIL
DU-6632	42165301890000	ACTIVE	PROD_OIL
DU-6633	42165301920000	ACTIVE	PROD_OIL
DU-6634	42165301900000	ACTIVE	PROD_OIL
DU-6635	42165301860000	ACTIVE	INJ_WAG
DU-6636	42165301880000	ACTIVE	INJ_WAG
DU-6637	42165316130000	ACTIVE	PROD_OIL
DU-6638	42165345160000	ACTIVE	PROD_OIL
DU-6639	42165352270000	ACTIVE	PROD_OIL
DU-6640	42165353970000	ACTIVE	PROD_OIL
DU-6641	42165354410000	ACTIVE	PROD_OIL
DU-6642	42165354420000	ACTIVE	PROD_OIL
DU-6643	42165354430000	ACTIVE	PROD_OIL
DU-6644	42165354440000	ACTIVE	PROD_OIL
DU-6645	42165355620000	ACTIVE	PROD_OIL
DU-6646	42165355630000	ACTIVE	PROD_OIL
DU-6647	42165355640000	ACTIVE	PROD_OIL
DU-6648	42165355650000	ACTIVE	PROD_OIL
DU-6649	42165356800000	ACTIVE	PROD_OIL
DU-6650	42165356870000	ACTIVE	PROD_OIL
DU-6651	42165357370000	ACTIVE	PROD_OIL
DU-6652	42165357050000	ACTIVE	PROD_OIL
DU-6654	42165357250000	ACTIVE	PROD_OIL
DU-6655	42165357240000	ACTIVE	PROD_OIL
DU-6656	42165358110000	TA	PROD_GAS

DU-6657	42165367150000	ACTIVE	INJ_WAG
DU-6701	42165008600000	ACTIVE	PROD_OIL
DU-6702	42165007070000	P & A	PROD_OIL
DU-6703	42165007090000	P & A	PROD_OIL
DU-6704	42165007100000	ACTIVE	PROD_OIL
DU-6705	42165007020000	ACTIVE	PROD_OIL
DU-6706	42165007030000	P & A	PROD_OIL
DU-6707	42165007040000	ACTIVE	PROD_OIL
DU-6708	42165007110000	P & A	INJ_H2O
DU-6709	42165007080000	ACTIVE	INJ_WAG
DU-6710	42165007050000	P & A	PROD_OIL
DU-6711	42165007060000	TA	INJ_GAS
DU-6712	42165007120000	ACTIVE	INJ_WAG
DU-6713	42165008560000	ACTIVE	INJ_WAG
DU-6714	42165008580000	TA	PROD_OIL
DU-6715	42165008590000	ACTIVE	INJ_WAG
DU-6716	42165007140000	ACTIVE	INJ_WAG
DU-6717	42165301660000	ACTIVE	PROD_OIL
DU-6718	42165301690000	ACTIVE	PROD_OIL
DU-6719	42165301710000	ACTIVE	INJ_WAG
DU-6720	42165301680000	ACTIVE	INJ_WAG
DU-6721	42165301620000	ACTIVE	INJ_WAG
DU-6722	42165301630000	ACTIVE	INJ_WAG
DU-6723	42165302030000	ACTIVE	INJ_WAG
DU-6724	42165302040000	ACTIVE	INJ_WAG
DU-6725	42165302100000	P & A	PROD_OIL
DU-6726	42165302050000	P & A	PROD_OIL
DU-6727	42165301950000	ACTIVE	INJ_WAG
DU-6728	42165301960000	P & A	PROD_OIL
DU-6729	42165302060000	ACTIVE	PROD_OIL
DU-6730	42165304250000	ACTIVE	PROD_OIL
DU-6731	42165315500000	P & A	PROD_OIL
DU-6732	42165315710000	ACTIVE	PROD_OIL
DU-6733	42165318720000	ACTIVE	PROD_OIL
DU-6734	42165318740000	ACTIVE	PROD_OIL
DU-6735	42165318790000	ACTIVE	PROD_OIL
DU-6736	42165318730000	TA	PROD_OIL
DU-6737	42165318680000	ACTIVE	INJ_WAG
DU-6738	42165333270000	ACTIVE	PROD_OIL
DU-6739	42165333500000	ACTIVE	PROD_OIL
DU-6740	42165336120000	TA	INJ_WAG
DU-6744	42165334540000	ACTIVE	INJ_WAG
DU-6748	42165334610000	TA	INJ_GAS
DU-6750	42165334580000	ACTIVE	INJ_WAG
DU-6751	42165334590000	ACTIVE	INJ_WAG
DU-6755	42165334570000	TA	PROD_OIL
DU-6756T	42165334600000	TA	PROD_OIL
DU-6757	42165334560000	P & A	PROD_OIL
DU-6758	42165334550000	TA	PROD_OIL
DU-6759	42165347810000	ACTIVE	PROD_OIL
DU-6760	42165354450000	ACTIVE	PROD_OIL
DU-6761	42165354460000	ACTIVE	PROD_OIL
DU-6762	42165354500000	ACTIVE	PROD_OIL
DU-6763	42165354490000	ACTIVE	PROD_OIL

DU-6764	42165354480000	ACTIVE	PROD_OIL
DU-6765	42165356880000	ACTIVE	PROD_OIL
DU-6766	42165356810000	ACTIVE	PROD_OIL
DU-6767	42165356830000	ACTIVE	PROD_OIL
DU-6768	42165356790000	ACTIVE	PROD_OIL
DU-6769	42165356820000	ACTIVE	PROD_OIL
DU-6770	42165357230000	ACTIVE	PROD_OIL
DU-6771	42165357220000	ACTIVE	PROD_OIL
DU-6772	42165357310000	ACTIVE	PROD_OIL
DU-6774	42165357300000	ACTIVE	PROD_OIL
DU-6775	42165357040000	ACTIVE	PROD_OIL
DU-6776	42165357290000	ACTIVE	PROD_OIL
DU-6777	42165358310000	ACTIVE	INJ_WAG
DU-6778	42165358320000	ACTIVE	INJ_WAG
DU-6779	42165360930000	ACTIVE	PROD_OIL
DU-6780	42165361670000	ACTIVE	PROD_OIL
DU-6781	42165378160000	ACTIVE	PROD_OIL
DU-6782	42165378130000	ACTIVE	PROD_OIL
DU-6801	42165008390000	P & A	PROD_OIL
DU-6802	42165008380000	P & A	INJ_H2O
DU-6803	42165020380000	ACTIVE	PROD_OIL
DU-6804	42165020430000	ACTIVE	INJ_H2O
DU-6805	42165008420000	ACTIVE	PROD_OIL
DU-6806	42165008400000	ACTIVE	PROD_OIL
DU-6807	42165018920000	P & A	PROD_OIL
DU-6808	42165018910000	P & A	INJ_H2O
DU-6809	42165008410000	ACTIVE	INJ_WAG
DU-6810	42165008430000	ACTIVE	PROD_OIL
DU-6811	42165004310000	P & A	INJ_WAG
DU-6812	42165014010000	TA	INJ_GAS
DU-6813	42165011460000	ACTIVE	INJ_WAG
DU-6814	42165011470000	P & A	INJ_H2O
DU-6815	42165019990000	P & A	INJ_H2O
DU-6816	42165301740000	P & A	PROD_OIL
DU-6817	42165301790000	ACTIVE	INJ_WAG
DU-6818	42165301760000	P & A	INJ_WAG
DU-6819	42165301800000	ACTIVE	PROD_OIL
DU-6820	42165303760000	ACTIVE	PROD_OIL
DU-6821	42165315600000	ACTIVE	PROD_OIL
DU-6822	42165315480000	ACTIVE	PROD_OIL
DU-6823	42165320790000	ACTIVE	PROD_OIL
DU-6824	42165320670000	ACTIVE	PROD_OIL
DU-6825	42165331380000	ACTIVE	INJ_WAG
DU-6826	42165331360000	ACTIVE	INJ_WAG
DU-6827	42165332500000	ACTIVE	PROD_OIL
DU-6828	42165332390000	ACTIVE	PROD_OIL
DU-6829	42165333910000	ACTIVE	PROD_OIL
DU-6830	42165333450000	ACTIVE	PROD_OIL
DU-6831	42165339540000	ACTIVE	PROD_OIL
DU-6832	42165340850000	ACTIVE	PROD_OIL
DU-6833	42165348970000	ACTIVE	PROD_OIL
DU-6834	42165354470000	ACTIVE	PROD_OIL
DU-6835	42165354510000	ACTIVE	PROD_OIL
DU-6836	42165354520000	ACTIVE	PROD_OIL

DU-6837	42165356780000	ACTIVE	INJ_WAG
DU-6838	42165357390000	ACTIVE	PROD_OIL
DU-6839	42165378120000	ACTIVE	PROD_OIL
DU-7301	42165021460000	P & A	INJ_H2O
DU-7302	42165021440000	P & A	INJ_H2O
DU-7303	42165006510000	P & A	INJ_H2O
DU-7304	42165006520000	P & A	INJ_H2O
DU-7401	42165021550000	P & A	PROD_OIL
DU-7402	42165021530000	P & A	PROD_OIL
DU-7403	42165018790000	P & A	PROD_OIL
DU-7404	42165013890000	ACTIVE	PROD_OIL
DU-7405	42165018760000	ACTIVE	PROD_OIL
DU-7406	42165021580000	ACTIVE	PROD_OIL
DU-7407	42165013910000	ACTIVE	INJ_WAG
DU-7408	42165013880000	ACTIVE	INJ_WAG
DU-7409	42165021540000	ACTIVE	PROD_OIL
DU-7410	42165021450000	P & A	PROD_OIL
DU-7411	42165018780000	TA	PROD_OIL
DU-7412	42165013900000	ACTIVE	PROD_OIL
DU-7413	42165018750000	P & A	PROD_OIL
DU-7414	42165008370000	P & A	INJ_H2O
DU-7415	42165008290000	TA	PROD_OIL
DU-7416	42165008310000	ACTIVE	INJ_WAG
DU-7417	42165008250000	ACTIVE	INJ_WAG
DU-7418	42165008360000	P & A	PROD_OIL
DU-7419	42165008350000	TA	INJ_H2O
DU-7420	42165008330000	ACTIVE	PROD_OIL
DU-7421	42165008270000	ACTIVE	INJ_WAG
DU-7422	42165303460000	ACTIVE	INJ_WAG
DU-7423	42165303270000	P & A	INJ_WAG
DU-7424	42165302740000	INACTIVE	PROD_OIL
DU-7425	42165303600000	ACTIVE	PROD_GAS
DU-7426	42165303470000	ACTIVE	INJ_WAG
DU-7427	42165304230000	TA	PROD_OIL
DU-7428	42165305460000	ACTIVE	PROD_OIL
DU-7429	42165313680000	ACTIVE	INJ_WAG
DU-7430	42165315700000	ACTIVE	PROD_OIL
DU-7431	42165318710000	ACTIVE	PROD_OIL
DU-7432	42165318770000	INACTIVE	INJ_H2O
DU-7433	42165320600000	ACTIVE	PROD_OIL
DU-7434	42165331350000	ACTIVE	PROD_OIL
DU-7435	42165332890000	ACTIVE	PROD_OIL
DU-7436	42165333530000	ACTIVE	INJ_WAG
DU-7437	42165335240000	ACTIVE	PROD_OIL
DU-7438	42165353750000	ACTIVE	PROD_GAS
DU-7440	42165354070000	ACTIVE	PROD_OIL
DU-7441	42165354090000	ACTIVE	PROD_OIL
DU-7442	42165354080000	ACTIVE	PROD_OIL
DU-7443	42165354060000	ACTIVE	PROD_OIL
DU-7444	42165357140000	ACTIVE	PROD_GAS
DU-7445	42165376850000	ACTIVE	PROD_OIL
DU-7446	42165376880000	ACTIVE	PROD_OIL
DU-7448	42165380530000	DRILL	PROD_OIL
DU-7449	42165380540000	ACTIVE	PROD_OIL

DU-7450	42165380550000	ACTIVE	PROD_OIL
DU-7501	42165007540000	ACTIVE	PROD_OIL
DU-7502	42165007530000	ACTIVE	PROD_OIL
DU-7503	42165007590000	ACTIVE	PROD_OIL
DU-7504	42165007570000	ACTIVE	PROD_OIL
DU-7505	42165007520000	ACTIVE	PROD_OIL
DU-7506	42165007550000	ACTIVE	PROD_OIL
DU-7507	42165007580000	ACTIVE	PROD_OIL
DU-7508	42165007560000	ACTIVE	PROD_OIL
DU-7509	42165007600000	ACTIVE	INJ_WAG
DU-7510	42165005540000	ACTIVE	INJ_WAG
DU-7511	42165005470000	ACTIVE	INJ_WAG
DU-7512	42165005460000	ACTIVE	INJ_WAG
DU-7513	42165005530000	ACTIVE	INJ_WAG
DU-7514	42165005550000	ACTIVE	INJ_WAG
DU-7515	42165005480000	ACTIVE	INJ_WAG
DU-7516	42165001510000	ACTIVE	INJ_WAG
DU-7517	42165301530000	ACTIVE	PROD_OIL
DU-7518	42165301540000	ACTIVE	INJ_WAG
DU-7519	42165301550000	ACTIVE	INJ_WAG
DU-7520	42165301650000	ACTIVE	PROD_OIL
DU-7521	42165301670000	INACTIVE	INJ_WAG
DU-7522	42165302260000	ACTIVE	PROD_OIL
DU-7523	42165302280000	ACTIVE	PROD_OIL
DU-7524	42165303640000	P & A	PROD_OIL
DU-7525	42165303200000	ACTIVE	INJ_WAG
DU-7526	42165303800000	ACTIVE	INJ_WAG
DU-7527	42165303190000	ACTIVE	INJ_WAG
DU-7528	42165303680000	ACTIVE	INJ_WAG
DU-7529	42165303670000	ACTIVE	PROD_OIL
DU-7530	42165303180000	ACTIVE	INJ_WAG
DU-7531	42165303170000	ACTIVE	PROD_OIL
DU-7532	42165303160000	ACTIVE	PROD_OIL
DU-7533	42165303290000	ACTIVE	PROD_OIL
DU-7534	42165303280000	ACTIVE	PROD_OIL
DU-7535	42165302750000	ACTIVE	INJ_WAG
DU-7536	42165303260000	ACTIVE	INJ_WAG
DU-7537	42165306570000	ACTIVE	PROD_OIL
DU-7538	42165315530000	P & A	PROD_OIL
DU-7539	42165315520000	ACTIVE	PROD_OIL
DU-7540	42165319110000	TA	PROD_GAS
DU-7541	42165005490000	ACTIVE	PROD_OIL
DU-7542	42165348340000	TA	PROD_OIL
DU-7543	42165352320000	ACTIVE	PROD_OIL
DU-7544	42165352330000	ACTIVE	PROD_OIL
DU-7545	42165352340000	ACTIVE	PROD_OIL
DU-7546	42165352350000	ACTIVE	PROD_OIL
DU-7547	42165352360000	ACTIVE	PROD_OIL
DU-7548	42165352370000	ACTIVE	PROD_OIL
DU-7549	42165354050000	ACTIVE	PROD_OIL
DU-7550	42165354040000	ACTIVE	PROD_OIL
DU-7551	42165353430000	ACTIVE	PROD_OIL
DU-7552	42165353440000	ACTIVE	PROD_OIL
DU-7553	42165354030000	ACTIVE	PROD_OIL

DU-7554	42165354020000	ACTIVE	PROD_OIL
DU-7555	42165353450000	ACTIVE	PROD_OIL
DU-7556	42165353460000	ACTIVE	PROD_OIL
DU-7558	42165354010000	ACTIVE	PROD_OIL
DU-7562	42165353470000	ACTIVE	PROD_OIL
DU-7563	42165353480000	ACTIVE	PROD_OIL
DU-7564	42165353740000	ACTIVE	PROD_GAS
DU-7565	42165353730000	ACTIVE	PROD_GAS
DU-7566	42165353720000	ACTIVE	PROD_GAS
DU-7567	42165353710000	ACTIVE	PROD_GAS
DU-7568	42165357150000	ACTIVE	PROD_GAS
DU-7569	42165360090000	ACTIVE	PROD_OIL
DU-7571GC	42165363040000	ACTIVE	PROD_GAS
DU-7572GC	42165005520101	ACTIVE	PROD_GAS
DU-7573GC	42165363050000	ACTIVE	PROD_GAS
DU-7574	42165375990000	ACTIVE	INJ_WAG
DU-7575	42165376000000	ACTIVE	INJ_WAG
DU-7576	42165375970000	ACTIVE	INJ_WAG
DU-7577	42165375950000	ACTIVE	INJ_WAG
DU-7578	42165375960000	ACTIVE	INJ_WAG
DU-7601	42165007360000	ACTIVE	PROD_OIL
DU-7602	42165007270000	ACTIVE	PROD_OIL
DU-7603	42165008510000	ACTIVE	PROD_OIL
DU-7604	42165008460000	ACTIVE	PROD_OIL
DU-7605	42165007340000	ACTIVE	PROD_OIL
DU-7606	42165007320000	ACTIVE	PROD_OIL
DU-7607	42165008470000	ACTIVE	PROD_OIL
DU-7608	42165008520000	ACTIVE	PROD_OIL
DU-7609	42165007300000	ACTIVE	INJ_WAG
DU-7610	42165007380000	ACTIVE	INJ_WAG
DU-7611	42165008490000	P & A	INJ_GAS
DU-7612	42165008480000	ACTIVE	INJ_WAG
DU-7613	42165008450000	ACTIVE	PROD_OIL
DU-7614	42165008440000	P & A	INJ_WAG
DU-7615	42165007400000	ACTIVE	PROD_OIL
DU-7616	42165008500000	TA	PROD_OIL
DU-7617	42165301770000	ACTIVE	PROD_OIL
DU-7618	42165301810000	P & A	PROD_OIL
DU-7619	42165301820000	ACTIVE	INJ_WAG
DU-7620	42165301750000	ACTIVE	INJ_WAG
DU-7621	42165301730000	ACTIVE	INJ_WAG
DU-7622	42165301780000	ACTIVE	INJ_WAG
DU-7623	42165302010000	ACTIVE	INJ_WAG
DU-7624	42165302020000	ACTIVE	PROD_OIL
DU-7625	42165301970000	ACTIVE	INJ_WAG
DU-7626	42165302270000	ACTIVE	PROD_OIL
DU-7627	42165303550000	ACTIVE	INJ_WAG
DU-7628	42165303560000	ACTIVE	PROD_OIL
DU-7629	42165303540000	ACTIVE	INJ_WAG
DU-7630	42165303740000	ACTIVE	PROD_OIL
DU-7631	42165303720000	ACTIVE	PROD_OIL
DU-7632	42165303730000	ACTIVE	PROD_OIL
DU-7633	42165303520000	ACTIVE	INJ_WAG
DU-7634	42165316140000	ACTIVE	PROD_OIL

DU-7635	42165315470000	TA	PROD_OIL
DU-7636	42165007280000	P & A	PROD_OIL
DU-7637	42165353490000	ACTIVE	PROD_OIL
DU-7638	42165353500000	ACTIVE	PROD_OIL
DU-7639	42165353510000	ACTIVE	PROD_OIL
DU-7640	42165354000000	ACTIVE	PROD_OIL
DU-7641	42165357030000	ACTIVE	PROD_OIL
DU-7642	42165357020000	ACTIVE	PROD_OIL
DU-7643	42165357010000	ACTIVE	PROD_OIL
DU-7644	42165357130000	ACTIVE	PROD_OIL
DU-7645	42165357120000	ACTIVE	PROD_OIL
DU-7646	42165357110000	ACTIVE	PROD_OIL
DU-7647	42165357100000	ACTIVE	PROD_OIL
DU-7648	42165356840000	ACTIVE	PROD_GAS
DU-7649	42165358810000	ACTIVE	PROD_OIL
DU-7650	42165358800000	ACTIVE	PROD_OIL
DU-7651	42165358790000	ACTIVE	INJ_WAG
DU-7652	42165364710000	ACTIVE	PROD_OIL
DU-7653	42165367600000	ACTIVE	INJ_WAG
DU-7701	42165008620000	TA	PROD_OIL
DU-7702	42165006920000	ACTIVE	PROD_OIL
DU-7703	42165008640000	ACTIVE	PROD_OIL
DU-7704	42165008650000	ACTIVE	PROD_OIL
DU-7705	42165006960000	ACTIVE	PROD_OIL
DU-7706	42165006980000	TA	INJ_H2O
DU-7707	42165008660000	TA	INJ_H2O
DU-7708	42165008670000	TA	INJ_H2O
DU-7709	42165008630000	P & A	INJ_H2O
DU-7710	42165006970000	P & A	INJ_H2O
DU-7711	42165006990000	TA	INJ_H2O
DU-7712	42165008680000	P & A	INJ_H2O
DU-7713	42165007000000	P & A	INJ_H2O
DU-7714	42165304260000	ACTIVE	PROD_OIL
DU-7715	42165315630000	ACTIVE	INJ_H2O
DU-7716	42165318800000	ACTIVE	PROD_OIL
DU-7717	42165318760000	TA	PROD_OIL
DU-7718	42165320800000	ACTIVE	INJ_WAG
DU-7719	42165332380000	ACTIVE	PROD_OIL
DU-7720	42165346730000	TA	PROD_OIL
DU-7721	42165357070000	ACTIVE	PROD_OIL
DU-7801	42165018940000	ACTIVE	INJ_H2O
DU-7802	42165018950000	P & A	INJ_H2O
DU-7803	42165018960000	ACTIVE	INJ_H2O
DU-7804	42165333490000	ACTIVE	PROD_OIL
DU-7805	42165333480000	ACTIVE	PROD_OIL
DU-8301	42501005800000	P & A	INJ_H2O
DU-8302	42165001870000	P & A	INJ_H2O
DU-8303	42165014120000	P & A	INJ_H2O
DU-8401	42165004330000	TA	INJ_H2O
DU-8402	42165004340000	P & A	PROD_OIL
DU-8403	42165005220000	P & A	INJ_H2O
DU-8404	42165005210000	P & A	PROD_OIL
DU-8405	42165004320000	TA	INJ_H2O
DU-8406	42165004270000	P & A	PROD_OIL

DU-8407	42165005230000	ACTIVE	PROD_OIL
DU-8408	42165021500000	P & A	PROD_OIL
DU-8409	42165005120000	P & A	INJ_H2O
DU-8410	42165005100000	INACTIVE	INJ_WAG
DU-8411	42165005190000	TA	INJ_GAS
DU-8412	42165005160000	TA	INJ_H2O
DU-8413	42165005140000	P & A	PROD_OIL
DU-8414	42165005200000	TA	PROD_OIL
DU-8415	42165303480000	P & A	INJ_GAS
DU-8416	42165304350000	P & A	PROD_OIL
DU-8417	42165304360000	TA	INJ_GAS
DU-8418	42165304330000	P & A	PROD_OIL
DU-8419	42165304340000	P & A	INJ_GAS
DU-8420	42165304370000	ACTIVE	INJ_H2O
DU-8421	42165305420000	ACTIVE	PROD_OIL
DU-8422	42165311970000	ACTIVE	PROD_OIL
DU-8423	42165315650000	ACTIVE	PROD_OIL
DU-8424	42165316070000	TA	PROD_OIL
DU-8425	42165320650000	ACTIVE	PROD_OIL
DU-8426	42165320640000	ACTIVE	INJ_WAG
DU-8427	42165331340000	ACTIVE	PROD_OIL
DU-8428	42165331300000	TA	PROD_OIL
DU-8429	42165332900000	TA	PROD_OIL
DU-8431	42165333520000	TA	PROD_OIL
DU-8432	42165333460000	ACTIVE	PROD_OIL
DU-8433	42165357090000	TA	PROD_GAS
DU-8434	42165380560000	ACTIVE	PROD_OIL
DU-8435	42165380570000	DRILL	PROD_OIL
DU-8436	42165380620000	DRILL	PROD_OIL
DU-8439	42165380650000	ACTIVE	PROD_OIL
DU-8440	42165380630000	ACTIVE	PROD_OIL
DU-8441	42165380640000	DRILL	PROD_OIL
DU-8501	42165008180000	P & A	PROD_OIL
DU-8502	42165008240000	ACTIVE	PROD_OIL
DU-8503	42165008170000	ACTIVE	PROD_OIL
DU-8504	42165008200000	ACTIVE	PROD_OIL
DU-8505	42165008230000	TA	PROD_OIL
DU-8506	42165008050000	TA	INJ_H2O
DU-8507	42165008060000	ACTIVE	PROD_OIL
DU-8508	42165008080000	ACTIVE	PROD_OIL
DU-8509	42165033040000	P & A	PROD_OIL
DU-8510	42165008070000	ACTIVE	INJ_WAG
DU-8511	42165008100000	ACTIVE	INJ_WAG
DU-8512	42165008090000	TA	INJ_H2O
DU-8513	42165008210000	ACTIVE	PROD_OIL
DU-8514	42165008120000	P & A	PROD_OIL
DU-8515	42165008150000	ACTIVE	INJ_H2O
DU-8516	42165008190000	P & A	PROD_OIL
DU-8517	42165303650000	ACTIVE	PROD_OIL
DU-8518	42165303310000	ACTIVE	PROD_OIL
DU-8519	42165303010000	TA	INJ_GAS
DU-8520	42165303610000	ACTIVE	INJ_WAG
DU-8521	42165303620000	INACTIVE	INJ_WAG
DU-8522	42165303020000	ACTIVE	INJ_WAG

DU-8523	42165303110000	ACTIVE	INJ_WAG
DU-8524	42165303130000	ACTIVE	INJ_WAG
DU-8525	42165303080000	ACTIVE	PROD_OIL
DU-8526	42165303120000	TA	PROD_OIL
DU-8527	42165303630000	INACTIVE	INJ_WAG
DU-8528	42165303100000	ACTIVE	PROD_OIL
DU-8529	42165303090000	ACTIVE	PROD_OIL
DU-8530	42165304220000	ACTIVE	PROD_OIL
DU-8531	42165304310000	TA	PROD_OIL
DU-8532	42165304490000	ACTIVE	PROD_OIL
DU-8533	42165304300000	TA	INJ_H2O
DU-8534	42165305410000	ACTIVE	INJ_WAG
DU-8535	42165315640000	TA	PROD_OIL
DU-8536	42165315680000	ACTIVE	PROD_OIL
DU-8537	42165315670000	ACTIVE	PROD_OIL
DU-8538	42165353700000	TA	PROD_GAS
DU-8539	42165353770000	ACTIVE	PROD_GAS
DU-8540	42165353990000	ACTIVE	PROD_OIL
DU-8541	42165353980000	ACTIVE	PROD_OIL
DU-8542	42165360100000	ACTIVE	PROD_OIL
DU-8543	42165360110000	ACTIVE	PROD_OIL
DU-8544	42165360120000	ACTIVE	PROD_OIL
DU-8545	42165360130000	ACTIVE	PROD_OIL
DU-8546	42165368340000	ACTIVE	PROD_GAS
DU-8547	42165368330000	TA	PROD_GAS
DU-8548	42165380660000	DRILL	PROD_OIL
DU-8601	42165005590000	ACTIVE	PROD_OIL
DU-8602	42165005630000	P & A	PROD_OIL
DU-8603	42165007410000	P & A	INJ_H2O
DU-8604	42165005640000	ACTIVE	PROD_OIL
DU-8605	42165005610000	ACTIVE	PROD_OIL
DU-8606	42165007420000	P & A	PROD_OIL
DU-8607	42165005620000	P & A	PROD_OIL
DU-8608	42165005650000	ACTIVE	INJ_H2O
DU-8609	42165005660000	P & A	INJ_H2O
DU-8610	42165005600000	TA	INJ_H2O
DU-8611	42165104260000	TA	INJ_H2O
DU-8612	42165318750000	ACTIVE	PROD_OIL
DU-8613	42165304210000	ACTIVE	PROD_OIL
DU-8614	42165333510000	ACTIVE	PROD_OIL
DU-8615	42165367580000	ACTIVE	PROD_OIL
DU-8616	42165367590000	ACTIVE	PROD_OIL
DU-9201	42165009540000	TA	INJ_H2O
DU-9202	42165009560000	P & A	INJ_H2O
DU-9203	42165009620000	TA	INJ_H2O
DU-9204	42165352130000	TA	PROD_OIL
DU-9301	42165009630000	P & A	INJ_H2O
DU-9302	42165032270000	P & A	PROD_OIL
DU-9303	42165002110000	P & A	PROD_OIL
DU-9304	42165002560000	TA	INJ_H2O
DU-9305	42165002150000	P & A	PROD_OIL
DU-9306	42165002100000	TA	PROD_OIL
DU-9307	42165316060000	ACTIVE	PROD_OIL
DU-9308	42165002120000	P & A	INJ_H2O

DU-9401	42165012200000	P & A	INJ_H2O
DU-9402	42165012210000	P & A	INJ_H2O
DU-9403	42165012180000	P & A	INJ_H2O
DU-9501	42165002750000	P & A	INJ_H2O
DU-9502	42165002760000	TA	INJ_H2O
DU-9503	42165023240000	TA	INJ_H2O
DU-9504	42165023300000	P & A	PROD_OIL
DU-9505	42165104270000	P & A	INJ_H2O

Appendix 7. Summary of Key Regulations Referenced in MRV Plan

There are two primary regulations cited in this plan:

1. Texas Administrative Code Title 16 Part 1 Chapter 3 Oil & Gas Division
2. 40 CFR Parts 144, 145, 146, 147

For reference, TAC 16, Part 1 (3) was accessed September 1, 2014 at: http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=4&ti=16&pt=1&ch=3&rl=Y and the table of contents is included below.

Texas Administrative Code

TITLE 16	ECONOMIC REGULATION
PART 1	RAILROAD COMMISSION OF TEXAS
CHAPTER 3	OIL AND GAS DIVISION

Table of Contents

§3.27	Gas To Be Measured and Surface Commingling of Gas
§3.28	Potential and Deliverability of Gas Wells To Be Ascertained and Reported
§3.29	Hydraulic Fracturing Chemical Disclosure Requirements
§3.30	Memorandum of Understanding between the Railroad Commission of Texas (RRC) and the Texas Commission on Environmental Quality (TCEQ)
§3.31	Gas Reservoirs and Gas Well Allowable
§3.32	Gas Well Gas and Casinghead Gas Shall Be Utilized for Legal Purposes
§3.33	Geothermal Resource Production Test Forms Required
§3.34	Gas To Be Produced and Purchased Ratably
§3.35	Procedures for Identification and Control of Wellbores in Which Certain Logging Tools Have Been Abandoned
§3.36	Oil, Gas, or Geothermal Resource Operation in Hydrogen Sulfide Areas
§3.37	Statewide Spacing Rule
§3.38	Well Densities
§3.39	Proration and Drilling Units: Contiguity of Acreage and Exception Thereto
§3.40	Assignment of Acreage to Pooled Development and Proration Units
§3.41	Application for New Oil or Gas Field Designation and/or Allowable
§3.42	Oil Discovery Allowable
§3.43	Application for Temporary Field Rules
§3.45	Oil Allowables
§3.46	Fluid Injection into Productive Reservoirs
§3.47	Allowable Transfers for Saltwater Injection Wells
§3.48	Capacity Oil Allowables for Secondary or Tertiary Recovery Projects
§3.49	Gas-Oil Ratio
§3.50	Enhanced Oil Recovery Projects--Approval and Certification for Tax Incentive
§3.51	Oil Potential Test Forms Required
§3.52	Oil Well Allowable Production
§3.53	Annual Well Tests and Well Status Reports Required
§3.54	Gas Reports Required
§3.55	Reports on Gas Wells Commingling Liquid Hydrocarbons before Metering
§3.56	Scrubber Oil and Skim Hydrocarbons
§3.57	Reclaiming Tank Bottoms, Other Hydrocarbon Wastes, and Other Waste Materials
§3.58	Certificate of Compliance and Transportation Authority; Operator Reports
§3.59	Oil and Gas Transporter's Reports
§3.60	Refinery Reports
§3.61	Refinery and Gasoline Plants
§3.62	Cycling Plant Control and Reports
§3.63	Carbon Black Plant Permits Required
§3.70	Pipeline Permits Required
§3.71	Pipeline Tariffs
§3.72	Obtaining Pipeline Connections
§3.73	Pipeline Connection; Cancellation of Certificate of Compliance; Severance
§3.76	Commission Approval of Plats for Mineral Development
§3.78	Fees and Financial Security Requirements
§3.79	Definitions
§3.80	Commission Oil and Gas Forms, Applications, and Filing Requirements

§3.81	Brine Mining Injection Wells
§3.83	Tax Exemption for Two-Year Inactive Wells and Three-Year Inactive Wells
§3.84	Gas Shortage Emergency Response
§3.85	Manifest To Accompany Each Transport of Liquid Hydrocarbons by Vehicle
§3.86	Horizontal Drainhole Wells
§3.91	Cleanup of Soil Contaminated by a Crude Oil Spill
§3.93	Water Quality Certification Definitions
§3.95	Underground Storage of Liquid or Liquefied Hydrocarbons in Salt Formations
§3.96	Underground Storage of Gas in Productive or Depleted Reservoirs
§3.97	Underground Storage of Gas in Salt Formations
§3.98	Standards for Management of Hazardous Oil and Gas Waste
§3.99	Cathodic Protection Wells
§3.100	Seismic Holes and Core Holes
§3.101	Certification for Severance Tax Exemption or Reduction for Gas Produced From High-Cost Gas Wells
§3.102	Tax Reduction for Incremental Production
§3.103	Certification for Severance Tax Exemption for Casinghead Gas Previously Vented or Flared
§3.106	Sour Gas Pipeline Facility Construction Permit
§3.107	Penalty Guidelines for Oil and Gas Violations

Request for Additional Information: Oxy Denver Unit CO_2 Subpart MRV Plan
December 14, 2015

Instructions: Please enter responses into this table. Any long responses, references, or supplemental information may be attached to the end of the table as an appendix. Supplemental information may also be provided in a resubmitted MRV plan.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
1.	2.2.3 – The Geology of the Denver Unit within the Wasson Field	8	MRV Plan: "Oxy has calculated the total pore space within the Denver Unit, from the top of the reservoir down to the spill point, which is located at -1,675 ft subsea or roughly 5,000 – 5,500 feet below the surface, to be 8,848 MMB." MRV Plan: "The volume of CO2 storage is based on the estimated total pore space within the Denver Unit from the top of the reservoir down to the spill point, or about 8.848 MMB." There appears to be a type-o in the calculated pore space.	Corrected second instance to read 8,848
2.	2.3.6 – Facilities Locations	26	There appears to be a font formatting error on the page.	Corrected blue font and did global search and replace to make all text black
3.	3.3 – Monitoring Timeframes	32	MRV Plan: "The Specified Period will begin January 1, 2016 and is anticipated to end prior to December 31, 2026." Please clarify the Specified Period in other sections of the plan, e.g. Pages 4 and 7, Figure 2.	Corrected to begin 2016 and run through 2026
4.	4.1 – Introduction	33	The bulleted list of potential pathways does not appear to match the headings in this section.	Removed bulleted reference to dissolution
5.	9.1 – Monitoring QA/QC	54	MRV Plan: "Operated in conformance with American Petroleum Institute (API) standards found in API Report No. 3, Parts 2 and 3." Please clarify whether this is API Report No. 3 or AGA Report No. 3.	Changed to AGA #3

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
6.	Appendix 5. Glossary of Terms	67	MRV Plan: "At Wasson, for example, San Andres formation is a layer of permeable dolomites that were deposited in a shallow marine environment during the Permian Era, some 250 to 300 million years ago." Oxy previously edited other sections of the MRV plan to change the term "Permian Era" to "Permian Period". However, the term "Permian Era" is still used here.	
7.	7.3 Mass of CO2 Produced		MRV Plan: "Again, using the data at each production well would give an inaccurate estimate of total injection due to the large number of wells and the potential for propagation of error due to allowable calibration ranges for each meter. Equation RR-8 in 98.443 will be used to calculate the mass of CO_2 from all injection wells as follows:" The term "production" instead of "injection" is intended; there are 2 typos	Both instances of "injection" were changed to "production"

Oxy Denver Unit CO_2 Subpart RR

Monitoring, Reporting and Verification (MRV) Plan

Final Version
September 2015

Table of Contents

Roadmap to the Monitoring, Reporting and Verification (MRV) Plan

Occidental Permian Ltd. (OPL) operates the Denver Unit in the Permian Basin for the primary purpose of enhanced oil recovery (EOR) using carbon dioxide (CO_2) flooding. OPL intends to inject CO_2 with a subsidiary purpose of establishing long-term containment of a measureable quantity of CO_2 in subsurface geological formations at the Denver Unit for an estimated period of ten years, the "Specified Period." The Specified Period includes all or some portion of the period 2014 through 2021. During the Specified Period, OPL will inject CO_2 that is purchased (fresh CO_2) from affiliates of Occidental Petroleum Corporation (OPC) or third parties, as well as CO_2 that is recovered (recycled CO_2) from the Denver Unit CO_2 Recovery Plant (DUCRP). OPL, OPC and their affiliates (together, Oxy) have developed this monitoring, reporting, and verification (MRV) plan in accordance with 40 CFR §98.440-449 (Subpart RR) to provide for the monitoring, reporting and verification of the quantity of CO_2 sequestered at the Denver Unit during the Specified Period.

In accordance with Subpart RR, flow meters are used to quantify the volume of CO_2 received, injected, produced, contained in products, and recycled. If leakage is detected, the volume of leaked CO_2 will be quantified using two approaches. First, Oxy follows the requirements in 40 CFR §98.230-238 (Subpart W) to quantify fugitive emissions, planned releases of CO_2, and other surface releases from equipment. Second, Oxy's risk-based monitoring program uses surveillance techniques in the subsurface and above ground to detect CO_2 leaks from potential leakage pathways in the subsurface. If a leak is identified, the volume of the release will be estimated. The CO_2 volume data, including CO_2 volume at different points in the injection and production process, equipment leaks, and surface leaks, will be used in the mass balance equations included 40 CFR §98.440-449 (Subpart RR) to calculate the volume of CO_2 stored on an annual and cumulative basis.

This MRV plan contains eleven sections:

- Section 1 contains general facility information.
- Section 2 presents the project description. This section describes the planned injection volumes, the environmental setting of the Denver Unit, the injection process, and reservoir modeling. It also illustrates that the Denver Unit is well suited for secure storage of injected CO_2.
- Section 3 describes the monitoring area: the Denver Unit in West Texas.

- Section 4 presents the evaluation of potential pathways for CO_2 leakage to the surface. The assessment finds that the potential for leakage through pathways other than the man-made well bores and surface equipment is minimal.
- Section 5 describes Oxy's risk-based monitoring process. The monitoring process utilizes Oxy's reservoir management system to identify potential leakage indicators in the subsurface. The monitoring process also entails visual inspection of surface facilities to locate leaks and personal H_2S monitors as a proxy for detecting potential leaks. Oxy's MRV efforts will be primarily directed towards managing potential leaks through well bores and surface facilities.
- Section 6 describes the baselines against which monitoring results will be compared to assess whether changes indicate potential leaks.
- Section 7 describes Oxy's approach to determining the volume of CO_2 sequestered using the mass balance equations in 40 CFR §98.440-449, Subpart RR of the Environmental Protection Agency's (EPA) Greenhouse Gas Reporting Program (GHGRP). This section also describes the site-specific factors considered in this approach.
- Section 8 presents the schedule for implementing the MRV plan.
- Section 9 describes the quality assurance program to ensure data integrity.
- Section 10 describes Oxy's record retention program.
- Section 11 includes several Appendices.

1. Facility Information

i) Reporter number – TBD

ii) All wells included in this report are permitted by the Texas Railroad Commission (TRRC), through TAC 16 Part 1 Chapter 3. The TRRC has primacy to implement the federal UIC Class II requirements and incorporated those provisions in TAC 16 Part 1 Chapter 3.

iii) All wells in the Denver Unit are identified by name, API number, status, and type. The list of wells as of August 2014 (roughly the date of MRV plan initial creation) is included in Appendix 6

2. Project Description

This section describes the planned injection volumes, environmental setting of the Denver Unit, injection process, and reservoir modeling conducted.

2.1 Project Characteristics

Using the modeling approaches described in section 2.4, Oxy has forecasted the total amount of CO_2 anticipated to be injected, produced, and stored in the Denver Unit as a result of its current and planned CO_2 EOR operations. Figure 1 shows the actual CO_2 injection, production, and stored volumes in the Denver Unit (main oil play plus the residual oil zone (ROZ)) for the period 1983 through 2013 (solid line) and the forecast for 2014 through 2111 (dotted line). The forecast is based on results from reservoir and recovery process modeling that Oxy uses to develop injection plans for each injection pattern, which is also described in section 2.4.

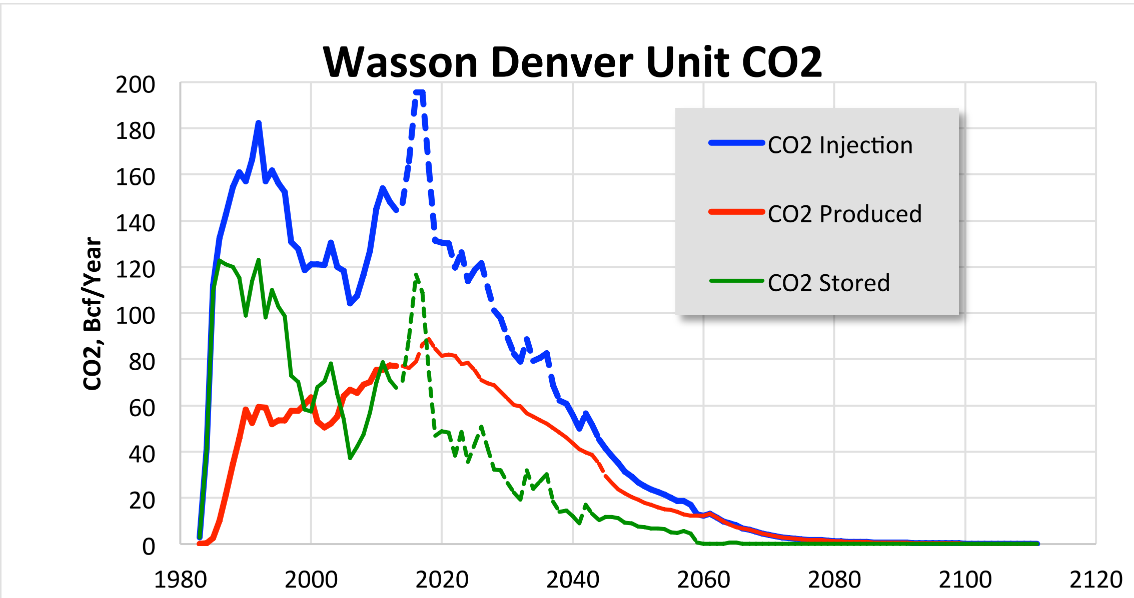

Figure 1 - Denver Unit Historic and Forecast CO_2 Injection, Production, and Storage 1980-2120

As discussed in Appendix 1 (**Background**), Oxy adjusts its purchase of fresh CO_2 to maintain reservoir pressure and to increase recovery of oil by extending or expanding the CO_2 flood. A volume of fresh CO_2 is purchased to balance the fluids removed from the reservoir and provide the solvency required to increase oil recovery. The data shows CO_2 injection, production, and storage through 2111 and anticipates new CO_2 storage volumes ending in 2059. Oxy has injected 4,035 Bscf of CO_2 (212.8 million metric tonnes (MMMT)) into the Denver Unit through the end of 2013. Of that amount, 1,593 Bscf (84.0 MMMT) was produced and 2,442 Bscf (128.8 MMMT) was stored.

Although exact storage volumes will be calculated using the mass balance equations described in Section 7, Oxy forecasts that the total volume of CO_2 stored over the lifetime of injection to be approximately 3,768 Bscf (200 MMMT), which represents approximately 25% of the theoretical storage capacity of the Denver Unit. For accounting purposes, the amount stored is the difference between the amount injected (including purchased and recycled CO_2) and the total of the amount produced less any

CO_2 that: i) leaks to the surface, ii) is released through surface equipment malfunction, or iii) is entrained or dissolved in produced oil.

Figure 2 presents the cumulative annual forecasted volume of CO_2 stored for a Specified Period 2014-2021. The cumulative amount stored is equal to the annual storage volume for that year plus the total of the annual storage volume(s) for the previous year(s) in a Specified Period. Hence the projected volume of CO_2 stored in the first year of the period specified in the graph is 70.7 Bscf (3.7 MMMT) and the cumulative in the second year is 160.1 Bscf (8.4 MMMT). In total, the eight-year volume is expected to be 603.5 Bscf (31.8 MMMT). This forecast illustrates the anticipated volume of subsidiary storage during a Specified Period; the actual amounts stored will be calculated as described in section 7 of this MRV plan.

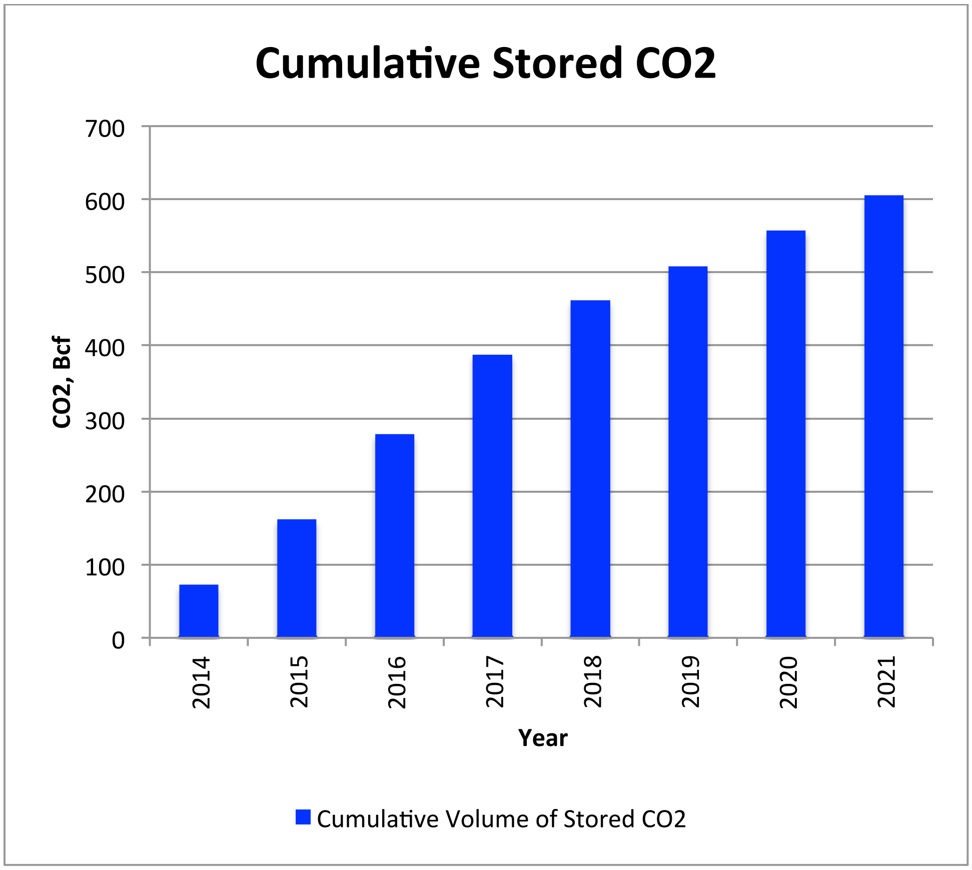

Figure 2 - Denver Unit CO_2 Storage Forecasted During the Specified Period 2014-2021

2.2 Environmental Setting

The project site for this MRV plan is the Denver Unit, located within the Wasson Field, in the Permian Basin.

2.2.1 Geology of the Wasson Field

The Wasson Field produces oil from the San Andres formation, a layer of permeable dolomites that were deposited in a shallow marine environment during the Permian Period, some 250 to 300 million years ago. This depository created a wide sedimentary basin, called the Permian Basin, which covers the western part of the Texas and the southeastern part of New Mexico. In the Permian Period this part of the central United States was under water.

The Wasson Field is located in southwestern Yoakum and northwestern Gaines counties of West Texas (See Figure 3), in an area called the Northwest Shelf. It is approximately five miles east of the New Mexico state line and 100 miles north of Midland, Texas as indicated with the red dot in Figure 3. The Wasson Field was discovered in 1936.

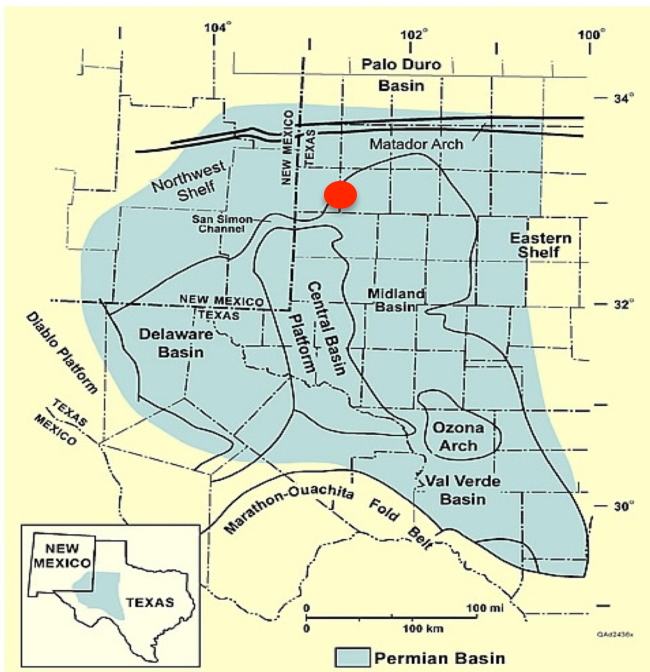

Figure 3 Permian Basin

With nearly 4,000 million barrels (MMB) of Original Oil in Place (OOIP), it is one of the largest oil fields in North America. In the years following its deposition, the San Andres formation has been buried under thick layers of impermeable rocks, and finally uplifted to form the current landscape. The process of burial and uplifting produced some unevenness in the geologic layers. Originally flat, there are now variations in elevation within the San Andres Formation across the Permian Basin. The relative high spots, such as the Wasson Field, have become the places where oil and gas have accumulated over the ensuing millions of years.

As indicated in Figure 4, the San Andres formation now lies beneath some 5,000 feet of overlying sediments. The San Andres reservoir is capped with nearly 400 feet of impermeable dolomite, referred to as the upper San Andres. This is the seal that has kept

oil and gas trapped in the lower San Andres formation for millions of years thus indicating it is clearly a seal of the highest integrity. Other zones also serve as seals. The properties of these seal intervals can be interpreted from logs run across the sealing intervals. Logs, such as SP (spontaneous potential) logs, gamma ray logs, and porosity logs, all indicate lack of permeability. Logs in multiple wells throughout Wasson confirm the presence of these seals over the entire field. These seals are highlighted in orange on Figure 4.

Between the surface and about 2,000 feet in depth there are intervals of underground sources of drinking water (USDW). These include the Ogallala and Paluxy aquifers, identified in blue in Figure 4. In addition other potentially useful brine intervals (having a higher dissolved solids content) are identified in light blue. TRCC, which has primacy to implement the UIC Class II program in Texas, requires that all wells drilled through these intervals confine fluids to the stratum in which they are encountered or injected. Wells are required to use casing and other measures to ensure confinement.[1]

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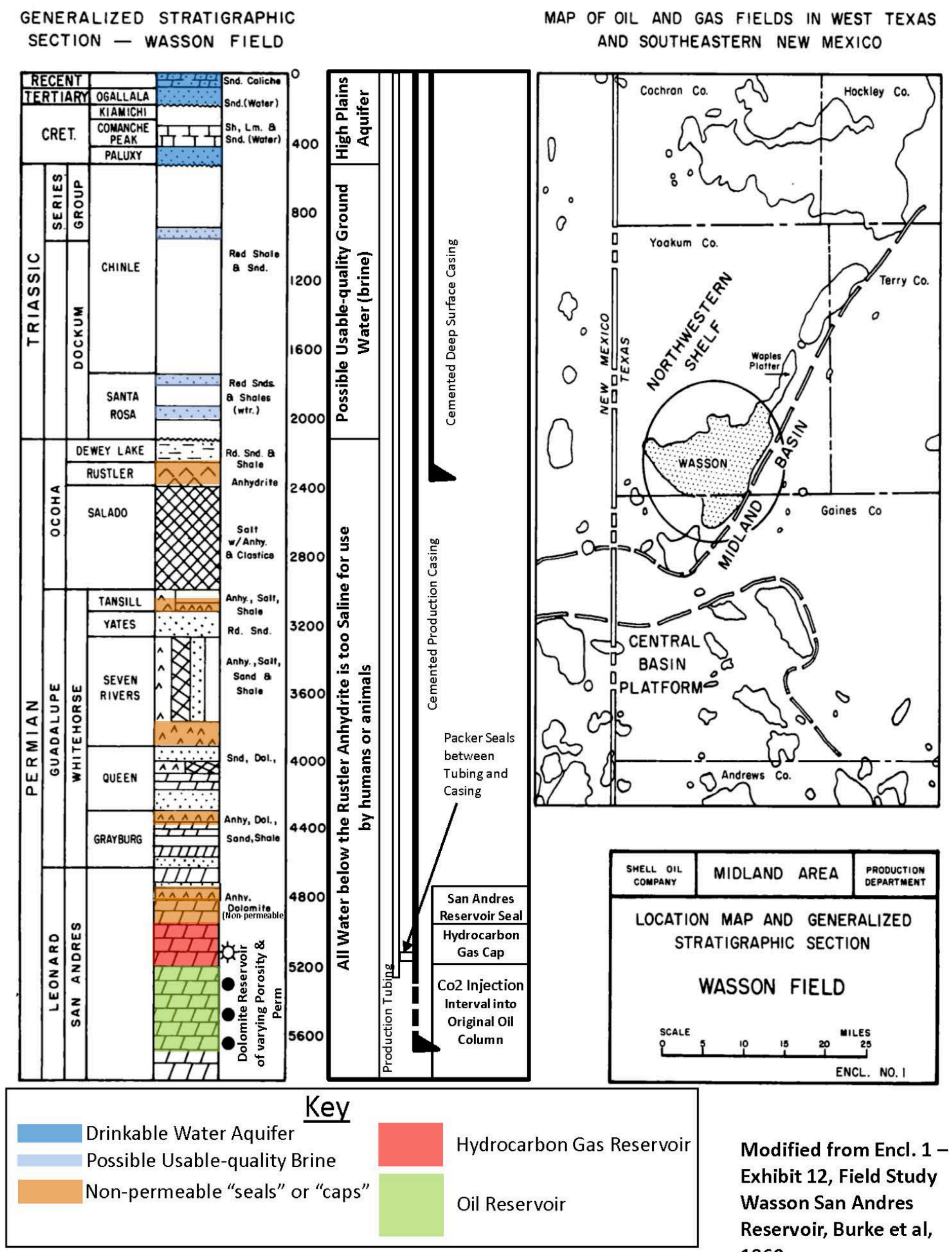
[1] See Texas Administrative Code Title 16 Part 1 Chapter 3 Rule §3.7 found online at: http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=4&ti=16&pt=1&ch=3&rl=Y. For convenience, this rule is summarized in Appendix 7.

Figure 4 Stratigraphic Section at Wasson



Modified from Encl. 1 – Exhibit 12, Field Study Wasson San Andres Reservoir, Burke et al, 1960

There are no known faults or fractures affecting the Denver Unit that provide an upward pathway for fluid flow. Oxy has confirmed this conclusion in multiple ways. First and foremost, the presence of oil, especially oil that has a gas cap, is indicative of a good quality natural seal. Oil and, to an even greater extent gas, are less dense than the brine found in rock formations and tend to rise over time. Places where oil and gas remain trapped in the deep subsurface over millions of years, as is the case in the Wasson Field,

provide good proof that faults or fractures do not provide a pathway for upward migration out of the flooding interval. The existence of such faults or fractures in the Wasson Field would have provided a pathway for oil and gas and they would not be found there today.

Second, in the course of developing the field, seismic surveys have been conducted to characterize the formations and inform the reservoir models used to design injection patterns. These surveys show the existence of faulting well below the San Andres formation but none that penetrate the flooding interval. Figures 5 and 6 show north-south and east-west seismic sections through the Denver Unit. Faulting can be identified deeper in the section, but not at the San Andres level. This lack of faulting is consistent with the presence of oil and gas in the San Andres formation at the time of discovery.

Figure 5 Seismic Section North-South

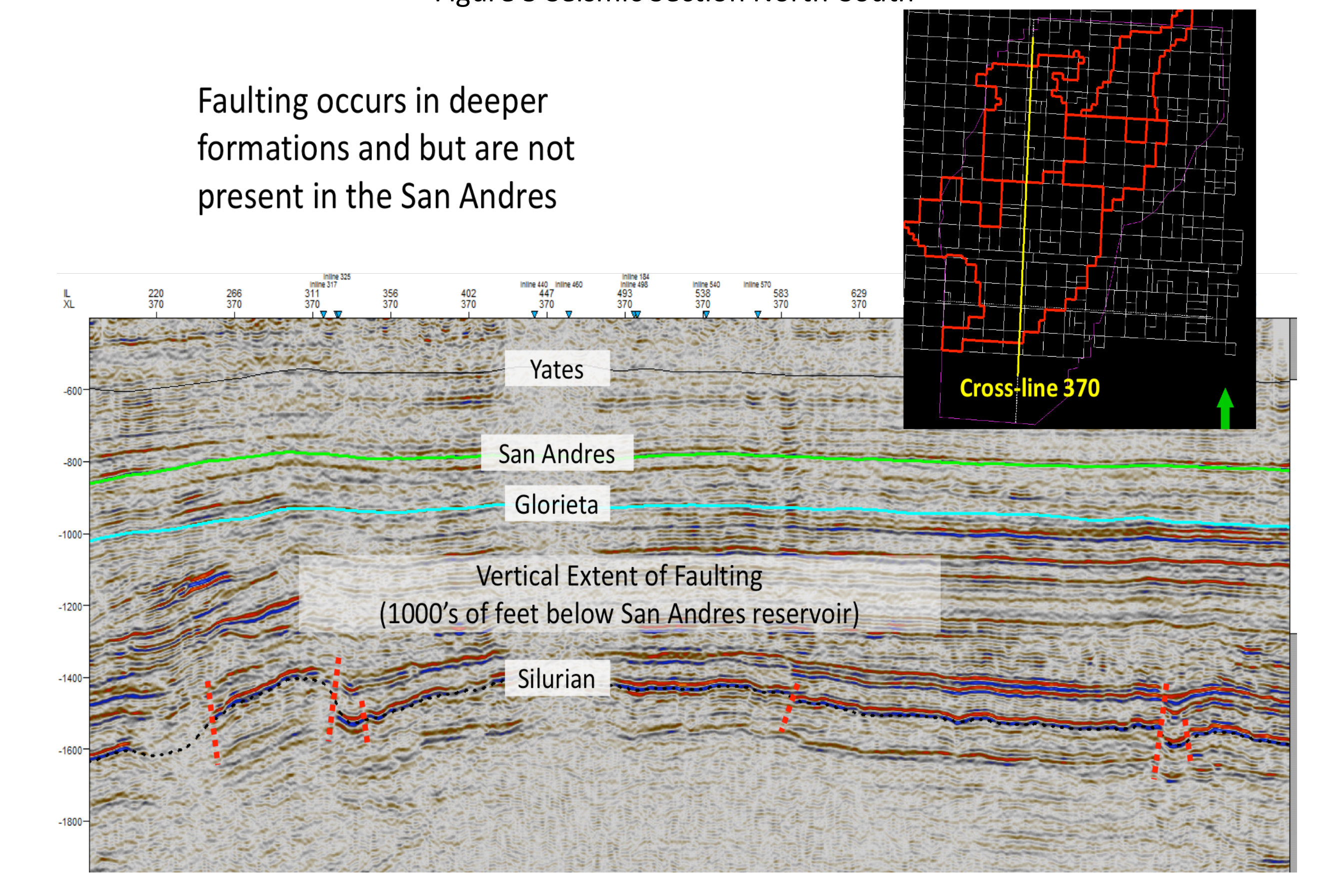
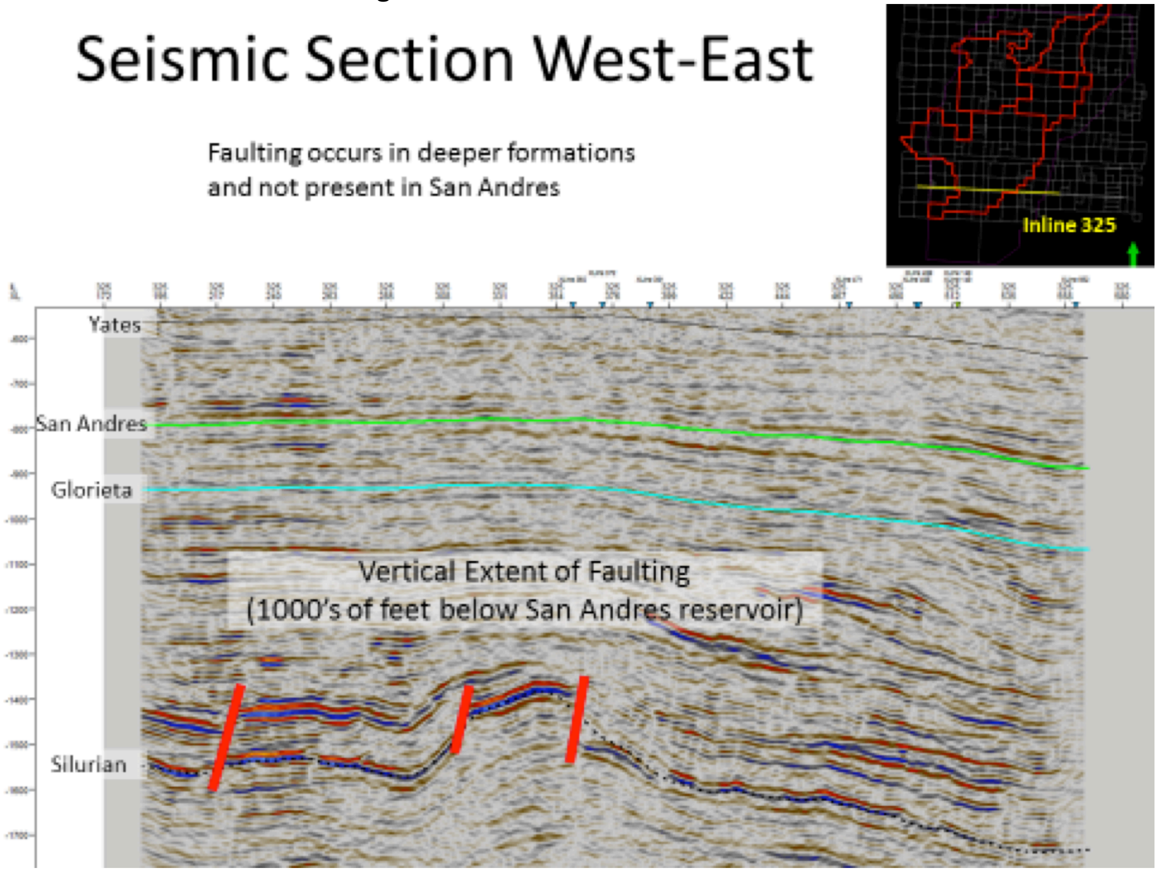


Figure 6 Seismic Section East-West



The Wasson seismic survey was a 3D shoot over most of Wasson conducted in 1994.

Leakage due to interaction with existing or new faults would lead to anomalies from expected performance. Such anomalies would lead to an investigation which may include measures such as injection profile surveys and pressure measurements to identify the cause. Poor performance could be attributed to inadequate pattern development, poor well conditions (e.g., scale buildup), conformance within the formation, or a potential leak. The investigation would identify the cause of the anomaly and guide the course of action. This is discussed further in Section 4.3 in the review of potential leakage pathways for injected CO_2.

And finally, the operating history at the Denver Unit confirms that there are no faults or fractures penetrating the flood zone. Fluids, both water and CO_2, have been successfully injected in the Denver Unit since the mid 1960's and there is no evidence of any interaction with existing or new faults or fractures. In fact, it is the absence of faults and fractures in the Denver Unit that make the reservoir such a strong candidate for CO_2 and water injection operations, and enable field operators to maintain effective control over the injection and production processes.

2.2.2 Operational History of the Denver Unit

The Denver Unit is a subdivision of the Wasson Field. It was established in the 1960s to implement water flooding. It is located in the southern part of the area of oil accumulation. The boundaries of the Denver Unit are indicated in the Wasson Field Map (see Figure 7).

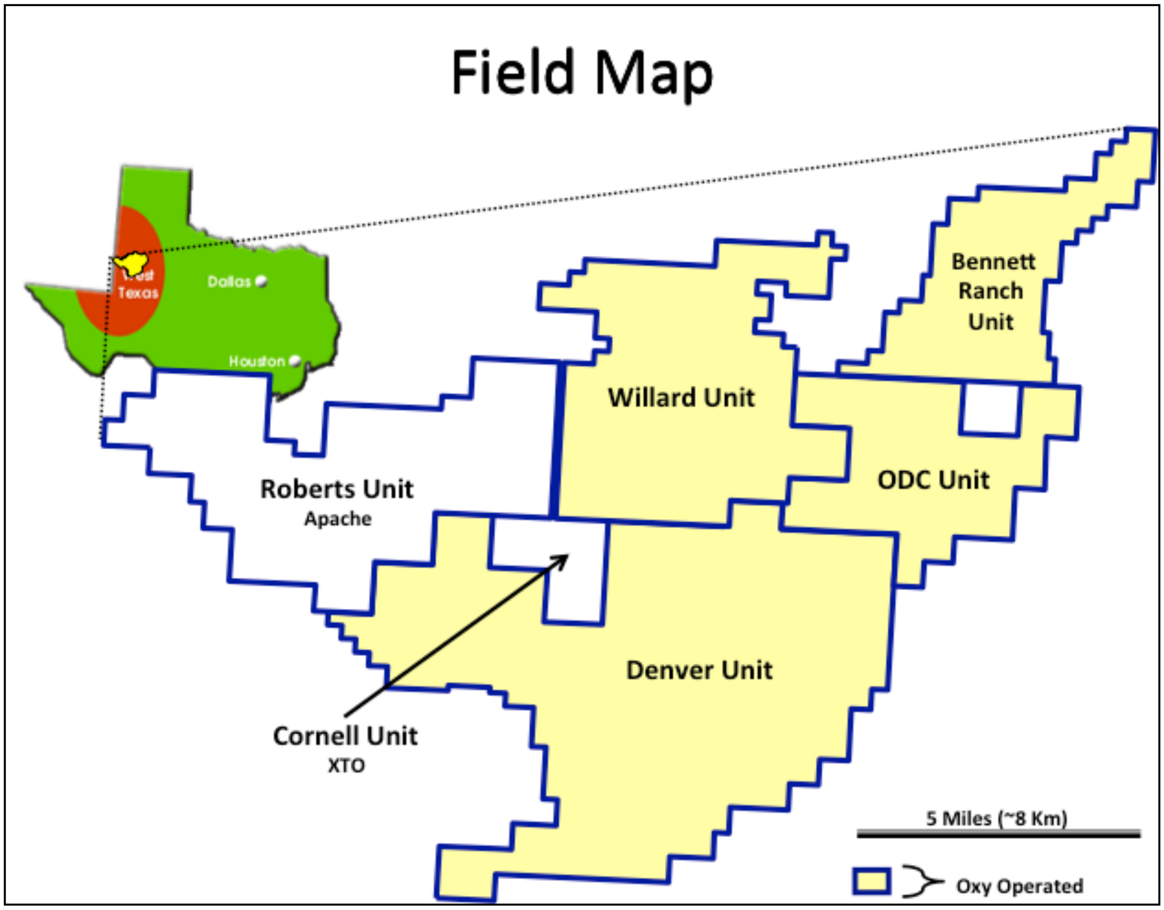


Figure 7 - Wasson Field Map

Water flooding works most efficiently with regular patterns over a large area. The Wasson Field was originally developed with numerous leases held by individuals and companies. To improve efficiency, a number of smaller leases were combined (or unitized) into larger legal entities (Units), which can be operated without the operational restrictions imposed by the former lease boundaries. In 1964, six such units were formed at Wasson to enable water flooding; the largest of these is the Denver Unit (See Figure 7).

CO_2 flooding of the Denver Unit began in 1983 and has continued and expanded since that time. The experience of operating and refining the Denver Unit CO_2 floods over three decades has created a strong understanding of the reservoir and its capacity to store CO_2.

2.2.3 The Geology of the Denver Unit within the Wasson Field

Figure 4 shows a vertical snapshot of the geology above and down to the Wasson field. Figure 8 is an aerial view of the structure of the field showing the depth of the top of the San Andres. As indicated in the discussion of Figure 4, the upper portion of the San Andres formation is comprised of impermeable anhydrite and dolomite sections that serve as a seal. In effect, they form the hard ceilings of an upside down bowl or dome. Below this seal the formation consists of permeable dolomites containing oil and gas. Figure 8 shows a two-dimensional picture of the structure of this formation.

The colors in the structure map in Figure 8 indicate changes in elevation, with red being highest level, (i.e., the level closest to the surface) and blue and purple being lowest level (i.e., the level deepest below the surface). As indicated in Figure 8, the Denver Unit is located at the highest elevation of the San Andres formation within the Wasson Field, forming the top of the dome. The rest of the Wasson field slopes downward from this area, effectively forming the sides of the dome. The elevated area formed a natural trap for oil and gas that migrated from below over millions of years. Once trapped in this high point, the oil and gas has remained in place. In the case of the Wasson Field, this oil and gas has been trapped in the San Andres formation for 50 to100 million years. Over time, fluids, including CO_2, in the Wasson would rise vertically until meeting the ceiling of the dome and would then follow it to the highest elevation in the Denver Unit. As such, the fluids injected into the Denver Unit would stay in the reservoir rather than move to adjacent areas.

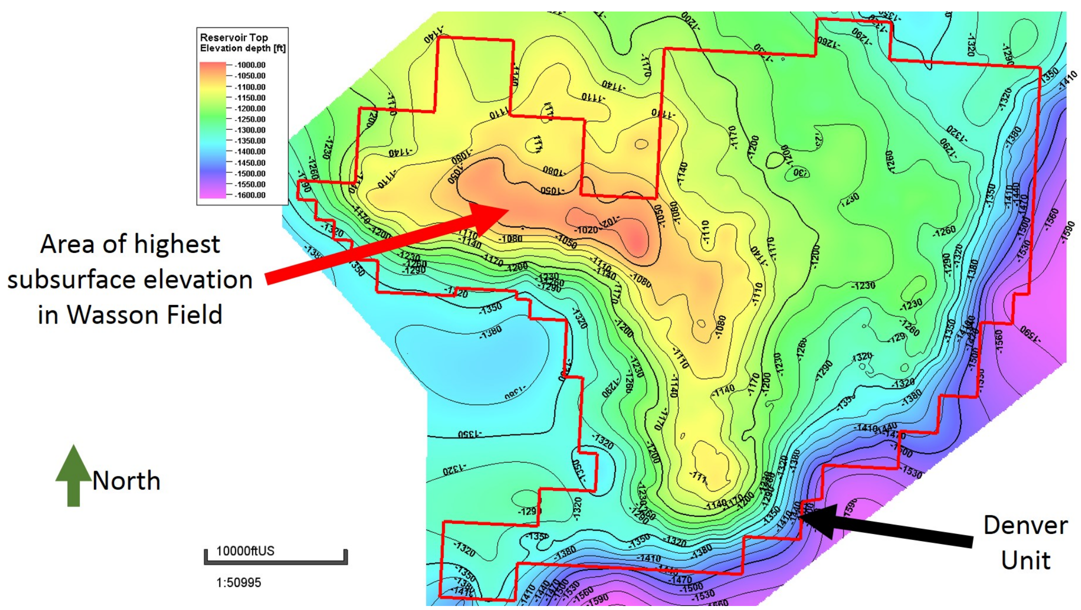


Figure 8 Structure Map on Top of San Andres Pay (F1)

Buoyancy dominates where oil and gas are found in a reservoir. Gas, being lightest, rises to the top and water, being heavier, sinks to the bottom. Oil, being heavier than gas but

lighter than water, lies in between. The cross section in Figure 9 shows saturation levels in the oil-bearing layers of the Wasson Field and illustrates this principle.

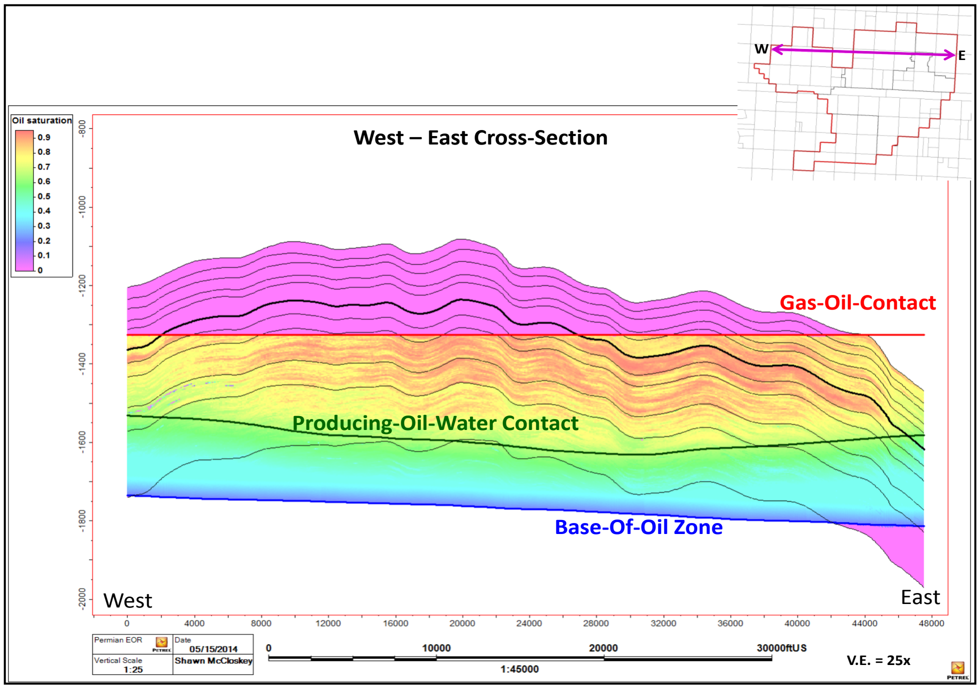


Figure 9 - Wasson Field Cross-Section Showing Saturation

At the time of discovery, natural gas was trapped at the structural high point of the Wasson Field, shown by pink area above the gas-oil contact line (in red) in the cross section (see Figure 9). This interface is found approximately 5,000 feet below the surface (or at -1,325 ft subsea). Above the gas-oil interface is the volume known as a "gas cap." As discussed in Section 2.2.1, the presence of a gas cap is evidence of the effectiveness of the seal formed by the upper San Andres. Gas is buoyant and highly mobile. If it could escape the Wasson field naturally, through faults or fractures, it would have done so over the millennia. Below the gas was an oil accumulation, which extended down to the producing oil-water contact (in black). The producing oil water contact was determined by early drilling to be the maximum depth where only oil was produced.

Below the level of the producing oil-water contact, wells produce a combination of oil and water. The uppermost region in this area is called the transition zone (TZ) and below that is the residual oil zone (ROZ). The ROZ was water flooded by nature millions of years ago, leaving a residual oil saturation.[2] This is approximately the same residual oil saturation remaining after water flooding in the water-swept areas of the main oil pay zone, and is also a target for CO_2 flooding.

When CO_2 is injected into an oil reservoir, it is pushed from injection wells to production wells by the high pressure of the injected CO_2. Once the CO_2 flood is complete and

[2] "Residual oil saturation" is the fraction of oil remaining in the pore space, typically after water flooding.

injection ceases, the remaining mobile CO_2 will rise slowly upward, driven by buoyancy forces. If the amount of CO_2 injected into the reservoir exceeds the secure storage capacity of the pore space, excess CO_2 could theoretically "spill" from the reservoir and migrate to other reservoirs in the Northwest Shelf. This risk is very low in the Denver Unit, because there is more than enough pore space to retain the CO_2. Oxy has calculated the total pore space within the Denver Unit, from the top of the reservoir down to the spill point, which is located at -1,675 ft subsea or roughly 5,000 – 5,500 feet below the surface, to be 8,848 MMB. At reservoir conditions the Denver Unit could hold about 14,700 Bscf (775 MMMT) CO_2 in the reservoir space above the spill point. Oxy forecasts that at the end of EOR operations stored CO_2 will fill approximately 25% of calculated storage capacity. The volume of CO_2 storage is based on the estimated total pore space within the Denver Unit from the top of the reservoir down to the spill point, or about 8.848 MMB. This is the volume of rock multiplied by porosity. CO_2 storage is calculated assuming an irreducible water saturation of 0.15, an irreducible oil saturation of 0.10 and a CO_2 formation volume factor of 0.45.

Top of F1 to -1675 ftss (shallowest BOZO Depth)	
Variables	Denver Unit Outline
Pore Volume [RB]	8,847,943,353
B_{CO2}	0.45
S_{wirr}	0.15
S_{orCO2}	0.1
Max CO_2	14,746,572,255
Max CO_2	14.7 TCF

$$CO_2\,(max) = Volume(RB) * (1 - S_{wirr} - S_{orCO2}) / B_{CO2}$$

The formation volume factor of CO_2 (B_{CO2}) is the ratio of reservoir volume in barrels to Mscf at standard conditions. At 1900 psi and 105 ^oF, the density of CO_2 is approximately 0.740 g/cc, which translates to a CO_2 formation volume factor of 0.45. (See Section 2.1 for additional forecast considerations.)

Given that the Denver Unit is the highest subsurface elevation within the Wasson Field, that the confining zone has proved competent over both millions of years and throughout decades of EOR operations, and that the field has ample storage capacity, Oxy is confident that stored CO_2 will be contained securely in the Denver Unit.

2.3 Description of CO_2 EOR Project Facilities and the Injection Process

Figure 10 shows a simplified flow diagram of the project facilities and equipment in the Denver Unit. CO_2 is delivered to the Wasson Field via the Permian pipeline delivery system. The CO_2 injected into the Denver Unit is supplied by a number of different

sources into the pipeline system. Specified amounts are drawn based on contractual arrangements among suppliers of CO_2, purchasers of CO_2, and the pipeline operator.

Once CO_2 enters the Denver Unit there are four main processes involved in EOR operations. These processes are shown in Figure 10 and include:

1. **CO_2 Distribution and Injection**. Purchased (fresh) CO_2 is combined with recycled CO_2 from the Denver Unit CO_2 Recovery Plant (DUCRP) and sent through the main CO_2 distribution system to various CO_2 injectors throughout the field.
2. **Produced Fluids Handling**. Produced fluids gathered from the production wells are sent to satellite batteries for separation into a gas/CO_2 mix and a water/oil mix. The water/oil mix is sent to centralized tank batteries where oil is separated from water. Produced oil is metered and sold; water is forwarded to the water injection stations for treatment and reinjection or disposal.
3. **Produced Gas Processing**. The gas/CO_2 mix separated at the satellite batteries goes to the DUCRP where the natural gas (NG), natural gas liquids (NGL), and CO_2 streams are separated. The NG and NGL move to commercial pipelines for sale. The majority of remaining CO_2 (e.g., the recycled CO_2) is returned to the CO_2 distribution system for reinjection.
4. **Water Treatment and Injection**. Water separated in the tank batteries is processed at water injection stations to remove any remaining oil and then distributed throughout the field either for reinjection along with CO_2 (the WAG or "water alternating gas" process) or sent to disposal wells.

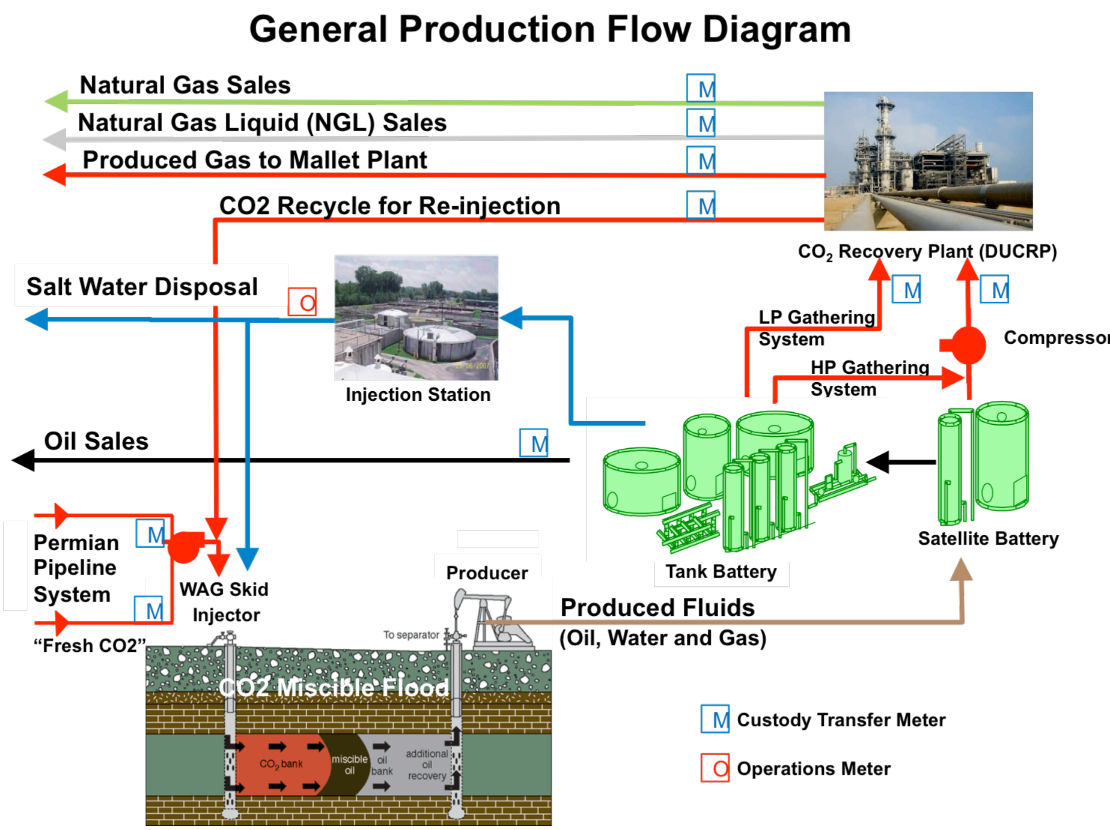


Figure 10 Denver Unit Facilities General Production Flow Diagram

2.3.1 CO_2 Distribution and Injection.

Oxy purchases CO_2 from the Permian pipeline delivery system and receives it through two custody transfer metering points, as indicated in Figure 10. Purchased CO_2 and recycled CO_2 are sent through the CO_2 trunk lines to injection manifolds. The manifolds are complexes of pipes that have no valves and do not exercise any control function. At the manifolds, the CO_2 is split into multiple streams and sent through distribution lines to individual WAG skids. There are volume meters at the inlet and outlet of DUCRP.

Currently, Oxy has 16 injection manifolds and approximately 600 injection wells in the Denver Unit. Approximately 400 MMscf of CO_2 is injected each day, of which approximately 47% is fresh CO_2, and the balance (53%) is recycled from DUCRP. The ratio of fresh CO_2 to recycled CO_2 is expected to change over time, and eventually the percentage of recycled CO_2 will increase and purchases of fresh CO_2 will taper off. As indicated in Section 2.1, Oxy forecasts ending purchases of fresh CO_2 for the Denver unit in 2059.

Each injection well has an individual WAG skid located near the wellhead (typically 150-200 feet away). WAG skids are remotely operated and can inject either CO_2 or water at various rates and injection pressures as specified in the injection plans. At any given time about half the injectors are injecting CO_2 and half are injecting water, in keeping with the injection plan for each one. The length of time spent injecting each fluid is a matter of continual optimization, designed to maximize oil recovery and minimize CO_2 utilization

in each injection pattern. A WAG skid control system is implemented at each WAG skid. It consists of a dual-purpose flow meter used to measure the injection rate of water or CO_2, depending on what is being injected. Data from these meters is sent to a control center where it is compared to the injection plan for that skid. As described in Sections 5 and 7, data from the WAG skid control systems, visual inspections of the injection equipment, and use of the procedures contained in 40 CFR §98.230-238 (Subpart W), will be gathered to complete the mass balance equations necessary to determine annual and cumulative volumes of stored CO_2.

2.3.2 Wells in the Denver Unit

As of August 2014, there are approximately 1,734 active wells in the Denver Unit as indicated in Figure 11; roughly two thirds of these wells are production wells and the remaining third are injection wells. In addition there are 448 inactive wells, bringing the total number of wells currently completed in the Denver Unit to 2,182. Table 1 shows these well counts in the Denver Unit by status.

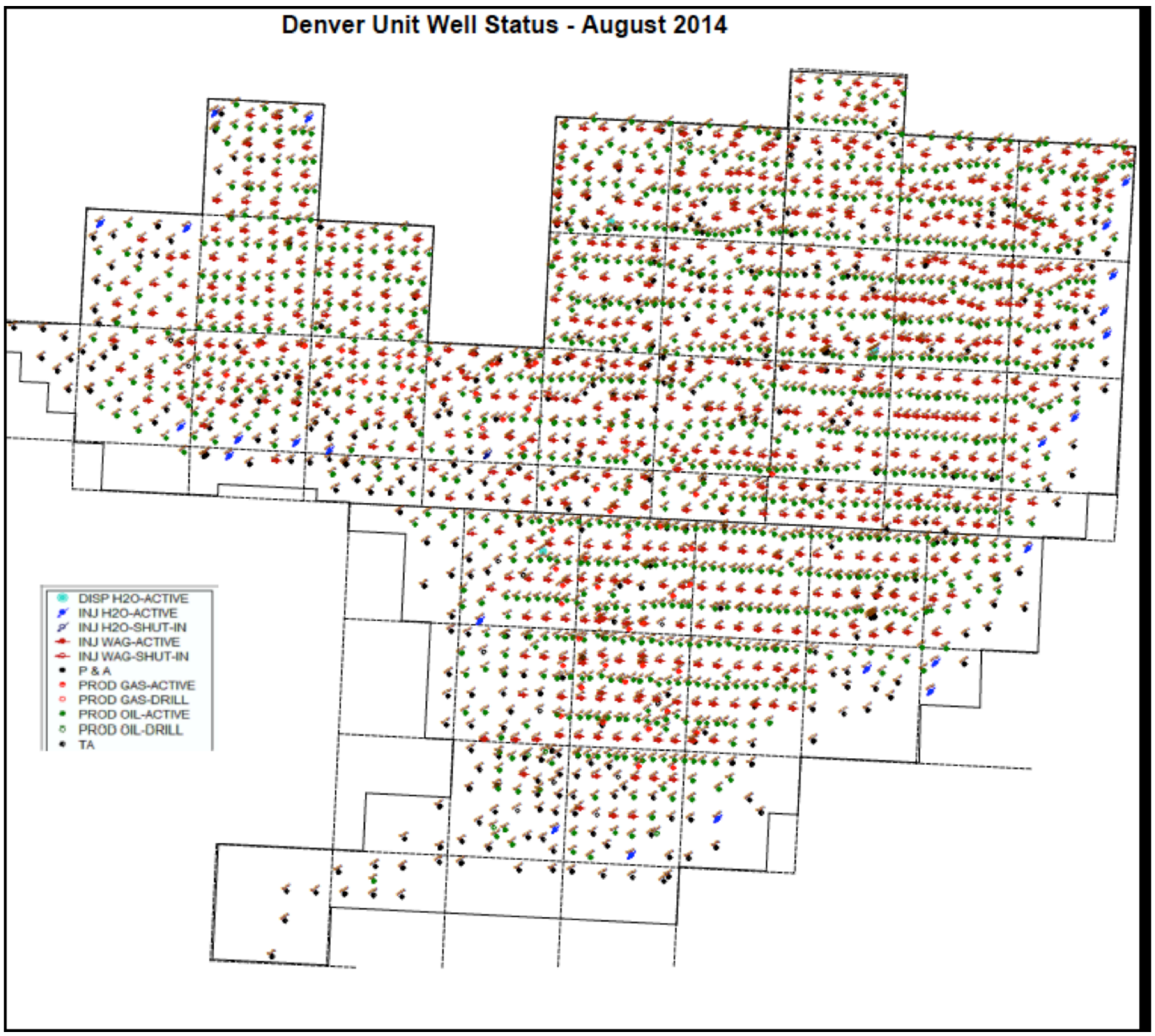


Figure 11 Denver Unit Wells - August 2014

Table 1 - Denver Unit Wells

Age/Completion of Well	*Active*	*Shut-in*	*Temporarily Abandoned*	*Plugged and Abandoned*
Drilled after 1996	619	3	23	3
Drilled 1961-1996 with production casing cemented to surface	388	2	58	49
Drilled between 1972-1975 – using lightweight casing	247	1	16	32
Drilled before 1960	480	2	47	212
TOTAL	***1734***	***8***	***144***	***296***

In addition to the wells completed in the Denver Unit, there are 885 wells that penetrate the Denver Unit but are completed in formations other than the San Andres. Table 2 shows these well counts by status: 498 of these wells are active and are operated by entities other than Oxy; the remaining wells are inactive and formerly operated by Oxy or others.

Table 2 – Non-Denver Unit Wells

	Oxy Operated			*Operated by Others*	
Age/Completion of Well	*Shut-In*	*Temporarily Abandoned*	*Plugged and Abandoned*	*Active*	*Inactive*
Drilled after 1996	2	16	1	181	10
Drilled 1961-1996 with production casing cemented to surface	4	69	94	214	89
Drilled between 1972-1975 – using lightweight casing	0	0	0	0	1
Drilled before 1960	0	28	29	103	44
TOTAL	***6***	***113***	***124***	***498***	***144***

Tables 1 and 2 categorize the wells in groups that relate to age and completion methods. The wells drilled after 1996 were completed using state-of-the-art standards. The term "State-of-the-art standards" refers to the use of regular weight casing cemented to surface. In 1996, Shell, which then operated the Denver Unit, as well as the major Clearfork leases that lie under the Denver Unit, implemented a policy that wells be cemented to surface following these standards. Oxy continues to follow that practice. The majority of wells drilled between 1961-1996 have production casings cemented to the surface. A subset of this group of wells uses lightweight casing. The last group covers older wellbores drilled before 1960. Oxy considers these categories when planning well maintenance projects. Further, Oxy keeps well workover crews on site in the Permian to maintain all active wells and to respond to any wellbore issues that arise.

All wells in oilfields, including both injection and production wells described in Tables 1 and 2, are regulated by TRRC, which has primacy to implement the UIC Class II

program in Texas, under TAC Title 16 Part 1 Chapter 3.[3] A list of wells, with well identification numbers, is included in Appendix 6.

TRRC rules govern well siting, construction, operation, maintenance, and closure for all wells in oilfields. Briefly current rules require, among other provisions:

- That fluids be constrained in the strata in which they are encountered;
- That activities governed by the rule cannot result in the pollution of subsurface or surface water;
- That wells adhere to specified casing, cementing, drilling well control, and completion requirements designed to prevent fluids from moving from the strata they are encountered into strata with oil and gas, or into subsurface and surface waters;
- That wells file a completion report including basic electric log (e.g., a density, sonic, or resistivity (except dip meter) log run over the entire wellbore);
- That all wells be equipped with a Bradenhead gauge, measure the pressure between casing strings using the Bradenhead gauge, and follow procedures to report and address any instances where pressure on the Bradenhead is detected;
- And that all wells follow plugging procedures that require advance approval from the Director and allow consideration of the suitability of the cement based on the use of the well, the location and setting of plugs.

In addition, Oxy implements a corrosion protection program to protect and maintain the steel used in injection and production wells from any CO_2-enriched fluids. Oxy currently employs methods to mitigate both internal and external corrosion of casing in wells in the Denver Unit.

Under the TRRC's program, wells to be used for fluid injection (as defined under EPA's UIC Class II program) must comply with additional requirements related to the Area of Review (AoR), casing design, special equipment for well monitoring, mechanical integrity testing (MIT) (using a pressure test), and monitoring / reporting. These current requirements are briefly described below.

AoR Review

According to EPA, the AoR refers to "the area around a deep injection well that must be checked for artificial penetrations, such as other wells, before a permit is issued. Well operators must identify all wells within the AoR that penetrate the injection or confining zone, and repair all wells that are improperly completed or plugged. The AoR is either a circle or a radius of at least ¼ mile around the well or an area determined by calculating the zone of endangering influence, where pressure due to injection may cause the migration of injected or formation fluid into a USDW."[4] These requirements thus require that Oxy locate and evaluate all wells located in the AoR. Thus, Oxy's reviews in the

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[3] See Appendix 7 for additional information.
[4] USEPA, Underground Injection Control Program Glossary, http://water.epa.gov/type/groundwater/uic/glossary.cfm.

Denver Unit include both wells operated by Oxy and other parties, drilled into the Denver Unit or other strata.

CO_2 flooding takes place throughout the Denver Unit. All of Oxy's injection wells are permitted for CO_2 flooding, after satisfying AoR requirements for the injection wells. Oxy is in compliance with all AoR requirements.

Mechanical Integrity Testing (MIT)
Oxy complies with the MIT requirements implemented by TRRC, which are designed to ensure that there is no significant leakage within the injection tubing, casing, or packer, as well as no leakage outside of the casing. All active injection wells undergo MIT testing (referred to as "H-5 testing") at the following intervals:

- Before injection operations begin;
- Every 5 years unless the permit states otherwise;
- After any workover that disturbs the seal between the tubing, packer, and casing;
- After any repair work on the casing; and
- When a request is made to suspend or reactivate the injection or disposal permit.

TRRC requires that the operator notify the TRRC district office at least 48 hours prior to conducting an H-5 test. Operators are required to use a pressure recorder and pressure gauge for the tests. The operator's field representative must sign the pressure recorder chart and submit it with the H-5 form. Casing test pressure must fall within 30-70% of the pressure recorder chart's full scale, and the pressure gauge must measure in increments that are no greater than 5% of the test pressure.

The current[5] requirements for conducting MIT include:

For Wells with Tubing

- The standard H-5 pressure test is the most common method.
- Pressure test the tubing-packer-casing at a pressure between 200 and 500 psi.
- The test pressure must stabilize within 10% of the required test pressure and remain stabilized for 30 minutes (60 minutes if testing with a gas-filled annulus)
- Maintain a minimum 200 psi pressure differential between the test pressure and tubing pressure.

For Wells without Tubing

- Pressure test immediately above injection perforations against a temporary plug, wireline plug, or tubing with packer.
- Indicate the type and depth of the plug.
- Must be tested to maximum permitted injection pressure that is not limited to 500 psi.

[5] The TRRC rules referenced here were accessed in August 2014 and are subject to change over time.

If a well fails an MIT, the operator must immediately shut in the well, provide notice to TRRC within 24 hours, file a Form H-5 with TRRC within 30 days, and make repairs or plug the well within 60 days. Casing leaks must be successfully repaired and the well retested or, if required, the well must be plugged. In such cases, the operator must submit a Form W-3A Notice of Intention to Plug and Abandon a well to the TRRC.

TRCC requires similar testing and response at injection wells that are more than 25 years old and have been idle for more than one year. This process is referred to as H-15 testing. For these wells, MIT is required every five years using either an annual fluid level test (valid for one year) or a hydraulic pressure test with a plug immediately above the perforations.

In the event of test failure at these idle wells, the process for reporting and correction is similar as for active wells, but the timeline is shorter. The operator must make repairs or plug the well within 30 days – not the 60 days allowed for an active well. Again, casing leaks must be successfully repaired and the well retested or plugged and, if plugging is required, a Form W-3A must be submitted to the TRRC.

Any well that fails an MIT cannot be returned to active status until it passes a new MIT.

2.3.3 Produced Fluids Handling

As injected CO_2 and water move through the reservoir, a mixture of oil, gas, and water (referred to as "produced fluids") flows to the production wells. Gathering lines bring the produced fluids from each production well to satellite batteries. Oxy has approximately 1,100 production wells in the Denver Unit and production from each is sent to one of 32 satellite batteries. Each satellite battery consists of a large vessel that performs a gas-liquid separation. Each satellite battery also has well test equipment to measure production rates of oil, water and gas from individual production wells. Oxy has testing protocols for all wells connected to a satellite. Most wells are tested every two months. Some wells are prioritized for more frequent testing because they are new or located in an important part of the field; some wells with mature, stable flow do not need to be tested as frequently; and finally some wells do not yield solid test results necessitating review or repeat testing.

After separation, the gas phase, which is approximately 80-85% CO_2 and contains 2,000-5,000 ppm H_2S, is transported by pipeline to DUCRP for processing as described below.

The liquid phase, which is a mixture of oil and water, is sent to one of six centralized tank batteries where oil is separated from water. The large size of the centralized tank batteries provides enough residence time for gravity to separate oil from water.

The separated oil is metered through the Lease Automatic Custody Transfer (LACT) unit located at each centralized tank battery and sold. The oil typically contains a small amount of dissolved or entrained CO_2. Analysis of representative samples of oil is

conducted once a year to assess CO_2 content. Since 2011, the dissolved CO_2 content has averaged 0.13% by volume in the oil.

The water is removed from the bottom of the tanks at the central tank batteries and sent to the water treatment facility. After treatment, the water is either re-injected at the WAG skids or disposed of into permitted disposal wells. Although Oxy is not required to determine or report the amount of dissolved CO_2 in this water, analyses have shown the water typically contains 40ppm (0.004%) CO_2.

Any gas that is released from the liquid phase rises to the top of the tanks and is collected by a Vapor Recovery Unit (VRU) that compresses the gas and sends it to DUCRP for processing.

Wasson oil is slightly sour, containing small amounts of hydrogen sulfide (H_2S), which is highly toxic. There are approximately 90 workers on the ground in the Denver Unit at any given time, and all field personnel are required to wear H_2S monitors at all times. Although the primary purpose of H_2S detectors is protecting employees, monitoring will also supplement Oxy's CO_2 leak detection practices as discussed in Sections 5 and 7.

In addition, the procedures in 40 CFR §98.230-238 (Subpart W) and the two-part visual inspection process described in Section 5 are used to detect leakage from the produced fluids handling system. As described in Sections 5 and 7 the volume of leaks, if any, will be estimated to complete the mass balance equations to determine annual and cumulative volumes of stored CO_2.

2.3.4 Produced Gas Handling

Produced gas is gathered from the satellite batteries and sent to centralized compressor stations and then to DUCRP in a high pressure gathering system. Produced gas collected from the tank battery by VRUs is either added to the high pressure gathering system or sent to DUCRP in a low pressure gathering system. Both gathering systems have custody transfer meters at the DUCRP inlet.

Once gas enters DUCRP, it undergoes compression and dehydration. Produced gas is first treated in a Sulferox unit to convert H_2S into elemental sulfur. Elemental sulfur is sold commercially and is trucked from the facility.

Other processes separate NG and NGLs into saleable products. At the end of these processes there is a CO_2 rich stream, a portion of which is redistributed (recycled) to again be injected. Oxy's goal is to limit the amount of H_2S in the recycled CO_2 to less than 100 ppm H_2S. Meters at DUCRP outlet are used to determine the total volume of the CO_2 stream recycled back into the EOR operations.

Separated NG is either used within the Denver Unit or delivered to a commercial pipeline for sale. The pipeline gas must meet quality standards and is measured using a flow meter

that is calibrated for commercial transactions. NGL is also measured using a commercial flow meter and sold for further processing.

As described in Section 2.3.4, data from 40 CFR §98.230-238 (Subpart W), the two-part visual inspection process for production wells and areas described in Section 5, and information from the personal H_2S monitors are used to detect leakage from the produced gas handling system. This data will be gathered to complete the mass balance equations necessary to determine annual and cumulative volumes of stored CO_2 as described in Sections 5 and 7.

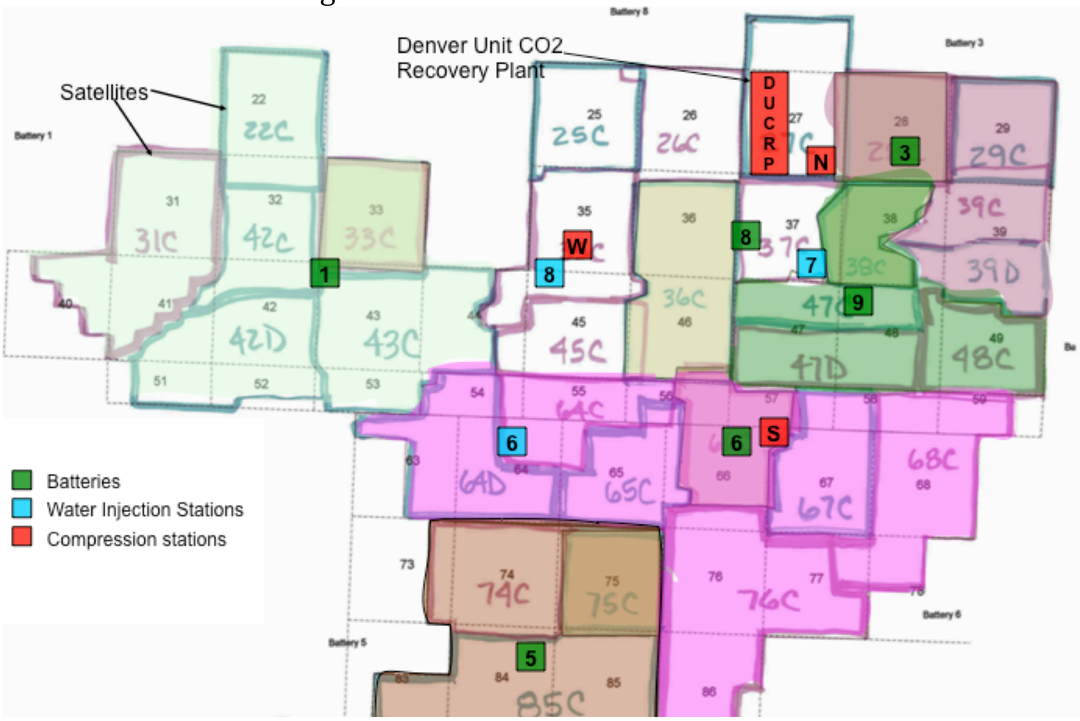
2.3.5 Water Treatment and Injection

Produced water collected from the tank batteries is gathered through a pipeline system and moved to one of three water treatment stations. Each facility consists of 10,000-barrel tanks where any remaining oil is skimmed from the water. Skimmed oil is returned to the centralized tank batteries. The water is filtered and sent to one of 10 large injection pumps. Pressurized water is distributed to the WAG skids for reinjection or to water disposal wells for injection into deeper permeable formations.

2.3.6 Facilities Locations

The locations of the various facilities in the Denver Unit are shown in Figure 12. As indicated above, there are 32 satellite batteries. The areas served by each satellite battery are shown in the highlighted areas and labeled with a number and letter, such as "31C" in the far west. The six centralized tank batteries are identified by the green squares. The three water treatment and injection stations are shown by the light blue squares. DUCRP is located by the large red rectangle to the north. Three compressor stations are shown by red squares.

Figure 12 Denver Unit EOR Facilities



TRRC requires that injections pressures be limited to prevent contamination of other hydrocarbon resources or pollution of subsurface or surface waters. In addition, EOR projects are designed by Oxy to ensure that mobilized oil, gas, and CO_2 do not migrate into adjoining properties that are owned by competing operators, who could then produce the fluids liberated by Oxy's EOR efforts. In the Denver Unit, Oxy uses two methods to contain fluids within the unit: reservoir pressure management and the careful placement and operation of wells along boundaries of other units.

Reservoir pressure in the Denver Unit is managed by maintaining an injection to withdrawal ratio (IWR)[6] of approximately 1.0. To maintain the IWR, Oxy monitors fluid injection to ensure that reservoir pressure does not increase to a level that would fracture the reservoir seal or otherwise damage the oil field. Similar practices are used for other units operated by Oxy within the Wasson Field. Most, if not all other Wasson Units, inject at pressures a little higher than Denver Unit and all maintain an IWR of at least one. In addition to the two methods mentioned above, higher pressures in the surrounding areas assure that Denver Unit fluids stay within the Unit.

Oxy also prevents injected fluids migrating out of the injection interval by keeping injection pressure below the fracture pressure which is measured using step-rate tests. In

[6] Injection to withdrawal ratio (IWR) is the ratio of the volume of fluids injected to the volume of fluids produced (withdrawn). Volumes are measured under reservoir conditions for all fluids. Injected fluids are CO_2 and water; produced fluids are oil, water, and CO_2. By keeping IWR close to 1.0, reservoir pressure is held constant, neither increasing nor decreasing.

these tests, injection pressures are incrementally increased (e.g., in "steps") until injectivity increases abruptly, which indicates that an opening (fracture) has been created in the rock. Oxy manages its operations to ensure that injection pressures are kept below the fracture pressure so as to ensure that the valuable fluid hydrocarbons and CO_2 remain in the reservoir.

The second way Oxy contains fluids within the Denver Unit is to drill wells along the lease lines that are designed to avoid loss of valuable fluids from the unit. To the north Oxy has established lease line agreements with the neighboring CO_2 units. These agreements provide for offsetting injectors or offsetting producers along the lease line that balance one another. For example, an injector on one side is offset and balanced by an injector on the other side. The two paired injectors are maintained on injection in such a way as to give Oxy and its partners sufficient assurance that a no-flow boundary is maintained at the Unit boundary. This restricts the flow of injected CO_2 or mobilized oil from one unit to the other. A similar dynamic is maintained for paired producers. To the east, south and west, there are no operations on the other side of the Denver Unit boundary. Near these boundaries, a row of water injectors or producers are maintained to keep CO_2 or mobilized oil from leaving the Denver Unit. As shown in Figure 7, Oxy operates the ODC and Willard Units to the north of the Denver Unit and therefore has first-hand knowledge of pressures on both sides of Unit boundaries.

In the case of the other, Oxy maintains lease line agreements with the other operators to assure injection and production is balanced along the lease line. In this way, Oxy is assured that CO_2 and mobilized oil do not escape the Denver Unit.

2.4 Reservoir Modeling

Oxy uses simulators to model the behavior of fluids in a reservoir, providing a mathematical representation that incorporates all information that is known about the reservoir. In this way, future performance can be predicted in a manner consistent with available data, including logs and cores, as well as past production and injection history.

Mathematically, reservoir behavior is modeled by a set of differential equations that describe the fundamental principles of conservation of mass and energy, fluid flow, and phase behavior. These equations are complex and must be solved numerically using high-powered computers. The solution process involves sub-dividing the reservoir into a large number of blocks arranged on a grid. Each block is assigned specific rock properties (porosity, permeability, saturations, compositions and pressure). The blocks are small enough to adequately describe the reservoir, but large enough to keep their number manageable. The computer uses the differential equations to determine how various physical properties change with time in each grid block. Small time steps are used to progress from a known starting point through time. In this way the computer simulates reservoir performance, consistent with fundamental physics and actual reservoir geometry. The simulation represents the flow of each fluid phase (oil, water

and gas), changes in fluid content (saturations), equilibrium between phases (compositional changes), and pressure changes over time.

Field-wide simulations are initially used to assess the viability of water and CO_2 flooding. Once a decision has been made to develop a CO_2 EOR project, Oxy uses detailed pattern modeling to plan the location and injection schedule for wells. For the purpose of operating a CO_2 flood, large-scale modeling is not useful as a management tool because it does not provide sufficiently detailed information about the expected pressure, injection volumes, and production at the level of an injection pattern.

In the case of the Denver Unit, field-wide modeling was conducted by the previous owners in the 1980's and 1990's. The outputs were used to determine plans to develop the site for CO_2 flooding more than 20 years ago. Oxy reviewed this large-scale modeling to inform their decision to acquire leases for the Denver Unit in 2000. However, since taking over operation of the Denver Unit in 2000, Oxy has used the more detailed pattern modeling to operate the CO_2 flood.

At the pattern level, the objective of a simulation is to develop an injection plan that maximizes the oil recovery, and minimizes the costs, of the CO_2 flood. The injection plan includes such controllable items as:

- The cycle length and WAG ratio to inject water or CO_2 in the WAG process, and
- The best rate and pressure for each injection phase.

Simulations may also be used to:

- Evaluate infill or replacement wells,
- Determine the best completion intervals,
- Verify the need for well remediation or stimulation, and
- Determine anticipated rates and ultimate recovery.

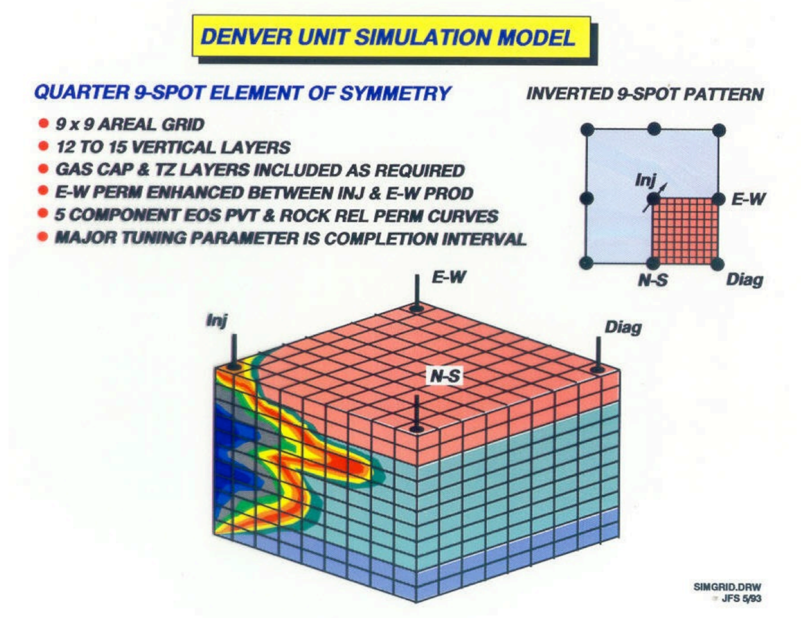
This pattern-level modeling provides Oxy with confidence that the injected CO_2 will stay in-zone to contact and displace oil, and that the flood pattern and injection scheme are optimized.

The pattern level simulator used by Oxy uses a commercially available compositional simulator, called MORE, developed by Roxar. It is called "compositional" because it has the capability to keep track of the composition of each phase (oil, gas, and water) over time and throughout the volume of the reservoir.

To build a simulation model, engineers and scientists input specific information on reservoir geometry, rock properties, and fluid flow properties. The input data includes:

- Reservoir geometry, including distance between wells, reservoir thickness and structural contours;
- Rock properties, such as permeability and porosity of individual layers, barriers to vertical flow, and layer continuity; and,
- Fluid flow properties including density and viscosity of each phase, relative permeability, capillary pressure, and phase behavior.

Figure 13 Denver Unit Simulation Model



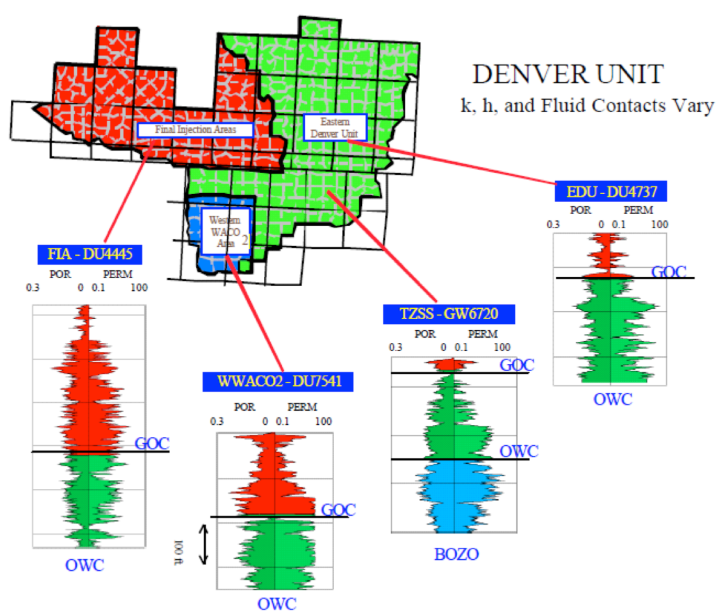
A representative pattern-level simulation model for the Denver Unit is illustrated in Figure 13. The model is representative of a portion of the field that is repeated many times throughout the field, in this case a fraction of an injection pattern. This fraction is an element of symmetry, meaning that the same geometry and the same process physics are repeated many times over the area of the field.

Layering

Within a flood pattern, one of the most important properties to model is the effect of layering. Reservoir rocks were originally deposited over very long periods of time. Because the environment tended to be uniform at any one point in time, reservoir properties tend to be relatively uniform over large areas. Depositional environment changes over time, however, and for this reason rock properties vary considerably with time or depth as they are deposited. Thus, rock properties are modeled as layers. Some layers have high permeability and some have lower permeability. Those with higher permeability take most of the injected fluids and are swept most readily. Those with lower permeability may be only partially contacted at the end of the flooding process. (The WAG process helps improve sweep efficiency.) As Figure 13 shows, the simulation is divided into 12 to 15 vertical grid blocks. Each layer of simulation grid blocks is used to model the depositional layering as closely as practical. Porosity and permeability have been measured on cores taken from the upper San Andres sealing zone. Measured permeabilities are less than 0.01 md. Permeabilities in the pay zones typically range from 1 to 10 md. Permeabilities in anhydrite intervals are zero. Anhydrites are one of the most common seal rocks for oil and gas reservoirs. Ultra-low permeability rocks do not contribute to flow and therefore do not need to be included in simulation models.

Reservoir quality varies markedly across the Unit. Thus, response to CO_2 flooding is also expected to vary within the Unit. Based on reservoir development and geological characteristics, the Unit is divided into three distinct areas: (a) Eastern Denver Unit, (b) WACO2, and (c) Final Injection Area. Figure 14 demonstrates the delineated areas and the typical porosity and permeability development found in each of the subgroups. CO_2 flooding in these areas is implemented according to their reservoir characteristics. The Eastern Denver Unit began CO_2 injection in 1984, received an initially large CO_2 slug size, then converted to a water alternating CO_2 injection scheme once a targeted CO_2 slug size was reached. The WACO2 area also began CO_2 injection in 1984. However, this area injected water alternating CO_2 from the beginning. Once the Eastern Denver Unit area began its alternating injection scheme, lower CO_2 injection rates were required in the developed portion of the field, allowing expansion of the flood into the Final Injection Area. Wells DU 4737 and DU 6720 typify the properties in the Eastern Denver Unit; well DU 7541 typifies the properties of the WACO2 area; and well DU 4445 is typical of the Final Injection Area.

Figure 14 – Area Sub-groups



The red lines in Figure 14 are intended to point to areas of the Unit that are similar to, or represented by, the selected wells. They do not point to the actual well locations. The red line for well 6720 points to the general location of the well, not necessarily the exact location. Lines for the other wells connect the well log to the label for the area they are representative of.

A structure map from Figure 8 has been modified below (Figure 15) to show the well locations indicated in Figure 14. According to this map, one would expect well 4445 to have the largest gas column and well 6720 the smallest gas column, consistent with the logs shown on Figure 14.

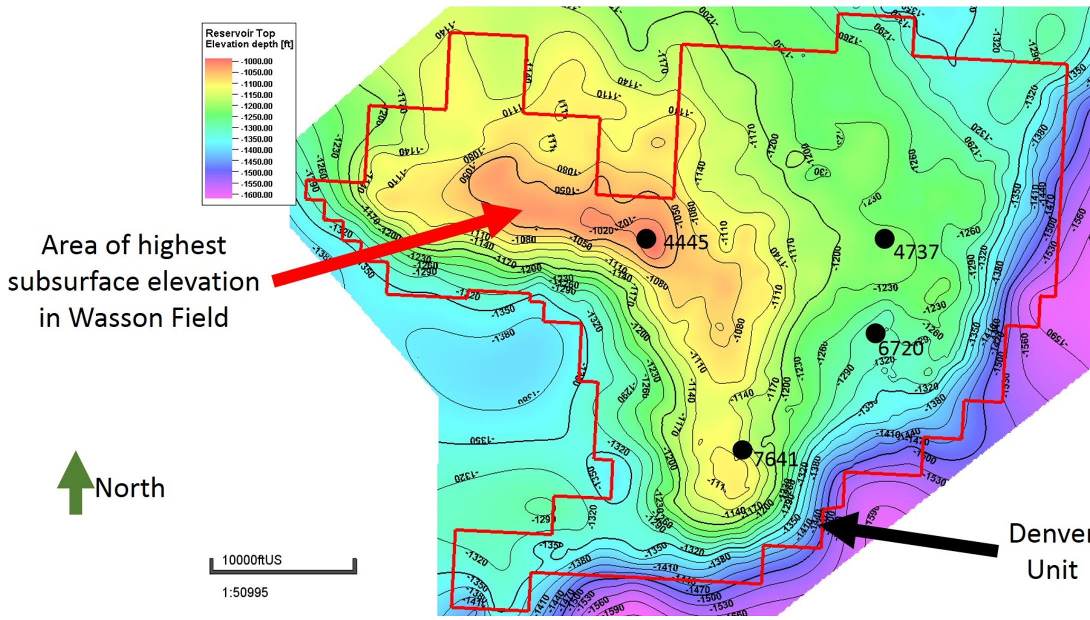


Figure 15 Modified Structure Map to Data Points from Figure 14

Predicted behavior for all patterns can be constructed in one of two ways: from simulation or from actual performance of a more mature analog project. Simulation models may represent either a multi-pattern segment of the field, or be an element of symmetry model representing a portion of a single pattern. Figure 13 illustrates an element of symmetry modeling approach that is used at the Denver Unit. Many such models have been constructed to capture the variation in geology throughout this large CO_2 project.

Predictions may also be constructed from the actual performance data of analog projects that already have received significant CO_2 injection.

Where simulation is used to generate the predictions, the simulation results should be validated by comparison with analog project performance if possible.

Prediction models forecast oil, water and CO_2 production, as well as CO_2 and water injection.

If actual performance differs in a noticeable way from prediction, reservoir engineers use professional judgment formed by an analysis of technical data to determine where further attention is needed. The appropriate response could be to change injection rates, to alter the prediction model or to find and repair fluid leaks.

3. Delineation of Monitoring Area and Timeframes

3.1 Active Monitoring Area

Because CO2 is present throughout the Denver Unit and retained within it, the Active Monitoring Area (AMA) is defined by the boundary of the Denver Unit. The following factors were considered in defining this boundary:

- Free phase CO_2 is present throughout the Denver Unit: More than 4,035 Bscf (212.8 MMMT) tons of CO_2 have been injected throughout the Denver Unit since 1983 and there has been significant infill drilling in the Denver Unit to complete additional wells to further optimize production. Operational results thus far indicate that there is CO_2 throughout the Denver Unit.
- CO_2 injected into the Denver Unit remains contained within that unit because of the fluid and pressure management impacts associated with CO_2 EOR. Namely, maintenance of an IWR of 1.0 assures a stable reservoir pressure; managed leaseline injection and production wells are used to retain fluids in the Denver Unit as indicated in Section 2.3.6; and operational results (such as normal pressures in the injection interval and injection and production rates within predicted ranges) indicate that injected CO_2 is retained in the Denver Unit.
- Furthermore, over geologic timeframes, stored CO_2 will remain in the Denver unit because it is the area with the highest elevation CO_2 will not migrate downdip as described in Section 2.2.3.

3.2 Maximum Monitoring Area

The Maximum Monitoring Area (MMA) is defined in 40 CFR §98.440-449 (Subpart RR) as including the maximum extent of the injected CO_2 and a half-mile buffer bordering that area. As described in the AMA section (Section 3.1), the maximum extent of the injected CO_2 is anticipated to be bounded by the Denver Unit. Therefore the MMA is the Denver Unit plus the half-mile buffer as required by 40 CFR §98.440-449 (Subpart RR).

3.3 Monitoring Timeframes

Oxy's primary purpose in injecting CO_2 is to produce oil that would otherwise remain trapped in the reservoir and not, as in UIC Class VI, "specifically for the purpose of geologic storage."[7] During the Specified Period, Oxy will have a subsidiary purpose of establishing the long-term containment of a measurable quantity of CO_2 in the San Andres formation at the Denver Unit. The Specified Period will begin January 1, 2016 and is anticipated to end prior to December 31, 2026. The Specified Period will be

[7] EPA UIC Class VI rule, EPA 75 FR 77291, December 10, 2010, section 146.81(b).

substantially shorter than the period of production from the Denver Unit because CO_2 has been injected at the Denver Unit since 1983 and is expected to continue for roughly five decades after the Specified Period ends. At the conclusion of the Specified Period, Oxy will submit a request for discontinuation of reporting when Oxy can provide a demonstration that current monitoring and model(s) show that the cumulative mass of CO_2 reported as sequestered during the Specified Period is not expected to migrate in the future in a manner likely to result in surface leakage. It is expected that it will be possible to make this demonstration within 2 – 3 years after injection for the Specified Period ceases and will be based upon predictive modeling supported by monitoring data. The demonstration will rely on two principles: 1) that just as is the case for the monitoring plan, the continued process of fluid management during the years of CO_2 EOR operation after the Specified Period will contain injected fluids in the Denver Unit, and 2) that the cumulative mass reported as sequestered during the Specified Period is a small fraction of the total that will be stored in the Denver Unit over the lifetime of operations. *See* 40 C.F.R. § 98.441(b)(2)(ii).

4. Evaluation of Potential Pathways for Leakage to the Surface

4.1 Introduction

In the 50 years since the Denver Unit was formed to facilitate water flooding, the reservoir has been studied and documented extensively. Based on the knowledge gained from that experience, this section assesses the potential pathways for leakage of stored CO_2 to the surface. The following potential pathways are reviewed:

- Existing Well Bores
- Faults and Fractures
- Natural and Induced Seismic Activity
- Previous Operations
- Pipeline/Surface Equipment
- Lateral Migration Outside the Denver Unit
- Dissolution of CO_2 into Formation Fluid and Subsequent Migration
- Drilling Through the CO_2 Area
- Diffuse Leakage Through the Seal

4.2 Existing Well Bores

As of August 2014, there are approximately 1,734 active wells in the Denver Unit – roughly two thirds are production wells and the remaining third are injection wells. In addition, there are 448 inactive wells, as described in Section 2.3.2.

Leakage through existing well bores is a potential risk at the Denver Unit that Oxy works to prevent by adhering to regulatory requirements for well drilling and testing;

implementing best practices that Oxy has developed through its extensive operating experience; monitoring injection/production performance, wellbores, and the surface; and by maintaining surface equipment.

As discussed in Section 2.3.2, regulations governing wells in the Denver Unit require that wells be completed and operated so that fluids are contained in the strata in which they are encountered and that well operation does not pollute subsurface and surface waters. The rules establish the requirements that all wells (injection, production, disposal) must comply with. Depending upon the purpose of a well, the requirements can include additional standards for AoR evaluation and MIT. In implementing these rules, Oxy has developed operating procedures based on its experience as one of the world's leading operators of EOR floods. Oxy's best practices include developing detailed modeling at the pattern level to guide injection pressures and performance expectations; utilizing diverse teams of experts to develop EOR projects based on specific site characteristics; and creating a culture where all field personnel are trained to look for and address issues promptly. Oxy's practices ensure that well completion and operation procedures are designed not only to comply with rules but also to ensure that all fluids (e.g., oil, gas, CO_2) remain in the Denver Unit until they are produced through an Oxy well – these include corrosion prevention techniques to protect the wellbore.

As described in section 5, continual and routine monitoring of Oxy's well bores and site operations will be used to detect leaks, including those from non-Oxy wells, or other potential well problems as follows:

- Pressures and flowrates are monitored continuously in all active injectors. The injection plans for each pattern are programmed into the injection WAG skid, as discussed in Section 2.3.1, to govern the rate, pressure, and duration of either water or CO_2 injection. Pressure monitors on the injection wells are programmed to flag pressures that significantly deviate from the plan. Leakage on the inside or outside of the injection wellbore would affect pressure and be detected through this approach. If such excursions occur, they are investigated and addressed. It is Oxy's experience that few excursions result in fluid migration out of the intended zone and that leakage to the surface is very rare.

- In addition to monitoring well pressure and injection performance, Oxy uses the experience gained over time to strategically approach well maintenance and updating. Oxy maintains well maintenance and workover crews onsite for this purpose. For example, the well classifications by age and construction method indicated in Table 1 inform Oxy's plan for monitoring and updating wells. Oxy uses all of the information at hand including pattern performance, and well characteristics to determine well maintenance schedules.

- Flowrates of oil, water and CO_2 are measured on all producers at least monthly, using the production well test process conducted when produced fluids are gathered and sent to a Satellite Battery. There is a routine cycle for each Satellite Battery, with each well being tested approximately once every two months.

During this cycle, each production well is diverted to the well test equipment for a period of time sufficient to measure and sample produced fluids (generally 12-24 hours). This test allows Oxy to allocate a portion of the produced fluids measured at the Satellite Battery to each production well, assess the composition of produced fluids by location, and assess the performance of each well. Performance data are reviewed on a routine basis to ensure that CO_2 flooding is optimized. If production is off plan, it is investigated and any identified issues addressed. Leakage to the outside of production wells is not considered a major risk because of the reduced pressure in the casing. Further, the personal H_2S monitors would detect leaked fluids around production wells.

- Finally, as indicated in Section 5, all wells are observed by Oxy personnel or Oxy Contractors at least weekly. On any day, Oxy has approximately 90 employees in the field. Leaking CO_2 is very cold and leads to formation of bright white clouds and ice that are easily spotted. All field personnel are trained to identify leaking CO_2 and other potential issues at wellbores and in the field. In addition, aerial surveys are completed weekly. Any significant CO_2 leakage detected will be documented and reported, quantified and addressed as described in Section 5.

Based on its ongoing monitoring activities and review of the potential leakage risks posed by well bores, Oxy concludes that it is mitigating the risk of CO_2 leakage through well bores by detecting problems as they arise and quantifying any leakage that does occur. Section 4.10 summarizes how Oxy will monitor CO_2 leakage from various pathways and describes how Oxy will respond to various leakage scenarios. In addition, Section 5 describes how Oxy will develop the inputs used in the Subpart RR mass-balance equation (Equation RR-11). Any incidents that result in CO_2 leakage up the wellbore and into the atmosphere will be quantified as described in section 7.4.

4.3 Faults and Fractures

After reviewing geologic, seismic, operating, and other evidence, Oxy has concluded that there are no known faults or fractures that transect the San Andres Formation interval in the project area. While faults have been identified in formations that are 1,000's of feet below the San Andres formation, this faulting has been shown not to affect the San Andres or create potential leakage pathways.

Oxy has extensive experience in designing and implementing EOR projects to ensure injection pressures will not damage the oil reservoir by inducing new fractures or creating shear. As a safeguard, injection skids are set with automatic shutoff controls if injection pressures exceed fracture pressures.

4.4 Natural or Induced Seismicity

A few recent studies have suggested a possible relationship between CO_2 miscible flooding activities and seismic activity in certain areas. Determining whether the seismic activity is induced or triggered by human activity is difficult. Many earthquakes occur that are not near injection wells, and many injection wells do not generate earthquakes. Thus, the occurrence of an earthquake near a well is not proof of cause of human actions having had any influence.

To evaluate this potential risk at the Denver Unit, Oxy has reviewed the nature and location of seismic events in West Texas. Some of the recorded earthquakes in West Texas are far removed from any injection operation. These are judged to be from natural causes. Others are near oil fields or water disposal wells and are placed in the category of "quakes in close association with human enterprise." (See Frohlich, 2012)

Of the recorded earthquakes in the Permian Basin, none have occurred in the Wasson Field; the closest was nearly 80 miles away. Moreover, Oxy is not aware of any reported loss of injectant (waste water or CO_2) to the surface associated with any seismic activity.

The concern about induced seismicity is that it could lead to fractures in the seal providing a pathway for CO_2 leakage to the surface. Based on Oxy's review of seismic data, none of the recorded "earthquakes" in the Permian Basin have occurred in the Wasson Field; the closest was nearly 80 miles away. Moreover, Oxy is not aware of any reported loss of injectant (waste water or CO_2) to the surface associated with any seismic activity. Therefore, there is no direct evidence to suggest that natural seismic activity poses a significant risk for loss of CO_2 to the surface in the Permian Basin, and specifically in the Denver Unit. If induced seismicity resulted in a pathway for material amounts of CO_2 to migrate from the injection zone, other reservoir fluid monitoring provisions (e.g., reservoir pressure, well pressure, and pattern monitoring) would lead to further investigation.

4.5 Previous Operations

CO_2 flooding has taken place in the Denver Unit since 1983, and Oxy took over operations in 2000. Oxy and the prior operators have kept records of the site and have completed numerous infill wells. Oxy's standard practice for drilling new wells includes a rigorous review of nearby wells to ensure that drilling will not cause expensive damage in or interfere with existing wells. Oxy also follows AoR requirements under the UIC Class II program, which require identification of all active and abandoned wells in the AoR and implementation of procedures that ensure the integrity of those wells when applying for a permit for any new injection well.[8] Oxy reviews TRRC's records and/or Oxy well files and may conduct ground surveys to identify old, unknown wells as a part

[8] Current requirements are referenced in Appendix 7.

of any AoR review in preparation for drilling a new well. Based on review, Oxy has concluded that there are no unknown wells within the Denver Unit. Oxy's operational experience confirms this conclusion. Oxy has successfully optimized CO_2 flooding with infill wells because the confining zone has not been impaired by previous operations.

4.6 Pipeline / Surface Equipment

Damage to or failure of pipelines and surface equipment can result in unplanned losses of CO_2. Oxy anticipates that the use of prevailing design and construction practices and compliance with applicable laws will reduce to the maximum extent practicable the risk of unplanned leakage from surface facilities. The facilities and pipelines currently utilize and will continue to utilize materials of construction and control processes that are standard for CO_2 EOR projects in the oil and gas industry. Operating and maintenance practices currently follow and will continue to follow demonstrated industry standards. CO_2 delivery via the Permian pipeline system will continue to comply with all applicable laws. Finally, Oxy conducts aerial inspections of the pipeline and surface equipment in the Denver Unit once a week. Field personnel are trained to look for and report potential leaks from pipeline and surface equipment as part of their routine activities. Should leakage be detected from pipeline or surface equipment, the volume of released CO_2 will be quantified following the requirements of Subpart W of EPA's GHGRP.

4.7 Lateral Migration Outside the Denver Unit

It is highly unlikely that injected CO_2 will migrate downdip and laterally outside the Denver Unit because of the nature of the geology and of the planned injection. First, as indicated in Section 2.3.3.3 "Geology of the Denver Unit within the Wasson Field," the Denver Unit contains the highest elevation within the San Andres. This means that over long periods of time, injected CO_2 will tend to rise vertically towards the Upper San Andres and continue towards the point in the Denver Unit with the highest elevation. Second, the planned injection volumes and active fluid management during injection operations will prevent CO_2 from migrating laterally into adjoining units. Finally, Oxy will not be increasing the total volume of fluids in the Denver Unit. Based on site characterization and planned and projected operations Oxy estimates the total volume of stored CO_2 will be approximately 25% of calculated capacity.

4.8 Drilling Through the CO_2 Area

It is possible that at some point in the future, drilling through the containment zone into the San Andres could occur and inadvertently create a leakage pathway. Oxy's review of this issue concludes that this risk is very low for three reasons. First, any wells drilled in the oil fields of Texas are regulated by TRRC and are subject to requirements that fluids be contained in strata in which they are encountered.[9] Second, Oxy's visual inspection process, including both routine site visits and flyovers, is designed to identify unapproved drilling activity in the Denver Unit. Third, Oxy plans to operate the CO_2 EOR flood in the Denver Unit for several more decades, and will continue to be vigilant about protecting the integrity of its assets and maximizing the potential of resources (oil, gas, CO_2). In the unlikely event Oxy would sell the field to a new operator, provisions would be made to ensure the secure storage of the amount of CO_2 reported as a result of CO_2 EOR operations during the Specified Period.

4.9 Diffuse Leakage Through the Seal

Diffuse leakage through the seal formed by the upper San Andres is highly unlikely. The presence of a gas cap trapped over millions of years as discussed in Section 2.2.3 confirms that the seal has been secure for a very long time. Injection pattern monitoring program referenced in Section 2.3.1 and detailed in Section 5 assures that no breach of the seal will be created. The seal is highly impermeable, wells are cemented across the horizon, and unexplained changes in injection pressure would trigger investigation as to the cause. Further, if CO_2 were to migrate through the San Andres seal, it would migrate vertically until it encountered and was trapped by any of the four additional seals indicated in orange in Figure 4.

4.10 Monitoring, Response, and Reporting Plan for CO_2 Loss

As discussed above, the potential sources of leakage include fairly routine issues, such as problems with surface equipment (pumps, valves, etc.) or subsurface equipment (well bores), and unique events such as induced fractures. Table 3 summarizes some of these potential leakage scenarios, the monitoring activities designed to detect those leaks, Oxy's standard response, and other applicable regulatory programs requiring similar reporting.

Table 3 Response Plan for CO_2 Loss

Known Potential Leakage Risks	Monitoring Methods and Frequency	Anticipated Response Plan
Tubing Leak	Monitor changes in annulus pressure; MIT for injectors	Workover crews respond within days
Casing Leak	Weekly field inspection; MIT for injectors; extra attention to high risk wells	Workover crews respond within days
Wellhead Leak	Weekly field inspection	Workover crews respond within days
Loss of Bottom-hole pressure control	Blowout during well operations (weekly inspection but field personnel present daily)	Maintain well kill procedures
Unplanned wells drilled	Weekly field inspection to prevent unapproved	Assure compliance with TRRC

[9] Current requirements are referenced in Appendix 7.

through San Andres	drilling; compliance with TRRC permitting for planned wells.	regulations
Loss of seal in abandoned wells	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Re-enter and reseal abandoned wells
Pumps, values, etc.	Weekly field inspection	Workover crews respond within days
Leakage along faults	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Shut in injectors near faults
Overfill beyond spill points	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Fluid management along lease lines
Leakage through induced fractures	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Comply with rules for keeping pressures below parting pressure
Leakage due to seismic event	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Shut in injectors near seismic event

Sections 5.1.5-5.1.7 discuss the approaches envisioned for quantifying the volumes of leaked CO_2. Given the uncertainty concerning the nature and characteristics of leaks that will be encountered, it is not clear the method for quantifying the volume of leaked CO_2 that would be most appropriate. In the event leakage occurs, Oxy will determine the most appropriate method for quantifying the volume leaked and will report the methodology used as required as part of the annual Subpart RR submission.

Any volume of CO_2 detected leaking to surface will be quantified using acceptable emission factors such as those found in 40 CFR Part 98 Subpart W or engineering estimates of leak amounts based on measurements in the subsurface, Oxy's field experience, and other factors such as the frequency of inspection. As indicated in Sections 5.1 and 7.4, leaks will be documented, evaluated and addressed in a timely manner. Records of leakage events will be retained in the electronic environmental documentation and reporting system. Repairs requiring a work order will be documented in the electronic equipment maintenance system.

Available studies of actual well leaks and natural analogs (e.g., naturally occurring CO_2 geysers) suggest that the amount released from routine leaks would be small as compared to the amount of CO_2 that would remain stored in the formation.[10]

4.11 Summary

The structure and stratigraphy of the San Andres reservoir in the Denver Unit is ideally suited for the injection and storage of CO_2. The stratigraphy within the CO_2 injection zones is porous, permeable and very thick, providing ample capacity for long-term CO_2 storage. The San Andres formation is overlain by several intervals of impermeable

[10] See references to following reports of measurements, assessments, and analogs in Appendix 4: IPCC Special Report on Carbon Dioxide Capture and Storage; Wright – Presentation to UNFCC SBSTA on CCS; Allis, R., et al, "Implications of results from CO2 flux surveys over known CO2 systems for long-term monitoring; McLing - Natural Analog CCS Site Characterization Soda Springs, Idaho Implications for the Long-term Fate of Carbon Dioxide Stored in Geologic Environments.

geologic zones that form effective seals or "caps" to fluids in the San Andres formation (See Figure 4). After assessing potential risk of release from the subsurface and steps that have been taken to prevent leaks, Oxy has determined that the potential threat of leakage is extremely low. The potential leakage scenarios are summarized below, in order of likelihood:

- *Existing wellbores*: Because existing boreholes are a potential pathway for release of CO_2 to the surface, Oxy is primarily focused on mitigating this risk through a combination of using best practices in well design, completion and operation, and implementation of a rigorous program for subsurface performance and well bore monitoring. Oxy further has established approach to remedy or close wells if a problem arises. Together, these components mitigate the risk of leakage to the surface through boreholes. In addition to these proactive measures, the operating history is well documented and does not indicate manmade leakage pathways from past production activities or any significant likelihood that existing but unknown wellbores will be identified. Oxy will account for any CO_2 leakage via well bores as required under Subpart RR.

- *Pipeline/Surface Equipment*: Oxy follows regulatory requirements and best practices that together mitigate the risk of significant CO_2 leakage from pipelines and surface equipment. Oxy will account for any leakage according to the requirements in Subpart W of the EPA's GHGRP and will reflect any such leakage in the mass balance calculation.

- *Faults:* There are no faults or fractures present within or affecting the Denver Unit, and Oxy believes that the risk of leakage via this pathway is low. Should such leakage occur, Oxy would quantify it using measured or engineering estimates of relevant parameters (e.g., CO_2 flow rate, concentration, duration), and report CO_2 emissions under Subpart RR.

- *Natural and Induced Seismic Activity, Previous Operations, Lateral Migration Outside the Denver Unit, Dissolution of CO_2 into Formation Fluid and Subsequent Migration, Drilling through the CO_2 Area, and Diffuse Movement Through the Seal*: As explained above, Oxy concludes that these theoretical leakage pathways are very unlikely and are mitigated, to the extent practicable, through Oxy's operating procedures. As with faults, Oxy believes that the risk of leakage via these pathways is low. Should such leakage occur, Oxy would quantify it using measured or engineering estimates of relevant parameters (e.g., CO_2 flow rate, concentration, duration), and report CO_2 emissions under Subpart RR.

In summary, based on a careful assessment of the potential risk of release of CO_2 from the subsurface, Oxy has determined that there are no leakage pathways at the Denver Unit that are likely to result in significant loss of CO_2 to the atmosphere. Further, given the detailed knowledge of the field and its operating protocols, Oxy concludes that it would be able to both detect and quantify any CO_2 leakage to the surface that could arise both identified and unexpected leakage pathways.

5. Monitoring and Considerations for Calculating Site Specific Variables

5.1 For the Mass Balance Equation

5.1.1 General Monitoring Procedures

As part of its ongoing operations, Oxy collects flow, pressure, and gas composition data from the Denver Unit. Flow and pressure data is monitored through hourly scans by centralized data management systems. Alarms are triggered when data deviates by a specified amount from desired operational conditions. Alarms are investigated by qualified technicians who follow Oxy response and reporting protocols. Responses are described in the following sections (5.1.5-5.1.7).

The typical volume weight averaged composition of injected CO_2 is:

%N2	0.93813
% CO2	96.9484
%C1	0.76578
%C2	1.31588
%C3	0.00421
%IC4	0.00402
%NC4	0.00933
%IC5	0.00345
%NC5	0.00325

The standard deviation of the CO_2 concentration over the last year is less than 0.5%.

There is no significant amount of H_2S in the injected gas stream. It is below the measurement threshold. DUCRP sweetens the gas before returning it to the field.

As indicated in Figure 10, custody-transfer meters are used at the two points at which custody of the CO_2 from the Permian pipeline delivery system is transferred to Oxy and also at the points at which custody of oil is transferred to other parties. Meters measure flow rate continually. Fluid composition will be determined, at a minimum, quarterly, consistent with EPA GHGRP's Subpart RR, section 98.447(a). All meter and composition data are documented, and records will be retained for at least seven years.

Metering protocols used by Oxy follow the prevailing industry standard(s) for custody transfer as currently promulgated by the API, the American Gas Association (AGA), and the Gas Processors Association (GPA), as appropriate. This approach is consistent with EPA GHGRP's Subpart RR, section 98.444(e)(3). These meters will be maintained routinely, operated continually, and will feed data directly to the centralized data collection systems. The meters meet the industry standard for custody transfer meter accuracy and calibration frequency. These custody meters provide the most accurate way to measure mass flows.

Oxy maintains in-field process control meters to monitor and manage in-field activities on a real time basis. These are identified as operations meters in Figure 10. These meters provide information used to make operational decisions but are not intended to provide the same level of accuracy as the custody-transfer meters. The level of precision and accuracy for in-field meters currently satisfies the requirements for reporting in existing UIC permits. Although these meters are accurate for operational purposes, it is important to note that there is some variance between most commercial meters (on the order of 1-5%) which is additive across meters. This variance is due to differences in factory settings and meter calibration, as well as the operating conditions within a field. Meter elevation, changes in temperature (over the course of the day), fluid composition (especially in multi-component or multi-phase streams), or pressure can affect in-field meter readings. Unlike in a saline formation, where there are likely to be only a few injection wells and associated meters, at CO_2 EOR operations in the Denver Unit there will be approximately 2,000 injection and production wells and a comparable number of meters, each with an acceptable range of error. This is a site-specific factor that is considered in the mass balance calculations described in Section 7.

5.1.2 CO_2 Received

Oxy measures the volume of received CO_2 using commercial custody transfer meters at each of the two off-take points from the Permian pipeline delivery system. This transfer is a commercial transaction that is documented. CO_2 composition is governed by the contract and the gas is routinely sampled to determine composition. No CO_2 is received in containers.

5.1.3 CO_2 Injected into the Subsurface

Injected CO_2 will be calculated using the flow meter volumes at the custody transfer meters at the outlet to DUCRP and the CO_2 off-take points from the Permian pipeline delivery system.

5.1.4 CO_2 Produced, Entrained in Products, and Recycled

The following measurements are used for the mass balance equations in Section 7:

CO_2 produced is calculated using the volumetric flow meters at the inlet to DUCRP.

CO_2 is produced as entrained or dissolved CO_2 in produced oil, as indicated in Figure 10. The concentration of CO_2 in produced oil is measured at the centralized tank battery.

Recycled CO_2 is calculated using the volumetric flow meter at the outlet of DUCRP, which is a custody transfer meter.

5.1.5 CO_2 Emitted by Surface Leakage

As discussed in Section 5.1.6 and 5.1.7 below, Oxy uses 40 CFR Part 98 Subpart W to estimate surface leaks from equipment at the Denver Unit. Subpart W uses a factor-driven approach to estimate equipment leakage. In addition, Oxy uses an event driven process to assess, address, track, and if applicable quantify potential CO_2 leakage to the surface. Oxy will reconcile the Subpart W report and results from any event-driven quantification to assure that surface leaks are not double counted.

The multi-layered, risk-based monitoring program for event-driven issues has been designed to meet two objectives, in accordance with the leakage risk assessment in Section 4: 1) to detect anomalies before CO_2 leaks to the surface; and 2) to detect and quantify any leaks that do occur. This section discusses how this monitoring will be conducted and used to quantify the volumes of CO_2 leaked to the surface.

<u>Monitoring for potential Leakage from the Injection/Production Zone:</u>
Oxy will monitor both injection into and production from the reservoir as a means of early identification of potential anomalies that could indicate leakage from the subsurface.

Oxy uses pattern modeling based on extensive history-matched data to develop injection plans (fluid rate, pressure, volume) that are programmed into each WAG skid. If injection pressure or rate measurements are beyond the specified set points determined as part of each pattern injection plan, a data flag is automatically triggered and field personnel will investigate and resolve the problem. These excursions will be reviewed by well management personnel to determine if CO_2 leakage may be occurring. Excursions are not necessarily indicators of leaks; they simply indicate that injection rates and pressures are not conforming to the pattern injection plan. In many cases, problems are straightforward to fix (e.g., a meter needs to be recalibrated or some other minor action is required), and there is no threat of CO_2 leakage. In the case of issues that are not readily resolved, more detailed investigation and response would be initiated, and staff from other parts of Oxy would provide additional support. Such issues would lead to the development of a work order in Oxy's Maximo work order management system. This record enables the company to track progress on investigating potential leaks and, if a leak has occurred, quantifying the magnitude.

Likewise, Oxy develops a forecast of the rate and composition of produced fluids. Each producer well is assigned to one satellite battery and is isolated once during each monthly cycle for a well production test. This data is reviewed on a periodic basis to confirm that production is at the level forecasted. If there is a significant deviation from the forecast, well management personnel investigate. If the issue cannot be resolved quickly, more detailed investigation and response would be initiated. As in the case of the injection pattern monitoring, if the investigation leads to a work order in the Maximo system, this record will provide the basis for tracking the outcome of the investigation and if a leak has occurred, recording the quantity leaked to the surface. If leakage in the flood zone were detected, Oxy would use an appropriate method to quantify the involved volume of CO_2. This might include use of material balance equations based on known injected quantities and monitored pressures in the injection zone to estimate the volume of CO_2 involved. Given the extensive operating history of the Denver Unit, this technique would be expected to have a relatively large margin of error.

A subsurface leak might not lead to a surface leak. In the event of a subsurface leak, Oxy would determine the appropriate approach for tracking subsurface leakage to determine and quantify leakage to the surface. To quantify leakage to the surface, Oxy would estimate the relevant parameters (e.g., the rate, concentration, and duration of leakage) to quantify the leak volume. Depending on specific circumstances, these determinations may rely on engineering estimates.

In the event leakage from the subsurface occurred diffusely through the seals, the leaked gas would include H_2S that would trigger the alarm on the personal monitors worn by field personnel. The personal H_2S meters worn by field personnel can detect levels of H_2S as low as 0.1 PPM. Such a diffuse leak from the subsurface through the seals has not occurred in the Denver Unit. In the event such a leak was detected, field personnel from across Oxy would be used to determine how to address the problem. The team might use modeling, engineering estimates, and direct measurements to assess, address, and quantify the leakage.

Monitoring of Wellbores:
Oxy monitors wells through continual, automated pressure monitoring in the injection zone (as described in Section 4.2), monitoring of the annular pressure in wellheads, and routine maintenance and inspection.

Leaks from wellbores would be detected through the follow-up investigation of pressure anomalies, visual inspection, or the use of personal H_2S monitors.

Anomalies in injection zone pressure may not indicate a leak, as discussed above. However, if the investigation leads to a work order, field personnel will inspect the equipment in question and determine the nature of the problem. If it is a simple matter, the repair will be made and the volume of leaked CO_2 would be included in the 40 CFR Part 98 Subpart W report for the Denver Unit. If more extensive repair were needed, Oxy would determine the appropriate approach for quantifying leaked CO_2 using the relevant parameters (e.g., the rate, concentration, and duration of leakage). The work order would serve as the basis for tracking the event for GHG reporting.

Anomalies in annular pressure or other parameters detected during routine maintenance inspections would be treated in the same way. Annular pressures in injectors should be close to zero in normal operating conditions because the annulus is isolated by the tubing and packer from injection fluids. Any higher pressure would indicate a potential leak in either the tubing or the packer and would trigger further investigation. If changes in pressure trigger a flag, the investigation follows a course of increasing detail as needed.

The investigation typically begins with simpler measures such as having a field technician inspect the well for faulty equipment (e.g., valves, flanges). Additional tests would be conducted on the well if the cause of the pressure change has not been determined. These tests can identify the nature and location of the problem. If the cause is still not determined, then an investigation involving a wider scope will be undertaken. If a simple repair addresses the issue, the volume of leaked CO_2 would be included in the 40 CFR Part 98 Subpart W report for the Denver Unit. If more extensive repairs were needed, a work order would be generated and Oxy would determine the appropriate approach for quantifying leaked CO_2 using the relevant parameters (e.g., the rate, concentration, and duration of leakage). The work order would serve as the basis for tracking the event for GHG reporting.

Because leaking CO_2 is very cold and leads to formation of bright white clouds and ice that are easily spotted, Oxy also employs a two-part visual inspection process in the general area of the Denver unit to detect unexpected releases from wellbores. First, field personnel visit the surface facilities on a routine basis. Inspections may include tank volumes, equipment status and reliability, lube oil levels, pressures and flow rates in the facility, and valve leaks. Field personnel inspections also check that injectors are on the proper WAG schedule and observe the facility for visible CO_2 or fluid line leaks. Second, Oxy uses airplanes to perform routine flyover inspections to look for unplanned activities in the field including trespass operations, disruption of buried pipelines, or other potential unapproved activities. The pilots also look for evidence of unexpected releases. If a pilot observes a leak or release, he or she contacts Oxy's surface operations with the location of the leak. Surface operations personnel then review the reports, conduct a site investigation, recommend appropriate corrective action, and ensure actions are completed.

Historically, Oxy has documented fewer than 4 unexpected release events each year at Denver Unit. A need for repair or maintenance identified in the visual inspections results in a work order being entered into Oxy's equipment and maintenance (Maximo) system. The time to repair any leak is dependent on several factors, such as the severity of the leak, available manpower, location of the leak, and availability of materials required for the repair. 80% of leaks are repaired within one day and the remaining 20% within several days.

Finally, Oxy uses the results from the H_2S monitors worn by all field personnel at all times, as a last method to detect leakage from wellbores. If an H_2S alarm is triggered, the first response is to protect the safety of the personnel, but the next step is to safely investigate the source of the alarm. As noted previously, Oxy considers H_2S a proxy for potential CO_2 leaks in the field. Thus, detected H_2S leaks will be investigated to determine, and if needed quantify, potential CO_2 leakage. If the problem resulted in a work order, this will serve as the basis for tracking the event for GHG reporting.

Other Potential Leakage at the Surface:
Oxy will utilize the same visual inspection process and H_2S monitoring system to detect other potential leakage at the surface as it does for leakage from wellbores. Oxy utilizes

routine visual inspections to detect significant loss of CO_2 to the surface. Field personnel routinely visit surface facilities to conduct a visual inspection. Inspections may include review of tank level, equipment status, lube oil levels, pressures and flow rates in the facility, valve leaks, ensuring that injectors are on the proper WAG schedule, and also conducting a general observation of the facility for visible CO_2 or fluid line leaks. Oxy also uses airplanes to routinely conduct visual inspections from the air. If problems are detected, field personnel investigate then, if maintenance is required, generate a work order in the maintenance system, which is tracked through completion. In addition to these visual inspections, Oxy will use the results of the personal H_2S monitors worn by field personnel as a supplement for smaller leaks that may escape visual detection.

If CO_2 leakage to the surface is detected, it will be reported to surface operations personnel who will review the reports and conduct a site investigation. If maintenance is required, a work order will be generated in the Maximo system. The work order will describe the appropriate corrective action and be used to track completion of the maintenance action. The work order will also serve as the basis for tracking the event for GHG reporting and quantifying any CO_2 emissions.

5.1.6 CO_2 emitted from equipment leaks and vented emissions of CO_2 from surface equipment located between the injection flow meter and the injection wellhead.

Oxy evaluates and estimates leaks from equipment, the CO_2 content of produced oil, and vented CO_2, as required under 40 CFR Part 98 Subpart W.

5.1.7 Mass of CO_2 emissions from equipment leaks and vented emissions of CO_2 from surface equipment located between the production flow meter and the production wellhead

Oxy evaluates and estimates leaks from equipment, the CO_2 content of produced oil, and vented CO_2, as required under 40 CFR Part 98 Subpart W.

5.2 To Demonstrate that Injected CO_2 is not Expected to Migrate to the Surface

At the end of the Specified Period, Oxy intends to cease injecting CO_2 for the subsidiary purpose of establishing the long-term storage of CO_2 in the Denver Unit. After the end of the Specified Period, Oxy anticipates that it will submit a request to discontinue monitoring and reporting. The request will demonstrate that the amount of CO_2 reported under 40 CFR §98.440-449 (Subpart RR) is not expected to migrate in the future in a manner likely to result in surface leakage. At that time, Oxy will be able to support its request with seven or more years of data collected during the Specified Period as well as two to three years of data collected after the end of the Specified Period. This demonstration will provide the information necessary for the EPA Administrator to approve the request to discontinue monitoring and reporting and may include, but is not limited to:

i. Data comparing actual performance to predicted performance (purchase, injection, production) over the monitoring period;
ii. An assessment of the CO_2 leakage detected, including discussion of the estimated amount of CO_2 leaked and the distribution of emissions by leakage pathway;
iii. A demonstration that future operations will not release the volume of stored CO_2 to the surface;
iv. A demonstration that there has been no significant leakage of CO_2; and,
v. An evaluation of reservoir pressure in the Denver Unit that demonstrates that injected fluids are not expected to migrate in a manner to create a potential leakage pathway.

6. Determination of Baselines

Oxy intends to utilize existing automatic data systems to identify and investigate excursions from expected performance that could indicate CO_2 leakage. Oxy's data systems are used primarily for operational control and monitoring and as such are set to capture more information than is necessary for reporting in the Annual Subpart RR Report. Oxy will develop the necessary system guidelines to capture the information that is pertinent to possible CO_2 leakage. The following describes Oxy's approach to collecting this information.

Visual Inspections
As field personnel conduct routine inspections, work orders are generated in the electronic system for maintenance activities that cannot be addressed on the spot. Methods to capture work orders that involve activities that could potentially involve CO_2 leakage will be developed, if not currently in place. Examples include occurrences of well workover or repair, as well as visual identification of vapor clouds or ice formations. Each incident will be flagged for review by the person responsible for MRV documentation. (The responsible party will be provided in the monitoring plan, as required under Subpart A, 98.3(g).) The Annual Subpart RR Report will include an estimate of the amount of CO_2 leaked. Records of information used to calculate emissions will be maintained on file for a minimum of seven years.

Personal H_2S Monitors
H_2S monitors are worn by all field personnel. Alarm of the monitor triggers an immediate response to ensure personnel are not at risk and to verify the monitor is working properly. The person responsible for MRV documentation will receive notice of all incidents where H_2S is confirmed to be present. The Annual Subpart RR Report will provide an estimate the amount of CO_2 emitted from any such incidents. Records of information to calculate emissions will be maintained on file for a minimum of seven years.

Injection Rates, Pressures and Volumes
Oxy develops a target injection rate and pressure for each injector, based on the results of ongoing pattern modeling. The injection targets are programmed into the WAG skid

controllers. High and low set points are also programmed into the controllers, and flags whenever statistically significant deviations from the targeted ranges are identified. The set points are designed to be conservative, because Oxy prefers to have too many flags rather than too few. As a result, flags can occur frequently and are often found to be insignificant. For purposes of Subpart RR reporting, flags (or excursions) will be screened to determine if they could also lead to CO_2 leakage to the surface. The person responsible for the MRV documentation will receive notice of excursions and related work orders that could potentially involve CO_2 leakage. The Annual Subpart RR Report will provide an estimate of CO_2 emissions. Records of information to calculate emissions will be maintained on file for a minimum of seven years.

Production Volumes and Compositions

Oxy develops a general forecast of production volumes and composition which is used to periodically evaluate performance and refine current and projected injection plans and the forecast. This information is used to make operational decisions but is not recorded in an automated data system. Sometimes, this review may result in the generation of a work order in the maintenance system. The MRV plan manager will review such work orders and identify those that could result in CO_2 leakage. Should such events occur, leakage volumes would be calculated following the approaches described in Sections 4 and 5. Impact to Subpart RR reporting will be addressed, if deemed necessary.

7. Determination of Sequestration Volumes Using Mass Balance Equations

To account for the site conditions and complexity of a large, active EOR operation, Oxy proposes to modify the locations for obtaining volume data for the equations in Subpart RR §98.443 as indicated below.

The first modification addresses the propagation of error that would be created if volume data from meters at each injection and production well were utilized. This issue arises because each meter has a small but acceptable margin of error, this error would become significant if data were taken from the approximately 2,000 meters within the Denver Unit. As such, Oxy proposes to use the data from custody meters on the main system pipelines to determine injection and production volumes used in the mass balance.

The second modification addresses the DUCRP. Figure 16 shows the planned mass balance envelope overlaid as a pale blue onto the General Production Flow Diagram originally shown in Figure 10. The envelope contains all of the measurements relevant to the mass balance equation. Those process steps outside of the envelope do not impact the mass balance and are, therefore, not included. As indicated in Figure 16, only the volume of CO_2 recycled from DUCRP impacts the mass balance equation and it is the volume measured at the DUCRP outlet. The remainder of the CO_2 -- that is, the difference between the inlet measurement and the outlet measurement occurring at DUCRP -- does not have an impact on the mass balance of the Denver Unit and therefore is not included in the mass balance equations. This is because the purpose of the MRV plan under

Subpart RR is to determine the amount of CO_2 stored at the project site, as well as the amount of CO_2 emitted from the project site. GHGR Reporting rule Subpart RR is not intended to account for CO_2 emissions throughout the CO_2 supply chain as those emissions are reported under other subparts of the GHG Reporting rule.

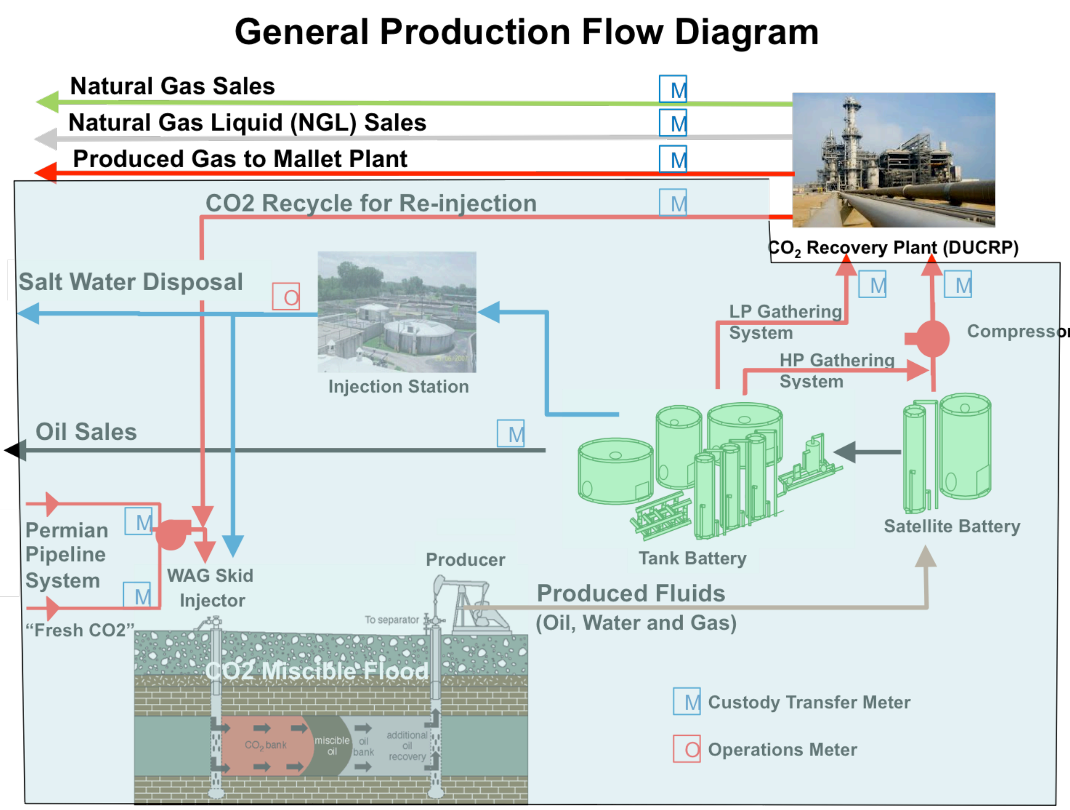


Figure 16 Material Balance Envelope (in blue)

The following sections describe how each element of the mass-balance equation (Equation RR-11) will be calculated.

7.1. Mass of CO_2 Received

Oxy will use equation RR-2 as indicated in Subpart RR §98.443 to calculate the mass of CO_2 received from each delivery meter immediately upstream of the Permian pipeline delivery system on the Denver Unit. The volumetric flow at standard conditions will be multiplied by the CO_2 concentration and the density of CO_2 at standard conditions to determine mass.

$$CO_{2T,r} = \sum_{p=1}^{4} (Q_{r,p} - S_{r,p}) * D * C_{CO_{2,p,r}} \qquad \text{(Eq. RR-2)}$$

where:

$CO_{2T,r}$ = Net annual mass of CO_2 received through flow meter r (metric tons).
$Q_{r,p}$ = Quarterly volumetric flow through a receiving flow meter r in quarter p at standard conditions (standard cubic meters).
$S_{r,p}$ = Quarterly volumetric flow through a receiving flow meter r that is redelivered to another facility without being injected into your well in quarter p (standard cubic meters).
D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682.
$C_{CO2,p,r}$ = Quarterly CO_2 concentration measurement in flow for flow meter r in quarter p (vol. percent CO_2, expressed as a decimal fraction).
p = Quarter of the year.
r = Receiving flow meters.

Given Oxy's method of receiving CO_2 and requirements at Subpart RR §98.444(a):

- All delivery to the Denver Unit is used within the unit so quarterly flow redelivered, $S_{r,p}$, is zero ("0") and will not be included in the equation.
- Quarterly CO_2 concentration will be taken from the gas measurement database

Oxy will sum to total Mass of CO_2 Received using equation RR-3 in 98.443

$$CO_2 = \sum_{r=1}^{R} CO_{2T,r} \quad \text{(Eq. RR-3)}$$

where:

CO_2 = Total net annual mass of CO_2 received (metric tons).
$CO_{2T,r}$ = Net annual mass of CO_2 received (metric tons) as calculated in Equation RR-2 for flow meter r.
r = Receiving flow meter.

7.2 Mass of CO_2 Injected into the Subsurface

The equation for calculating the Mass of CO_2 Injected into the Subsurface at the Denver Unit is equal to the sum of the Mass of CO_2 Received as calculated in RR-3 of 98.443 as described in Section 7.1 and the Mass of CO_2 recycled as calculated using measurements taken from the flow meter located at the output of the DUCRP. As previously explained, using data at each injection well would give an inaccurate estimate of total injection volume due to the large number of wells and the potential for propagation of error due to allowable calibration ranges for each meter.

The mass of CO_2 recycled will be determined using equations RR-5 as follows:

$$CO_{2,u} = \sum_{p=1}^{4} Q_{p,u} * D * C_{CO_{2},p,u} \quad \text{(Eq. RR-5)}$$

where:

$CO_{2,u}$ = Annual CO_2 mass recycled (metric tons) as measured by flow meter u.

$Q_{p,u}$ = Quarterly volumetric flow rate measurement for flow meter u in quarter p at standard conditions (standard cubic meters per quarter).
D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682.
$C_{CO2,p,u}$ = CO_2 concentration measurement in flow for flow meter u in quarter p (vol. percent CO_2, expressed as a decimal fraction).
p = Quarter of the year.
u = Flow meter.

The total Mass of CO_2 received will be the sum of the Mass of CO_2 received (RR-3) and Mass of CO_2 recycled (modified RR-5).

$CO_{2I} = CO_2 + CO_{2,u}$

7.3 Mass of CO_2 Produced

The Mass of CO_2 Produced at the Denver Unit will be calculated using the measurements from the flow meters at the inlet to DUCRP rather than the metered data from each production well. Again, using the data at each production well would give an inaccurate estimate of total injection due to the large number of wells and the potential for propagation of error due to allowable calibration ranges for each meter.

Equation RR-8 in 98.443 will be used to calculate the mass of CO_2 from all injection wells as follows:

$$CO_{2,w} = \sum_{p=1}^{4} Q_{p,w} * D * C_{CO_{2,p,w}} \quad \text{(Eq. RR-8)}$$

Where:
$CO_{2,w}$ = Annual CO_2 mass produced (metric tons) through meter w.
$Q_{p,w}$ = Volumetric gas flow rate measurement for meter w in quarter p at standard conditions (standard cubic meters).
D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682.
$C_{CO2,p,w}$ = CO_2 concentration measurement in flow for meter w in quarter p (vol. percent CO_2, expressed as a decimal fraction).
p = Quarter of the year.
w = inlet meter to DUCRP.

Equation RR-9 in 98.443 will be used to aggregate the mass of CO_2 produced net of the mass of CO_2 entrained in oil leaving the Denver Unit prior to treatment of the remaining gas fraction in DUCRP as follows:

$$CO_{2P} = \sum_{w=1}^{W} CO_{2,w} + X_{oil} \quad \text{(Eq. RR-9)}$$

Where:

CO_{2P} = Total annual CO_2 mass produced (metric tons) through all meters in the reporting year.

$CO_{2,w}$ = Annual CO_2 mass produced (metric tons) through meter w in the reporting year.

X_{oil} = Mass of entrained CO_2 in oil in the reporting year measured utilizing commercial meters and electronic flow-measurement devices at each point of custody transfer. The mass of CO_2 will be calculated by multiplying the total volumetric rate by the CO_2 concentration.

7.4 Mass of CO_2 emitted by Surface Leakage

Oxy will calculate and report the total annual Mass of CO_2 emitted by Surface Leakage using an approach that is tailored to specific leakage events and relies on 40 CFR Part 98 Subpart W reports of equipment leakage. As described in Sections 4 and 5.1.5-5.1.7, Oxy is prepared to address the potential for leakage in a variety of settings. Estimates of the amount of CO_2 leaked to the surface will likely depend on a number of site-specific factors including measurements, engineering estimates, and emission factors, depending on the source and nature of the leakage.

Oxy's process for quantifying leakage will entail using best engineering principles or emission factors. While it is not possible to predict in advance the types of leaks that will occur, Oxy describes some approaches for quantification in Section 5.1.5-5.1.7. In the event leakage to the surface occurs, Oxy will quantify and report leakage amounts, and retain records that describe the methods used to estimate or measure the volume leaked as reported in the Annual Subpart RR Report. Further, Oxy will reconcile the Subpart W report and results from any event-driven quantification to assure that surface leaks are not double counted.

Equation RR-10 in 48.433 will be used to calculate and report the Mass of CO_2 emitted by Surface Leakage:

$$CO_{2E} = \sum_{x=1}^{X} CO_{2,x} \quad \text{(Eq. RR-10)}$$

where:

CO_{2E} = Total annual CO_2 mass emitted by surface leakage (metric tons) in the reporting year.

$CO_{2,x}$ = Annual CO_2 mass emitted (metric tons) at leakage pathway x in the reporting year.

x = Leakage pathway.

7.5 Mass of CO_2 sequestered in subsurface geologic formations.

Oxy will use equation RR-11 in 98.443 to calculate the Mass of CO_2 Sequestered in Subsurface Geologic Formations in the Reporting Year as follows:

$$CO_2 = CO_{2I} - CO_{2P} - CO_{2E} - CO_{2FI} - CO_{2FP} \quad \text{(Eq. RR-11)}$$

where:

CO_2 = Total annual CO_2 mass sequestered in subsurface geologic formations (metric tons) at the facility in the reporting year.

CO_{2I} = Total annual CO_2 mass injected (metric tons) in the well or group of wells covered by this source category in the reporting year.

CO_{2P} = Total annual CO_2 mass produced (metric tons) in the reporting year.

CO_{2E} = Total annual CO_2 mass emitted (metric tons) by surface leakage in the reporting year.

CO_{2FI} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead, for which a calculation procedure is provided in subpart W of this part.

CO_{2FP} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the production wellhead and the flow meter used to measure production quantity, for which a calculation procedure is provided in subpart W of this part.

7.6 Cumulative mass of CO_2 reported as sequestered in subsurface geologic formations

Oxy will sum of the total annual volumes obtained using equation RR-11 in 98.443 to calculate the Cumulative Mass of CO_2 Sequestered in Subsurface Geologic Formations.

8. MRV Plan Implementation Schedule

It is anticipated that this MRV plan will be implemented within 180 days of EPA approval. Other GHG reports are filed on March 31 of the year after the reporting year and it is anticipated that the Annual Subpart RR Report will be filed at the same time. As described in Section 3.3 above, Oxy anticipates that the MRV program will be in effect during the Specified Period, during which time Oxy will operate the Denver Unit with the subsidiary purpose of establishing long-term containment of a measurable quantity of CO_2 in subsurface geological formations at the Denver Unit. Oxy anticipates establishing that a measurable portion of the CO_2 injected during the Specified Period will be stored in a manner not expected to migrate resulting in future surface leakage. At such time, Oxy will prepare a demonstration supporting the long-term containment determination and submit a request to discontinue reporting under this MRV plan. *See* 40 C.F.R. § 98.441(b)(2)(ii).

9. Quality Assurance Program

9.1 Monitoring QA/QC

As indicated in Section 7, Oxy has incorporated the requirements of §98.444 (a) – (d) in the discussion of mass balance equations. These include the following provisions.

CO_2 Received and Injected

- The quarterly flow rate of CO_2 received by pipeline is measured at the receiving custody transfer meters.
- The quarterly CO_2 flow rate for recycled CO_2 is measured at the custody transfer meter located at the DUCRP outlet.

CO_2 Produced

- The point of measurement for the quantity of CO_2 produced from oil or other fluid production wells is a flow meter directly downstream of each separator that sends a stream of gas into a recycle or end use system.
- The produced gas stream is sampled at least once per quarter immediately downstream of the flow meter used to measure flow rate of that gas stream and measure the CO_2 concentration of the sample.
- The quarterly flow rate of the produced gas is measured at the custody transfer meters located at the DUCRP inlet.

CO_2 emissions from equipment leaks and vented emissions of CO_2

These volumes are measured in conformance with the monitoring and QA/QC requirements specified in subpart W of 40 CFR Part 98.

Flow meter provisions

The flow meters used to generate data for the mass balance equations in Section 7 are:

- Operated continuously except as necessary for maintenance and calibration.
- Operated using the calibration and accuracy requirements in 40 CFR §98.3(i).
- Operated in conformance with American Petroleum Institute (API) standards found in API Report No. 3, Parts 2 and 3.
- National Institute of Standards and Technology (NIST) traceable.

Concentration of CO_2

As indicated in Appendix 2, CO_2 concentration is measured using the Gas Processors Association (GPA) standards 2261:2013 (Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography) and GPA 2186 – 02 (Method for the Extended Analysis of Hydrocarbon Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Temperature Programmed Gas Chromatography). Further, all measured volumes of CO_2 have been converted to standard cubic meters at a temperature of 60 degrees

Fahrenheit and at an absolute pressure of 1 atmosphere, including those used in Equations RR-2, RR-5 and RR-8 in Section 7.

9.2 Missing Data Procedures

In the event Oxy is unable to collect data needed for the mass balance calculations, procedures for estimating missing data in §98.445 will be used as follows:

- A quarterly flow rate of CO_2 received that is missing would be estimated using invoices or using a representative flow rate value from the nearest previous time period.
- A quarterly CO_2 concentration of a CO_2 stream received that is missing would be estimated using invoices or using a representative concentration value from the nearest previous time period.
- A quarterly quantity of CO_2 injected that is missing would be estimated using a representative quantity of CO_2injected from the nearest previous period of time at a similar injection pressure.
- For any values associated with CO_2 emissions from equipment leaks and vented emissions of CO_2 from surface equipment at the facility that are reported in this subpart, missing data estimation procedures specified in subpart W of 40 CFR Part 98 would be followed.
- The quarterly quantity of CO_2 produced from subsurface geologic formations that is missing would be estimated using a representative quantity of CO_2 produced from the nearest previous period of time.

9.3 MRV Plan Revisions

In the event there is a material change to the monitoring and/or operational parameters of the Oxy CO_2 EOR operations in the Denver Unit that is not anticipated in this MRV plan, the MRV plan will be revised and submitted to the EPA Administrator within 180 days as required in §98.448(d).

10. Records Retention

Oxy will follow the record retention requirements specified by §98.3(g). In addition, it will follow the requirements in Subpart RR §98.447 by maintaining the following records for at least seven years:

- Quarterly records of CO_2 received at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.

- Quarterly records of produced CO_2, including volumetric flow at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.
- Quarterly records of injected CO_2 including volumetric flow at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.
- Annual records of information used to calculate the CO_2 emitted by surface leakage from leakage pathways.
- Annual records of information used to calculate the CO_2 emitted from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.
- Annual records of information used to calculate the CO_2 emitted from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the production wellhead and the flow meter used to measure production quantity.

These data will be collected as generated and aggregated as required for reporting purposes.

11. Appendices

Appendix 1. Background

This appendix provides background information on the EOR project at the Denver Unit.

A1.1 Project Overview

Enhanced oil recovery (EOR) using carbon dioxide (CO_2) flooding is a mature technology that has been applied commercially since the early 1970s. It entails compressing CO_2 and injecting it into oil fields to restore pressure and mobilize trapped oil. The Permian Basin, spread across parts of Texas and New Mexico, is a geologic basin holding vast oil and gas resources that have been produced for almost a century. CO_2 EOR flooding has been practiced in the Permian Basin since the technique was first developed more than four decades ago. Today the area hosts a large integrated network of CO_2 sources, delivery pipelines, and CO_2 floods. Advances in geologic understanding and flooding techniques have led to a renewed economic interest in producing domestic oil and gas from the Permian Basin. As a result there is an increasing demand for CO_2 that could be met with anthropogenic sources.

A number of entities own or operate the different CO_2 and hydrocarbon production and delivery assets used in the Permian Basin. Occidental Petroleum Corporation and its affiliates (together, Oxy) are one of the largest of these entities. Figure A1-1 depicts the location of Oxy assets and operations in the Permian Basin. It shows that Oxy currently

owns or operates multiple sources of CO_2 (including natural and anthropogenic sources), almost 900 miles of major CO_2 pipelines, and approximately 30 CO_2 floods. The company handles a total of approximately 400 million cubic feet per day (MMscf/D) (20 thousand metric tonnes (MMT)) of CO_2 purchased (or "fresh") from a third party and recycled from the Denver Unit per day and produces approximately 25,000 barrels of oil per day (bopd). Through its work in the Permian Basin and in other CO_2 floods, Oxy has gained significant experience managing CO_2 EOR floods safely and profitability.

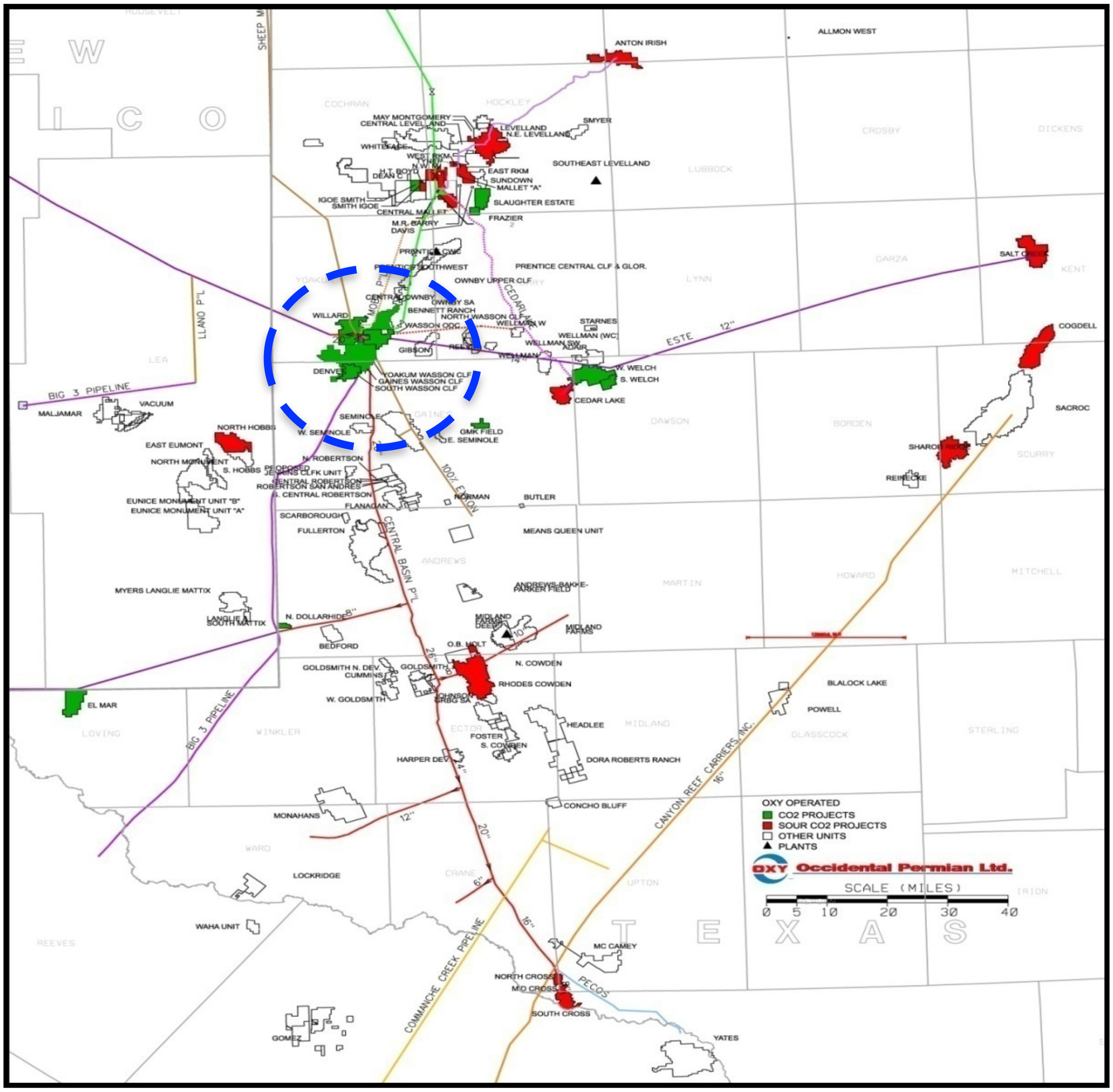


Figure A1-1 - Oxy CO_2 EOR Assets and Operations in the Permian Basin, Blue Circle Indicates Wasson Field Location

As described in the following section, in an effort to address its growing need for CO_2 in the Permian, Oxy invested in a natural gas processing plant that is capturing CO_2 that would otherwise be vented to the atmosphere. The captured CO_2 is fed into the pipeline delivery system that services the Permian Basin, including Oxy's CO_2 floods.

A1.2 CO_2 Transport through the Permian pipeline delivery system

The Permian pipeline delivery system (See Figure A1-2)[11] consists of major and minor pipelines that are used to move CO_2 to, around, and from the CO_2 floods. Each day, the pipeline system distributes approximately 1.8 Bscf (95 thousand metric tons (MMT) of fresh CO_2 that is purchased by the more than 60 CO_2 floods off taking from the system. Oxy and Kinder Morgan are the primary operators of the Permian pipeline delivery system, controlling a majority of the approximately 2,400 miles of major CO_2 pipeline in the system. There are a number of CO_2 sources connected to the system including both natural CO_2 reservoirs and anthropogenic CO_2 sources.

The Permian pipeline delivery system includes intra- and interstate pipelines in Texas, New Mexico, and Colorado. Minimum pipeline safety standards have been established by the US Department of Transportation (DOT) in 49 CFR Parts 190-199 and are implemented by DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) Office of Pipeline Safety (OPS). In all three states, OPS inspects and enforces the pipeline safety regulations for interstate gas and hazardous liquid pipeline operators. In addition, OPS oversees the intrastate pipelines in Colorado. The Texas Railroad Commission (TRRC) and New Mexico Public Regulation Commission Pipeline Safety Bureau are certified to oversee intrastate pipelines in their respective states. The pipeline safety requirements include standards for siting, construction, operation, and addressing accidents. There are no reporting requirements for such pipelines under EPA's GHGRP.

[11] Source: based on image found at http://www.texasenergyfoundation.org/wp-content/uploads/2012/10/Figure-II-3.-Existing-CO_2-Pipelines-Permian-Basin.gif

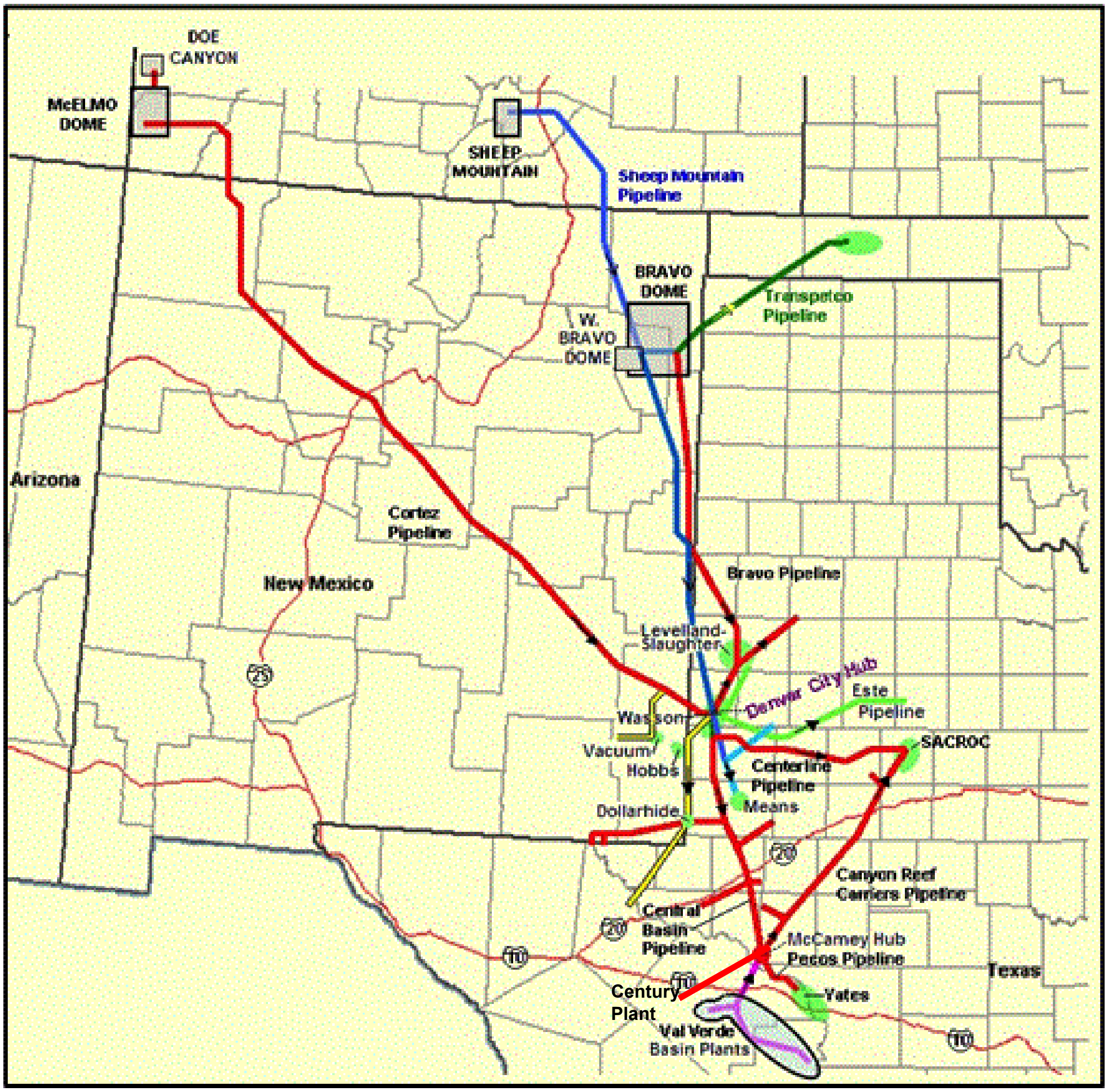


Figure A1-2 Permian Basin CO2 Pipeline Delivery System

All CO_2 entering the pipeline system must meet specifications for chemical composition and is treated by pipeline carriers and shippers as fungible. In Oxy's case, this means that contracts designate both the amounts of CO_2 that Oxy puts into the system and the amounts of CO_2 that Oxy draws from the system. CO_2 inputs and draws are measured using commercially calibrated flow meters at designated delivery points into and out of the pipeline system. Measured amounts typically are trued up against the contract amounts as specified in the particular contract. Oxy withdrew approximately 293 Bscf, or 15 million metric tons (MMMT), of fresh CO_2 from the Permian pipeline system in 2013 of which approximately 22% was injected in the Denver Unit.

A1.3 Oxy's EOR Experience

Oxy is an experienced CO_2 EOR operator and follows a rigorous, standardized process for assessing, developing, and operating CO_2 EOR projects. To profitably implement CO_2 miscible flooding,[12] the operator must optimize oil production while minimizing costs (e.g., CO_2, water, and energy). The miscible CO_2 flood at the Denver Unit has been successfully operated since 1983, demonstrating over this period that the reservoir is well characterized and that the CO_2 flood can be undertaken safely, profitably, and efficiently.

This Section provides a more thorough description of the process for selecting, developing, and managing fields for CO_2 floods, and a general description of CO_2 miscible flooding.

A1.3.1 Oxy's Process to Select, Develop, and Manage Fields for CO_2 Floods

Oxy is one of the largest and most respected CO_2 EOR operators in the world. The company has extensive experience in selecting and developing oil fields suitable for CO_2 floods and maintains standard practices for field selection, development, and management. Oxy's approach relies on frequent communication between operations staff with responsibility for specific geographic areas, and technical staff with responsibility for specific reservoirs, equipment, or functions. This organizational model provides multiple perspectives on field performance and stimulates identification of enhancement opportunities. Field technicians, who are trained in operating procedures, well surveillance, safety, and environmental protection, among other topics, are an integral part of the effective management of each field and work closely with contractors that perform specialized field services.

In designing CO_2 floods, Oxy first conducts an extensive study of the subsurface characteristics of the target oil reservoir. The reservoir characterization study entails a detailed geological and reservoir evaluation to determine the capability of the reservoir to effectively utilize CO_2 to increase oil recovery. Because CO_2 is an expensive injectant, the study includes a thorough analysis of the capability of the reservoir to maintain fluids within the targeted subsurface intervals, including an analysis of formation parting pressures and the ability of the reservoir strata to assimilate the injected CO_2.

Oxy typically creates a (or uses an existing) compositional reservoir simulation model that has been calibrated with actual reservoir data. Reservoir simulation models are used to evaluate potential development scenarios and determine the most viable options. When planning and operating a specific EOR project, Oxy uses pattern modeling. Once a CO_2 flood plan has been developed, it is subjected to thorough technical, operational, safety, environmental, and business reviews within Oxy. At this juncture, Oxy seeks the required regulatory approvals from the appropriate agencies. All of these steps were followed in the development of the CO_2 flood at the Denver Unit. Prior operators

[12] A miscible CO_2 flood employs the characteristic of CO_2 as mixable (or miscible) with crude oil (i.e., the two fluids can dissolve into each other). See Section 2.3.1.2 for additional explanation of miscible flooding.

developed reservoir-wide models. Oxy used this information to inform their decision to acquire leases for the Denver Unit. Since taking over operation of the Denver Unit in 2000, Oxy has conducted additional reservoir characterization studies and undertaken pattern modeling to design and operate the CO_2 flood.

A1.3.2 General Description of CO_2 Miscible Flooding

In a typical sedimentary formation, like the San Andres reservoir in the Denver Unit in the Wasson Field, primary production produces only a portion of the Original Oil-In-Place (OOIP). The percentage of oil recovered during "primary production" varies; in the Denver Unit, primary production recovered approximately 17% of the OOIP, and approximately 83% of the OOIP remained in the pore space in the reservoir.

Water injection may be applied as a secondary production method. This approach typically yields a sizeable additional volume of oil. In the Denver Unit, water injection led to the production of another 33% of the OOIP, leaving approximately 50% still in the pore space in the reservoir.

The oil remaining after water injection is the target for "tertiary recovery" through miscible CO_2 flooding. Typically, CO_2 flooding in the Permian Basin is used as a tertiary production method and it entails compressing CO_2 and injecting it into oil fields to mobilize trapped oil remaining after water flooding. Miscible CO_2 flooding can produce another 20% of the OOIP, leaving the fraction of oil remaining in the pore space in the reservoir at approximately 30%.

Under typical pressure and temperature conditions in a reservoir, CO_2 is a supercritical fluid (see Figure A1-3) that is miscible with crude oil. As injected CO_2 mixes with the oil, it acts like a solvent wash to sweep remaining oil from the pore space in the reservoir. The net effect is to further increase oil production from existing wells. As the oil is swept from the pore space, CO_2 and water fill the vacated pore space. The profitability of CO_2 EOR is dependent on the underlying costs of the commodities. Under current economic conditions, the combined cost of CO_2, water, and the necessary energy are less than the value of the produced oil, and the process is profitable to producers. However, those conditions can change quickly and have done so in the past.

The first commercial CO_2 injection project began in January 1972 in the SACROC (Scurry Area Canyon Reef Operators Committee) Unit of the Kelly-Snyder Field in Scurry County, West Texas. Following that early field test, CO_2 flooding has spread throughout the Permian Basin, the Gulf Coast and the Mid-continent areas. The industry currently recovers approximately 300,000 bopd from CO_2 flooding in the United States. In the supercritical fluid phase, CO_2 is neither a liquid nor a gas (See Figure A1-3). It has a density that is close to that of oil but less than that of water. However, it has a very low viscosity, which means CO_2 tends to bypass the oil and water it is displacing. The result is low process sweep efficiency and high gas production rates. One way to improve sweep and reduce gas production is to inject water along with the CO_2, which adds water to the pore spaces and slows the flow of CO_2. This is generally done with alternate injection of water and CO_2, or WAG (water alternating gas) injection. The WAG

approach is common in the Permian Basin, although there are several other ways to manage CO_2 flooding. The WAG approach improves how CO_2 flooding works by helping to maintain more stable flood fronts and reducing the rate at which CO_2 is produced through the production wells.

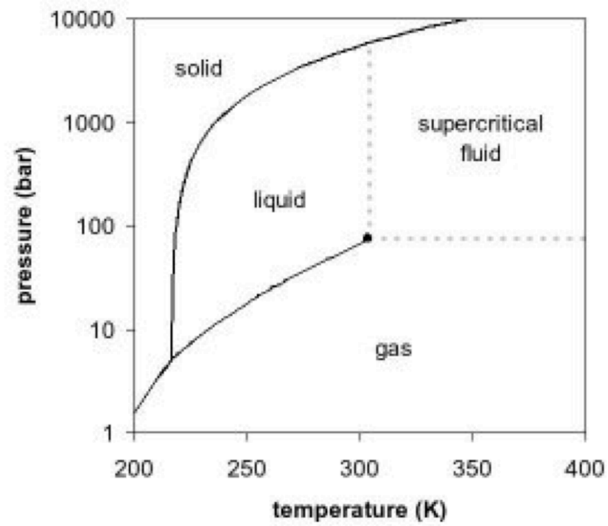


Figure A1-3 CO2 Phases

Because CO_2 is an inherently inefficient displacing agent, a portion of the injected CO_2 is co-produced along with oil and water. The remaining portion stays trapped in the pore space in the reservoir. The produced fluid is treated through a closed loop process to remove valuable products (like natural gas (NG), natural gas liquids (NGL) and sulfur) and to separate the CO_2 and water for recompression and re-injection. Fresh CO_2 is combined with recycled CO_2 to make up the amount of CO_2 that is injected. As a close approximation, the amount of purchased CO_2 is the amount that remains trapped (stored) in the pore space in the reservoir. As a standard practice, the volume of purchased CO_2 is calculated to be just sufficient to take the place of the oil and net water that has been produced. In this way, reservoir pressure is maintained.

Each injection well ("injector") is surrounded by a number of producing wells ("producers"), each of which responds to the amount and rate of injection. The injector and producer wells form a "pattern," typically either a five-spot pattern with four corner wells forming a square around the injector, or a nine-spot pattern with an additional producer located along each side of the square. Oxy uses pattern modeling, discussed in more detail in Section 3.1, to predict the fluid flow in the formation; develop an injection plan for each pattern; predict the performance of each pattern; and determine where to place infill wells to better manage production and injection over time. The resulting injection plan describes the expected volume and pressure for the injection of CO_2 and water introduced into each injection well.

Appendix 2. Conversion Factors

Oxy reports CO_2 volumes at standard conditions of temperature and pressure as defined in the State of Texas – 60 ^oF and 14.65 psi.

To convert these volumes into metric tonnes, a density is calculated using the Span and Wagner equation of state as recommended by the EPA. Density was calculated using the database of thermodynamic properties developed by the National Institute of Standards and Technology (NIST), available at http://webbook.nist.gov/chemistry/fluid/.

At State of Texas standard conditions, the Span and Wagner equation of state gives a density of 0.0026417 lb-moles per cubic foot. Using a molecular weight for CO_2 of 44.0095, 2204.62 lbs/metric ton and 35.314667 ft^3/m^3, gives a CO_2 density of 5.27346 x 10^{-2} MT/Mcf or 0.0018623 MT/m^3.

Note at EPA standard conditions of 60 ^oF and one atmosphere, the Span and Wagner equation of state gives a density of 0.0026500 lb-moles per cubic foot. Using a molecular weight for CO_2 of 44.0095, 2204.62 lbs/metric ton and 35.314667 ft^3/m^3, gives a CO_2 density of 5.29003 x 10^{-5} MT/ft^3 or 0.0018682 MT/m^3.

The conversion factor 5.27346 x 10^{-2} MT/Mcf has been used throughout to convert Oxy volumes to metric tons.

Appendix 3. Acronyms

AGA – American Gas Association
AMA – Active Monitoring Area
AoR – Area of Review
API – American Petroleum Institute
Bscf – billion standard cubic feet
B/D – barrels per day
bopd – barrels of oil per day
cf – cubic feet
CH_4 – Methane
CO_2 – Carbon Dioxide
CRP – CO_2 Removal Plant
CTB – Central Tank Battery
DOT – US Department of Transportation
DUCRP – Denver Unit CO_2 Recovery Plant
EOR – Enhanced Oil Recovery
EPA – US Environmental Protection Agency
ESD – Emergency Shutdown Device
GHG – Greenhouse Gas
GHGRP – Greenhouse Gas Reporting Program
HC – Hydrocarbon
H_2S – Hydrogen Sulfide
IWR -- Injection to Withdrawal Ratio
LACT – Lease Automatic Custody Transfer meter
LEL – Lower Explosive Limit
MIT – Mechanical Integrity Test
MMA – Maximum Monitoring Area
MMB – Million barrels
Mscf – Thousand standard cubic feet
MMscf – Million standard cubic feet
MMMT – Million metric tonnes
MMT – Thousand metric tonnes
MRV – Monitoring, Reporting, and Verification
MT -- Metric Tonne
NG—Natural Gas
NGLs – Natural Gas Liquids
OOIP – Original Oil-In-Place
OPC – Occidental Petroleum Corporation
OPL – Occidental Petroleum Ltd.
OPS – Office of Pipeline Safety
PHMSA – Pipeline and Hazardous Materials Safety Administration
PPM – Parts Per Million
RCF – Reinjection Compression Facility
ROZ – Residual Oil Zone
SACROC – Scurry Area Canyon Reef Operators Committee

ST – Short Ton
TRRC – Texas Railroad Commission
TSD – Technical Support Document
TVDSS – True Vertical Depth Subsea
TZ – Transition Zone
UIC – Underground Injection Control
USEPA – U.S. Environmental Protection Agency
USDW – Underground Source of Drinking Water
VRU -- Vapor Recovery Unit
WAG – Water Alternating Gas
WTO – West Texas Overthrust

Appendix 4. References

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Appendix 5. Glossary of Terms

This glossary describes some of the technical terms as they are used in this MRV plan. For additional glossaries please see the U.S. EPA Glossary of UIC Terms (http://water.epa.gov/type/groundwater/uic/glossary.cfm) and the Schlumberger Oilfield Glossary (http://www.glossary.oilfield.slb.com/).

Anhydrite -- Anhydrite is a mineral—anhydrous calcium sulfate, $CaSO_4$.

Bradenhead -- a casing head in an oil well having a stuffing box packed (as with rubber) to make a gastight connection
Contain / Containment – having the effect of keeping fluids located within in a specified portion of a geologic formation.

Dip -- Very few, if any, geologic features are perfectly horizontal. They are almost always tilted. The direction of tilt is called "dip." Dip is the angle of steepest descent measured from the horizontal plane. Moving higher up structure is moving "updip." Moving lower is "downdip." Perpendicular to dip is "strike." Moving perpendicular along a constant depth is moving along strike.

Dolomite -- Dolomite is an anhydrous carbonate mineral composed of calcium magnesium carbonate $CaMg(CO_3)_2$.

Downdip -- See "dip."

Formation -- A body of rock that is sufficiently distinctive and continuous that it can be mapped. At Wasson, for example, San Andres formation is a layer of permeable dolomites that were deposited in a shallow marine environment during the Permian Era, some 250 to 300 million years ago. The San Andres can be mapped over much of the Permian Basin.

Igneous Rocks -- Igneous rocks crystallize from molten rock, or magma, with interlocking mineral crystals.

Infill Drilling -- The drilling of additional wells within existing patterns. These additional wells decrease average well spacing. This practice both accelerates expected recovery and increases estimated ultimate recovery in heterogeneous reservoirs by improving the continuity between injectors and producers. As well spacing is decreased, the shifting flow paths lead to increased sweep to areas where greater hydrocarbon saturations remain.

Metamorphic Rocks -- Metamorphic rocks form from the alteration of preexisting rocks by changes in ambient temperature, pressure, volatile content, or all of these. Such changes can occur through the activity of fluids in the Earth and movement of igneous bodies or regional tectonic activity.

Permeability -- Permeability is the measure of a rock's ability to transmit fluids. Rocks that transmit fluids readily, such as sandstones, are described as permeable and tend to have many large, well-connected pores. Impermeable formations, such as shales and siltstones, tend to be finer grained or of a mixed grain size, with smaller, fewer, or less interconnected pores.

Phase -- Phase is a region of space throughout which all physical properties of a material are essentially uniform. Fluids that don't mix together segregate themselves into phases. Oil, for example, does not mix with water and forms a separate phase.

Pore Space -- See porosity.

Porosity -- Porosity is the fraction of a rock that is not occupied by solid grains or minerals. Almost all rocks have spaces between rock crystals or grains that is available to be filled with a fluid, such as water, oil or gas. This space is called "pore space."

Primary recovery -- The first stage of hydrocarbon production, in which natural reservoir energy, such as gasdrive, waterdrive or gravity drainage, displaces hydrocarbons from the reservoir, into the wellbore and up to surface. Initially, the reservoir pressure is considerably higher than the bottomhole pressure inside the wellbore. This high natural differential pressure drives hydrocarbons toward the well and up to surface. However, as the reservoir pressure declines because of production, so does the differential pressure. To reduce the bottomhole pressure or increase the differential pressure to increase hydrocarbon production, it is necessary to implement an artificial lift system, such as a rod pump, an electrical submersible pump or a gas-lift installation. Production using artificial lift is considered primary recovery. The primary recovery stage reaches its limit either when the reservoir pressure is so low that the production rates are not economical, or when the proportions of gas or water in the production stream are too high. During primary recovery, only a small percentage of the initial hydrocarbons in place are produced, typically around 10% for oil reservoirs. Primary recovery is also called primary production.

Saturation -- The fraction of pore space occupied by a given fluid. Oil saturation, for example, is the fraction of pore space occupied by oil.

Seal – A geologic layer (or multiple layers) of impermeable rock that serve as a barrier to prevent fluids from moving upwards to the surface.

Secondary recovery -- The second stage of hydrocarbon production during which an external fluid such as water or gas is injected into the reservoir through injection wells located in rock that has fluid communication with production wells. The purpose of secondary recovery is to maintain reservoir pressure and to displace hydrocarbons toward the wellbore. The most common secondary recovery techniques are gas injection and waterflooding.

Sedimentary Rocks -- Sedimentary rocks are formed at the Earth's surface through deposition of sediments derived from weathered rocks, biogenic activity or precipitation from solution. There are three main types of rocks – igneous, metamorphic and sedimentary.

Stratigraphic section -- A stratigraphic section is a sequence of layers of rocks in the order they were deposited.

Strike -- See “dip.”

Updip -- See “dip.”

Appendix 6. Well Identification Numbers

The following table presents the well name, API number, status and type for the wells in the Denver Unit as of August 2014. The table is subject to change over time as new wells are drilled, existing wells change status, or existing wells are repurposed. The following terms are used:

- Well Status
  - ACTIVE refers to active wells
  - DRILL refers to wells under construction
  - P&A refers to wells that have been closed (plugged and abandoned) per TAC 16.1.3
  - TA refers to wells that have been temporarily abandoned
  - SHUT_IN refers to wells that have been temporarily idled or shut-in
  - INACTIVE refers to wells that have been completed but are not in use
- Well Type
  - INJ_WAG refers to wells that inject water and CO_2 Gas
  - INJ_GAS refers to wells that inject CO_2 Gas
  - INJ_H2O refers to wells that inject water
  - PROD_GAS refers to wells that produce natural gas
  - PROD_OIL refers to wells that produce oil
  - DISP_H2O refers to wells used for water disposal

Well Name	API Number	Well Status	Well Type
DU-0001	42501000000000	ACTIVE	DISP_H2O
DU-0001B	42165313440000	ACTIVE	DISP_H2O
DU-0001SWD	42501324880000	ACTIVE	DISP_H2O
DU-0002	42501328930000	ACTIVE	DISP_H2O
DU-0003SWD	42165336580000	ACTIVE	DISP_H2O
DU-0004	42501363510000	DRILL	PROD_OIL
DU-1701	42501022100000	ACTIVE	INJ_WAG
DU-1702	42501022150000	ACTIVE	PROD_OIL
DU-1703	42501000700000	ACTIVE	INJ_WAG
DU-1704	42501000690000	ACTIVE	INJ_WAG
DU-1705	42501022120000	P & A	INJ_WAG
DU-1706	42501022110000	ACTIVE	PROD_OIL
DU-1707	42501000710000	ACTIVE	PROD_OIL
DU-1708	42501000720000	TA	INJ_WAG
DU-1709	42501301980000	ACTIVE	INJ_WAG
DU-1710	42501301970000	ACTIVE	PROD_OIL
DU-1711	42501303970000	ACTIVE	INJ_WAG
DU-1712	42501303960000	ACTIVE	PROD_OIL
DU-1713	42501303950000	ACTIVE	PROD_OIL
DU-1714	42501311220000	ACTIVE	PROD_OIL
DU-1715	42501311230000	ACTIVE	INJ_WAG
DU-1716	42501314560000	ACTIVE	PROD_OIL
DU-1717	42501313090000	ACTIVE	INJ_WAG
DU-1718	42501317050000	ACTIVE	INJ_WAG
DU-1719	42501340520000	ACTIVE	PROD_OIL
DU-1720	42501348490000	ACTIVE	PROD_OIL

DU-1721	42501348500000	ACTIVE	PROD_OIL
DU-1722	42501348510000	ACTIVE	PROD_OIL
DU-1723	42501348520000	ACTIVE	PROD_OIL
DU-1724	42501348530000	ACTIVE	PROD_OIL
DU-1725	42501348540000	ACTIVE	PROD_OIL
DU-1726	42501348550000	ACTIVE	PROD_OIL
DU-1727	42501352120000	ACTIVE	PROD_OIL
DU-1728	42501356810000	ACTIVE	INJ_WAG
DU-2201	42501018320000	P & A	INJ_H2O
DU-2202	42501018330000	ACTIVE	INJ_WAG
DU-2203	42501018260000	P & A	PROD_OIL
DU-2204	42501018250000	ACTIVE	INJ_H2O
DU-2205	42501018290000	ACTIVE	PROD_OIL
DU-2206	42501018410000	ACTIVE	PROD_OIL
DU-2207	42501018350000	P & A	PROD_OIL
DU-2208	42501018280000	P & A	PROD_OIL
DU-2208R	42501329970000	ACTIVE	INJ_WAG
DU-2209	42501018270000	ACTIVE	INJ_WAG
DU-2210	42501014570000	P & A	PROD_OIL
DU-2211	42501014590000	ACTIVE	PROD_OIL
DU-2212	42501018370000	TA	INJ_H2O
DU-2213	42501018360000	ACTIVE	INJ_WAG
DU-2214	42501018300000	ACTIVE	INJ_WAG
DU-2215	42501804810000	ACTIVE	INJ_WAG
DU-2216	42501028960000	ACTIVE	PROD_OIL
DU-2217	42501018400000	ACTIVE	INJ_WAG
DU-2218	42501018380000	ACTIVE	INJ_WAG
DU-2219	42501018390000	ACTIVE	INJ_WAG
DU-2220	42501018310000	ACTIVE	INJ_WAG
DU-2221	42501309150000	ACTIVE	PROD_OIL
DU-2222	42501309140000	ACTIVE	PROD_OIL
DU-2223	42501309130000	TA	PROD_OIL
DU-2224	42501309120000	ACTIVE	PROD_OIL
DU-2225	42501309110000	ACTIVE	PROD_OIL
DU-2226	42501309260000	P & A	PROD_OIL
DU-2227	42501309060000	ACTIVE	PROD_OIL
DU-2228	42501309620000	ACTIVE	PROD_OIL
DU-2229	42501315420000	P & A	PROD_OIL
DU-2232	42501316560000	P & A	INJ_GAS
DU-2233	42501325210000	ACTIVE	INJ_WAG
DU-2235	42501328580000	ACTIVE	PROD_OIL
DU-2236	42501329270000	ACTIVE	PROD_OIL
DU-2237	42501334570000	ACTIVE	PROD_OIL
DU-2238	42501341180000	ACTIVE	PROD_OIL
DU-2239	42501340990000	ACTIVE	INJ_H2O
DU-2240	42501352290000	ACTIVE	PROD_OIL
DU-2241	42501352110000	ACTIVE	PROD_OIL
DU-2242	42501347160000	ACTIVE	PROD_OIL
DU-2243	42501347110000	ACTIVE	PROD_OIL
DU-2244	42501349630000	ACTIVE	INJ_WAG
DU-2245	42501353570000	ACTIVE	PROD_OIL
DU-2246	42501359610000	ACTIVE	PROD_OIL
DU-2247	42501359580000	ACTIVE	PROD_OIL
DU-2248	42501359590000	ACTIVE	PROD_OIL

DU-2249	42501359600000	ACTIVE	PROD_OIL
DU-2250	42501359620000	ACTIVE	PROD_OIL
DU-2251	42501359660000	ACTIVE	PROD_OIL
DU-2252	42501359630000	ACTIVE	PROD_OIL
DU-2253	42501359970000	ACTIVE	PROD_OIL
DU-2254	42501359640000	ACTIVE	PROD_OIL
DU-2255	42501359650000	ACTIVE	PROD_OIL
DU-2256	42501359670000	ACTIVE	PROD_OIL
DU-2257	42501359980000	ACTIVE	PROD_OIL
DU-2501	42501023940000	P & A	INJ_H2O
DU-2502	42501024200000	ACTIVE	INJ_WAG
DU-2503	42501024250000	P & A	INJ_WAG
DU-2504	42501023790000	P & A	PROD_OIL
DU-2505	42501023840000	ACTIVE	INJ_WAG
DU-2506	42501024150000	P & A	PROD_OIL
DU-2507	42501023990000	P & A	PROD_OIL
DU-2508	42501023890000	ACTIVE	INJ_WAG
DU-2509	42501024550000	ACTIVE	PROD_OIL
DU-2510	42501024650000	ACTIVE	PROD_OIL
DU-2511	42501024600000	ACTIVE	PROD_OIL
DU-2512	42501024500000	ACTIVE	PROD_OIL
DU-2513	42501023740000	P & A	INJ_H2O
DU-2514	42501024090000	P & A	INJ_H2O
DU-2515	42501024040000	P & A	INJ_H2O
DU-2516	42501024350000	ACTIVE	INJ_WAG
DU-2517	42501023530000	ACTIVE	INJ_WAG
DU-2518	42501024440000	ACTIVE	PROD_OIL
DU-2519	42501024390000	ACTIVE	INJ_WAG
DU-2520	42501023680000	P & A	PROD_OIL
DU-2521	42501023630000	P & A	INJ_H2O
DU-2522	42501023570000	P & A	PROD_OIL
DU-2523	42501024300000	ACTIVE	PROD_OIL
DU-2524	42501023470000	ACTIVE	PROD_OIL
DU-2525	42501101690000	ACTIVE	PROD_OIL
DU-2526	42501302990000	ACTIVE	PROD_OIL
DU-2527	42501302970000	ACTIVE	PROD_OIL
DU-2528	42501302980000	ACTIVE	PROD_OIL
DU-2529	42501303940000	ACTIVE	PROD_OIL
DU-2530	42501307700000	ACTIVE	PROD_OIL
DU-2531	42501307710000	ACTIVE	INJ_WAG
DU-2532	42501311170000	ACTIVE	PROD_OIL
DU-2533	42501315440000	ACTIVE	PROD_OIL
DU-2534	42501316480000	ACTIVE	PROD_OIL
DU-2535	42501316520000	ACTIVE	PROD_OIL
DU-2536	42501325220000	ACTIVE	INJ_WAG
DU-2537	42501325960000	ACTIVE	INJ_WAG
DU-2538	42501327910000	ACTIVE	INJ_WAG
DU-2539	42501328570000	ACTIVE	INJ_WAG
DU-2540	42501329830000	TA	INJ_GAS
DU-2541	42501331180000	ACTIVE	INJ_WAG
DU-2542	42501333830000	ACTIVE	INJ_WAG
DU-2543	42501333870000	ACTIVE	INJ_WAG
DU-2544	42501334580000	ACTIVE	INJ_WAG
DU-2545	42501334420000	ACTIVE	INJ_WAG

DU-2546	42501336480000	ACTIVE	PROD_OIL
DU-2547	42501345130000	ACTIVE	PROD_OIL
DU-2548	42501345490000	ACTIVE	PROD_OIL
DU-2549	42501345620000	ACTIVE	PROD_OIL
DU-2550	42501346500000	ACTIVE	PROD_OIL
DU-2551	42501346770000	ACTIVE	PROD_OIL
DU-2552	42501346410000	ACTIVE	PROD_OIL
DU-2553	42501346760000	ACTIVE	PROD_OIL
DU-2554	42501346560000	ACTIVE	PROD_OIL
DU-2555	42501346420000	ACTIVE	PROD_OIL
DU-2556	42501346680000	ACTIVE	INJ_WAG
DU-2557	42501346780000	ACTIVE	PROD_OIL
DU-2558	42501347120000	ACTIVE	PROD_OIL
DU-2559	42501347130000	ACTIVE	PROD_OIL
DU-2560	42501353360000	ACTIVE	PROD_OIL
DU-2561	42501353380000	ACTIVE	PROD_OIL
DU-2562	42501353390000	ACTIVE	PROD_OIL
DU-2564GC	42501355190000	TA	PROD_GAS
DU-2601	42501023730000	P & A	INJ_H2O
DU-2602	42501023780000	ACTIVE	INJ_WAG
DU-2603	42501023830000	P & A	INJ_H2O
DU-2604	42501023880000	P & A	PROD_OIL
DU-2605	42501024080000	P & A	PROD_OIL
DU-2606	42501330140000	ACTIVE	INJ_WAG
DU-2607	42501330010000	ACTIVE	INJ_WAG
DU-2608	42501023930000	ACTIVE	INJ_WAG
DU-2609	42501023560000	P & A	PROD_OIL
DU-2610	42501023620000	ACTIVE	INJ_WAG
DU-2611	42501023670000	P & A	INJ_H2O
DU-2612	42501023540000	ACTIVE	INJ_WAG
DU-2613	42501024290000	P & A	INJ_H2O
DU-2614	42501024340000	ACTIVE	INJ_WAG
DU-2615	42501023460000	P & A	INJ_H2O
DU-2616	42501023980000	P & A	PROD_OIL
DU-2617	42501024240000	ACTIVE	PROD_OIL
DU-2618	42501024030000	ACTIVE	PROD_OIL
DU-2619	42501301960000	ACTIVE	PROD_OIL
DU-2620	42501303010000	ACTIVE	PROD_OIL
DU-2621	42501303000000	ACTIVE	PROD_OIL
DU-2622	42501024540000	ACTIVE	PROD_OIL
DU-2623	42501304400000	P & A	PROD_OIL
DU-2624	42501024490000	ACTIVE	PROD_OIL
DU-2625	42501024430000	TA	PROD_OIL
DU-2626	42501307690000	TA	INJ_H2O
DU-2627	42501309100000	ACTIVE	PROD_OIL
DU-2628	42501309090000	ACTIVE	PROD_OIL
DU-2629	42501311190000	ACTIVE	PROD_OIL
DU-2630	42501311270000	TA	PROD_OIL
DU-2631	42501314650000	ACTIVE	INJ_WAG
DU-2632	42501314540000	ACTIVE	INJ_WAG
DU-2633	42501315510000	ACTIVE	PROD_OIL
DU-2634	42501315450000	ACTIVE	PROD_OIL
DU-2635	42501327900000	P & A	INJ_WAG
DU-2636	42501328420000	ACTIVE	INJ_WAG

DU-2637	42501330250000	ACTIVE	PROD_OIL
DU-2638	42501329980000	ACTIVE	PROD_OIL
DU-2639	42501330110000	ACTIVE	PROD_OIL
DU-2640	42501330940000	TA	INJ_GAS
DU-2641	42501331710000	ACTIVE	INJ_WAG
DU-2642	42501333840000	ACTIVE	PROD_OIL
DU-2643	42501333860000	ACTIVE	PROD_OIL
DU-2644	42501334160000	ACTIVE	PROD_OIL
DU-2645	42501338480000	ACTIVE	INJ_WAG
DU-2646	42501342840000	ACTIVE	PROD_OIL
DU-2647	42501345500000	ACTIVE	PROD_OIL
DU-2648	42501345510000	ACTIVE	PROD_OIL
DU-2649	42501345120000	ACTIVE	PROD_OIL
DU-2650	42501345110000	ACTIVE	PROD_OIL
DU-2651	42501345170000	ACTIVE	PROD_OIL
DU-2652	42501345520000	ACTIVE	PROD_OIL
DU-2653	42501345530000	ACTIVE	PROD_OIL
DU-2654	42501345100000	ACTIVE	PROD_OIL
DU-2655	42501345090000	ACTIVE	PROD_OIL
DU-2656	42501345080000	ACTIVE	PROD_OIL
DU-2657	42501345690000	ACTIVE	INJ_WAG
DU-2658	42501345150000	ACTIVE	INJ_WAG
DU-2659	42501346430000	ACTIVE	PROD_OIL
DU-2660	42501346580000	ACTIVE	PROD_OIL
DU-2661	42501346460000	ACTIVE	PROD_OIL
DU-2662	42501348560000	ACTIVE	PROD_OIL
DU-2663	42501352140000	ACTIVE	INJ_WAG
DU-2664	42501352150000	ACTIVE	PROD_OIL
DU-2665	42501353400000	ACTIVE	PROD_OIL
DU-2666	42501353410000	ACTIVE	PROD_OIL
DU-2667	42501353370000	ACTIVE	INJ_WAG
DU-2668	42501353840000	ACTIVE	PROD_OIL
DU-2669	42501354900000	ACTIVE	PROD_OIL
DU-2670	42501356820000	ACTIVE	INJ_WAG
DU-2671	42501356830000	ACTIVE	INJ_WAG
DU-2672	42501356840000	ACTIVE	INJ_WAG
DU-2673	42501356850000	ACTIVE	INJ_WAG
DU-2674	42501356860000	ACTIVE	INJ_WAG
DU-2701	42501023770000	P & A	INJ_H2O
DU-2702	42501023720000	ACTIVE	INJ_WAG
DU-2703	42501023600000	ACTIVE	INJ_WAG
DU-2704	42501023550000	P & A	INJ_WAG
DU-2705	42501023820000	ACTIVE	PROD_OIL
DU-2706	42501024120000	P & A	PROD_OIL
DU-2707	42501024180000	ACTIVE	PROD_OIL
DU-2708	42501023920000	ACTIVE	PROD_OIL
DU-2709	42501023970000	ACTIVE	PROD_OIL
DU-2710	42501024070000	P & A	INJ_H2O
DU-2711	42501024230000	ACTIVE	PROD_OIL
DU-2712	42501024020000	ACTIVE	PROD_OIL
DU-2713	42501023660000	TA	PROD_OIL
DU-2714	42501024280000	P & A	PROD_OIL
DU-2715	42501023870000	P & A	PROD_OIL
DU-2716	42501023450000	ACTIVE	PROD_OIL

DU-2717	42501024720000	TA	PROD_OIL
DU-2718	42501024840000	ACTIVE	INJ_WAG
DU-2719	42501304350000	TA	PROD_OIL
DU-2720	42501304200000	ACTIVE	INJ_WAG
DU-2721	42501024830000	INACTIVE	PROD_OIL
DU-2722	42501024580000	ACTIVE	PROD_OIL
DU-2723	42501024810000	ACTIVE	INJ_WAG
DU-2724	42501024630000	ACTIVE	INJ_WAG
DU-2725	42501307720000	ACTIVE	PROD_OIL
DU-2726	42501309080000	ACTIVE	INJ_WAG
DU-2727	42501309070000	ACTIVE	INJ_WAG
DU-2728	42501314550000	ACTIVE	PROD_OIL
DU-2729	42501313080000	ACTIVE	INJ_WAG
DU-2730	42501313100000	ACTIVE	INJ_WAG
DU-2731	42501314490000	ACTIVE	PROD_OIL
DU-2732	42501315410000	P & A	INJ_H2O
DU-2733	42501315400000	ACTIVE	INJ_WAG
DU-2734	42501316500000	ACTIVE	PROD_OIL
DU-2735	42501319120000	ACTIVE	PROD_OIL
DU-2736	42501323100000	ACTIVE	INJ_WAG
DU-2737	42501322920000	ACTIVE	INJ_WAG
DU-2738	42501330000000	ACTIVE	INJ_WAG
DU-2739	42501329900000	ACTIVE	PROD_OIL
DU-2740	42501334430000	ACTIVE	PROD_OIL
DU-2741	42501101680000	ACTIVE	PROD_OIL
DU-2742	42501340510000	ACTIVE	PROD_OIL
DU-2743	42501341630000	ACTIVE	PROD_OIL
DU-2744	42501343490000	ACTIVE	PROD_OIL
DU-2745	42501343900000	ACTIVE	PROD_OIL
DU-2746	42501343720000	ACTIVE	PROD_OIL
DU-2747	42501343860000	ACTIVE	PROD_OIL
DU-2748	42501343870000	ACTIVE	INJ_WAG
DU-2749	42501343810000	ACTIVE	PROD_OIL
DU-2750	42501343730000	ACTIVE	PROD_OIL
DU-2751	42501343800000	ACTIVE	PROD_OIL
DU-2752	42501343880000	ACTIVE	PROD_OIL
DU-2753	42501343790000	ACTIVE	PROD_OIL
DU-2754	42501343780000	ACTIVE	PROD_OIL
DU-2755	42501343890000	ACTIVE	PROD_OIL
DU-2756	42501347940000	ACTIVE	PROD_OIL
DU-2757	42501348570000	ACTIVE	INJ_WAG
DU-2758	42501348580000	ACTIVE	INJ_WAG
DU-2759	42501356870000	ACTIVE	INJ_WAG
DU-2760	42501356880000	ACTIVE	INJ_WAG
DU-2761	42501356890000	ACTIVE	INJ_WAG
DU-2762	42501356900000	ACTIVE	INJ_WAG
DU-2801	42501023910000	ACTIVE	INJ_WAG
DU-2802	42501023860000	ACTIVE	INJ_WAG
DU-2803	42501023650000	INACTIVE	INJ_WAG
DU-2804	42501023960000	P & A	INJ_H2O
DU-2805	42501023490000	ACTIVE	INJ_WAG
DU-2806	42501024370000	ACTIVE	PROD_OIL
DU-2807	42501024060000	ACTIVE	PROD_OIL
DU-2808	42501023590000	ACTIVE	PROD_OIL

DU-2809	42501024320000	ACTIVE	INJ_WAG
DU-2810	42501024170000	ACTIVE	INJ_WAG
DU-2811	42501024410000	ACTIVE	INJ_WAG
DU-2812	42501024110000	ACTIVE	PROD_OIL
DU-2813	42501024270000	ACTIVE	PROD_OIL
DU-2814	42501023710000	P & A	PROD_OIL
DU-2815	42501024220000	ACTIVE	INJ_WAG
DU-2816	42501023520000	ACTIVE	PROD_OIL
DU-2817	42501024010000	ACTIVE	PROD_OIL
DU-2818	42501023760000	ACTIVE	PROD_OIL
DU-2819	42501023810000	P & A	PROD_OIL
DU-2820	42501302320000	ACTIVE	PROD_OIL
DU-2821	42501304260000	P & A	PROD_OIL
DU-2822	42501304380000	ACTIVE	INJ_WAG
DU-2823	42501304270000	ACTIVE	INJ_WAG
DU-2824	42501024670000	P & A	PROD_OIL
DU-2825	42501304340000	ACTIVE	INJ_WAG
DU-2826	42501304310000	ACTIVE	INJ_WAG
DU-2827	42501304250000	TA	INJ_WAG
DU-2828	42501304240000	ACTIVE	INJ_WAG
DU-2829	42501304230000	ACTIVE	PROD_OIL
DU-2830	42501304330000	ACTIVE	PROD_OIL
DU-2831	42501311180000	TA	PROD_OIL
DU-2832	42501313060000	ACTIVE	INJ_WAG
DU-2833	42501313050000	ACTIVE	PROD_OIL
DU-2834	42501315520000	ACTIVE	INJ_WAG
DU-2835	42501316640000	ACTIVE	INJ_WAG
DU-2836	42501322910000	ACTIVE	PROD_OIL
DU-2837	42501322960000	ACTIVE	PROD_OIL
DU-2838	42501331400000	ACTIVE	PROD_OIL
DU-2839	42501338260000	ACTIVE	INJ_WAG
DU-2840	42501340500000	ACTIVE	PROD_OIL
DU-2841	42501340480000	ACTIVE	PROD_OIL
DU-2842	42501342830000	ACTIVE	PROD_OIL
DU-2843	42501343080000	ACTIVE	INJ_WAG
DU-2844	42501343070000	ACTIVE	PROD_OIL
DU-2845	42501343090000	ACTIVE	PROD_OIL
DU-2846	42501343060000	ACTIVE	PROD_OIL
DU-2847	42501343050000	ACTIVE	PROD_OIL
DU-2848	42501343100000	ACTIVE	PROD_OIL
DU-2849	42501343040000	ACTIVE	PROD_OIL
DU-2850	42501343030000	ACTIVE	PROD_OIL
DU-2851	42501343690000	ACTIVE	PROD_OIL
DU-2852	42501343710000	ACTIVE	PROD_OIL
DU-2853	42501343700000	ACTIVE	PROD_OIL
DU-2854	42501343770000	ACTIVE	INJ_WAG
DU-2855	42501343760000	ACTIVE	PROD_OIL
DU-2856	42501343740000	ACTIVE	PROD_OIL
DU-2857	42501343750000	ACTIVE	PROD_OIL
DU-2858	42501343820000	ACTIVE	PROD_OIL
DU-2859	42501345140000	ACTIVE	PROD_OIL
DU-2860	42501346350000	ACTIVE	PROD_OIL
DU-2861	42501347190000	ACTIVE	PROD_OIL
DU-2862	42501347290000	ACTIVE	PROD_OIL

DU-2863	42501347200000	ACTIVE	PROD_OIL
DU-2864	42501347280000	ACTIVE	PROD_OIL
DU-2865	42501350120000	ACTIVE	PROD_OIL
DU-2866	42501350130000	ACTIVE	PROD_OIL
DU-2867	42501350140000	ACTIVE	PROD_OIL
DU-2868	42501362440000	ACTIVE	INJ_WAG
DU-2869	42501362450000	ACTIVE	INJ_WAG
DU-2870	42501362460000	ACTIVE	INJ_WAG
DU-2871	42501362470000	ACTIVE	INJ_WAG
DU-2872	42501362530000	ACTIVE	INJ_WAG
DU-2901	42501028320000	ACTIVE	INJ_WAG
DU-2902	42501028360000	ACTIVE	INJ_WAG
DU-2903	42501017280000	ACTIVE	INJ_WAG
DU-2904	42501017300000	ACTIVE	INJ_WAG
DU-2905	42501028400000	ACTIVE	PROD_OIL
DU-2906	42501028380000	ACTIVE	PROD_OIL
DU-2907	42501017250000	ACTIVE	INJ_WAG
DU-2908	42501017310000	ACTIVE	PROD_OIL
DU-2909	42501017270000	ACTIVE	PROD_OIL
DU-2910	42501017290000	ACTIVE	INJ_H2O
DU-2911	42501028340000	ACTIVE	INJ_WAG
DU-2912	42501028300000	ACTIVE	INJ_WAG
DU-2913	42501017130000	ACTIVE	INJ_WAG
DU-2914	42501017230000	ACTIVE	INJ_WAG
DU-2915	42501012030000	ACTIVE	PROD_OIL
DU-2916	42501012050000	P & A	PROD_OIL
DU-2917	42501021900000	ACTIVE	PROD_OIL
DU-2918	42501021860000	ACTIVE	PROD_OIL
DU-2919	42501012010000	ACTIVE	PROD_OIL
DU-2920	42501021820000	P & A	INJ_WAG
DU-2921	42501012020000	ACTIVE	INJ_WAG
DU-2922	42501021910000	ACTIVE	PROD_OIL
DU-2923	42501012040000	ACTIVE	PROD_OIL
DU-2924	42501021840000	TA	PROD_OIL
DU-2925	42501021880000	P & A	PROD_OIL
DU-2926	42501307750000	ACTIVE	INJ_WAG
DU-2927	42501307740000	ACTIVE	PROD_OIL
DU-2928	42501308190000	ACTIVE	INJ_WAG
DU-2929	42501307770000	ACTIVE	INJ_WAG
DU-2930	42501307730000	ACTIVE	PROD_OIL
DU-2931	42501311290000	ACTIVE	INJ_WAG
DU-2932	42501311280000	TA	PROD_OIL
DU-2933	42501311370000	ACTIVE	INJ_H2O
DU-2934	42501315640000	P & A	PROD_OIL
DU-2935	42501317010000	ACTIVE	PROD_OIL
DU-2936	42501317020000	P & A	PROD_OIL
DU-2937	42501322970000	ACTIVE	PROD_OIL
DU-2938	42501322950000	TA	PROD_OIL
DU-2939	42501328770000	ACTIVE	PROD_OIL
DU-2940	42501333890000	ACTIVE	PROD_OIL
DU-2941	42501333900000	ACTIVE	PROD_OIL
DU-2946	42501335130000	ACTIVE	INJ_WAG
DU-2947	42501340530000	ACTIVE	PROD_OIL
DU-2948	42501340490000	ACTIVE	PROD_OIL

DU-2949	42501340460000	ACTIVE	PROD_OIL
DU-2950	42501340470000	ACTIVE	PROD_OIL
DU-2951	42501341470000	ACTIVE	PROD_OIL
DU-2952	42501347210000	ACTIVE	PROD_OIL
DU-2953	42501347270000	ACTIVE	PROD_OIL
DU-2954	42501347260000	ACTIVE	PROD_OIL
DU-2955	42501347250000	ACTIVE	PROD_OIL
DU-2956	42501347240000	ACTIVE	PROD_OIL
DU-2957	42501347230000	ACTIVE	PROD_OIL
DU-2958	42501347220000	ACTIVE	PROD_OIL
DU-2959	42501348750000	ACTIVE	PROD_OIL
DU-2960	42501350150000	ACTIVE	PROD_OIL
DU-2961	42501350160000	ACTIVE	PROD_OIL
DU-2962	42501350170000	ACTIVE	PROD_OIL
DU-2963	42501352360000	ACTIVE	PROD_OIL
DU-2964	42501354020000	ACTIVE	PROD_OIL
DU-2966	42501354030000	ACTIVE	PROD_OIL
DU-2967	42501362480000	ACTIVE	INJ_WAG
DU-2968	42501362510000	ACTIVE	INJ_WAG
DU-2969	42501362490000	ACTIVE	INJ_WAG
DU-2970	42501362520000	ACTIVE	INJ_WAG
DU-2971	42501362500000	ACTIVE	INJ_WAG
DU-3101	42501001100000	ACTIVE	INJ_H2O
DU-3102	42501001110000	ACTIVE	PROD_OIL
DU-3103	42501001120000	P & A	INJ_H2O
DU-3104	42501001000000	ACTIVE	INJ_H2O
DU-3105	42501001090000	ACTIVE	PROD_OIL
DU-3106	42501001080000	ACTIVE	PROD_OIL
DU-3107	42501001040000	P & A	INJ_WAG
DU-3108	42501001010000	ACTIVE	INJ_WAG
DU-3109	42501001050000	TA	INJ_H2O
DU-3110	42501001070000	ACTIVE	INJ_WAG
DU-3111	42501001030000	ACTIVE	INJ_WAG
DU-3112	42501000990000	ACTIVE	INJ_WAG
DU-3113	42501001060000	TA	PROD_OIL
DU-3114	42501026740000	ACTIVE	INJ_WAG
DU-3115	42501001020000	ACTIVE	INJ_WAG
DU-3116	42501000980000	ACTIVE	INJ_WAG
DU-3117	42501307620000	ACTIVE	PROD_OIL
DU-3118	42501309270000	TA	PROD_OIL
DU-3119	42501309290000	ACTIVE	INJ_WAG
DU-3120	42501309280000	TA	PROD_OIL
DU-3121	42501309300000	TA	PROD_OIL
DU-3122	42501309050000	ACTIVE	PROD_OIL
DU-3123	42501309310000	ACTIVE	PROD_OIL
DU-3124	42501309320000	ACTIVE	PROD_OIL
DU-3126	42501309700000	ACTIVE	PROD_OIL
DU-3127	42501309770000	ACTIVE	PROD_OIL
DU-3128	42501315660000	P & A	PROD_OIL
DU-3129	42501315650000	ACTIVE	PROD_OIL
DU-3130	42501316840000	TA	PROD_OIL
DU-3131	42501316890000	ACTIVE	INJ_WAG
DU-3132	42501316950000	ACTIVE	PROD_OIL
DU-3133	42501319070000	ACTIVE	PROD_OIL

DU-3134	42501319130000	TA	PROD_OIL
DU-3135	42501328790000	TA	PROD_OIL
DU-3201	42501001230000	ACTIVE	INJ_WAG
DU-3202	42501001270000	ACTIVE	INJ_WAG
DU-3203	42501001290000	ACTIVE	INJ_WAG
DU-3204	42501001310000	ACTIVE	INJ_WAG
DU-3205	42501001250000	ACTIVE	INJ_WAG
DU-3206	42501001370000	ACTIVE	INJ_WAG
DU-3207	42501001450000	ACTIVE	INJ_WAG
DU-3208	42501001470000	ACTIVE	INJ_WAG
DU-3209	42501001330000	ACTIVE	INJ_WAG
DU-3210	42501001350000	ACTIVE	INJ_WAG
DU-3211	42501001430000	ACTIVE	INJ_WAG
DU-3212	42501001490000	ACTIVE	INJ_WAG
DU-3213	42501001210000	ACTIVE	INJ_WAG
DU-3214	42501001390000	ACTIVE	INJ_WAG
DU-3215	42501001410000	ACTIVE	INJ_WAG
DU-3216	42501026050000	ACTIVE	PROD_OIL
DU-3217	42501307640000	ACTIVE	PROD_OIL
DU-3218	42501309680000	ACTIVE	PROD_OIL
DU-3219	42501309690000	ACTIVE	PROD_OIL
DU-3220	42501309330000	ACTIVE	PROD_OIL
DU-3221	42501309650000	P & A	INJ_H2O
DU-3222	42501309760000	ACTIVE	PROD_OIL
DU-3223	42501309340000	ACTIVE	PROD_OIL
DU-3224	42501309660000	ACTIVE	PROD_OIL
DU-3225	42501309350000	ACTIVE	PROD_OIL
DU-3226	42501309670000	ACTIVE	PROD_OIL
DU-3227	42501309800000	ACTIVE	PROD_OIL
DU-3228	42501309360000	ACTIVE	PROD_OIL
DU-3229	42501309780000	ACTIVE	PROD_OIL
DU-3230	42501309750000	ACTIVE	PROD_OIL
DU-3231	42501309370000	ACTIVE	PROD_OIL
DU-3232	42501309720000	ACTIVE	PROD_OIL
DU-3233	42501316820000	ACTIVE	INJ_WAG
DU-3234	42501316870000	P & A	PROD_OIL
DU-3235	42501347390000	P & A	PROD_OIL
DU-3236	42501348090000	ACTIVE	PROD_OIL
DU-3237	42501358350000	ACTIVE	PROD_OIL
DU-3238	42501358360000	ACTIVE	PROD_OIL
DU-3239	42501358370000	ACTIVE	PROD_OIL
DU-3240	42501358380000	ACTIVE	PROD_OIL
DU-3241	42501358390000	ACTIVE	PROD_OIL
DU-3242	42501358400000	ACTIVE	PROD_OIL
DU-3243	42501358500000	ACTIVE	PROD_OIL
DU-3244	42501358430000	ACTIVE	PROD_OIL
DU-3245	42501358440000	ACTIVE	PROD_OIL
DU-3246	42501358420000	ACTIVE	PROD_OIL
DU-3247	42501358410000	ACTIVE	PROD_OIL
DU-3248	42501358460000	ACTIVE	PROD_OIL
DU-3249	42501359820000	ACTIVE	PROD_OIL
DU-3250	42501359840000	ACTIVE	PROD_OIL
DU-3251	42501359850000	ACTIVE	PROD_OIL
DU-3301	42501001260000	ACTIVE	INJ_WAG

DU-3302	42501001280000	ACTIVE	INJ_WAG
DU-3303	42501001360000	ACTIVE	INJ_WAG
DU-3304	42501001340000	ACTIVE	INJ_WAG
DU-3305	42501001480000	ACTIVE	INJ_WAG
DU-3306	42501001460000	ACTIVE	INJ_WAG
DU-3307	42501001380000	P & A	INJ_WAG
DU-3308	42501001320000	ACTIVE	INJ_WAG
DU-3309	42501001500000	ACTIVE	INJ_WAG
DU-3310	42501001440000	ACTIVE	INJ_WAG
DU-3311	42501001400000	P & A	PROD_OIL
DU-3312	42501001300000	P & A	INJ_H2O
DU-3313	42501026770000	P & A	INJ_WAG
DU-3314	42501001420000	ACTIVE	INJ_WAG
DU-3315	42501001240000	ACTIVE	INJ_WAG
DU-3316	42501001220000	ACTIVE	INJ_WAG
DU-3317	42501309500000	ACTIVE	PROD_OIL
DU-3318	42501309490000	ACTIVE	PROD_OIL
DU-3319	42501309480000	ACTIVE	PROD_OIL
DU-3320	42501309460000	ACTIVE	PROD_OIL
DU-3321	42501309470000	ACTIVE	PROD_OIL
DU-3322	42501309450000	ACTIVE	PROD_OIL
DU-3323	42501309220000	ACTIVE	PROD_OIL
DU-3324	42501309440000	ACTIVE	PROD_OIL
DU-3325	42501309430000	ACTIVE	PROD_OIL
DU-3326	42501309420000	P & A	INJ_H2O
DU-3327	42501309230000	ACTIVE	PROD_OIL
DU-3328	42501309410000	ACTIVE	PROD_OIL
DU-3329	42501309400000	ACTIVE	PROD_OIL
DU-3330	42501309390000	ACTIVE	PROD_OIL
DU-3331	42501309380000	ACTIVE	PROD_OIL
DU-3332	42501316860000	ACTIVE	PROD_OIL
DU-3333	42501316850000	ACTIVE	PROD_OIL
DU-3334	42501334560000	ACTIVE	PROD_OIL
DU-3335	42501334550000	ACTIVE	PROD_OIL
DU-3336	42501334540000	ACTIVE	PROD_OIL
DU-3337	42501334600000	ACTIVE	INJ_WAG
DU-3338	42501338130000	ACTIVE	INJ_WAG
DU-3340	42501347150000	ACTIVE	PROD_OIL
DU-3341	42501347140000	ACTIVE	PROD_OIL
DU-3342	42501347400000	ACTIVE	PROD_OIL
DU-3344	42501350740000	ACTIVE	INJ_WAG
DU-3345	42501352050000	ACTIVE	PROD_OIL
DU-3346	42501352060000	ACTIVE	PROD_OIL
DU-3347	42501353850000	ACTIVE	PROD_GAS
DU-3348	42501358450000	ACTIVE	PROD_OIL
DU-3349	42501358470000	ACTIVE	PROD_OIL
DU-3350	42501358480000	ACTIVE	PROD_OIL
DU-3351	42501358490000	ACTIVE	PROD_OIL
DU-3352	42501359530000	ACTIVE	PROD_OIL
DU-3353	42501359500000	ACTIVE	PROD_OIL
DU-3354	42501359510000	ACTIVE	PROD_OIL
DU-3355	42501359540000	ACTIVE	PROD_OIL
DU-3356	42501359550000	ACTIVE	PROD_OIL
DU-3357	42501359560000	ACTIVE	PROD_OIL

DU-3358	42501359680000	ACTIVE	PROD_OIL
DU-3359	42501359690000	ACTIVE	PROD_OIL
DU-3360	42501359750000	ACTIVE	PROD_OIL
DU-3361	42501359570000	ACTIVE	INJ_WAG
DU-3501	42501001660000	ACTIVE	PROD_OIL
DU-3502	42501001670000	ACTIVE	INJ_WAG
DU-3503	42501001680000	ACTIVE	INJ_WAG
DU-3504	42501001650000	P & A	INJ_H2O
DU-3505	42501000400000	ACTIVE	INJ_WAG
DU-3506	42501000430000	ACTIVE	PROD_OIL
DU-3507	42501000390000	ACTIVE	PROD_OIL
DU-3508	42501000410000	ACTIVE	PROD_OIL
DU-3509	42501000380000	P & A	PROD_OIL
DU-3510	42501000350000	ACTIVE	INJ_WAG
DU-3511	42501000440000	ACTIVE	INJ_WAG
DU-3512	42501000370000	ACTIVE	INJ_WAG
DU-3513	42501000420000	ACTIVE	INJ_WAG
DU-3514	42501000360000	P & A	PROD_OIL
DU-3515	42501030110000	ACTIVE	INJ_WAG
DU-3516	42501018490000	ACTIVE	PROD_OIL
DU-3517	42501029930000	ACTIVE	PROD_OIL
DU-3518	42501018500000	P & A	PROD_OIL
DU-3519	42501029940000	ACTIVE	PROD_OIL
DU-3520	42501018510000	P & A	INJ_H2O
DU-3521	42501029950000	P & A	INJ_H2O
DU-3522	42501022410000	ACTIVE	PROD_OIL
DU-3523	42501022460000	ACTIVE	INJ_WAG
DU-3524	42501022430000	ACTIVE	INJ_WAG
DU-3525	42501022470000	ACTIVE	INJ_WAG
DU-3526	42501022450000	P & A	PROD_OIL
DU-3527	42501022500000	ACTIVE	PROD_OIL
DU-3528	42501022420000	P & A	PROD_OIL
DU-3529	42501022490000	ACTIVE	PROD_OIL
DU-3530	42501022440000	ACTIVE	PROD_OIL
DU-3531	42501022480000	P & A	INJ_H2O
DU-3532	42501314430000	ACTIVE	PROD_OIL
DU-3533	42501315840000	ACTIVE	INJ_WAG
DU-3534	42501315890000	ACTIVE	PROD_OIL
DU-3535	42501316830000	ACTIVE	PROD_OIL
DU-3536	42501316900000	P & A	PROD_OIL
DU-3537	42501321020000	ACTIVE	INJ_WAG
DU-3538	42501326290000	ACTIVE	PROD_OIL
DU-3539	42501327780000	ACTIVE	PROD_OIL
DU-3540	42501329840000	ACTIVE	PROD_OIL
DU-3541	42501332190000	ACTIVE	INJ_WAG
DU-3542	42501333910000	ACTIVE	PROD_OIL
DU-3543	42501334530000	ACTIVE	PROD_OIL
DU-3544	42501334150000	ACTIVE	INJ_WAG
DU-3545	42501334120000	ACTIVE	PROD_OIL
DU-3546	42501343670000	ACTIVE	PROD_OIL
DU-3547	42501344710000	ACTIVE	PROD_OIL
DU-3548	42501344770000	ACTIVE	PROD_OIL
DU-3549	42501344760000	ACTIVE	PROD_OIL
DU-3550	42501344750000	ACTIVE	PROD_OIL

DU-3551	42501344740000	ACTIVE	PROD_OIL
DU-3552	42501344730000	ACTIVE	PROD_OIL
DU-3553	42501344720000	ACTIVE	PROD_OIL
DU-3554	42501345550000	ACTIVE	PROD_OIL
DU-3555	42501345840000	ACTIVE	PROD_OIL
DU-3556	42501345540000	ACTIVE	PROD_OIL
DU-3557	42501345560000	ACTIVE	PROD_OIL
DU-3558	42501346440000	ACTIVE	PROD_OIL
DU-3559	42501346450000	ACTIVE	PROD_OIL
DU-3560	42501346400000	ACTIVE	PROD_OIL
DU-3561	42501346550000	ACTIVE	INJ_WAG
DU-3562	42501346490000	ACTIVE	PROD_OIL
DU-3563	42501349480000	ACTIVE	INJ_WAG
DU-3564	42501349490000	ACTIVE	INJ_WAG
DU-3565	42501353770000	ACTIVE	PROD_OIL
DU-3566	42501359740000	ACTIVE	PROD_OIL
DU-3601	42501013790000	ACTIVE	INJ_WAG
DU-3602	42501014060000	ACTIVE	INJ_WAG
DU-3603	42501014070000	ACTIVE	INJ_WAG
DU-3604	42501014050000	ACTIVE	INJ_WAG
DU-3605	42501014100000	P & A	PROD_OIL
DU-3606	42501013840000	P & A	PROD_OIL
DU-3607	42501013990000	ACTIVE	PROD_OIL
DU-3608	42501013980000	ACTIVE	INJ_WAG
DU-3609	42501014120000	ACTIVE	INJ_WAG
DU-3610	42501014130000	ACTIVE	INJ_WAG
DU-3611	42501014080000	P & A	INJ_WAG
DU-3612	42501013880000	P & A	INJ_H2O
DU-3613	42501013820000	ACTIVE	PROD_OIL
DU-3614	42501013810000	ACTIVE	PROD_OIL
DU-3615	42501014110000	ACTIVE	INJ_WAG
DU-3616	42501014140000	ACTIVE	INJ_WAG
DU-3617	42501014090000	P & A	PROD_OIL
DU-3618	42501013900000	ACTIVE	INJ_WAG
DU-3619	42501013800000	ACTIVE	INJ_WAG
DU-3620	42501013930000	ACTIVE	PROD_OIL
DU-3621	42501014150000	ACTIVE	PROD_OIL
DU-3622	42501013860000	ACTIVE	PROD_OIL
DU-3623	42501304390000	ACTIVE	INJ_WAG
DU-3624	42501304090000	P & A	PROD_OIL
DU-3625	42501304100000	ACTIVE	PROD_OIL
DU-3626	42501304040000	ACTIVE	INJ_WAG
DU-3627	42501304060000	ACTIVE	PROD_OIL
DU-3628	42501304050000	ACTIVE	PROD_OIL
DU-3629	42501304130000	ACTIVE	PROD_OIL
DU-3630	42501308390000	ACTIVE	PROD_OIL
DU-3631	42501311240000	P & A	PROD_OIL
DU-3632	42501314620000	ACTIVE	INJ_WAG
DU-3633	42501315730000	TA	INJ_GAS
DU-3634	42501315740000	ACTIVE	PROD_OIL
DU-3635	42501315760000	ACTIVE	PROD_OIL
DU-3636	42501316800000	TA	PROD_OIL
DU-3637	42501316810000	ACTIVE	PROD_OIL
DU-3638	42501325930000	ACTIVE	PROD_OIL

DU-3639	42501327620000	ACTIVE	PROD_OIL
DU-3640	42501328540000	ACTIVE	PROD_OIL
DU-3641	42501328160000	TA	PROD_OIL
DU-3642	42501329990000	ACTIVE	INJ_WAG
DU-3644	42501334130000	ACTIVE	INJ_WAG
DU-3645	42501334140000	ACTIVE	PROD_OIL
DU-3646	42501343660000	ACTIVE	PROD_OIL
DU-3647	42501343650000	ACTIVE	PROD_OIL
DU-3648	42501345070000	ACTIVE	PROD_OIL
DU-3649	42501345060000	ACTIVE	PROD_OIL
DU-3650	42501345050000	ACTIVE	PROD_OIL
DU-3651	42501345570000	ACTIVE	PROD_OIL
DU-3652	42501345040000	ACTIVE	PROD_OIL
DU-3653	42501345030000	ACTIVE	PROD_OIL
DU-3654	42501345240000	ACTIVE	PROD_OIL
DU-3655	42501345230000	ACTIVE	PROD_OIL
DU-3656	42501345220000	ACTIVE	PROD_OIL
DU-3657	42501345210000	ACTIVE	PROD_OIL
DU-3658	42501345420000	ACTIVE	INJ_WAG
DU-3659	42501347180000	ACTIVE	PROD_OIL
DU-3660	42501349470000	ACTIVE	PROD_OIL
DU-3661	42501353880000	ACTIVE	PROD_OIL
DU-3666	42501354160000	ACTIVE	PROD_OIL
DU-3701	42501024260000	P & A	INJ_H2O
DU-3702	42501023480000	ACTIVE	INJ_WAG
DU-3703	42501024000000	P & A	PROD_OIL
DU-3704	42501024850000	P & A	PROD_OIL
DU-3705	42501024210000	ACTIVE	INJ_WAG
DU-3706	42501023850000	ACTIVE	INJ_WAG
DU-3707	42501023950000	ACTIVE	INJ_WAG
DU-3708	42501024100000	ACTIVE	INJ_WAG
DU-3709	42501024310000	ACTIVE	PROD_OIL
DU-3710	42501024050000	P & A	INJ_H2O
DU-3711	42501023800000	TA	PROD_OIL
DU-3712	42501023750000	ACTIVE	PROD_OIL
DU-3713	42501024400000	P & A	INJ_WAG
DU-3714	42501024160000	ACTIVE	INJ_WAG
DU-3715	42501023580000	ACTIVE	PROD_OIL
DU-3716	42501023640000	ACTIVE	PROD_OIL
DU-3717	42501023700000	ACTIVE	PROD_OIL
DU-3718	42501023900000	ACTIVE	PROD_OIL
DU-3719	42501304190000	ACTIVE	INJ_WAG
DU-3720	42501024760000	ACTIVE	INJ_WAG
DU-3721	42501304180000	ACTIVE	INJ_WAG
DU-3722	42501303990000	ACTIVE	PROD_OIL
DU-3723	42501304170000	ACTIVE	PROD_OIL
DU-3724	42501304140000	ACTIVE	PROD_OIL
DU-3725	42501304150000	ACTIVE	INJ_WAG
DU-3726	42501024800000	ACTIVE	PROD_OIL
DU-3727	42501304160000	ACTIVE	PROD_OIL
DU-3728	42501304070000	ACTIVE	INJ_WAG
DU-3729	42501304080000	ACTIVE	INJ_WAG
DU-3730	42501308100000	P & A	INJ_WAG
DU-3731	42501312020000	ACTIVE	PROD_OIL

DU-3733	42501312760000	P & A	INJ_H2O
DU-3735	42501312790000	P & A	PROD_OIL
DU-3736	42501314530000	TA	PROD_OIL
DU-3737	42501315530000	P & A	PROD_OIL
DU-3738	42501315540000	ACTIVE	INJ_WAG
DU-3739	42501316590000	P & A	PROD_OIL
DU-3740	42501316750000	P & A	PROD_OIL
DU-3741	42501316780000	P & A	PROD_OIL
DU-3742	42501316770000	P & A	PROD_OIL
DU-3743	42501316790000	P & A	PROD_OIL
DU-3746	42501320510000	ACTIVE	INJ_WAG
DU-3747	42501320370000	ACTIVE	PROD_OIL
DU-3748	42501332830000	ACTIVE	PROD_OIL
DU-3749	42501337960000	ACTIVE	PROD_OIL
DU-3750	42501342290000	ACTIVE	PROD_OIL
DU-3751	42501342230000	ACTIVE	PROD_OIL
DU-3752	42501342240000	ACTIVE	PROD_OIL
DU-3753	42501342250000	ACTIVE	PROD_OIL
DU-3754	42501342260000	ACTIVE	PROD_OIL
DU-3755	42501342300000	ACTIVE	PROD_OIL
DU-3756	42501342310000	ACTIVE	PROD_OIL
DU-3757	42501343020000	ACTIVE	INJ_WAG
DU-3758	42501343010000	ACTIVE	PROD_OIL
DU-3759	42501343230000	ACTIVE	PROD_OIL
DU-3760	42501343000000	ACTIVE	PROD_OIL
DU-3761	42501343110000	ACTIVE	PROD_OIL
DU-3762	42501343240000	ACTIVE	PROD_OIL
DU-3763	42501342990000	ACTIVE	PROD_OIL
DU-3764	42501342980000	ACTIVE	INJ_WAG
DU-3765	42501343120000	ACTIVE	PROD_OIL
DU-3766	42501343130000	ACTIVE	PROD_OIL
DU-3767	42501343210000	ACTIVE	PROD_OIL
DU-3768	42501345660000	ACTIVE	PROD_OIL
DU-3769	42501352130000	ACTIVE	INJ_WAG
DU-3770	42501354050000	ACTIVE	INJ_WAG
DU-3771	42501354230000	ACTIVE	INJ_WAG
DU-3801	42501022170000	ACTIVE	INJ_WAG
DU-3802	42501022220000	ACTIVE	INJ_WAG
DU-3803	42501028310000	ACTIVE	INJ_WAG
DU-3804	42501028350000	ACTIVE	INJ_WAG
DU-3805	42501022230000	ACTIVE	PROD_OIL
DU-3806	42501028370000	P & A	PROD_OIL
DU-3807	42501028390000	P & A	INJ_H2O
DU-3808	42501022190000	ACTIVE	INJ_WAG
DU-3809	42501022240000	ACTIVE	INJ_WAG
DU-3810	42501022210000	P & A	PROD_OIL
DU-3811	42501028290000	ACTIVE	INJ_WAG
DU-3812	42501028330000	ACTIVE	INJ_WAG
DU-3813	42501017180000	P & A	PROD_OIL
DU-3814	42501017200000	ACTIVE	PROD_OIL
DU-3815	42501006020000	ACTIVE	PROD_OIL
DU-3816	42501006080000	ACTIVE	PROD_OIL
DU-3817	42501017160000	ACTIVE	INJ_WAG
DU-3818	42501017240000	ACTIVE	INJ_WAG

DU-3819	42501006060000	ACTIVE	INJ_WAG
DU-3820	42501006120000	ACTIVE	INJ_WAG
DU-3821	42501017140000	ACTIVE	PROD_OIL
DU-3822	42501017220000	ACTIVE	PROD_OIL
DU-3823	42501006040000	ACTIVE	PROD_OIL
DU-3824	42501006100000	ACTIVE	PROD_OIL
DU-3825	42501302380000	ACTIVE	PROD_OIL
DU-3826	42501302370000	ACTIVE	PROD_OIL
DU-3827	42501304620000	ACTIVE	INJ_WAG
DU-3828	42501304450000	P & A	PROD_OIL
DU-3829	42501304440000	P & A	PROD_OIL
DU-3830	42501304430000	ACTIVE	PROD_OIL
DU-3831	42501304550000	ACTIVE	INJ_WAG
DU-3832	42501304560000	P & A	PROD_OIL
DU-3833	42501304610000	P & A	PROD_OIL
DU-3834	42501304570000	P & A	INJ_WAG
DU-3835	42501304580000	ACTIVE	INJ_WAG
DU-3836	42501304590000	ACTIVE	PROD_OIL
DU-3837	42501304600000	P & A	PROD_OIL
DU-3838	42501308680000	ACTIVE	INJ_WAG
DU-3839	42501316960000	ACTIVE	PROD_OIL
DU-3840	42501316980000	TA	PROD_OIL
DU-3841	42501317000000	TA	PROD_OIL
DU-3842	42501338970000	ACTIVE	PROD_OIL
DU-3843	42501340430000	ACTIVE	PROD_OIL
DU-3844	42501341460000	ACTIVE	PROD_OIL
DU-3845	42501341560000	ACTIVE	INJ_WAG
DU-3847	42501341620000	ACTIVE	PROD_OIL
DU-3848	42501341480000	ACTIVE	PROD_OIL
DU-3849	42501341490000	ACTIVE	PROD_OIL
DU-3850	42501341500000	ACTIVE	PROD_OIL
DU-3851	42501341510000	ACTIVE	PROD_OIL
DU-3852	42501341520000	ACTIVE	PROD_OIL
DU-3853	42501341610000	ACTIVE	PROD_OIL
DU-3854	42501341600000	ACTIVE	PROD_OIL
DU-3855	42501341530000	ACTIVE	PROD_OIL
DU-3856	42501341540000	ACTIVE	PROD_OIL
DU-3857	42501341550000	ACTIVE	PROD_OIL
DU-3858	42501341570000	ACTIVE	PROD_OIL
DU-3859	42501342220000	ACTIVE	PROD_OIL
DU-3860	42501342320000	ACTIVE	PROD_OIL
DU-3861	42501342210000	ACTIVE	PROD_OIL
DU-3862	42501342330000	ACTIVE	PROD_OIL
DU-3863	42501342340000	ACTIVE	PROD_OIL
DU-3864	42501342350000	ACTIVE	PROD_OIL
DU-3865	42501342360000	ACTIVE	PROD_OIL
DU-3866	42501342370000	ACTIVE	PROD_OIL
DU-3867	42501343540000	ACTIVE	PROD_OIL
DU-3868	42501348430000	ACTIVE	INJ_WAG
DU-3869	42501348710000	ACTIVE	PROD_OIL
DU-3870	42501353050000	ACTIVE	PROD_OIL
DU-3871	42501354100000	ACTIVE	INJ_WAG
DU-3872	42501354110000	ACTIVE	INJ_WAG
DU-3873	42501354060000	ACTIVE	INJ_WAG

DU-3874	42501354070000	ACTIVE	INJ_WAG
DU-3875	42501354080000	ACTIVE	INJ_WAG
DU-3876	42501354710000	ACTIVE	INJ_WAG
DU-3877	42501354740000	ACTIVE	INJ_WAG
DU-3878	42501354750000	ACTIVE	INJ_WAG
DU-3879	42501354760000	ACTIVE	INJ_WAG
DU-3880	42501354770000	ACTIVE	INJ_WAG
DU-3901	42501006090000	ACTIVE	INJ_WAG
DU-3902	42501006030000	ACTIVE	INJ_WAG
DU-3903	42501017170000	TA	INJ_H2O
DU-3904	42501017330000	ACTIVE	INJ_H2O
DU-3905	42501006130000	ACTIVE	PROD_OIL
DU-3906	42501006110000	ACTIVE	PROD_OIL
DU-3907	42501017150000	ACTIVE	PROD_OIL
DU-3908	42501017190000	ACTIVE	INJ_WAG
DU-3909	42501006070000	ACTIVE	INJ_WAG
DU-3910	42501006050000	ACTIVE	PROD_OIL
DU-3911	42501017210000	ACTIVE	PROD_OIL
DU-3912	42501017320000	ACTIVE	INJ_H2O
DU-3913	42501025380000	ACTIVE	PROD_OIL
DU-3914	42501025390000	TA	PROD_OIL
DU-3915	42501021830000	P & A	INJ_WAG
DU-3916	42501021870000	ACTIVE	INJ_H2O
DU-3917	42501025420000	P & A	PROD_OIL
DU-3918	42501025400000	ACTIVE	PROD_OIL
DU-3919	42501025410000	P & A	PROD_OIL
DU-3920	42501021850000	P & A	INJ_H2O
DU-3921	42501021890000	P & A	INJ_H2O
DU-3922	42501308710000	ACTIVE	INJ_WAG
DU-3923	42501308550000	ACTIVE	INJ_WAG
DU-3924	42501308560000	ACTIVE	PROD_OIL
DU-3925	42501308570000	ACTIVE	INJ_WAG
DU-3926	42501308580000	ACTIVE	PROD_OIL
DU-3927	42501308590000	ACTIVE	INJ_WAG
DU-3928	42501308600000	ACTIVE	PROD_OIL
DU-3929	42501311200000	ACTIVE	PROD_OIL
DU-3930	42501317030000	ACTIVE	PROD_OIL
DU-3932	42501330620000	ACTIVE	PROD_OIL
DU-3933	42501332900000	TA	PROD_OIL
DU-3934	42501332910000	ACTIVE	PROD_OIL
DU-3935	42501332920000	ACTIVE	INJ_WAG
DU-3936	42501332880000	ACTIVE	INJ_WAG
DU-3937	42501102150000	TA	INJ_WAG
DU-3938	42501100250000	TA	PROD_OIL
DU-3939	42501347020000	ACTIVE	PROD_OIL
DU-3940	42501347030000	ACTIVE	PROD_OIL
DU-3941	42501347000000	ACTIVE	PROD_OIL
DU-3942	42501347040000	ACTIVE	PROD_OIL
DU-3943	42501346990000	ACTIVE	PROD_OIL
DU-3944	42501347010000	ACTIVE	PROD_OIL
DU-3945	42501347310000	ACTIVE	INJ_WAG
DU-3946	42501352370000	ACTIVE	PROD_OIL
DU-3947	42501352380000	ACTIVE	PROD_OIL
DU-3948	42501352390000	ACTIVE	PROD_OIL

DU-3949	42501352400000	TA	PROD_OIL
DU-3950	42501352410000	ACTIVE	PROD_OIL
DU-3951	42501352420000	ACTIVE	PROD_OIL
DU-3955	42501354200000	ACTIVE	PROD_OIL
DU-3956	42501354780000	ACTIVE	INJ_WAG
DU-3957	42501354790000	ACTIVE	INJ_WAG
DU-3958	42501354800000	ACTIVE	INJ_WAG
DU-4001	42501017760000	P & A	INJ_H2O
DU-4002	42501021470000	TA	PROD_OIL
DU-4003	42501020180000	P & A	INJ_H2O
DU-4004	42501021380000	P & A	INJ_H2O
DU-4005	42501021390000	P & A	PROD_OIL
DU-4006	42501017770000	TA	INJ_H2O
DU-4007	42501331380000	TA	PROD_OIL
DU-4101	42501010410000	ACTIVE	PROD_OIL
DU-4102	42501000560000	ACTIVE	INJ_WAG
DU-4103	42501000530000	P & A	INJ_H2O
DU-4104	42501010400000	P & A	INJ_H2O
DU-4105	42501010440000	P & A	PROD_OIL
DU-4106	42501010420000	ACTIVE	INJ_WAG
DU-4107	42501000550000	P & A	INJ_H2O
DU-4108	42501000540000	ACTIVE	INJ_WAG
DU-4109	42501010450000	P & A	INJ_H2O
DU-4110	42501010430000	P & A	INJ_H2O
DU-4111	42501028280000	ACTIVE	INJ_WAG
DU-4112	42501028250000	ACTIVE	INJ_WAG
DU-4113	42501028260000	P & A	INJ_H2O
DU-4114	42501028270000	ACTIVE	INJ_H2O
DU-4115	42501319110000	ACTIVE	PROD_OIL
DU-4116	42501309730000	ACTIVE	PROD_OIL
DU-4117	42501314570000	ACTIVE	PROD_OIL
DU-4118	42501314440000	ACTIVE	PROD_OIL
DU-4119	42501315550000	ACTIVE	PROD_OIL
DU-4120	42501315580000	ACTIVE	INJ_WAG
DU-4121	42501319840000	P & A	PROD_OIL
DU-4122	42501319090000	ACTIVE	PROD_OIL
DU-4123	42501319060000	TA	PROD_OIL
DU-4124	42501327490000	ACTIVE	INJ_WAG
DU-4125	42501329250000	P & A	INJ_H2O
DU-4126	42501330670000	ACTIVE	PROD_OIL
DU-4127	42501330630000	ACTIVE	PROD_OIL
DU-4128	42501331370000	ACTIVE	PROD_OIL
DU-4129	42501331670000	TA	INJ_H2O
DU-4130	42501332070000	ACTIVE	PROD_OIL
DU-4131	42501333590000	ACTIVE	PROD_OIL
DU-4132	42501336450000	ACTIVE	INJ_WAG
DU-4133	42501348720000	ACTIVE	INJ_WAG
DU-4134GC	42501353860000	SHUT-IN	PROD_GAS
DU-4135	42501354360000	ACTIVE	PROD_OIL
DU-4136	42501355520000	SHUT-IN	PROD_GAS
DU-4137	42501362000000	ACTIVE	PROD_OIL
DU-4138	42501362550000	ACTIVE	PROD_OIL
DU-4139	42501362540000	ACTIVE	PROD_OIL
DU-4201	42501005920000	ACTIVE	INJ_WAG

DU-4202	42501005980000	P & A	PROD_OIL
DU-4203	42501016390000	ACTIVE	INJ_WAG
DU-4204	42501011070000	ACTIVE	INJ_WAG
DU-4205	42501005940000	ACTIVE	INJ_WAG
DU-4206	42501005970000	ACTIVE	INJ_WAG
DU-4207	42501005950000	ACTIVE	INJ_WAG
DU-4208	42501005930000	P & A	INJ_H2O
DU-4209	42501005960000	ACTIVE	INJ_WAG
DU-4210	42501011040000	P & A	INJ_H2O
DU-4211	42501006910000	P & A	INJ_H2O
DU-4212	42501006900000	P & A	PROD_OIL
DU-4213	42501015640000	P & A	PROD_OIL
DU-4214	42501011050000	ACTIVE	INJ_H2O
DU-4215	42501006920000	P & A	PROD_OIL
DU-4216	42501006930000	ACTIVE	INJ_H2O
DU-4217	42501309860000	ACTIVE	PROD_OIL
DU-4218	42501309820000	ACTIVE	PROD_OIL
DU-4219	42501309850000	ACTIVE	PROD_OIL
DU-4220	42501309830000	ACTIVE	PROD_OIL
DU-4221	42501309940000	ACTIVE	PROD_OIL
DU-4222	42501309970000	INACTIVE	PROD_OIL
DU-4223	42501309890000	ACTIVE	PROD_OIL
DU-4224	42501314460000	ACTIVE	INJ_WAG
DU-4225	42501314470000	ACTIVE	PROD_OIL
DU-4226	42501314480000	P & A	PROD_OIL
DU-4227	42501314510000	ACTIVE	INJ_WAG
DU-4228	42501315590000	ACTIVE	INJ_WAG
DU-4229	42501315560000	ACTIVE	PROD_OIL
DU-4230	42501315570000	ACTIVE	PROD_OIL
DU-4231	42501316940000	ACTIVE	PROD_OIL
DU-4232	42501316880000	ACTIVE	PROD_OIL
DU-4233	42501319080000	ACTIVE	PROD_OIL
DU-4234	42501319030000	ACTIVE	PROD_OIL
DU-4235	42501319390000	ACTIVE	PROD_GAS
DU-4236	42501319350000	TA	PROD_GAS
DU-4237	42501325940000	ACTIVE	PROD_OIL
DU-4238	42501325980000	ACTIVE	PROD_OIL
DU-4239	42501328560000	TA	PROD_OIL
DU-4240	42501331360000	ACTIVE	PROD_OIL
DU-4241	42501332080000	ACTIVE	PROD_OIL
DU-4242	42501333920000	ACTIVE	INJ_WAG
DU-4243	42501333630000	ACTIVE	PROD_OIL
DU-4244	42501333640000	ACTIVE	PROD_OIL
DU-4245	42501335930000	ACTIVE	INJ_WAG
DU-4246	42501346900000	ACTIVE	PROD_OIL
DU-4247	42501349650000	ACTIVE	PROD_OIL
DU-4250	42501353580000	ACTIVE	INJ_WAG
DU-4251	42501353590000	ACTIVE	INJ_WAG
DU-4252	42501353600000	ACTIVE	INJ_WAG
DU-4253	42501353710000	ACTIVE	INJ_WAG
DU-4254	42501354720000	ACTIVE	PROD_GAS
DU-4255	42501354730000	ACTIVE	PROD_GAS
DU-4257	42501360000000	ACTIVE	PROD_OIL
DU-4258	42501362010000	ACTIVE	PROD_OIL

DU-4259	42501361990000	ACTIVE	PROD_OIL
DU-4260	42501362050000	ACTIVE	PROD_OIL
DU-4301	42501006170000	ACTIVE	INJ_WAG
DU-4302	42501006310000	ACTIVE	INJ_WAG
DU-4303	42501006250000	ACTIVE	INJ_WAG
DU-4304	42501006210000	ACTIVE	INJ_WAG
DU-4305	42501006230000	P & A	PROD_OIL
DU-4306W	42501006290000	ACTIVE	INJ_WAG
DU-4307	42501006270000	ACTIVE	INJ_WAG
DU-4308	42501006190000	ACTIVE	INJ_WAG
DU-4309	42501006200000	ACTIVE	INJ_WAG
DU-4310	42501006280000	ACTIVE	INJ_WAG
DU-4311	42501006260000	ACTIVE	INJ_WAG
DU-4312	42501006180000	P & A	INJ_H2O
DU-4313	42501006220000	TA	PROD_OIL
DU-4314	42501006330000	P & A	PROD_OIL
DU-4315	42501006300000	ACTIVE	INJ_WAG
DU-4316	42501006240000	ACTIVE	INJ_WAG
DU-4317	42501307630000	ACTIVE	PROD_OIL
DU-4318	42501310030000	ACTIVE	PROD_OIL
DU-4319	42501309580000	ACTIVE	PROD_OIL
DU-4320	42501309240000	ACTIVE	PROD_OIL
DU-4321	42501309590000	ACTIVE	PROD_OIL
DU-4322	42501309600000	P & A	INJ_H2O
DU-4323	42501309250000	ACTIVE	PROD_OIL
DU-4324	42501309570000	ACTIVE	PROD_OIL
DU-4326	42501309960000	ACTIVE	PROD_OIL
DU-4327	42501309170000	P & A	INJ_H2O
DU-4328	42501309630000	ACTIVE	PROD_OIL
DU-4329	42501315620000	ACTIVE	INJ_WAG
DU-4330	42501315630000	ACTIVE	PROD_OIL
DU-4331	42501316910000	ACTIVE	PROD_OIL
DU-4332	42501316920000	ACTIVE	PROD_OIL
DU-4333	42501319100000	ACTIVE	INJ_H2O
DU-4334	42501328550000	P & A	PROD_OIL
DU-4335	42501333620000	TA	PROD_OIL
DU-4336	42501333610000	ACTIVE	PROD_OIL
DU-4337	42501335920000	ACTIVE	PROD_OIL
DU-4338	42501336460000	ACTIVE	INJ_WAG
DU-4339	42501345580000	TA	PROD_GAS
DU-4340	42501346920000	ACTIVE	PROD_GAS
DU-4341	42501346930000	TA	PROD_GAS
DU-4342	42501346940000	ACTIVE	PROD_GAS
DU-4343GC	42501352230000	ACTIVE	PROD_GAS
DU-4344GC	42501352070000	TA	PROD_GAS
DU-4346	42501353610000	ACTIVE	PROD_OIL
DU-4347	42501354370000	ACTIVE	PROD_GAS
DU-4348GC	42501354860000	TA	PROD_OIL
DU-4349	42501359760000	P & A	PROD_OIL
DU-4350	42501359770000	ACTIVE	PROD_OIL
DU-4351	42501359780000	ACTIVE	PROD_OIL
DU-4352	42501359790000	ACTIVE	PROD_OIL
DU-4353	42501359870000	ACTIVE	PROD_OIL
DU-4354	42501359880000	ACTIVE	PROD_OIL

DU-4355	42501359830000	ACTIVE	PROD_OIL
DU-4356	42501359810000	ACTIVE	PROD_OIL
DU-4357	42501359860000	ACTIVE	PROD_OIL
DU-4358	42501360710000	ACTIVE	PROD_OIL
DU-4401	42501025100000	ACTIVE	INJ_WAG
DU-4402	42501025080000	P & A	PROD_OIL
DU-4403	42501026990000	P & A	INJ_H2O
DU-4404	42501026980000	P & A	INJ_WAG
DU-4405	42501025090000	ACTIVE	INJ_WAG
DU-4406	42501023690000	P & A	PROD_OIL
DU-4407	42501027000000	P & A	PROD_OIL
DU-4408	42501001830000	ACTIVE	INJ_WAG
DU-4409	42501020880000	P & A	INJ_H2O
DU-4410	42501020890000	ACTIVE	PROD_OIL
DU-4411	42501001790000	P & A	INJ_H2O
DU-4412	42501001800000	ACTIVE	PROD_OIL
DU-4413	42501020910000	ACTIVE	PROD_OIL
DU-4414	42501020900000	P & A	PROD_OIL
DU-4415	42501001810000	SHUT-IN	INJ_H2O
DU-4416	42501001820000	P & A	PROD_OIL
DU-4417	42501308170000	ACTIVE	PROD_OIL
DU-4418	42501308150000	ACTIVE	INJ_WAG
DU-4419	42501308610000	P & A	PROD_OIL
DU-4420	42501308620000	ACTIVE	INJ_WAG
DU-4421	42501309990000	P & A	INJ_H2O
DU-4422	42501310540000	ACTIVE	PROD_OIL
DU-4423	42501310040000	ACTIVE	PROD_OIL
DU-4424	42501310050000	ACTIVE	PROD_OIL
DU-4425	42501310550000	ACTIVE	PROD_OIL
DU-4426	42501309980000	ACTIVE	INJ_WAG
DU-4427	42501310010000	ACTIVE	INJ_WAG
DU-4428	42501310340000	P & A	PROD_OIL
DU-4429	42501311250000	ACTIVE	PROD_OIL
DU-4430	42501315060000	ACTIVE	PROD_OIL
DU-4431	42501315080000	P & A	PROD_GAS
DU-4432	42501315090000	ACTIVE	INJ_WAG
DU-4433	42501315040000	ACTIVE	PROD_OIL
DU-4434	42501315070000	ACTIVE	PROD_OIL
DU-4435	42501315710000	ACTIVE	INJ_WAG
DU-4436	42501315850000	ACTIVE	PROD_OIL
DU-4437	42501316630000	TA	PROD_OIL
DU-4438	42501316990000	ACTIVE	PROD_GAS
DU-4439	42501319340000	TA	INJ_WAG
DU-4440	42501328780000	ACTIVE	PROD_OIL
DU-4441	42501332090000	ACTIVE	INJ_WAG
DU-4442	42501332100000	ACTIVE	PROD_OIL
DU-4443	42501332420000	ACTIVE	INJ_WAG
DU-4444	42501334610000	ACTIVE	INJ_WAG
DU-4445	42501336470000	ACTIVE	PROD_GAS
DU-4447	42501345430000	TA	PROD_GAS
DU-4448	42501345670000	ACTIVE	PROD_GAS
DU-4449	42501346260000	ACTIVE	PROD_GAS
DU-4450	42501346340000	ACTIVE	PROD_GAS
DU-4451	42501346570000	ACTIVE	PROD_OIL

DU-4452	42501346690000	ACTIVE	PROD_OIL
DU-4453	42501346510000	ACTIVE	INJ_WAG
DU-4454	42501346700000	ACTIVE	PROD_OIL
DU-4455	42501347090000	ACTIVE	PROD_OIL
DU-4456	42501347690000	ACTIVE	PROD_OIL
DU-4457	42501347700000	ACTIVE	PROD_OIL
DU-4458	42501347820000	ACTIVE	INJ_WAG
DU-4459	42501347710000	ACTIVE	PROD_OIL
DU-4460	42501347720000	ACTIVE	PROD_OIL
DU-4461GC	42501351660000	ACTIVE	PROD_GAS
DU-4463GC	42501354870000	ACTIVE	PROD_GAS
DU-4466	42501354590000	ACTIVE	PROD_GAS
DU-4467	42501355980000	DRILL	PROD_GAS
DU-4468	42501355950000	DRILL	PROD_GAS
DU-4501	42501014170000	ACTIVE	INJ_WAG
DU-4502	42501013780000	P & A	INJ_H2O
DU-4503	42501013890000	ACTIVE	INJ_WAG
DU-4504	42501013920000	ACTIVE	INJ_WAG
DU-4505	42501014160000	ACTIVE	INJ_WAG
DU-4506	42501013950000	P & A	INJ_H2O
DU-4507	42501014190000	ACTIVE	PROD_OIL
DU-4508	42501014200000	ACTIVE	PROD_OIL
DU-4509	42501014010000	P & A	INJ_H2O
DU-4510	42501013850000	P & A	INJ_H2O
DU-4511	42501014210000	ACTIVE	INJ_WAG
DU-4512	42501013910000	ACTIVE	INJ_WAG
DU-4513	42501013940000	P & A	INJ_H2O
DU-4514	42501014180000	P & A	PROD_OIL
DU-4515	42501014040000	P & A	PROD_OIL
DU-4516	42501014020000	P & A	INJ_H2O
DU-4517	42501013830000	ACTIVE	PROD_OIL
DU-4518	42501014000000	P & A	PROD_OIL
DU-4519	42501014030000	ACTIVE	INJ_WAG
DU-4520	42501013960000	ACTIVE	PROD_OIL
DU-4521	42501013870000	ACTIVE	PROD_OIL
DU-4522	42501807970000	P & A	PROD_OIL
DU-4523	42501307820000	ACTIVE	INJ_WAG
DU-4524	42501308160000	ACTIVE	PROD_OIL
DU-4525	42501308180000	ACTIVE	PROD_OIL
DU-4526	42501308330000	P & A	INJ_H2O
DU-4527	42501308420000	ACTIVE	PROD_OIL
DU-4528	42501308300000	ACTIVE	INJ_WAG
DU-4529	42501308400000	P & A	INJ_H2O
DU-4530	42501308410000	P & A	PROD_OIL
DU-4531	42501308520000	ACTIVE	INJ_WAG
DU-4532	42501308340000	ACTIVE	INJ_WAG
DU-4533	42501308370000	ACTIVE	INJ_WAG
DU-4534	42501308360000	ACTIVE	INJ_WAG
DU-4535	42501308690000	ACTIVE	PROD_OIL
DU-4536	42501308540000	ACTIVE	PROD_OIL
DU-4537	42501014320000	TA	PROD_OIL
DU-4538	42501314600000	ACTIVE	PROD_OIL
DU-4539	42501316930000	ACTIVE	PROD_OIL
DU-4540	42501329110000	ACTIVE	PROD_OIL

DU-4541	42501331680000	ACTIVE	INJ_WAG
DU-4542	42501331660000	ACTIVE	INJ_WAG
DU-4543	42501334440000	ACTIVE	INJ_WAG
DU-4544	42501342820000	ACTIVE	PROD_OIL
DU-4545	42501342810000	ACTIVE	PROD_OIL
DU-4546	42501343480000	ACTIVE	PROD_OIL
DU-4547	42501345870000	ACTIVE	PROD_GAS
DU-4548	42501345860000	TA	PROD_GAS
DU-4549	42501345850000	ACTIVE	PROD_GAS
DU-4550	42501347790000	ACTIVE	PROD_OIL
DU-4551	42501346710000	ACTIVE	PROD_OIL
DU-4552	42501346720000	ACTIVE	PROD_OIL
DU-4553	42501346730000	ACTIVE	PROD_OIL
DU-4554	42501346740000	ACTIVE	PROD_OIL
DU-4555	42501346520000	ACTIVE	PROD_OIL
DU-4556	42501346470000	ACTIVE	PROD_OIL
DU-4557	42501346480000	ACTIVE	PROD_OIL
DU-4558	42501346750000	ACTIVE	PROD_OIL
DU-4559	42501347770000	ACTIVE	PROD_OIL
DU-4560	42501346530000	ACTIVE	PROD_OIL
DU-4561	42501347800000	ACTIVE	PROD_OIL
DU-4562	42501347780000	ACTIVE	PROD_OIL
DU-4563	42501346540000	ACTIVE	INJ_WAG
DU-4564	42501346670000	ACTIVE	INJ_WAG
DU-4568GC	42501351020000	TA	PROD_GAS
DU-4569GC	42501351060000	TA	PROD_GAS
DU-4570GC	42501351030000	ACTIVE	PROD_GAS
DU-4571GC	42501351040000	TA	PROD_GAS
DU-4572GC	42501352880000	TA	PROD_GAS
DU-4573	42501354170000	ACTIVE	PROD_OIL
DU-4574	42501354240000	ACTIVE	PROD_OIL
DU-4575	42501354380000	TA	PROD_GAS
DU-4576	42501354390000	TA	PROD_GAS
DU-4601	42501027190000	P & A	INJ_H2O
DU-4602	42501025500000	ACTIVE	INJ_WAG
DU-4603	42501002280000	P & A	PROD_OIL
DU-4604	42501027180000	ACTIVE	PROD_OIL
DU-4605	42501023510000	ACTIVE	PROD_OIL
DU-4606	42501027200000	ACTIVE	PROD_OIL
DU-4607	42501025470000	ACTIVE	PROD_OIL
DU-4608	42501002290000	ACTIVE	INJ_WAG
DU-4609	42501027170000	P & A	INJ_H2O
DU-4610	42501025460000	ACTIVE	INJ_WAG
DU-4611	42501025490000	ACTIVE	PROD_OIL
DU-4612	42501002300000	ACTIVE	PROD_OIL
DU-4613	42501027160000	ACTIVE	PROD_OIL
DU-4614	42501025450000	ACTIVE	PROD_OIL
DU-4615	42501025520000	ACTIVE	INJ_WAG
DU-4616	42501002270000	ACTIVE	PROD_OIL
DU-4617	42501025150000	P & A	INJ_H2O
DU-4618	42501025480000	ACTIVE	PROD_OIL
DU-4619	42501023500000	ACTIVE	PROD_OIL
DU-4620	42501304320000	ACTIVE	PROD_OIL
DU-4621	42501025570000	ACTIVE	INJ_WAG

DU-4622	42501025560000	P & A	PROD_OIL
DU-4623	42501025550000	ACTIVE	PROD_OIL
DU-4624	42501025540000	ACTIVE	INJ_WAG
DU-4625	42501308220000	ACTIVE	PROD_OIL
DU-4626	42501308290000	TA	PROD_GAS
DU-4627	42501308280000	P & A	PROD_OIL
DU-4628	42501308350000	ACTIVE	INJ_WAG
DU-4629	42501308430000	ACTIVE	PROD_OIL
DU-4630	42501308230000	ACTIVE	INJ_WAG
DU-4632	42501308110000	P & A	PROD_OIL
DU-4633	42501314630000	TA	PROD_GAS
DU-4634	42501314640000	ACTIVE	PROD_OIL
DU-4635	42501315720000	ACTIVE	INJ_WAG
DU-4636	42501315750000	P & A	PROD_OIL
DU-4637	42501315910000	ACTIVE	INJ_WAG
DU-4638	42501315770000	ACTIVE	PROD_OIL
DU-4639	42501315900000	ACTIVE	PROD_OIL
DU-4640	42501316510000	ACTIVE	PROD_OIL
DU-4641	42501321030000	ACTIVE	PROD_OIL
DU-4642	42501325320000	ACTIVE	INJ_WAG
DU-4643	42501336490000	ACTIVE	INJ_WAG
DU-4644	42501341360000	ACTIVE	PROD_OIL
DU-4645	42501345880000	ACTIVE	PROD_OIL
DU-4646	42501345590000	ACTIVE	PROD_OIL
DU-4647	42501345200000	ACTIVE	PROD_OIL
DU-4648	42501345410000	ACTIVE	PROD_OIL
DU-4649	42501345190000	ACTIVE	PROD_OIL
DU-4650	42501345640000	ACTIVE	INJ_WAG
DU-4651	42501345600000	P & A	INJ_H2O
DU-4652	42501345610000	ACTIVE	INJ_WAG
DU-4653	42501345830000	ACTIVE	INJ_WAG
DU-4654	42501346080000	ACTIVE	INJ_WAG
DU-4655	42501347830000	ACTIVE	PROD_OIL
DU-4656	42501348140000	ACTIVE	PROD_OIL
DU-4657	42501348150000	ACTIVE	PROD_OIL
DU-4658	42501348160000	ACTIVE	PROD_OIL
DU-4659	42501348170000	ACTIVE	INJ_WAG
DU-4660	42501348180000	ACTIVE	INJ_WAG
DU-4661	42501348190000	ACTIVE	INJ_WAG
DU-4662	42501348360000	ACTIVE	PROD_OIL
DU-4663	42501348370000	ACTIVE	PROD_OIL
DU-4664	42501348200000	ACTIVE	PROD_OIL
DU-4665	42501348210000	ACTIVE	PROD_OIL
DU-4666	42501348220000	ACTIVE	PROD_OIL
DU-4667	42501347730000	ACTIVE	PROD_OIL
DU-4668GC	42501354890000	TA	PROD_GAS
DU-4701	42501028420000	P & A	INJ_H2O
DU-4702	42501028430000	P & A	PROD_OIL
DU-4703	42501008190000	ACTIVE	INJ_WAG
DU-4704	42501028950000	INACTIVE	INJ_WAG
DU-4705	42501008210000	ACTIVE	INJ_WAG
DU-4706	42501028940000	ACTIVE	PROD_OIL
DU-4707	42501028410000	P & A	INJ_H2O
DU-4708	42501028440000	ACTIVE	INJ_WAG

DU-4709	42501008200000	ACTIVE	INJ_WAG
DU-4710	42501008220000	ACTIVE	INJ_WAG
DU-4711	42501028000000	ACTIVE	PROD_OIL
DU-4712	42501027950000	ACTIVE	PROD_OIL
DU-4713	42501027960000	ACTIVE	PROD_OIL
DU-4714	42501027990000	ACTIVE	PROD_OIL
DU-4715	42501000520000	ACTIVE	INJ_WAG
DU-4716	42501018240000	ACTIVE	PROD_OIL
DU-4717	42501000510000	ACTIVE	PROD_OIL
DU-4718	42501027940000	ACTIVE	PROD_OIL
DU-4719	42501027980000	ACTIVE	PROD_OIL
DU-4720	42501027970000	P & A	PROD_OIL
DU-4721	42501302360000	ACTIVE	PROD_OIL
DU-4722	42501302350000	ACTIVE	INJ_WAG
DU-4723	42501304530000	ACTIVE	INJ_WAG
DU-4724	42501304520000	ACTIVE	PROD_OIL
DU-4725	42501304510000	ACTIVE	PROD_OIL
DU-4726	42501304500000	ACTIVE	PROD_OIL
DU-4727	42501304490000	P & A	PROD_OIL
DU-4728	42501304540000	ACTIVE	INJ_WAG
DU-4729	42501305260000	ACTIVE	PROD_OIL
DU-4730	42501305340000	ACTIVE	PROD_OIL
DU-4731	42501305330000	ACTIVE	INJ_WAG
DU-4732	42501305240000	ACTIVE	INJ_WAG
DU-4733	42501304980000	ACTIVE	INJ_WAG
DU-4734	42501305400000	ACTIVE	INJ_WAG
DU-4735	42501305270000	TA	PROD_OIL
DU-4736	42501308730000	ACTIVE	PROD_OIL
DU-4737	42501310060000	TA	PROD_OIL
DU-4738	42501310070000	TA	PROD_OIL
DU-4739	42501310080000	TA	PROD_OIL
DU-4740	42501321040000	ACTIVE	INJ_WAG
DU-4741	42501335460000	ACTIVE	PROD_OIL
DU-4742	42501340210000	ACTIVE	PROD_OIL
DU-4743	42501340200000	ACTIVE	PROD_OIL
DU-4744	42501340190000	ACTIVE	PROD_OIL
DU-4745	42501342530000	ACTIVE	PROD_OIL
DU-4746	42501342610000	ACTIVE	PROD_OIL
DU-4747	42501342600000	ACTIVE	PROD_OIL
DU-4748	42501342550000	ACTIVE	PROD_OIL
DU-4749	42501343390000	ACTIVE	INJ_WAG
DU-4750	42501343380000	ACTIVE	INJ_WAG
DU-4751	42501343250000	ACTIVE	PROD_OIL
DU-4752	42501343260000	ACTIVE	PROD_OIL
DU-4753	42501343270000	ACTIVE	PROD_OIL
DU-4754	42501343370000	ACTIVE	INJ_WAG
DU-4755	42501343300000	ACTIVE	PROD_OIL
DU-4756	42501343310000	ACTIVE	PROD_OIL
DU-4757	42501343340000	ACTIVE	PROD_OIL
DU-4758	42501343470000	ACTIVE	PROD_OIL
DU-4759	42501343320000	ACTIVE	PROD_OIL
DU-4760	42501343330000	ACTIVE	PROD_OIL
DU-4761	42501355470000	ACTIVE	PROD_GAS
DU-4762GC	42501355960000	DRILL	PROD_GAS

DU-4763	42501362030000	ACTIVE	INJ_WAG
DU-4801	42501000790000	P & A	INJ_H2O
DU-4802	42501000830000	ACTIVE	INJ_WAG
DU-4803	42501011910000	ACTIVE	INJ_WAG
DU-4804	42501011950000	ACTIVE	INJ_WAG
DU-4805	42501003520000	ACTIVE	PROD_OIL
DU-4806	42501000800000	ACTIVE	INJ_WAG
DU-4807	42501000840000	ACTIVE	INJ_WAG
DU-4808	42501011920000	ACTIVE	INJ_WAG
DU-4809	42501011970000	ACTIVE	INJ_WAG
DU-4810	42501000810000	ACTIVE	PROD_OIL
DU-4811	42501000850000	ACTIVE	PROD_OIL
DU-4812	42501011930000	ACTIVE	PROD_OIL
DU-4813	42501011960000	ACTIVE	PROD_OIL
DU-4814	42501000820000	ACTIVE	PROD_OIL
DU-4815	42501000860000	ACTIVE	PROD_OIL
DU-4816	42501011940000	P & A	PROD_OIL
DU-4817	42501011980000	P & A	INJ_H2O
DU-4818	42501302340000	ACTIVE	PROD_OIL
DU-4819	42501302330000	ACTIVE	INJ_WAG
DU-4820	42501304420000	ACTIVE	INJ_WAG
DU-4821	42501304410000	ACTIVE	INJ_WAG
DU-4822	42501304700000	ACTIVE	PROD_OIL
DU-4823	42501304690000	P & A	PROD_OIL
DU-4824	42501304670000	ACTIVE	PROD_OIL
DU-4825	42501304640000	ACTIVE	PROD_OIL
DU-4826	42501304650000	ACTIVE	PROD_OIL
DU-4827	42501304660000	ACTIVE	INJ_WAG
DU-4828	42501304710000	ACTIVE	INJ_WAG
DU-4829	42501304680000	TA	INJ_H2O
DU-4830	42501305320000	ACTIVE	INJ_WAG
DU-4831	42501305300000	ACTIVE	INJ_WAG
DU-4832	42501305290000	ACTIVE	INJ_WAG
DU-4833	42501305080000	ACTIVE	INJ_WAG
DU-4834	42501305120000	ACTIVE	INJ_WAG
DU-4835	42501305280000	ACTIVE	PROD_OIL
DU-4836	42501305110000	ACTIVE	PROD_OIL
DU-4837	42501317060000	P & A	PROD_OIL
DU-4838	42501333930000	ACTIVE	PROD_OIL
DU-4839	42501335410000	ACTIVE	PROD_OIL
DU-4840	42501337950000	ACTIVE	PROD_OIL
DU-4841	42501341210000	ACTIVE	PROD_OIL
DU-4842	42501341200000	ACTIVE	PROD_OIL
DU-4843	42501341230000	ACTIVE	INJ_WAG
DU-4844	42501341590000	ACTIVE	PROD_OIL
DU-4845	42501341700000	ACTIVE	PROD_OIL
DU-4846	42501341660000	ACTIVE	PROD_OIL
DU-4847	42501341670000	ACTIVE	PROD_OIL
DU-4848	42501341580000	ACTIVE	PROD_OIL
DU-4849	42501341650000	ACTIVE	PROD_OIL
DU-4850	42501341640000	ACTIVE	PROD_OIL
DU-4851	42501341680000	ACTIVE	PROD_OIL
DU-4852	42501341450000	ACTIVE	PROD_OIL
DU-4853	42501341690000	ACTIVE	PROD_OIL

DU-4854	42501342540000	ACTIVE	PROD_OIL
DU-4855	42501342270000	ACTIVE	PROD_OIL
DU-4856	42501342570000	ACTIVE	PROD_OIL
DU-4857	42501342590000	ACTIVE	PROD_OIL
DU-4858	42501342580000	ACTIVE	PROD_OIL
DU-4859	42501342560000	ACTIVE	PROD_OIL
DU-4860	42501342380000	ACTIVE	PROD_OIL
DU-4861	42501351520000	ACTIVE	INJ_WAG
DU-4862	42501351530000	ACTIVE	INJ_WAG
DU-4863	42501351540000	ACTIVE	INJ_WAG
DU-4864	42501351550000	ACTIVE	INJ_WAG
DU-4865	42501354880000	ACTIVE	PROD_OIL
DU-4901	42501012760000	P & A	INJ_WAG
DU-4902	42501012800000	ACTIVE	INJ_WAG
DU-4903	42501007300000	TA	PROD_OIL
DU-4904	42501007360000	P & A	INJ_H2O
DU-4905	42501012810000	ACTIVE	PROD_OIL
DU-4906	42501012770000	ACTIVE	INJ_WAG
DU-4907	42501007310000	ACTIVE	INJ_H2O
DU-4908	42501012780000	ACTIVE	PROD_OIL
DU-4909	42501012820000	ACTIVE	INJ_H2O
DU-4910	42501007320000	P & A	INJ_H2O
DU-4911	42501012790000	ACTIVE	PROD_OIL
DU-4912	42501007280000	ACTIVE	PROD_OIL
DU-4913	42501007330000	P & A	INJ_H2O
DU-4914	42501308910000	ACTIVE	INJ_WAG
DU-4915	42501308700000	ACTIVE	PROD_OIL
DU-4916	42501308940000	ACTIVE	INJ_WAG
DU-4917	42501308760000	ACTIVE	INJ_WAG
DU-4918	42501317080000	ACTIVE	PROD_OIL
DU-4919	42501317040000	ACTIVE	INJ_WAG
DU-4920	42501326300000	ACTIVE	PROD_OIL
DU-4921	42501327790000	ACTIVE	PROD_OIL
DU-4922	42501327920000	ACTIVE	PROD_OIL
DU-4923	42501327880000	ACTIVE	INJ_WAG
DU-4924	42501329160000	ACTIVE	PROD_OIL
DU-4925	42501332930000	ACTIVE	PROD_OIL
DU-4926	42501332890000	TA	PROD_OIL
DU-4927	42501346270000	ACTIVE	INJ_WAG
DU-4928	42501352430000	ACTIVE	PROD_OIL
DU-4929	42501352440000	ACTIVE	PROD_OIL
DU-5101	42501333580000	ACTIVE	PROD_OIL
DU-5201	42501808550000	P & A	PROD_OIL
DU-5202	42501003370000	ACTIVE	INJ_H2O
DU-5203	42501015660000	P & A	PROD_OIL
DU-5204	42501029510000	ACTIVE	INJ_WAG
DU-5205	42501029500000	P & A	INJ_H2O
DU-5206	42501103450000	P & A	INJ_H2O
DU-5301	42501029490000	TA	INJ_H2O
DU-5302	42501025060000	P & A	PROD_OIL
DU-5303	42501025050000	P & A	PROD_OIL
DU-5304	42501025040000	P & A	PROD_OIL
DU-5305	42501025070000	TA	INJ_H2O
DU-5306	42501015650000	P & A	INJ_H2O

DU-5307	42501015670000	P & A	INJ_H2O
DU-5308	42501319140000	P & A	INJ_WAG
DU-5309	42501325950000	ACTIVE	PROD_OIL
DU-5310	42501326020000	ACTIVE	PROD_OIL
DU-5311	42501329260000	ACTIVE	PROD_OIL
DU-5312	42501329180000	ACTIVE	PROD_OIL
DU-5313	42501329720000	ACTIVE	PROD_OIL
DU-5315	42501330680000	TA	PROD_OIL
DU-5316	42501331690000	P & A	PROD_OIL
DU-5317	42501354600000	ACTIVE	PROD_OIL
DU-5401	42501015630000	ACTIVE	INJ_WAG
DU-5402	42501024930000	P & A	INJ_H2O
DU-5403	42501022290000	ACTIVE	INJ_WAG
DU-5404	42501015620000	ACTIVE	INJ_WAG
DU-5405	42501024910000	ACTIVE	INJ_WAG
DU-5406	42501022280000	TA	INJ_H2O
DU-5407	42501308870000	SHUT-IN	INJ_WAG
DU-5408	42501308630000	ACTIVE	INJ_WAG
DU-5409	42501308670000	ACTIVE	INJ_WAG
DU-5410	42501311330000	TA	PROD_OIL
DU-5411	42501314420000	ACTIVE	PROD_OIL
DU-5412	42501314400000	TA	PROD_OIL
DU-5413	42501314410000	ACTIVE	PROD_OIL
DU-5414	42501317110000	P & A	PROD_OIL
DU-5415	42501319050000	TA	PROD_OIL
DU-5416	42501328860000	ACTIVE	PROD_OIL
DU-5501	42501022270000	P & A	INJ_WAG
DU-5502	42501024900000	ACTIVE	INJ_WAG
DU-5503	42501024920000	ACTIVE	INJ_WAG
DU-5504	42501022300000	P & A	INJ_H2O
DU-5505	42501024940000	TA	INJ_H2O
DU-5506	42501024960000	P & A	INJ_H2O
DU-5507	42501308660000	P & A	PROD_OIL
DU-5508	42501308510000	ACTIVE	PROD_OIL
DU-5509	42501308650000	ACTIVE	INJ_WAG
DU-5510	42501311320000	ACTIVE	PROD_OIL
DU-5511	42501311310000	ACTIVE	PROD_OIL
DU-5512	42501315050000	ACTIVE	PROD_OIL
DU-5513	42501314500000	ACTIVE	PROD_GAS
DU-5514	42501315780000	ACTIVE	INJ_WAG
DU-5515	42501315870000	ACTIVE	PROD_OIL
DU-5516	42501316250000	ACTIVE	INJ_WAG
DU-5517	42501319500000	P & A	PROD_OIL
DU-5519	42501320400000	TA	PROD_OIL
DU-5520	42501337970000	ACTIVE	INJ_WAG
DU-5521	42501344780000	ACTIVE	PROD_GAS
DU-5522	42501346240000	ACTIVE	PROD_GAS
DU-5523GC	42501353870000	ACTIVE	PROD_GAS
DU-5601	42501012680000	ACTIVE	PROD_OIL
DU-5602	42501012670000	P & A	PROD_OIL
DU-5603	42501012710000	ACTIVE	INJ_WAG
DU-5604	42501029960000	ACTIVE	INJ_WAG
DU-5605	42501012700000	ACTIVE	PROD_OIL
DU-5606	42501012690000	ACTIVE	INJ_WAG

DU-5607	42501012660000	P & A	INJ_H2O
DU-5608	42501028860000	ACTIVE	PROD_OIL
DU-5609	42501004920000	ACTIVE	INJ_WAG
DU-5610	42501305310000	ACTIVE	INJ_WAG
DU-5611	42501308140000	ACTIVE	PROD_OIL
DU-5612	42501309190000	ACTIVE	PROD_OIL
DU-5613	42501314520000	P & A	PROD_OIL
DU-5614	42501314580000	ACTIVE	PROD_OIL
DU-5615	42501315800000	ACTIVE	PROD_OIL
DU-5616	42501315670000	ACTIVE	PROD_OIL
DU-5617	42501330950000	ACTIVE	PROD_OIL
DU-5618	42165344300000	ACTIVE	INJ_WAG
DU-5619	42501342950000	ACTIVE	PROD_OIL
DU-5620	42501347600000	ACTIVE	PROD_OIL
DU-5621	42501347590000	ACTIVE	PROD_OIL
DU-5622GC	42501354510000	ACTIVE	PROD_GAS
DU-5623	42501355970000	DRILL	PROD_GAS
DU-5701	42501029970000	P & A	INJ_GAS
DU-5702	42501004940000	ACTIVE	INJ_WAG
DU-5703	42501004950000	ACTIVE	INJ_WAG
DU-5704	42501004970000	ACTIVE	INJ_WAG
DU-5705	42501029980000	ACTIVE	INJ_WAG
DU-5706	42501004930000	ACTIVE	INJ_WAG
DU-5707	42501005010000	ACTIVE	INJ_WAG
DU-5708	42501005020000	ACTIVE	INJ_WAG
DU-5709	42501305100000	ACTIVE	INJ_WAG
DU-5710	42501305090000	ACTIVE	INJ_WAG
DU-5711	42501304990000	ACTIVE	INJ_WAG
DU-5712	42501305190000	ACTIVE	INJ_WAG
DU-5713S	42501026000000	TA	PROD_OIL
DU-5714	42501314590000	ACTIVE	PROD_OIL
DU-5715	42501315680000	ACTIVE	PROD_OIL
DU-5716	42501315690000	ACTIVE	PROD_OIL
DU-5717	42501320500000	ACTIVE	PROD_OIL
DU-5718	42501320340000	ACTIVE	PROD_OIL
DU-5719	42501320470000	ACTIVE	PROD_OIL
DU-5720	42501343280000	ACTIVE	PROD_OIL
DU-5721	42501343290000	ACTIVE	PROD_OIL
DU-5722	42501343140000	ACTIVE	PROD_OIL
DU-5723	42501343150000	ACTIVE	PROD_OIL
DU-5724	42501343160000	ACTIVE	PROD_OIL
DU-5725	42501349450000	ACTIVE	INJ_WAG
DU-5801	42501004960000	ACTIVE	INJ_WAG
DU-5802	42501004980000	ACTIVE	INJ_WAG
DU-5803	42501004990000	ACTIVE	INJ_WAG
DU-5804	42501018910000	ACTIVE	INJ_WAG
DU-5805	42501005030000	P & A	INJ_WAG
DU-5806	42501005000000	ACTIVE	INJ_WAG
DU-5807	42501019040000	ACTIVE	INJ_WAG
DU-5808	42501305130000	ACTIVE	INJ_WAG
DU-5809	42501305200000	ACTIVE	INJ_WAG
DU-5810	42501305210000	ACTIVE	INJ_WAG
DU-5811	42501308750000	ACTIVE	INJ_WAG
DU-5812	42501308740000	ACTIVE	INJ_WAG

DU-5813	42501316490000	TA	PROD_OIL
DU-5814	42501316530000	TA	PROD_OIL
DU-5815	42501320480000	ACTIVE	PROD_OIL
DU-5816	42501320520000	ACTIVE	PROD_OIL
DU-5817	42501321010000	ACTIVE	PROD_OIL
DU-5818	42501320420000	P & A	PROD_OIL
DU-5819	42501320530000	ACTIVE	PROD_OIL
DU-5820	42501320490000	ACTIVE	PROD_OIL
DU-5821	42501343170000	ACTIVE	PROD_OIL
DU-5822	42501343180000	ACTIVE	PROD_OIL
DU-5823	42501343350000	ACTIVE	PROD_OIL
DU-5824	42501343190000	ACTIVE	PROD_OIL
DU-5825	42501343200000	ACTIVE	PROD_OIL
DU-5826	42501343360000	ACTIVE	PROD_OIL
DU-5827	42501354090000	ACTIVE	PROD_OIL
DU-5828	42501362320000	ACTIVE	INJ_WAG
DU-5901	42501019170000	ACTIVE	INJ_WAG
DU-5902	42501019280000	ACTIVE	INJ_WAG
DU-5903	42501007340000	P & A	INJ_H2O
DU-5904	42501030250000	ACTIVE	PROD_OIL
DU-5905	42501317070000	ACTIVE	PROD_OIL
DU-5906	42501320460000	ACTIVE	PROD_OIL
DU-6301	42165014090000	P & A	INJ_H2O
DU-6302	42165014060000	ACTIVE	PROD_OIL
DU-6303	42165014030000	ACTIVE	PROD_OIL
DU-6304	42165014070000	P & A	INJ_H2O
DU-6305	42165014020000	P & A	INJ_H2O
DU-6306	42165014040000	P & A	PROD_OIL
DU-6307	42165014110000	P & A	INJ_H2O
DU-6308	42165014080000	P & A	PROD_OIL
DU-6309	42165318700000	ACTIVE	PROD_OIL
DU-6310	42165367650000	ACTIVE	PROD_OIL
DU-6401	42165005420000	ACTIVE	PROD_OIL
DU-6402	42165005240000	ACTIVE	PROD_OIL
DU-6403	42165005450000	ACTIVE	PROD_OIL
DU-6404	42165005440000	ACTIVE	INJ_WAG
DU-6405	42165013870000	ACTIVE	PROD_OIL
DU-6406	42165013850000	ACTIVE	PROD_OIL
DU-6407	42165018770000	P & A	PROD_OIL
DU-6408	42165004910000	SHUT-IN	PROD_GAS
DU-6409	42165005410000	ACTIVE	PROD_OIL
DU-6410	42165005430000	ACTIVE	PROD_OIL
DU-6411	42165005360000	TA	PROD_OIL
DU-6412	42165005280000	ACTIVE	INJ_WAG
DU-6413	42165005340000	ACTIVE	INJ_WAG
DU-6414	42165005400000	ACTIVE	INJ_WAG
DU-6415	42165005330000	ACTIVE	PROD_OIL
DU-6416	42165005380000	ACTIVE	PROD_OIL
DU-6417	42165005390000	ACTIVE	INJ_WAG
DU-6418	42165005260000	ACTIVE	INJ_WAG
DU-6419	42165303820000	ACTIVE	PROD_OIL
DU-6420	42165303390000	ACTIVE	PROD_OIL
DU-6421	42165303380000	ACTIVE	INJ_WAG
DU-6422	42165303430000	ACTIVE	INJ_WAG

DU-6423	42165302990000	ACTIVE	INJ_WAG
DU-6424	42165303420000	ACTIVE	PROD_OIL
DU-6425	42165303410000	ACTIVE	INJ_WAG
DU-6426	42165303440000	ACTIVE	PROD_OIL
DU-6427	42165303060000	ACTIVE	PROD_OIL
DU-6428	42165303700000	ACTIVE	PROD_OIL
DU-6429	42165303400000	ACTIVE	PROD_OIL
DU-6430	42165303690000	ACTIVE	INJ_WAG
DU-6431	42165305430000	ACTIVE	PROD_OIL
DU-6432	42165315510000	ACTIVE	PROD_OIL
DU-6433	42165316150000	SHUT-IN	INJ_WAG
DU-6434	42165318690000	SHUT-IN	INJ_WAG
DU-6435	42165318780000	TA	PROD_OIL
DU-6436	42165320660000	ACTIVE	PROD_OIL
DU-6437	42165332400000	ACTIVE	PROD_OIL
DU-6438	42165333410000	ACTIVE	INJ_H2O
DU-6439	42165355920000	ACTIVE	PROD_OIL
DU-6440	42165355390000	ACTIVE	PROD_GAS
DU-6441	42165355930000	ACTIVE	PROD_OIL
DU-6442	42165355940000	ACTIVE	PROD_OIL
DU-6443	42165355950000	ACTIVE	PROD_OIL
DU-6444	42165355960000	ACTIVE	PROD_OIL
DU-6445	42165355970000	ACTIVE	PROD_OIL
DU-6446	42165355980000	ACTIVE	PROD_OIL
DU-6447	42165356520000	ACTIVE	PROD_GAS
DU-6448	42165357260000	TA	PROD_GAS
DU-6449GC	42165363500000	ACTIVE	PROD_GAS
DU-6450	42165363750000	ACTIVE	PROD_OIL
DU-6451	42165363760000	ACTIVE	PROD_OIL
DU-6452	42165363770000	ACTIVE	PROD_OIL
DU-6453GC	42165005290101	ACTIVE	PROD_GAS
DU-6454	42165366690000	SHUT-IN	PROD_GAS
DU-6501	42165007760000	ACTIVE	PROD_OIL
DU-6502	42165007940000	ACTIVE	PROD_OIL
DU-6503	42165007770000	ACTIVE	PROD_OIL
DU-6504	42165007730000	P & A	PROD_OIL
DU-6505	42165007750000	ACTIVE	PROD_OIL
DU-6506	42165007740000	ACTIVE	PROD_OIL
DU-6507	42165007790000	ACTIVE	PROD_OIL
DU-6508	42165813430000	ACTIVE	PROD_OIL
DU-6509	42165015330000	ACTIVE	INJ_WAG
DU-6510	42165015320000	ACTIVE	INJ_WAG
DU-6511	42165007890000	ACTIVE	INJ_WAG
DU-6512	42165007930000	ACTIVE	INJ_WAG
DU-6513	42165004740000	ACTIVE	PROD_OIL
DU-6514	42165004730000	ACTIVE	PROD_OIL
DU-6515	42165025140000	ACTIVE	PROD_OIL
DU-6516	42165025150000	ACTIVE	PROD_OIL
DU-6517	42165007950000	ACTIVE	INJ_WAG
DU-6518	42165007700000	TA	INJ_WAG
DU-6519	42165007970000	INACTIVE	INJ_WAG
DU-6520	42165007960000	ACTIVE	INJ_WAG
DU-6521	42165301980000	P & A	PROD_OIL
DU-6522	42165301990000	ACTIVE	INJ_WAG

DU-6523	42165302000000	ACTIVE	INJ_WAG
DU-6524	42165301940000	ACTIVE	PROD_OIL
DU-6525	42165302110000	P & A	INJ_WAG
DU-6526	42165302070000	ACTIVE	PROD_OIL
DU-6527	42165302090000	ACTIVE	PROD_OIL
DU-6528	42165302080000	ACTIVE	PROD_OIL
DU-6529	42165302980000	ACTIVE	PROD_OIL
DU-6530	42165303070000	ACTIVE	INJ_WAG
DU-6531	42165302820000	ACTIVE	INJ_WAG
DU-6532	42165302970000	ACTIVE	INJ_WAG
DU-6533	42165302810000	ACTIVE	INJ_WAG
DU-6534	42165302960000	ACTIVE	PROD_OIL
DU-6535	42165303660000	ACTIVE	INJ_WAG
DU-6536	42165315730000	ACTIVE	PROD_OIL
DU-6537	42165315740000	ACTIVE	PROD_GAS
DU-6538	42165320780000	ACTIVE	INJ_WAG
DU-6539	42165345960000	ACTIVE	PROD_OIL
DU-6540	42165007900000	ACTIVE	PROD_GAS
DU-6541	42165354760000	ACTIVE	PROD_OIL
DU-6542	42165353960000	ACTIVE	INJ_WAG
DU-6543	42165353950000	ACTIVE	PROD_OIL
DU-6544	42165354750000	ACTIVE	PROD_OIL
DU-6545	42165354740000	ACTIVE	PROD_OIL
DU-6546	42165353400000	ACTIVE	PROD_OIL
DU-6547	42165353410000	ACTIVE	PROD_OIL
DU-6548	42165353420000	ACTIVE	PROD_OIL
DU-6549	42165353760000	ACTIVE	PROD_GAS
DU-6550	42165354730000	ACTIVE	PROD_OIL
DU-6551	42165355480000	ACTIVE	PROD_GAS
DU-6552	42165356050000	ACTIVE	PROD_OIL
DU-6553	42165356040000	ACTIVE	PROD_OIL
DU-6554	42165355680000	ACTIVE	PROD_OIL
DU-6555	42165355690000	ACTIVE	PROD_OIL
DU-6556	42165356030000	ACTIVE	PROD_OIL
DU-6557	42165355700000	ACTIVE	PROD_OIL
DU-6558	42165355710000	ACTIVE	PROD_OIL
DU-6559	42165355720000	ACTIVE	PROD_OIL
DU-6560	42165356010000	ACTIVE	INJ_WAG
DU-6561	42165355610000	ACTIVE	INJ_WAG
DU-6562	42165356020000	ACTIVE	PROD_OIL
DU-6563	42165007850001	ACTIVE	PROD_OIL
DU-6564	42165357060000	ACTIVE	PROD_GAS
DU-6566	42165358080000	ACTIVE	PROD_OIL
DU-6567GC	42165363020000	TA	PROD_GAS
DU-6568GC	42165364530000	ACTIVE	PROD_GAS
DU-6569GC	42165363030000	ACTIVE	PROD_GAS
DU-6570GC	42165366460000	ACTIVE	PROD_GAS
DU-6571	42165367860000	ACTIVE	PROD_GAS
DU-6572	42165367870000	TA	PROD_GAS
DU-6573	42165015360001	ACTIVE	PROD_GAS
DU-6574	42165375940000	ACTIVE	INJ_WAG
DU-6575	42165376830000	ACTIVE	PROD_OIL
DU-6576	42165376840000	ACTIVE	PROD_OIL
DU-6601	42165005710000	ACTIVE	PROD_OIL

DU-6602	42165005790000	ACTIVE	PROD_OIL
DU-6603	42165005680000	ACTIVE	PROD_OIL
DU-6604	42165008540000	ACTIVE	PROD_OIL
DU-6605	42165007010000	ACTIVE	PROD_OIL
DU-6606	42165005730000	ACTIVE	PROD_OIL
DU-6607	42165005750000	ACTIVE	PROD_OIL
DU-6608	42165005780000	ACTIVE	PROD_OIL
DU-6609	42165007170000	ACTIVE	PROD_OIL
DU-6610	42165007230000	ACTIVE	PROD_OIL
DU-6611	42165005770000	ACTIVE	INJ_WAG
DU-6612	42165005740000	ACTIVE	INJ_WAG
DU-6613	42165007250000	ACTIVE	INJ_WAG
DU-6614	42165007290000	ACTIVE	INJ_WAG
DU-6615	42165005720000	ACTIVE	INJ_WAG
DU-6616	42165005760000	ACTIVE	INJ_WAG
DU-6617	42165007190000	ACTIVE	INJ_WAG
DU-6618	42165007210000	ACTIVE	INJ_WAG
DU-6619	42165301360000	ACTIVE	PROD_OIL
DU-6620	42165301600000	ACTIVE	INJ_WAG
DU-6621	42165301640000	ACTIVE	INJ_WAG
DU-6622	42165301500000	ACTIVE	INJ_WAG
DU-6623	42165301510000	ACTIVE	INJ_WAG
DU-6624	42165301520000	P & A	INJ_WAG
DU-6625	42165301370000	ACTIVE	INJ_WAG
DU-6626	42165301610000	ACTIVE	PROD_OIL
DU-6627	42165301910000	ACTIVE	INJ_WAG
DU-6628	42165301870000	ACTIVE	INJ_WAG
DU-6629	42165301850000	ACTIVE	PROD_OIL
DU-6630	42165301840000	P & A	PROD_OIL
DU-6631	42165301930000	P & A	PROD_OIL
DU-6632	42165301890000	ACTIVE	PROD_OIL
DU-6633	42165301920000	ACTIVE	PROD_OIL
DU-6634	42165301900000	ACTIVE	PROD_OIL
DU-6635	42165301860000	ACTIVE	INJ_WAG
DU-6636	42165301880000	ACTIVE	INJ_WAG
DU-6637	42165316130000	ACTIVE	PROD_OIL
DU-6638	42165345160000	ACTIVE	PROD_OIL
DU-6639	42165352270000	ACTIVE	PROD_OIL
DU-6640	42165353970000	ACTIVE	PROD_OIL
DU-6641	42165354410000	ACTIVE	PROD_OIL
DU-6642	42165354420000	ACTIVE	PROD_OIL
DU-6643	42165354430000	ACTIVE	PROD_OIL
DU-6644	42165354440000	ACTIVE	PROD_OIL
DU-6645	42165355620000	ACTIVE	PROD_OIL
DU-6646	42165355630000	ACTIVE	PROD_OIL
DU-6647	42165355640000	ACTIVE	PROD_OIL
DU-6648	42165355650000	ACTIVE	PROD_OIL
DU-6649	42165356800000	ACTIVE	PROD_OIL
DU-6650	42165356870000	ACTIVE	PROD_OIL
DU-6651	42165357370000	ACTIVE	PROD_OIL
DU-6652	42165357050000	ACTIVE	PROD_OIL
DU-6654	42165357250000	ACTIVE	PROD_OIL
DU-6655	42165357240000	ACTIVE	PROD_OIL
DU-6656	42165358110000	TA	PROD_GAS

DU-6657	42165367150000	ACTIVE	INJ_WAG
DU-6701	42165008600000	ACTIVE	PROD_OIL
DU-6702	42165007070000	P & A	PROD_OIL
DU-6703	42165007090000	P & A	PROD_OIL
DU-6704	42165007100000	ACTIVE	PROD_OIL
DU-6705	42165007020000	ACTIVE	PROD_OIL
DU-6706	42165007030000	P & A	PROD_OIL
DU-6707	42165007040000	ACTIVE	PROD_OIL
DU-6708	42165007110000	P & A	INJ_H2O
DU-6709	42165007080000	ACTIVE	INJ_WAG
DU-6710	42165007050000	P & A	PROD_OIL
DU-6711	42165007060000	TA	INJ_GAS
DU-6712	42165007120000	ACTIVE	INJ_WAG
DU-6713	42165008560000	ACTIVE	INJ_WAG
DU-6714	42165008580000	TA	PROD_OIL
DU-6715	42165008590000	ACTIVE	INJ_WAG
DU-6716	42165007140000	ACTIVE	INJ_WAG
DU-6717	42165301660000	ACTIVE	PROD_OIL
DU-6718	42165301690000	ACTIVE	PROD_OIL
DU-6719	42165301710000	ACTIVE	INJ_WAG
DU-6720	42165301680000	ACTIVE	INJ_WAG
DU-6721	42165301620000	ACTIVE	INJ_WAG
DU-6722	42165301630000	ACTIVE	INJ_WAG
DU-6723	42165302030000	ACTIVE	INJ_WAG
DU-6724	42165302040000	ACTIVE	INJ_WAG
DU-6725	42165302100000	P & A	PROD_OIL
DU-6726	42165302050000	P & A	PROD_OIL
DU-6727	42165301950000	ACTIVE	INJ_WAG
DU-6728	42165301960000	P & A	PROD_OIL
DU-6729	42165302060000	ACTIVE	PROD_OIL
DU-6730	42165304250000	ACTIVE	PROD_OIL
DU-6731	42165315500000	P & A	PROD_OIL
DU-6732	42165315710000	ACTIVE	PROD_OIL
DU-6733	42165318720000	ACTIVE	PROD_OIL
DU-6734	42165318740000	ACTIVE	PROD_OIL
DU-6735	42165318790000	ACTIVE	PROD_OIL
DU-6736	42165318730000	TA	PROD_OIL
DU-6737	42165318680000	ACTIVE	INJ_WAG
DU-6738	42165333270000	ACTIVE	PROD_OIL
DU-6739	42165333500000	ACTIVE	PROD_OIL
DU-6740	42165336120000	TA	INJ_WAG
DU-6744	42165334540000	ACTIVE	INJ_WAG
DU-6748	42165334610000	TA	INJ_GAS
DU-6750	42165334580000	ACTIVE	INJ_WAG
DU-6751	42165334590000	ACTIVE	INJ_WAG
DU-6755	42165334570000	TA	PROD_OIL
DU-6756T	42165334600000	TA	PROD_OIL
DU-6757	42165334560000	P & A	PROD_OIL
DU-6758	42165334550000	TA	PROD_OIL
DU-6759	42165347810000	ACTIVE	PROD_OIL
DU-6760	42165354450000	ACTIVE	PROD_OIL
DU-6761	42165354460000	ACTIVE	PROD_OIL
DU-6762	42165354500000	ACTIVE	PROD_OIL
DU-6763	42165354490000	ACTIVE	PROD_OIL

DU-6764	42165354480000	ACTIVE	PROD_OIL
DU-6765	42165356880000	ACTIVE	PROD_OIL
DU-6766	42165356810000	ACTIVE	PROD_OIL
DU-6767	42165356830000	ACTIVE	PROD_OIL
DU-6768	42165356790000	ACTIVE	PROD_OIL
DU-6769	42165356820000	ACTIVE	PROD_OIL
DU-6770	42165357230000	ACTIVE	PROD_OIL
DU-6771	42165357220000	ACTIVE	PROD_OIL
DU-6772	42165357310000	ACTIVE	PROD_OIL
DU-6774	42165357300000	ACTIVE	PROD_OIL
DU-6775	42165357040000	ACTIVE	PROD_OIL
DU-6776	42165357290000	ACTIVE	PROD_OIL
DU-6777	42165358310000	ACTIVE	INJ_WAG
DU-6778	42165358320000	ACTIVE	INJ_WAG
DU-6779	42165360930000	ACTIVE	PROD_OIL
DU-6780	42165361670000	ACTIVE	PROD_OIL
DU-6781	42165378160000	ACTIVE	PROD_OIL
DU-6782	42165378130000	ACTIVE	PROD_OIL
DU-6801	42165008390000	P & A	PROD_OIL
DU-6802	42165008380000	P & A	INJ_H2O
DU-6803	42165020380000	ACTIVE	PROD_OIL
DU-6804	42165020430000	ACTIVE	INJ_H2O
DU-6805	42165008420000	ACTIVE	PROD_OIL
DU-6806	42165008400000	ACTIVE	PROD_OIL
DU-6807	42165018920000	P & A	PROD_OIL
DU-6808	42165018910000	P & A	INJ_H2O
DU-6809	42165008410000	ACTIVE	INJ_WAG
DU-6810	42165008430000	ACTIVE	PROD_OIL
DU-6811	42165004310000	P & A	INJ_WAG
DU-6812	42165014010000	TA	INJ_GAS
DU-6813	42165011460000	ACTIVE	INJ_WAG
DU-6814	42165011470000	P & A	INJ_H2O
DU-6815	42165019990000	P & A	INJ_H2O
DU-6816	42165301740000	P & A	PROD_OIL
DU-6817	42165301790000	ACTIVE	INJ_WAG
DU-6818	42165301760000	P & A	INJ_WAG
DU-6819	42165301800000	ACTIVE	PROD_OIL
DU-6820	42165303760000	ACTIVE	PROD_OIL
DU-6821	42165315600000	ACTIVE	PROD_OIL
DU-6822	42165315480000	ACTIVE	PROD_OIL
DU-6823	42165320790000	ACTIVE	PROD_OIL
DU-6824	42165320670000	ACTIVE	PROD_OIL
DU-6825	42165331380000	ACTIVE	INJ_WAG
DU-6826	42165331360000	ACTIVE	INJ_WAG
DU-6827	42165332500000	ACTIVE	PROD_OIL
DU-6828	42165332390000	ACTIVE	PROD_OIL
DU-6829	42165333910000	ACTIVE	PROD_OIL
DU-6830	42165333450000	ACTIVE	PROD_OIL
DU-6831	42165339540000	ACTIVE	PROD_OIL
DU-6832	42165340850000	ACTIVE	PROD_OIL
DU-6833	42165348970000	ACTIVE	PROD_OIL
DU-6834	42165354470000	ACTIVE	PROD_OIL
DU-6835	42165354510000	ACTIVE	PROD_OIL
DU-6836	42165354520000	ACTIVE	PROD_OIL

DU-6837	42165356780000	ACTIVE	INJ_WAG
DU-6838	42165357390000	ACTIVE	PROD_OIL
DU-6839	42165378120000	ACTIVE	PROD_OIL
DU-7301	42165021460000	P & A	INJ_H2O
DU-7302	42165021440000	P & A	INJ_H2O
DU-7303	42165006510000	P & A	INJ_H2O
DU-7304	42165006520000	P & A	INJ_H2O
DU-7401	42165021550000	P & A	PROD_OIL
DU-7402	42165021530000	P & A	PROD_OIL
DU-7403	42165018790000	P & A	PROD_OIL
DU-7404	42165013890000	ACTIVE	PROD_OIL
DU-7405	42165018760000	ACTIVE	PROD_OIL
DU-7406	42165021580000	ACTIVE	PROD_OIL
DU-7407	42165013910000	ACTIVE	INJ_WAG
DU-7408	42165013880000	ACTIVE	INJ_WAG
DU-7409	42165021540000	ACTIVE	PROD_OIL
DU-7410	42165021450000	P & A	PROD_OIL
DU-7411	42165018780000	TA	PROD_OIL
DU-7412	42165013900000	ACTIVE	PROD_OIL
DU-7413	42165018750000	P & A	PROD_OIL
DU-7414	42165008370000	P & A	INJ_H2O
DU-7415	42165008290000	TA	PROD_OIL
DU-7416	42165008310000	ACTIVE	INJ_WAG
DU-7417	42165008250000	ACTIVE	INJ_WAG
DU-7418	42165008360000	P & A	PROD_OIL
DU-7419	42165008350000	TA	INJ_H2O
DU-7420	42165008330000	ACTIVE	PROD_OIL
DU-7421	42165008270000	ACTIVE	INJ_WAG
DU-7422	42165303460000	ACTIVE	INJ_WAG
DU-7423	42165303270000	P & A	INJ_WAG
DU-7424	42165302740000	INACTIVE	PROD_OIL
DU-7425	42165303600000	ACTIVE	PROD_GAS
DU-7426	42165303470000	ACTIVE	INJ_WAG
DU-7427	42165304230000	TA	PROD_OIL
DU-7428	42165305460000	ACTIVE	PROD_OIL
DU-7429	42165313680000	ACTIVE	INJ_WAG
DU-7430	42165315700000	ACTIVE	PROD_OIL
DU-7431	42165318710000	ACTIVE	PROD_OIL
DU-7432	42165318770000	INACTIVE	INJ_H2O
DU-7433	42165320600000	ACTIVE	PROD_OIL
DU-7434	42165331350000	ACTIVE	PROD_OIL
DU-7435	42165332890000	ACTIVE	PROD_OIL
DU-7436	42165333530000	ACTIVE	INJ_WAG
DU-7437	42165335240000	ACTIVE	PROD_OIL
DU-7438	42165353750000	ACTIVE	PROD_GAS
DU-7440	42165354070000	ACTIVE	PROD_OIL
DU-7441	42165354090000	ACTIVE	PROD_OIL
DU-7442	42165354080000	ACTIVE	PROD_OIL
DU-7443	42165354060000	ACTIVE	PROD_OIL
DU-7444	42165357140000	ACTIVE	PROD_GAS
DU-7445	42165376850000	ACTIVE	PROD_OIL
DU-7446	42165376880000	ACTIVE	PROD_OIL
DU-7448	42165380530000	DRILL	PROD_OIL
DU-7449	42165380540000	ACTIVE	PROD_OIL

DU-7450	42165380550000	ACTIVE	PROD_OIL
DU-7501	42165007540000	ACTIVE	PROD_OIL
DU-7502	42165007530000	ACTIVE	PROD_OIL
DU-7503	42165007590000	ACTIVE	PROD_OIL
DU-7504	42165007570000	ACTIVE	PROD_OIL
DU-7505	42165007520000	ACTIVE	PROD_OIL
DU-7506	42165007550000	ACTIVE	PROD_OIL
DU-7507	42165007580000	ACTIVE	PROD_OIL
DU-7508	42165007560000	ACTIVE	PROD_OIL
DU-7509	42165007600000	ACTIVE	INJ_WAG
DU-7510	42165005540000	ACTIVE	INJ_WAG
DU-7511	42165005470000	ACTIVE	INJ_WAG
DU-7512	42165005460000	ACTIVE	INJ_WAG
DU-7513	42165005530000	ACTIVE	INJ_WAG
DU-7514	42165005550000	ACTIVE	INJ_WAG
DU-7515	42165005480000	ACTIVE	INJ_WAG
DU-7516	42165001510000	ACTIVE	INJ_WAG
DU-7517	42165301530000	ACTIVE	PROD_OIL
DU-7518	42165301540000	ACTIVE	INJ_WAG
DU-7519	42165301550000	ACTIVE	INJ_WAG
DU-7520	42165301650000	ACTIVE	PROD_OIL
DU-7521	42165301670000	INACTIVE	INJ_WAG
DU-7522	42165302260000	ACTIVE	PROD_OIL
DU-7523	42165302280000	ACTIVE	PROD_OIL
DU-7524	42165303640000	P & A	PROD_OIL
DU-7525	42165303200000	ACTIVE	INJ_WAG
DU-7526	42165303800000	ACTIVE	INJ_WAG
DU-7527	42165303190000	ACTIVE	INJ_WAG
DU-7528	42165303680000	ACTIVE	INJ_WAG
DU-7529	42165303670000	ACTIVE	PROD_OIL
DU-7530	42165303180000	ACTIVE	INJ_WAG
DU-7531	42165303170000	ACTIVE	PROD_OIL
DU-7532	42165303160000	ACTIVE	PROD_OIL
DU-7533	42165303290000	ACTIVE	PROD_OIL
DU-7534	42165303280000	ACTIVE	PROD_OIL
DU-7535	42165302750000	ACTIVE	INJ_WAG
DU-7536	42165303260000	ACTIVE	INJ_WAG
DU-7537	42165306570000	ACTIVE	PROD_OIL
DU-7538	42165315530000	P & A	PROD_OIL
DU-7539	42165315520000	ACTIVE	PROD_OIL
DU-7540	42165319110000	TA	PROD_GAS
DU-7541	42165005490000	ACTIVE	PROD_OIL
DU-7542	42165348340000	TA	PROD_OIL
DU-7543	42165352320000	ACTIVE	PROD_OIL
DU-7544	42165352330000	ACTIVE	PROD_OIL
DU-7545	42165352340000	ACTIVE	PROD_OIL
DU-7546	42165352350000	ACTIVE	PROD_OIL
DU-7547	42165352360000	ACTIVE	PROD_OIL
DU-7548	42165352370000	ACTIVE	PROD_OIL
DU-7549	42165354050000	ACTIVE	PROD_OIL
DU-7550	42165354040000	ACTIVE	PROD_OIL
DU-7551	42165353430000	ACTIVE	PROD_OIL
DU-7552	42165353440000	ACTIVE	PROD_OIL
DU-7553	42165354030000	ACTIVE	PROD_OIL

DU-7554	42165354020000	ACTIVE	PROD_OIL
DU-7555	42165353450000	ACTIVE	PROD_OIL
DU-7556	42165353460000	ACTIVE	PROD_OIL
DU-7558	42165354010000	ACTIVE	PROD_OIL
DU-7562	42165353470000	ACTIVE	PROD_OIL
DU-7563	42165353480000	ACTIVE	PROD_OIL
DU-7564	42165353740000	ACTIVE	PROD_GAS
DU-7565	42165353730000	ACTIVE	PROD_GAS
DU-7566	42165353720000	ACTIVE	PROD_GAS
DU-7567	42165353710000	ACTIVE	PROD_GAS
DU-7568	42165357150000	ACTIVE	PROD_GAS
DU-7569	42165360090000	ACTIVE	PROD_OIL
DU-7571GC	42165363040000	ACTIVE	PROD_GAS
DU-7572GC	42165005520101	ACTIVE	PROD_GAS
DU-7573GC	42165363050000	ACTIVE	PROD_GAS
DU-7574	42165375990000	ACTIVE	INJ_WAG
DU-7575	42165376000000	ACTIVE	INJ_WAG
DU-7576	42165375970000	ACTIVE	INJ_WAG
DU-7577	42165375950000	ACTIVE	INJ_WAG
DU-7578	42165375960000	ACTIVE	INJ_WAG
DU-7601	42165007360000	ACTIVE	PROD_OIL
DU-7602	42165007270000	ACTIVE	PROD_OIL
DU-7603	42165008510000	ACTIVE	PROD_OIL
DU-7604	42165008460000	ACTIVE	PROD_OIL
DU-7605	42165007340000	ACTIVE	PROD_OIL
DU-7606	42165007320000	ACTIVE	PROD_OIL
DU-7607	42165008470000	ACTIVE	PROD_OIL
DU-7608	42165008520000	ACTIVE	PROD_OIL
DU-7609	42165007300000	ACTIVE	INJ_WAG
DU-7610	42165007380000	ACTIVE	INJ_WAG
DU-7611	42165008490000	P & A	INJ_GAS
DU-7612	42165008480000	ACTIVE	INJ_WAG
DU-7613	42165008450000	ACTIVE	PROD_OIL
DU-7614	42165008440000	P & A	INJ_WAG
DU-7615	42165007400000	ACTIVE	PROD_OIL
DU-7616	42165008500000	TA	PROD_OIL
DU-7617	42165301770000	ACTIVE	PROD_OIL
DU-7618	42165301810000	P & A	PROD_OIL
DU-7619	42165301820000	ACTIVE	INJ_WAG
DU-7620	42165301750000	ACTIVE	INJ_WAG
DU-7621	42165301730000	ACTIVE	INJ_WAG
DU-7622	42165301780000	ACTIVE	INJ_WAG
DU-7623	42165302010000	ACTIVE	INJ_WAG
DU-7624	42165302020000	ACTIVE	PROD_OIL
DU-7625	42165301970000	ACTIVE	INJ_WAG
DU-7626	42165302270000	ACTIVE	PROD_OIL
DU-7627	42165303550000	ACTIVE	INJ_WAG
DU-7628	42165303560000	ACTIVE	PROD_OIL
DU-7629	42165303540000	ACTIVE	INJ_WAG
DU-7630	42165303740000	ACTIVE	PROD_OIL
DU-7631	42165303720000	ACTIVE	PROD_OIL
DU-7632	42165303730000	ACTIVE	PROD_OIL
DU-7633	42165303520000	ACTIVE	INJ_WAG
DU-7634	42165316140000	ACTIVE	PROD_OIL

DU-7635	42165315470000	TA	PROD_OIL
DU-7636	42165007280000	P & A	PROD_OIL
DU-7637	42165353490000	ACTIVE	PROD_OIL
DU-7638	42165353500000	ACTIVE	PROD_OIL
DU-7639	42165353510000	ACTIVE	PROD_OIL
DU-7640	42165354000000	ACTIVE	PROD_OIL
DU-7641	42165357030000	ACTIVE	PROD_OIL
DU-7642	42165357020000	ACTIVE	PROD_OIL
DU-7643	42165357010000	ACTIVE	PROD_OIL
DU-7644	42165357130000	ACTIVE	PROD_OIL
DU-7645	42165357120000	ACTIVE	PROD_OIL
DU-7646	42165357110000	ACTIVE	PROD_OIL
DU-7647	42165357100000	ACTIVE	PROD_OIL
DU-7648	42165356840000	ACTIVE	PROD_GAS
DU-7649	42165358810000	ACTIVE	PROD_OIL
DU-7650	42165358800000	ACTIVE	PROD_OIL
DU-7651	42165358790000	ACTIVE	INJ_WAG
DU-7652	42165364710000	ACTIVE	PROD_OIL
DU-7653	42165367600000	ACTIVE	INJ_WAG
DU-7701	42165008620000	TA	PROD_OIL
DU-7702	42165006920000	ACTIVE	PROD_OIL
DU-7703	42165008640000	ACTIVE	PROD_OIL
DU-7704	42165008650000	ACTIVE	PROD_OIL
DU-7705	42165006960000	ACTIVE	PROD_OIL
DU-7706	42165006980000	TA	INJ_H2O
DU-7707	42165008660000	TA	INJ_H2O
DU-7708	42165008670000	TA	INJ_H2O
DU-7709	42165008630000	P & A	INJ_H2O
DU-7710	42165006970000	P & A	INJ_H2O
DU-7711	42165006990000	TA	INJ_H2O
DU-7712	42165008680000	P & A	INJ_H2O
DU-7713	42165007000000	P & A	INJ_H2O
DU-7714	42165304260000	ACTIVE	PROD_OIL
DU-7715	42165315630000	ACTIVE	INJ_H2O
DU-7716	42165318800000	ACTIVE	PROD_OIL
DU-7717	42165318760000	TA	PROD_OIL
DU-7718	42165320800000	ACTIVE	INJ_WAG
DU-7719	42165332380000	ACTIVE	PROD_OIL
DU-7720	42165346730000	TA	PROD_OIL
DU-7721	42165357070000	ACTIVE	PROD_OIL
DU-7801	42165018940000	ACTIVE	INJ_H2O
DU-7802	42165018950000	P & A	INJ_H2O
DU-7803	42165018960000	ACTIVE	INJ_H2O
DU-7804	42165333490000	ACTIVE	PROD_OIL
DU-7805	42165333480000	ACTIVE	PROD_OIL
DU-8301	42501005800000	P & A	INJ_H2O
DU-8302	42165001870000	P & A	INJ_H2O
DU-8303	42165014120000	P & A	INJ_H2O
DU-8401	42165004330000	TA	INJ_H2O
DU-8402	42165004340000	P & A	PROD_OIL
DU-8403	42165005220000	P & A	INJ_H2O
DU-8404	42165005210000	P & A	PROD_OIL
DU-8405	42165004320000	TA	INJ_H2O
DU-8406	42165004270000	P & A	PROD_OIL

DU-8407	42165005230000	ACTIVE	PROD_OIL
DU-8408	42165021500000	P & A	PROD_OIL
DU-8409	42165005120000	P & A	INJ_H2O
DU-8410	42165005100000	INACTIVE	INJ_WAG
DU-8411	42165005190000	TA	INJ_GAS
DU-8412	42165005160000	TA	INJ_H2O
DU-8413	42165005140000	P & A	PROD_OIL
DU-8414	42165005200000	TA	PROD_OIL
DU-8415	42165303480000	P & A	INJ_GAS
DU-8416	42165304350000	P & A	PROD_OIL
DU-8417	42165304360000	TA	INJ_GAS
DU-8418	42165304330000	P & A	PROD_OIL
DU-8419	42165304340000	P & A	INJ_GAS
DU-8420	42165304370000	ACTIVE	INJ_H2O
DU-8421	42165305420000	ACTIVE	PROD_OIL
DU-8422	42165311970000	ACTIVE	PROD_OIL
DU-8423	42165315650000	ACTIVE	PROD_OIL
DU-8424	42165316070000	TA	PROD_OIL
DU-8425	42165320650000	ACTIVE	PROD_OIL
DU-8426	42165320640000	ACTIVE	INJ_WAG
DU-8427	42165331340000	ACTIVE	PROD_OIL
DU-8428	42165331300000	TA	PROD_OIL
DU-8429	42165332900000	TA	PROD_OIL
DU-8431	42165333520000	TA	PROD_OIL
DU-8432	42165333460000	ACTIVE	PROD_OIL
DU-8433	42165357090000	TA	PROD_GAS
DU-8434	42165380560000	ACTIVE	PROD_OIL
DU-8435	42165380570000	DRILL	PROD_OIL
DU-8436	42165380620000	DRILL	PROD_OIL
DU-8439	42165380650000	ACTIVE	PROD_OIL
DU-8440	42165380630000	ACTIVE	PROD_OIL
DU-8441	42165380640000	DRILL	PROD_OIL
DU-8501	42165008180000	P & A	PROD_OIL
DU-8502	42165008240000	ACTIVE	PROD_OIL
DU-8503	42165008170000	ACTIVE	PROD_OIL
DU-8504	42165008200000	ACTIVE	PROD_OIL
DU-8505	42165008230000	TA	PROD_OIL
DU-8506	42165008050000	TA	INJ_H2O
DU-8507	42165008060000	ACTIVE	PROD_OIL
DU-8508	42165008080000	ACTIVE	PROD_OIL
DU-8509	42165033040000	P & A	PROD_OIL
DU-8510	42165008070000	ACTIVE	INJ_WAG
DU-8511	42165008100000	ACTIVE	INJ_WAG
DU-8512	42165008090000	TA	INJ_H2O
DU-8513	42165008210000	ACTIVE	PROD_OIL
DU-8514	42165008120000	P & A	PROD_OIL
DU-8515	42165008150000	ACTIVE	INJ_H2O
DU-8516	42165008190000	P & A	PROD_OIL
DU-8517	42165303650000	ACTIVE	PROD_OIL
DU-8518	42165303310000	ACTIVE	PROD_OIL
DU-8519	42165303010000	TA	INJ_GAS
DU-8520	42165303610000	ACTIVE	INJ_WAG
DU-8521	42165303620000	INACTIVE	INJ_WAG
DU-8522	42165303020000	ACTIVE	INJ_WAG

DU-8523	42165303110000	ACTIVE	INJ_WAG
DU-8524	42165303130000	ACTIVE	INJ_WAG
DU-8525	42165303080000	ACTIVE	PROD_OIL
DU-8526	42165303120000	TA	PROD_OIL
DU-8527	42165303630000	INACTIVE	INJ_WAG
DU-8528	42165303100000	ACTIVE	PROD_OIL
DU-8529	42165303090000	ACTIVE	PROD_OIL
DU-8530	42165304220000	ACTIVE	PROD_OIL
DU-8531	42165304310000	TA	PROD_OIL
DU-8532	42165304490000	ACTIVE	PROD_OIL
DU-8533	42165304300000	TA	INJ_H2O
DU-8534	42165305410000	ACTIVE	INJ_WAG
DU-8535	42165315640000	TA	PROD_OIL
DU-8536	42165315680000	ACTIVE	PROD_OIL
DU-8537	42165315670000	ACTIVE	PROD_OIL
DU-8538	42165353700000	TA	PROD_GAS
DU-8539	42165353770000	ACTIVE	PROD_GAS
DU-8540	42165353990000	ACTIVE	PROD_OIL
DU-8541	42165353980000	ACTIVE	PROD_OIL
DU-8542	42165360100000	ACTIVE	PROD_OIL
DU-8543	42165360110000	ACTIVE	PROD_OIL
DU-8544	42165360120000	ACTIVE	PROD_OIL
DU-8545	42165360130000	ACTIVE	PROD_OIL
DU-8546	42165368340000	ACTIVE	PROD_GAS
DU-8547	42165368330000	TA	PROD_GAS
DU-8548	42165380660000	DRILL	PROD_OIL
DU-8601	42165005590000	ACTIVE	PROD_OIL
DU-8602	42165005630000	P & A	PROD_OIL
DU-8603	42165007410000	P & A	INJ_H2O
DU-8604	42165005640000	ACTIVE	PROD_OIL
DU-8605	42165005610000	ACTIVE	PROD_OIL
DU-8606	42165007420000	P & A	PROD_OIL
DU-8607	42165005620000	P & A	PROD_OIL
DU-8608	42165005650000	ACTIVE	INJ_H2O
DU-8609	42165005660000	P & A	INJ_H2O
DU-8610	42165005600000	TA	INJ_H2O
DU-8611	42165104260000	TA	INJ_H2O
DU-8612	42165318750000	ACTIVE	PROD_OIL
DU-8613	42165304210000	ACTIVE	PROD_OIL
DU-8614	42165333510000	ACTIVE	PROD_OIL
DU-8615	42165367580000	ACTIVE	PROD_OIL
DU-8616	42165367590000	ACTIVE	PROD_OIL
DU-9201	42165009540000	TA	INJ_H2O
DU-9202	42165009560000	P & A	INJ_H2O
DU-9203	42165009620000	TA	INJ_H2O
DU-9204	42165352130000	TA	PROD_OIL
DU-9301	42165009630000	P & A	INJ_H2O
DU-9302	42165032270000	P & A	PROD_OIL
DU-9303	42165002110000	P & A	PROD_OIL
DU-9304	42165002560000	TA	INJ_H2O
DU-9305	42165002150000	P & A	PROD_OIL
DU-9306	42165002100000	TA	PROD_OIL
DU-9307	42165316060000	ACTIVE	PROD_OIL
DU-9308	42165002120000	P & A	INJ_H2O

DU-9401	42165012200000	P & A	INJ_H2O
DU-9402	42165012210000	P & A	INJ_H2O
DU-9403	42165012180000	P & A	INJ_H2O
DU-9501	42165002750000	P & A	INJ_H2O
DU-9502	42165002760000	TA	INJ_H2O
DU-9503	42165023240000	TA	INJ_H2O
DU-9504	42165023300000	P & A	PROD_OIL
DU-9505	42165104270000	P & A	INJ_H2O

Appendix 7. Summary of Key Regulations Referenced in MRV Plan

There are two primary regulations cited in this plan:

1. Texas Administrative Code Title 16 Part 1 Chapter 3 Oil & Gas Division
2. 40 CFR Parts 144, 145, 146, 147

For reference, TAC 16, Part 1 (3) was accessed September 1, 2014 at: http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=4&ti=16&pt=1&ch=3&rl=Y and the table of contents is included below.

Texas Administrative Code

TITLE 16	ECONOMIC REGULATION
PART 1	RAILROAD COMMISSION OF TEXAS
CHAPTER 3	OIL AND GAS DIVISION

Table of Contents

§3.81	Brine Mining Injection Wells
§3.83	Tax Exemption for Two-Year Inactive Wells and Three-Year Inactive Wells
§3.84	Gas Shortage Emergency Response
§3.85	Manifest To Accompany Each Transport of Liquid Hydrocarbons by Vehicle
§3.86	Horizontal Drainhole Wells
§3.91	Cleanup of Soil Contaminated by a Crude Oil Spill
§3.93	Water Quality Certification Definitions
§3.95	Underground Storage of Liquid or Liquefied Hydrocarbons in Salt Formations
§3.96	Underground Storage of Gas in Productive or Depleted Reservoirs
§3.97	Underground Storage of Gas in Salt Formations
§3.98	Standards for Management of Hazardous Oil and Gas Waste
§3.99	Cathodic Protection Wells
§3.100	Seismic Holes and Core Holes
§3.101	Certification for Severance Tax Exemption or Reduction for Gas Produced From High-Cost Gas Wells
§3.102	Tax Reduction for Incremental Production
§3.103	Certification for Severance Tax Exemption for Casinghead Gas Previously Vented or Flared
§3.106	Sour Gas Pipeline Facility Construction Permit
§3.107	Penalty Guidelines for Oil and Gas Violations

Oxy Response
September 21, 2015

Request for Additional Information, July 17, 2015: Oxy Denver Unit CO_2 Subpart MRV Plan

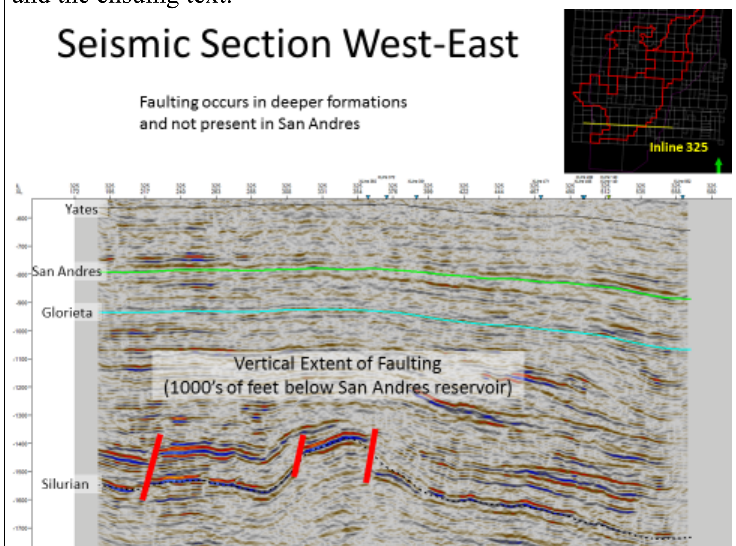
NOTE: Oxy completed the response in the last column of this form and indicated revised page numbers on the page column (in parentheses) but did not alter the rest of the form unless indicated as follows in: [ALL CAPS].

Instructions [FROM EPA]: Please enter responses into this table. Any long responses, references, or supplemental information may be attached to the end of the table as an appendix. Supplemental information may also be provided in a resubmitted MRV plan.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
1.	1 – Facility Information	5	MRV Plan: "Injection wells included in this report are permitted as UIC Class II wells; other wells are permitted through Texas Railroad Commission (TRRC) through TAC 16 Part 1 Chapter 3." All of the UIC Class II wells are permitted through the Texas Railroad Commission (TRRC). In several locations, the plan reads as though "other" wells (i.e. some wells) are permitted by TRRC.	Sections 1, 2.2.1 and 2.3.2 of the MRV Plan have been edited as indicated in Questions 1, 4, and 7 to clarify that TRRC has been delegated primacy for implementing the UIC Class II program in Texas.
2.	2.2.1 – Geology of the Wasson Field	8	MRV Plan: "The Wasson Field produces oil from the San Andres formation, a layer of permeable dolomites that were deposited in a shallow marine environment during the Permian Era, some 250 to 300 million years ago." The language in this section describes the Permian "Era", however geologists generally refer to the Permian as a geologic "Period". The last paragraph appears to equate topography (i.e. high spots) to structural geology (i.e. places where oil and gas have accumulated). Please clarify.	The MRV plan has been edited to revise "Permian Era" to "Permian Period." Section 2.2.1 of the MRV Plan has been edited as follows: Originally flat, there are now variations in elevation within the San Andres Formation across the Permian Basin. The relative high spots, such as the Wasson Field, have become the places where oil and gas have accumulated over the ensuing millions of years.

No.	MRV Plan Section	MRV Plan Page	EPA Questions	Responses
3.	2.2.1 – Geology of the Wasson Field	8 (9)	MRV Plan: "There are a number of sections above the formation that are impermeable and serve as reliable barriers to prevent fluids from moving upwards toward the surface. These barriers are referred to as seals because they effectively seal fluids into the rock formations underneath them. In the Wasson Field, the seals include anhydrite and impermeable dolomite sections that comprise the upper San Andres, as well as intervals in the Grayburg, Seven Rivers, Tansill and Rustler formations." What data/information support the continuity of these sealing zones across the unit?	The MRV Plan has been edited to include the following: The San Andres reservoir is capped with nearly 400 feet of impermeable dolomite, referred to as the upper San Andres. This is the seal that has kept oil and gas trapped in the lower San Andres formation for millions of years thus indicating it is clearly a seal of the highest integrity. Other zones also serve as seals. The properties of these seal intervals can be interpreted from logs run across the sealing intervals. Logs, such as, SP (spontaneous potential) logs, gamma ray logs, and porosity logs, all indicate lack of permeability. Logs in multiple wells throughout Wasson confirm the presence of these seals over the entire field. See also Response No. 10.
4.	2.2.1 – Geology of the Wasson Field	9	MRV Plan: "U.S. EPA's Underground Injection Control (UIC) and Texas Railroad Commission (TRCC) regulations require that all wells drilled through these intervals confine fluids to the stratum in which they are encountered or injected." Note that Texas has primacy for the Class II UIC Program.	As indicated in Response No. 1, the MRV Plan has been edited to clarify the TRRC has primacy for UIC Class II implementation.

Oxy Response
September 21, 2015

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
5.	2.2.1 – Geology of the Wasson Field	11-12	MRV Plan describes the results of seismic surveys (north-south) conducted to characterize the formations and inform the reservoir models to demonstrate the lack of faulting. Please describe the seismic survey detection shown in Figure 5 [AND FIGURE 6]. For example, over what time period was the survey conducted? Was an east-west seismic survey conducted? MRV Plan: "Fluids, both water and CO_2, have been successfully injected in the Denver Unit since the mid 1960's and there is no evidence of any interaction with existing or new faults or fractures." Please describe what information supports this conclusion. For example, does the injection and production data over time support the conclusion that there is no migration of fluids vertically through the seal rock?	The MRV Plan has been edited to include the following east-west cross-section, similar to the north-south cross-section in the MRV Plan, and the ensuing text.  The Wasson seismic survey is a 3D shoot of the Wasson conducted in 1994. Leakage due to interaction with existing or new faults would lead to anomalies from expected performance. Such anomalies would lead to an investigation, which may include measures such as injection profile surveys and pressure measurements to identify the cause. Poor performance could be attributed to inadequate pattern development, poor well conditions (e.g., scale buildup), conformance within the formation, or a potential leak. The investigation would identify the cause of the anomaly and guide the course of action.

<table>
<tr><th rowspan="2">No.</th><th colspan="2">MRV Plan</th><th rowspan="2">EPA Questions</th><th rowspan="2">Responses</th></tr>
<tr><th>Section</th><th>Page</th></tr>
<tr><td>6.</td><td>2.2.3 – The Geology of the Denver Unit within the Wasson Field</td><td>15 (16)</td><td>MRV Plan: “Oxy has calculated the total pore space within the Denver Unit, from the top of the reservoir down to the spill point, which is located at -1,675 ft subsea or roughly 5,000 – 5,500 feet below the surface, to be 8,848 MMB. At reservoir conditions the Denver Unit could hold about 14,700 Bscf (775 MMMT) CO_2 in the reservoir space above the spill point. Oxy forecasts that at the end of EOR operations stored CO_2 will fill approximately 25% of calculated storage capacity.”

What considerations were taken into account in calculating the storage capacity?</td><td>The MRV Plan has been edited to include the following language: The volume of CO_2 storage is based on the estimated total pore space within the Denver Unit from the top of the reservoir down to the spill point, or about 8.848 MMB. This is the volume of rock multiplied by porosity. CO_2 storage is calculated assuming an irreducible water saturation of 0.15, an irreducible oil saturation of 0.10 and a CO_2 formation volume factor of 0.45.
<table>
<tr><th colspan="2">Top of F1 to -1675 ftss (shallowest BOZO Depth)</th></tr>
<tr><th>Variables</th><th>Denver Unit Outline</th></tr>
<tr><td>Pore Volume [RB]</td><td>8,847,943,353</td></tr>
<tr><td>B_{CO2}</td><td>0.45</td></tr>
<tr><td>S_{wirr}</td><td>0.15</td></tr>
<tr><td>S_{orCO2}</td><td>0.1</td></tr>
<tr><td>Max CO_2</td><td>14,746,572,255</td></tr>
<tr><td>Max CO_2</td><td>14.7 TCF</td></tr>
</table>

$$CO_2(max) = Volume(RB) * (1 - S_{wirr} - S_{orCO2}) / B_{CO2}$$

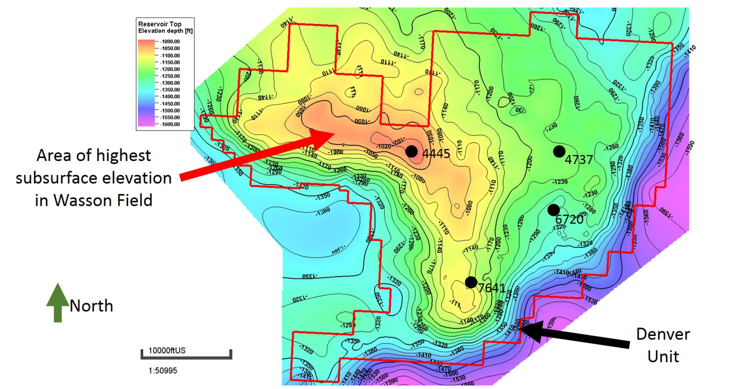
The formation volume factor of CO_2 (B_{CO2}) is the ratio of reservoir volume in barrels to Mscf at standard conditions. At 1900 psi and 105 ^{o}F, the density of CO_2 is approximately 0.740 g/cc, which translates to a CO_2 formation volume factor of 0.45.</td></tr>
</table>

Oxy Response
September 21, 2015

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
7.	2.3.2 – Wells in the Denver Unit	19 (20)	MRV Plan: "The wells drilled after 1996 were completed using state-of-the-art standards." What are the state-of-the-art standards that were used? MRV Plan: "The injection wells are subject to additional requirements promulgated by EPA – the UIC Class II program – implementation of which has been delegated to the TRRC." What are the additional requirements promulgated by EPA that are being referred to?	The MRV Plan has been edited to include the following language: The term "State-of-the-art standards" refers to the use of regular weight casing cemented to surface. In 1996, Shell, which then operated the Denver Unit, as well as the major Clearfork leases that lie under the Denver Unit, implemented a policy that wells be cemented to surface following these standards. Oxy continues to follow this practice. As indicated in Response No. 1, the MRV Plan has been edited to clarify the TRRC has primacy for UIC Class II implementation.
8.	2.3.2 – Wells in the Denver Unit	20	What types of mechanical integrity tests are conducted on injection and production wells? How frequently are they conducted?	Section 2.3.2 describes the MIT provisions in the TRRC rules for injection wells in oil fields including test types and frequency. Production wells are regulated by TRRC because of their location in oil fields. The TRRC requires all wells in oil fields to constrain fluids within the strata in which they are located and to demonstrate well integrity before use and before closure.

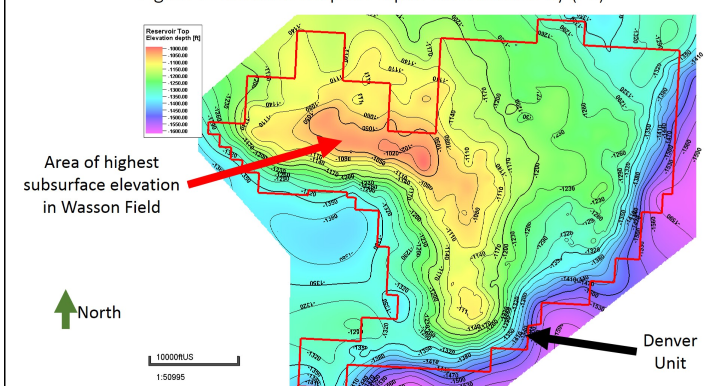
No.	MRV Plan		EPA Questions	Responses
	Section	Page		
9.	2.3.6 – Facilities Locations	25 (27)	MRV Plan: "Most, if not all other Wasson Units, inject at pressures a little higher than Denver Unit and all maintain an IWR of at least one. Higher pressures in the surrounding areas confine Denver Unit fluids within the Unit." "The second way Oxy contains fluids within the Denver Unit is to drill wells along the lease lines that are designed to avoid loss of valuable fluids from the unit. To the north Oxy has established lease line agreements with the neighboring CO_2 units. These agreements provide for offsetting injectors or offsetting producers along the lease line that balance one another. For example, an injector on one side is offset and balanced by an injector on the other side. The two paired injectors are maintained on injection in such a way as to give Oxy and its partners sufficient assurance that a no-flow boundary is maintained at the Unit boundary. This restricts the flow of injected CO_2 or mobilized oil from one unit to the other. A similar dynamic is maintained for paired producers. To the east, south and west, there are no operations on the other side of the Denver Unit boundary. Near these boundaries, a row of water injectors or producers are maintained to keep CO_2 or mobilized oil from leaving the Denver Unit." How would Oxy's fluid containment methods be impacted by changes in the adjacent operations that might create lower pressure at the boundaries? For example, does Oxy monitor pressures at the boundary or stay in coordination with adjacent operations?	The MRV Plan has been edited with the following language: As shown in Figure 7, Oxy operates the ODC and Willard Units to the north of the Denver Unit and therefore has first-hand knowledge of pressures on both sides of Unit boundaries. In the case of the other units, Oxy maintains lease line agreements with the other operators to assure injection and production is balanced along the lease line. In this way, Oxy is assured that CO_2 and mobilized oil do not escape the Denver Unit. The MRV Plan has also been edited to include changes to Section 2.3.6 of the MRV Plan: Most, if not all other Wasson Units, inject at pressures a little higher than Denver Unit and all maintain an IWR of at least one. In addition to the two methods mentioned above, higher pressures in the surrounding areas further assure that Denver Unit fluids stay within the Unit.

No.	MRV Plan Section	Page	EPA Questions	Responses
10.	2.4 – Reservoir Modeling	28-29	MRV Plan: "The seal rocks above the flood interval are not included in the simulation since they are impermeable and do not participate in fluid flow processes." What is the average porosity and permeability for the sealing formation above the injection zone?	The MRV Plan has been edited to include the following language: Porosity and permeability have been measured on cores taken from the upper San Andres sealing zone. Measured permeabilities are less than 0.01 md. Permeabilities in the pay zones typically range from 1 to 10 md. Permeabilities in anhydrite intervals are zero. Anhydrites are one of the most common seal rocks for oil and gas reservoirs. Ultra-low permeability rocks do not contribute to flow and therefore do not need to be included in simulation models. – See also Response No. 3.
11.	2.4 – Reservoir Modeling	29 (30 - 31)	Based on the elevations shown in Figure 7 and the description of fluid flow direction toward the elevated section of the unit (toward to DU 4445), one would expect to see a thicker gas zone (red) at DU 4445. However, based on Figure 7, GW6720 and DU4737 have similar elevations, yet the thickness of the gas zone appears to vary between these two locations. Could you describe the reason for the difference? Is there any log data available for the northern part of the unit?	The MRV Plan has been edited to include the following language: Reservoir quality varies markedly across the Unit. Thus, response to CO_2 flooding is also expected to vary within the Unit. Based on reservoir development and geological characteristics, the Unit is divided into three distinct areas: (a) Eastern Denver Unit, (b) WACO2, and (c) Final Injection Area. Figure 14 demonstrates the delineated areas and the typical porosity and permeability development found in each of the subgroups. CO_2 flooding in these areas is implemented according to their reservoir characteristics. The Eastern Denver Unit began CO_2 injection in 1984, received an initially large CO_2 slug size, then converted to a water alternating CO_2 injection scheme once a targeted CO_2 slug size was reached. The WACO2 area also began CO_2 injection in 1984. However, this area injected water alternating CO_2 from the beginning. Once the Eastern Denver Unit area began its alternating injection scheme, lower CO_2 injection rates were required in the developed portion of the field, allowing expansion of the flood into the Final Injection Area. Wells DU 4737 and DU 6720 typify the properties in the Eastern Denver Unit; well DU 7541 typifies the properties of the WACO2 area; and well DU 4445 is typical of the Final Injection Area. The red lines in Figure 14 are intended to point to areas of the Unit that

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
				are similar to, or represented by, the selected wells. They do not point to the actual well locations. The red line for well 6720 points to the general location of the well, not necessarily the exact location. Lines for the other wells connect the well log to the label for the area they are representative of. A structure map from Figure 8 has been modified below to (Figure 15, page 31) show the well locations indicated in Figure 14.  According to this map, one would expect well 4445 to have the largest gas column and well 6720 the smallest gas column, consistent with the logs shown on Figure 14.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
12.	2.4 – Reservoir Modeling	29 (31)	MRV Plan: "The production and injection performance of each pattern is monitored in relation to the predicted (i.e., simulated) behavior. Special attention is focused on those patterns where performance does not match the model. In this way, any performance problems are quickly identified and remedied." What are the parameters used for validating or calibrating the model? Could you demonstrate the accuracy of the model to predict CO_2 migration in the domain? What are examples of "performance problems" that may be faced?	The MRV Plan has been edited to include the following language; See Response No. 13. Predicted behavior for all patterns can be constructed in one of two ways: from simulation or from actual performance of a more mature analog project. Simulation models may represent either a multi-pattern segment of the field, or be an element of symmetry model representing a portion of a single pattern. Figure 12 illustrates an element of symmetry modeling approach that is used at the Denver Unit. Many such models have been constructed to capture the variation in geology throughout this large CO_2 project. Predictions may also be constructed from the actual performance data of analog projects that already have received significant CO_2 injection. Where simulation is used to generate the predictions, the simulation results should be validated by comparison with analog project performance if possible. Prediction models forecast oil, water and CO_2 production, as well as CO_2 and water injection. If actual performance differs in a noticeable way from prediction, reservoir engineers use professional judgment formed by an analysis of technical data to determine where further attention is needed. The appropriate response could be to change injection rates, to alter the prediction model or to find and repair fluid leaks.

Oxy Response
September 21, 2015

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
13.	3.1 – Active Monitoring Area	30 (32)	MRV Plan: "CO_2 injected into the Denver Unit remains contained within that unit because of the fluid and pressure management impacts associated with CO_2 EOR. Namely, maintenance of an IWR of 1.0 assures a stable reservoir pressure; managed leaseline injection and production wells are used to retain fluids in the Denver Unit as indicated in Section 2.3.6; and operational results indicate that injected CO_2 is retained in the Denver Unit." What operational results or monitoring indicate that the injected CO_2 is retained in the Denver Unit?	The MRV Plan has been edited to include the following example of operational results; See Response No. 12. "(such as normal pressures in the injection interval and injection and production rates within predicted ranges) "
14.	3.1 – Active Monitoring Area	30 (32)	MRV Plan: "Furthermore, over geologic timeframes, stored CO_2 will remain in the Denver unit because it is the area with the highest elevation CO_2 will not migrate downdip as described in Section 2.2.3." What is the structure (elevation) in the unit along the western border of the Denver Unit? (See Figure 7 [REVISED FIGURE 8])	The MRV Plan has been edited to substitute the following map for Figure 8. Figure 7 Structure Map on Top of San Andres Pay (F1)  [1] This is a structure map on top of the San Andres pay zone.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
15.	3.3 – Monitoring Timeframe	30 (32)	MRV Plan: "…with a subsidiary purpose of establishing long-term containment of a measureable quantity of CO_2 in subsurface geological formations at the Denver Unit for an estimated period of ten years, the "Specified Period." The Specified Period includes all or some portion of the period 2014 through 2021." Please confirm the "Specified Period".	The MRV Plan has been edited as follows: The Specified Period will begin Jan 1, 2016 and is anticipated to end prior to December 31, 2026.
16.	4.2 – Existing Well Bores	31-32 (33 - 35)	What are the testing and monitoring activities that an injection well receives on average in a year? How frequently is an injection well visited by Oxy staff on average? What are the testing and monitoring activities that a production well receives on average in a year? How frequently is a production well visited by Oxy staff on average? What is the extent and frequency of aerial inspections for the wells?	The MRV Plan has been edited to include the following language: Pressure and flowrates are monitored continuously in all active injectors. Flow rates of oil, water and CO_2 are measured on all producers at least monthly. All wells are observed by Oxy personnel or Oxy Contractors at least weekly. Likewise, aerial surveys are completed weekly.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
17.	4.4 – Natural or Induced Seismicity	33 (36)	MRV Plan: On this basis, Oxy concludes that there is no direct evidence that natural seismic activity poses a significant risk for loss of CO_2 to the surface in the Permian Basis, and specifically in the Denver Unit. Does induced seismic activity pose a significant risk for loss of CO_2?	Section 4.4 of the MRV Plan has been edited to include the following language: The concern about induced seismicity is that it could lead to fractures in the seal providing a pathway for CO_2 leakage to the surface. Based on Oxy's review of seismic data, none of the recorded "earthquakes" in the Permian Basin have occurred in the Wasson Field; the closest was nearly 80 miles away. Moreover, Oxy is not aware of any reported loss of injectant (waste water or CO_2) to the surface associated with any seismic activity. Therefore, there is no direct evidence to suggest that natural seismic activity poses a significant risk for loss of CO_2 to the surface in the Permian Basis,n and specifically in the Denver Unit. If induced seismicity resulted in a pathway for material amounts of CO_2 to migrate from the injection zone, other reservoir fluid monitoring provisions (e.g., reservoir pressure, well pressure, and pattern monitoring) would lead to further investigation. See Response No. 5 for additional information on such investigations.
18.	4.5 – Previous Operations	34 (36)	MRV Plan: "As a result, Oxy has checked for the presence of old, unknown wells throughout the Denver Unit over many years. Based on that effort, Oxy has concluded that there are no unknown wells within the Denver Unit. Oxy's operational experience confirms this conclusion. Oxy has successfully optimized CO_2 flooding with infill wells because the confining zone has not been impaired by previous operations." How did Oxy conduct its investigation to identify old, unknown wells?	The MRV Plan has been edited to indicate the following: Oxy reviews TRRC's records and/or Oxy well files, and may conduct ground surveys to identify old, unknown wells as a part of any AoR review in preparation for drilling a new well.
19.	4.6 – Pipeline/ Surface Equipment	34 (37)	What is the extent and frequency of visual inspections of the pipeline and surface equipment? Other than visual inspections, are there other types of monitoring being conducted that can alert operators to a pipeline leak?	The MRV Plan has been edited to include the following language: Oxy conducts aerial inspections of the pipeline and surface equipment in the Denver Unit once a week. Field personnel are trained to look for and report potential leaks from pipeline and surface equipment as part of their routine activities.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
20.	4.7 – Lateral Migration Outside the Denver Unit	35 (37)	MRV Plan: "Based on site characterization and planned and projected operations Oxy estimates the total volume of stored CO_2 will be approximately 20% of calculated capacity." Previous sections referred to an estimated 25% of calculated capacity.	This is a typographical error and the MRV Plan has been edited to indicate 25% of potential capacity.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
21.	4.10 – Monitoring, Response, and Reporting Plan for CO2 Loss	36 – (38-39)	Please describe the spatial and temporal extent (e.g., frequency) of the monitoring activities under the plan. (See Table 3) Is the reservoir pressure monitored at all wells in the Denver unit? If not, what would be the spatial coverage for identifying a reservoir pressure anomaly to indicate loss of seal in an abandoned well? MRV Plan: "Given the uncertainty concerning the nature and characteristics of leaks that will be encountered, it is not clear the method for quantifying the volume of leaked CO_2 that would be most appropriate." Please describe the types of methods that would be considered.	Table 3 in Section 4.10 (page 38-39) of the MRV Plan has been modified to clarify known potential leakage risks, monitoring methods and frequency, and the anticipated response plan. As indicated throughout the MRV plan, the operation of EOR facilities is specifically designed to control fluid flows and avoid leaks. While leakage events may occur (as indicated in Table 3), they are few and typically of small duration and volume. To the extent possible Oxy will use published emission factors, such as those included in Subpart W of the GHG Reporting program to quantify CO_2 volumes released. Oxy will use emission factors developed through on-going industry studies or based on engineering estimates for other small volumes released. Although we have been unable to find documented cases to date, it is possible that unique leakage events could take place that would necessitate the development of a new quantification approach yet to be defined. Given the tight operations controls and daily monitoring, Oxy cannot envision the circumstances of such an event. If one were to occur, Oxy will take appropriate measures to prevent uncontrolled fluid flow and then develop an estimate of the leaked amount of CO_2 using data from the event (e.g., duration, magnitude, field conditions) as well as modeling and engineering estimates. If such an event were to occur Oxy would document the methodology used. This answer applies to Questions No. 23 and No. 27 below. – Reservoir pressures are measured in the Denver Unit when the need for additional information is indicated. Pressure fall-off or pressure build-up tests may be performed when injection or production rates differ from forecast and additional information seems appropriate. See Response No. 5 and No.13.

Oxy Response
September 21, 2015

<table>
<tr><th rowspan="2">No.</th><th colspan="2">MRV Plan</th><th rowspan="2">EPA Questions</th><th rowspan="2">Responses</th></tr>
<tr><th>Section</th><th>Page</th></tr>
<tr><td>22.</td><td>5.1.1 – General Monitoring Procedures</td><td>38 (41)</td><td>MRV Plan: “As part of its ongoing operations, Oxy monitors and collects flow, pressure, and gas composition data from the Denver Unit in centralized data management systems. This data is monitored continually by qualified technicians who follow Oxy response and reporting protocols when the systems deliver notifications that data exceed statistically acceptable boundaries.”

What is the typical composition of injected CO_2 and how much does it vary over time, particularly with respect to H_2S concentrations?

What is the acceptable statistical boundary? Alternatively, what are the statistical parameters that trigger an investigation into a potential leak?</td><td>The MRV Plan has been edited in Section 5.1.1 as follows:

As part of its ongoing operations, Oxy collects flow, pressure, and gas composition data from the Denver Unit. Flow and pressure data is monitored through hourly scans by centralized data management systems. Alarms are triggered when data deviates by a specified amount from desired operational conditions. Alarms are investigated by qualified technicians who follow Oxy response and reporting protocols. Responses are described in the following sections (5.1.5-5.1.7).
The typical volume weight averaged composition of injected CO_2 is:
<table>
<tr><td>%N2</td><td>0.93813</td></tr>
<tr><td>% CO2</td><td>96.9484</td></tr>
<tr><td>%C1</td><td>0.76578</td></tr>
<tr><td>%C2</td><td>1.31588</td></tr>
<tr><td>%C3</td><td>0.00421</td></tr>
<tr><td>%IC4</td><td>0.00402</td></tr>
<tr><td>%NC4</td><td>0.00933</td></tr>
<tr><td>%IC5</td><td>0.00345</td></tr>
<tr><td>%NC5</td><td>0.00325</td></tr>
</table>
The standard deviation of the CO_2 concentration over the last year is less than 0.5%.

There is no significant amount of H_2S in the injected gas stream. It is below the measurement threshold. DUCRP sweetens the gas before returning it to the field.</td></tr>
</table>

No.	MRV Plan Section	MRV Plan Page	EPA Questions	Responses
23.	5.1.5 – CO_2 Emitted by Surface Leakage	41 (42-44)	MRV Plan: "A subsurface leak might not lead to a surface leak. In the event of a subsurface leak, Oxy would determine the appropriate approach for tracking subsurface leakage to determine and quantify leakage to the surface. To quantify leakage to the surface, Oxy would estimate the relevant parameters (e.g., the rate, concentration, and duration of leakage) to quantify the leak volume." Please describe the types of methods that might be employed to track subsurface leakage.	See Response No. 21
24.	5.1.5 – CO_2 Emitted by Surface Leakage	41 (44)	MRV Plan: "In the event leakage from the subsurface occurred diffusely through the seals, the leaked gas would include H_2S that would trigger the alarm on the personal monitors worn by field personnel. Such a diffuse leak from the subsurface has not occurred in the Denver Unit." What is the smallest leak that could be detected with this method?	The MRV Plan has been edited to include the following: The personal H_2S meters worn by field personnel can detect levels of H_2S as low as 0.1PPM.

Oxy Response
September 21, 2015

No.	MRV Plan Section	MRV Plan Page	EPA Questions	Responses
25.	5.1.5 – CO_2 Emitted by Surface Leakage	41 (44)	How large a change in annulus pressure is required to initiate an investigation and how are such excursions typically handled/investigated?	The MRV Plan has been edited to include the following language: Annular pressures in injectors should be close to zero in normal operating conditions because the annulus is isolated by the tubing and packer from injection fluids. Any higher pressure would indicate a potential leak in either the tubing or the packer and would trigger further investigation. If changes in pressure trigger a flag the investigation follows a course of increasing detail as needed. The investigation typically begins with simpler measures such as having a field technician inspect the well for faulty equipment (e.g., valves, flanges). Additional tests would be conducted on the well if the cause of the pressure change has not been determined. These tests can identify the nature and location of the problem. If the cause is still not determined, then an investigation involving a wider scope will be undertaken. This response also applies to detected anomalies referred to in Question No. 27 below. Annular pressures in producers should be also zero because the bottom-hole pressures in pumped-off wells should be well below hydrostatic levels.
26.	5.1.5 – CO_2 Emitted by Surface Leakage	45	MRV Plan: "Historically, Oxy has documented fewer than 4 unexpected release events each year at Denver Unit." Please describe what the underlying leakage mechanisms were for these events. What was the severity of the leak?	These releases were due to equipment failure and subsequent repair. Leaks averaged approximately 1100 MCF and were corrected in less than 24 hours.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
27.	6 – Determination of Baselines	45 (47)	If Oxy detects an anomaly in injection rates or reservoir pressure, how will the investigation of potential leakage take place?	See Response No. 21 and 25. Oxy's approach to investigating anomalies uses a process of elimination. The first reviews consider obvious problems such as equipment failure. If the problem cannot be identified and addressed then a broader look will take place in which Oxy will use modeling, injection data, production data, and other reports from an area to determine potential issues and how to investigate them.
28.	9.1 – Monitoring QA/QC	51 (54)	What API standards will be used for meter calibrations?	The MRV Plan has been edited to refer to the following standards: American Petroleum Institute (API) Report No. 3, Parts 2 and 3
29.	9.1 – Monitoring QA/QC	52 (54)	What method will be used for measuring CO_2 concentration?	The MRV Plan has been edited to refer to the following standards: Gas Processors Association (GPA) 2261:2013 Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography GPA 2186 – 02 Method for the Extended Analysis of Hydrocarbon Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Temperature Programmed Gas Chromatography

Complete list of final changes to MRV Plan

The following are minor typographical errors that were identified and corrected after the second version of the MRV Plan was submitted to EPA on September 1, 2015. These errors include the following and are indicated on the current revised page number:

1. Page 8, section 2.2.1: Only one of the two references to the Permian “Era” was corrected to Permian “Period;” both references are now correct.

2. Page 9, section 2.2.1 – first line, comma was removed after word “year.”

3. Page 9, section 2.1.1 – first paragraph, word “as” was inserted before “SP Logs.”

4. Page 34, section 4.2 - The extra line space was removed

5. Page 36, section 4.4 – “Basin” was spelled incorrectly as “Basin” and has been corrected.

6. Page 42, section 5.1.2 the word “of” was added between “each the” to read “each of the.”

7. Page 45, section 5.1.5 – the word “located” was replaced with “determined”

8. Page 54, section 9.1 – description of flow meter was modified to correct spelling of “data.”

9. Page 54, section 9.1 – the extra period was removed from the end of the first sentence under the section on Concentration of CO_2.

10. Page 55, section 9.3 – the extra period at end of this section was removed.

11. Page 55 - section 10 – first line was redundant and removed.

12. Page 61, Appendix A1 – the reference to “Figure 5” was corrected to refer to Figure A1-3.

13. Response Document – Comment number 11. The response was corrected to refer to Figure 14 not Figure 13.

Oxy Denver Unit CO_2 Subpart RR

Monitoring, Reporting and Verification (MRV) Plan

Final Version
September 2015

Table of Contents

Roadmap to the Monitoring, Reporting and Verification (MRV) Plan

Occidental Permian Ltd. (OPL) operates the Denver Unit in the Permian Basin for the primary purpose of enhanced oil recovery (EOR) using carbon dioxide (CO_2) flooding. OPL intends to inject CO_2 with a subsidiary purpose of establishing long-term containment of a measureable quantity of CO_2 in subsurface geological formations at the Denver Unit for an estimated period of ten years, the “Specified Period.” The Specified Period includes all or some portion of the period 2014 through 2021. During the Specified Period, OPL will inject CO_2 that is purchased (fresh CO_2) from affiliates of Occidental Petroleum Corporation (OPC) or third parties, as well as CO_2 that is recovered (recycled CO_2) from the Denver Unit CO_2 Recovery Plant (DUCRP). OPL, OPC and their affiliates (together, Oxy) have developed this monitoring, reporting, and verification (MRV) plan in accordance with 40 CFR §98.440-449 (Subpart RR) to provide for the monitoring, reporting and verification of the quantity of CO_2 sequestered at the Denver Unit during the Specified Period.

In accordance with Subpart RR, flow meters are used to quantify the volume of CO_2 received, injected, produced, contained in products, and recycled. If leakage is detected, the volume of leaked CO_2 will be quantified using two approaches. First, Oxy follows the requirements in 40 CFR §98.230-238 (Subpart W) to quantify fugitive emissions, planned releases of CO_2, and other surface releases from equipment. Second, Oxy’s risk-based monitoring program uses surveillance techniques in the subsurface and above ground to detect CO_2 leaks from potential leakage pathways in the subsurface. If a leak is identified, the volume of the release will be estimated. The CO_2 volume data, including CO_2 volume at different points in the injection and production process, equipment leaks, and surface leaks, will be used in the mass balance equations included 40 CFR §98.440-449 (Subpart RR) to calculate the volume of CO_2 stored on an annual and cumulative basis.

This MRV plan contains eleven sections:

- Section 1 contains general facility information.
- Section 2 presents the project description. This section describes the planned injection volumes, the environmental setting of the Denver Unit, the injection process, and reservoir modeling. It also illustrates that the Denver Unit is well suited for secure storage of injected CO_2.
- Section 3 describes the monitoring area: the Denver Unit in West Texas.

- Section 4 presents the evaluation of potential pathways for CO_2 leakage to the surface. The assessment finds that the potential for leakage through pathways other than the man-made well bores and surface equipment is minimal.
- Section 5 describes Oxy's risk-based monitoring process. The monitoring process utilizes Oxy's reservoir management system to identify potential leakage indicators in the subsurface. The monitoring process also entails visual inspection of surface facilities to locate leaks and personal H_2S monitors as a proxy for detecting potential leaks. Oxy's MRV efforts will be primarily directed towards managing potential leaks through well bores and surface facilities.
- Section 6 describes the baselines against which monitoring results will be compared to assess whether changes indicate potential leaks.
- Section 7 describes Oxy's approach to determining the volume of CO_2 sequestered using the mass balance equations in 40 CFR §98.440-449, Subpart RR of the Environmental Protection Agency's (EPA) Greenhouse Gas Reporting Program (GHGRP). This section also describes the site-specific factors considered in this approach.
- Section 8 presents the schedule for implementing the MRV plan.
- Section 9 describes the quality assurance program to ensure data integrity.
- Section 10 describes Oxy's record retention program.
- Section 11 includes several Appendices.

1. Facility Information

i) Reporter number – TBD

ii) All wells included in this report are permitted by the Texas Railroad Commission (TRRC), through TAC 16 Part 1 Chapter 3. The TRRC has primacy to implement the federal UIC Class II requirements and incorporated those provisions in TAC 16 Part 1 Chapter 3.

iii) All wells in the Denver Unit are identified by name, API number, status, and type. The list of wells as of August 2014 (roughly the date of MRV plan initial creation) is included in Appendix 6

2. Project Description

This section describes the planned injection volumes, environmental setting of the Denver Unit, injection process, and reservoir modeling conducted.

2.1 Project Characteristics

Using the modeling approaches described in section 2.4, Oxy has forecasted the total amount of CO_2 anticipated to be injected, produced, and stored in the Denver Unit as a result of its current and planned CO_2 EOR operations. Figure 1 shows the actual CO_2 injection, production, and stored volumes in the Denver Unit (main oil play plus the residual oil zone (ROZ)) for the period 1983 through 2013 (solid line) and the forecast for 2014 through 2111 (dotted line). The forecast is based on results from reservoir and recovery process modeling that Oxy uses to develop injection plans for each injection pattern, which is also described in section 2.4.

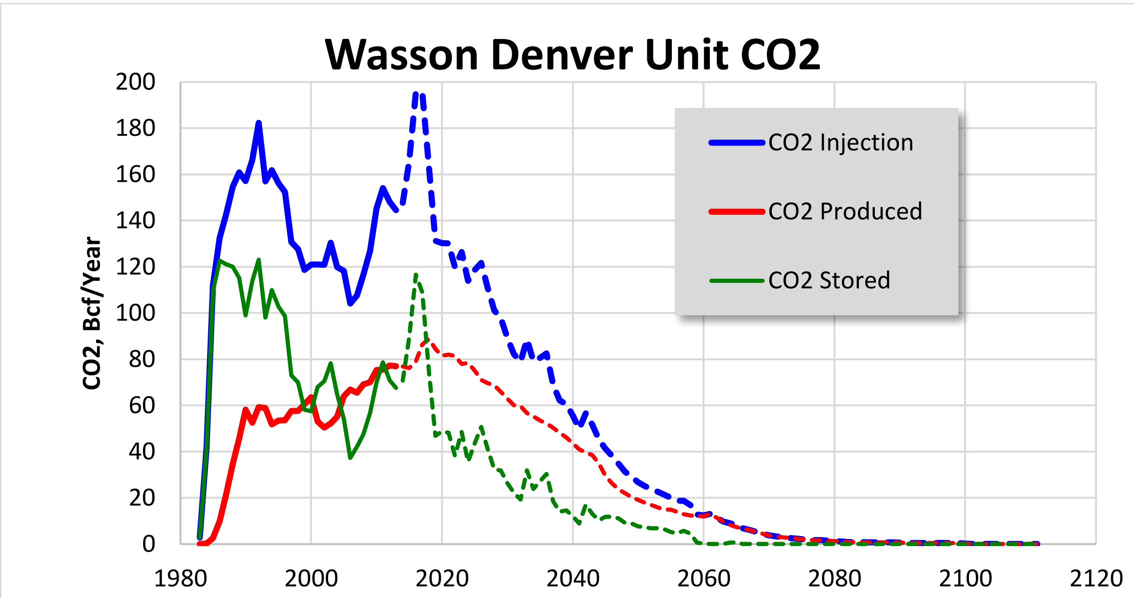


Figure 1 - Denver Unit Historic and Forecast CO_2 Injection, Production, and Storage 1980-2120

As discussed in Appendix 1 (**Background**), Oxy adjusts its purchase of fresh CO_2 to maintain reservoir pressure and to increase recovery of oil by extending or expanding the CO_2 flood. A volume of fresh CO_2 is purchased to balance the fluids removed from the reservoir and provide the solvency required to increase oil recovery. The data shows CO_2 injection, production, and storage through 2111 and anticipates new CO_2 storage volumes ending in 2059. Oxy has injected 4,035 Bscf of CO_2 (212.8 million metric tonnes (MMMT)) into the Denver Unit through the end of 2013. Of that amount, 1,593 Bscf (84.0 MMMT) was produced and 2,442 Bscf (128.8 MMMT) was stored.

Although exact storage volumes will be calculated using the mass balance equations described in Section 7, Oxy forecasts that the total volume of CO_2 stored over the lifetime of injection to be approximately 3,768 Bscf (200 MMMT), which represents approximately 25% of the theoretical storage capacity of the Denver Unit. For accounting purposes, the amount stored is the difference between the amount injected (including purchased and recycled CO_2) and the total of the amount produced less any

CO_2 that: i) leaks to the surface, ii) is released through surface equipment malfunction, or iii) is entrained or dissolved in produced oil.

Figure 2 presents the cumulative annual forecasted volume of CO_2 stored for a Specified Period 2014-2021. The cumulative amount stored is equal to the annual storage volume for that year plus the total of the annual storage volume(s) for the previous year(s) in a Specified Period. Hence the projected volume of CO_2 stored in the first year of the period specified in the graph is 70.7 Bscf (3.7 MMMT) and the cumulative in the second year is 160.1 Bscf (8.4 MMMT). In total, the eight-year volume is expected to be 603.5 Bscf (31.8 MMMT). This forecast illustrates the anticipated volume of subsidiary storage during a Specified Period; the actual amounts stored will be calculated as described in section 7 of this MRV plan.

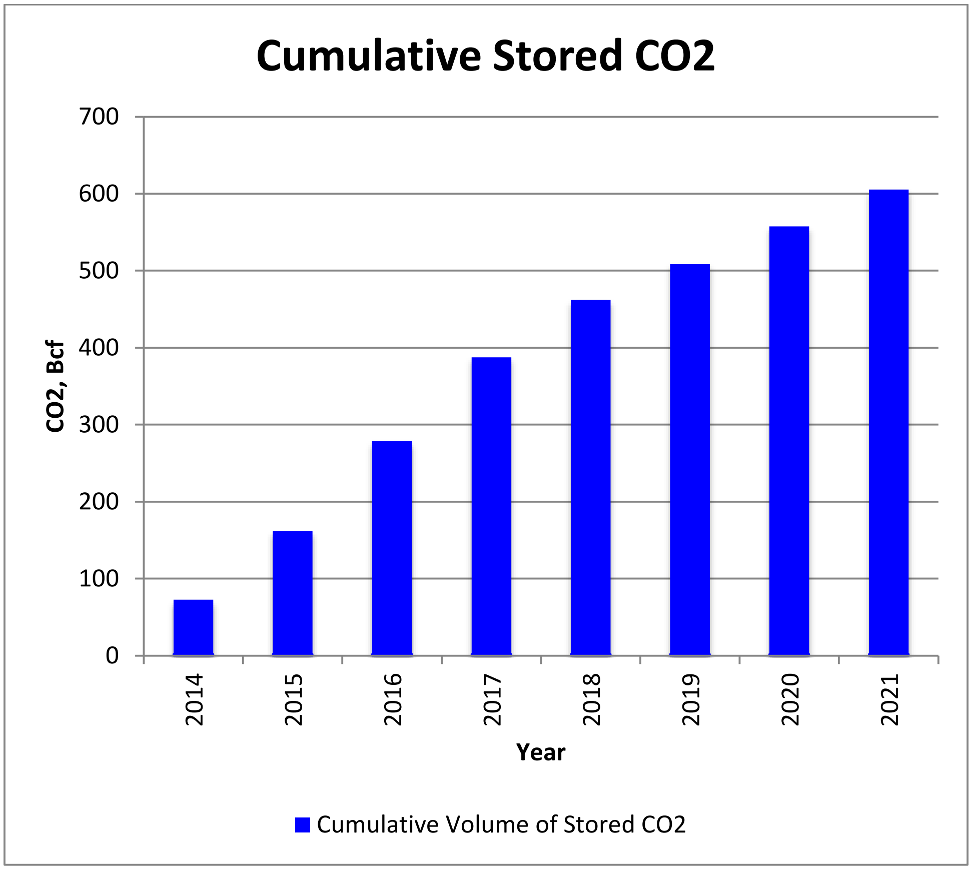


Figure 2 - Denver Unit CO_2 Storage Forecasted During the Specified Period 2014-2021

2.2 Environmental Setting

The project site for this MRV plan is the Denver Unit, located within the Wasson Field, in the Permian Basin.

2.2.1 Geology of the Wasson Field

The Wasson Field produces oil from the San Andres formation, a layer of permeable dolomites that were deposited in a shallow marine environment during the Permian Era, some 250 to 300 million years ago. This depository created a wide sedimentary basin, called the Permian Basin, which covers the western part of the Texas and the southeastern part of New Mexico. In the Permian Period this part of the central United States was under water.

The Wasson Field is located in southwestern Yoakum and northwestern Gaines counties of West Texas (See Figure 3), in an area called the Northwest Shelf. It is approximately five miles east of the New Mexico state line and 100 miles north of Midland, Texas as indicated with the red dot in Figure 3. The Wasson Field was discovered in 1936.

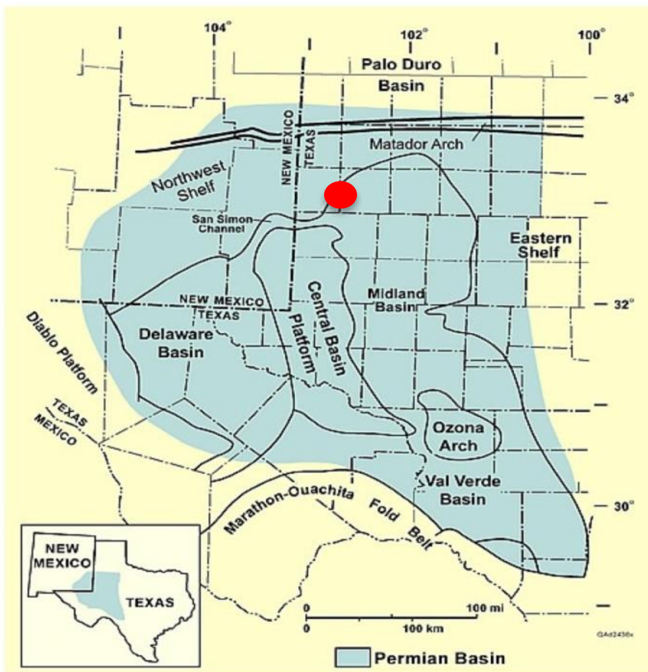


Figure 3 Permian Basin

With nearly 4,000 million barrels (MMB) of Original Oil in Place (OOIP), it is one of the largest oil fields in North America. In the years following its deposition, the San Andres formation has been buried under thick layers of impermeable rocks, and finally uplifted to form the current landscape. The process of burial and uplifting produced some unevenness in the geologic layers. Originally flat, there are now variations in elevation within the San Andres Formation across the Permian Basin. The relative high spots, such as the Wasson Field, have become the places where oil and gas have accumulated over the ensuing millions of years.

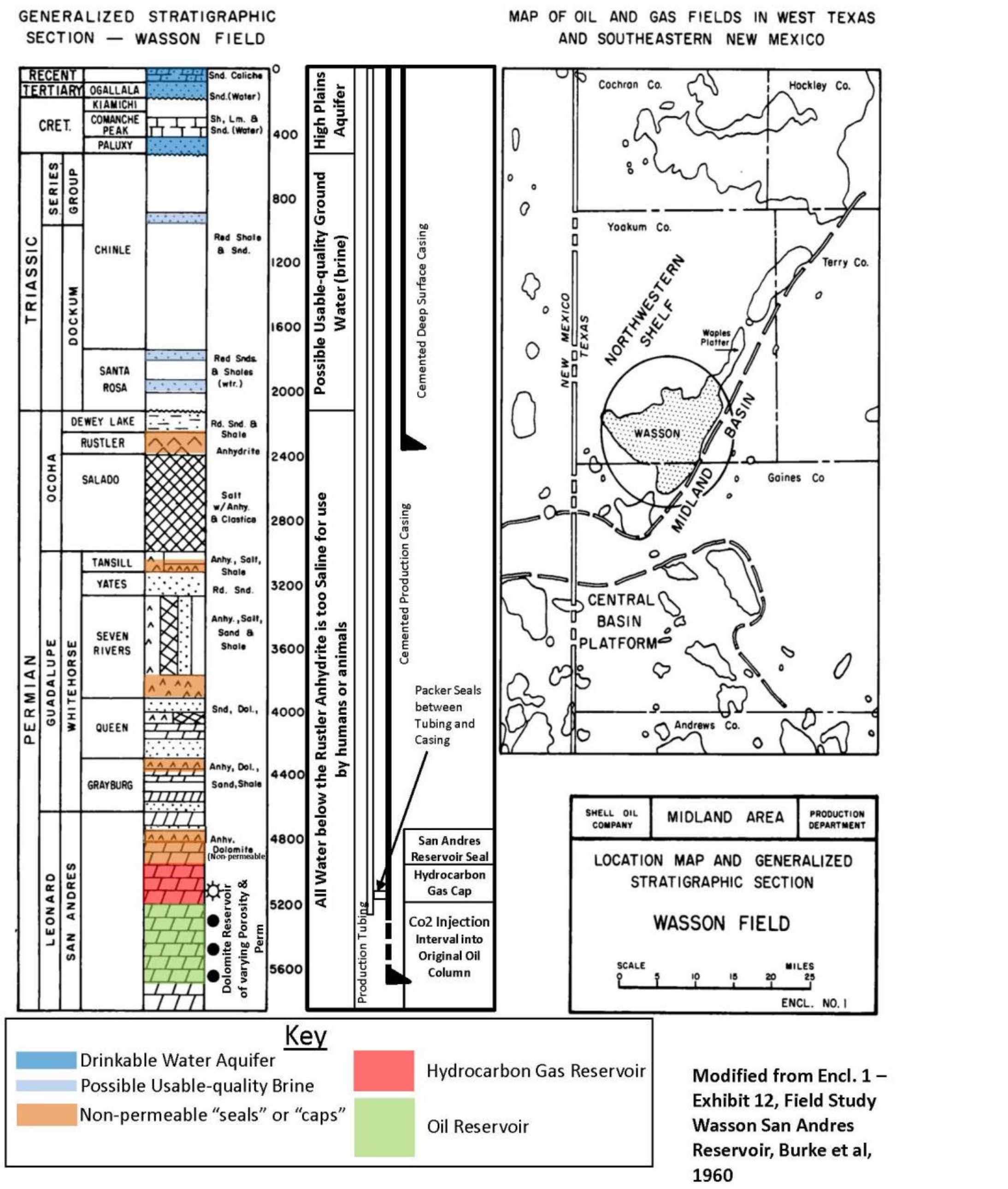
As indicated in Figure 4, the San Andres formation now lies beneath some 5,000 feet of overlying sediments. The San Andres reservoir is capped with nearly 400 feet of impermeable dolomite, referred to as the upper San Andres. This is the seal that has kept

oil and gas trapped in the lower San Andres formation for millions of years, thus indicating it is clearly a seal of the highest integrity. Other zones also serve as seals. The properties of these seal intervals can be interpreted from logs run across the sealing intervals. Logs, such SP (spontaneous potential) logs, gamma ray logs, and porosity logs, all indicate lack of permeability. Logs in multiple wells throughout Wasson confirm the presence of these seals over the entire field. These seals are highlighted in orange on Figure 4.

Between the surface and about 2,000 feet in depth there are intervals of underground sources of drinking water (USDW). These include the Ogallala and Paluxy aquifers, identified in blue in Figure 4. In addition other potentially useful brine intervals (having a higher dissolved solids content) are identified in light blue. TRCC, which has primacy to implement the UIC Class II program in Texas, requires that all wells drilled through these intervals confine fluids to the stratum in which they are encountered or injected. Wells are required to use casing and other measures to ensure confinement.[1]

[1] See Texas Administrative Code Title 16 Part 1 Chapter 3 Rule §3.7 found online at: http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=4&ti=16&pt=1&ch=3&rl=Y. For convenience, this rule is summarized in Appendix 7.

Figure 4 Stratigraphic Section at Wasson



There are no known faults or fractures affecting the Denver Unit that provide an upward pathway for fluid flow. Oxy has confirmed this conclusion in multiple ways. First and foremost, the presence of oil, especially oil that has a gas cap, is indicative of a good quality natural seal. Oil and, to an even greater extent gas, are less dense than the brine found in rock formations and tend to rise over time. Places where oil and gas remain trapped in the deep subsurface over millions of years, as is the case in the Wasson Field,

provide good proof that faults or fractures do not provide a pathway for upward migration out of the flooding interval. The existence of such faults or fractures in the Wasson Field would have provided a pathway for oil and gas and they would not be found there today.

Second, in the course of developing the field, seismic surveys have been conducted to characterize the formations and inform the reservoir models used to design injection patterns. These surveys show the existence of faulting well below the San Andres formation but none that penetrate the flooding interval. Figures 5 and 6 shows north-south and east-west seismic sections through the Denver Unit. Faulting can be identified deeper in the section, but not at the San Andres level. This lack of faulting is consistent with the presence of oil and gas in the San Andres formation at the time of discovery.

Figure 5 Seismic Section North-South

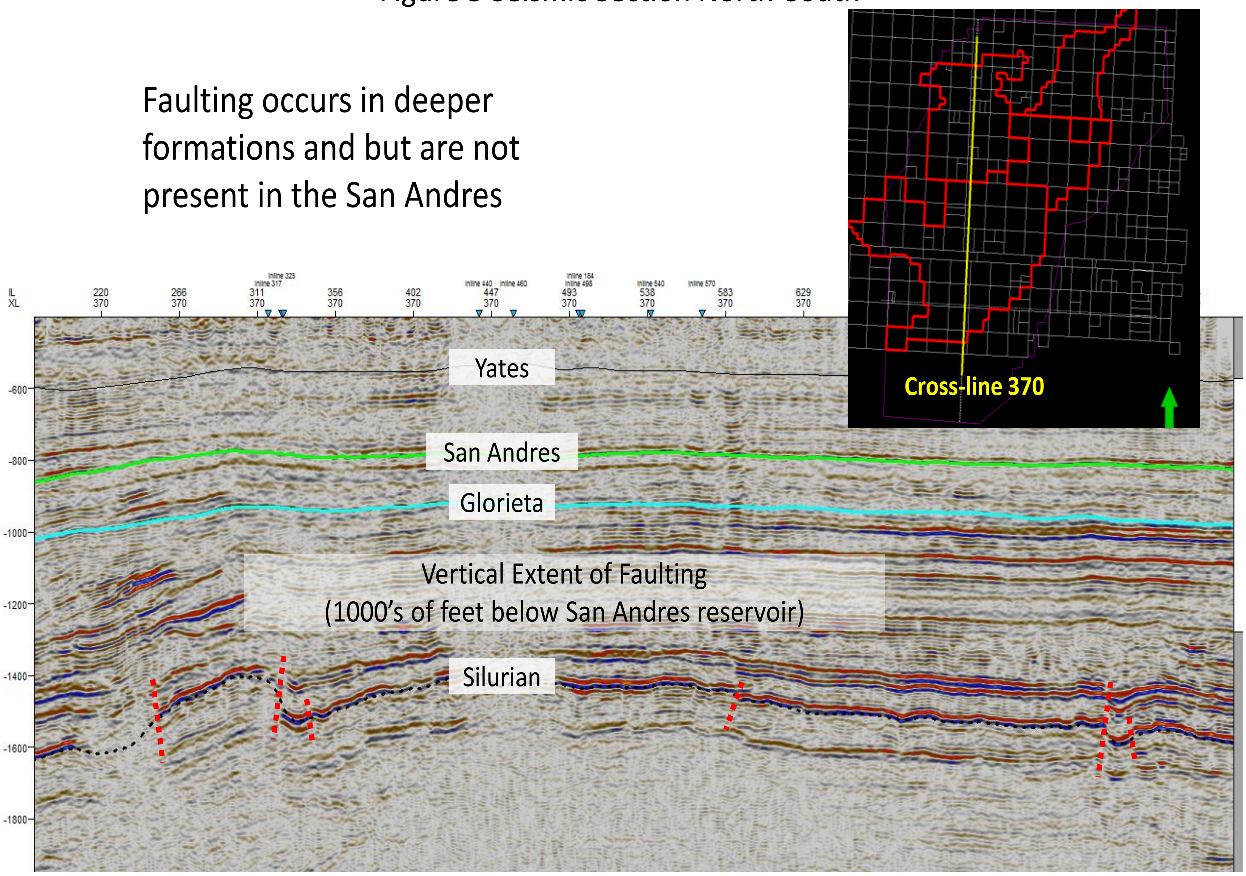
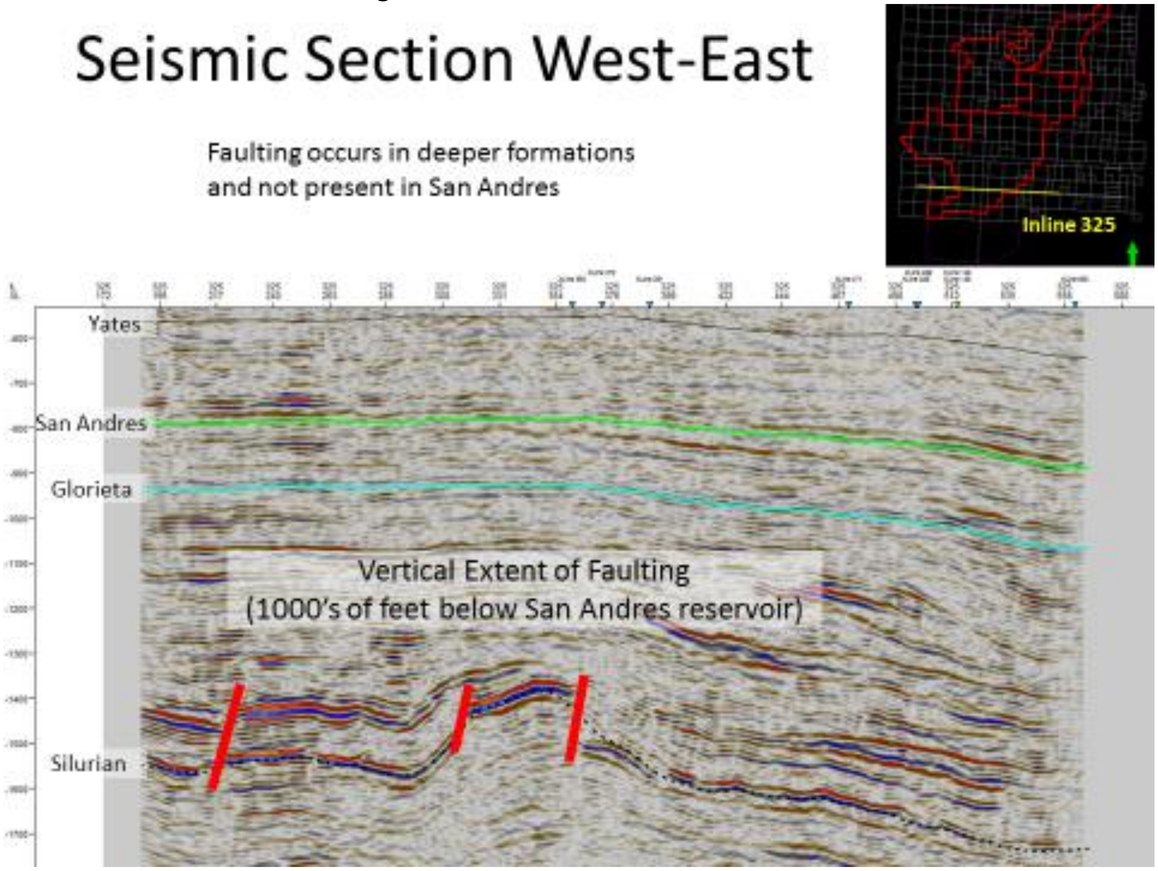


Figure 6 Seismic Section East-West



The Wasson seismic survey was a 3D shoot over most of Wasson conducted in 1994.

Leakage due to interaction with existing or new faults would lead to anomalies from expected performance. Such anomalies would lead to an investigation which may include measures such as injection profile surveys and pressure measurements to identify the cause. Poor performance could be attributed to inadequate pattern development, poor well conditions (e.g., scale buildup), conformance within the formation, or a potential leak. The investigation would identify the cause of the anomaly and guide the course of action. This is discussed further in Section 4.3 in the review of potential leakage pathways for injected CO_2.

And finally, the operating history at the Denver Unit confirms that there are no faults or fractures penetrating the flood zone. Fluids, both water and CO_2, have been successfully injected in the Denver Unit since the mid 1960's and there is no evidence of any interaction with existing or new faults or fractures. In fact, it is the absence of faults and fractures in the Denver Unit that make the reservoir such a strong candidate for CO_2 and water injection operations, and enable field operators to maintain effective control over the injection and production processes.

2.2.2 Operational History of the Denver Unit

The Denver Unit is a subdivision of the Wasson Field. It was established in the 1960s to implement water flooding. It is located in the southern part of the area of oil accumulation. The boundaries of the Denver Unit are indicated in the Wasson Field Map (see Figure 7).

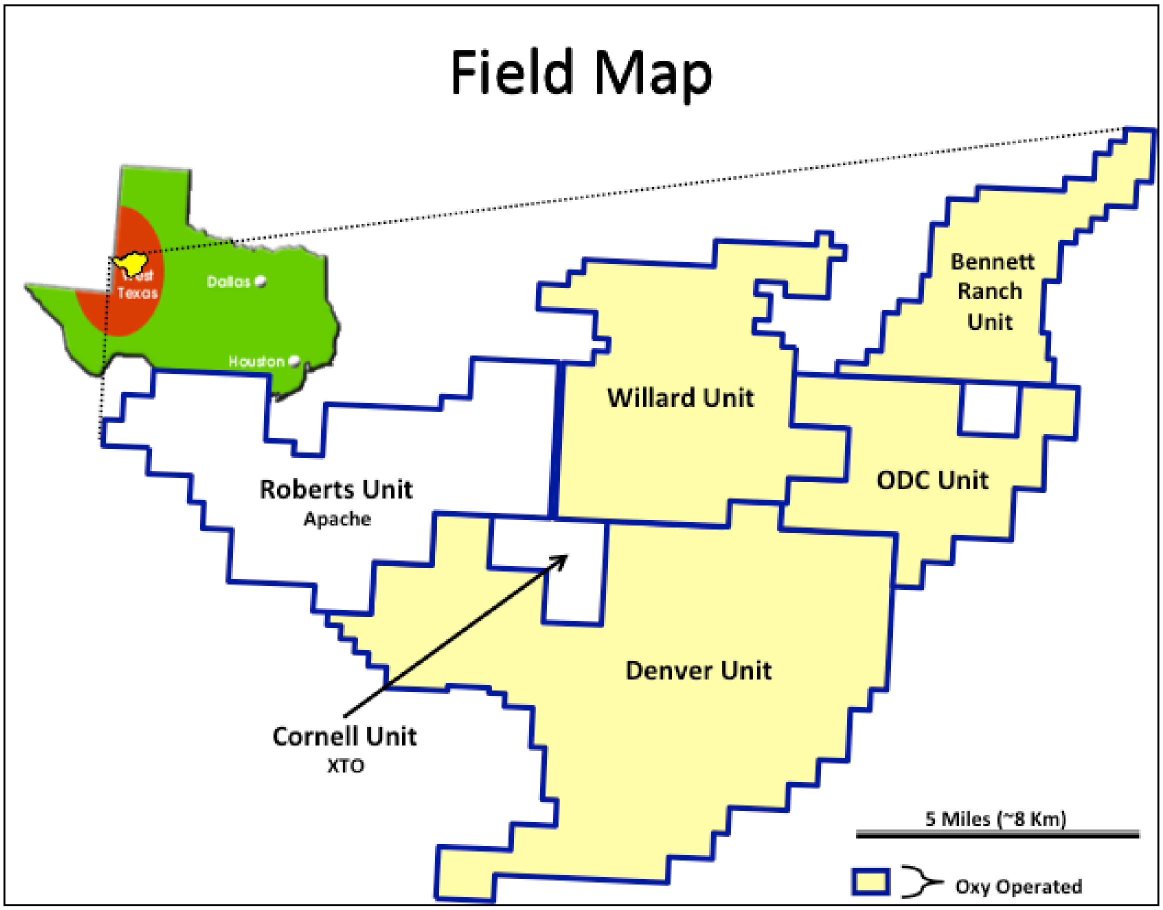


Figure 7 - Wasson Field Map

Water flooding works most efficiently with regular patterns over a large area. The Wasson Field was originally developed with numerous leases held by individuals and companies. To improve efficiency, a number of smaller leases were combined (or unitized) into larger legal entities (Units), which can be operated without the operational restrictions imposed by the former lease boundaries. In 1964, six such units were formed at Wasson to enable water flooding; the largest of these is the Denver Unit (See Figure 7).

CO_2 flooding of the Denver Unit began in 1983 and has continued and expanded since that time. The experience of operating and refining the Denver Unit CO_2 floods over three decades has created a strong understanding of the reservoir and its capacity to store CO_2.

2.2.3 The Geology of the Denver Unit within the Wasson Field

Figure 4 shows a vertical snapshot of the geology above and down to the Wasson field. Figure 8 is an aerial view of the structure of the field showing the depth of the top of the San Andres. As indicated in the discussion of Figure 4, the upper portion of the San Andres formation is comprised of impermeable anhydrite and dolomite sections that serve as a seal. In effect, they form the hard ceilings of an upside down bowl or dome. Below this seal the formation consists of permeable dolomites containing oil and gas. Figure 8 shows a two-dimensional picture of the structure of this formation.

The colors in the structure map in Figure 8 indicate changes in elevation, with red being highest level, (i.e., the level closest to the surface) and blue and purple being lowest level (i.e., the level deepest below the surface). As indicated in Figure 8, the Denver Unit is located at the highest elevation of the San Andres formation within the Wasson Field, forming the top of the dome. The rest of the Wasson field slopes downward from this area, effectively forming the sides of the dome. The elevated area formed a natural trap for oil and gas that migrated from below over millions of years. Once trapped in this high point, the oil and gas has remained in place. In the case of the Wasson Field, this oil and gas has been trapped in the San Andres formation for 50 to100 million years. Over time, fluids, including CO_2, in the Wasson would rise vertically until meeting the ceiling of the dome and would then follow it to the highest elevation in the Denver Unit. As such, the fluids injected into the Denver Unit would stay in the reservoir rather than move to adjacent areas.

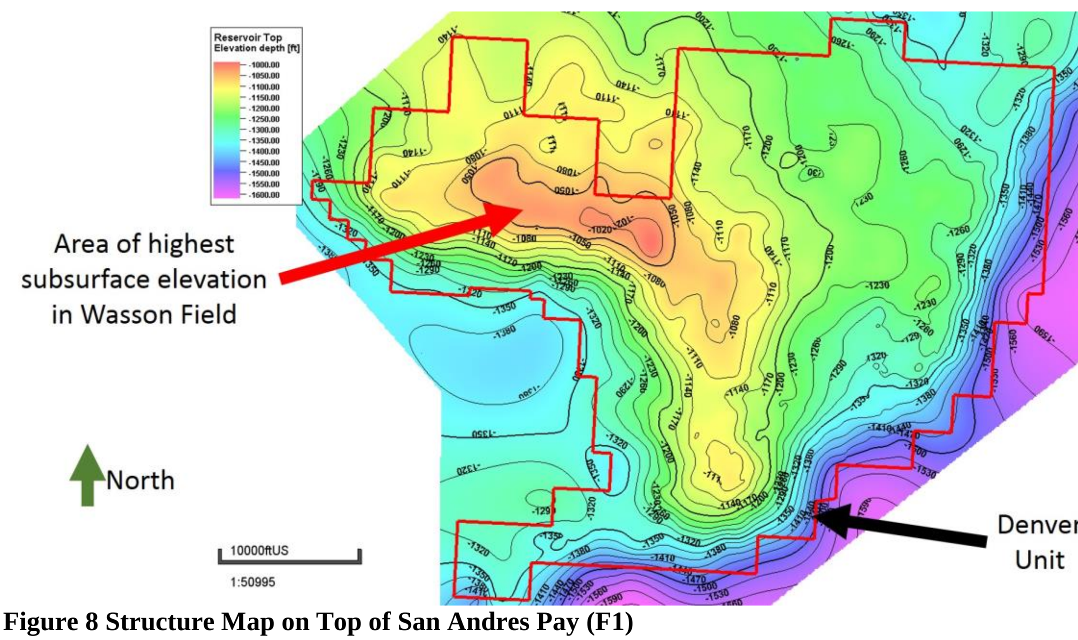


Figure 8 Structure Map on Top of San Andres Pay (F1)

Buoyancy dominates where oil and gas are found in a reservoir. Gas, being lightest, rises to the top and water, being heavier, sinks to the bottom. Oil, being heavier than gas but

lighter than water, lies in between. The cross section in Figure 9 shows saturation levels in the oil-bearing layers of the Wasson Field and illustrates this principle.

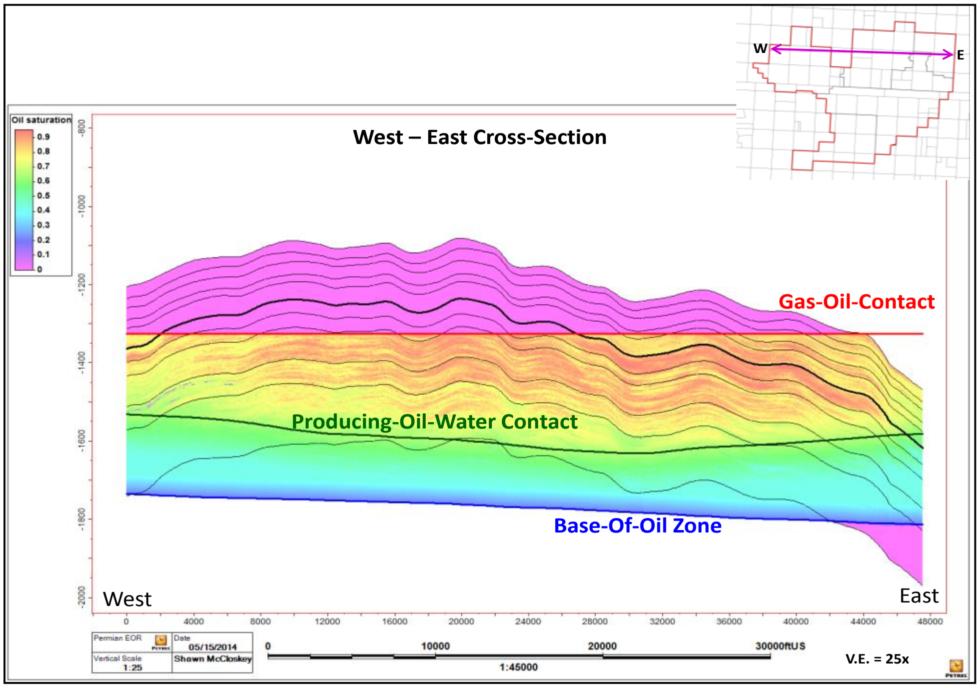


Figure 9 - Wasson Field Cross-Section Showing Saturation

At the time of discovery, natural gas was trapped at the structural high point of the Wasson Field, shown by pink area above the gas-oil contact line (in red) in the cross section (see Figure 9). This interface is found approximately 5,000 feet below the surface (or at -1,325 ft subsea). Above the gas-oil interface is the volume known as a “gas cap.” As discussed in Section 2.2.1, the presence of a gas cap is evidence of the effectiveness of the seal formed by the upper San Andres. Gas is buoyant and highly mobile. If it could escape the Wasson field naturally, through faults or fractures, it would have done so over the millennia. Below the gas was an oil accumulation, which extended down to the producing oil-water contact (in black). The producing oil water contact was determined by early drilling to be the maximum depth where only oil was produced.

Below the level of the producing oil-water contact, wells produce a combination of oil and water. The uppermost region in this area is called the transition zone (TZ) and below that is the residual oil zone (ROZ). The ROZ was water flooded by nature millions of years ago, leaving a residual oil saturation.[2] This is approximately the same residual oil saturation remaining after water flooding in the water-swept areas of the main oil pay zone, and is also a target for CO_2 flooding.

When CO_2 is injected into an oil reservoir, it is pushed from injection wells to production wells by the high pressure of the injected CO_2. Once the CO_2 flood is complete and injection ceases, the remaining mobile CO_2 will rise slowly upward, driven by buoyancy

[2] “Residual oil saturation” is the fraction of oil remaining in the pore space, typically after water flooding.

forces. If the amount of CO_2 injected into the reservoir exceeds the secure storage capacity of the pore space, excess CO_2 could theoretically "spill" from the reservoir and migrate to other reservoirs in the Northwest Shelf. This risk is very low in the Denver Unit, because there is more than enough pore space to retain the CO_2. Oxy has calculated the total pore space within the Denver Unit, from the top of the reservoir down to the spill point, which is located at -1,675 ft subsea or roughly 5,000 – 5,500 feet below the surface, to be 8,848 MMB. At reservoir conditions the Denver Unit could hold about 14,700 Bscf (775 MMMT) CO_2 in the reservoir space above the spill point. Oxy forecasts that at the end of EOR operations stored CO_2 will fill approximately 25% of calculated storage capacity. The volume of CO_2 storage is based on the estimated total pore space within the Denver Unit from the top of the reservoir down to the spill point, or about 8.848 MMB. This is the volume of rock multiplied by porosity. CO_2 storage is calculated assuming an irreducible water saturation of 0.15, an irreducible oil saturation of 0.10 and a CO_2 formation volume factor of 0.45.

Top of F1 to -1675 ftss (shallowest BOZO Depth)	
Variables	Denver Unit Outline
Pore Volume [RB]	8,847,943,353
B_{CO2}	0.45
S_{wirr}	0.15
S_{orCO2}	0.1
Max CO_2	14,746,572,255
Max CO_2	14.7 TCF

$$CO_2\,(max) = Volume(RB) * (1 - S_{wirr} - S_{orCO2}) / B_{CO2}$$

The formation volume factor of CO_2 (B_{CO2}) is the ratio of reservoir volume in barrels to Mscf at standard conditions. At 1900 psi and 105 ^oF, the density of CO_2 is approximately 0.740 g/cc, which translates to a CO_2 formation volume factor of 0.45. (See Section 2.1 for additional forecast considerations.)

Given that the Denver Unit is the highest subsurface elevation within the Wasson Field, that the confining zone has proved competent over both millions of years and throughout decades of EOR operations, and that the field has ample storage capacity, Oxy is confident that stored CO_2 will be contained securely in the Denver Unit.

2.3 Description of CO_2 EOR Project Facilities and the Injection Process

Figure 10 shows a simplified flow diagram of the project facilities and equipment in the Denver Unit. CO_2 is delivered to the Wasson Field via the Permian pipeline delivery system. The CO_2 injected into the Denver Unit is supplied by a number of different sources into the pipeline system. Specified amounts are drawn based on contractual arrangements among suppliers of CO_2, purchasers of CO_2, and the pipeline operator.

Once CO_2 enters the Denver Unit there are four main processes involved in EOR operations. These processes are shown in Figure 10 and include:

1. **CO_2 Distribution and Injection**. Purchased (fresh) CO_2 is combined with recycled CO_2 from the Denver Unit CO_2 Recovery Plant (DUCRP) and sent through the main CO_2 distribution system to various CO_2 injectors throughout the field.
2. **Produced Fluids Handling**. Produced fluids gathered from the production wells are sent to satellite batteries for separation into a gas/CO_2 mix and a water/oil mix. The water/oil mix is sent to centralized tank batteries where oil is separated from water. Produced oil is metered and sold; water is forwarded to the water injection stations for treatment and reinjection or disposal.
3. **Produced Gas Processing**. The gas/CO_2 mix separated at the satellite batteries goes to the DUCRP where the natural gas (NG), natural gas liquids (NGL), and CO_2 streams are separated. The NG and NGL move to commercial pipelines for sale. The majority of remaining CO_2 (e.g., the recycled CO_2) is returned to the CO_2 distribution system for reinjection.
4. **Water Treatment and Injection**. Water separated in the tank batteries is processed at water injection stations to remove any remaining oil and then distributed throughout the field either for reinjection along with CO_2 (the WAG or "water alternating gas" process) or sent to disposal wells.

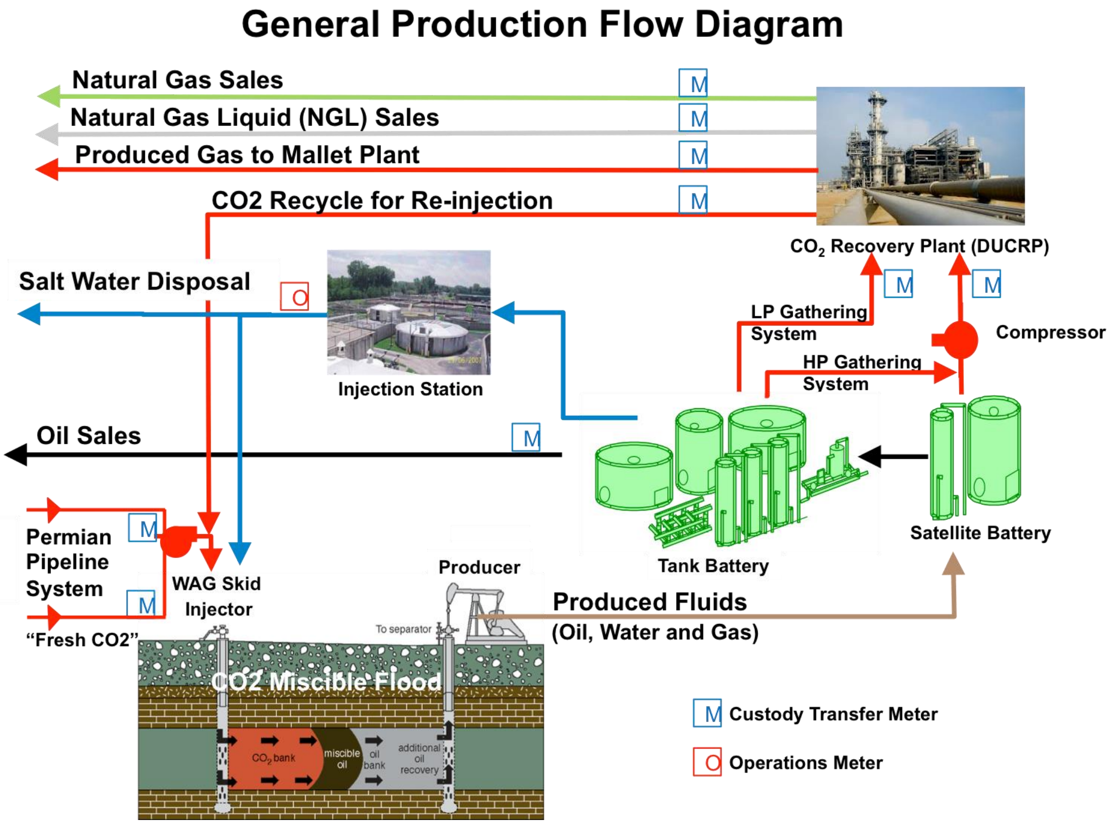


Figure 10 Denver Unit Facilities General Production Flow Diagram

2.3.1 CO_2 Distribution and Injection.

Oxy purchases CO_2 from the Permian pipeline delivery system and receives it through two custody transfer metering points, as indicated in Figure 10. Purchased CO_2 and recycled CO_2 are sent through the CO_2 trunk lines to injection manifolds. The manifolds are complexes of pipes that have no valves and do not exercise any control function. At the manifolds, the CO_2 is split into multiple streams and sent through distribution lines to individual WAG skids. There are volume meters at the inlet and outlet of DUCRP.

Currently, Oxy has 16 injection manifolds and approximately 600 injection wells in the Denver Unit. Approximately 400 MMscf of CO_2 is injected each day, of which approximately 47% is fresh CO_2, and the balance (53%) is recycled from DUCRP. The ratio of fresh CO_2 to recycled CO_2 is expected to change over time, and eventually the percentage of recycled CO_2 will increase and purchases of fresh CO_2 will taper off. As indicated in Section 2.1, Oxy forecasts ending purchases of fresh CO_2 for the Denver unit in 2059.

Each injection well has an individual WAG skid located near the wellhead (typically 150-200 feet away). WAG skids are remotely operated and can inject either CO_2 or water at various rates and injection pressures as specified in the injection plans. At any given time about half the injectors are injecting CO_2 and half are injecting water, in keeping with the injection plan for each one. The length of time spent injecting each fluid is a matter of continual optimization, designed to maximize oil recovery and minimize CO_2 utilization

in each injection pattern. A WAG skid control system is implemented at each WAG skid. It consists of a dual-purpose flow meter used to measure the injection rate of water or CO_2, depending on what is being injected. Data from these meters is sent to a control center where it is compared to the injection plan for that skid. As described in Sections 5 and 7, data from the WAG skid control systems, visual inspections of the injection equipment, and use of the procedures contained in 40 CFR §98.230-238 (Subpart W), will be gathered to complete the mass balance equations necessary to determine annual and cumulative volumes of stored CO_2.

2.3.2 Wells in the Denver Unit

As of August 2014, there are approximately 1,734 active wells in the Denver Unit as indicated in Figure 11; roughly two thirds of these wells are production wells and the remaining third are injection wells. In addition there are 448 inactive wells, bringing the total number of wells currently completed in the Denver Unit to 2,182. Table 1 shows these well counts in the Denver Unit by status.

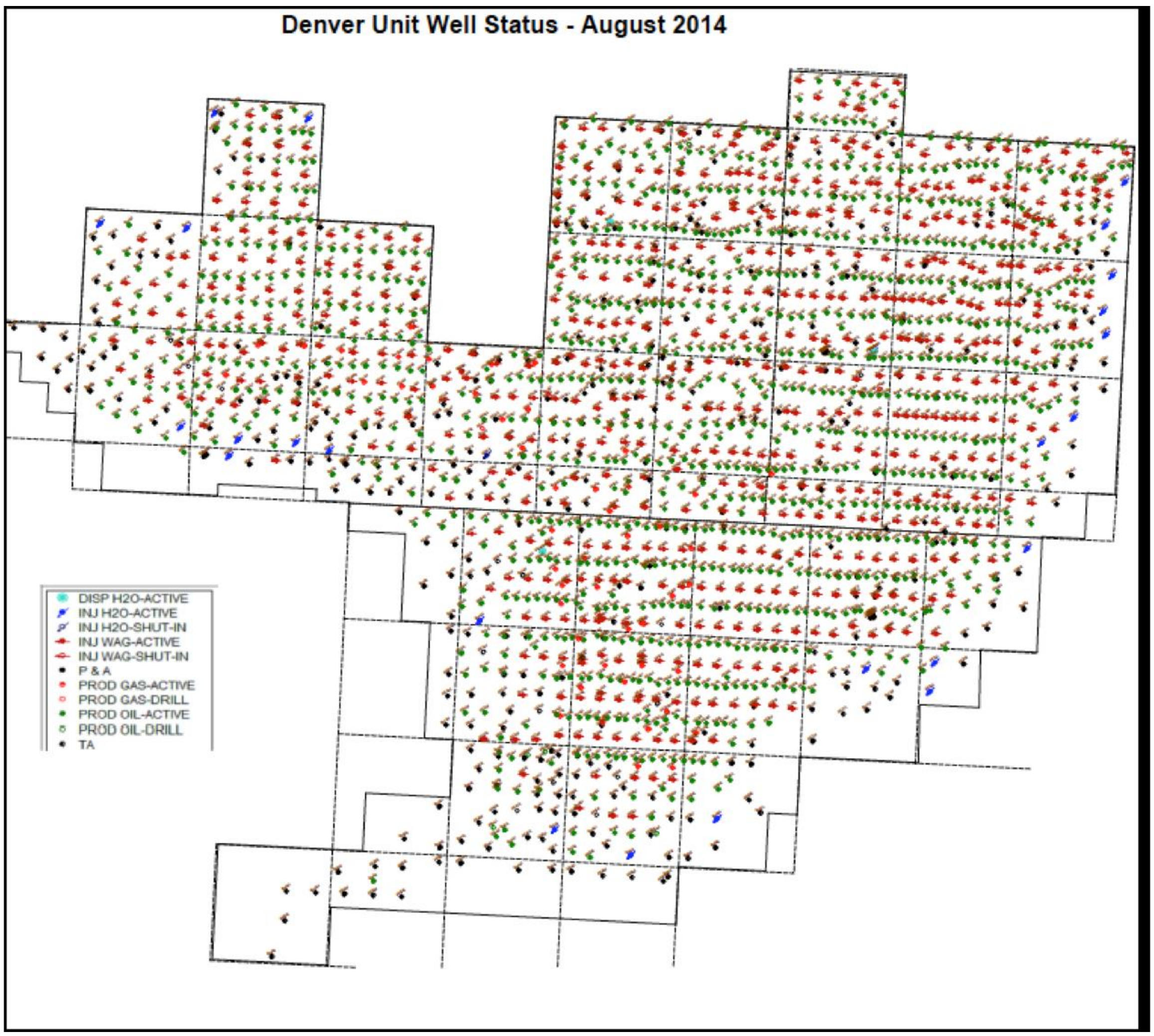


Figure 11 Denver Unit Wells - August 2014

Table 1 - Denver Unit Wells

Age/Completion of Well	*Active*	*Shut-in*	*Temporarily Abandoned*	*Plugged and Abandoned*
Drilled after 1996	619	3	23	3
Drilled 1961-1996 with production casing cemented to surface	388	2	58	49
Drilled between 1972-1975 – using lightweight casing	247	1	16	32
Drilled before 1960	480	2	47	212
TOTAL	***1734***	***8***	***144***	***296***

In addition to the wells completed in the Denver Unit, there are 885 wells that penetrate the Denver Unit but are completed in formations other than the San Andres. Table 2 shows these well counts by status: 498 of these wells are active and are operated by entities other than Oxy; the remaining wells are inactive and formerly operated by Oxy or others.

Table 2 – Non-Denver Unit Wells

	Oxy Operated			*Operated by Others*	
Age/Completion of Well	*Shut-In*	*Temporarily Abandoned*	*Plugged and Abandoned*	*Active*	*Inactive*
Drilled after 1996	2	16	1	181	10
Drilled 1961-1996 with production casing cemented to surface	4	69	94	214	89
Drilled between 1972-1975 – using lightweight casing	0	0	0	0	1
Drilled before 1960	0	28	29	103	44
TOTAL	***6***	***113***	***124***	***498***	***144***

Tables 1 and 2 categorize the wells in groups that relate to age and completion methods. The wells drilled after 1996 were completed using state-of-the-art standards. The term "State-of-the-art standards" refers to the use of regular weight casing cemented to surface. In 1996, Shell, which then operated the Denver Unit, as well as the major Clearfork leases that lie under the Denver Unit, implemented a policy that wells be cemented to surface following these standards. Oxy continues to follow that practice. The majority of wells drilled between 1961-1996 have production casings cemented to the surface. A subset of this group of wells uses lightweight casing. The last group covers older wellbores drilled before 1960. Oxy considers these categories when planning well maintenance projects. Further, Oxy keeps well workover crews on site in the Permian to maintain all active wells and to respond to any wellbore issues that arise.

All wells in oilfields, including both injection and production wells described in Tables 1 and 2, are regulated by TRRC, which has primacy to implement the UIC Class II program in Texas, under TAC Title 16 Part 1 Chapter 3.[3] A list of wells, with well identification numbers, is included in Appendix 6.

[3] See Appendix 7 for additional information.

TRRC rules govern well siting, construction, operation, maintenance, and closure for all wells in oilfields. Briefly current rules require, among other provisions:

- That fluids be constrained in the strata in which they are encountered;
- That activities governed by the rule cannot result in the pollution of subsurface or surface water;
- That wells adhere to specified casing, cementing, drilling well control, and completion requirements designed to prevent fluids from moving from the strata they are encountered into strata with oil and gas, or into subsurface and surface waters;
- That wells file a completion report including basic electric log (e.g., a density, sonic, or resistivity (except dip meter) log run over the entire wellbore);
- That all wells be equipped with a Bradenhead gauge, measure the pressure between casing strings using the Bradenhead gauge, and follow procedures to report and address any instances where pressure on the Bradenhead is detected;
- And that all wells follow plugging procedures that require advance approval from the Director and allow consideration of the suitability of the cement based on the use of the well, the location and setting of plugs.

In addition, Oxy implements a corrosion protection program to protect and maintain the steel used in injection and production wells from any CO_2-enriched fluids. Oxy currently employs methods to mitigate both internal and external corrosion of casing in wells in the Denver Unit.

Under the TRRC's program, wells to be used for fluid injection (as defined under EPA's UIC Class II program) must comply with additional requirements related to the Area of Review (AoR), casing design, special equipment for well monitoring, mechanical integrity testing (MIT) (using a pressure test), and monitoring / reporting. These current requirements are briefly described below.

AoR Review

According to EPA, the AoR refers to "the area around a deep injection well that must be checked for artificial penetrations, such as other wells, before a permit is issued. Well operators must identify all wells within the AoR that penetrate the injection or confining zone, and repair all wells that are improperly completed or plugged. The AoR is either a circle or a radius of at least ¼ mile around the well or an area determined by calculating the zone of endangering influence, where pressure due to injection may cause the migration of injected or formation fluid into a USDW."[4] These requirements thus require that Oxy locate and evaluate all wells located in the AoR. Thus, Oxy's reviews in the Denver Unit include both wells operated by Oxy and other parties, drilled into the Denver Unit or other strata.

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[4] USEPA, Underground Injection Control Program Glossary, http://water.epa.gov/type/groundwater/uic/glossary.cfm.

CO_2 flooding takes place throughout the Denver Unit. All of Oxy's injection wells are permitted for CO_2 flooding, after satisfying AoR requirements for the injection wells. Oxy is in compliance with all AoR requirements.

Mechanical Integrity Testing (MIT)
Oxy complies with the MIT requirements implemented by TRRC, which are designed to ensure that there is no significant leakage within the injection tubing, casing, or packer, as well as no leakage outside of the casing. All active injection wells undergo MIT testing (referred to as "H-5 testing") at the following intervals:

- Before injection operations begin;
- Every 5 years unless the permit states otherwise;
- After any workover that disturbs the seal between the tubing, packer, and casing;
- After any repair work on the casing; and
- When a request is made to suspend or reactivate the injection or disposal permit.

TRRC requires that the operator notify the TRRC district office at least 48 hours prior to conducting an H-5 test. Operators are required to use a pressure recorder and pressure gauge for the tests. The operator's field representative must sign the pressure recorder chart and submit it with the H-5 form. Casing test pressure must fall within 30-70% of the pressure recorder chart's full scale, and the pressure gauge must measure in increments that are no greater than 5% of the test pressure.

The current[5] requirements for conducting MIT include:

For Wells with Tubing
- The standard H-5 pressure test is the most common method.
- Pressure test the tubing-packer-casing at a pressure between 200 and 500 psi.
- The test pressure must stabilize within 10% of the required test pressure and remain stabilized for 30 minutes (60 minutes if testing with a gas-filled annulus)
- Maintain a minimum 200 psi pressure differential between the test pressure and tubing pressure.

For Wells without Tubing
- Pressure test immediately above injection perforations against a temporary plug, wireline plug, or tubing with packer.
- Indicate the type and depth of the plug.
- Must be tested to maximum permitted injection pressure that is not limited to 500 psi.

If a well fails an MIT, the operator must immediately shut in the well, provide notice to TRRC within 24 hours, file a Form H-5 with TRRC within 30 days, and make repairs or plug the well within 60 days. Casing leaks must be successfully repaired and the well retested or, if

[5] The TRRC rules referenced here were accessed in August 2014 and are subject to change over time.

required, the well must be plugged. In such cases, the operator must submit a Form W-3A Notice of Intention to Plug and Abandon a well to the TRRC.

TRCC requires similar testing and response at injection wells that are more than 25 years old and have been idle for more than one year. This process is referred to as H-15 testing. For these wells, MIT is required every five years using either an annual fluid level test (valid for one year) or a hydraulic pressure test with a plug immediately above the perforations.

In the event of test failure at these idle wells, the process for reporting and correction is similar as for active wells, but the timeline is shorter. The operator must make repairs or plug the well within 30 days – not the 60 days allowed for an active well. Again, casing leaks must be successfully repaired and the well retested or plugged and, if plugging is required, a Form W-3A must be submitted to the TRRC.

Any well that fails an MIT cannot be returned to active status until it passes a new MIT.

2.3.3 Produced Fluids Handling

As injected CO_2 and water move through the reservoir, a mixture of oil, gas, and water (referred to as "produced fluids") flows to the production wells. Gathering lines bring the produced fluids from each production well to satellite batteries. Oxy has approximately 1,100 production wells in the Denver Unit and production from each is sent to one of 32 satellite batteries. Each satellite battery consists of a large vessel that performs a gas-liquid separation. Each satellite battery also has well test equipment to measure production rates of oil, water and gas from individual production wells. Oxy has testing protocols for all wells connected to a satellite. Most wells are tested every two months. Some wells are prioritized for more frequent testing because they are new or located in an important part of the field; some wells with mature, stable flow do not need to be tested as frequently; and finally some wells do not yield solid test results necessitating review or repeat testing.

After separation, the gas phase, which is approximately 80-85% CO_2 and contains 2,000-5,000 ppm H_2S, is transported by pipeline to DUCRP for processing as described below.

The liquid phase, which is a mixture of oil and water, is sent to one of six centralized tank batteries where oil is separated from water. The large size of the centralized tank batteries provides enough residence time for gravity to separate oil from water.

The separated oil is metered through the Lease Automatic Custody Transfer (LACT) unit located at each centralized tank battery and sold. The oil typically contains a small amount of dissolved or entrained CO_2. Analysis of representative samples of oil is conducted once a year to assess CO_2 content. Since 2011, the dissolved CO_2 content has averaged 0.13% by volume in the oil.

The water is removed from the bottom of the tanks at the central tank batteries and sent to the water treatment facility. After treatment, the water is either re-injected at the WAG skids or disposed of into permitted disposal wells. Although Oxy is not required to determine or report the amount of dissolved CO_2 in this water, analyses have shown the water typically contains 40ppm (0.004%) CO_2.

Any gas that is released from the liquid phase rises to the top of the tanks and is collected by a Vapor Recovery Unit (VRU) that compresses the gas and sends it to DUCRP for processing.

Wasson oil is slightly sour, containing small amounts of hydrogen sulfide (H_2S), which is highly toxic. There are approximately 90 workers on the ground in the Denver Unit at any given time, and all field personnel are required to wear H_2S monitors at all times. Although the primary purpose of H_2S detectors is protecting employees, monitoring will also supplement Oxy's CO_2 leak detection practices as discussed in Sections 5 and 7.

In addition, the procedures in 40 CFR §98.230-238 (Subpart W) and the two-part visual inspection process described in Section 5 are used to detect leakage from the produced fluids handling system. As described in Sections 5 and 7 the volume of leaks, if any, will be estimated to complete the mass balance equations to determine annual and cumulative volumes of stored CO_2.

2.3.4 Produced Gas Handling

Produced gas is gathered from the satellite batteries and sent to centralized compressor stations and then to DUCRP in a high pressure gathering system. Produced gas collected from the tank battery by VRUs is either added to the high pressure gathering system or sent to DUCRP in a low pressure gathering system. Both gathering systems have custody transfer meters at the DUCRP inlet.

Once gas enters DUCRP, it undergoes compression and dehydration. Produced gas is first treated in a Sulferox unit to convert H_2S into elemental sulfur. Elemental sulfur is sold commercially and is trucked from the facility.

Other processes separate NG and NGLs into saleable products. At the end of these processes there is a CO_2 rich stream, a portion of which is redistributed (recycled) to again be injected. Oxy's goal is to limit the amount of H_2S in the recycled CO_2 to less than 100 ppm H_2S. Meters at DUCRP outlet are used to determine the total volume of the CO_2 stream recycled back into the EOR operations.

Separated NG is either used within the Denver Unit or delivered to a commercial pipeline for sale. The pipeline gas must meet quality standards and is measured using a flow meter that is calibrated for commercial transactions. NGL is also measured using a commercial flow meter and sold for further processing.

As described in Section 2.3.4, data from 40 CFR §98.230-238 (Subpart W), the two-part visual inspection process for production wells and areas described in Section 5, and information from the personal H_2S monitors are used to detect leakage from the produced gas handling system. This data will be gathered to complete the mass balance equations necessary to determine annual and cumulative volumes of stored CO_2 as described in Sections 5 and 7.

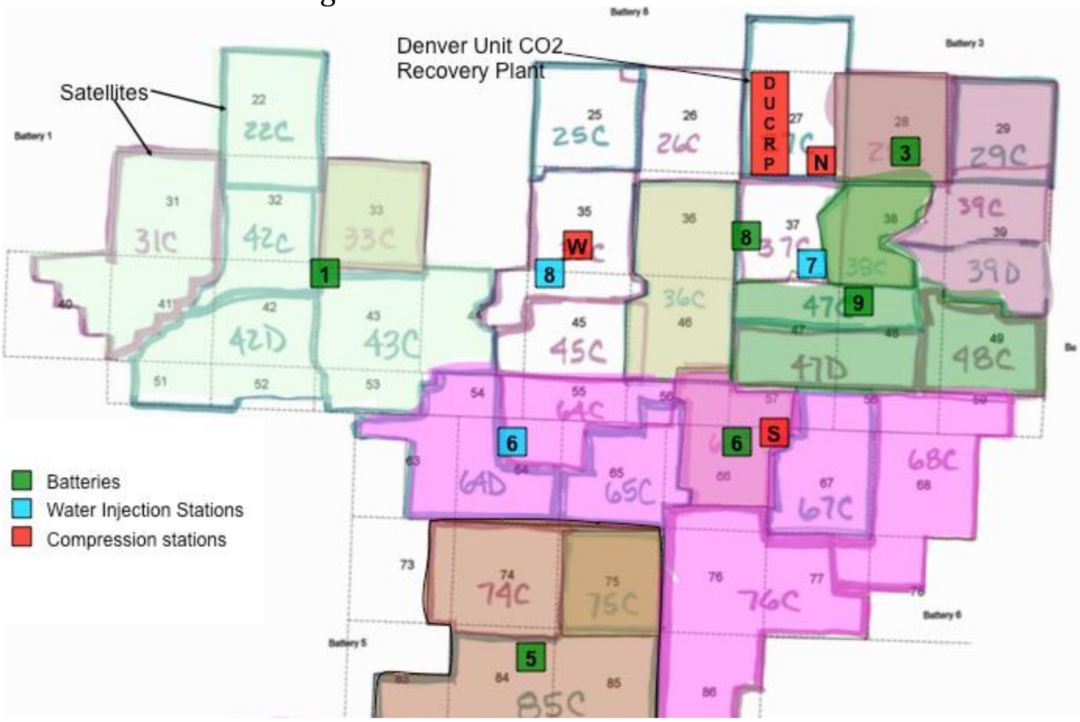
2.3.5 Water Treatment and Injection

Produced water collected from the tank batteries is gathered through a pipeline system and moved to one of three water treatment stations. Each facility consists of 10,000-barrel tanks where any remaining oil is skimmed from the water. Skimmed oil is returned to the centralized tank batteries. The water is filtered and sent to one of 10 large injection pumps. Pressurized water is distributed to the WAG skids for reinjection or to water disposal wells for injection into deeper permeable formations.

2.3.6 Facilities Locations

The locations of the various facilities in the Denver Unit are shown in Figure 12. As indicated above, there are 32 satellite batteries. The areas served by each satellite battery are shown in the highlighted areas and labeled with a number and letter, such as “31C” in the far west. The six centralized tank batteries are identified by the green squares. The three water treatment and injection stations are shown by the light blue squares. DUCRP is located by the large red rectangle to the north. Three compressor stations are shown by red squares.

Figure 12 Denver Unit EOR Facilities



TRRC requires that injections pressures be limited to prevent contamination of other hydrocarbon resources or pollution of subsurface or surface waters. In addition, EOR projects are designed by Oxy to ensure that mobilized oil, gas, and CO_2 do not migrate into adjoining properties that are owned by competing operators, who could then produce the fluids liberated by Oxy's EOR efforts. In the Denver Unit, Oxy uses two methods to contain fluids within the unit: reservoir pressure management and the careful placement and operation of wells along boundaries of other units.

Reservoir pressure in the Denver Unit is managed by maintaining an injection to withdrawal ratio (IWR)[6] of approximately 1.0. To maintain the IWR, Oxy monitors fluid injection to ensure that reservoir pressure does not increase to a level that would fracture the reservoir seal or otherwise damage the oil field. Similar practices are used for other units operated by Oxy within the Wasson Field. Most, if not all other Wasson Units, inject at pressures a little higher than Denver Unit and all maintain an IWR of at least one. In addition to the two methods mentioned above, higher pressures in the surrounding areas assure that Denver Unit fluids stay within the Unit.

Oxy also prevents injected fluids migrating out of the injection interval by keeping injection pressure below the fracture pressure which is measured using step-rate tests. In

[6] Injection to withdrawal ratio (IWR) is the ratio of the volume of fluids injected to the volume of fluids produced (withdrawn). Volumes are measured under reservoir conditions for all fluids. Injected fluids are CO_2 and water; produced fluids are oil, water, and CO_2. By keeping IWR close to 1.0, reservoir pressure is held constant, neither increasing nor decreasing.

these tests, injection pressures are incrementally increased (e.g., in “steps”) until injectivity increases abruptly, which indicates that an opening (fracture) has been created in the rock. Oxy manages its operations to ensure that injection pressures are kept below the fracture pressure so as to ensure that the valuable fluid hydrocarbons and CO_2 remain in the reservoir.

The second way Oxy contains fluids within the Denver Unit is to drill wells along the lease lines that are designed to avoid loss of valuable fluids from the unit. To the north Oxy has established lease line agreements with the neighboring CO_2 units. These agreements provide for offsetting injectors or offsetting producers along the lease line that balance one another. For example, an injector on one side is offset and balanced by an injector on the other side. The two paired injectors are maintained on injection in such a way as to give Oxy and its partners sufficient assurance that a no-flow boundary is maintained at the Unit boundary. This restricts the flow of injected CO_2 or mobilized oil from one unit to the other. A similar dynamic is maintained for paired producers. To the east, south and west, there are no operations on the other side of the Denver Unit boundary. Near these boundaries, a row of water injectors or producers are maintained to keep CO_2 or mobilized oil from leaving the Denver Unit. As shown in Figure 7, Oxy operates the ODC and Willard Units to the north of the Denver Unit and therefore has first-hand knowledge of pressures on both sides of Unit boundaries.

In the case of the other, Oxy maintains lease line agreements with the other operators to assure injection and production is balanced along the lease line. In this way, Oxy is assured that CO_2 and mobilized oil do not escape the Denver Unit.

2.4 Reservoir Modeling

Oxy uses simulators to model the behavior of fluids in a reservoir, providing a mathematical representation that incorporates all information that is known about the reservoir. In this way, future performance can be predicted in a manner consistent with available data, including logs and cores, as well as past production and injection history.

Mathematically, reservoir behavior is modeled by a set of differential equations that describe the fundamental principles of conservation of mass and energy, fluid flow, and phase behavior. These equations are complex and must be solved numerically using high-powered computers. The solution process involves sub-dividing the reservoir into a large number of blocks arranged on a grid. Each block is assigned specific rock properties (porosity, permeability, saturations, compositions and pressure). The blocks are small enough to adequately describe the reservoir, but large enough to keep their number manageable. The computer uses the differential equations to determine how various physical properties change with time in each grid block. Small time steps are used to progress from a known starting point through time. In this way the computer simulates reservoir performance, consistent with fundamental physics and actual reservoir geometry. The simulation represents the flow of each fluid phase (oil, water

and gas), changes in fluid content (saturations), equilibrium between phases (compositional changes), and pressure changes over time.

Field-wide simulations are initially used to assess the viability of water and CO_2 flooding. Once a decision has been made to develop a CO_2 EOR project, Oxy uses detailed pattern modeling to plan the location and injection schedule for wells. For the purpose of operating a CO_2 flood, large-scale modeling is not useful as a management tool because it does not provide sufficiently detailed information about the expected pressure, injection volumes, and production at the level of an injection pattern.

In the case of the Denver Unit, field-wide modeling was conducted by the previous owners in the 1980's and 1990's. The outputs were used to determine plans to develop the site for CO_2 flooding more than 20 years ago. Oxy reviewed this large-scale modeling to inform their decision to acquire leases for the Denver Unit in 2000. However, since taking over operation of the Denver Unit in 2000, Oxy has used the more detailed pattern modeling to operate the CO_2 flood.

At the pattern level, the objective of a simulation is to develop an injection plan that maximizes the oil recovery, and minimizes the costs, of the CO_2 flood. The injection plan includes such controllable items as:

- The cycle length and WAG ratio to inject water or CO_2 in the WAG process, and
- The best rate and pressure for each injection phase.

Simulations may also be used to:

- Evaluate infill or replacement wells,
- Determine the best completion intervals,
- Verify the need for well remediation or stimulation, and
- Determine anticipated rates and ultimate recovery.

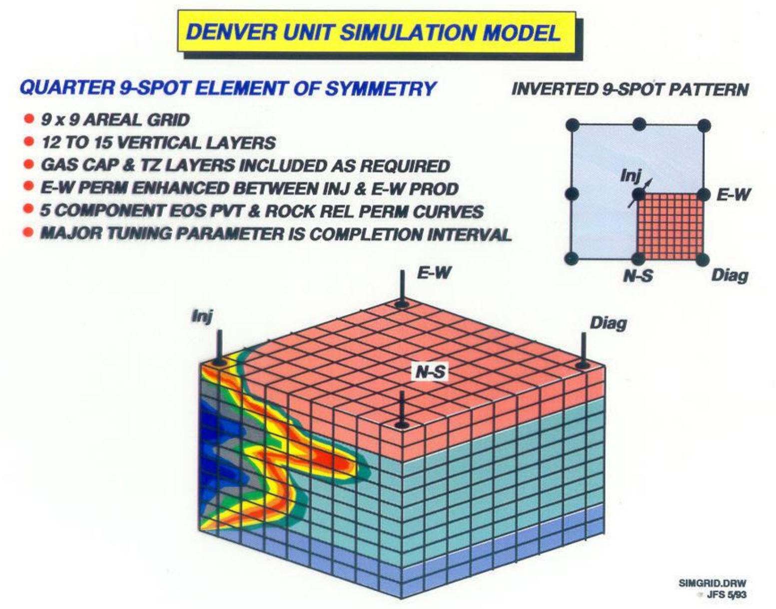
This pattern-level modeling provides Oxy with confidence that the injected CO_2 will stay in-zone to contact and displace oil, and that the flood pattern and injection scheme are optimized.

The pattern level simulator used by Oxy uses a commercially available compositional simulator, called MORE, developed by Roxar. It is called "compositional" because it has the capability to keep track of the composition of each phase (oil, gas, and water) over time and throughout the volume of the reservoir.

To build a simulation model, engineers and scientists input specific information on reservoir geometry, rock properties, and fluid flow properties. The input data includes:

- Reservoir geometry, including distance between wells, reservoir thickness and structural contours;
- Rock properties, such as permeability and porosity of individual layers, barriers to vertical flow, and layer continuity; and,
- Fluid flow properties including density and viscosity of each phase, relative permeability, capillary pressure, and phase behavior.

Figure 13 Denver Unit Simulation Model



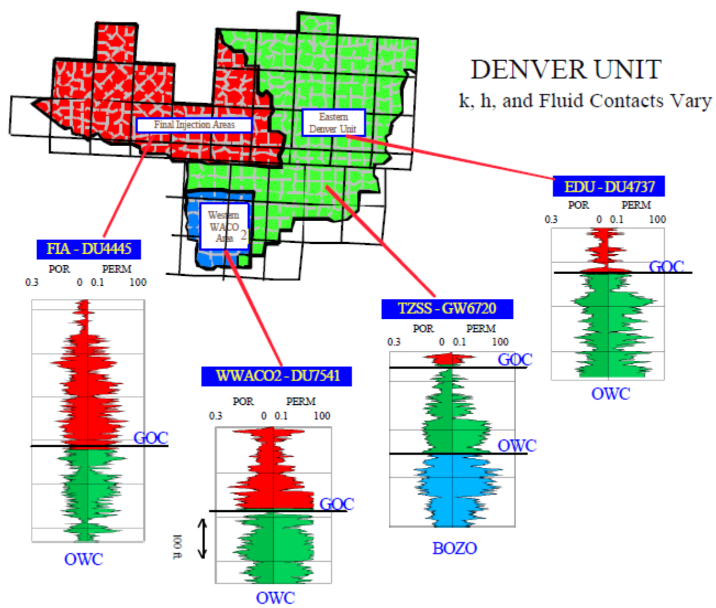
A representative pattern-level simulation model for the Denver Unit is illustrated in Figure 13. The model is representative of a portion of the field that is repeated many times throughout the field, in this case a fraction of an injection pattern. This fraction is an element of symmetry, meaning that the same geometry and the same process physics are repeated many times over the area of the field.

Layering

Within a flood pattern, one of the most important properties to model is the effect of layering. Reservoir rocks were originally deposited over very long periods of time. Because the environment tended to be uniform at any one point in time, reservoir properties tend to be relatively uniform over large areas. Depositional environment changes over time, however, and for this reason rock properties vary considerably with time or depth as they are deposited. Thus, rock properties are modeled as layers. Some layers have high permeability and some have lower permeability. Those with higher permeability take most of the injected fluids and are swept most readily. Those with lower permeability may be only partially contacted at the end of the flooding process. (The WAG process helps improve sweep efficiency.) As Figure 13 shows, the simulation is divided into 12 to 15 vertical grid blocks. Each layer of simulation grid blocks is used to model the depositional layering as closely as practical. Porosity and permeability have been measured on cores taken from the upper San Andres sealing zone. Measured permeabilities are less than 0.01 md. Permeabilities in the pay zones typically range from 1 to 10 md. Permeabilities in anhydrite intervals are zero. Anhydrites are one of the most common seal rocks for oil and gas reservoirs. Ultra-low permeability rocks do not contribute to flow and therefore do not need to be included in simulation models.

Reservoir quality varies markedly across the Unit. Thus, response to CO_2 flooding is also expected to vary within the Unit. Based on reservoir development and geological characteristics, the Unit is divided into three distinct areas: (a) Eastern Denver Unit, (b) WACO2, and (c) Final Injection Area. Figure 14 demonstrates the delineated areas and the typical porosity and permeability development found in each of the subgroups. CO_2 flooding in these areas is implemented according to their reservoir characteristics. The Eastern Denver Unit began CO_2 injection in 1984, received an initially large CO_2 slug size, then converted to a water alternating CO_2 injection scheme once a targeted CO_2 slug size was reached. The WACO2 area also began CO_2 injection in 1984. However, this area injected water alternating CO_2 from the beginning. Once the Eastern Denver Unit area began its alternating injection scheme, lower CO_2 injection rates were required in the developed portion of the field, allowing expansion of the flood into the Final Injection Area. Wells DU 4737 and DU 6720 typify the properties in the Eastern Denver Unit; well DU 7541 typifies the properties of the WACO2 area; and well DU 4445 is typical of the Final Injection Area.

Figure 14 – Area Sub-groups



The red lines in Figure 14 are intended to point to areas of the Unit that are similar to, or represented by, the selected wells. They do not point to the actual well locations. The red line for well 6720 points to the general location of the well, not necessarily the exact location. Lines for the other wells connect the well log to the label for the area they are representative of.

A structure map from Figure 8 has been modified below (Figure 15) to show the well locations indicated in Figure 14. According to this map, one would expect well 4445 to have the largest gas column and well 6720 the smallest gas column, consistent with the logs shown on Figure 14.

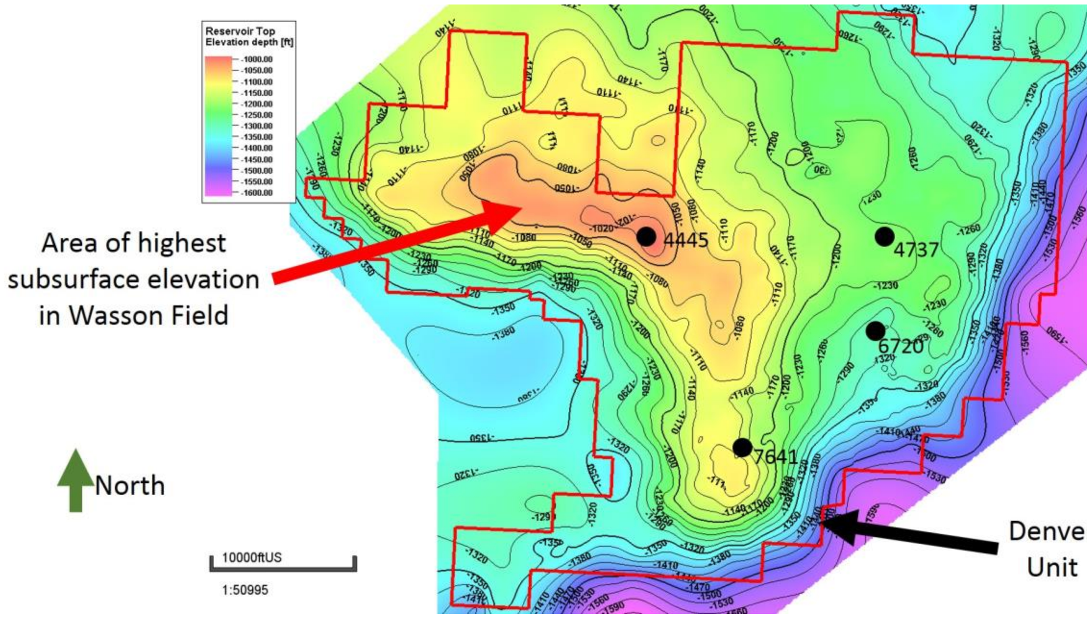


Figure 15 Modified Structure Map to Data Points from Figure 14

Predicted behavior for all patterns can be constructed in one of two ways: from simulation or from actual performance of a more mature analog project. Simulation models may represent either a multi-pattern segment of the field, or be an element of symmetry model representing a portion of a single pattern. Figure 13 illustrates an element of symmetry modeling approach that is used at the Denver Unit. Many such models have been constructed to capture the variation in geology throughout this large CO_2 project.

Predictions may also be constructed from the actual performance data of analog projects that already have received significant CO_2 injection.

Where simulation is used to generate the predictions, the simulation results should be validated by comparison with analog project performance if possible.

Prediction models forecast oil, water and CO_2 production, as well as CO_2 and water injection.

If actual performance differs in a noticeable way from prediction, reservoir engineers use professional judgment formed by an analysis of technical data to determine where further attention is needed. The appropriate response could be to change injection rates, to alter the prediction model or to find and repair fluid leaks.

3. Delineation of Monitoring Area and Timeframes

3.1 Active Monitoring Area

Because CO2 is present throughout the Denver Unit and retained within it, the Active Monitoring Area (AMA) is defined by the boundary of the Denver Unit. The following factors were considered in defining this boundary:

- Free phase CO_2 is present throughout the Denver Unit: More than 4,035 Bscf (212.8 MMMT) tons of CO_2 have been injected throughout the Denver Unit since 1983 and there has been significant infill drilling in the Denver Unit to complete additional wells to further optimize production. Operational results thus far indicate that there is CO_2 throughout the Denver Unit.
- CO_2 injected into the Denver Unit remains contained within that unit because of the fluid and pressure management impacts associated with CO_2 EOR. Namely, maintenance of an IWR of 1.0 assures a stable reservoir pressure; managed leaseline injection and production wells are used to retain fluids in the Denver Unit as indicated in Section 2.3.6; and operational results (such as normal pressures in the injection interval and injection and production rates within predicted ranges) indicate that injected CO_2 is retained in the Denver Unit.
- Furthermore, over geologic timeframes, stored CO_2 will remain in the Denver unit because it is the area with the highest elevation CO_2 will not migrate downdip as described in Section 2.2.3.

3.2 Maximum Monitoring Area

The Maximum Monitoring Area (MMA) is defined in 40 CFR §98.440-449 (Subpart RR) as including the maximum extent of the injected CO_2 and a half-mile buffer bordering that area. As described in the AMA section (Section 3.1), the maximum extent of the injected CO_2 is anticipated to be bounded by the Denver Unit. Therefore the MMA is the Denver Unit plus the half-mile buffer as required by 40 CFR §98.440-449 (Subpart RR).

3.3 Monitoring Timeframes

Oxy's primary purpose in injecting CO_2 is to produce oil that would otherwise remain trapped in the reservoir and not, as in UIC Class VI, "specifically for the purpose of geologic storage."[7] During the Specified Period, Oxy will have a subsidiary purpose of establishing the long-term containment of a measurable quantity of CO_2 in the San Andres formation at the Denver Unit. The Specified Period will begin January 1, 2016 and is anticipated to end prior to December 31, 2026. The Specified Period will be substantially shorter than the period of production from the Denver Unit because CO_2 has

[7] EPA UIC Class VI rule, EPA 75 FR 77291, December 10, 2010, section 146.81(b).

been injected at the Denver Unit since 1983 and is expected to continue for roughly five decades after the Specified Period ends. At the conclusion of the Specified Period, Oxy will submit a request for discontinuation of reporting when Oxy can provide a demonstration that current monitoring and model(s) show that the cumulative mass of CO_2 reported as sequestered during the Specified Period is not expected to migrate in the future in a manner likely to result in surface leakage. It is expected that it will be possible to make this demonstration within 2 – 3 years after injection for the Specified Period ceases and will be based upon predictive modeling supported by monitoring data. The demonstration will rely on two principles: 1) that just as is the case for the monitoring plan, the continued process of fluid management during the years of CO_2 EOR operation after the Specified Period will contain injected fluids in the Denver Unit, and 2) that the cumulative mass reported as sequestered during the Specified Period is a small fraction of the total that will be stored in the Denver Unit over the lifetime of operations. *See* 40 C.F.R. § 98.441(b)(2)(ii).

4. Evaluation of Potential Pathways for Leakage to the Surface

4.1 Introduction

In the 50 years since the Denver Unit was formed to facilitate water flooding, the reservoir has been studied and documented extensively. Based on the knowledge gained from that experience, this section assesses the potential pathways for leakage of stored CO_2 to the surface. The following potential pathways are reviewed:

- Existing Well Bores
- Faults and Fractures
- Natural and Induced Seismic Activity
- Previous Operations
- Pipeline/Surface Equipment
- Lateral Migration Outside the Denver Unit
- Dissolution of CO_2 into Formation Fluid and Subsequent Migration
- Drilling Through the CO_2 Area
- Diffuse Leakage Through the Seal

4.2 Existing Well Bores

As of August 2014, there are approximately 1,734 active wells in the Denver Unit – roughly two thirds are production wells and the remaining third are injection wells. In addition, there are 448 inactive wells, as described in Section 2.3.2.

Leakage through existing well bores is a potential risk at the Denver Unit that Oxy works to prevent by adhering to regulatory requirements for well drilling and testing; implementing best practices that Oxy has developed through its extensive operating

experience; monitoring injection/production performance, wellbores, and the surface; and by maintaining surface equipment.

As discussed in Section 2.3.2, regulations governing wells in the Denver Unit require that wells be completed and operated so that fluids are contained in the strata in which they are encountered and that well operation does not pollute subsurface and surface waters. The rules establish the requirements that all wells (injection, production, disposal) must comply with. Depending upon the purpose of a well, the requirements can include additional standards for AoR evaluation and MIT. In implementing these rules, Oxy has developed operating procedures based on its experience as one of the world's leading operators of EOR floods. Oxy's best practices include developing detailed modeling at the pattern level to guide injection pressures and performance expectations; utilizing diverse teams of experts to develop EOR projects based on specific site characteristics; and creating a culture where all field personnel are trained to look for and address issues promptly. Oxy's practices ensure that well completion and operation procedures are designed not only to comply with rules but also to ensure that all fluids (e.g., oil, gas, CO_2) remain in the Denver Unit until they are produced through an Oxy well – these include corrosion prevention techniques to protect the wellbore.

As described in section 5, continual and routine monitoring of Oxy's well bores and site operations will be used to detect leaks, including those from non-Oxy wells, or other potential well problems as follows:

- Pressures and flowrates are monitored continuously in all active injectors. The injection plans for each pattern are programmed into the injection WAG skid, as discussed in Section 2.3.1, to govern the rate, pressure, and duration of either water or CO_2 injection. Pressure monitors on the injection wells are programmed to flag pressures that significantly deviate from the plan. Leakage on the inside or outside of the injection wellbore would affect pressure and be detected through this approach. If such excursions occur, they are investigated and addressed. It is Oxy's experience that few excursions result in fluid migration out of the intended zone and that leakage to the surface is very rare.

- In addition to monitoring well pressure and injection performance, Oxy uses the experience gained over time to strategically approach well maintenance and updating. Oxy maintains well maintenance and workover crews onsite for this purpose. For example, the well classifications by age and construction method indicated in Table 1 inform Oxy's plan for monitoring and updating wells. Oxy uses all of the information at hand including pattern performance, and well characteristics to determine well maintenance schedules.

- Flowrates of oil, water and CO_2 are measured on all producers at least monthly, using the production well test process conducted when produced fluids are gathered and sent to a Satellite Battery. There is a routine cycle for each Satellite Battery, with each well being tested approximately once every two months.

During this cycle, each production well is diverted to the well test equipment for a period of time sufficient to measure and sample produced fluids (generally 12-24 hours). This test allows Oxy to allocate a portion of the produced fluids measured at the Satellite Battery to each production well, assess the composition of produced fluids by location, and assess the performance of each well. Performance data are reviewed on a routine basis to ensure that CO_2 flooding is optimized. If production is off plan, it is investigated and any identified issues addressed. Leakage to the outside of production wells is not considered a major risk because of the reduced pressure in the casing. Further, the personal H_2S monitors would detect leaked fluids around production wells.

- Finally, as indicated in Section 5, all wells are observed by Oxy personnel or Oxy Contractors at least weekly. On any day, Oxy has approximately 90 employees in the field. Leaking CO_2 is very cold and leads to formation of bright white clouds and ice that are easily spotted. All field personnel are trained to identify leaking CO_2 and other potential issues at wellbores and in the field. In addition, aerial surveys are completed weekly. Any significant CO_2 leakage detected will be documented and reported, quantified and addressed as described in Section 5.

Based on its ongoing monitoring activities and review of the potential leakage risks posed by well bores, Oxy concludes that it is mitigating the risk of CO_2 leakage through well bores by detecting problems as they arise and quantifying any leakage that does occur. Section 4.10 summarizes how Oxy will monitor CO_2 leakage from various pathways and describes how Oxy will respond to various leakage scenarios. In addition, Section 5 describes how Oxy will develop the inputs used in the Subpart RR mass-balance equation (Equation RR-11). Any incidents that result in CO_2 leakage up the wellbore and into the atmosphere will be quantified as described in section 7.4.

4.3 Faults and Fractures

After reviewing geologic, seismic, operating, and other evidence, Oxy has concluded that there are no known faults or fractures that transect the San Andres Formation interval in the project area. While faults have been identified in formations that are 1,000’s of feet below the San Andres formation, this faulting has been shown not to affect the San Andres or create potential leakage pathways.

Oxy has extensive experience in designing and implementing EOR projects to ensure injection pressures will not damage the oil reservoir by inducing new fractures or creating shear. As a safeguard, injection skids are set with automatic shutoff controls if injection pressures exceed fracture pressures.

4.4 Natural or Induced Seismicity

A few recent studies have suggested a possible relationship between CO_2 miscible flooding activities and seismic activity in certain areas. Determining whether the seismic activity is induced or triggered by human activity is difficult. Many earthquakes occur that are not near injection wells, and many injection wells do not generate earthquakes. Thus, the occurrence of an earthquake near a well is not proof of cause of human actions having had any influence.

To evaluate this potential risk at the Denver Unit, Oxy has reviewed the nature and location of seismic events in West Texas. Some of the recorded earthquakes in West Texas are far removed from any injection operation. These are judged to be from natural causes. Others are near oil fields or water disposal wells and are placed in the category of "quakes in close association with human enterprise." (See Frohlich, 2012)

Of the recorded earthquakes in the Permian Basin, none have occurred in the Wasson Field; the closest was nearly 80 miles away. Moreover, Oxy is not aware of any reported loss of injectant (waste water or CO_2) to the surface associated with any seismic activity.

The concern about induced seismicity is that it could lead to fractures in the seal providing a pathway for CO_2 leakage to the surface. Based on Oxy's review of seismic data, none of the recorded "earthquakes" in the Permian Basin have occurred in the Wasson Field; the closest was nearly 80 miles away. Moreover, Oxy is not aware of any reported loss of injectant (waste water or CO_2) to the surface associated with any seismic activity. Therefore, there is no direct evidence to suggest that natural seismic activity poses a significant risk for loss of CO_2 to the surface in the Permian Basis, and specifically in the Denver Unit. If induced seismicity resulted in a pathway for material amounts of CO_2 to migrate from the injection zone, other reservoir fluid monitoring provisions (e.g., reservoir pressure, well pressure, and pattern monitoring) would lead to further investigation.

4.5 Previous Operations

CO_2 flooding has taken place in the Denver Unit since 1983, and Oxy took over operations in 2000. Oxy and the prior operators have kept records of the site and have completed numerous infill wells. Oxy's standard practice for drilling new wells includes a rigorous review of nearby wells to ensure that drilling will not cause expensive damage in or interfere with existing wells. Oxy also follows AoR requirements under the UIC Class II program, which require identification of all active and abandoned wells in the AoR and implementation of procedures that ensure the integrity of those wells when applying for a permit for any new injection well.[8] Oxy reviews TRRC's records and/or Oxy well files and may conduct ground surveys to identify old, unknown wells as a part of any AoR review in preparation for drilling a new well. Based on review, Oxy has concluded that there are no unknown wells within the Denver Unit. Oxy's operational

[8] Current requirements are referenced in Appendix 7.

experience confirms this conclusion. Oxy has successfully optimized CO_2 flooding with infill wells because the confining zone has not been impaired by previous operations.

4.6 Pipeline / Surface Equipment

Damage to or failure of pipelines and surface equipment can result in unplanned losses of CO_2. Oxy anticipates that the use of prevailing design and construction practices and compliance with applicable laws will reduce to the maximum extent practicable the risk of unplanned leakage from surface facilities. The facilities and pipelines currently utilize and will continue to utilize materials of construction and control processes that are standard for CO_2 EOR projects in the oil and gas industry. Operating and maintenance practices currently follow and will continue to follow demonstrated industry standards. CO_2 delivery via the Permian pipeline system will continue to comply with all applicable laws. Finally, Oxy conducts aerial inspections of the pipeline and surface equipment in the Denver Unit once a week. Field personnel are trained to look for and report potential leaks from pipeline and surface equipment as part of their routine activities. Should leakage be detected from pipeline or surface equipment, the volume of released CO_2 will be quantified following the requirements of Subpart W of EPA's GHGRP.

4.7 Lateral Migration Outside the Denver Unit

It is highly unlikely that injected CO_2 will migrate downdip and laterally outside the Denver Unit because of the nature of the geology and of the planned injection. First, as indicated in Section 2.3.3.3 "Geology of the Denver Unit within the Wasson Field," the Denver Unit contains the highest elevation within the San Andres. This means that over long periods of time, injected CO_2 will tend to rise vertically towards the Upper San Andres and continue towards the point in the Denver Unit with the highest elevation. Second, the planned injection volumes and active fluid management during injection operations will prevent CO_2 from migrating laterally into adjoining units. Finally, Oxy will not be increasing the total volume of fluids in the Denver Unit. Based on site characterization and planned and projected operations Oxy estimates the total volume of stored CO_2 will be approximately 25% of calculated capacity.

4.8 Drilling Through the CO_2 Area

It is possible that at some point in the future, drilling through the containment zone into the San Andres could occur and inadvertently create a leakage pathway. Oxy's review of this issue concludes that this risk is very low for three reasons. First, any wells drilled in the oil fields of Texas are regulated by TRRC and are subject to requirements that fluids be contained in strata in which they are encountered.[9] Second, Oxy's visual inspection process, including both routine site visits and flyovers, is designed to identify unapproved

[9] Current requirements are referenced in Appendix 7.

drilling activity in the Denver Unit. Third, Oxy plans to operate the CO_2 EOR flood in the Denver Unit for several more decades, and will continue to be vigilant about protecting the integrity of its assets and maximizing the potential of resources (oil, gas, CO_2). In the unlikely event Oxy would sell the field to a new operator, provisions would be made to ensure the secure storage of the amount of CO_2 reported as a result of CO_2 EOR operations during the Specified Period.

4.9 Diffuse Leakage Through the Seal

Diffuse leakage through the seal formed by the upper San Andres is highly unlikely. The presence of a gas cap trapped over millions of years as discussed in Section 2.2.3 confirms that the seal has been secure for a very long time. Injection pattern monitoring program referenced in Section 2.3.1 and detailed in Section 5 assures that no breach of the seal will be created. The seal is highly impermeable, wells are cemented across the horizon, and unexplained changes in injection pressure would trigger investigation as to the cause. Further, if CO_2 were to migrate through the San Andres seal, it would migrate vertically until it encountered and was trapped by any of the four additional seals indicated in orange in Figure 4.

4.10 Monitoring, Response, and Reporting Plan for CO_2 Loss

As discussed above, the potential sources of leakage include fairly routine issues, such as problems with surface equipment (pumps, valves, etc.) or subsurface equipment (well bores), and unique events such as induced fractures. Table 3 summarizes some of these potential leakage scenarios, the monitoring activities designed to detect those leaks, Oxy's standard response, and other applicable regulatory programs requiring similar reporting.

Table 3 Response Plan for CO_2 Loss

Known Potential Leakage Risks	Monitoring Methods and Frequency	Anticipated Response Plan
Tubing Leak	Monitor changes in annulus pressure; MIT for injectors	Workover crews respond within days
Casing Leak	Weekly field inspection; MIT for injectors; extra attention to high risk wells	Workover crews respond within days
Wellhead Leak	Weekly field inspection	Workover crews respond within days
Loss of Bottom-hole pressure control	Blowout during well operations (weekly inspection but field personnel present daily)	Maintain well kill procedures
Unplanned wells drilled through San Andres	Weekly field inspection to prevent unapproved drilling; compliance with TRRC permitting for planned wells.	Assure compliance with TRRC regulations
Loss of seal in abandoned wells	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Re-enter and reseal abandoned wells
Pumps, values, etc.	Weekly field inspection	Workover crews respond within days

Leakage along faults	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Shut in injectors near faults
Overfill beyond spill points	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Fluid management along lease lines
Leakage through induced fractures	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Comply with rules for keeping pressures below parting pressure
Leakage due to seismic event	Continuous monitoring of pressure in WAG skids; high pressure found in new wells as drilled	Shut in injectors near seismic event

Sections 5.1.5-5.1.7 discuss the approaches envisioned for quantifying the volumes of leaked CO_2. Given the uncertainty concerning the nature and characteristics of leaks that will be encountered, it is not clear the method for quantifying the volume of leaked CO_2 that would be most appropriate. In the event leakage occurs, Oxy will determine the most appropriate method for quantifying the volume leaked and will report the methodology used as required as part of the annual Subpart RR submission.

Any volume of CO_2 detected leaking to surface will be quantified using acceptable emission factors such as those found in 40 CFR Part 98 Subpart W or engineering estimates of leak amounts based on measurements in the subsurface, Oxy's field experience, and other factors such as the frequency of inspection. As indicated in Sections 5.1 and 7.4, leaks will be documented, evaluated and addressed in a timely manner. Records of leakage events will be retained in the electronic environmental documentation and reporting system. Repairs requiring a work order will be documented in the electronic equipment maintenance system.

Available studies of actual well leaks and natural analogs (e.g., naturally occurring CO_2 geysers) suggest that the amount released from routine leaks would be small as compared to the amount of CO_2 that would remain stored in the formation.[10]

4.11 Summary

The structure and stratigraphy of the San Andres reservoir in the Denver Unit is ideally suited for the injection and storage of CO_2. The stratigraphy within the CO_2 injection zones is porous, permeable and very thick, providing ample capacity for long-term CO_2 storage. The San Andres formation is overlain by several intervals of impermeable geologic zones that form effective seals or "caps" to fluids in the San Andres formation (See Figure 4). After assessing potential risk of release from the subsurface and steps that have been taken to prevent leaks, Oxy has determined that the potential threat of leakage is extremely low. The potential leakage scenarios are summarized below, in order of likelihood:

[10] See references to following reports of measurements, assessments, and analogs in Appendix 4: IPCC Special Report on Carbon Dioxide Capture and Storage; Wright – Presentation to UNFCC SBSTA on CCS; Allis, R., et al, "Implications of results from CO2 flux surveys over known CO2 systems for long-term monitoring; McLing - Natural Analog CCS Site Characterization Soda Springs, Idaho Implications for the Long-term Fate of Carbon Dioxide Stored in Geologic Environments.

- *Existing wellbores*: Because existing boreholes are a potential pathway for release of CO_2 to the surface, Oxy is primarily focused on mitigating this risk through a combination of using best practices in well design, completion and operation, and implementation of a rigorous program for subsurface performance and well bore monitoring. Oxy further has established approach to remedy or close wells if a problem arises. Together, these components mitigate the risk of leakage to the surface through boreholes. In addition to these proactive measures, the operating history is well documented and does not indicate manmade leakage pathways from past production activities or any significant likelihood that existing but unknown wellbores will be identified. Oxy will account for any CO_2 leakage via well bores as required under Subpart RR.

- *Pipeline/Surface Equipment*: Oxy follows regulatory requirements and best practices that together mitigate the risk of significant CO_2 leakage from pipelines and surface equipment. Oxy will account for any leakage according to the requirements in Subpart W of the EPA's GHGRP and will reflect any such leakage in the mass balance calculation.

- *Faults:* There are no faults or fractures present within or affecting the Denver Unit, and Oxy believes that the risk of leakage via this pathway is low. Should such leakage occur, Oxy would quantify it using measured or engineering estimates of relevant parameters (e.g., CO_2 flow rate, concentration, duration), and report CO_2 emissions under Subpart RR.

- *Natural and Induced Seismic Activity, Previous Operations, Lateral Migration Outside the Denver Unit, Dissolution of CO_2 into Formation Fluid and Subsequent Migration, Drilling through the CO_2 Area, and Diffuse Movement Through the Seal*: As explained above, Oxy concludes that these theoretical leakage pathways are very unlikely and are mitigated, to the extent practicable, through Oxy's operating procedures. As with faults, Oxy believes that the risk of leakage via these pathways is low. Should such leakage occur, Oxy would quantify it using measured or engineering estimates of relevant parameters (e.g., CO_2 flow rate, concentration, duration), and report CO_2 emissions under Subpart RR.

In summary, based on a careful assessment of the potential risk of release of CO_2 from the subsurface, Oxy has determined that there are no leakage pathways at the Denver Unit that are likely to result in significant loss of CO_2 to the atmosphere. Further, given the detailed knowledge of the field and its operating protocols, Oxy concludes that it would be able to both detect and quantify any CO_2 leakage to the surface that could arise both identified and unexpected leakage pathways.

5. Monitoring and Considerations for Calculating Site Specific Variables

5.1 For the Mass Balance Equation

5.1.1 General Monitoring Procedures

As part of its ongoing operations, Oxy collects flow, pressure, and gas composition data from the Denver Unit. Flow and pressure data is monitored through hourly scans by centralized data management systems. Alarms are triggered when data deviates by a specified amount from desired operational conditions. Alarms are investigated by qualified technicians who follow Oxy response and reporting protocols. Responses are described in the following sections (5.1.5-5.1.7).

The typical volume weight averaged composition of injected CO_2 is:

%N2	0.93813
% CO2	96.9484
%C1	0.76578
%C2	1.31588
%C3	0.00421
%IC4	0.00402
%NC4	0.00933
%IC5	0.00345
%NC5	0.00325

The standard deviation of the CO_2 concentration over the last year is less than 0.5%.

There is no significant amount of H_2S in the injected gas stream. It is below the measurement threshold. DUCRP sweetens the gas before returning it to the field.

As indicated in Figure 10, custody-transfer meters are used at the two points at which custody of the CO_2 from the Permian pipeline delivery system is transferred to Oxy and also at the points at which custody of oil is transferred to other parties. Meters measure flow rate continually. Fluid composition will be determined, at a minimum, quarterly, consistent with EPA GHGRP's Subpart RR, section 98.447(a). All meter and composition data are documented, and records will be retained for at least seven years.

Metering protocols used by Oxy follow the prevailing industry standard(s) for custody transfer as currently promulgated by the API, the American Gas Association (AGA), and the Gas Processors Association (GPA), as appropriate. This approach is consistent with EPA GHGRP's Subpart RR, section 98.444(e)(3). These meters will be maintained routinely, operated continually, and will feed data directly to the centralized data collection systems. The meters meet the industry standard for custody transfer meter accuracy and calibration frequency. These custody meters provide the most accurate way to measure mass flows.

Oxy maintains in-field process control meters to monitor and manage in-field activities on a real time basis. These are identified as operations meters in Figure 10. These meters provide information used to make operational decisions but are not intended to provide the same level of accuracy as the custody-transfer meters. The level of precision and accuracy for in-field meters currently satisfies the requirements for reporting in existing UIC permits. Although these meters are accurate for operational purposes, it is important to note that there is some variance between most commercial meters (on the order of 1-5%) which is additive across meters. This variance is due to differences in factory settings and meter calibration, as well as the operating conditions within a field. Meter elevation, changes in temperature (over the course of the day), fluid composition (especially in multi-component or multi-phase streams), or pressure can affect in-field meter readings. Unlike in a saline formation, where there are likely to be only a few injection wells and associated meters, at CO_2 EOR operations in the Denver Unit there will be approximately 2,000 injection and production wells and a comparable number of meters, each with an acceptable range of error. This is a site-specific factor that is considered in the mass balance calculations described in Section 7.

5.1.2 CO_2 Received

Oxy measures the volume of received CO_2 using commercial custody transfer meters at each the two off-take points from the Permian pipeline delivery system. This transfer is a commercial transaction that is documented. CO_2 composition is governed by the contract and the gas is routinely sampled to determine composition. No CO_2 is received in containers.

5.1.3 CO_2 Injected into the Subsurface

Injected CO_2 will be calculated using the flow meter volumes at the custody transfer meters at the outlet to DUCRP and the CO_2 off-take points from the Permian pipeline delivery system.

5.1.4 CO_2 Produced, Entrained in Products, and Recycled

The following measurements are used for the mass balance equations in Section 7:

CO_2 produced is calculated using the volumetric flow meters at the inlet to DUCRP.

CO_2 is produced as entrained or dissolved CO_2 in produced oil, as indicated in Figure 10. The concentration of CO_2 in produced oil is measured at the centralized tank battery.

Recycled CO_2 is calculated using the volumetric flow meter at the outlet of DUCRP, which is a custody transfer meter.

5.1.5 CO_2 Emitted by Surface Leakage

As discussed in Section 5.1.6 and 5.1.7 below, Oxy uses 40 CFR Part 98 Subpart W to estimate surface leaks from equipment at the Denver Unit. Subpart W uses a factor-driven approach to estimate equipment leakage. In addition, Oxy uses an event driven process to assess, address, track, and if applicable quantify potential CO_2 leakage to the surface. Oxy will reconcile the Subpart W report and results from any event-driven quantification to assure that surface leaks are not double counted.

The multi-layered, risk-based monitoring program for event-driven issues has been designed to meet two objectives, in accordance with the leakage risk assessment in Section 4: 1) to detect anomalies before CO_2 leaks to the surface; and 2) to detect and quantify any leaks that do occur. This section discusses how this monitoring will be conducted and used to quantify the volumes of CO_2 leaked to the surface.

<u>Monitoring for potential Leakage from the Injection/Production Zone:</u>
Oxy will monitor both injection into and production from the reservoir as a means of early identification of potential anomalies that could indicate leakage from the subsurface.

Oxy uses pattern modeling based on extensive history-matched data to develop injection plans (fluid rate, pressure, volume) that are programmed into each WAG skid. If injection pressure or rate measurements are beyond the specified set points determined as part of each pattern injection plan, a data flag is automatically triggered and field personnel will investigate and resolve the problem. These excursions will be reviewed by well management personnel to determine if CO_2 leakage may be occurring. Excursions are not necessarily indicators of leaks; they simply indicate that injection rates and pressures are not conforming to the pattern injection plan. In many cases, problems are straightforward to fix (e.g., a meter needs to be recalibrated or some other minor action is required), and there is no threat of CO_2 leakage. In the case of issues that are not readily resolved, more detailed investigation and response would be initiated, and staff from other parts of Oxy would provide additional support. Such issues would lead to the development of a work order in Oxy's Maximo work order management system. This record enables the company to track progress on investigating potential leaks and, if a leak has occurred, quantifying the magnitude.

Likewise, Oxy develops a forecast of the rate and composition of produced fluids. Each producer well is assigned to one satellite battery and is isolated once during each monthly cycle for a well production test. This data is reviewed on a periodic basis to confirm that production is at the level forecasted. If there is a significant deviation from the forecast, well management personnel investigate. If the issue cannot be resolved quickly, more detailed investigation and response would be initiated. As in the case of the injection pattern monitoring, if the investigation leads to a work order in the Maximo system, this record will provide the basis for tracking the outcome of the investigation and if a leak has occurred, recording the quantity leaked to the surface. If leakage in the flood zone were detected, Oxy would use an appropriate method to quantify the involved volume of CO_2. This might include use of material balance equations based on known injected quantities and monitored pressures in the injection zone to estimate the volume of CO_2 involved. Given the extensive operating history of the Denver Unit, this technique would be expected to have a relatively large margin of error.

A subsurface leak might not lead to a surface leak. In the event of a subsurface leak, Oxy would determine the appropriate approach for tracking subsurface leakage to determine and quantify leakage to the surface. To quantify leakage to the surface, Oxy would estimate the relevant parameters (e.g., the rate, concentration, and duration of leakage) to quantify the leak volume. Depending on specific circumstances, these determinations may rely on engineering estimates.

In the event leakage from the subsurface occurred diffusely through the seals, the leaked gas would include H_2S that would trigger the alarm on the personal monitors worn by field personnel. The personal H_2S meters worn by field personnel can detect levels of H_2S as low as 0.1 PPM. Such a diffuse leak from the subsurface through the seals has not occurred in the Denver Unit. In the event such a leak was detected, field personnel from across Oxy would be used to determine how to address the problem. The team might use modeling, engineering estimates, and direct measurements to assess, address, and quantify the leakage.

Monitoring of Wellbores*:*

Oxy monitors wells through continual, automated pressure monitoring in the injection zone (as described in Section 4.2), monitoring of the annular pressure in wellheads, and routine maintenance and inspection.

Leaks from wellbores would be detected through the follow-up investigation of pressure anomalies, visual inspection, or the use of personal H_2S monitors.

Anomalies in injection zone pressure may not indicate a leak, as discussed above. However, if the investigation leads to a work order, field personnel will inspect the equipment in question and determine the nature of the problem. If it is a simple matter, the repair will be made and the volume of leaked CO_2 would be included in the 40 CFR Part 98 Subpart W report for the Denver Unit. If more extensive repair were needed, Oxy would determine the appropriate approach for quantifying leaked CO_2 using the relevant parameters (e.g., the rate, concentration, and duration of leakage). The work order would serve as the basis for tracking the event for GHG reporting.

Anomalies in annular pressure or other parameters detected during routine maintenance inspections would be treated in the same way. Annular pressures in injectors should be close to zero in normal operating conditions because the annulus is isolated by the tubing and packer from injection fluids. Any higher pressure would indicate a potential leak in either the tubing or the packer and would trigger further investigation. If changes in pressure trigger a flag, the investigation follows a course of increasing detail as needed. The investigation typically begins with simpler measures such as having a field technician inspect the well for faulty equipment (e.g., valves, flanges). Additional tests would be conducted on the well if the cause of the pressure change has not been located. These tests can identify the nature and location of the problem. If the cause is still not determined, then an investigation involving a wider scope will be undertaken. If a simple repair addresses the issue, the volume of leaked CO_2 would be included in the 40 CFR Part 98 Subpart W report for the Denver Unit. If more extensive repairs were needed, a work order would be generated and Oxy would determine the appropriate approach for quantifying leaked CO_2 using the relevant parameters (e.g., the rate, concentration, and duration of leakage). The work order would serve as the basis for tracking the event for GHG reporting.

Because leaking CO_2 is very cold and leads to formation of bright white clouds and ice that are easily spotted, Oxy also employs a two-part visual inspection process in the general area of the Denver unit to detect unexpected releases from wellbores. First, field personnel visit the surface facilities on a routine basis. Inspections may include tank volumes, equipment status and reliability, lube oil levels, pressures and flow rates in the facility, and valve leaks. Field personnel inspections also check that injectors are on the proper WAG schedule and observe the facility for visible CO_2 or fluid line leaks. Second, Oxy uses airplanes to perform routine flyover inspections to look for unplanned activities in the field including trespass operations, disruption of buried pipelines, or other potential unapproved activities. The pilots also look for evidence of unexpected releases. If a pilot observes a leak or release, he or she contacts Oxy's surface operations with the location of the leak. Surface operations personnel then review the reports, conduct a site investigation, recommend appropriate corrective action, and ensure actions are completed.

Historically, Oxy has documented fewer than 4 unexpected release events each year at Denver Unit. A need for repair or maintenance identified in the visual inspections results in a work order being entered into Oxy's equipment and maintenance (Maximo) system. The time to repair any leak is dependent on several factors, such as the severity of the leak, available manpower, location of the leak, and availability of materials required for the repair. 80% of leaks are repaired within one day and the remaining 20% within several days.

Finally, Oxy uses the results from the H_2S monitors worn by all field personnel at all times, as a last method to detect leakage from wellbores. If an H_2S alarm is triggered, the first response is to protect the safety of the personnel, but the next step is to safely investigate the source of the alarm. As noted previously, Oxy considers H_2S a proxy for potential CO_2 leaks in the field. Thus, detected H_2S leaks will be investigated to determine, and if needed quantify, potential CO_2 leakage. If the problem resulted in a work order, this will serve as the basis for tracking the event for GHG reporting.

Other Potential Leakage at the Surface:

Oxy will utilize the same visual inspection process and H_2S monitoring system to detect other potential leakage at the surface as it does for leakage from wellbores. Oxy utilizes routine visual inspections to detect significant loss of CO_2 to the surface. Field personnel routinely visit surface facilities to conduct a visual inspection. Inspections may include review of tank level, equipment status, lube oil levels, pressures and flow rates in the facility, valve leaks, ensuring that injectors are on the proper WAG schedule, and also conducting a general observation of the facility for visible CO_2 or fluid line leaks. Oxy also uses airplanes to routinely conduct visual inspections from the air. If problems are detected, field personnel investigate then, if maintenance is required, generate a work order in the maintenance system, which is tracked through completion. In addition to these visual inspections, Oxy will use the results of the personal H_2S monitors worn by field personnel as a supplement for smaller leaks that may escape visual detection.

If CO_2 leakage to the surface is detected, it will be reported to surface operations personnel who will review the reports and conduct a site investigation. If maintenance is required, a work order will be generated in the Maximo system. The work order will describe the appropriate corrective action and be used to track completion of the maintenance action. The work order will also serve as the basis for tracking the event for GHG reporting and quantifying any CO_2 emissions.

5.1.6 CO_2 emitted from equipment leaks and vented emissions of CO_2 from surface equipment located between the injection flow meter and the injection wellhead.

Oxy evaluates and estimates leaks from equipment, the CO_2 content of produced oil, and vented CO_2, as required under 40 CFR Part 98 Subpart W.

5.1.7 Mass of CO_2 emissions from equipment leaks and vented emissions of CO_2 from surface equipment located between the production flow meter and the production wellhead

Oxy evaluates and estimates leaks from equipment, the CO_2 content of produced oil, and vented CO_2, as required under 40 CFR Part 98 Subpart W.

5.2 To Demonstrate that Injected CO_2 is not Expected to Migrate to the Surface

At the end of the Specified Period, Oxy intends to cease injecting CO_2 for the subsidiary purpose of establishing the long-term storage of CO_2 in the Denver Unit. After the end of the Specified Period, Oxy anticipates that it will submit a request to discontinue monitoring and reporting. The request will demonstrate that the amount of CO_2 reported under 40 CFR §98.440-449 (Subpart RR) is not expected to migrate in the future in a manner likely to result in surface leakage. At that time, Oxy will be able to support its request with seven or more years of data collected during the Specified Period as well as two to three years of data collected after the end of the Specified Period. This demonstration will provide the information necessary for the EPA Administrator to approve the request to discontinue monitoring and reporting and may include, but is not limited to:

i. Data comparing actual performance to predicted performance (purchase, injection, production) over the monitoring period;
ii. An assessment of the CO_2 leakage detected, including discussion of the estimated amount of CO_2 leaked and the distribution of emissions by leakage pathway;
iii. A demonstration that future operations will not release the volume of stored CO_2 to the surface;

iv. A demonstration that there has been no significant leakage of CO_2; and,

v. An evaluation of reservoir pressure in the Denver Unit that demonstrates that injected fluids are not expected to migrate in a manner to create a potential leakage pathway.

6. Determination of Baselines

Oxy intends to utilize existing automatic data systems to identify and investigate excursions from expected performance that could indicate CO_2 leakage. Oxy's data systems are used primarily for operational control and monitoring and as such are set to capture more information than is necessary for reporting in the Annual Subpart RR Report. Oxy will develop the necessary system guidelines to capture the information that is pertinent to possible CO_2 leakage. The following describes Oxy's approach to collecting this information.

Visual Inspections

As field personnel conduct routine inspections, work orders are generated in the electronic system for maintenance activities that cannot be addressed on the spot. Methods to capture work orders that involve activities that could potentially involve CO_2 leakage will be developed, if not currently in place. Examples include occurrences of well workover or repair, as well as visual identification of vapor clouds or ice formations. Each incident will be flagged for review by the person responsible for MRV documentation. (The responsible party will be provided in the monitoring plan, as required under Subpart A, 98.3(g).) The Annual Subpart RR Report will include an estimate of the amount of CO_2 leaked. Records of information used to calculate emissions will be maintained on file for a minimum of seven years.

Personal H_2S Monitors

H_2S monitors are worn by all field personnel. Alarm of the monitor triggers an immediate response to ensure personnel are not at risk and to verify the monitor is working properly. The person responsible for MRV documentation will receive notice of all incidents where H_2S is confirmed to be present. The Annual Subpart RR Report will provide an estimate the amount of CO_2 emitted from any such incidents. Records of information to calculate emissions will be maintained on file for a minimum of seven years.

Injection Rates, Pressures and Volumes

Oxy develops a target injection rate and pressure for each injector, based on the results of ongoing pattern modeling. The injection targets are programmed into the WAG skid controllers. High and low set points are also programmed into the controllers, and flags whenever statistically significant deviations from the targeted ranges are identified. The set points are designed to be conservative, because Oxy prefers to have too many flags rather than too few. As a result, flags can occur frequently and are often found to be insignificant. For purposes of Subpart RR reporting, flags (or excursions) will be screened to determine if they could also lead to CO_2 leakage to the surface. The person responsible for the MRV documentation will receive notice of excursions and related work orders that could potentially involve CO_2 leakage. The Annual Subpart RR Report will provide an estimate of CO_2 emissions. Records of information to calculate emissions will be maintained on file for a minimum of seven years.

Production Volumes and Compositions

Oxy develops a general forecast of production volumes and composition which is used to periodically evaluate performance and refine current and projected injection plans and the forecast. This information is used to make operational decisions but is not recorded in an automated data system. Sometimes, this review may result in the generation of a work order in the maintenance system. The MRV plan manager will review such work orders and identify those that could result in CO_2 leakage. Should such events occur, leakage volumes would be calculated following the approaches described in Sections 4 and 5. Impact to Subpart RR reporting will be addressed, if deemed necessary.

7. Determination of Sequestration Volumes Using Mass Balance Equations

To account for the site conditions and complexity of a large, active EOR operation, Oxy proposes to modify the locations for obtaining volume data for the equations in Subpart RR §98.443 as indicated below.

The first modification addresses the propagation of error that would be created if volume data from meters at each injection and production well were utilized. This issue arises because each meter has a small but acceptable margin of error, this error would become significant if data were taken from the approximately 2,000 meters within the Denver Unit. As such, Oxy proposes to use the data from custody meters on the main system pipelines to determine injection and production volumes used in the mass balance.

The second modification addresses the DUCRP. Figure 16 shows the planned mass balance envelope overlaid as a pale blue onto the General Production Flow Diagram originally shown in Figure 10. The envelope contains all of the measurements relevant to the mass balance equation. Those process steps outside of the envelope do not impact the mass balance and are, therefore, not included. As indicated in Figure 16, only the volume of CO_2 recycled from DUCRP impacts the mass balance equation and it is the volume measured at the DUCRP outlet. The remainder of the CO_2 -- that is, the difference between the inlet measurement and the outlet measurement occurring at DUCRP -- does not have an impact on the mass balance of the Denver Unit and therefore is not included in the mass balance equations. This is because the purpose of the MRV plan under Subpart RR is to determine the amount of CO_2 stored at the project site, as well as the amount of CO_2 emitted from the project site. GHGR Reporting rule Subpart RR is not intended to account for CO_2 emissions throughout the CO_2 supply chain as those emissions are reported under other subparts of the GHG Reporting rule.

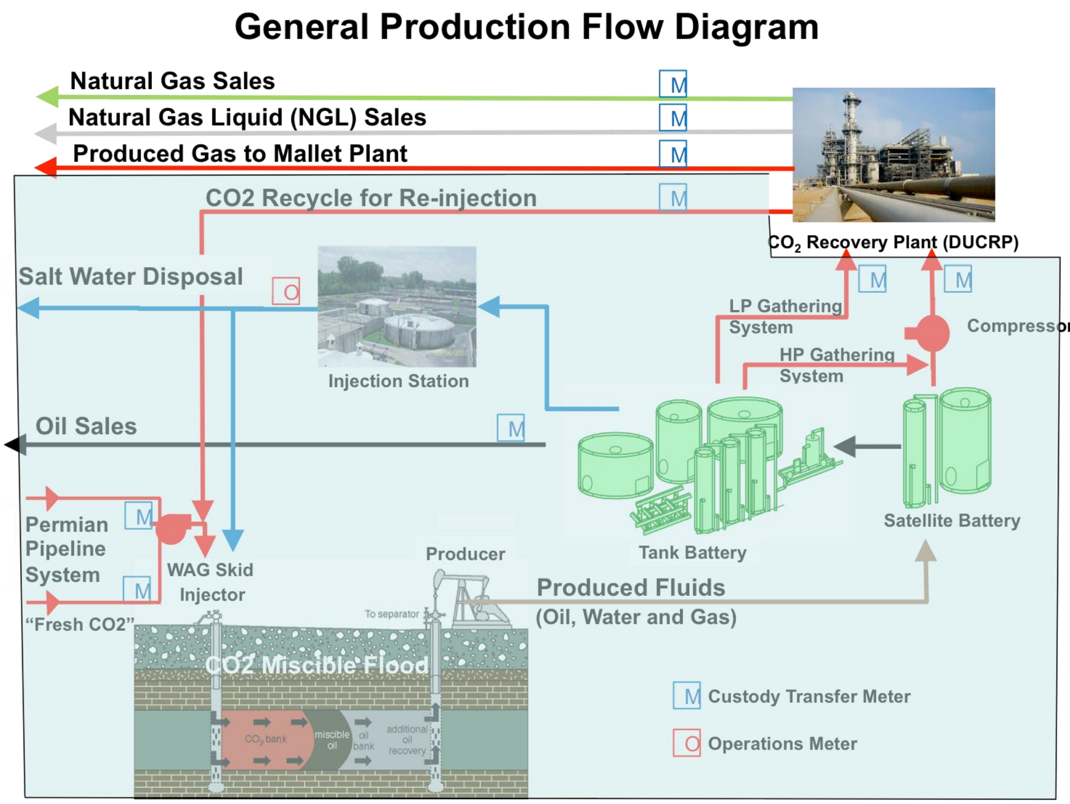


Figure 16 Material Balance Envelope (in blue)

The following sections describe how each element of the mass-balance equation (Equation RR-11) will be calculated.

7.1. Mass of CO_2 Received

Oxy will use equation RR-2 as indicated in Subpart RR §98.443 to calculate the mass of CO_2 received from each delivery meter immediately upstream of the Permian pipeline delivery system on the Denver Unit. The volumetric flow at standard conditions will be multiplied by the CO_2 concentration and the density of CO_2 at standard conditions to determine mass.

$$CO_{2T,r} = \sum_{p=1}^{4} (Q_{r,p} - S_{r,p}) * D * C_{CO_{2,p,r}} \qquad \text{(Eq. RR-2)}$$

where:

$CO_{2T,r}$ = Net annual mass of CO_2 received through flow meter r (metric tons).

$Q_{r,p}$ = Quarterly volumetric flow through a receiving flow meter r in quarter p at standard conditions (standard cubic meters).

$S_{r,p}$ = Quarterly volumetric flow through a receiving flow meter r that is redelivered to another facility without being injected into your well in quarter p (standard cubic meters).

D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682.

$C_{CO2,p,r}$ = Quarterly CO_2 concentration measurement in flow for flow meter r in quarter p (vol. percent CO_2, expressed as a decimal fraction).

p = Quarter of the year.

r = Receiving flow meters.

Given Oxy's method of receiving CO_2 and requirements at Subpart RR §98.444(a):

- All delivery to the Denver Unit is used within the unit so quarterly flow redelivered, $S_{r,p}$, is zero ("0") and will not be included in the equation.
- Quarterly CO_2 concentration will be taken from the gas measurement database

Oxy will sum to total Mass of CO_2 Received using equation RR-3 in 98.443

$$CO_2 = \sum_{r=1}^{R} CO_{2T,r} \quad \text{(Eq. RR-3)}$$

where:

CO_2 = Total net annual mass of CO_2 received (metric tons).

$CO_{2T,r}$ = Net annual mass of CO_2 received (metric tons) as calculated in Equation RR-2 for flow meter r.

r = Receiving flow meter.

7.2 Mass of CO_2 Injected into the Subsurface

The equation for calculating the Mass of CO_2 Injected into the Subsurface at the Denver Unit is equal to the sum of the Mass of CO_2 Received as calculated in RR-3 of 98.443 as described in Section 7.1 and the Mass of CO_2 recycled as calculated using measurements taken from the flow meter located at the output of the DUCRP. As previously explained, using data at each injection well would give an inaccurate estimate of total injection volume due to the large number of wells and the potential for propagation of error due to allowable calibration ranges for each meter.

The mass of CO_2 recycled will be determined using equations RR-5 as follows:

$$CO_{2,u} = \sum_{p=1}^{4} Q_{p,u} * D * C_{CO_{2,p,u}} \quad \text{(Eq. RR-5)}$$

where:

$CO_{2,u}$ = Annual CO_2 mass recycled (metric tons) as measured by flow meter u.

$Q_{p,u}$ = Quarterly volumetric flow rate measurement for flow meter u in quarter p at standard conditions (standard cubic meters per quarter).

D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682.

$C_{CO2,p,u}$ = CO_2 concentration measurement in flow for flow meter u in quarter p (vol. percent CO_2, expressed as a decimal fraction).
p = Quarter of the year.
u = Flow meter.

The total Mass of CO_2 received will be the sum of the Mass of CO_2 received (RR-3) and Mass of CO_2 recycled (modified RR-5).

$CO_{2I} = CO_2 + CO_{2,u}$

7.3 Mass of CO_2 Produced

The Mass of CO_2 Produced at the Denver Unit will be calculated using the measurements from the flow meters at the inlet to DUCRP rather than the metered data from each production well. Again, using the data at each production well would give an inaccurate estimate of total injection due to the large number of wells and the potential for propagation of error due to allowable calibration ranges for each meter.

Equation RR-8 in 98.443 will be used to calculate the mass of CO_2 from all injection wells as follows:

$$CO_{2,w} = \sum_{p=1}^{4} Q_{p,w} * D * C_{CO_{2,p,w}} \quad \text{(Eq. RR-8)}$$

Where:

$CO_{2,w}$ = Annual CO_2 mass produced (metric tons) through meter w.
$Q_{p,w}$ = Volumetric gas flow rate measurement for meter w in quarter p at standard conditions (standard cubic meters).
D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682.
$C_{CO2,p,w}$ = CO_2 concentration measurement in flow for meter w in quarter p (vol. percent CO_2, expressed as a decimal fraction).
p = Quarter of the year.
w = inlet meter to DUCRP.

Equation RR-9 in 98.443 will be used to aggregate the mass of CO_2 produced net of the mass of CO_2 entrained in oil leaving the Denver Unit prior to treatment of the remaining gas fraction in DUCRP as follows:

$$CO_{2P} = \sum_{w=1}^{W} CO_{2,w} + X_{oil} \quad \text{(Eq. RR-9)}$$

Where:

CO_{2P} = Total annual CO_2 mass produced (metric tons) through all meters in the reporting year.
$CO_{2,w}$ = Annual CO_2 mass produced (metric tons) through meter w in the reporting year.

X_{oil} = Mass of entrained CO_2 in oil in the reporting year measured utilizing commercial meters and electronic flow-measurement devices at each point of custody transfer. The mass of CO_2 will be calculated by multiplying the total volumetric rate by the CO_2 concentration.

7.4 Mass of CO_2 emitted by Surface Leakage

Oxy will calculate and report the total annual Mass of CO_2 emitted by Surface Leakage using an approach that is tailored to specific leakage events and relies on 40 CFR Part 98 Subpart W reports of equipment leakage. As described in Sections 4 and 5.1.5-5.1.7, Oxy is prepared to address the potential for leakage in a variety of settings. Estimates of the amount of CO_2 leaked to the surface will likely depend on a number of site-specific factors including measurements, engineering estimates, and emission factors, depending on the source and nature of the leakage.

Oxy's process for quantifying leakage will entail using best engineering principles or emission factors. While it is not possible to predict in advance the types of leaks that will occur, Oxy describes some approaches for quantification in Section 5.1.5-5.1.7. In the event leakage to the surface occurs, Oxy will quantify and report leakage amounts, and retain records that describe the methods used to estimate or measure the volume leaked as reported in the Annual Subpart RR Report. Further, Oxy will reconcile the Subpart W report and results from any event-driven quantification to assure that surface leaks are not double counted.

Equation RR-10 in 48.433 will be used to calculate and report the Mass of CO_2 emitted by Surface Leakage:

$$CO_{2E} = \sum_{x=1}^{X} CO_{2,x} \quad \text{(Eq. RR-10)}$$

where:

CO_{2E} = Total annual CO_2 mass emitted by surface leakage (metric tons) in the reporting year.

$CO_{2,x}$ = Annual CO_2 mass emitted (metric tons) at leakage pathway x in the reporting year.

x = Leakage pathway.

7.5 Mass of CO_2 sequestered in subsurface geologic formations.

Oxy will use equation RR-11 in 98.443 to calculate the Mass of CO_2 Sequestered in Subsurface Geologic Formations in the Reporting Year as follows:

$$CO_2 = CO_{2I} - CO_{2P} - CO_{2E} - CO_{2FI} - CO_{2FP} \quad \text{(Eq. RR-11)}$$

where:

CO_2 = Total annual CO_2 mass sequestered in subsurface geologic formations (metric tons) at the facility in the reporting year.

CO_{2I} = Total annual CO_2 mass injected (metric tons) in the well or group of wells covered by this source category in the reporting year.

CO_{2P} = Total annual CO_2 mass produced (metric tons) in the reporting year.

CO_{2E} = Total annual CO_2 mass emitted (metric tons) by surface leakage in the reporting year.

CO_{2FI} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead, for which a calculation procedure is provided in subpart W of this part.

CO_{2FP} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the production wellhead and the flow meter used to measure production quantity, for which a calculation procedure is provided in subpart W of this part.

7.6 Cumulative mass of CO_2 reported as sequestered in subsurface geologic formations

Oxy will sum of the total annual volumes obtained using equation RR-11 in 98.443 to calculate the Cumulative Mass of CO_2 Sequestered in Subsurface Geologic Formations.

8. MRV Plan Implementation Schedule

It is anticipated that this MRV plan will be implemented within 180 days of EPA approval. Other GHG reports are filed on March 31 of the year after the reporting year and it is anticipated that the Annual Subpart RR Report will be filed at the same time. As described in Section 3.3 above, Oxy anticipates that the MRV program will be in effect during the Specified Period, during which time Oxy will operate the Denver Unit with the subsidiary purpose of establishing long-term containment of a measurable quantity of CO_2 in subsurface geological formations at the Denver Unit. Oxy anticipates establishing that a measurable portion of the CO_2 injected during the Specified Period will be stored in a manner not expected to migrate resulting in future surface leakage. At such time, Oxy will prepare a demonstration supporting the long-term containment determination and submit a request to discontinue reporting under this MRV plan. *See* 40 C.F.R. § 98.441(b)(2)(ii).

9. Quality Assurance Program

9.1 Monitoring QA/QC

As indicated in Section 7, Oxy has incorporated the requirements of §98.444 (a) – (d) in the discussion of mass balance equations. These include the following provisions.

CO_2 Received and Injected

- The quarterly flow rate of CO_2 received by pipeline is measured at the receiving custody transfer meters.
- The quarterly CO_2 flow rate for recycled CO_2 is measured at the custody transfer meter located at the DUCRP outlet.

CO_2 Produced

- The point of measurement for the quantity of CO_2 produced from oil or other fluid production wells is a flow meter directly downstream of each separator that sends a stream of gas into a recycle or end use system.
- The produced gas stream is sampled at least once per quarter immediately downstream of the flow meter used to measure flow rate of that gas stream and measure the CO_2 concentration of the sample.
- The quarterly flow rate of the produced gas is measured at the custody transfer meters located at the DUCRP inlet.

CO_2 emissions from equipment leaks and vented emissions of CO_2

These volumes are measured in conformance with the monitoring and QA/QC requirements specified in subpart W of 40 CFR Part 98.

Flow meter provisions

The flow meters used to generate date for the mass balance equations in Section 7 are:

- Operated continuously except as necessary for maintenance and calibration.
- Operated using the calibration and accuracy requirements in 40 CFR §98.3(i).
- Operated in conformance with American Petroleum Institute (API) standards found in API Report No. 3, Parts 2 and 3.
- National Institute of Standards and Technology (NIST) traceable.

Concentration of CO_2

As indicated in Appendix 2, CO_2 concentration is measured using the Gas Processors Association (GPA) standards 2261:2013 (Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography) and GPA 2186 – 02 (Method for the Extended Analysis of Hydrocarbon Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Temperature Programmed Gas Chromatography).. Further, all measured volumes of CO_2 have been converted to standard cubic meters at a temperature of 60 degrees Fahrenheit and at an absolute pressure of 1 atmosphere, including those used in Equations RR-2, RR-5 and RR-8 in Section 7.

9.2 Missing Data Procedures

In the event Oxy is unable to collect data needed for the mass balance calculations, procedures for estimating missing data in §98.445 will be used as follows:

- A quarterly flow rate of CO_2 received that is missing would be estimated using invoices or using a representative flow rate value from the nearest previous time period.
- A quarterly CO_2 concentration of a CO_2 stream received that is missing would be estimated using invoices or using a representative concentration value from the nearest previous time period.
- A quarterly quantity of CO_2 injected that is missing would be estimated using a representative quantity of CO_2injected from the nearest previous period of time at a similar injection pressure.
- For any values associated with CO_2 emissions from equipment leaks and vented emissions of CO_2 from surface equipment at the facility that are reported in this subpart, missing data estimation procedures specified in subpart W of 40 CFR Part 98 would be followed.
- The quarterly quantity of CO_2 produced from subsurface geologic formations that is missing would be estimated using a representative quantity of CO_2 produced from the nearest previous period of time.

9.3 MRV Plan Revisions

In the event there is a material change to the monitoring and/or operational parameters of the Oxy CO_2 EOR operations in the Denver Unit that is not anticipated in this MRV plan, the MRV plan will be revised and submitted to the EPA Administrator within 180 days as required in §98.448(d)..

10. Records Retention

Oxy will follow the record retention requirements in as required.
Oxy will follow the record retention requirements specified by §98.3(g). In addition, it will follow the requirements in Subpart RR §98.447 by maintaining the following records for at least seven years:

- Quarterly records of CO_2 received at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.

- Quarterly records of produced CO_2, including volumetric flow at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.
- Quarterly records of injected CO_2 including volumetric flow at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.
- Annual records of information used to calculate the CO_2 emitted by surface leakage from leakage pathways.
- Annual records of information used to calculate the CO_2 emitted from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.
- Annual records of information used to calculate the CO_2 emitted from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the production wellhead and the flow meter used to measure production quantity.

These data will be collected as generated and aggregated as required for reporting purposes.

11. Appendices

Appendix 1. Background

This appendix provides background information on the EOR project at the Denver Unit.

A1.1 Project Overview

Enhanced oil recovery (EOR) using carbon dioxide (CO_2) flooding is a mature technology that has been applied commercially since the early 1970s. It entails compressing CO_2 and injecting it into oil fields to restore pressure and mobilize trapped oil. The Permian Basin, spread across parts of Texas and New Mexico, is a geologic basin holding vast oil and gas resources that have been produced for almost a century. CO_2 EOR flooding has been practiced in the Permian Basin since the technique was first developed more than four decades ago. Today the area hosts a large integrated network of CO_2 sources, delivery pipelines, and CO_2 floods. Advances in geologic understanding and flooding techniques have led to a renewed economic interest in producing domestic oil and gas from the Permian Basin. As a result there is an increasing demand for CO_2 that could be met with anthropogenic sources.

A number of entities own or operate the different CO_2 and hydrocarbon production and delivery assets used in the Permian Basin. Occidental Petroleum Corporation and its affiliates (together, Oxy) are one of the largest of these entities. Figure A1-1 depicts the location of Oxy assets and operations in the Permian Basin. It shows that Oxy currently

owns or operates multiple sources of CO_2 (including natural and anthropogenic sources), almost 900 miles of major CO_2 pipelines, and approximately 30 CO_2 floods. The company handles a total of approximately 400 million cubic feet per day (MMscf/D) (20 thousand metric tonnes (MMT)) of CO_2 purchased (or "fresh") from a third party and recycled from the Denver Unit per day and produces approximately 25,000 barrels of oil per day (bopd). Through its work in the Permian Basin and in other CO_2 floods, Oxy has gained significant experience managing CO_2 EOR floods safely and profitability.

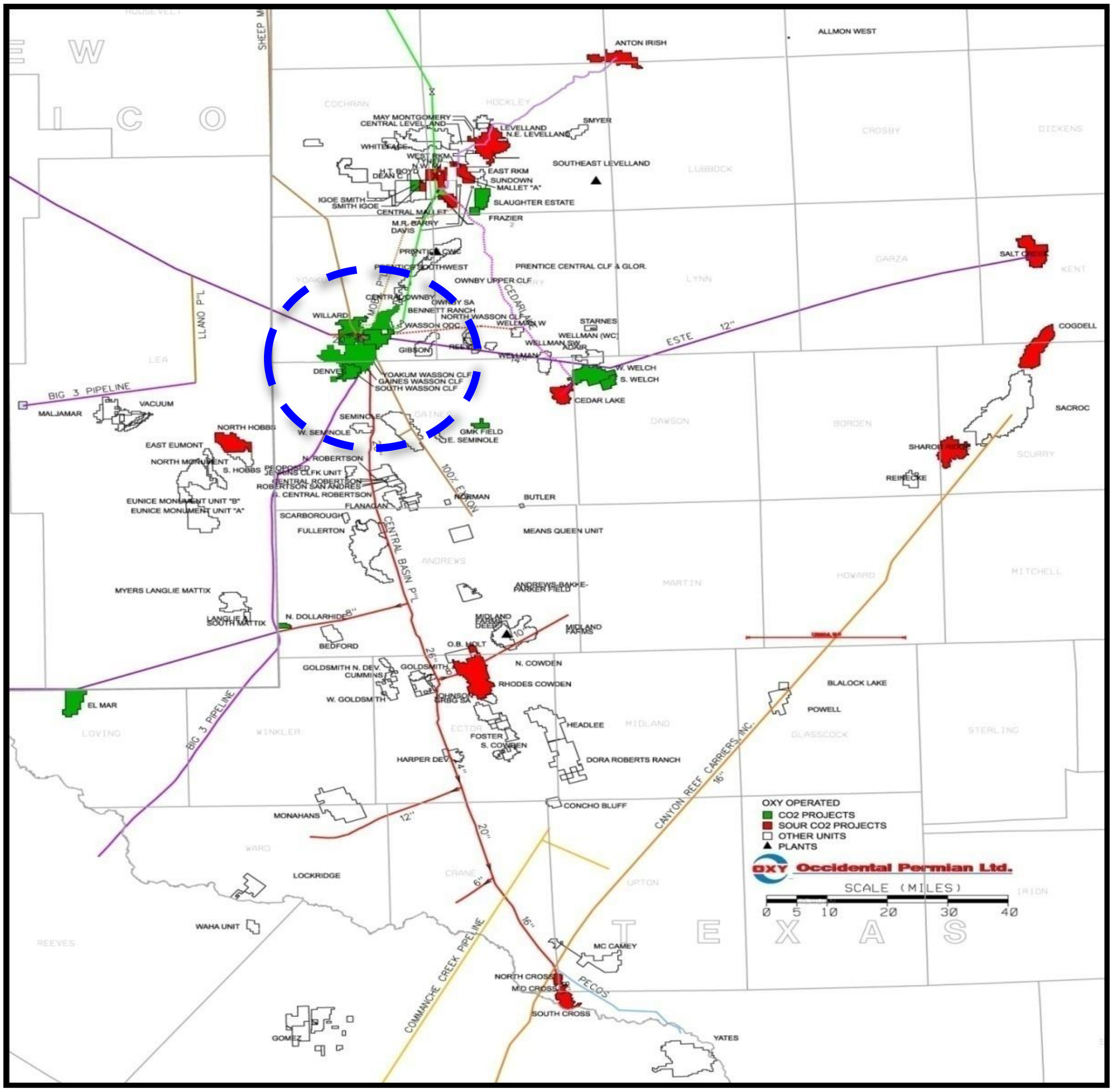


Figure A1-1 - Oxy CO_2 EOR Assets and Operations in the Permian Basin, Blue Circle Indicates Wasson Field Location

As described in the following section, in an effort to address its growing need for CO_2 in the Permian, Oxy invested in a natural gas processing plant that is capturing CO_2 that would otherwise be vented to the atmosphere. The captured CO_2 is fed into the pipeline delivery system that services the Permian Basin, including Oxy's CO_2 floods.

A1.2 CO_2 Transport through the Permian pipeline delivery system

The Permian pipeline delivery system (See Figure A1-2)[11] consists of major and minor pipelines that are used to move CO_2 to, around, and from the CO_2 floods. Each day, the pipeline system distributes approximately 1.8 Bscf (95 thousand metric tons (MMT) of fresh CO_2 that is purchased by the more than 60 CO_2 floods off taking from the system. Oxy and Kinder Morgan are the primary operators of the Permian pipeline delivery system, controlling a majority of the approximately 2,400 miles of major CO_2 pipeline in the system. There are a number of CO_2 sources connected to the system including both natural CO_2 reservoirs and anthropogenic CO_2 sources.

The Permian pipeline delivery system includes intra- and interstate pipelines in Texas, New Mexico, and Colorado. Minimum pipeline safety standards have been established by the US Department of Transportation (DOT) in 49 CFR Parts 190-199 and are implemented by DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) Office of Pipeline Safety (OPS). In all three states, OPS inspects and enforces the pipeline safety regulations for interstate gas and hazardous liquid pipeline operators. In addition, OPS oversees the intrastate pipelines in Colorado. The Texas Railroad Commission (TRRC) and New Mexico Public Regulation Commission Pipeline Safety Bureau are certified to oversee intrastate pipelines in their respective states. The pipeline safety requirements include standards for siting, construction, operation, and addressing accidents. There are no reporting requirements for such pipelines under EPA's GHGRP.

[11] Source: based on image found at http://www.texasenergyfoundation.org/wp-content/uploads/2012/10/Figure-II-3.-Existing-CO_2-Pipelines-Permian-Basin.gif

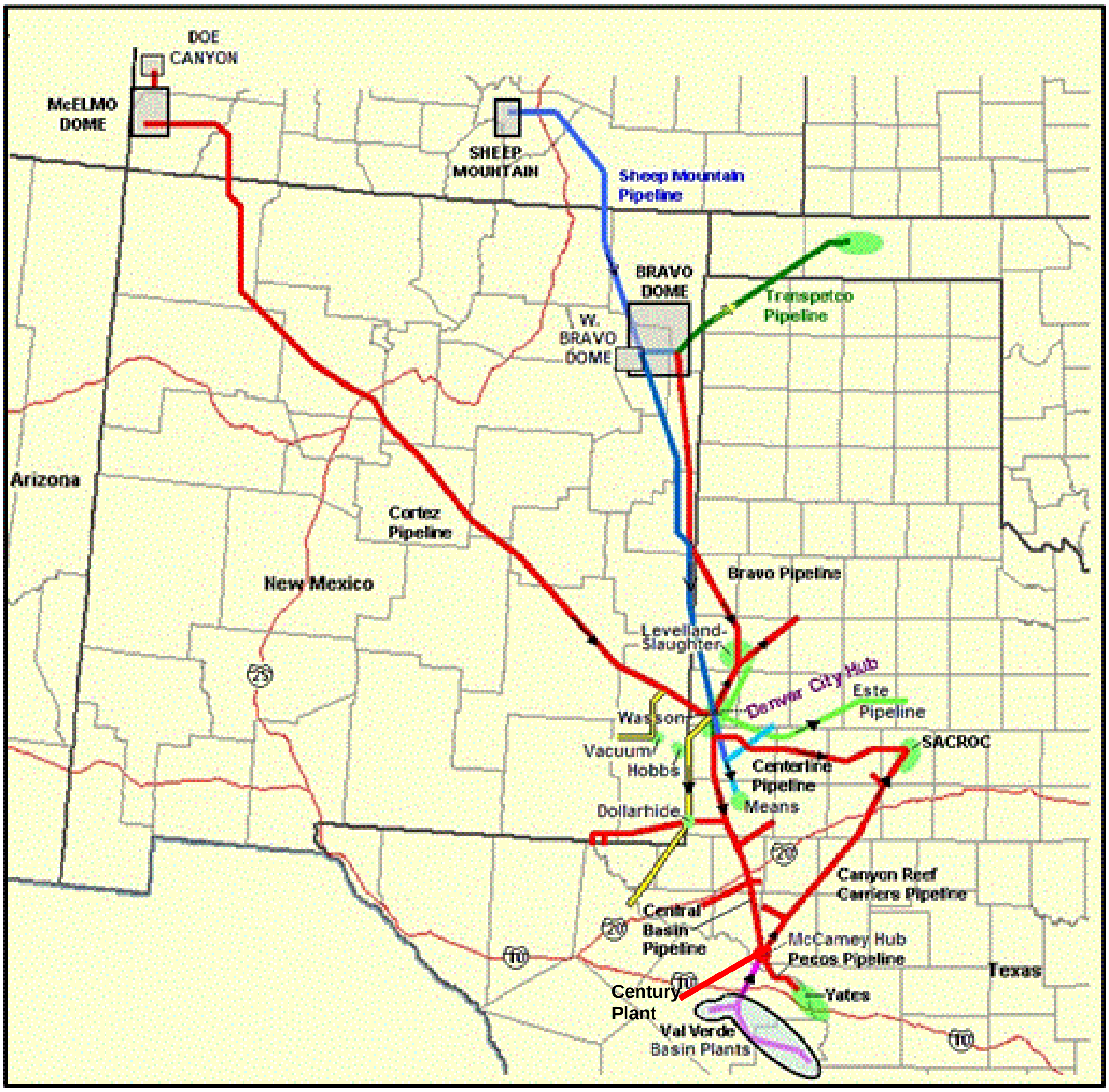


Figure A1-2 Permian Basin CO2 Pipeline Delivery System

All CO_2 entering the pipeline system must meet specifications for chemical composition and is treated by pipeline carriers and shippers as fungible. In Oxy's case, this means that contracts designate both the amounts of CO_2 that Oxy puts into the system and the amounts of CO_2 that Oxy draws from the system. CO_2 inputs and draws are measured using commercially calibrated flow meters at designated delivery points into and out of the pipeline system. Measured amounts typically are trued up against the contract amounts as specified in the particular contract. Oxy withdrew approximately 293 Bscf, or 15 million metric tons (MMMT), of fresh CO_2 from the Permian pipeline system in 2013 of which approximately 22% was injected in the Denver Unit.

A1.3 Oxy's EOR Experience

Oxy is an experienced CO_2 EOR operator and follows a rigorous, standardized process for assessing, developing, and operating CO_2 EOR projects. To profitably implement CO_2 miscible flooding,[12] the operator must optimize oil production while minimizing costs (e.g., CO_2, water, and energy). The miscible CO_2 flood at the Denver Unit has been successfully operated since 1983, demonstrating over this period that the reservoir is well characterized and that the CO_2 flood can be undertaken safely, profitably, and efficiently.

This Section provides a more thorough description of the process for selecting, developing, and managing fields for CO_2 floods, and a general description of CO_2 miscible flooding.

A1.3.1 Oxy's Process to Select, Develop, and Manage Fields for CO_2 Floods

Oxy is one of the largest and most respected CO_2 EOR operators in the world. The company has extensive experience in selecting and developing oil fields suitable for CO_2 floods and maintains standard practices for field selection, development, and management. Oxy's approach relies on frequent communication between operations staff with responsibility for specific geographic areas, and technical staff with responsibility for specific reservoirs, equipment, or functions. This organizational model provides multiple perspectives on field performance and stimulates identification of enhancement opportunities. Field technicians, who are trained in operating procedures, well surveillance, safety, and environmental protection, among other topics, are an integral part of the effective management of each field and work closely with contractors that perform specialized field services.

In designing CO_2 floods, Oxy first conducts an extensive study of the subsurface characteristics of the target oil reservoir. The reservoir characterization study entails a detailed geological and reservoir evaluation to determine the capability of the reservoir to effectively utilize CO_2 to increase oil recovery. Because CO_2 is an expensive injectant, the study includes a thorough analysis of the capability of the reservoir to maintain fluids within the targeted subsurface intervals, including an analysis of formation parting pressures and the ability of the reservoir strata to assimilate the injected CO_2.

Oxy typically creates a (or uses an existing) compositional reservoir simulation model that has been calibrated with actual reservoir data. Reservoir simulation models are used to evaluate potential development scenarios and determine the most viable options. When planning and operating a specific EOR project, Oxy uses pattern modeling. Once a CO_2 flood plan has been developed, it is subjected to thorough technical, operational, safety, environmental, and business reviews within Oxy. At this juncture, Oxy seeks the required regulatory approvals from the appropriate agencies. All of these steps were followed in the development of the CO_2 flood at the Denver Unit. Prior operators developed reservoir-wide models. Oxy used this information to inform their decision to

[12] A miscible CO_2 flood employs the characteristic of CO_2 as mixable (or miscible) with crude oil (i.e., the two fluids can dissolve into each other). See Section 2.3.1.2 for additional explanation of miscible flooding.

acquire leases for the Denver Unit. Since taking over operation of the Denver Unit in 2000, Oxy has conducted additional reservoir characterization studies and undertaken pattern modeling to design and operate the CO_2 flood.

A1.3.2 General Description of CO_2 Miscible Flooding

In a typical sedimentary formation, like the San Andres reservoir in the Denver Unit in the Wasson Field, primary production produces only a portion of the Original Oil-In-Place (OOIP). The percentage of oil recovered during "primary production" varies; in the Denver Unit, primary production recovered approximately 17% of the OOIP, and approximately 83% of the OOIP remained in the pore space in the reservoir.

Water injection may be applied as a secondary production method. This approach typically yields a sizeable additional volume of oil. In the Denver Unit, water injection led to the production of another 33% of the OOIP, leaving approximately 50% still in the pore space in the reservoir.

The oil remaining after water injection is the target for "tertiary recovery" through miscible CO_2 flooding. Typically, CO_2 flooding in the Permian Basin is used as a tertiary production method and it entails compressing CO_2 and injecting it into oil fields to mobilize trapped oil remaining after water flooding. Miscible CO_2 flooding can produce another 20% of the OOIP, leaving the fraction of oil remaining in the pore space in the reservoir at approximately 30%.

Under typical pressure and temperature conditions in a reservoir, CO_2 is a supercritical fluid (see Figure 5) that is miscible with crude oil. As injected CO_2 mixes with the oil, it acts like a solvent wash to sweep remaining oil from the pore space in the reservoir. The net effect is to further increase oil production from existing wells. As the oil is swept from the pore space, CO_2 and water fill the vacated pore space. The profitability of CO_2 EOR is dependent on the underlying costs of the commodities. Under current economic conditions, the combined cost of CO_2, water, and the necessary energy are less than the value of the produced oil, and the process is profitable to producers. However, those conditions can change quickly and have done so in the past.

The first commercial CO_2 injection project began in January 1972 in the SACROC (Scurry Area Canyon Reef Operators Committee) Unit of the Kelly-Snyder Field in Scurry County, West Texas. Following that early field test, CO_2 flooding has spread throughout the Permian Basin, the Gulf Coast and the Mid-continent areas. The industry currently recovers approximately 300,000 bopd from CO_2 flooding in the United States. In the supercritical fluid phase, CO_2 is neither a liquid nor a gas (See Figure A1-3). It has a density that is close to that of oil but less than that of water. However, it has a very low viscosity, which means CO_2 tends to bypass the oil and water it is displacing. The result is low process sweep efficiency and high gas production rates. One way to improve sweep and reduce gas production is to inject water along with the CO_2, which adds water to the pore spaces and slows the flow of CO_2. This is generally done with alternate injection of water and CO_2, or WAG (water alternating gas) injection. The WAG

approach is common in the Permian Basin, although there are several other ways to manage CO_2 flooding. The WAG approach improves how CO_2 flooding works by helping to maintain more stable flood fronts and reducing the rate at which CO_2 is produced through the production wells.

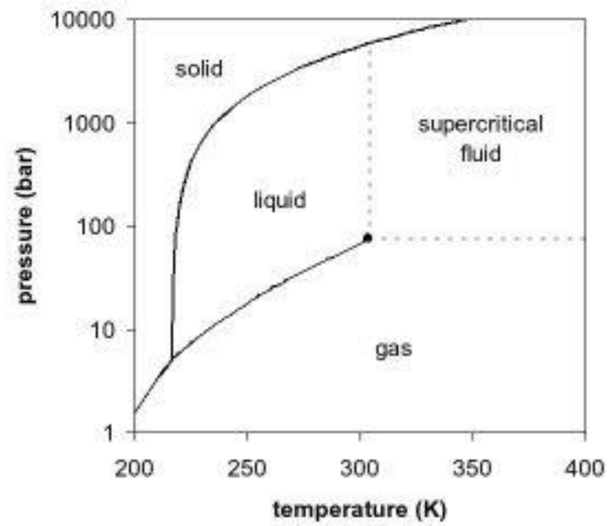


Figure A1-3 CO2 Phases

Because CO_2 is an inherently inefficient displacing agent, a portion of the injected CO_2 is co-produced along with oil and water. The remaining portion stays trapped in the pore space in the reservoir. The produced fluid is treated through a closed loop process to remove valuable products (like natural gas (NG), natural gas liquids (NGL) and sulfur) and to separate the CO_2 and water for recompression and re-injection. Fresh CO_2 is combined with recycled CO_2 to make up the amount of CO_2 that is injected. As a close approximation, the amount of purchased CO_2 is the amount that remains trapped (stored) in the pore space in the reservoir. As a standard practice, the volume of purchased CO_2 is calculated to be just sufficient to take the place of the oil and net water that has been produced. In this way, reservoir pressure is maintained.

Each injection well ("injector") is surrounded by a number of producing wells ("producers"), each of which responds to the amount and rate of injection. The injector and producer wells form a "pattern," typically either a five-spot pattern with four corner wells forming a square around the injector, or a nine-spot pattern with an additional producer located along each side of the square. Oxy uses pattern modeling, discussed in more detail in Section 3.1, to predict the fluid flow in the formation; develop an injection plan for each pattern; predict the performance of each pattern; and determine where to place infill wells to better manage production and injection over time. The resulting injection plan describes the expected volume and pressure for the injection of CO_2 and water introduced into each injection well.

Appendix 2. Conversion Factors

Oxy reports CO_2 volumes at standard conditions of temperature and pressure as defined in the State of Texas – 60 ^oF and 14.65 psi.

To convert these volumes into metric tonnes, a density is calculated using the Span and Wagner equation of state as recommended by the EPA. Density was calculated using the database of thermodynamic properties developed by the National Institute of Standards and Technology (NIST), available at http://webbook.nist.gov/chemistry/fluid/.

At State of Texas standard conditions, the Span and Wagner equation of state gives a density of 0.0026417 lb-moles per cubic foot. Using a molecular weight for CO_2 of 44.0095, 2204.62 lbs/metric ton and 35.314667 ft^3/m^3, gives a CO_2 density of 5.27346 x 10^{-2} MT/Mcf or 0.0018623 MT/m^3.

Note at EPA standard conditions of 60 ^oF and one atmosphere, the Span and Wagner equation of state gives a density of 0.0026500 lb-moles per cubic foot. Using a molecular weight for CO_2 of 44.0095, 2204.62 lbs/metric ton and 35.314667 ft^3/m^3, gives a CO_2 density of 5.29003 x 10^{-5} MT/ft^3 or 0.0018682 MT/m^3.

The conversion factor 5.27346 x 10^{-2} MT/Mcf has been used throughout to convert Oxy volumes to metric tons.

Appendix 3. Acronyms

AGA – American Gas Association
AMA – Active Monitoring Area
AoR – Area of Review
API – American Petroleum Institute
Bscf – billion standard cubic feet
B/D – barrels per day
bopd – barrels of oil per day
cf – cubic feet
CH_4 – Methane
CO_2 – Carbon Dioxide
CRP – CO_2 Removal Plant
CTB – Central Tank Battery
DOT – US Department of Transportation
DUCRP – Denver Unit CO_2 Recovery Plant
EOR – Enhanced Oil Recovery
EPA – US Environmental Protection Agency
ESD – Emergency Shutdown Device
GHG – Greenhouse Gas
GHGRP – Greenhouse Gas Reporting Program
HC – Hydrocarbon
H_2S – Hydrogen Sulfide
IWR -- Injection to Withdrawal Ratio
LACT – Lease Automatic Custody Transfer meter
LEL – Lower Explosive Limit
MIT – Mechanical Integrity Test
MMA – Maximum Monitoring Area
MMB – Million barrels
Mscf – Thousand standard cubic feet
MMscf – Million standard cubic feet
MMMT – Million metric tonnes
MMT – Thousand metric tonnes
MRV – Monitoring, Reporting, and Verification
MT -- Metric Tonne
NG—Natural Gas
NGLs – Natural Gas Liquids
OOIP – Original Oil-In-Place
OPC – Occidental Petroleum Corporation
OPL – Occidental Petroleum Ltd.
OPS – Office of Pipeline Safety
PHMSA – Pipeline and Hazardous Materials Safety Administration
PPM – Parts Per Million
RCF – Reinjection Compression Facility
ROZ – Residual Oil Zone
SACROC – Scurry Area Canyon Reef Operators Committee

ST – Short Ton
TRRC – Texas Railroad Commission
TSD – Technical Support Document
TVDSS – True Vertical Depth Subsea
TZ – Transition Zone
UIC – Underground Injection Control
USEPA – U.S. Environmental Protection Agency
USDW – Underground Source of Drinking Water
VRU -- Vapor Recovery Unit
WAG – Water Alternating Gas
WTO – West Texas Overthrust

Appendix 4. References

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Appendix 5. Glossary of Terms

This glossary describes some of the technical terms as they are used in this MRV plan. For additional glossaries please see the U.S. EPA Glossary of UIC Terms (http://water.epa.gov/type/groundwater/uic/glossary.cfm) and the Schlumberger Oilfield Glossary (http://www.glossary.oilfield.slb.com/).

Anhydrite -- Anhydrite is a mineral—anhydrous calcium sulfate, $CaSO_4$.

Bradenhead -- a casing head in an oil well having a stuffing box packed (as with rubber) to make a gastight connection
Contain / Containment – having the effect of keeping fluids located within in a specified portion of a geologic formation.

Dip -- Very few, if any, geologic features are perfectly horizontal. They are almost always tilted. The direction of tilt is called "dip." Dip is the angle of steepest descent measured from the horizontal plane. Moving higher up structure is moving "updip." Moving lower is "downdip." Perpendicular to dip is "strike." Moving perpendicular along a constant depth is moving along strike.

Dolomite -- Dolomite is an anhydrous carbonate mineral composed of calcium magnesium carbonate $CaMg(CO_3)_2$.

Downdip -- See "dip."

Formation -- A body of rock that is sufficiently distinctive and continuous that it can be mapped. At Wasson, for example, San Andres formation is a layer of permeable dolomites that were deposited in a shallow marine environment during the Permian Era, some 250 to 300 million years ago. The San Andres can be mapped over much of the Permian Basin.

Igneous Rocks -- Igneous rocks crystallize from molten rock, or magma, with interlocking mineral crystals.

Infill Drilling -- The drilling of additional wells within existing patterns. These additional wells decrease average well spacing. This practice both accelerates expected recovery and increases estimated ultimate recovery in heterogeneous reservoirs by improving the continuity between injectors and producers. As well spacing is decreased, the shifting flow paths lead to increased sweep to areas where greater hydrocarbon saturations remain.

Metamorphic Rocks -- Metamorphic rocks form from the alteration of preexisting rocks by changes in ambient temperature, pressure, volatile content, or all of these. Such changes can occur through the activity of fluids in the Earth and movement of igneous bodies or regional tectonic activity.

Permeability -- Permeability is the measure of a rock's ability to transmit fluids. Rocks that transmit fluids readily, such as sandstones, are described as permeable and tend to have many large, well-connected pores. Impermeable formations, such as shales and siltstones, tend to be finer grained or of a mixed grain size, with smaller, fewer, or less interconnected pores.

Phase -- Phase is a region of space throughout which all physical properties of a material are essentially uniform. Fluids that don't mix together segregate themselves into phases. Oil, for example, does not mix with water and forms a separate phase.

Pore Space -- See porosity.

Porosity -- Porosity is the fraction of a rock that is not occupied by solid grains or minerals. Almost all rocks have spaces between rock crystals or grains that is available to be filled with a fluid, such as water, oil or gas. This space is called "pore space."

Primary recovery -- The first stage of hydrocarbon production, in which natural reservoir energy, such as gasdrive, waterdrive or gravity drainage, displaces hydrocarbons from the reservoir, into the wellbore and up to surface. Initially, the reservoir pressure is considerably higher than the bottomhole pressure inside the wellbore. This high natural differential pressure drives hydrocarbons toward the well and up to surface. However, as the reservoir pressure declines because of production, so does the differential pressure. To reduce the bottomhole pressure or increase the differential pressure to increase hydrocarbon production, it is necessary to implement an artificial lift system, such as a rod pump, an electrical submersible pump or a gas-lift installation. Production using artificial lift is considered primary recovery. The primary recovery stage reaches its limit either when the reservoir pressure is so low that the production rates are not economical, or when the proportions of gas or water in the production stream are too high. During primary recovery, only a small percentage of the initial hydrocarbons in place are produced, typically around 10% for oil reservoirs. Primary recovery is also called primary production.

Saturation -- The fraction of pore space occupied by a given fluid. Oil saturation, for example, is the fraction of pore space occupied by oil.

Seal – A geologic layer (or multiple layers) of impermeable rock that serve as a barrier to prevent fluids from moving upwards to the surface.

Secondary recovery -- The second stage of hydrocarbon production during which an external fluid such as water or gas is injected into the reservoir through injection wells located in rock that has fluid communication with production wells. The purpose of secondary recovery is to maintain reservoir pressure and to displace hydrocarbons toward the wellbore. The most common secondary recovery techniques are gas injection and waterflooding.

Sedimentary Rocks -- Sedimentary rocks are formed at the Earth's surface through deposition of sediments derived from weathered rocks, biogenic activity or precipitation from solution. There are three main types of rocks – igneous, metamorphic and sedimentary.

Stratigraphic section -- A stratigraphic section is a sequence of layers of rocks in the order they were deposited.

Strike -- See “dip.”

Updip -- See “dip.”

Appendix 6. Well Identification Numbers

The following table presents the well name, API number, status and type for the wells in the Denver Unit as of August 2014. The table is subject to change over time as new wells are drilled, existing wells change status, or existing wells are repurposed. The following terms are used:

- Well Status
    - ACTIVE refers to active wells
    - DRILL refers to wells under construction
    - P&A refers to wells that have been closed (plugged and abandoned) per TAC 16.1.3
    - TA refers to wells that have been temporarily abandoned
    - SHUT_IN refers to wells that have been temporarily idled or shut-in
    - INACTIVE refers to wells that have been completed but are not in use
- Well Type
    - INJ_WAG refers to wells that inject water and CO_2 Gas
    - INJ_GAS refers to wells that inject CO_2 Gas
    - INJ_H2O refers to wells that inject water
    - PROD_GAS refers to wells that produce natural gas
    - PROD_OIL refers to wells that produce oil
    - DISP_H2O refers to wells used for water disposal

Well Name	API Number	Well Status	Well Type
DU-0001	42501000000000	ACTIVE	DISP_H2O
DU-0001B	42165313440000	ACTIVE	DISP_H2O
DU-0001SWD	42501324880000	ACTIVE	DISP_H2O
DU-0002	42501328930000	ACTIVE	DISP_H2O
DU-0003SWD	42165336580000	ACTIVE	DISP_H2O
DU-0004	42501363510000	DRILL	PROD_OIL
DU-1701	42501022100000	ACTIVE	INJ_WAG
DU-1702	42501022150000	ACTIVE	PROD_OIL
DU-1703	42501000700000	ACTIVE	INJ_WAG
DU-1704	42501000690000	ACTIVE	INJ_WAG
DU-1705	42501022120000	P & A	INJ_WAG
DU-1706	42501022110000	ACTIVE	PROD_OIL
DU-1707	42501000710000	ACTIVE	PROD_OIL
DU-1708	42501000720000	TA	INJ_WAG
DU-1709	42501301980000	ACTIVE	INJ_WAG
DU-1710	42501301970000	ACTIVE	PROD_OIL
DU-1711	42501303970000	ACTIVE	INJ_WAG
DU-1712	42501303960000	ACTIVE	PROD_OIL
DU-1713	42501303950000	ACTIVE	PROD_OIL
DU-1714	42501311220000	ACTIVE	PROD_OIL
DU-1715	42501311230000	ACTIVE	INJ_WAG
DU-1716	42501314560000	ACTIVE	PROD_OIL
DU-1717	42501313090000	ACTIVE	INJ_WAG
DU-1718	42501317050000	ACTIVE	INJ_WAG
DU-1719	42501340520000	ACTIVE	PROD_OIL
DU-1720	42501348490000	ACTIVE	PROD_OIL

DU-1721	42501348500000	ACTIVE	PROD_OIL
DU-1722	42501348510000	ACTIVE	PROD_OIL
DU-1723	42501348520000	ACTIVE	PROD_OIL
DU-1724	42501348530000	ACTIVE	PROD_OIL
DU-1725	42501348540000	ACTIVE	PROD_OIL
DU-1726	42501348550000	ACTIVE	PROD_OIL
DU-1727	42501352120000	ACTIVE	PROD_OIL
DU-1728	42501356810000	ACTIVE	INJ_WAG
DU-2201	42501018320000	P & A	INJ_H2O
DU-2202	42501018330000	ACTIVE	INJ_WAG
DU-2203	42501018260000	P & A	PROD_OIL
DU-2204	42501018250000	ACTIVE	INJ_H2O
DU-2205	42501018290000	ACTIVE	PROD_OIL
DU-2206	42501018410000	ACTIVE	PROD_OIL
DU-2207	42501018350000	P & A	PROD_OIL
DU-2208	42501018280000	P & A	PROD_OIL
DU-2208R	42501329970000	ACTIVE	INJ_WAG
DU-2209	42501018270000	ACTIVE	INJ_WAG
DU-2210	42501014570000	P & A	PROD_OIL
DU-2211	42501014590000	ACTIVE	PROD_OIL
DU-2212	42501018370000	TA	INJ_H2O
DU-2213	42501018360000	ACTIVE	INJ_WAG
DU-2214	42501018300000	ACTIVE	INJ_WAG
DU-2215	42501804810000	ACTIVE	INJ_WAG
DU-2216	42501028960000	ACTIVE	PROD_OIL
DU-2217	42501018400000	ACTIVE	INJ_WAG
DU-2218	42501018380000	ACTIVE	INJ_WAG
DU-2219	42501018390000	ACTIVE	INJ_WAG
DU-2220	42501018310000	ACTIVE	INJ_WAG
DU-2221	42501309150000	ACTIVE	PROD_OIL
DU-2222	42501309140000	ACTIVE	PROD_OIL
DU-2223	42501309130000	TA	PROD_OIL
DU-2224	42501309120000	ACTIVE	PROD_OIL
DU-2225	42501309110000	ACTIVE	PROD_OIL
DU-2226	42501309260000	P & A	PROD_OIL
DU-2227	42501309060000	ACTIVE	PROD_OIL
DU-2228	42501309620000	ACTIVE	PROD_OIL
DU-2229	42501315420000	P & A	PROD_OIL
DU-2232	42501316560000	P & A	INJ_GAS
DU-2233	42501325210000	ACTIVE	INJ_WAG
DU-2235	42501328580000	ACTIVE	PROD_OIL
DU-2236	42501329270000	ACTIVE	PROD_OIL
DU-2237	42501334570000	ACTIVE	PROD_OIL
DU-2238	42501341180000	ACTIVE	PROD_OIL
DU-2239	42501340990000	ACTIVE	INJ_H2O
DU-2240	42501352290000	ACTIVE	PROD_OIL
DU-2241	42501352110000	ACTIVE	PROD_OIL
DU-2242	42501347160000	ACTIVE	PROD_OIL
DU-2243	42501347110000	ACTIVE	PROD_OIL
DU-2244	42501349630000	ACTIVE	INJ_WAG
DU-2245	42501353570000	ACTIVE	PROD_OIL
DU-2246	42501359610000	ACTIVE	PROD_OIL
DU-2247	42501359580000	ACTIVE	PROD_OIL
DU-2248	42501359590000	ACTIVE	PROD_OIL

DU-2249	42501359600000	ACTIVE	PROD_OIL
DU-2250	42501359620000	ACTIVE	PROD_OIL
DU-2251	42501359660000	ACTIVE	PROD_OIL
DU-2252	42501359630000	ACTIVE	PROD_OIL
DU-2253	42501359970000	ACTIVE	PROD_OIL
DU-2254	42501359640000	ACTIVE	PROD_OIL
DU-2255	42501359650000	ACTIVE	PROD_OIL
DU-2256	42501359670000	ACTIVE	PROD_OIL
DU-2257	42501359980000	ACTIVE	PROD_OIL
DU-2501	42501023940000	P & A	INJ_H2O
DU-2502	42501024200000	ACTIVE	INJ_WAG
DU-2503	42501024250000	P & A	INJ_WAG
DU-2504	42501023790000	P & A	PROD_OIL
DU-2505	42501023840000	ACTIVE	INJ_WAG
DU-2506	42501024150000	P & A	PROD_OIL
DU-2507	42501023990000	P & A	PROD_OIL
DU-2508	42501023890000	ACTIVE	INJ_WAG
DU-2509	42501024550000	ACTIVE	PROD_OIL
DU-2510	42501024650000	ACTIVE	PROD_OIL
DU-2511	42501024600000	ACTIVE	PROD_OIL
DU-2512	42501024500000	ACTIVE	PROD_OIL
DU-2513	42501023740000	P & A	INJ_H2O
DU-2514	42501024090000	P & A	INJ_H2O
DU-2515	42501024040000	P & A	INJ_H2O
DU-2516	42501024350000	ACTIVE	INJ_WAG
DU-2517	42501023530000	ACTIVE	INJ_WAG
DU-2518	42501024440000	ACTIVE	PROD_OIL
DU-2519	42501024390000	ACTIVE	INJ_WAG
DU-2520	42501023680000	P & A	PROD_OIL
DU-2521	42501023630000	P & A	INJ_H2O
DU-2522	42501023570000	P & A	PROD_OIL
DU-2523	42501024300000	ACTIVE	PROD_OIL
DU-2524	42501023470000	ACTIVE	PROD_OIL
DU-2525	42501101690000	ACTIVE	PROD_OIL
DU-2526	42501302990000	ACTIVE	PROD_OIL
DU-2527	42501302970000	ACTIVE	PROD_OIL
DU-2528	42501302980000	ACTIVE	PROD_OIL
DU-2529	42501303940000	ACTIVE	PROD_OIL
DU-2530	42501307700000	ACTIVE	PROD_OIL
DU-2531	42501307710000	ACTIVE	INJ_WAG
DU-2532	42501311170000	ACTIVE	PROD_OIL
DU-2533	42501315440000	ACTIVE	PROD_OIL
DU-2534	42501316480000	ACTIVE	PROD_OIL
DU-2535	42501316520000	ACTIVE	PROD_OIL
DU-2536	42501325220000	ACTIVE	INJ_WAG
DU-2537	42501325960000	ACTIVE	INJ_WAG
DU-2538	42501327910000	ACTIVE	INJ_WAG
DU-2539	42501328570000	ACTIVE	INJ_WAG
DU-2540	42501329830000	TA	INJ_GAS
DU-2541	42501331180000	ACTIVE	INJ_WAG
DU-2542	42501333830000	ACTIVE	INJ_WAG
DU-2543	42501333870000	ACTIVE	INJ_WAG
DU-2544	42501334580000	ACTIVE	INJ_WAG
DU-2545	42501334420000	ACTIVE	INJ_WAG

DU-2546	42501336480000	ACTIVE	PROD_OIL
DU-2547	42501345130000	ACTIVE	PROD_OIL
DU-2548	42501345490000	ACTIVE	PROD_OIL
DU-2549	42501345620000	ACTIVE	PROD_OIL
DU-2550	42501346500000	ACTIVE	PROD_OIL
DU-2551	42501346770000	ACTIVE	PROD_OIL
DU-2552	42501346410000	ACTIVE	PROD_OIL
DU-2553	42501346760000	ACTIVE	PROD_OIL
DU-2554	42501346560000	ACTIVE	PROD_OIL
DU-2555	42501346420000	ACTIVE	PROD_OIL
DU-2556	42501346680000	ACTIVE	INJ_WAG
DU-2557	42501346780000	ACTIVE	PROD_OIL
DU-2558	42501347120000	ACTIVE	PROD_OIL
DU-2559	42501347130000	ACTIVE	PROD_OIL
DU-2560	42501353360000	ACTIVE	PROD_OIL
DU-2561	42501353380000	ACTIVE	PROD_OIL
DU-2562	42501353390000	ACTIVE	PROD_OIL
DU-2564GC	42501355190000	TA	PROD_GAS
DU-2601	42501023730000	P & A	INJ_H2O
DU-2602	42501023780000	ACTIVE	INJ_WAG
DU-2603	42501023830000	P & A	INJ_H2O
DU-2604	42501023880000	P & A	PROD_OIL
DU-2605	42501024080000	P & A	PROD_OIL
DU-2606	42501330140000	ACTIVE	INJ_WAG
DU-2607	42501330010000	ACTIVE	INJ_WAG
DU-2608	42501023930000	ACTIVE	INJ_WAG
DU-2609	42501023560000	P & A	PROD_OIL
DU-2610	42501023620000	ACTIVE	INJ_WAG
DU-2611	42501023670000	P & A	INJ_H2O
DU-2612	42501023540000	ACTIVE	INJ_WAG
DU-2613	42501024290000	P & A	INJ_H2O
DU-2614	42501024340000	ACTIVE	INJ_WAG
DU-2615	42501023460000	P & A	INJ_H2O
DU-2616	42501023980000	P & A	PROD_OIL
DU-2617	42501024240000	ACTIVE	PROD_OIL
DU-2618	42501024030000	ACTIVE	PROD_OIL
DU-2619	42501301960000	ACTIVE	PROD_OIL
DU-2620	42501303010000	ACTIVE	PROD_OIL
DU-2621	42501303000000	ACTIVE	PROD_OIL
DU-2622	42501024540000	ACTIVE	PROD_OIL
DU-2623	42501304400000	P & A	PROD_OIL
DU-2624	42501024490000	ACTIVE	PROD_OIL
DU-2625	42501024430000	TA	PROD_OIL
DU-2626	42501307690000	TA	INJ_H2O
DU-2627	42501309100000	ACTIVE	PROD_OIL
DU-2628	42501309090000	ACTIVE	PROD_OIL
DU-2629	42501311190000	ACTIVE	PROD_OIL
DU-2630	42501311270000	TA	PROD_OIL
DU-2631	42501314650000	ACTIVE	INJ_WAG
DU-2632	42501314540000	ACTIVE	INJ_WAG
DU-2633	42501315510000	ACTIVE	PROD_OIL
DU-2634	42501315450000	ACTIVE	PROD_OIL
DU-2635	42501327900000	P & A	INJ_WAG
DU-2636	42501328420000	ACTIVE	INJ_WAG

DU-2637	42501330250000	ACTIVE	PROD_OIL
DU-2638	42501329980000	ACTIVE	PROD_OIL
DU-2639	42501330110000	ACTIVE	PROD_OIL
DU-2640	42501330940000	TA	INJ_GAS
DU-2641	42501331710000	ACTIVE	INJ_WAG
DU-2642	42501333840000	ACTIVE	PROD_OIL
DU-2643	42501333860000	ACTIVE	PROD_OIL
DU-2644	42501334160000	ACTIVE	PROD_OIL
DU-2645	42501338480000	ACTIVE	INJ_WAG
DU-2646	42501342840000	ACTIVE	PROD_OIL
DU-2647	42501345500000	ACTIVE	PROD_OIL
DU-2648	42501345510000	ACTIVE	PROD_OIL
DU-2649	42501345120000	ACTIVE	PROD_OIL
DU-2650	42501345110000	ACTIVE	PROD_OIL
DU-2651	42501345170000	ACTIVE	PROD_OIL
DU-2652	42501345520000	ACTIVE	PROD_OIL
DU-2653	42501345530000	ACTIVE	PROD_OIL
DU-2654	42501345100000	ACTIVE	PROD_OIL
DU-2655	42501345090000	ACTIVE	PROD_OIL
DU-2656	42501345080000	ACTIVE	PROD_OIL
DU-2657	42501345690000	ACTIVE	INJ_WAG
DU-2658	42501345150000	ACTIVE	INJ_WAG
DU-2659	42501346430000	ACTIVE	PROD_OIL
DU-2660	42501346580000	ACTIVE	PROD_OIL
DU-2661	42501346460000	ACTIVE	PROD_OIL
DU-2662	42501348560000	ACTIVE	PROD_OIL
DU-2663	42501352140000	ACTIVE	INJ_WAG
DU-2664	42501352150000	ACTIVE	PROD_OIL
DU-2665	42501353400000	ACTIVE	PROD_OIL
DU-2666	42501353410000	ACTIVE	PROD_OIL
DU-2667	42501353370000	ACTIVE	INJ_WAG
DU-2668	42501353840000	ACTIVE	PROD_OIL
DU-2669	42501354900000	ACTIVE	PROD_OIL
DU-2670	42501356820000	ACTIVE	INJ_WAG
DU-2671	42501356830000	ACTIVE	INJ_WAG
DU-2672	42501356840000	ACTIVE	INJ_WAG
DU-2673	42501356850000	ACTIVE	INJ_WAG
DU-2674	42501356860000	ACTIVE	INJ_WAG
DU-2701	42501023770000	P & A	INJ_H2O
DU-2702	42501023720000	ACTIVE	INJ_WAG
DU-2703	42501023600000	ACTIVE	INJ_WAG
DU-2704	42501023550000	P & A	INJ_WAG
DU-2705	42501023820000	ACTIVE	PROD_OIL
DU-2706	42501024120000	P & A	PROD_OIL
DU-2707	42501024180000	ACTIVE	PROD_OIL
DU-2708	42501023920000	ACTIVE	PROD_OIL
DU-2709	42501023970000	ACTIVE	PROD_OIL
DU-2710	42501024070000	P & A	INJ_H2O
DU-2711	42501024230000	ACTIVE	PROD_OIL
DU-2712	42501024020000	ACTIVE	PROD_OIL
DU-2713	42501023660000	TA	PROD_OIL
DU-2714	42501024280000	P & A	PROD_OIL
DU-2715	42501023870000	P & A	PROD_OIL
DU-2716	42501023450000	ACTIVE	PROD_OIL

DU-2717	42501024720000	TA	PROD_OIL
DU-2718	42501024840000	ACTIVE	INJ_WAG
DU-2719	42501304350000	TA	PROD_OIL
DU-2720	42501304200000	ACTIVE	INJ_WAG
DU-2721	42501024830000	INACTIVE	PROD_OIL
DU-2722	42501024580000	ACTIVE	PROD_OIL
DU-2723	42501024810000	ACTIVE	INJ_WAG
DU-2724	42501024630000	ACTIVE	INJ_WAG
DU-2725	42501307720000	ACTIVE	PROD_OIL
DU-2726	42501309080000	ACTIVE	INJ_WAG
DU-2727	42501309070000	ACTIVE	INJ_WAG
DU-2728	42501314550000	ACTIVE	PROD_OIL
DU-2729	42501313080000	ACTIVE	INJ_WAG
DU-2730	42501313100000	ACTIVE	INJ_WAG
DU-2731	42501314490000	ACTIVE	PROD_OIL
DU-2732	42501315410000	P & A	INJ_H2O
DU-2733	42501315400000	ACTIVE	INJ_WAG
DU-2734	42501316500000	ACTIVE	PROD_OIL
DU-2735	42501319120000	ACTIVE	PROD_OIL
DU-2736	42501323100000	ACTIVE	INJ_WAG
DU-2737	42501322920000	ACTIVE	INJ_WAG
DU-2738	42501330000000	ACTIVE	INJ_WAG
DU-2739	42501329900000	ACTIVE	PROD_OIL
DU-2740	42501334430000	ACTIVE	PROD_OIL
DU-2741	42501101680000	ACTIVE	PROD_OIL
DU-2742	42501340510000	ACTIVE	PROD_OIL
DU-2743	42501341630000	ACTIVE	PROD_OIL
DU-2744	42501343490000	ACTIVE	PROD_OIL
DU-2745	42501343900000	ACTIVE	PROD_OIL
DU-2746	42501343720000	ACTIVE	PROD_OIL
DU-2747	42501343860000	ACTIVE	PROD_OIL
DU-2748	42501343870000	ACTIVE	INJ_WAG
DU-2749	42501343810000	ACTIVE	PROD_OIL
DU-2750	42501343730000	ACTIVE	PROD_OIL
DU-2751	42501343800000	ACTIVE	PROD_OIL
DU-2752	42501343880000	ACTIVE	PROD_OIL
DU-2753	42501343790000	ACTIVE	PROD_OIL
DU-2754	42501343780000	ACTIVE	PROD_OIL
DU-2755	42501343890000	ACTIVE	PROD_OIL
DU-2756	42501347940000	ACTIVE	PROD_OIL
DU-2757	42501348570000	ACTIVE	INJ_WAG
DU-2758	42501348580000	ACTIVE	INJ_WAG
DU-2759	42501356870000	ACTIVE	INJ_WAG
DU-2760	42501356880000	ACTIVE	INJ_WAG
DU-2761	42501356890000	ACTIVE	INJ_WAG
DU-2762	42501356900000	ACTIVE	INJ_WAG
DU-2801	42501023910000	ACTIVE	INJ_WAG
DU-2802	42501023860000	ACTIVE	INJ_WAG
DU-2803	42501023650000	INACTIVE	INJ_WAG
DU-2804	42501023960000	P & A	INJ_H2O
DU-2805	42501023490000	ACTIVE	INJ_WAG
DU-2806	42501024370000	ACTIVE	PROD_OIL
DU-2807	42501024060000	ACTIVE	PROD_OIL
DU-2808	42501023590000	ACTIVE	PROD_OIL

DU-2809	42501024320000	ACTIVE	INJ_WAG
DU-2810	42501024170000	ACTIVE	INJ_WAG
DU-2811	42501024410000	ACTIVE	INJ_WAG
DU-2812	42501024110000	ACTIVE	PROD_OIL
DU-2813	42501024270000	ACTIVE	PROD_OIL
DU-2814	42501023710000	P & A	PROD_OIL
DU-2815	42501024220000	ACTIVE	INJ_WAG
DU-2816	42501023520000	ACTIVE	PROD_OIL
DU-2817	42501024010000	ACTIVE	PROD_OIL
DU-2818	42501023760000	ACTIVE	PROD_OIL
DU-2819	42501023810000	P & A	PROD_OIL
DU-2820	42501302320000	ACTIVE	PROD_OIL
DU-2821	42501304260000	P & A	PROD_OIL
DU-2822	42501304380000	ACTIVE	INJ_WAG
DU-2823	42501304270000	ACTIVE	INJ_WAG
DU-2824	42501024670000	P & A	PROD_OIL
DU-2825	42501304340000	ACTIVE	INJ_WAG
DU-2826	42501304310000	ACTIVE	INJ_WAG
DU-2827	42501304250000	TA	INJ_WAG
DU-2828	42501304240000	ACTIVE	INJ_WAG
DU-2829	42501304230000	ACTIVE	PROD_OIL
DU-2830	42501304330000	ACTIVE	PROD_OIL
DU-2831	42501311180000	TA	PROD_OIL
DU-2832	42501313060000	ACTIVE	INJ_WAG
DU-2833	42501313050000	ACTIVE	PROD_OIL
DU-2834	42501315520000	ACTIVE	INJ_WAG
DU-2835	42501316640000	ACTIVE	INJ_WAG
DU-2836	42501322910000	ACTIVE	PROD_OIL
DU-2837	42501322960000	ACTIVE	PROD_OIL
DU-2838	42501331400000	ACTIVE	PROD_OIL
DU-2839	42501338260000	ACTIVE	INJ_WAG
DU-2840	42501340500000	ACTIVE	PROD_OIL
DU-2841	42501340480000	ACTIVE	PROD_OIL
DU-2842	42501342830000	ACTIVE	PROD_OIL
DU-2843	42501343080000	ACTIVE	INJ_WAG
DU-2844	42501343070000	ACTIVE	PROD_OIL
DU-2845	42501343090000	ACTIVE	PROD_OIL
DU-2846	42501343060000	ACTIVE	PROD_OIL
DU-2847	42501343050000	ACTIVE	PROD_OIL
DU-2848	42501343100000	ACTIVE	PROD_OIL
DU-2849	42501343040000	ACTIVE	PROD_OIL
DU-2850	42501343030000	ACTIVE	PROD_OIL
DU-2851	42501343690000	ACTIVE	PROD_OIL
DU-2852	42501343710000	ACTIVE	PROD_OIL
DU-2853	42501343700000	ACTIVE	PROD_OIL
DU-2854	42501343770000	ACTIVE	INJ_WAG
DU-2855	42501343760000	ACTIVE	PROD_OIL
DU-2856	42501343740000	ACTIVE	PROD_OIL
DU-2857	42501343750000	ACTIVE	PROD_OIL
DU-2858	42501343820000	ACTIVE	PROD_OIL
DU-2859	42501345140000	ACTIVE	PROD_OIL
DU-2860	42501346350000	ACTIVE	PROD_OIL
DU-2861	42501347190000	ACTIVE	PROD_OIL
DU-2862	42501347290000	ACTIVE	PROD_OIL

DU-2863	42501347200000	ACTIVE	PROD_OIL
DU-2864	42501347280000	ACTIVE	PROD_OIL
DU-2865	42501350120000	ACTIVE	PROD_OIL
DU-2866	42501350130000	ACTIVE	PROD_OIL
DU-2867	42501350140000	ACTIVE	PROD_OIL
DU-2868	42501362440000	ACTIVE	INJ_WAG
DU-2869	42501362450000	ACTIVE	INJ_WAG
DU-2870	42501362460000	ACTIVE	INJ_WAG
DU-2871	42501362470000	ACTIVE	INJ_WAG
DU-2872	42501362530000	ACTIVE	INJ_WAG
DU-2901	42501028320000	ACTIVE	INJ_WAG
DU-2902	42501028360000	ACTIVE	INJ_WAG
DU-2903	42501017280000	ACTIVE	INJ_WAG
DU-2904	42501017300000	ACTIVE	INJ_WAG
DU-2905	42501028400000	ACTIVE	PROD_OIL
DU-2906	42501028380000	ACTIVE	PROD_OIL
DU-2907	42501017250000	ACTIVE	INJ_WAG
DU-2908	42501017310000	ACTIVE	PROD_OIL
DU-2909	42501017270000	ACTIVE	PROD_OIL
DU-2910	42501017290000	ACTIVE	INJ_H2O
DU-2911	42501028340000	ACTIVE	INJ_WAG
DU-2912	42501028300000	ACTIVE	INJ_WAG
DU-2913	42501017130000	ACTIVE	INJ_WAG
DU-2914	42501017230000	ACTIVE	INJ_WAG
DU-2915	42501012030000	ACTIVE	PROD_OIL
DU-2916	42501012050000	P & A	PROD_OIL
DU-2917	42501021900000	ACTIVE	PROD_OIL
DU-2918	42501021860000	ACTIVE	PROD_OIL
DU-2919	42501012010000	ACTIVE	PROD_OIL
DU-2920	42501021820000	P & A	INJ_WAG
DU-2921	42501012020000	ACTIVE	INJ_WAG
DU-2922	42501021910000	ACTIVE	PROD_OIL
DU-2923	42501012040000	ACTIVE	PROD_OIL
DU-2924	42501021840000	TA	PROD_OIL
DU-2925	42501021880000	P & A	PROD_OIL
DU-2926	42501307750000	ACTIVE	INJ_WAG
DU-2927	42501307740000	ACTIVE	PROD_OIL
DU-2928	42501308190000	ACTIVE	INJ_WAG
DU-2929	42501307770000	ACTIVE	INJ_WAG
DU-2930	42501307730000	ACTIVE	PROD_OIL
DU-2931	42501311290000	ACTIVE	INJ_WAG
DU-2932	42501311280000	TA	PROD_OIL
DU-2933	42501311370000	ACTIVE	INJ_H2O
DU-2934	42501315640000	P & A	PROD_OIL
DU-2935	42501317010000	ACTIVE	PROD_OIL
DU-2936	42501317020000	P & A	PROD_OIL
DU-2937	42501322970000	ACTIVE	PROD_OIL
DU-2938	42501322950000	TA	PROD_OIL
DU-2939	42501328770000	ACTIVE	PROD_OIL
DU-2940	42501333890000	ACTIVE	PROD_OIL
DU-2941	42501333900000	ACTIVE	PROD_OIL
DU-2946	42501335130000	ACTIVE	INJ_WAG
DU-2947	42501340530000	ACTIVE	PROD_OIL
DU-2948	42501340490000	ACTIVE	PROD_OIL

DU-2949	42501340460000	ACTIVE	PROD_OIL
DU-2950	42501340470000	ACTIVE	PROD_OIL
DU-2951	42501341470000	ACTIVE	PROD_OIL
DU-2952	42501347210000	ACTIVE	PROD_OIL
DU-2953	42501347270000	ACTIVE	PROD_OIL
DU-2954	42501347260000	ACTIVE	PROD_OIL
DU-2955	42501347250000	ACTIVE	PROD_OIL
DU-2956	42501347240000	ACTIVE	PROD_OIL
DU-2957	42501347230000	ACTIVE	PROD_OIL
DU-2958	42501347220000	ACTIVE	PROD_OIL
DU-2959	42501348750000	ACTIVE	PROD_OIL
DU-2960	42501350150000	ACTIVE	PROD_OIL
DU-2961	42501350160000	ACTIVE	PROD_OIL
DU-2962	42501350170000	ACTIVE	PROD_OIL
DU-2963	42501352360000	ACTIVE	PROD_OIL
DU-2964	42501354020000	ACTIVE	PROD_OIL
DU-2966	42501354030000	ACTIVE	PROD_OIL
DU-2967	42501362480000	ACTIVE	INJ_WAG
DU-2968	42501362510000	ACTIVE	INJ_WAG
DU-2969	42501362490000	ACTIVE	INJ_WAG
DU-2970	42501362520000	ACTIVE	INJ_WAG
DU-2971	42501362500000	ACTIVE	INJ_WAG
DU-3101	42501001100000	ACTIVE	INJ_H2O
DU-3102	42501001110000	ACTIVE	PROD_OIL
DU-3103	42501001120000	P & A	INJ_H2O
DU-3104	42501001000000	ACTIVE	INJ_H2O
DU-3105	42501001090000	ACTIVE	PROD_OIL
DU-3106	42501001080000	ACTIVE	PROD_OIL
DU-3107	42501001040000	P & A	INJ_WAG
DU-3108	42501001010000	ACTIVE	INJ_WAG
DU-3109	42501001050000	TA	INJ_H2O
DU-3110	42501001070000	ACTIVE	INJ_WAG
DU-3111	42501001030000	ACTIVE	INJ_WAG
DU-3112	42501000990000	ACTIVE	INJ_WAG
DU-3113	42501001060000	TA	PROD_OIL
DU-3114	42501026740000	ACTIVE	INJ_WAG
DU-3115	42501001020000	ACTIVE	INJ_WAG
DU-3116	42501000980000	ACTIVE	INJ_WAG
DU-3117	42501307620000	ACTIVE	PROD_OIL
DU-3118	42501309270000	TA	PROD_OIL
DU-3119	42501309290000	ACTIVE	INJ_WAG
DU-3120	42501309280000	TA	PROD_OIL
DU-3121	42501309300000	TA	PROD_OIL
DU-3122	42501309050000	ACTIVE	PROD_OIL
DU-3123	42501309310000	ACTIVE	PROD_OIL
DU-3124	42501309320000	ACTIVE	PROD_OIL
DU-3126	42501309700000	ACTIVE	PROD_OIL
DU-3127	42501309770000	ACTIVE	PROD_OIL
DU-3128	42501315660000	P & A	PROD_OIL
DU-3129	42501315650000	ACTIVE	PROD_OIL
DU-3130	42501316840000	TA	PROD_OIL
DU-3131	42501316890000	ACTIVE	INJ_WAG
DU-3132	42501316950000	ACTIVE	PROD_OIL
DU-3133	42501319070000	ACTIVE	PROD_OIL

DU-3134	42501319130000	TA	PROD_OIL
DU-3135	42501328790000	TA	PROD_OIL
DU-3201	42501001230000	ACTIVE	INJ_WAG
DU-3202	42501001270000	ACTIVE	INJ_WAG
DU-3203	42501001290000	ACTIVE	INJ_WAG
DU-3204	42501001310000	ACTIVE	INJ_WAG
DU-3205	42501001250000	ACTIVE	INJ_WAG
DU-3206	42501001370000	ACTIVE	INJ_WAG
DU-3207	42501001450000	ACTIVE	INJ_WAG
DU-3208	42501001470000	ACTIVE	INJ_WAG
DU-3209	42501001330000	ACTIVE	INJ_WAG
DU-3210	42501001350000	ACTIVE	INJ_WAG
DU-3211	42501001430000	ACTIVE	INJ_WAG
DU-3212	42501001490000	ACTIVE	INJ_WAG
DU-3213	42501001210000	ACTIVE	INJ_WAG
DU-3214	42501001390000	ACTIVE	INJ_WAG
DU-3215	42501001410000	ACTIVE	INJ_WAG
DU-3216	42501026050000	ACTIVE	PROD_OIL
DU-3217	42501307640000	ACTIVE	PROD_OIL
DU-3218	42501309680000	ACTIVE	PROD_OIL
DU-3219	42501309690000	ACTIVE	PROD_OIL
DU-3220	42501309330000	ACTIVE	PROD_OIL
DU-3221	42501309650000	P & A	INJ_H2O
DU-3222	42501309760000	ACTIVE	PROD_OIL
DU-3223	42501309340000	ACTIVE	PROD_OIL
DU-3224	42501309660000	ACTIVE	PROD_OIL
DU-3225	42501309350000	ACTIVE	PROD_OIL
DU-3226	42501309670000	ACTIVE	PROD_OIL
DU-3227	42501309800000	ACTIVE	PROD_OIL
DU-3228	42501309360000	ACTIVE	PROD_OIL
DU-3229	42501309780000	ACTIVE	PROD_OIL
DU-3230	42501309750000	ACTIVE	PROD_OIL
DU-3231	42501309370000	ACTIVE	PROD_OIL
DU-3232	42501309720000	ACTIVE	PROD_OIL
DU-3233	42501316820000	ACTIVE	INJ_WAG
DU-3234	42501316870000	P & A	PROD_OIL
DU-3235	42501347390000	P & A	PROD_OIL
DU-3236	42501348090000	ACTIVE	PROD_OIL
DU-3237	42501358350000	ACTIVE	PROD_OIL
DU-3238	42501358360000	ACTIVE	PROD_OIL
DU-3239	42501358370000	ACTIVE	PROD_OIL
DU-3240	42501358380000	ACTIVE	PROD_OIL
DU-3241	42501358390000	ACTIVE	PROD_OIL
DU-3242	42501358400000	ACTIVE	PROD_OIL
DU-3243	42501358500000	ACTIVE	PROD_OIL
DU-3244	42501358430000	ACTIVE	PROD_OIL
DU-3245	42501358440000	ACTIVE	PROD_OIL
DU-3246	42501358420000	ACTIVE	PROD_OIL
DU-3247	42501358410000	ACTIVE	PROD_OIL
DU-3248	42501358460000	ACTIVE	PROD_OIL
DU-3249	42501359820000	ACTIVE	PROD_OIL
DU-3250	42501359840000	ACTIVE	PROD_OIL
DU-3251	42501359850000	ACTIVE	PROD_OIL
DU-3301	42501001260000	ACTIVE	INJ_WAG

DU-3302	42501001280000	ACTIVE	INJ_WAG
DU-3303	42501001360000	ACTIVE	INJ_WAG
DU-3304	42501001340000	ACTIVE	INJ_WAG
DU-3305	42501001480000	ACTIVE	INJ_WAG
DU-3306	42501001460000	ACTIVE	INJ_WAG
DU-3307	42501001380000	P & A	INJ_WAG
DU-3308	42501001320000	ACTIVE	INJ_WAG
DU-3309	42501001500000	ACTIVE	INJ_WAG
DU-3310	42501001440000	ACTIVE	INJ_WAG
DU-3311	42501001400000	P & A	PROD_OIL
DU-3312	42501001300000	P & A	INJ_H2O
DU-3313	42501026770000	P & A	INJ_WAG
DU-3314	42501001420000	ACTIVE	INJ_WAG
DU-3315	42501001240000	ACTIVE	INJ_WAG
DU-3316	42501001220000	ACTIVE	INJ_WAG
DU-3317	42501309500000	ACTIVE	PROD_OIL
DU-3318	42501309490000	ACTIVE	PROD_OIL
DU-3319	42501309480000	ACTIVE	PROD_OIL
DU-3320	42501309460000	ACTIVE	PROD_OIL
DU-3321	42501309470000	ACTIVE	PROD_OIL
DU-3322	42501309450000	ACTIVE	PROD_OIL
DU-3323	42501309220000	ACTIVE	PROD_OIL
DU-3324	42501309440000	ACTIVE	PROD_OIL
DU-3325	42501309430000	ACTIVE	PROD_OIL
DU-3326	42501309420000	P & A	INJ_H2O
DU-3327	42501309230000	ACTIVE	PROD_OIL
DU-3328	42501309410000	ACTIVE	PROD_OIL
DU-3329	42501309400000	ACTIVE	PROD_OIL
DU-3330	42501309390000	ACTIVE	PROD_OIL
DU-3331	42501309380000	ACTIVE	PROD_OIL
DU-3332	42501316860000	ACTIVE	PROD_OIL
DU-3333	42501316850000	ACTIVE	PROD_OIL
DU-3334	42501334560000	ACTIVE	PROD_OIL
DU-3335	42501334550000	ACTIVE	PROD_OIL
DU-3336	42501334540000	ACTIVE	PROD_OIL
DU-3337	42501334600000	ACTIVE	INJ_WAG
DU-3338	42501338130000	ACTIVE	INJ_WAG
DU-3340	42501347150000	ACTIVE	PROD_OIL
DU-3341	42501347140000	ACTIVE	PROD_OIL
DU-3342	42501347400000	ACTIVE	PROD_OIL
DU-3344	42501350740000	ACTIVE	INJ_WAG
DU-3345	42501352050000	ACTIVE	PROD_OIL
DU-3346	42501352060000	ACTIVE	PROD_OIL
DU-3347	42501353850000	ACTIVE	PROD_GAS
DU-3348	42501358450000	ACTIVE	PROD_OIL
DU-3349	42501358470000	ACTIVE	PROD_OIL
DU-3350	42501358480000	ACTIVE	PROD_OIL
DU-3351	42501358490000	ACTIVE	PROD_OIL
DU-3352	42501359530000	ACTIVE	PROD_OIL
DU-3353	42501359500000	ACTIVE	PROD_OIL
DU-3354	42501359510000	ACTIVE	PROD_OIL
DU-3355	42501359540000	ACTIVE	PROD_OIL
DU-3356	42501359550000	ACTIVE	PROD_OIL
DU-3357	42501359560000	ACTIVE	PROD_OIL

DU-3358	42501359680000	ACTIVE	PROD_OIL
DU-3359	42501359690000	ACTIVE	PROD_OIL
DU-3360	42501359750000	ACTIVE	PROD_OIL
DU-3361	42501359570000	ACTIVE	INJ_WAG
DU-3501	42501001660000	ACTIVE	PROD_OIL
DU-3502	42501001670000	ACTIVE	INJ_WAG
DU-3503	42501001680000	ACTIVE	INJ_WAG
DU-3504	42501001650000	P & A	INJ_H2O
DU-3505	42501000400000	ACTIVE	INJ_WAG
DU-3506	42501000430000	ACTIVE	PROD_OIL
DU-3507	42501000390000	ACTIVE	PROD_OIL
DU-3508	42501000410000	ACTIVE	PROD_OIL
DU-3509	42501000380000	P & A	PROD_OIL
DU-3510	42501000350000	ACTIVE	INJ_WAG
DU-3511	42501000440000	ACTIVE	INJ_WAG
DU-3512	42501000370000	ACTIVE	INJ_WAG
DU-3513	42501000420000	ACTIVE	INJ_WAG
DU-3514	42501000360000	P & A	PROD_OIL
DU-3515	42501030110000	ACTIVE	INJ_WAG
DU-3516	42501018490000	ACTIVE	PROD_OIL
DU-3517	42501029930000	ACTIVE	PROD_OIL
DU-3518	42501018500000	P & A	PROD_OIL
DU-3519	42501029940000	ACTIVE	PROD_OIL
DU-3520	42501018510000	P & A	INJ_H2O
DU-3521	42501029950000	P & A	INJ_H2O
DU-3522	42501022410000	ACTIVE	PROD_OIL
DU-3523	42501022460000	ACTIVE	INJ_WAG
DU-3524	42501022430000	ACTIVE	INJ_WAG
DU-3525	42501022470000	ACTIVE	INJ_WAG
DU-3526	42501022450000	P & A	PROD_OIL
DU-3527	42501022500000	ACTIVE	PROD_OIL
DU-3528	42501022420000	P & A	PROD_OIL
DU-3529	42501022490000	ACTIVE	PROD_OIL
DU-3530	42501022440000	ACTIVE	PROD_OIL
DU-3531	42501022480000	P & A	INJ_H2O
DU-3532	42501314430000	ACTIVE	PROD_OIL
DU-3533	42501315840000	ACTIVE	INJ_WAG
DU-3534	42501315890000	ACTIVE	PROD_OIL
DU-3535	42501316830000	ACTIVE	PROD_OIL
DU-3536	42501316900000	P & A	PROD_OIL
DU-3537	42501321020000	ACTIVE	INJ_WAG
DU-3538	42501326290000	ACTIVE	PROD_OIL
DU-3539	42501327780000	ACTIVE	PROD_OIL
DU-3540	42501329840000	ACTIVE	PROD_OIL
DU-3541	42501332190000	ACTIVE	INJ_WAG
DU-3542	42501333910000	ACTIVE	PROD_OIL
DU-3543	42501334530000	ACTIVE	PROD_OIL
DU-3544	42501334150000	ACTIVE	INJ_WAG
DU-3545	42501334120000	ACTIVE	PROD_OIL
DU-3546	42501343670000	ACTIVE	PROD_OIL
DU-3547	42501344710000	ACTIVE	PROD_OIL
DU-3548	42501344770000	ACTIVE	PROD_OIL
DU-3549	42501344760000	ACTIVE	PROD_OIL
DU-3550	42501344750000	ACTIVE	PROD_OIL

DU-3551	42501344740000	ACTIVE	PROD_OIL
DU-3552	42501344730000	ACTIVE	PROD_OIL
DU-3553	42501344720000	ACTIVE	PROD_OIL
DU-3554	42501345550000	ACTIVE	PROD_OIL
DU-3555	42501345840000	ACTIVE	PROD_OIL
DU-3556	42501345540000	ACTIVE	PROD_OIL
DU-3557	42501345560000	ACTIVE	PROD_OIL
DU-3558	42501346440000	ACTIVE	PROD_OIL
DU-3559	42501346450000	ACTIVE	PROD_OIL
DU-3560	42501346400000	ACTIVE	PROD_OIL
DU-3561	42501346550000	ACTIVE	INJ_WAG
DU-3562	42501346490000	ACTIVE	PROD_OIL
DU-3563	42501349480000	ACTIVE	INJ_WAG
DU-3564	42501349490000	ACTIVE	INJ_WAG
DU-3565	42501353770000	ACTIVE	PROD_OIL
DU-3566	42501359740000	ACTIVE	PROD_OIL
DU-3601	42501013790000	ACTIVE	INJ_WAG
DU-3602	42501014060000	ACTIVE	INJ_WAG
DU-3603	42501014070000	ACTIVE	INJ_WAG
DU-3604	42501014050000	ACTIVE	INJ_WAG
DU-3605	42501014100000	P & A	PROD_OIL
DU-3606	42501013840000	P & A	PROD_OIL
DU-3607	42501013990000	ACTIVE	PROD_OIL
DU-3608	42501013980000	ACTIVE	INJ_WAG
DU-3609	42501014120000	ACTIVE	INJ_WAG
DU-3610	42501014130000	ACTIVE	INJ_WAG
DU-3611	42501014080000	P & A	INJ_WAG
DU-3612	42501013880000	P & A	INJ_H2O
DU-3613	42501013820000	ACTIVE	PROD_OIL
DU-3614	42501013810000	ACTIVE	PROD_OIL
DU-3615	42501014110000	ACTIVE	INJ_WAG
DU-3616	42501014140000	ACTIVE	INJ_WAG
DU-3617	42501014090000	P & A	PROD_OIL
DU-3618	42501013900000	ACTIVE	INJ_WAG
DU-3619	42501013800000	ACTIVE	INJ_WAG
DU-3620	42501013930000	ACTIVE	PROD_OIL
DU-3621	42501014150000	ACTIVE	PROD_OIL
DU-3622	42501013860000	ACTIVE	PROD_OIL
DU-3623	42501304390000	ACTIVE	INJ_WAG
DU-3624	42501304090000	P & A	PROD_OIL
DU-3625	42501304100000	ACTIVE	PROD_OIL
DU-3626	42501304040000	ACTIVE	INJ_WAG
DU-3627	42501304060000	ACTIVE	PROD_OIL
DU-3628	42501304050000	ACTIVE	PROD_OIL
DU-3629	42501304130000	ACTIVE	PROD_OIL
DU-3630	42501308390000	ACTIVE	PROD_OIL
DU-3631	42501311240000	P & A	PROD_OIL
DU-3632	42501314620000	ACTIVE	INJ_WAG
DU-3633	42501315730000	TA	INJ_GAS
DU-3634	42501315740000	ACTIVE	PROD_OIL
DU-3635	42501315760000	ACTIVE	PROD_OIL
DU-3636	42501316800000	TA	PROD_OIL
DU-3637	42501316810000	ACTIVE	PROD_OIL
DU-3638	42501325930000	ACTIVE	PROD_OIL

DU-3639	42501327620000	ACTIVE	PROD_OIL
DU-3640	42501328540000	ACTIVE	PROD_OIL
DU-3641	42501328160000	TA	PROD_OIL
DU-3642	42501329990000	ACTIVE	INJ_WAG
DU-3644	42501334130000	ACTIVE	INJ_WAG
DU-3645	42501334140000	ACTIVE	PROD_OIL
DU-3646	42501343660000	ACTIVE	PROD_OIL
DU-3647	42501343650000	ACTIVE	PROD_OIL
DU-3648	42501345070000	ACTIVE	PROD_OIL
DU-3649	42501345060000	ACTIVE	PROD_OIL
DU-3650	42501345050000	ACTIVE	PROD_OIL
DU-3651	42501345570000	ACTIVE	PROD_OIL
DU-3652	42501345040000	ACTIVE	PROD_OIL
DU-3653	42501345030000	ACTIVE	PROD_OIL
DU-3654	42501345240000	ACTIVE	PROD_OIL
DU-3655	42501345230000	ACTIVE	PROD_OIL
DU-3656	42501345220000	ACTIVE	PROD_OIL
DU-3657	42501345210000	ACTIVE	PROD_OIL
DU-3658	42501345420000	ACTIVE	INJ_WAG
DU-3659	42501347180000	ACTIVE	PROD_OIL
DU-3660	42501349470000	ACTIVE	PROD_OIL
DU-3661	42501353880000	ACTIVE	PROD_OIL
DU-3666	42501354160000	ACTIVE	PROD_OIL
DU-3701	42501024260000	P & A	INJ_H2O
DU-3702	42501023480000	ACTIVE	INJ_WAG
DU-3703	42501024000000	P & A	PROD_OIL
DU-3704	42501024850000	P & A	PROD_OIL
DU-3705	42501024210000	ACTIVE	INJ_WAG
DU-3706	42501023850000	ACTIVE	INJ_WAG
DU-3707	42501023950000	ACTIVE	INJ_WAG
DU-3708	42501024100000	ACTIVE	INJ_WAG
DU-3709	42501024310000	ACTIVE	PROD_OIL
DU-3710	42501024050000	P & A	INJ_H2O
DU-3711	42501023800000	TA	PROD_OIL
DU-3712	42501023750000	ACTIVE	PROD_OIL
DU-3713	42501024400000	P & A	INJ_WAG
DU-3714	42501024160000	ACTIVE	INJ_WAG
DU-3715	42501023580000	ACTIVE	PROD_OIL
DU-3716	42501023640000	ACTIVE	PROD_OIL
DU-3717	42501023700000	ACTIVE	PROD_OIL
DU-3718	42501023900000	ACTIVE	PROD_OIL
DU-3719	42501304190000	ACTIVE	INJ_WAG
DU-3720	42501024760000	ACTIVE	INJ_WAG
DU-3721	42501304180000	ACTIVE	INJ_WAG
DU-3722	42501303990000	ACTIVE	PROD_OIL
DU-3723	42501304170000	ACTIVE	PROD_OIL
DU-3724	42501304140000	ACTIVE	PROD_OIL
DU-3725	42501304150000	ACTIVE	INJ_WAG
DU-3726	42501024800000	ACTIVE	PROD_OIL
DU-3727	42501304160000	ACTIVE	PROD_OIL
DU-3728	42501304070000	ACTIVE	INJ_WAG
DU-3729	42501304080000	ACTIVE	INJ_WAG
DU-3730	42501308100000	P & A	INJ_WAG
DU-3731	42501312020000	ACTIVE	PROD_OIL

DU-3733	42501312760000	P & A	INJ_H2O
DU-3735	42501312790000	P & A	PROD_OIL
DU-3736	42501314530000	TA	PROD_OIL
DU-3737	42501315530000	P & A	PROD_OIL
DU-3738	42501315540000	ACTIVE	INJ_WAG
DU-3739	42501316590000	P & A	PROD_OIL
DU-3740	42501316750000	P & A	PROD_OIL
DU-3741	42501316780000	P & A	PROD_OIL
DU-3742	42501316770000	P & A	PROD_OIL
DU-3743	42501316790000	P & A	PROD_OIL
DU-3746	42501320510000	ACTIVE	INJ_WAG
DU-3747	42501320370000	ACTIVE	PROD_OIL
DU-3748	42501332830000	ACTIVE	PROD_OIL
DU-3749	42501337960000	ACTIVE	PROD_OIL
DU-3750	42501342290000	ACTIVE	PROD_OIL
DU-3751	42501342230000	ACTIVE	PROD_OIL
DU-3752	42501342240000	ACTIVE	PROD_OIL
DU-3753	42501342250000	ACTIVE	PROD_OIL
DU-3754	42501342260000	ACTIVE	PROD_OIL
DU-3755	42501342300000	ACTIVE	PROD_OIL
DU-3756	42501342310000	ACTIVE	PROD_OIL
DU-3757	42501343020000	ACTIVE	INJ_WAG
DU-3758	42501343010000	ACTIVE	PROD_OIL
DU-3759	42501343230000	ACTIVE	PROD_OIL
DU-3760	42501343000000	ACTIVE	PROD_OIL
DU-3761	42501343110000	ACTIVE	PROD_OIL
DU-3762	42501343240000	ACTIVE	PROD_OIL
DU-3763	42501342990000	ACTIVE	PROD_OIL
DU-3764	42501342980000	ACTIVE	INJ_WAG
DU-3765	42501343120000	ACTIVE	PROD_OIL
DU-3766	42501343130000	ACTIVE	PROD_OIL
DU-3767	42501343210000	ACTIVE	PROD_OIL
DU-3768	42501345660000	ACTIVE	PROD_OIL
DU-3769	42501352130000	ACTIVE	INJ_WAG
DU-3770	42501354050000	ACTIVE	INJ_WAG
DU-3771	42501354230000	ACTIVE	INJ_WAG
DU-3801	42501022170000	ACTIVE	INJ_WAG
DU-3802	42501022220000	ACTIVE	INJ_WAG
DU-3803	42501028310000	ACTIVE	INJ_WAG
DU-3804	42501028350000	ACTIVE	INJ_WAG
DU-3805	42501022230000	ACTIVE	PROD_OIL
DU-3806	42501028370000	P & A	PROD_OIL
DU-3807	42501028390000	P & A	INJ_H2O
DU-3808	42501022190000	ACTIVE	INJ_WAG
DU-3809	42501022240000	ACTIVE	INJ_WAG
DU-3810	42501022210000	P & A	PROD_OIL
DU-3811	42501028290000	ACTIVE	INJ_WAG
DU-3812	42501028330000	ACTIVE	INJ_WAG
DU-3813	42501017180000	P & A	PROD_OIL
DU-3814	42501017200000	ACTIVE	PROD_OIL
DU-3815	42501006020000	ACTIVE	PROD_OIL
DU-3816	42501006080000	ACTIVE	PROD_OIL
DU-3817	42501017160000	ACTIVE	INJ_WAG
DU-3818	42501017240000	ACTIVE	INJ_WAG

DU-3819	42501006060000	ACTIVE	INJ_WAG
DU-3820	42501006120000	ACTIVE	INJ_WAG
DU-3821	42501017140000	ACTIVE	PROD_OIL
DU-3822	42501017220000	ACTIVE	PROD_OIL
DU-3823	42501006040000	ACTIVE	PROD_OIL
DU-3824	42501006100000	ACTIVE	PROD_OIL
DU-3825	42501302380000	ACTIVE	PROD_OIL
DU-3826	42501302370000	ACTIVE	PROD_OIL
DU-3827	42501304620000	ACTIVE	INJ_WAG
DU-3828	42501304450000	P & A	PROD_OIL
DU-3829	42501304440000	P & A	PROD_OIL
DU-3830	42501304430000	ACTIVE	PROD_OIL
DU-3831	42501304550000	ACTIVE	INJ_WAG
DU-3832	42501304560000	P & A	PROD_OIL
DU-3833	42501304610000	P & A	PROD_OIL
DU-3834	42501304570000	P & A	INJ_WAG
DU-3835	42501304580000	ACTIVE	INJ_WAG
DU-3836	42501304590000	ACTIVE	PROD_OIL
DU-3837	42501304600000	P & A	PROD_OIL
DU-3838	42501308680000	ACTIVE	INJ_WAG
DU-3839	42501316960000	ACTIVE	PROD_OIL
DU-3840	42501316980000	TA	PROD_OIL
DU-3841	42501317000000	TA	PROD_OIL
DU-3842	42501338970000	ACTIVE	PROD_OIL
DU-3843	42501340430000	ACTIVE	PROD_OIL
DU-3844	42501341460000	ACTIVE	PROD_OIL
DU-3845	42501341560000	ACTIVE	INJ_WAG
DU-3847	42501341620000	ACTIVE	PROD_OIL
DU-3848	42501341480000	ACTIVE	PROD_OIL
DU-3849	42501341490000	ACTIVE	PROD_OIL
DU-3850	42501341500000	ACTIVE	PROD_OIL
DU-3851	42501341510000	ACTIVE	PROD_OIL
DU-3852	42501341520000	ACTIVE	PROD_OIL
DU-3853	42501341610000	ACTIVE	PROD_OIL
DU-3854	42501341600000	ACTIVE	PROD_OIL
DU-3855	42501341530000	ACTIVE	PROD_OIL
DU-3856	42501341540000	ACTIVE	PROD_OIL
DU-3857	42501341550000	ACTIVE	PROD_OIL
DU-3858	42501341570000	ACTIVE	PROD_OIL
DU-3859	42501342220000	ACTIVE	PROD_OIL
DU-3860	42501342320000	ACTIVE	PROD_OIL
DU-3861	42501342210000	ACTIVE	PROD_OIL
DU-3862	42501342330000	ACTIVE	PROD_OIL
DU-3863	42501342340000	ACTIVE	PROD_OIL
DU-3864	42501342350000	ACTIVE	PROD_OIL
DU-3865	42501342360000	ACTIVE	PROD_OIL
DU-3866	42501342370000	ACTIVE	PROD_OIL
DU-3867	42501343540000	ACTIVE	PROD_OIL
DU-3868	42501348430000	ACTIVE	INJ_WAG
DU-3869	42501348710000	ACTIVE	PROD_OIL
DU-3870	42501353050000	ACTIVE	PROD_OIL
DU-3871	42501354100000	ACTIVE	INJ_WAG
DU-3872	42501354110000	ACTIVE	INJ_WAG
DU-3873	42501354060000	ACTIVE	INJ_WAG

DU-3874	42501354070000	ACTIVE	INJ_WAG
DU-3875	42501354080000	ACTIVE	INJ_WAG
DU-3876	42501354710000	ACTIVE	INJ_WAG
DU-3877	42501354740000	ACTIVE	INJ_WAG
DU-3878	42501354750000	ACTIVE	INJ_WAG
DU-3879	42501354760000	ACTIVE	INJ_WAG
DU-3880	42501354770000	ACTIVE	INJ_WAG
DU-3901	42501006090000	ACTIVE	INJ_WAG
DU-3902	42501006030000	ACTIVE	INJ_WAG
DU-3903	42501017170000	TA	INJ_H2O
DU-3904	42501017330000	ACTIVE	INJ_H2O
DU-3905	42501006130000	ACTIVE	PROD_OIL
DU-3906	42501006110000	ACTIVE	PROD_OIL
DU-3907	42501017150000	ACTIVE	PROD_OIL
DU-3908	42501017190000	ACTIVE	INJ_WAG
DU-3909	42501006070000	ACTIVE	INJ_WAG
DU-3910	42501006050000	ACTIVE	PROD_OIL
DU-3911	42501017210000	ACTIVE	PROD_OIL
DU-3912	42501017320000	ACTIVE	INJ_H2O
DU-3913	42501025380000	ACTIVE	PROD_OIL
DU-3914	42501025390000	TA	PROD_OIL
DU-3915	42501021830000	P & A	INJ_WAG
DU-3916	42501021870000	ACTIVE	INJ_H2O
DU-3917	42501025420000	P & A	PROD_OIL
DU-3918	42501025400000	ACTIVE	PROD_OIL
DU-3919	42501025410000	P & A	PROD_OIL
DU-3920	42501021850000	P & A	INJ_H2O
DU-3921	42501021890000	P & A	INJ_H2O
DU-3922	42501308710000	ACTIVE	INJ_WAG
DU-3923	42501308550000	ACTIVE	INJ_WAG
DU-3924	42501308560000	ACTIVE	PROD_OIL
DU-3925	42501308570000	ACTIVE	INJ_WAG
DU-3926	42501308580000	ACTIVE	PROD_OIL
DU-3927	42501308590000	ACTIVE	INJ_WAG
DU-3928	42501308600000	ACTIVE	PROD_OIL
DU-3929	42501311200000	ACTIVE	PROD_OIL
DU-3930	42501317030000	ACTIVE	PROD_OIL
DU-3932	42501330620000	ACTIVE	PROD_OIL
DU-3933	42501332900000	TA	PROD_OIL
DU-3934	42501332910000	ACTIVE	PROD_OIL
DU-3935	42501332920000	ACTIVE	INJ_WAG
DU-3936	42501332880000	ACTIVE	INJ_WAG
DU-3937	42501102150000	TA	INJ_WAG
DU-3938	42501100250000	TA	PROD_OIL
DU-3939	42501347020000	ACTIVE	PROD_OIL
DU-3940	42501347030000	ACTIVE	PROD_OIL
DU-3941	42501347000000	ACTIVE	PROD_OIL
DU-3942	42501347040000	ACTIVE	PROD_OIL
DU-3943	42501346990000	ACTIVE	PROD_OIL
DU-3944	42501347010000	ACTIVE	PROD_OIL
DU-3945	42501347310000	ACTIVE	INJ_WAG
DU-3946	42501352370000	ACTIVE	PROD_OIL
DU-3947	42501352380000	ACTIVE	PROD_OIL
DU-3948	42501352390000	ACTIVE	PROD_OIL

DU-3949	42501352400000	TA	PROD_OIL
DU-3950	42501352410000	ACTIVE	PROD_OIL
DU-3951	42501352420000	ACTIVE	PROD_OIL
DU-3955	42501354200000	ACTIVE	PROD_OIL
DU-3956	42501354780000	ACTIVE	INJ_WAG
DU-3957	42501354790000	ACTIVE	INJ_WAG
DU-3958	42501354800000	ACTIVE	INJ_WAG
DU-4001	42501017760000	P & A	INJ_H2O
DU-4002	42501021470000	TA	PROD_OIL
DU-4003	42501020180000	P & A	INJ_H2O
DU-4004	42501021380000	P & A	INJ_H2O
DU-4005	42501021390000	P & A	PROD_OIL
DU-4006	42501017770000	TA	INJ_H2O
DU-4007	42501331380000	TA	PROD_OIL
DU-4101	42501010410000	ACTIVE	PROD_OIL
DU-4102	42501000560000	ACTIVE	INJ_WAG
DU-4103	42501000530000	P & A	INJ_H2O
DU-4104	42501010400000	P & A	INJ_H2O
DU-4105	42501010440000	P & A	PROD_OIL
DU-4106	42501010420000	ACTIVE	INJ_WAG
DU-4107	42501000550000	P & A	INJ_H2O
DU-4108	42501000540000	ACTIVE	INJ_WAG
DU-4109	42501010450000	P & A	INJ_H2O
DU-4110	42501010430000	P & A	INJ_H2O
DU-4111	42501028280000	ACTIVE	INJ_WAG
DU-4112	42501028250000	ACTIVE	INJ_WAG
DU-4113	42501028260000	P & A	INJ_H2O
DU-4114	42501028270000	ACTIVE	INJ_H2O
DU-4115	42501319110000	ACTIVE	PROD_OIL
DU-4116	42501309730000	ACTIVE	PROD_OIL
DU-4117	42501314570000	ACTIVE	PROD_OIL
DU-4118	42501314440000	ACTIVE	PROD_OIL
DU-4119	42501315550000	ACTIVE	PROD_OIL
DU-4120	42501315580000	ACTIVE	INJ_WAG
DU-4121	42501319840000	P & A	PROD_OIL
DU-4122	42501319090000	ACTIVE	PROD_OIL
DU-4123	42501319060000	TA	PROD_OIL
DU-4124	42501327490000	ACTIVE	INJ_WAG
DU-4125	42501329250000	P & A	INJ_H2O
DU-4126	42501330670000	ACTIVE	PROD_OIL
DU-4127	42501330630000	ACTIVE	PROD_OIL
DU-4128	42501331370000	ACTIVE	PROD_OIL
DU-4129	42501331670000	TA	INJ_H2O
DU-4130	42501332070000	ACTIVE	PROD_OIL
DU-4131	42501333590000	ACTIVE	PROD_OIL
DU-4132	42501336450000	ACTIVE	INJ_WAG
DU-4133	42501348720000	ACTIVE	INJ_WAG
DU-4134GC	42501353860000	SHUT-IN	PROD_GAS
DU-4135	42501354360000	ACTIVE	PROD_OIL
DU-4136	42501355520000	SHUT-IN	PROD_GAS
DU-4137	42501362000000	ACTIVE	PROD_OIL
DU-4138	42501362550000	ACTIVE	PROD_OIL
DU-4139	42501362540000	ACTIVE	PROD_OIL
DU-4201	42501005920000	ACTIVE	INJ_WAG

DU-4202	42501005980000	P & A	PROD_OIL
DU-4203	42501016390000	ACTIVE	INJ_WAG
DU-4204	42501011070000	ACTIVE	INJ_WAG
DU-4205	42501005940000	ACTIVE	INJ_WAG
DU-4206	42501005970000	ACTIVE	INJ_WAG
DU-4207	42501005950000	ACTIVE	INJ_WAG
DU-4208	42501005930000	P & A	INJ_H2O
DU-4209	42501005960000	ACTIVE	INJ_WAG
DU-4210	42501011040000	P & A	INJ_H2O
DU-4211	42501006910000	P & A	INJ_H2O
DU-4212	42501006900000	P & A	PROD_OIL
DU-4213	42501015640000	P & A	PROD_OIL
DU-4214	42501011050000	ACTIVE	INJ_H2O
DU-4215	42501006920000	P & A	PROD_OIL
DU-4216	42501006930000	ACTIVE	INJ_H2O
DU-4217	42501309860000	ACTIVE	PROD_OIL
DU-4218	42501309820000	ACTIVE	PROD_OIL
DU-4219	42501309850000	ACTIVE	PROD_OIL
DU-4220	42501309830000	ACTIVE	PROD_OIL
DU-4221	42501309940000	ACTIVE	PROD_OIL
DU-4222	42501309970000	INACTIVE	PROD_OIL
DU-4223	42501309890000	ACTIVE	PROD_OIL
DU-4224	42501314460000	ACTIVE	INJ_WAG
DU-4225	42501314470000	ACTIVE	PROD_OIL
DU-4226	42501314480000	P & A	PROD_OIL
DU-4227	42501314510000	ACTIVE	INJ_WAG
DU-4228	42501315590000	ACTIVE	INJ_WAG
DU-4229	42501315560000	ACTIVE	PROD_OIL
DU-4230	42501315570000	ACTIVE	PROD_OIL
DU-4231	42501316940000	ACTIVE	PROD_OIL
DU-4232	42501316880000	ACTIVE	PROD_OIL
DU-4233	42501319080000	ACTIVE	PROD_OIL
DU-4234	42501319030000	ACTIVE	PROD_OIL
DU-4235	42501319390000	ACTIVE	PROD_GAS
DU-4236	42501319350000	TA	PROD_GAS
DU-4237	42501325940000	ACTIVE	PROD_OIL
DU-4238	42501325980000	ACTIVE	PROD_OIL
DU-4239	42501328560000	TA	PROD_OIL
DU-4240	42501331360000	ACTIVE	PROD_OIL
DU-4241	42501332080000	ACTIVE	PROD_OIL
DU-4242	42501333920000	ACTIVE	INJ_WAG
DU-4243	42501333630000	ACTIVE	PROD_OIL
DU-4244	42501333640000	ACTIVE	PROD_OIL
DU-4245	42501335930000	ACTIVE	INJ_WAG
DU-4246	42501346900000	ACTIVE	PROD_OIL
DU-4247	42501349650000	ACTIVE	PROD_OIL
DU-4250	42501353580000	ACTIVE	INJ_WAG
DU-4251	42501353590000	ACTIVE	INJ_WAG
DU-4252	42501353600000	ACTIVE	INJ_WAG
DU-4253	42501353710000	ACTIVE	INJ_WAG
DU-4254	42501354720000	ACTIVE	PROD_GAS
DU-4255	42501354730000	ACTIVE	PROD_GAS
DU-4257	42501360000000	ACTIVE	PROD_OIL
DU-4258	42501362010000	ACTIVE	PROD_OIL

DU-4259	42501361990000	ACTIVE	PROD_OIL
DU-4260	42501362050000	ACTIVE	PROD_OIL
DU-4301	42501006170000	ACTIVE	INJ_WAG
DU-4302	42501006310000	ACTIVE	INJ_WAG
DU-4303	42501006250000	ACTIVE	INJ_WAG
DU-4304	42501006210000	ACTIVE	INJ_WAG
DU-4305	42501006230000	P & A	PROD_OIL
DU-4306W	42501006290000	ACTIVE	INJ_WAG
DU-4307	42501006270000	ACTIVE	INJ_WAG
DU-4308	42501006190000	ACTIVE	INJ_WAG
DU-4309	42501006200000	ACTIVE	INJ_WAG
DU-4310	42501006280000	ACTIVE	INJ_WAG
DU-4311	42501006260000	ACTIVE	INJ_WAG
DU-4312	42501006180000	P & A	INJ_H2O
DU-4313	42501006220000	TA	PROD_OIL
DU-4314	42501006330000	P & A	PROD_OIL
DU-4315	42501006300000	ACTIVE	INJ_WAG
DU-4316	42501006240000	ACTIVE	INJ_WAG
DU-4317	42501307630000	ACTIVE	PROD_OIL
DU-4318	42501310030000	ACTIVE	PROD_OIL
DU-4319	42501309580000	ACTIVE	PROD_OIL
DU-4320	42501309240000	ACTIVE	PROD_OIL
DU-4321	42501309590000	ACTIVE	PROD_OIL
DU-4322	42501309600000	P & A	INJ_H2O
DU-4323	42501309250000	ACTIVE	PROD_OIL
DU-4324	42501309570000	ACTIVE	PROD_OIL
DU-4326	42501309960000	ACTIVE	PROD_OIL
DU-4327	42501309170000	P & A	INJ_H2O
DU-4328	42501309630000	ACTIVE	PROD_OIL
DU-4329	42501315620000	ACTIVE	INJ_WAG
DU-4330	42501315630000	ACTIVE	PROD_OIL
DU-4331	42501316910000	ACTIVE	PROD_OIL
DU-4332	42501316920000	ACTIVE	PROD_OIL
DU-4333	42501319100000	ACTIVE	INJ_H2O
DU-4334	42501328550000	P & A	PROD_OIL
DU-4335	42501333620000	TA	PROD_OIL
DU-4336	42501333610000	ACTIVE	PROD_OIL
DU-4337	42501335920000	ACTIVE	PROD_OIL
DU-4338	42501336460000	ACTIVE	INJ_WAG
DU-4339	42501345580000	TA	PROD_GAS
DU-4340	42501346920000	ACTIVE	PROD_GAS
DU-4341	42501346930000	TA	PROD_GAS
DU-4342	42501346940000	ACTIVE	PROD_GAS
DU-4343GC	42501352230000	ACTIVE	PROD_GAS
DU-4344GC	42501352070000	TA	PROD_GAS
DU-4346	42501353610000	ACTIVE	PROD_OIL
DU-4347	42501354370000	ACTIVE	PROD_GAS
DU-4348GC	42501354860000	TA	PROD_OIL
DU-4349	42501359760000	P & A	PROD_OIL
DU-4350	42501359770000	ACTIVE	PROD_OIL
DU-4351	42501359780000	ACTIVE	PROD_OIL
DU-4352	42501359790000	ACTIVE	PROD_OIL
DU-4353	42501359870000	ACTIVE	PROD_OIL
DU-4354	42501359880000	ACTIVE	PROD_OIL

DU-4355	42501359830000	ACTIVE	PROD_OIL
DU-4356	42501359810000	ACTIVE	PROD_OIL
DU-4357	42501359860000	ACTIVE	PROD_OIL
DU-4358	42501360710000	ACTIVE	PROD_OIL
DU-4401	42501025100000	ACTIVE	INJ_WAG
DU-4402	42501025080000	P & A	PROD_OIL
DU-4403	42501026990000	P & A	INJ_H2O
DU-4404	42501026980000	P & A	INJ_WAG
DU-4405	42501025090000	ACTIVE	INJ_WAG
DU-4406	42501023690000	P & A	PROD_OIL
DU-4407	42501027000000	P & A	PROD_OIL
DU-4408	42501001830000	ACTIVE	INJ_WAG
DU-4409	42501020880000	P & A	INJ_H2O
DU-4410	42501020890000	ACTIVE	PROD_OIL
DU-4411	42501001790000	P & A	INJ_H2O
DU-4412	42501001800000	ACTIVE	PROD_OIL
DU-4413	42501020910000	ACTIVE	PROD_OIL
DU-4414	42501020900000	P & A	PROD_OIL
DU-4415	42501001810000	SHUT-IN	INJ_H2O
DU-4416	42501001820000	P & A	PROD_OIL
DU-4417	42501308170000	ACTIVE	PROD_OIL
DU-4418	42501308150000	ACTIVE	INJ_WAG
DU-4419	42501308610000	P & A	PROD_OIL
DU-4420	42501308620000	ACTIVE	INJ_WAG
DU-4421	42501309990000	P & A	INJ_H2O
DU-4422	42501310540000	ACTIVE	PROD_OIL
DU-4423	42501310040000	ACTIVE	PROD_OIL
DU-4424	42501310050000	ACTIVE	PROD_OIL
DU-4425	42501310550000	ACTIVE	PROD_OIL
DU-4426	42501309980000	ACTIVE	INJ_WAG
DU-4427	42501310010000	ACTIVE	INJ_WAG
DU-4428	42501310340000	P & A	PROD_OIL
DU-4429	42501311250000	ACTIVE	PROD_OIL
DU-4430	42501315060000	ACTIVE	PROD_OIL
DU-4431	42501315080000	P & A	PROD_GAS
DU-4432	42501315090000	ACTIVE	INJ_WAG
DU-4433	42501315040000	ACTIVE	PROD_OIL
DU-4434	42501315070000	ACTIVE	PROD_OIL
DU-4435	42501315710000	ACTIVE	INJ_WAG
DU-4436	42501315850000	ACTIVE	PROD_OIL
DU-4437	42501316630000	TA	PROD_OIL
DU-4438	42501316990000	ACTIVE	PROD_GAS
DU-4439	42501319340000	TA	INJ_WAG
DU-4440	42501328780000	ACTIVE	PROD_OIL
DU-4441	42501332090000	ACTIVE	INJ_WAG
DU-4442	42501332100000	ACTIVE	PROD_OIL
DU-4443	42501332420000	ACTIVE	INJ_WAG
DU-4444	42501334610000	ACTIVE	INJ_WAG
DU-4445	42501336470000	ACTIVE	PROD_GAS
DU-4447	42501345430000	TA	PROD_GAS
DU-4448	42501345670000	ACTIVE	PROD_GAS
DU-4449	42501346260000	ACTIVE	PROD_GAS
DU-4450	42501346340000	ACTIVE	PROD_GAS
DU-4451	42501346570000	ACTIVE	PROD_OIL

DU-4452	42501346690000	ACTIVE	PROD_OIL
DU-4453	42501346510000	ACTIVE	INJ_WAG
DU-4454	42501346700000	ACTIVE	PROD_OIL
DU-4455	42501347090000	ACTIVE	PROD_OIL
DU-4456	42501347690000	ACTIVE	PROD_OIL
DU-4457	42501347700000	ACTIVE	PROD_OIL
DU-4458	42501347820000	ACTIVE	INJ_WAG
DU-4459	42501347710000	ACTIVE	PROD_OIL
DU-4460	42501347720000	ACTIVE	PROD_OIL
DU-4461GC	42501351660000	ACTIVE	PROD_GAS
DU-4463GC	42501354870000	ACTIVE	PROD_GAS
DU-4466	42501354590000	ACTIVE	PROD_GAS
DU-4467	42501355980000	DRILL	PROD_GAS
DU-4468	42501355950000	DRILL	PROD_GAS
DU-4501	42501014170000	ACTIVE	INJ_WAG
DU-4502	42501013780000	P & A	INJ_H2O
DU-4503	42501013890000	ACTIVE	INJ_WAG
DU-4504	42501013920000	ACTIVE	INJ_WAG
DU-4505	42501014160000	ACTIVE	INJ_WAG
DU-4506	42501013950000	P & A	INJ_H2O
DU-4507	42501014190000	ACTIVE	PROD_OIL
DU-4508	42501014200000	ACTIVE	PROD_OIL
DU-4509	42501014010000	P & A	INJ_H2O
DU-4510	42501013850000	P & A	INJ_H2O
DU-4511	42501014210000	ACTIVE	INJ_WAG
DU-4512	42501013910000	ACTIVE	INJ_WAG
DU-4513	42501013940000	P & A	INJ_H2O
DU-4514	42501014180000	P & A	PROD_OIL
DU-4515	42501014040000	P & A	PROD_OIL
DU-4516	42501014020000	P & A	INJ_H2O
DU-4517	42501013830000	ACTIVE	PROD_OIL
DU-4518	42501014000000	P & A	PROD_OIL
DU-4519	42501014030000	ACTIVE	INJ_WAG
DU-4520	42501013960000	ACTIVE	PROD_OIL
DU-4521	42501013870000	ACTIVE	PROD_OIL
DU-4522	42501807970000	P & A	PROD_OIL
DU-4523	42501307820000	ACTIVE	INJ_WAG
DU-4524	42501308160000	ACTIVE	PROD_OIL
DU-4525	42501308180000	ACTIVE	PROD_OIL
DU-4526	42501308330000	P & A	INJ_H2O
DU-4527	42501308420000	ACTIVE	PROD_OIL
DU-4528	42501308300000	ACTIVE	INJ_WAG
DU-4529	42501308400000	P & A	INJ_H2O
DU-4530	42501308410000	P & A	PROD_OIL
DU-4531	42501308520000	ACTIVE	INJ_WAG
DU-4532	42501308340000	ACTIVE	INJ_WAG
DU-4533	42501308370000	ACTIVE	INJ_WAG
DU-4534	42501308360000	ACTIVE	INJ_WAG
DU-4535	42501308690000	ACTIVE	PROD_OIL
DU-4536	42501308540000	ACTIVE	PROD_OIL
DU-4537	42501014320000	TA	PROD_OIL
DU-4538	42501314600000	ACTIVE	PROD_OIL
DU-4539	42501316930000	ACTIVE	PROD_OIL
DU-4540	42501329110000	ACTIVE	PROD_OIL

DU-4541	42501331680000	ACTIVE	INJ_WAG
DU-4542	42501331660000	ACTIVE	INJ_WAG
DU-4543	42501334440000	ACTIVE	INJ_WAG
DU-4544	42501342820000	ACTIVE	PROD_OIL
DU-4545	42501342810000	ACTIVE	PROD_OIL
DU-4546	42501343480000	ACTIVE	PROD_OIL
DU-4547	42501345870000	ACTIVE	PROD_GAS
DU-4548	42501345860000	TA	PROD_GAS
DU-4549	42501345850000	ACTIVE	PROD_GAS
DU-4550	42501347790000	ACTIVE	PROD_OIL
DU-4551	42501346710000	ACTIVE	PROD_OIL
DU-4552	42501346720000	ACTIVE	PROD_OIL
DU-4553	42501346730000	ACTIVE	PROD_OIL
DU-4554	42501346740000	ACTIVE	PROD_OIL
DU-4555	42501346520000	ACTIVE	PROD_OIL
DU-4556	42501346470000	ACTIVE	PROD_OIL
DU-4557	42501346480000	ACTIVE	PROD_OIL
DU-4558	42501346750000	ACTIVE	PROD_OIL
DU-4559	42501347770000	ACTIVE	PROD_OIL
DU-4560	42501346530000	ACTIVE	PROD_OIL
DU-4561	42501347800000	ACTIVE	PROD_OIL
DU-4562	42501347780000	ACTIVE	PROD_OIL
DU-4563	42501346540000	ACTIVE	INJ_WAG
DU-4564	42501346670000	ACTIVE	INJ_WAG
DU-4568GC	42501351020000	TA	PROD_GAS
DU-4569GC	42501351060000	TA	PROD_GAS
DU-4570GC	42501351030000	ACTIVE	PROD_GAS
DU-4571GC	42501351040000	TA	PROD_GAS
DU-4572GC	42501352880000	TA	PROD_GAS
DU-4573	42501354170000	ACTIVE	PROD_OIL
DU-4574	42501354240000	ACTIVE	PROD_OIL
DU-4575	42501354380000	TA	PROD_GAS
DU-4576	42501354390000	TA	PROD_GAS
DU-4601	42501027190000	P & A	INJ_H2O
DU-4602	42501025500000	ACTIVE	INJ_WAG
DU-4603	42501002280000	P & A	PROD_OIL
DU-4604	42501027180000	ACTIVE	PROD_OIL
DU-4605	42501023510000	ACTIVE	PROD_OIL
DU-4606	42501027200000	ACTIVE	PROD_OIL
DU-4607	42501025470000	ACTIVE	PROD_OIL
DU-4608	42501002290000	ACTIVE	INJ_WAG
DU-4609	42501027170000	P & A	INJ_H2O
DU-4610	42501025460000	ACTIVE	INJ_WAG
DU-4611	42501025490000	ACTIVE	PROD_OIL
DU-4612	42501002300000	ACTIVE	PROD_OIL
DU-4613	42501027160000	ACTIVE	PROD_OIL
DU-4614	42501025450000	ACTIVE	PROD_OIL
DU-4615	42501025520000	ACTIVE	INJ_WAG
DU-4616	42501002270000	ACTIVE	PROD_OIL
DU-4617	42501025150000	P & A	INJ_H2O
DU-4618	42501025480000	ACTIVE	PROD_OIL
DU-4619	42501023500000	ACTIVE	PROD_OIL
DU-4620	42501304320000	ACTIVE	PROD_OIL
DU-4621	42501025570000	ACTIVE	INJ_WAG

DU-4622	42501025560000	P & A	PROD_OIL
DU-4623	42501025550000	ACTIVE	PROD_OIL
DU-4624	42501025540000	ACTIVE	INJ_WAG
DU-4625	42501308220000	ACTIVE	PROD_OIL
DU-4626	42501308290000	TA	PROD_GAS
DU-4627	42501308280000	P & A	PROD_OIL
DU-4628	42501308350000	ACTIVE	INJ_WAG
DU-4629	42501308430000	ACTIVE	PROD_OIL
DU-4630	42501308230000	ACTIVE	INJ_WAG
DU-4632	42501308110000	P & A	PROD_OIL
DU-4633	42501314630000	TA	PROD_GAS
DU-4634	42501314640000	ACTIVE	PROD_OIL
DU-4635	42501315720000	ACTIVE	INJ_WAG
DU-4636	42501315750000	P & A	PROD_OIL
DU-4637	42501315910000	ACTIVE	INJ_WAG
DU-4638	42501315770000	ACTIVE	PROD_OIL
DU-4639	42501315900000	ACTIVE	PROD_OIL
DU-4640	42501316510000	ACTIVE	PROD_OIL
DU-4641	42501321030000	ACTIVE	PROD_OIL
DU-4642	42501325320000	ACTIVE	INJ_WAG
DU-4643	42501336490000	ACTIVE	INJ_WAG
DU-4644	42501341360000	ACTIVE	PROD_OIL
DU-4645	42501345880000	ACTIVE	PROD_OIL
DU-4646	42501345590000	ACTIVE	PROD_OIL
DU-4647	42501345200000	ACTIVE	PROD_OIL
DU-4648	42501345410000	ACTIVE	PROD_OIL
DU-4649	42501345190000	ACTIVE	PROD_OIL
DU-4650	42501345640000	ACTIVE	INJ_WAG
DU-4651	42501345600000	P & A	INJ_H2O
DU-4652	42501345610000	ACTIVE	INJ_WAG
DU-4653	42501345830000	ACTIVE	INJ_WAG
DU-4654	42501346080000	ACTIVE	INJ_WAG
DU-4655	42501347830000	ACTIVE	PROD_OIL
DU-4656	42501348140000	ACTIVE	PROD_OIL
DU-4657	42501348150000	ACTIVE	PROD_OIL
DU-4658	42501348160000	ACTIVE	PROD_OIL
DU-4659	42501348170000	ACTIVE	INJ_WAG
DU-4660	42501348180000	ACTIVE	INJ_WAG
DU-4661	42501348190000	ACTIVE	INJ_WAG
DU-4662	42501348360000	ACTIVE	PROD_OIL
DU-4663	42501348370000	ACTIVE	PROD_OIL
DU-4664	42501348200000	ACTIVE	PROD_OIL
DU-4665	42501348210000	ACTIVE	PROD_OIL
DU-4666	42501348220000	ACTIVE	PROD_OIL
DU-4667	42501347730000	ACTIVE	PROD_OIL
DU-4668GC	42501354890000	TA	PROD_GAS
DU-4701	42501028420000	P & A	INJ_H2O
DU-4702	42501028430000	P & A	PROD_OIL
DU-4703	42501008190000	ACTIVE	INJ_WAG
DU-4704	42501028950000	INACTIVE	INJ_WAG
DU-4705	42501008210000	ACTIVE	INJ_WAG
DU-4706	42501028940000	ACTIVE	PROD_OIL
DU-4707	42501028410000	P & A	INJ_H2O
DU-4708	42501028440000	ACTIVE	INJ_WAG

DU-4709	42501008200000	ACTIVE	INJ_WAG
DU-4710	42501008220000	ACTIVE	INJ_WAG
DU-4711	42501028000000	ACTIVE	PROD_OIL
DU-4712	42501027950000	ACTIVE	PROD_OIL
DU-4713	42501027960000	ACTIVE	PROD_OIL
DU-4714	42501027990000	ACTIVE	PROD_OIL
DU-4715	42501000520000	ACTIVE	INJ_WAG
DU-4716	42501018240000	ACTIVE	PROD_OIL
DU-4717	42501000510000	ACTIVE	PROD_OIL
DU-4718	42501027940000	ACTIVE	PROD_OIL
DU-4719	42501027980000	ACTIVE	PROD_OIL
DU-4720	42501027970000	P & A	PROD_OIL
DU-4721	42501302360000	ACTIVE	PROD_OIL
DU-4722	42501302350000	ACTIVE	INJ_WAG
DU-4723	42501304530000	ACTIVE	INJ_WAG
DU-4724	42501304520000	ACTIVE	PROD_OIL
DU-4725	42501304510000	ACTIVE	PROD_OIL
DU-4726	42501304500000	ACTIVE	PROD_OIL
DU-4727	42501304490000	P & A	PROD_OIL
DU-4728	42501304540000	ACTIVE	INJ_WAG
DU-4729	42501305260000	ACTIVE	PROD_OIL
DU-4730	42501305340000	ACTIVE	PROD_OIL
DU-4731	42501305330000	ACTIVE	INJ_WAG
DU-4732	42501305240000	ACTIVE	INJ_WAG
DU-4733	42501304980000	ACTIVE	INJ_WAG
DU-4734	42501305400000	ACTIVE	INJ_WAG
DU-4735	42501305270000	TA	PROD_OIL
DU-4736	42501308730000	ACTIVE	PROD_OIL
DU-4737	42501310060000	TA	PROD_OIL
DU-4738	42501310070000	TA	PROD_OIL
DU-4739	42501310080000	TA	PROD_OIL
DU-4740	42501321040000	ACTIVE	INJ_WAG
DU-4741	42501335460000	ACTIVE	PROD_OIL
DU-4742	42501340210000	ACTIVE	PROD_OIL
DU-4743	42501340200000	ACTIVE	PROD_OIL
DU-4744	42501340190000	ACTIVE	PROD_OIL
DU-4745	42501342530000	ACTIVE	PROD_OIL
DU-4746	42501342610000	ACTIVE	PROD_OIL
DU-4747	42501342600000	ACTIVE	PROD_OIL
DU-4748	42501342550000	ACTIVE	PROD_OIL
DU-4749	42501343390000	ACTIVE	INJ_WAG
DU-4750	42501343380000	ACTIVE	INJ_WAG
DU-4751	42501343250000	ACTIVE	PROD_OIL
DU-4752	42501343260000	ACTIVE	PROD_OIL
DU-4753	42501343270000	ACTIVE	PROD_OIL
DU-4754	42501343370000	ACTIVE	INJ_WAG
DU-4755	42501343300000	ACTIVE	PROD_OIL
DU-4756	42501343310000	ACTIVE	PROD_OIL
DU-4757	42501343340000	ACTIVE	PROD_OIL
DU-4758	42501343470000	ACTIVE	PROD_OIL
DU-4759	42501343320000	ACTIVE	PROD_OIL
DU-4760	42501343330000	ACTIVE	PROD_OIL
DU-4761	42501355470000	ACTIVE	PROD_GAS
DU-4762GC	42501355960000	DRILL	PROD_GAS

DU-4763	42501362030000	ACTIVE	INJ_WAG
DU-4801	42501000790000	P & A	INJ_H2O
DU-4802	42501000830000	ACTIVE	INJ_WAG
DU-4803	42501011910000	ACTIVE	INJ_WAG
DU-4804	42501011950000	ACTIVE	INJ_WAG
DU-4805	42501003520000	ACTIVE	PROD_OIL
DU-4806	42501000800000	ACTIVE	INJ_WAG
DU-4807	42501000840000	ACTIVE	INJ_WAG
DU-4808	42501011920000	ACTIVE	INJ_WAG
DU-4809	42501011970000	ACTIVE	INJ_WAG
DU-4810	42501000810000	ACTIVE	PROD_OIL
DU-4811	42501000850000	ACTIVE	PROD_OIL
DU-4812	42501011930000	ACTIVE	PROD_OIL
DU-4813	42501011960000	ACTIVE	PROD_OIL
DU-4814	42501000820000	ACTIVE	PROD_OIL
DU-4815	42501000860000	ACTIVE	PROD_OIL
DU-4816	42501011940000	P & A	PROD_OIL
DU-4817	42501011980000	P & A	INJ_H2O
DU-4818	42501302340000	ACTIVE	PROD_OIL
DU-4819	42501302330000	ACTIVE	INJ_WAG
DU-4820	42501304420000	ACTIVE	INJ_WAG
DU-4821	42501304410000	ACTIVE	INJ_WAG
DU-4822	42501304700000	ACTIVE	PROD_OIL
DU-4823	42501304690000	P & A	PROD_OIL
DU-4824	42501304670000	ACTIVE	PROD_OIL
DU-4825	42501304640000	ACTIVE	PROD_OIL
DU-4826	42501304650000	ACTIVE	PROD_OIL
DU-4827	42501304660000	ACTIVE	INJ_WAG
DU-4828	42501304710000	ACTIVE	INJ_WAG
DU-4829	42501304680000	TA	INJ_H2O
DU-4830	42501305320000	ACTIVE	INJ_WAG
DU-4831	42501305300000	ACTIVE	INJ_WAG
DU-4832	42501305290000	ACTIVE	INJ_WAG
DU-4833	42501305080000	ACTIVE	INJ_WAG
DU-4834	42501305120000	ACTIVE	INJ_WAG
DU-4835	42501305280000	ACTIVE	PROD_OIL
DU-4836	42501305110000	ACTIVE	PROD_OIL
DU-4837	42501317060000	P & A	PROD_OIL
DU-4838	42501333930000	ACTIVE	PROD_OIL
DU-4839	42501335410000	ACTIVE	PROD_OIL
DU-4840	42501337950000	ACTIVE	PROD_OIL
DU-4841	42501341210000	ACTIVE	PROD_OIL
DU-4842	42501341200000	ACTIVE	PROD_OIL
DU-4843	42501341230000	ACTIVE	INJ_WAG
DU-4844	42501341590000	ACTIVE	PROD_OIL
DU-4845	42501341700000	ACTIVE	PROD_OIL
DU-4846	42501341660000	ACTIVE	PROD_OIL
DU-4847	42501341670000	ACTIVE	PROD_OIL
DU-4848	42501341580000	ACTIVE	PROD_OIL
DU-4849	42501341650000	ACTIVE	PROD_OIL
DU-4850	42501341640000	ACTIVE	PROD_OIL
DU-4851	42501341680000	ACTIVE	PROD_OIL
DU-4852	42501341450000	ACTIVE	PROD_OIL
DU-4853	42501341690000	ACTIVE	PROD_OIL

DU-4854	42501342540000	ACTIVE	PROD_OIL
DU-4855	42501342270000	ACTIVE	PROD_OIL
DU-4856	42501342570000	ACTIVE	PROD_OIL
DU-4857	42501342590000	ACTIVE	PROD_OIL
DU-4858	42501342580000	ACTIVE	PROD_OIL
DU-4859	42501342560000	ACTIVE	PROD_OIL
DU-4860	42501342380000	ACTIVE	PROD_OIL
DU-4861	42501351520000	ACTIVE	INJ_WAG
DU-4862	42501351530000	ACTIVE	INJ_WAG
DU-4863	42501351540000	ACTIVE	INJ_WAG
DU-4864	42501351550000	ACTIVE	INJ_WAG
DU-4865	42501354880000	ACTIVE	PROD_OIL
DU-4901	42501012760000	P & A	INJ_WAG
DU-4902	42501012800000	ACTIVE	INJ_WAG
DU-4903	42501007300000	TA	PROD_OIL
DU-4904	42501007360000	P & A	INJ_H2O
DU-4905	42501012810000	ACTIVE	PROD_OIL
DU-4906	42501012770000	ACTIVE	INJ_WAG
DU-4907	42501007310000	ACTIVE	INJ_H2O
DU-4908	42501012780000	ACTIVE	PROD_OIL
DU-4909	42501012820000	ACTIVE	INJ_H2O
DU-4910	42501007320000	P & A	INJ_H2O
DU-4911	42501012790000	ACTIVE	PROD_OIL
DU-4912	42501007280000	ACTIVE	PROD_OIL
DU-4913	42501007330000	P & A	INJ_H2O
DU-4914	42501308910000	ACTIVE	INJ_WAG
DU-4915	42501308700000	ACTIVE	PROD_OIL
DU-4916	42501308940000	ACTIVE	INJ_WAG
DU-4917	42501308760000	ACTIVE	INJ_WAG
DU-4918	42501317080000	ACTIVE	PROD_OIL
DU-4919	42501317040000	ACTIVE	INJ_WAG
DU-4920	42501326300000	ACTIVE	PROD_OIL
DU-4921	42501327790000	ACTIVE	PROD_OIL
DU-4922	42501327920000	ACTIVE	PROD_OIL
DU-4923	42501327880000	ACTIVE	INJ_WAG
DU-4924	42501329160000	ACTIVE	PROD_OIL
DU-4925	42501332930000	ACTIVE	PROD_OIL
DU-4926	42501332890000	TA	PROD_OIL
DU-4927	42501346270000	ACTIVE	INJ_WAG
DU-4928	42501352430000	ACTIVE	PROD_OIL
DU-4929	42501352440000	ACTIVE	PROD_OIL
DU-5101	42501333580000	ACTIVE	PROD_OIL
DU-5201	42501808550000	P & A	PROD_OIL
DU-5202	42501003370000	ACTIVE	INJ_H2O
DU-5203	42501015660000	P & A	PROD_OIL
DU-5204	42501029510000	ACTIVE	INJ_WAG
DU-5205	42501029500000	P & A	INJ_H2O
DU-5206	42501103450000	P & A	INJ_H2O
DU-5301	42501029490000	TA	INJ_H2O
DU-5302	42501025060000	P & A	PROD_OIL
DU-5303	42501025050000	P & A	PROD_OIL
DU-5304	42501025040000	P & A	PROD_OIL
DU-5305	42501025070000	TA	INJ_H2O
DU-5306	42501015650000	P & A	INJ_H2O

DU-5307	42501015670000	P & A	INJ_H2O
DU-5308	42501319140000	P & A	INJ_WAG
DU-5309	42501325950000	ACTIVE	PROD_OIL
DU-5310	42501326020000	ACTIVE	PROD_OIL
DU-5311	42501329260000	ACTIVE	PROD_OIL
DU-5312	42501329180000	ACTIVE	PROD_OIL
DU-5313	42501329720000	ACTIVE	PROD_OIL
DU-5315	42501330680000	TA	PROD_OIL
DU-5316	42501331690000	P & A	PROD_OIL
DU-5317	42501354600000	ACTIVE	PROD_OIL
DU-5401	42501015630000	ACTIVE	INJ_WAG
DU-5402	42501024930000	P & A	INJ_H2O
DU-5403	42501022290000	ACTIVE	INJ_WAG
DU-5404	42501015620000	ACTIVE	INJ_WAG
DU-5405	42501024910000	ACTIVE	INJ_WAG
DU-5406	42501022280000	TA	INJ_H2O
DU-5407	42501308870000	SHUT-IN	INJ_WAG
DU-5408	42501308630000	ACTIVE	INJ_WAG
DU-5409	42501308670000	ACTIVE	INJ_WAG
DU-5410	42501311330000	TA	PROD_OIL
DU-5411	42501314420000	ACTIVE	PROD_OIL
DU-5412	42501314400000	TA	PROD_OIL
DU-5413	42501314410000	ACTIVE	PROD_OIL
DU-5414	42501317110000	P & A	PROD_OIL
DU-5415	42501319050000	TA	PROD_OIL
DU-5416	42501328860000	ACTIVE	PROD_OIL
DU-5501	42501022270000	P & A	INJ_WAG
DU-5502	42501024900000	ACTIVE	INJ_WAG
DU-5503	42501024920000	ACTIVE	INJ_WAG
DU-5504	42501022300000	P & A	INJ_H2O
DU-5505	42501024940000	TA	INJ_H2O
DU-5506	42501024960000	P & A	INJ_H2O
DU-5507	42501308660000	P & A	PROD_OIL
DU-5508	42501308510000	ACTIVE	PROD_OIL
DU-5509	42501308650000	ACTIVE	INJ_WAG
DU-5510	42501311320000	ACTIVE	PROD_OIL
DU-5511	42501311310000	ACTIVE	PROD_OIL
DU-5512	42501315050000	ACTIVE	PROD_OIL
DU-5513	42501314500000	ACTIVE	PROD_GAS
DU-5514	42501315780000	ACTIVE	INJ_WAG
DU-5515	42501315870000	ACTIVE	PROD_OIL
DU-5516	42501316250000	ACTIVE	INJ_WAG
DU-5517	42501319500000	P & A	PROD_OIL
DU-5519	42501320400000	TA	PROD_OIL
DU-5520	42501337970000	ACTIVE	INJ_WAG
DU-5521	42501344780000	ACTIVE	PROD_GAS
DU-5522	42501346240000	ACTIVE	PROD_GAS
DU-5523GC	42501353870000	ACTIVE	PROD_GAS
DU-5601	42501012680000	ACTIVE	PROD_OIL
DU-5602	42501012670000	P & A	PROD_OIL
DU-5603	42501012710000	ACTIVE	INJ_WAG
DU-5604	42501029960000	ACTIVE	INJ_WAG
DU-5605	42501012700000	ACTIVE	PROD_OIL
DU-5606	42501012690000	ACTIVE	INJ_WAG

DU-5607	42501012660000	P & A	INJ_H2O
DU-5608	42501028860000	ACTIVE	PROD_OIL
DU-5609	42501004920000	ACTIVE	INJ_WAG
DU-5610	42501305310000	ACTIVE	INJ_WAG
DU-5611	42501308140000	ACTIVE	PROD_OIL
DU-5612	42501309190000	ACTIVE	PROD_OIL
DU-5613	42501314520000	P & A	PROD_OIL
DU-5614	42501314580000	ACTIVE	PROD_OIL
DU-5615	42501315800000	ACTIVE	PROD_OIL
DU-5616	42501315670000	ACTIVE	PROD_OIL
DU-5617	42501330950000	ACTIVE	PROD_OIL
DU-5618	42165344300000	ACTIVE	INJ_WAG
DU-5619	42501342950000	ACTIVE	PROD_OIL
DU-5620	42501347600000	ACTIVE	PROD_OIL
DU-5621	42501347590000	ACTIVE	PROD_OIL
DU-5622GC	42501354510000	ACTIVE	PROD_GAS
DU-5623	42501355970000	DRILL	PROD_GAS
DU-5701	42501029970000	P & A	INJ_GAS
DU-5702	42501004940000	ACTIVE	INJ_WAG
DU-5703	42501004950000	ACTIVE	INJ_WAG
DU-5704	42501004970000	ACTIVE	INJ_WAG
DU-5705	42501029980000	ACTIVE	INJ_WAG
DU-5706	42501004930000	ACTIVE	INJ_WAG
DU-5707	42501005010000	ACTIVE	INJ_WAG
DU-5708	42501005020000	ACTIVE	INJ_WAG
DU-5709	42501305100000	ACTIVE	INJ_WAG
DU-5710	42501305090000	ACTIVE	INJ_WAG
DU-5711	42501304990000	ACTIVE	INJ_WAG
DU-5712	42501305190000	ACTIVE	INJ_WAG
DU-5713S	42501026000000	TA	PROD_OIL
DU-5714	42501314590000	ACTIVE	PROD_OIL
DU-5715	42501315680000	ACTIVE	PROD_OIL
DU-5716	42501315690000	ACTIVE	PROD_OIL
DU-5717	42501320500000	ACTIVE	PROD_OIL
DU-5718	42501320340000	ACTIVE	PROD_OIL
DU-5719	42501320470000	ACTIVE	PROD_OIL
DU-5720	42501343280000	ACTIVE	PROD_OIL
DU-5721	42501343290000	ACTIVE	PROD_OIL
DU-5722	42501343140000	ACTIVE	PROD_OIL
DU-5723	42501343150000	ACTIVE	PROD_OIL
DU-5724	42501343160000	ACTIVE	PROD_OIL
DU-5725	42501349450000	ACTIVE	INJ_WAG
DU-5801	42501004960000	ACTIVE	INJ_WAG
DU-5802	42501004980000	ACTIVE	INJ_WAG
DU-5803	42501004990000	ACTIVE	INJ_WAG
DU-5804	42501018910000	ACTIVE	INJ_WAG
DU-5805	42501005030000	P & A	INJ_WAG
DU-5806	42501005000000	ACTIVE	INJ_WAG
DU-5807	42501019040000	ACTIVE	INJ_WAG
DU-5808	42501305130000	ACTIVE	INJ_WAG
DU-5809	42501305200000	ACTIVE	INJ_WAG
DU-5810	42501305210000	ACTIVE	INJ_WAG
DU-5811	42501308750000	ACTIVE	INJ_WAG
DU-5812	42501308740000	ACTIVE	INJ_WAG

DU-5813	42501316490000	TA	PROD_OIL
DU-5814	42501316530000	TA	PROD_OIL
DU-5815	42501320480000	ACTIVE	PROD_OIL
DU-5816	42501320520000	ACTIVE	PROD_OIL
DU-5817	42501321010000	ACTIVE	PROD_OIL
DU-5818	42501320420000	P & A	PROD_OIL
DU-5819	42501320530000	ACTIVE	PROD_OIL
DU-5820	42501320490000	ACTIVE	PROD_OIL
DU-5821	42501343170000	ACTIVE	PROD_OIL
DU-5822	42501343180000	ACTIVE	PROD_OIL
DU-5823	42501343350000	ACTIVE	PROD_OIL
DU-5824	42501343190000	ACTIVE	PROD_OIL
DU-5825	42501343200000	ACTIVE	PROD_OIL
DU-5826	42501343360000	ACTIVE	PROD_OIL
DU-5827	42501354090000	ACTIVE	PROD_OIL
DU-5828	42501362320000	ACTIVE	INJ_WAG
DU-5901	42501019170000	ACTIVE	INJ_WAG
DU-5902	42501019280000	ACTIVE	INJ_WAG
DU-5903	42501007340000	P & A	INJ_H2O
DU-5904	42501030250000	ACTIVE	PROD_OIL
DU-5905	42501317070000	ACTIVE	PROD_OIL
DU-5906	42501320460000	ACTIVE	PROD_OIL
DU-6301	42165014090000	P & A	INJ_H2O
DU-6302	42165014060000	ACTIVE	PROD_OIL
DU-6303	42165014030000	ACTIVE	PROD_OIL
DU-6304	42165014070000	P & A	INJ_H2O
DU-6305	42165014020000	P & A	INJ_H2O
DU-6306	42165014040000	P & A	PROD_OIL
DU-6307	42165014110000	P & A	INJ_H2O
DU-6308	42165014080000	P & A	PROD_OIL
DU-6309	42165318700000	ACTIVE	PROD_OIL
DU-6310	42165367650000	ACTIVE	PROD_OIL
DU-6401	42165005420000	ACTIVE	PROD_OIL
DU-6402	42165005240000	ACTIVE	PROD_OIL
DU-6403	42165005450000	ACTIVE	PROD_OIL
DU-6404	42165005440000	ACTIVE	INJ_WAG
DU-6405	42165013870000	ACTIVE	PROD_OIL
DU-6406	42165013850000	ACTIVE	PROD_OIL
DU-6407	42165018770000	P & A	PROD_OIL
DU-6408	42165004910000	SHUT-IN	PROD_GAS
DU-6409	42165005410000	ACTIVE	PROD_OIL
DU-6410	42165005430000	ACTIVE	PROD_OIL
DU-6411	42165005360000	TA	PROD_OIL
DU-6412	42165005280000	ACTIVE	INJ_WAG
DU-6413	42165005340000	ACTIVE	INJ_WAG
DU-6414	42165005400000	ACTIVE	INJ_WAG
DU-6415	42165005330000	ACTIVE	PROD_OIL
DU-6416	42165005380000	ACTIVE	PROD_OIL
DU-6417	42165005390000	ACTIVE	INJ_WAG
DU-6418	42165005260000	ACTIVE	INJ_WAG
DU-6419	42165303820000	ACTIVE	PROD_OIL
DU-6420	42165303390000	ACTIVE	PROD_OIL
DU-6421	42165303380000	ACTIVE	INJ_WAG
DU-6422	42165303430000	ACTIVE	INJ_WAG

DU-6423	42165302990000	ACTIVE	INJ_WAG
DU-6424	42165303420000	ACTIVE	PROD_OIL
DU-6425	42165303410000	ACTIVE	INJ_WAG
DU-6426	42165303440000	ACTIVE	PROD_OIL
DU-6427	42165303060000	ACTIVE	PROD_OIL
DU-6428	42165303700000	ACTIVE	PROD_OIL
DU-6429	42165303400000	ACTIVE	PROD_OIL
DU-6430	42165303690000	ACTIVE	INJ_WAG
DU-6431	42165305430000	ACTIVE	PROD_OIL
DU-6432	42165315510000	ACTIVE	PROD_OIL
DU-6433	42165316150000	SHUT-IN	INJ_WAG
DU-6434	42165318690000	SHUT-IN	INJ_WAG
DU-6435	42165318780000	TA	PROD_OIL
DU-6436	42165320660000	ACTIVE	PROD_OIL
DU-6437	42165332400000	ACTIVE	PROD_OIL
DU-6438	42165333410000	ACTIVE	INJ_H2O
DU-6439	42165355920000	ACTIVE	PROD_OIL
DU-6440	42165355390000	ACTIVE	PROD_GAS
DU-6441	42165355930000	ACTIVE	PROD_OIL
DU-6442	42165355940000	ACTIVE	PROD_OIL
DU-6443	42165355950000	ACTIVE	PROD_OIL
DU-6444	42165355960000	ACTIVE	PROD_OIL
DU-6445	42165355970000	ACTIVE	PROD_OIL
DU-6446	42165355980000	ACTIVE	PROD_OIL
DU-6447	42165356520000	ACTIVE	PROD_GAS
DU-6448	42165357260000	TA	PROD_GAS
DU-6449GC	42165363500000	ACTIVE	PROD_GAS
DU-6450	42165363750000	ACTIVE	PROD_OIL
DU-6451	42165363760000	ACTIVE	PROD_OIL
DU-6452	42165363770000	ACTIVE	PROD_OIL
DU-6453GC	42165005290101	ACTIVE	PROD_GAS
DU-6454	42165366690000	SHUT-IN	PROD_GAS
DU-6501	42165007760000	ACTIVE	PROD_OIL
DU-6502	42165007940000	ACTIVE	PROD_OIL
DU-6503	42165007770000	ACTIVE	PROD_OIL
DU-6504	42165007730000	P & A	PROD_OIL
DU-6505	42165007750000	ACTIVE	PROD_OIL
DU-6506	42165007740000	ACTIVE	PROD_OIL
DU-6507	42165007790000	ACTIVE	PROD_OIL
DU-6508	42165813430000	ACTIVE	PROD_OIL
DU-6509	42165015330000	ACTIVE	INJ_WAG
DU-6510	42165015320000	ACTIVE	INJ_WAG
DU-6511	42165007890000	ACTIVE	INJ_WAG
DU-6512	42165007930000	ACTIVE	INJ_WAG
DU-6513	42165004740000	ACTIVE	PROD_OIL
DU-6514	42165004730000	ACTIVE	PROD_OIL
DU-6515	42165025140000	ACTIVE	PROD_OIL
DU-6516	42165025150000	ACTIVE	PROD_OIL
DU-6517	42165007950000	ACTIVE	INJ_WAG
DU-6518	42165007700000	TA	INJ_WAG
DU-6519	42165007970000	INACTIVE	INJ_WAG
DU-6520	42165007960000	ACTIVE	INJ_WAG
DU-6521	42165301980000	P & A	PROD_OIL
DU-6522	42165301990000	ACTIVE	INJ_WAG

DU-6523	42165302000000	ACTIVE	INJ_WAG
DU-6524	42165301940000	ACTIVE	PROD_OIL
DU-6525	42165302110000	P & A	INJ_WAG
DU-6526	42165302070000	ACTIVE	PROD_OIL
DU-6527	42165302090000	ACTIVE	PROD_OIL
DU-6528	42165302080000	ACTIVE	PROD_OIL
DU-6529	42165302980000	ACTIVE	PROD_OIL
DU-6530	42165303070000	ACTIVE	INJ_WAG
DU-6531	42165302820000	ACTIVE	INJ_WAG
DU-6532	42165302970000	ACTIVE	INJ_WAG
DU-6533	42165302810000	ACTIVE	INJ_WAG
DU-6534	42165302960000	ACTIVE	PROD_OIL
DU-6535	42165303660000	ACTIVE	INJ_WAG
DU-6536	42165315730000	ACTIVE	PROD_OIL
DU-6537	42165315740000	ACTIVE	PROD_GAS
DU-6538	42165320780000	ACTIVE	INJ_WAG
DU-6539	42165345960000	ACTIVE	PROD_OIL
DU-6540	42165007900000	ACTIVE	PROD_GAS
DU-6541	42165354760000	ACTIVE	PROD_OIL
DU-6542	42165353960000	ACTIVE	INJ_WAG
DU-6543	42165353950000	ACTIVE	PROD_OIL
DU-6544	42165354750000	ACTIVE	PROD_OIL
DU-6545	42165354740000	ACTIVE	PROD_OIL
DU-6546	42165353400000	ACTIVE	PROD_OIL
DU-6547	42165353410000	ACTIVE	PROD_OIL
DU-6548	42165353420000	ACTIVE	PROD_OIL
DU-6549	42165353760000	ACTIVE	PROD_GAS
DU-6550	42165354730000	ACTIVE	PROD_OIL
DU-6551	42165355480000	ACTIVE	PROD_GAS
DU-6552	42165356050000	ACTIVE	PROD_OIL
DU-6553	42165356040000	ACTIVE	PROD_OIL
DU-6554	42165355680000	ACTIVE	PROD_OIL
DU-6555	42165355690000	ACTIVE	PROD_OIL
DU-6556	42165356030000	ACTIVE	PROD_OIL
DU-6557	42165355700000	ACTIVE	PROD_OIL
DU-6558	42165355710000	ACTIVE	PROD_OIL
DU-6559	42165355720000	ACTIVE	PROD_OIL
DU-6560	42165356010000	ACTIVE	INJ_WAG
DU-6561	42165355610000	ACTIVE	INJ_WAG
DU-6562	42165356020000	ACTIVE	PROD_OIL
DU-6563	42165007850001	ACTIVE	PROD_OIL
DU-6564	42165357060000	ACTIVE	PROD_GAS
DU-6566	42165358080000	ACTIVE	PROD_OIL
DU-6567GC	42165363020000	TA	PROD_GAS
DU-6568GC	42165364530000	ACTIVE	PROD_GAS
DU-6569GC	42165363030000	ACTIVE	PROD_GAS
DU-6570GC	42165366460000	ACTIVE	PROD_GAS
DU-6571	42165367860000	ACTIVE	PROD_GAS
DU-6572	42165367870000	TA	PROD_GAS
DU-6573	42165015360001	ACTIVE	PROD_GAS
DU-6574	42165375940000	ACTIVE	INJ_WAG
DU-6575	42165376830000	ACTIVE	PROD_OIL
DU-6576	42165376840000	ACTIVE	PROD_OIL
DU-6601	42165005710000	ACTIVE	PROD_OIL

DU-6602	42165005790000	ACTIVE	PROD_OIL
DU-6603	42165005680000	ACTIVE	PROD_OIL
DU-6604	42165008540000	ACTIVE	PROD_OIL
DU-6605	42165007010000	ACTIVE	PROD_OIL
DU-6606	42165005730000	ACTIVE	PROD_OIL
DU-6607	42165005750000	ACTIVE	PROD_OIL
DU-6608	42165005780000	ACTIVE	PROD_OIL
DU-6609	42165007170000	ACTIVE	PROD_OIL
DU-6610	42165007230000	ACTIVE	PROD_OIL
DU-6611	42165005770000	ACTIVE	INJ_WAG
DU-6612	42165005740000	ACTIVE	INJ_WAG
DU-6613	42165007250000	ACTIVE	INJ_WAG
DU-6614	42165007290000	ACTIVE	INJ_WAG
DU-6615	42165005720000	ACTIVE	INJ_WAG
DU-6616	42165005760000	ACTIVE	INJ_WAG
DU-6617	42165007190000	ACTIVE	INJ_WAG
DU-6618	42165007210000	ACTIVE	INJ_WAG
DU-6619	42165301360000	ACTIVE	PROD_OIL
DU-6620	42165301600000	ACTIVE	INJ_WAG
DU-6621	42165301640000	ACTIVE	INJ_WAG
DU-6622	42165301500000	ACTIVE	INJ_WAG
DU-6623	42165301510000	ACTIVE	INJ_WAG
DU-6624	42165301520000	P & A	INJ_WAG
DU-6625	42165301370000	ACTIVE	INJ_WAG
DU-6626	42165301610000	ACTIVE	PROD_OIL
DU-6627	42165301910000	ACTIVE	INJ_WAG
DU-6628	42165301870000	ACTIVE	INJ_WAG
DU-6629	42165301850000	ACTIVE	PROD_OIL
DU-6630	42165301840000	P & A	PROD_OIL
DU-6631	42165301930000	P & A	PROD_OIL
DU-6632	42165301890000	ACTIVE	PROD_OIL
DU-6633	42165301920000	ACTIVE	PROD_OIL
DU-6634	42165301900000	ACTIVE	PROD_OIL
DU-6635	42165301860000	ACTIVE	INJ_WAG
DU-6636	42165301880000	ACTIVE	INJ_WAG
DU-6637	42165316130000	ACTIVE	PROD_OIL
DU-6638	42165345160000	ACTIVE	PROD_OIL
DU-6639	42165352270000	ACTIVE	PROD_OIL
DU-6640	42165353970000	ACTIVE	PROD_OIL
DU-6641	42165354410000	ACTIVE	PROD_OIL
DU-6642	42165354420000	ACTIVE	PROD_OIL
DU-6643	42165354430000	ACTIVE	PROD_OIL
DU-6644	42165354440000	ACTIVE	PROD_OIL
DU-6645	42165355620000	ACTIVE	PROD_OIL
DU-6646	42165355630000	ACTIVE	PROD_OIL
DU-6647	42165355640000	ACTIVE	PROD_OIL
DU-6648	42165355650000	ACTIVE	PROD_OIL
DU-6649	42165356800000	ACTIVE	PROD_OIL
DU-6650	42165356870000	ACTIVE	PROD_OIL
DU-6651	42165357370000	ACTIVE	PROD_OIL
DU-6652	42165357050000	ACTIVE	PROD_OIL
DU-6654	42165357250000	ACTIVE	PROD_OIL
DU-6655	42165357240000	ACTIVE	PROD_OIL
DU-6656	42165358110000	TA	PROD_GAS

DU-6657	42165367150000	ACTIVE	INJ_WAG
DU-6701	42165008600000	ACTIVE	PROD_OIL
DU-6702	42165007070000	P & A	PROD_OIL
DU-6703	42165007090000	P & A	PROD_OIL
DU-6704	42165007100000	ACTIVE	PROD_OIL
DU-6705	42165007020000	ACTIVE	PROD_OIL
DU-6706	42165007030000	P & A	PROD_OIL
DU-6707	42165007040000	ACTIVE	PROD_OIL
DU-6708	42165007110000	P & A	INJ_H2O
DU-6709	42165007080000	ACTIVE	INJ_WAG
DU-6710	42165007050000	P & A	PROD_OIL
DU-6711	42165007060000	TA	INJ_GAS
DU-6712	42165007120000	ACTIVE	INJ_WAG
DU-6713	42165008560000	ACTIVE	INJ_WAG
DU-6714	42165008580000	TA	PROD_OIL
DU-6715	42165008590000	ACTIVE	INJ_WAG
DU-6716	42165007140000	ACTIVE	INJ_WAG
DU-6717	42165301660000	ACTIVE	PROD_OIL
DU-6718	42165301690000	ACTIVE	PROD_OIL
DU-6719	42165301710000	ACTIVE	INJ_WAG
DU-6720	42165301680000	ACTIVE	INJ_WAG
DU-6721	42165301620000	ACTIVE	INJ_WAG
DU-6722	42165301630000	ACTIVE	INJ_WAG
DU-6723	42165302030000	ACTIVE	INJ_WAG
DU-6724	42165302040000	ACTIVE	INJ_WAG
DU-6725	42165302100000	P & A	PROD_OIL
DU-6726	42165302050000	P & A	PROD_OIL
DU-6727	42165301950000	ACTIVE	INJ_WAG
DU-6728	42165301960000	P & A	PROD_OIL
DU-6729	42165302060000	ACTIVE	PROD_OIL
DU-6730	42165304250000	ACTIVE	PROD_OIL
DU-6731	42165315500000	P & A	PROD_OIL
DU-6732	42165315710000	ACTIVE	PROD_OIL
DU-6733	42165318720000	ACTIVE	PROD_OIL
DU-6734	42165318740000	ACTIVE	PROD_OIL
DU-6735	42165318790000	ACTIVE	PROD_OIL
DU-6736	42165318730000	TA	PROD_OIL
DU-6737	42165318680000	ACTIVE	INJ_WAG
DU-6738	42165333270000	ACTIVE	PROD_OIL
DU-6739	42165333500000	ACTIVE	PROD_OIL
DU-6740	42165336120000	TA	INJ_WAG
DU-6744	42165334540000	ACTIVE	INJ_WAG
DU-6748	42165334610000	TA	INJ_GAS
DU-6750	42165334580000	ACTIVE	INJ_WAG
DU-6751	42165334590000	ACTIVE	INJ_WAG
DU-6755	42165334570000	TA	PROD_OIL
DU-6756T	42165334600000	TA	PROD_OIL
DU-6757	42165334560000	P & A	PROD_OIL
DU-6758	42165334550000	TA	PROD_OIL
DU-6759	42165347810000	ACTIVE	PROD_OIL
DU-6760	42165354450000	ACTIVE	PROD_OIL
DU-6761	42165354460000	ACTIVE	PROD_OIL
DU-6762	42165354500000	ACTIVE	PROD_OIL
DU-6763	42165354490000	ACTIVE	PROD_OIL

DU-6764	42165354480000	ACTIVE	PROD_OIL
DU-6765	42165356880000	ACTIVE	PROD_OIL
DU-6766	42165356810000	ACTIVE	PROD_OIL
DU-6767	42165356830000	ACTIVE	PROD_OIL
DU-6768	42165356790000	ACTIVE	PROD_OIL
DU-6769	42165356820000	ACTIVE	PROD_OIL
DU-6770	42165357230000	ACTIVE	PROD_OIL
DU-6771	42165357220000	ACTIVE	PROD_OIL
DU-6772	42165357310000	ACTIVE	PROD_OIL
DU-6774	42165357300000	ACTIVE	PROD_OIL
DU-6775	42165357040000	ACTIVE	PROD_OIL
DU-6776	42165357290000	ACTIVE	PROD_OIL
DU-6777	42165358310000	ACTIVE	INJ_WAG
DU-6778	42165358320000	ACTIVE	INJ_WAG
DU-6779	42165360930000	ACTIVE	PROD_OIL
DU-6780	42165361670000	ACTIVE	PROD_OIL
DU-6781	42165378160000	ACTIVE	PROD_OIL
DU-6782	42165378130000	ACTIVE	PROD_OIL
DU-6801	42165008390000	P & A	PROD_OIL
DU-6802	42165008380000	P & A	INJ_H2O
DU-6803	42165020380000	ACTIVE	PROD_OIL
DU-6804	42165020430000	ACTIVE	INJ_H2O
DU-6805	42165008420000	ACTIVE	PROD_OIL
DU-6806	42165008400000	ACTIVE	PROD_OIL
DU-6807	42165018920000	P & A	PROD_OIL
DU-6808	42165018910000	P & A	INJ_H2O
DU-6809	42165008410000	ACTIVE	INJ_WAG
DU-6810	42165008430000	ACTIVE	PROD_OIL
DU-6811	42165004310000	P & A	INJ_WAG
DU-6812	42165014010000	TA	INJ_GAS
DU-6813	42165011460000	ACTIVE	INJ_WAG
DU-6814	42165011470000	P & A	INJ_H2O
DU-6815	42165019990000	P & A	INJ_H2O
DU-6816	42165301740000	P & A	PROD_OIL
DU-6817	42165301790000	ACTIVE	INJ_WAG
DU-6818	42165301760000	P & A	INJ_WAG
DU-6819	42165301800000	ACTIVE	PROD_OIL
DU-6820	42165303760000	ACTIVE	PROD_OIL
DU-6821	42165315600000	ACTIVE	PROD_OIL
DU-6822	42165315480000	ACTIVE	PROD_OIL
DU-6823	42165320790000	ACTIVE	PROD_OIL
DU-6824	42165320670000	ACTIVE	PROD_OIL
DU-6825	42165331380000	ACTIVE	INJ_WAG
DU-6826	42165331360000	ACTIVE	INJ_WAG
DU-6827	42165332500000	ACTIVE	PROD_OIL
DU-6828	42165332390000	ACTIVE	PROD_OIL
DU-6829	42165333910000	ACTIVE	PROD_OIL
DU-6830	42165333450000	ACTIVE	PROD_OIL
DU-6831	42165339540000	ACTIVE	PROD_OIL
DU-6832	42165340850000	ACTIVE	PROD_OIL
DU-6833	42165348970000	ACTIVE	PROD_OIL
DU-6834	42165354470000	ACTIVE	PROD_OIL
DU-6835	42165354510000	ACTIVE	PROD_OIL
DU-6836	42165354520000	ACTIVE	PROD_OIL

DU-6837	42165356780000	ACTIVE	INJ_WAG
DU-6838	42165357390000	ACTIVE	PROD_OIL
DU-6839	42165378120000	ACTIVE	PROD_OIL
DU-7301	42165021460000	P & A	INJ_H2O
DU-7302	42165021440000	P & A	INJ_H2O
DU-7303	42165006510000	P & A	INJ_H2O
DU-7304	42165006520000	P & A	INJ_H2O
DU-7401	42165021550000	P & A	PROD_OIL
DU-7402	42165021530000	P & A	PROD_OIL
DU-7403	42165018790000	P & A	PROD_OIL
DU-7404	42165013890000	ACTIVE	PROD_OIL
DU-7405	42165018760000	ACTIVE	PROD_OIL
DU-7406	42165021580000	ACTIVE	PROD_OIL
DU-7407	42165013910000	ACTIVE	INJ_WAG
DU-7408	42165013880000	ACTIVE	INJ_WAG
DU-7409	42165021540000	ACTIVE	PROD_OIL
DU-7410	42165021450000	P & A	PROD_OIL
DU-7411	42165018780000	TA	PROD_OIL
DU-7412	42165013900000	ACTIVE	PROD_OIL
DU-7413	42165018750000	P & A	PROD_OIL
DU-7414	42165008370000	P & A	INJ_H2O
DU-7415	42165008290000	TA	PROD_OIL
DU-7416	42165008310000	ACTIVE	INJ_WAG
DU-7417	42165008250000	ACTIVE	INJ_WAG
DU-7418	42165008360000	P & A	PROD_OIL
DU-7419	42165008350000	TA	INJ_H2O
DU-7420	42165008330000	ACTIVE	PROD_OIL
DU-7421	42165008270000	ACTIVE	INJ_WAG
DU-7422	42165303460000	ACTIVE	INJ_WAG
DU-7423	42165303270000	P & A	INJ_WAG
DU-7424	42165302740000	INACTIVE	PROD_OIL
DU-7425	42165303600000	ACTIVE	PROD_GAS
DU-7426	42165303470000	ACTIVE	INJ_WAG
DU-7427	42165304230000	TA	PROD_OIL
DU-7428	42165305460000	ACTIVE	PROD_OIL
DU-7429	42165313680000	ACTIVE	INJ_WAG
DU-7430	42165315700000	ACTIVE	PROD_OIL
DU-7431	42165318710000	ACTIVE	PROD_OIL
DU-7432	42165318770000	INACTIVE	INJ_H2O
DU-7433	42165320600000	ACTIVE	PROD_OIL
DU-7434	42165331350000	ACTIVE	PROD_OIL
DU-7435	42165332890000	ACTIVE	PROD_OIL
DU-7436	42165333530000	ACTIVE	INJ_WAG
DU-7437	42165335240000	ACTIVE	PROD_OIL
DU-7438	42165353750000	ACTIVE	PROD_GAS
DU-7440	42165354070000	ACTIVE	PROD_OIL
DU-7441	42165354090000	ACTIVE	PROD_OIL
DU-7442	42165354080000	ACTIVE	PROD_OIL
DU-7443	42165354060000	ACTIVE	PROD_OIL
DU-7444	42165357140000	ACTIVE	PROD_GAS
DU-7445	42165376850000	ACTIVE	PROD_OIL
DU-7446	42165376880000	ACTIVE	PROD_OIL
DU-7448	42165380530000	DRILL	PROD_OIL
DU-7449	42165380540000	ACTIVE	PROD_OIL

DU-7450	42165380550000	ACTIVE	PROD_OIL
DU-7501	42165007540000	ACTIVE	PROD_OIL
DU-7502	42165007530000	ACTIVE	PROD_OIL
DU-7503	42165007590000	ACTIVE	PROD_OIL
DU-7504	42165007570000	ACTIVE	PROD_OIL
DU-7505	42165007520000	ACTIVE	PROD_OIL
DU-7506	42165007550000	ACTIVE	PROD_OIL
DU-7507	42165007580000	ACTIVE	PROD_OIL
DU-7508	42165007560000	ACTIVE	PROD_OIL
DU-7509	42165007600000	ACTIVE	INJ_WAG
DU-7510	42165005540000	ACTIVE	INJ_WAG
DU-7511	42165005470000	ACTIVE	INJ_WAG
DU-7512	42165005460000	ACTIVE	INJ_WAG
DU-7513	42165005530000	ACTIVE	INJ_WAG
DU-7514	42165005550000	ACTIVE	INJ_WAG
DU-7515	42165005480000	ACTIVE	INJ_WAG
DU-7516	42165001510000	ACTIVE	INJ_WAG
DU-7517	42165301530000	ACTIVE	PROD_OIL
DU-7518	42165301540000	ACTIVE	INJ_WAG
DU-7519	42165301550000	ACTIVE	INJ_WAG
DU-7520	42165301650000	ACTIVE	PROD_OIL
DU-7521	42165301670000	INACTIVE	INJ_WAG
DU-7522	42165302260000	ACTIVE	PROD_OIL
DU-7523	42165302280000	ACTIVE	PROD_OIL
DU-7524	42165303640000	P & A	PROD_OIL
DU-7525	42165303200000	ACTIVE	INJ_WAG
DU-7526	42165303800000	ACTIVE	INJ_WAG
DU-7527	42165303190000	ACTIVE	INJ_WAG
DU-7528	42165303680000	ACTIVE	INJ_WAG
DU-7529	42165303670000	ACTIVE	PROD_OIL
DU-7530	42165303180000	ACTIVE	INJ_WAG
DU-7531	42165303170000	ACTIVE	PROD_OIL
DU-7532	42165303160000	ACTIVE	PROD_OIL
DU-7533	42165303290000	ACTIVE	PROD_OIL
DU-7534	42165303280000	ACTIVE	PROD_OIL
DU-7535	42165302750000	ACTIVE	INJ_WAG
DU-7536	42165303260000	ACTIVE	INJ_WAG
DU-7537	42165306570000	ACTIVE	PROD_OIL
DU-7538	42165315530000	P & A	PROD_OIL
DU-7539	42165315520000	ACTIVE	PROD_OIL
DU-7540	42165319110000	TA	PROD_GAS
DU-7541	42165005490000	ACTIVE	PROD_OIL
DU-7542	42165348340000	TA	PROD_OIL
DU-7543	42165352320000	ACTIVE	PROD_OIL
DU-7544	42165352330000	ACTIVE	PROD_OIL
DU-7545	42165352340000	ACTIVE	PROD_OIL
DU-7546	42165352350000	ACTIVE	PROD_OIL
DU-7547	42165352360000	ACTIVE	PROD_OIL
DU-7548	42165352370000	ACTIVE	PROD_OIL
DU-7549	42165354050000	ACTIVE	PROD_OIL
DU-7550	42165354040000	ACTIVE	PROD_OIL
DU-7551	42165353430000	ACTIVE	PROD_OIL
DU-7552	42165353440000	ACTIVE	PROD_OIL
DU-7553	42165354030000	ACTIVE	PROD_OIL

DU-7554	42165354020000	ACTIVE	PROD_OIL
DU-7555	42165353450000	ACTIVE	PROD_OIL
DU-7556	42165353460000	ACTIVE	PROD_OIL
DU-7558	42165354010000	ACTIVE	PROD_OIL
DU-7562	42165353470000	ACTIVE	PROD_OIL
DU-7563	42165353480000	ACTIVE	PROD_OIL
DU-7564	42165353740000	ACTIVE	PROD_GAS
DU-7565	42165353730000	ACTIVE	PROD_GAS
DU-7566	42165353720000	ACTIVE	PROD_GAS
DU-7567	42165353710000	ACTIVE	PROD_GAS
DU-7568	42165357150000	ACTIVE	PROD_GAS
DU-7569	42165360090000	ACTIVE	PROD_OIL
DU-7571GC	42165363040000	ACTIVE	PROD_GAS
DU-7572GC	42165005520101	ACTIVE	PROD_GAS
DU-7573GC	42165363050000	ACTIVE	PROD_GAS
DU-7574	42165375990000	ACTIVE	INJ_WAG
DU-7575	42165376000000	ACTIVE	INJ_WAG
DU-7576	42165375970000	ACTIVE	INJ_WAG
DU-7577	42165375950000	ACTIVE	INJ_WAG
DU-7578	42165375960000	ACTIVE	INJ_WAG
DU-7601	42165007360000	ACTIVE	PROD_OIL
DU-7602	42165007270000	ACTIVE	PROD_OIL
DU-7603	42165008510000	ACTIVE	PROD_OIL
DU-7604	42165008460000	ACTIVE	PROD_OIL
DU-7605	42165007340000	ACTIVE	PROD_OIL
DU-7606	42165007320000	ACTIVE	PROD_OIL
DU-7607	42165008470000	ACTIVE	PROD_OIL
DU-7608	42165008520000	ACTIVE	PROD_OIL
DU-7609	42165007300000	ACTIVE	INJ_WAG
DU-7610	42165007380000	ACTIVE	INJ_WAG
DU-7611	42165008490000	P & A	INJ_GAS
DU-7612	42165008480000	ACTIVE	INJ_WAG
DU-7613	42165008450000	ACTIVE	PROD_OIL
DU-7614	42165008440000	P & A	INJ_WAG
DU-7615	42165007400000	ACTIVE	PROD_OIL
DU-7616	42165008500000	TA	PROD_OIL
DU-7617	42165301770000	ACTIVE	PROD_OIL
DU-7618	42165301810000	P & A	PROD_OIL
DU-7619	42165301820000	ACTIVE	INJ_WAG
DU-7620	42165301750000	ACTIVE	INJ_WAG
DU-7621	42165301730000	ACTIVE	INJ_WAG
DU-7622	42165301780000	ACTIVE	INJ_WAG
DU-7623	42165302010000	ACTIVE	INJ_WAG
DU-7624	42165302020000	ACTIVE	PROD_OIL
DU-7625	42165301970000	ACTIVE	INJ_WAG
DU-7626	42165302270000	ACTIVE	PROD_OIL
DU-7627	42165303550000	ACTIVE	INJ_WAG
DU-7628	42165303560000	ACTIVE	PROD_OIL
DU-7629	42165303540000	ACTIVE	INJ_WAG
DU-7630	42165303740000	ACTIVE	PROD_OIL
DU-7631	42165303720000	ACTIVE	PROD_OIL
DU-7632	42165303730000	ACTIVE	PROD_OIL
DU-7633	42165303520000	ACTIVE	INJ_WAG
DU-7634	42165316140000	ACTIVE	PROD_OIL

DU-7635	42165315470000	TA	PROD_OIL
DU-7636	42165007280000	P & A	PROD_OIL
DU-7637	42165353490000	ACTIVE	PROD_OIL
DU-7638	42165353500000	ACTIVE	PROD_OIL
DU-7639	42165353510000	ACTIVE	PROD_OIL
DU-7640	42165354000000	ACTIVE	PROD_OIL
DU-7641	42165357030000	ACTIVE	PROD_OIL
DU-7642	42165357020000	ACTIVE	PROD_OIL
DU-7643	42165357010000	ACTIVE	PROD_OIL
DU-7644	42165357130000	ACTIVE	PROD_OIL
DU-7645	42165357120000	ACTIVE	PROD_OIL
DU-7646	42165357110000	ACTIVE	PROD_OIL
DU-7647	42165357100000	ACTIVE	PROD_OIL
DU-7648	42165356840000	ACTIVE	PROD_GAS
DU-7649	42165358810000	ACTIVE	PROD_OIL
DU-7650	42165358800000	ACTIVE	PROD_OIL
DU-7651	42165358790000	ACTIVE	INJ_WAG
DU-7652	42165364710000	ACTIVE	PROD_OIL
DU-7653	42165367600000	ACTIVE	INJ_WAG
DU-7701	42165008620000	TA	PROD_OIL
DU-7702	42165006920000	ACTIVE	PROD_OIL
DU-7703	42165008640000	ACTIVE	PROD_OIL
DU-7704	42165008650000	ACTIVE	PROD_OIL
DU-7705	42165006960000	ACTIVE	PROD_OIL
DU-7706	42165006980000	TA	INJ_H2O
DU-7707	42165008660000	TA	INJ_H2O
DU-7708	42165008670000	TA	INJ_H2O
DU-7709	42165008630000	P & A	INJ_H2O
DU-7710	42165006970000	P & A	INJ_H2O
DU-7711	42165006990000	TA	INJ_H2O
DU-7712	42165008680000	P & A	INJ_H2O
DU-7713	42165007000000	P & A	INJ_H2O
DU-7714	42165304260000	ACTIVE	PROD_OIL
DU-7715	42165315630000	ACTIVE	INJ_H2O
DU-7716	42165318800000	ACTIVE	PROD_OIL
DU-7717	42165318760000	TA	PROD_OIL
DU-7718	42165320800000	ACTIVE	INJ_WAG
DU-7719	42165332380000	ACTIVE	PROD_OIL
DU-7720	42165346730000	TA	PROD_OIL
DU-7721	42165357070000	ACTIVE	PROD_OIL
DU-7801	42165018940000	ACTIVE	INJ_H2O
DU-7802	42165018950000	P & A	INJ_H2O
DU-7803	42165018960000	ACTIVE	INJ_H2O
DU-7804	42165333490000	ACTIVE	PROD_OIL
DU-7805	42165333480000	ACTIVE	PROD_OIL
DU-8301	42501005800000	P & A	INJ_H2O
DU-8302	42165001870000	P & A	INJ_H2O
DU-8303	42165014120000	P & A	INJ_H2O
DU-8401	42165004330000	TA	INJ_H2O
DU-8402	42165004340000	P & A	PROD_OIL
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DU-8404	42165005210000	P & A	PROD_OIL
DU-8405	42165004320000	TA	INJ_H2O
DU-8406	42165004270000	P & A	PROD_OIL

DU-8407	42165005230000	ACTIVE	PROD_OIL
DU-8408	42165021500000	P & A	PROD_OIL
DU-8409	42165005120000	P & A	INJ_H2O
DU-8410	42165005100000	INACTIVE	INJ_WAG
DU-8411	42165005190000	TA	INJ_GAS
DU-8412	42165005160000	TA	INJ_H2O
DU-8413	42165005140000	P & A	PROD_OIL
DU-8414	42165005200000	TA	PROD_OIL
DU-8415	42165303480000	P & A	INJ_GAS
DU-8416	42165304350000	P & A	PROD_OIL
DU-8417	42165304360000	TA	INJ_GAS
DU-8418	42165304330000	P & A	PROD_OIL
DU-8419	42165304340000	P & A	INJ_GAS
DU-8420	42165304370000	ACTIVE	INJ_H2O
DU-8421	42165305420000	ACTIVE	PROD_OIL
DU-8422	42165311970000	ACTIVE	PROD_OIL
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DU-8424	42165316070000	TA	PROD_OIL
DU-8425	42165320650000	ACTIVE	PROD_OIL
DU-8426	42165320640000	ACTIVE	INJ_WAG
DU-8427	42165331340000	ACTIVE	PROD_OIL
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DU-8429	42165332900000	TA	PROD_OIL
DU-8431	42165333520000	TA	PROD_OIL
DU-8432	42165333460000	ACTIVE	PROD_OIL
DU-8433	42165357090000	TA	PROD_GAS
DU-8434	42165380560000	ACTIVE	PROD_OIL
DU-8435	42165380570000	DRILL	PROD_OIL
DU-8436	42165380620000	DRILL	PROD_OIL
DU-8439	42165380650000	ACTIVE	PROD_OIL
DU-8440	42165380630000	ACTIVE	PROD_OIL
DU-8441	42165380640000	DRILL	PROD_OIL
DU-8501	42165008180000	P & A	PROD_OIL
DU-8502	42165008240000	ACTIVE	PROD_OIL
DU-8503	42165008170000	ACTIVE	PROD_OIL
DU-8504	42165008200000	ACTIVE	PROD_OIL
DU-8505	42165008230000	TA	PROD_OIL
DU-8506	42165008050000	TA	INJ_H2O
DU-8507	42165008060000	ACTIVE	PROD_OIL
DU-8508	42165008080000	ACTIVE	PROD_OIL
DU-8509	42165033040000	P & A	PROD_OIL
DU-8510	42165008070000	ACTIVE	INJ_WAG
DU-8511	42165008100000	ACTIVE	INJ_WAG
DU-8512	42165008090000	TA	INJ_H2O
DU-8513	42165008210000	ACTIVE	PROD_OIL
DU-8514	42165008120000	P & A	PROD_OIL
DU-8515	42165008150000	ACTIVE	INJ_H2O
DU-8516	42165008190000	P & A	PROD_OIL
DU-8517	42165303650000	ACTIVE	PROD_OIL
DU-8518	42165303310000	ACTIVE	PROD_OIL
DU-8519	42165303010000	TA	INJ_GAS
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DU-8521	42165303620000	INACTIVE	INJ_WAG
DU-8522	42165303020000	ACTIVE	INJ_WAG

DU-8523	42165303110000	ACTIVE	INJ_WAG
DU-8524	42165303130000	ACTIVE	INJ_WAG
DU-8525	42165303080000	ACTIVE	PROD_OIL
DU-8526	42165303120000	TA	PROD_OIL
DU-8527	42165303630000	INACTIVE	INJ_WAG
DU-8528	42165303100000	ACTIVE	PROD_OIL
DU-8529	42165303090000	ACTIVE	PROD_OIL
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DU-8531	42165304310000	TA	PROD_OIL
DU-8532	42165304490000	ACTIVE	PROD_OIL
DU-8533	42165304300000	TA	INJ_H2O
DU-8534	42165305410000	ACTIVE	INJ_WAG
DU-8535	42165315640000	TA	PROD_OIL
DU-8536	42165315680000	ACTIVE	PROD_OIL
DU-8537	42165315670000	ACTIVE	PROD_OIL
DU-8538	42165353700000	TA	PROD_GAS
DU-8539	42165353770000	ACTIVE	PROD_GAS
DU-8540	42165353990000	ACTIVE	PROD_OIL
DU-8541	42165353980000	ACTIVE	PROD_OIL
DU-8542	42165360100000	ACTIVE	PROD_OIL
DU-8543	42165360110000	ACTIVE	PROD_OIL
DU-8544	42165360120000	ACTIVE	PROD_OIL
DU-8545	42165360130000	ACTIVE	PROD_OIL
DU-8546	42165368340000	ACTIVE	PROD_GAS
DU-8547	42165368330000	TA	PROD_GAS
DU-8548	42165380660000	DRILL	PROD_OIL
DU-8601	42165005590000	ACTIVE	PROD_OIL
DU-8602	42165005630000	P & A	PROD_OIL
DU-8603	42165007410000	P & A	INJ_H2O
DU-8604	42165005640000	ACTIVE	PROD_OIL
DU-8605	42165005610000	ACTIVE	PROD_OIL
DU-8606	42165007420000	P & A	PROD_OIL
DU-8607	42165005620000	P & A	PROD_OIL
DU-8608	42165005650000	ACTIVE	INJ_H2O
DU-8609	42165005660000	P & A	INJ_H2O
DU-8610	42165005600000	TA	INJ_H2O
DU-8611	42165104260000	TA	INJ_H2O
DU-8612	42165318750000	ACTIVE	PROD_OIL
DU-8613	42165304210000	ACTIVE	PROD_OIL
DU-8614	42165333510000	ACTIVE	PROD_OIL
DU-8615	42165367580000	ACTIVE	PROD_OIL
DU-8616	42165367590000	ACTIVE	PROD_OIL
DU-9201	42165009540000	TA	INJ_H2O
DU-9202	42165009560000	P & A	INJ_H2O
DU-9203	42165009620000	TA	INJ_H2O
DU-9204	42165352130000	TA	PROD_OIL
DU-9301	42165009630000	P & A	INJ_H2O
DU-9302	42165032270000	P & A	PROD_OIL
DU-9303	42165002110000	P & A	PROD_OIL
DU-9304	42165002560000	TA	INJ_H2O
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DU-9306	42165002100000	TA	PROD_OIL
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DU-9308	42165002120000	P & A	INJ_H2O

DU-9401	42165012200000	P & A	INJ_H2O
DU-9402	42165012210000	P & A	INJ_H2O
DU-9403	42165012180000	P & A	INJ_H2O
DU-9501	42165002750000	P & A	INJ_H2O
DU-9502	42165002760000	TA	INJ_H2O
DU-9503	42165023240000	TA	INJ_H2O
DU-9504	42165023300000	P & A	PROD_OIL
DU-9505	42165104270000	P & A	INJ_H2O

Appendix 7. Summary of Key Regulations Referenced in MRV Plan

There are two primary regulations cited in this plan:

1. Texas Administrative Code Title 16 Part 1 Chapter 3 Oil & Gas Division
2. 40 CFR Parts 144, 145, 146, 147

For reference, TAC 16, Part 1 (3) was accessed September 1, 2014 at: http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=4&ti=16&pt=1&ch=3&rl=Y and the table of contents is included below.

Texas Administrative Code

TITLE 16	ECONOMIC REGULATION
PART 1	RAILROAD COMMISSION OF TEXAS
CHAPTER 3	OIL AND GAS DIVISION

Table of Contents

§3.27	Gas To Be Measured and Surface Commingling of Gas
§3.28	Potential and Deliverability of Gas Wells To Be Ascertained and Reported
§3.29	Hydraulic Fracturing Chemical Disclosure Requirements
§3.30	Memorandum of Understanding between the Railroad Commission of Texas (RRC) and the Texas Commission on Environmental Quality (TCEQ)
§3.31	Gas Reservoirs and Gas Well Allowable
§3.32	Gas Well Gas and Casinghead Gas Shall Be Utilized for Legal Purposes
§3.33	Geothermal Resource Production Test Forms Required
§3.34	Gas To Be Produced and Purchased Ratably
§3.35	Procedures for Identification and Control of Wellbores in Which Certain Logging Tools Have Been Abandoned
§3.36	Oil, Gas, or Geothermal Resource Operation in Hydrogen Sulfide Areas
§3.37	Statewide Spacing Rule
§3.38	Well Densities
§3.39	Proration and Drilling Units: Contiguity of Acreage and Exception Thereto
§3.40	Assignment of Acreage to Pooled Development and Proration Units
§3.41	Application for New Oil or Gas Field Designation and/or Allowable
§3.42	Oil Discovery Allowable
§3.43	Application for Temporary Field Rules
§3.45	Oil Allowables
§3.46	Fluid Injection into Productive Reservoirs
§3.47	Allowable Transfers for Saltwater Injection Wells
§3.48	Capacity Oil Allowables for Secondary or Tertiary Recovery Projects
§3.49	Gas-Oil Ratio
§3.50	Enhanced Oil Recovery Projects--Approval and Certification for Tax Incentive
§3.51	Oil Potential Test Forms Required
§3.52	Oil Well Allowable Production
§3.53	Annual Well Tests and Well Status Reports Required
§3.54	Gas Reports Required
§3.55	Reports on Gas Wells Commingling Liquid Hydrocarbons before Metering
§3.56	Scrubber Oil and Skim Hydrocarbons
§3.57	Reclaiming Tank Bottoms, Other Hydrocarbon Wastes, and Other Waste Materials
§3.58	Certificate of Compliance and Transportation Authority; Operator Reports
§3.59	Oil and Gas Transporter's Reports
§3.60	Refinery Reports
§3.61	Refinery and Gasoline Plants
§3.62	Cycling Plant Control and Reports
§3.63	Carbon Black Plant Permits Required
§3.70	Pipeline Permits Required
§3.71	Pipeline Tariffs
§3.72	Obtaining Pipeline Connections
§3.73	Pipeline Connection; Cancellation of Certificate of Compliance; Severance
§3.76	Commission Approval of Plats for Mineral Development
§3.78	Fees and Financial Security Requirements
§3.79	Definitions
§3.80	Commission Oil and Gas Forms, Applications, and Filing Requirements

§3.81	Brine Mining Injection Wells
§3.83	Tax Exemption for Two-Year Inactive Wells and Three-Year Inactive Wells
§3.84	Gas Shortage Emergency Response
§3.85	Manifest To Accompany Each Transport of Liquid Hydrocarbons by Vehicle
§3.86	Horizontal Drainhole Wells
§3.91	Cleanup of Soil Contaminated by a Crude Oil Spill
§3.93	Water Quality Certification Definitions
§3.95	Underground Storage of Liquid or Liquefied Hydrocarbons in Salt Formations
§3.96	Underground Storage of Gas in Productive or Depleted Reservoirs
§3.97	Underground Storage of Gas in Salt Formations
§3.98	Standards for Management of Hazardous Oil and Gas Waste
§3.99	Cathodic Protection Wells
§3.100	Seismic Holes and Core Holes
§3.101	Certification for Severance Tax Exemption or Reduction for Gas Produced From High-Cost Gas Wells
§3.102	Tax Reduction for Incremental Production
§3.103	Certification for Severance Tax Exemption for Casinghead Gas Previously Vented or Flared
§3.106	Sour Gas Pipeline Facility Construction Permit
§3.107	Penalty Guidelines for Oil and Gas Violations

Oxy Response
September 1, 2015

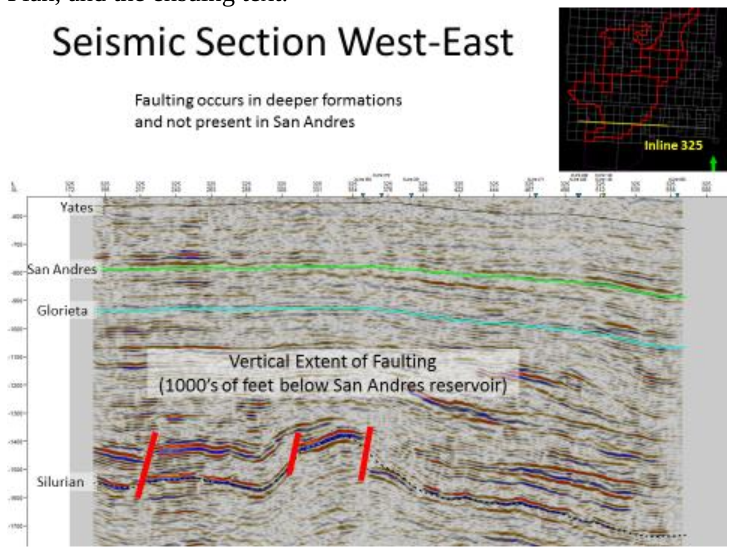
Request for Additional Information, July 17, 2015: Oxy Denver Unit CO_2 Subpart MRV Plan

NOTE: Oxy completed the response in the last column of this form and indicated revised page numbers on the page column (in parentheses) if applicable, but did not alter the rest of the form unless indicated as follows in: [ALL CAPS].

Instructions [FROM EPA]: Please enter responses into this table. Any long responses, references, or supplemental information may be attached to the end of the table as an appendix. Supplemental information may also be provided in a resubmitted MRV plan.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
1.	1 – Facility Information	5	MRV Plan: "Injection wells included in this report are permitted as UIC Class II wells; other wells are permitted through Texas Railroad Commission (TRRC) through TAC 16 Part 1 Chapter 3." All of the UIC Class II wells are permitted through the Texas Railroad Commission (TRRC). In several locations, the plan reads as though "other" wells (i.e. some wells) are permitted by TRRC.	Sections 1, 2.2.1 and 2.3.2 of the MRV Plan have been edited as indicated in Questions 1, 4, and 7 to clarify that TRRC has been delegated primacy for implementing the UIC Class II program in Texas.
2.	2.2.1 – Geology of the Wasson Field	8	MRV Plan: "The Wasson Field produces oil from the San Andres formation, a layer of permeable dolomites that were deposited in a shallow marine environment during the Permian Era, some 250 to 300 million years ago." The language in this section describes the Permian "Era", however geologists generally refer to the Permian as a geologic "Period". The last paragraph appears to equate topography (i.e. high spots) to structural geology (i.e. places where oil and gas have accumulated). Please clarify.	The MRV plan has been edited to revise "Permian Era" to "Permian Period." Section 2.2.1 of the MRV Plan has been edited as follows: Originally flat, there are now variations in elevation within the San Andres Formation across the Permian Basin. The relative high spots, such as the Wasson Field, have become the places where oil and gas have accumulated over the ensuing millions of years.

No.	MRV Plan Section	MRV Plan Page	EPA Questions	Responses
3.	2.2.1 – Geology of the Wasson Field	8 (9)	MRV Plan: "There are a number of sections above the formation that are impermeable and serve as reliable barriers to prevent fluids from moving upwards toward the surface. These barriers are referred to as seals because they effectively seal fluids into the rock formations underneath them. In the Wasson Field, the seals include anhydrite and impermeable dolomite sections that comprise the upper San Andres, as well as intervals in the Grayburg, Seven Rivers, Tansill and Rustler formations." What data/information support the continuity of these sealing zones across the unit?	The MRV Plan has been edited to include the following: The San Andres reservoir is capped with nearly 400 feet of impermeable dolomite, referred to as the upper San Andres. This is the seal that has kept oil and gas trapped in the lower San Andres formation for millions of years thus indicating it is clearly a seal of the highest integrity. Other zones also serve as seals. The properties of these seal intervals can be interpreted from logs run across the sealing intervals. Logs, such as, SP (spontaneous potential) logs, gamma ray logs, and porosity logs, all indicate lack of permeability. Logs in multiple wells throughout Wasson confirm the presence of these seals over the entire field. See also Response No. 10.
4.	2.2.1 – Geology of the Wasson Field	9	MRV Plan: "U.S. EPA's Underground Injection Control (UIC) and Texas Railroad Commission (TRCC) regulations require that all wells drilled through these intervals confine fluids to the stratum in which they are encountered or injected." Note that Texas has primacy for the Class II UIC Program.	As indicated in Response No. 1, the MRV Plan has been edited to clarify the TRRC has primacy for UIC Class II implementation.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
5.	2.2.1 – Geology of the Wasson Field	11-12	MRV Plan describes the results of seismic surveys (north-south) conducted to characterize the formations and inform the reservoir models to demonstrate the lack of faulting. Please describe the seismic survey detection shown in Figure 5 [AND FIGURE 6]. For example, over what time period was the survey conducted? Was an east-west seismic survey conducted? MRV Plan: "Fluids, both water and CO_2, have been successfully injected in the Denver Unit since the mid 1960's and there is no evidence of any interaction with existing or new faults or fractures." Please describe what information supports this conclusion. For example, does the injection and production data over time support the conclusion that there is no migration of fluids vertically through the seal rock?	The MRV Plan has been edited to include the following east-west cross-section, similar to the north-south cross-section in the MRV Plan, and the ensuing text.  The Wasson seismic survey is a 3D shoot of the Wasson conducted in 1994. Leakage due to interaction with existing or new faults would lead to anomalies from expected performance. Such anomalies would lead to an investigation, which may include measures such as injection profile surveys and pressure measurements to identify the cause. Poor performance could be attributed to inadequate pattern development, poor well conditions (e.g., scale buildup), conformance within the formation, or a potential leak. The investigation would identify the cause of the anomaly and guide the course of action.

<table>
<tr><th rowspan="2">No.</th><th colspan="2">MRV Plan</th><th rowspan="2">EPA Questions</th><th rowspan="2">Responses</th></tr>
<tr><th>Section</th><th>Page</th></tr>
<tr>
<td>6.</td>
<td>2.2.3 – The Geology of the Denver Unit within the Wasson Field</td>
<td>15 (16)</td>
<td>MRV Plan: “Oxy has calculated the total pore space within the Denver Unit, from the top of the reservoir down to the spill point, which is located at -1,675 ft subsea or roughly 5,000 – 5,500 feet below the surface, to be 8,848 MMB. At reservoir conditions the Denver Unit could hold about 14,700 Bscf (775 MMMT) CO_2 in the reservoir space above the spill point. Oxy forecasts that at the end of EOR operations stored CO_2 will fill approximately 25% of calculated storage capacity.”

What considerations were taken into account in calculating the storage capacity?</td>
<td>The MRV Plan has been edited to include the following language: The volume of CO_2 storage is based on the estimated total pore space within the Denver Unit from the top of the reservoir down to the spill point, or about 8.848 MMB. This is the volume of rock multiplied by porosity. CO_2 storage is calculated assuming an irreducible water saturation of 0.15, an irreducible oil saturation of 0.10 and a CO_2 formation volume factor of 0.45.
<table>
<tr><th colspan="2">Top of F1 to -1675 ftss (shallowest BOZO Depth)</th></tr>
<tr><th>Variables</th><th>Denver Unit Outline</th></tr>
<tr><td>Pore Volume [RB]</td><td>8,847,943,353</td></tr>
<tr><td>B_{CO2}</td><td>0.45</td></tr>
<tr><td>S_{wirr}</td><td>0.15</td></tr>
<tr><td>S_{orCO2}</td><td>0.1</td></tr>
<tr><td>Max CO_2</td><td>14,746,572,255</td></tr>
<tr><td>Max CO_2</td><td>14.7 TCF</td></tr>
</table>

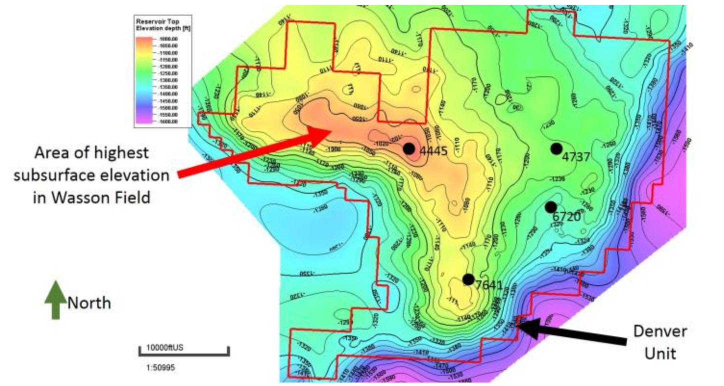
$$CO_2(max) = Volume(RB) * (1 - S_{wirr} - S_{orCO2}) / B_{CO2}$$

The formation volume factor of CO_2 (B_{CO2}) is the ratio of reservoir volume in barrels to Mscf at standard conditions. At 1900 psi and 105 ^{o}F, the density of CO_2 is approximately 0.740 g/cc, which translates to a CO_2 formation volume factor of 0.45.</td>
</tr>
</table>

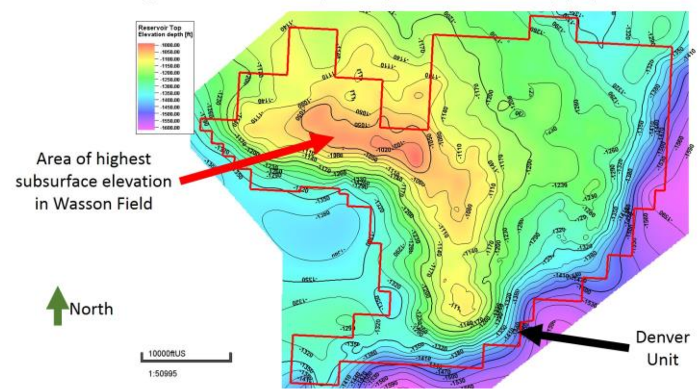
No.	MRV Plan		EPA Questions	Responses
	Section	**Page**		
7.	2.3.2 – Wells in the Denver Unit	19 (20)	MRV Plan: "The wells drilled after 1996 were completed using state-of-the-art standards." What are the state-of-the-art standards that were used? MRV Plan: "The injection wells are subject to additional requirements promulgated by EPA – the UIC Class II program – implementation of which has been delegated to the TRRC." What are the additional requirements promulgated by EPA that are being referred to?	The MRV Plan has been edited to include the following language: The term "State-of-the-art standards" refers to the use of regular weight casing cemented to surface. In 1996, Shell, which then operated the Denver Unit, as well as the major Clearfork leases that lie under the Denver Unit, implemented a policy that wells be cemented to surface following these standards. Oxy continues to follow this practice. As indicated in Response No. 1, the MRV Plan has been edited to clarify the TRRC has primacy for UIC Class II implementation.
8.	2.3.2 – Wells in the Denver Unit	20	What types of mechanical integrity tests are conducted on injection and production wells? How frequently are they conducted?	Section 2.3.2 describes the MIT provisions in the TRRC rules for injection wells in oil fields including test types and frequency. Production wells are regulated by TRRC because of their location in oil fields. The TRRC requires all wells in oil fields to constrain fluids within the strata in which they are located and to demonstrate well integrity before use and before closure.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
9.	2.3.6 – Facilities Locations	25 (27)	MRV Plan: "Most, if not all other Wasson Units, inject at pressures a little higher than Denver Unit and all maintain an IWR of at least one. Higher pressures in the surrounding areas confine Denver Unit fluids within the Unit." "The second way Oxy contains fluids within the Denver Unit is to drill wells along the lease lines that are designed to avoid loss of valuable fluids from the unit. To the north Oxy has established lease line agreements with the neighboring CO_2 units. These agreements provide for offsetting injectors or offsetting producers along the lease line that balance one another. For example, an injector on one side is offset and balanced by an injector on the other side. The two paired injectors are maintained on injection in such a way as to give Oxy and its partners sufficient assurance that a no-flow boundary is maintained at the Unit boundary. This restricts the flow of injected CO_2 or mobilized oil from one unit to the other. A similar dynamic is maintained for paired producers. To the east, south and west, there are no operations on the other side of the Denver Unit boundary. Near these boundaries, a row of water injectors or producers are maintained to keep CO_2 or mobilized oil from leaving the Denver Unit." How would Oxy's fluid containment methods be impacted by changes in the adjacent operations that might create lower pressure at the boundaries? For example, does Oxy monitor pressures at the boundary or stay in coordination with adjacent operations?	The MRV Plan has been edited with the following language: As shown in Figure 7, Oxy operates the ODC and Willard Units to the north of the Denver Unit and therefore has first-hand knowledge of pressures on both sides of Unit boundaries. In the case of the other units, Oxy maintains lease line agreements with the other operators to assure injection and production is balanced along the lease line. In this way, Oxy is assured that CO_2 and mobilized oil do not escape the Denver Unit. – The MRV Plan has also been edited to include changes to Section 2.3.6 of the MRV Plan: Most, if not all other Wasson Units, inject at pressures a little higher than Denver Unit and all maintain an IWR of at least one. In addition to the two methods mentioned above, higher pressures in the surrounding areas further assure that Denver Unit fluids stay within the Unit.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
10.	2.4 – Reservoir Modeling	28-29	MRV Plan: "The seal rocks above the flood interval are not included in the simulation since they are impermeable and do not participate in fluid flow processes." What is the average porosity and permeability for the sealing formation above the injection zone?	The MRV Plan has been edited to include the following language: Porosity and permeability have been measured on cores taken from the upper San Andres sealing zone. Measured permeabilities are less than 0.01 md. Permeabilities in the pay zones typically range from 1 to 10 md. Permeabilities in anhydrite intervals are zero. Anhydrites are one of the most common seal rocks for oil and gas reservoirs. Ultra-low permeability rocks do not contribute to flow and therefore do not need to be included in simulation models. – See also Response No. 3.
11.	2.4 – Reservoir Modeling	29 (30 - 31)	Based on the elevations shown in Figure 7 and the description of fluid flow direction toward the elevated section of the unit (toward to DU 4445), one would expect to see a thicker gas zone (red) at DU 4445. However, based on Figure 7, GW6720 and DU4737 have similar elevations, yet the thickness of the gas zone appears to vary between these two locations. Could you describe the reason for the difference? Is there any log data available for the northern part of the unit?	The MRV Plan has been edited to include the following language: Reservoir quality varies markedly across the Unit. Thus, response to CO_2 flooding is also expected to vary within the Unit. Based on reservoir development and geological characteristics, the Unit is divided into three distinct areas: (a) Eastern Denver Unit, (b) WACO2, and (c) Final Injection Area. Figure 13 demonstrates the delineated areas and the typical porosity and permeability development found in each of the subgroups. CO_2 flooding in these areas is implemented according to their reservoir characteristics. The Eastern Denver Unit began CO_2 injection in 1984, received an initially large CO_2 slug size, then converted to a water alternating CO_2 injection scheme once a targeted CO_2 slug size was reached. The WACO2 area also began CO_2 injection in 1984. However, this area injected water alternating CO_2 from the beginning. Once the Eastern Denver Unit area began its alternating injection scheme, lower CO_2 injection rates were required in the developed portion of the field, allowing expansion of the flood into the Final Injection Area. Wells DU 4737 and DU 6720 typify the properties in the Eastern Denver Unit; well DU 7541 typifies the properties of the WACO2 area; and well DU 4445 is typical of the Final Injection Area.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
				The red lines in Figure 14 are intended to point to areas of the Unit that are similar to, or represented by, the selected wells. They do not point to the actual well locations. The red line for well 6720 points to the general location of the well, not necessarily the exact location. Lines for the other wells connect the well log to the label for the area they are representative of. A structure map from Figure 8 has been modified below to (Figure 15, page 31) show the well locations indicated in Figure 14.  According to this map, one would expect well 4445 to have the largest gas column and well 6720 the smallest gas column, consistent with the logs shown on Figure 14.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
12.	2.4 – Reservoir Modeling	29 (31)	MRV Plan: "The production and injection performance of each pattern is monitored in relation to the predicted (i.e., simulated) behavior. Special attention is focused on those patterns where performance does not match the model. In this way, any performance problems are quickly identified and remedied." What are the parameters used for validating or calibrating the model? Could you demonstrate the accuracy of the model to predict CO_2 migration in the domain? What are examples of "performance problems" that may be faced?	The MRV Plan has been edited to include the following language; See Response No. 13. Predicted behavior for all patterns can be constructed in one of two ways: from simulation or from actual performance of a more mature analog project. Simulation models may represent either a multi-pattern segment of the field, or be an element of symmetry model representing a portion of a single pattern. Figure 12 illustrates an element of symmetry modeling approach that is used at the Denver Unit. Many such models have been constructed to capture the variation in geology throughout this large CO_2 project. Predictions may also be constructed from the actual performance data of analog projects that already have received significant CO_2 injection. Where simulation is used to generate the predictions, the simulation results should be validated by comparison with analog project performance if possible. Prediction models forecast oil, water and CO_2 production, as well as CO_2 and water injection. If actual performance differs in a noticeable way from prediction, reservoir engineers use professional judgment formed by an analysis of technical data to determine where further attention is needed. The appropriate response could be to change injection rates, to alter the prediction model or to find and repair fluid leaks.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
13.	3.1 – Active Monitoring Area	30 (32)	MRV Plan: "CO_2 injected into the Denver Unit remains contained within that unit because of the fluid and pressure management impacts associated with CO_2 EOR. Namely, maintenance of an IWR of 1.0 assures a stable reservoir pressure; managed leaseline injection and production wells are used to retain fluids in the Denver Unit as indicated in Section 2.3.6; and operational results indicate that injected CO_2 is retained in the Denver Unit." What operational results or monitoring indicate that the injected CO_2 is retained in the Denver Unit?	The MRV Plan has been edited to include the following example of operational results; See Response No. 12. "(such as normal pressures in the injection interval and injection and production rates within predicted ranges) "
14.	3.1 – Active Monitoring Area	30 (32)	MRV Plan: "Furthermore, over geologic timeframes, stored CO_2 will remain in the Denver unit because it is the area with the highest elevation CO_2 will not migrate downdip as described in Section 2.2.3." What is the structure (elevation) in the unit along the western border of the Denver Unit? (See Figure 7 [REVISED FIGURE 8])	The MRV Plan has been edited to substitute the following map for Figure 8. Figure 7 Structure Map on Top of San Andres Pay (F1)  This is a structure map on top of the San Andres pay zone.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
15.	3.3 – Monitoring Timeframe	30 (32)	MRV Plan: "…with a subsidiary purpose of establishing long-term containment of a measureable quantity of CO_2 in subsurface geological formations at the Denver Unit for an estimated period of ten years, the "Specified Period." The Specified Period includes all or some portion of the period 2014 through 2021." Please confirm the "Specified Period".	The MRV Plan has been edited as follows: The Specified Period will begin Jan 1, 2016 and is anticipated to end prior to December 31, 2026.
16.	4.2 – Existing Well Bores	31-32 (33 - 35)	What are the testing and monitoring activities that an injection well receives on average in a year? How frequently is an injection well visited by Oxy staff on average? What are the testing and monitoring activities that a production well receives on average in a year? How frequently is a production well visited by Oxy staff on average? What is the extent and frequency of aerial inspections for the wells?	The MRV Plan has been edited to include the following language: Pressure and flowrates are monitored continuously in all active injectors. Flow rates of oil, water and CO_2 are measured on all producers at least monthly. All wells are observed by Oxy personnel or Oxy Contractors at least weekly. Likewise, aerial surveys are completed weekly.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
17.	4.4 – Natural or Induced Seismicity	33 (36)	MRV Plan: On this basis, Oxy concludes that there is no direct evidence that natural seismic activity poses a significant risk for loss of CO_2 to the surface in the Permian Basis, and specifically in the Denver Unit. Does induced seismic activity pose a significant risk for loss of CO_2?	Section 4.4 of the MRV Plan has been edited to include the following language: The concern about induced seismicity is that it could lead to fractures in the seal providing a pathway for CO_2 leakage to the surface. Based on Oxy's review of seismic data, none of the recorded "earthquakes" in the Permian Basin have occurred in the Wasson Field; the closest was nearly 80 miles away. Moreover, Oxy is not aware of any reported loss of injectant (waste water or CO_2) to the surface associated with any seismic activity. Therefore, there is no direct evidence to suggest that natural seismic activity poses a significant risk for loss of CO_2 to the surface in the Permian Basis, and specifically in the Denver Unit. If induced seismicity resulted in a pathway for material amounts of CO_2 to migrate from the injection zone, other reservoir fluid monitoring provisions (e.g., reservoir pressure, well pressure, and pattern monitoring) would lead to further investigation. See Response No. 5 for additional information on such investigations.
18.	4.5 – Previous Operations	34 (36)	MRV Plan: "As a result, Oxy has checked for the presence of old, unknown wells throughout the Denver Unit over many years. Based on that effort, Oxy has concluded that there are no unknown wells within the Denver Unit. Oxy's operational experience confirms this conclusion. Oxy has successfully optimized CO_2 flooding with infill wells because the confining zone has not been impaired by previous operations." How did Oxy conduct its investigation to identify old, unknown wells?	The MRV Plan has been edited to indicate the following: Oxy reviews TRRC's records and/or Oxy well files, and may conduct ground surveys to identify old, unknown wells as a part of any AoR review in preparation for drilling a new well.
19.	4.6 – Pipeline/ Surface Equipment	34 (37)	What is the extent and frequency of visual inspections of the pipeline and surface equipment? Other than visual inspections, are there other types of monitoring being conducted that can alert operators to a pipeline leak?	The MRV Plan has been edited to include the following language: Oxy conducts aerial inspections of the pipeline and surface equipment in the Denver Unit once a week. Field personnel are trained to look for and report potential leaks from pipeline and surface equipment as part of their routine activities.

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
20.	4.7 – Lateral Migration Outside the Denver Unit	35 (37)	MRV Plan: "Based on site characterization and planned and projected operations Oxy estimates the total volume of stored CO_2 will be approximately 20% of calculated capacity." Previous sections referred to an estimated 25% of calculated capacity.	This is a typographical error and the MRV Plan has been edited to indicate 25% of potential capacity.

21.	4.10 – Monitoring, Response, and Reporting Plan for CO2 Loss	36 – (38-39)	Please describe the spatial and temporal extent (e.g., frequency) of the monitoring activities under the plan. (See Table 3) Is the reservoir pressure monitored at all wells in the Denver unit? If not, what would be the spatial coverage for identifying a reservoir pressure anomaly to indicate loss of seal in an abandoned well? MRV Plan: "Given the uncertainty concerning the nature and characteristics of leaks that will be encountered, it is not clear the method for quantifying the volume of leaked CO_2 that would be most appropriate." Please describe the types of methods that would be considered.	Table 3 in Section 4.10 (page 38-39) of the MRV Plan has been modified to clarify known potential leakage risks, monitoring methods and frequency, and the anticipated response plan. As indicated throughout the MRV plan, the operation of EOR facilities is specifically designed to control fluid flows and avoid leaks. While leakage events may occur (as indicated in Table 3), they are few and typically of small duration and volume. To the extent possible Oxy will use published emission factors, such as those included in Subpart W of the GHG Reporting program to quantify CO_2 volumes released. Oxy will use emission factors developed through on-going industry studies or based on engineering estimates for other small volumes released. Although we have been unable to find documented cases to date, it is possible that unique leakage events could take place that would necessitate the development of a new quantification approach yet to be defined. Given the tight operations controls and daily monitoring, Oxy cannot envision the circumstances of such an event. If one were to occur, Oxy will take appropriate measures to prevent uncontrolled fluid flow and then develop an estimate of the leaked amount of CO_2 using data from the event (e.g., duration, magnitude, field conditions) as well as modeling and engineering estimates. If such an event were to occur Oxy would document the methodology used. This answer applies to Questions No. 23 and No. 27 below. – Reservoir pressures are measured in the Denver Unit when the need for additional information is indicated. Pressure fall-off or pressure build-up tests may be performed when injection or production rates differ from forecast and additional information seems appropriate. See Response No. 5 and No.13.

<table>
<tr><th rowspan="2">No.</th><th colspan="2">MRV Plan</th><th rowspan="2">EPA Questions</th><th rowspan="2">Responses</th></tr>
<tr><th>Section</th><th>Page</th></tr>
<tr><td>22.</td><td>5.1.1 – General Monitoring Procedures</td><td>38 (41)</td><td>MRV Plan: “As part of its ongoing operations, Oxy monitors and collects flow, pressure, and gas composition data from the Denver Unit in centralized data management systems. This data is monitored continually by qualified technicians who follow Oxy response and reporting protocols when the systems deliver notifications that data exceed statistically acceptable boundaries.”

What is the typical composition of injected CO_2 and how much does it vary over time, particularly with respect to H_2S concentrations?

What is the acceptable statistical boundary? Alternatively, what are the statistical parameters that trigger an investigation into a potential leak?</td><td>The MRV Plan has been edited in Section 5.1.1 as follows:

As part of its ongoing operations, Oxy collects flow, pressure, and gas composition data from the Denver Unit. Flow and pressure data is monitored through hourly scans by centralized data management systems. Alarms are triggered when data deviates by a specified amount from desired operational conditions. Alarms are investigated by qualified technicians who follow Oxy response and reporting protocols. Responses are described in the following sections (5.1.5-5.1.7).
The typical volume weight averaged composition of injected CO_2 is:

<table>
<tr><td>%N2</td><td>0.93813</td></tr>
<tr><td>% CO2</td><td>96.9484</td></tr>
<tr><td>%C1</td><td>0.76578</td></tr>
<tr><td>%C2</td><td>1.31588</td></tr>
<tr><td>%C3</td><td>0.00421</td></tr>
<tr><td>%IC4</td><td>0.00402</td></tr>
<tr><td>%NC4</td><td>0.00933</td></tr>
<tr><td>%IC5</td><td>0.00345</td></tr>
<tr><td>%NC5</td><td>0.00325</td></tr>
</table>
The standard deviation of the CO_2 concentration over the last year is less than 0.5%.

There is no significant amount of H_2S in the injected gas stream. It is below the measurement threshold. DUCRP sweetens the gas before returning it to the field.</td></tr>
</table>

No.	MRV Plan		EPA Questions	Responses
	Section	Page		
23.	5.1.5 – CO_2 Emitted by Surface Leakage	41 (42-44)	MRV Plan: "A subsurface leak might not lead to a surface leak. In the event of a subsurface leak, Oxy would determine the appropriate approach for tracking subsurface leakage to determine and quantify leakage to the surface. To quantify leakage to the surface, Oxy would estimate the relevant parameters (e.g., the rate, concentration, and duration of leakage) to quantify the leak volume." Please describe the types of methods that might be employed to track subsurface leakage.	See Response No. 21
24.	5.1.5 – CO_2 Emitted by Surface Leakage	41 (44)	MRV Plan: "In the event leakage from the subsurface occurred diffusely through the seals, the leaked gas would include H_2S that would trigger the alarm on the personal monitors worn by field personnel. Such a diffuse leak from the subsurface has not occurred in the Denver Unit." What is the smallest leak that could be detected with this method?	The MRV Plan has been edited to include the following: The personal H_2S meters worn by field personnel can detect levels of H_2S as low as 0.1PPM.

No.	MRV Plan		EPA Questions	Responses
	Section	**Page**		
25.	5.1.5 – CO_2 Emitted by Surface Leakage	41 (44)	How large a change in annulus pressure is required to initiate an investigation and how are such excursions typically handled/investigated?	The MRV Plan has been edited to include the following language: Annular pressures in injectors should be close to zero in normal operating conditions because the annulus is isolated by the tubing and packer from injection fluids. Any higher pressure would indicate a potential leak in either the tubing or the packer and would trigger further investigation. If changes in pressure trigger a flag the investigation follows a course of increasing detail as needed. The investigation typically begins with simpler measures such as having a field technician inspect the well for faulty equipment (e.g., valves, flanges). Additional tests would be conducted on the well if the cause of the pressure change has not been determined. These tests can identify the nature and location of the problem. If the cause is still not determined, then an investigation involving a wider scope will be undertaken. This response also applies to detected anomalies referred to in Question No. 27 below. Annular pressures in producers should be also zero because the bottom-hole pressures in pumped-off wells should be well below hydrostatic levels.
26.	5.1.5 – CO_2 Emitted by Surface Leakage	45	MRV Plan: "Historically, Oxy has documented fewer than 4 unexpected release events each year at Denver Unit." Please describe what the underlying leakage mechanisms were for these events. What was the severity of the leak?	These releases were due to equipment failure and subsequent repair. Leaks averaged approximately 1100 MCF and were corrected in less than 24 hours.

No.	MRV Plan Section	Page	EPA Questions	Responses
27.	6 – Determination of Baselines	45 (47)	If Oxy detects an anomaly in injection rates or reservoir pressure, how will the investigation of potential leakage take place?	See Response No. 21 and 25. Oxy's approach to investigating anomalies uses a process of elimination. The first reviews consider obvious problems such as equipment failure. If the problem cannot be identified and addressed then a broader look will take place in which Oxy will use modeling, injection data, production data, and other reports from an area to determine potential issues and how to investigate them.
28.	9.1 – Monitoring QA/QC	51 (54)	What API standards will be used for meter calibrations?	The MRV Plan has been edited to refer to the following standards: American Petroleum Institute (API) Report No. 3, Parts 2 and 3
29.	9.1 – Monitoring QA/QC	52 (54)	What method will be used for measuring CO_2 concentration?	The MRV Plan has been edited to refer to the following standards: Gas Processors Association (GPA) 2261:2013 Analysis for Natural Gas and Similar Gaseous Mixtures by Gas Chromatography GPA 2186 – 02 Method for the Extended Analysis of Hydrocarbon Liquid Mixtures Containing Nitrogen and Carbon Dioxide by Temperature Programmed Gas Chromatography

Oxy Denver Unit CO_2 Subpart RR

Monitoring, Reporting and Verification (MRV) Plan

Final Version
April 9, 2015

Table of Contents

Roadmap to the Monitoring, Reporting and Verification (MRV) Plan

Occidental Permian Ltd. (OPL) operates the Denver Unit in the Permian Basin for the primary purpose of enhanced oil recovery (EOR) using carbon dioxide (CO_2) flooding. OPL intends to inject CO_2 with a subsidiary purpose of establishing long-term containment of a measureable quantity of CO_2 in subsurface geological formations at the Denver Unit for an estimated period of ten years, the "Specified Period." The Specified Period includes all or some portion of the period 2014 through 2021. During the Specified Period, OPL will inject CO_2 that is purchased (fresh CO_2) from affiliates of Occidental Petroleum Corporation (OPC) or third parties, as well as CO_2 that is recovered (recycled CO_2) from the Denver Unit CO_2 Recovery Plant (DUCRP). OPL, OPC and their affiliates (together, Oxy) have developed this monitoring, reporting, and verification (MRV) plan in accordance with 40 CFR §98.440-449 (Subpart RR) to provide for the monitoring, reporting and verification of the quantity of CO_2 sequestered at the Denver Unit during the Specified Period.

In accordance with Subpart RR, flow meters are used to quantify the volume of CO_2 received, injected, produced, contained in products, and recycled. If leakage is detected, the volume of leaked CO_2 will be quantified using two approaches. First, Oxy follows the requirements in 40 CFR §98.230-238 (Subpart W) to quantify fugitive emissions, planned releases of CO_2, and other surface releases from equipment. Second, Oxy's risk-based monitoring program uses surveillance techniques in the subsurface and above ground to detect CO_2 leaks from potential leakage pathways in the subsurface. If a leak is identified, the volume of the release will be estimated. The CO_2 volume data, including CO_2 volume at different points in the injection and production process, equipment leaks, and surface leaks, will be used in the mass balance equations included 40 CFR §98.440-449 (Subpart RR) to calculate the volume of CO_2 stored on an annual and cumulative basis.

This MRV plan contains eleven sections:

- Section 1 contains general facility information.
- Section 2 presents the project description. This section describes the planned injection volumes, the environmental setting of the Denver Unit, the injection process, and reservoir modeling. It also illustrates that the Denver Unit is well suited for secure storage of injected CO_2.
- Section 3 describes the monitoring area: the Denver Unit in West Texas.
- Section 4 presents the evaluation of potential pathways for CO_2 leakage to the surface. The assessment finds that the potential for leakage through pathways other than the man-made well bores and surface equipment is minimal.

- Section 5 describes Oxy's risk-based monitoring process. The monitoring process utilizes Oxy's reservoir management system to identify potential leakage indicators in the subsurface. The monitoring process also entails visual inspection of surface facilities to locate leaks and personal H_2S monitors as a proxy for detecting potential leaks. Oxy's MRV efforts will be primarily directed towards managing potential leaks through well bores and surface facilities.
- Section 6 describes the baselines against which monitoring results will be compared to assess whether changes indicate potential leaks.
- Section 7 describes Oxy's approach to determining the volume of CO_2 sequestered using the mass balance equations in 40 CFR §98.440-449, Subpart RR of the Environmental Protection Agency's (EPA) Greenhouse Gas Reporting Program (GHGRP). This section also describes the site-specific factors considered in this approach.
- Section 8 presents the schedule for implementing the MRV plan.
- Section 9 describes the quality assurance program to ensure data integrity.
- Section 10 describes Oxy's record retention program.
- Section 11 includes several Appendices.

1. Facility Information

i) Reporter number – TBD

ii) Injection wells included in this report are permitted as UIC Class II wells; other wells are permitted through Texas Railroad Commission (TRRC) through TAC 16 Part 1 Chapter 3.

iii) All wells in the Denver Unit are identified by name, API number, status, and type. The list of wells as of the date of MRV plan submission is included in Appendix 6

2. Project Description

This section describes the planned injection volumes, environmental setting of the Denver Unit, injection process, and reservoir modeling conducted.

2.1 Project Characteristics

Using the modeling approaches described in section 2.4, Oxy has forecasted the total amount of CO_2 anticipated to be injected, produced, and stored in the Denver Unit as a result of its current and planned CO_2 EOR operations. Figure 1 shows the actual CO_2

injection, production, and stored volumes in the Denver Unit (main oil play plus the residual oil zone (ROZ)) for the period 1983 through 2013 (solid line) and the forecast for 2014 through 2111 (dotted line). The forecast is based on results from reservoir and recovery process modeling that Oxy uses to develop injection plans for each injection pattern, which is also described in section 2.4.

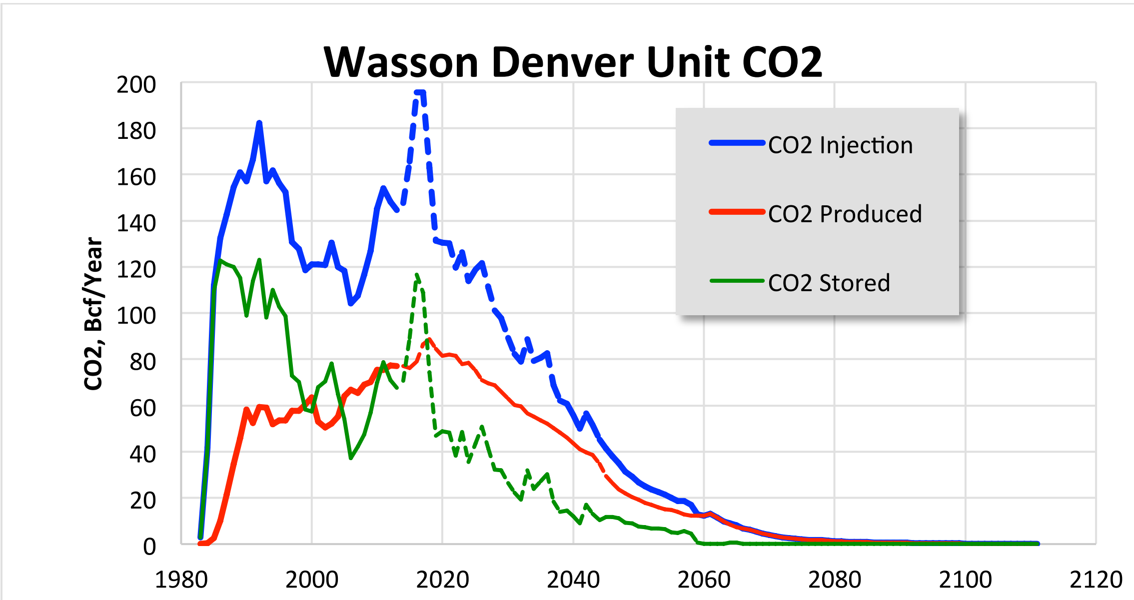


Figure 1 - Denver Unit Historic and Forecast CO_2 Injection, Production, and Storage 1980-2120

As discussed in Appendix 1 (**Background**), Oxy adjusts its purchase of fresh CO_2 to maintain reservoir pressure and to increase recovery of oil by extending or expanding the CO_2 flood. A volume of fresh CO_2 is purchased to balance the fluids removed from the reservoir and provide the solvency required to increase oil recovery. The data shows CO_2 injection, production, and storage through 2111 and anticipates new CO_2 storage volumes ending in 2059. Oxy has injected 4,035 Bscf of CO_2 (212.8 million metric tonnes (MMMT)) into the Denver Unit through the end of 2013. Of that amount, 1,593 Bscf (84.0 MMMT) was produced and 2,442 Bscf (128.8 MMMT) was stored.

Although exact storage volumes will be calculated using the mass balance equations described in Section 7, Oxy forecasts that the total volume of CO_2 stored over the lifetime of injection to be approximately 3,768 Bscf (200 MMMT), which represents approximately 25% of the theoretical storage capacity of the Denver Unit. For accounting purposes, the amount stored is the difference between the amount injected (including purchased and recycled CO_2) and the total of the amount produced less any CO_2 that: i) leaks to the surface, ii) is released through surface equipment malfunction, or iii) is entrained or dissolved in produced oil.

Figure 2 presents the cumulative annual forecasted volume of CO_2 stored for a Specified Period 2014-2021. The cumulative amount stored is equal to the annual storage volume for that year plus the total of the annual storage volume(s) for the previous year(s) in a Specified Period. Hence the projected volume of CO_2 stored in the first year of the period specified in the graph is 70.7 Bscf (3.7 MMMT) and the cumulative in the second year is 160.1 Bscf (8.4 MMMT). In total, the eight-year volume is expected to be 603.5 Bscf (31.8 MMMT). This forecast illustrates the anticipated volume of subsidiary storage during a Specified Period; the actual amounts stored will be calculated as described in section 7 of this MRV plan.

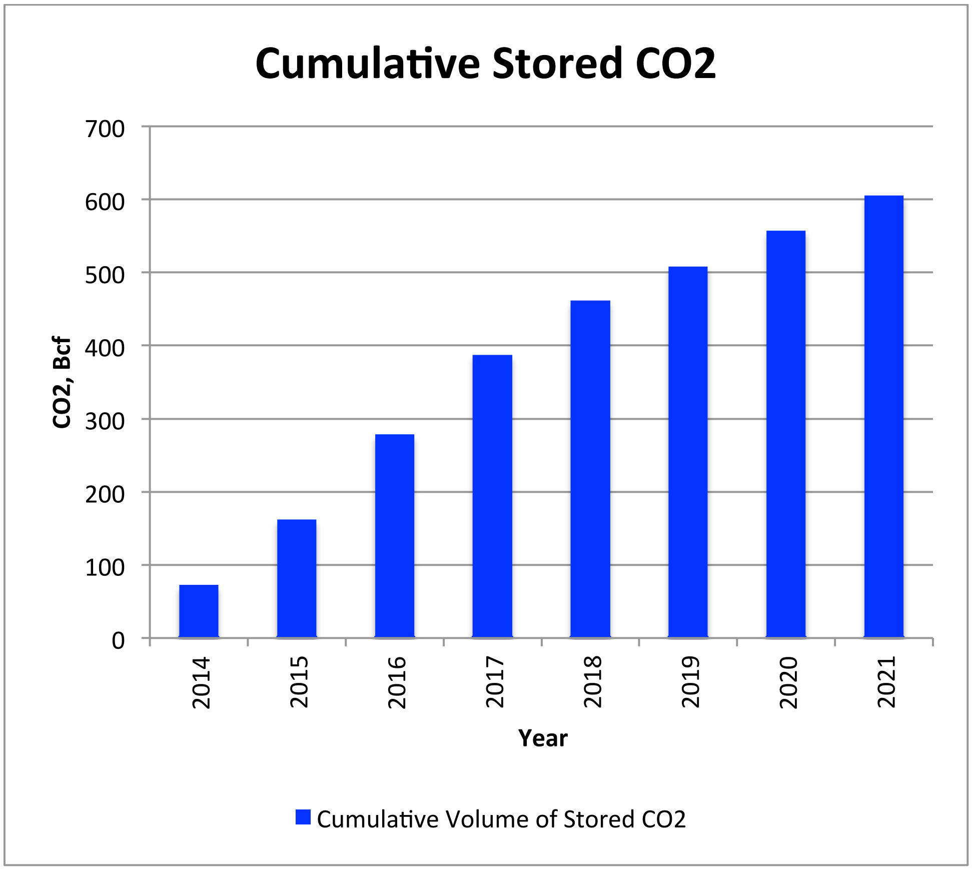


Figure 2 - Denver Unit CO_2 Storage Forecasted During the Specified Period 2014-2021

2.2 Environmental Setting

The project site for this MRV plan is the Denver Unit, located within the Wasson Field, in the Permian Basin.

2.2.1 Geology of the Wasson Field

The Wasson Field produces oil from the San Andres formation, a layer of permeable dolomites that were deposited in a shallow marine environment during the Permian Era, some 250 to 300 million years ago. This depository created a wide sedimentary basin, called the Permian Basin, which covers the western part of the Texas and the southeastern part of New Mexico. In the Permian Era this part of the central United States was under water.

The Wasson Field is located in southwestern Yoakum and northwestern Gaines counties of West Texas (See Figure 3), in an area called the Northwest Shelf. It is approximately five miles east of the New Mexico state line and 100 miles north of Midland, Texas as indicated with the red dot in Figure 3. The Wasson Field was discovered in 1936.

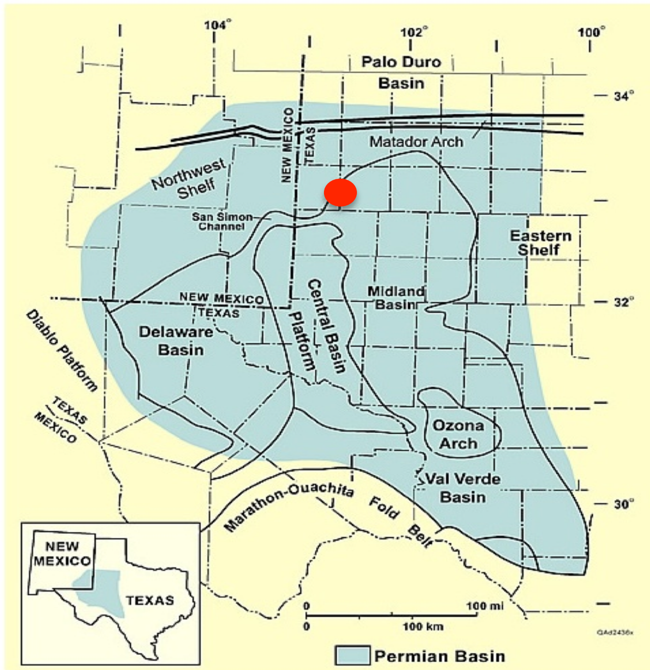


Figure 3 Permian Basin

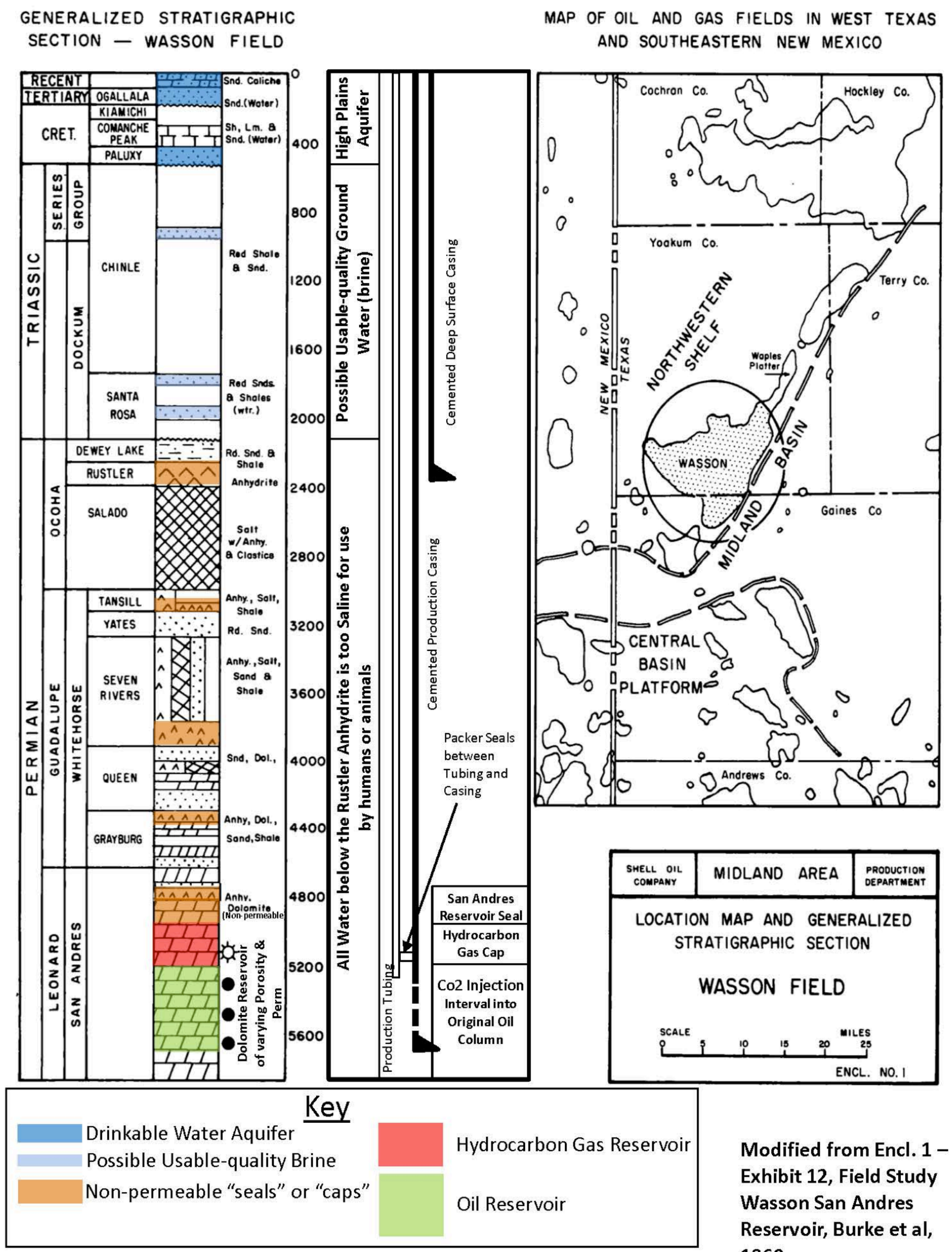
With nearly 4,000 million barrels (MMB) of Original Oil in Place (OOIP), it is one of the largest oil fields in North America. In the years following its deposition, the San Andres formation has been buried under thick layers of impermeable rocks, and finally uplifted to form the current landscape. The process of burial and uplifting produced some unevenness in the geologic layers. Originally flat, there are now some variations in elevation across the Permian Basin. The relative high spots, such as the Wasson Field, have become the places where oil and gas have accumulated over the ensuing millions of years.

As indicated in Figure 4, the San Andres formation now lies beneath some 5,000 feet of overlying sediments. There are a number of sections above the formation that are impermeable and serve as reliable barriers to prevent fluids from moving upwards towards the surface. These barriers are referred to as seals because they effectively seal fluids into the rock formations underneath them. In the Wasson Field, the seals include anhydrite and impermeable dolomite sections that comprise the upper San Andres, as well as intervals in the Grayburg, Seven Rivers, Tansill and Rustler formations. These seals are highlighted in orange on Figure 4.

Between the surface and about 2,000 feet in depth there are intervals of underground sources of drinking water (USDW). These include the Ogallala and Paluxy aquifers, identified in blue in Figure 4. In addition other potentially useful brine intervals (having a higher dissolved solids content) are identified in light blue. U.S. EPA's Underground Injection Control (UIC) and Texas Railroad Commission (TRCC) regulations require that all wells drilled through these intervals confine fluids to the stratum in which they are encountered or injected. Wells are required to use casing and other measures to ensure confinement.[1]

[1] See Texas Administrative Code Title 16 Part 1 Chapter 3 Rule §3.7 found online at: http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=4&ti=16&pt=1&ch=3&rl=Y. For convenience, this rule is summarized in Appendix 7.

Figure 4 Stratigraphic Section at Wasson



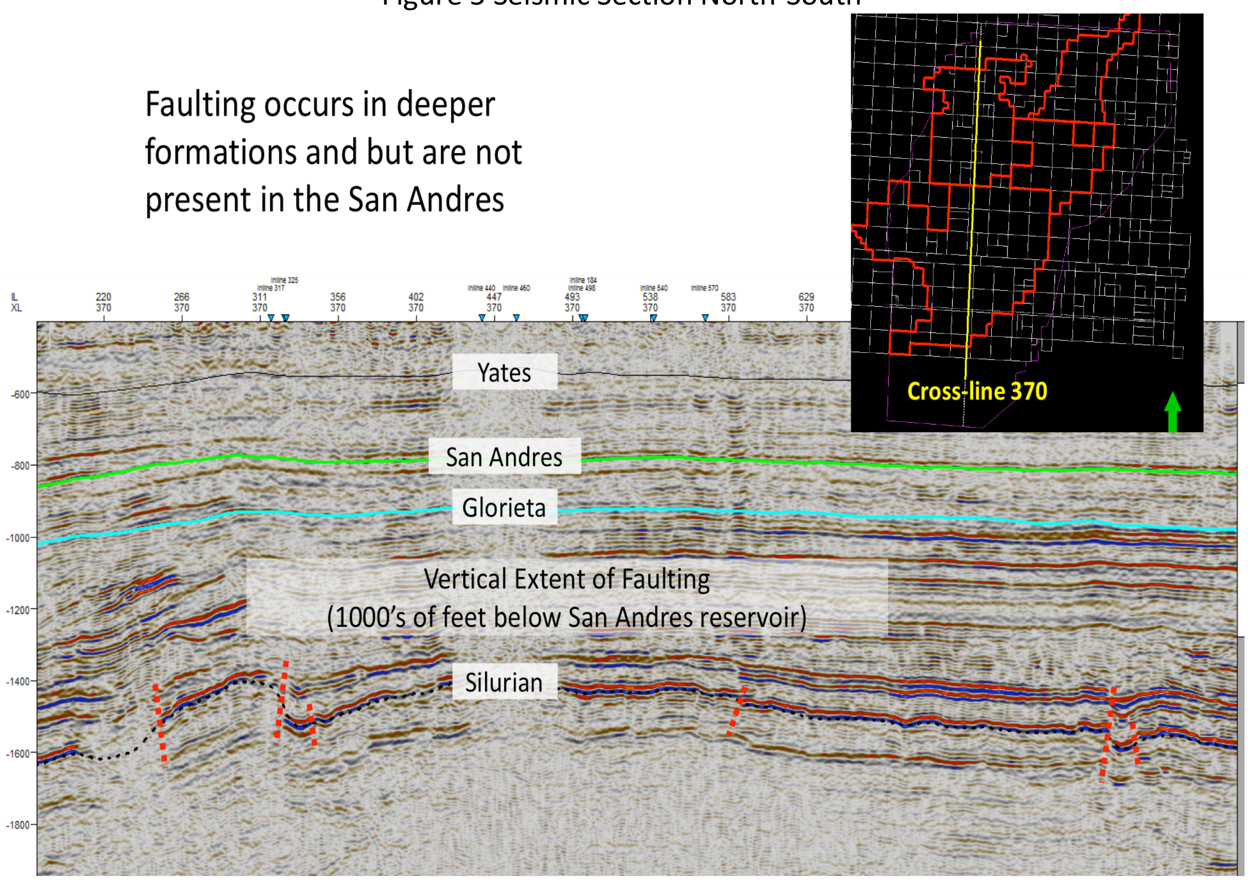
Modified from Encl. 1 – Exhibit 12, Field Study Wasson San Andres Reservoir, Burke et al, 1960

There are no known faults or fractures affecting the Denver Unit that provide an upward pathway for fluid flow. Oxy has confirmed this conclusion in multiple ways. First and foremost, the presence of oil, especially oil that has a gas cap, is indicative of a good quality natural seal. Oil and, to an even greater extent gas, are less dense than the brine found in rock formations and tend to rise over time. Places where oil and gas remain trapped in the deep subsurface over millions of years, as is the case in the Wasson Field,

provide good proof that faults or fractures do not provide a pathway for upward migration out of the flooding interval. The existence of such faults or fractures in the Wasson Field would have provided a pathway for oil and gas and they would not be found there today.

Second, in the course of developing the field, seismic surveys have been conducted to characterize the formations and inform the reservoir models used to design injection patterns. These surveys show the existence of faulting well below the San Andres formation but none that penetrate the flooding interval. Figure 5 shows a seismic section north-south through the Denver Unit. Faulting can be identified deeper in the section, but not at the San Andres level. The same is true in east-west sections. This lack of faulting is consistent with the presence of oil and gas in the San Andres formation at the time of discovery.

Figure 5 Seismic Section North-South



A similar seismic section of the east-west view would show the same relationship to faults that lie thousands of feet below the San Andres and therefore will not provide pathways for fluids in the San Andres to migrate to the surface. This is discussed further in Section 4.3 in the review of potential leakage pathways for injected CO_2.

And finally, the operating history at the Denver Unit confirms that there are no faults or fractures penetrating the flood zone. Fluids, both water and CO_2, have been successfully injected in the Denver Unit since the mid 1960's and there is no evidence of any interaction with existing or new faults or fractures. In fact, it is the absence of faults and fractures in the Denver Unit that make the reservoir such a strong candidate for CO_2 and water injection operations, and enable field operators to maintain effective control over the injection and production processes.

2.2.2 Operational History of the Denver Unit

The Denver Unit is a subdivision of the Wasson Field. It was established in the 1960s to implement water flooding. It is located in the southern part of the area of oil accumulation. The boundaries of the Denver Unit are indicated in the Wasson Field Map (see Figure 6).

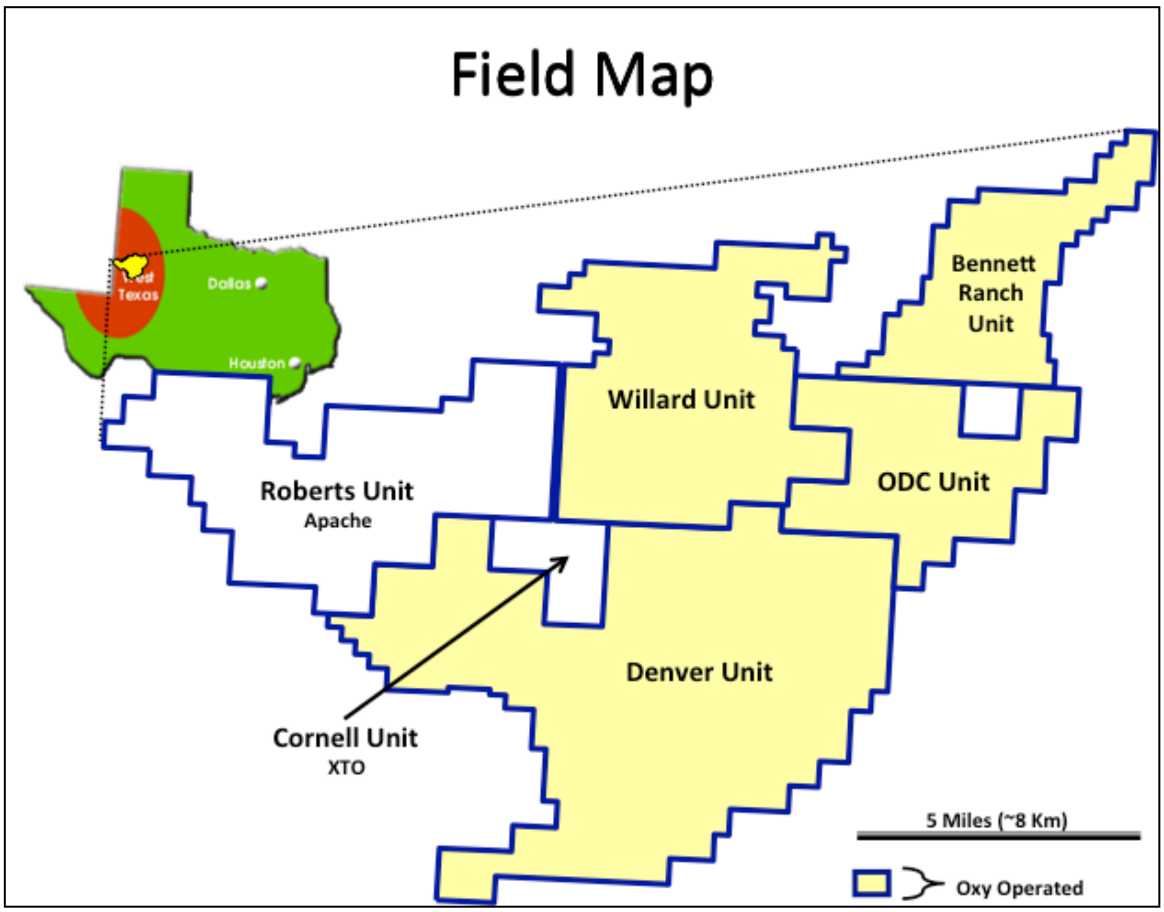


Figure 6 - Wasson Field Map

Water flooding works most efficiently with regular patterns over a large area. The Wasson Field was originally developed with numerous leases held by individuals and companies. To improve efficiency, a number of smaller leases were combined (or unitized) into larger legal entities (Units), which can be operated without the operational restrictions imposed by the former lease boundaries. In 1964, six such units were formed at Wasson to enable water flooding; the largest of these is the Denver Unit (See Figure 6).

CO_2 flooding of the Denver Unit began in 1983 and has continued and expanded since that time. The experience of operating and refining the Denver Unit CO_2 floods over three decades has created a strong understanding of the reservoir and its capacity to store CO_2.

2.2.3 The Geology of the Denver Unit within the Wasson Field

Figure 4 shows a vertical snapshot of the geology above and down to the Wasson field. Figure 7 is an aerial view of the structure of the field showing the depth of the top of the San Andres. As indicated in the discussion of Figure 4, the upper portion of the San Andres formation is comprised of impermeable anhydrite and dolomite sections that serve as a seal. In effect, they form the hard ceilings of an upside down bowl or dome. Below this seal the formation consists of permeable dolomites containing oil and gas. Figure 7 shows a two-dimensional picture of the structure of this formation.

The colors in the structure map in Figure 7 indicate changes in elevation, with red being highest level, (i.e., the level closest to the surface) and blue and purple being lowest level (i.e., the level deepest below the surface). As indicated in Figure 7, the Denver Unit is located at the highest elevation of the San Andres formation within the Wasson Field, forming the top of the dome. The rest of the Wasson field slopes downward from this area, effectively forming the sides of the dome. The elevated area formed a natural trap for oil and gas that migrated from below over millions of years. Once trapped in this high point, the oil and gas has remained in place. In the case of the Wasson Field, this oil and gas has been trapped in the San Andres formation for 50 to100 million years. Over time, fluids, including CO_2, in the Wasson would rise vertically until meeting the ceiling of the dome and would then follow it to the highest elevation in the Denver Unit. As such, the fluids injected into the Denver Unit would stay in the reservoir rather than move to adjacent areas.

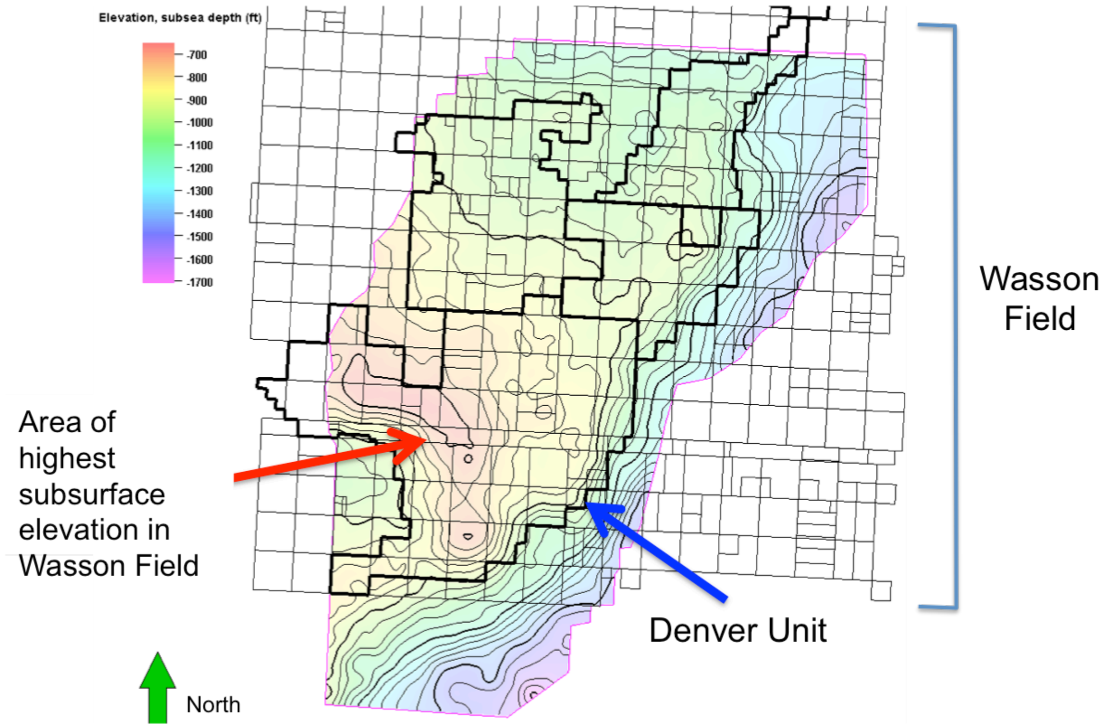


Figure 7 - Structure Map on the Top of San Andres Reservoir

Buoyancy dominates where oil and gas are found in a reservoir. Gas, being lightest, rises to the top and water, being heavier, sinks to the bottom. Oil, being heavier than gas but lighter than water, lies in between. The cross section in Figure 8 shows saturation levels in the oil-bearing layers of the Wasson Field and illustrates this principle.

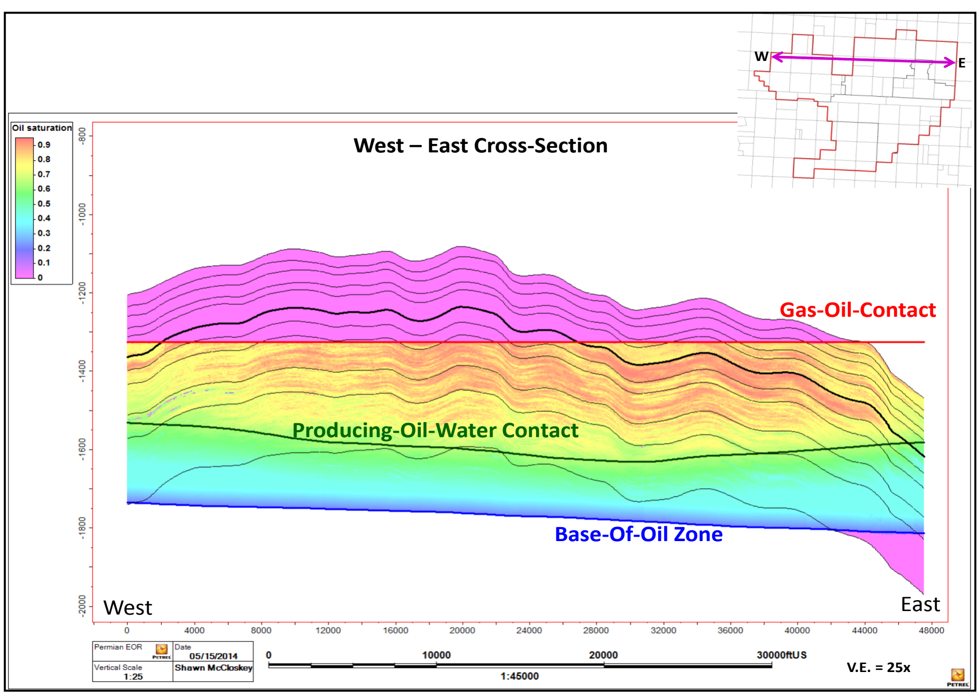


Figure 8 - Wasson Field Cross-Section Showing Saturation

At the time of discovery, natural gas was trapped at the structural high point of the Wasson Field, shown by pink area above the gas-oil contact line (in red) in the cross section (see Figure 8). This interface is found approximately 5,000 feet below the surface (or at -1,325 ft subsea). Above the gas-oil interface is the volume known as a "gas cap." As discussed in Section 2.2.1, the presence of a gas cap is evidence of the effectiveness of the seal formed by the upper San Andres. Gas is buoyant and highly mobile. If it could escape the Wasson field naturally, through faults or fractures, it would have done so over the millennia. Below the gas was an oil accumulation, which extended down to the producing oil-water contact (in black). The producing oil water contact was determined by early drilling to be the maximum depth where only oil was produced.

Below the level of the producing oil-water contact, wells produce a combination of oil and water. The uppermost region in this area is called the transition zone (TZ) and below that is the residual oil zone (ROZ). The ROZ was water flooded by nature millions of years ago, leaving a residual oil saturation.[2] This is approximately the same residual oil saturation remaining after water flooding in the water-swept areas of the main oil pay zone, and is also a target for CO_2 flooding.

When CO_2 is injected into an oil reservoir, it is pushed from injection wells to production wells by the high pressure of the injected CO_2. Once the CO_2 flood is complete and injection ceases, the remaining mobile CO_2 will rise slowly upward, driven by buoyancy forces. If the amount of CO_2 injected into the reservoir exceeds the secure storage capacity of the pore space, excess CO_2 could theoretically "spill" from the reservoir and migrate to other reservoirs in the Northwest Shelf. This risk is very low in the Denver Unit, because there is more than enough pore space to retain the CO_2. Oxy has calculated the total pore space within the Denver Unit, from the top of the reservoir down to the spill point, which is located at -1,675 ft subsea or roughly 5,000 – 5,500 feet below the surface, to be 8,848 MMB. At reservoir conditions the Denver Unit could hold about 14,700 Bscf (775 MMMT) CO_2 in the reservoir space above the spill point. Oxy forecasts that at the end of EOR operations stored CO_2 will fill approximately 25% of calculated storage capacity. (See Section 2.1 for further explanation of the forecast.)

Given that the Denver Unit is the highest subsurface elevation within the Wasson Field, that the confining zone has proved competent over both millions of years and throughout decades of EOR operations, and that the field has ample storage capacity, Oxy is confident that stored CO_2 will be contained securely in the Denver Unit.

2.3 Description of CO_2 EOR Project Facilities and the Injection Process

Figure 9 shows a simplified flow diagram of the project facilities and equipment in the Denver Unit. CO_2 is delivered to the Wasson Field via the Permian pipeline delivery system. The CO_2 injected into the Denver Unit is supplied by a number of different sources into the pipeline system. Specified amounts are drawn based on contractual arrangements among suppliers of CO_2, purchasers of CO_2, and the pipeline operator.

[2] "Residual oil saturation" is the fraction of oil remaining in the pore space, typically after water flooding.

Once CO_2 enters the Denver Unit there are four main processes involved in EOR operations. These processes are shown in Figure 9 and include:

1. **CO_2 Distribution and Injection**. Purchased (fresh) CO_2 is combined with recycled CO_2 from the Denver Unit CO_2 Recovery Plant (DUCRP) and sent through the main CO_2 distribution system to various CO_2 injectors throughout the field.
2. **Produced Fluids Handling**. Produced fluids gathered from the production wells are sent to satellite batteries for separation into a gas/CO_2 mix and a water/oil mix. The water/oil mix is sent to centralized tank batteries where oil is separated from water. Produced oil is metered and sold; water is forwarded to the water injection stations for treatment and reinjection or disposal.
3. **Produced Gas Processing**. The gas/CO_2 mix separated at the satellite batteries goes to the DUCRP where the natural gas (NG), natural gas liquids (NGL), and CO_2 streams are separated. The NG and NGL move to commercial pipelines for sale. The majority of remaining CO_2 (e.g., the recycled CO_2) is returned to the CO_2 distribution system for reinjection.
4. **Water Treatment and Injection**. Water separated in the tank batteries is processed at water injection stations to remove any remaining oil and then distributed throughout the field either for reinjection along with CO_2 (the WAG or "water alternating gas" process) or sent to disposal wells.

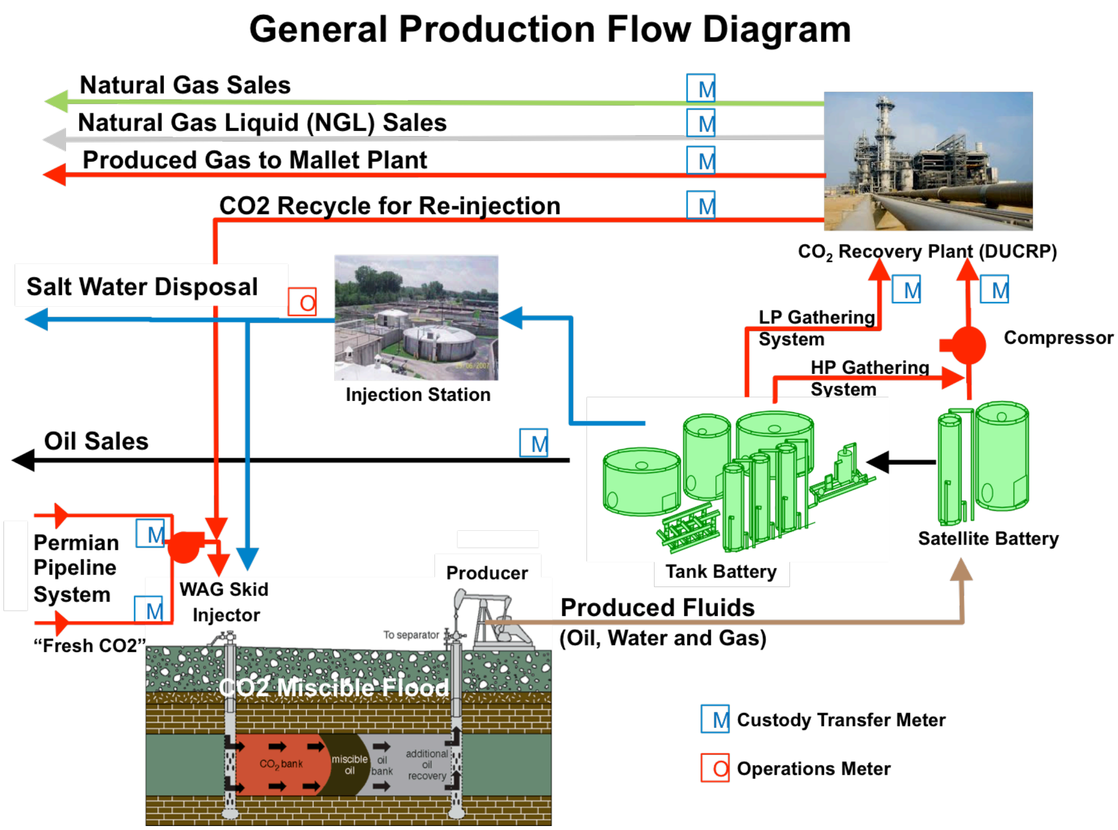


Figure 9 Denver Unit Facilities General Production Flow Diagram

2.3.1 CO_2 Distribution and Injection.

Oxy purchases CO_2 from the Permian pipeline delivery system and receives it through two custody transfer metering points, as indicated in Figure 9. Purchased CO_2 and recycled CO_2 are sent through the CO_2 trunk lines to injection manifolds. The manifolds are complexes of pipes that have no valves and do not exercise any control function. At the manifolds, the CO_2 is split into multiple streams and sent through distribution lines to individual WAG skids. There are volume meters at the inlet and outlet of DUCRP.

Currently, Oxy has 16 injection manifolds and approximately 600 injection wells in the Denver Unit. Approximately 400 MMscf of CO_2 is injected each day, of which approximately 47% is fresh CO_2, and the balance (53%) is recycled from DUCRP. The ratio of fresh CO_2 to recycled CO_2 is expected to change over time, and eventually the percentage of recycled CO_2 will increase and purchases of fresh CO_2 will taper off. As indicated in Section 2.1, Oxy forecasts ending purchases of fresh CO_2 for the Denver unit in 2059.

Each injection well has an individual WAG skid located near the wellhead (typically 150-200 feet away). WAG skids are remotely operated and can inject either CO_2 or water at various rates and injection pressures as specified in the injection plans. At any given time about half the injectors are injecting CO_2 and half are injecting water, in keeping with the injection plan for each one. The length of time spent injecting each fluid is a matter of continual optimization, designed to maximize oil recovery and minimize CO_2 utilization

in each injection pattern. A WAG skid control system is implemented at each WAG skid. It consists of a dual-purpose flow meter used to measure the injection rate of water or CO_2, depending on what is being injected. Data from these meters is sent to a control center where it is compared to the injection plan for that skid. As described in Sections 5 and 7, data from the WAG skid control systems, visual inspections of the injection equipment, and use of the procedures contained in 40 CFR §98.230-238 (Subpart W), will be gathered to complete the mass balance equations necessary to determine annual and cumulative volumes of stored CO_2.

2.3.2 Wells in the Denver Unit

As of August 2014, there are approximately 1,734 active wells in the Denver Unit as indicated in Figure 10; roughly two thirds of these wells are production wells and the remaining third are injection wells. In addition there are 448 inactive wells, bringing the total number of wells currently completed in the Denver Unit to 2,182. Table 1 shows these well counts in the Denver Unit by status.

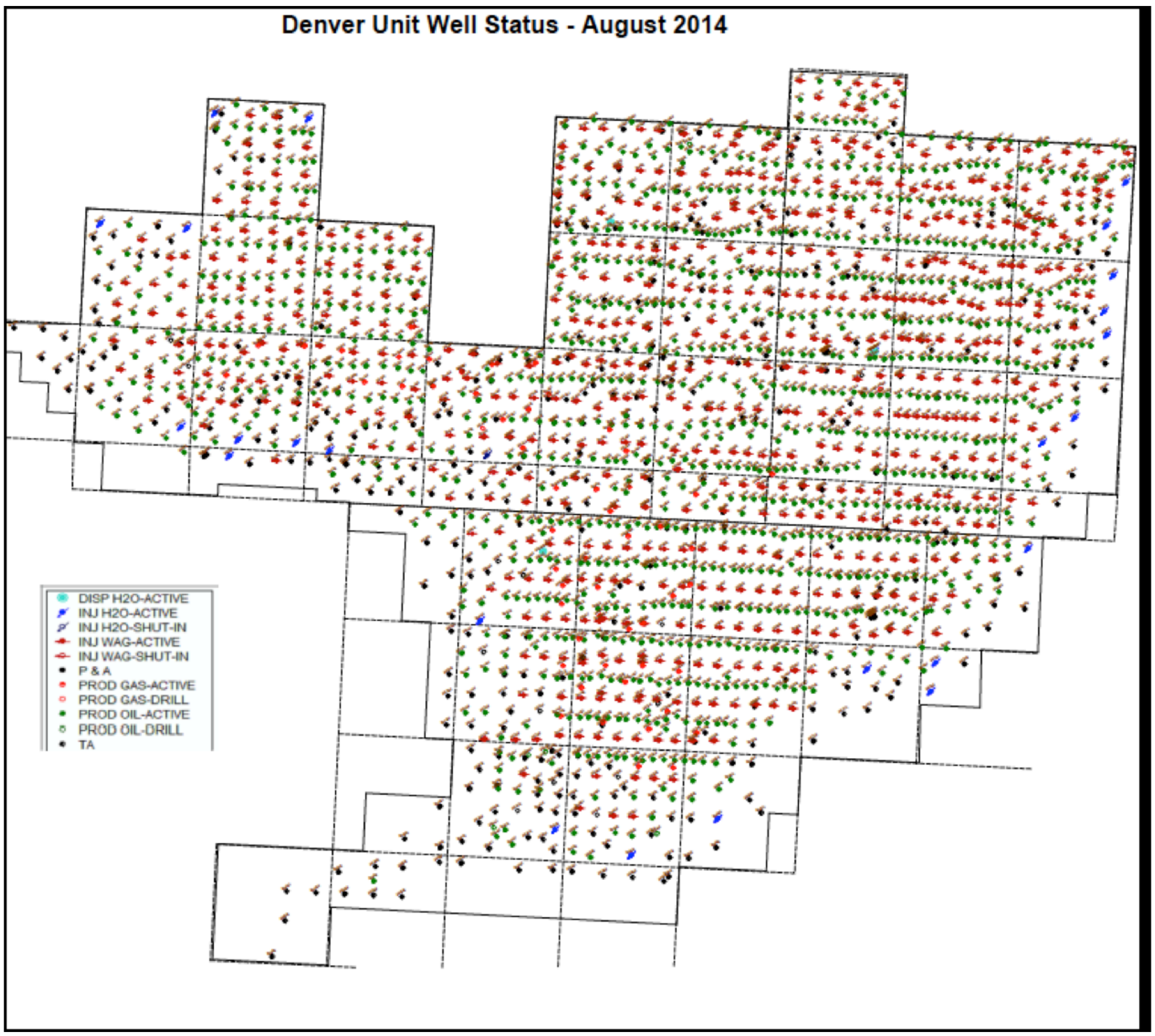


Figure 10 Denver Unit Wells - August 2014

Table 1 - Denver Unit Wells

Age/Completion of Well	*Active*	*Shut-in*	*Temporarily Abandoned*	*Plugged and Abandoned*
Drilled after 1996	619	3	23	3
Drilled 1961-1996 with production casing cemented to surface	388	2	58	49
Drilled between 1972-1975 – using lightweight casing	247	1	16	32
Drilled before 1960	480	2	47	212
TOTAL	***1734***	***8***	***144***	***296***

In addition to the wells completed in the Denver Unit, there are 885 wells that penetrate the Denver Unit but are completed in formations other than the San Andres. Table 2 shows these well counts by status: 498 of these wells are active and are operated by entities other than Oxy; the remaining wells are inactive and formerly operated by Oxy or others.

Table 2 – Non-Denver Unit Wells

	Oxy Operated			*Operated by Others*	
Age/Completion of Well	*Shut-In*	*Temporarily Abandoned*	*Plugged and Abandoned*	*Active*	*Inactive*
Drilled after 1996	2	16	1	181	10
Drilled 1961-1996 with production casing cemented to surface	4	69	94	214	89
Drilled between 1972-1975 – using lightweight casing	0	0	0	0	1
Drilled before 1960	0	28	29	103	44
TOTAL	***6***	***113***	***124***	***498***	***144***

Tables 1 and 2 categorize the wells in groups that relate to age and completion methods. The wells drilled after 1996 were completed using state-of-the-art standards. The majority of wells drilled between 1961-1996 have production casings cemented to the surface. A subset of this group of wells uses lightweight casing. The last group covers older wellbores drilled before 1960. Oxy considers these categories when planning well maintenance projects. Further, Oxy keeps well workover crews on site in the Permian to maintain all active wells and to respond to any wellbore issues that arise.

All wells in oilfields, including both injection and production wells described in Tables 1 and 2, are regulated by TRRC under TAC Title 16 Part 1 Chapter 3.[3] A list of wells, with well identification numbers, is included in Appendix 6. The injection wells are subject to additional requirements promulgated by EPA – the UIC Class II program – implementation of which has been delegated to the TRRC.

TRRC rules govern well siting, construction, operation, maintenance, and closure for all wells in oilfields. Briefly current rules require, among other provisions:

[3] See Appendix 7 for additional information.

- That fluids be constrained in the strata in which they are encountered;
- That activities governed by the rule cannot result in the pollution of subsurface or surface water;
- That wells adhere to specified casing, cementing, drilling well control, and completion requirements designed to prevent fluids from moving from the strata they are encountered into strata with oil and gas, or into subsurface and surface waters;
- That wells file a completion report including basic electric log (e.g., a density, sonic, or resistivity (except dip meter) log run over the entire wellbore);
- That all wells be equipped with a Bradenhead gauge, measure the pressure between casing strings using the Bradenhead gauge, and follow procedures to report and address any instances where pressure on the Bradenhead is detected;
- And that all wells follow plugging procedures that require advance approval from the Director and allow consideration of the suitability of the cement based on the use of the well, the location and setting of plugs.

In addition, Oxy implements a corrosion protection program to protect and maintain the steel used in injection and production wells from any CO_2-enriched fluids. Oxy currently employs methods to mitigate both internal and external corrosion of casing in wells in the Denver Unit.

Under the TRRC's program, wells to be used for fluid injection (as defined under EPA's UIC Class II program) must comply with additional requirements related to the Area of Review (AoR), casing design, special equipment for well monitoring, mechanical integrity testing (MIT) (using a pressure test), and monitoring / reporting. These current requirements are briefly described below.

AoR Review

According to EPA, the AoR refers to "the area around a deep injection well that must be checked for artificial penetrations, such as other wells, before a permit is issued. Well operators must identify all wells within the AoR that penetrate the injection or confining zone, and repair all wells that are improperly completed or plugged. The AoR is either a circle or a radius of at least ¼ mile around the well or an area determined by calculating the zone of endangering influence, where pressure due to injection may cause the migration of injected or formation fluid into a USDW."[4] These requirements thus require that Oxy locate and evaluate all wells located in the AoR. Thus, Oxy's reviews in the Denver Unit include both wells operated by Oxy and other parties, drilled into the Denver Unit or other strata.

CO_2 flooding takes place throughout the Denver Unit. All of Oxy's injection wells are permitted for CO_2 flooding, after satisfying AoR requirements for the injection wells. Oxy is in compliance with all AoR requirements.

[4] USEPA, Underground Injection Control Program Glossary, http://water.epa.gov/type/groundwater/uic/glossary.cfm.

Mechanical Integrity Testing (MIT)
Oxy complies with the MIT requirements implemented by TRRC, which are designed to ensure that there is no significant leakage within the injection tubing, casing, or packer, as well as no leakage outside of the casing. All active injection wells undergo MIT testing (referred to as "H-5 testing") at the following intervals:

- Before injection operations begin;
- Every 5 years unless the permit states otherwise;
- After any workover that disturbs the seal between the tubing, packer, and casing;
- After any repair work on the casing; and
- When a request is made to suspend or reactivate the injection or disposal permit.

TRRC requires that the operator notify the TRRC district office at least 48 hours prior to conducting an H-5 test. Operators are required to use a pressure recorder and pressure gauge for the tests. The operator's field representative must sign the pressure recorder chart and submit it with the H-5 form. Casing test pressure must fall within 30-70% of the pressure recorder chart's full scale, and the pressure gauge must measure in increments that are no greater than 5% of the test pressure.

The current[5] requirements for conducting MIT include:

For Wells with Tubing
- The standard H-5 pressure test is the most common method.
- Pressure test the tubing-packer-casing at a pressure between 200 and 500 psi.
- The test pressure must stabilize within 10% of the required test pressure and remain stabilized for 30 minutes (60 minutes if testing with a gas-filled annulus)
- Maintain a minimum 200 psi pressure differential between the test pressure and tubing pressure.

For Wells without Tubing
- Pressure test immediately above injection perforations against a temporary plug, wireline plug, or tubing with packer.
- Indicate the type and depth of the plug.
- Must be tested to maximum permitted injection pressure that is not limited to 500 psi.

If a well fails an MIT, the operator must immediately shut in the well, provide notice to TRRC within 24 hours, file a Form H-5 with TRRC within 30 days, and make repairs or plug the well within 60 days. Casing leaks must be successfully repaired and the well retested or, if required, the well must be plugged. In such cases, the operator must submit a Form W-3A Notice of Intention to Plug and Abandon a well to the TRRC.

[5] The TRRC rules referenced here were accessed in August 2014 and are subject to change over time.

TRCC requires similar testing and response at injection wells that are more than 25 years old and have been idle for more than one year. This process is referred to as H-15 testing. For these wells, MIT is required every five years using either an annual fluid level test (valid for one year) or a hydraulic pressure test with a plug immediately above the perforations.

In the event of test failure at these idle wells, the process for reporting and correction is similar as for active wells, but the timeline is shorter. The operator must make repairs or plug the well within 30 days – not the 60 days allowed for an active well. Again, casing leaks must be successfully repaired and the well retested or plugged and, if plugging is required, a Form W-3A must be submitted to the TRRC.

Any well that fails an MIT cannot be returned to active status until it passes a new MIT.

2.3.3 Produced Fluids Handling

As injected CO_2 and water move through the reservoir, a mixture of oil, gas, and water (referred to as "produced fluids") flows to the production wells. Gathering lines bring the produced fluids from each production well to satellite batteries. Oxy has approximately 1,100 production wells in the Denver Unit and production from each is sent to one of 32 satellite batteries. Each satellite battery consists of a large vessel that performs a gas-liquid separation. Each satellite battery also has well test equipment to measure production rates of oil, water and gas from individual production wells. Oxy has testing protocols for all wells connected to a satellite. Most wells are tested every two months. Some wells are prioritized for more frequent testing because they are new or located in an important part of the field; some wells with mature, stable flow do not need to be tested as frequently; and finally some wells do not yield solid test results necessitating review or repeat testing.

After separation, the gas phase, which is approximately 80-85% CO_2 and contains 2,000-5,000 ppm H_2S, is transported by pipeline to DUCRP for processing as described below.

The liquid phase, which is a mixture of oil and water, is sent to one of six centralized tank batteries where oil is separated from water. The large size of the centralized tank batteries provides enough residence time for gravity to separate oil from water.

The separated oil is metered through the Lease Automatic Custody Transfer (LACT) unit located at each centralized tank battery and sold. The oil typically contains a small amount of dissolved or entrained CO_2. Analysis of representative samples of oil is conducted once a year to assess CO_2 content. Since 2011, the dissolved CO_2 content has averaged 0.13% by volume in the oil.

The water is removed from the bottom of the tanks at the central tank batteries and sent to the water treatment facility. After treatment, the water is either re-injected at the WAG skids or disposed of into permitted disposal wells. Although Oxy is not required to determine or report the amount of dissolved CO_2 in this water, analyses have shown the water typically contains 40ppm (0.004%) CO_2.

Any gas that is released from the liquid phase rises to the top of the tanks and is collected by a Vapor Recovery Unit (VRU) that compresses the gas and sends it to DUCRP for processing.

Wasson oil is slightly sour, containing small amounts of hydrogen sulfide (H_2S), which is highly toxic. There are approximately 90 workers on the ground in the Denver Unit at any given time, and all field personnel are required to wear H_2S monitors at all times. Although the primary purpose of H_2S detectors is protecting employees, monitoring will also supplement Oxy's CO_2 leak detection practices as discussed in Sections 5 and 7.

In addition, the procedures in 40 CFR §98.230-238 (Subpart W) and the two-part visual inspection process described in Section 5 are used to detect leakage from the produced fluids handling system. As described in Sections 5 and 7 the volume of leaks, if any, will be estimated to complete the mass balance equations to determine annual and cumulative volumes of stored CO_2.

2.3.4 Produced Gas Handling

Produced gas is gathered from the satellite batteries and sent to centralized compressor stations and then to DUCRP in a high pressure gathering system. Produced gas collected from the tank battery by VRUs is either added to the high pressure gathering system or sent to DUCRP in a low pressure gathering system. Both gathering systems have custody transfer meters at the DUCRP inlet.

Once gas enters DUCRP, it undergoes compression and dehydration. Produced gas is first treated in a Sulferox unit to convert H_2S into elemental sulfur. Elemental sulfur is sold commercially and is trucked from the facility.

Other processes separate NG and NGLs into saleable products. At the end of these processes there is a CO_2 rich stream, a portion of which is redistributed (recycled) to again be injected. Oxy's goal is to limit the amount of H_2S in the recycled CO_2 to less than 100 ppm H_2S. Meters at DUCRP outlet are used to determine the total volume of the CO_2 stream recycled back into the EOR operations.

Separated NG is either used within the Denver Unit or delivered to a commercial pipeline for sale. The pipeline gas must meet quality standards and is measured using a flow meter that is calibrated for commercial transactions. NGL is also measured using a commercial flow meter and sold for further processing.

As described in Section 2.3.4, data from 40 CFR §98.230-238 (Subpart W), the two-part visual inspection process for production wells and areas described in Section 5, and information from the personal H_2S monitors are used to detect leakage from the produced gas handling system. This data will be gathered to complete the mass balance equations necessary to determine annual and cumulative volumes of stored CO_2 as described in Sections 5 and 7.

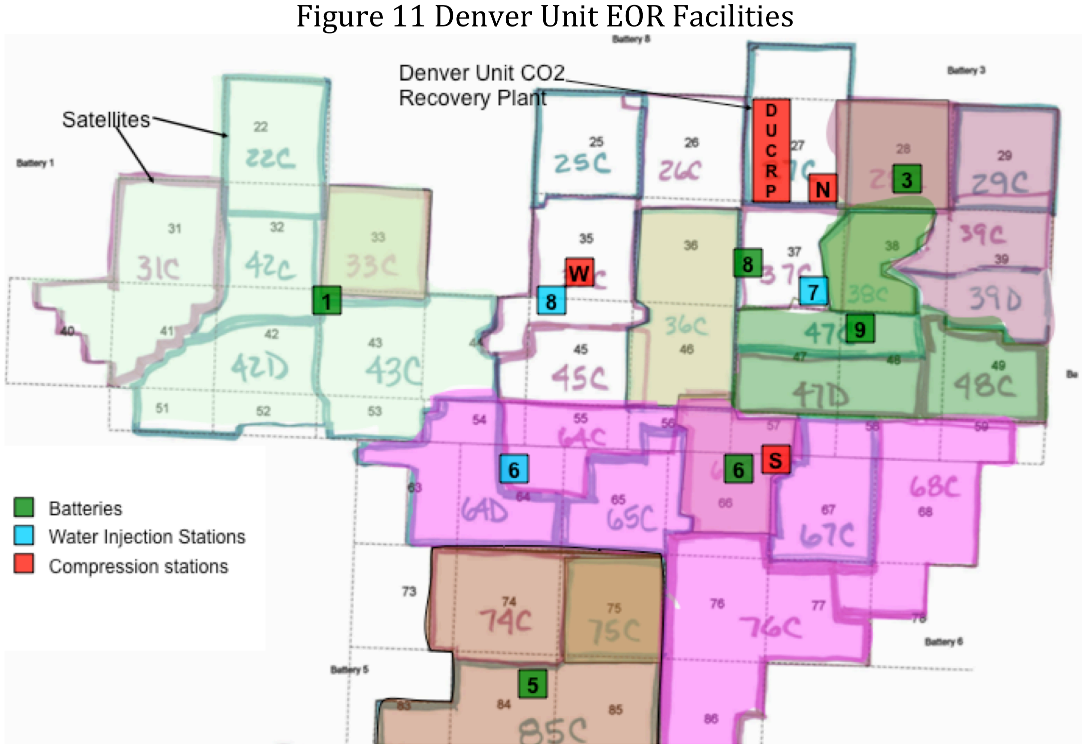
2.3.5 Water Treatment and Injection

Produced water collected from the tank batteries is gathered through a pipeline system and moved to one of three water treatment stations. Each facility consists of 10,000-barrel tanks where any remaining oil is skimmed from the water. Skimmed oil is returned to the centralized tank batteries. The water is filtered and sent to one of 10 large injection pumps. Pressurized water is distributed to the WAG skids for reinjection or to water disposal wells for injection into deeper permeable formations.

2.3.6 Facilities Locations

The locations of the various facilities in the Denver Unit are shown in Figure 11. As indicated above, there are 32 satellite batteries. The areas served by each satellite battery are shown in the highlighted areas and labeled with a number and letter, such as "31C" in the far west. The six centralized tank batteries are identified by the green squares. The three water treatment and injection stations are shown by the light blue squares. DUCRP is located by the large red rectangle to the north. Three compressor stations are shown by red squares.

Figure 11 Denver Unit EOR Facilities



TRRC requires that injections pressures be limited to prevent contamination of other hydrocarbon resources or pollution of subsurface or surface waters. In addition, EOR projects are designed by Oxy to ensure that mobilized oil, gas, and CO_2 do not migrate into adjoining properties that are owned by competing operators, who could then produce the fluids liberated by Oxy's EOR efforts. In the Denver Unit, Oxy uses two methods to contain fluids within the unit: reservoir pressure management and the careful placement and operation of wells along boundaries of other units.

Reservoir pressure in the Denver Unit is managed by maintaining an injection to withdrawal ratio (IWR)[6] of approximately 1.0. To maintain the IWR, Oxy monitors fluid injection to ensure that reservoir pressure does not increase to a level that would fracture the reservoir seal or otherwise damage the oil field. Similar practices are used for other units operated by Oxy within the Wasson Field. Most, if not all other Wasson Units, inject at pressures a little higher than Denver Unit and all maintain an IWR of at least one. Higher pressures in the surrounding areas confine Denver Unit fluids within the Unit.

Oxy also prevents injected fluids migrating out of the injection interval by keeping injection pressure below the fracture pressure which is measured using step-rate tests. In these tests, injection pressures are incrementally increased (e.g., in "steps") until injectivity increases abruptly, which indicates that an opening (fracture) has been created in the rock. Oxy manages its operations to ensure that injection pressures are kept below the fracture pressure so as to ensure that the valuable fluid hydrocarbons and CO_2 remain in the reservoir.

The second way Oxy contains fluids within the Denver Unit is to drill wells along the lease lines that are designed to avoid loss of valuable fluids from the unit. To the north Oxy has established lease line agreements with the neighboring CO_2 units. These agreements provide for offsetting injectors or offsetting producers along the lease line that balance one another. For example, an injector on one side is offset and balanced by an injector on the other side. The two paired injectors are maintained on injection in such a way as to give Oxy and its partners sufficient assurance that a no-flow boundary is maintained at the Unit boundary. This restricts the flow of injected CO_2 or mobilized oil from one unit to the other. A similar dynamic is maintained for paired producers. To the east, south and west, there are no operations on the other side of the Denver Unit boundary. Near these boundaries, a row of water injectors or producers are maintained to keep CO_2 or mobilized oil from leaving the Denver Unit.

2.4 Reservoir Modeling

[6] Injection to withdrawal ratio (IWR) is the ratio of the volume of fluids injected to the volume of fluids produced (withdrawn). Volumes are measured under reservoir conditions for all fluids. Injected fluids are CO_2 and water; produced fluids are oil, water, and CO_2. By keeping IWR close to 1.0, reservoir pressure is held constant, neither increasing nor decreasing.

Oxy uses simulators to model the behavior of fluids in a reservoir, providing a mathematical representation that incorporates all information that is known about the reservoir. In this way, future performance can be predicted in a manner consistent with available data, including logs and cores, as well as past production and injection history.

Mathematically, reservoir behavior is modeled by a set of differential equations that describe the fundamental principles of conservation of mass and energy, fluid flow, and phase behavior. These equations are complex and must be solved numerically using high-powered computers. The solution process involves sub-dividing the reservoir into a large number of blocks arranged on a grid. Each block is assigned specific rock properties (porosity, permeability, saturations, compositions and pressure). The blocks are small enough to adequately describe the reservoir, but large enough to keep their number manageable. The computer uses the differential equations to determine how various physical properties change with time in each grid block. Small time steps are used to progress from a known starting point through time. In this way the computer simulates reservoir performance, consistent with fundamental physics and actual reservoir geometry. The simulation represents the flow of each fluid phase (oil, water and gas), changes in fluid content (saturations), equilibrium between phases (compositional changes), and pressure changes over time.

Field-wide simulations are initially used to assess the viability of water and CO_2 flooding. Once a decision has been made to develop a CO_2 EOR project, Oxy uses detailed pattern modeling to plan the location and injection schedule for wells. For the purpose of operating a CO_2 flood, large-scale modeling is not useful as a management tool because it does not provide sufficiently detailed information about the expected pressure, injection volumes, and production at the level of an injection pattern.

In the case of the Denver Unit, field-wide modeling was conducted by the previous owners in the 1980's and 1990's. The outputs were used to determine plans to develop the site for CO_2 flooding more than 20 years ago. Oxy reviewed this large-scale modeling to inform their decision to acquire leases for the Denver Unit in 2000. However, since taking over operation of the Denver Unit in 2000, Oxy has used the more detailed pattern modeling to operate the CO_2 flood.

At the pattern level, the objective of a simulation is to develop an injection plan that maximizes the oil recovery, and minimizes the costs, of the CO_2 flood. The injection plan includes such controllable items as:

- The cycle length and WAG ratio to inject water or CO_2 in the WAG process, and
- The best rate and pressure for each injection phase.

Simulations may also be used to:

- Evaluate infill or replacement wells,
- Determine the best completion intervals,
- Verify the need for well remediation or stimulation, and

- Determine anticipated rates and ultimate recovery.

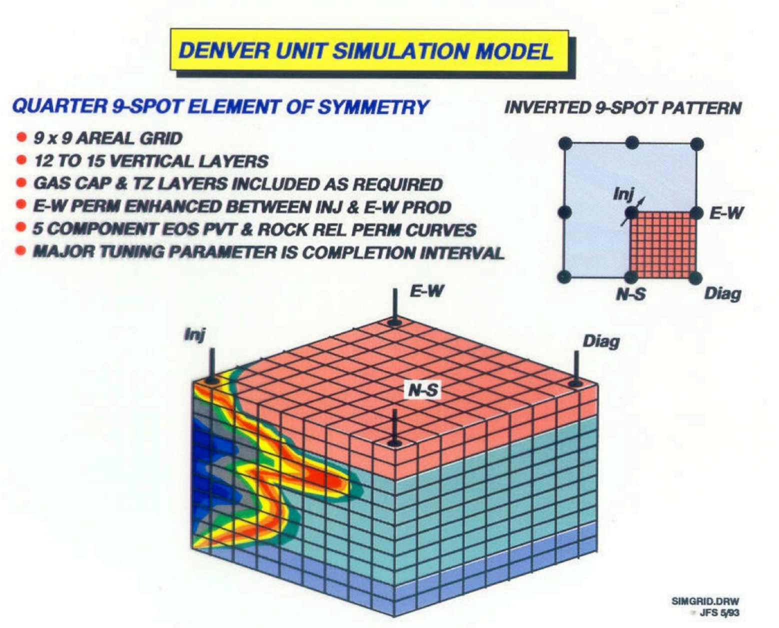
This pattern-level modeling provides Oxy with confidence that the injected CO_2 will stay in-zone to contact and displace oil, and that the flood pattern and injection scheme are optimized.

The pattern level simulator used by Oxy uses a commercially available compositional simulator, called MORE, developed by Roxar. It is called "compositional" because it has the capability to keep track of the composition of each phase (oil, gas, and water) over time and throughout the volume of the reservoir.

To build a simulation model, engineers and scientists input specific information on reservoir geometry, rock properties, and fluid flow properties. The input data includes:

- Reservoir geometry, including distance between wells, reservoir thickness and structural contours;
- Rock properties, such as permeability and porosity of individual layers, barriers to vertical flow, and layer continuity; and,
- Fluid flow properties including density and viscosity of each phase, relative permeability, capillary pressure, and phase behavior.

Figure 12 Denver Unit Simulation Model



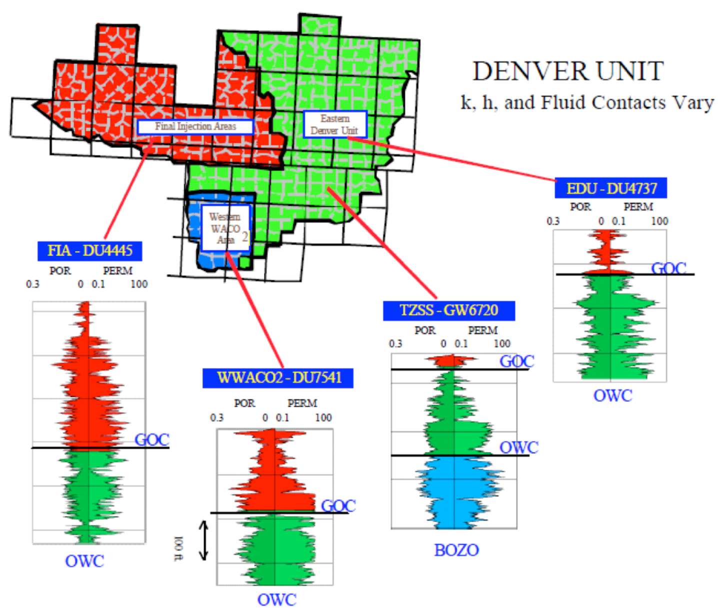
A representative pattern-level simulation model for the Denver Unit is illustrated in Figure 12. The model is representative of a portion of the field that is repeated many times throughout the field, in this case a fraction of an injection pattern. This fraction is an element of symmetry, meaning that the same geometry and the same process physics are repeated many times over the area of the field.

Layering

Within a flood pattern, one of the most important properties to model is the effect of layering. Reservoir rocks were originally deposited over very long periods of time. Because the environment tended to be uniform at any one point in time, reservoir properties tend to be relatively uniform over large areas. Depositional environment changes over time, however, and for this reason rock properties vary considerably with time or depth as they are deposited. Thus, rock properties are modeled as layers. Some layers have high permeability and some have lower permeability. Those with higher permeability take most of the injected fluids and are swept most readily. Those with lower permeability may be only partially contacted at the end of the flooding process. (The WAG process helps improve sweep efficiency.) As Figure 12 shows, the simulation is divided into 12 to 15 vertical grid blocks. Each layer of simulation grid blocks is used to model the depositional layering as closely as practical. The seal rocks above the flood interval are not included in the simulation since they are impermeable and do not participate in fluid flow processes.

Figure 13 illustrates how rock properties and fluid content vary across the Denver Unit. A thick original gas cap (indicated by the red shading of the porosity/permeability logs in Figure 13) covers the western portion of the field. Rock properties and fluid content are modeled based on the layering found in well DU 4445. (The layers shown in green are filled with oil; those in blue are in the transition zone. The well diagrams show rock properties versus depth within the flooded interval. The flooded interval is some 5000 ft below the surface.) The gas-filled rock forms a natural path for injected CO_2 to follow, because gas is more mobile than oil. Care must be taken to avoid having CO_2 simply bypass the oil layers, thus reducing oil recovery. Fortunately, the vertical permeability (i.e., the connectivity between layers) is low, thus keeping injected CO_2 in the zone into which it was injected.

Figure 13 – Area Sub-groups



Moving further to the south and east, the gas zone occupies less vertical height but the transition zone plays a larger role. Here the layering is modeled based on well DU 7541. Further east, different layering is modeled based on wells GW 6720 and DU 4737.

The production and injection performance of each pattern is monitored in relation to the predicted (i.e., simulated) behavior. Special attention is focused on those patterns where performance does not match the model. In this way, any performance problems are quickly identified and remedied.

3. Delineation of Monitoring Area and Timeframes

3.1 Active Monitoring Area

Because CO2 is present throughout the Denver Unit and retained within it, the Active Monitoring Area (AMA) is defined by the boundary of the Denver Unit. The following factors were considered in defining this boundary:

- Free phase CO_2 is present throughout the Denver Unit: More than 4,035 Bscf (212.8 MMMT) tons of CO_2 have been injected throughout the Denver Unit since 1983 and there has been significant infill drilling in the Denver Unit to complete additional wells to further optimize production. Operational results thus far indicate that there is CO_2 throughout the Denver Unit.
- CO_2 injected into the Denver Unit remains contained within that unit because of the fluid and pressure management impacts associated with CO_2 EOR. Namely, maintenance of an IWR of 1.0 assures a stable reservoir pressure; managed leaseline injection and production wells are used to retain fluids in the Denver Unit as indicated in Section 2.3.6; and operational results indicate that injected CO_2 is retained in the Denver Unit.
- Furthermore, over geologic timeframes, stored CO_2 will remain in the Denver unit because it is the area with the highest elevation CO_2 will not migrate downdip as described in Section 2.2.3.

3.2 Maximum Monitoring Area

The Maximum Monitoring Area (MMA) is defined in 40 CFR §98.440-449 (Subpart RR) as including the maximum extent of the injected CO_2 and a half-mile buffer bordering that area. As described in the AMA section (Section 3.1), the maximum extent of the injected CO_2 is anticipated to be bounded by the Denver Unit. Therefore the MMA is the Denver Unit plus the half-mile buffer as required by 40 CFR §98.440-449 (Subpart RR).

3.3 Monitoring Timeframes

Oxy's primary purpose in injecting CO_2 is to produce oil that would otherwise remain trapped in the reservoir and not, as in UIC Class VI, "specifically for the purpose of geologic storage."[7] During a Specified Period (an estimated ten years including all or some portion of 2014 through 2021), Oxy will have a subsidiary purpose of establishing the long-term containment of a measurable quantity of CO_2 in the San Andres formation at the Denver Unit. The Specified Period will be substantially shorter than the period of production from the Denver Unit because CO_2 has been injected at the Denver Unit since 1983 and is expected to continue for roughly five decades after the Specified Period ends. At the conclusion of the Specified Period, Oxy will submit a request for discontinuation of reporting when Oxy can provide a demonstration that current monitoring and model(s) show that the cumulative mass of CO_2 reported as sequestered during the Specified Period is not expected to migrate in the future in a manner likely to result in surface leakage. It is expected that it will be possible to make this demonstration within 2 – 3 years after injection for the Specified Period ceases and will be based upon predictive modeling supported by monitoring data. The demonstration will rely on two principles: 1) that just as is the case for the monitoring plan, the continued process of fluid management during the years of CO_2 EOR operation after the Specified Period will contain injected fluids in the Denver Unit, and 2) that the cumulative mass reported as sequestered during the Specified Period is a small fraction of the total that will be stored in the Denver Unit over the lifetime of operations. *See* 40 C.F.R. § 98.441(b)(2)(ii).

4. Evaluation of Potential Pathways for Leakage to the Surface

4.1 Introduction

In the 50 years since the Denver Unit was formed to facilitate water flooding, the reservoir has been studied and documented extensively. Based on the knowledge gained from that experience, this section assesses the potential pathways for leakage of stored CO_2 to the surface. The following potential pathways are reviewed:

- Existing Well Bores
- Faults and Fractures
- Natural and Induced Seismic Activity
- Previous Operations
- Pipeline/Surface Equipment
- Lateral Migration Outside the Denver Unit
- Dissolution of CO_2 into Formation Fluid and Subsequent Migration
- Drilling Through the CO_2 Area
- Diffuse Leakage Through the Seal

[7] EPA UIC Class VI rule, EPA 75 FR 77291, December 10, 2010, section 146.81(b).

4.2 Existing Well Bores

As of August 2014, there are approximately 1,734 active wells in the Denver Unit – roughly two thirds are production wells and the remaining third are injection wells. In addition, there are 448 inactive wells, as described in Section 2.3.2.

Leakage through existing well bores is a potential risk at the Denver Unit that Oxy works to prevent by adhering to regulatory requirements for well drilling and testing; implementing best practices that Oxy has developed through its extensive operating experience; monitoring injection/production performance, wellbores, and the surface; and by maintaining surface equipment.

As discussed in Section 2.3.2, regulations governing wells in the Denver Unit require that wells be completed and operated so that fluids are contained in the strata in which they are encountered and that well operation does not pollute subsurface and surface waters. The rules establish the requirements that all wells (injection, production, disposal) must comply with. Depending upon the purpose of a well, the requirements can include additional standards for AoR evaluation and MIT. In implementing these rules, Oxy has developed operating procedures based on its experience as one of the world's leading operators of EOR floods. Oxy's best practices include developing detailed modeling at the pattern level to guide injection pressures and performance expectations; utilizing diverse teams of experts to develop EOR projects based on specific site characteristics; and creating a culture where all field personnel are trained to look for and address issues promptly. Oxy's practices ensure that well completion and operation procedures are designed not only to comply with rules but also to ensure that all fluids (e.g., oil, gas, CO_2) remain in the Denver Unit until they are produced through an Oxy well – these include corrosion prevention techniques to protect the wellbore.

As described in section 5, continual and routine monitoring of Oxy's well bores and site operations will be used to detect leaks, including those from non-Oxy wells, or other potential well problems as follows:

- Well pressure in injection wells is monitored on a continual basis. The injection plans for each pattern are programmed into the injection WAG skid, as discussed in Section 2.3.1, to govern the rate, pressure, and duration of either water or CO_2 injection. Pressure monitors on the injection wells are programmed to flag pressures that significantly deviate from the plan. Leakage on the inside or outside of the injection wellbore would affect pressure and be detected through this approach. If such excursions occur, they are investigated and addressed. It is Oxy's experience that few excursions result in fluid migration out of the intended zone and that leakage to the surface is very rare.

- In addition to monitoring well pressure and injection performance, Oxy uses the experience gained over time to strategically approach well maintenance and updating. Oxy maintains well maintenance and workover crews onsite for this purpose. For example, the well classifications by age and construction method indicated in Table 1 inform Oxy's plan for monitoring and updating wells. Oxy uses all of the information at hand including pattern performance, and well characteristics to determine well maintenance schedules.

- Production well performance is monitored using the production well test process conducted when produced fluids are gathered and sent to a Satellite Battery. There is a routine cycle for each Satellite Battery, with each well being tested approximately once every two months. During this cycle, each production well is diverted to the well test equipment for a period of time sufficient to measure and sample produced fluids (generally 12-24 hours). This test allows Oxy to allocate a portion of the produced fluids measured at the Satellite Battery to each production well, assess the composition of produced fluids by location, and assess the performance of each well. Performance data are reviewed on a routine basis to ensure that CO_2 flooding is optimized. If production is off plan, it is investigated and any identified issues addressed. Leakage to the outside of production wells is not considered a major risk because of the reduced pressure in the casing. Further, the personal H_2S monitors would detect leaked fluids around production wells.

- Finally, as indicated in Section 5, field inspections are conducted on a routine basis by field personnel. On any day, Oxy has approximately 90 employees in the field. Leaking CO_2 is very cold and leads to formation of bright white clouds and ice that are easily spotted. All field personnel are trained to identify leaking CO_2 and other potential problems at wellbores and in the field. In addition, Oxy uses aerial surveillance. Any significant CO_2 leakage detected will be documented and reported, quantified and addressed as described in Section 5.

Based on its ongoing monitoring activities and review of the potential leakage risks posed by well bores, Oxy concludes that it is mitigating the risk of CO_2 leakage through well bores by detecting problems as they arise and quantifying any leakage that does occur. Section 4.10 summarizes how Oxy will monitor CO_2 leakage from various pathways and describes how Oxy will respond to various leakage scenarios. In addition, Section 5 describes how Oxy will develop the inputs used in the Subpart RR mass-balance equation (Equation RR-11). Any incidents that result in CO_2 leakage up the wellbore and into the atmosphere will be quantified as described in section 7.4.

4.3 Faults and Fractures

After reviewing geologic, seismic, operating, and other evidence, Oxy has concluded that there are no known faults or fractures that transect the San Andres Formation interval in the project area. While faults have been identified in formations that are 1,000's of feet below the San Andres formation, this faulting has been shown not to affect the San Andres or create potential leakage pathways.

Oxy has extensive experience in designing and implementing EOR projects to ensure injection pressures will not damage the oil reservoir by inducing new fractures or creating shear. As a safeguard, injection skids are set with automatic shutoff controls if injection pressures exceed fracture pressures.

4.4 Natural or Induced Seismicity

A few recent studies have suggested a possible relationship between CO_2 miscible flooding activities and seismic activity in certain areas. Determining whether the seismic activity is induced or triggered by human activity is difficult. Many earthquakes occur that are not near injection wells, and many injection wells do not generate earthquakes. Thus, the occurrence of an earthquake near a well is not proof of cause of human actions having had any influence.

To evaluate this potential risk at the Denver Unit, Oxy has reviewed the nature and location of seismic events in West Texas. Some of the recorded earthquakes in West Texas are far removed from any injection operation. These are judged to be from natural causes. Others are near oil fields or water disposal wells and are placed in the category of "quakes in close association with human enterprise." (See Frohlich, 2012)

Of the recorded earthquakes in the Permian Basin, none have occurred in the Wasson Field; the closest was nearly 80 miles away. Moreover, Oxy is not aware of any reported loss of injectant (waste water or CO_2) to the surface associated with any seismic activity.

On this basis, Oxy concludes that there is no direct evidence that natural seismic activity poses a significant risk for loss of CO_2 to the surface in the Permian Basis, and specifically in the Denver Unit.

4.5 Previous Operations

CO_2 flooding has taken place in the Denver Unit since 1983, and Oxy took over operations in 2000. Oxy and the prior operators have kept records of the site and have completed numerous infill wells. Oxy's standard practice for drilling new wells includes a rigorous review of nearby wells to ensure that drilling will not cause expensive damage in or interfere with existing wells. Oxy also follows AoR requirements under the UIC Class II program, which require identification of all active and abandoned wells in the AoR and implementation of procedures that ensure the integrity of those wells when applying for a permit for any new injection well.[8] As a result, Oxy has checked for the presence of old, unknown wells throughout the Denver Unit over many years. Based on that effort, Oxy has concluded that there are no unknown wells within the Denver Unit. Oxy's operational experience confirms this conclusion. Oxy has successfully optimized CO_2 flooding with infill wells because the confining zone has not been impaired by previous operations.

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[8] Current requirements are referenced in Appendix 7.

4.6 Pipeline / Surface Equipment

Damage to or failure of pipelines and surface equipment can result in unplanned losses of CO_2. Oxy anticipates that the use of prevailing design and construction practices and compliance with applicable laws will reduce to the maximum extent practicable the risk of unplanned leakage from surface facilities. The facilities and pipelines currently utilize and will continue to utilize materials of construction and control processes that are standard for CO_2 EOR projects in the oil and gas industry. Operating and maintenance practices currently follow and will continue to follow demonstrated industry standards. CO_2 delivery via the Permian pipeline system will continue to comply with all applicable laws. Finally, frequent routine visual inspection of surface facilities by field staff will provide an additional way to detect leaks and further support Oxy's efforts to detect and remedy any leaks in a timely manner. Should leakage be detected from pipeline or surface equipment, the volume of released CO_2 will be quantified following the requirements of Subpart W of EPA's GHGRP.

4.7 Lateral Migration Outside the Denver Unit

It is highly unlikely that injected CO_2 will migrate downdip and laterally outside the Denver Unit because of the nature of the geology and of the planned injection. First, as indicated in Section 2.3.3.3 "Geology of the Denver Unit within the Wasson Field," the Denver Unit contains the highest elevation within the San Andres. This means that over long periods of time, injected CO_2 will tend to rise vertically towards the Upper San Andres and continue towards the point in the Denver Unit with the highest elevation. Second, the planned injection volumes and active fluid management during injection operations will prevent CO_2 from migrating laterally into adjoining units. Finally, Oxy will not be increasing the total volume of fluids in the Denver Unit. Based on site characterization and planned and projected operations Oxy estimates the total volume of stored CO_2 will be approximately 20% of calculated capacity.

4.8 Drilling Through the CO_2 Area

It is possible that at some point in the future, drilling through the containment zone into the San Andres could occur and inadvertently create a leakage pathway. Oxy's review of this issue concludes that this risk is very low for three reasons. First, any wells drilled in the oil fields of Texas are regulated by TRRC and are subject to requirements that fluids be contained in strata in which they are encountered.[9] Second, Oxy's visual inspection process, including both routine site visits and flyovers, is designed to identify unapproved drilling activity in the Denver Unit. Third, Oxy plans to operate the CO_2 EOR flood in

[9] Current requirements are referenced in Appendix 7.

the Denver Unit for several more decades, and will continue to be vigilant about protecting the integrity of its assets and maximizing the potential of resources (oil, gas, CO_2). In the unlikely event Oxy would sell the field to a new operator, provisions would be made to ensure the secure storage of the amount of CO_2 reported as a result of CO_2 EOR operations during the Specified Period.

4.9 Diffuse Leakage Through the Seal

Diffuse leakage through the seal formed by the upper San Andres is highly unlikely. The presence of a gas cap trapped over millions of years as discussed in Section 2.2.3 confirms that the seal has been secure for a very long time. Injection pattern monitoring program referenced in Section 2.3.1 and detailed in Section 5 assures that no breach of the seal will be created. The seal is highly impermeable, wells are cemented across the horizon, and unexplained changes in injection pressure would trigger investigation as to the cause. Further, if CO_2 were to migrate through the San Andres seal, it would migrate vertically until it encountered and was trapped by any of the four additional seals indicated in orange in Figure 4.

4.10 Monitoring, Response, and Reporting Plan for CO_2 Loss

As discussed above, the potential sources of leakage include fairly routine issues, such as problems with surface equipment (pumps, valves, etc.) or subsurface equipment (well bores), and unique events such as induced fractures. Table 3 summarizes some of these potential leakage scenarios, the monitoring activities designed to detect those leaks, Oxy's standard response, and other applicable regulatory programs requiring similar reporting.

Table 3 Response Plan for CO_2 Loss

Risk	Monitoring Plan	Response Plan	Parallel Reporting (if any)
Loss of Well Control			
Tubing Leak	Monitor changes in annulus pressure; MIT for injectors	Workover crews respond within days	TRRC Blowout data
Casing Leak	Routine field inspection; MIT for injectors; extra attention to high risk wells	Workover crews respond within days	TRRC Blowout data
Wellhead Leak	Routine field inspection	Workover crews respond within days	TRRC Blowout data
Loss of Bottom-hole pressure control	Blowout during well operations	Maintain well kill procedures	TRRC Blowout data
Unplanned wells drilled through San Andres	Routine field inspection to prevent unapproved drilling; compliance with TRRC permitting for planned wells.	Assure compliance with TRRC regulations	TRRC Permitting
Loss of seal in abandoned wells	Reservoir pressure in WAG skids; high pressure found in new wells	Re-enter and reseal abandoned wells	TRRC Blowout data

Leaks in Surface Facilities			
Pumps, values, etc.	Routine field inspection	Workover crews respond within days	Subpart W
Subsurface Leaks			
Leakage along faults	Reservoir pressure in WAG skids; high pressure found in new wells	Shut in injectors near faults	None
Overfill beyond spill points	Reservoir pressure in WAG skids; high pressure found in new wells	Fluid management along lease lines	None
Leakage through induced fractures	Reservoir pressure in WAG skids; high pressure found in new wells	Comply with rules for keeping pressures below parting pressure	None
Leakage due to seismic event	Reservoir pressure in WAG skids; high pressure found in new wells	Shut in injectors near seismic event	None

Sections 5.1.5-5.1.7 discuss the approaches envisioned for quantifying the volumes of leaked CO_2. Given the uncertainty concerning the nature and characteristics of leaks that will be encountered, it is not clear the method for quantifying the volume of leaked CO_2 that would be most appropriate. In the event leakage occurs, Oxy plans to determine the most appropriate method for quantifying the volume leaked and will report it as required as part of the annual Subpart RR submission.

Any volume of CO_2 detected leaking to surface will be quantified using acceptable emission factors such as those found in 40 CFR Part 98 Subpart W or engineering estimates of leak amounts based on measurements in the subsurface, Oxy's field experience, and other factors such as the frequency of inspection. As indicated in Sections 5.1 and 7.4, leaks will be documented, evaluated and addressed in a timely manner. Records of leakage events will be retained in the electronic environmental documentation and reporting system. Repairs requiring a work order will be documented in the electronic equipment maintenance system.

Available studies of actual well leaks and natural analogs (e.g., naturally occurring CO_2 geysers) suggest that the amount released from routine leaks would be small as compared to the amount of CO_2 that would remain stored in the formation.[10]

4.11 Summary

The structure and stratigraphy of the San Andres reservoir in the Denver Unit is ideally suited for the injection and storage of CO_2. The stratigraphy within the CO_2 injection zones is porous, permeable and very thick, providing ample capacity for long-term CO_2 storage. The San Andres formation is overlain by several intervals of impermeable geologic zones that form effective seals or "caps" to fluids in the San Andres formation

[10] See references to following reports of measurements, assessments, and analogs in Appendix 4: IPCC Special Report on Carbon Dioxide Capture and Storage; Wright – Presentation to UNFCC SBSTA on CCS; Allis, R., et al, "Implications of results from CO2 flux surveys over known CO2 systems for long-term monitoring; McLing - Natural Analog CCS Site Characterization Soda Springs, Idaho Implications for the Long-term Fate of Carbon Dioxide Stored in Geologic Environments.

(See Figure 4). After assessing potential risk of release from the subsurface and steps that have been taken to prevent leaks, Oxy has determined that the potential threat of leakage is extremely low. The potential leakage scenarios are summarized below, in order of likelihood:

- *Existing wellbores*: Because existing boreholes are a potential pathway for release of CO_2 to the surface, Oxy is primarily focused on mitigating this risk through a combination of using best practices in well design, completion and operation, and implementation of a rigorous program for subsurface performance and well bore monitoring. Oxy further has established approach to remedy or close wells if a problem arises. Together, these components mitigate the risk of leakage to the surface through boreholes. In addition to these proactive measures, the operating history is well documented and does not indicate manmade leakage pathways from past production activities or any significant likelihood that existing but unknown wellbores will be identified. Oxy will account for any CO_2 leakage via well bores as required under Subpart RR.

- *Pipeline/Surface Equipment*: Oxy follows regulatory requirements and best practices that together mitigate the risk of significant CO_2 leakage from pipelines and surface equipment. Oxy will account for any leakage according to the requirements in Subpart W of the EPA's GHGRP and will reflect any such leakage in the mass balance calculation.

- *Faults:* There are no faults or fractures present within or affecting the Denver Unit, and Oxy believes that the risk of leakage via this pathway is low. Should such leakage occur, Oxy would quantify it using measured or engineering estimates of relevant parameters (e.g., CO_2 flow rate, concentration, duration), and report CO_2 emissions under Subpart RR.

- *Natural and Induced Seismic Activity, Previous Operations, Lateral Migration Outside the Denver Unit, Dissolution of CO_2 into Formation Fluid and Subsequent Migration, Drilling through the CO_2 Area, and Diffuse Movement Through the Seal*: As explained above, Oxy concludes that these theoretical leakage pathways are very unlikely and are mitigated, to the extent practicable, through Oxy's operating procedures. As with faults, Oxy believes that the risk of leakage via these pathways is low. Should such leakage occur, Oxy would quantify it using measured or engineering estimates of relevant parameters (e.g., CO_2 flow rate, concentration, duration), and report CO_2 emissions under Subpart RR.

In summary, based on a careful assessment of the potential risk of release of CO_2 from the subsurface, Oxy has determined that there are no leakage pathways at the Denver Unit that are likely to result in significant loss of CO_2 to the atmosphere. Further, given the detailed knowledge of the field and its operating protocols, Oxy concludes that it would be able to both detect and quantify any CO_2 leakage to the surface that could arise both identified and unexpected leakage pathways.

5. Monitoring and Considerations for Calculating Site Specific Variables

5.1 For the Mass Balance Equation

5.1.1 General Monitoring Procedures

As part of its ongoing operations, Oxy monitors and collects flow, pressure, and gas composition data from the Denver Unit in centralized data management systems. This data is monitored continually by qualified technicians who follow Oxy response and reporting protocols when the systems deliver notifications that data exceed statistically acceptable boundaries.

As indicated in Figure 9, custody-transfer meters are used at the two points at which custody of the CO_2 from the Permian pipeline delivery system is transferred to Oxy and also at the points at which custody of oil is transferred to other parties. Meters measure flow rate continually. Fluid composition will be determined, at a minimum, quarterly, consistent with EPA GHGRP's Subpart RR, section 98.447(a). All meter and composition data are documented, and records will be retained for at least seven years.

Metering protocols used by Oxy follow the prevailing industry standard(s) for custody transfer as currently promulgated by the API, the American Gas Association (AGA), and the Gas Processors Association (GPA), as appropriate. This approach is consistent with EPA GHGRP's Subpart RR, section 98.444(e)(3). These meters will be maintained routinely, operated continually, and will feed data directly to the centralized data collection systems. The meters meet the industry standard for custody transfer meter accuracy and calibration frequency. These custody meters provide the most accurate way to measure mass flows.

Oxy maintains in-field process control meters to monitor and manage in-field activities on a real time basis. These are identified as operations meters in Figure 9. These meters provide information used to make operational decisions but are not intended to provide the same level of accuracy as the custody-transfer meters. The level of precision and accuracy for in-field meters currently satisfies the requirements for reporting in existing UIC permits. Although these meters are accurate for operational purposes, it is important to note that there is some variance between most commercial meters (on the order of 1-5%) which is additive across meters. This variance is due to differences in factory settings and meter calibration, as well as the operating conditions within a field. Meter elevation, changes in temperature (over the course of the day), fluid composition (especially in multi-component or multi-phase streams), or pressure can affect in-field meter readings. Unlike in a saline formation, where there are likely to be only a few injection wells and associated meters, at CO_2 EOR operations in the Denver Unit there will be approximately 2,000 injection and production wells and a comparable number of meters, each with an acceptable range of error. This is a site-specific factor that is considered in the mass balance calculations described in Section 7.

5.1.2 CO_2 Received

Oxy measures the volume of received CO_2 using commercial custody transfer meters at each the two off-take points from the Permian pipeline delivery system. This transfer is a commercial transaction that is documented. CO_2 composition is governed by the contract and the gas is routinely sampled to determine composition. No CO_2 is received in containers.

5.1.3 CO_2 Injected into the Subsurface

Injected CO_2 will be calculated using the flow meter volumes at the custody transfer meters at the outlet to DUCRP and the CO_2 off-take points from the Permian pipeline delivery system.

5.1.4 CO_2 Produced, Entrained in Products, and Recycled

The following measurements are used for the mass balance equations in Section 7:

CO_2 produced is calculated using the volumetric flow meters at the inlet to DUCRP.

CO_2 is produced as entrained or dissolved CO_2 in produced oil, as indicated in Figure 9. The concentration of CO_2 in produced oil is measured at the centralized tank battery.

Recycled CO_2 is calculated using the volumetric flow meter at the outlet of DUCRP, which is a custody transfer meter.

5.1.5 CO_2 Emitted by Surface Leakage

As discussed in Section 5.1.6 and 5.1.7 below, Oxy uses 40 CFR Part 98 Subpart W to estimate surface leaks from equipment at the Denver Unit. Subpart W uses a factor-driven approach to estimate equipment leakage. In addition, Oxy uses an event driven process to assess, address, track, and if applicable quantify potential CO_2 leakage to the surface. Oxy will reconcile the Subpart W report and results from any event-driven quantification to assure that surface leaks are not double counted.

The multi-layered, risk-based monitoring program for event-driven issues has been designed to meet two objectives, in accordance with the leakage risk assessment in Section 4: 1) to detect problems before CO_2 leaks to the surface; and 2) to detect and quantify any leaks that do occur. This section discusses how this monitoring will be conducted and used to quantify the volumes of CO_2 leaked to the surface.

<u>Monitoring for potential Leakage from the Injection/Production Zone:</u>
Oxy will monitor both injection into and production from the reservoir as a means of early identification of potential anomalies that could indicate leakage from the subsurface.

Oxy uses pattern modeling based on extensive history-matched data to develop injection plans (fluid rate, pressure, volume) that are programmed into each WAG skid. If injection pressure or rate measurements are beyond the specified set points determined as part of each pattern injection plan, a data flag is automatically triggered and field personnel will investigate and resolve the problem. These excursions will be reviewed by well management personnel to determine if CO_2 leakage may be occurring. Excursions are not necessarily indicators of leaks; they simply indicate that injection rates and pressures are not conforming to the pattern injection plan. In many cases, problems are straightforward to fix (e.g., a meter needs to be recalibrated or some other minor action is required), and there is no threat of CO_2 leakage. In the case of issues that are not readily resolved, more detailed investigation and response would be initiated, and staff from other parts of Oxy would provide additional support. Such issues would lead to the development of a work order in Oxy's Maximo work order management system. This record enables the company to track progress on investigating potential leaks and, if a leak has occurred, quantifying the magnitude.

Likewise, Oxy develops a forecast of the rate and composition of produced fluids. Each producer well is assigned to one satellite battery and is isolated once during each monthly cycle for a well production test. This data is reviewed on a periodic basis to confirm that production is at the level forecasted. If there is a significant deviation from the forecast, well management personnel investigate. If the issue cannot be resolved quickly, more detailed investigation and response would be initiated. As in the case of the injection pattern monitoring, if the investigation leads to a work order in the Maximo system, this record will provide the basis for tracking the outcome of the investigation and if a leak has occurred, recording the quantity leaked to the surface. If leakage in the flood zone were detected, Oxy would use an appropriate method to quantify the involved volume of CO_2. This might include use of material balance equations based on known injected quantities and monitored pressures in the injection zone to estimate the volume of CO_2 involved. Given the extensive operating history of the Denver Unit, this technique would be expected to have a relatively large margin of error.

A subsurface leak might not lead to a surface leak. In the event of a subsurface leak, Oxy would determine the appropriate approach for tracking subsurface leakage to determine and quantify leakage to the surface. To quantify leakage to the surface, Oxy would estimate the relevant parameters (e.g., the rate, concentration, and duration of leakage) to quantify the leak volume. Depending on specific circumstances, these determinations may rely on engineering estimates.

In the event leakage from the subsurface occurred diffusely through the seals, the leaked gas would include H_2S that would trigger the alarm on the personal monitors worn by field personnel. Such a diffuse leak from the subsurface has not occurred in the Denver Unit. In the event such a leak was detected, field personnel from across Oxy would be used to determine how to address the problem. The team might use modeling, engineering estimates, and direct measurements to assess, address, and quantify the leakage.

Monitoring of Wellbores:
Oxy monitors wells through continual, automated pressure monitoring in the injection zone (as described in Section 4.2), monitoring of the annular pressure in wellheads, and routine maintenance and inspection.

Leaks from wellbores would be detected through the follow-up investigation of pressure anomalies, visual inspection, or the use of personal H_2S monitors.

Anomalies in injection zone pressure may not indicate a leak, as discussed above. However, if the investigation leads to a work order, field personnel will inspect the equipment in question and determine the nature of the problem. If it is a simple matter the repair will be made and the volume of leaked CO_2 would be included in the 40 CFR Part 98 Subpart W report for the Denver Unit. If more extensive repair were needed, Oxy would determine the appropriate approach for quantifying leaked CO_2 using the relevant parameters (e.g., the rate, concentration, and duration of leakage). The work order would serve as the basis for tracking the event for GHG reporting.

Anomalies in annular pressure or other issues detected during routine maintenance inspections would be treated in the same way. Field personnel will inspect the equipment in question and determine the nature of the problem. If it is a simple matter the repair will be made at the time of inspection and the volume of leaked CO_2 would be included in the 40 CFR Part 98 Subpart W report for the Denver Unit. If more extensive repairs were needed, a work order would be generated and Oxy would determine the appropriate approach for quantifying leaked CO_2 using the relevant parameters (e.g., the rate, concentration, and duration of leakage). The work order would serve as the basis for tracking the event for GHG reporting.

Because leaking CO_2 is very cold and leads to formation of bright white clouds and ice that are easily spotted, Oxy also employs a two-part visual inspection process in the general area of the Denver unit to detect unexpected releases from wellbores. First, field personnel visit the surface facilities on a routine basis. Inspections may include tank volumes, equipment status and reliability, lube oil levels, pressures and flow rates in the facility, and valve leaks. Field personnel inspections also check that injectors are on the proper WAG schedule and observe the facility for visible CO_2 or fluid line leaks. Second, Oxy uses airplanes to perform routine flyover inspections to look for unplanned activities in the field including trespass operations, disruption of buried pipelines, or other potential unapproved activities. The pilots also look for evidence of unexpected releases. If a pilot observes a leak or release, he or she contacts Oxy's surface operations with the location of the leak. Surface operations personnel then review the reports, conduct a site investigation, recommend appropriate corrective action, and ensure actions are completed.

Historically, Oxy has documented fewer than 4 unexpected release events each year at Denver Unit. A need for repair or maintenance identified in the visual inspections results in a work order being entered into Oxy's equipment and maintenance (Maximo) system. The time to repair any leak is dependent on several factors, such as the severity of the leak, available manpower, location of the leak, and availability of materials required for the repair. 80% of leaks are repaired within one day and the remaining 20% within several days.

Finally, Oxy uses the results from the H_2S monitors worn by all field personnel at all times, as a last method to detect leakage from wellbores. If an H_2S alarm is triggered, the first response is to protect the safety of the personnel, but the next step is to safely investigate the source of the alarm. As noted previously, Oxy considers H_2S a proxy for potential CO_2 leaks in the field. Thus, detected H_2S leaks will be investigated to determine, and if needed quantify, potential CO_2 leakage. If the problem resulted in a work order, this will serve as the basis for tracking the event for GHG reporting.

Other Potential Leakage at the Surface:
Oxy will utilize the same visual inspection process and H_2S monitoring system to detect other potential leakage at the surface as it does for leakage from wellbores. Oxy utilizes routine visual inspections to detect significant loss of CO_2 to the surface. Field personnel routinely visit surface facilities to conduct a visual inspection. Inspections may include review of tank level, equipment status, lube oil levels, pressures and flow rates in the facility, valve leaks, ensuring that injectors are on the proper WAG schedule, and also conducting a general observation of the facility for visible CO_2 or fluid line leaks. Oxy also uses airplanes to routinely conduct visual inspections from the air. If problems are detected, field personnel investigate then, if maintenance is required, generate a work order in the maintenance system, which is tracked through completion. In addition to these visual inspections, Oxy will use the results of the personal H_2S monitors worn by field personnel as a supplement for smaller leaks that may escape visual detection.

If CO_2 leakage to the surface is detected, it will be reported to surface operations personnel who will review the reports and conduct a site investigation. If maintenance is required, a work order will be generated in the Maximo system. The work order will describe the appropriate corrective action and be used to track completion of the maintenance action. The work order will also serve as the basis for tracking the event for GHG reporting and quantifying any CO_2 emissions.

5.1.6 CO_2 emitted from equipment leaks and vented emissions of CO_2 from surface equipment located between the injection flow meter and the injection wellhead.

Oxy evaluates and estimates leaks from equipment, the CO_2 content of produced oil, and vented CO_2, as required under 40 CFR Part 98 Subpart W.

5.1.7 Mass of CO_2 emissions from equipment leaks and vented emissions of CO_2 from surface equipment located between the production flow meter and the production wellhead

Oxy evaluates and estimates leaks from equipment, the CO_2 content of produced oil, and vented CO_2, as required under 40 CFR Part 98 Subpart W.

5.2 To Demonstrate that Injected CO_2 is not Expected to Migrate to the Surface

At the end of the Specified Period, Oxy intends to cease injecting CO_2 for the subsidiary purpose of establishing the long-term storage of CO_2 in the Denver Unit. After the end of the Specified Period, Oxy anticipates that it will submit a request to discontinue monitoring and reporting. The request will demonstrate that the amount of CO_2 reported under 40 CFR §98.440-449 (Subpart RR) is not expected to migrate in the future in a manner likely to result in surface leakage. At that time, Oxy will be able to support its request with seven or more years of data collected during the Specified Period as well as two to three years of data collected after the end of the Specified Period. This demonstration will provide the information necessary for the EPA Administrator to approve the request to discontinue monitoring and reporting and may include, but is not limited to:

i. Data comparing actual performance to predicted performance (purchase, injection, production) over the monitoring period;
ii. An assessment of the CO_2 leakage detected, including discussion of the estimated amount of CO_2 leaked and the distribution of emissions by leakage pathway;
iii. A demonstration that future operations will not release the volume of stored CO_2 to the surface;
iv. A demonstration that there has been no significant leakage of CO_2; and,
v. An evaluation of reservoir pressure in the Denver Unit that demonstrates that injected fluids are not expected to migrate in a manner to create a potential leakage pathway.

6. Determination of Baselines

Oxy intends to utilize existing automatic data systems to identify and investigate excursions from expected performance that could indicate CO_2 leakage. Oxy's data systems are used primarily for operational control and monitoring and as such are set to capture more information than is necessary for reporting in the Annual Subpart RR Report. Oxy will develop the necessary system guidelines to capture the information that is pertinent to possible CO_2 leakage. The following describes Oxy's approach to collecting this information.

Visual Inspections
As field personnel conduct routine inspections, work orders are generated in the electronic system for maintenance activities that cannot be addressed on the spot. Methods to capture work orders that involve activities that could potentially involve CO_2 leakage will be developed, if not currently in place. Examples include occurrences of well workover or repair, as well as visual identification of vapor clouds or ice formations.

Each incident will be flagged for review by the person responsible for MRV documentation. (The responsible party will be provided in the monitoring plan, as required under Subpart A, 98.3(g).) The Annual Subpart RR Report will include an estimate of the amount of CO_2 leaked. Records of information used to calculate emissions will be maintained on file for a minimum of seven years.

Personal H_2S Monitors

H_2S monitors are worn by all field personnel. Alarm of the monitor triggers an immediate response to ensure personnel are not at risk and to verify the monitor is working properly. The person responsible for MRV documentation will receive notice of all incidents where H_2S is confirmed to be present. The Annual Subpart RR Report will provide an estimate the amount of CO_2 emitted from any such incidents. Records of information to calculate emissions will be maintained on file for a minimum of seven years.

Injection Rates, Pressures and Volumes

Oxy develops a target injection rate and pressure for each injector, based on the results of ongoing pattern modeling. The injection targets are programmed into the WAG skid controllers. High and low set points are also programmed into the controllers, and flags whenever statistically significant deviations from the targeted ranges are identified. The set points are designed to be conservative, because Oxy prefers to have too many flags rather than too few. As a result, flags can occur frequently and are often found to be insignificant. For purposes of Subpart RR reporting, flags (or excursions) will be screened to determine if they could also lead to CO_2 leakage to the surface. The person responsible for the MRV documentation will receive notice of excursions and related work orders that could potentially involve CO_2 leakage. The Annual Subpart RR Report will provide an estimate of CO_2 emissions. Records of information to calculate emissions will be maintained on file for a minimum of seven years.

Production Volumes and Compositions

Oxy develops a general forecast of production volumes and composition which is used to periodically evaluate performance and refine current and projected injection plans and the forecast. This information is used to make operational decisions but is not recorded in an automated data system. Sometimes, this review may result in the generation of a work order in the maintenance system. The MRV plan manager will review such work orders and identify those that could result in CO_2 leakage. Should such events occur, leakage volumes would be calculated following the approaches described in Sections 4 and 5. Impact to Subpart RR reporting will be addressed, if deemed necessary.

7. Determination of Sequestration Volumes Using Mass Balance Equations

To account for the site conditions and complexity of a large, active EOR operation, Oxy proposes to modify the locations for obtaining volume data for the equations in Subpart RR §98.443 as indicated below.

The first modification addresses the propagation of error that would be created if volume data from meters at each injection and production well were utilized. This issue arises because each meter has a small but acceptable margin of error, this error would become significant if data were taken from the approximately 2,000 meters within the Denver Unit. As such, Oxy proposes to use the data from custody meters on the main system pipelines to determine injection and production volumes used in the mass balance.

The second modification addresses the DUCRP. Figure 14 shows the planned mass balance envelope overlaid as a pale blue onto the General Production Flow Diagram originally shown in Figure 9. The envelope contains all of the measurements relevant to the mass balance equation. Those process steps outside of the envelope do not impact the mass balance and are, therefore, not included. As indicated in Figure 14, only the volume of CO_2 recycled from DUCRP impacts the mass balance equation and it is the volume measured at the DUCRP outlet. The remainder of the CO_2 -- that is, the difference between the inlet measurement and the outlet measurement occurring at DUCRP -- does not have an impact on the mass balance of the Denver Unit and therefore is not included in the mass balance equations. This is because the purpose of the MRV plan under Subpart RR is to determine the amount of CO_2 stored at the project site, as well as the amount of CO_2 emitted from the project site. GHGR Reporting rule Subpart RR is not intended to account for CO_2 emissions throughout the CO_2 supply chain as those emissions are reported under other subparts of the GHG Reporting rule.

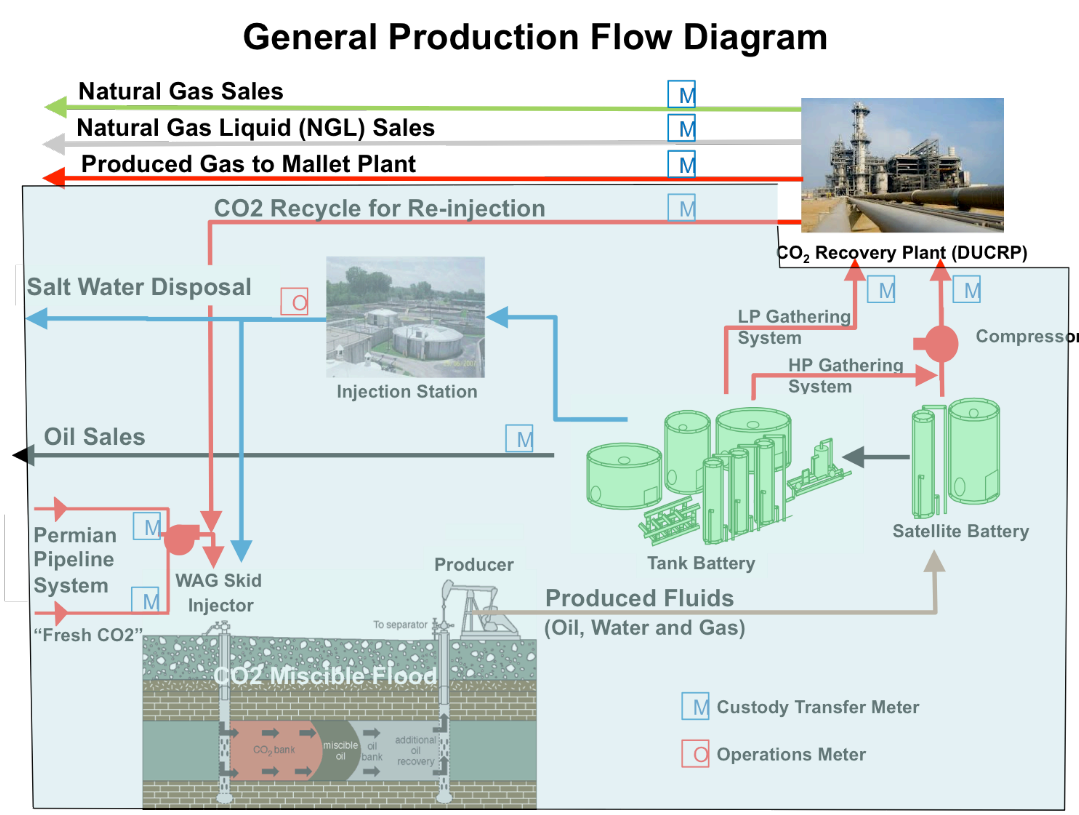

Figure 14 Material Balance Envelope (in blue)

The following sections describe how each element of the mass-balance equation (Equation RR-11) will be calculated.

7.1. Mass of CO_2 Received

Oxy will use equation RR-2 as indicated in Subpart RR §98.443 to calculate the mass of CO_2 received from each delivery meter immediately upstream of the Permian pipeline delivery system on the Denver Unit. The volumetric flow at standard conditions will be multiplied by the CO_2 concentration and the density of CO_2 at standard conditions to determine mass.

$$CO_{2T,r} = \sum_{p=1}^{4} (Q_{r,p} - S_{r,p}) * D * C_{CO_{2,p,r}} \quad \text{(Eq. RR-2)}$$

where:

$CO_{2T,r}$ = Net annual mass of CO_2 received through flow meter r (metric tons).

$Q_{r,p}$ = Quarterly volumetric flow through a receiving flow meter r in quarter p at standard conditions (standard cubic meters).

$S_{r,p}$ = Quarterly volumetric flow through a receiving flow meter r that is redelivered to another facility without being injected into your well in quarter p (standard cubic meters).

D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682.

$C_{CO2,p,r}$ = Quarterly CO_2 concentration measurement in flow for flow meter r in quarter p (vol. percent CO_2, expressed as a decimal fraction).

p = Quarter of the year.

r = Receiving flow meters.

Given Oxy's method of receiving CO_2 and requirements at Subpart RR §98.444(a):

- All delivery to the Denver Unit is used within the unit so quarterly flow redelivered, $S_{r,p}$, is zero ("0") and will not be included in the equation.
- Quarterly CO_2 concentration will be taken from the gas measurement database

Oxy will sum to total Mass of CO_2 Received using equation RR-3 in 98.443

$$CO_2 = \sum_{r=1}^{R} CO_{2T,r} \quad \text{(Eq. RR-3)}$$

where:

CO_2 = Total net annual mass of CO_2 received (metric tons).

$CO_{2T,r}$ = Net annual mass of CO_2 received (metric tons) as calculated in Equation RR-2 for flow meter r.

r = Receiving flow meter.

7.2 Mass of CO_2 Injected into the Subsurface

The equation for calculating the Mass of CO_2 Injected into the Subsurface at the Denver Unit is equal to the sum of the Mass of CO_2 Received as calculated in RR-3 of 98.443 as described in Section 7.1 and the Mass of CO_2 recycled as calculated using measurements taken from the flow meter located at the output of the DUCRP. As previously explained, using data at each injection well would give an inaccurate estimate of total injection volume due to the large number of wells and the potential for propagation of error due to allowable calibration ranges for each meter.

The mass of CO_2 recycled will be determined using equations RR-5 as follows:

$$CO_{2,u} = \sum_{p=1}^{4} Q_{p,u} * D * C_{CO_{2,p,u}} \quad \text{(Eq. RR-5)}$$

where:

$CO_{2,u}$ = Annual CO_2 mass recycled (metric tons) as measured by flow meter u.
$Q_{p,u}$ = Quarterly volumetric flow rate measurement for flow meter u in quarter p at standard conditions (standard cubic meters per quarter).
D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682.
$C_{CO2,p,u}$ = CO_2 concentration measurement in flow for flow meter u in quarter p (vol. percent CO_2, expressed as a decimal fraction).
p = Quarter of the year.
u = Flow meter.

The total Mass of CO_2 received will be the sum of the Mass of CO_2 received (RR-3) and Mass of CO_2 recycled (modified RR-5).

$CO_{2I} = CO_2 + CO_{2,u}$

7.3 Mass of CO_2 Produced

The Mass of CO_2 Produced at the Denver Unit will be calculated using the measurements from the flow meters at the inlet to DUCRP rather than the metered data from each production well. Again, using the data at each production well would give an inaccurate estimate of total injection due to the large number of wells and the potential for propagation of error due to allowable calibration ranges for each meter.

Equation RR-8 in 98.443 will be used to calculate the mass of CO_2 from all injection wells as follows:

$$CO_{2,w} = \sum_{p=1}^{4} Q_{p,w} * D * C_{CO_{2,p,w}} \quad \text{(Eq. RR-8)}$$

Where:

$CO_{2,w}$ = Annual CO_2 mass produced (metric tons) through meter w.

$Q_{p,w}$ = Volumetric gas flow rate measurement for meter w in quarter p at standard conditions (standard cubic meters).

D = Density of CO_2 at standard conditions (metric tons per standard cubic meter): 0.0018682.

$C_{CO2,p,w}$ = CO_2 concentration measurement in flow for meter w in quarter p (vol. percent CO_2, expressed as a decimal fraction).

p = Quarter of the year.

w = inlet meter to DUCRP.

Equation RR-9 in 98.443 will be used to aggregate the mass of CO_2 produced net of the mass of CO_2 entrained in oil leaving the Denver Unit prior to treatment of the remaining gas fraction in DUCRP as follows:

$$CO_{2P} = \sum_{w=1}^{W} CO_{2,w} + X_{oil} \qquad \text{(Eq. RR-9)}$$

Where:

CO_{2P} = Total annual CO_2 mass produced (metric tons) through all meters in the reporting year.

$CO_{2,w}$ = Annual CO_2 mass produced (metric tons) through meter w in the reporting year.

X_{oil} = Mass of entrained CO_2 in oil in the reporting year measured utilizing commercial meters and electronic flow-measurement devices at each point of custody transfer. The mass of CO_2 will be calculated by multiplying the total volumetric rate by the CO_2 concentration.

7.4 Mass of CO_2 emitted by Surface Leakage

Oxy will calculate and report the total annual Mass of CO_2 emitted by Surface Leakage using an approach that is tailored to specific leakage events and relies on 40 CFR Part 98 Subpart W reports of equipment leakage. As described in Sections 4 and 5.1.5-5.1.7, Oxy is prepared to address the potential for leakage in a variety of settings. Estimates of the amount of CO_2 leaked to the surface will likely depend on a number of site-specific factors including measurements, engineering estimates, and emission factors, depending on the source and nature of the leakage.

Oxy's process for quantifying leakage will entail using best engineering principles or emission factors. While it is not possible to predict in advance the types of leaks that will occur, Oxy describes some approaches for quantification in Section 5.1.5-5.1.7. In the event leakage to the surface occurs, Oxy will quantify and report leakage amounts, and retain records that describe the methods used to estimate or measure the volume leaked as reported in the Annual Subpart RR Report. Further, Oxy will reconcile the Subpart W report and results from any event-driven quantification to assure that surface leaks are not double counted.

Equation RR-10 in 48.433 will be used to calculate and report the Mass of CO_2 emitted by Surface Leakage:

$$CO_{2E} = \sum_{x=1}^{X} CO_{2,x} \quad \text{(Eq. RR-10)}$$

where:

CO_{2E} = Total annual CO_2 mass emitted by surface leakage (metric tons) in the reporting year.

$CO_{2,x}$ = Annual CO_2 mass emitted (metric tons) at leakage pathway x in the reporting year.

x = Leakage pathway.

7.5 Mass of CO_2 sequestered in subsurface geologic formations.

Oxy will use equation RR-11 in 98.443 to calculate the Mass of CO_2 Sequestered in Subsurface Geologic Formations in the Reporting Year as follows:

$$CO_2 = CO_{2I} - CO_{2P} - CO_{2E} - CO_{2FI} - CO_{2FP} \quad \text{(Eq. RR-11)}$$

where:

CO_2 = Total annual CO_2 mass sequestered in subsurface geologic formations (metric tons) at the facility in the reporting year.

CO_{2I} = Total annual CO_2 mass injected (metric tons) in the well or group of wells covered by this source category in the reporting year.

CO_{2P} = Total annual CO_2 mass produced (metric tons) in the reporting year.

CO_{2E} = Total annual CO_2 mass emitted (metric tons) by surface leakage in the reporting year.

CO_{2FI} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead, for which a calculation procedure is provided in subpart W of this part.

CO_{2FP} = Total annual CO_2 mass emitted (metric tons) from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the production wellhead and the flow meter used to measure production quantity, for which a calculation procedure is provided in subpart W of this part.

7.6 Cumulative mass of CO_2 reported as sequestered in subsurface geologic formations

Oxy will sum of the total annual volumes obtained using equation RR-11 in 98.443 to calculate the Cumulative Mass of CO_2 Sequestered in Subsurface Geologic Formations.

8. MRV Plan Implementation Schedule

It is anticipated that this MRV plan will be implemented within 180 days of EPA approval. Other GHG reports are filed on March 31 of the year after the reporting year and it is anticipated that the Annual Subpart RR Report will be filed at the same time. As described in Section 3.3 above, Oxy anticipates that the MRV program will be in effect during the Specified Period, during which time Oxy will operate the Denver Unit with the subsidiary purpose of establishing long-term containment of a measurable quantity of CO_2 in subsurface geological formations at the Denver Unit. Oxy anticipates establishing that a measurable portion of the CO_2 injected during the Specified Period will be stored in a manner not expected to migrate resulting in future surface leakage. At such time, Oxy will prepare a demonstration supporting the long-term containment determination and submit a request to discontinue reporting under this MRV plan. *See* 40 C.F.R. § 98.441(b)(2)(ii).

9. Quality Assurance Program

9.1 Monitoring QA/QC

As indicated in Section 7, Oxy has incorporated the requirements of §98.444 (a) – (d) in the discussion of mass balance equations. These include the following provisions.

CO_2 Received and Injected

- The quarterly flow rate of CO_2 received by pipeline is measured at the receiving custody transfer meters.
- The quarterly CO_2 flow rate for recycled CO_2 is measured at the custody transfer meter located at the DUCRP outlet.

CO_2 Produced

- The point of measurement for the quantity of CO_2 produced from oil or other fluid production wells is a flow meter directly downstream of each separator that sends a stream of gas into a recycle or end use system.
- The produced gas stream is sampled at least once per quarter immediately downstream of the flow meter used to measure flow rate of that gas stream and measure the CO_2 concentration of the sample.
- The quarterly flow rate of the produced gas is measured at the custody transfer meters located at the DUCRP inlet.

CO_2 emissions from equipment leaks and vented emissions of CO_2

These volumes are measured in conformance with the monitoring and QA/QC requirements specified in subpart W of 40 CFR Part 98.

Flow meter provisions

The flow meters used to generate date for the mass balance equations in Section 7 are:

- Operated continuously except as necessary for maintenance and calibration.

- Operated using the calibration and accuracy requirements in 40 CFR §98.3(i).
- Operated in conformance with American Petroleum Institute (API) standards.
- National Institute of Standards and Technology (NIST) traceable.

Concentration of CO_2
As indicated in Appendix 2, CO_2 concentration is measured using an appropriate standard method. Further, all measured volumes of CO_2 have been converted to standard cubic meters at a temperature of 60 degrees Fahrenheit and at an absolute pressure of 1 atmosphere, including those used in Equations RR-2, RR-5 and RR-8 in Section 7.

9.2 Missing Data Procedures

In the event Oxy is unable to collect data needed for the mass balance calculations, procedures for estimating missing data in §98.445 will be used as follows:

- A quarterly flow rate of CO_2 received that is missing would be estimated using invoices or using a representative flow rate value from the nearest previous time period.
- A quarterly CO_2 concentration of a CO_2 stream received that is missing would be estimated using invoices or using a representative concentration value from the nearest previous time period.
- A quarterly quantity of CO_2 injected that is missing would be estimated using a representative quantity of CO_2injected from the nearest previous period of time at a similar injection pressure.
- For any values associated with CO_2 emissions from equipment leaks and vented emissions of CO_2 from surface equipment at the facility that are reported in this subpart, missing data estimation procedures specified in subpart W of 40 CFR Part 98 would be followed.
- The quarterly quantity of CO_2 produced from subsurface geologic formations that is missing would be estimated using a representative quantity of CO_2 produced from the nearest previous period of time.

9.3 MRV Plan Revisions

In the event there is a material change to the monitoring and/or operational parameters of the Oxy CO_2 EOR operations in the Denver Unit that is not anticipated in this MRV plan, the MRV plan will be revised and submitted to the EPA Administrator within 180 days as required in §98.448(d)..

10. Records Retention

Oxy will follow the record retention requirements in as required.
Oxy will follow the record retention requirements specified by §98.3(g). In addition, it will follow the requirements in Subpart RR §98.447 by maintaining the following records for at least seven years:

- Quarterly records of CO_2 received at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.
- Quarterly records of produced CO_2, including volumetric flow at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.
- Quarterly records of injected CO_2 including volumetric flow at standard conditions and operating conditions, operating temperature and pressure, and concentration of these streams.
- Annual records of information used to calculate the CO_2 emitted by surface leakage from leakage pathways.
- Annual records of information used to calculate the CO_2 emitted from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the flow meter used to measure injection quantity and the injection wellhead.
- Annual records of information used to calculate the CO_2 emitted from equipment leaks and vented emissions of CO_2 from equipment located on the surface between the production wellhead and the flow meter used to measure production quantity.

These data will be collected as generated and aggregated as required for reporting purposes.

11. Appendices

Appendix 1. Background

This appendix provides background information on the EOR project at the Denver Unit.

A1.1 Project Overview

Enhanced oil recovery (EOR) using carbon dioxide (CO_2) flooding is a mature technology that has been applied commercially since the early 1970s. It entails compressing CO_2 and injecting it into oil fields to restore pressure and mobilize trapped oil. The Permian Basin, spread across parts of Texas and New Mexico, is a geologic basin holding vast oil and gas resources that have been produced for almost a century.

CO_2 EOR flooding has been practiced in the Permian Basin since the technique was first developed more than four decades ago. Today the area hosts a large integrated network of CO_2 sources, delivery pipelines, and CO_2 floods. Advances in geologic understanding and flooding techniques have led to a renewed economic interest in producing domestic oil and gas from the Permian Basin. As a result there is an increasing demand for CO_2 that could be met with anthropogenic sources.

A number of entities own or operate the different CO_2 and hydrocarbon production and delivery assets used in the Permian Basin. Occidental Petroleum Corporation and its affiliates (together, Oxy) are one of the largest of these entities. Figure A1-1 depicts the location of Oxy assets and operations in the Permian Basin. It shows that Oxy currently owns or operates multiple sources of CO_2 (including natural and anthropogenic sources), almost 900 miles of major CO_2 pipelines, and approximately 30 CO_2 floods. The company handles a total of approximately 400 million cubic feet per day (MMscf/D) (20 thousand metric tonnes (MMT)) of CO_2 purchased (or "fresh") from a third party and recycled from the Denver Unit per day and produces approximately 25,000 barrels of oil per day (bopd). Through its work in the Permian Basin and in other CO_2 floods, Oxy has gained significant experience managing CO_2 EOR floods safely and profitability.

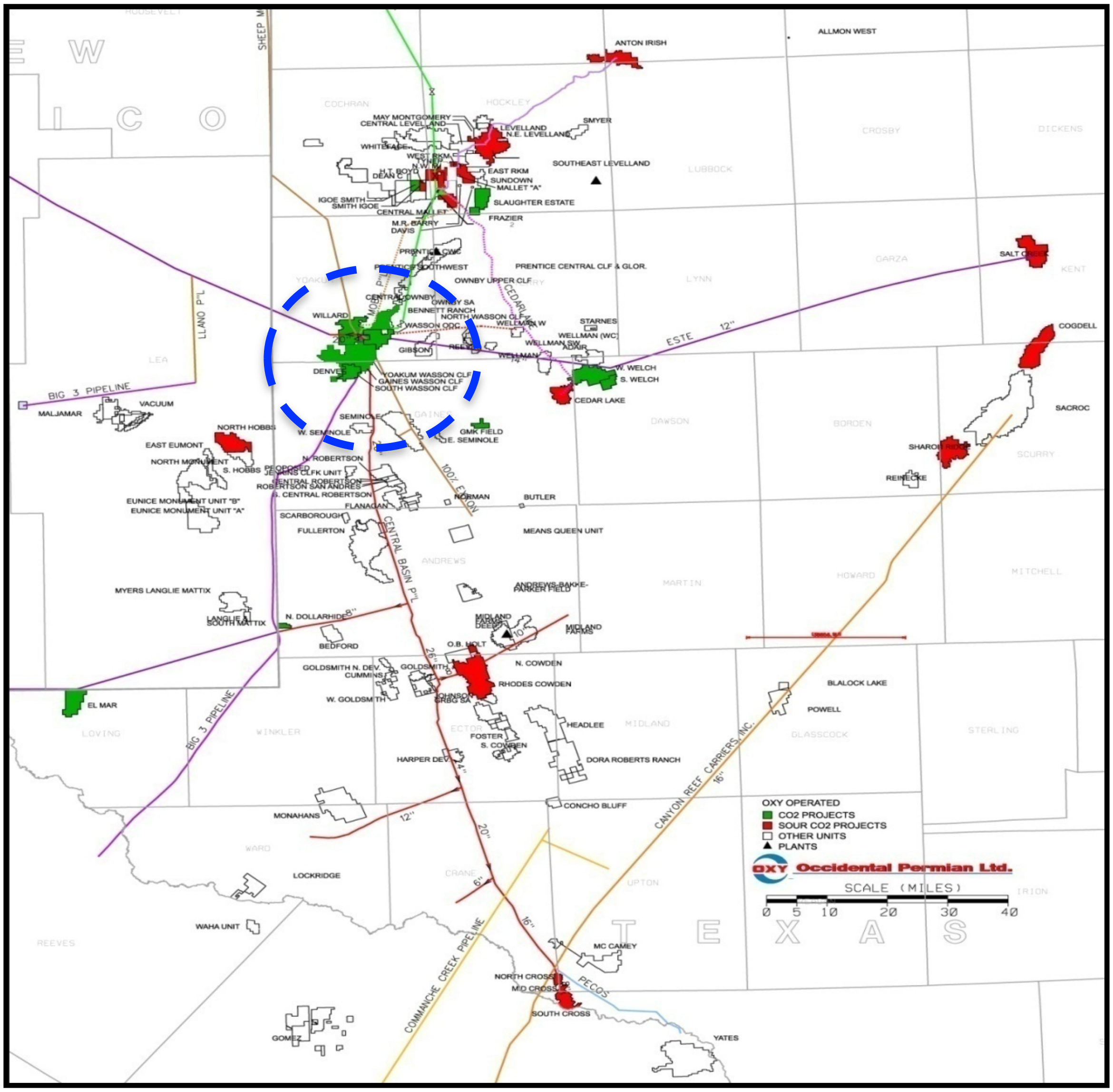

Figure A1-1 - Oxy CO_2 EOR Assets and Operations in the Permian Basin, Blue Circle Indicates Wasson Field Location

As described in the following section, in an effort to address its growing need for CO_2 in the Permian, Oxy invested in a natural gas processing plant that is capturing CO_2 that would otherwise be vented to the atmosphere. The captured CO_2 is fed into the pipeline delivery system that services the Permian Basin, including Oxy's CO_2 floods.

A1.2 CO_2 Transport through the Permian pipeline delivery system

The Permian pipeline delivery system (See Figure A1-2)[11] consists of major and minor pipelines that are used to move CO_2 to, around, and from the CO_2 floods. Each day, the pipeline system distributes approximately 1.8 Bscf (95 thousand metric tons (MMT) of fresh CO_2 that is purchased by the more than 60 CO_2 floods off taking from the system. Oxy and Kinder Morgan are the primary operators of the Permian pipeline delivery system, controlling a majority of the approximately 2,400 miles of major CO_2 pipeline in the system. There are a number of CO_2 sources connected to the system including both natural CO_2 reservoirs and anthropogenic CO_2 sources.

The Permian pipeline delivery system includes intra- and interstate pipelines in Texas, New Mexico, and Colorado. Minimum pipeline safety standards have been established by the US Department of Transportation (DOT) in 49 CFR Parts 190-199 and are implemented by DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) Office of Pipeline Safety (OPS). In all three states, OPS inspects and enforces the pipeline safety regulations for interstate gas and hazardous liquid pipeline operators. In addition, OPS oversees the intrastate pipelines in Colorado. The Texas Railroad Commission (TRRC) and New Mexico Public Regulation Commission Pipeline Safety Bureau are certified to oversee intrastate pipelines in their respective states. The pipeline safety requirements include standards for siting, construction, operation, and addressing accidents. There are no reporting requirements for such pipelines under EPA's GHGRP.

[11] Source: based on image found at http://www.texasenergyfoundation.org/wp-content/uploads/2012/10/Figure-II-3.-Existing-CO_2-Pipelines-Permian-Basin.gif

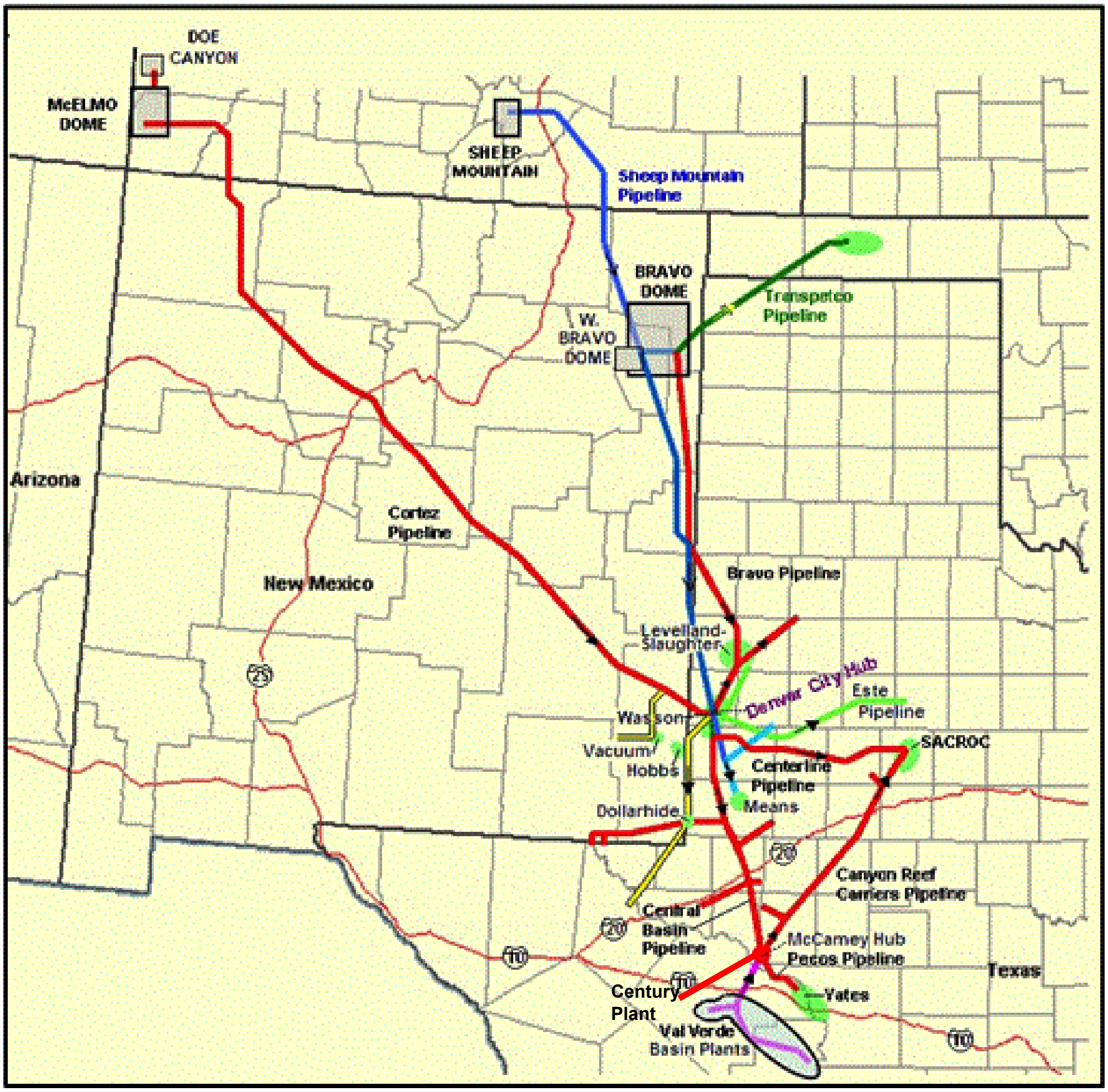

Figure A1-2 Permian Basin CO2 Pipeline Delivery System

All CO_2 entering the pipeline system must meet specifications for chemical composition and is treated by pipeline carriers and shippers as fungible. In Oxy's case, this means that contracts designate both the amounts of CO_2 that Oxy puts into the system and the amounts of CO_2 that Oxy draws from the system. CO_2 inputs and draws are measured using commercially calibrated flow meters at designated delivery points into and out of the pipeline system. Measured amounts typically are trued up against the contract amounts as specified in the particular contract. Oxy withdrew approximately 293 Bscf, or 15 million metric tons (MMMT), of fresh CO_2 from the Permian pipeline system in 2013 of which approximately 22% was injected in the Denver Unit.

A1.3 Oxy's EOR Experience

Oxy is an experienced CO_2 EOR operator and follows a rigorous, standardized process for assessing, developing, and operating CO_2 EOR projects. To profitably implement CO_2

miscible flooding,[12] the operator must optimize oil production while minimizing costs (e.g., CO_2, water, and energy). The miscible CO_2 flood at the Denver Unit has been successfully operated since 1983, demonstrating over this period that the reservoir is well characterized and that the CO_2 flood can be undertaken safely, profitably, and efficiently.

This Section provides a more thorough description of the process for selecting, developing, and managing fields for CO_2 floods, and a general description of CO_2 miscible flooding.

A1.3.1 Oxy's Process to Select, Develop, and Manage Fields for CO_2 Floods

Oxy is one of the largest and most respected CO_2 EOR operators in the world. The company has extensive experience in selecting and developing oil fields suitable for CO_2 floods and maintains standard practices for field selection, development, and management. Oxy's approach relies on frequent communication between operations staff with responsibility for specific geographic areas, and technical staff with responsibility for specific reservoirs, equipment, or functions. This organizational model provides multiple perspectives on field performance and stimulates identification of enhancement opportunities. Field technicians, who are trained in operating procedures, well surveillance, safety, and environmental protection, among other topics, are an integral part of the effective management of each field and work closely with contractors that perform specialized field services.

In designing CO_2 floods, Oxy first conducts an extensive study of the subsurface characteristics of the target oil reservoir. The reservoir characterization study entails a detailed geological and reservoir evaluation to determine the capability of the reservoir to effectively utilize CO_2 to increase oil recovery. Because CO_2 is an expensive injectant, the study includes a thorough analysis of the capability of the reservoir to maintain fluids within the targeted subsurface intervals, including an analysis of formation parting pressures and the ability of the reservoir strata to assimilate the injected CO_2.

Oxy typically creates a (or uses an existing) compositional reservoir simulation model that has been calibrated with actual reservoir data. Reservoir simulation models are used to evaluate potential development scenarios and determine the most viable options. When planning and operating a specific EOR project, Oxy uses pattern modeling. Once a CO_2 flood plan has been developed, it is subjected to thorough technical, operational, safety, environmental, and business reviews within Oxy. At this juncture, Oxy seeks the required regulatory approvals from the appropriate agencies. All of these steps were followed in the development of the CO_2 flood at the Denver Unit. Prior operators developed reservoir-wide models. Oxy used this information to inform their decision to acquire leases for the Denver Unit. Since taking over operation of the Denver Unit in 2000, Oxy has conducted additional reservoir characterization studies and undertaken pattern modeling to design and operate the CO_2 flood.

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[12] A miscible CO_2 flood employs the characteristic of CO_2 as mixable (or miscible) with crude oil (i.e., the two fluids can dissolve into each other). See Section 2.3.1.2 for additional explanation of miscible flooding.

A1.3.2 General Description of CO_2 Miscible Flooding

In a typical sedimentary formation, like the San Andres reservoir in the Denver Unit in the Wasson Field, primary production produces only a portion of the Original Oil-In-Place (OOIP). The percentage of oil recovered during "primary production" varies; in the Denver Unit, primary production recovered approximately 17% of the OOIP, and approximately 83% of the OOIP remained in the pore space in the reservoir.

Water injection may be applied as a secondary production method. This approach typically yields a sizeable additional volume of oil. In the Denver Unit, water injection led to the production of another 33% of the OOIP, leaving approximately 50% still in the pore space in the reservoir.

The oil remaining after water injection is the target for "tertiary recovery" through miscible CO_2 flooding. Typically, CO_2 flooding in the Permian Basin is used as a tertiary production method and it entails compressing CO_2 and injecting it into oil fields to mobilize trapped oil remaining after water flooding. Miscible CO_2 flooding can produce another 20% of the OOIP, leaving the fraction of oil remaining in the pore space in the reservoir at approximately 30%.

Under typical pressure and temperature conditions in a reservoir, CO_2 is a supercritical fluid (see Figure 5) that is miscible with crude oil. As injected CO_2 mixes with the oil, it acts like a solvent wash to sweep remaining oil from the pore space in the reservoir. The net effect is to further increase oil production from existing wells. As the oil is swept from the pore space, CO_2 and water fill the vacated pore space. The profitability of CO_2 EOR is dependent on the underlying costs of the commodities. Under current economic conditions, the combined cost of CO_2, water, and the necessary energy are less than the value of the produced oil, and the process is profitable to producers. However, those conditions can change quickly and have done so in the past.

The first commercial CO_2 injection project began in January 1972 in the SACROC (Scurry Area Canyon Reef Operators Committee) Unit of the Kelly-Snyder Field in Scurry County, West Texas. Following that early field test, CO_2 flooding has spread throughout the Permian Basin, the Gulf Coast and the Mid-continent areas. The industry currently recovers approximately 300,000 bopd from CO_2 flooding in the United States.

In the supercritical fluid phase, CO_2 is neither a liquid nor a gas (See Figure A1-3). It has a density that is close to that of oil but less than that of water. However, it has a very low viscosity, which means CO_2 tends to bypass the oil and water it is displacing. The result is low process sweep efficiency and high gas production rates. One way to improve sweep and reduce gas production is to inject water along with the CO_2, which adds water to the pore spaces and slows the flow of CO_2. This is generally done with alternate injection of water and CO_2, or WAG (water alternating gas) injection. The WAG approach is common in the Permian Basin, although there are several other ways to manage CO_2 flooding. The WAG approach improves how CO_2 flooding works by helping to maintain more stable flood fronts and reducing the rate at which CO_2 is produced through the production wells.

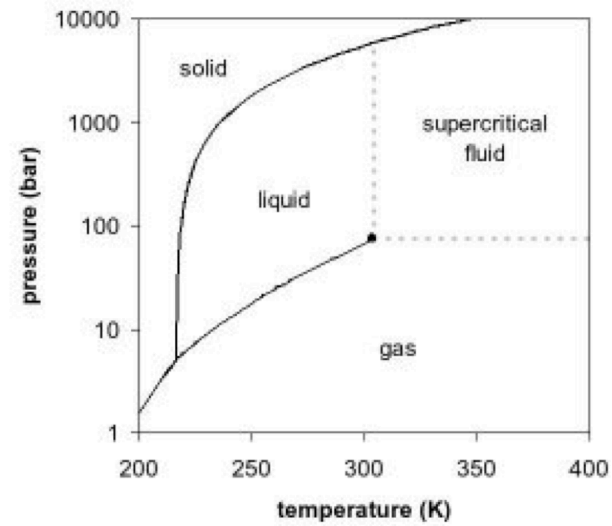

Figure A1-3 CO2 Phases

Because CO_2 is an inherently inefficient displacing agent, a portion of the injected CO_2 is co-produced along with oil and water. The remaining portion stays trapped in the pore space in the reservoir. The produced fluid is treated through a closed loop process to remove valuable products (like natural gas (NG), natural gas liquids (NGL) and sulfur) and to separate the CO_2 and water for recompression and re-injection. Fresh CO_2 is combined with recycled CO_2 to make up the amount of CO_2 that is injected. As a close approximation, the amount of purchased CO_2 is the amount that remains trapped (stored) in the pore space in the reservoir. As a standard practice, the volume of purchased CO_2 is calculated to be just sufficient to take the place of the oil and net water that has been produced. In this way, reservoir pressure is maintained.

Each injection well ("injector") is surrounded by a number of producing wells ("producers"), each of which responds to the amount and rate of injection. The injector and producer wells form a "pattern," typically either a five-spot pattern with four corner wells forming a square around the injector, or a nine-spot pattern with an additional producer located along each side of the square. Oxy uses pattern modeling, discussed in more detail in Section 3.1, to predict the fluid flow in the formation; develop an injection plan for each pattern; predict the performance of each pattern; and determine where to place infill wells to better manage production and injection over time. The resulting injection plan describes the expected volume and pressure for the injection of CO_2 and water introduced into each injection well.

Appendix 2. Conversion Factors

Oxy reports CO_2 volumes at standard conditions of temperature and pressure as defined in the State of Texas – 60 ^{o}F and 14.65 psi.

To convert these volumes into metric tonnes, a density is calculated using the Span and Wagner equation of state as recommended by the EPA. Density was calculated using the database of thermodynamic properties developed by the National Institute of Standards and Technology (NIST), available at http://webbook.nist.gov/chemistry/fluid/.

At State of Texas standard conditions, the Span and Wagner equation of state gives a density of 0.0026417 lb-moles per cubic foot. Using a molecular weight for CO_2 of 44.0095, 2204.62 lbs/metric ton and 35.314667 ft^3/m^3, gives a CO_2 density of 5.27346 x 10^{-2} MT/Mcf or 0.0018623 MT/m^3.

Note at EPA standard conditions of 60 ^{o}F and one atmosphere, the Span and Wagner equation of state gives a density of 0.0026500 lb-moles per cubic foot. Using a molecular weight for CO_2 of 44.0095, 2204.62 lbs/metric ton and 35.314667 ft^3/m^3, gives a CO_2 density of 5.29003 x 10^{-5} MT/ft^3 or 0.0018682 MT/m^3.

The conversion factor 5.27346 x 10^{-2} MT/Mcf has been used throughout to convert Oxy volumes to metric tons.

Appendix 3. Acronyms

AGA – American Gas Association
AMA – Active Monitoring Area
AoR – Area of Review
API – American Petroleum Institute
Bscf – billion standard cubic feet
B/D – barrels per day
bopd – barrels of oil per day
cf – cubic feet
CH_4 – Methane
CO_2 – Carbon Dioxide
CRP – CO_2 Removal Plant
CTB – Central Tank Battery
DOT – US Department of Transportation
DUCRP – Denver Unit CO_2 Recovery Plant
EOR – Enhanced Oil Recovery
EPA – US Environmental Protection Agency
ESD – Emergency Shutdown Device
GHG – Greenhouse Gas
GHGRP – Greenhouse Gas Reporting Program
HC – Hydrocarbon
H_2S – Hydrogen Sulfide
IWR -- Injection to Withdrawal Ratio
LACT – Lease Automatic Custody Transfer meter
LEL – Lower Explosive Limit
MIT – Mechanical Integrity Test
MMA – Maximum Monitoring Area
MMB – Million barrels
Mscf – Thousand standard cubic feet
MMscf – Million standard cubic feet
MMMT – Million metric tonnes
MMT – Thousand metric tonnes
MRV – Monitoring, Reporting, and Verification
MT -- Metric Tonne
NG—Natural Gas
NGLs – Natural Gas Liquids
OOIP – Original Oil-In-Place
OPC – Occidental Petroleum Corporation
OPL – Occidental Petroleum Ltd.
OPS – Office of Pipeline Safety
PHMSA – Pipeline and Hazardous Materials Safety Administration
PPM – Parts Per Million
RCF – Reinjection Compression Facility
ROZ – Residual Oil Zone
SACROC – Scurry Area Canyon Reef Operators Committee

ST – Short Ton
TRRC – Texas Railroad Commission
TSD – Technical Support Document
TVDSS – True Vertical Depth Subsea
TZ – Transition Zone
UIC – Underground Injection Control
USEPA – U.S. Environmental Protection Agency
USDW – Underground Source of Drinking Water
VRU -- Vapor Recovery Unit
WAG – Water Alternating Gas
WTO – West Texas Overthrust

Appendix 4. References

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Appendix 5. Glossary of Terms

This glossary describes some of the technical terms as they are used in this MRV plan. For additional glossaries please see the U.S. EPA Glossary of UIC Terms (http://water.epa.gov/type/groundwater/uic/glossary.cfm) and the Schlumberger Oilfield Glossary (http://www.glossary.oilfield.slb.com/).

Anhydrite -- Anhydrite is a mineral—anhydrous calcium sulfate, $CaSO_4$.

Bradenhead -- a casing head in an oil well having a stuffing box packed (as with rubber) to make a gastight connection
Contain / Containment – having the effect of keeping fluids located within in a specified portion of a geologic formation.

Dip -- Very few, if any, geologic features are perfectly horizontal. They are almost always tilted. The direction of tilt is called "dip." Dip is the angle of steepest descent measured from the horizontal plane. Moving higher up structure is moving "updip." Moving lower is "downdip." Perpendicular to dip is "strike." Moving perpendicular along a constant depth is moving along strike.

Dolomite -- Dolomite is an anhydrous carbonate mineral composed of calcium magnesium carbonate $CaMg(CO_3)_2$.

Downdip -- See "dip."

Formation -- A body of rock that is sufficiently distinctive and continuous that it can be mapped. At Wasson, for example, San Andres formation is a layer of permeable dolomites that were deposited in a shallow marine environment during the Permian Era, some 250 to 300 million years ago. The San Andres can be mapped over much of the Permian Basin.

Igneous Rocks -- Igneous rocks crystallize from molten rock, or magma, with interlocking mineral crystals.

Infill Drilling -- The drilling of additional wells within existing patterns. These additional wells decrease average well spacing. This practice both accelerates expected recovery and increases estimated ultimate recovery in heterogeneous reservoirs by improving the continuity between injectors and producers. As well spacing is decreased, the shifting flow paths lead to increased sweep to areas where greater hydrocarbon saturations remain.

Metamorphic Rocks -- Metamorphic rocks form from the alteration of preexisting rocks by changes in ambient temperature, pressure, volatile content, or all of these. Such changes can occur through the activity of fluids in the Earth and movement of igneous bodies or regional tectonic activity.

Permeability -- Permeability is the measure of a rock's ability to transmit fluids. Rocks that transmit fluids readily, such as sandstones, are described as permeable and tend to have many large, well-connected pores. Impermeable formations, such as shales and siltstones, tend to be finer grained or of a mixed grain size, with smaller, fewer, or less interconnected pores.

Phase -- Phase is a region of space throughout which all physical properties of a material are essentially uniform. Fluids that don't mix together segregate themselves into phases. Oil, for example, does not mix with water and forms a separate phase.

Pore Space -- See porosity.

Porosity -- Porosity is the fraction of a rock that is not occupied by solid grains or minerals. Almost all rocks have spaces between rock crystals or grains that is available to be filled with a fluid, such as water, oil or gas. This space is called "pore space."

Primary recovery -- The first stage of hydrocarbon production, in which natural reservoir energy, such as gasdrive, waterdrive or gravity drainage, displaces hydrocarbons from the reservoir, into the wellbore and up to surface. Initially, the reservoir pressure is considerably higher than the bottomhole pressure inside the wellbore. This high natural differential pressure drives hydrocarbons toward the well and up to surface. However, as the reservoir pressure declines because of production, so does the differential pressure. To reduce the bottomhole pressure or increase the differential pressure to increase hydrocarbon production, it is necessary to implement an artificial lift system, such as a rod pump, an electrical submersible pump or a gas-lift installation. Production using artificial lift is considered primary recovery. The primary recovery stage reaches its limit either when the reservoir pressure is so low that the production rates are not economical, or when the proportions of gas or water in the production stream are too high. During primary recovery, only a small percentage of the initial hydrocarbons in place are produced, typically around 10% for oil reservoirs. Primary recovery is also called primary production.

Saturation -- The fraction of pore space occupied by a given fluid. Oil saturation, for example, is the fraction of pore space occupied by oil.

Seal – A geologic layer (or multiple layers) of impermeable rock that serve as a barrier to prevent fluids from moving upwards to the surface.

Secondary recovery -- The second stage of hydrocarbon production during which an external fluid such as water or gas is injected into the reservoir through injection wells located in rock that has fluid communication with production wells. The purpose of secondary recovery is to maintain reservoir pressure and to displace hydrocarbons toward the wellbore. The most common secondary recovery techniques are gas injection and waterflooding.

Sedimentary Rocks -- Sedimentary rocks are formed at the Earth's surface through deposition of sediments derived from weathered rocks, biogenic activity or precipitation from solution. There are three main types of rocks – igneous, metamorphic and sedimentary.

Stratigraphic section -- A stratigraphic section is a sequence of layers of rocks in the order they were deposited.

Strike -- See “dip.”

Updip -- See “dip.”

Appendix 6. Well Identification Numbers

The following table presents the well name, API number, status and type for the wells in the Denver Unit as of August 2014. The table is subject to change over time as new wells are drilled, existing wells change status, or existing wells are repurposed. The following terms are used:

- Well Status
  - ACTIVE refers to active wells
  - DRILL refers to wells under construction
  - P&A refers to wells that have been closed (plugged and abandoned) per TAC 16.1.3
  - TA refers to wells that have been temporarily abandoned
  - SHUT_IN refers to wells that have been temporarily idled or shut-in
  - INACTIVE refers to wells that have been completed but are not in use
- Well Type
  - INJ_WAG refers to wells that inject water and CO_2 Gas
  - INJ_GAS refers to wells that inject CO_2 Gas
  - INJ_H2O refers to wells that inject water
  - PROD_GAS refers to wells that produce natural gas
  - PROD_OIL refers to wells that produce oil
  - DISP_H2O refers to wells used for water disposal

Well Name	API Number	Well Status	Well Type
DU-0001	42501000000000	ACTIVE	DISP_H2O
DU-0001B	42165313440000	ACTIVE	DISP_H2O
DU-0001SWD	42501324880000	ACTIVE	DISP_H2O
DU-0002	42501328930000	ACTIVE	DISP_H2O
DU-0003SWD	42165336580000	ACTIVE	DISP_H2O
DU-0004	42501363510000	DRILL	PROD_OIL
DU-1701	42501022100000	ACTIVE	INJ_WAG
DU-1702	42501022150000	ACTIVE	PROD_OIL
DU-1703	42501000700000	ACTIVE	INJ_WAG
DU-1704	42501000690000	ACTIVE	INJ_WAG
DU-1705	42501022120000	P & A	INJ_WAG
DU-1706	42501022110000	ACTIVE	PROD_OIL
DU-1707	42501000710000	ACTIVE	PROD_OIL
DU-1708	42501000720000	TA	INJ_WAG
DU-1709	42501301980000	ACTIVE	INJ_WAG
DU-1710	42501301970000	ACTIVE	PROD_OIL
DU-1711	42501303970000	ACTIVE	INJ_WAG
DU-1712	42501303960000	ACTIVE	PROD_OIL
DU-1713	42501303950000	ACTIVE	PROD_OIL
DU-1714	42501311220000	ACTIVE	PROD_OIL
DU-1715	42501311230000	ACTIVE	INJ_WAG
DU-1716	42501314560000	ACTIVE	PROD_OIL
DU-1717	42501313090000	ACTIVE	INJ_WAG
DU-1718	42501317050000	ACTIVE	INJ_WAG
DU-1719	42501340520000	ACTIVE	PROD_OIL
DU-1720	42501348490000	ACTIVE	PROD_OIL
DU-1721	42501348500000	ACTIVE	PROD_OIL

DU-1722	42501348510000	ACTIVE	PROD_OIL
DU-1723	42501348520000	ACTIVE	PROD_OIL
DU-1724	42501348530000	ACTIVE	PROD_OIL
DU-1725	42501348540000	ACTIVE	PROD_OIL
DU-1726	42501348550000	ACTIVE	PROD_OIL
DU-1727	42501352120000	ACTIVE	PROD_OIL
DU-1728	42501356810000	ACTIVE	INJ_WAG
DU-2201	42501018320000	P & A	INJ_H2O
DU-2202	42501018330000	ACTIVE	INJ_WAG
DU-2203	42501018260000	P & A	PROD_OIL
DU-2204	42501018250000	ACTIVE	INJ_H2O
DU-2205	42501018290000	ACTIVE	PROD_OIL
DU-2206	42501018410000	ACTIVE	PROD_OIL
DU-2207	42501018350000	P & A	PROD_OIL
DU-2208	42501018280000	P & A	PROD_OIL
DU-2208R	42501329970000	ACTIVE	INJ_WAG
DU-2209	42501018270000	ACTIVE	INJ_WAG
DU-2210	42501014570000	P & A	PROD_OIL
DU-2211	42501014590000	ACTIVE	PROD_OIL
DU-2212	42501018370000	TA	INJ_H2O
DU-2213	42501018360000	ACTIVE	INJ_WAG
DU-2214	42501018300000	ACTIVE	INJ_WAG
DU-2215	42501804810000	ACTIVE	INJ_WAG
DU-2216	42501028960000	ACTIVE	PROD_OIL
DU-2217	42501018400000	ACTIVE	INJ_WAG
DU-2218	42501018380000	ACTIVE	INJ_WAG
DU-2219	42501018390000	ACTIVE	INJ_WAG
DU-2220	42501018310000	ACTIVE	INJ_WAG
DU-2221	42501309150000	ACTIVE	PROD_OIL
DU-2222	42501309140000	ACTIVE	PROD_OIL
DU-2223	42501309130000	TA	PROD_OIL
DU-2224	42501309120000	ACTIVE	PROD_OIL
DU-2225	42501309110000	ACTIVE	PROD_OIL
DU-2226	42501309260000	P & A	PROD_OIL
DU-2227	42501309060000	ACTIVE	PROD_OIL
DU-2228	42501309620000	ACTIVE	PROD_OIL
DU-2229	42501315420000	P & A	PROD_OIL
DU-2232	42501316560000	P & A	INJ_GAS
DU-2233	42501325210000	ACTIVE	INJ_WAG
DU-2235	42501328580000	ACTIVE	PROD_OIL
DU-2236	42501329270000	ACTIVE	PROD_OIL
DU-2237	42501334570000	ACTIVE	PROD_OIL
DU-2238	42501341180000	ACTIVE	PROD_OIL
DU-2239	42501340990000	ACTIVE	INJ_H2O
DU-2240	42501352290000	ACTIVE	PROD_OIL
DU-2241	42501352110000	ACTIVE	PROD_OIL
DU-2242	42501347160000	ACTIVE	PROD_OIL
DU-2243	42501347110000	ACTIVE	PROD_OIL
DU-2244	42501349630000	ACTIVE	INJ_WAG
DU-2245	42501353570000	ACTIVE	PROD_OIL
DU-2246	42501359610000	ACTIVE	PROD_OIL
DU-2247	42501359580000	ACTIVE	PROD_OIL
DU-2248	42501359590000	ACTIVE	PROD_OIL
DU-2249	42501359600000	ACTIVE	PROD_OIL
DU-2250	42501359620000	ACTIVE	PROD_OIL

DU-2251	42501359660000	ACTIVE	PROD_OIL
DU-2252	42501359630000	ACTIVE	PROD_OIL
DU-2253	42501359970000	ACTIVE	PROD_OIL
DU-2254	42501359640000	ACTIVE	PROD_OIL
DU-2255	42501359650000	ACTIVE	PROD_OIL
DU-2256	42501359670000	ACTIVE	PROD_OIL
DU-2257	42501359980000	ACTIVE	PROD_OIL
DU-2501	42501023940000	P & A	INJ_H2O
DU-2502	42501024200000	ACTIVE	INJ_WAG
DU-2503	42501024250000	P & A	INJ_WAG
DU-2504	42501023790000	P & A	PROD_OIL
DU-2505	42501023840000	ACTIVE	INJ_WAG
DU-2506	42501024150000	P & A	PROD_OIL
DU-2507	42501023990000	P & A	PROD_OIL
DU-2508	42501023890000	ACTIVE	INJ_WAG
DU-2509	42501024550000	ACTIVE	PROD_OIL
DU-2510	42501024650000	ACTIVE	PROD_OIL
DU-2511	42501024600000	ACTIVE	PROD_OIL
DU-2512	42501024500000	ACTIVE	PROD_OIL
DU-2513	42501023740000	P & A	INJ_H2O
DU-2514	42501024090000	P & A	INJ_H2O
DU-2515	42501024040000	P & A	INJ_H2O
DU-2516	42501024350000	ACTIVE	INJ_WAG
DU-2517	42501023530000	ACTIVE	INJ_WAG
DU-2518	42501024440000	ACTIVE	PROD_OIL
DU-2519	42501024390000	ACTIVE	INJ_WAG
DU-2520	42501023680000	P & A	PROD_OIL
DU-2521	42501023630000	P & A	INJ_H2O
DU-2522	42501023570000	P & A	PROD_OIL
DU-2523	42501024300000	ACTIVE	PROD_OIL
DU-2524	42501023470000	ACTIVE	PROD_OIL
DU-2525	42501101690000	ACTIVE	PROD_OIL
DU-2526	42501302990000	ACTIVE	PROD_OIL
DU-2527	42501302970000	ACTIVE	PROD_OIL
DU-2528	42501302980000	ACTIVE	PROD_OIL
DU-2529	42501303940000	ACTIVE	PROD_OIL
DU-2530	42501307700000	ACTIVE	PROD_OIL
DU-2531	42501307710000	ACTIVE	INJ_WAG
DU-2532	42501311170000	ACTIVE	PROD_OIL
DU-2533	42501315440000	ACTIVE	PROD_OIL
DU-2534	42501316480000	ACTIVE	PROD_OIL
DU-2535	42501316520000	ACTIVE	PROD_OIL
DU-2536	42501325220000	ACTIVE	INJ_WAG
DU-2537	42501325960000	ACTIVE	INJ_WAG
DU-2538	42501327910000	ACTIVE	INJ_WAG
DU-2539	42501328570000	ACTIVE	INJ_WAG
DU-2540	42501329830000	TA	INJ_GAS
DU-2541	42501331180000	ACTIVE	INJ_WAG
DU-2542	42501333830000	ACTIVE	INJ_WAG
DU-2543	42501333870000	ACTIVE	INJ_WAG
DU-2544	42501334580000	ACTIVE	INJ_WAG
DU-2545	42501334420000	ACTIVE	INJ_WAG
DU-2546	42501336480000	ACTIVE	PROD_OIL
DU-2547	42501345130000	ACTIVE	PROD_OIL
DU-2548	42501345490000	ACTIVE	PROD_OIL

DU-2549	42501345620000	ACTIVE	PROD_OIL
DU-2550	42501346500000	ACTIVE	PROD_OIL
DU-2551	42501346770000	ACTIVE	PROD_OIL
DU-2552	42501346410000	ACTIVE	PROD_OIL
DU-2553	42501346760000	ACTIVE	PROD_OIL
DU-2554	42501346560000	ACTIVE	PROD_OIL
DU-2555	42501346420000	ACTIVE	PROD_OIL
DU-2556	42501346680000	ACTIVE	INJ_WAG
DU-2557	42501346780000	ACTIVE	PROD_OIL
DU-2558	42501347120000	ACTIVE	PROD_OIL
DU-2559	42501347130000	ACTIVE	PROD_OIL
DU-2560	42501353360000	ACTIVE	PROD_OIL
DU-2561	42501353380000	ACTIVE	PROD_OIL
DU-2562	42501353390000	ACTIVE	PROD_OIL
DU-2564GC	42501355190000	TA	PROD_GAS
DU-2601	42501023730000	P & A	INJ_H2O
DU-2602	42501023780000	ACTIVE	INJ_WAG
DU-2603	42501023830000	P & A	INJ_H2O
DU-2604	42501023880000	P & A	PROD_OIL
DU-2605	42501024080000	P & A	PROD_OIL
DU-2606	42501330140000	ACTIVE	INJ_WAG
DU-2607	42501330010000	ACTIVE	INJ_WAG
DU-2608	42501023930000	ACTIVE	INJ_WAG
DU-2609	42501023560000	P & A	PROD_OIL
DU-2610	42501023620000	ACTIVE	INJ_WAG
DU-2611	42501023670000	P & A	INJ_H2O
DU-2612	42501023540000	ACTIVE	INJ_WAG
DU-2613	42501024290000	P & A	INJ_H2O
DU-2614	42501024340000	ACTIVE	INJ_WAG
DU-2615	42501023460000	P & A	INJ_H2O
DU-2616	42501023980000	P & A	PROD_OIL
DU-2617	42501024240000	ACTIVE	PROD_OIL
DU-2618	42501024030000	ACTIVE	PROD_OIL
DU-2619	42501301960000	ACTIVE	PROD_OIL
DU-2620	42501303010000	ACTIVE	PROD_OIL
DU-2621	42501303000000	ACTIVE	PROD_OIL
DU-2622	42501024540000	ACTIVE	PROD_OIL
DU-2623	42501304400000	P & A	PROD_OIL
DU-2624	42501024490000	ACTIVE	PROD_OIL
DU-2625	42501024430000	TA	PROD_OIL
DU-2626	42501307690000	TA	INJ_H2O
DU-2627	42501309100000	ACTIVE	PROD_OIL
DU-2628	42501309090000	ACTIVE	PROD_OIL
DU-2629	42501311190000	ACTIVE	PROD_OIL
DU-2630	42501311270000	TA	PROD_OIL
DU-2631	42501314650000	ACTIVE	INJ_WAG
DU-2632	42501314540000	ACTIVE	INJ_WAG
DU-2633	42501315510000	ACTIVE	PROD_OIL
DU-2634	42501315450000	ACTIVE	PROD_OIL
DU-2635	42501327900000	P & A	INJ_WAG
DU-2636	42501328420000	ACTIVE	INJ_WAG
DU-2637	42501330250000	ACTIVE	PROD_OIL
DU-2638	42501329980000	ACTIVE	PROD_OIL
DU-2639	42501330110000	ACTIVE	PROD_OIL
DU-2640	42501330940000	TA	INJ_GAS

DU-2641	42501331710000	ACTIVE	INJ_WAG
DU-2642	42501333840000	ACTIVE	PROD_OIL
DU-2643	42501333860000	ACTIVE	PROD_OIL
DU-2644	42501334160000	ACTIVE	PROD_OIL
DU-2645	42501338480000	ACTIVE	INJ_WAG
DU-2646	42501342840000	ACTIVE	PROD_OIL
DU-2647	42501345500000	ACTIVE	PROD_OIL
DU-2648	42501345510000	ACTIVE	PROD_OIL
DU-2649	42501345120000	ACTIVE	PROD_OIL
DU-2650	42501345110000	ACTIVE	PROD_OIL
DU-2651	42501345170000	ACTIVE	PROD_OIL
DU-2652	42501345520000	ACTIVE	PROD_OIL
DU-2653	42501345530000	ACTIVE	PROD_OIL
DU-2654	42501345100000	ACTIVE	PROD_OIL
DU-2655	42501345090000	ACTIVE	PROD_OIL
DU-2656	42501345080000	ACTIVE	PROD_OIL
DU-2657	42501345690000	ACTIVE	INJ_WAG
DU-2658	42501345150000	ACTIVE	INJ_WAG
DU-2659	42501346430000	ACTIVE	PROD_OIL
DU-2660	42501346580000	ACTIVE	PROD_OIL
DU-2661	42501346460000	ACTIVE	PROD_OIL
DU-2662	42501348560000	ACTIVE	PROD_OIL
DU-2663	42501352140000	ACTIVE	INJ_WAG
DU-2664	42501352150000	ACTIVE	PROD_OIL
DU-2665	42501353400000	ACTIVE	PROD_OIL
DU-2666	42501353410000	ACTIVE	PROD_OIL
DU-2667	42501353370000	ACTIVE	INJ_WAG
DU-2668	42501353840000	ACTIVE	PROD_OIL
DU-2669	42501354900000	ACTIVE	PROD_OIL
DU-2670	42501356820000	ACTIVE	INJ_WAG
DU-2671	42501356830000	ACTIVE	INJ_WAG
DU-2672	42501356840000	ACTIVE	INJ_WAG
DU-2673	42501356850000	ACTIVE	INJ_WAG
DU-2674	42501356860000	ACTIVE	INJ_WAG
DU-2701	42501023770000	P & A	INJ_H2O
DU-2702	42501023720000	ACTIVE	INJ_WAG
DU-2703	42501023600000	ACTIVE	INJ_WAG
DU-2704	42501023550000	P & A	INJ_WAG
DU-2705	42501023820000	ACTIVE	PROD_OIL
DU-2706	42501024120000	P & A	PROD_OIL
DU-2707	42501024180000	ACTIVE	PROD_OIL
DU-2708	42501023920000	ACTIVE	PROD_OIL
DU-2709	42501023970000	ACTIVE	PROD_OIL
DU-2710	42501024070000	P & A	INJ_H2O
DU-2711	42501024230000	ACTIVE	PROD_OIL
DU-2712	42501024020000	ACTIVE	PROD_OIL
DU-2713	42501023660000	TA	PROD_OIL
DU-2714	42501024280000	P & A	PROD_OIL
DU-2715	42501023870000	P & A	PROD_OIL
DU-2716	42501023450000	ACTIVE	PROD_OIL
DU-2717	42501024720000	TA	PROD_OIL
DU-2718	42501024840000	ACTIVE	INJ_WAG
DU-2719	42501304350000	TA	PROD_OIL
DU-2720	42501304200000	ACTIVE	INJ_WAG
DU-2721	42501024830000	INACTIVE	PROD_OIL

DU-2722	42501024580000	ACTIVE	PROD_OIL
DU-2723	42501024810000	ACTIVE	INJ_WAG
DU-2724	42501024630000	ACTIVE	INJ_WAG
DU-2725	42501307720000	ACTIVE	PROD_OIL
DU-2726	42501309080000	ACTIVE	INJ_WAG
DU-2727	42501309070000	ACTIVE	INJ_WAG
DU-2728	42501314550000	ACTIVE	PROD_OIL
DU-2729	42501313080000	ACTIVE	INJ_WAG
DU-2730	42501313100000	ACTIVE	INJ_WAG
DU-2731	42501314490000	ACTIVE	PROD_OIL
DU-2732	42501315410000	P & A	INJ_H2O
DU-2733	42501315400000	ACTIVE	INJ_WAG
DU-2734	42501316500000	ACTIVE	PROD_OIL
DU-2735	42501319120000	ACTIVE	PROD_OIL
DU-2736	42501323100000	ACTIVE	INJ_WAG
DU-2737	42501322920000	ACTIVE	INJ_WAG
DU-2738	42501330000000	ACTIVE	INJ_WAG
DU-2739	42501329900000	ACTIVE	PROD_OIL
DU-2740	42501334430000	ACTIVE	PROD_OIL
DU-2741	42501101680000	ACTIVE	PROD_OIL
DU-2742	42501340510000	ACTIVE	PROD_OIL
DU-2743	42501341630000	ACTIVE	PROD_OIL
DU-2744	42501343490000	ACTIVE	PROD_OIL
DU-2745	42501343900000	ACTIVE	PROD_OIL
DU-2746	42501343720000	ACTIVE	PROD_OIL
DU-2747	42501343860000	ACTIVE	PROD_OIL
DU-2748	42501343870000	ACTIVE	INJ_WAG
DU-2749	42501343810000	ACTIVE	PROD_OIL
DU-2750	42501343730000	ACTIVE	PROD_OIL
DU-2751	42501343800000	ACTIVE	PROD_OIL
DU-2752	42501343880000	ACTIVE	PROD_OIL
DU-2753	42501343790000	ACTIVE	PROD_OIL
DU-2754	42501343780000	ACTIVE	PROD_OIL
DU-2755	42501343890000	ACTIVE	PROD_OIL
DU-2756	42501347940000	ACTIVE	PROD_OIL
DU-2757	42501348570000	ACTIVE	INJ_WAG
DU-2758	42501348580000	ACTIVE	INJ_WAG
DU-2759	42501356870000	ACTIVE	INJ_WAG
DU-2760	42501356880000	ACTIVE	INJ_WAG
DU-2761	42501356890000	ACTIVE	INJ_WAG
DU-2762	42501356900000	ACTIVE	INJ_WAG
DU-2801	42501023910000	ACTIVE	INJ_WAG
DU-2802	42501023860000	ACTIVE	INJ_WAG
DU-2803	42501023650000	INACTIVE	INJ_WAG
DU-2804	42501023960000	P & A	INJ_H2O
DU-2805	42501023490000	ACTIVE	INJ_WAG
DU-2806	42501024370000	ACTIVE	PROD_OIL
DU-2807	42501024060000	ACTIVE	PROD_OIL
DU-2808	42501023590000	ACTIVE	PROD_OIL
DU-2809	42501024320000	ACTIVE	INJ_WAG
DU-2810	42501024170000	ACTIVE	INJ_WAG
DU-2811	42501024410000	ACTIVE	INJ_WAG
DU-2812	42501024110000	ACTIVE	PROD_OIL
DU-2813	42501024270000	ACTIVE	PROD_OIL
DU-2814	42501023710000	P & A	PROD_OIL

DU-2815	42501024220000	ACTIVE	INJ_WAG
DU-2816	42501023520000	ACTIVE	PROD_OIL
DU-2817	42501024010000	ACTIVE	PROD_OIL
DU-2818	42501023760000	ACTIVE	PROD_OIL
DU-2819	42501023810000	P & A	PROD_OIL
DU-2820	42501302320000	ACTIVE	PROD_OIL
DU-2821	42501304260000	P & A	PROD_OIL
DU-2822	42501304380000	ACTIVE	INJ_WAG
DU-2823	42501304270000	ACTIVE	INJ_WAG
DU-2824	42501024670000	P & A	PROD_OIL
DU-2825	42501304340000	ACTIVE	INJ_WAG
DU-2826	42501304310000	ACTIVE	INJ_WAG
DU-2827	42501304250000	TA	INJ_WAG
DU-2828	42501304240000	ACTIVE	INJ_WAG
DU-2829	42501304230000	ACTIVE	PROD_OIL
DU-2830	42501304330000	ACTIVE	PROD_OIL
DU-2831	42501311180000	TA	PROD_OIL
DU-2832	42501313060000	ACTIVE	INJ_WAG
DU-2833	42501313050000	ACTIVE	PROD_OIL
DU-2834	42501315520000	ACTIVE	INJ_WAG
DU-2835	42501316640000	ACTIVE	INJ_WAG
DU-2836	42501322910000	ACTIVE	PROD_OIL
DU-2837	42501322960000	ACTIVE	PROD_OIL
DU-2838	42501331400000	ACTIVE	PROD_OIL
DU-2839	42501338260000	ACTIVE	INJ_WAG
DU-2840	42501340500000	ACTIVE	PROD_OIL
DU-2841	42501340480000	ACTIVE	PROD_OIL
DU-2842	42501342830000	ACTIVE	PROD_OIL
DU-2843	42501343080000	ACTIVE	INJ_WAG
DU-2844	42501343070000	ACTIVE	PROD_OIL
DU-2845	42501343090000	ACTIVE	PROD_OIL
DU-2846	42501343060000	ACTIVE	PROD_OIL
DU-2847	42501343050000	ACTIVE	PROD_OIL
DU-2848	42501343100000	ACTIVE	PROD_OIL
DU-2849	42501343040000	ACTIVE	PROD_OIL
DU-2850	42501343030000	ACTIVE	PROD_OIL
DU-2851	42501343690000	ACTIVE	PROD_OIL
DU-2852	42501343710000	ACTIVE	PROD_OIL
DU-2853	42501343700000	ACTIVE	PROD_OIL
DU-2854	42501343770000	ACTIVE	INJ_WAG
DU-2855	42501343760000	ACTIVE	PROD_OIL
DU-2856	42501343740000	ACTIVE	PROD_OIL
DU-2857	42501343750000	ACTIVE	PROD_OIL
DU-2858	42501343820000	ACTIVE	PROD_OIL
DU-2859	42501345140000	ACTIVE	PROD_OIL
DU-2860	42501346350000	ACTIVE	PROD_OIL
DU-2861	42501347190000	ACTIVE	PROD_OIL
DU-2862	42501347290000	ACTIVE	PROD_OIL
DU-2863	42501347200000	ACTIVE	PROD_OIL
DU-2864	42501347280000	ACTIVE	PROD_OIL
DU-2865	42501350120000	ACTIVE	PROD_OIL
DU-2866	42501350130000	ACTIVE	PROD_OIL
DU-2867	42501350140000	ACTIVE	PROD_OIL
DU-2868	42501362440000	ACTIVE	INJ_WAG
DU-2869	42501362450000	ACTIVE	INJ_WAG

DU-2870	42501362460000	ACTIVE	INJ_WAG
DU-2871	42501362470000	ACTIVE	INJ_WAG
DU-2872	42501362530000	ACTIVE	INJ_WAG
DU-2901	42501028320000	ACTIVE	INJ_WAG
DU-2902	42501028360000	ACTIVE	INJ_WAG
DU-2903	42501017280000	ACTIVE	INJ_WAG
DU-2904	42501017300000	ACTIVE	INJ_WAG
DU-2905	42501028400000	ACTIVE	PROD_OIL
DU-2906	42501028380000	ACTIVE	PROD_OIL
DU-2907	42501017250000	ACTIVE	INJ_WAG
DU-2908	42501017310000	ACTIVE	PROD_OIL
DU-2909	42501017270000	ACTIVE	PROD_OIL
DU-2910	42501017290000	ACTIVE	INJ_H2O
DU-2911	42501028340000	ACTIVE	INJ_WAG
DU-2912	42501028300000	ACTIVE	INJ_WAG
DU-2913	42501017130000	ACTIVE	INJ_WAG
DU-2914	42501017230000	ACTIVE	INJ_WAG
DU-2915	42501012030000	ACTIVE	PROD_OIL
DU-2916	42501012050000	P & A	PROD_OIL
DU-2917	42501021900000	ACTIVE	PROD_OIL
DU-2918	42501021860000	ACTIVE	PROD_OIL
DU-2919	42501012010000	ACTIVE	PROD_OIL
DU-2920	42501021820000	P & A	INJ_WAG
DU-2921	42501012020000	ACTIVE	INJ_WAG
DU-2922	42501021910000	ACTIVE	PROD_OIL
DU-2923	42501012040000	ACTIVE	PROD_OIL
DU-2924	42501021840000	TA	PROD_OIL
DU-2925	42501021880000	P & A	PROD_OIL
DU-2926	42501307750000	ACTIVE	INJ_WAG
DU-2927	42501307740000	ACTIVE	PROD_OIL
DU-2928	42501308190000	ACTIVE	INJ_WAG
DU-2929	42501307770000	ACTIVE	INJ_WAG
DU-2930	42501307730000	ACTIVE	PROD_OIL
DU-2931	42501311290000	ACTIVE	INJ_WAG
DU-2932	42501311280000	TA	PROD_OIL
DU-2933	42501311370000	ACTIVE	INJ_H2O
DU-2934	42501315640000	P & A	PROD_OIL
DU-2935	42501317010000	ACTIVE	PROD_OIL
DU-2936	42501317020000	P & A	PROD_OIL
DU-2937	42501322970000	ACTIVE	PROD_OIL
DU-2938	42501322950000	TA	PROD_OIL
DU-2939	42501328770000	ACTIVE	PROD_OIL
DU-2940	42501333890000	ACTIVE	PROD_OIL
DU-2941	42501333900000	ACTIVE	PROD_OIL
DU-2946	42501335130000	ACTIVE	INJ_WAG
DU-2947	42501340530000	ACTIVE	PROD_OIL
DU-2948	42501340490000	ACTIVE	PROD_OIL
DU-2949	42501340460000	ACTIVE	PROD_OIL
DU-2950	42501340470000	ACTIVE	PROD_OIL
DU-2951	42501341470000	ACTIVE	PROD_OIL
DU-2952	42501347210000	ACTIVE	PROD_OIL
DU-2953	42501347270000	ACTIVE	PROD_OIL
DU-2954	42501347260000	ACTIVE	PROD_OIL
DU-2955	42501347250000	ACTIVE	PROD_OIL
DU-2956	42501347240000	ACTIVE	PROD_OIL

DU-2957	42501347230000	ACTIVE	PROD_OIL
DU-2958	42501347220000	ACTIVE	PROD_OIL
DU-2959	42501348750000	ACTIVE	PROD_OIL
DU-2960	42501350150000	ACTIVE	PROD_OIL
DU-2961	42501350160000	ACTIVE	PROD_OIL
DU-2962	42501350170000	ACTIVE	PROD_OIL
DU-2963	42501352360000	ACTIVE	PROD_OIL
DU-2964	42501354020000	ACTIVE	PROD_OIL
DU-2966	42501354030000	ACTIVE	PROD_OIL
DU-2967	42501362480000	ACTIVE	INJ_WAG
DU-2968	42501362510000	ACTIVE	INJ_WAG
DU-2969	42501362490000	ACTIVE	INJ_WAG
DU-2970	42501362520000	ACTIVE	INJ_WAG
DU-2971	42501362500000	ACTIVE	INJ_WAG
DU-3101	42501001100000	ACTIVE	INJ_H2O
DU-3102	42501001110000	ACTIVE	PROD_OIL
DU-3103	42501001120000	P & A	INJ_H2O
DU-3104	42501001000000	ACTIVE	INJ_H2O
DU-3105	42501001090000	ACTIVE	PROD_OIL
DU-3106	42501001080000	ACTIVE	PROD_OIL
DU-3107	42501001040000	P & A	INJ_WAG
DU-3108	42501001010000	ACTIVE	INJ_WAG
DU-3109	42501001050000	TA	INJ_H2O
DU-3110	42501001070000	ACTIVE	INJ_WAG
DU-3111	42501001030000	ACTIVE	INJ_WAG
DU-3112	42501000990000	ACTIVE	INJ_WAG
DU-3113	42501001060000	TA	PROD_OIL
DU-3114	42501026740000	ACTIVE	INJ_WAG
DU-3115	42501001020000	ACTIVE	INJ_WAG
DU-3116	42501000980000	ACTIVE	INJ_WAG
DU-3117	42501307620000	ACTIVE	PROD_OIL
DU-3118	42501309270000	TA	PROD_OIL
DU-3119	42501309290000	ACTIVE	INJ_WAG
DU-3120	42501309280000	TA	PROD_OIL
DU-3121	42501309300000	TA	PROD_OIL
DU-3122	42501309050000	ACTIVE	PROD_OIL
DU-3123	42501309310000	ACTIVE	PROD_OIL
DU-3124	42501309320000	ACTIVE	PROD_OIL
DU-3126	42501309700000	ACTIVE	PROD_OIL
DU-3127	42501309770000	ACTIVE	PROD_OIL
DU-3128	42501315660000	P & A	PROD_OIL
DU-3129	42501315650000	ACTIVE	PROD_OIL
DU-3130	42501316840000	TA	PROD_OIL
DU-3131	42501316890000	ACTIVE	INJ_WAG
DU-3132	42501316950000	ACTIVE	PROD_OIL
DU-3133	42501319070000	ACTIVE	PROD_OIL
DU-3134	42501319130000	TA	PROD_OIL
DU-3135	42501328790000	TA	PROD_OIL
DU-3201	42501001230000	ACTIVE	INJ_WAG
DU-3202	42501001270000	ACTIVE	INJ_WAG
DU-3203	42501001290000	ACTIVE	INJ_WAG
DU-3204	42501001310000	ACTIVE	INJ_WAG
DU-3205	42501001250000	ACTIVE	INJ_WAG
DU-3206	42501001370000	ACTIVE	INJ_WAG
DU-3207	42501001450000	ACTIVE	INJ_WAG

DU-3208	42501001470000	ACTIVE	INJ_WAG
DU-3209	42501001330000	ACTIVE	INJ_WAG
DU-3210	42501001350000	ACTIVE	INJ_WAG
DU-3211	42501001430000	ACTIVE	INJ_WAG
DU-3212	42501001490000	ACTIVE	INJ_WAG
DU-3213	42501001210000	ACTIVE	INJ_WAG
DU-3214	42501001390000	ACTIVE	INJ_WAG
DU-3215	42501001410000	ACTIVE	INJ_WAG
DU-3216	42501026050000	ACTIVE	PROD_OIL
DU-3217	42501307640000	ACTIVE	PROD_OIL
DU-3218	42501309680000	ACTIVE	PROD_OIL
DU-3219	42501309690000	ACTIVE	PROD_OIL
DU-3220	42501309330000	ACTIVE	PROD_OIL
DU-3221	42501309650000	P & A	INJ_H2O
DU-3222	42501309760000	ACTIVE	PROD_OIL
DU-3223	42501309340000	ACTIVE	PROD_OIL
DU-3224	42501309660000	ACTIVE	PROD_OIL
DU-3225	42501309350000	ACTIVE	PROD_OIL
DU-3226	42501309670000	ACTIVE	PROD_OIL
DU-3227	42501309800000	ACTIVE	PROD_OIL
DU-3228	42501309360000	ACTIVE	PROD_OIL
DU-3229	42501309780000	ACTIVE	PROD_OIL
DU-3230	42501309750000	ACTIVE	PROD_OIL
DU-3231	42501309370000	ACTIVE	PROD_OIL
DU-3232	42501309720000	ACTIVE	PROD_OIL
DU-3233	42501316820000	ACTIVE	INJ_WAG
DU-3234	42501316870000	P & A	PROD_OIL
DU-3235	42501347390000	P & A	PROD_OIL
DU-3236	42501348090000	ACTIVE	PROD_OIL
DU-3237	42501358350000	ACTIVE	PROD_OIL
DU-3238	42501358360000	ACTIVE	PROD_OIL
DU-3239	42501358370000	ACTIVE	PROD_OIL
DU-3240	42501358380000	ACTIVE	PROD_OIL
DU-3241	42501358390000	ACTIVE	PROD_OIL
DU-3242	42501358400000	ACTIVE	PROD_OIL
DU-3243	42501358500000	ACTIVE	PROD_OIL
DU-3244	42501358430000	ACTIVE	PROD_OIL
DU-3245	42501358440000	ACTIVE	PROD_OIL
DU-3246	42501358420000	ACTIVE	PROD_OIL
DU-3247	42501358410000	ACTIVE	PROD_OIL
DU-3248	42501358460000	ACTIVE	PROD_OIL
DU-3249	42501359820000	ACTIVE	PROD_OIL
DU-3250	42501359840000	ACTIVE	PROD_OIL
DU-3251	42501359850000	ACTIVE	PROD_OIL
DU-3301	42501001260000	ACTIVE	INJ_WAG
DU-3302	42501001280000	ACTIVE	INJ_WAG
DU-3303	42501001360000	ACTIVE	INJ_WAG
DU-3304	42501001340000	ACTIVE	INJ_WAG
DU-3305	42501001480000	ACTIVE	INJ_WAG
DU-3306	42501001460000	ACTIVE	INJ_WAG
DU-3307	42501001380000	P & A	INJ_WAG
DU-3308	42501001320000	ACTIVE	INJ_WAG
DU-3309	42501001500000	ACTIVE	INJ_WAG
DU-3310	42501001440000	ACTIVE	INJ_WAG
DU-3311	42501001400000	P & A	PROD_OIL

DU-3312	42501001300000	P & A	INJ_H2O
DU-3313	42501026770000	P & A	INJ_WAG
DU-3314	42501001420000	ACTIVE	INJ_WAG
DU-3315	42501001240000	ACTIVE	INJ_WAG
DU-3316	42501001220000	ACTIVE	INJ_WAG
DU-3317	42501309500000	ACTIVE	PROD_OIL
DU-3318	42501309490000	ACTIVE	PROD_OIL
DU-3319	42501309480000	ACTIVE	PROD_OIL
DU-3320	42501309460000	ACTIVE	PROD_OIL
DU-3321	42501309470000	ACTIVE	PROD_OIL
DU-3322	42501309450000	ACTIVE	PROD_OIL
DU-3323	42501309220000	ACTIVE	PROD_OIL
DU-3324	42501309440000	ACTIVE	PROD_OIL
DU-3325	42501309430000	ACTIVE	PROD_OIL
DU-3326	42501309420000	P & A	INJ_H2O
DU-3327	42501309230000	ACTIVE	PROD_OIL
DU-3328	42501309410000	ACTIVE	PROD_OIL
DU-3329	42501309400000	ACTIVE	PROD_OIL
DU-3330	42501309390000	ACTIVE	PROD_OIL
DU-3331	42501309380000	ACTIVE	PROD_OIL
DU-3332	42501316860000	ACTIVE	PROD_OIL
DU-3333	42501316850000	ACTIVE	PROD_OIL
DU-3334	42501334560000	ACTIVE	PROD_OIL
DU-3335	42501334550000	ACTIVE	PROD_OIL
DU-3336	42501334540000	ACTIVE	PROD_OIL
DU-3337	42501334600000	ACTIVE	INJ_WAG
DU-3338	42501338130000	ACTIVE	INJ_WAG
DU-3340	42501347150000	ACTIVE	PROD_OIL
DU-3341	42501347140000	ACTIVE	PROD_OIL
DU-3342	42501347400000	ACTIVE	PROD_OIL
DU-3344	42501350740000	ACTIVE	INJ_WAG
DU-3345	42501352050000	ACTIVE	PROD_OIL
DU-3346	42501352060000	ACTIVE	PROD_OIL
DU-3347	42501353850000	ACTIVE	PROD_GAS
DU-3348	42501358450000	ACTIVE	PROD_OIL
DU-3349	42501358470000	ACTIVE	PROD_OIL
DU-3350	42501358480000	ACTIVE	PROD_OIL
DU-3351	42501358490000	ACTIVE	PROD_OIL
DU-3352	42501359530000	ACTIVE	PROD_OIL
DU-3353	42501359500000	ACTIVE	PROD_OIL
DU-3354	42501359510000	ACTIVE	PROD_OIL
DU-3355	42501359540000	ACTIVE	PROD_OIL
DU-3356	42501359550000	ACTIVE	PROD_OIL
DU-3357	42501359560000	ACTIVE	PROD_OIL
DU-3358	42501359680000	ACTIVE	PROD_OIL
DU-3359	42501359690000	ACTIVE	PROD_OIL
DU-3360	42501359750000	ACTIVE	PROD_OIL
DU-3361	42501359570000	ACTIVE	INJ_WAG
DU-3501	42501001660000	ACTIVE	PROD_OIL
DU-3502	42501001670000	ACTIVE	INJ_WAG
DU-3503	42501001680000	ACTIVE	INJ_WAG
DU-3504	42501001650000	P & A	INJ_H2O
DU-3505	42501000400000	ACTIVE	INJ_WAG
DU-3506	42501000430000	ACTIVE	PROD_OIL
DU-3507	42501000390000	ACTIVE	PROD_OIL

DU-3508	42501000410000	ACTIVE	PROD_OIL
DU-3509	42501000380000	P & A	PROD_OIL
DU-3510	42501000350000	ACTIVE	INJ_WAG
DU-3511	42501000440000	ACTIVE	INJ_WAG
DU-3512	42501000370000	ACTIVE	INJ_WAG
DU-3513	42501000420000	ACTIVE	INJ_WAG
DU-3514	42501000360000	P & A	PROD_OIL
DU-3515	42501030110000	ACTIVE	INJ_WAG
DU-3516	42501018490000	ACTIVE	PROD_OIL
DU-3517	42501029930000	ACTIVE	PROD_OIL
DU-3518	42501018500000	P & A	PROD_OIL
DU-3519	42501029940000	ACTIVE	PROD_OIL
DU-3520	42501018510000	P & A	INJ_H2O
DU-3521	42501029950000	P & A	INJ_H2O
DU-3522	42501022410000	ACTIVE	PROD_OIL
DU-3523	42501022460000	ACTIVE	INJ_WAG
DU-3524	42501022430000	ACTIVE	INJ_WAG
DU-3525	42501022470000	ACTIVE	INJ_WAG
DU-3526	42501022450000	P & A	PROD_OIL
DU-3527	42501022500000	ACTIVE	PROD_OIL
DU-3528	42501022420000	P & A	PROD_OIL
DU-3529	42501022490000	ACTIVE	PROD_OIL
DU-3530	42501022440000	ACTIVE	PROD_OIL
DU-3531	42501022480000	P & A	INJ_H2O
DU-3532	42501314430000	ACTIVE	PROD_OIL
DU-3533	42501315840000	ACTIVE	INJ_WAG
DU-3534	42501315890000	ACTIVE	PROD_OIL
DU-3535	42501316830000	ACTIVE	PROD_OIL
DU-3536	42501316900000	P & A	PROD_OIL
DU-3537	42501321020000	ACTIVE	INJ_WAG
DU-3538	42501326290000	ACTIVE	PROD_OIL
DU-3539	42501327780000	ACTIVE	PROD_OIL
DU-3540	42501329840000	ACTIVE	PROD_OIL
DU-3541	42501332190000	ACTIVE	INJ_WAG
DU-3542	42501333910000	ACTIVE	PROD_OIL
DU-3543	42501334530000	ACTIVE	PROD_OIL
DU-3544	42501334150000	ACTIVE	INJ_WAG
DU-3545	42501334120000	ACTIVE	PROD_OIL
DU-3546	42501343670000	ACTIVE	PROD_OIL
DU-3547	42501344710000	ACTIVE	PROD_OIL
DU-3548	42501344770000	ACTIVE	PROD_OIL
DU-3549	42501344760000	ACTIVE	PROD_OIL
DU-3550	42501344750000	ACTIVE	PROD_OIL
DU-3551	42501344740000	ACTIVE	PROD_OIL
DU-3552	42501344730000	ACTIVE	PROD_OIL
DU-3553	42501344720000	ACTIVE	PROD_OIL
DU-3554	42501345550000	ACTIVE	PROD_OIL
DU-3555	42501345840000	ACTIVE	PROD_OIL
DU-3556	42501345540000	ACTIVE	PROD_OIL
DU-3557	42501345560000	ACTIVE	PROD_OIL
DU-3558	42501346440000	ACTIVE	PROD_OIL
DU-3559	42501346450000	ACTIVE	PROD_OIL
DU-3560	42501346400000	ACTIVE	PROD_OIL
DU-3561	42501346550000	ACTIVE	INJ_WAG
DU-3562	42501346490000	ACTIVE	PROD_OIL

DU-3563	42501349480000	ACTIVE	INJ_WAG
DU-3564	42501349490000	ACTIVE	INJ_WAG
DU-3565	42501353770000	ACTIVE	PROD_OIL
DU-3566	42501359740000	ACTIVE	PROD_OIL
DU-3601	42501013790000	ACTIVE	INJ_WAG
DU-3602	42501014060000	ACTIVE	INJ_WAG
DU-3603	42501014070000	ACTIVE	INJ_WAG
DU-3604	42501014050000	ACTIVE	INJ_WAG
DU-3605	42501014100000	P & A	PROD_OIL
DU-3606	42501013840000	P & A	PROD_OIL
DU-3607	42501013990000	ACTIVE	PROD_OIL
DU-3608	42501013980000	ACTIVE	INJ_WAG
DU-3609	42501014120000	ACTIVE	INJ_WAG
DU-3610	42501014130000	ACTIVE	INJ_WAG
DU-3611	42501014080000	P & A	INJ_WAG
DU-3612	42501013880000	P & A	INJ_H2O
DU-3613	42501013820000	ACTIVE	PROD_OIL
DU-3614	42501013810000	ACTIVE	PROD_OIL
DU-3615	42501014110000	ACTIVE	INJ_WAG
DU-3616	42501014140000	ACTIVE	INJ_WAG
DU-3617	42501014090000	P & A	PROD_OIL
DU-3618	42501013900000	ACTIVE	INJ_WAG
DU-3619	42501013800000	ACTIVE	INJ_WAG
DU-3620	42501013930000	ACTIVE	PROD_OIL
DU-3621	42501014150000	ACTIVE	PROD_OIL
DU-3622	42501013860000	ACTIVE	PROD_OIL
DU-3623	42501304390000	ACTIVE	INJ_WAG
DU-3624	42501304090000	P & A	PROD_OIL
DU-3625	42501304100000	ACTIVE	PROD_OIL
DU-3626	42501304040000	ACTIVE	INJ_WAG
DU-3627	42501304060000	ACTIVE	PROD_OIL
DU-3628	42501304050000	ACTIVE	PROD_OIL
DU-3629	42501304130000	ACTIVE	PROD_OIL
DU-3630	42501308390000	ACTIVE	PROD_OIL
DU-3631	42501311240000	P & A	PROD_OIL
DU-3632	42501314620000	ACTIVE	INJ_WAG
DU-3633	42501315730000	TA	INJ_GAS
DU-3634	42501315740000	ACTIVE	PROD_OIL
DU-3635	42501315760000	ACTIVE	PROD_OIL
DU-3636	42501316800000	TA	PROD_OIL
DU-3637	42501316810000	ACTIVE	PROD_OIL
DU-3638	42501325930000	ACTIVE	PROD_OIL
DU-3639	42501327620000	ACTIVE	PROD_OIL
DU-3640	42501328540000	ACTIVE	PROD_OIL
DU-3641	42501328160000	TA	PROD_OIL
DU-3642	42501329990000	ACTIVE	INJ_WAG
DU-3644	42501334130000	ACTIVE	INJ_WAG
DU-3645	42501334140000	ACTIVE	PROD_OIL
DU-3646	42501343660000	ACTIVE	PROD_OIL
DU-3647	42501343650000	ACTIVE	PROD_OIL
DU-3648	42501345070000	ACTIVE	PROD_OIL
DU-3649	42501345060000	ACTIVE	PROD_OIL
DU-3650	42501345050000	ACTIVE	PROD_OIL
DU-3651	42501345570000	ACTIVE	PROD_OIL
DU-3652	42501345040000	ACTIVE	PROD_OIL

DU-3653	42501345030000	ACTIVE	PROD_OIL
DU-3654	42501345240000	ACTIVE	PROD_OIL
DU-3655	42501345230000	ACTIVE	PROD_OIL
DU-3656	42501345220000	ACTIVE	PROD_OIL
DU-3657	42501345210000	ACTIVE	PROD_OIL
DU-3658	42501345420000	ACTIVE	INJ_WAG
DU-3659	42501347180000	ACTIVE	PROD_OIL
DU-3660	42501349470000	ACTIVE	PROD_OIL
DU-3661	42501353880000	ACTIVE	PROD_OIL
DU-3666	42501354160000	ACTIVE	PROD_OIL
DU-3701	42501024260000	P & A	INJ_H2O
DU-3702	42501023480000	ACTIVE	INJ_WAG
DU-3703	42501024000000	P & A	PROD_OIL
DU-3704	42501024850000	P & A	PROD_OIL
DU-3705	42501024210000	ACTIVE	INJ_WAG
DU-3706	42501023850000	ACTIVE	INJ_WAG
DU-3707	42501023950000	ACTIVE	INJ_WAG
DU-3708	42501024100000	ACTIVE	INJ_WAG
DU-3709	42501024310000	ACTIVE	PROD_OIL
DU-3710	42501024050000	P & A	INJ_H2O
DU-3711	42501023800000	TA	PROD_OIL
DU-3712	42501023750000	ACTIVE	PROD_OIL
DU-3713	42501024400000	P & A	INJ_WAG
DU-3714	42501024160000	ACTIVE	INJ_WAG
DU-3715	42501023580000	ACTIVE	PROD_OIL
DU-3716	42501023640000	ACTIVE	PROD_OIL
DU-3717	42501023700000	ACTIVE	PROD_OIL
DU-3718	42501023900000	ACTIVE	PROD_OIL
DU-3719	42501304190000	ACTIVE	INJ_WAG
DU-3720	42501024760000	ACTIVE	INJ_WAG
DU-3721	42501304180000	ACTIVE	INJ_WAG
DU-3722	42501303990000	ACTIVE	PROD_OIL
DU-3723	42501304170000	ACTIVE	PROD_OIL
DU-3724	42501304140000	ACTIVE	PROD_OIL
DU-3725	42501304150000	ACTIVE	INJ_WAG
DU-3726	42501024800000	ACTIVE	PROD_OIL
DU-3727	42501304160000	ACTIVE	PROD_OIL
DU-3728	42501304070000	ACTIVE	INJ_WAG
DU-3729	42501304080000	ACTIVE	INJ_WAG
DU-3730	42501308100000	P & A	INJ_WAG
DU-3731	42501312020000	ACTIVE	PROD_OIL
DU-3733	42501312760000	P & A	INJ_H2O
DU-3735	42501312790000	P & A	PROD_OIL
DU-3736	42501314530000	TA	PROD_OIL
DU-3737	42501315530000	P & A	PROD_OIL
DU-3738	42501315540000	ACTIVE	INJ_WAG
DU-3739	42501316590000	P & A	PROD_OIL
DU-3740	42501316750000	P & A	PROD_OIL
DU-3741	42501316780000	P & A	PROD_OIL
DU-3742	42501316770000	P & A	PROD_OIL
DU-3743	42501316790000	P & A	PROD_OIL
DU-3746	42501320510000	ACTIVE	INJ_WAG
DU-3747	42501320370000	ACTIVE	PROD_OIL
DU-3748	42501332830000	ACTIVE	PROD_OIL
DU-3749	42501337960000	ACTIVE	PROD_OIL

DU-3750	42501342290000	ACTIVE	PROD_OIL
DU-3751	42501342230000	ACTIVE	PROD_OIL
DU-3752	42501342240000	ACTIVE	PROD_OIL
DU-3753	42501342250000	ACTIVE	PROD_OIL
DU-3754	42501342260000	ACTIVE	PROD_OIL
DU-3755	42501342300000	ACTIVE	PROD_OIL
DU-3756	42501342310000	ACTIVE	PROD_OIL
DU-3757	42501343020000	ACTIVE	INJ_WAG
DU-3758	42501343010000	ACTIVE	PROD_OIL
DU-3759	42501343230000	ACTIVE	PROD_OIL
DU-3760	42501343000000	ACTIVE	PROD_OIL
DU-3761	42501343110000	ACTIVE	PROD_OIL
DU-3762	42501343240000	ACTIVE	PROD_OIL
DU-3763	42501342990000	ACTIVE	PROD_OIL
DU-3764	42501342980000	ACTIVE	INJ_WAG
DU-3765	42501343120000	ACTIVE	PROD_OIL
DU-3766	42501343130000	ACTIVE	PROD_OIL
DU-3767	42501343210000	ACTIVE	PROD_OIL
DU-3768	42501345660000	ACTIVE	PROD_OIL
DU-3769	42501352130000	ACTIVE	INJ_WAG
DU-3770	42501354050000	ACTIVE	INJ_WAG
DU-3771	42501354230000	ACTIVE	INJ_WAG
DU-3801	42501022170000	ACTIVE	INJ_WAG
DU-3802	42501022220000	ACTIVE	INJ_WAG
DU-3803	42501028310000	ACTIVE	INJ_WAG
DU-3804	42501028350000	ACTIVE	INJ_WAG
DU-3805	42501022230000	ACTIVE	PROD_OIL
DU-3806	42501028370000	P & A	PROD_OIL
DU-3807	42501028390000	P & A	INJ_H2O
DU-3808	42501022190000	ACTIVE	INJ_WAG
DU-3809	42501022240000	ACTIVE	INJ_WAG
DU-3810	42501022210000	P & A	PROD_OIL
DU-3811	42501028290000	ACTIVE	INJ_WAG
DU-3812	42501028330000	ACTIVE	INJ_WAG
DU-3813	42501017180000	P & A	PROD_OIL
DU-3814	42501017200000	ACTIVE	PROD_OIL
DU-3815	42501006020000	ACTIVE	PROD_OIL
DU-3816	42501006080000	ACTIVE	PROD_OIL
DU-3817	42501017160000	ACTIVE	INJ_WAG
DU-3818	42501017240000	ACTIVE	INJ_WAG
DU-3819	42501006060000	ACTIVE	INJ_WAG
DU-3820	42501006120000	ACTIVE	INJ_WAG
DU-3821	42501017140000	ACTIVE	PROD_OIL
DU-3822	42501017220000	ACTIVE	PROD_OIL
DU-3823	42501006040000	ACTIVE	PROD_OIL
DU-3824	42501006100000	ACTIVE	PROD_OIL
DU-3825	42501302380000	ACTIVE	PROD_OIL
DU-3826	42501302370000	ACTIVE	PROD_OIL
DU-3827	42501304620000	ACTIVE	INJ_WAG
DU-3828	42501304450000	P & A	PROD_OIL
DU-3829	42501304440000	P & A	PROD_OIL
DU-3830	42501304430000	ACTIVE	PROD_OIL
DU-3831	42501304550000	ACTIVE	INJ_WAG
DU-3832	42501304560000	P & A	PROD_OIL
DU-3833	42501304610000	P & A	PROD_OIL

DU-3834	42501304570000	P & A	INJ_WAG
DU-3835	42501304580000	ACTIVE	INJ_WAG
DU-3836	42501304590000	ACTIVE	PROD_OIL
DU-3837	42501304600000	P & A	PROD_OIL
DU-3838	42501308680000	ACTIVE	INJ_WAG
DU-3839	42501316960000	ACTIVE	PROD_OIL
DU-3840	42501316980000	TA	PROD_OIL
DU-3841	42501317000000	TA	PROD_OIL
DU-3842	42501338970000	ACTIVE	PROD_OIL
DU-3843	42501340430000	ACTIVE	PROD_OIL
DU-3844	42501341460000	ACTIVE	PROD_OIL
DU-3845	42501341560000	ACTIVE	INJ_WAG
DU-3847	42501341620000	ACTIVE	PROD_OIL
DU-3848	42501341480000	ACTIVE	PROD_OIL
DU-3849	42501341490000	ACTIVE	PROD_OIL
DU-3850	42501341500000	ACTIVE	PROD_OIL
DU-3851	42501341510000	ACTIVE	PROD_OIL
DU-3852	42501341520000	ACTIVE	PROD_OIL
DU-3853	42501341610000	ACTIVE	PROD_OIL
DU-3854	42501341600000	ACTIVE	PROD_OIL
DU-3855	42501341530000	ACTIVE	PROD_OIL
DU-3856	42501341540000	ACTIVE	PROD_OIL
DU-3857	42501341550000	ACTIVE	PROD_OIL
DU-3858	42501341570000	ACTIVE	PROD_OIL
DU-3859	42501342220000	ACTIVE	PROD_OIL
DU-3860	42501342320000	ACTIVE	PROD_OIL
DU-3861	42501342210000	ACTIVE	PROD_OIL
DU-3862	42501342330000	ACTIVE	PROD_OIL
DU-3863	42501342340000	ACTIVE	PROD_OIL
DU-3864	42501342350000	ACTIVE	PROD_OIL
DU-3865	42501342360000	ACTIVE	PROD_OIL
DU-3866	42501342370000	ACTIVE	PROD_OIL
DU-3867	42501343540000	ACTIVE	PROD_OIL
DU-3868	42501348430000	ACTIVE	INJ_WAG
DU-3869	42501348710000	ACTIVE	PROD_OIL
DU-3870	42501353050000	ACTIVE	PROD_OIL
DU-3871	42501354100000	ACTIVE	INJ_WAG
DU-3872	42501354110000	ACTIVE	INJ_WAG
DU-3873	42501354060000	ACTIVE	INJ_WAG
DU-3874	42501354070000	ACTIVE	INJ_WAG
DU-3875	42501354080000	ACTIVE	INJ_WAG
DU-3876	42501354710000	ACTIVE	INJ_WAG
DU-3877	42501354740000	ACTIVE	INJ_WAG
DU-3878	42501354750000	ACTIVE	INJ_WAG
DU-3879	42501354760000	ACTIVE	INJ_WAG
DU-3880	42501354770000	ACTIVE	INJ_WAG
DU-3901	42501006090000	ACTIVE	INJ_WAG
DU-3902	42501006030000	ACTIVE	INJ_WAG
DU-3903	42501017170000	TA	INJ_H2O
DU-3904	42501017330000	ACTIVE	INJ_H2O
DU-3905	42501006130000	ACTIVE	PROD_OIL
DU-3906	42501006110000	ACTIVE	PROD_OIL
DU-3907	42501017150000	ACTIVE	PROD_OIL
DU-3908	42501017190000	ACTIVE	INJ_WAG
DU-3909	42501006070000	ACTIVE	INJ_WAG

DU-3910	42501006050000	ACTIVE	PROD_OIL
DU-3911	42501017210000	ACTIVE	PROD_OIL
DU-3912	42501017320000	ACTIVE	INJ_H2O
DU-3913	42501025380000	ACTIVE	PROD_OIL
DU-3914	42501025390000	TA	PROD_OIL
DU-3915	42501021830000	P & A	INJ_WAG
DU-3916	42501021870000	ACTIVE	INJ_H2O
DU-3917	42501025420000	P & A	PROD_OIL
DU-3918	42501025400000	ACTIVE	PROD_OIL
DU-3919	42501025410000	P & A	PROD_OIL
DU-3920	42501021850000	P & A	INJ_H2O
DU-3921	42501021890000	P & A	INJ_H2O
DU-3922	42501308710000	ACTIVE	INJ_WAG
DU-3923	42501308550000	ACTIVE	INJ_WAG
DU-3924	42501308560000	ACTIVE	PROD_OIL
DU-3925	42501308570000	ACTIVE	INJ_WAG
DU-3926	42501308580000	ACTIVE	PROD_OIL
DU-3927	42501308590000	ACTIVE	INJ_WAG
DU-3928	42501308600000	ACTIVE	PROD_OIL
DU-3929	42501311200000	ACTIVE	PROD_OIL
DU-3930	42501317030000	ACTIVE	PROD_OIL
DU-3932	42501330620000	ACTIVE	PROD_OIL
DU-3933	42501332900000	TA	PROD_OIL
DU-3934	42501332910000	ACTIVE	PROD_OIL
DU-3935	42501332920000	ACTIVE	INJ_WAG
DU-3936	42501332880000	ACTIVE	INJ_WAG
DU-3937	42501102150000	TA	INJ_WAG
DU-3938	42501100250000	TA	PROD_OIL
DU-3939	42501347020000	ACTIVE	PROD_OIL
DU-3940	42501347030000	ACTIVE	PROD_OIL
DU-3941	42501347000000	ACTIVE	PROD_OIL
DU-3942	42501347040000	ACTIVE	PROD_OIL
DU-3943	42501346990000	ACTIVE	PROD_OIL
DU-3944	42501347010000	ACTIVE	PROD_OIL
DU-3945	42501347310000	ACTIVE	INJ_WAG
DU-3946	42501352370000	ACTIVE	PROD_OIL
DU-3947	42501352380000	ACTIVE	PROD_OIL
DU-3948	42501352390000	ACTIVE	PROD_OIL
DU-3949	42501352400000	TA	PROD_OIL
DU-3950	42501352410000	ACTIVE	PROD_OIL
DU-3951	42501352420000	ACTIVE	PROD_OIL
DU-3955	42501354200000	ACTIVE	PROD_OIL
DU-3956	42501354780000	ACTIVE	INJ_WAG
DU-3957	42501354790000	ACTIVE	INJ_WAG
DU-3958	42501354800000	ACTIVE	INJ_WAG
DU-4001	42501017760000	P & A	INJ_H2O
DU-4002	42501021470000	TA	PROD_OIL
DU-4003	42501020180000	P & A	INJ_H2O
DU-4004	42501021380000	P & A	INJ_H2O
DU-4005	42501021390000	P & A	PROD_OIL
DU-4006	42501017770000	TA	INJ_H2O
DU-4007	42501331380000	TA	PROD_OIL
DU-4101	42501010410000	ACTIVE	PROD_OIL
DU-4102	42501000560000	ACTIVE	INJ_WAG
DU-4103	42501000530000	P & A	INJ_H2O

DU-4104	42501010400000	P & A	INJ_H2O
DU-4105	42501010440000	P & A	PROD_OIL
DU-4106	42501010420000	ACTIVE	INJ_WAG
DU-4107	42501000550000	P & A	INJ_H2O
DU-4108	42501000540000	ACTIVE	INJ_WAG
DU-4109	42501010450000	P & A	INJ_H2O
DU-4110	42501010430000	P & A	INJ_H2O
DU-4111	42501028280000	ACTIVE	INJ_WAG
DU-4112	42501028250000	ACTIVE	INJ_WAG
DU-4113	42501028260000	P & A	INJ_H2O
DU-4114	42501028270000	ACTIVE	INJ_H2O
DU-4115	42501319110000	ACTIVE	PROD_OIL
DU-4116	42501309730000	ACTIVE	PROD_OIL
DU-4117	42501314570000	ACTIVE	PROD_OIL
DU-4118	42501314440000	ACTIVE	PROD_OIL
DU-4119	42501315550000	ACTIVE	PROD_OIL
DU-4120	42501315580000	ACTIVE	INJ_WAG
DU-4121	42501319840000	P & A	PROD_OIL
DU-4122	42501319090000	ACTIVE	PROD_OIL
DU-4123	42501319060000	TA	PROD_OIL
DU-4124	42501327490000	ACTIVE	INJ_WAG
DU-4125	42501329250000	P & A	INJ_H2O
DU-4126	42501330670000	ACTIVE	PROD_OIL
DU-4127	42501330630000	ACTIVE	PROD_OIL
DU-4128	42501331370000	ACTIVE	PROD_OIL
DU-4129	42501331670000	TA	INJ_H2O
DU-4130	42501332070000	ACTIVE	PROD_OIL
DU-4131	42501333590000	ACTIVE	PROD_OIL
DU-4132	42501336450000	ACTIVE	INJ_WAG
DU-4133	42501348720000	ACTIVE	INJ_WAG
DU-4134GC	42501353860000	SHUT-IN	PROD_GAS
DU-4135	42501354360000	ACTIVE	PROD_OIL
DU-4136	42501355520000	SHUT-IN	PROD_GAS
DU-4137	42501362000000	ACTIVE	PROD_OIL
DU-4138	42501362550000	ACTIVE	PROD_OIL
DU-4139	42501362540000	ACTIVE	PROD_OIL
DU-4201	42501005920000	ACTIVE	INJ_WAG
DU-4202	42501005980000	P & A	PROD_OIL
DU-4203	42501016390000	ACTIVE	INJ_WAG
DU-4204	42501011070000	ACTIVE	INJ_WAG
DU-4205	42501005940000	ACTIVE	INJ_WAG
DU-4206	42501005970000	ACTIVE	INJ_WAG
DU-4207	42501005950000	ACTIVE	INJ_WAG
DU-4208	42501005930000	P & A	INJ_H2O
DU-4209	42501005960000	ACTIVE	INJ_WAG
DU-4210	42501011040000	P & A	INJ_H2O
DU-4211	42501006910000	P & A	INJ_H2O
DU-4212	42501006900000	P & A	PROD_OIL
DU-4213	42501015640000	P & A	PROD_OIL
DU-4214	42501011050000	ACTIVE	INJ_H2O
DU-4215	42501006920000	P & A	PROD_OIL
DU-4216	42501006930000	ACTIVE	INJ_H2O
DU-4217	42501309860000	ACTIVE	PROD_OIL
DU-4218	42501309820000	ACTIVE	PROD_OIL
DU-4219	42501309850000	ACTIVE	PROD_OIL

DU-4220	42501309830000	ACTIVE	PROD_OIL
DU-4221	42501309940000	ACTIVE	PROD_OIL
DU-4222	42501309970000	INACTIVE	PROD_OIL
DU-4223	42501309890000	ACTIVE	PROD_OIL
DU-4224	42501314460000	ACTIVE	INJ_WAG
DU-4225	42501314470000	ACTIVE	PROD_OIL
DU-4226	42501314480000	P & A	PROD_OIL
DU-4227	42501314510000	ACTIVE	INJ_WAG
DU-4228	42501315590000	ACTIVE	INJ_WAG
DU-4229	42501315560000	ACTIVE	PROD_OIL
DU-4230	42501315570000	ACTIVE	PROD_OIL
DU-4231	42501316940000	ACTIVE	PROD_OIL
DU-4232	42501316880000	ACTIVE	PROD_OIL
DU-4233	42501319080000	ACTIVE	PROD_OIL
DU-4234	42501319030000	ACTIVE	PROD_OIL
DU-4235	42501319390000	ACTIVE	PROD_GAS
DU-4236	42501319350000	TA	PROD_GAS
DU-4237	42501325940000	ACTIVE	PROD_OIL
DU-4238	42501325980000	ACTIVE	PROD_OIL
DU-4239	42501328560000	TA	PROD_OIL
DU-4240	42501331360000	ACTIVE	PROD_OIL
DU-4241	42501332080000	ACTIVE	PROD_OIL
DU-4242	42501333920000	ACTIVE	INJ_WAG
DU-4243	42501333630000	ACTIVE	PROD_OIL
DU-4244	42501333640000	ACTIVE	PROD_OIL
DU-4245	42501335930000	ACTIVE	INJ_WAG
DU-4246	42501346900000	ACTIVE	PROD_OIL
DU-4247	42501349650000	ACTIVE	PROD_OIL
DU-4250	42501353580000	ACTIVE	INJ_WAG
DU-4251	42501353590000	ACTIVE	INJ_WAG
DU-4252	42501353600000	ACTIVE	INJ_WAG
DU-4253	42501353710000	ACTIVE	INJ_WAG
DU-4254	42501354720000	ACTIVE	PROD_GAS
DU-4255	42501354730000	ACTIVE	PROD_GAS
DU-4257	42501360000000	ACTIVE	PROD_OIL
DU-4258	42501362010000	ACTIVE	PROD_OIL
DU-4259	42501361990000	ACTIVE	PROD_OIL
DU-4260	42501362050000	ACTIVE	PROD_OIL
DU-4301	42501006170000	ACTIVE	INJ_WAG
DU-4302	42501006310000	ACTIVE	INJ_WAG
DU-4303	42501006250000	ACTIVE	INJ_WAG
DU-4304	42501006210000	ACTIVE	INJ_WAG
DU-4305	42501006230000	P & A	PROD_OIL
DU-4306W	42501006290000	ACTIVE	INJ_WAG
DU-4307	42501006270000	ACTIVE	INJ_WAG
DU-4308	42501006190000	ACTIVE	INJ_WAG
DU-4309	42501006200000	ACTIVE	INJ_WAG
DU-4310	42501006280000	ACTIVE	INJ_WAG
DU-4311	42501006260000	ACTIVE	INJ_WAG
DU-4312	42501006180000	P & A	INJ_H2O
DU-4313	42501006220000	TA	PROD_OIL
DU-4314	42501006330000	P & A	PROD_OIL
DU-4315	42501006300000	ACTIVE	INJ_WAG
DU-4316	42501006240000	ACTIVE	INJ_WAG
DU-4317	42501307630000	ACTIVE	PROD_OIL

DU-4318	42501310030000	ACTIVE	PROD_OIL
DU-4319	42501309580000	ACTIVE	PROD_OIL
DU-4320	42501309240000	ACTIVE	PROD_OIL
DU-4321	42501309590000	ACTIVE	PROD_OIL
DU-4322	42501309600000	P & A	INJ_H2O
DU-4323	42501309250000	ACTIVE	PROD_OIL
DU-4324	42501309570000	ACTIVE	PROD_OIL
DU-4326	42501309960000	ACTIVE	PROD_OIL
DU-4327	42501309170000	P & A	INJ_H2O
DU-4328	42501309630000	ACTIVE	PROD_OIL
DU-4329	42501315620000	ACTIVE	INJ_WAG
DU-4330	42501315630000	ACTIVE	PROD_OIL
DU-4331	42501316910000	ACTIVE	PROD_OIL
DU-4332	42501316920000	ACTIVE	PROD_OIL
DU-4333	42501319100000	ACTIVE	INJ_H2O
DU-4334	42501328550000	P & A	PROD_OIL
DU-4335	42501333620000	TA	PROD_OIL
DU-4336	42501333610000	ACTIVE	PROD_OIL
DU-4337	42501335920000	ACTIVE	PROD_OIL
DU-4338	42501336460000	ACTIVE	INJ_WAG
DU-4339	42501345580000	TA	PROD_GAS
DU-4340	42501346920000	ACTIVE	PROD_GAS
DU-4341	42501346930000	TA	PROD_GAS
DU-4342	42501346940000	ACTIVE	PROD_GAS
DU-4343GC	42501352230000	ACTIVE	PROD_GAS
DU-4344GC	42501352070000	TA	PROD_GAS
DU-4346	42501353610000	ACTIVE	PROD_OIL
DU-4347	42501354370000	ACTIVE	PROD_GAS
DU-4348GC	42501354860000	TA	PROD_OIL
DU-4349	42501359760000	P & A	PROD_OIL
DU-4350	42501359770000	ACTIVE	PROD_OIL
DU-4351	42501359780000	ACTIVE	PROD_OIL
DU-4352	42501359790000	ACTIVE	PROD_OIL
DU-4353	42501359870000	ACTIVE	PROD_OIL
DU-4354	42501359880000	ACTIVE	PROD_OIL
DU-4355	42501359830000	ACTIVE	PROD_OIL
DU-4356	42501359810000	ACTIVE	PROD_OIL
DU-4357	42501359860000	ACTIVE	PROD_OIL
DU-4358	42501360710000	ACTIVE	PROD_OIL
DU-4401	42501025100000	ACTIVE	INJ_WAG
DU-4402	42501025080000	P & A	PROD_OIL
DU-4403	42501026990000	P & A	INJ_H2O
DU-4404	42501026980000	P & A	INJ_WAG
DU-4405	42501025090000	ACTIVE	INJ_WAG
DU-4406	42501023690000	P & A	PROD_OIL
DU-4407	42501027000000	P & A	PROD_OIL
DU-4408	42501001830000	ACTIVE	INJ_WAG
DU-4409	42501020880000	P & A	INJ_H2O
DU-4410	42501020890000	ACTIVE	PROD_OIL
DU-4411	42501001790000	P & A	INJ_H2O
DU-4412	42501001800000	ACTIVE	PROD_OIL
DU-4413	42501020910000	ACTIVE	PROD_OIL
DU-4414	42501020900000	P & A	PROD_OIL
DU-4415	42501001810000	SHUT-IN	INJ_H2O
DU-4416	42501001820000	P & A	PROD_OIL

DU-4417	42501308170000	ACTIVE	PROD_OIL
DU-4418	42501308150000	ACTIVE	INJ_WAG
DU-4419	42501308610000	P & A	PROD_OIL
DU-4420	42501308620000	ACTIVE	INJ_WAG
DU-4421	42501309990000	P & A	INJ_H2O
DU-4422	42501310540000	ACTIVE	PROD_OIL
DU-4423	42501310040000	ACTIVE	PROD_OIL
DU-4424	42501310050000	ACTIVE	PROD_OIL
DU-4425	42501310550000	ACTIVE	PROD_OIL
DU-4426	42501309980000	ACTIVE	INJ_WAG
DU-4427	42501310010000	ACTIVE	INJ_WAG
DU-4428	42501310340000	P & A	PROD_OIL
DU-4429	42501311250000	ACTIVE	PROD_OIL
DU-4430	42501315060000	ACTIVE	PROD_OIL
DU-4431	42501315080000	P & A	PROD_GAS
DU-4432	42501315090000	ACTIVE	INJ_WAG
DU-4433	42501315040000	ACTIVE	PROD_OIL
DU-4434	42501315070000	ACTIVE	PROD_OIL
DU-4435	42501315710000	ACTIVE	INJ_WAG
DU-4436	42501315850000	ACTIVE	PROD_OIL
DU-4437	42501316630000	TA	PROD_OIL
DU-4438	42501316990000	ACTIVE	PROD_GAS
DU-4439	42501319340000	TA	INJ_WAG
DU-4440	42501328780000	ACTIVE	PROD_OIL
DU-4441	42501332090000	ACTIVE	INJ_WAG
DU-4442	42501332100000	ACTIVE	PROD_OIL
DU-4443	42501332420000	ACTIVE	INJ_WAG
DU-4444	42501334610000	ACTIVE	INJ_WAG
DU-4445	42501336470000	ACTIVE	PROD_GAS
DU-4447	42501345430000	TA	PROD_GAS
DU-4448	42501345670000	ACTIVE	PROD_GAS
DU-4449	42501346260000	ACTIVE	PROD_GAS
DU-4450	42501346340000	ACTIVE	PROD_GAS
DU-4451	42501346570000	ACTIVE	PROD_OIL
DU-4452	42501346690000	ACTIVE	PROD_OIL
DU-4453	42501346510000	ACTIVE	INJ_WAG
DU-4454	42501346700000	ACTIVE	PROD_OIL
DU-4455	42501347090000	ACTIVE	PROD_OIL
DU-4456	42501347690000	ACTIVE	PROD_OIL
DU-4457	42501347700000	ACTIVE	PROD_OIL
DU-4458	42501347820000	ACTIVE	INJ_WAG
DU-4459	42501347710000	ACTIVE	PROD_OIL
DU-4460	42501347720000	ACTIVE	PROD_OIL
DU-4461GC	42501351660000	ACTIVE	PROD_GAS
DU-4463GC	42501354870000	ACTIVE	PROD_GAS
DU-4466	42501354590000	ACTIVE	PROD_GAS
DU-4467	42501355980000	DRILL	PROD_GAS
DU-4468	42501355950000	DRILL	PROD_GAS
DU-4501	42501014170000	ACTIVE	INJ_WAG
DU-4502	42501013780000	P & A	INJ_H2O
DU-4503	42501013890000	ACTIVE	INJ_WAG
DU-4504	42501013920000	ACTIVE	INJ_WAG
DU-4505	42501014160000	ACTIVE	INJ_WAG
DU-4506	42501013950000	P & A	INJ_H2O
DU-4507	42501014190000	ACTIVE	PROD_OIL

DU-4508	42501014200000	ACTIVE	PROD_OIL
DU-4509	42501014010000	P & A	INJ_H2O
DU-4510	42501013850000	P & A	INJ_H2O
DU-4511	42501014210000	ACTIVE	INJ_WAG
DU-4512	42501013910000	ACTIVE	INJ_WAG
DU-4513	42501013940000	P & A	INJ_H2O
DU-4514	42501014180000	P & A	PROD_OIL
DU-4515	42501014040000	P & A	PROD_OIL
DU-4516	42501014020000	P & A	INJ_H2O
DU-4517	42501013830000	ACTIVE	PROD_OIL
DU-4518	42501014000000	P & A	PROD_OIL
DU-4519	42501014030000	ACTIVE	INJ_WAG
DU-4520	42501013960000	ACTIVE	PROD_OIL
DU-4521	42501013870000	ACTIVE	PROD_OIL
DU-4522	42501807970000	P & A	PROD_OIL
DU-4523	42501307820000	ACTIVE	INJ_WAG
DU-4524	42501308160000	ACTIVE	PROD_OIL
DU-4525	42501308180000	ACTIVE	PROD_OIL
DU-4526	42501308330000	P & A	INJ_H2O
DU-4527	42501308420000	ACTIVE	PROD_OIL
DU-4528	42501308300000	ACTIVE	INJ_WAG
DU-4529	42501308400000	P & A	INJ_H2O
DU-4530	42501308410000	P & A	PROD_OIL
DU-4531	42501308520000	ACTIVE	INJ_WAG
DU-4532	42501308340000	ACTIVE	INJ_WAG
DU-4533	42501308370000	ACTIVE	INJ_WAG
DU-4534	42501308360000	ACTIVE	INJ_WAG
DU-4535	42501308690000	ACTIVE	PROD_OIL
DU-4536	42501308540000	ACTIVE	PROD_OIL
DU-4537	42501014320000	TA	PROD_OIL
DU-4538	42501314600000	ACTIVE	PROD_OIL
DU-4539	42501316930000	ACTIVE	PROD_OIL
DU-4540	42501329110000	ACTIVE	PROD_OIL
DU-4541	42501331680000	ACTIVE	INJ_WAG
DU-4542	42501331660000	ACTIVE	INJ_WAG
DU-4543	42501334440000	ACTIVE	INJ_WAG
DU-4544	42501342820000	ACTIVE	PROD_OIL
DU-4545	42501342810000	ACTIVE	PROD_OIL
DU-4546	42501343480000	ACTIVE	PROD_OIL
DU-4547	42501345870000	ACTIVE	PROD_GAS
DU-4548	42501345860000	TA	PROD_GAS
DU-4549	42501345850000	ACTIVE	PROD_GAS
DU-4550	42501347790000	ACTIVE	PROD_OIL
DU-4551	42501346710000	ACTIVE	PROD_OIL
DU-4552	42501346720000	ACTIVE	PROD_OIL
DU-4553	42501346730000	ACTIVE	PROD_OIL
DU-4554	42501346740000	ACTIVE	PROD_OIL
DU-4555	42501346520000	ACTIVE	PROD_OIL
DU-4556	42501346470000	ACTIVE	PROD_OIL
DU-4557	42501346480000	ACTIVE	PROD_OIL
DU-4558	42501346750000	ACTIVE	PROD_OIL
DU-4559	42501347770000	ACTIVE	PROD_OIL
DU-4560	42501346530000	ACTIVE	PROD_OIL
DU-4561	42501347800000	ACTIVE	PROD_OIL
DU-4562	42501347780000	ACTIVE	PROD_OIL

DU-4563	42501346540000	ACTIVE	INJ_WAG
DU-4564	42501346670000	ACTIVE	INJ_WAG
DU-4568GC	42501351020000	TA	PROD_GAS
DU-4569GC	42501351060000	TA	PROD_GAS
DU-4570GC	42501351030000	ACTIVE	PROD_GAS
DU-4571GC	42501351040000	TA	PROD_GAS
DU-4572GC	42501352880000	TA	PROD_GAS
DU-4573	42501354170000	ACTIVE	PROD_OIL
DU-4574	42501354240000	ACTIVE	PROD_OIL
DU-4575	42501354380000	TA	PROD_GAS
DU-4576	42501354390000	TA	PROD_GAS
DU-4601	42501027190000	P & A	INJ_H2O
DU-4602	42501025500000	ACTIVE	INJ_WAG
DU-4603	42501002280000	P & A	PROD_OIL
DU-4604	42501027180000	ACTIVE	PROD_OIL
DU-4605	42501023510000	ACTIVE	PROD_OIL
DU-4606	42501027200000	ACTIVE	PROD_OIL
DU-4607	42501025470000	ACTIVE	PROD_OIL
DU-4608	42501002290000	ACTIVE	INJ_WAG
DU-4609	42501027170000	P & A	INJ_H2O
DU-4610	42501025460000	ACTIVE	INJ_WAG
DU-4611	42501025490000	ACTIVE	PROD_OIL
DU-4612	42501002300000	ACTIVE	PROD_OIL
DU-4613	42501027160000	ACTIVE	PROD_OIL
DU-4614	42501025450000	ACTIVE	PROD_OIL
DU-4615	42501025520000	ACTIVE	INJ_WAG
DU-4616	42501002270000	ACTIVE	PROD_OIL
DU-4617	42501025150000	P & A	INJ_H2O
DU-4618	42501025480000	ACTIVE	PROD_OIL
DU-4619	42501023500000	ACTIVE	PROD_OIL
DU-4620	42501304320000	ACTIVE	PROD_OIL
DU-4621	42501025570000	ACTIVE	INJ_WAG
DU-4622	42501025560000	P & A	PROD_OIL
DU-4623	42501025550000	ACTIVE	PROD_OIL
DU-4624	42501025540000	ACTIVE	INJ_WAG
DU-4625	42501308220000	ACTIVE	PROD_OIL
DU-4626	42501308290000	TA	PROD_GAS
DU-4627	42501308280000	P & A	PROD_OIL
DU-4628	42501308350000	ACTIVE	INJ_WAG
DU-4629	42501308430000	ACTIVE	PROD_OIL
DU-4630	42501308230000	ACTIVE	INJ_WAG
DU-4632	42501308110000	P & A	PROD_OIL
DU-4633	42501314630000	TA	PROD_GAS
DU-4634	42501314640000	ACTIVE	PROD_OIL
DU-4635	42501315720000	ACTIVE	INJ_WAG
DU-4636	42501315750000	P & A	PROD_OIL
DU-4637	42501315910000	ACTIVE	INJ_WAG
DU-4638	42501315770000	ACTIVE	PROD_OIL
DU-4639	42501315900000	ACTIVE	PROD_OIL
DU-4640	42501316510000	ACTIVE	PROD_OIL
DU-4641	42501321030000	ACTIVE	PROD_OIL
DU-4642	42501325320000	ACTIVE	INJ_WAG
DU-4643	42501336490000	ACTIVE	INJ_WAG
DU-4644	42501341360000	ACTIVE	PROD_OIL
DU-4645	42501345880000	ACTIVE	PROD_OIL

DU-4646	42501345590000	ACTIVE	PROD_OIL
DU-4647	42501345200000	ACTIVE	PROD_OIL
DU-4648	42501345410000	ACTIVE	PROD_OIL
DU-4649	42501345190000	ACTIVE	PROD_OIL
DU-4650	42501345640000	ACTIVE	INJ_WAG
DU-4651	42501345600000	P & A	INJ_H2O
DU-4652	42501345610000	ACTIVE	INJ_WAG
DU-4653	42501345830000	ACTIVE	INJ_WAG
DU-4654	42501346080000	ACTIVE	INJ_WAG
DU-4655	42501347830000	ACTIVE	PROD_OIL
DU-4656	42501348140000	ACTIVE	PROD_OIL
DU-4657	42501348150000	ACTIVE	PROD_OIL
DU-4658	42501348160000	ACTIVE	PROD_OIL
DU-4659	42501348170000	ACTIVE	INJ_WAG
DU-4660	42501348180000	ACTIVE	INJ_WAG
DU-4661	42501348190000	ACTIVE	INJ_WAG
DU-4662	42501348360000	ACTIVE	PROD_OIL
DU-4663	42501348370000	ACTIVE	PROD_OIL
DU-4664	42501348200000	ACTIVE	PROD_OIL
DU-4665	42501348210000	ACTIVE	PROD_OIL
DU-4666	42501348220000	ACTIVE	PROD_OIL
DU-4667	42501347730000	ACTIVE	PROD_OIL
DU-4668GC	42501354890000	TA	PROD_GAS
DU-4701	42501028420000	P & A	INJ_H2O
DU-4702	42501028430000	P & A	PROD_OIL
DU-4703	42501008190000	ACTIVE	INJ_WAG
DU-4704	42501028950000	INACTIVE	INJ_WAG
DU-4705	42501008210000	ACTIVE	INJ_WAG
DU-4706	42501028940000	ACTIVE	PROD_OIL
DU-4707	42501028410000	P & A	INJ_H2O
DU-4708	42501028440000	ACTIVE	INJ_WAG
DU-4709	42501008200000	ACTIVE	INJ_WAG
DU-4710	42501008220000	ACTIVE	INJ_WAG
DU-4711	42501028000000	ACTIVE	PROD_OIL
DU-4712	42501027950000	ACTIVE	PROD_OIL
DU-4713	42501027960000	ACTIVE	PROD_OIL
DU-4714	42501027990000	ACTIVE	PROD_OIL
DU-4715	42501000520000	ACTIVE	INJ_WAG
DU-4716	42501018240000	ACTIVE	PROD_OIL
DU-4717	42501000510000	ACTIVE	PROD_OIL
DU-4718	42501027940000	ACTIVE	PROD_OIL
DU-4719	42501027980000	ACTIVE	PROD_OIL
DU-4720	42501027970000	P & A	PROD_OIL
DU-4721	42501302360000	ACTIVE	PROD_OIL
DU-4722	42501302350000	ACTIVE	INJ_WAG
DU-4723	42501304530000	ACTIVE	INJ_WAG
DU-4724	42501304520000	ACTIVE	PROD_OIL
DU-4725	42501304510000	ACTIVE	PROD_OIL
DU-4726	42501304500000	ACTIVE	PROD_OIL
DU-4727	42501304490000	P & A	PROD_OIL
DU-4728	42501304540000	ACTIVE	INJ_WAG
DU-4729	42501305260000	ACTIVE	PROD_OIL
DU-4730	42501305340000	ACTIVE	PROD_OIL
DU-4731	42501305330000	ACTIVE	INJ_WAG
DU-4732	42501305240000	ACTIVE	INJ_WAG

DU-4733	42501304980000	ACTIVE	INJ_WAG
DU-4734	42501305400000	ACTIVE	INJ_WAG
DU-4735	42501305270000	TA	PROD_OIL
DU-4736	42501308730000	ACTIVE	PROD_OIL
DU-4737	42501310060000	TA	PROD_OIL
DU-4738	42501310070000	TA	PROD_OIL
DU-4739	42501310080000	TA	PROD_OIL
DU-4740	42501321040000	ACTIVE	INJ_WAG
DU-4741	42501335460000	ACTIVE	PROD_OIL
DU-4742	42501340210000	ACTIVE	PROD_OIL
DU-4743	42501340200000	ACTIVE	PROD_OIL
DU-4744	42501340190000	ACTIVE	PROD_OIL
DU-4745	42501342530000	ACTIVE	PROD_OIL
DU-4746	42501342610000	ACTIVE	PROD_OIL
DU-4747	42501342600000	ACTIVE	PROD_OIL
DU-4748	42501342550000	ACTIVE	PROD_OIL
DU-4749	42501343390000	ACTIVE	INJ_WAG
DU-4750	42501343380000	ACTIVE	INJ_WAG
DU-4751	42501343250000	ACTIVE	PROD_OIL
DU-4752	42501343260000	ACTIVE	PROD_OIL
DU-4753	42501343270000	ACTIVE	PROD_OIL
DU-4754	42501343370000	ACTIVE	INJ_WAG
DU-4755	42501343300000	ACTIVE	PROD_OIL
DU-4756	42501343310000	ACTIVE	PROD_OIL
DU-4757	42501343340000	ACTIVE	PROD_OIL
DU-4758	42501343470000	ACTIVE	PROD_OIL
DU-4759	42501343320000	ACTIVE	PROD_OIL
DU-4760	42501343330000	ACTIVE	PROD_OIL
DU-4761	42501355470000	ACTIVE	PROD_GAS
DU-4762GC	42501355960000	DRILL	PROD_GAS
DU-4763	42501362030000	ACTIVE	INJ_WAG
DU-4801	42501000790000	P & A	INJ_H2O
DU-4802	42501000830000	ACTIVE	INJ_WAG
DU-4803	42501011910000	ACTIVE	INJ_WAG
DU-4804	42501011950000	ACTIVE	INJ_WAG
DU-4805	42501003520000	ACTIVE	PROD_OIL
DU-4806	42501000800000	ACTIVE	INJ_WAG
DU-4807	42501000840000	ACTIVE	INJ_WAG
DU-4808	42501011920000	ACTIVE	INJ_WAG
DU-4809	42501011970000	ACTIVE	INJ_WAG
DU-4810	42501000810000	ACTIVE	PROD_OIL
DU-4811	42501000850000	ACTIVE	PROD_OIL
DU-4812	42501011930000	ACTIVE	PROD_OIL
DU-4813	42501011960000	ACTIVE	PROD_OIL
DU-4814	42501000820000	ACTIVE	PROD_OIL
DU-4815	42501000860000	ACTIVE	PROD_OIL
DU-4816	42501011940000	P & A	PROD_OIL
DU-4817	42501011980000	P & A	INJ_H2O
DU-4818	42501302340000	ACTIVE	PROD_OIL
DU-4819	42501302330000	ACTIVE	INJ_WAG
DU-4820	42501304420000	ACTIVE	INJ_WAG
DU-4821	42501304410000	ACTIVE	INJ_WAG
DU-4822	42501304700000	ACTIVE	PROD_OIL
DU-4823	42501304690000	P & A	PROD_OIL
DU-4824	42501304670000	ACTIVE	PROD_OIL

DU-4825	42501304640000	ACTIVE	PROD_OIL
DU-4826	42501304650000	ACTIVE	PROD_OIL
DU-4827	42501304660000	ACTIVE	INJ_WAG
DU-4828	42501304710000	ACTIVE	INJ_WAG
DU-4829	42501304680000	TA	INJ_H2O
DU-4830	42501305320000	ACTIVE	INJ_WAG
DU-4831	42501305300000	ACTIVE	INJ_WAG
DU-4832	42501305290000	ACTIVE	INJ_WAG
DU-4833	42501305080000	ACTIVE	INJ_WAG
DU-4834	42501305120000	ACTIVE	INJ_WAG
DU-4835	42501305280000	ACTIVE	PROD_OIL
DU-4836	42501305110000	ACTIVE	PROD_OIL
DU-4837	42501317060000	P & A	PROD_OIL
DU-4838	42501333930000	ACTIVE	PROD_OIL
DU-4839	42501335410000	ACTIVE	PROD_OIL
DU-4840	42501337950000	ACTIVE	PROD_OIL
DU-4841	42501341210000	ACTIVE	PROD_OIL
DU-4842	42501341200000	ACTIVE	PROD_OIL
DU-4843	42501341230000	ACTIVE	INJ_WAG
DU-4844	42501341590000	ACTIVE	PROD_OIL
DU-4845	42501341700000	ACTIVE	PROD_OIL
DU-4846	42501341660000	ACTIVE	PROD_OIL
DU-4847	42501341670000	ACTIVE	PROD_OIL
DU-4848	42501341580000	ACTIVE	PROD_OIL
DU-4849	42501341650000	ACTIVE	PROD_OIL
DU-4850	42501341640000	ACTIVE	PROD_OIL
DU-4851	42501341680000	ACTIVE	PROD_OIL
DU-4852	42501341450000	ACTIVE	PROD_OIL
DU-4853	42501341690000	ACTIVE	PROD_OIL
DU-4854	42501342540000	ACTIVE	PROD_OIL
DU-4855	42501342270000	ACTIVE	PROD_OIL
DU-4856	42501342570000	ACTIVE	PROD_OIL
DU-4857	42501342590000	ACTIVE	PROD_OIL
DU-4858	42501342580000	ACTIVE	PROD_OIL
DU-4859	42501342560000	ACTIVE	PROD_OIL
DU-4860	42501342380000	ACTIVE	PROD_OIL
DU-4861	42501351520000	ACTIVE	INJ_WAG
DU-4862	42501351530000	ACTIVE	INJ_WAG
DU-4863	42501351540000	ACTIVE	INJ_WAG
DU-4864	42501351550000	ACTIVE	INJ_WAG
DU-4865	42501354880000	ACTIVE	PROD_OIL
DU-4901	42501012760000	P & A	INJ_WAG
DU-4902	42501012800000	ACTIVE	INJ_WAG
DU-4903	42501007300000	TA	PROD_OIL
DU-4904	42501007360000	P & A	INJ_H2O
DU-4905	42501012810000	ACTIVE	PROD_OIL
DU-4906	42501012770000	ACTIVE	INJ_WAG
DU-4907	42501007310000	ACTIVE	INJ_H2O
DU-4908	42501012780000	ACTIVE	PROD_OIL
DU-4909	42501012820000	ACTIVE	INJ_H2O
DU-4910	42501007320000	P & A	INJ_H2O
DU-4911	42501012790000	ACTIVE	PROD_OIL
DU-4912	42501007280000	ACTIVE	PROD_OIL
DU-4913	42501007330000	P & A	INJ_H2O
DU-4914	42501308910000	ACTIVE	INJ_WAG

DU-4915	42501308700000	ACTIVE	PROD_OIL
DU-4916	42501308940000	ACTIVE	INJ_WAG
DU-4917	42501308760000	ACTIVE	INJ_WAG
DU-4918	42501317080000	ACTIVE	PROD_OIL
DU-4919	42501317040000	ACTIVE	INJ_WAG
DU-4920	42501326300000	ACTIVE	PROD_OIL
DU-4921	42501327790000	ACTIVE	PROD_OIL
DU-4922	42501327920000	ACTIVE	PROD_OIL
DU-4923	42501327880000	ACTIVE	INJ_WAG
DU-4924	42501329160000	ACTIVE	PROD_OIL
DU-4925	42501332930000	ACTIVE	PROD_OIL
DU-4926	42501332890000	TA	PROD_OIL
DU-4927	42501346270000	ACTIVE	INJ_WAG
DU-4928	42501352430000	ACTIVE	PROD_OIL
DU-4929	42501352440000	ACTIVE	PROD_OIL
DU-5101	42501333580000	ACTIVE	PROD_OIL
DU-5201	42501808550000	P & A	PROD_OIL
DU-5202	42501003370000	ACTIVE	INJ_H2O
DU-5203	42501015660000	P & A	PROD_OIL
DU-5204	42501029510000	ACTIVE	INJ_WAG
DU-5205	42501029500000	P & A	INJ_H2O
DU-5206	42501103450000	P & A	INJ_H2O
DU-5301	42501029490000	TA	INJ_H2O
DU-5302	42501025060000	P & A	PROD_OIL
DU-5303	42501025050000	P & A	PROD_OIL
DU-5304	42501025040000	P & A	PROD_OIL
DU-5305	42501025070000	TA	INJ_H2O
DU-5306	42501015650000	P & A	INJ_H2O
DU-5307	42501015670000	P & A	INJ_H2O
DU-5308	42501319140000	P & A	INJ_WAG
DU-5309	42501325950000	ACTIVE	PROD_OIL
DU-5310	42501326020000	ACTIVE	PROD_OIL
DU-5311	42501329260000	ACTIVE	PROD_OIL
DU-5312	42501329180000	ACTIVE	PROD_OIL
DU-5313	42501329720000	ACTIVE	PROD_OIL
DU-5315	42501330680000	TA	PROD_OIL
DU-5316	42501331690000	P & A	PROD_OIL
DU-5317	42501354600000	ACTIVE	PROD_OIL
DU-5401	42501015630000	ACTIVE	INJ_WAG
DU-5402	42501024930000	P & A	INJ_H2O
DU-5403	42501022290000	ACTIVE	INJ_WAG
DU-5404	42501015620000	ACTIVE	INJ_WAG
DU-5405	42501024910000	ACTIVE	INJ_WAG
DU-5406	42501022280000	TA	INJ_H2O
DU-5407	42501308870000	SHUT-IN	INJ_WAG
DU-5408	42501308630000	ACTIVE	INJ_WAG
DU-5409	42501308670000	ACTIVE	INJ_WAG
DU-5410	42501311330000	TA	PROD_OIL
DU-5411	42501314420000	ACTIVE	PROD_OIL
DU-5412	42501314400000	TA	PROD_OIL
DU-5413	42501314410000	ACTIVE	PROD_OIL
DU-5414	42501317110000	P & A	PROD_OIL
DU-5415	42501319050000	TA	PROD_OIL
DU-5416	42501328860000	ACTIVE	PROD_OIL
DU-5501	42501022270000	P & A	INJ_WAG

DU-5502	42501024900000	ACTIVE	INJ_WAG
DU-5503	42501024920000	ACTIVE	INJ_WAG
DU-5504	42501022300000	P & A	INJ_H2O
DU-5505	42501024940000	TA	INJ_H2O
DU-5506	42501024960000	P & A	INJ_H2O
DU-5507	42501308660000	P & A	PROD_OIL
DU-5508	42501308510000	ACTIVE	PROD_OIL
DU-5509	42501308650000	ACTIVE	INJ_WAG
DU-5510	42501311320000	ACTIVE	PROD_OIL
DU-5511	42501311310000	ACTIVE	PROD_OIL
DU-5512	42501315050000	ACTIVE	PROD_OIL
DU-5513	42501314500000	ACTIVE	PROD_GAS
DU-5514	42501315780000	ACTIVE	INJ_WAG
DU-5515	42501315870000	ACTIVE	PROD_OIL
DU-5516	42501316250000	ACTIVE	INJ_WAG
DU-5517	42501319500000	P & A	PROD_OIL
DU-5519	42501320400000	TA	PROD_OIL
DU-5520	42501337970000	ACTIVE	INJ_WAG
DU-5521	42501344780000	ACTIVE	PROD_GAS
DU-5522	42501346240000	ACTIVE	PROD_GAS
DU-5523GC	42501353870000	ACTIVE	PROD_GAS
DU-5601	42501012680000	ACTIVE	PROD_OIL
DU-5602	42501012670000	P & A	PROD_OIL
DU-5603	42501012710000	ACTIVE	INJ_WAG
DU-5604	42501029960000	ACTIVE	INJ_WAG
DU-5605	42501012700000	ACTIVE	PROD_OIL
DU-5606	42501012690000	ACTIVE	INJ_WAG
DU-5607	42501012660000	P & A	INJ_H2O
DU-5608	42501028860000	ACTIVE	PROD_OIL
DU-5609	42501004920000	ACTIVE	INJ_WAG
DU-5610	42501305310000	ACTIVE	INJ_WAG
DU-5611	42501308140000	ACTIVE	PROD_OIL
DU-5612	42501309190000	ACTIVE	PROD_OIL
DU-5613	42501314520000	P & A	PROD_OIL
DU-5614	42501314580000	ACTIVE	PROD_OIL
DU-5615	42501315800000	ACTIVE	PROD_OIL
DU-5616	42501315670000	ACTIVE	PROD_OIL
DU-5617	42501330950000	ACTIVE	PROD_OIL
DU-5618	42165344300000	ACTIVE	INJ_WAG
DU-5619	42501342950000	ACTIVE	PROD_OIL
DU-5620	42501347600000	ACTIVE	PROD_OIL
DU-5621	42501347590000	ACTIVE	PROD_OIL
DU-5622GC	42501354510000	ACTIVE	PROD_GAS
DU-5623	42501355970000	DRILL	PROD_GAS
DU-5701	42501029970000	P & A	INJ_GAS
DU-5702	42501004940000	ACTIVE	INJ_WAG
DU-5703	42501004950000	ACTIVE	INJ_WAG
DU-5704	42501004970000	ACTIVE	INJ_WAG
DU-5705	42501029980000	ACTIVE	INJ_WAG
DU-5706	42501004930000	ACTIVE	INJ_WAG
DU-5707	42501005010000	ACTIVE	INJ_WAG
DU-5708	42501005020000	ACTIVE	INJ_WAG
DU-5709	42501305100000	ACTIVE	INJ_WAG
DU-5710	42501305090000	ACTIVE	INJ_WAG
DU-5711	42501304990000	ACTIVE	INJ_WAG

DU-5712	42501305190000	ACTIVE	INJ_WAG
DU-5713S	42501026000000	TA	PROD_OIL
DU-5714	42501314590000	ACTIVE	PROD_OIL
DU-5715	42501315680000	ACTIVE	PROD_OIL
DU-5716	42501315690000	ACTIVE	PROD_OIL
DU-5717	42501320500000	ACTIVE	PROD_OIL
DU-5718	42501320340000	ACTIVE	PROD_OIL
DU-5719	42501320470000	ACTIVE	PROD_OIL
DU-5720	42501343280000	ACTIVE	PROD_OIL
DU-5721	42501343290000	ACTIVE	PROD_OIL
DU-5722	42501343140000	ACTIVE	PROD_OIL
DU-5723	42501343150000	ACTIVE	PROD_OIL
DU-5724	42501343160000	ACTIVE	PROD_OIL
DU-5725	42501349450000	ACTIVE	INJ_WAG
DU-5801	42501004960000	ACTIVE	INJ_WAG
DU-5802	42501004980000	ACTIVE	INJ_WAG
DU-5803	42501004990000	ACTIVE	INJ_WAG
DU-5804	42501018910000	ACTIVE	INJ_WAG
DU-5805	42501005030000	P & A	INJ_WAG
DU-5806	42501005000000	ACTIVE	INJ_WAG
DU-5807	42501019040000	ACTIVE	INJ_WAG
DU-5808	42501305130000	ACTIVE	INJ_WAG
DU-5809	42501305200000	ACTIVE	INJ_WAG
DU-5810	42501305210000	ACTIVE	INJ_WAG
DU-5811	42501308750000	ACTIVE	INJ_WAG
DU-5812	42501308740000	ACTIVE	INJ_WAG
DU-5813	42501316490000	TA	PROD_OIL
DU-5814	42501316530000	TA	PROD_OIL
DU-5815	42501320480000	ACTIVE	PROD_OIL
DU-5816	42501320520000	ACTIVE	PROD_OIL
DU-5817	42501321010000	ACTIVE	PROD_OIL
DU-5818	42501320420000	P & A	PROD_OIL
DU-5819	42501320530000	ACTIVE	PROD_OIL
DU-5820	42501320490000	ACTIVE	PROD_OIL
DU-5821	42501343170000	ACTIVE	PROD_OIL
DU-5822	42501343180000	ACTIVE	PROD_OIL
DU-5823	42501343350000	ACTIVE	PROD_OIL
DU-5824	42501343190000	ACTIVE	PROD_OIL
DU-5825	42501343200000	ACTIVE	PROD_OIL
DU-5826	42501343360000	ACTIVE	PROD_OIL
DU-5827	42501354090000	ACTIVE	PROD_OIL
DU-5828	42501362320000	ACTIVE	INJ_WAG
DU-5901	42501019170000	ACTIVE	INJ_WAG
DU-5902	42501019280000	ACTIVE	INJ_WAG
DU-5903	42501007340000	P & A	INJ_H2O
DU-5904	42501030250000	ACTIVE	PROD_OIL
DU-5905	42501317070000	ACTIVE	PROD_OIL
DU-5906	42501320460000	ACTIVE	PROD_OIL
DU-6301	42165014090000	P & A	INJ_H2O
DU-6302	42165014060000	ACTIVE	PROD_OIL
DU-6303	42165014030000	ACTIVE	PROD_OIL
DU-6304	42165014070000	P & A	INJ_H2O
DU-6305	42165014020000	P & A	INJ_H2O
DU-6306	42165014040000	P & A	PROD_OIL
DU-6307	42165014110000	P & A	INJ_H2O

DU-6308	42165014080000	P & A	PROD_OIL
DU-6309	42165318700000	ACTIVE	PROD_OIL
DU-6310	42165367650000	ACTIVE	PROD_OIL
DU-6401	42165005420000	ACTIVE	PROD_OIL
DU-6402	42165005240000	ACTIVE	PROD_OIL
DU-6403	42165005450000	ACTIVE	PROD_OIL
DU-6404	42165005440000	ACTIVE	INJ_WAG
DU-6405	42165013870000	ACTIVE	PROD_OIL
DU-6406	42165013850000	ACTIVE	PROD_OIL
DU-6407	42165018770000	P & A	PROD_OIL
DU-6408	42165004910000	SHUT-IN	PROD_GAS
DU-6409	42165005410000	ACTIVE	PROD_OIL
DU-6410	42165005430000	ACTIVE	PROD_OIL
DU-6411	42165005360000	TA	PROD_OIL
DU-6412	42165005280000	ACTIVE	INJ_WAG
DU-6413	42165005340000	ACTIVE	INJ_WAG
DU-6414	42165005400000	ACTIVE	INJ_WAG
DU-6415	42165005330000	ACTIVE	PROD_OIL
DU-6416	42165005380000	ACTIVE	PROD_OIL
DU-6417	42165005390000	ACTIVE	INJ_WAG
DU-6418	42165005260000	ACTIVE	INJ_WAG
DU-6419	42165303820000	ACTIVE	PROD_OIL
DU-6420	42165303390000	ACTIVE	PROD_OIL
DU-6421	42165303380000	ACTIVE	INJ_WAG
DU-6422	42165303430000	ACTIVE	INJ_WAG
DU-6423	42165302990000	ACTIVE	INJ_WAG
DU-6424	42165303420000	ACTIVE	PROD_OIL
DU-6425	42165303410000	ACTIVE	INJ_WAG
DU-6426	42165303440000	ACTIVE	PROD_OIL
DU-6427	42165303060000	ACTIVE	PROD_OIL
DU-6428	42165303700000	ACTIVE	PROD_OIL
DU-6429	42165303400000	ACTIVE	PROD_OIL
DU-6430	42165303690000	ACTIVE	INJ_WAG
DU-6431	42165305430000	ACTIVE	PROD_OIL
DU-6432	42165315510000	ACTIVE	PROD_OIL
DU-6433	42165316150000	SHUT-IN	INJ_WAG
DU-6434	42165318690000	SHUT-IN	INJ_WAG
DU-6435	42165318780000	TA	PROD_OIL
DU-6436	42165320660000	ACTIVE	PROD_OIL
DU-6437	42165332400000	ACTIVE	PROD_OIL
DU-6438	42165333410000	ACTIVE	INJ_H2O
DU-6439	42165355920000	ACTIVE	PROD_OIL
DU-6440	42165355390000	ACTIVE	PROD_GAS
DU-6441	42165355930000	ACTIVE	PROD_OIL
DU-6442	42165355940000	ACTIVE	PROD_OIL
DU-6443	42165355950000	ACTIVE	PROD_OIL
DU-6444	42165355960000	ACTIVE	PROD_OIL
DU-6445	42165355970000	ACTIVE	PROD_OIL
DU-6446	42165355980000	ACTIVE	PROD_OIL
DU-6447	42165356520000	ACTIVE	PROD_GAS
DU-6448	42165357260000	TA	PROD_GAS
DU-6449GC	42165363500000	ACTIVE	PROD_GAS
DU-6450	42165363750000	ACTIVE	PROD_OIL
DU-6451	42165363760000	ACTIVE	PROD_OIL
DU-6452	42165363770000	ACTIVE	PROD_OIL

DU-6453GC	42165005290101	ACTIVE	PROD_GAS
DU-6454	42165366690000	SHUT-IN	PROD_GAS
DU-6501	42165007760000	ACTIVE	PROD_OIL
DU-6502	42165007940000	ACTIVE	PROD_OIL
DU-6503	42165007770000	ACTIVE	PROD_OIL
DU-6504	42165007730000	P & A	PROD_OIL
DU-6505	42165007750000	ACTIVE	PROD_OIL
DU-6506	42165007740000	ACTIVE	PROD_OIL
DU-6507	42165007790000	ACTIVE	PROD_OIL
DU-6508	42165813430000	ACTIVE	PROD_OIL
DU-6509	42165015330000	ACTIVE	INJ_WAG
DU-6510	42165015320000	ACTIVE	INJ_WAG
DU-6511	42165007890000	ACTIVE	INJ_WAG
DU-6512	42165007930000	ACTIVE	INJ_WAG
DU-6513	42165004740000	ACTIVE	PROD_OIL
DU-6514	42165004730000	ACTIVE	PROD_OIL
DU-6515	42165025140000	ACTIVE	PROD_OIL
DU-6516	42165025150000	ACTIVE	PROD_OIL
DU-6517	42165007950000	ACTIVE	INJ_WAG
DU-6518	42165007700000	TA	INJ_WAG
DU-6519	42165007970000	INACTIVE	INJ_WAG
DU-6520	42165007960000	ACTIVE	INJ_WAG
DU-6521	42165301980000	P & A	PROD_OIL
DU-6522	42165301990000	ACTIVE	INJ_WAG
DU-6523	42165302000000	ACTIVE	INJ_WAG
DU-6524	42165301940000	ACTIVE	PROD_OIL
DU-6525	42165302110000	P & A	INJ_WAG
DU-6526	42165302070000	ACTIVE	PROD_OIL
DU-6527	42165302090000	ACTIVE	PROD_OIL
DU-6528	42165302080000	ACTIVE	PROD_OIL
DU-6529	42165302980000	ACTIVE	PROD_OIL
DU-6530	42165303070000	ACTIVE	INJ_WAG
DU-6531	42165302820000	ACTIVE	INJ_WAG
DU-6532	42165302970000	ACTIVE	INJ_WAG
DU-6533	42165302810000	ACTIVE	INJ_WAG
DU-6534	42165302960000	ACTIVE	PROD_OIL
DU-6535	42165303660000	ACTIVE	INJ_WAG
DU-6536	42165315730000	ACTIVE	PROD_OIL
DU-6537	42165315740000	ACTIVE	PROD_GAS
DU-6538	42165320780000	ACTIVE	INJ_WAG
DU-6539	42165345960000	ACTIVE	PROD_OIL
DU-6540	42165007900000	ACTIVE	PROD_GAS
DU-6541	42165354760000	ACTIVE	PROD_OIL
DU-6542	42165353960000	ACTIVE	INJ_WAG
DU-6543	42165353950000	ACTIVE	PROD_OIL
DU-6544	42165354750000	ACTIVE	PROD_OIL
DU-6545	42165354740000	ACTIVE	PROD_OIL
DU-6546	42165353400000	ACTIVE	PROD_OIL
DU-6547	42165353410000	ACTIVE	PROD_OIL
DU-6548	42165353420000	ACTIVE	PROD_OIL
DU-6549	42165353760000	ACTIVE	PROD_GAS
DU-6550	42165354730000	ACTIVE	PROD_OIL
DU-6551	42165355480000	ACTIVE	PROD_GAS
DU-6552	42165356050000	ACTIVE	PROD_OIL
DU-6553	42165356040000	ACTIVE	PROD_OIL

DU-6554	42165355680000	ACTIVE	PROD_OIL
DU-6555	42165355690000	ACTIVE	PROD_OIL
DU-6556	42165356030000	ACTIVE	PROD_OIL
DU-6557	42165355700000	ACTIVE	PROD_OIL
DU-6558	42165355710000	ACTIVE	PROD_OIL
DU-6559	42165355720000	ACTIVE	PROD_OIL
DU-6560	42165356010000	ACTIVE	INJ_WAG
DU-6561	42165355610000	ACTIVE	INJ_WAG
DU-6562	42165356020000	ACTIVE	PROD_OIL
DU-6563	42165007850001	ACTIVE	PROD_OIL
DU-6564	42165357060000	ACTIVE	PROD_GAS
DU-6566	42165358080000	ACTIVE	PROD_OIL
DU-6567GC	42165363020000	TA	PROD_GAS
DU-6568GC	42165364530000	ACTIVE	PROD_GAS
DU-6569GC	42165363030000	ACTIVE	PROD_GAS
DU-6570GC	42165366460000	ACTIVE	PROD_GAS
DU-6571	42165367860000	ACTIVE	PROD_GAS
DU-6572	42165367870000	TA	PROD_GAS
DU-6573	42165015360001	ACTIVE	PROD_GAS
DU-6574	42165375940000	ACTIVE	INJ_WAG
DU-6575	42165376830000	ACTIVE	PROD_OIL
DU-6576	42165376840000	ACTIVE	PROD_OIL
DU-6601	42165005710000	ACTIVE	PROD_OIL
DU-6602	42165005790000	ACTIVE	PROD_OIL
DU-6603	42165005680000	ACTIVE	PROD_OIL
DU-6604	42165008540000	ACTIVE	PROD_OIL
DU-6605	42165007010000	ACTIVE	PROD_OIL
DU-6606	42165005730000	ACTIVE	PROD_OIL
DU-6607	42165005750000	ACTIVE	PROD_OIL
DU-6608	42165005780000	ACTIVE	PROD_OIL
DU-6609	42165007170000	ACTIVE	PROD_OIL
DU-6610	42165007230000	ACTIVE	PROD_OIL
DU-6611	42165005770000	ACTIVE	INJ_WAG
DU-6612	42165005740000	ACTIVE	INJ_WAG
DU-6613	42165007250000	ACTIVE	INJ_WAG
DU-6614	42165007290000	ACTIVE	INJ_WAG
DU-6615	42165005720000	ACTIVE	INJ_WAG
DU-6616	42165005760000	ACTIVE	INJ_WAG
DU-6617	42165007190000	ACTIVE	INJ_WAG
DU-6618	42165007210000	ACTIVE	INJ_WAG
DU-6619	42165301360000	ACTIVE	PROD_OIL
DU-6620	42165301600000	ACTIVE	INJ_WAG
DU-6621	42165301640000	ACTIVE	INJ_WAG
DU-6622	42165301500000	ACTIVE	INJ_WAG
DU-6623	42165301510000	ACTIVE	INJ_WAG
DU-6624	42165301520000	P & A	INJ_WAG
DU-6625	42165301370000	ACTIVE	INJ_WAG
DU-6626	42165301610000	ACTIVE	PROD_OIL
DU-6627	42165301910000	ACTIVE	INJ_WAG
DU-6628	42165301870000	ACTIVE	INJ_WAG
DU-6629	42165301850000	ACTIVE	PROD_OIL
DU-6630	42165301840000	P & A	PROD_OIL
DU-6631	42165301930000	P & A	PROD_OIL
DU-6632	42165301890000	ACTIVE	PROD_OIL
DU-6633	42165301920000	ACTIVE	PROD_OIL

DU-6634	42165301900000	ACTIVE	PROD_OIL
DU-6635	42165301860000	ACTIVE	INJ_WAG
DU-6636	42165301880000	ACTIVE	INJ_WAG
DU-6637	42165316130000	ACTIVE	PROD_OIL
DU-6638	42165345160000	ACTIVE	PROD_OIL
DU-6639	42165352270000	ACTIVE	PROD_OIL
DU-6640	42165353970000	ACTIVE	PROD_OIL
DU-6641	42165354410000	ACTIVE	PROD_OIL
DU-6642	42165354420000	ACTIVE	PROD_OIL
DU-6643	42165354430000	ACTIVE	PROD_OIL
DU-6644	42165354440000	ACTIVE	PROD_OIL
DU-6645	42165355620000	ACTIVE	PROD_OIL
DU-6646	42165355630000	ACTIVE	PROD_OIL
DU-6647	42165355640000	ACTIVE	PROD_OIL
DU-6648	42165355650000	ACTIVE	PROD_OIL
DU-6649	42165356800000	ACTIVE	PROD_OIL
DU-6650	42165356870000	ACTIVE	PROD_OIL
DU-6651	42165357370000	ACTIVE	PROD_OIL
DU-6652	42165357050000	ACTIVE	PROD_OIL
DU-6654	42165357250000	ACTIVE	PROD_OIL
DU-6655	42165357240000	ACTIVE	PROD_OIL
DU-6656	42165358110000	TA	PROD_GAS
DU-6657	42165367150000	ACTIVE	INJ_WAG
DU-6701	42165008600000	ACTIVE	PROD_OIL
DU-6702	42165007070000	P & A	PROD_OIL
DU-6703	42165007090000	P & A	PROD_OIL
DU-6704	42165007100000	ACTIVE	PROD_OIL
DU-6705	42165007020000	ACTIVE	PROD_OIL
DU-6706	42165007030000	P & A	PROD_OIL
DU-6707	42165007040000	ACTIVE	PROD_OIL
DU-6708	42165007110000	P & A	INJ_H2O
DU-6709	42165007080000	ACTIVE	INJ_WAG
DU-6710	42165007050000	P & A	PROD_OIL
DU-6711	42165007060000	TA	INJ_GAS
DU-6712	42165007120000	ACTIVE	INJ_WAG
DU-6713	42165008560000	ACTIVE	INJ_WAG
DU-6714	42165008580000	TA	PROD_OIL
DU-6715	42165008590000	ACTIVE	INJ_WAG
DU-6716	42165007140000	ACTIVE	INJ_WAG
DU-6717	42165301660000	ACTIVE	PROD_OIL
DU-6718	42165301690000	ACTIVE	PROD_OIL
DU-6719	42165301710000	ACTIVE	INJ_WAG
DU-6720	42165301680000	ACTIVE	INJ_WAG
DU-6721	42165301620000	ACTIVE	INJ_WAG
DU-6722	42165301630000	ACTIVE	INJ_WAG
DU-6723	42165302030000	ACTIVE	INJ_WAG
DU-6724	42165302040000	ACTIVE	INJ_WAG
DU-6725	42165302100000	P & A	PROD_OIL
DU-6726	42165302050000	P & A	PROD_OIL
DU-6727	42165301950000	ACTIVE	INJ_WAG
DU-6728	42165301960000	P & A	PROD_OIL
DU-6729	42165302060000	ACTIVE	PROD_OIL
DU-6730	42165304250000	ACTIVE	PROD_OIL
DU-6731	42165315500000	P & A	PROD_OIL
DU-6732	42165315710000	ACTIVE	PROD_OIL

DU-6733	42165318720000	ACTIVE	PROD_OIL
DU-6734	42165318740000	ACTIVE	PROD_OIL
DU-6735	42165318790000	ACTIVE	PROD_OIL
DU-6736	42165318730000	TA	PROD_OIL
DU-6737	42165318680000	ACTIVE	INJ_WAG
DU-6738	42165333270000	ACTIVE	PROD_OIL
DU-6739	42165333500000	ACTIVE	PROD_OIL
DU-6740	42165336120000	TA	INJ_WAG
DU-6744	42165334540000	ACTIVE	INJ_WAG
DU-6748	42165334610000	TA	INJ_GAS
DU-6750	42165334580000	ACTIVE	INJ_WAG
DU-6751	42165334590000	ACTIVE	INJ_WAG
DU-6755	42165334570000	TA	PROD_OIL
DU-6756T	42165334600000	TA	PROD_OIL
DU-6757	42165334560000	P & A	PROD_OIL
DU-6758	42165334550000	TA	PROD_OIL
DU-6759	42165347810000	ACTIVE	PROD_OIL
DU-6760	42165354450000	ACTIVE	PROD_OIL
DU-6761	42165354460000	ACTIVE	PROD_OIL
DU-6762	42165354500000	ACTIVE	PROD_OIL
DU-6763	42165354490000	ACTIVE	PROD_OIL
DU-6764	42165354480000	ACTIVE	PROD_OIL
DU-6765	42165356880000	ACTIVE	PROD_OIL
DU-6766	42165356810000	ACTIVE	PROD_OIL
DU-6767	42165356830000	ACTIVE	PROD_OIL
DU-6768	42165356790000	ACTIVE	PROD_OIL
DU-6769	42165356820000	ACTIVE	PROD_OIL
DU-6770	42165357230000	ACTIVE	PROD_OIL
DU-6771	42165357220000	ACTIVE	PROD_OIL
DU-6772	42165357310000	ACTIVE	PROD_OIL
DU-6774	42165357300000	ACTIVE	PROD_OIL
DU-6775	42165357040000	ACTIVE	PROD_OIL
DU-6776	42165357290000	ACTIVE	PROD_OIL
DU-6777	42165358310000	ACTIVE	INJ_WAG
DU-6778	42165358320000	ACTIVE	INJ_WAG
DU-6779	42165360930000	ACTIVE	PROD_OIL
DU-6780	42165361670000	ACTIVE	PROD_OIL
DU-6781	42165378160000	ACTIVE	PROD_OIL
DU-6782	42165378130000	ACTIVE	PROD_OIL
DU-6801	42165008390000	P & A	PROD_OIL
DU-6802	42165008380000	P & A	INJ_H2O
DU-6803	42165020380000	ACTIVE	PROD_OIL
DU-6804	42165020430000	ACTIVE	INJ_H2O
DU-6805	42165008420000	ACTIVE	PROD_OIL
DU-6806	42165008400000	ACTIVE	PROD_OIL
DU-6807	42165018920000	P & A	PROD_OIL
DU-6808	42165018910000	P & A	INJ_H2O
DU-6809	42165008410000	ACTIVE	INJ_WAG
DU-6810	42165008430000	ACTIVE	PROD_OIL
DU-6811	42165004310000	P & A	INJ_WAG
DU-6812	42165014010000	TA	INJ_GAS
DU-6813	42165011460000	ACTIVE	INJ_WAG
DU-6814	42165011470000	P & A	INJ_H2O
DU-6815	42165019990000	P & A	INJ_H2O
DU-6816	42165301740000	P & A	PROD_OIL

DU-6817	42165301790000	ACTIVE	INJ_WAG
DU-6818	42165301760000	P & A	INJ_WAG
DU-6819	42165301800000	ACTIVE	PROD_OIL
DU-6820	42165303760000	ACTIVE	PROD_OIL
DU-6821	42165315600000	ACTIVE	PROD_OIL
DU-6822	42165315480000	ACTIVE	PROD_OIL
DU-6823	42165320790000	ACTIVE	PROD_OIL
DU-6824	42165320670000	ACTIVE	PROD_OIL
DU-6825	42165331380000	ACTIVE	INJ_WAG
DU-6826	42165331360000	ACTIVE	INJ_WAG
DU-6827	42165332500000	ACTIVE	PROD_OIL
DU-6828	42165332390000	ACTIVE	PROD_OIL
DU-6829	42165333910000	ACTIVE	PROD_OIL
DU-6830	42165333450000	ACTIVE	PROD_OIL
DU-6831	42165339540000	ACTIVE	PROD_OIL
DU-6832	42165340850000	ACTIVE	PROD_OIL
DU-6833	42165348970000	ACTIVE	PROD_OIL
DU-6834	42165354470000	ACTIVE	PROD_OIL
DU-6835	42165354510000	ACTIVE	PROD_OIL
DU-6836	42165354520000	ACTIVE	PROD_OIL
DU-6837	42165356780000	ACTIVE	INJ_WAG
DU-6838	42165357390000	ACTIVE	PROD_OIL
DU-6839	42165378120000	ACTIVE	PROD_OIL
DU-7301	42165021460000	P & A	INJ_H2O
DU-7302	42165021440000	P & A	INJ_H2O
DU-7303	42165006510000	P & A	INJ_H2O
DU-7304	42165006520000	P & A	INJ_H2O
DU-7401	42165021550000	P & A	PROD_OIL
DU-7402	42165021530000	P & A	PROD_OIL
DU-7403	42165018790000	P & A	PROD_OIL
DU-7404	42165013890000	ACTIVE	PROD_OIL
DU-7405	42165018760000	ACTIVE	PROD_OIL
DU-7406	42165021580000	ACTIVE	PROD_OIL
DU-7407	42165013910000	ACTIVE	INJ_WAG
DU-7408	42165013880000	ACTIVE	INJ_WAG
DU-7409	42165021540000	ACTIVE	PROD_OIL
DU-7410	42165021450000	P & A	PROD_OIL
DU-7411	42165018780000	TA	PROD_OIL
DU-7412	42165013900000	ACTIVE	PROD_OIL
DU-7413	42165018750000	P & A	PROD_OIL
DU-7414	42165008370000	P & A	INJ_H2O
DU-7415	42165008290000	TA	PROD_OIL
DU-7416	42165008310000	ACTIVE	INJ_WAG
DU-7417	42165008250000	ACTIVE	INJ_WAG
DU-7418	42165008360000	P & A	PROD_OIL
DU-7419	42165008350000	TA	INJ_H2O
DU-7420	42165008330000	ACTIVE	PROD_OIL
DU-7421	42165008270000	ACTIVE	INJ_WAG
DU-7422	42165303460000	ACTIVE	INJ_WAG
DU-7423	42165303270000	P & A	INJ_WAG
DU-7424	42165302740000	INACTIVE	PROD_OIL
DU-7425	42165303600000	ACTIVE	PROD_GAS
DU-7426	42165303470000	ACTIVE	INJ_WAG
DU-7427	42165304230000	TA	PROD_OIL
DU-7428	42165305460000	ACTIVE	PROD_OIL

DU-7429	42165313680000	ACTIVE	INJ_WAG
DU-7430	42165315700000	ACTIVE	PROD_OIL
DU-7431	42165318710000	ACTIVE	PROD_OIL
DU-7432	42165318770000	INACTIVE	INJ_H2O
DU-7433	42165320600000	ACTIVE	PROD_OIL
DU-7434	42165331350000	ACTIVE	PROD_OIL
DU-7435	42165332890000	ACTIVE	PROD_OIL
DU-7436	42165333530000	ACTIVE	INJ_WAG
DU-7437	42165335240000	ACTIVE	PROD_OIL
DU-7438	42165353750000	ACTIVE	PROD_GAS
DU-7440	42165354070000	ACTIVE	PROD_OIL
DU-7441	42165354090000	ACTIVE	PROD_OIL
DU-7442	42165354080000	ACTIVE	PROD_OIL
DU-7443	42165354060000	ACTIVE	PROD_OIL
DU-7444	42165357140000	ACTIVE	PROD_GAS
DU-7445	42165376850000	ACTIVE	PROD_OIL
DU-7446	42165376880000	ACTIVE	PROD_OIL
DU-7448	42165380530000	DRILL	PROD_OIL
DU-7449	42165380540000	ACTIVE	PROD_OIL
DU-7450	42165380550000	ACTIVE	PROD_OIL
DU-7501	42165007540000	ACTIVE	PROD_OIL
DU-7502	42165007530000	ACTIVE	PROD_OIL
DU-7503	42165007590000	ACTIVE	PROD_OIL
DU-7504	42165007570000	ACTIVE	PROD_OIL
DU-7505	42165007520000	ACTIVE	PROD_OIL
DU-7506	42165007550000	ACTIVE	PROD_OIL
DU-7507	42165007580000	ACTIVE	PROD_OIL
DU-7508	42165007560000	ACTIVE	PROD_OIL
DU-7509	42165007600000	ACTIVE	INJ_WAG
DU-7510	42165005540000	ACTIVE	INJ_WAG
DU-7511	42165005470000	ACTIVE	INJ_WAG
DU-7512	42165005460000	ACTIVE	INJ_WAG
DU-7513	42165005530000	ACTIVE	INJ_WAG
DU-7514	42165005550000	ACTIVE	INJ_WAG
DU-7515	42165005480000	ACTIVE	INJ_WAG
DU-7516	42165001510000	ACTIVE	INJ_WAG
DU-7517	42165301530000	ACTIVE	PROD_OIL
DU-7518	42165301540000	ACTIVE	INJ_WAG
DU-7519	42165301550000	ACTIVE	INJ_WAG
DU-7520	42165301650000	ACTIVE	PROD_OIL
DU-7521	42165301670000	INACTIVE	INJ_WAG
DU-7522	42165302260000	ACTIVE	PROD_OIL
DU-7523	42165302280000	ACTIVE	PROD_OIL
DU-7524	42165303640000	P & A	PROD_OIL
DU-7525	42165303200000	ACTIVE	INJ_WAG
DU-7526	42165303800000	ACTIVE	INJ_WAG
DU-7527	42165303190000	ACTIVE	INJ_WAG
DU-7528	42165303680000	ACTIVE	INJ_WAG
DU-7529	42165303670000	ACTIVE	PROD_OIL
DU-7530	42165303180000	ACTIVE	INJ_WAG
DU-7531	42165303170000	ACTIVE	PROD_OIL
DU-7532	42165303160000	ACTIVE	PROD_OIL
DU-7533	42165303290000	ACTIVE	PROD_OIL
DU-7534	42165303280000	ACTIVE	PROD_OIL
DU-7535	42165302750000	ACTIVE	INJ_WAG

DU-7536	42165303260000	ACTIVE	INJ_WAG
DU-7537	42165306570000	ACTIVE	PROD_OIL
DU-7538	42165315530000	P & A	PROD_OIL
DU-7539	42165315520000	ACTIVE	PROD_OIL
DU-7540	42165319110000	TA	PROD_GAS
DU-7541	42165005490000	ACTIVE	PROD_OIL
DU-7542	42165348340000	TA	PROD_OIL
DU-7543	42165352320000	ACTIVE	PROD_OIL
DU-7544	42165352330000	ACTIVE	PROD_OIL
DU-7545	42165352340000	ACTIVE	PROD_OIL
DU-7546	42165352350000	ACTIVE	PROD_OIL
DU-7547	42165352360000	ACTIVE	PROD_OIL
DU-7548	42165352370000	ACTIVE	PROD_OIL
DU-7549	42165354050000	ACTIVE	PROD_OIL
DU-7550	42165354040000	ACTIVE	PROD_OIL
DU-7551	42165353430000	ACTIVE	PROD_OIL
DU-7552	42165353440000	ACTIVE	PROD_OIL
DU-7553	42165354030000	ACTIVE	PROD_OIL
DU-7554	42165354020000	ACTIVE	PROD_OIL
DU-7555	42165353450000	ACTIVE	PROD_OIL
DU-7556	42165353460000	ACTIVE	PROD_OIL
DU-7558	42165354010000	ACTIVE	PROD_OIL
DU-7562	42165353470000	ACTIVE	PROD_OIL
DU-7563	42165353480000	ACTIVE	PROD_OIL
DU-7564	42165353740000	ACTIVE	PROD_GAS
DU-7565	42165353730000	ACTIVE	PROD_GAS
DU-7566	42165353720000	ACTIVE	PROD_GAS
DU-7567	42165353710000	ACTIVE	PROD_GAS
DU-7568	42165357150000	ACTIVE	PROD_GAS
DU-7569	42165360090000	ACTIVE	PROD_OIL
DU-7571GC	42165363040000	ACTIVE	PROD_GAS
DU-7572GC	42165005520101	ACTIVE	PROD_GAS
DU-7573GC	42165363050000	ACTIVE	PROD_GAS
DU-7574	42165375990000	ACTIVE	INJ_WAG
DU-7575	42165376000000	ACTIVE	INJ_WAG
DU-7576	42165375970000	ACTIVE	INJ_WAG
DU-7577	42165375950000	ACTIVE	INJ_WAG
DU-7578	42165375960000	ACTIVE	INJ_WAG
DU-7601	42165007360000	ACTIVE	PROD_OIL
DU-7602	42165007270000	ACTIVE	PROD_OIL
DU-7603	42165008510000	ACTIVE	PROD_OIL
DU-7604	42165008460000	ACTIVE	PROD_OIL
DU-7605	42165007340000	ACTIVE	PROD_OIL
DU-7606	42165007320000	ACTIVE	PROD_OIL
DU-7607	42165008470000	ACTIVE	PROD_OIL
DU-7608	42165008520000	ACTIVE	PROD_OIL
DU-7609	42165007300000	ACTIVE	INJ_WAG
DU-7610	42165007380000	ACTIVE	INJ_WAG
DU-7611	42165008490000	P & A	INJ_GAS
DU-7612	42165008480000	ACTIVE	INJ_WAG
DU-7613	42165008450000	ACTIVE	PROD_OIL
DU-7614	42165008440000	P & A	INJ_WAG
DU-7615	42165007400000	ACTIVE	PROD_OIL
DU-7616	42165008500000	TA	PROD_OIL
DU-7617	42165301770000	ACTIVE	PROD_OIL

DU-7618	42165301810000	P & A	PROD_OIL
DU-7619	42165301820000	ACTIVE	INJ_WAG
DU-7620	42165301750000	ACTIVE	INJ_WAG
DU-7621	42165301730000	ACTIVE	INJ_WAG
DU-7622	42165301780000	ACTIVE	INJ_WAG
DU-7623	42165302010000	ACTIVE	INJ_WAG
DU-7624	42165302020000	ACTIVE	PROD_OIL
DU-7625	42165301970000	ACTIVE	INJ_WAG
DU-7626	42165302270000	ACTIVE	PROD_OIL
DU-7627	42165303550000	ACTIVE	INJ_WAG
DU-7628	42165303560000	ACTIVE	PROD_OIL
DU-7629	42165303540000	ACTIVE	INJ_WAG
DU-7630	42165303740000	ACTIVE	PROD_OIL
DU-7631	42165303720000	ACTIVE	PROD_OIL
DU-7632	42165303730000	ACTIVE	PROD_OIL
DU-7633	42165303520000	ACTIVE	INJ_WAG
DU-7634	42165316140000	ACTIVE	PROD_OIL
DU-7635	42165315470000	TA	PROD_OIL
DU-7636	42165007280000	P & A	PROD_OIL
DU-7637	42165353490000	ACTIVE	PROD_OIL
DU-7638	42165353500000	ACTIVE	PROD_OIL
DU-7639	42165353510000	ACTIVE	PROD_OIL
DU-7640	42165354000000	ACTIVE	PROD_OIL
DU-7641	42165357030000	ACTIVE	PROD_OIL
DU-7642	42165357020000	ACTIVE	PROD_OIL
DU-7643	42165357010000	ACTIVE	PROD_OIL
DU-7644	42165357130000	ACTIVE	PROD_OIL
DU-7645	42165357120000	ACTIVE	PROD_OIL
DU-7646	42165357110000	ACTIVE	PROD_OIL
DU-7647	42165357100000	ACTIVE	PROD_OIL
DU-7648	42165356840000	ACTIVE	PROD_GAS
DU-7649	42165358810000	ACTIVE	PROD_OIL
DU-7650	42165358800000	ACTIVE	PROD_OIL
DU-7651	42165358790000	ACTIVE	INJ_WAG
DU-7652	42165364710000	ACTIVE	PROD_OIL
DU-7653	42165367600000	ACTIVE	INJ_WAG
DU-7701	42165008620000	TA	PROD_OIL
DU-7702	42165006920000	ACTIVE	PROD_OIL
DU-7703	42165008640000	ACTIVE	PROD_OIL
DU-7704	42165008650000	ACTIVE	PROD_OIL
DU-7705	42165006960000	ACTIVE	PROD_OIL
DU-7706	42165006980000	TA	INJ_H2O
DU-7707	42165008660000	TA	INJ_H2O
DU-7708	42165008670000	TA	INJ_H2O
DU-7709	42165008630000	P & A	INJ_H2O
DU-7710	42165006970000	P & A	INJ_H2O
DU-7711	42165006990000	TA	INJ_H2O
DU-7712	42165008680000	P & A	INJ_H2O
DU-7713	42165007000000	P & A	INJ_H2O
DU-7714	42165304260000	ACTIVE	PROD_OIL
DU-7715	42165315630000	ACTIVE	INJ_H2O
DU-7716	42165318800000	ACTIVE	PROD_OIL
DU-7717	42165318760000	TA	PROD_OIL
DU-7718	42165320800000	ACTIVE	INJ_WAG
DU-7719	42165332380000	ACTIVE	PROD_OIL

DU-7720	42165346730000	TA	PROD_OIL
DU-7721	42165357070000	ACTIVE	PROD_OIL
DU-7801	42165018940000	ACTIVE	INJ_H2O
DU-7802	42165018950000	P & A	INJ_H2O
DU-7803	42165018960000	ACTIVE	INJ_H2O
DU-7804	42165333490000	ACTIVE	PROD_OIL
DU-7805	42165333480000	ACTIVE	PROD_OIL
DU-8301	42501005800000	P & A	INJ_H2O
DU-8302	42165001870000	P & A	INJ_H2O
DU-8303	42165014120000	P & A	INJ_H2O
DU-8401	42165004330000	TA	INJ_H2O
DU-8402	42165004340000	P & A	PROD_OIL
DU-8403	42165005220000	P & A	INJ_H2O
DU-8404	42165005210000	P & A	PROD_OIL
DU-8405	42165004320000	TA	INJ_H2O
DU-8406	42165004270000	P & A	PROD_OIL
DU-8407	42165005230000	ACTIVE	PROD_OIL
DU-8408	42165021500000	P & A	PROD_OIL
DU-8409	42165005120000	P & A	INJ_H2O
DU-8410	42165005100000	INACTIVE	INJ_WAG
DU-8411	42165005190000	TA	INJ_GAS
DU-8412	42165005160000	TA	INJ_H2O
DU-8413	42165005140000	P & A	PROD_OIL
DU-8414	42165005200000	TA	PROD_OIL
DU-8415	42165303480000	P & A	INJ_GAS
DU-8416	42165304350000	P & A	PROD_OIL
DU-8417	42165304360000	TA	INJ_GAS
DU-8418	42165304330000	P & A	PROD_OIL
DU-8419	42165304340000	P & A	INJ_GAS
DU-8420	42165304370000	ACTIVE	INJ_H2O
DU-8421	42165305420000	ACTIVE	PROD_OIL
DU-8422	42165311970000	ACTIVE	PROD_OIL
DU-8423	42165315650000	ACTIVE	PROD_OIL
DU-8424	42165316070000	TA	PROD_OIL
DU-8425	42165320650000	ACTIVE	PROD_OIL
DU-8426	42165320640000	ACTIVE	INJ_WAG
DU-8427	42165331340000	ACTIVE	PROD_OIL
DU-8428	42165331300000	TA	PROD_OIL
DU-8429	42165332900000	TA	PROD_OIL
DU-8431	42165333520000	TA	PROD_OIL
DU-8432	42165333460000	ACTIVE	PROD_OIL
DU-8433	42165357090000	TA	PROD_GAS
DU-8434	42165380560000	ACTIVE	PROD_OIL
DU-8435	42165380570000	DRILL	PROD_OIL
DU-8436	42165380620000	DRILL	PROD_OIL
DU-8439	42165380650000	ACTIVE	PROD_OIL
DU-8440	42165380630000	ACTIVE	PROD_OIL
DU-8441	42165380640000	DRILL	PROD_OIL
DU-8501	42165008180000	P & A	PROD_OIL
DU-8502	42165008240000	ACTIVE	PROD_OIL
DU-8503	42165008170000	ACTIVE	PROD_OIL
DU-8504	42165008200000	ACTIVE	PROD_OIL
DU-8505	42165008230000	TA	PROD_OIL
DU-8506	42165008050000	TA	INJ_H2O
DU-8507	42165008060000	ACTIVE	PROD_OIL

DU-8508	42165008080000	ACTIVE	PROD_OIL
DU-8509	42165033040000	P & A	PROD_OIL
DU-8510	42165008070000	ACTIVE	INJ_WAG
DU-8511	42165008100000	ACTIVE	INJ_WAG
DU-8512	42165008090000	TA	INJ_H2O
DU-8513	42165008210000	ACTIVE	PROD_OIL
DU-8514	42165008120000	P & A	PROD_OIL
DU-8515	42165008150000	ACTIVE	INJ_H2O
DU-8516	42165008190000	P & A	PROD_OIL
DU-8517	42165303650000	ACTIVE	PROD_OIL
DU-8518	42165303310000	ACTIVE	PROD_OIL
DU-8519	42165303010000	TA	INJ_GAS
DU-8520	42165303610000	ACTIVE	INJ_WAG
DU-8521	42165303620000	INACTIVE	INJ_WAG
DU-8522	42165303020000	ACTIVE	INJ_WAG
DU-8523	42165303110000	ACTIVE	INJ_WAG
DU-8524	42165303130000	ACTIVE	INJ_WAG
DU-8525	42165303080000	ACTIVE	PROD_OIL
DU-8526	42165303120000	TA	PROD_OIL
DU-8527	42165303630000	INACTIVE	INJ_WAG
DU-8528	42165303100000	ACTIVE	PROD_OIL
DU-8529	42165303090000	ACTIVE	PROD_OIL
DU-8530	42165304220000	ACTIVE	PROD_OIL
DU-8531	42165304310000	TA	PROD_OIL
DU-8532	42165304490000	ACTIVE	PROD_OIL
DU-8533	42165304300000	TA	INJ_H2O
DU-8534	42165305410000	ACTIVE	INJ_WAG
DU-8535	42165315640000	TA	PROD_OIL
DU-8536	42165315680000	ACTIVE	PROD_OIL
DU-8537	42165315670000	ACTIVE	PROD_OIL
DU-8538	42165353700000	TA	PROD_GAS
DU-8539	42165353770000	ACTIVE	PROD_GAS
DU-8540	42165353990000	ACTIVE	PROD_OIL
DU-8541	42165353980000	ACTIVE	PROD_OIL
DU-8542	42165360100000	ACTIVE	PROD_OIL
DU-8543	42165360110000	ACTIVE	PROD_OIL
DU-8544	42165360120000	ACTIVE	PROD_OIL
DU-8545	42165360130000	ACTIVE	PROD_OIL
DU-8546	42165368340000	ACTIVE	PROD_GAS
DU-8547	42165368330000	TA	PROD_GAS
DU-8548	42165380660000	DRILL	PROD_OIL
DU-8601	42165005590000	ACTIVE	PROD_OIL
DU-8602	42165005630000	P & A	PROD_OIL
DU-8603	42165007410000	P & A	INJ_H2O
DU-8604	42165005640000	ACTIVE	PROD_OIL
DU-8605	42165005610000	ACTIVE	PROD_OIL
DU-8606	42165007420000	P & A	PROD_OIL
DU-8607	42165005620000	P & A	PROD_OIL
DU-8608	42165005650000	ACTIVE	INJ_H2O
DU-8609	42165005660000	P & A	INJ_H2O
DU-8610	42165005600000	TA	INJ_H2O
DU-8611	42165104260000	TA	INJ_H2O
DU-8612	42165318750000	ACTIVE	PROD_OIL
DU-8613	42165304210000	ACTIVE	PROD_OIL
DU-8614	42165333510000	ACTIVE	PROD_OIL

DU-8615	42165367580000	ACTIVE	PROD_OIL
DU-8616	42165367590000	ACTIVE	PROD_OIL
DU-9201	42165009540000	TA	INJ_H2O
DU-9202	42165009560000	P & A	INJ_H2O
DU-9203	42165009620000	TA	INJ_H2O
DU-9204	42165352130000	TA	PROD_OIL
DU-9301	42165009630000	P & A	INJ_H2O
DU-9302	42165032270000	P & A	PROD_OIL
DU-9303	42165002110000	P & A	PROD_OIL
DU-9304	42165002560000	TA	INJ_H2O
DU-9305	42165002150000	P & A	PROD_OIL
DU-9306	42165002100000	TA	PROD_OIL
DU-9307	42165316060000	ACTIVE	PROD_OIL
DU-9308	42165002120000	P & A	INJ_H2O
DU-9401	42165012200000	P & A	INJ_H2O
DU-9402	42165012210000	P & A	INJ_H2O
DU-9403	42165012180000	P & A	INJ_H2O
DU-9501	42165002750000	P & A	INJ_H2O
DU-9502	42165002760000	TA	INJ_H2O
DU-9503	42165023240000	TA	INJ_H2O
DU-9504	42165023300000	P & A	PROD_OIL
DU-9505	42165104270000	P & A	INJ_H2O

Appendix 7. Summary of Key Regulations Referenced in MRV Plan

There are two primary regulations cited in this plan:

1. Texas Administrative Code Title 16 Part 1 Chapter 3 Oil & Gas Division
2. 40 CFR Parts 144, 145, 146, 147

For reference, TAC 16, Part 1 (3) was accessed September 1, 2014 at: http://info.sos.state.tx.us/pls/pub/readtac$ext.ViewTAC?tac_view=4&ti=16&pt=1&ch=3&rl=Y and the table of contents is included below.

Texas Administrative Code

TITLE 16 ECONOMIC REGULATION
PART 1 RAILROAD COMMISSION OF TEXAS
CHAPTER 3 OIL AND GAS DIVISION

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