Appendix 3D

Description of Pump Stations, Capacity Expansion, and the El Paso Terminal

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PART 1 – DESCRIPTION OF PUMP STATIONS AND CAPACITY EXPANSIONS

Pump Stations for Initial Operations

Five pump stations were constructed in order to provide initial delivery of 72,000 barrels per day (bpd) of products to Crane Station and El Paso Terminal.

Galena Park Station

This newly constructed station is situated inside of the fenced GATX Terminal, in Galena Park, Harris County, Texas. It consists of two electrically-powered mainline pumps, two meters, and an electrical substation. Access to the facility is gained through the GATX Terminal security gate. The station is located at MP 0. The 0.86 acre site is fenced and covered with crushed rock.

The GATX Terminal is comprised of two 1,000 HP electric motors and pumps. A single unit would provide sufficient flow and pressure to enable product to reach the next pumping station, Satsuma, with the second unit as a backup. There are two turbine meters at this location; only one would be utilized during normal operations, and the second would act as a backup, if needed. These meters would measure the product taken into Longhorn Pipeline's custody. There is also an 18-inch bi-directional meter prover to verify the accuracy of the meters. Corrosion inhibitor would be injected into the product stream at this location to protect the pipeline against internal corrosion.

Satsuma Station

This refurbished station is situated in Harris County and consists of one electrically powered mainline pump and a scraper launcher and receiver. The station is located at MP 34.09. The 3.42 acre site is fenced, and approximately 2.5 acres are covered in crushed rock.

Satsuma consists of a single 3000 HP electric motor and pump. The station was built at the point where the line transitions from 20-inch diameter pipe to 18-inch diameter pipe. In addition, a pressure relief/control system was installed at Satsuma Station to protect the 20-inch diameter pipeline from a back pressure from the higher pressure 18-inch diameter pipeline west

of Satsuma. Back pressure could occur if a pump station on the 18-inch diameter pipeline were to shut down inadvertently, possibly due to a local electric power disruption, or if a valve closed quickly. Each pump station has block valves and each pump has unit valves. Bypass loops equipped with check values are installed around each pump.

Cedar Valley Station

This newly constructed station is situated on a 4.5-acre parcel in Hays County and consists of two 1000 HP electrically-powered mainline pumps, an electrical substation and a 30-foot wide graveled road from Fitzhugh Road to the facility. The station is located at MP 181.60. The fenced area of the facility encloses 0.82 acres and is covered in crushed rock.

Kimble County Station

This newly constructed station is situated on a 3.8-acre parcel in Kimble County and consists of two 1000 HP electrically-powered mainline pumps and an electrical substation. Access is along an existing road. The station is located at MP 295.12. The fenced area of the facility encloses 0.9 acres and is covered in crushed rock.

Crane Station

This station was constructed in Crane County at MP 457.55. Approximately 21.5 acres of the 40-acre parcel are graded, fenced, and covered with crushed rock. The facility consists of two electrically-powered mainline pumps, meter prover, meter run equipment, scraper receivers and launchers, and a 24-foot by 28-foot control building with transformer pad and satellite dish (for communication of information to a central controller in Williams Energy System's (WES) Tulsa Control Center). The station is comprised of two separate pumps and motors. One unit, a 4,500 HP electric motor and pump, is dedicated to the 18-inch diameter pipeline pumping to El Paso, Texas. The second unit, a 1,000 HP electric motor and pump, is dedicated to the 8-inch diameter Odessa lateral.

The facility also contains one pressure relief tank to relive the higher pressures on the main line. There are three product tanks and one pressure relief tank at this location. The tankage receives product from the 18-inch diameter pipeline for redelivery into the Odessa lateral. To provide protection from an abnormal overpressure condition, a pressure relief valve in the station would automatically open and divert product flow into the pressure relief tank, protecting the equipment from excess pressure. Two of the product tanks are 48-foot high by 96-

foot diameter tanks with an internal floating roof, mechanical shoe and rim-mounted seals with a capacity of 58,000 barrels each. The other is a 48-foot high by 91-foot diameter tank with an internal floating roof, mechanical shoe and rim-mounted seals, and a capacity of 55,000 barrels. These tanks are located within a diked containment area sized to contain a volume of 110 percent of the largest single tank within the dike.

There are two meters at this location. One is dedicated to the Odessa lateral and would measure all products being pumped out of tankage to Odessa. A bi-directional loop prover is installed to ensure accurate measurement through this meter. The other meter is dedicated to the receipts into tankage from the 18-inch diameter pipeline. All receipts into Crane tankage would be metered through this turbine meter. An additional bi-directional loop prover is dedicated to this meter to ensure accuracy.

First Capacity Expansion (125,000 bpd)

No changes would be made to expand the system capacity from 72,000 bpd to 125,000 bpd at the following stations: Galena Park, Satsuma, Cedar Valley, Kimble County, and Crane. The following paragraphs describe the changes to be made to existing stations and the new stations to be constructed.

Warda Station

This is a previously existing pump station, which is presently bypassed, located at MP 112.9 in Fayette County. A new pump and motor would be installed to enable the increased flow rate in this case. The approximate size of the motor would be 3,000 to 4,000 HP, which would be coupled to a pump sized for this operation. The station would be similar to the Cedar Valley and Kimble County stations. The fenced station area would be covered in crushed rock with the remaining disturbance area returned to the site's original condition.

Eckert Station

This is a previously existing pump station, which is presently bypassed, located at MP 227.8 in Gillespie County. A new pump and motor would be installed to enable the increased flow rate in this case. The approximate size of the motor would be 3,000 to 4,000 HP, which would be coupled to a pump sized for this operation. The station would be similar to the Cedar Valley and Kimble County stations. The fenced station area would be covered in crushed rock with the remaining disturbance area returned to the site's original condition.

Big Lake Station

This station would be a new pumping facility located at MP 373.5 in Crockett County. A new pump and motor would be installed to enable the increased flow rate in this case. The approximate size of the motor would be 3,000 to 4,000 HP, which would be coupled to a pump sized for this operation. The station would be similar to the Cedar Valley and Kimble County Stations. The fenced station area would be approximately 260 feet by 150 feet. This area would be covered in crushed rock with the remaining disturbance area returned to the site's original condition. At this station site, the 18-inch diameter Crane to El Paso pipeline was constructed with two aboveground gate valves to facilitate future construction.

Cottonwood Station

This station would be a new pumping facility located at MP 576.3 in Culberson County. A new pump and motor would be installed to enable the increased flow rate in this case. The approximate size of the motor would be 4,000 to 5,000 HP, which would be coupled to a pump sized for this operation. The station would be similar to the Cedar Valley and Kimble County stations. The fenced station area would be approximately 260 feet by 150 feet. This area would be covered in crushed rock with the remaining disturbance area returned to the site's original condition. The 18-inch diameter Crane to El Paso pipeline was constructed with two above-ground gate valves in the pipeline at this site to facilitate future construction.

Second Capacity Expansion (206,000 bpd)

All existing stations listed in the 125,000 bpd case above would be upgraded with new motors and pumps. In addition to these changes, eight new stations would be built. Table 3-3 describes these changes.

Additional storage tanks would be required to achieve this capacity scenario. Storage capacity at Crane Station would be approximately double the existing storage capacity. Additional storage capacity at El Paso Terminal would be in the range of 1.5 to 2.0 million barrels.

Ultimate Capacity Expansion (225,000 bpd)

The introduction of a drag reducing agent increases the capacity of the system from 206,000 bpd to an expected 225,000 bpd. Drag reducing agents are commonly used in petroleum

product pipelines to reduce turbulence, and thereby friction, in the pipeline, allowing for greater flow rates without the need to increase pumping pressure. The drag reducer is a poly alphaolefin, carbon chain polymer. Injection rates vary from 5 to 40 parts per million (ppm) of solution. The drag reducing agent is not recovered from the product stream; therefore, no disposal is required.

Lightning Protection for Pump Stations and Tanks

In an effort to reduce the risk of damage to electrical equipment in the facilities, which in turn, reduces system outages and improves safety, a lightning protection system would be installed at every facility, at every pump station, and the El Paso Terminal on the System. Longhorn also believes lightning protection reduces the risk of a fire caused by a lightning strike to storage tanks.

The lightning protection system would consist of locating streamer retarders at high points within each facility. These have been installed on top of every tank and every building to dissipate electrical charges, which build up in the atmosphere prior to a lightning strike. The streamer retarders, which are attached to a grounding system, distribute these charges evenly in the atmosphere around the station or terminal to prevent the lightning strike.

Part 2 – Description of the El Paso Terminal and Tankage

As part of the System, a products terminal and tank facility has been constructed near El Paso, providing 900,000 barrels of refined products storage, a three-bay, 20,000 bpd truck loading rack, and a 50,000 bpd pipeline pump station. The Terminal is designed to initially handle 50,000 bpd, but is expandable up to 225,000 bpd. The initial product slate for the loading rack includes gasolines and distillates. The El Paso Terminal is located on a 418-acre site approximately three miles east of the El Paso city limits, on Montana Avenue (Highway 62/180). The location is at the termination point of the new 18-inch diameter pipeline from Crane Station to the El Paso Terminal. The location would also be the origination point for three lateral pipelines. Product is delivered to the El Paso Terminal through the new 18-inch diameter pipeline from Crane Station to the El Paso Terminal. Measurement of incoming product is achieved with one turbine meter that is equipped with a loop style prover.

Truck Loading Rack

The truck loading rack is a standard designed bottom-loading rack with loading vapor control by combustion, sequential blending capabilities, and double-spouting capability for

regular unleaded gasoline and ethanol. The rack was constructed with three bays but can be expanded in the future. All rack piping except the drain lines are above ground to provide ready inspection and maintenance and to allow any leaks to be quickly detected. Each bay contains four sets of load arm/meter equipment, offering the same arrangement of products on each bay. The loading rack offers automatic bulk additive injection as required by law and required by customers. The 20,000 bpd capacity of the rack could accommodate approximately 100 tanker trucks.

Pipeline Pump Station

The pump station receives product from tankage and would deliver product to the proposed lateral pipelines going to the Chevron and Kinder Morgan pipeline connections. The station includes measurement equipment, low pressure manifold relief protection, and three mainline pump units. Each pump is sized and dedicated to one of the three outgoing lateral pipelines. The pump station would also receive product from the nearby Kinder Morgan and Ultramar Diamond Shamrock facilities for transportation to Tucson and Phoenix on the Kinder Morgan pipeline. (The loop configuration would reduce the demand for electric power for both Kinder Morgan and Diamond Shamrock by using only the Longhorn pump station.) Each lateral line has a dedicated meter and meter prover.

Oil/Water Separator

All location drains that have the potential for receiving product or storm water runoff that may be contaminated by product are routed to an oil/water separator. Oily material is sent to a product tank. The water portion is sent to a water storage tank for testing and proper disposal at an authorized reclamation facility.

Fire Protection and Suppression

According to the National Fire Protection Act (NFPA) recommendations, fire protection and suppression are not required for the El Paso Terminal. Longhorn is installing fire detection, protection and suppression systems for the unlikely event of a fire. These would comply with Sections 2-9, Fire Protection and Identification of NFPA. Longhorn has drilled a 620-foot deep water well to provide firewater, which would be stored in an aboveground tank. The firewater would be distributed throughout the terminal to provide fire suppression to each product storage tank and to the truck loading rack. It would also provide cooling water to any adjacent tanks in the unlikely event that a tank fire should occur. Fire detection would be accomplished inside each product storage tank using a heat sensing wire, and heat sensing detectors would be used in

the truck rack. Fire detection in the pump station area would be provided by the use of ultraviolet/infrared (UV/IR) detectors.

The fire suppression agent for the truck rack and each tank would be 3 percent chemical foam. A 10-minute supply of foam can be applied to the truck rack and a 55-minute supply of foam to a tank. Hand-held and wheel mounted fire extinguishers with dry chemical powder would also be placed at strategic locations throughout the terminal.

Product Storage Tanks

The terminal product storage consists of 19 tanks. Nine of these storage tanks are for gasoline storage; six are distillates tanks. The other tanks include an ethyl alcohol storage tank, two gasoline/distillate mix tanks, and a 1500 barrel mainline relief. All tanks except the relief tank are constructed with internal floating roofs to allow maximum products storage flexibility and to reduce air emissions. All tanks, except the ethanol tank, are connected to the mainline receipt manifold and are breakout tanks. Breakout tanks are used to store liquids on a temporary basis as they are transferred from one pipeline to another. The ethyl alcohol, which would be blended with gasoline to produce clean burning fuels, would be supplied to the terminal by trucks. All storage tanks are equipped with tank pumps to feed the loading rack. All tanks except the ethanol tank are connected to a common mainline booster manifold to feed the pipeline pump station.

All tanks are constructed of welded steel and are painted white. All tanks have cone or geodesic-dome roofs covering welded deck internal floating roofs fitted with both primary mechanical-shoe seals and secondary rim-mounted seals. All aspects of tank and roof design are intended to minimize volatile organic compound (VOC) emissions to the air.

All products entering the El Paso Terminal would be distributed through the truck loading rack or through the two 8-inch and one 12-inch diameter outgoing laterals. Typically, product would be loaded into 8,500-gallon tank trucks for further transport. A vapor combustion unit (VCU) would control VOC emissions from the truck loading rack.