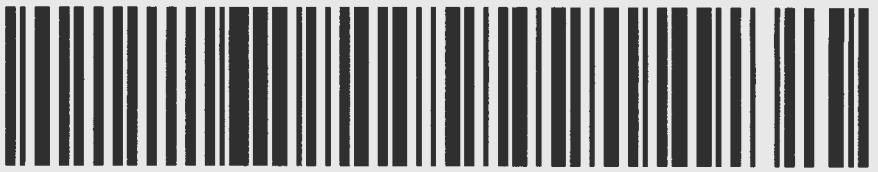


0000029-50-01-8

Title: PAS2R924BMCK Curtis Oil, Inc. Permit Processing

PERMIT APPLICATION INCLUDING
ALL ADDENDUMS

July 30, 2013

United States
Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029
Attention: Steve Platt
Permit Identification: PAS2R902BMCK

Dear Steve;

The purpose of this letter is to inform whom it may concern that W-19 and W-18 which are both on the Bryner Injection Permit are now plugged. The plugging certificates are enclosed. Curtis Oil, Inc. now is operating only 3 (three) wells under the Bryner permit and none under the Bullymore permit. Curtis Oil, Inc. currently has $42,500 in place for the financial liabilities. The plugging estimates are $5,039 per well, therefore, there is sufficient finances to cover another 5 more wells.

If there is anything further that is necessary, please, don't hesitate to call me. Thank you for your assistance throughout this process.

Sincerely;

Randy W. Curtis

8000-FM-OOGM0006 9/2012

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS MANAGEMENT

CERTIFICATE OF WELL PLUGGING

DEP USE ONLY	
Site ID #	Primary Facility ID #
eFACTS Client #	Sub-facility ID #
Bonded Well? ☐ Yes ☐ No	Bond Agreement #

WELL INFORMATION

Well Operator: Curtis Oil Inc	DEP ID#	Well API #: 37-083-51282		Well Farm Name: Bryner	Well #: W-18
Address: P.O. Box 287		LAT: 41°49 58.80	NAD 83	Project Number: MEOC-1	Serial #
		LONG: -78°42 47.80			
City: Duke Center	State: PA	Zip: 16729	Municipality: Lafayette	County: McKean	
Phone: (814) 966-3452	Fax: (814) 966-3852		Email	USGS 7.5 min. quadrangle map: Lewis Run	

Complete the next section (coal) if applicable.

Coal ☐ Operator ☐ Owner ☐ Lessee	Coal ☐ Operator ☐ Owner ☐ Lessee	Coal ☐ Operator ☐ Owner ☐ Lessee
Address	Address	Address
City, State, Zip	City, State, Zip	City, State, Zip

The undersigned representatives of the Well Operator certify that we participated in plugging this well, and that the work was started on *(date)* 6-10-13 and that the well was plugged as follows:

Filling Material and Plugs	Depth From	Depth To	Casing and Tubing Size	Pulled	Left
BRADFORD 3RD 22 SACKS OF CEMENT	2050	1860	4 5/8	0	21'
2" PIPE CEMENTED IN ON PACKER	1940	1720	700	0	497'
BRADFORD 2ND 10 SACKS OF CEMENT	1720	1660	2"	1650'	490'
BRADFORD 1ST 26 SACKS OF CEMENT	1530	1390			
CASING SEAT 20 SACKS OF CEMENT	550	440			
6 SACKS OF GEL USED IN-			Depth to coal seams, if any		
BETWEEN CEMENT PLUGS					
			Describe Monument		
Dept. approved Attainable Bottom			2" Pipe		
		TD 2050			

Signature of Participants

Signature – Well Operator	Signature – Qualified Participant	Signature – Qualified Participant
Randy W. Curtis	Matthew Curtis	
Print or Type Signer's Name and Title: RANDY W. CURTIS PRESIDENT	Print or Type Signer's Name, Title, & Co.: Matthew Curtis Tool Pusher - Curtis O.I	Print or Type Signer's Name, Title, & Co.

Signers certify that the work of plugging this well was completed on *(date)* 6-26-13, and that the information above is true and accurate.

DEP USE ONLY

☐ Approved ☐ Denied

DEP Rep: Date:

Upon completion of plugging, mail one copy of this certificate to each coal operator, owner, or lessee, if any, and one copy to the appropriate DEP Regional Oil and Gas Management Program office.

Dept. of Environmental Protection
NW District Oil & Gas Operations
230 Chestnut Street
Meadville, PA 16335-3481

Dept. of Environmental Protection
SW District Oil & Gas Operations
400 Waterfront Drive
Pittsburgh, PA 15222-4745

8000-FM-OOGM0006 9/2012

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS MANAGEMENT

CERTIFICATE OF WELL PLUGGING

DEP USE ONLY	
Site ID #	Primary Facility ID #
eFACTS Client #	Sub-facility ID #
Bonded Well? ☐ Yes ☐ No	Bond Agreement #

WELL INFORMATION

Well Operator	DEP ID#	Well API #		Well Farm Name	Well #
Curtis Oil, Inc.		37-083-46519- -		Bryner	W19
Address		LAT 41°49' 33.34"	NAD 83	Project Number	Serial #
P.O. Box 287 694 Main Street		LONG - 78°42' 30"			
City	State / Zip	Municipality		County	
Duke Center	PA 16729	Lafayette		McKean	
Phone	Fax	Email		USGS 7.5 min. quadrangle map	
814-966-3452					

Complete the next section (coal) if applicable.

Coal ☐ Operator ☐ Owner ☐ Lessee	Coal ☐ Operator ☐ Owner ☐ Lessee	Coal ☐ Operator ☐ Owner ☐ Lessee
Address	Address	Address
City, State, Zip	City, State, Zip	City, State, Zip

The undersigned representatives of the Well Operator certify that we participated in plugging this well, and that the work was started on *(date)* , and that the well was plugged as follows:

Filling Material and Plugs	Depth From	Depth To	Casing and Tubing Size	Casing and Tubing Pulled	Casing and Tubing Left
Bradford Third 20 sacks of cement	2070'	1620'	8"	0	21'
2" pipe cemented in on packer	1992'	1450'	6 5/8"	0	450'
Bradford Firdt 10 sacks of cement	1450'	1400'	2"	1350'	642'
casing seat 20 sacks of cement	500'	400'	1"	1990'	0
6 sacks of gel used inbetween cement plugs					
			Depth to coal seams, if any		
			Describe Monument		
Dept. approved Attainable Bottom			2" pipe		
		TD ___'			

Signature of Participants

Signature – Well Operator	Signature – Qualified Participant	Signature – Qualified Participant
Randy W. Curtis		
Print or Type Signer's Name and Title	Print or Type Signer's Name, Title, & Co.	Print or Type Signer's Name, Title, & Co.
Randy W. Curtis President	MATTHEW W Curtis Head Driller Curtis Oil Inc.	

Signers certify that the work of plugging this well was completed on *(date)* 6/19/2013, and that the information above is true and accurate.

DEP USE ONLY

☐ Approved ☐ Denied

DEP Rep: Date:

Upon completion of plugging, mail one copy of this certificate to each coal operator, owner, or lessee, if any, and one copy to the appropriate DEP Regional Oil and Gas Management Program office.

Dept. of Environmental Protection
NW District Oil & Gas Operations
230 Chestnut Street
Meadville, PA 16335-3481

Dept. of Environmental Protection
SW District Oil & Gas Operations
400 Waterfront Drive
Pittsburgh, PA 15222-4745

Curtis Oil, Inc.

P.O. Box 287
Duke Center, PA 16729
814-966-3452

May 23, 2013

United States
Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029
3WP22
Attention: Mr. Roger Reinhart

Dear Mr. Reinhart;

Enclosed is the new plugging estimate that was requested. There are currently 5 injection wells which would still be covered by financial responsibility on the part of Curtis Oil, Inc. as there is a letter of Credit with First National Bank of Port Allegany Bank for $12,500 and a Certificate of Deposit at Hamlin Bank for $15,000. This is sufficient to cover all existing injection wells at the new plugging costs. Curtis Oil, Inc. will be depositing more monies into the Certificate of Deposit to cover the plugging costs of any new injection wells.

Dave Rectenwald, the field inspector, is working with me to have the wells tested for integrity.

If you have any further questions please contact me.

Sincerely;

Randy W. Curtis
PAS2R924BMCK

CURTIS OIL, INC.
P.O. Box 287 694 Main St.
Duke Center, PA 16729

ERIE PA 165
31 JUL 2013 PM 1 L

WP22

United States
Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

ATTN: Steve Platt

19103+2087

PA S2R924BMCK
PA S2R902BMCK

Plants & Goodwin INC. OIL & GAS FIELD SERVICES

PAUL R. PLANTS
STEPHEN D. PLANTS

1034 ROUTE 44 • SHINGLEHOUSE, PA 16748 • (814) 697-6330 • (814) 697-7515 FAX

May 23, 2013

Curtis Oil, Inc.
694 Main St.
Duke Center, PA 16729

Re: Estimate to plug injection well

Dear Mr. Curtis:

Please find enclosed our cost estimate for plugging water injection wells. Feel free to call me if you have any questions.

Sincerely,

PLANTS AND GOODWIN, INC.

Stephen D. Plants

Stephen D. Plants, Vice Pres./Treas.

SDP:tlh
Enclosure

PAS2R924BMCK

Plants & Goodwin INC. OIL & GAS FIELD SERVICES

PAUL R. PLANTS
STEPHEN D. PLANTS

1034 ROUTE 44 • SHINGLEHOUSE, PA 16748 • (814) 697-6330 • (814) 697-7515 FAX

ESTIMATE TO PLUG INJECTION WELL

Move equipment to location		$500
Set up rig & pull 1" pipe, remove packer, run 1" back in to 50' below the Bradford 3rd, run 12 sks. Cement		$950
Pull 1" pipe, run blind packer & 2 sks. Cement		$500
Shoot off 2" pipe		$500
Cement well (4 plugs) & pull 2" pipe		$1000
Fill top hole & set marker, let rig down		$500
Materials:	94 sks. Cement @ $11/sk.	$1034
	5 sks. Gel @ $11/sk.	$55
	2" blind packer	$50
	Total	$5039

McCracken Well Plugging and Servicing
R.D. #3 - Box 166
Smethport, PA 16749
Phone: (814) 465-9979

DATE: October 8, 1992

TO: Curtis Oil

Estimate for plugging injection well

1st Method

$ 69.10	-	cement and benenite gel
$ 576.00	-	labor and rig time*
$ 645.10	-	Total

* - Rig time is based on everything going according to plan. This meaning 4½" comes off with first shot, etc.

- Also based on you supplying the water.

McCracken Well Plugging and Servicing
R.D. #3 - Box 166
Smethport, PA 16749
Phone: (814) 465-9979

DATE: October 8, 1992

TO: Curtis Oil

Estimate for plugging injection well

2nd Method

$ 268.25	-	cement and benenite gel
$ 150.00	-	shot
$ 1152.00	-	labor and rig time*
$ 1570.25	-	Total

* - Rig time is based on everything going according to plan. This meaning 4½" comes off with first shot, etc.

- Also based on you supplying the water.

McCracken Well Plugging and Servicing
R.D. #3 - Box 166
Smethport, PA 16749
Phone: (814) 465-9979

DATE: October 8, 1992

TO: Curtis Oil

Estimate for plugging injection well

3rd Method

$ 200.70	-	cement and benenite gel
$ 864.00	-	labor and rig time*
$ 1064.70	-	Total

* - Rig time is based on everything going according to plan. This meaning 4½" comes off with first shot, etc.

- Also based on you supplying the water.

Curtis Drilling Co.
RD#1 - BOX 123
KANSAS BRANCH ROAD
DUKE CENTER, PA 16729
814-966-3452

Date: October 12, 1992

To: Curtis Oil, Inc.

Re: Estimate for plugging injection well.

Completion by 2 3/8 cemented to surface.

$ 70.00	- cement and benenite gel
650.00	- Rig time *
100.00	- furnishing of water
$820.00	- Total

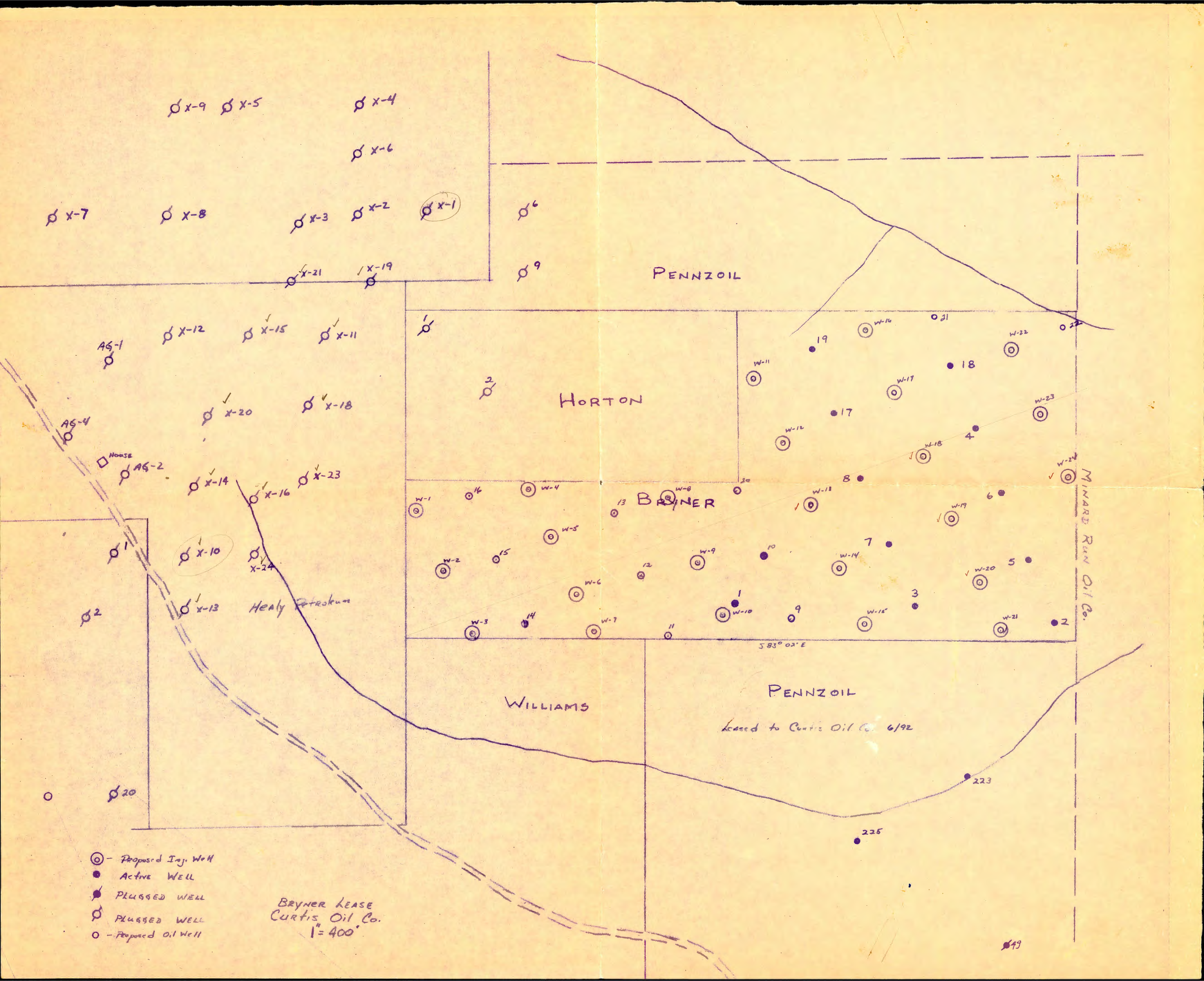
4½ cemented to 100' above packer.

$ 300.00	- cement and benenite gel
150.00	- shot
1200.00	- rig time *
100.00	- water
$1750.00	- total

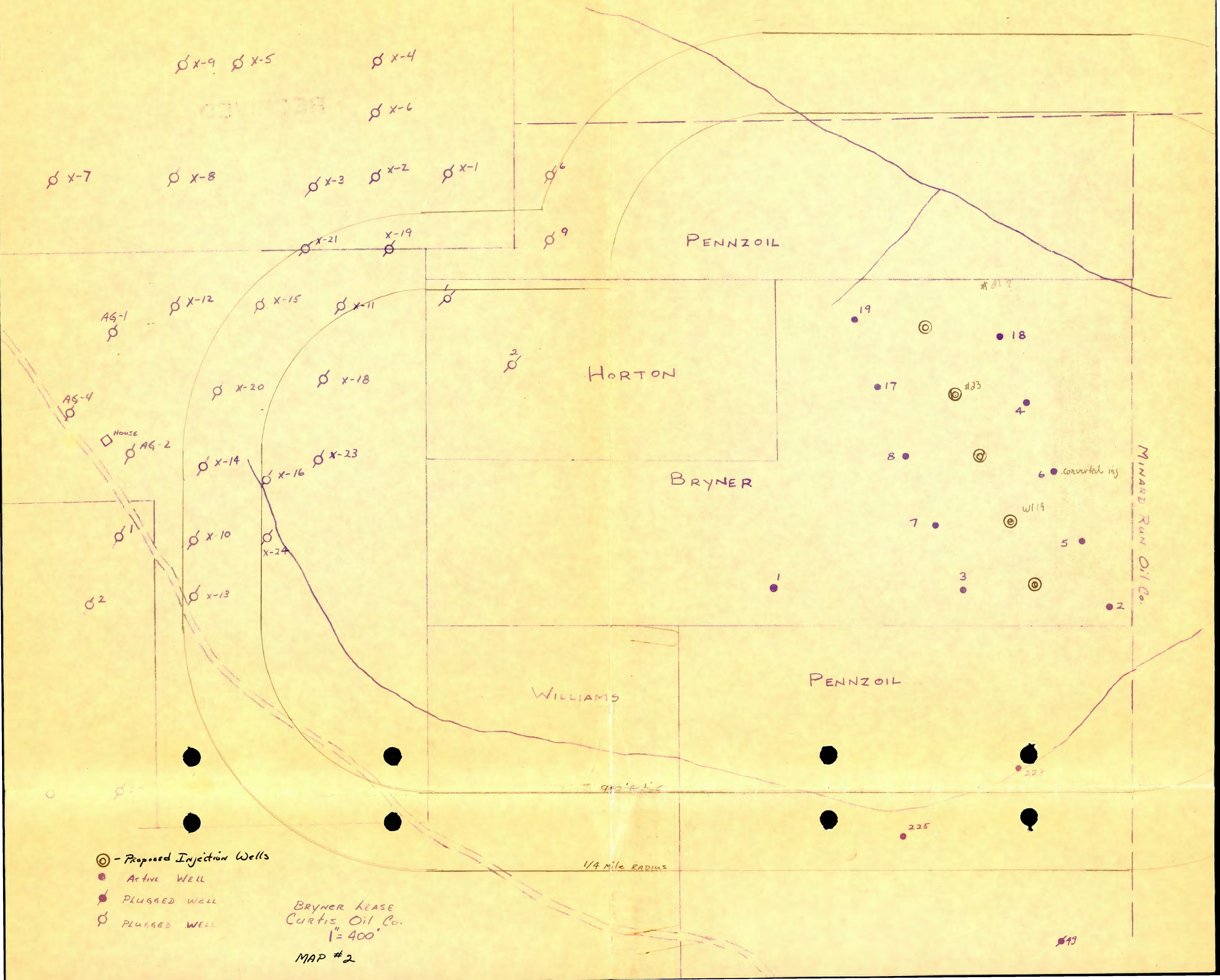
4½ cemented to surface.

$ 200.00	- cement and benenite gel
900.00	- rig time *
100.00	- water
$1200.00	- total

Rig time is based on everything going according to plan.



PENNZOIL
HORTON
BRYNER
WILLIAMS
PENNZOIL
Leased to Curtis Oil Co. 6/92
MINARD RUN OIL CO.
Healy Petroleum
S 83° 02' E
House
X-1
X-2
X-3
X-4
X-5
X-6
X-7
X-8
X-9
X-10
X-11
X-12
X-13
X-14
X-15
X-16
X-18
X-19
X-20
X-21
X-23
X-24
AG-1
AG-2
AG-4
W-1
W-2
W-3
W-4
W-5
W-6
W-7
W-8
W-9
W-10
W-11
W-12
W-13
W-14
W-15
W-16
W-17
W-18
W-19
W-20
W-21
W-22
W-23
W-24
223
225
49
Proposed Inj. Well
Active Well
Plugged Well
Plugged Well
Proposed Oil Well
Bryner Lease
Curtis Oil Co.
1" = 400'


PENNZOIL
HORTON
BRYNER
WILLIAMS
PENNZOIL
MINARD RUN OIL CO.
X-9
X-5
X-4
X-6
X-7
X-8
X-3
X-2
X-1
X-21
X-19
X-12
X-15
X-11
AG-1
AG-4
X-20
X-18
HOUSE
AG-2
X-14
X-16
X-23
X-10
X-24
X-13
converted inj
1/4 Mile RADIUS
Proposed Injection Wells
Active Well
Plugged Well
Plugged Well
Bryner Lease
Curtis Oil Co.
1" = 400'
MAP #2

Area of Review

$$t_D = \frac{6.33 \times 10^{-3} kT}{\phi \mu c r^2}$$

$$t_D = \frac{6.33 \times 10^{-3} (12.7) 3650}{(.146)(1.0)(7.5 \times 10^{-6})(.2604)^2}$$

$$= \frac{293.43}{7.42 \times 10^{-8}}$$

$$\approx 4.2 \times 10^{8} \qquad \frac{1}{t_D} < 0.01$$

$$P_f = P_i + 162.6 \frac{q \mu B}{k h} \log \left(\frac{kt}{70.4 \phi \mu c r^2} \right)$$

$$= P_i + 162.6 \frac{(50)(1.0)(1.0)}{(12.7)(15)} \log \left(\frac{(12.7)(3050)}{70.4(.146)(1.0)(7.5 \times 10^{-6})(900)^2} \right)$$

$$= P_i + 42.68 \log \left(\frac{46355}{62.44} \right)$$

$$= P_i + 42.68 \log 742.39$$

$$= P_i + 42.68 (2.87)$$

$$= P_i + 122.49 \times 2.31 = 282.95 \text{ ft of } H_2O$$

Could allow up to 670 psi

2000
450
1550 ft

* 900 foot A.O.R. OK

814-966-3452

NAME	ADDRESS	CITY/STATE/ZIP

PERMITTEE Curtis Oil, Inc. P.O. Box 287 694 Main St. Duke Center, PA 16729

UIC PERMIT NUMBER _____ DATE RECEIVED 4-23-92

FACILITY NAME Bryner Lease (Bradford Oil Field) DATE APPLICATION _____

LOCATION (Same as Above) IS COMPLETE _____

NO/TYPE WELLS 24 IIR (New)

COVER PAGE: (NOTE PROBLEMS) _____

This project consist of 24 new injection wells or 5 new injectors as map shows

ATTACHMENTS/ISSUES

A. AREA OF REVIEW

- USED FIXED 1/4 MILE RADIUS
- ✓ USED OTHER CALCULATION Radius of Pressure Influence Calc. - Propose 900' Maps show 900' & 1320' radius!
- ✓ USED CALCULATION CORRECTLY } need to check no calculation provided, only parameters!
- EPA CONFIRMATION OF CALCULATION } Calculation OK!
- RADIUS FROM WELL BORE
  - PROJECT BOUNDARY
  - ✓ PROPERTY BOUNDARY

B. MAPS OS WELLS/A OF R see R-12 + R-21

✓ SUBMITTED TOPO MAP Lewis Run Quad

✓ MAP EXTENDS 1 MILE BEYOND PROPERTY

✓ FEATURES DEPICTED

- DISTRIBUTION MANIFOLD N/A

✓ ALL WELLS AND WATER SOURCES SHOWN

✓ ALL IDENTIFIED WITHIN 1/4 MILE A OF R Adjacent Property Owners shown on surface map. Need to have addresses provided.

C. CORRECTIVE ACTION PLAN AND WELL DATA

✓ INDENTIFICATION OF THE NAMES & ADDRESSES OF OWNERS OF RECORD WITHIN A OF R

✓ PUBLIC RECORD INFO ON WELLS IN A OF R WHICH PENETRATE INJECTION ZONE Indications are that some wells drilled on Healey lease may have been drilled to Sliverville Sand 300' above Bradford 3rd. * See if records can be provided! Can records be produced w/ actually confirm plugging?

✓ ADEQUACY OF PUBLIC RECORD INFO (SEARCH OF LOCAL/COUNTY/STATE RECORDS)
Does not address where records came from

✓ WELL DATA (DATE/TYPE CONSTRUCTION/LOCATION/DEPTH/ RECORD OF PLUGGING AND/OR COMPLETION Can you get records from Amzoil? * Provide records for what has been documented
Need to provide all available well records!

✓ CORRECTIVE ACTION PLAN ON UNPLUGGED OR IMPROPERLY ABANDONED WELLS References plugging to DER standards, Needs to reference EPA requirements.

- WELLS IN OTHER FORMATIONS AFFECTED BY PROPOSED PRESSURE ABOVE INJECTION ZONE FRACTURE PRESSURE

D. MAPS/CROSS SECTIONS OF USDW (N.A. TO II's)

E. NAME AND DEPTH OF USDW's (II)

- GEOLOGIC NAME OF USDW's Cattaraugus Formation

- DEPTH TO BOTTOM OF USDW's ~410' below surface according to well records
Only log sections of well #6 received, did not receive well #7.

F. MAPS/CROSS SECTIONS OF GEOLOGIC STRUCTURE (N.A. TO II's)

G. GEOLOGICAL DATA-INJECTION AND CONFINING ZONES	INJECTION	CONFINING
- LITHOLOGIC DESCRIPTION	Sandstone	Shale
- GEOLOGIC NAME	Bradford 3rd	--
- THICKNESS	Gross 92' Net 33'	~238'
- DEPTH (depending upon surface elev.)	~2025'-2117'	~1787'-2025'
- FRACTURE PRESSURE ISIP data well #18 " #6	1500 e- depth of 1992 1550 " " 2076 1600 e " " 2060	1.19 1.18 * 1.21

Any records w/ document ISIP data?

F.G. = ISIP + (.433 × Sg × 2025') ÷ 2025
= 1450 + (.433 × 1.0 × 2025') ÷ 2025
= 1.149

OK Pmax = 1.15 - (.433 × 1.045) × 2025
= 1413

H. OPERATING DATA (II)

	AVERAGE	MAXIMUM
- AVERAGE AND MAXIMUM DAILY RATE	30 BBLS/D	100 BBLS/D (for initial full up - 3 to 6 mths)
- AVERAGE AND MAXIMUM DAILY VOLUME	"	"
- AVERAGE AND MAXIMUM INJECTION PRESSURE	1100 psi	1100 psi (initially 400 psi)
- NATURE OF ANNULUS FLUID	fresh water	- corrosion inhibitor ?
✓ SOURCE AND ANALYSIS (PHYSICAL AND CHEMICAL)	Need Sq	

I. FORMATION TESTING PROGRAM (II) — N/A

- DESCRIPTION OF PROGRAM
- DATA ON FLUID PRESSURE
- DATA ON ESTIMATED FRAC PRESSURE
- PHYSICAL/CHEMICAL CHARACTERISTIC OF INJECTION ZONE

J. STIMULATION PROGRAM

- OUTLINE OF STIMULATION PLAN — Plan to shoot wells w/ nitroglycerine. Explosive will be selectively placed in well bore w/ expected radius of influence of ~20'.

K. INJECTION PROCEDURES

- DESCRIBE PROCEDURES — Scale & corrosion inhibitor to be added to produced fluid & bactericide prior to filtration
- PUMP, SURGE, TANK, ETC. — Schematic of treatment provided

L. CONSTRUCTION PROCEDURES - §147.155(b)

✓ SURFACE CASING FROM SURFACE TO 50' BELOW BASE OF LOWERMOST USDW — Based on USDW, extend to 460'.

✓ CASING CEMENTED BY RECIRCULATION TO SURFACE OR NO LESS THAN 120% OF C.A. VOL. — T.O.C or CBL (if returns not achieved)

✓ FOR IIR - LONG STRING OR TUBING TO INJECTION ZONE — Require 4½" L.S. not 2⅜" — Long string 4½ to be run to T.D or Top of injection zone? * Well should not be drilled 40' below Bradford 3rd due to injection fm requirements.

✓ FOR IID - LONG STRING AND TUBING TO INJECTION ZONE — Require 2⅜" injection string

✓ ISOLATE INJECTION ZONE BY PLACING CEMENT TO FILL CALCULATED VOL - 50' ABOVE INJECTION ZONE — Request 100' — Cement bond log required on L.S.C.

- R. A. SPECIFIED ADDITIONAL CASING AND CEMENTING §146.22 — Cementing of 4½" L.S. not indicated in schematic. Packer would not be required for L.S.

- SITED IN FORMATION SEPARATED BY A FAULT/FRACTURE FREE CONFINING

L. (CONTINUED)

✓ CASING AND CEMENTING DESIGNED FOR LIFE EXPECTANCY OF WELL — Class A

- DESCRIPTIVE REPORT ON LOGS/TEST RELATING USDW/CON ZONES TO INJECTION AND ADJACENT FORMATIONS — Program must I.D. relationship to USDW, injection zones.

- WHERE LITHOLOGY IS UNKNOWN

- FOR SURFACE CASING:

✓ ELECTRIC AND CALIPER LOGS IN OPEN HOLE +

✓ CEMENT BOND, TEMP OR DENSITY LOG

- AFTER CASING IS SET AND CEMENTED

- FOR INTERMED AND LONG STRING CASING

✓ ELECTRIC-POROSITY-GAMMA RAY IN OPEN HOLE

- FRACTURE FINDER LOGS AND

✓ CEMENT BOND, TEMP OR DENSITY LOG AFTER CASING IS SET AND CEMENTED

M. CONSTRUCTION DETAILS

✓ SCHEMATICS/DRAWINGS OF SURFACE AND SUBSURFACE CONSTRUCTION OF WELL

N. CHANGES IN INJECTED FLUID (III) (N.A. TO II)

O. PLANS FOR WELL FAILURES

- CONTINGENCY PLANS FOR SHUT-INS OR WELL FAILIRES TO PREVENT FLUID MIGRATION INTO USDW's — No plans for high/low pressure shut-off. Require

P. MONITORING PROGRAM

- MONITORING WELLS AND DEVICES

- EVALUATION OF MANIFOLD MONITORING IN COMPARISON TO INDIVIDUAL WELL MONITORING

✓ MECHANICAL INTEGRITY TEST PROPOSAL (§146.08) — No mention of MIT! Individual well volumes + pressures recorded monthly

Q. PLUGGING AND ABANDONMENT PLAN

✓ TYPE, NUMBER, PLACEMENT (ELEVATION TOP TO BOTTOM) OF PLUGS TO BE USED — State may require plugging across Bradford 3rd. Schematic provided

✓ TYPE GRADE AND QUANTITY OF CEMENT TO BE USED

4½" L.S. w/l is cemented w/ 2 3/8" tubing + packer would not have cement on packer. If leak is detected from tubing how would it be detected? (should be monitored - annulus pressure) If leak occurs tubing + packer could be pulled and tubing replaced. Any string unacceptable because MIT could not be performed adequately. Indicate 4½" to be cemented to surface. This is not indicated in construction!

Q. (CONTINUED)

- METHOD OF PLUG PLACEMENT (146.10)
- METHOD USED TO ACHIEVE STATIC EQUILIBRIUM
- ✓ ESTIMATE OF WELL CLOSURE COSTS No cost estimate provided. (need $2500./well)
- ✓ FORM 7520-14 SUBMITTED Form not signed

R. NECESSARY RESOURCES

- DEMONSTRATION SUBMITTED
- EQUAL TO P/A COSTS No demonstration supplied
- METHODLOGY CORRECT OF DEMO
- PAYABLE TO STAND-BY TRUST (OTHER THAN FINANCIAL STATEMENTS)

S. AQUIFER EXEMPTION

- IF REQUESTED, DEMONSTRATION DATA

T. EXISTING EPA PERMITS

- PROGRAM AND NUMBER NPDES, RCRA

U. - DESCRIPTION OF BUSINESS

3WM40

Curtis Oil, Inc.

P.O. Box 287
Duke Center, PA 16729
814-966-3452

October 12, 1992

Regional Administrator
Environmental Protection Agency
Region E.P.A. III
841 Chestnut Street
Philadelphia, PA 19107

Dear Sir;

Enclosed please find the necessary documents to correct all the deficiencies of the previous permit application for an area injection permit for the Bryner Lease water flood.

Submitted also is a Letter of Credit for the sum of $12,500. This amount is to cover the firstfive (5) wells to be drilled. The amount of $2,500 per well which is the minimum accepted by the E.P.A. is being submitted. The Standby Trust Agreement is also enclosed.

Plugging estimates have been compiled and are also enclosed. These estimates of plugging the wells are well below the amount of the Letter of Credit.

If and when additional wells are to be drilled, they will be bonded as required.

If any more information is necessary before the areainjection well permit will be issued, please contact me.

Thank you;

Randy W. Curtis

Randy W. Curtis
Curtis Oil, Inc.

74 Bryner
177
254

Addendum

7520-6

Please see new map showing all active and proposed producing well and all proposed injection wells.

The initial phase of construction is to be 5 wells. Nos. w-13, W-18, W-19, W-20 and W-24. Additional future drilling will be highly dependent on the response generated by these wells.

Addendum

Attachment C

Surface owners within ¼ mile of property boundary

U.S.D.A. Forest Service - Bradford Ranger District

Star Route

Bradford, PA 16701

James Bryner

West WArren Rd.

Custer City, PA

Pennzoil Production Co.

Boylston St.

Bradford, PA 16701

Wells in Area of Review

Minard Run

10-24	Active		
10-23	Active		
10-A14	Active		Record enclosed
10-A13	Plugged	6-24-92	Record enclosed
10-15	Active		
10-14	Active		

Pennzoil (Now Curtis Oil)

225 425' - 6 5/8 Csg. T.D. 2023 Active

223 Elev 2033, 365' - 6 5/8 Csg. T.D. 2034' Active

Healy

X-13	Record not available
X-10	Elev 2146 40' 8 5/8" T.D. 1814 drilled 1938 A.D.
X-14	R. NA
X-16	R. NA
X-24	R. NA
X-23	R. NA
X-18	R. NA
X-20	R. NA
X-15	R. NA
X-11	R. NA
X-21	R. NA
X-19	R. NA

Pennzoil

6 wells not drilled by Pennzoil,

9 Pennzoil has no record of these wells.

Horton

1 Elev. 2180 no Csg. record T.D. 1878' date drilled 1938

2 - no record of this well in A. Simmons files probably not drilled.

E.H. Bryner

#1 Elev. 2100' 453' - 6 5/8 Csg. T.D. 2153 date drilled 1940

Well is active, now owned by R. Curtis. Well will be plugged if injection well W-10 is drilled.

Requested records from Pennzoil and Minard Run Oil. Healy records not available except those provided in 1941 report on Music Mtn. Field (enclosed portions). Belden and Blake now owns the files of A. Simmons and they have no record of the Horton or Healy wells.

Also searched the microfiche files of the DER and no records appear on the Horton, Healy or Pz1 #6, #9 wells. Permitting for drilling was not required in PA until 1955 and records are poor until approx. 1962.

Attachment C - well plugging

Wells will be plugged in accordance with DER or EPA standards whichever are more stringent. At this time DER requirements appear to be more stringent.

Attachment E

Accept the requirement for 460' surface casing.

Attachment G

Frac records for well # 8 & #6 attached. Bradford 3rd horizon is highlighted.

Attachment H

See letter from Mr. T. Defibaugh regarding specific gravity. Tested at 1.045.

Attachment L

As these wells will be stimulated with explosives, running 4½ casing will require either a casing packer shoe or a bridge to be located in the hole immediately above the injection zone. Each of these methods requires special tools and adds from $1500 to $4000 on the initial completion cost of the well.

The use of 2 3/8" long string and a packer allows the pipe to be cemented in place by using a tremie string placed alongside the long string. (This can't be done with 4½ due to clearance problems between casing collar and wellbore.)

In either case the wells will be constructed with long string casing and an injection string. A bond log can be run on either type of long string.

The 40' below the Bradford 3rd horizon is necessary to allow the logging tool stack to fully analyze the formation and to allow for fill up of stimulation debris. This horizon is very impermeable and is of similar material to the caprock and confining zone above the Bradford 3rd horizon. We believe if necessary to have this exposed and that it poses no threat due to its impermeable nature. We respectfully request EPA to reconsider.

Cement bond logs will be run on all surface if returns aren't acheived and on all long string casing.

Attachment O - new attachment to replace previous one

Well failure

All wells are to be constructed with long string casing (either 4½ or 2 3/8). The long string casing will be cemented in place with a minimum of 100' of cement extending from the top of the injection zone.

Injection tubing will be run inside the long string casing and the annular space pressurized to 10% above the approved injection pressure (per EPA guidelines).

During operation should the injection tubing fail the well will be shut in and the injection tubing and packer pulled, the tubing and packer will be repaired/replaced as necessary and rerun to its position at the bottom of the long string casing.

If a satisfactory repair is not completed a similar rework will be tried. If the well cannot be successfully repaired in the allotted time frame (90 days per EPA guidelines) the well will be plugged in accordance with the P & A plan.

Per your recommendation the wells will be monitored daily and the pressure at the plant will be continuously monitored. A pressure switch will be installed in the water plant to affect a shut down in the case of a well failure.

Attachment P

MIT - Tubing/casing annulus will be tested to 110% of injection pressure for 30 minutes. (per EPA guidelines).

Bond logs will be run on all long string casing and submitted with cementing records.

Attachment Q

See attached.

A bottom plug is not required to be cemented across the formation in wells stimulated with explosives. The P & A plan meets DER requirements with exception of the casing plug. We believe EPA is aware of this discrepancy and will not approve DER's requirements. Therefore we are submitting to EPA's requirement.

Attachment R

Financial responsibility is attached.

Mr. Randy Curtis
Curtis Oil Co.
Main St.
Duke Center, PA

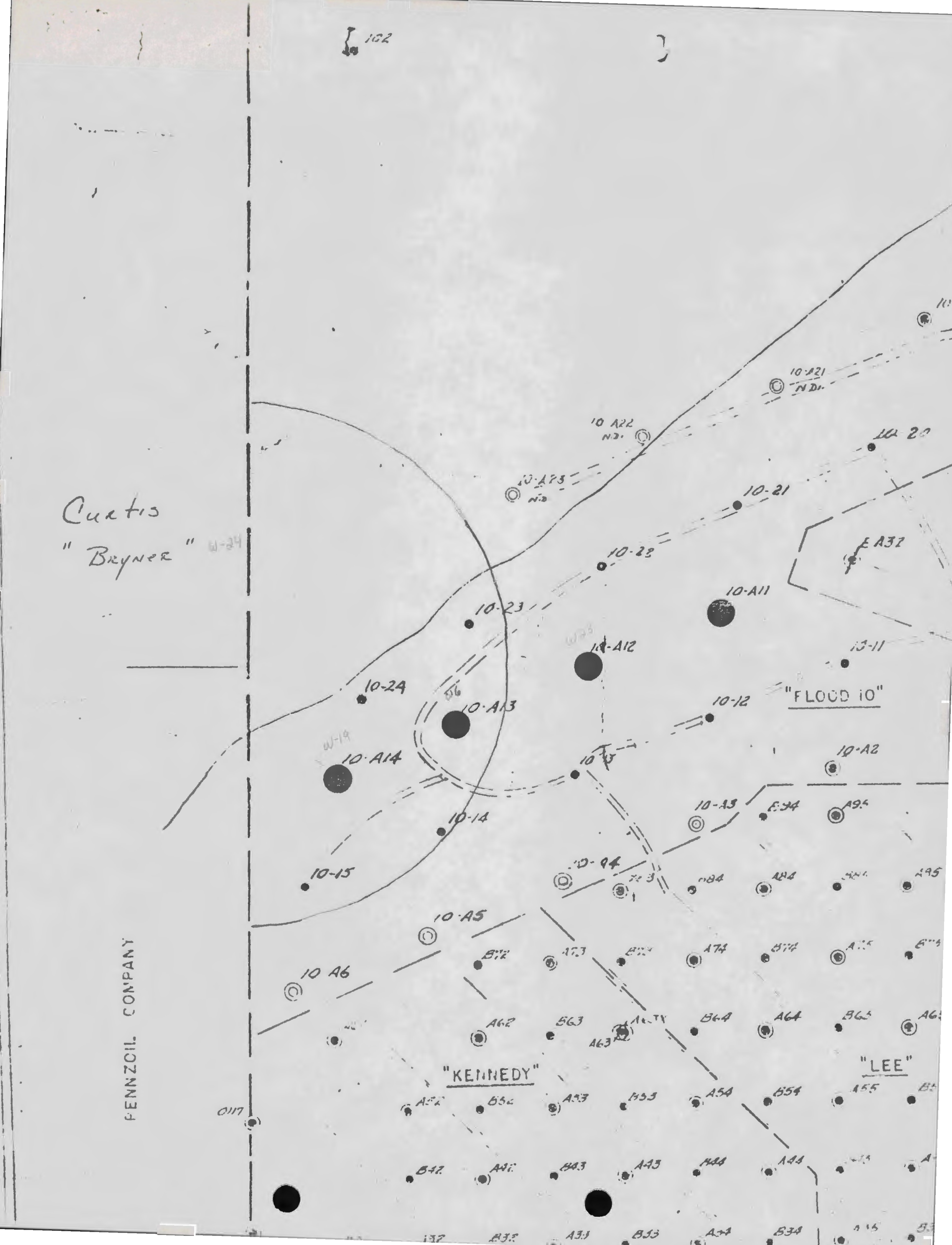
Dear Mr. Curtis,

I recently tested the sample of produced water from the Bryner Lease for specific gravity. Using a hydrometer, the water tested at a specific gravity of 1.045. This is about normal for produced fluids in your area.

If you have any questions please call me.

Yours Truly,

Thomas Defibaugh


Curtis
"Bryner"
W-24
10-A21
ND.
10 A22
N.D.
10-A23
N.D.
10-20
10-21
10-22
10-23
10-24
10-A11
10-A12
10-A13
10-A14
W-19
10-11
10-12
"FLOOD 10"
10-A2
10-A3
10-14
10-15
10-A4
10-A5
10 A6
A84
A74
A62
B63
A63
B64
A64
A55
A54
B54
A53
B53
A43
A44
B43
A42
B42
"KENNEDY"
"LEE"
0117
B33
A34
B34
PENNZOIL COMPANY

2 3/8 Cement to Surface

Form Approved. OMB No. 2040-0042. Approval expires 9-30-86

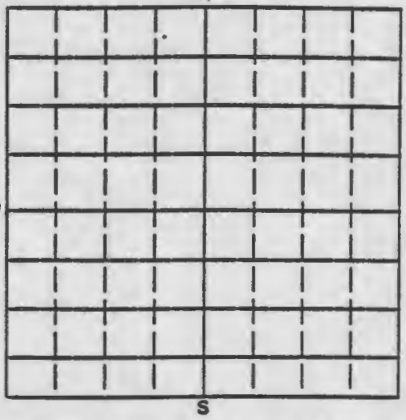
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

PLUGGING AND ABANDONMENT PLAN

NAME AND ADDRESS OF FACILITY	NAME AND ADDRESS OF OWNER/OPERATOR

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER
TX	McLEAN	

SURFACE LOCATION DESCRIPTION

¼ OF	¼ OF	¼ SECTION	TOWNSHIP	RANGE

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location ____ ft. from (N/S) ____ Line of quarter section

and ____ ft. from (E/W) ____ Line of quarter section

TYPE OF AUTHORIZATION

- ☐ Individual Permit
- ☒ Area Permit
- ☐ Rule

Number of Wells ____

WELL ACTIVITY

- ☐ CLASS I
- ☐ CLASS II
  - ☐ Brine Disposal
  - ☒ Enhanced Recovery
  - ☐ Hydrocarbon Storage
- ☐ CLASS III

Lease Name BRYNER

Well Number

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT(LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
8 5/8	17.0	20	20	9 3/4
6 5/8	13.0	460	460	7 7/8
2 3/4	4.6	2000	2000	6 1/4
1.3	1.0	2000	0	2

METHOD OF EMPLACEMENT OF CEMENT PLUGS

- ☐ The Balance Method
- ☐ The Dump Bailer Method
- ☐ The Two-Plug Method
- ☐ Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inches)	2.0	2.0	2.0				
Depth to Bottom of Tubing or Drill Pipe (ft.)	2000	525	20				
Sacks of Cement To Be Used (each plug)	3	2	1				
Slurry Volume To Be Pumped (cu. ft.)	3.54	2.36	1.18				
Calculated Top of Plug (ft.)	18.37	435	0				
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gal.)	15.6	15.6	15.6				
Type Cement or Other Material (Class III)	Portland	Portland	Portland				

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED *(If any)*

From	To	From	To

Estimated Cost to Plug Wells

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED
PRESIDENT	Randy W. Curtis	Oct 5 1992

4½ Cemented to 100' above packer

Form Approved. OMB No. 2040-0042. Approval expires 9-30-86

EPA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

PLUGGING AND ABANDONMENT PLAN

NAME AND ADDRESS OF FACILITY	NAME AND ADDRESS OF OWNER/OPERATOR

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES

N / W / E / S

STATE	COUNTY	PERMIT NUMBER
Pa	McKean	

SURFACE LOCATION DESCRIPTION

¼ OF ¼ OF ¼ SECTION TOWNSHIP RANGE

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location ____ ft. from (N/S) ____ Line of quarter section

and ____ ft. from (E/W) ____ Line of quarter section

TYPE OF AUTHORIZATION

- ☐ Individual Permit
- ☒ Area Permit
- ☐ Rule

Number of Wells ____

Lease Name Bryner

WELL ACTIVITY

- ☐ CLASS I
- ☐ CLASS II
  - ☐ Brine Disposal
  - ☒ Enhanced Recovery
  - ☐ Hydrocarbon Storage
- ☐ CLASS III

Well Number

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT(LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
8 5/8	17.0	20	20	9 3/4
6 5/8	13.0	460	460	7 7/8
4 ½	9.5	2000	150	6 1/8
2 3/8	4.6	2000	0	4.0

METHOD OF EMPLACEMENT OF CEMENT PLUGS

- ☒ The Balance Method
- ☐ The Dump Bailer Method
- ☐ The Two-Plug Method
- ☐ Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inches)	4½	6 1/8	6 1/8				
Depth to Bottom of Tubing or Drill Pipe (ft.)	1990	525	20				
Sacks of Cement To Be Used (each plug)	10	10	5				
Slurry Volume To Be Pumped (cu. ft.)	11.8	11.8	5.9				
Calculated Top of Plug (ft.)	1860	466	0				
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gal.)	15.4	15.6	15.4				
Type Cement or Other Material (Class III)	Portland	Portland	Portland				

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED (If any)

From	To	From	To

Estimated Cost to Plug Wells

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED
PRESIDENT	Randy W. Curtis	Oct. 5. 1992

4½" cemented to surface

Form Approved. OMB No. 2040-0042. Approval expires 9-30-86

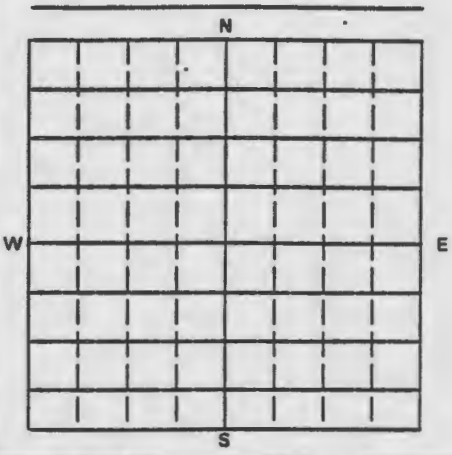
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

PLUGGING AND ABANDONMENT PLAN

NAME AND ADDRESS OF FACILITY	NAME AND ADDRESS OF OWNER/OPERATOR

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES



STATE	COUNTY	PERMIT NUMBER
PA	McKEAN	

SURFACE LOCATION DESCRIPTION

¼ OF ¼ OF ¼ SECTION TOWNSHIP RANGE

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location ____ ft. from (N/S) ____ Line of quarter section

and ____ ft. from (E/W) ____ Line of quarter section

TYPE OF AUTHORIZATION

- ☐ Individual Permit
- ☒ Area Permit
- ☐ Rule

Number of Wells ____

WELL ACTIVITY

- ☐ CLASS I
- ☐ CLASS II
  - ☐ Brine Disposal
  - ☒ Enhanced Recovery
  - ☐ Hydrocarbon Storage
- ☐ CLASS III

Lease Name BRYNER Well Number

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT(LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
8 5/8	17.0	20	20	9 3/4
6 5/8	13.0	460	460	7 7/8
4½	9.6	2000	2000	6 ¼
2 3/8	4.6	2000	0	4.0

METHOD OF EMPLACEMENT OF CEMENT PLUGS

- ☒ The Balance Method
- ☐ The Dump Bailer Method
- ☐ The Two-Plug Method
- ☐ Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inches)	4½	4½	4½				
Depth to Bottom of Tubing or Drill Pipe (ft.)	1990	525	20				
Sacks of Cement To Be Used (each plug)	10	5	2				
Slurry Volume To Be Pumped (cu. ft.)	11.8	5.9	2.36				
Calculated Top of Plug (ft.)	1860	460	0				
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gal.)	15.4	15.4	15.4				
Type Cement or Other Material (Class III)	Portland	Portland	Portland				

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED *(If any)*

From	To	From	To

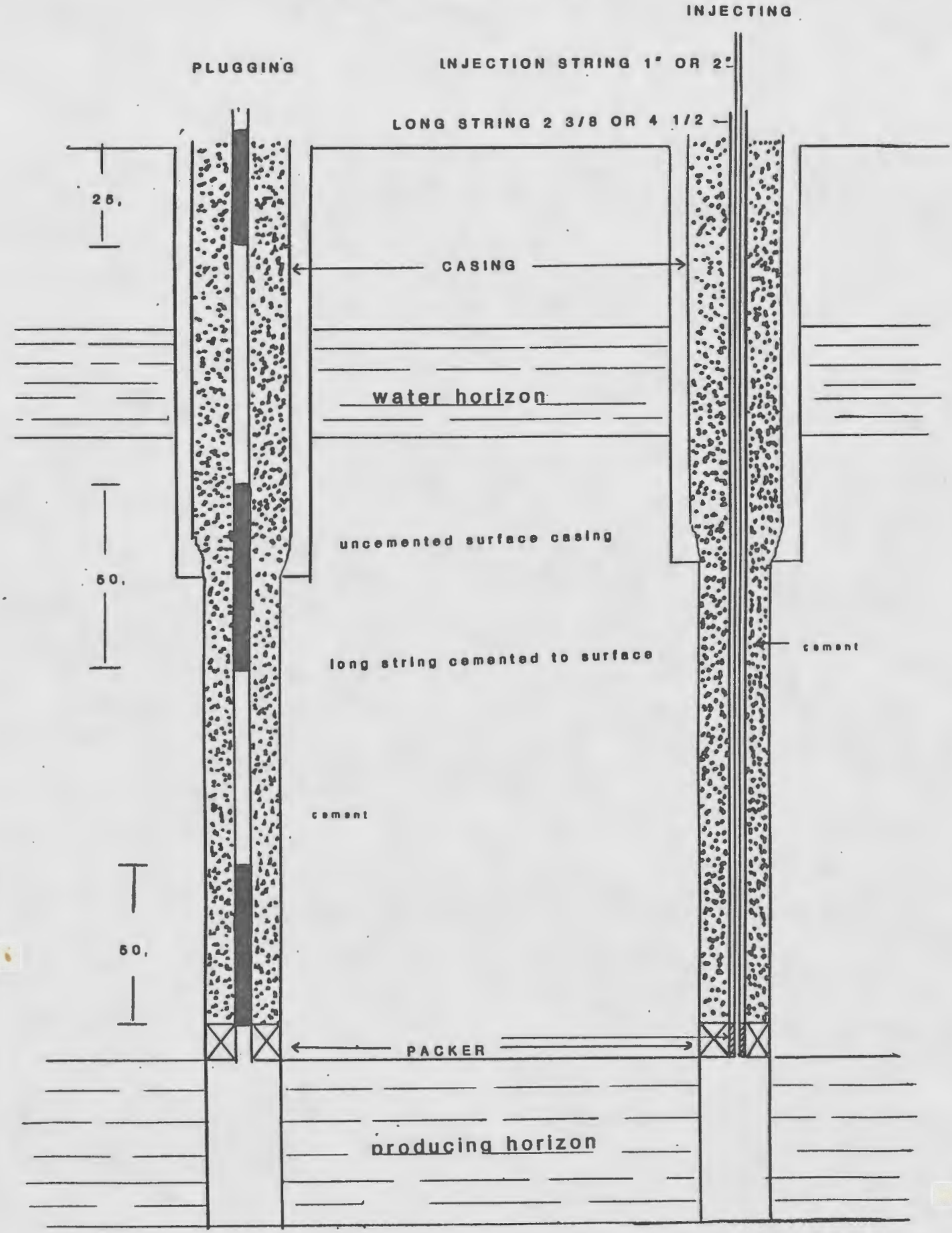
Estimated Cost to Plug Wells

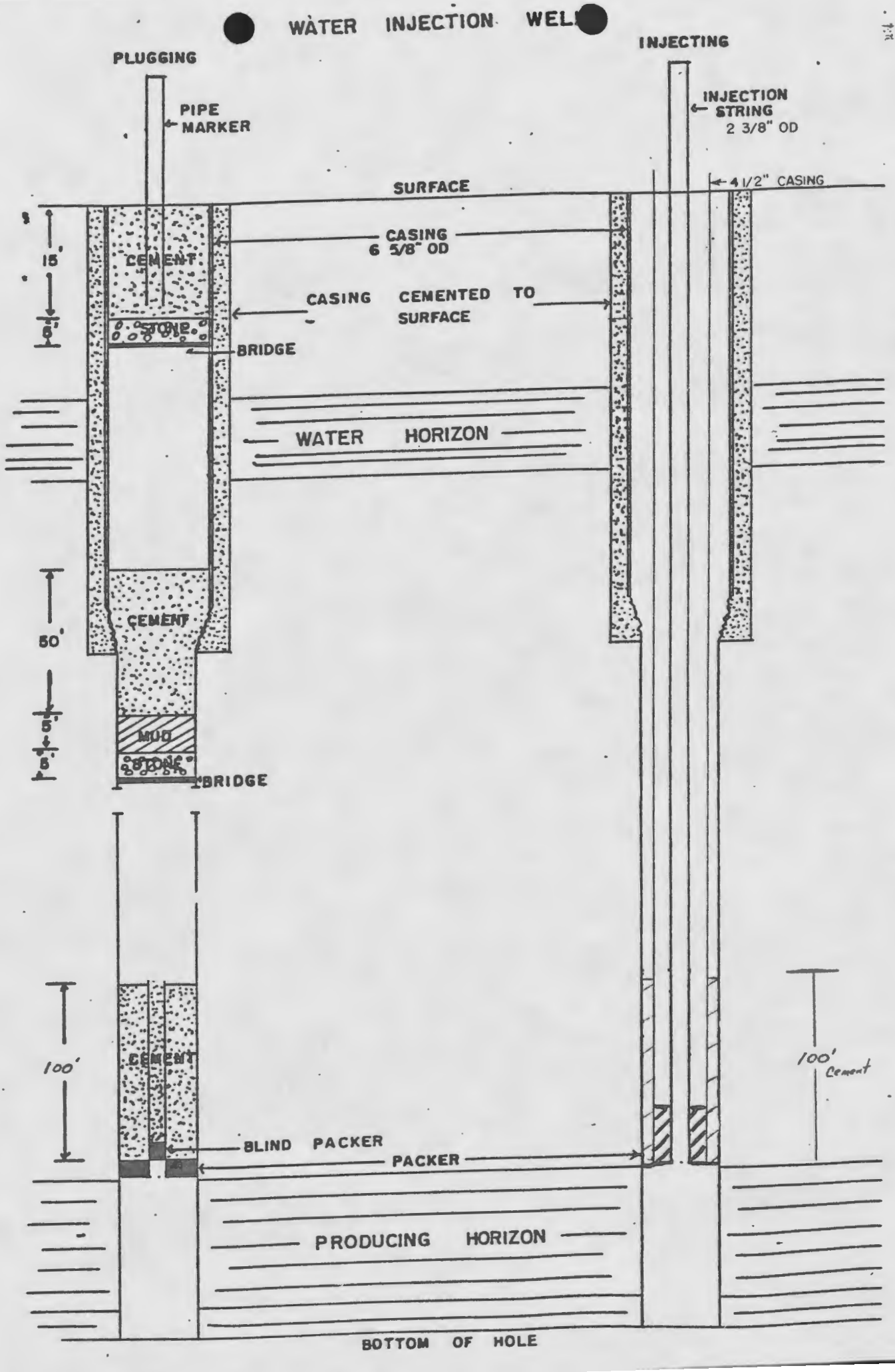
CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

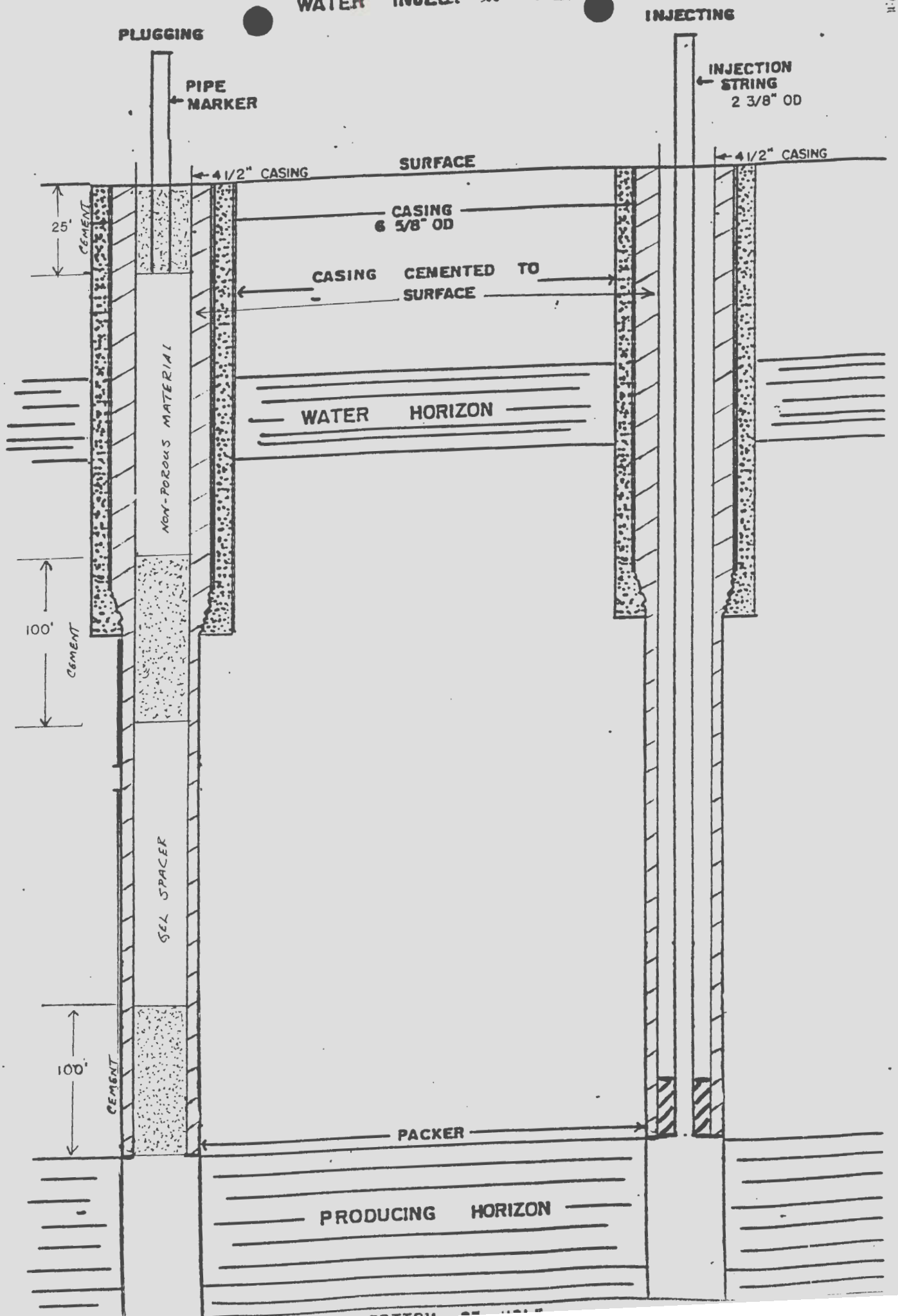
NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED
PRESIDENT	Randy N. Curtis	Oct. 5. 1992

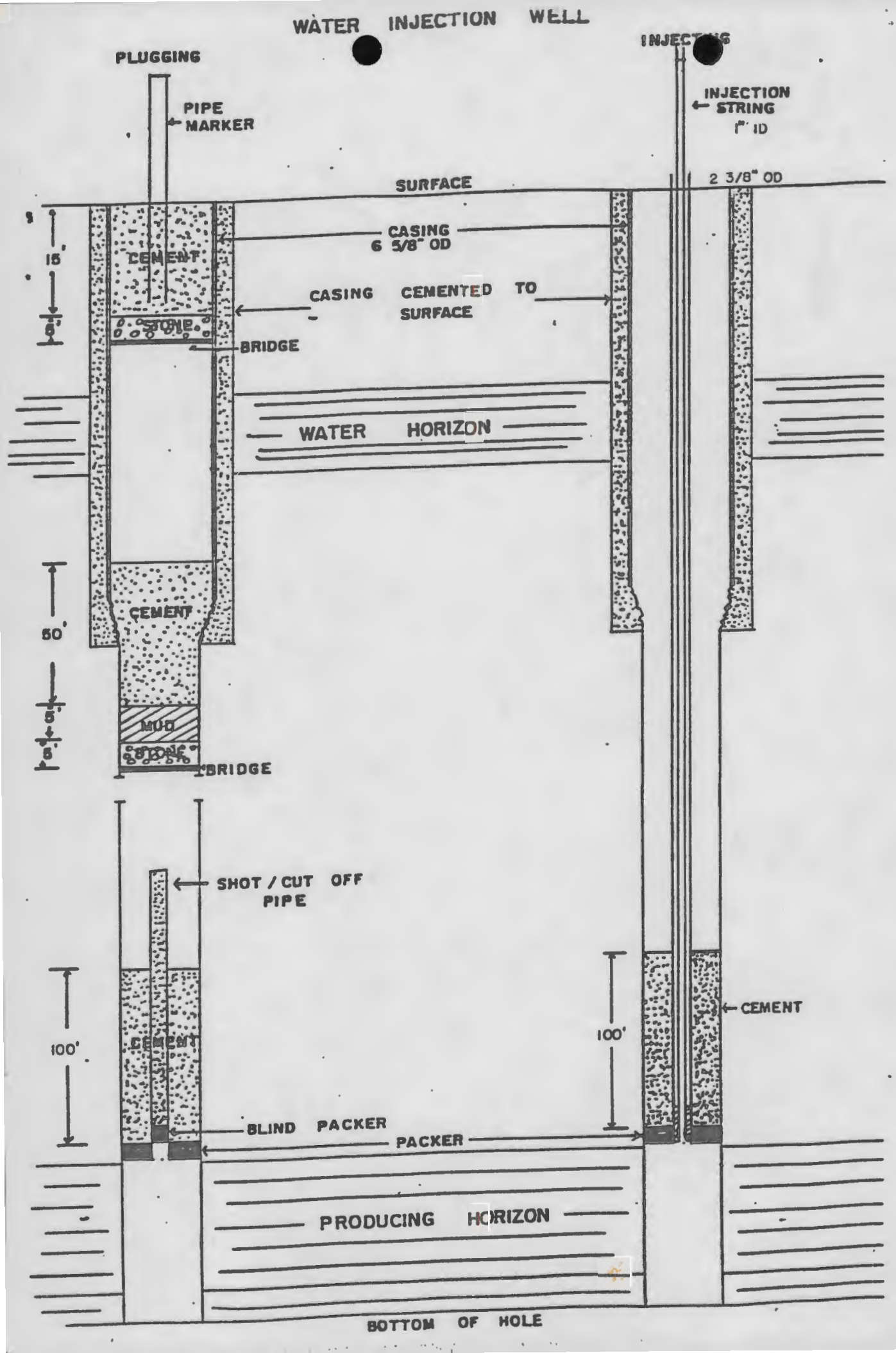
WATER INJECTION WELL




WATER INJECTION WELL
PLUGGING
INJECTING
PIPE MARKER
INJECTION STRING
2 3/8" OD
SURFACE
4 1/2" CASING
CASING
6 5/8" OD
15'
CEMENT
CASING CEMENTED TO SURFACE
5'
STONE
BRIDGE
WATER HORIZON
50'
CEMENT
5'
MUD
5'
STONE
BRIDGE
100'
CEMENT
100'
Cement
BLIND PACKER
PACKER
PRODUCING HORIZON
BOTTOM OF HOLE

WATER INJECTION WELL




WATER INJECTION WELL
PLUGGING
INJECTING
PIPE MARKER
INJECTION STRING
1" ID
SURFACE
2 3/8" OD
CASING 6 5/8" OD
15'
CEMENT
CASING CEMENTED TO SURFACE
5'
STONE
BRIDGE
WATER HORIZON
50'
CEMENT
5'
MUD
5'
STONE
BRIDGE
SHOT / CUT OFF PIPE
100'
CEMENT
100'
CEMENT
BLIND PACKER
PACKER
PRODUCING HORIZON
BOTTOM OF HOLE

Progress Report 125 June 1941

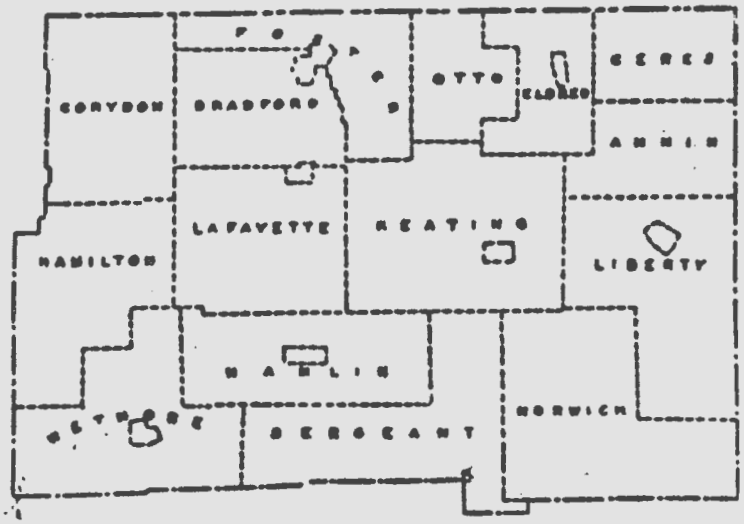
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF INTERNAL AFFAIRS
WILLIAM S. LIVENGOOD, JR., *Secretary*
TOPOGRAPHIC AND GEOLOGIC SURVEY
GEORGE H. ASHLEY, *State Geologist*

MUSIC MOUNTAIN OIL POOL

AND OTHER OIL POOLS IN LAFAYETTE TOWNSHIP

McKEAN COUNTY, PENNSYLVANIA

By CHAS. R. FETTKE
Professor of Geology
CARNEGIE INSTITUTE OF TECHNOLOGY



Map of McKean County townships.

Map number ..	94	95	96	97	98	99
Warrant number. Property and number ..	3435 Noles Tract No. 4	3435 Noles Tract No. 3	3435 Noles Tract No. 2	3435 Intake No. 1	3435 Mayo Lot 1	3435 Northwestern X-10
Owner	Foster and Burns	Foster and Burns	Foster and Burns	Bingham Petroleum Corp.	F. D. Hill et al.	Healy Petroleum Corp.
Elevation	2029	2047	2054	2149	2115	2146
Drive pipe	16	43	20	14	26	40
Casing	287	340	340	446	415	380
Bottom of Olean.						
"Red rock"					515-660	
					752-800	
"Pink rock" ...					1050-1280	
Sands:						
Bradford First.					1431-1440 show oil	
Sugar Run ...						
Chipmunk					1576-1584	
Bradford Second	1611-	1637-			Gray 1710-1718	1710-1741
Harrisburg Run.		1670-1690 show oil	1690-1714	1785-1800	1736-1744	1760-1765
Silverville	1685-1786 small oil prod.	1711-1714 show gas	Stray, dry 1790-1811	1818- show gas	1760- §	1771-1811§
Bradford Third.			1962-1978 salt water			
Lewis Run						
Kane						
Haskell						
Total depth ..	1810	1774	1978	1900	1810	1814
Date completed	June 6, 1939				1939	1938

§ 500 bbls. oil first 2 hrs. § 150 bbls. oil per hr. 1000 M. gas.

Map number ..	105	106	107	108	109	110
Warrant number. Property and number ..	3903 Dent-Whitney 84	3903 Dent-Whitney 82	3903 Dent-Whitney 56	3903 No. 21	2263 Johnston Lot D. No. 5	2263 Bingham Lot 206, No. 390
Owner	Minard Run Oil Co.	Minard Run Oil Co.	Minard Run Oil Co.	Moody & Moody	Associated Producers Co.	Associated Producers Co.
Elevation	1813	1833	1956	2170	2031	2150
Drive pipe			43	14		
Casing	550	584	465	403	393	
Bottom of Olean.			9		40' above well	
"Red rock"						460-780
"Pink rock" ...	s.w. at 525	s.w. at 570				1120-1138
Sands:						
Bradford First.		1154-1165 white				
Sugar Run ...						1452-1480
						1510-1521
Chipmunk						1571-1610
Bradford Second				1787-1812		
Harrisburg Run.		1467-1485				
Silverville						
Bradford Third.	1700-1719 salt water	1720-1742	1910-1928 oil	2096-2109 show oil	1902-1945 oil	2004-2051 oil
Lewis Run	1771-1779	1788-1801 small oil prod.				
Kane		Stray 1832-1836				
Haskell						
Total depth ..	1809	1838	1957	2242	1945	2051
Date completed	July 16, 1936	June 13, 1936				Oct. 2, 1927

Table 1[illegible] elected well records, Lafayette T[illegible]ship—Continued

Map number ..	89	90	91	92	93
Warrant number.	2266	3412	3432	3435	3435
Property and number ..	Dent 4	Gates No. 1, Lot 10	Noles Tract No. 1	Noles Tract No. 7	Noles Tract No. 5
Owner	A. E. Booth	Paul E. Kahle	Foster and Burns	Foster and Burns	Foster and Burns
Elevation	1654	2089	2041		2045
Drive pipe	154	60	25	65	11
Casing	610	375	324	345	295
Bottom of Olean.					
"Red rock"		480-95, 530-45			650-35 M. gas
"Pink rock" ...		1038-1059			
Sands:					
Bradford First.	960-	1364-1405 dry			1350-1380
Sugar Run ...		1459-1466 gas, show oil			
Chipmunk		1586-1601 white	1486-1526 show oil		
Bradford Second		gray 1655-1683			
Harrisburg Run.	1264-	brown 1697-1725	1686-1726		
Sliverville		1735-1738 hard shell, show gas	Stray 1776-1792	1727-1740 100 M. gas	1707-1725 dry
Bradford Third.	1529-1559 oil	1969- salt water	1962-1999 s.w., show oil		1943-1983 show oil, s.w.
Lewis Run			2089-2103		2050-2059
Kane	1780-1804 show oil		Stray 2157-2164		
Haskell	Stray 1861-1868				2422-2437*
Total depth ..	1915	1990		1820	2555
Date completed		1939	1938	1940	Dec. 12, 1939

* Stray 2515-2555, show gas and oil.

Map number ..	100	101	102	103	104
Warrant number.	3435	3435	3435	3435	3903
Property and number ..	Northwestern X-1	Catherine P. Horton 1	Lot 6, No. 1	E. H. Bryner No. 1	Dent-Whitney 102
Owner	Healy Petroleum Corp.	Arthur C. Simmons et al.	Geo. McKinney et al.	Geo. McKinney et al.	Minard Run Oil Co.
Elevation	2168	2180			1981
Drive pipe	24			32	
Casing	325			453	375
Bottom of Olean.		187			
"Red rock"	495-525†	516-797	465-805	484-749	
"Pink rock" ...	1020-1211‡	923-1226	1194-1225	**	
Sands:					
Bradford First.	1445-1483	1455-1503			1283-1325.
Sugar Run ...	1517-1524		1458-1505	white*** 1473-1486	
Chipmunk	1566-1600	1608-1614	1582-1622.		1474-1492 some gas
Bradford Second	brown 1719-1734	1746-1765 gas 1751-1756	1654-1687	white 1665-1676	1583-1587 white shell
Harrisburg Run.	brown 1750-1763	1785-1794 show oil		brown 1746-1750	1611-1617 brown, show oil
Sliverville	1763-1793 oil	1810-1820	1786-1788		stray, light brown 1729-1737
Bradford Third.				2021-2055 show oil & s.w.	1865-1891 s.w. & show oil
Lewis Run				2115-2120 dry	1955-1960 s.w. & show oil
Kane					
Haskell					
Total depth ..	1820	1878	1892	2153	1960
Date completed		1938		1940	June 21, 1938

† White sand 670-690, 750-805.
‡ Sand 805-845.
** Show of gas in Stray sand 840-862, 1010-1025.
*** Show oil and gas at 1478.

Sanderson Well Services

G. R. "JERRY" SANDERSON
GENERAL WELL CONSULTING
&
WELL COMPLETIONS

R. D. #1, BOX 96
TIDIOUTE, PA. 16351

814/484-7349

MIDEAST OIL & GAS #8 BRYNER
5/6/81

0635	Met Halliburton @ Tacks Inn		
0700	Trucks spotted on location		
	Rig crew not called out by Murry Drilling Co.		
0905	Load & Circulate Hole		
Stage 1	1480' - 1486' Bradford First		
0942	Break formation @	3200 psi	
	Recalibrate Fracometer		
0955	Pump into formation @	2600 psi	
0956	Start sand @ 1 lb/gal	2600 psi	18 BPM
0957½	Start sand @ 2 lb/gal	2500 psi	18 BPM
1003½	Sand in (100 sks)	2200 psi	20 BPM
1004½	Shut down (1000 psi ISP)	2200 psi	20 BPM
	Good Strong Flowback		
	Trouble circulating down - gas & dirty borehole		
Stage 2	1734' - 1742' Bradford Second		
1451	Break formation @	3600 psi	
1453	Start sand @ ½ lb/gal	3400 psi	13 BPM
1454	Start sand @ 1 lb/gal	3100 psi	14 BPM
1457	Start sand @ 2 lb/gal	2700 psi	18 BPM
1502½	Sand in (100 sks)	2750 psi	18 BPM
1503½	Shut down (ISP 1300)	2750 psi	18 BPM
	Good Strong Flowback - Good smell of gas		
Stage 3	1776' - 1780' Sliverville		
1550	Circulate by packer		
	Set 1 foot lower - still circulates		
	Set 1 foot lower - still circulates		
	Set 1 foot above origional setting - pipe slid up hole @	2400 psi	
	Set 1 foot from bottom of zone - circulates		
	Move down to Stage 4		
Stage 4	2036' - 2044' Bradford Third		
1848	Break formation @	2800 psi	
1850	Start sand @ 1 lb/gal	2400 psi	19 BPM
1853	Start WAC 10	2800 psi	18 BPM
1855	Sand in @ 2 lb/gal	2350 psi	19 BPM
1859	Sand in (100 sks)	2800 psi	18 BPM
1900	Shut down (ISP - 1600 psi)	2900 psi	17 BPM
	Good Strong Flowback - Good show of oil		
Stage 5	2116' - 2120' ~~Lewis Run~~ Bfd 3rd		
1958	Break formation @	3000 psi	
1959	Start WAC 10	3000 psi	17 BPM

Stage 5	continued		
2000	Start sand @ 1 lb/gal	2800 psi	18 BPM
2001	Start sand @ 2 lb/gal	2800 psi	18 BPM
2007	Sand in (100 sks)	3000 psi	16 BPM
2008	Shut down (ISP 1600 psi)	3100 psi	15 BPM
	Good strong Flowback - Good smell of gas		
2040	Finished circulating out 57' of pocket.		
	Halliburton released.		

Sanderson Well Services

G. R. "JERRY" SANDERSON
GENERAL WELL CONSULTING
&
WELL COMPLETIONS

R. D. #1, BOX 96
TIDIOUTE, PA. 16351

814/484-7349

MIDEAST OIL & GAS CO.
#6 Bryner
6-3-81

0630	Met Halliburton @ Tack's Inn		
0700	Halliburton on location		
0815	Load & Circulate hole - good show of oil & gas		

Stage 1	Bradford Second	1686' - 1692'	
0840	Break formation @	3200 psi	
0841	Start sand @ ½ lb/gal	3200 psi	14 BPM
0842	Start sand @ 1 lb/gal	2400 psi	16 BPM
0843½	Start sand @ 2 lb/gal	2200 psi	16 BPM
0853½	Sand in (100 sks)	3050 psi	13 BPM
0854½	Shut down (ISP-1300)	3000 psi	13 BPM
	Good strong flowback - smell of gas - show of oil		

Stage 2	Sliverville	1725' - 1729'	
0924	Break formation @	4000 psi	
0925	Start sand @ ½ lb/gal	3400 psi	12 BPM
0927	Start sand @ 1 lb/gal	2600 psi	12 BPM
0929	Start sand @ 2 lb/gal	2600 psi	14 BPM
0937	Sand in (100 sks)	2400 psi	15 BPM
0937½	Shut down (ISP-1350)	2400 psi	15 BPM
	Fair flowback		

MIDEAST OIL & GAS CO.
6 Bryner
cont.

Stage 3	Bradford third	1982' - 1990'	
1047	Break formation @ 1600 psi		
1048	Start sand @ 1 lb/gal	2200 psi	17 BPM
1049½	Start sand @ 2 lb/gal	2400 psi	16 BPM
1058	Sand in (190 sks)	3400 psi	12 BPM
1058½	Screen out - released	4500 psi	-- ---
	Good flowback - smell of gas - show of oil		
	Show of oil & gas while circulating down		
Stage 4	~~Lewis Run~~ BD 3rd	2060' - 2066'	
1213	Break formation @ 3200 pai		
1213½	Circulating around packer Reset packer 10' higher		
1226	Pump into formation @	2400 psi	
1227	Start sand @ 1 lb/gal	2500 psi	14 BPM
1230	Screen out released	4400 psi	-- ---
1237	Pump into formation @	2600 psi	
1238	Start sand @ 1 lb/gal	2800 psi	13 BPM
1244	Pumping	3000 psi	12 BPM
1251	Sand in (100 sks)	2800 psi	13 BPM
1252½	Shut down (ISP-1600)	2800 psi	14 BPM
	Very strong flowback - strong show of gas		
1330	Finished circulating 59' of pocket.		
1345	Halliburton released		

Sanderson Well Services

G. R. "JERRY" SANDERSON
GENERAL WELL CONSULTING
&
WELL COMPLETIONS

R. D. #1, BOX 96
TIDIOUTE, PA. 16351

814/484-7349

MIDEAST OIL & GAS #7 BRYNER
5-11-81

0630	Met Halliburton @ Tack's Inn		
0700	Trucks on location (waited for two water tanks to be spotted)		
Stage 1	1462' - 1466'	Bradford First	
0800	Load hole & circulate hole		
0826	Break Formation @	2400 psi	
0827	Start sand @ 1 lb/gal	2400 psi	17 BPM
0829	Start sand @ 2 lb/gal	2400 psi	18 BPM
0833	Start sand @ 3 lb/gal	2000 psi	20 BPM
0834	Sand in (loo sks)	1950 psi	20 BPM
0835	Shut down (ISP-1200)	1900 psi	20 BPM
	Good strong flowback - show of gas		
Stage 2		Bradford First	
0905	Packer slid up hole @	3600 psi	

Tried to free packer, it will move down but not up. Circulated down hole and kept trying to work packer up hole, but with no sucess. Continued circulating down hole until below the Lewis Run Formation; then cut bottom nut off from packer. Pulled 3 inches tubing out of hole minus 3 slips, 2 slip arms, cone, rubber, bottom nut and Halliburton 3 inch notch tool.

MIDEAST OIL & GAS #7 BRYNER
5-18-81

0630	Met Halliburton		
0645	Halliburton on location		
0750	Load & Circulate		
Stage 2	1472' - 1478'	Bradford First	
0843	Break formation @	3600 psi	
0844	Start sand @ ½ lb/gal	2800 psi	14 BPM
0845	Start sand @ 1 lb/gal	2400 psi	16 BPM
0846½	Start sand @ 2 lb/gal	2100 psi	17 BPM
0853	Sand in (100 sks)	1900 psi	18 BPM
0854	Shut down (ISP-1150)	1900 psi	18 BPM
	Good Flowback		
Stage 3	1486' - 1490'	Bradford First	
0920	Break formation @	2400 psi	
0921	Start sand @ 1 lb/gal	2200 psi	18 BPM
0922	Start sand @ 2 lb/gal	2100 psi	18 BPM
0928	Sand in (loo sks)	2000 psi	20 BPM
0929	Shut down (ISP-1200)	1950 psi	20 BPM
	Good flowback- Good gas smell on flushdown		
Stage 4	1738' - 1746'	Bradford Second	
1057	Break formation @	3400 psi	
1057½	Start sand @ 1 lb/gal	2800 psi	14 BPM
1058½	Start sand @ 2 lb/gal	2200 psi	17 BPM
1105	Sand in (100 sks)	2150 psi	17 BPM
1106	Shut down (ISP-1250)	2150 psi	17 BPM
	Good strong flowback		
Stage 5	1780' - 1784'	Sliverville	
1147	Break formation @	3400 psi	
1148	Start sand @ ½ lb/gal	3000 psi	13 BPM
1149½	Start sand @ 1 lb/gal	2600 psi	15 BPM
1150½	Start sand @ 2 lb/gal	2300 psi	16 BPM
1158	Sand in (100 sks)	2300 psi	16 BPM
1159	Shut down (ISP-1200)	1200 psi	10 BPM
	Fair flowback		
Stage 6	2040' - 2044'	Bradford Third	
1338	Break formation @	3600 psi	
1338½	Start sand @ 1 lb/gal	1800 psi	19 BPM
1339	Circulate by packer		
1345	Tubing line swiveled-up, caught in crown pully and broke. Restrung tubing line. Reset packer @ 2004'		

MIDEAST OIL & GAS #7 BRYNER
5-18-81 cont.

Stage 6	cont.		
1643	Pump into formation @	2300 psi	
1643½	Start sand @ 1 lb/gal	2000 psi	18 BPM
1645	Start sand @ 2 lb/gal	2000 psi	18 BPM
1652½	Sand in (100 sks)	2250 psi	15 BPM
1653½	Shut down (ISP-1450)	2350 psi	16 BPM
	Good flowback		
Stage 7	2120' - 2124' ~~Lewis Run~~ Bfd 3rd		
1745	Break formation @	3700 psi	
1747	Start sand @ 1 lb/gal	2800 psi	13 BPM
1749	Circulate by packer (10 sks pumped in befor circulation)		
	Reset packer @ 2090'		
1803	Pump into formation - packer jumped uphole Packer stuck - worked free - appears to have a slip off or broken. Worked pipe up hole 2 joints before pipe pulled free. Packer won't set.		
1845	Halliburton released		

GO WIRELINE SERVICES
GEARHART-OWEN

COMPENSATED DENSITY NEUTRON LOG

FILING NO.

COMPANY MIDEAST OIL

RECEIVED FEB 2 1981

WELL 11 T BEYNON

FIELD MOUNTAIN

COUNTY _____ STATE PA.

Location:

Sec. _____ Twp. _____ Rge. _____

Other Services

Permanent Datum: _____ ; Elev.: _____

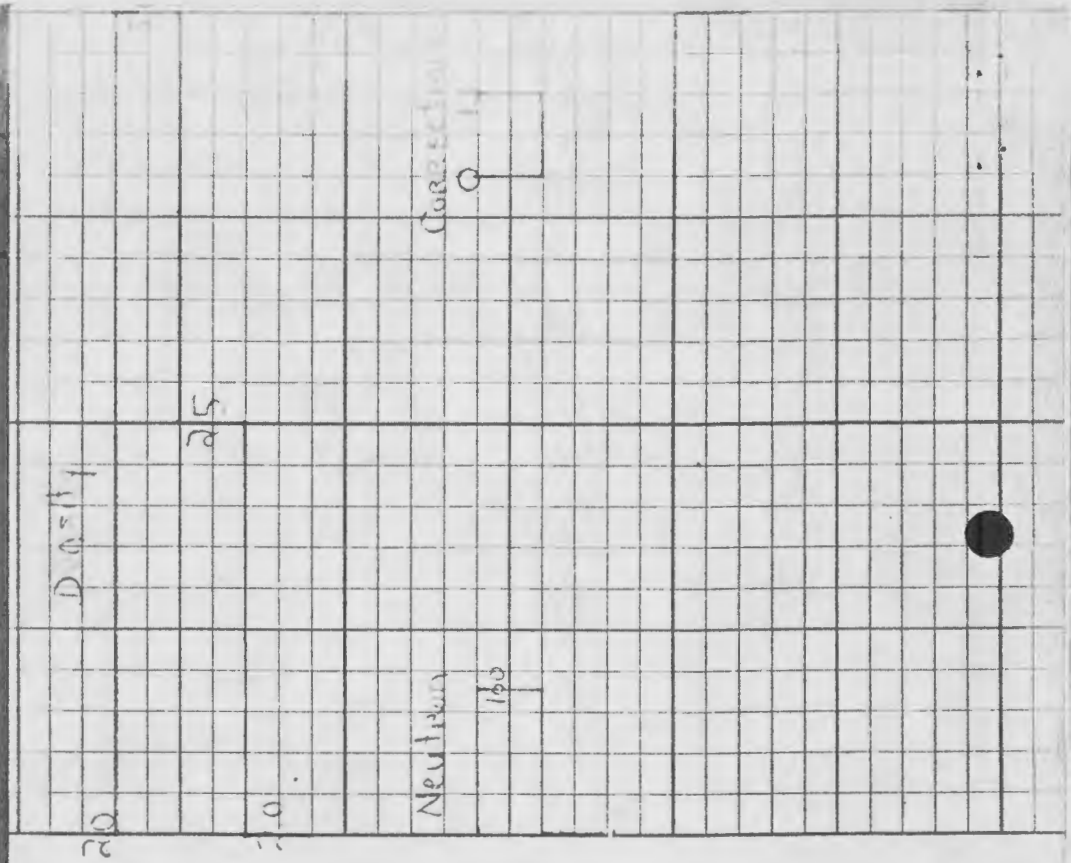
Log Measured From _____ Ft. Above Perm. Datum

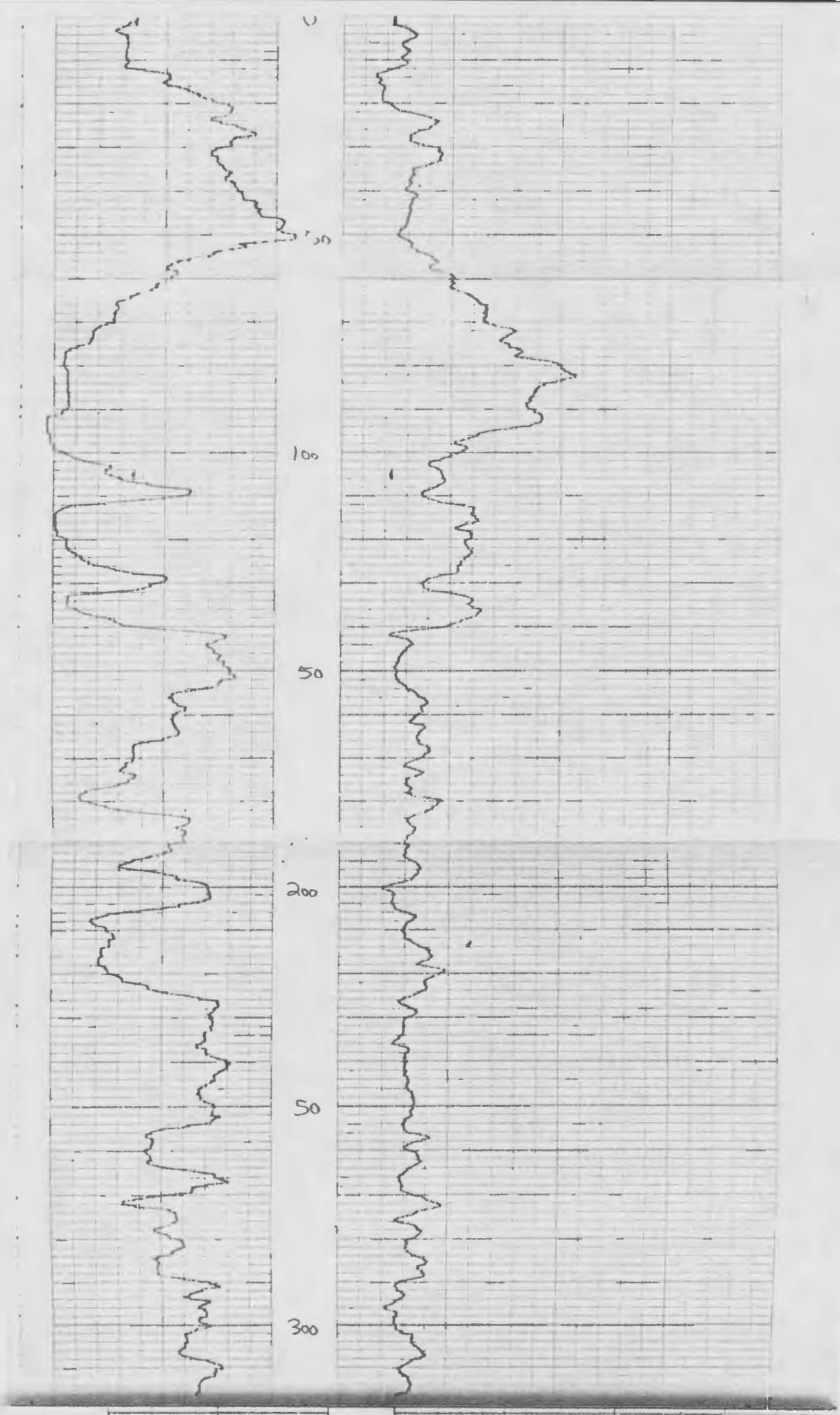
Drilling Measured From _____

Elev.: K.B. _____
D.F. _____
G.L. _____

Date			
Run No.			
Type Log			
Depth—Driller			
Depth—Logger			
Bottom logged interval			
Top logged interval			
Type fluid in hole			
Salinity, PPM Cl. or Nacl.			
Density ; Rm at F			
Level ; Contact			
Max rec. temp., deg F.			
Operating rig time			
Recorded by			
Witnessed by			

Run No.	Bore-Hole Record Bit	From	To	Casing Record Size	Wgt.	From	To

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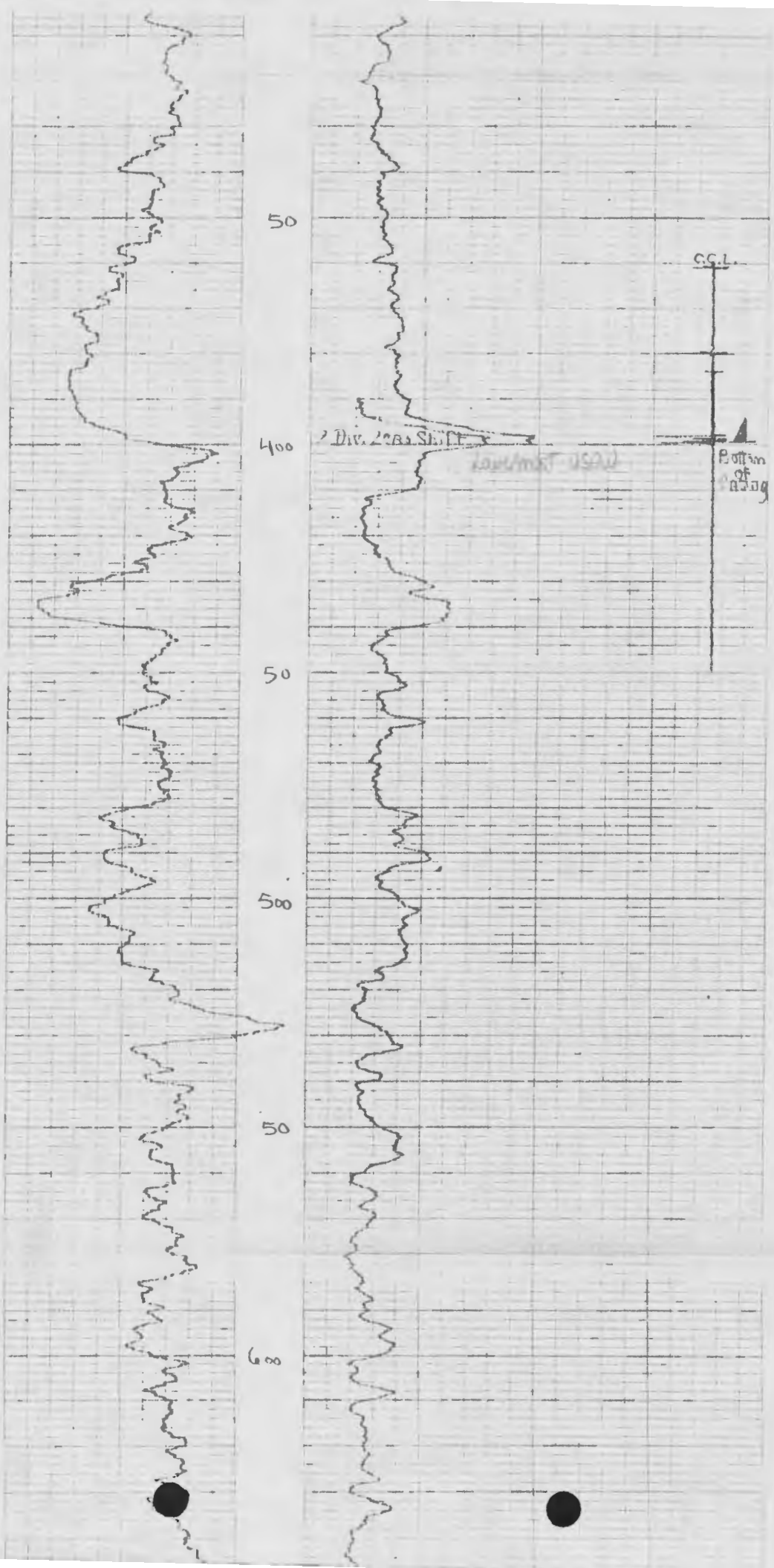
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400
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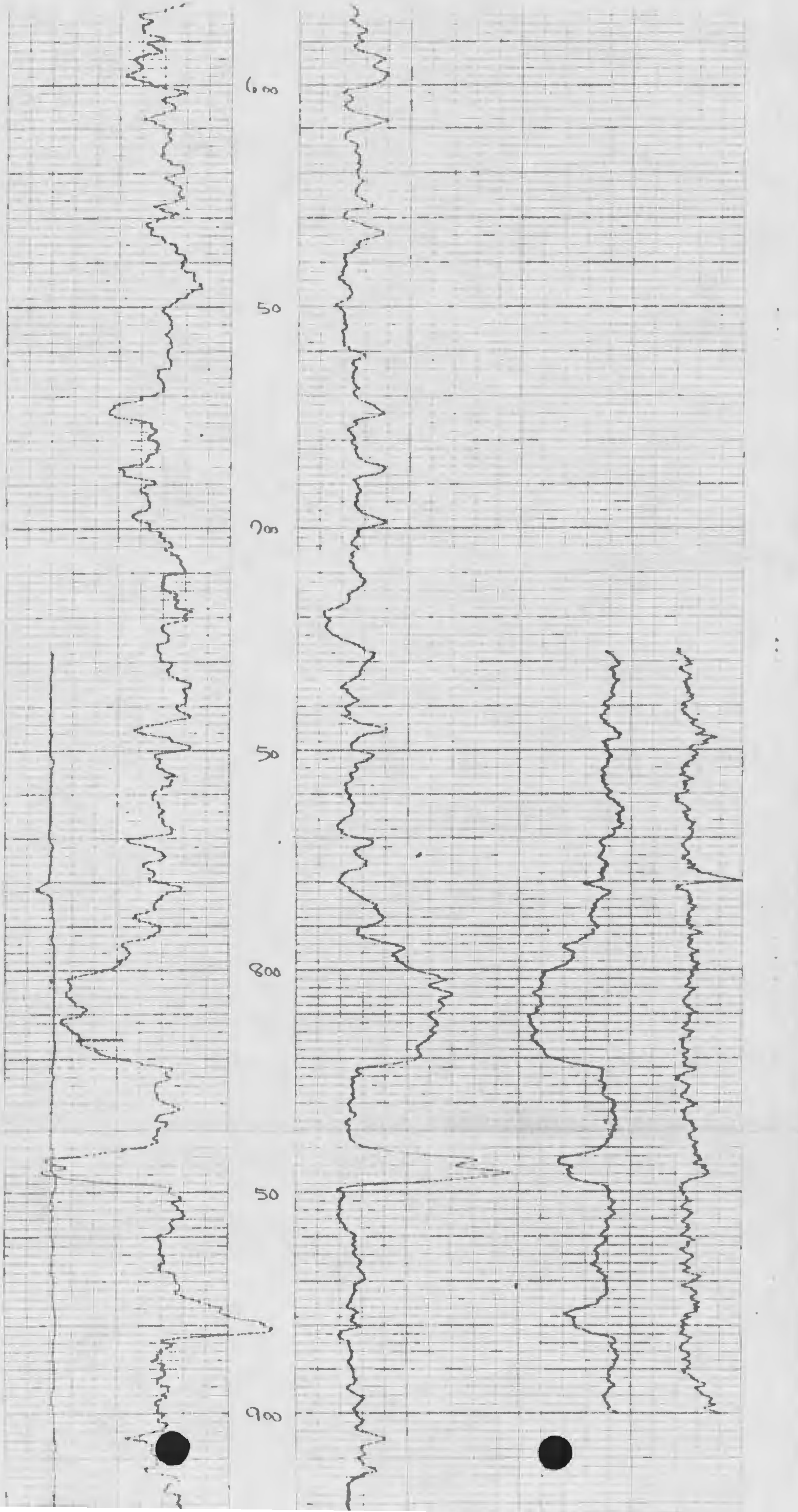
600
C.C.L.
Bottom of Casing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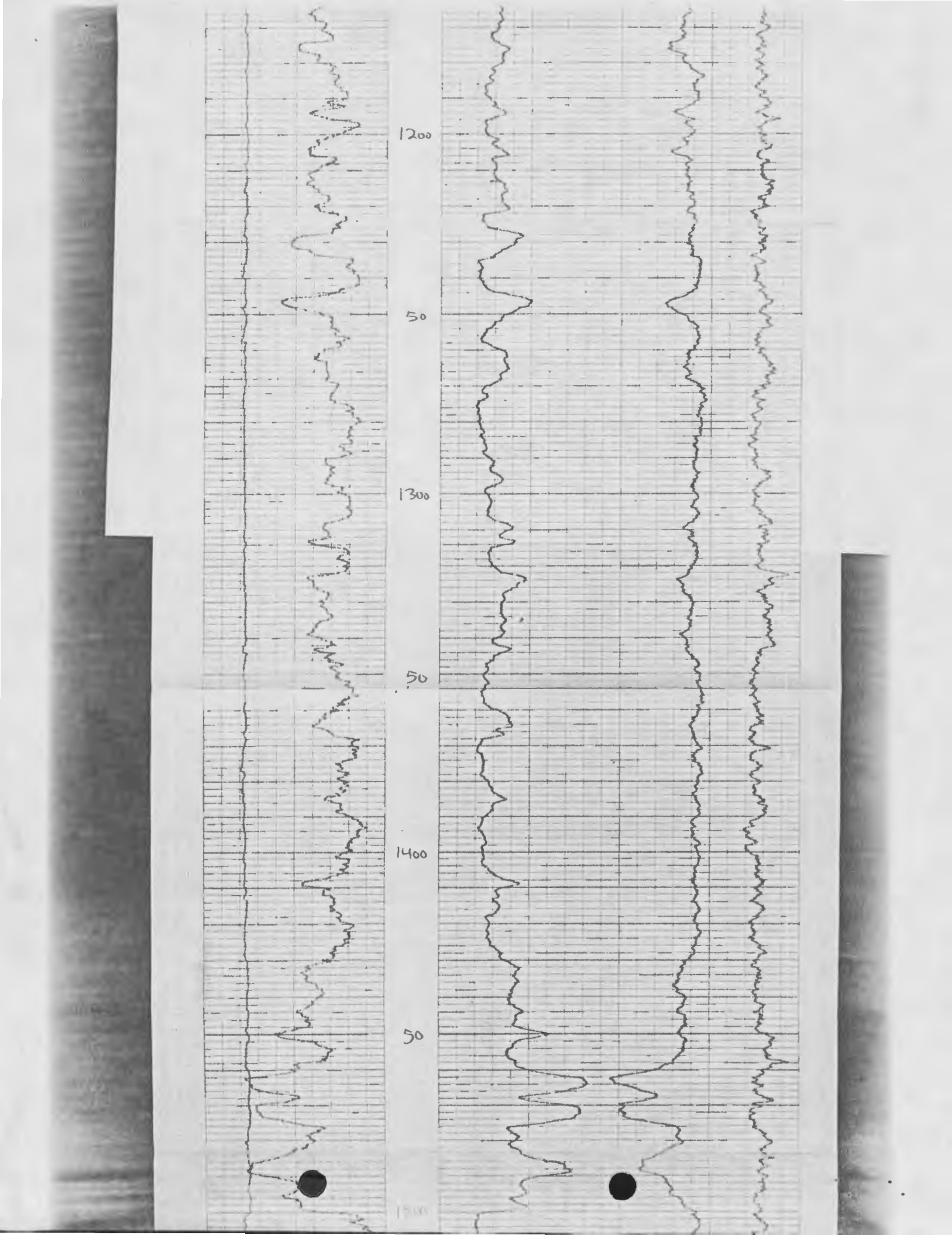
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1400
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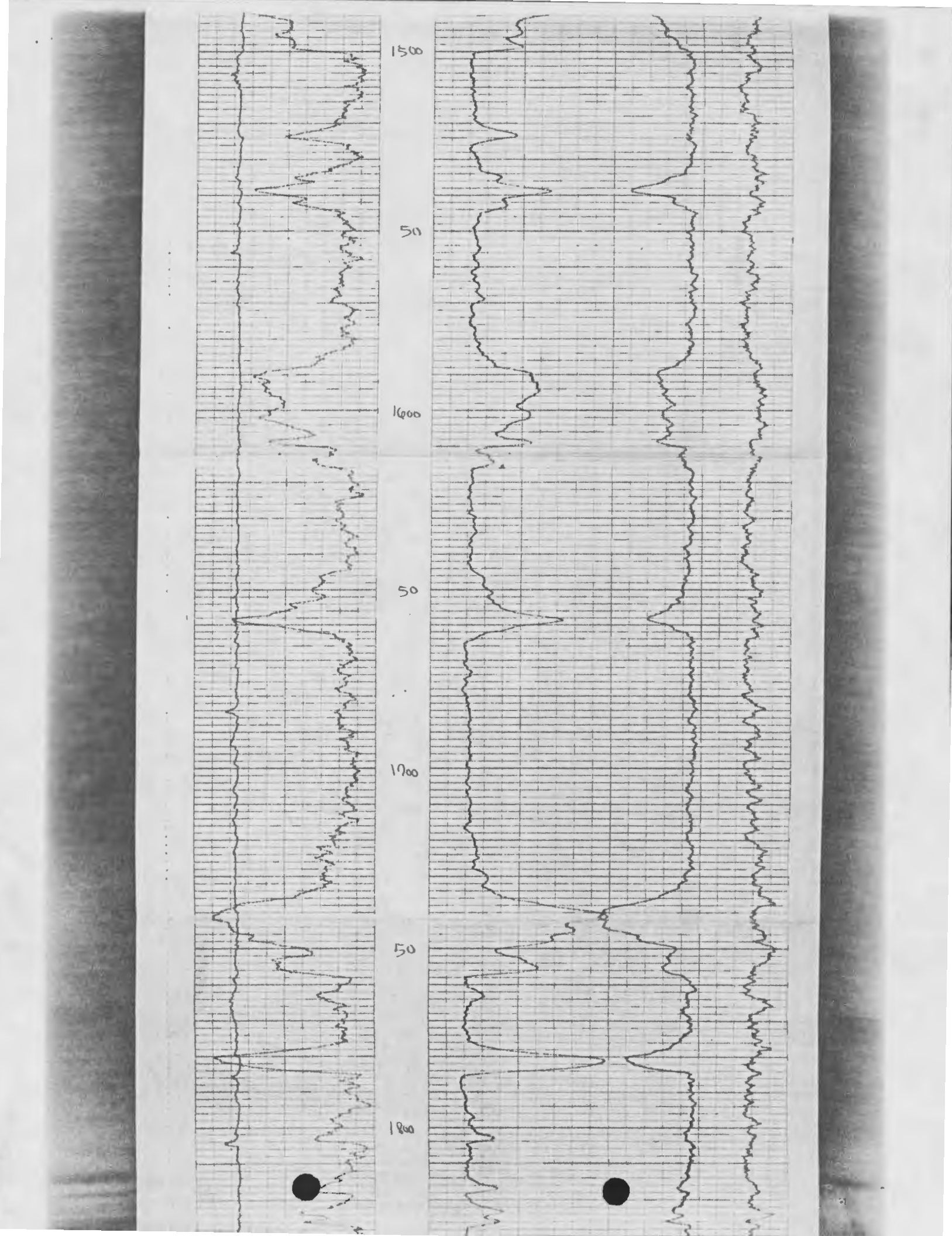
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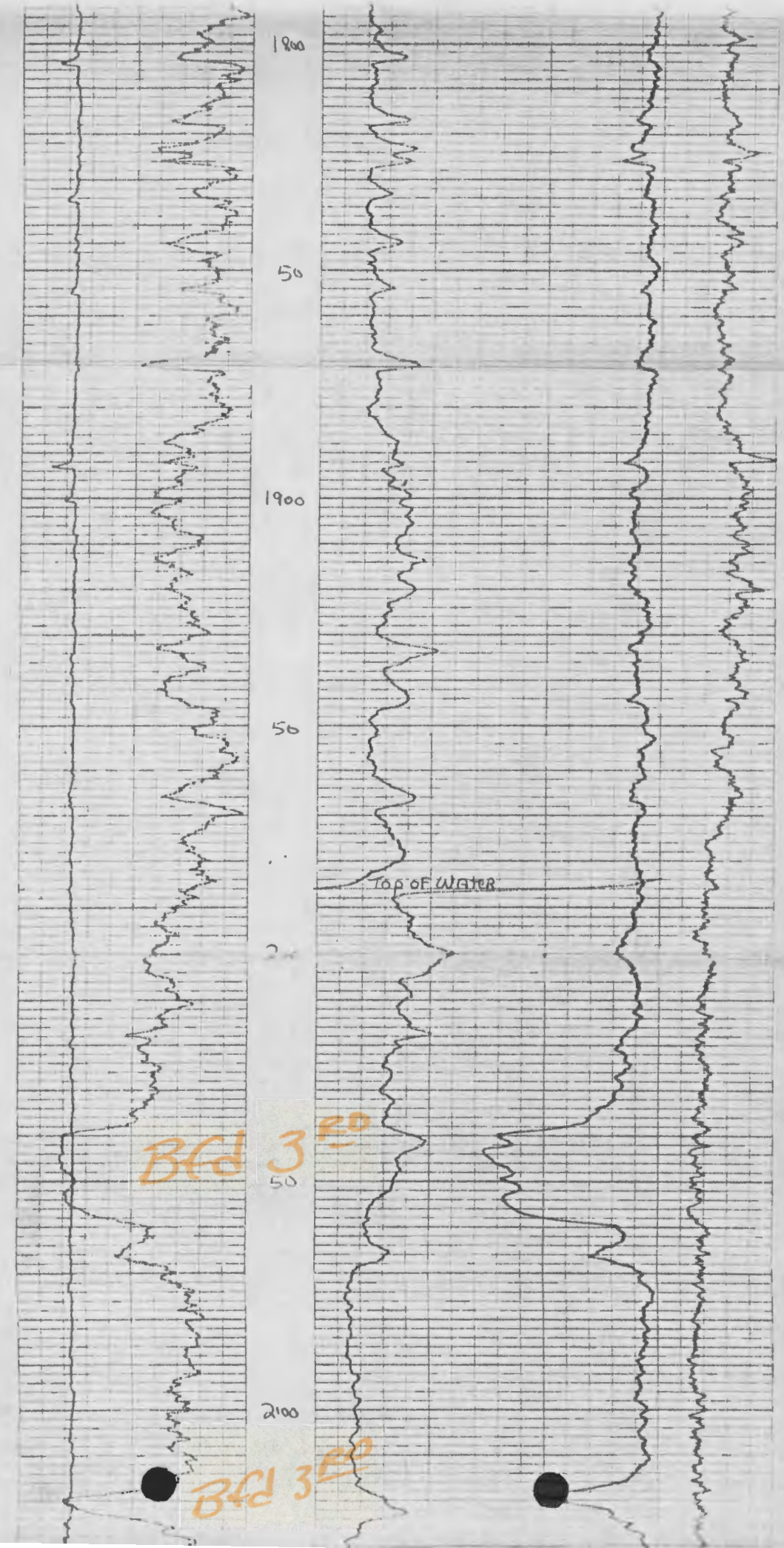
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1900
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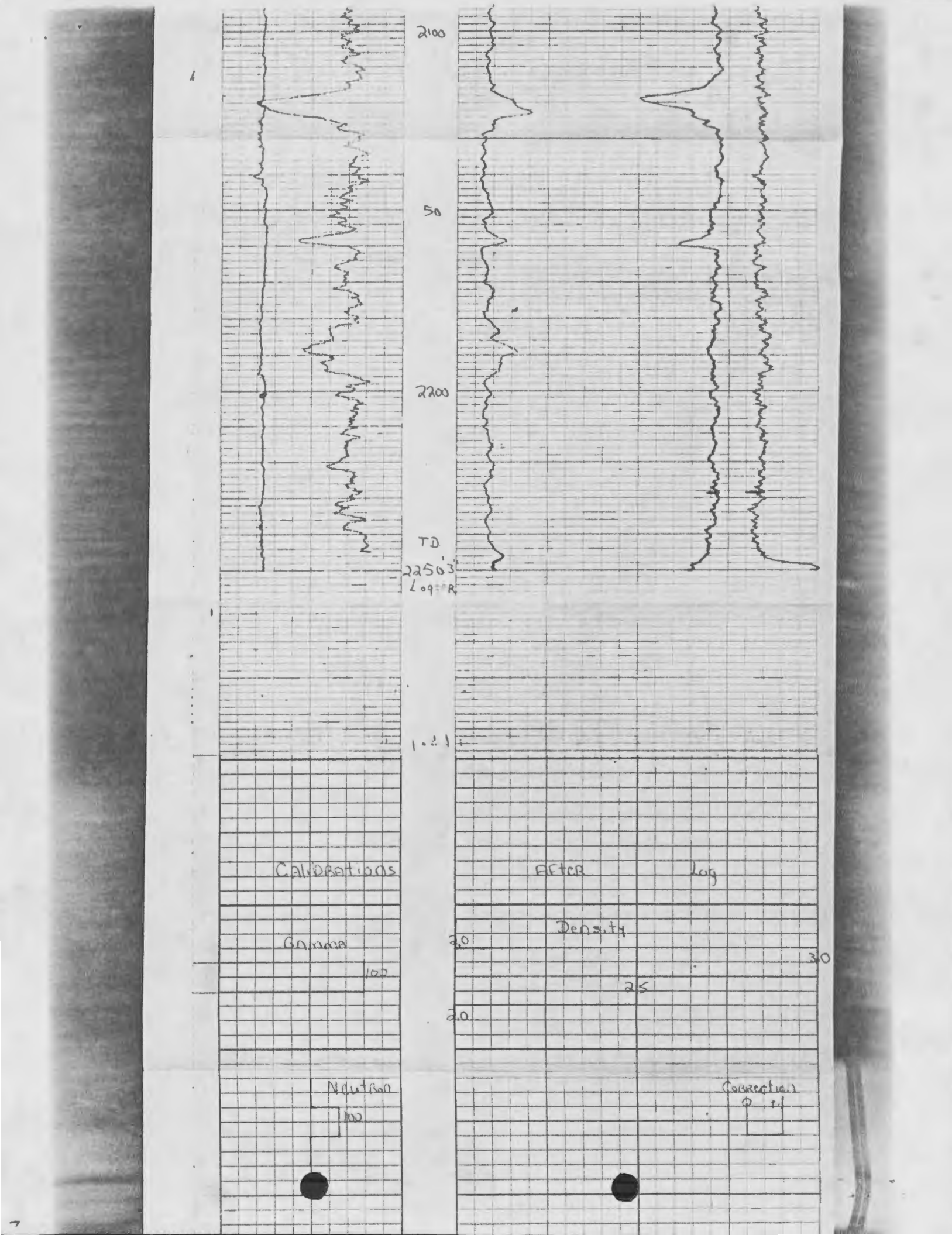
Top of Water
2
BFd 3RD
50
2100
BFd 3RD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Calibrations
After
Log
Gamma
100
Density
3.0
2.5
2.0
Neutron
100
Correction
Φ

MINARD RUN OIL COMPANY — BRADFORD, PA. — WELL RECORD

Property Flood 10 Well No. 10-A14 Producer ☐ Intake ☒X

Contractor Mackey Started 5-30-80 Finished 7-9-80

Conductor: Size _____ In. Amount _____ Ft. Condition _____

Drive Pipe: Size 8 In. Amount 26 Ft. Condition S.H.

Casing: Size 6¼ In. Amount 377 Ft. Condition New

Rig Floor 2.4' Feet Above Ground. Bottom of Hole Before Frac 2059'1" Ft.

Act. Meas. to Rig Floor

SAND DESCRIPTION	TOP	BOTTOM

Water, Fuel Oil Frac
By Halliburton
Date 7-2-80
Remarks: _____
HYDRAFRAC: _____

Cored? _____ By _____ Top _____ Ft. Bottom _____ Ft.

Electric Log? Yes By Go Wireline Top 1300 Ft. Bottom 2057'11" Ft.

Remarks: _____

Gas Showing _____ Water Showing _____

Cleaning Out: No. of Hours _____ Well Depth After _____ Ft.

Packer: Size 2 x 6¼ In. Make Rag Top 1354 Ft.

Fill In 50' Amount 8 sacks cement

R-L Nipple _____ Set At 1354

Depth after cementing 1,974'

COMPLETION RECORD

Anchor: Size _____ Inch. Amount _____ Feet _____ Inches

Perforated: Size _____ Inch. Amount _____ Feet _____ Inches

Amount of Tubing Between Working Barrel and Perforated _____ Feet _____ Inches

Working Barrel: Make _____ Size _____ In. Condition _____

Tubing: Size 1½ Inch. Amount 1,348' Ft. Condition New

Rods: Size _____ Inch. Amount _____ Ft. Condition _____

Pumping Equipment: _____

First Pumping Date _____ Oil To Tank No. _____

Date Water Turned In 7-10-80 Pressure _____

ADDITIONAL DATA OVER

8-79—200

MINARD RUN OIL COMPANY — BRADFORD, PA. — WELL RECORD

Property Flood 10 Well No. 10-14 Producer XX Intake ☐

Contractor C. J. Morris & Sons Started 4-21-80 Finished 6-6-80

Conductor: Size ____ In. Amount ____ Ft. Condition ____

Drive Pipe: Size 8" In. Amount 22' Ft. Condition S.H.

Casing: Size 6¼" In. Amount 424 Ft. Condition New

Rig Floor 2.0' Feet Above Ground. Bottom of Hole Before Frac 2075'1 Ft.

Act. Meas. to Rig Floor

SAND DESCRIPTION	TOP	BOTTOM

Water, Fuel Oil Frac
By Halliburton
Date 6-4-80
Remarks:
HYDRAFRAC:

Cored? ____ By ____ Top ____ Ft. Bottom ____ Ft.

Electric Log? Yes By Go Wireline Top 1300 Ft. Bottom 2074'4" Ft.

Remarks: ____

Gas Showing ____ Water Showing ____

Cleaning Out: No. of Hours ____ Well Depth After 2020' Ft.

Packer: Size ____ In. Make ____ Top ____ Ft.

Fill In ____ Amount ____

R-L Nipple ____ Set At ____

COMPLETION RECORD

Anchor: Size 2 Inch. Amount 22 Feet ____ Inches

Perforated: Size 2" Inch. Amount 1 Feet ____ Inches

Amount of Tubing Between Working Barrel and Perforated ____ Feet ____ Inches

Working Barrel: Make B.M.W. Size 2 In. Condition New

Tubing: Size 2" Inch. Amount 1989 Ft. Condition S.H.

Rods: Size 5/8" Inch. Amount 1984 Ft. Condition S.H.

Pumping Equipment: Jensen Jack & Briggs & Straton Gas Eng.

First Pumping Date 6-9-80 Oil To Tank No. F-2 Battery

Date Water Turned In ____ Pressure ____

ADDITIONAL DATA OVER

12-69 500

MINARD RUN OIL COMPANY — BRADFORD, PA. — WELL RECORD

Well No. 10-A14 Producer ☐ XX Intake

Started 5-30-80 Finished 7-9-80

Ft. Condition ____

Ft. Condition S.H.

Ft. Condition New

e Ground. Bottom of Hole Before Frac 2059'1" Ft.

Water, Fuel Oil Frac
By Halliburton
Date 7-2-80
Remarks:
HYDRAFRAC:

TOP	BOTTOM

Top ____ Ft. Bottom ____ Ft.

Top 1300 Ft. Bottom 2057'11" Ft.

ne

Water Showing ____

Well Depth After ____ Ft.

Top 1354 Ft.

Amount 8 sacks cement

1354

OMPLETION RECORD

Inch. Amount ____ Feet ____ Inches

Inch. Amount ____ Feet ____ Inches

…ARD RUN OIL COMPANY — BRADFORD, PA. — WELL RECORD

Property: Flood 10 — Well No. 10-15 — Producer: XX — Intake: ☐

Contractor: C. J. Morris & Sons — Started: 3-3-80 — Finished: 4-16-80

Conductor: Size ______ In. Amount ______ Ft. Condition ______

Drive Pipe: Size 8 In. Amount 19 Ft. Condition S.H.

Casing: Size 6¼ In. Amount 430 Ft. Condition New

Rig Floor 1.8' Feet Above Ground. Bottom of Hole Before Frac 2193'3" Ft.

Act. Meas. to Rig Floor

SAND DESCRIPTION	TOP	BOTTOM

Water, Fuel Oil Frac

By: Halliburton

Date: 4-10-80

Remarks:

HYDRAFRAC:

Cored? ______ By ______ Top ______ Ft. Bottom ______ Ft.

Electric Log? Yes By GO Wireline Top 1300 Ft. Bottom 2092'4" Ft.

Remarks:

Gas Showing: Light — Water Showing: ______

Cleaning Out: No. of Hours ______ Well Depth After 2016' Ft.

Packer: Size ______ In. Make ______ Top ______ Ft.

Fill In ______ Amount ______

R-L Nipple ______ Set At ______

COMPLETION RECORD

Anchor: Size 2 Inch. Amount 21 Feet ______ Inches

Perforated: Size 2 Inch. Amount 1 Feet ______ Inches

Amount of Tubing Between Working Barrel and Perforated ______ Feet ______ Inches

Working Barrel: Make B.M.W. Size 2 In. Condition New

Tubing: Size 2 Inch. Amount 1985 Ft. Condition S.H.

Rods: Size 5/8 Inch. Amount 1980 Ft. Condition S.H.

Pumping Equipment: Jensen Jack Gas Engine

First Pumping Date: 4-17-80 — Oil To Tank No.: F-2

Date Water Turned In ______ Pressure ______

ADDITIONAL DATA OVER

12-69 500

…ANY — BRADFORD, PA. — WELL RECORD

Well No. 10-A14 — Producer ☐ — Intake XX

Started 5-30-80 — Finished 7-9-80

…unt 26 Ft. Condition S.H.

…unt 377 Ft. Condition New

…Ground. Bottom of Hole Before Frac 2059'1" Ft.

Water, Fuel Oil Frac

By Halliburton

Date 7-2-80

Remarks:

HYDRAFRAC:

Top ______ Ft. Bottom ______ Ft.

…ne Top 1300 Ft. Bottom 2057'11" Ft.

Water Showing

Well Depth After ______ Ft.

1354 — Amount 8 sacks cement — Top 1354 Ft.

…OMPLETION RECORD

…Inch. Amount ______ Feet ______ Inches

MINARD RUN OIL COMPANY — BRADFORD, PA. — WELL RECORD

Property Flood 10 Well No. 10-23 Producer XX Intake ☐

Contractor Mackey Started 9-4-80 Finished 10-31-80

Conductor: Size ____ In. Amount ____ Ft. Condition ____

Drive Pipe: Size 8 In. Amount 36 Ft. Condition Used

Casing: Size 6¼ In. Amount 353 Ft. Condition New

Rig Floor 2.3 Feet Above Ground. Bottom of Hole Before Frac 2031'1" Ft.

Act. Meas. to Rig Floor

SAND DESCRIPTION	TOP	BOTTOM

Water, Fuel Oil Frac
By Halliburton
Date 10-29-80
Remarks:
HYDRAFRAC:

Cored? ____ By ____ Top ____ Ft. Bottom ____ Ft.

Electric Log? Yes By Go Wireline Top 1300 Ft. Bottom 2031'1" Ft.

Remarks:

Gas Showing ____ Water Showing ____

Cleaning Out: No. of Hours ____ Well Depth After (After Frac) 2004'6" Ft.

Packer: Size ____ In. Make ____ Top ____ Ft.

Fill In ____ Amount ____

R-L Nipple ____ Set At ____

COMPLETION RECORD

Anchor: Size 2 Inch. Amount 21 Feet ____ Inches

Perforated: Size 2 Inch. Amount 1 Feet ____ Inches

Amount of Tubing Between Working Barrel and Perforated ____ Feet ____ Inches

Working Barrel: Make BMW Size 2 In. Condition New

Tubing: Size 2 Inch. Amount 1972' Ft. Condition S.H. 10 thread & 11½ thread pipe

Rods: Size 5/8 Inch. Amount 1967 Ft. Condition Used

Pumping Equipment: Waukashaw Gas Engine & Jensen Jack

First Pumping Date 11-3-80 Oil To Tank No. F-Flood

Date Water Turned In ____ Pressure ____

ADDITIONAL DATA OVER

8-79-200

MINARD RUN OIL COMPANY — BRADFORD, PA. — WELL RECORD

Well No. 10-A14 Producer ☐ Intake XX

Started 5-30-80 Finished 7-9-80

Ft. Condition ____

Ft. Condition S.H.

Ft. Condition New

Ft. Bottom 2059'1" Ft.

Water, Fuel Oil Frac
By Halliburton
Date 7-2-80
Remarks:
HYDRAFRAC:

TOP	BOTTOM

Top ____ Ft. Bottom ____ Ft.

Top 1300 Ft. Bottom 2057'11" Ft.

Water Showing ____

Well Depth After ____ Ft.

Top 1354 Ft.

Amount 8 sacks cement

1354

COMPLETION RECORD

Inch. Amount ____ Feet ____ Inches

MINARD RUN OIL COMPANY — BRADFORD, PA. — WELL RECORD

Property Flood 10 Well No. 10-24 Producer XX Intake ☐

Contractor Mackey Drilling Started 7-10-80 Finished 8-26-80

Conductor: Size ____ In. Amount ____ Ft. Condition ____

Drive Pipe: Size 8" In. Amount 46' Ft. Condition New

Casing: Size 6¼" In. Amount 360' Ft. Condition New

Rig Floor 2.2' Feet Above Ground. Bottom of Hole Before Frac 2041'10" Ft.

Act. Meas. to rig Floor

SAND DESCRIPTION	TOP	BOTTOM

Water, Fuel Oil Frac
By Halliburton
Date 8-29-80
Remarks:
HYDRAFRAC:

Cored? ____ By ____ Top ____ Ft. Bottom ____ Ft.

Electric Log? Yes By Go Wireline Top 1250' Ft. Bottom 2036'4" Ft.

Remarks:

Gas Showing Light Water Showing ____

Cleaning Out: No. of Hours ____ Well Depth After 1932' Ft.

Packer: Size ____ In. Make ____ Top ____ Ft.

Fill In ____ Amount ____

R-L Nipple ____ Set At ____

COMPLETION RECORD

Anchor: Size 2 Inch. Amount 21 Feet ____ Inches

Perforated: Size 2 Inch. Amount 1 Feet ____ Inches

Amount of Tubing Between Working Barrel and Perforated ____ Feet ____ Inches

Working Barrel: Make B.M.W. Size ____ In. Condition ____

Tubing: Size 2" Inch. Amount 1901 Ft. Condition 10 thread & 11½

Rods: Size 5/8" Inch. Amount 1896 Ft. Condition Used

Pumping Equipment: Jensen Jack on boat

First Pumping Date 9-3-80 Oil To Tank No. F-2 tanks

Date Water Turned In ____ Pressure ____

ADDITIONAL DATA OVER

8 79--200

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
BUREAU OF OIL AND GAS MANAGEMENT

Code	
Oil & Gas Inspector	
Date Approved	
INV	EXA

CERTIFICATE OF WELL PLUGGING

Coal ☐ Operator ☐ Owner ☐ Lessee

Address

Coal ☐ Operator ☐ Owner ☐ Lessee

Address

Coal ☐ Operator ☐ Owner ☐ Lessee

Address

COMPLETE ABOVE SECTION IF APPLICABLE

Intake
Type of Well

Minard Run Oil Company
Operator Name

P.O. Box 18
Address

Bradford, PA 16701

Lafayette Twp.
Municipality

McKean
County

37-083-38436 MRO-27
Permit/Registration Number Project Number

Flood-10
Farm Name

10A13
Well Number Serial Number

We, the undersigned representatives of the Well Operator certify that we participated in the plugging of the above well, and that the work was started June 17 19 92, and that the well was plugged as follows:

FILLING MATERIAL AND PLUGS	FROM	TO	Casing and Tubing SIZE	PULLED	LEFT
Total depth		2062	8"		20'
Cement plug	1925	1875	6¼"		404'
Cement plug	1690	1590	1½"	1167'	213'
Rag packer		1380			
Cement on packer	1380	1339			
1" plug packer		1370			
Cement on packer	1370	1300	Depth of Coal Seam(s), If Any		
Gel water	1167	474			
Bridge		474			
Gravel on bridge	474	454			
Cement	454	354			
Dirt & gravel	354	25	Description of Monument		
Cement	25	0			
			2" pipe marker		

I certify that the work of plugging and filling said well was completed on the 24th day of June, 19 92 and that the above information is true and accurate.

Minard Run Oil Company 7/15/92
(Well Operator) Date

E.W. Aharrah Supt.
E.W. Aharrah (Qualified Participant) Superintendent

F.W. Fesenmyer President
F.W. Fesenmyer (Qualified Participant) President

One copy of this certificate to be mailed to each coal operator, lessee, or owner, if any, and one to the Bureau of Oil and Gas Management, upon completion of plugging.

Curtis Oil, Inc.

P.O. Box 287
Duke Center, PA 16729
814-966-3452

April 21, 1992

U.S. Environmental Protection Agency
841 Chestnut Street
Philadelphia, PA 19107
S. Stephen Platt

Mr. Platt;

Enclosed is the application for an area permit for the Bryner Lease. All parts are done except the financial section which is being compiled. As soon as the estimates on the plugging are received, the information will be submitted. The letter of credit from the First National Bank of Port Allegany will also be included with the financial information that you require.

If there are any problems with this application please let me know.

Thank you;

Randolph W. Curtis

Randolph W. Curtis

Form 4 UIC

EPA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

UNDERGROUND INJECTION CONTROL PERMIT APPLICATION

(Collected under the authority of the Safe Drinking Water Act, Sections 1421, 1422, 40 CFR 144)

I. EPA ID NUMBER: U | | | T/A | C

READ ATTACHED INSTRUCTIONS BEFORE STARTING

FOR OFFICIAL USE ONLY

Application approved (mo / day / year)	Date Received (mo / day / year)	Permit/Well Number	Comments

II. FACILITY NAME AND ADDRESS

Facility Name: Curtis Oil Inc. - Bowerlease

Street Address: PO Box 287 694 Main St.

City: Duke Center | State: PA | ZIP Code: 16729

III. OWNER/OPERATOR AND ADDRESS

Owner/Operator Name: Curtis Oil, Inc.

Street Address: PO Box 287 694 Main St.

City: Duke Center | State: PA | ZIP Code: 16729

IV. OWNERSHIP STATUS (Mark 'x')

☐ A. Federal ☐ B. State ☒ C. Private

☐ D. Public ☐ E. Other (Explain)

V. SIC CODES

VI. WELL STATUS (Mark 'x')

☐ A. Operating | Date Started (mo / day / year) | ☐ B. Modification/Conversion ☒ C. Proposed

VII. TYPE OF PERMIT REQUESTED (Mark 'x' and specify if required)

☐ A. Individual ☒ B. Area

Number of Existing wells	Number of Proposed wells	Name(s) of field(s) or project(s)
0	24	Bradford oil Field

VIII. CLASS AND TYPE OF WELL (see reverse)

A. Class(es) (enter code(s))	B. Type(s) (enter code(s))	C. If class is "other" or type is code 'x,' explain	D. Number of wells per type (if area permit)
II	R		24

IX. LOCATION OF WELL(S) OR APPROXIMATE CENTER OF FIELD OR PROJECT

X. INDIAN LANDS (Mark 'x') ☐ Yes ☒ No

	A. Latitude Deg	Min	Sec	B. Longitude Deg	Min	Sec	Township and Range Twsp	Range	Sec	¼ Sec	Feet from	Line	Feet from	Line
I	41	50	00	78	42	30					1900	N	400	E

XI. ATTACHMENTS

(Complete the following questions on a separate sheet(s) and number accordingly; see instructions)

FOR CLASSES I, II, III (and other classes) complete and submit on separate sheet(s) Attachments A — U (pp 2-6) as appropriate. Attach maps where required. List attachments by letter which are applicable and are included with your application:

XII. CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

A. Name and Title (Type or Print)	B. Phone No. (Area Code and No.)
Randolph W. Curtis, President.	8149663452
C. Signature	**D. Date Signed**
Randolph W. Curtis	4/20/92

EPA Form 7520-6 (2-84)

Section A

The area of review method used was to calculate the radius of influence utilizing the formulas given in the EPA publication "Radius of Pressure Influence of Injection Wells."

Following are the parameters used to calculate the area of influence:

$K = 12.7$ md

$\phi = 14,6\%$

$h = 15$ ft

$C = 7.5 \times 10^{-6}$ psi^{-1}

$\mu = 1$ cp

$p = 1200$ psi surface

$q = 50$ bbl/day

$r = 0.2604$ (6.25" wellbore)

$T = 5475$ (15 yrs.)

Utilizing the parameters for a single well, a pressure of approximately 120 psi bottomhole was found at a 900 foot distance.

It was determined to use this distance as multiple injection wells less the volume produced by the production wells would have no greater impact on the radius of influence.

All maps submitted however show a 1320' radius on them along with the 900' radius. Verification of all wells in these radii has been attempted and are addressed in section C.

Section B

Several Maps have been included:

1. A copy of the Lewis Run USGS Topo showing a 900' radius, 1320' radius and a 1 mile radius around the project area. Scale: 1" = 2000'

2. A map showing the location of all known surrounding wells active and plugged.

3. A copy of the McKean Co. plat book showing the property owners on and adjacent to the project.

To the best of our knowledge and research of public records, no intake or discharge structures, no hazardous waste treatment, storage or disposal facilities are located in this area.

Springs are located accurately on the USGS Topo and are closely located on the 1" = 400' map showing the wells.

There is one house located approximately 1800' west of the project and it is assumed it has a water well as no springs or public water supplies are in the immediate area.

The only public road in the vicinity is SR 59 located on the 1" = 400' scale map.

Section C

Bryner Lease - All wells active

Pennzoil South - #225 and #223 active - Curtis Oil presently negotiating purchase of these wells.

Williams - no known wells

Healey - wells denoted by X prefix were drilled in 1938 and 1939. All wells have been visually checked and appear to be plugged. The wells according to the limited records available were drilled into the Sliverville Sand approximately 300' above the Bradford 3rd Sand and were not drilled into the Bradford 3rd Sand.

Well X-1 was drilled to a depth of 1820 and had a surface elevation of 2168 ft above sea level. This well T.Ded 240' above the Bradford 3rd Sand. X-10 elev 2146 TD 1814 250' above Bradford 3rd Sand.

Horton #1 and #2 - no record available for #2. #1 well: 2180' Elev. TDed at 1878' approximately 220' above the Bradford 3rd Sand. Again visual inspection shows wells appear to be plugged.

Pennzoil North #6, #9 - no public records available. Wells appear plugged.

Minard Run Oil - wells on this tract being plugged at this time.

Only 18 wells fall into the 1350' area of review. These wells were part of the Music Mountain Pool which produced from the Sliverville Sand. It is highly likely that they were never drilled into the Bradford 3rd horizon as the Bradford 3rd Sand is wet (contains salt water not oil) as one goes to the Healy tract (X wells). Those

records available confirm this belief and the appearance is that these wells are now plugged.

However, should a well be found to be not plugged every effort will be made to get permission to plug the well to present Pa. D.E.R. standards.

Minard Run Oil is presently plugging their wells in this area and they are located for the most part more than 1320' from the property line.

Section E

No Studies of USDW's in this area have been done to our knowledge. There are no supply wells in this immediate area. However, two wells were electric logged through the water bearing horizons and 1 well, #19, was drilled by a cable tool rig.

The logs indicate no water bearing horizons deeper than 220' and the cable tool drilled well confirms this depth. There is however, a porous zone located at approximately 370 to 400' deep and casing is set through this zone even though no water is encountered in it.

The water bearing zone is of the Cattaragus formation of Devonian age sometimes referred to as the Cattaragus Red beds.

Log sections of wells #6 and #7 are included in this application and the water zones are marked for identification.

Section I & G

The confining zone consists of 238' of dense gray green shale. There are small (less than 4 feet) sections of sandy shale that are well cemented and have no effective porosity. The portion of the confining zone immediately above the Bradford 3rd Sand is a dense mudstone that forms a very good cap rock.

Injection Zone

Mineralogical Composition (Fettke)

The Bradford Third sand is a chocolate-brown sandstone composed predominantly of fine to very fine angular quartz grains. Occasionally a few well-rounded small pebbles, of transparent to milky quartz up to 3 millimeters in diameter, occur scattered through the sandstone. These are mostly in the upper layers and only rarely constitute any appreciable volume of the rock.

Chemical Analysis (Fettke)
Chemical analysis of Bradford Third Sandstone:

	Percent		Percent
SiO_2	86.89	Alkalies	Not Determ.
Al_2O_3	6.95	H_2O (combined)	0.89
Fe_2O_3 (includes FeO)	2.55	CO_2	trace
MgO	0.42	C (organic)	0.30
CaO	0.07		98.07

From log & core data

Top of Bfd 3rd	82' above sea level
Bottom of Bfd 3rd	10' below sea level
Gross Sand Thickness	92 feet
Net Sand Thickness	33 feet

Fracture Pressure

	(1) ISIP	(2) Depth	1 + 2 (.433) (psig)	Gradient
Well #18	1500	1992	2363	1.19
	1550	2076	2449	1.18
Well #6	1600	2060	2492	1.21

Avg. ≈ 2025'

Confining Zone

Dense Gray Green Shale - see attached description

Top of confining Zone	320' above sea level
Bottom of confining Zone	82' above sea level
Gross Thickness	238 feet
Net Thickness	238 feet

Injection Rates

During the initial turn-in period injection rates will be held to 100 bbl/day until fill up is accomplished. Fill up will take from 3 to 6 months at which time the wells capacity to take fluid will decrease until they achieve a settled in rate (estimated from surrounding core data) of approximately 30 BWPD.

During this fill-up period the wellhead pressure will begin at approximately 400 psig and gradually increase to 1100 psig when the stabilized rate is achieved.

The annulus between the injection string and casing/tubing will be filled with fresh water as a result of pressure testing the casing/tubing.

Refer to shematic for details.

The water for this project will be that water produced from the surrounding wells. Some fresh water may be added as needed to keep the flood working at its greatest efficiency.

A water analysis is attached.

The wells will be stimulated with a liquid explosive (i.e. nitroglycerine) using selective shop placement and selectively sized containers based on the information obtained from electric logs or cores. The shot size is dependent on this data and average shot size will probably be 135 quarts of explosive. Expected radius of influence from the shot is approximately 20'.

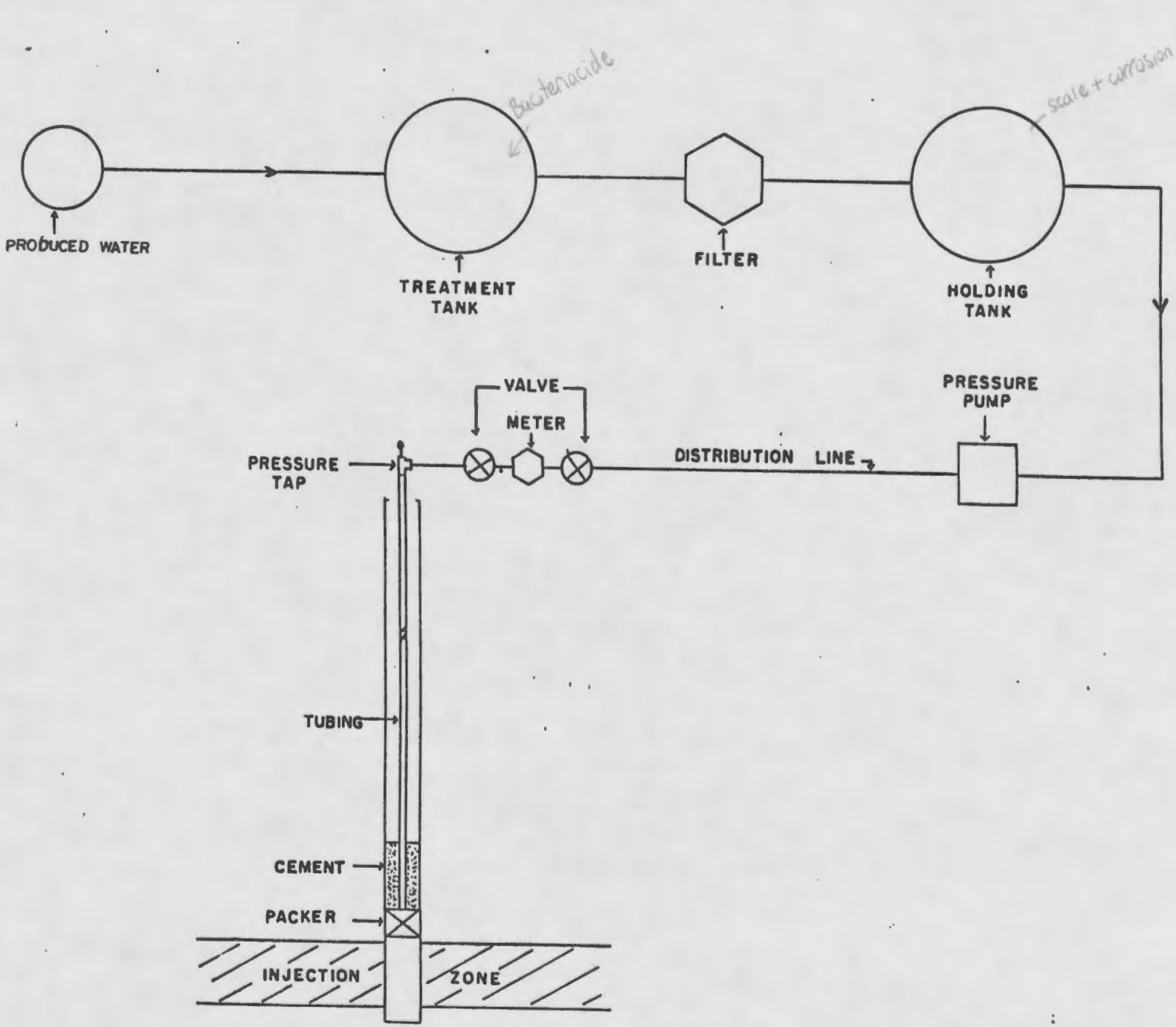
After the well is shot the rubble is cleaned from the well bore and the injection tubing and packer is run to a point no greater than 3' above the Bradford Third Sand. The packer is then set and cemented in place using 20 sacks of neat Portland cement (filling approximately 100' of well bore).

The well is then allowed to set for a period of not less than 10 days to allow the cement to property cure before injection can begin.

The tubing string will consist of an average 1765' of 2 3/8" non-EUE 4.6# Range 2 prime pipe and a 2" X 6¼" Hookwall Packer. Inside the 2" tubing a second string of 1" tubing will be run on a packer or similar device and seated immediately above the packer.

Alternative: An alternative method will be to run 4½" casing on a packer and cement the 4½ to a point no less than 100' above the top of the sand. Then a 2 3/8" tubing string and a 2 X 4" hookwall packer will be run to the bottom of the 4½ casing and seated in place.

Section K


Bacteriacide
scale + corrosion inhibitor
PRODUCED WATER
TREATMENT TANK
FILTER
HOLDING TANK
VALVE
METER
PRESSURE PUMP
PRESSURE TAP
DISTRIBUTION LINE
TUBING
CEMENT
PACKER
INJECTION ZONE

Present treatment plans are to add a scale and corrosion inhibitor to the produced fluid and a bacteriacide prior to filtration. The water will then be filtered and injected into the wells.

At this time treatment chemicals have not been selected. Several suppliers are being evaluated at this time including Baker Chemical, Nalco and Calgon.

20 - 40' of 8 5/8" - 24# set in pipe to isolate the well bore from topsoil and surface waters.

A 7 7/8" diameter hole is then drilled to a casing point averaging 425' over the project area.

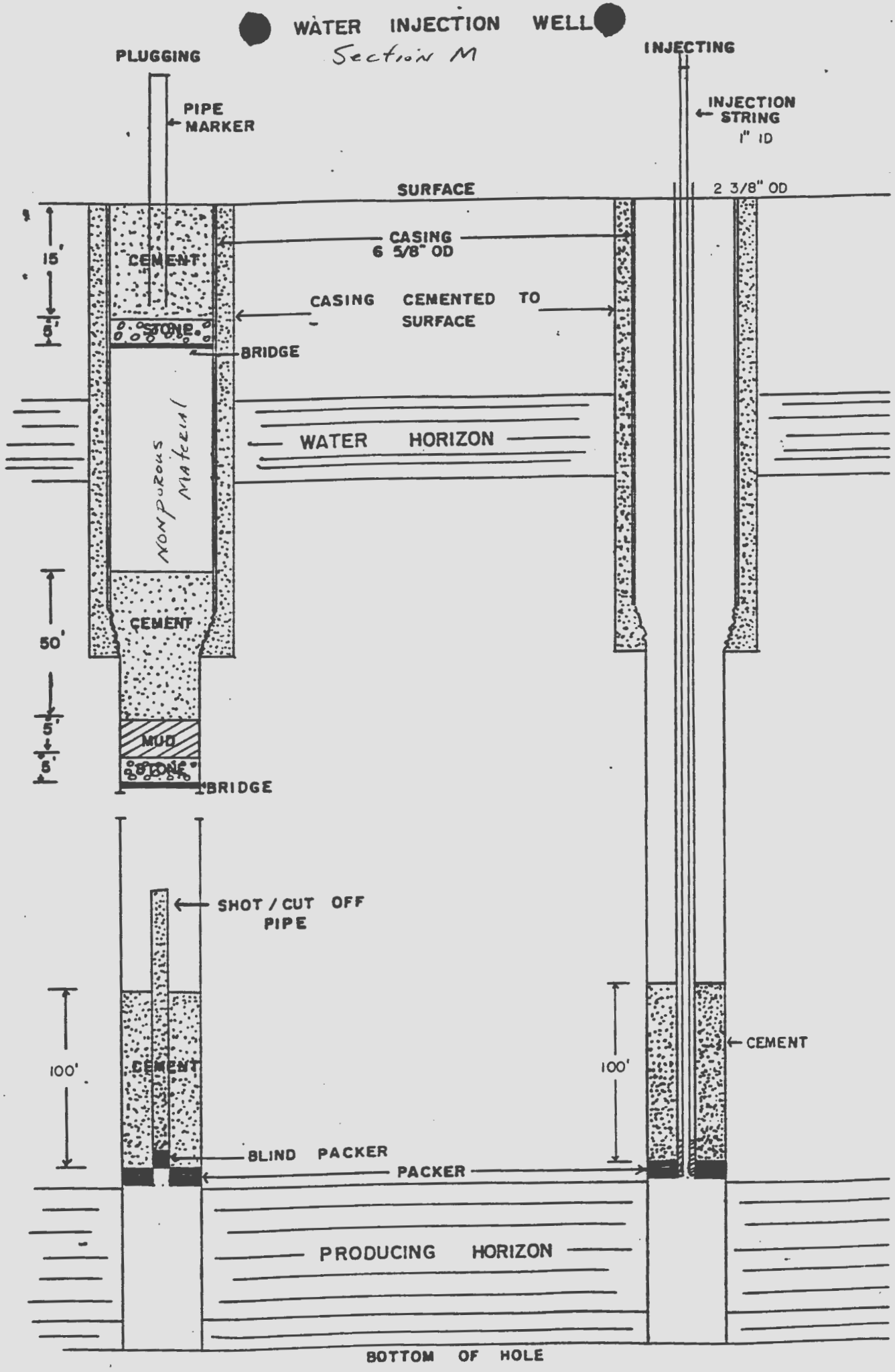
At this point a string of 6 5/8" - 13# casing is run to the bottom of the hole. A service company (i.e. Halliburton) is then brought in to cement the casing back to surface. The cementing program will be as follows: 50 sacks of common cement Class A with 3% calcium chloride and ¼ - ½#/sack of chopped cellophane as a fluid loss additive and 2 sacks of a bentonite gel which is run immediately ahead of the cement slurry to clean the hole of any loose drill cuttings. This program will yield approximately 140% of the annular volume on the average well. The cement is then allowed to cure a minimum of 12 hours before any drilling is allowed to commence. Two centralizers are run on the lower 150' of the casing string to facilitate formation of a uniform cement sheath in the annular space.

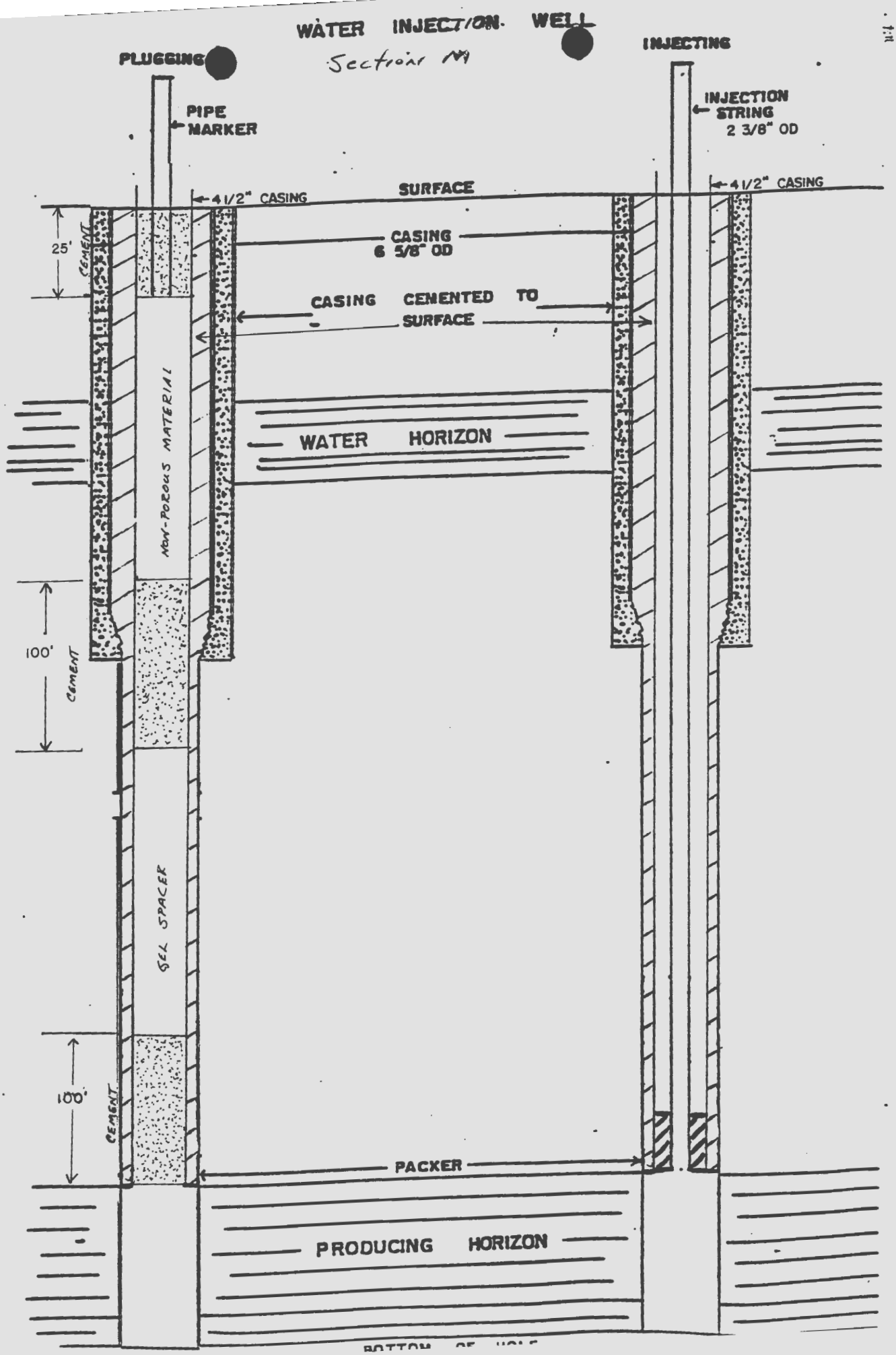
From this point 1 6 3/16" diameter hole is drilled to a point 40' below the bottom of the Bradford 3rd Sand (approximately 80' above sea level). The wells will range from 2,250' deep to 2,000' deep.

The well will then have a sufficient volume of fresh water added to it to fill 700' of bore hole to aid in the logging and stimulation program. The top of the added fluid will be approximately 700' above sea level.

The logging program will consist of the following electric and nuclear logs: Gamma Ray, Guard and Caliper.

After logging and stimulation either 4½ casing will be run and cemented in place or 2 3/8" tubing and a packer will be run and cemented in place. Then the injection tubing will be run with either a packer or seating device attached to inject through after the 4½" or 2 3/8" that was cemented in has been pressure tested to 1200 psig.


WATER INJECTION WELL
Section M
PLUGGING
INJECTING
PIPE MARKER
INJECTION STRING
1" ID
SURFACE
2 3/8" OD
CASING
6 5/8" OD
15'
CEMENT
CASING CEMENTED TO SURFACE
5'
STONE
BRIDGE
NONPOROUS MATERIAL
WATER HORIZON
50'
CEMENT
5'
MUD
5'
STONE
BRIDGE
SHOT / CUT OFF PIPE
100'
CEMENT
100'
CEMENT
BLIND PACKER
PACKER
PRODUCING HORIZON
BOTTOM OF HOLE


WATER INJECTION WELL
Section M
PLUGGING
INJECTING
PIPE MARKER
INJECTION STRING 2 3/8" OD
4 1/2" CASING
SURFACE
4 1/2" CASING
25' CEMENT
CASING 6 5/8" OD
CASING CEMENTED TO SURFACE
NON-POROUS MATERIAL
WATER HORIZON
100' CEMENT
SEL SPACER
100' CEMENT
PACKER
PRODUCING HORIZON

4½ Completion

Form Approved. [illegible] No. 2040-0042. Approval expires 3-31-88

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

PLUGGING AND ABANDONMENT PLAN

NAME AND ADDRESS OF FACILITY	NAME AND ADDRESS OF OWNER/OPERATOR

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES

N / W / E / S

STATE	COUNTY	PERMIT NUMBER
PA.	McKEAN	

SURFACE LOCATION DESCRIPTION

¼ OF ¼ OF ¼ SECTION TOWNSHIP RANGE

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location ____ ft. from (N/S) ____ Line of quarter section

and ____ ft. from (E/W) ____ Line of quarter section

TYPE OF AUTHORIZATION

- ☐ Individual Permit
- ☒ Area Permit
- ☐ Rule

Number of Wells ____

WELL ACTIVITY

- ☐ CLASS I
- ☒ CLASS II
  - ☐ Brine Disposal
  - ☒ Enhanced Recovery
  - ☐ Hydrocarbon Storage
- ☐ CLASS III

Lease Name BRYNER Well Number

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT(LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
8 5/8	17 #	40	40	9.50
6 5/8	13 #	425	425	7.25
4½	9.5 #	2200	2200	6.25

METHOD OF EMPLACEMENT OF CEMENT PLUGS

- ☒ The Balance Method
- ☐ The Dump Bailer Method
- ☐ The Two-Plug Method
- ☐ Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inches)	4.0	4.0	4.0				
Depth to Bottom of Tubing or Drill Pipe (ft.)	2000	475	25				
Sacks of Cement To Be Used (each plug)	10	10	3				
Slurry Volume To Be Pumped (cu. ft.)	11.8	11.8	3.54				
Calculated Top of Plug (ft.)	1900	375	0				
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gal.)	15.2	15.2	15.2				
Type Cement or Other Material (Class III)	Portland	Portland	Portland				

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED *(If any)*

From	To	From	To
[redacted]	[redacted]		
2200	1900		

Intervals all filled with gel/water mixture except 375 to 25 filled with hard porous material not gel.

Estimated Cost to Plug Wells

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED

EPA Form 7520-14 (3-84)

Last Completion

Form Approved. [illegible] No. 2040-0042. Approval expires 3-31-88

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

EPA

PLUGGING AND ABANDONMENT PLAN

NAME AND ADDRESS OF FACILITY	NAME AND ADDRESS OF OWNER/OPERATOR

LOCATE WELL AND OUTLINE UNIT ON SECTION PLAT — 640 ACRES

N / W / E / S

STATE	COUNTY	PERMIT NUMBER
Pa.	McKEAN	

SURFACE LOCATION DESCRIPTION

¼ OF ¼ OF ¼ SECTION TOWNSHIP RANGE

LOCATE WELL IN TWO DIRECTIONS FROM NEAREST LINES OF QUARTER SECTION AND DRILLING UNIT

Surface Location ____ ft. from (N/S) ____ Line of quarter section

and ____ ft. from (E/W) ____ Line of quarter section

TYPE OF AUTHORIZATION

- ☐ Individual Permit
- ☒ Area Permit
- ☐ Rule

Number of Wells ____

WELL ACTIVITY

- ☐ CLASS I
- ☒ CLASS II
  - ☐ Brine Disposal
  - ☒ Enhanced Recovery
  - ☐ Hydrocarbon Storage
- ☐ CLASS III

Lease Name BRYNER Well Number

CASING AND TUBING RECORD AFTER PLUGGING

SIZE	WT(LB/FT)	TO BE PUT IN WELL (FT)	TO BE LEFT IN WELL (FT)	HOLE SIZE
5 5/8	17.0	40	40	9.50
6 5/8	13.0	425	425	8.25
2 3/8	4.6	2000	150	6.25
1"	1.7	2000	0	2 3/8

METHOD OF EMPLACEMENT OF CEMENT PLUGS

- ☒ The Balance Method
- ☐ The Dump Bailer Method
- ☐ The Two-Plug Method
- ☐ Other

CEMENTING TO PLUG AND ABANDON DATA:	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inches)	2 3/8	6.25	6.25				
Depth to Bottom of Tubing or Drill Pipe (ft.)	2000	475	25				
Sacks of Cement To Be Used (each plug)	2	20	6				
Slurry Volume To Be Pumped (cu. ft.)	2.36	23.6	7.1				
Calculated Top of Plug (ft.)	1900	375	0				
Measured Top of Plug (if tagged ft.)							
Slurry Wt. (Lb./Gal.)	15.2	15.2	15.2				
Type Cement or Other Material (Class III)	Portland	Portland	Portland				

LIST ALL OPEN HOLE AND/OR PERFORATED INTERVALS AND INTERVALS WHERE CASING WILL BE VARIED *(If any)*

From	To	From	To
Interval from	375 to 25 filled with non porous	material not gel	
Remaining intervals filled with gel/water mixture			

Estimated Cost to Plug Wells

CERTIFICATION

I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. (Ref. 40 CFR 144.32)

NAME AND OFFICIAL TITLE *(Please type or print)*	SIGNATURE	DATE SIGNED

EPA Form 7520-14 (3-84)

Well Failure - Packer - If a packer should fail to contain injected fluids the well would be shut in and cement circulated from the packer to the casing seat. This would be highly unlikely as the packer will have 50' of cement run on top of it prior to the well being put on production.

Injection Tubing - If a hole should develop in the tubing string the well would be temporarily shut down and pressure allowed to diminish. Then a pony packer and remedial tubing run inside the pipe to a point below the hole and set there. The well is then pressured up and monitored to make sure the work over is functioning properly.

If any injection well can not be satisfactorily repaired the well will be shut in and plugged.

The above methods have satisfactorily repaired nearly 100 percent of any problems in the past.

In the case of 4½ casing and 1" tubing, the 1" tubing and packer will be removed and replaced to maintain mechanical integrity. As the 4½ casing will be cemented to surface and will not come into contact with the injected fluid it is highly unlikely it will fail. However, if it should, a casing patch can be run over the bad section. A 2 7/8" line could be run or if all else fails the well will be plugged in accordance with our P & A plan.

Injection is begun by first flushing the lines to the wellhead then connecting the injection line to a flow meter on the injection tubing. A valve is opened partially to allow the well to begin filling.

The well is monitored daily until a period of stabilization is reached (usually 1 - 2 months), then the well is monitored weekly for a period of approximately 1 year, then monthly monitoring is begun until the flood is to be abandoned.

The monitoring of the wells will be done individually. The meter for each well will be located at each well and the pressure tap will be located on the top of the tubing string.

At this point in the life of the flood the injection will stop but the producing wells will be kept pumping for a period of 2 - 4 months to allow the reservoir to reach a static state. When this happens the plugging will begin.

Pressures and volumes will be monitored at the injection plant on a daily basis and the pressures will be continuously recorded by a chart meter.

Microbac

WATER ANALYSIS REPORT

Microbac Laboratories, Inc.
J-Labs Division
P.O. Box 489, Bradford, Pennsylvania 16701
(814) 368-6087

Case No. 87519

AIR • FUEL • WATER • FOOD • WASTES

CLIENT: Curtis Oil Company SYSTEM:

Sample No.		90F130			
Date Sampled by J-Labs Personnel		6-13-90			
Time Sampled		4:00 p.m.			
Date Received		6-13-90			
Location:		Discharge Off 305-A			
Appearance When Sampled					
Appearance After Standing					
pH (As Sampled)		6.4			
Odor					
Temperature	°C.	15.0			
pH		6.6			
Carbon Dioxide	CO_2				
Dissolved Oxygen	O_2				
Residual Chlorine	Cl_2				
Hydrogen Sulfide	H_2S				
Turbidity	NTU				
Alkalinity to Phenolphthalein	as $CaCO_3$	0			
Alkalinity to Methyl Orange	as $CaCO_3$	65			
Chlorides	Cl	95,000			
Total Hardness	$CaCO_3$	47,600			
Calcium	Ca	15,200			
Magnesium	Mg	2,333			
Sulfates	SO_4	896			
Phosphate	PO_4				
Manganese	Mn	17.7			
Iron (Total)	Fe	34.2			
Iron (Dissolved)	Fe	27.7			
Total Solids, Dissolved @ 180°C.		165,000			
Suspended Solids		<1.0			
Specific Gravity (60 °F)					
Specific Conductance, micromhos/cm.		228,000			
Oil & Grease		17.5			
Osmolality, mOsm/kg.		4,320			

Results expressed in mg/liter - "ND" means not determined.

Case No. 87519

Microbac Laboratories, Inc.
J-Labs Division
P.O. Box 489, Bradford, Pennsylvania 16701
(814) 368-6087

Client: Curtis Oil Company **System:**

Sample No.	90F130							
Sampled by: J-Labs Personnel	Date 6-13-90	Time 4:00 p.m.	Date	Time	Date	Time	Date	Time
Received by:	6-13-90							
Location	Discharge Off 305-A							
Arsenic	<0.005							
Barium	64.7							
Cadmium	<0.50							
Chromium								
Lead	<0.05							
Mercury								
Selenium								
Silver	<0.05							
Fluoride								
Nitrate NO_3 - N								
Ammonia Nitrogen	24.8							
Aluminum	<0.2							
Lithium	2.20							
Beryllium	<0.005							
M.B.A.S.	0.056							
Phenol	0.002							
Copper	<0.05							
Nickel	<0.05							
Strontium	72.3							
Zinc	<0.05							
Sodium	41,500							
Total Organic Carbon	119							
Benzene	1.406							
Toluene	0.644							
Xylene	0.346							
Bromide	946							

Results expressed in mg/liter "ND" means "not determined"

T

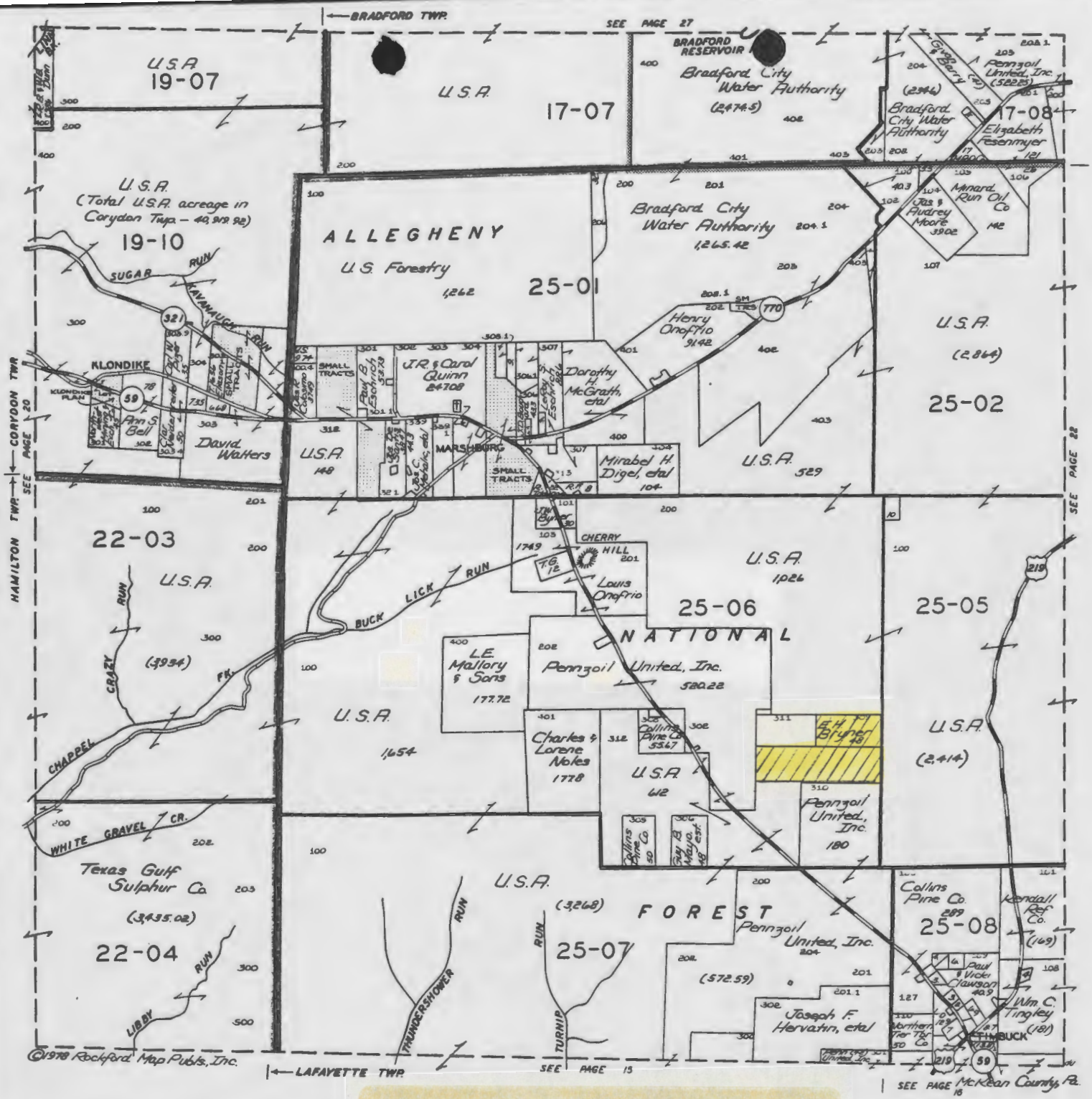
Curtis Oil, Inc. never has had any other permits with the E.P.A. in the past or at this time.

U

Curtis Oil, Inc.'s business is the extraction of oil and natural gas from the ground through oil and gas wells; all of which are primary. This project will be our first secondary recovery under E.P.A. regulation. Curtis Oil, Inc. is a small family run business with one employee other than family members.

Bryner Lease
Lewis Run USGS 7½' Topo
1" = 2000'

Curtis Oil Bryner Lease
Surface Ownership Map



GO WIRELINE SERVICES GEARHART-OWEN

COMPENSATED DENSITY NEUTRON LOG

FILING NO.

PERMIT NO. 39302

RECEIVED JUN 1? 1981

COMPANY	MIDEAST OIL AND GAS		
WELL	GG BRYNER		
FIELD	MUSIC MOUNTAIN		
COUNTY	MC KEAN	STATE	PA.
Location:	LAFAYETTE	Other Services:	GUARD
Sec.	Twp.	Rge.	

Permanent Datum: GRADED SURFACE ; Elev.:

Log Measured From TOP OF CSG. 0.4 Ft. Above Perm. Datum

Drilling Measured From TOP OF CASING @ 1/4"

Elev.: K.B. D.F. G.L.

Date	5-26-81	5-26-81	5-26-81
Run No.	ONE	TWO	THREE
Type Log	GAMMA/NEUTRON	COMP DENSITY	CALIPER
Depth—Driller	N.A.	N.A.	N.A.
Depth—Logger	2198'10"	2198'10"	2198'10"
Bottom logged interval	2197' [illegible]	2196' 2"	2197' 2"
Top logged interval	0' 0"	600' 0"	600' 0"
Type fluid in hole	WATER, OIL, GAS		
Salinity, PPM Cl. or Nacl.			
Density			
Level	534'		
Max rec. temp., deg F.			
Operating rig time			
Recorded by	C.SCOTT		
Witnessed by			

Bore-Hole Record				Casing Record			
Run No.	Bit	From	To	Size	Wgt.	From	To

FOLD HERE — THIS HEADING AND LOG CONFORMS TO API RP 33

EQUIPMENT DATA						DENSITY CALIBRATION DATA					
Run No.	Tool No.	Source No.	Panel No.	Logging Unit	Location	SS CPS AT	2.0	3.0	LS CPS AT	2.0	3.0
TWO	2389	CSV511	5192	7027	21-094		469	303		650	104
				7027	21-094						

CALIBRATION DATA						
RUN NO.	GAMMA RAY API Scale	BKG CPS	CAL. CPS	NEUTRON API Scale	BKG CPS	CAL CPS
1	20	40	220			750
						308

Run No. Gamma Ray	ONE
Tool Model No.	
Diameter	3.5
Detector Model No.	
Type ;Length	
Distance to N. Source	7'9"

Run No. Neutron	ONE	
Source Serial No.	173	
Tool Model No; Type		
Diameter ;Spacing	3.5	17"
Det Mod. No ;Type		HE 3
Source Type ;STG	AMBE241	

LOGGING DATA

RUN NO.	DEPTHS From	To	Speed Ft/Min.	GAMMA RAY T.C. Sec.	Sens Setting	Zero Div. L or R	API GR Units Per Log Div.	NEUTRON T.C. Sec.	Sens Settings	Zero Div. L or R	API N. Units Per Log Div.
1	T.D.	1150'	16	5.0	180	2 L	20	5.0	308	1 L	
1	1150	534	32	2.0	180	2 L	20	2.0	308	1 L	
1	534	0'	32	2.0	180	2L	20	2.0	750	2 L	

REMARKS

G.I. MAST TRUCK OVER ROTARY HOLE

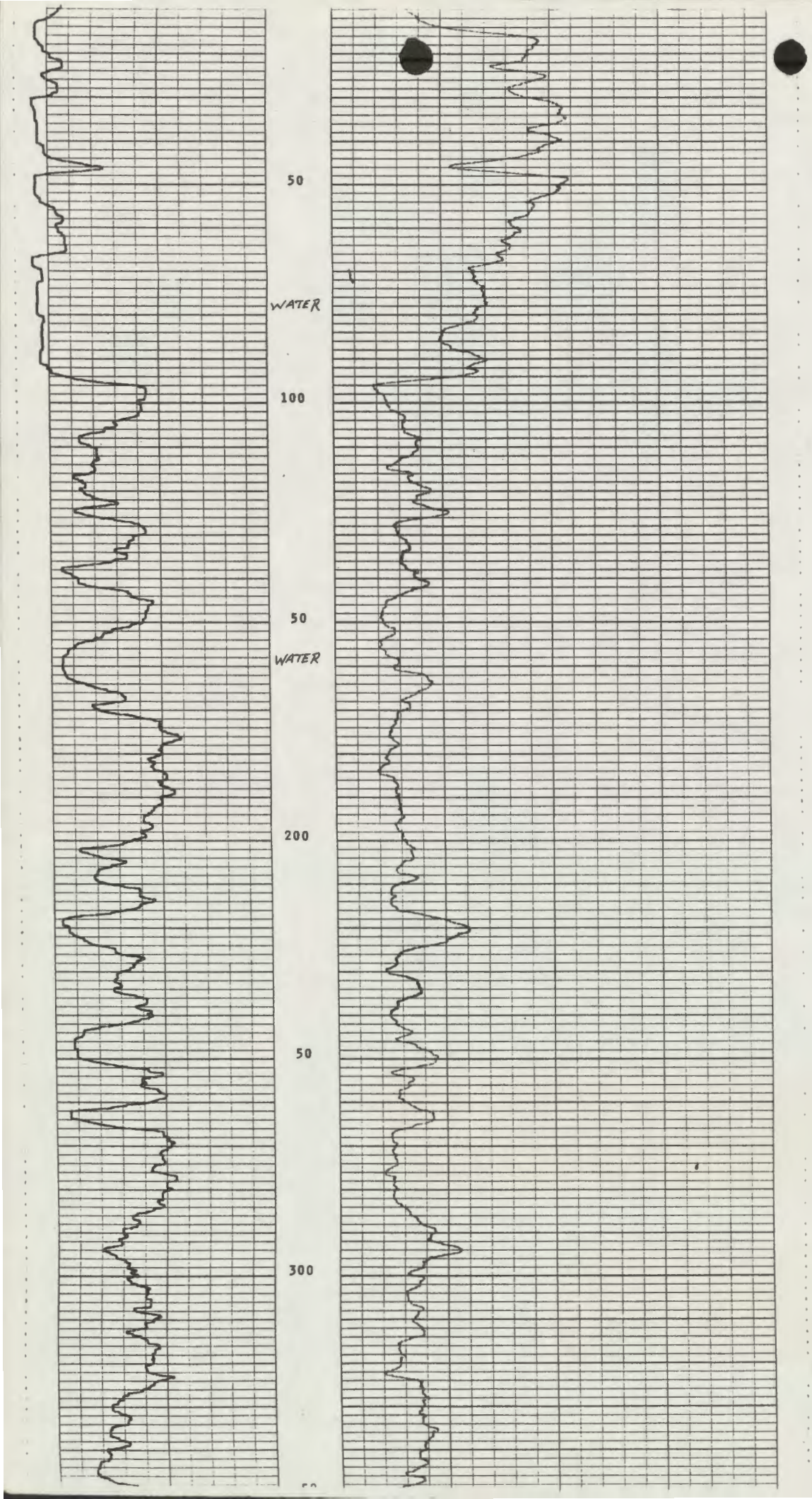
GAMMA RAY API → 20 ← UNITS	DEPTHS	BULK DENSITY GRAMS/cm³
40 140 240		2.0 2.5 3.0
CALIPER		0 NEUTRON API → 75 ← UNITS
HOLE SIZE - INCHES 8 7 6		DRY 750 1125; WET 154 308; CORRECTION -1 0 +1

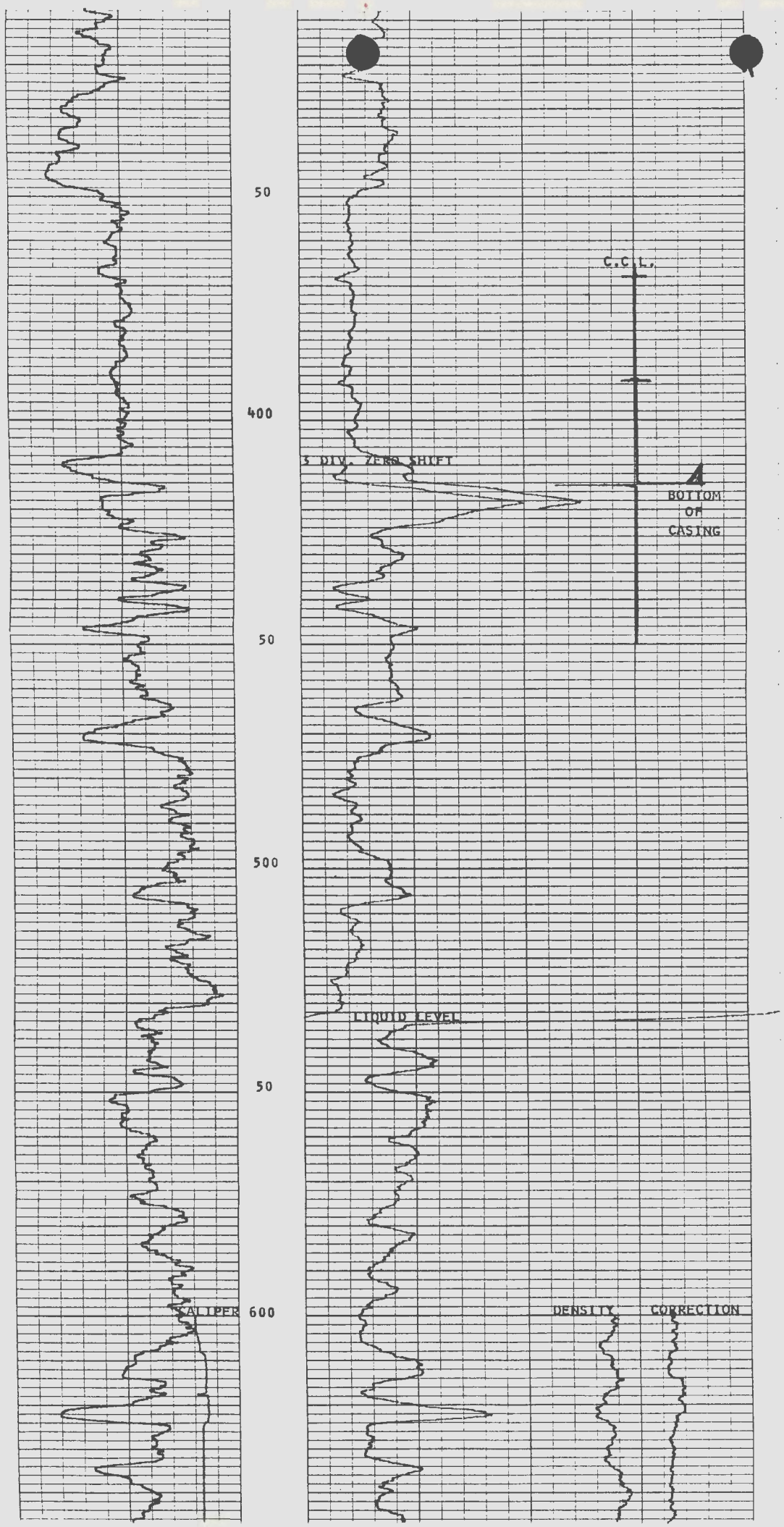
CALIBRATIONS AFTER LOG

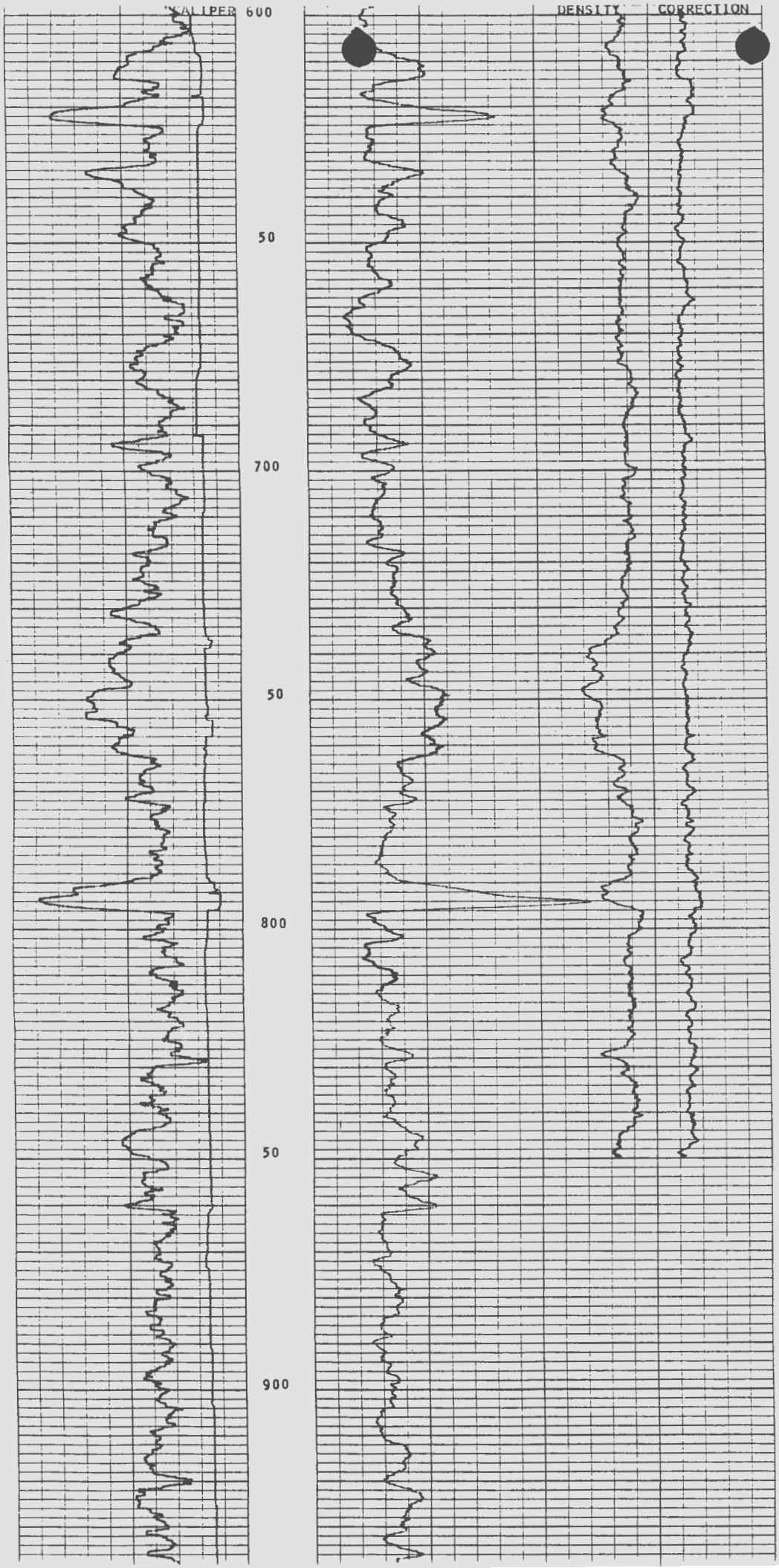
GAMMA 180 CPS

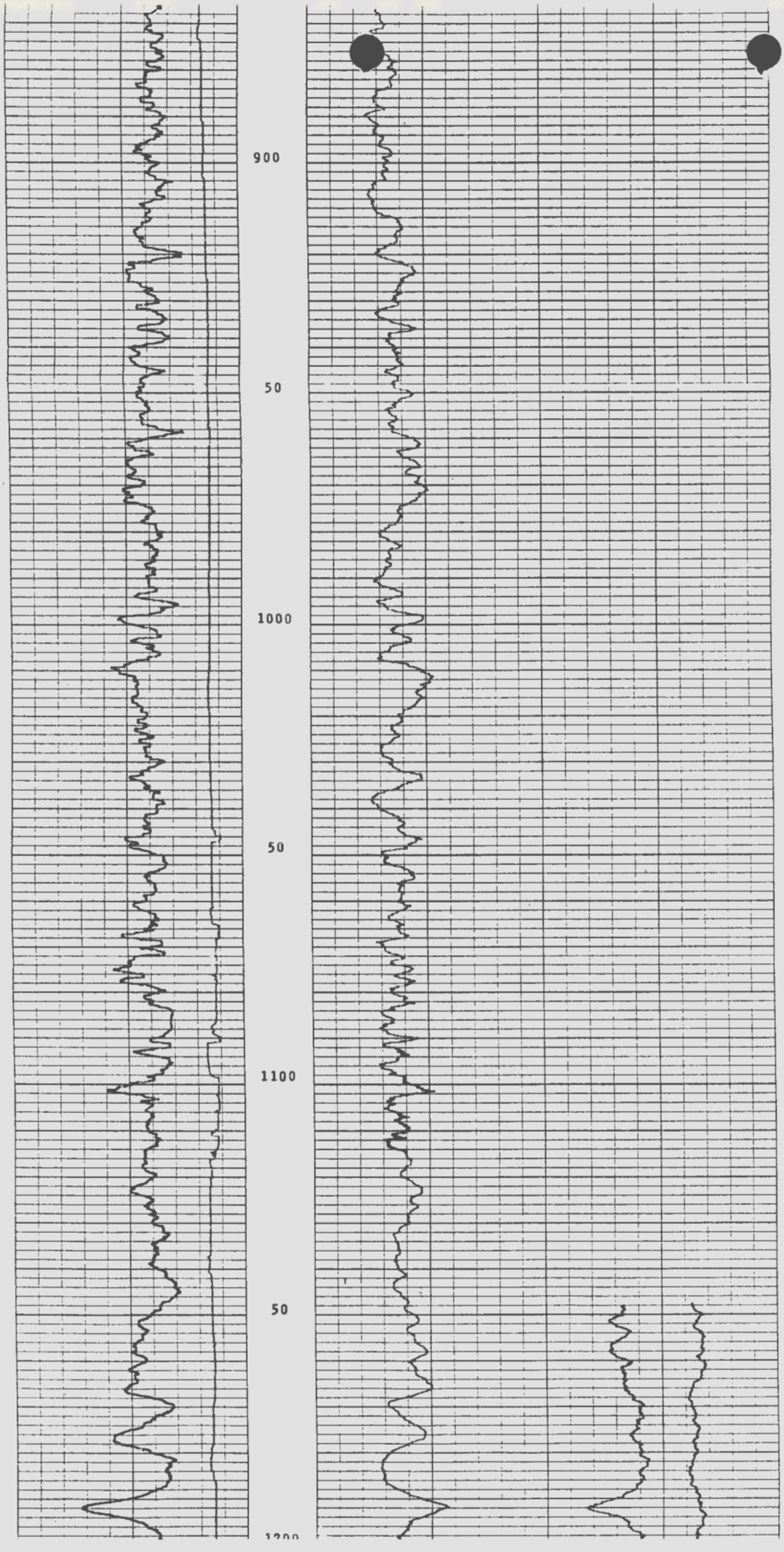
DENSITY 2.0 2.5 3.0

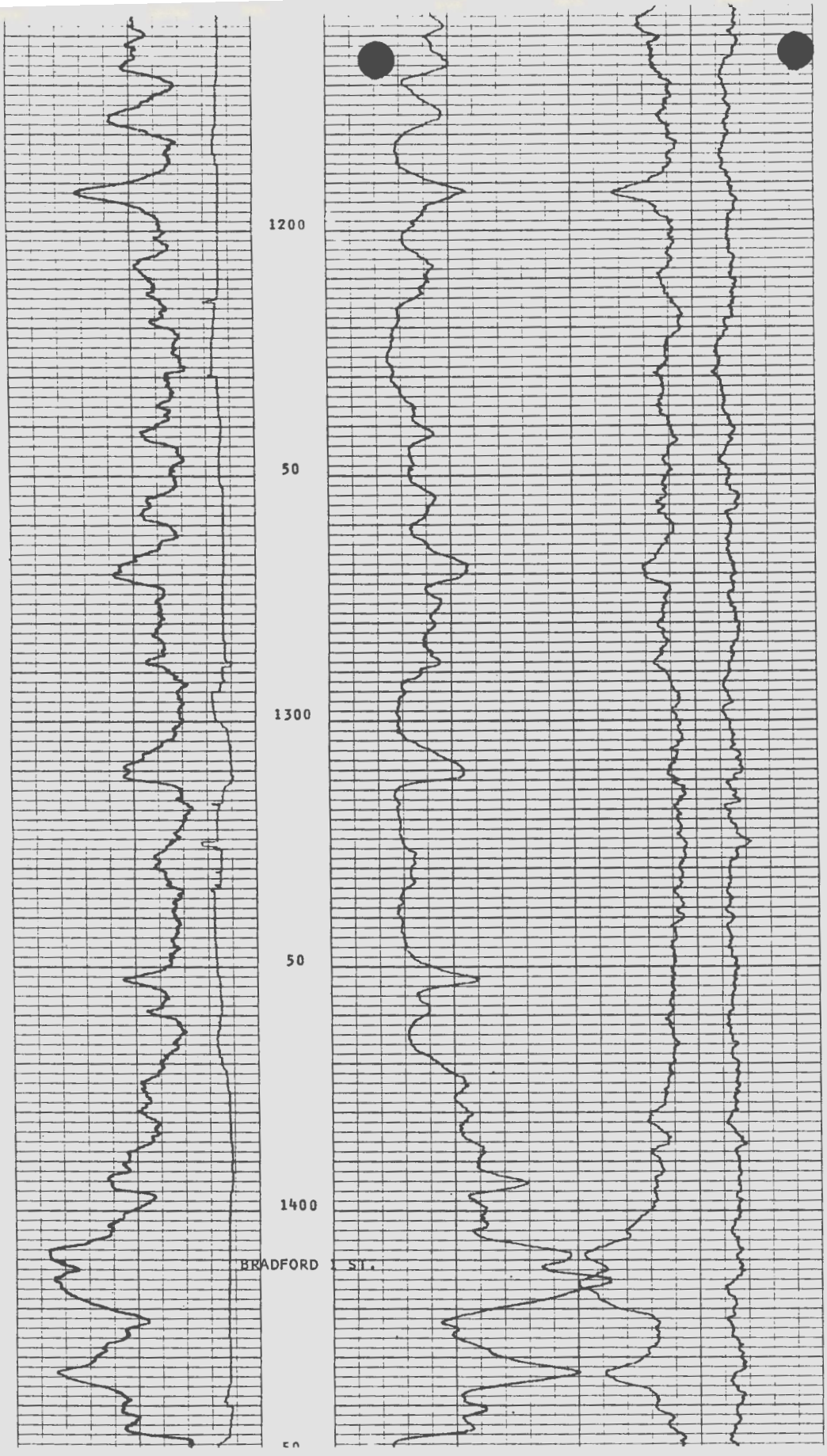
FORM 300-N

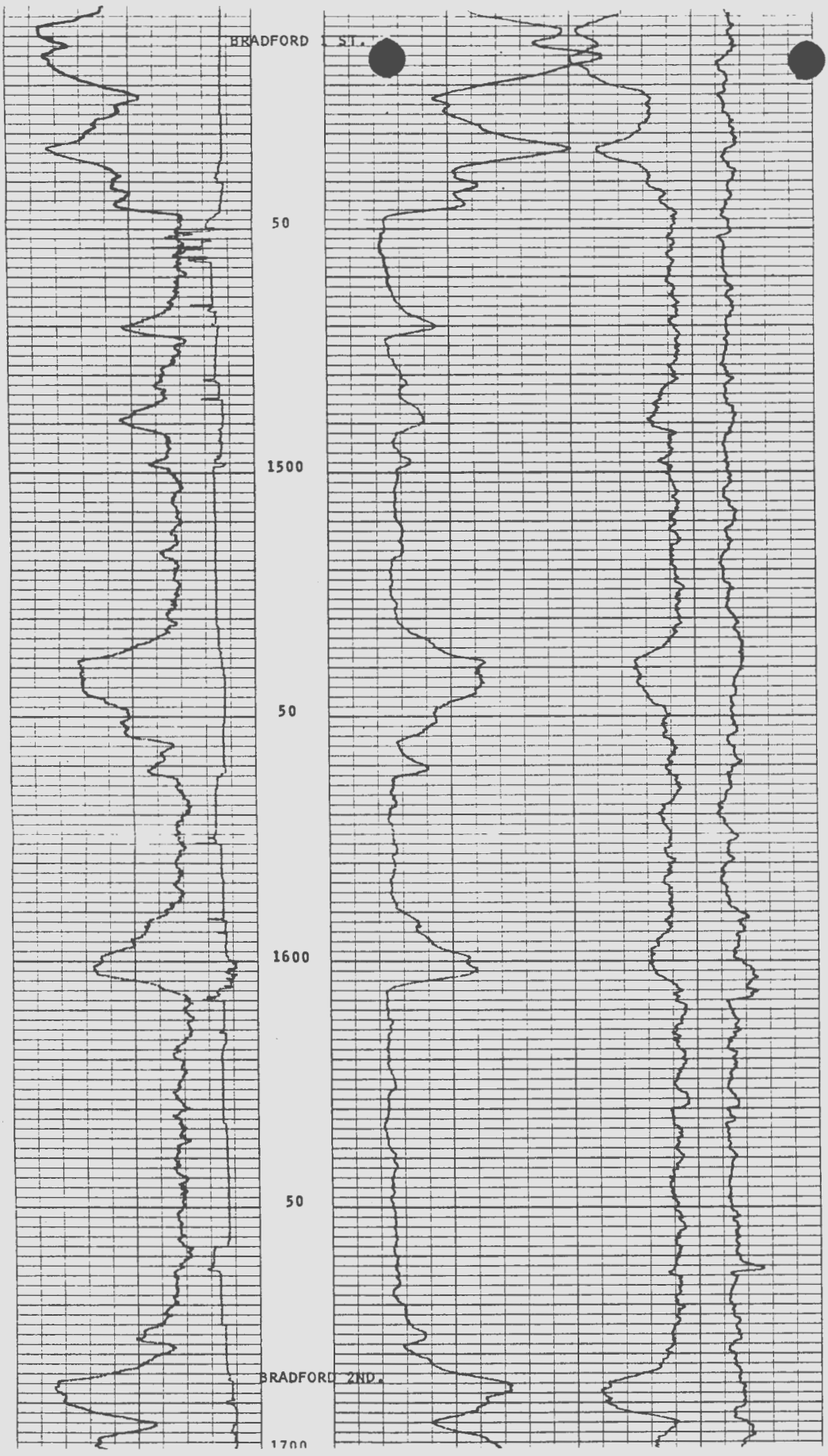

50
WATER
100
50
WATER
200
50
300

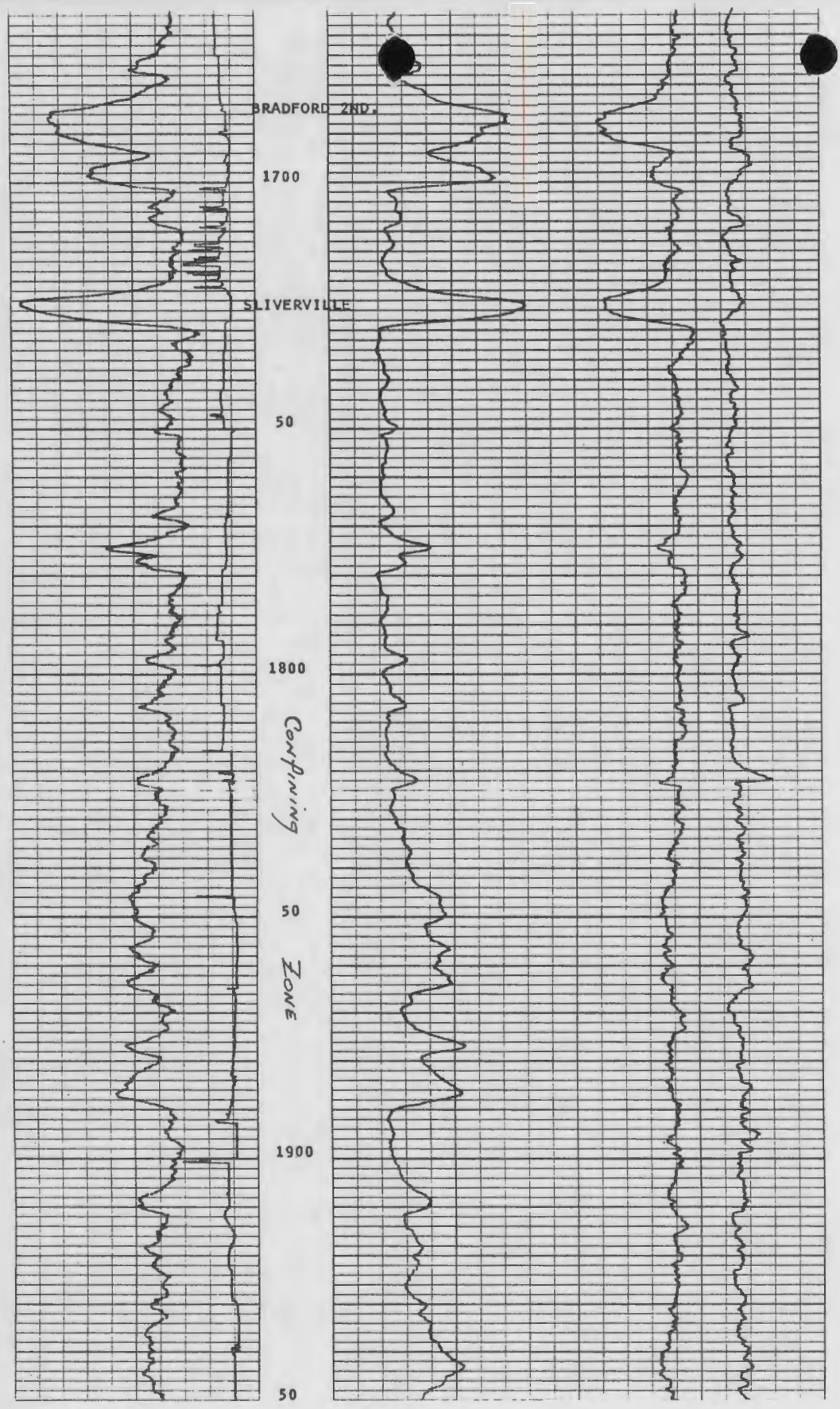

50
400
50
500
50
600
C.C.L.
3 DIV. ZERO SHIFT
BOTTOM OF CASING
LIQUID LEVEL
CALIPER
DENSITY
CORRECTION

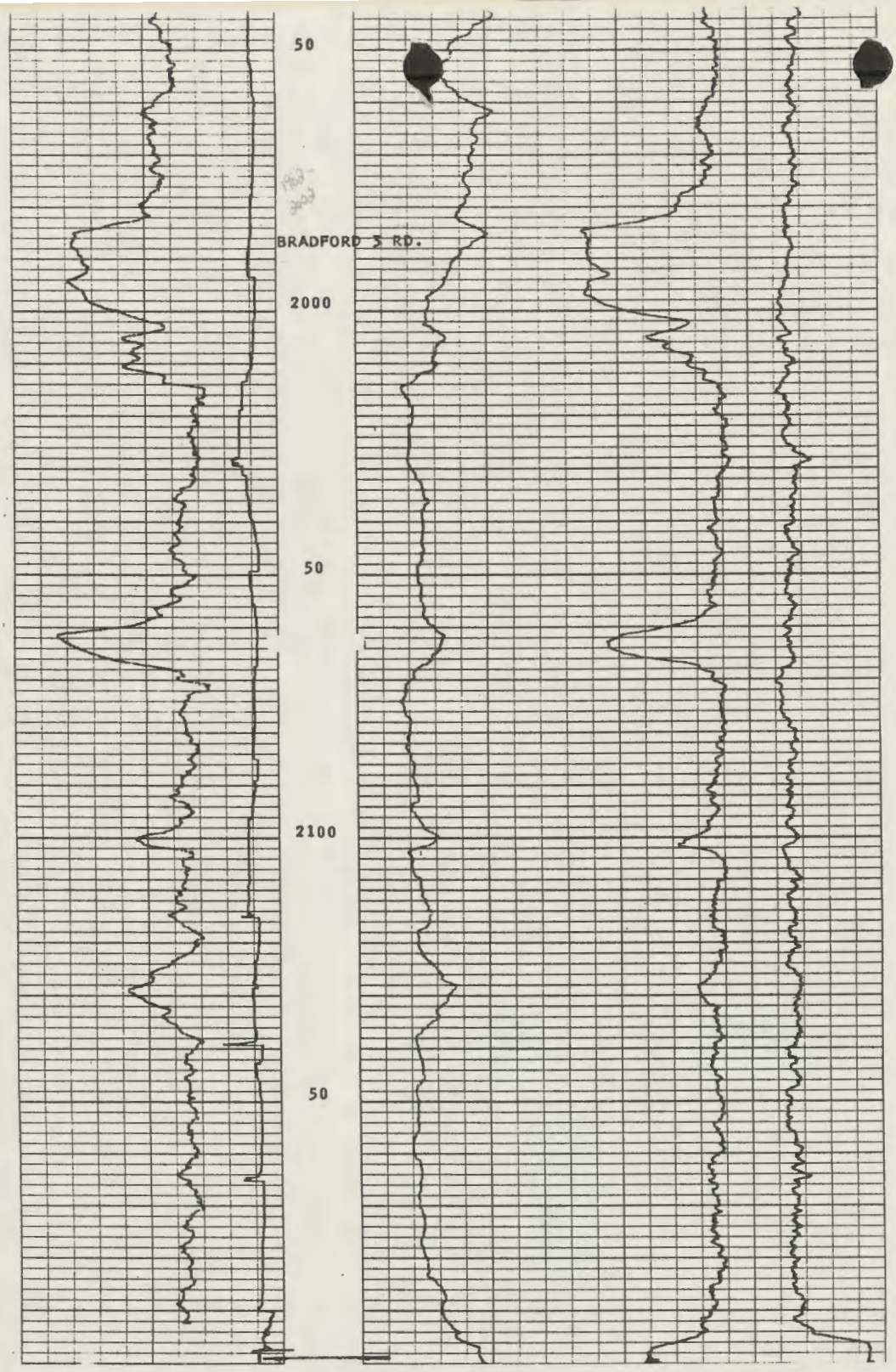

CALIPER
600
50
700
50
800
50
900
DENSITY
CORRECTION


900
50
1000
50
1100
50
1200


1200
50
1300
50
1400
BRADFORD SD.


BRADFORD ST.
50
1500
50
1600
50
BRADFORD 2ND.
1700


BRADFORD 2ND.
1700
SLIVERVILLE
50
1800
Confining
50
Zone
1900
50


50
BRADFORD 5 RD.
2000
50
2100
50