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LAW OFFICES OF
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ROSWELL, NEW MEXICO 88201

TELEPHONE 622-8432
AREA CODE 505

January 13, 1970

Oil Conservation Commission
P. O. Box 2088
Santa Fe, New Mexico 87501

RE: CASE NO. 3779, ORDER R-3431

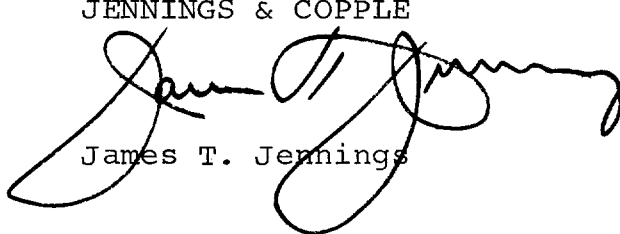
Gentlemen:

In accordance with the provisions of Order R-3431, Shenandoah Oil Corporation is making Application for Administrative Approval of six additional water injection wells in the Shenandoah Shugart Waterflood Project and its Application in triplicate is enclosed herewith.

If there are any questions or you need any additional information, please call us.

Yours very truly,

JENNINGS & COPPLE


James T. Jennings

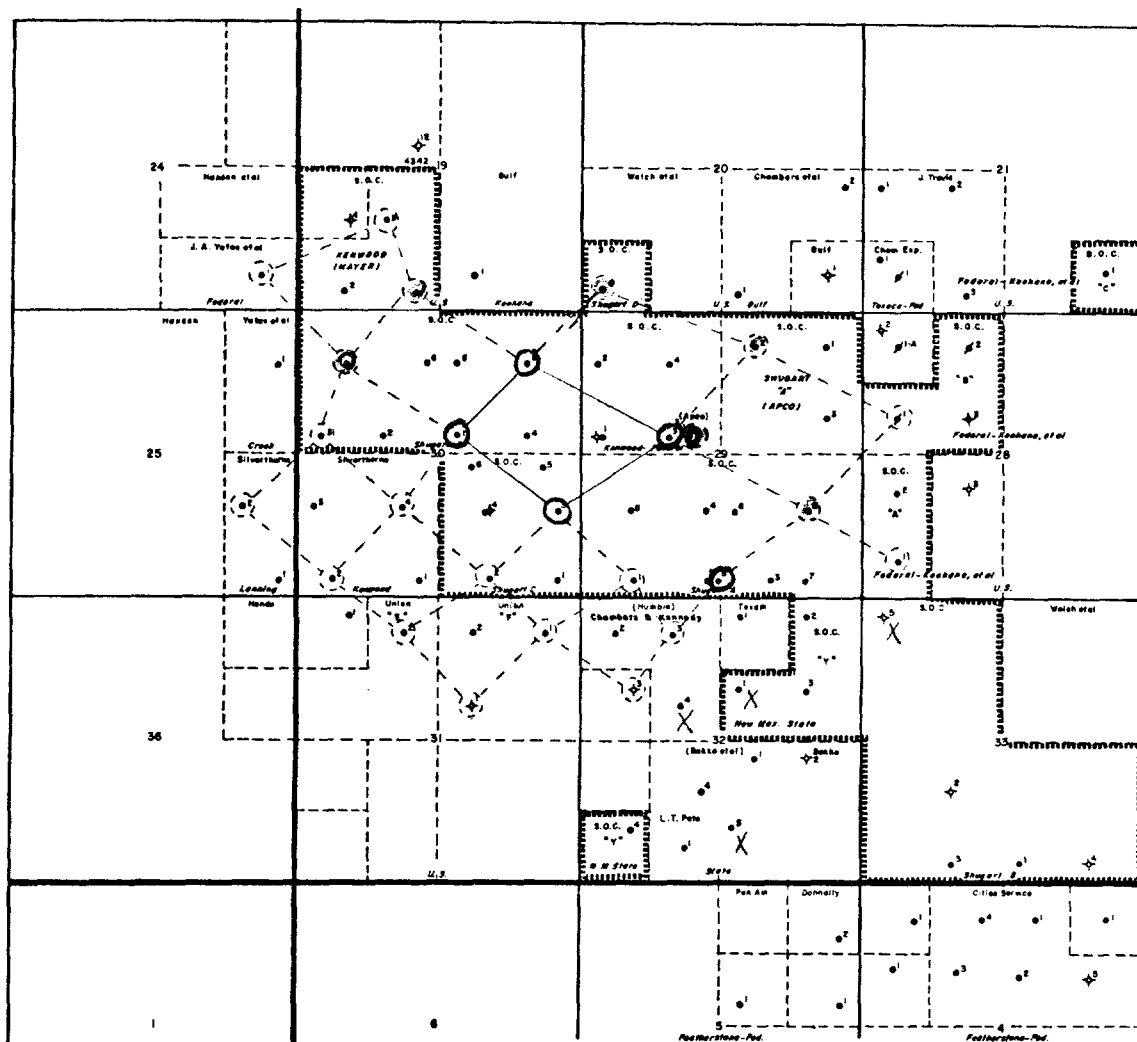
JTJ/mb

Encl.

cc: U.S.G.S., Artesia Office, w/encl.
Shenandoah Oil Corporation

R 31 E

T
18
S



***** LEASE BOUNDARIES

- _____ Pilot
 - - - - - Proposed Field Pattern
 Converted Pilot Inj. Well
 Proposed Conversion



SHENANDOAH OIL CORPORATION

FLOOD NO. 4
SHUGART
EDDY COUNTY, NEW MEXICO

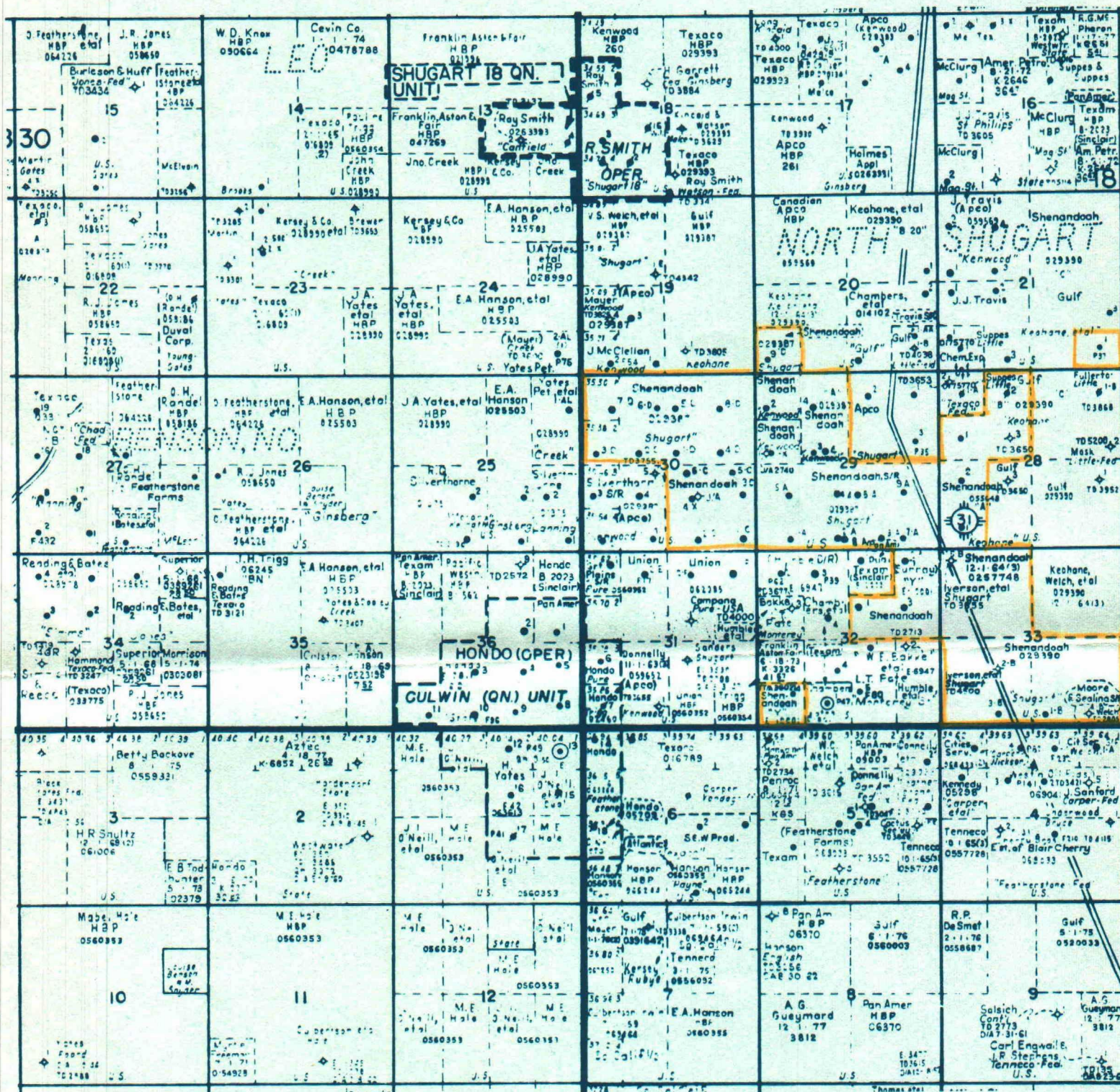
SCALE

0 1/2 1 M

OCTOBER, 1969

EXHIBIT B

R-31-E



FLOOD 4
SHUGART
EDDY COUNTY, NEW MEXICO
SCALE: 1" = 4000'

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE APPLICATION OF
SHENANDOAH OIL CORPORATION TO CONVERT
SIX ADDITIONAL WELLS TO WATER INJECTION
WELLS IN THE SHENANDOAH SHUGART WATERFLOOD
PROJECT IN THE SHUGART POOL, EDDY COUNTY,
NEW MEXICO.

WFX - 382
New Jan 29
CASE NO. 3779

APPLICATION FOR ADMINISTRATIVE APPROVAL
OF ADDITIONAL WATER INJECTION WELLS

Comes now Applicant, Shenandoah Oil Corporation, and
hereby makes application for administrative approval of the con-
version of six additional wells to water injection in the Shenandoah
Shugart Waterflood Project pursuant to Rule 701 E-5 of the Rules
and Regulations of the Commission and in support thereof states:

1. That by Order No. R-3431 the Commission authorized
the Applicant herein to institute a waterflood project in the
Shugart Pool by the injection of water into the Yates, Seven Rivers,
Queen and Grayburg formations and the Commission designated the
waterflood project as the Shenandoah Shugart Waterflood Project.

2. That by Administrative Order No. WFX 316 dated June
1, 1969, the Applicant, Shenandoah Oil Corporation, was authorized
to inject water into the Yates, Seven Rivers, Queen and Grayburg
formations in the following described wells:

Shugart A-1 located in Unit M of Section 29;
Shugart C-2 located in Unit O of Section 30,
both in Township 18 South, Range 31 East.

That the Applicant has not yet commenced the injection of water
in said wells as Applicant has not been able to make a satisfactory
agreement with the offset operators, who are Chambers & Kennedy and
Union Oil Company of California.

3. That the conversion of six additional wells to water injection wells is necessary for an efficient injection pattern and will insure the protection of correlative rights and will result in the increased ultimate recovery of oil and prevent waste.

4. That the Applicant desires to convert the following described wells to water injection wells:

<u>WELL NUMBER</u>	<u>LOCATION</u>
Shugart A-9	Unit I of Section 29-18S-31E
Shugart D-7	Unit D of Section 30-18S-31E
Shugart D-9	Unit M of Section 20-18S-31E
Shugart "A" (APCO)-2	Unit B of Section 29-18S-31E
Shugart "A" (APCO)-4	Unit F of Section 29-18S-31E
Kenwood-Federal (Mayer)-1	Unit N of Section 19-18S-31E

5. That Applicant will inject fresh to brackish water and produced water into the Yates, Seven Rivers, Queen and Grayburg formations and that the injection wells will be completed in the same manner as other injection wells on the project, in that Applicant will use plastic coated tubing and downhole Baker flow regulator control valves and packers.

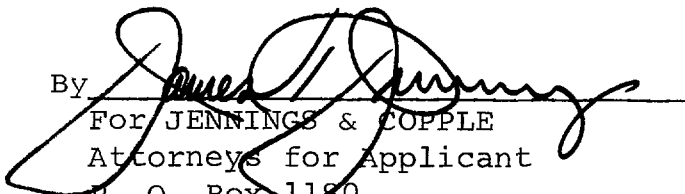
6. In support of this application and in accordance with the provisions of Rule 701-B, Applicant has heretofore submitted in connection with its original application for waterflood project a plat marked as Exhibit A therein showing the location of Applicant's project relative to the ownership of all other leases within a two mile radius which are producing from one or more of the same geologic formations, and Applicant hereby adopts said exhibit by reference and Applicant hereby submits the following exhibits:

- Exhibit A-1: A new plat showing the Applicant's acreage and the ownership of other acreage in the area.
- Exhibit B: A plat showing the proposed field pattern, the wells which have been converted to water injection and the six wells which Applicant proposes to convert to water injection wells.
- Exhibit C-1 through C-6: Diagramatic sketch of the proposed injection wells showing the tops of cement, perforations and depths.
- Exhibit D: Tabulation of Cement and Casing Data.
- Exhibit E-1 through E-6: Logs of the six wells which Applicant proposes to convert to water injection wells.
- Exhibit F: Chart showing water injection and oil and water production from the project.

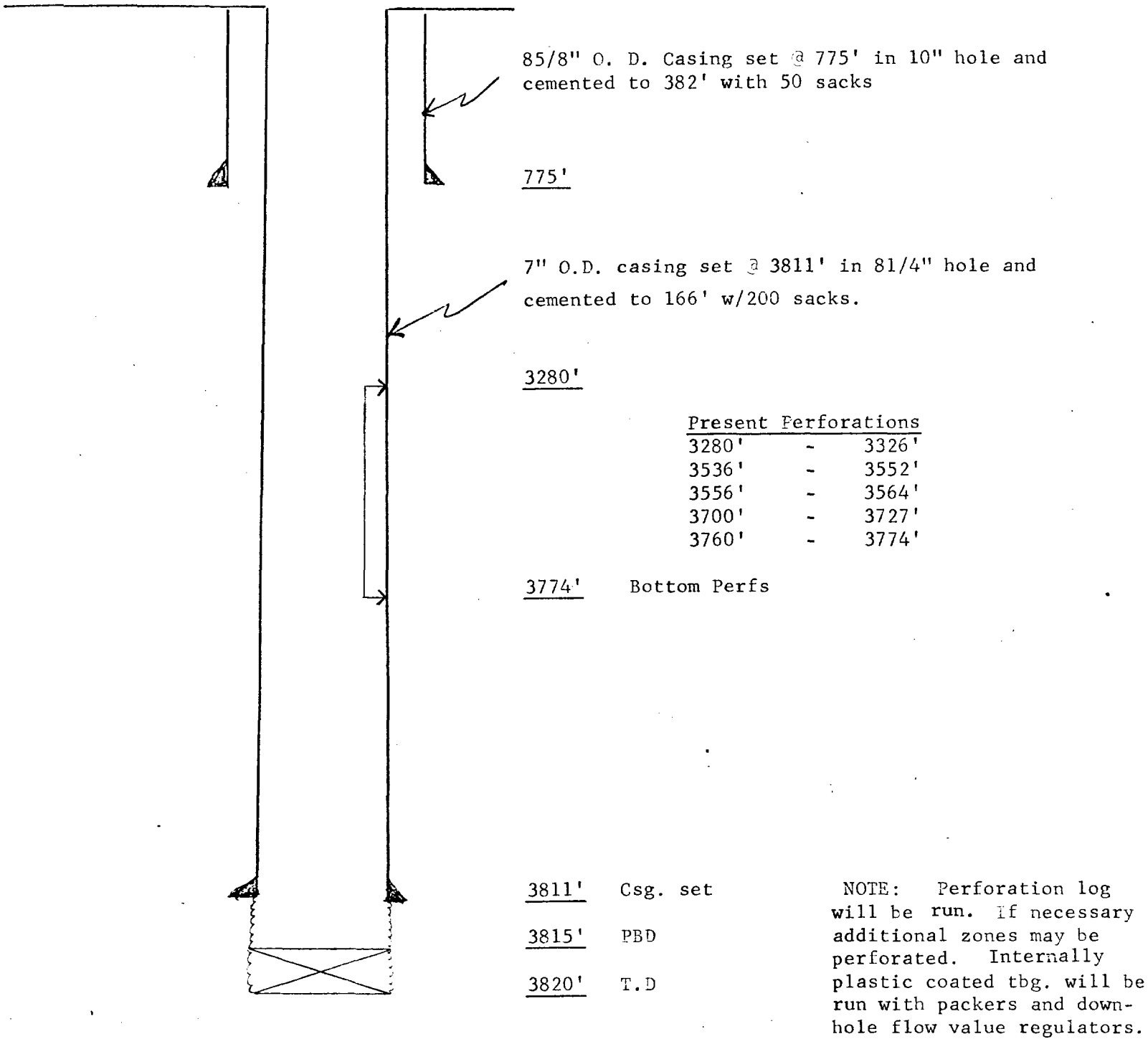
WHEREFORE, Applicant requests that the Secretary-Director of the Commission approve the expansion of the Shenandoah Shugart Waterflood Project to include the six injection wells described above, and that the Applicant be authorized to inject water into the Yates, Seven Rivers, Queen and Grayburg formations in the above described injection wells located in Sections 19, 20, 29 and 30, Township 18 South, Range 31 East, N.M.P.M.

Respectfully submitted,

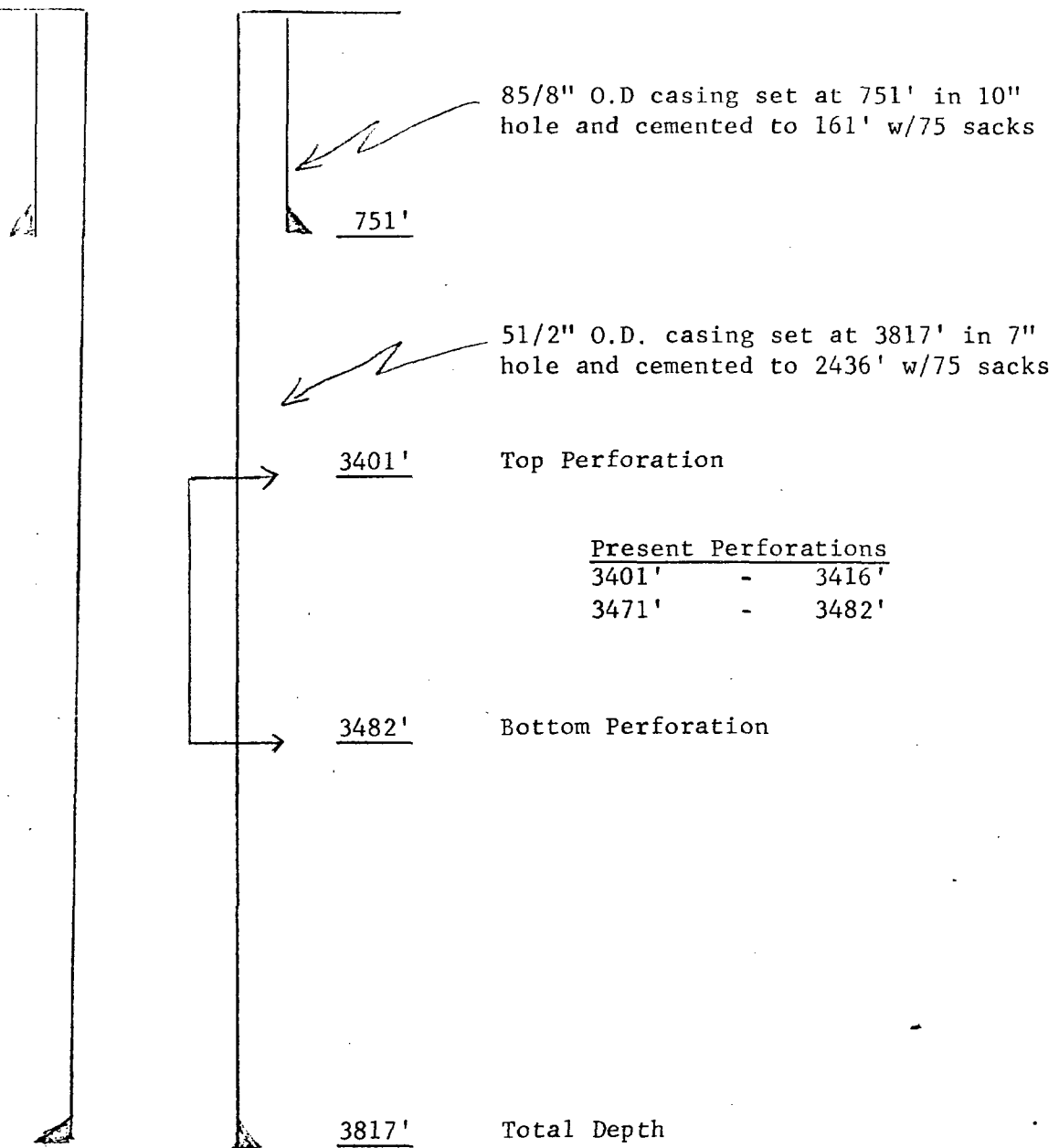
SHENANDOAH OIL CORPORATION

By 
For JENNINGS & COPPLE
Attorneys for Applicant
P. O. Box 1180
Roswell, New Mexico 88201

Shugart "A" No 9
Unit I - 1650' FSL & 990' FEL
Section 29 - 18S - 31E
Eddy County, New Mexico



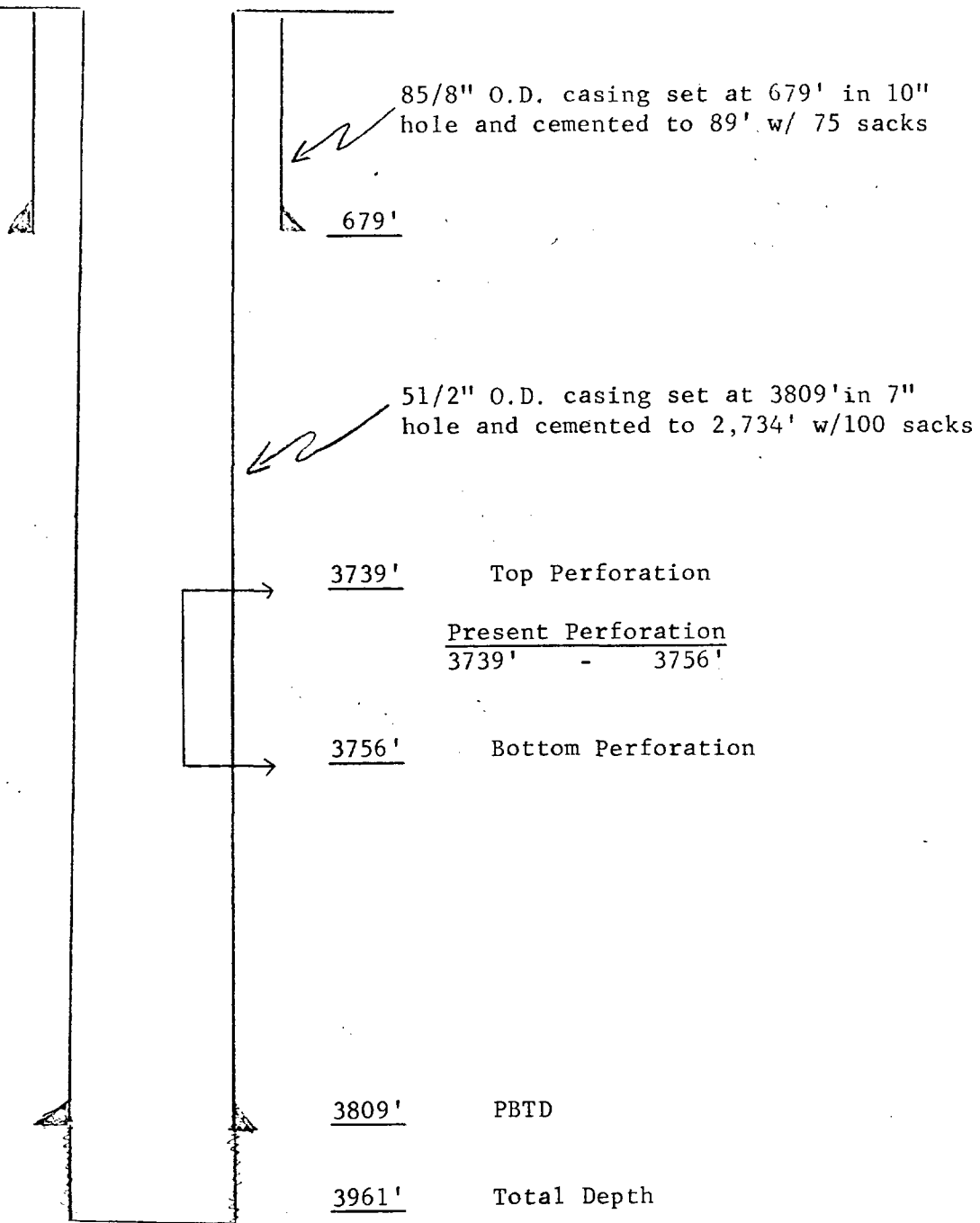
UNIT D - 990' FNL & 890' FWL
SECTION 30-T18S-R31E
EDDY COUNTY NEW MEXICO



NOTE:

Perforation log will be run. If necessary additional zones may be perforated. Internally plastic coated tubing will be run with packers and down hole flow valve regulators.

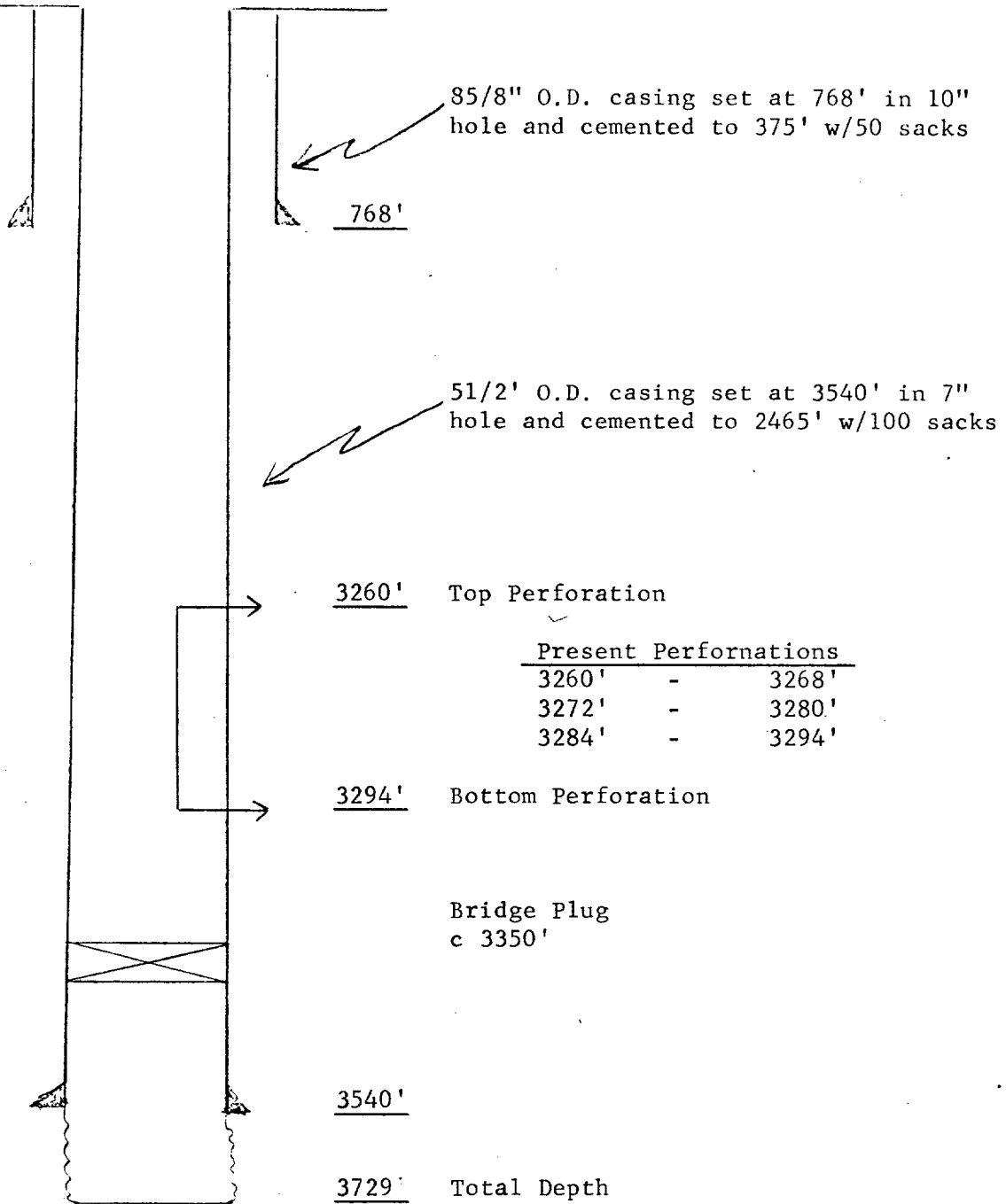
SHUGART "D" NO. 9
UNIT M 330' FSL & 330' FWL
SECTION 20-T18S-R31E
EDDY COUNTY, NEW MEXICO



NOTE

Perforation log will be run. If necessary additional zones may be perforated. Internally plastic coated tubing will be run with packers and down hole flow valve regulators.

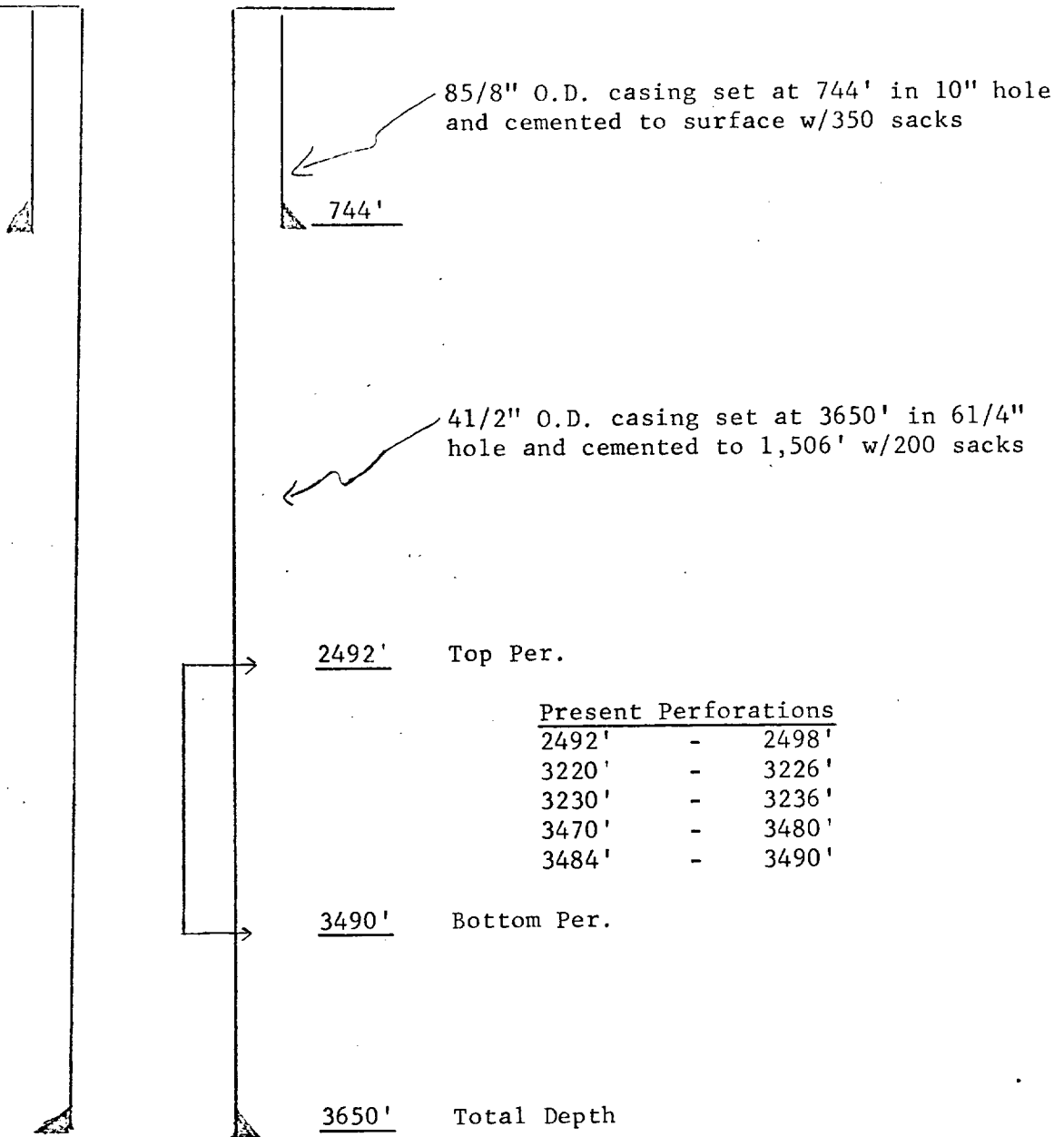
SHUGART "A" (APCO) NO. 2
UNIT B - 660' FNL & 660' FWL
SECTION 29-T18S-R31E
EDDY COUNTY, NEW MEXICO



NOTE:

Perforation log will be run . If necessary additional zones will be perforated. Internally plastic coated tubing will be run with packers and down hole flow regulators.

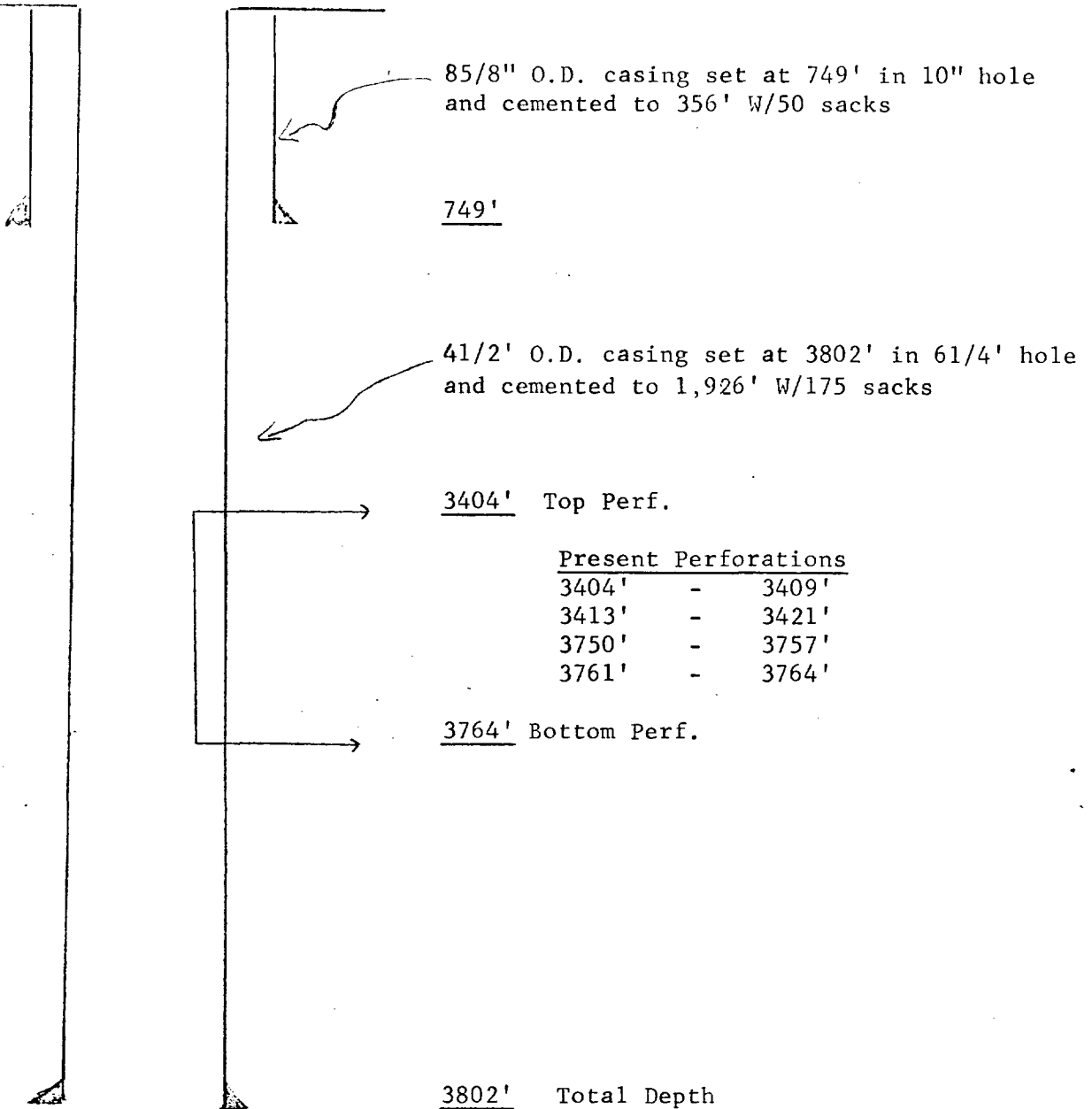
SHUGART "A" (APCO) NO. 4
UNIT F - 2310' FNL & 1930' FWL
Section 29-T18S-R31E
Eddy County, New Mexico



NOTE:

Perforation log will be run. If necessary additional zones will be perforated. Internally plastic coated tubing will be run with packers and down hole flow regulators.

KENWOOD-FEDERAL (MAYER) NO. 1
UNIT N - 330' FSL & 2154' FWL
SECTION 19-T18S-R31E
EDDY COUNTY, NEW MEXICO



Note:

Perforation log will be run. If necessary additional zones will be perforated. Internally plastic coated tubing will be run with packers and down hole flow regulators.

CEMENT AND CASING DATA

Lease and Well No.	Hole Size	Size & Depth of Casing	Sacks of Cement Used	Lin. Feet Per Sack	Calculated Top of Cement
Shugart A-9	10"	8-5/8" @ 775'	50	7.87	382'
	7"	5½" @ 3811'	200	10.75	1,661'
Shugart D-7	10"	8-5/8" O.D. @ 751'	75	7.87	161'
	7"	5½" O.D. @ 3817'	175	10.75	2,436'
Shugart D-9	10"	8-5/8" O.D. @ 679'	75	7.87	89'
	7"	5½" O.D. @ 3809'	100	10.75	2,734'
Shugart "A" (APCO)-2	10"	8-5/8" O.D. @ 768'	50	7.87	375'
	7"	5½" O.D. @ 3540'	100	10.75	2,465'
Shugart "A" (APCO)-4	10"	8-5/8" O.D. @ 744'	350	7.87	Circulated
	6¼"	4½" O.D. @ 3650'	200	10.72	1,506'
Kenwood-Federal (Mayer)-1	10"	8-5/8" O.D. @ 749'	50	7.87	356'
	6¼"	4½" O.D. @ 3802'	175	10.72	1,926'

Bore Hole Record				Coring record			
No.	Bit	From	To	Size	Wgt	from	To
1	1 1/2"	SURFACE	1'03"	9 1/2"		SURFACE	0'55"
2	6"	SURFACE	5'22"	5 1/2"	138	SURFACE	5'11"

10 COMPLETION RECORD

EXHIBIT E-1

R. D. 3784
 T. D. 3797
 V. S. WELCH ACCT. NO. 2
 SHUGART A-9
 SHUGART FIELD
 EDDY COUNTY, NEW MEXICO.

R. D. 3786
 T. D. 3797

0RU 50RU 600EU 5600EU

G/R LOG CALIBRATION
 BEFORE LOG
 RADIATION UNITS OF CALIB. STD. 100
 SENSITIVITY READING 400
 MULTIPLIER XI
 ZERO SUPPRESSION 0
 TIME CONSTANT 4
 MEASURED CHART DIVISIONS 15.3

G/R LOG CALIBRATION
 AFTER LOG
 RADIATION UNITS OF CALIB. STD. 100
 SENSITIVITY READING 525
 MULTIPLIER XI
 ZERO SUPPRESSION 0
 TIME CONSTANT 4
 MEASURED CHART DIVISIONS 20

NEUTRON LOG CALIBRATION
 BEFORE LOG
 ENVIRONMENTAL UNITS OF
 CALIB. STD. 1000
 SENSITIVITY READING 200
 MULTIPLIER XI
 ZERO SUPPRESSION 0
 TIME CONSTANT 4
 MEASURED CHART DIVISIONS 10

NEUTRON LOG CALIBRATION
 AFTER LOG
 ENVIRONMENTAL UNITS OF
 CALIB. STD.

WELCH LOGS	
FILE NO.	COMPANY <u>V. S. WELCH</u>
WELL <u>SHUGART 20" NO 7</u>	
FIELD <u>SHUGART</u>	
COUNTY <u>EDDY</u> STATE <u>NEW MEXICO</u>	
LOCATION:	Other Services
SEC <u>30</u> TWP <u>18-S</u> RGE <u>31-E</u>	
Permanent Datum <u>GROUND LEVEL</u> Elev.	KB Elevations
Log Measured from <u>0</u> to <u>2</u> Ft Above Permanent Datum	DF
Drilling Measured from <u>CABLE TOOL FLOOR</u>	CL
Date <u>3-10-63</u>	
Run No. <u>ONE</u>	
Type Log <u>WELCH RAY</u>	
Depth Driller <u>3-10</u>	
Depth Logger <u>3-10</u>	
Bottom Logged Interval <u>3-10</u>	
Top Logged Interval <u>3-10</u>	
Type Fluid in Hole <u>WATER</u>	
Solubility Spm Cl.	
Density lb. Gals	
Level	
Max. Perc Temp Deg. F	
Opr. Rg Time	
Recorded By <u>W. S. WELCH</u>	
Witnessed By <u>W. S. WELCH</u>	
Run No.	
Bit	
From	
To	
Size	
Wgt	
From	
To	

Reproduced By
West Texas Electrical Log Service
 Dallas 2, Texas

REFERENCE A1470H

// COMPLETION RECORD



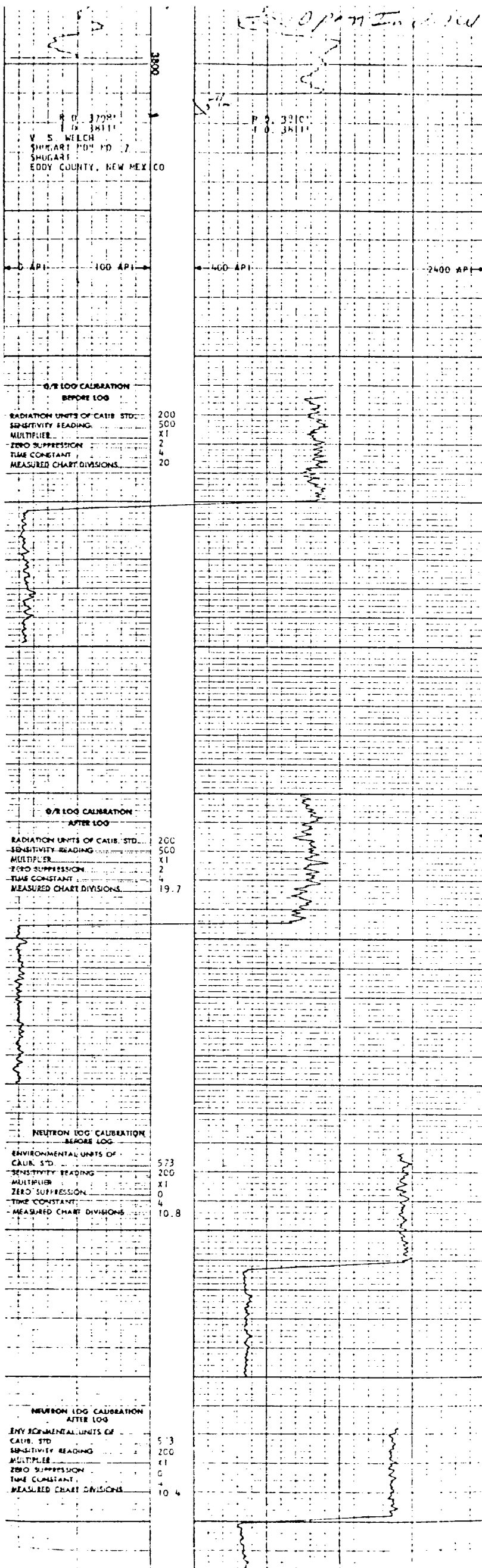
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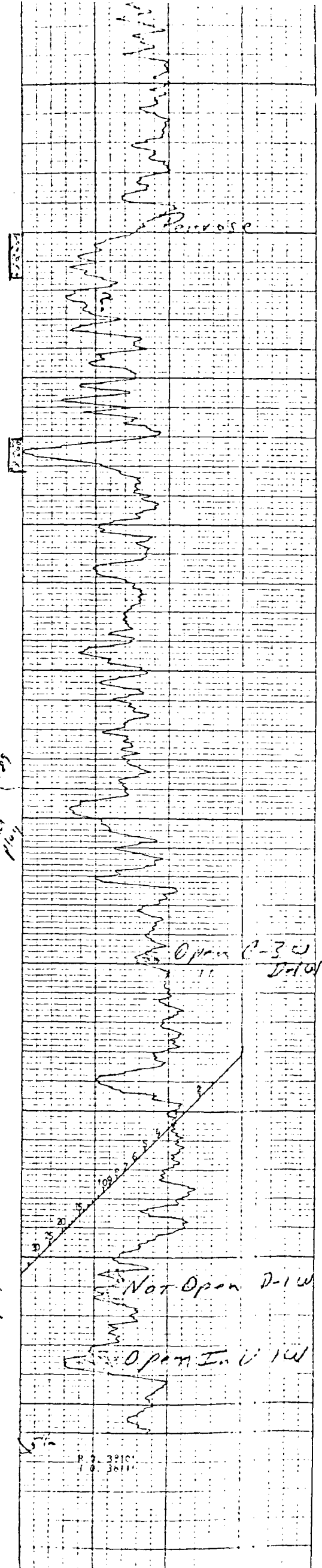
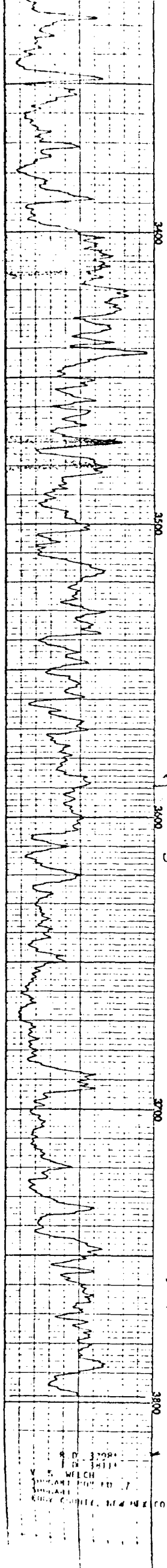
COMP DATE

DST RECORD

CASING RECORD

EXHIBIT E-2





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3600

3700

3800

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4300
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9200
9300
9400
9500
9600
9700
9800
9900
10000

Open C-3 W
D-1 W

Not Open D-1 W

Open In U W

R.D. 37284
IN 34114
V.S. WELCH
SUNSHINE PUMP CO.
SUNSHINE
EL PASO, TEXAS

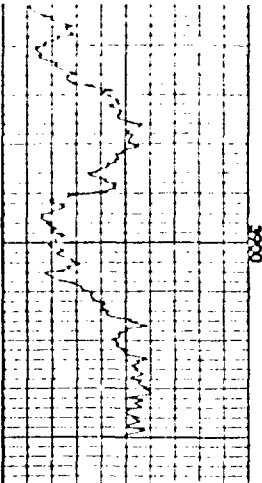
P. 37284
IN 34114

"D-9

UD DATE _____

MP DATE _____

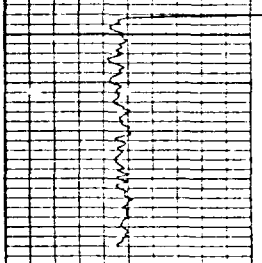
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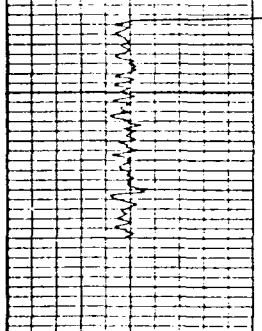
R.D. 39401
 T.D. 39531
 V. S. WELCH
 SHUGART NO. 9
 SHUGART
 EDDY COUNTY, NEW MEXICO

0 API 100 API

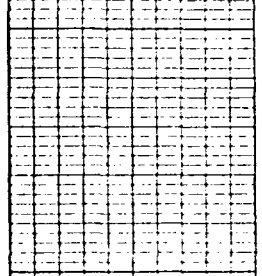
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 BEFORE LOG
 RADIATION UNITS OF CALIB. STD. 200
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 TIME CONSTANT 4
 MEASURED CHART DIVISIONS 20.2



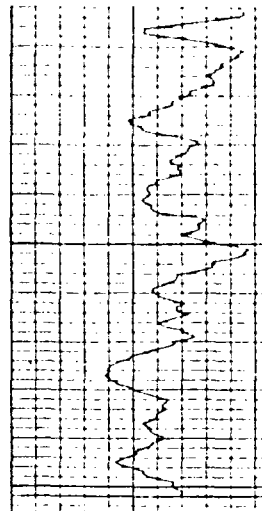
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 TIME CONSTANT 4
 MEASURED CHART DIVISIONS 19.7



NEUTRON LOG CALIBRATION
 BEFORE LOG
 ENVIRONMENTAL UNITS OF
 CALIB. STD. 573
 SENSITIVITY READING 200
 MULTIPLIER X1
 ZERO SUPPRESSION 0
 TIME CONSTANT 4
 MEASURED CHART DIVISIONS 11.2



NEUTRON LOG CALIBRATION
 AFTER LOG
 ENVIRONMENTAL UNITS OF
 CALIB. STD. 573
 SENSITIVITY READING 200
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 TIME CONSTANT 4
 MEASURED CHART DIVISIONS 11.7

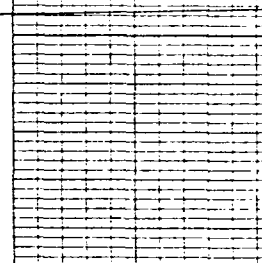


R.D. 39521
 T.D. 39531

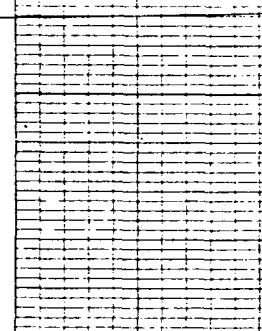
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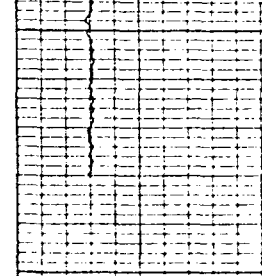
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 RADIATION UNITS OF CALIB. STD. 200
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 MULTIPLIER X1
 ZERO SUPPRESSION 0
 TIME CONSTANT 4
 MEASURED CHART DIVISIONS 20.2



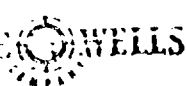
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 TIME CONSTANT 4
 MEASURED CHART DIVISIONS 19.7



NEUTRON LOG CALIBRATION
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 ENVIRONMENTAL UNITS OF
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 TIME CONSTANT 4
 MEASURED CHART DIVISIONS 11.2



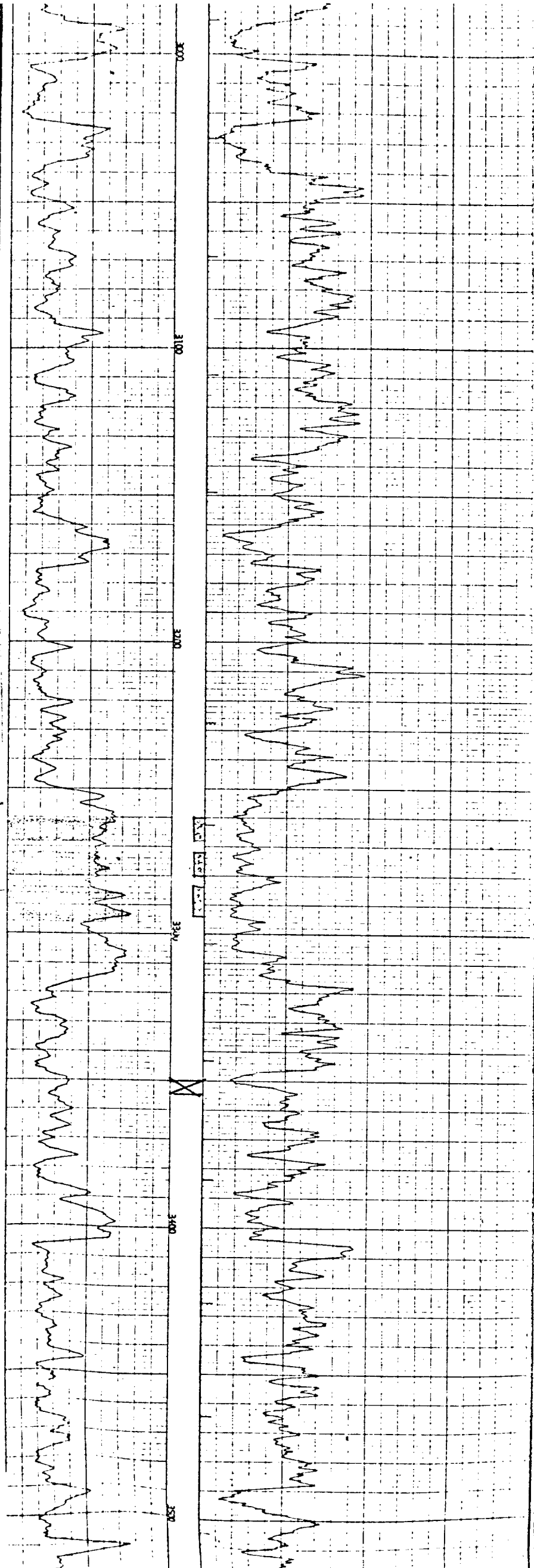
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 SENSITIVITY READING 200
 MULTIPLIER X1
 ZERO SUPPRESSION 0
 TIME CONSTANT 4
 MEASURED CHART DIVISIONS 11.7



Radiactivity Log

COMPANY: KENWOOD OIL COMPANY		Well Location	
WELL: SHUQUART "A" NO. 2			
FIELD: NORTH SHUQUART			
LOCATION: 660 P.M. & 1970 P.M. SEC. 29, T-18-S, R-31-E			
COUNTY: KIMBLE		STATE: N.M.	
LOG ZERO	5 1/2" SPACER HEAD	ELEV. 3617	
DRIG. ZERO	5 1/2" SPACER HEAD	ELEV. 3617	
PERM. DATUM	5 1/2" SPACER HEAD	ELEV. 3617	
LOG	CHAMBER	W/CASING	
1-2-57	2-20-57	2-20-57	
DEPTH (DRILLER) 5.1	3729	3729	
DEPTH (DRILLER)	3729	3729	
LOGGED INTERVAL	3729	3729	
OF LOGGED INTERVAL	3729	3729	
FLUID IN HOLE	3729	3729	
RECORDED TEMP.	6004	6004	
LENGTH & TYPE	15.75	15.75	
PACING - IN.	CHAMBER	CHAMBER	
CLASS	E-127	G-209	
TYPE	36	9.1	
OF MEAS. DEVICE - IN.	3 5/8	3 5/8	
INSTRUMENT - IN.	4.3	2.9	
INSTANT - SECONDS	20-40	20-40	
SPEED FT./MIN.	RECORDED	RECORDED	
AL. VARIATION - IN.	274	275	
TY REFERENCE	SOLVENT RESISTANCE		
BY	WAGGONER	WAGGONER	
D BY	WAGGONER	WAGGONER	
WELL RECORD			
TSIZE	CASING	WT.-LB.	FROM WELL RECORD
11	8 5/8		SURF. TO 768
8	5 1/2		SURF. TO 3540
			TO
			TO
			TO
REMARKS OR OTHER DATA			

Apco



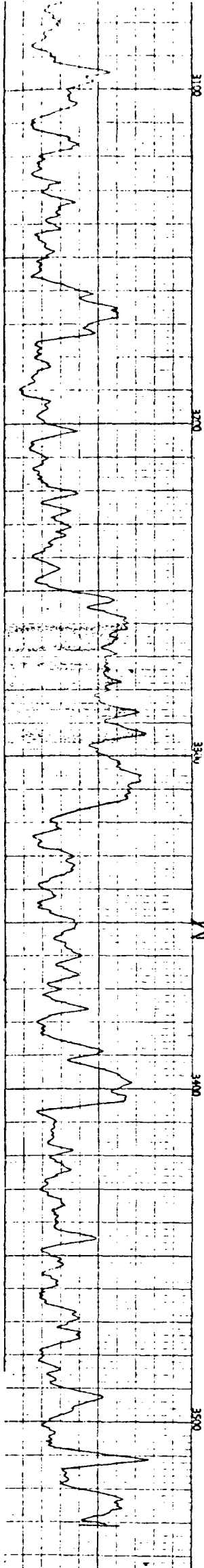
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Dallas 2, Texas

REFERENCE No A 6241 -D

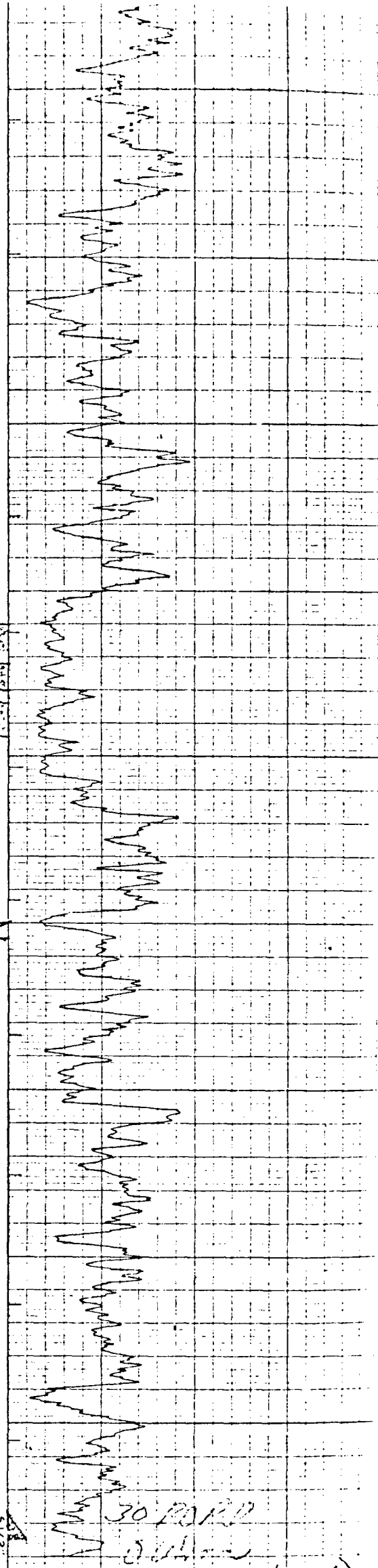
COMPLETION RECORD

DATE

EXHIBIT E-4



R. D. 3531'
T. D. 3542'
KENWOOD OIL COMPANY
SHUGART 'A' NO 2
NORTH SHUGART



2/15
5/12

R. D. 3540'
T. D. 3542'

APCO #2

COMPANY KENWOOD OIL COMPANY
WELL SHUGART "A" NO. 4
FIELD SHUGART
COUNTY ELDY STATE NEW MEXICO
LOCATION 1980' FWL & 2510' FNL
SEC 29 TWP 18-S RGE 31-E
Permanent Datum Ground Level Elev. 3622 Est. KB 3631 Est.
Measured from K. D. B. 9 Ft. Above Permanent Datum DF 3630 Est.
Drilling Measured from K. D. B. GL 3622 Est.

Log No.	32-8-61				
Depth—Driller	3650				
Depth—Logger	3655				
Bottom Logged Interval	3651				
Bottom Logged Interval	Surface				
Logging—Driller	8 5/8" 800				
Logging—Logger					
Log Size	7 7/8"				
Type Fluid in Hole	Detergent Mud				
Density and Viscosity	11.5-11.6 Ppm				
pH and Fluid Loss	9 32				
Source of Sample	Pit				
Rm. G. Meas. Temp	.06 60 F				
Rm. G. Meas. Temp	.05 60 F				
Rm. G. Meas. Temp	.07 60 F				
Source of Rm. G. Meas.	Meas.				
Rm. G. BHT	.04 90 F				
Time Since Circ	2 Hours				
Max. Rec. Temp. Deg. F	90°				
Equip. No. and Location	X-900 Hobbs				
Recorded By	S. Hutterback				
Witnessed By	Moore				

Reproduced By
West Texas Electrical Log Service
Dallas 2, Texas

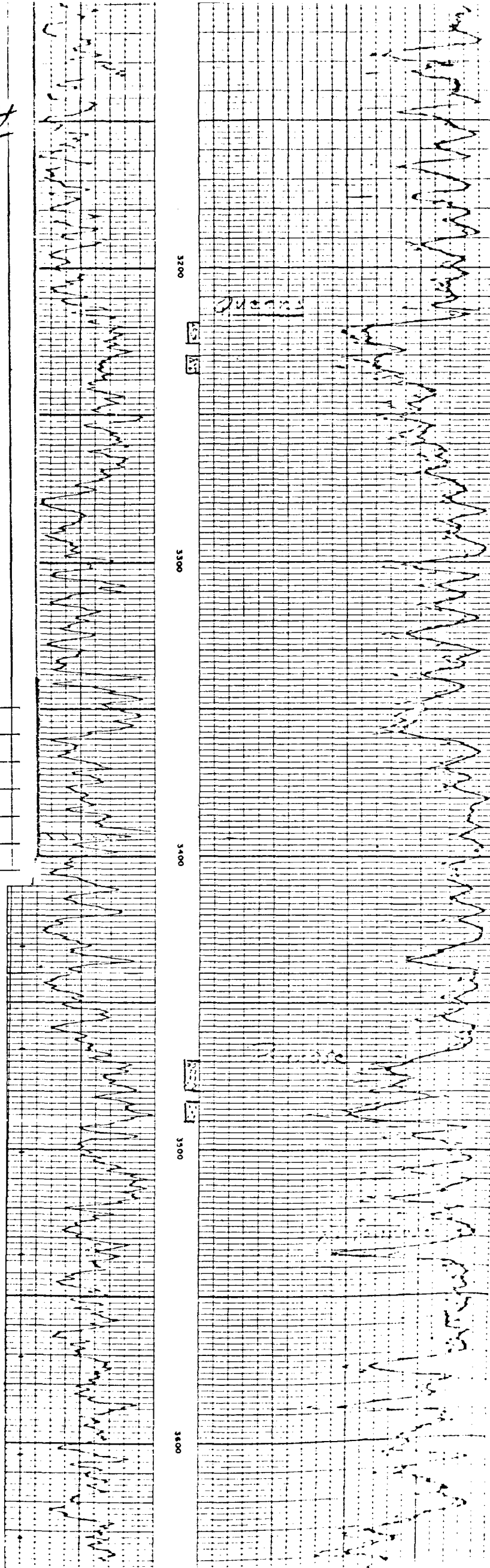
REFERENCE W1564L

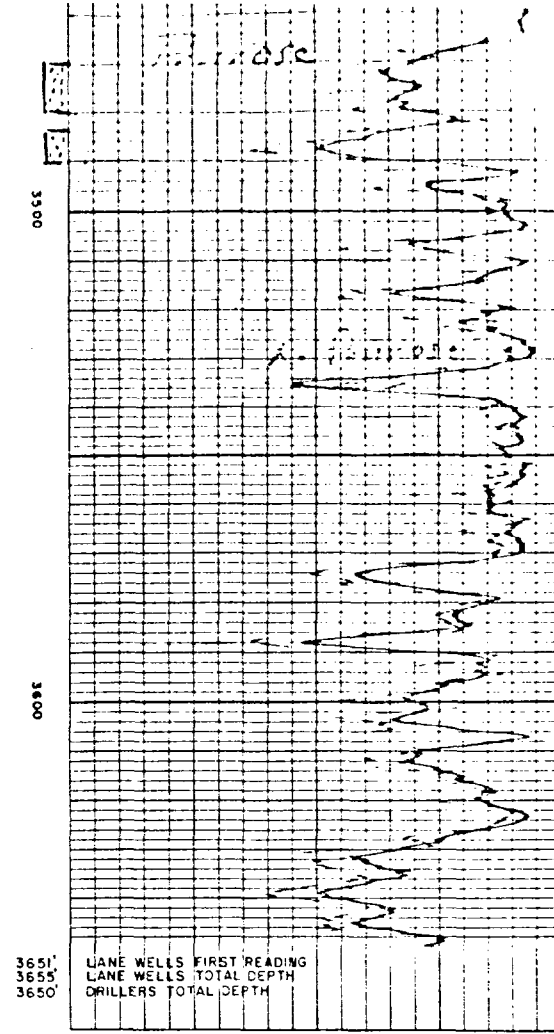
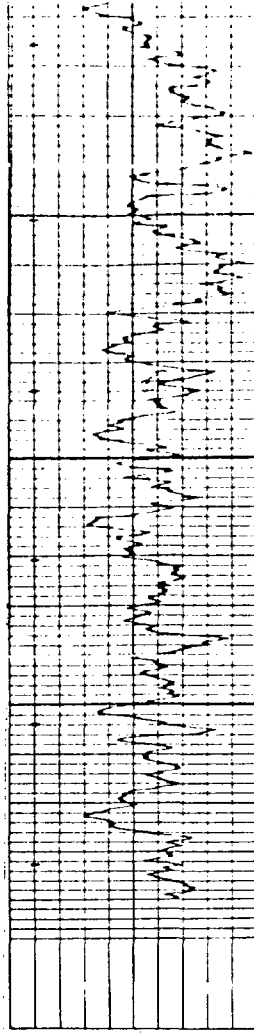


10 COMPLETION RECORD

SPUD DATE
COMP DATE
DST RECORD
CASING RECORD

EXHIBIT E-5

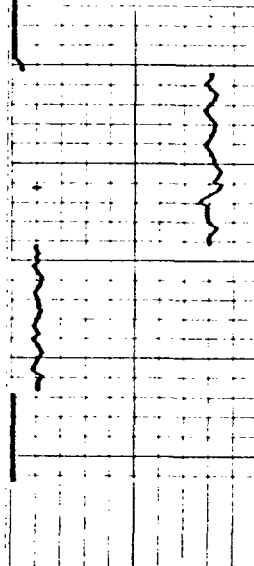




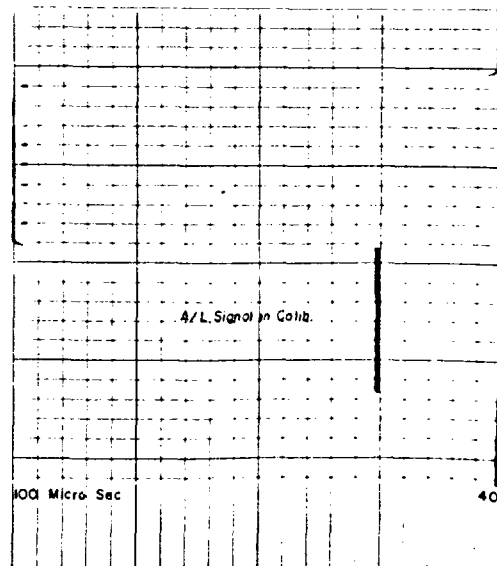
KENWOOD OIL COMPANY
SHUGART "A" NO. 4
SHUGART
EDDY COUNTY, NEW MEXICO

G/R LOG CALIBRATION
BEFORE LOG

RADIATION UNITS OF CALIB. STD.	100
SENSITIVITY READING	300
MULTIPLIER	X1
ZERO SUPPRESSION	0
TIME CONSTANT	4
MEASURED CHART DIVISIONS	7

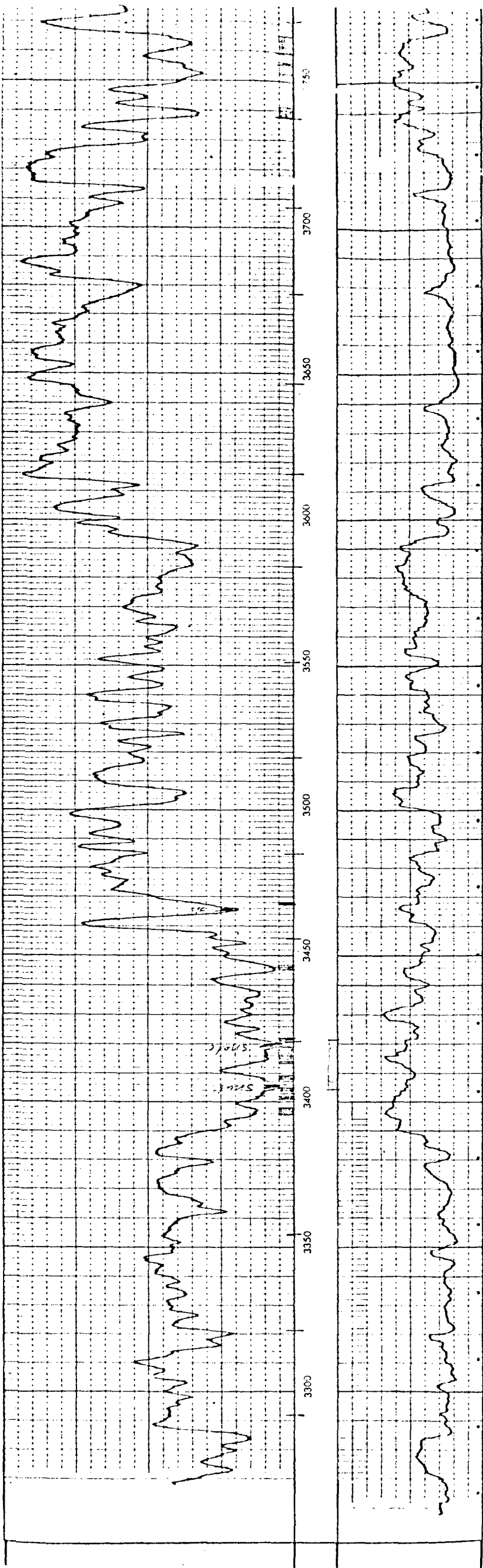


ACOUSTILOG CALIB. BEFORE LOG



G/R LOG CALIBRATION
AFTER LOG

RADIATION UNITS OF CALIB. STD.	100
SENSITIVITY READING	300
MULTIPLIER	X1
ZERO SUPPRESSION	0
TIME CONSTANT	4
MEASURED CHART DIVISIONS	7



WILEX																																	
COMPANY LEN MAYER																																	
WELL KENWOOD-FEDERAL # 1																																	
FIELD SHUGART																																	
COUNTY EDDY	STATE NEW MEXICO																																
Location 2310'FWL 330'FSL																																	
Sec 19	Twp 18-S Rge 31-E																																
Permanent Datum Ground Level Elev 3618																																	
and Measured from D. F. 2 Ft Above Perm Datum																																	
Logging Measured from Driller floor																																	
Date 8-15-63	8-15-63																																
Run No 1	1																																
Type Log Gamma	Neutron																																
Depth Driller 3700	3700																																
Depth Well 3700	3700																																
Bottom Logged Interval 3700	3700																																
Top Logged Interval 3700	3700																																
Type Fluid in Hole Oil	Oil																																
Salinity PPM Cl 0	0																																
Density 1.0	1.0																																
Level 357	357																																
Max rec temp deg F 95	95																																
Operating Rig Time 2 hrs	2 hrs																																
Recorded By B. L. MURPHY																																	
Witnessed by Mr. Mayer																																	
<table border="1"><thead><tr><th colspan="4">BORE HOLE RECORD</th><th colspan="4">CASINO RECORD</th></tr><tr><th>No</th><th>Bit</th><th>From</th><th>To</th><th>Size</th><th>Wgt</th><th>From</th><th>To</th></tr></thead><tbody><tr><td>11</td><td>0</td><td>719</td><td>719</td><td>4-5/8</td><td>0</td><td>719</td><td>719</td></tr><tr><td>8</td><td>749</td><td>3802</td><td>3802</td><td>4-1/2</td><td>0</td><td>3802</td><td>3802</td></tr></tbody></table>		BORE HOLE RECORD				CASINO RECORD				No	Bit	From	To	Size	Wgt	From	To	11	0	719	719	4-5/8	0	719	719	8	749	3802	3802	4-1/2	0	3802	3802
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Reproduced By
West Texas Electrical Log Service
Dallas 2, Texas

REFERENCE **A16S2G** **(ELSI)**
COMPLETION RECORD

SPUD DATE
COMP DATE
DST RECORD

FLOOD NO. 4 SHUGART EDDY COUNTY, NEW MEXICO

