

MADURO UNIT AREA
LEA COUNTY, NEW MEXICO

APPLICATION FOR APPROVAL
OF THE FIRST REVISION OF
THE PARTICIPATING AREA OF
THE MORROW FORMATION

OIL CONSERVATION DIVISION
ENERGY AND MINERALS DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501
ATTN: MR. JOE RAMEY, DIRECTOR

Union Oil Company of California, as Unit Operator for the Maduro Unit agreement, approved by the Oil Conservation Division on March 28, 1979, by the Regional Conservation Manager of the U.S. Geological Survey, effective May 3, 1979, and by the Commissioner of Public Lands on May 14, 1979, pursuant to the provisions of Section 11 thereof, respectfully submits for your approval the selection of the following described land to constitute the first revision of the participating area for the Morrow producing zone or formation, to wit:

Township 19 South, Range 33 East, N.M.P.M.
Section 28: W/2
Section 32: N/2
Section 33: NW/4
containing 800.00 acres, more or less.

In support of this application, the following numbered items are attached hereto and made a part hereof:

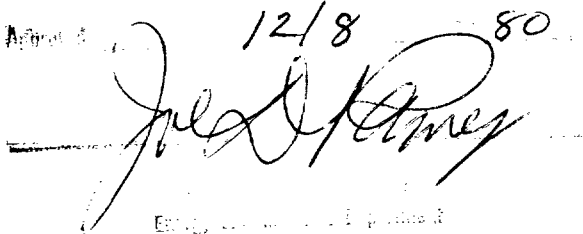
- (1) An ownership map marked Exhibit "A" showing thereon the boundary of the Unit area, the participating area as heretofore established, and the boundary of the proposed revision herein.
- (2) A schedule showing the lands entitled to participation in the unitized substances produced from the Morrow formation, with the percentage of participation of each lease or tract indicated thereon.

Applicant is submitting separately in triplicate a geological report with accompanying maps supporting and justifying the proposed first revision of the participating area.

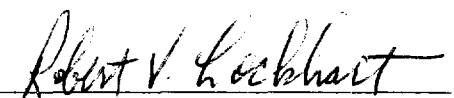
This proposed first revision of the participating area is predicated upon the knowledge and information first obtained upon completion in paying quantities under the terms of the unit agreement on May 10, 1980, of the Maduro Unit Well No. 2 in NE/4 NW/4 Section 32, T-19-S, R-33-E, with an initial test stabilized flow rate of 2,077 MCFGPD plus 192 barrels of condensate per day and a CAOF of 2,421 MCFGPD with a gas-liquid hydrocarbon ratio of 11,458 CFG per barrel from the Morrow formation at a depth of 13,478 to 13,487 feet. The well went on stream July 8, 1980 and during the remainder of the month produced an average of 1,155 MCFGPD plus 110 barrels condensate per day. The Maduro Unit Well No. 2 was validated as a Unit Well on June 30, 1980 by the Commissioner of Public Lands. The effective date of this first revision of the Morrow participating area shall be May 1, 1980, pursuant to Section 11 of the unit agreement.

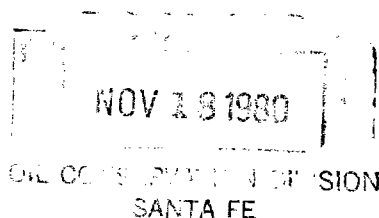
Consequently, applicant respectfully requests your approval of the hereinabove selection of lands to constitute the first revision of the participating area to be effective May 1, 1980.

Dated this 10 day of November, 1980.

12/8 80

Joe Ramey, Director

UNION OIL COMPANY OF CALIFORNIA

BY: 
Robert V. Lockhart
District Land Manager



R 33 E

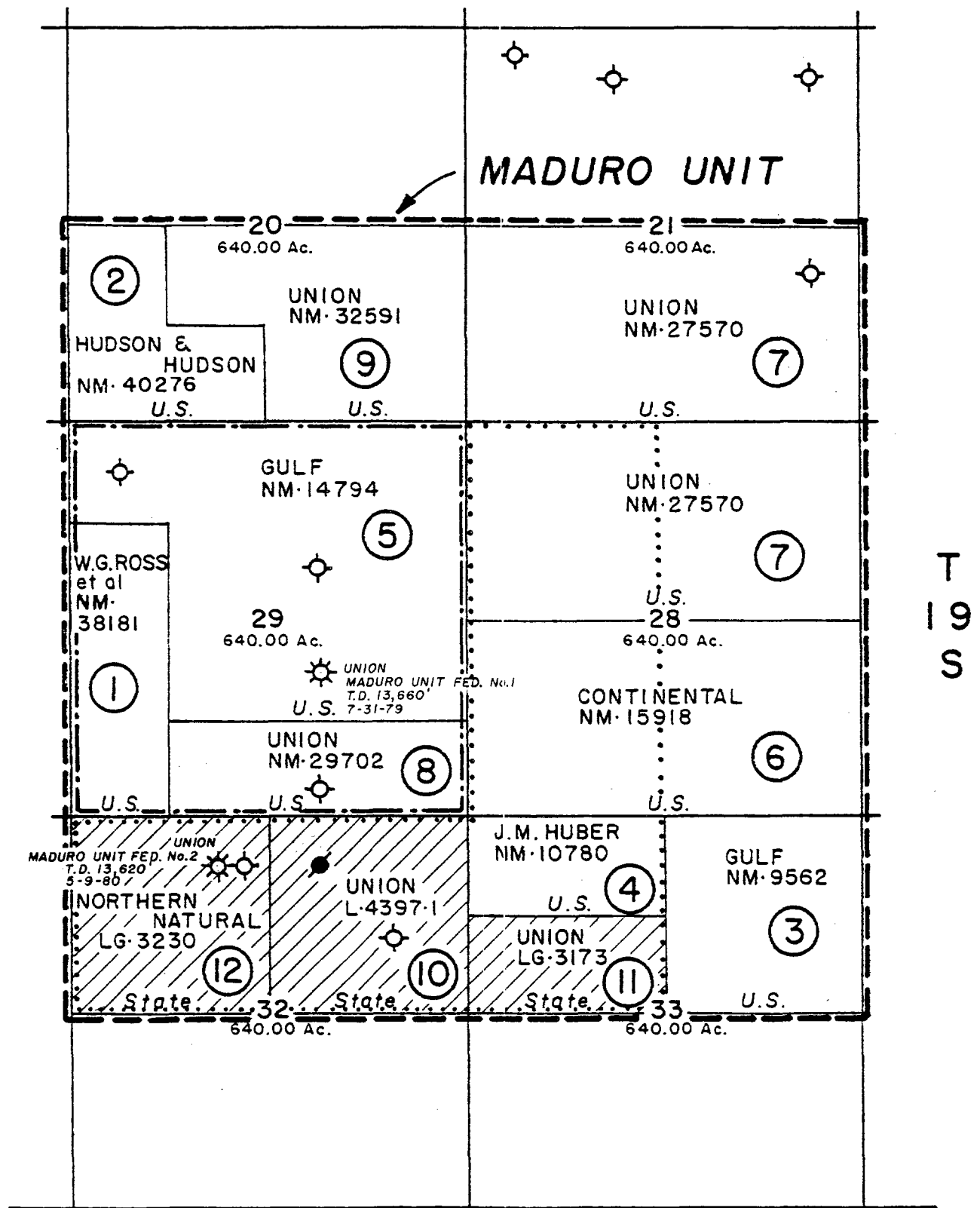
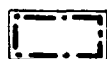


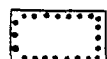
EXHIBIT "A"
MADURO UNIT
LEA COUNTY, NEW MEXICO



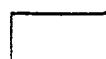
① TRACT NUMBER - EXHIBIT "B"



MORROW PARTICIPATING AREA



1st REVISION - MORROW PARTICIPATING AREA



FEDERAL 2160.00 Ac. 84.37500 %



STATE 400.00 Ac. 15.62500 %
2560.00 Ac. 100.00000 %

Exhibit "B"
 First Revision Morrow Formation
 Participating Area
 Maduro Unit Agreement
 Lea County, New Mexico

Tract No.	Lease No. or Type of Land	Description	Participating Acres	Percent of Participation	Working Interest Owner
1	NM-38181 Federal	All lands are in T-19-S, R-33-E, N.M.P.M. Sec. 29: W/2 SW/4, SW/4 NW/4	120.00	8.82352	FROM SURFACE TO 13,760 FEET Union Oil Company of California 31.9149% Gulf Oil Corporation 14.8936% William A. Hudson and 2.7606% Edward R. Hudson Edward R. Hudson, Jr., agent and attorney-in-fact for B. D. Moore, Jr., et al William G. Ross 25.0000% *Superior Oil Company 25.0000% BELOW 13,760 FEET Aminoil USA 50.0000% William G. Ross 25.0000% Superior Oil Company 25.0000%
4	NM-10780 Federal	Sec. 33: N/2 NW/4	80.00	-0-	J. M. Huber Corporation- All
5	NM-14794 Federal	Sec. 29: NE/4, N/2 NW/4 SE/4 NW/4, NE/4 SW/4, N/2 SE/4	400.00	29.41176	Gulf Oil Corporation- All

* A. C. Holder claims operating rights from surface to 4000' under Assignment of Operating Rights dated 6-13-61 which is pending approval. Union Oil Company of California has farmout agreement with A.C. Holder. Revised 11/13/80

Exhibit "B"
First Revision Morrow Formation
Participating Area
Maduro Unit Agreement
Lea County, New Mexico

Tract No.	Lease No. or Type of Land	Description	Participating Acres	Percent of Participation	Working Interest Owner
6	NM-15918 Federal	All lands are in T-19-S, R-33-E, N.M.P.M.	160.00	11.76471	FROM SURFACE TO 13,760 FEET Continental Oil Company 50.0000% Union Oil Company of Calif. 31.9149% Gulf Oil Corporation 14.8936% William A. Hudson and 2.7606% Edward R. Hudson Edward R. Hudson, Jr., agent .4309% and attorney-in-fact for B. D. Moore, Jr., et al
7	NM-27570 Federal	Sec. 28: NW/4	160.00	11.76471	BELOW 13,760 FEET Continental Oil Company All
8	NM-29702 Federal	Sec. 29: S/2 SE/4, SE/4 SW/4	120.00	8.82353	Union Oil Company of California - All
10	L-4397-1 State	Sec. 32: NE/4	160.00	11.76471	Union Oil Company of California - All
11	LG-3173 State	Sec. 33: S/2 NW/4	80.00	5.88235	Union Oil Company of California - All

Exhibit "B"
 First Revision Morrow Formation
 Participating Area
 Maduro Unit Agreement
 Lea County, New Mexico

Tract No.	Lease No. or Type of Land	Description	Participating Acres	Percent of Participation	Working Interest Owner
12	LG-3230 State	Sec. 32: NW/4 All lands are in T-19-S, R-33-E, N.M.P.M.	160.00	11.7647%	InterNorth, Inc.- All
		TOTAL	1,440.00	100.000000	
<u>SUMMARY</u>					
<u>TYPE LAND</u>		<u>COMMITTED ACRES</u>	<u>NON-COMMITTED ACRES</u>		<u>PERCENT **</u>
Federal		960.00	80.00		70.58824
State		400.00	-0-		29.41176
TOTAL		1,360.00	80.00		100.00000%

** Percentages refer to only committed acres.

MADURO UNIT
LEA COUNTY, NEW MEXICO

Participating area for production from the Maduro Unit Well No. 2 from the Morrow formation, Gem Morrow Gas Pool, Lea County, New Mexico.

GEOLOGICAL REPORT

The Union Oil Company of California No. 2 Maduro Unit well in Unit C, 1980 feet from the west line and 660 feet from the north line of Section 32, Township 19 South, Range 33 East, Lea County, New Mexico, was drilled to a total depth of 13,620 feet in the lower Morrow section of the Pennsylvanian.

The subject well was completed May 10, 1980, from the Morrow formation for CAOF 2,421 MCF gas per day with a gas-liquid hydrocarbon ratio of 11,458 CFG per barrel.

Formation tops of subject well are as follows (elevation 3600' KB):

Rustler	1,243'
Salt	1,435'
Base of Salt	2,852'
Yates	3,031'
Wolfcamp	110,840'
Cisco	11,740'
Canyon	11,955'
Strawn	12,057'
Atoka	12,392'
Morrow	12,885'
Middle Morrow	13,086'
Lower Morrow	13,448'

Gas production in the No. 2 Maduro well is from perforations 13,478-13,487 feet in a lower Morrow sand. The accumulation seems to be controlled both by structure and stratigraphy. It is 37 feet low to the Maduro Unit well No. 1 located approximately 3000 feet to the north.

The reservoir rock is about 15 feet thick and is a white, coarse grained quartz sand divided into two ledges by a two-foot thick bed of gray shale. Only the lower ledge is perforated. Porosity calculations from wireline logs range up to 11.5%. Shut-in tubing

Maduro Unit
Lea County, New Mexico
Page -2-

pressure is 3920 psig.

Additional sand in the lower Morrow that was not perforated brings the total clean sand up to a thickness of 32 feet as shown on the isopach and structure contour map. Structural configuration is based on well control and seismic data. The isopach of the net clean lower Morrow sand is taken from our regional maps.

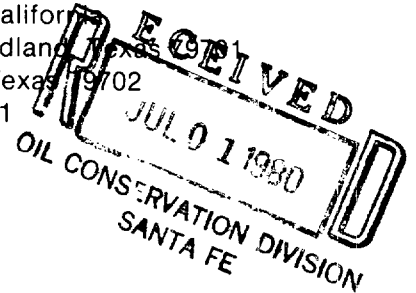
Initial production from the No. 2 Maduro Unit commenced on July 8, 1980. On a daily test the well flowed 1,405 MCF plus 121 barrels of condensate with 2400# FTP.

C. E. Singletary
C. E. Singletary
Geologist
UNION OIL COMPANY OF CALIFORNIA

CES/skp

Union Oil and Gas Division: Central Region

Union Oil Company of California
500 North Marienfeld, Midland, Texas 79701
P.O. Box 671, Midland, Texas 79702
Telephone (915) 682-9731



40-116

Robert V. Lockhart
District Land Manager
Midland District

June 25, 1980

Oil Conservation Division
of the Energy and Minerals Department
P. O. Box 2088
Santa Fe, New Mexico 87501

Attn: Mr. Joe D. Ramey,
Director

Gentlemen:

Maduro Unit Well No. 2
NW/4 Section 32-19S-33E
Maduro Prospect (8138)
Lea County, New Mexico

Enclosed for your review and file is a copy of Union Oil Company of California's letter dated June 24, 1980, requesting validation from the Commissioner of Public Lands for the Union operated Maduro Unit Well No. 2. Please note that the request for unit well validation was initially sent to the U.S.G.S. in error, as the Maduro Unit Well No. 2 is located on State land. You will be furnished with a copy of the Commissioner's decision as soon as it becomes available.

If further information is required, please advise.

Yours very truly,

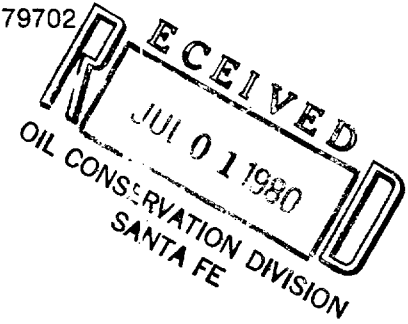
UNION OIL COMPANY OF CALIFORNIA

A handwritten signature in cursive script that reads "Robert V. Lockhart".
Robert V. Lockhart
District Land Manager

RVL:cs
Encl.

Union Oil and Gas Division: Central Region

Union Oil Company of California
500 North Mariefeld, Midland, Texas 79701
P.O. Box 671, Midland, Texas 79702
Telephone (915) 682-9731



Robert V. Lockhart
District Land Manager
Midland District

June 24, 1980

Commissioner of Public Lands
P. O. Box 1148
Santa Fe, New Mexico 87501

Attn: Mr. Ray D. Graham, Director
Oil and Gas Division

Gentlemen:

Request for Unit Determination
Maduro Unit Well No. 2
NW/4 Section 32-19S-33E
Lea County, New Mexico

As indicated in the 1980 Plan of Development and Operation, Union Oil Company of California commenced the drilling of a 13,600' Morrow test located 660' FNL and 1980' FWL of Section 32, Township 19 South, Range 33 East, N.M.P.M., Lea County, New Mexico. Our well was drilled to a total depth of 13,620' on April 2, 1980. The Morrow Sand interval between 13,478' through 13,487' was perforated and the well flowed back on May 10, 1980 at a stabilized flow of 2,077 MCFGPD + 192 barrels of condensate on a 18/64" choke at 1450 PSIG flowing tubing pressure. The well is currently shut-in waiting on a pipeline connection. Union Oil Company of California, as Operator for the Maduro Unit Area, now respectfully requests the afore-said well be validated as a Unit Well.

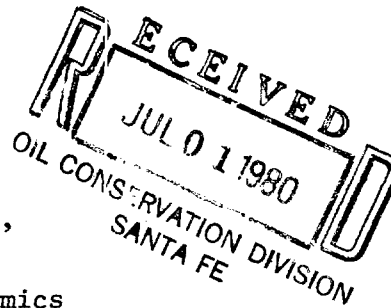
In support of this request, please consider the following, sent to you under cover of letter dated June 6, 1980:

- 1.) A brief drilling history of the Maduro Unit Well No. 2.
- 2.) A gas analysis taken from our Pipeline Federal Well No. 1, located in Sec. 4, T-19-S, R-34-E, Lea County, New Mexico for calculation of initial gas formation volume factor. A gas analysis was not taken from the Maduro Unit Well No. 2.

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June 24, 1980

Page 2



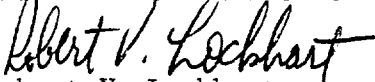
- 3.) Volumetric calculations for gas in place for the zone of completion, as well as five (5) additional intervals, not perforated, which are believed to be productive.
- 4.) A Development Well Analysis form, which shows the economics of the subject well, using reserves for only the current zone of completion.
- 5.) Copies of the CNL-FDC logs and Dual Laterolog which indicate, in red, the current zone of completion, and proposed zones of completions.
- 6.) A map of the area, showing the subject well location and surrounding acreage.

A total cost of \$1,306,382.00 was used in the enclosed economic evaluation. It is believed the engineering data demonstrates Morrow gas and condensate reserves sufficient to produce in paying quantities which will allow recovery of all costs of drilling, completing and producing operations, with a reasonable profit, in accordance with the provisions of Section 9 of the Unit Agreement. After the well is on stream, we will be presenting a request for a revised participating area.

If you require any additional information, please contact the undersigned.
Thank you for your consideration.

Very truly yours,

UNION OIL COMPANY OF CALIFORNIA


Robert V. Lockhart
District Land Manager

RVL:cs
Encl.

Union Oil and Gas Division: Central Region

Union Oil Company of California
500 North Mariefeld, Midland, Texas 79701
P.O. Box 671, Midland, Texas 79702
Telephone (915) 682-9731



June 6, 1980

Robert V. Lockhart
District Land Manager
Midland District

Oil Conservation Division of
the Energy and Minerals Department
P. O. Box 2088
Santa Fe, New Mexico 87501

Attn: Mr. Joe D. Ramey, Director

Gentlemen:

Maduro Unit Well No. 2
Lea County, New Mexico
Maduro Prospect (8138)

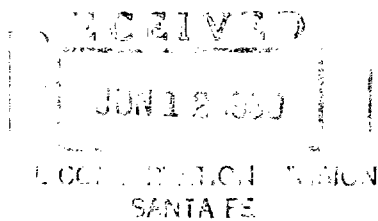
Enclosed for your review and file is a copy of Union Oil Company's letter dated June 4, 1980, and attachments thereto, requesting validation from the U.S.G.S. for the Union operated Maduro Unit Area. You will be furnished with a copy of the Survey's decision as soon as it becomes available.

If anything further is required, please advise me accordingly.

Very truly yours,

UNION OIL COMPANY OF CALIFORNIA

Robert V. Lockhart for RVL
Robert V. Lockhart
District Land Manager



HHG:cs

Enclosure

Cert. Ret. Rec't.

Union Oil and Gas Division: Central Region

Union Oil Company of California

500 North Marientfeld, Midland, Texas 79701

P.O. Box 671, Midland, Texas 79702

Telephone (915) 682-9731

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JUL



Robert V. Lockhart

District Land Manager
Midland District

June 4, 1980

Regional Manager

Conservation Division

United States Geological Survey

Denver, Colorado 80202

Attn: Supervisor

United States Geological Survey

P. O. Box 26124

Albuquerque, New Mexico 87125

Gentlemen:

Request for Unit Determination

Maduro Unit Well No. 2

NW/4 Section 32 - 19S - 33E

Lea County, New Mexico

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In support of this request, we enclose in triplicate the following:

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- 2.) A gas analysis taken from our Pipeline Federal Well No. 1, located in Sec. 4, T-19-S, R-34-E, Lea County, New Mexico for calculation of initial gas formation volume factor. A gas analysis was not taken from the Maduro Unit Well No. 2.

JUN 12 1980
CONSERVATION DIVISION
SANTA FE

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If you require any additional information, please contact the undersigned. Thank you for your consideration.

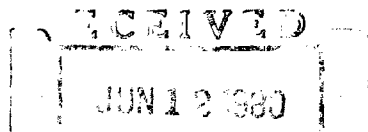
Very truly yours,

UNION OIL COMPANY OF CALIFORNIA

Robert V. Lockhart

Robert V. Lockhart
District Land Manager

RVL:ld



RECEIPT FOR CERTIFIED MAIL

SENT TO U.S.G.S. (Armando Lopez)		POSTMARK OR DATE	
STREET AND NO. P. O. Box 26124			
P.O., STATE AND ZIP CODE Albuquerque, NM 87125		6/4/80	
RETURN RECEIPT SERVICES		CONSULT POSTMASTER FOR FEES	
1. Shows to whom and date delivered With restricted delivery			
2. Shows to whom, date and where delivered With restricted delivery			
RESTRICTED DELIVERY			
SPECIAL DELIVERY (extra fee required)			

PS Form 3800 Jan. 1976 NO INSURANCE COVERAGE PROVIDED— (See other side)
NOT FOR INTERNATIONAL MAIL
GPO 1976-O-591-452


No. 52726

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VOLUMETRIC CALCULATIONS OF GAS IN PLACE - MORRIS FORMATION

Open Perfs: 13478-13487' - Lower Morrow

Porosity, ϕ = 8.2% Acres = 320
Water Saturation, S_w = 29% Bgi = 318.67 SCF/RCF
Net Pay, h = 9' R.E. = 80% Recovery Factor

GIP = (43560) (Acres) (h) (ϕ) ($1 - S_w$) (Bg)
= (43560) (320) (9) (.709) (318.67) = 2.32 BCF
Recoverable Gas = (.80) (2.32 BCF) = 1.86 BCF

Proposed Perforated Intervals:

13427-13436' - ϕ = 9.25% S_w = 9.7% h = 9'

GIP = (43560) (320) (9) (.0925) (.903) (318.67) = 3.34 BCF
Recoverable Gas = (.80) (3.34 BCF) = 2.67 BCF

13470-13474' - ϕ = 9.75% S_w = 25.1% h = 4'

GIP = (43560) (320) (4) (.0975) (.749) (318.67) = 1.30 BCF
Recoverable Gas = (.80) (1.30 BCF) = 1.04 BCF

13300-13304' - ϕ = 6.25% S_w = 10.5% h = 4'

GIP = (43560) (320) (4) (.0625) (.895) (318.67) = .994 BCF
Recoverable Gas = (.80) (.994 BCF) = .80 BCF

13284-13288' - ϕ = 6.25% S_w = 21.2% h = 4'

GIP = (43560) (320) (4) (.0625) (.788) (318.67) = .875 BCF
Recoverable Gas = (.80) (.875 BCF) = .70 BCF

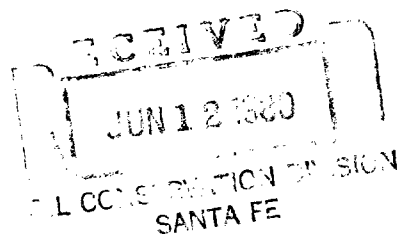
13086-13088' - ϕ = 12% S_w = 12.5% h = 2'

GIP = (43560) (320) (2) (.12) (.875) (318.67) = .933 BCF
Recoverable Gas = (.80) (.933 BCF) = .75 BCF

Additional Total Recoverable Gas

From the Proposed Perforated Intervals:	INTERVAL	RECOVERABLE GAS
	13427-13436'	2.67
	13470-13474'	1.04
	13300-13304'	.80
	13284-13288'	.70
	13086-13088'	.75
		<u>5.96 BCF</u>

Total Possible Recoverable Gas = Recovered Gas From Proposed Perfs
+ Recoverable Gas From Existing Perfs = 5.96 BCF + 1.86 BCF = 7.82 BCF



L MADFED2
IKJ523271 MADFED2
00010 NAME MADURO FEDERAL UNIT NO. 2,33 ESP
00020 GWG RSRV 1.85E6 680
00030 ONCE 60000 680
00040 DIST 150 780
00050 COND RSRV 27320 680
00060 ONCE 2700 680
00070 DIST 1 780
00080 OPEX HOLD 330 680
00090 GWGPR HOLD 2.71 680
00100 CNDPR HOLD 33.97 680
00110 GRINT HOLD 0.5404919 680
00120 NTINT HOLD 0.4613327 680
00130 INVI ONCE 1048844 680
00140 INVT ONCE 257538 680
00150 BIND HOLD .11 680
READY

L MADAFE3
IKJ523271 MADAFE3
00010 2, MADURO UNIT NO.2,394300
00020 GEN MORROW, UNION OIL OF CALIF., MORROW
00030 DEPTH 13660 13089
00040 PAY 9
00050 ACRES 320
00060 INTEREST 0.5404919 0.4613327
00070 PRICE GWG(2.71) COND(33.97)
00080 RATE GWG(2000) COND(90)
00090 AFE 1306382 1048844 1048844
00100 BY ESP
00110 REMARKS ECONOMICS BASED ON ACTUAL COSTS AND PRODUCTION
00120 REMARKS RATE DURING A FLOW TEST OF THE MADURO NO. 2.
READY

RECEIVED
JUN 12 1980
LCCO-SECTION 1
SANTA FE

DRILLING HISTORY

1-19-80 Spudded well at 1980' FWL and 660' FNL, Section 32, T-19-S R-33-E, Lea County, New Mexico. Drilled 17-1/2" hole to 1356', ran 13-3/8" casing to 1356'

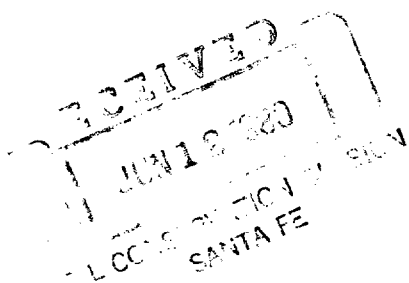
1-22-80 Set cement retainer at 1356', squeezed w/900 sks. Drilled 12-1/4" hole to 5235'.

2-24-80 Ran 9-5/8" casing at 5228', DV tool at 3564'. First stage, cmt w/250 sks lite wate and 200 sks Class "C" cement. Second stage, cmt through DV tool at 3564' w/2150 sks lite wate and 450 sks Class "C" cement.

2-26-80 Drilled 7-7/8" hole to 13620'

4-4-80 Ran and cemented 5-1/2" casing at 13620', DV tool at 9993'. First stage, cmt w/750 sks. Second stage, cmt w/450 sks.

5-13-80 Perf lower Morrow 13478-13487'. CAOF test: 2421 MCFGPD. Flow rate test: 2077 MCF/D at 1450# FTP plus 8 BC per hour.



CALCULATION OF GAS PROPERTIES

Flash Gas From High Pressure Seperator
Pipeline Federal Well No. 1
La Rica (Morrow) Field
lea County, New Mexico
Section 4 T-19-S R-34-E

COMPONENT	MOL%	MOLECULAR WT	Pc Psia	Tc DR	(1x2)	(1x3)	(1x4)
Methane, C ¹	84.31	16.04	673.1	343.2	13.52	567.49	289.35
Ithane, C ²	9.96	30.07	708.3	549.9	2.69	63.46	49.27
Propane, C ³	3.51	44.09	617.4	666.0	1.55	21.67	23.38
Iso-Butane, C ⁴	.44	58.12	529.1	734.6	.26	2.33	3.23
N-Butane	.80	58.12	550.1	765.7	.46	4.40	6.13
Iso-Pentane	.20	72.15	483.5	829.6	.14	.97	1.66
N-Pentane	.17	72.15	489.8	846.2	.12	.83	1.44
Hexane	.09	86.17	440.1	914.2	.08	.396	.823
Heptanes	.07	100.2	395.9	972.4	.07	.28	.68
Carbon Dioxide	.66	44.01	1070.2	547.5	.29	7.06	3.61
Nitrogen	.79	28.02	493.2	227.0	.22	3.89	1.79
					19.412315	672.78	381.36

$S_g = \frac{\text{MOL. WT. GAS}}{\text{MOL. WT. AIR}} = \frac{19.41}{28.97} = .670$

$P_c = 672.78 \quad P_r = \frac{6150}{672.78} = 9.14 \quad Z = 1.078$

$T_c = 381.36 \quad T_r = \frac{632}{381.36} = 1.66$

$B_{gi} = \frac{V_{sc}}{V_r} = \frac{P_r T_{sc}}{Z T_r P_{sc}} = \frac{(6150) (520)}{(1.078) (632) (14.73)} = 318.67 \frac{\text{SCF}}{\text{RCF}}$

RECEIVED
JUN 18 1963
LUCAS OIL CO.
SANTA FE

DEVELOPMENT WELL ANALYSIS ACTUAL

WELL: MADURO UNIT NO.2 AFE NO: 394300
FIELD: GEM MORROW OPERATOR: UNION OIL OF CALIF.
FORMATION: MORROW TD: 13,660 FT. PAY TOP: 13,080 FT

UOCO INTEREST: GROSS 54.05% NET 46.13%

	UOCO INTEREST	TOTAL
COSTS		
AFE COST, \$	706,089	1,306,382
DRY HOLE COST, \$	566,892	
CASH RISK, \$	566,892	
RESERVES		
GWG-MMCF	858	1,860
CND-MSTB	13	28
NET PAY, FT.		9
ACRES		320
MCF/AC. FT.		646
INITIAL RATE		
GWG, MCF/DAY	923	2,000
CND, BBL/DAY	42	90

***** ECONOMICS *****

UOCO AVERAGE EXP \$/MO	PROD VALUES	INITIAL	ESCL. \$/YR	MAX	YR
DIRECT 183	GWG, \$/MCF	2.71	0.00	2.71	80
INDIRECT 20	CND, \$/BBL	33.97	0.00	34.48	80
OVERHEAD 14					
UNIT CHARGE					

PROJECTION EFFECTIVE DATE 6/80

*** UOCO INTEREST ***
BFIT AFIT

GROSS AFTER ROYALTY, M\$	2,761	
TOTAL EXPENSE, M\$	211	
TOTAL INVESTMENT (DEVELOPMENT COST), M\$	706	
UNDISC. CASH FLOW, M\$	1,844	935
1 PROFIT / \$ TOTAL INVESTMENT	2.61	1.32
PRESENT WORTH AT 10%	1,410	689
PROFITABILITY INDEX AT 5%	2.27	1.13
ROI (RATE OF RETURN), %	25.0	25.0
PAYOUT, YEARS:	0.6	0.8
LIFE, YEARS	10	

REMARKS: ECONOMICS BASED ON ACTUAL COSTS AND PRODUCTION
RATE DURING A FLOW TEST OF THE MADURO NO. 2.

BY: ESP

DATE: 05/28/80 2:00 PM

JUN 15 1980
A.C.O. S. J. L. R. N.
SANTA FE

LEASE TOTAL

: MADURO FEDERAL UNIT NO. 2

N MEXICO ESP

TYPE 05/23/80 2:00 PM

YEAR	GAR	TOTAL EXP	TOTAL INV	CASH-BT	CASH-AT
1980	712,427	45,453	706,089	-39,120	-70,304
1981	757,713	49,371		703,342	355,675
1982	449,189	30,366		418,823	219,246
1983	285,086	20,257		264,829	141,218
1984	186,796	14,203		172,593	94,063
1985-95	369,982	51,100		318,882	184,800
	-----	-----	-----	-----	-----
TOTAL	2,761,193	210,755	706,089	1,844,349	934,698

TYPE 05/23/80 2:00 PM

YEAR	GROSS GWG	NET GWG	GWG SOLD	TOT GAS SLD	GROSS COND
1980	386,363	178,230	178,230	178,230	14,640
1981	486,324	224,342	224,342	224,342	9,556
1982	326,318	150,532	150,532	150,532	2,632
1983	218,957	101,005	101,005	101,005	725
1984	146,913	67,774	67,774	67,774	200
1985-95	295,120	136,139	136,139	136,139	67
	-----	-----	-----	-----	-----
TOTAL	1,860,000	858,022	858,022	858,022	27,820

TYPE 05/23/80 2:00 PM

YEAR	NET COND
1980	6,754
1981	4,408
1982	1,214
1983	334
1984	92
1985-95	30

TOTAL	12,832

Option: PWROR

INVESTMENT PARAMETERS

EFFECTIVE DATE: 6/80

PRESENT WORTH

	BEFORE TAX-	AFTER TAX		BEFORE TAX	AFTER TAX
50	1,601,732	797,721	RATE OF RETURN	> 100.0	> 100.0
100	1,409,379	689,418	PROFITABILITY INDEX	2.00	0.98
200	1,125,632	528,755	PAYOUT, YRS	0.6	0.6
500	657,544	261,792	INITIAL INVESTMENT	706,089	

Option: AFE

RECEIVED
JUN 12 1980
U.S. AIR FORCE
CMTAFB

Compensated Neutron

Formation Density

13400

Proposed
Perforations

LOWER
MORROW
13448

Proposed
Perforations

Current
Completion
Interval

13500

10 ft

6	1.50
11	0
15	7.1
20	11.5
25	11.1
30	13.7
35	17.5
40	22.0
45	28.0

6	5.0
11.5	20.4
15	26.6
20	27.5
25	40.5
30	14.8
35	15.2
40	37.5
45	33.8
50	40.0

Formation Dersleri

MIDDLE
MEADOW
13086

13100

Fractured
Perforations

13200

Exposed
Perforations

13300
Perforations

Dual Laterolog

Micro - SFL

13100

13200

13300

Dual - operating
Micro-SEL

13400

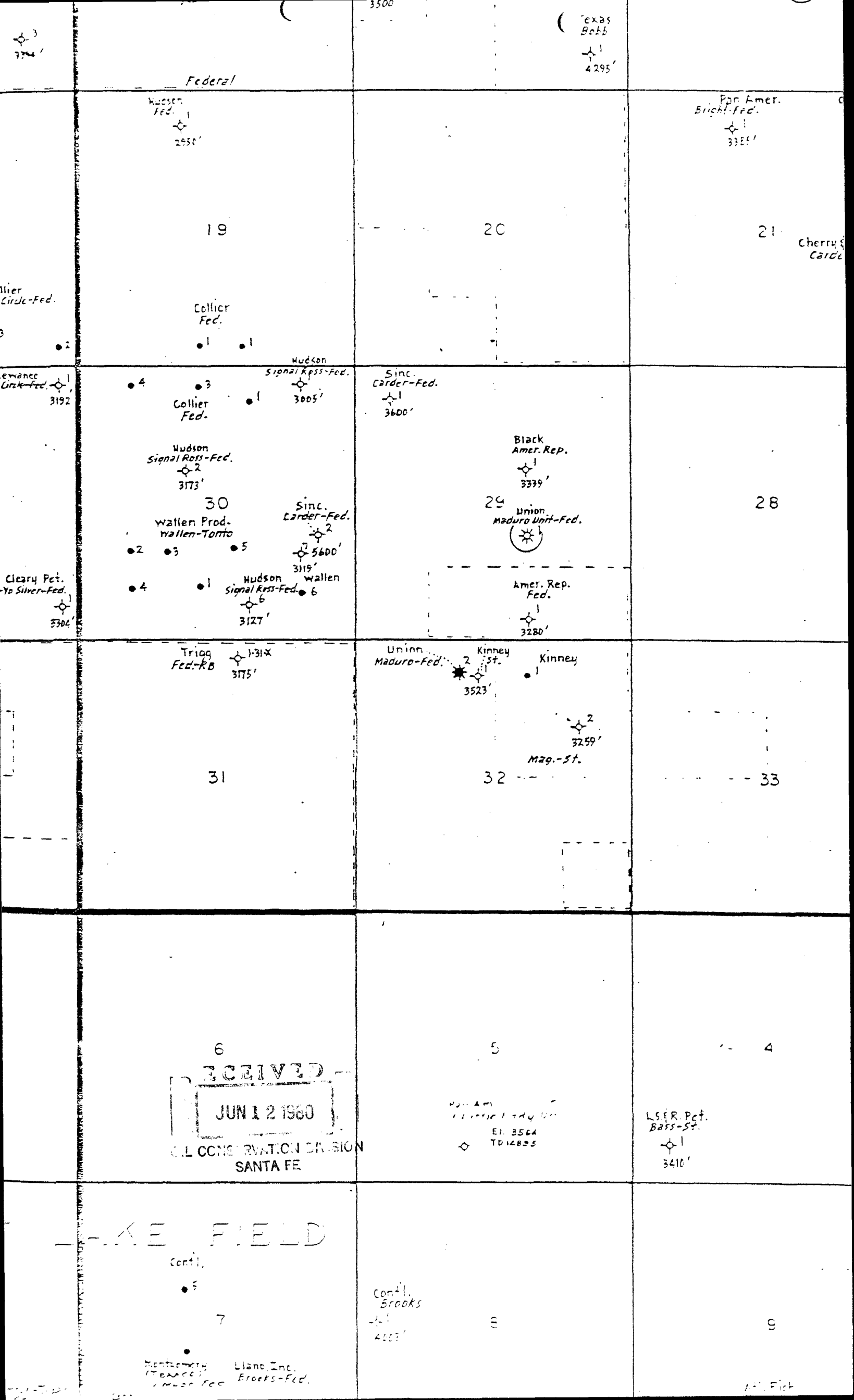
13500

1044

FRGR

13500

FRGR



3500
Texas
Bobb
4295'

Federal

Hudson
Fed.
2950'

For Amer.
Bright Fed.
3385'

19

20

21

Cherry
Carder

Collier
Fed.

Hudson
Signal Ross Fed.
3005'

Sinc.
Carder Fed.
3600'

Black
Amer. Rep.
3339'

29
Union
Maduro Unit Fed.

28

Hudson
Signal Ross Fed.
3173'

Sinc.
Carder Fed.
5600'

Amer. Rep.
Fed.
3280'

30
Wallen Prod.
Wallen-Tonto

Hudson
Signal Ross Fed.
3127'

Union
Maduro Fed.
3523'

Kinney

3259'

Mag. St.

31

32

33

Triag
Fed. KB
3175'

U.S. AM
Little Ferry
El. 3564
TD 14805

LSE R. Pet.
Bass-St.
3410'

6
RECEIVED
JUN 12 1980
OIL CONSERVATION DIVISION
SANTA FE

LAKE FIELD

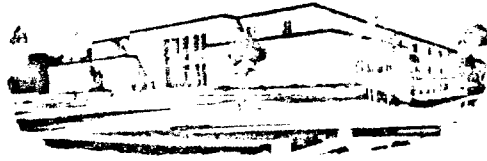
Cont.

Cont.
Brooks
4003'

Montgomery
Texas
Lland. Inc.
Brooks Fed.

AF. Field

State of New Mexico



Commissioner of Public Lands

March 20, 1980

ALEX J. ARMIJO
COMMISSIONER

P. O. BOX 1148
SANTA FE, NEW MEXICO 87501

6716

Union Oil Company of California
500 North Marienfeld
Midland, Texas 79701

Re: Maduro Unit
APPLICATION FOR APPROVAL OF THE
INITIAL PARTICIPATING AREA OF THE
MORROW FORMATION

ATTENTION: Mr. Richard R. Oelze

Gentlemen:

The Commissioner of Public Lands has this date approved your application, dated October 12, 1979, for the Initial Morrow Participating Area, effective as of August 2, 1979. The USGS gave their approval on March 14, 1980.

The Initial Morrow Participating Area embraces 640.00 acres described as All of Section 29, Township 19 South, Range 33 East, N.M.P.M.

Enclosed is one approved copy for your files.

Very truly yours,

ALEX J. ARMIJO
COMMISSIONER OF PUBLIC LANDS

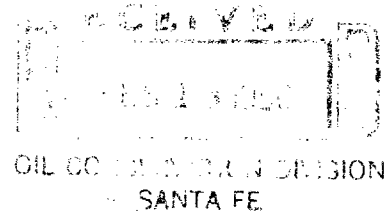
BY:
RAY D. GRAHAM, Director
Oil and Gas Division
AC 505-827-2748

AJA/RDG/s
encl.
cc:

OCD-Santa Fe, New Mexico
USGS-Roswell, New Mexico
USGS-Albuquerque, New Mexico

Union Oil and Gas Division: Central Region

Union Oil Company of California
500 North Marienfeld, Midland, Texas 79701
P.O. Box 671, Midland, Texas 79702
Telephone (915) 682-9731



Robert V. Lockhart
District Land Manager
Midland District

February 12, 1980

6516

Oil Conservation Division
Energy and Minerals Department
State of New Mexico
P. O. Box 2088
Santa Fe, New Mexico 87501

Gentlemen:

Attn: Joe D. Ramey, Director

Maduro Unit
Lea County, New Mexico
Maduro Prospect (8138)

In accordance with our letter to your agency of August 27, 1979, please find enclosed copy of U.S.G.S. letter concurring with our determination that the Maduro Unit Well No. 1 qualifies as a unit well.

Union, as operator, submitted its application to the Survey on Nov. 5, 1979, for the initial Morrow participating area (embracing all of Section 29, T-19-S, R-33-E, NMPM).

If you need any further information in this regard, please advise.

Sincerely yours,

UNION OIL COMPANY OF CALIFORNIA

Richard R. Oelze
Richard R. Oelze
Landman

RRO/sb

Encl: (1)



United States Department of the Interior

GEOLOGICAL SURVEY
P. O. Box 26124
Albuquerque, New Mexico 87125

FEB 08 1980

Union Oil Company of California
Attention: Mr. Robert V. Lockhart
P. O. Box 671
Midland, Texas 79702

FEB 11 1980

RECEIVED

Gentlemen:

Your letter of August 23, 1979, indicates that as unit operator of the Maduro unit agreement, Lea County, New Mexico, you have determined that unit well No. 1 in the NW $\frac{1}{4}$ SE $\frac{1}{4}$ section 29, T. 19 S., R. 33 E., N.M.P.M., is capable of producing unitized substances in paying quantities.

Unit well No. 1 was completed July 31, 1979, for a calculated absolute open flow of 101 barrels of condensate and 6,686 MCF/day from the Morrow interval of 13,446 - 13,457 feet.

This office concurs with your determination that such well is capable of production of unitized substances in paying quantities from the Morrow formation pursuant to Section 9 of the unit agreement.

Sincerely yours,

James W. Sutherland
Oil and Gas Supervisor, SRMA

Enclosures

cc: John Hansen
W. I. Brown

ONE HUNDRED YEARS OF EARTH SCIENCE IN THE PUBLIC SERVICE



III-A Schedule of Interests of Parties AS TO ALL DEPTHS FROM 4,000 FEET DOWN TO AND INCLUDING 13,760 FEET

W. I. Owners	Original Acreage	Acreage Farmed-In	Total Acreage Before Payout	Percent Interest Before Payout	Total Acreage After Payout	Percent Interest After Payout (4)	Percent Interest in Subsequent Wells Before Payout
Aminoil (1)	60.00	-	-	-	-	-	-
Conoco (1) (6)	320.00	-	-	-	160.00	6.45161	6.45161
Gulf (2)	560.00	113.19	673.19	27.14476	625.53	25.22298	25.22298
Hudson & Hudson (2)(3)	103.80	20.98	124.78	5.03145	109.95	4.43347	4.67541
Moore Group (2)	16.20	3.28	19.48	.78548	18.10	.72984	.72984
Northern	160.00	-	160.00	6.45161	160.00	6.45161	6.45161
Ross	30.00	-	30.00	1.20968	30.00	1.20968	1.20968
Superior (5)	30.00	-	30.00	1.20968	30.00	1.20968	1.20968
Unger (3)	-	-	-	-	6.00	.24194	-
Union (2)	<u>1,200.00</u>	<u>242.55</u>	<u>1,442.55</u>	<u>58.16734</u>	<u>1,340.42</u>	<u>54.04919</u>	<u>54.04919</u>
	2,480.00	380.00	2,480.00	100.00000	2,480.00	100.00000	100.00000

(1) Parties electing to farmout, and (2) Parties electing to accept farmins.

(3) Hudson & Hudson have agreed to carry the 12-acre interest of Unger in each well until payout, and the original acreage position has so been adjusted.

(4) Assuming conversion of overriding royalties to working interests.

(5) Superior interest is limited to depths below 4,000 feet.
A.C. Holder holds rights above 4,000 feet and if well is completed above 4,000 feet he will farmout to those parties who have previously elected to accept farmins, and this Exhibit will be revised accordingly.

(6) Payout, for the limited purposes of this agreement, shall be defined and occur at such time as Union has recovered from its proportionate share of the proceeds of all production its proportionate share of 100% of the cost of drilling, completing, equipping and operating such well, including costs of drilling, testing, completing and equipping the well.

continued...

for production, both surface and subsurface; all costs of producing the well and disposing of production, including labor and other services necessary for the maintenance and operation of the well; materials, transportation, repairs and replacements used in maintenance and operation of the well; the cost of re-working and re-equipping the well and costs allocated to the well in accordance with the Accounting Procedure attached to the Maduro Unit Operating Agreement as Exhibit "C", after deducting from such proceeds of production its proportionate share of the royalties, overriding royalties, and taxes measured by production, and the burdens and encumbrances on applicable lease or leases created prior to April 25, 1979, the date of the Farmout Agreement between Continental Oil Company and Union Oil Company of California, and the overriding royalty of 1/16 of 8/8 of 320/2480 or .80645% reserved by Continental Oil Company during said payout period. Union shall notify Continental when payout has occurred, and Conoco shall have 30 days from its receipt of such notice to notify Union in writing whether or not it has elected to convert its overriding royalty to a 50% of 320/2480 or 6.45161% working interest; If Conoco fails to so notify Union within the said 30 day period, it will be conclusively presumed that Conoco has elected to convert its overriding royalty interest in the initial test well to the herein above stated working interest effective with the date payout occurred. Conoco's working interest in any subsequent unit wells completed under Schedule IIA will be 6.45161% as set out herein above and subject to the provisions of Section 9 of the Unit Operating Agreement. Union will furnish Conoco a detailed statement of all the initial costs and expenses of the initial well and at monthly intervals a memorandum statement showing costs, expenses, revenues received or market value of production and status of payout. Said costs and expenses shall be determined in accordance with the Accounting Procedures attached as Exhibit "C" to the Unit Operating Agreement.

III-B Schedule of Interest of Parties AS TO ALL DEPTHS BELOW 13,760 FEET

W. I. Owners	Total Acreage Before Payout	Percent Interest In Wells Before Payout	Total Acreage After Payout	Percent Interest In Wells After Payout
Aminoil	60.00	2.41935	60.00	2.41935
Conoco	320.00	12.90323	320.00	12.90323
Gulf	560.00	22.58064	560.00	22.58064
Hudson & Hudson (1)	103.80	4.18548	97.80	3.94354
Moore Group	16.20	.65323	16.20	.65323
Northern	160.00	6.45161	160.00	6.45161
Ross	30.00	1.20968	30.00	1.20968
Superior	30.00	1.20968	30.00	1.20968
Unger (1)	-	-	6.00	.24194
Union	<u>1,200.00</u> 2,480.00	<u>48.38710</u> 100.00000	<u>1,200.00</u> 2,480.00	<u>48.38710</u> 100.00000

(1) Hudson & Hudson have agreed to carry the 12-acre interest of Unger in each well until payout, and their acreage position has so been adjusted.

Union Oil and Gas Division: Central Region

Union Oil Company of California
500 North Marienfeld, Midland, Texas 79701
Telephone (915) 682-9731

Mailing Address: P. O. Box 671
Midland, Texas 79702



Midland District

April 30, 1979

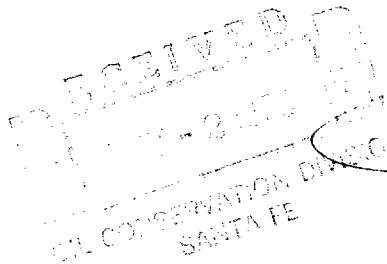
Case 6516

Oil Conservation Division
Energy and Minerals Department
P. O. Box 2088
Santa Fe, New Mexico 87501

*material's
approved
5/17/79*

Attn: Mr. Joe D. Ramey, Director

Gentlemen:



Case No. 6516
~~Order No. R-5976~~
Maduro Unit
Lea County, New Mexico

In connection with the captioned unit, we are enclosing the following material
for your approval and file:

- 1) Xerox copy of Union Oil Company of California's letter dated April 20, 1979, to the Area Oil and Gas Supervisor, U.S.G.S., requesting final determination for the Maduro Unit (Supplemental letter of April 26, 1979, also attached herewith).
- 2) Original executed Unit Agreement signed by Union Oil Company of California, on March 20, 1979, together with original ratifications signed by the following:

Working Interest Owners - Aminoil U.S.A., Inc.
William G. Ross
William A. Hudson
Estate of Edward R. Hudson, Deceased
by Edward R. Hudson, Jr., Trustee
B. D. Moore, Jr. et al
by Edward R. Hudson, Jr.,
Agent and Attorney-in-Fact
E. E. Unger
Gulf Oil Corporation
Continental Oil Company
Northern Natural Gas Company

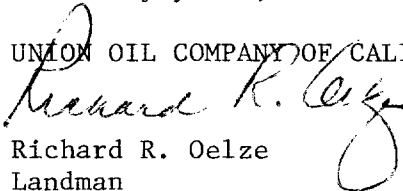
Oil Conservation Division
Energy and Minerals Department
April 30, 1979
Page 2
Maduro Unit

Overriding Royalty Owners - Virginia Lee Saunders
Robert S. Light and JoAnna W.
Light, dba "The Light Company"
Elizabeth W. Mendez
J. Ray Hobbs
Donald L. Killgore
Carlsbad National Bank, Trustee,
for Bradley T. Light, et al
Herbert D. Lowell and wife
Reva Raeda Lowell

Should you require any additional information, please let us hear from you.
Thank you for your cooperation in this matter.

Sincerely yours,

UNION OIL COMPANY OF CALIFORNIA


Richard R. Oelze
Landman

RRO/jr
Encls.

Union Oil and Gas Division: Central Region

Union Oil Company of California
500 North Marienfeld, Midland, Texas 79701
Telephone (915) 682-9731

Mailing Address: P. O. Box 671
Midland, Texas 79702



Midland District

April 26, 1979

Area Oil and Gas Supervisor
United States Geological Survey
P. O. Box 1857
Roswell, New Mexico 88201

Dear Sir:

Maduro Unit
Lea County, New Mexico

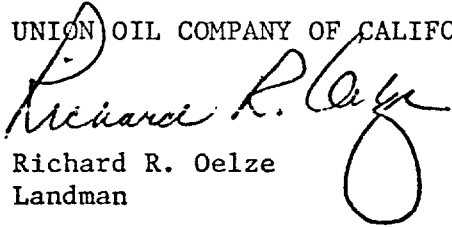
Your attention is directed to our final determination letter of April 20, 1979.

Enclosed for your review are three (3) sets (original plus three (3) Xerox copies) of Consent, Ratification and Joinder instruments which have been executed by Continental Oil Company.

Please be advised that as soon as we are in receipt of the remaining Consent and Ratification instruments, we will forward them to you at that time.

Sincerely yours,

UNION OIL COMPANY OF CALIFORNIA


Richard R. Oelze
Landman

RRO/bh
Encls.

Union Oil and Gas Division: Central Region

Union Oil Company of California
500 North Marienfeld, Midland, Texas 79701
P.O. Box 671, Midland, Texas 79702
Telephone (915) 682-9731



Robert V. Lockhart
District Land Manager
Midland District

April 20, 1979

Area Oil and Gas Supervisor
United States Geological Survey
P. O. Box 1857
Roswell, New Mexico 88201

Dear Sir:

Maduro Unit
Lea County, New Mexico

By letter dated March 27, 1979, the Regional Conservation Manager for the Director designated 2,560.00 acres, more or less, in Lea County, New Mexico, as logically subject to exploration and development under the unitization provision of the Mineral Leasing Act, as amended.

Enclosed for your review and final approval are: four (4) copies of the Unit Agreement for the development and operation of the Maduro Unit Area, one (1) being designated as an original and executed by Union Oil Company of California; three (3) sets (original plus three (3) Xerox copies) of "Consent, Ratification and Joinder instruments which have been executed by the other Working Interest Owners with the exception designated hereinafter; and three (3) copies of the Maduro Operating Agreement executed by Union Oil Company of California on March 20, 1979.

Presently, 96.87500% of the working interest ownership in proposed Unit Area is committed to join in the drilling of the initial test well. J. M. Huber Corporation is the working interest owner under Tract 4, and they have elected not to join nor farmout under acceptable terms to date. The "Ratification and Joinders" for Continental Oil Company (Tract 6) and The Superior Oil Company (Tract 1) are not enclosed herewith, but will be sent to you under separate cover in the near future. Both of these working interest owners have assured us of their joining the unit and we are awaiting receipt of their respective joinders.

In addition to the working interest owners who have executed the Unit Agreement and the Unit Operating Agreement, we have attached "Ratification and Joinder" instruments to the Unit Agreement for the overriding royalty interest owners as shown on Unit Agreement Exhibit "B" under the various tracts in which the working interest is committed. We are not submitting Ratification and Joinders executed by the following:

- 1) Tract 1 - Paul F. Kasper, Jr., owner of a 1/2 of 1% overriding royalty interest; Vee K. Ross, owner of a 1/2 of 1% overriding royalty interest; R. M. Young, Jr., and wife, Adele J. Young, owners of a 1/4 of 1% overriding royalty interest, and Monument Energy Corporation, owner of a 1.25% overriding royalty interest from surface to 4,000', and 3/4 of 1% below 4,000'. The foregoing owners have been requested to join the unit, but as of this date we have not received their Ratification and Joinder. We will provide you with the necessary copies when they become available to us.
- 2) Tract 2 - Mary Lee Saunders Woodland, owner of a 3/16 of 2% overriding royalty interest; Woodlan Perry Saunders, owner of a 3/16 of 2% overriding royalty interest; Mary Leslie Unger, owner of a 1/32 of 8.45% overriding royalty interest, and, Eric Earl Unger, owner of a 1/32 of 8.45% overriding royalty interest. The foregoing owners have been requested to join the unit, but as of this date we have not received their Ratification and Joinders. We will provide you with the necessary copies when they become available to us. Please note that the remaining six (6) overriding royalty interest owners in this tract have executed the Ratification and Joinders and they are enclosed herewith.
- 3) Tract 3 - The Hill Foundation, owner of a 5% overriding royalty interest. The foregoing owner has not been requested to join the unit since the 5% overriding royalty interest has been previously committed by virtue of a provision in the original Assignment of lease from The Hill Foundation to Gulf Oil Corporation. The special provision committing this interest reads as follows: "The obligation herein reserved shall automatically become subject to any communitization agreement or to any cooperative or unit plan of operation or development approved by the Secretary of the Interior or his delegated representative in the event said lease, or any part thereof, shall hereafter be committed to such agreement, cooperative or unit plan of operation or development by the Assignee, its successors or assigns, and in such event said obligation shall be computed and paid on the basis of the oil and gas allocated to the above described lands or any part thereof under and pursuant to the terms of any agreement or plan."
- 4) Tract 4 - William L. O'Brien and wife, Margaret L. O'Brien, owners of a 1% overriding royalty interest; Central Southwest Oil Corporation Pension Trust, owner of a 1.2242% overriding royalty interest; Sunshine Company, owner of a .3750% overriding royalty interest; Robert N. Enfield and wife, Mona L. Enfield, owners of a .1875% overriding royalty interest; Bryan Bell, owner of a .1875% overriding royalty interest; Board of Regents of New Mexico Military Institute, owner of a .00387% overriding royalty interest; Board of Regents of University of New Mexico, owner of a .02064% overriding royalty interest; Conquistador Council of Boy Scouts of America Trust Fund, owner of a .00129% overriding royalty interest, and; Featherstone Development Corporation, owner of a production payment of \$500.00 per acre out of 3.25% overriding royalty interest. All of the foregoing are not being requested to commit to the Unit Agreement, since the working interest owner under this tract, J. M. Huber Corporation, has refused to join in the unit or farmout, as previously advised.

- 5) Tract 6 - Arthur E. Meinhart and wife, Marilyn Meinhart, owners of a 5% overriding royalty interest, are not being requested to commit to the Unit Agreement. This interest is committed to the Unit Agreement by virtue of the language contained in the Assignment of Oil and Gas Lease, dated August 15, 1972, between Arthur E. Meinhart and Marilyn Meinhart, husband and wife, and Continental Oil Company, a Delaware corporation. The special provision committing this interest reads as follows: "Assignor's interest in said overriding royalty shall be subject to any cooperative or unit plan of operation or development approved by the Secretary of the Interior, or any communitization or other agreement for the purpose of forming a well spacing or a proration unit under the rules or regulations of the New Mexico Oil Conservation Commission, to which said lease may have heretofore been committed or may hereafter be committed, and in such event, said overriding royalty shall be computed and paid on the basis of the oil and gas allocated to the above described land under and pursuant to the terms of any such plan of operation or development or any such agreement."
- 6) Tract 7 - Ben Comroe and wife, Eleanor W. Comroe, owners of a 4% overriding royalty interest, and Doreen Smith, owner of a 1% overriding royalty interest, are not being requested to commit to the Unit Agreement. Union is committing this interest to the Unit Agreement by virtue of the language contained in the Assignment of Oil and Gas Lease, dated September 20, 1971, between Ben Comroe and Eleanor W. Comroe, his wife, and Union Oil Company of California. The special provision committing this interest reads as follows: "The overriding royalty shall...(d) be subject to any governmentally approved cooperative or unit plan of development or operation or communitization or other agreement forming a well spacing or proration unit under the rules or regulations of the New Mexico Oil Conservation Commission, to which the lease is now committed or may hereafter be committed, and in such event the overriding royalty shall be computed and paid on the basis of the oil and gas allocated to the lands pursuant to the terms of the plan or agreement."
- 7) Tract 9 - Evelyn R. Joeckel and husband, Raymond N. Joeckel, owners of a 6.25% overriding royalty interest, are not being requested to commit to the Unit Agreement. Union is committing this interest to the Unit Agreement by virtue of the language contained in the Assignment of Oil and Gas Lease, dated October 19, 1978, from Evelyn R. Joeckel and husband, Raymond N. Joeckel to Union Oil Company of California. The special provision committing this interest reads as follows: "Assignor's interest in said overriding royalty shall be subject to any cooperative or unit plan of operation or development approved by the Secretary of the Interior or any communitization or other agreement for the purpose of forming a well spacing or a proration unit under the rules or regulations of the State regulatory body or other lawful authority having jurisdiction thereof, to which said lease may have heretofore or may hereafter be committed, and in such event, said overriding royalty shall be computed and paid on the basis of the oil and gas allocated to the above described land under and pursuant to the terms of any such plan of operation or development or any such agreement."

- 8) Tract 10 - Roy G. Barton, Jr., and wife, Norma J. Barton, owners of a 5% overriding royalty interest, are not being requested to commit to the Unit Agreement. Union is committing this interest to the Unit Agreement by virtue of the language contained in the Agreement dated October 28, 1975, between Roy G. Barton, Jr., and his wife, Norma J. Barton, and Union Oil Company of California. The special provision committing this interest reads as follows: "This overriding royalty shall be subject to any cooperative or unit plan of operation or development approved by the Commissioner of Public Lands of the State of New Mexico and to any communitization or other agreement for the purpose of forming a well spacing or proration unit under the rules and regulations of the New Mexico Oil Conservation Commission, to which said leased lands may have heretofore or hereafter be committed, and in such event, said overriding royalty shall be computed and paid on the basis of the oil and gas allocated to the leased lands under and pursuant to the terms of any such plan of operation or development or any such agreement."

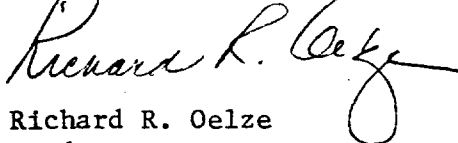
Xerox copies of the instruments committing the overriding royalty interests to the Unit Agreement, above mentioned in sub-paragraphs 3), 5) thru 8), incl. are enclosed for your consideration.

Pursuant to the request stated in the Regional Conservation Manager's letter of March 27, 1979, the Exhibit "B" to the Unit Agreement includes the latest status of all Federal acreage, showing the current record owners of all issued leases, there being no leases in application status within the unit area, and likewise, showing all current overriding royalty owners. The entire unit area of 2,560.00 acres is composed of 2,160.00 acres of Federal land and 400.00 acres of State land. There are no fee lands involved in the unit area.

We respectfully request your early consideration to the Unit Agreement and its final approval. We presently have a suitable drilling rig reserved to commence this project. When the Unit Agreement is approved, please return all approved copies not retained by your office to the undersigned. Thank you for your continued cooperation in this matter.

Sincerely yours,

UNION OIL COMPANY OF CALIFORNIA


Richard R. Oelze
Landman

RRO/bh
Encls.

Unocal Oil & Gas Division
Unocal Corporation
1004 North Big Spring Street, Suite 300
P.O. Box 3100
Midland, Texas 79702
Telephone (915) 684-8231

#6514

UNOCAL 76

RECEIVED

OCT 26 1989

OIL CONSERVATION DIVISION

October 25, 1989

Southwestern Region

10-30-89

D-
Unit letter
Thx
Roy

Oil Conservation Division
Energy and Minerals Division
P. O. Box 2088
Santa Fe, New Mexico 87504-2088

Attn: Mr. William J. LeMay,
Director

1989 Amended Plan of Development
Maduro Unit
Lea County, New Mexico
Union's Maduro Prospect (8138)

Gentlemen:

Please find enclosed for your approval two copies of Union's 1989 Amended Plan of Development for the Maduro Unit, necessitated by our plan to drill another Morrow well by the end of the year.

This new well was planned for late December but has been moved up to mid-November so your expedited oral approval followed by a written confirmation would be greatly appreciated.

Sincerely yours,

Union Oil Company of California
dba UNOCAL

Linda H. Hicks

Linda H. Hicks
Landman

LHH:jpp

Enclosures

1989 AMENDED PLAN OF DEVELOPMENT
MADURO UNIT AREA
LEA COUNTY, NEW MEXICO

TO: Oil Conservation Division
Energy and Minerals Division
P. O. Box 2088
Santa Fe, New Mexico 87504-2088

RECEIVED

OCT 26 1989

OIL CONSERVATION DIVISION

Attn: Mr. William J. LeMay,
Director

Union Oil Company of California as Unit Operator for the Maduro Unit Area, pursuant to the provisions of Section 10 of the Unit Agreement for Development and Operation of the Maduro Unit Area, dated May 31, 1979 (No. 14-08-0001-18028) respectfully submits for approval this Amended 1989 Plan of Development for the Maduro Unit Area. This Plan is for the period ending December 31, 1989.

SUMMARY OF 1988 OPERATIONS:

No new wells were drilled in 1988. Well No. 1 produced 65,000 MCF and 372 BC and currently tests at 149 MCFPD + 1 BCPD. Well No. 2 was perforated at 13,283-304' in the Middle Morrow to return the well to production. In 1988 it produced 14,400 MCF + 1280 BC and currently tests 53 MCFPD + 3 BCPD.

PLAN OF DEVELOPMENT FOR 1989

Union plans to drill a 13,750' Morrow well located 460' FNL & 1980' FEL Section 29-19S-33E.

This plan may be modified or supplemented from time to time with the approval needed, when necessary to meet changed conditions or to protect the interest of all parties in the Unit Agreement.

Submitted this 25th day of October, 1989.

Sincerely yours,

Union Oil Company of California
dba UNOCAL



Linda H. Hicks
Landman

LHH:jpp

1989 AMENDED PLAN OF DEVELOPMENT
MADURO UNIT AREA
LEA COUNTY, NEW MEXICO

TO: Oil Conservation Division
Energy and Minerals Division
P. O. Box 2088
Santa Fe, New Mexico 87504-2088

Attn: Mr. William J. LeMay,
Director

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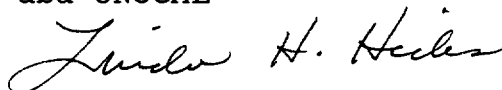
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Submitted this 25th day of October, 1989.

Sincerely yours,

Union Oil Company of California
dba UNOCAL



Linda H. Hicks
Landman

LHH:jpp

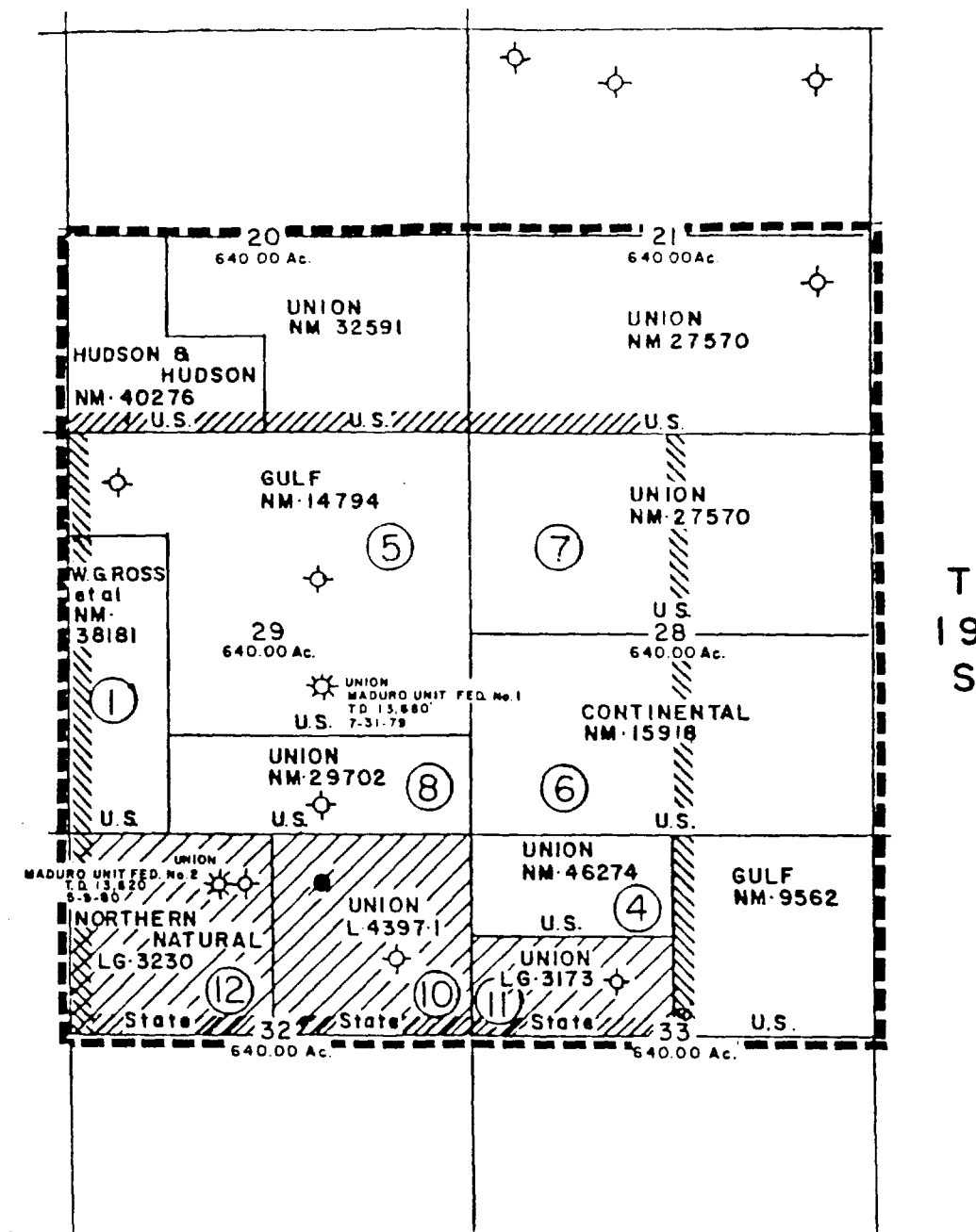




EXHIBIT "A"-(REVISED) MADURO UNIT

LEA COUNTY, NEW MEXICO
(AS CONTRACTED EFFECTIVE AUGUST 2, 1984)



① TRACT NUMBER - EXHIBIT "B"

	FEDERAL	1040.00 Ac.	72.22222 %
	STATE	400.00 Ac.	27.77778 %
		1440.00 Ac.	100.00000 %



ORIGINAL UNIT BOUNDARY



REVISED UNIT BOUNDARY & PARTICIPATING AREA

State of New Mexico



W.R. HUMPHRIES
COMMISSIONER



Commissioner of Public Lands

OCD

P.O. BOX 1148
SANTA FE, NEW MEXICO 87504-1148

November 3, 1989

UNOCAL Oil and Gas Division
UNOCAL Corporation
P.O. Box 3100
Midland, TX 79702

ATTN: Ms. Linda Hicks

RE: Maduro Unit
Lea County, New Mexico
1989 Amended Plan of Development

Gentlemen:

The Commissioner of Public Lands has this date approved the above captioned Amended 1989 Plan of Development. Our approval is subject to like approval by all other appropriate agencies.

Enclosed is an approved copy for your files. If we may be of further help, please do not hesitate to contact Susan Howarth at (505) 827-5791.

Very truly yours,

W.R. HUMPHRIES
COMMISSIONER OF PUBLIC LANDS

BY:

Floyd O. Prando

FLOYD O. PRANDO, Director
Oil and Gas Division
(505) 827-5749

cc: OCD - Santa Fe, New Mexico
BLM
Unit Correspondence File
Unit P.O.D. File

WRH/FOP/SMH

Union Oil and Gas Division: Central Region

Union Oil Company of California
500 North Marienfeld, Midland, Texas 79701
P.O. Box 671, Midland, Texas 79702
Telephone (915) 682-9731



Robert V. Lockhart
District Land Manager
Midland District

August 27, 1979

6516

Oil Conservation Division of the
Energy and Minerals Department
P. O. Box 2088
Santa Fe, New Mexico 87501

Attention: Joe D. Ramey, Director

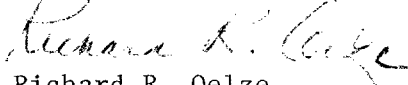
Gentlemen:

Maduro Unit
Lea County, New Mexico
Maduro Prospect (8138)

Enclosed for your review and file is a copy of Union Oil Company of California's letter dated August 23, 1979, and attachments thereto, requesting validation from the U.S.G.S. for the Union operated Maduro Unit Area. You will be furnished with a copy of the Survey's decision as soon as it becomes available. If anything further is required, please advise me accordingly.

Very truly yours,

UNION OIL COMPANY OF CALIFORNIA


Richard R. Oelze
Landman

RRO/jr
Encls.

Union Oil and Gas Division: Central Region

Union Oil Company of California
500 North Marienfeld, Midland, Texas 79701
P.O. Box 671, Midland, Texas 79702
Telephone (915) 682-9731

file copy



Robert V. Lockhart
District Land Manager
Midland District

August 23, 1979

Regional Manager
Conservation Division
United States Geological Survey
Denver, Colorado 80202

Attn: Supervisor
United States Geological Survey
P. O. Box 26124
Albuquerque, New Mexico 87125

Gentlemen:

SUBJECT:
Validation of Maduro Unit Area
Lea County, New Mexico

Union Oil Company of California respectfully requests validation of our Maduro Unit Area based on the discovery of commercial hydrocarbons in the lower Morrow Sands in our Maduro Unit Federal Well No. 1.

In support of this application we are enclosing the following in triplicate:

1. A drilling history of the Maduro Unit Federal Well No. 1.
2. A gas analysis taken from the Maduro Unit Federal Well No. 1.
3. A computer calculation of flowing and static bottom hole pressure for the subject well.
4. Volumetric calculations for gas in place for the zone of completion, as well as seven (7) additional intervals, not perforated, which are believed to be productive.
5. A Development Well Analysis form, which shows the economics of the subject well, using reserves for only the current zone of completion.
6. Copies of the CNL-FDC logs and Dual Laterolog which indicate, in red, the current zone of completion, and proposed zones of completions.
7. A map of the area, showing the subject well location and surrounding acreage.

August 23, 1979

We believe the enclosed engineering data demonstrates Morrow gas and condensate reserves sufficient to produce in paying quantities, and which will allow recovery of all costs of drilling, completing, and producing operations, with a reasonable profit, as defined in Section 9 of the Unit Agreement. The subject well is currently shut-in. Negotiations are underway for a gas sales contract.

If you have any questions or need any additional information, please notify the undersigned.

Sincerely yours,

UNION OIL COMPANY OF CALIFORNIA

Robert V. Lockhart
District Land Manager

RRO/jr
Encls.

MCVAY DRILLING COMPANY

LOCATION: 1980' FSL & 1980' FEL, SECTION 29, T-19-S, R-3-E, LEA COUNTY, NEW MEXICO.

13-3/8" @ 1275'

- 5-26-79 : 869' DRLG. DRLD 869' IN 21 HRS. RED BED. 3/4" @ 250', 3/4" @ 460' & 1 1/2" @ 667'. MUD: 9.2, 34, NC. SPUDDED 17 1/2" HOLE @ 8:00 AM 5-25-79, TRIP TO CLEAN UP BIT @ 365'. RE-RUN BIT #1.
- 5-27: 1080' DRLG. DRLD 211' IN 21 1/4 HRS. RED BED & LM. 2 1/4" @ 931' & 972'; 1 1/4" @ 1046'. MUD: 9.6, 34.
- 5-28: 1275' WOC. DRLD 195' IN 11-3/4 HRS. ANHY & LM. 3/4" @ 1275'. MUD: 9.9, 33, 8000, 13% SOLIDS. DRLD 17 1/2" HOLE TO 1275'. R&C 33 JTS + 1 PC (1253') OF 13-3/8" 48# H-40 ST&C 8RD NEW CSG @ 1275' W/900 SXS CLASS "C" W/4% GEL & 2% CACL₂ @ 13.0 PPG, FOLLOWED W/200 SXS CLASS "C" W/2% CACL₂ @ 14.8 PPG. BUMPED PLUG & FLOAT HELD OK. JC @ & CIP @ 2:35 AM 5-28-79. CIRC 420 SXS TO PIT. WOC
- 5-29: 2059' DRLG. DRLD 784' IN 10 1/2 HRS. ANHY & SALT. 1" @ 1770'. MUD: 10, BR WTR WOC 12 HRS. NU 3000 PSI BOP. TESTED CSG & BOP TO 600 PSI, OK. DRLD OUT AFTER 24 HRS.
- 13-3/8" @ 1275'
- 5-30-79 2857' DRLG. DRLD 798' IN 19 1/2 HRS. SALT & ANHY. 1" @ 2250' & 2" @ 2796'. MUD: 9.9 BRINE WTR, 11, 156,000.
- 13-3/8" @ 1275'
- 5-31-79. 3148' TO. DRLD 291' IN 22 1/4 HRS. ANHY. 1-3/4" @ 3013'. MUD: 9.8 BRINE WTR, 11, 156,000.
- 13-3/8" @ 1275'
- 6-1-79 3552' DRLG. DRLD 404' IN 19 1/4 HRS. LM. 1" @ 3148'. MUD: 10.1 BRINE WTR, 9.5. COST TO DATE: \$68,000.
- 13-3/8" @ 1275'
- 6-2-79 : 3875' DRLG. DRLD 323' IN 21 1/4 HRS. ANHY. 1-3/4" @ 3623' & 3716'. MUD: 9.9 BRINE, 10, 156,000. LOST RETURNS @ 3851' FOR 10 MIN. NOW DRLG W/60% RETURNS.
- 6-3: 4069' LOST CIRC. DRLD 194' IN 10 1/4 HRS. LM. MUD: 9.9 BRINE WTR, 9.5. LOST COMPLETE RETURNS @ 3925'. DRY DRLD TO 4069'. POH. RAN 5" DP OPENENDED TO 3800'. MIXED & PUMPED 300 SXS THICKSET CMT W/12# SX GILSONITE, 1/2# FLOCELE & 2% CACL₂ @ 13.6 PPG, FOLLOWED W/100 SXS CLASS "C" W/2% CACL₂ @ 14.6 PPG. DISPL W/57 BFW W/NO RETURNS. POH & WOC 6 HRS. PUMPED 450 BBLs BRINE WTR & COULD NOT LOAD HOLE. RAN DP OE'D TO 3800'. (PREP TO CMT). (PUMPED 150 BBLs MUD W/8-10 PPB LCM @ 3925' & 4000').
- 6-4: 4210' DRLG. DRLD 141' IN 7 1/2 HRS. LM. MUD: 9.9 BRINE WTR, 12, 150,000. CMT'D W/300 SXS THICKSET W/12# GILSONITE, 1/2# FLOCELE & 2% CACL₂ @ 13.6 PPG, FOLLOWED W/100 SXS CLASS "C" W/2% CACL₂ @ 14.6 PPG. DISPL W/57 BFW W/NO RETURNS TO SURFACE. POH W/HOLE FULL. WOC 4 HRS. PUMPED 36 BBLs BRINE WTR & LOADED HOLE. RAN BIT & DC'S & CHECKED CMT @ 3300'. DRLD CMT 3300-3995' & LOST CIRC. DRLD SOFT CMT TO 4069' & REGAINED FULL RETURNS. DRLD TO 4182' & LOST 50% OF RETURNS. NOW DRLG W/65% RETURNS. (PUMPED 150 BBLs MUD W/8 PPB LCM @ 4180' & RETURNS IMPROVED FROM 50-65%).
- 13-3/8" @ 1275'
- 6-5-79 4617' TO. DRLD 407' IN 22 HRS. LM. MUD: 9.9, 11, 150,000. LOST CIRC @ 4500'. MIXED 150 BBL PILL W/LCM & REGAINED 50% RETURNS AFTER 2 HRS. DRLD TO 4617' IN BROKEN FORMATION W/50% RETURNS.
- 13-3/8" @ 1275'
- 5-6-79 : 4884' DRLG. DRLD 268' IN 20-3/4 HRS. LM. 2" @ 4610'. MUD: 9.9 BRINE WTR, 10. DRLG W/FULL RETURNS.
- 13-3/8" @ 1275'
- 6-7-79 5151' DRLG. DRLD 267' IN 23-3/4 HRS. LM. MUD: 10, 30, 9.0, 160,000. DRLG W/FULL RETURNS.
- 13-3/8" @ 1275'
- 6-8-79 5190' RUN CSG. DRLD 39' IN 3 1/2 HRS. DOLO. 1 1/4" @ 5190'. MUD: 10 BRINE WTR, 9.0, 160,000. DRLD TO 5190' @ 10:30 AM. CIRC 3 HRS & CLEANED HOLE W/100 BBL PILL OF MUD & SPOTTED 100 BBLs MUD ON BOTTOM. LDDP & DC'S. SCHLUMBERGER RAN FDC-CNL-DLL W/GR FROM 3800' SURFACE W/DETAIL TO 1275' (HAD TO RUN 2ND TOOL FOR DLL). NOW RUNNING 9-5/8" CSG. COST TO DATE: \$138,836.

LT & C NEW CSG @ 1162' (CSG PLUG 28' AT BOTTOM) W/50 SXS HALCO LITE WT, FOLLOWED W/200 SXS LITE WT W/10# SK GILBERTITE AND 1/4 FLOCELE @ 12.1 PPG, FOLLOWED W/200 SXS CLASS "C" HEAT W/1/4# FLOCELE @ 14.8 PPG. DISP W/391 BBLs BRINE. FLOAT HELD OK. CIP @ 12:00 NOON. CIRC 50 SXS CMT. SHUT DOWN & CHECKED FOR FLOW, OK. CMT'D THRU DV TOOL W/2150 SXS LITE WT W/15# SALT, & 1/4# FLOCELE @ 12.9 PPG, FOLLOWED W/450 SXS CLASS "C" 50/50 POZMIX W/5.4# SALT AND 0.5% CFR-2 @ 13.8 PPG. DISP PLUG W/268 BBLs. CLOSED DV TOOL W/2100 PSI AND HELD OK. CIRC 113 SXS CMT TO PIT. JC @ 7:30 P.M., 6-8-79. SET SLIPS. CUT OFF 9-5/8" CSG. NU 5000 PSI SPOOL & 5000 PSI BOP'S W/3000 PSI HYDRIL & ROTATING HEAD. NOW PU DC'S.

- 6-10: 5400' DRLG. DRLD 210' IN 13-1/2 HRS. LM. FR WTR. BIT, BHR, 12' DC, REAMER 30' DC. PU BHA AND RAN BIT TO 3200'. TESTED CSG TO 1500 PSI. OK. DRLD DV TOOL @ 3457'. TESTED CSG TO 1500 PSI. DRLD OUT.
- 6-11: 5725' DRLG. DRLD 325' IN 22-3/4 HRS. LM, SH, & SD. 1-1/4" @ 5583'. 8.5 FR WTR
13-3/8" @ 1275'
9-5/8" @ 5162'
- 6-12-79 6160' DRLG. DRLD 435' IN 23 HRS. LM & SD. 1 1/2" @ 6020'. MUD: 8.6 WTR, 10.
13-3/8" @ 1275'
9-5/8" @ 5162'
- 6-13-79 6615' DRLG. DRLD 465' IN 23 HRS. LM & SD. 1 1/2" @ 6300'. MUD: 8.7 BRINE WTR, 10, 35,000.
13-3/8" @ 1275'
9-5/8" @ 5162'
- 6-14-79 7115' DRLG. DRLD 490' IN 23 1/4 HRS. LM & SD. 1 1/4" @ 6770'. MUD: 8.7 WTR, 10, 10,000.
13-3/8" @ 1275'
9-5/8" @ 5162'
- 6-15-79 7541' TO. DRLD 426' IN 21 1/2 HRS. LM & SD. 3/4" @ 7261'. MUD: 8.6 BRINE WTR, 28,000
COST TO DATE: \$321,861.
13-3/8" @ 1275'
9-5/8" @ 5162'
- 6-16-79 6-16: 7765' DRLG. DRLD 224' IN 15 1/4 HRS. LM & SD. 1 1/4" @ 7541'. MUD: 8.6 WTR, 10, 20,000. TRIP FOR NEW BIT @ 7541'. TESTED BOP STACK & CK MANIFOLD TO 5000 PSI. TESTED HYDRIL TO 1500 PSI.
- 6-17: 8190' DRLG. DRLD 425' IN 23 HRS. LM & SD. 3/4" @ 7904'. MUD: 8.6 WTR, 10, 20,000.
- 6-18: 8605' DRLG. DRLD 415' IN 22 1/4 HRS. LM & SD. 2" @ 8406' & 1-3/4" @ 8560'. MUD: 8.6 WTR, 10, 20,000.
13-3/8" @ 1275'
9-5/8" @ 5162'
- 6-19-79 8970' DRLG. DRLD 365' IN 22-3/4 HRS. SH & LM. 1-3/4" @ 8840'. MUD: 8.6 WTR, 9.5.
13-3/8" @ 1275'
9-5/8" @ 5162'
- 6-20-79 9285' DRLG. DRLD 315' IN 23-3/4 HRS. SH & LM. MUD: WTR, 28, 9.5, 3,500.
13-3/8" @ 1275'
9-5/8" @ 5162'
- 6-21-79 9550' DRLG. DRLD 265' IN 17 1/4 HRS. SH & LM. 2 1/2" @ 9305' & 2" @ 9374'. MUD: 8.6 WTR, 9.0, 30,000. CHANGED OUT BOTTOM HOLE REAMER ON TRIP @ 9374'.
13-3/8" @ 1275'
9-5/8" @ 5162'
- 6-22-79 9880' DRLG. DRLD 330' IN 22-3/4 HRS. SH & LM. 2 1/4" @ 9643'. MUD: 8.6, 28, 9.5, 30,000.
COST TO DATE: \$383,211.
13-3/8" @ 1275'
9-5/8" @ 5162'
- 6-23-79 10,205' DRLG. DRLD 325' IN 22 1/2 HRS. LM & SH. 2 1/4" @ 9970'. MUD: 8.6, 28, WTR, 9.5, 37,000.
- 6-24: 10,540' DRLG. DRLD 335' IN 23-3/4 HRS. LM & SH. MUD: 8.9, 29, 9.5, 30,000.
- 6-25: 10,784' DRLG. DRLD 244' IN 23-3/4 HRS. LM & SH. MUD: 9.7, 30, 9.5, 156,000. DISPL HOLE @ 10,575' W/BRINE WTR.
13-3/8" @ 1275'
9-5/8" @ 5162'
- 6-26-79 11,022' DRLG. DRLD 238' IN 15-3/4 HRS. SH & SD. 1" @ 10,867'. MUD: 9.7, WTR, 9.5, 156,000. LAID DOWN BOTTOM HOLE ASSEMBLY ON TRIP.

13-3/8" @ 1275'

9-5/8" @ 5162'

6-28-79 11,400' DST NO. 1. DRLD 106' IN 7 1/4 HRS. SD, SH & LM. 10" @ 11,400'. MUD: 9.7 WTR, 9.5, 146,000. HAD 5' DRLG F K 11,345-50'. DRLD TO 11,400'. CIRC 7 HRS. RAN 75 BBL MUD SWEEP & SPOTTED 100 BBL 40 VIS, 10 CC WL MUD ON BOTTOM. POOH. RAN DST NO. 1 11,342-11,400'. SET PKRS OK. OPENED TOOL W/VERY WEAK BLOW IN BUCKET AT 15 MIN. SHUT IN F/ISIP. INCOMP. (HAVE 1000' WTR BLANKET).

13-3/8" @ 1275'

9-5/8" @ 5162'

6-29-79 11,501' DRLG. DRLD 101' IN 10-3/4 HRS. SH & LM. MUD: 9.7, BRINE WTR, 9.5, 150,000. ~~DST NO. 1 (11,345-11,400') WOLF CAMP 11,400' WTR BLANKET. ISI 45 MIN. OPENED TOOL 11,400' WTR BLANKET 6-30-79 GAS CUT & SLIGHTLY OIL CUT WTR. SAMPLER HAD 500 CC'S OIL CUT 10% WTR @ 525 PSI & 11.62 FT³ GAS. BIT 2120'. RAN BIT & DRLD AHEAD. TOP CHART: IHP 5748 PSI, IFP 756-756, ISIP (45 MIN) 3500, FFP 756, FSIP (3 HRS) 2335, FHP 5748 PSI. OIL GR - 41.8 @ 600. WTR CL₂ IN SAMPLER - 156,000. COST TO DATE: \$424,061.~~

13-3/8" @ 1275'

9-5/8" @ 5162'

6-30-79 11,610' PIPE STUCK. DRLD 109' IN 13-3/4 HRS. LM, SH & CHERT. MUD: 9.7 WTR. TRIP FOR NEW BIT @ 11,160'. ~~RAN INTO 11,160' & SET DOWN ON BRIDGE. PICKED UP KELLY & STUCK DP. CIRC & WORKING DP W/BIT @ 11,460'. PUMPED 150 BBL SLUG & DISPLACING HOLE W/9.7 PPG MUD.~~

7-1: 11,610' STUCK DP. MUD: 9.5, 36, 6.0, 1/32, 10.5, 108,000, 4.0% SOLIDS. WORKED DP 3 HRS. SPOTTED 100 BO AROUND BIT & WORKED DP 9 HRS. CIRC OIL OUT & CIRC 3 HRS. SPOTTED 100 BO W/55 GAL PIPE LAX (2150' ABOVE BIT) & WORKED DP 9 HRS W/NO MOVEMENT. (PREP TO RUN FREE PT).

7-2: 11,610' FISHING. MUD: 9.9, 36, 6.0, 1/32, 10.5, 100,000, 4.0% SOLIDS. DOWN 12 HRS FOR RIG REPAIRS. ~~RAN FREE POINT & FOUND PIPE STUCK @ BIT. BACKED OFF & LEFT 3 DC'S & BIT IN HOLE. POH. (PREP TO RUN JARS & SCREW INTO FISH).~~

7-2: PUMPED TR OIL + 70 BW FOR 24 HRS.

13-3/8" @ 1275'

9-5/8" @ 5162'

7-3-79 11,655' DRLG. DRLD 42' IN 4 1/2 HRS. LM & SH. MUD: 9.6, 40, 5.4, 1/32, 10.5, 96,000. FTO. RAN BUMPER SUB, JARS & ACC JARS ON DC'S TO 11,370' & SCREWED INTO FISH. JARRED TO 300,000 LBS & FISH FREE. POH. RAN NEW BIT & REAMED 160' TO BOTTOM FOR 5 1/2 HRS. DRLD AHEAD.

13-3/8" @ 1275'

9-5/8" @ 5162'

7-4-79 11,794' DRLG. DRLD 142' IN 23 1/2 HRS. SH. MUD: 9.6, 38, 6, 1/32, 19, 196,000, 8% OIL.

7-5: 11,925' DRLG. DRLD 131' IN 23-3/4 HRS. LM & SH. MUD: 9.6, 37, 7.0, 1/32, 9.5, 92,000, 4% OIL.

13-3/8" @ 1275'

9-5/8" @ 5162'

7-6-79

13-3/8" @ 1275'

9-5/8" @ 5162'

7-7-79 : 12,164' DRLG. DRLD 115' IN 16 HRS. LM & SH. 3/4" @ 12,121'. MUD: 9.7, 38, 8, 1/32, 9.5, 72,000, 4% OIL, 4% SOLIDS.

7-8: 12,315 DRLG. DRLD 151' IN 23-3/4 HRS. LM & SH. MUD: 9.6, 37, 8, 1/32, 9, 84,000, 6% OIL, 4% SOLIDS.

7-9: 12,395' DRLG. DRLD 80' IN 16 HRS. LM, SH & CHT. 3/4" @ 12,346'. MUD: 9.5, 37, 8, 1/32, 9, 84,000, 6% OIL, 4% SOLIDS.

13-3/8" @ 1275'

9-5/8" @ 5162'

7-10-79 12,425' DRLG. DRLD 30' IN 4-1/2 HRS. LM & SH. MUD: 9.5, 38, 8.2, 1/32, 10, 9.5, 6% OIL. DRLD TO 12,425' @ 1:30 P.M. CIRC 8-1/2 HRS. POOH. ~~DST NO. 1233 42,100-12,425' USING 2 PKRS, JARS, SF, 1500' WTR BLANKET. RAN TEST TOOL TO BOTTOM, OK. OPENED TOOL @ 5:15 W/WEAK BLOW. INCREASED TO FAIR BLOW IN BUCKET FOR 30 MINS. SHUT TOOL IN.~~

8% OIL, 4% SOLIDS. NO. 2-400012 (100' 425' (SYN)) - 1500' WTR BLANKET
TOOL OPEN 30 MINS (IPF) W/WEAK BLOW INCREASING TO FAIR BLOW IN BUCKET. CLOSED
TOOL 90 MINS (ISLR), REOPENED FOR 90 MINS W/FAIR BLOW INCREASING TO 3 PSI ON 1/4"
CHOKE. NO GAS OR FLUID TO SURFACE. CLOSED TOOL FOR 30 MINS. FSIP. UNSEATED PKR
& POOH. RECOVERED 225' DRLG MUD, 850' OF GAS CUT WTR BLANKET, 825' OF GAS & MUD
CUT WTR BLANKET. SAMPLE CHAMBER CONTAINED 2500 CC OIL CUT & SLIGHTLY GAS CUT MUD
UNDER 550 PSI. NO GAS RECOVERED. IHP - 6091, IPF (30) 842-842, 4SI 0-4220,
FFP (90) 886-907, FSIP (330) 6167, FHP - 6157, BHT 158°.

13-3/8" @ 1275'

9-5/8" @ 5162'

-12-79 12,655' DRLG. DRLD 186' IN 23-3/4 HRS. SH, SD & LM. MUD: 9.3, 41, 8, 1/32, 10,
85,000, 8% OIL, 4% SOLIDS.

13-3/8" @ 1275'

9-5/8" @ 5162'

-13-79 12,837 DRLG. DRLD 182' IN 23-3/4 HRS. LM & SH. MUD: 9.5, 37, 10, 1/32, 9, 85,000,
7% OIL, 4% SOLIDS. COST TO DATE: \$568,458.

13-3/8" @ 1275'

9-5/8" @ 5162'

7-14-79 : 13,038' DRLG. DRLD 201' IN 23-3/4 HRS. SH & LM. MUD: 9.6, 37, 8, 1/32, 10,
89,000, 8% OIL, 8% SOLIDS.

7-15: 13,180' DRLG. DRLD 142' IN 13-3/4 HRS. LM, SH, & SAND. 2° @ 13,060'. MUD:
9.7, 36, 8, 1/64, 9.5, 80,000, 8% OIL, 6% SOLIDS. DRLG BREAKS (MIDDLE MORROW
SAND) 13,076-88' (12') 1 MIN/FT, 13,115-125' (10') 1.5 MIN/FT AND 13,162-179'
(17') 2 MIN/FT.

7-16: 13,352' DRLG. DRLD 172' IN 23-3/4 HRS. LM & SH. MUD: 9.7, 40, 10, 1/64, 10,
80,000, 6% OIL, 7% SOLIDS.

13-3/8" @ 1275'

9-5/8" @ 5162'

-17-79 13,482' DRLG. DRLD 130' IN 23-3/4 HRS. SH. MUD: 9.7, 38, 8, 1/32, 10, 80,000, 8%
OIL, 9% SOLIDS.

13-3/8" @ 1275'

9-5/8" @ 5162'

-18-79 13,596' DRLG. DRLD 114' IN 23-3/4 HRS. SH. MUD: 9.9, 40, 8, 1/32, 10, 80,000, 8%
OIL, 9% SOLIDS.

13-3/8" @ 1275'

9-5/8" @ 5162'

TD 13,660'

-19-79 ~~13,660' TRIP OUT LOGGING~~ DRLD 64' IN 18 1/2 HRS. SH. MUD: 10, 40, 10, 1/32, 9.5,
80,000, 8% OIL, 9% SOLIDS. ~~DRLD TO TD @ 11,300' 7-18-79~~

13-3/8" @ 1275'

9-5/8" @ 5162'

TD 13,660'

-20-79 13,660' TD. FISHING F/LOGGING TOOLS. 1° @ 13,660'. MUD: 10, 38, 8, 1/32, 9.5,
80,000, 8% OIL, 9% SOLIDS. FINISH OUT OF HOLE W/BIT. RAN SCHLUMBERGER GR SONIC LOG
TO 13,658'. LOGGED OUT TO 13,176'. RAN BACK F/REPEAT. STOPPED @ 13,420'. PO W/
TOOL DRAGGING TO 13,309'. POOH W/LOGGING TOOL, FIT LUBRICATOR DROPPING LOGGING TOOL
IN HOLE. RAN 5-3/4" BOWEN OVER SHOT W/30' EXT & 3-3/8" GRAPPLE & JARS ON DRILLING
STRING. CIRC DOWN TO TOP OF LOGGING TOOL @ 13,820'. WORKED OVER FISH W/PUMP PRES
INCREASE. NOW CHAINING OUT OF HOLE. INCOMP.
COST TO DATE: \$614,681.

13-3/8" @ 1275'

9-5/8" @ 5162'

5 1/2" @ 13,660'

TD 13,660'

7-21-79 : 13,660' LOGGING. MUD: 10.1, 41, 7.2, 9.6, 80,000, 9% OIL, 8% SOLIDS. FINISH
OUT OF HOLE W/FISHING TOOLS. REC'D SCHLUMBERGER LOGGING TOOL. RAN BIT TO
BOTTOM. WASHED OUT 20' FILL 13,640-60'. CIRC & COND HOLE F/4 HRS. SPOTTED
ON BOTTOM 100 BBLs OF 10.4, 57 VIS, 7.2 WL MUD 13,660-12,060'. MADE SHORT
TRIP TO 12,000'. NO DRAG, NO FILL. POOH W/BIT. SCHLUMBERGER RAN GR SONIC LOG
TO 13,662' (LTD). NOW LOGGING W/SONIC TOOL @ 9200'.

7-22: 13,660' CIRC & COND HOLE. MUD: 10.2, 40, 7, 1/32, 9, 80,000, 8% OIL, 9%
SOLIDS. 20 HRS FINISHED RUNNING GR SONIC LOG 13,662' TO 5100'. GR CNL-FDC
LOGS & DUAL LATEROLOGS. RAN 7-7/8" BIT TO BOTTOM, OK.

7-23: 13,660' WCC. CIRC & COND HOLE 4 1/2 HRS. PO & LAID DOWN DP & DC'S. RSC 330
JTS (13,640') 5 1/2" OD 17# S-95 & N-80 8RD & BUTTRESS NS CSG @ 13,660' W/F SHOE @
13,658', FC @ 13,616' W/400 SXS HOWCO LITE WATE W/.6% HALAD 22 1/4# FLOCELE 5#
KCL @ 12.7 PPG, FOLLOWED BY 250 SXS CLASS "C" W/.8% HALAD 22 & .4% CFR-2, 5#
KCL @ 14.8 PPG. DISPL W/316 BFW @ 10 BPM @ 2200 MAX. PLUG BUMP @ 2800 PSI.
RELEASED PRES, FLOAT OK. CIP & JC @ 7:40 AM. CMT PRECEDED BY 10 BBLs KCL
WTR, 500 GALS MUD FLUSH & 10 BBLs KCL WTR.

7-24-79 13,660' TD. MORT. WDC HRS. SET SLIPS & CUT OFF 5 1/2" CSG. RAN TEMP SURVEY. CHECK
ETD 13,590'. ~~AT 13,660' RELEASED RIG @ 4:00 PM 7-23-79.~~

13-3/8" @ 1275' TD 13,660'
9-5/8" @ 5162' ETD 13,590'
5 1/2" @ 13,660'

7-25-79 MORT.

13-3/8" @ 1275' TD 13,660'
9-5/8" @ 5162' ETD 13,590'
5 1/2" @ 13,660'

7-26-79 PREP TO RIG UP PU.

13-3/8" @ 1275' TD 13,660'
9-5/8" @ 5162' ETD 13,590'
5 1/2" @ 12,660'

7-27-79 MI RU DD UNIT. INSTALLED CIW 10"-5000 X 6"-5000 TBG SPOOL & TESTED TO 5000 PSI. SCHLUM-
BERGER RAN PDC LOG #F/13,551' TO 11,450', CORRECTED SONIC LOG RAN 7-29-79 RAN
VELOCITY SURVEY #F/13,545' TO 1500' SDON.
COST TO DATE: \$819,608.

*we are separating off the CNLFO
log.*

13-3/8" @ 1275' TD 13,600'
9-5/8" @ 5162' ETD 13,571'
5 1/2" @ 12,660'

7-28-79

7-29: RAN 4-3/4" BIT ON 2-7/8" EUE 8RD 6.5# N-80 TO 13,563' ETD. SDON.
CIRC HOLE CLEAN TO 13,571'. PO TO 13,465'. TESTED CSG & BOP TO 2000 PSI.
DISP HOLE W/6% KCL WTR & SPOTTED 250 GALS 10% ACETIC ACID @ 13,465'. POH W/
TBG. SDON.
7-30: SDOS.

13-3/8" @ 1275' TD 13,600'
9-5/8" @ 5162' ETD 13,571'
5 1/2" @ 12,660'

7-31-79 RAN GAUGE RING TO 13,454'. RAN OTIS "N" NIPPLE (2.205" ID), 1 JT 2-7/8" EUE 8RD N-80
TBG & MILL OUT EXTENSION ON OTIS 5 1/2" TYPE "WB" PKR W/3" BORE ON WIRE LINE & SET @
13,320' W/ BOTTOM OF TOOLS @ 13,367'. RAN LATCHIN TYPE SEAL ASSEMBLY ON 2-7/8" EUE &
6.5# N-80 AB MOD TBG, TESTING TO 7000 PSI. INCOMP. SDON.

13-3/8" @ 1275' TD 13,600'
9-5/8" @ 5162' ETD 13,571'
5 1/2" @ 12,660'

8-1-79 FTIH TESTING TBG TO 7000 PSI. TOTAL 415 JTS (13,304'). SPACED OUT, REVERSE CIRC HOLE
W/6% KCL WTR. DISPL WTR IN TBG TO 3500' W/N2. LATCHED INTO PKR & PULLED 15,000# OK.
TESTED PKR SEALS, WELLHEAD & TBG TO 5000 PSI W/N2 OK. NIPPLED UP TREE. TESTED SEALS
TO 5000 PSI. RELEASED N2 PRES. SDON. (PREP TO PERE) W

PERFS: LOWER MORROW 13,446-457'

13-3/8" @ 1275' TD 13,600'
9-5/8" @ 5162' ETD 13,571'
5 1/2" @ 12,660'

8-2-79 PERF'D LOWER MORROW W/2" THRU TBG GUN @ 13,446-457', 2-JSPF. FL @ 3650'. NO CHANGE
AFTER PERF'G. HAD SLIGHT BLOW F/1 1/2 HRS, THEN DIED. WAITED 6 HRS, NO BLOW. PRESSURED
TBG W/N2 TO 5000 PSI W/33,000 SCF. NO BLEED OFF. PRESSURED TO 6000 PSI. SD BLED
300 PSI IN 4 MIN. CALCULATED TO BE 2 1/2 BBLs ACID IN FORM. RELEASED N2 W/GAS TO SURFACE
IN 20 MIN, EST 30 MCF. PLACED ON 16" GUN CK, NO PRESSURE INCR AFTER 10 HRS TO EST 1
MCF/DAY W/3000 PSI. *Pressure gauge Picked out.*

PERFS: LOWER MORROW 13,446-457'

13-3/8" @ 1275' TD 13,600'
9-5/8" @ 5162' ETD 13,571'
5 1/2" @ 12,660'

8-3-79 SHUT IN 4 HRS. SITP @ 3000 PSI. OPENED THRU TEST UNIT ON 6/6" CHECK W/3600 PSI SITP @
2700 PSI. FLOWED ON 13/6" CHECK FOR 3 HRS. ON 2-8" W/3600 PSI SITP. PROD
2.5 BBLs COND FOR 3 HRS. NO WTR. FLOWED ON 13/6" CHECK FOR 3 HRS. ON 2-8" W/3600 PSI SITP. PROD
W/1800 PSI SITP. PROD 30 BBLs COND FOR 3 HRS. NO WTR. SHUT WELL IN @ 9:30 PM. SITP
(1 MIN) 2700 PSI.
COST TO DATE: \$871,419.

MCF/D-10718. GAS GRAY .600, CONDENSATE GRAY 48.5 (0.00). RAN BHP BOMB, COULD NOT RELEASE F/BOMB. POOH. SHUT IN OVERNITE. (PREP TO RERUN LOMB). RECOVERED 24 BC WHILE FLOWING 6 HRS. REC'D 5 BBLs LAST HR.

8-5: SITP 4300/12 HRS. FLOWED WELL ON 13/64" CK @ 2-6:24 AM @ 2800 PSI. REG'D 12. 30 LK 4 HRS. HANSON CO RAN BHP BOMB. STOPPED & SET @ 8140'. POOH. ATTEMPTED TO RUN OS, COULD NOT GET FISHING TOOLS TO FALL. SDON. (PREP TO CHANGE OUT WL UNIT).

8-6: SITP 4350/18 HRS. FISHED PRES BOMB @ 8140'. RERAN PRES BOMB & SET @ 8745' GOING IN HOLE. FISHED BOMB (SPRING THAT HOLDS SLIPS WEARING INTO). RERAN PRES BOMB W/2 1/2" NO-GO & SET @ 5946'. FISHED BOMB & SDON.

PERFS: LOWER MORROW 13,446-457'

13-3/8" @ 1275'

TD 13,600'

9-5/8" @ 5162'

ETD 13,571'

5 1/2" @ 12,660'

8-7-79 SITP 4300/12 HRS. FLOWED THRU SEP 6 HRS ON 14/64" CK. REC 25 BC + NO WTR. FTP 3100-2900 PSI. ~~GAS RATE 12.653 BBL/D~~. SHUT WELL IN @ 5:45 PM. ~~SITP 4300/15 MIN. & 13 HRS.~~

-8-79 Shut-in.

-9-79 Shut-in.

-10-79 Shut-in.

-11-79 Shut-in.

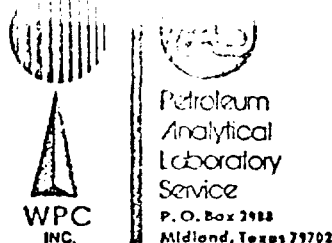
-12-79 Shut-in.

-13-79 Shut-in.

-14-79 Shut-in.

-15-79 Shut in.

ir Monitoring
omplete Gas Service
onsulting Chemists
orrosion Fatigue Testing
ollution Control
later Analysis



24 HOUR PHONE 915-563-2628

NO. 11174
RUN No. 11174
DATE OF RUN
DATE SECURED 8/3/79

SAMPLE OF SWEET GAS @ TEST SKID MADURO FEDERAL UNIT #1
ECURED FROM UNION OIL COMPANY OF CALIFORNIA
T LOVINGTON, NEW MEXICO SECURED BY CLARK BAGLEY
AMPLING CONDITIONS PRESS. 460# TEMP. 76° TIME 2:00PM (Tex.) DATE 8/3/79
TD 13,600

FRACTIONAL ANALYSIS
@ 14.696 & 60 DEG. F.

	MOL %	WT. %	LIQ %	CALC. SP. GR.	0.6677	PROPANE CALC.	G.P.M.	0.926
CARBON DIOXIDE	0.59			CALC. A.P.I.		BUTANES CALC.	G.P.M.	0.418
NR				CALC. MOL. WT.		PENTANES PLUS	G.P.M.	0.276
NITROGEN	0.48			Calc. Vapor Press.		ETHANE CALC.	G.P.M.	2.136
OXYGEN				SP. GR. C +		TOTAL	G.P.M.	
LS				MOL. WT. C +		B.T.U./CU. FT.		
METHANE	85.54		GPM	VAP. PRESS. C +		DRY BASIS		1165
THANE	8.01		2.136	GAL/# MOL. C +		WET BASIS		1144
PROPANE	3.37		0.926	CF/GAL C +		26# PRODUCT		0.408
ISO-BUTANE	0.51		0.166	LB/GAL C +		12# PRODUCT		0.276
I-BUTANE	0.80		0.252	26.0 R.V.P. Gasoline		% BUTANES INCLUDED		
ISO-PENTANE	0.27		0.098	EXCESS C4s		Sulfur Analysis (Gr./100 Cu.Ft.)		
I-PENTANE	0.19		0.070	EXCESS C3		HYDROGEN SULFIDE		
HEXANES	0.12		0.051	EXCESS C2		MERCAPTANS		
HEPTANES	0.12		0.057	14.0 R.V.P. Gasoline		SULFIDES		
				EXCESS C4's		RESIDUAL SULFUR		
				EXCESS C3		Moisture Content, #/MM Cu. Ft.		
				EXCESS C2				
				12.0 R.V.P. Gasoline				
				EXCESS C4's				
				EXCESS C3				
				EXCESS C2				
TOTAL	100.00		3.756					

RUN BY BARNETT CHECKED BY MCPHERSON APPROVED BY

ADDITIONAL DATA AND REMARKS

COPIES TO: Inv. lcc Keith Spradlin, Lovington, N.M.; CA Bagley Odess, 2cc; E.C. Stangle Midland 3cc

PRESSURE VS DEPTH
TUBING FLOW

FLOWING SURFACE PRESSURE (PSIA)	2900.0000
FLOWING BOTTOM HOLE PRESSURE (PSIA)	4568.5888
FLOW RATE (MCF/DAY)	3.6000
SURFACE TEMPERATURE (DEG.F)	60.0000
BOTTOM HOLE TEMPERATURE (DEG.F)	170.0000
DRY GAS GRAVITY (S.G.(AIR=1))	0.6760
CONDENSATE GRAVITY (SP. GRA OR DEG API)	53.2000
PRODUCING GAS/OIL RATIO (CU. FT./BBL)	40.0000
WET GAS GRAVITY (S.G.(AIR=1))	0.7932
FIRST TUBING I.D. (INCHES)	2.4410
FIRST TUBING O.D. (INCHES)	2.8750
FIRST TUBING LENGTH (FEET)	13304.0000
SECOND TUBING LENGTH (FEET)	13304.0000
SECOND TUBING I.D. (INCHES)	2.4410
TUBING LENGTH/TOTAL DEPTH	*****

DEPTH (FEET)	PRESSURE (PSIA)	GRADIENT (PSI/FT)
-----	-----	-----

0	2900	0
700	2991	0.1302
1400	3082	0.1291
2101	3172	0.1285
2801	3261	0.1279
3501	3350	0.1274
4201	3439	0.1270
4901	3528	0.1265
5602	3616	0.1261
6302	3704	0.1257
7002	3792	0.1252
7702	3879	0.1248
8403	3966	0.1244
9103	4053	0.1240
9803	4140	0.1236
10503	4226	0.1233
11203	4312	0.1229
11904	4398	0.1225
12604	4483	0.1221
13304	4569	0.1217

FINAL Z 0.908804

P/Z = 5027

GDM/AUG 15, 1979

PRESSURE VS DEPTH
FOR STATIC CONDITIONS

SHUT IN SURFACE PRESSURE (PSIA)	4300.0000
SHUT IN BOTTOM HOLE PRESSURE (PSIA)	6164.2576
SURFACE TEMPERATURE (DEG.F)	60.0000
BOTTOM HOLE TEMPERATURE (DEG.F)	170.0000
DRY GAS GRAVITY (S.G.(AIR=1))	0.6760
CONDENSATE GRAVITY (SP. GRA OR DEG API)	53.2000
PRODUCING GAS/OIL RATIO (CU. FT./BBL)	40.0000
WET GAS GRAVITY (S.G.(AIR=1))	0.7932
FIRST TUBING I.D. (INCHES)	2.4410
FIRST TUBING O.D. (INCHES)	2.8750
FIRST TUBING LENGTH (FEET)	13304.0000
SECOND TUBING LENGTH (FEET)	13304.0000
SECOND TUBING I.D. (INCHES)	2.4410
TUBING LENGTH/TOTAL DEPTH	1.0000

DEPTH (FEET)	PRESSURE (PSIA)	GRADIENT (PSI/FT)
-----------------	--------------------	----------------------

0	4300	0
700	4403	0.1468
1400	4505	0.1456
2101	4606	0.1448
2801	4707	0.1441
3501	4807	0.1433
4201	4907	0.1426
4901	5007	0.1419
5602	5106	0.1412
6302	5204	0.1405
7002	5302	0.1399
7702	5399	0.1392
8403	5496	0.1386
9103	5593	0.1380
9803	5689	0.1374
10503	5785	0.1368
11203	5880	0.1362
11904	5975	0.1357
12604	6070	0.1351
13304	6164	0.1346

FINAL Z 1.081259

P/Z = 5701

GDN/AUG 15, 1979

VOLUMETRIC CALCULATIONS
OF GAS IN PLACE
MORROW FORMATION

Open Perfs - 13446-457'

Porosity ϕ = 7.2%

Water Saturation, S_w = 22%

Ney Pay, h = 11'

Acres = 320

B_{gi} = 319.87 SCF/RCF

RF = 85% Recovery Factor

$$\begin{aligned} G_{ip} &= (43560) (\text{Acres}) (h) (\phi) (1-S_w) (B_g) \\ &= (43560) (320) (11) (.072) (1-.22) (319.87) \\ &= 2.75 \text{ BCF} \quad \text{Recovery} = (2.75 \text{ BCF}) (.85) = 2.34 \text{ BCF} \end{aligned}$$

Proposed Perforated Intervals

13505-09' ϕ = 6% S_w = 17% h = 4'

$$\begin{aligned} G_{ip} &= (43560) (320) (4) (.06) (1-.17) (319.87) \\ &= 0.888 \text{ BCF} \quad \text{Recovery} = (0.888 \text{ BCF}) (.85) = 0.755 \text{ BCF} \end{aligned}$$

13285-93' ϕ = 10% S_w = 27% h = 8'

$$\begin{aligned} G_{ip} &= (43560) (320) (8) (.10) (1-.27) (319.87) \\ &= 2.60 \text{ BCF} \quad \text{Recovery} = (2.60 \text{ BCF}) (.85) = 2.21 \text{ BCF} \end{aligned}$$

13274-78' ϕ = 6.5% S_w = 23% h = 4'

$$\begin{aligned} G_{ip} &= (43560) (320) (4) (.065) (1-.23) (319.87) \\ &= 0.893 \text{ BCF} \quad \text{Recovery} = (0.893 \text{ BCF}) (.85) = 0.759 \text{ BCF} \end{aligned}$$

13226-36' ϕ = 6.4% S_w = 20% h = 10'

$$\begin{aligned} G_{ip} &= (43560) (320) (10) (0.064) (1-.20) (319.87) \\ &= 2.28 \text{ BCF} \quad \text{Recovery} = (2.28) (.85) = 1.94 \text{ BCF} \end{aligned}$$

13154-192' ϕ = 7.5% S_w = 38% h = 25' (net)

$$\begin{aligned} G_{ip} &= (43560) (320) (25) (0.075) (1-.38) (319.87) \\ &= 5.18 \text{ BCF} \quad \text{Recovery} = (5.18) (.85) = 4.40 \text{ BCF} \end{aligned}$$

13127-134' ϕ = 10.3% S_w = 49% h = 7'

$$\begin{aligned} G_{ip} &= (43560) (320) (7) (.103) (1-.49) (319.87) \\ &= 1.63 \text{ BCF} \quad \text{Recovery} = (1.63) (.85) = 1.39 \text{ BCF} \end{aligned}$$

13089-100' ϕ = 12.3% S_w = 13% h = 11'

$$\begin{aligned} G_{ip} &= (43560) (320) (11) (.123) (1-.13) (319.87) \\ &= 5.25 \text{ BCF} \quad \text{Recovery} = (5.25 \text{ BCF}) (.85) = 4.46 \text{ BCF} \end{aligned}$$

VOLUMETRIC CALCULATIONS OF GAS IN PLACE - CONT'D

Total Recoverable Gas
From Proposed Perforated Intervals

<u>INTERVAL</u>	<u>RECOVERABLE GAS</u>	
13505-509'	0.755 BCF	
13285-293'	2.210 BCF	
13274-278'	0.759 BCF	
13226-236'	1.940 BCF	
13154-192'	4.400 BCF	
13127-134'	1.390 BCF	
13089-100'	4.460 BCF	
	15.914 BCF	Total

Total Recoverable gas from the Maduro Federal No. 1

Rec. gas from proposed perfs + rec. gas from open perfs
15.914 BCF + 2.34 BCF = 18.254 BCF

DEVELOPMENT WELL ANALYSIS
ACTUAL

WELL: MADURO FEDERAL NO. 1
FIELD: UNDESIGNATED
FORMATION: MOKROU

AFE NO: 394073
OPERATOR: UNION OIL OF CALIF.
TD: 13,660 FT. PAY TOP: 13,089 FT

UOCO INTEREST: GROSS 46.88% NET 41.02%

	UOCO INTEREST	TOTAL
	-----	-----
COSTS		
AFE COST, \$	355,781	759,000
DRY HOLE COST, \$	272,344	
CASH RISK, \$	272,344	
RESERVES		
GWG-MHCF	960	2,340
CND-MSTB	14	35
NET PAY. FT.		11
ACRES		320
MCF/AC. FT.		665
INITIAL RATE		
GWG, MCF/DAY	1,477	3,600
CND, BBL/DAY	66	162

***** ECONOMICS *****

UOCO AVERAGE EXP \$/MO	PROD VALUES	INITIAL	ESCL. %/YR	MAX	YR
DIRECT 205	GWG, \$/MCF	2.63	6.00	3.76	35
INDIRECT 18	CND, \$/BBL	28.50	0.00	3.76	
OVERHEAD 15					
UNIT CHARGE					

PROJECTION EFFECTIVE DATE 9/79

*** UOCO INTEREST ***
BFIT AFIT

	BFIT	AFIT
	-----	-----
GROSS AFTER ROYALTY, M\$	3,283	
TOTAL EXPENSE, M\$	261	
TOTAL INVESTMENT (DEVELOPMENT COST), M\$	422	
UNDISC. CASH FLOW, M\$	2,600	1,313
\$ PROFIT / \$ TOTAL INVESTMENT	6.16	3.11
PRESENT WORTH AT 10%	2,189	1,086
PROFITABILITY INDEX AT 5%	5.63	2.82
ROI (RATE OF RETURN), %	25.0	25.0
PAYOUT, YEARS	0.2	0.3
LIFE, YEARS	9	

REMARKS: ECONOMICS BASED ON ACTUAL COSTS AND PRODUCTION
RATE DURING A FLOW TEST.

BY: GDM

DATE: 08/24/79 6:01 AM

LIST MADFEDI

MADFEDI

00010 NAME MADURO FEDERAL NO. 1,41 GDM
00020 GWG RSRV 2.34E6 979
00030 ONCE 109440 979
00040 DIST 1000 1079
00050 COND RSRV 35000 979
00060 ONCE 4925 979
00070 DIST 1 1079
00080 GWGPR ONCE 2.71 979
00090 INCLN 0.06 1079
00100 CAPCY 3.78 979
00110 CHDPR ONCE 28.50 979
00120 INCLN 0.06 1079
00130 CAPCY 35.00 979
00140 OPEX ONCE 350 979
00150 INCLN 0.06 1079
00160 GRINT HOLD 0.46875 979
00170 NTINT HOLD 0.4101562 979
00180 INVI ONCE 600000 979
00190 INVT ONCE 300000 979
00200 ZIND HOLD 0.09 979
READY

LIST MADAEFI

MADAEFI

00010 2, MADURO FEDERAL NO. 1,394073
00020 UNDESIGNATED UNION OIL OF CALIF., MORROW
00030 DEPTH 13660 13089
00040 PAY 11
00050 ACRES 320
00060 INTEREST 0.46875 0.4101562
00070 PRICE GWG(2.63) COND(28.50)
00080 RATE GWG(3600) COND(162)
00090 AFE 759000 581000 581000
00100 BY GDM
00110 REMARKS ECONOMICS BASED ON ACTUAL COSTS AND PRODUCTION
00120 REMARKS RATE DURING A FLOW TEST.
READY

LEASE TOTAL

LADURO FEDERAL NO. 1

TEXAS GDA

TYPE 08/24/79 6:01 AM

YEAR	GROSS GWC	GROSS COND	NET GWC	NET COND	GWC SOLD
1979	414,940	16,599	170,190	6,808	170,190
1980	359,955	15,826	352,715	6,491	352,715
1981	479,858	2,219	196,817	910	196,817
1982	267,763	311	109,825	128	109,825
1983	149,413	44	61,283	18	61,283
1984-90	168,070	1	68,935		68,935
	-----	-----	-----	-----	-----
TOTAL	2,339,999	35,000	959,765	14,355	959,765

TYPE 08/24/79 6:01 AM

YEAR	TOT GAS SLD	GWC INCOME	COND INCOME	GAR	DEPLE ALLO
1979	170,190	464,478	195,296	659,773	
1980	352,715	998,326	192,037	1,190,362	
1981	196,817	590,493	23,539	619,032	
1982	109,825	349,267	4,241	353,508	
1983	61,283	206,586	624	207,210	
1984-90	68,935	253,431	15	253,496	
	-----	-----	-----	-----	-----
TOTAL	959,765	2,862,631	420,752	3,283,381	

TYPE 08/24/79 6:01 AM

YEAR	DEPRCH	INDIR EXP	DIR EXP	PDCN TAX	ITAN INV
1979	12,783	59	661	44,808	281,250
1980	23,245	136	2,062	84,959	
1981	19,870	197	2,136	46,012	
1982	17,739	209	2,317	26,530	
1983	15,694	221	2,456	15,623	
1984-90	51,244	976	10,858	19,123	
	-----	-----	-----	-----	-----
TOTAL	140,625	1,848	20,540	237,105	281,250

TYPE 08/24/79 6:01 AM

YEAR	TANG INV	OVERHEAD	TOTAL EXP	INCOME TAX	TOTAL INV
1979	140,625	50	45,578	147,425	421,875
1980		157	37,364	539,877	
1981		166	48,561	275,301	
1982		176	29,282	153,219	
1983		187	18,487	86,515	
1984-90		827	31,784	85,234	
	-----	-----	-----	-----	-----
TOTAL	140,625	1,563	261,056	1,237,571	421,875

LEASE TOTAL

HADURO FEDERAL NO. 1

TEXAS

GDH *** CONTINUED

TYPE 08/24/79 6:01 AM

YEAR	CASH-BT	CASH-AT
1979	192,320	44,895
1980	1,102,998	563,121
1981	570,471	295,170
1982	324,226	171,007
1983	188,723	102,208
1984-90	221,712	136,478
	-----	-----
TOTAL	2,600,450	1,312,879

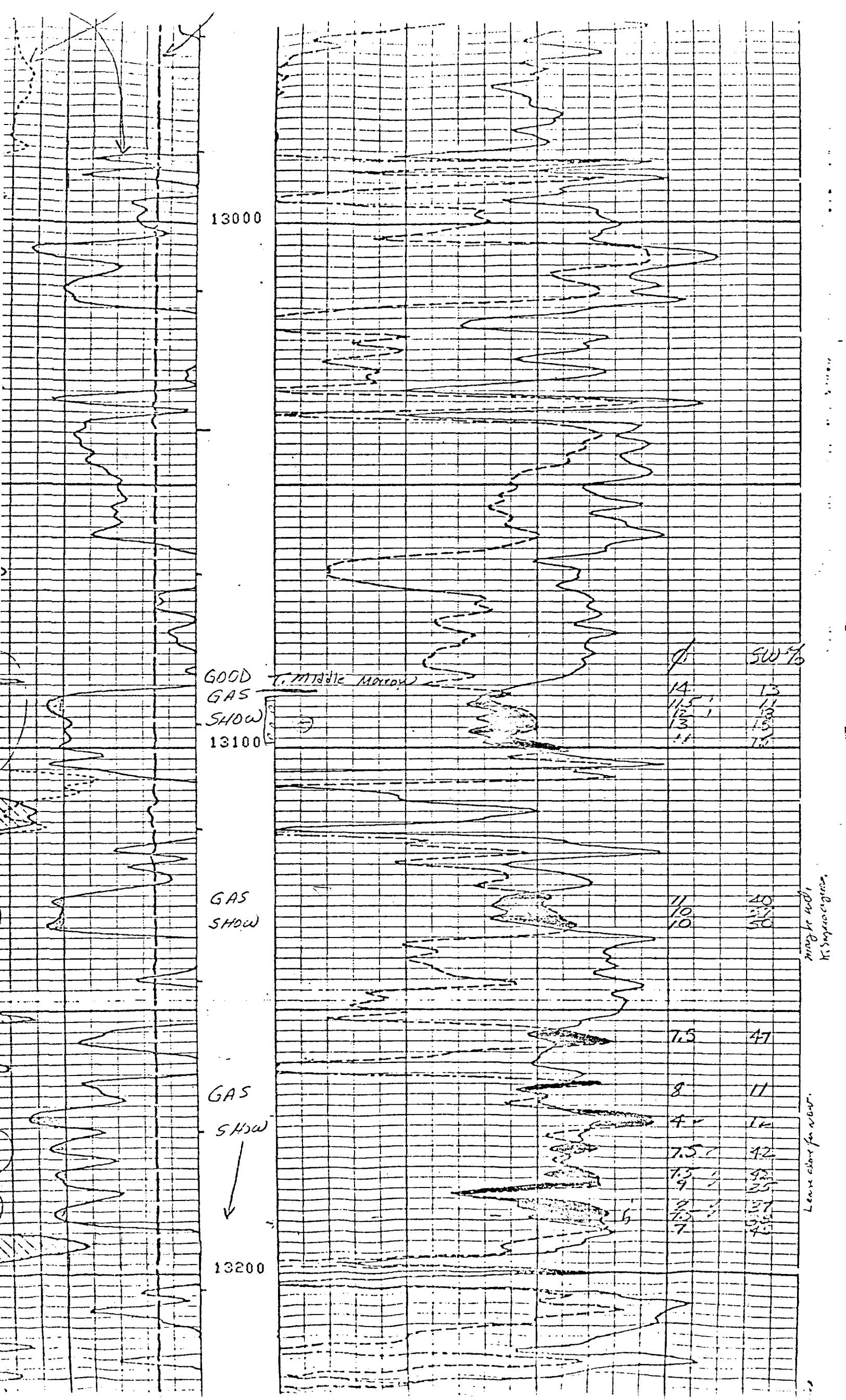
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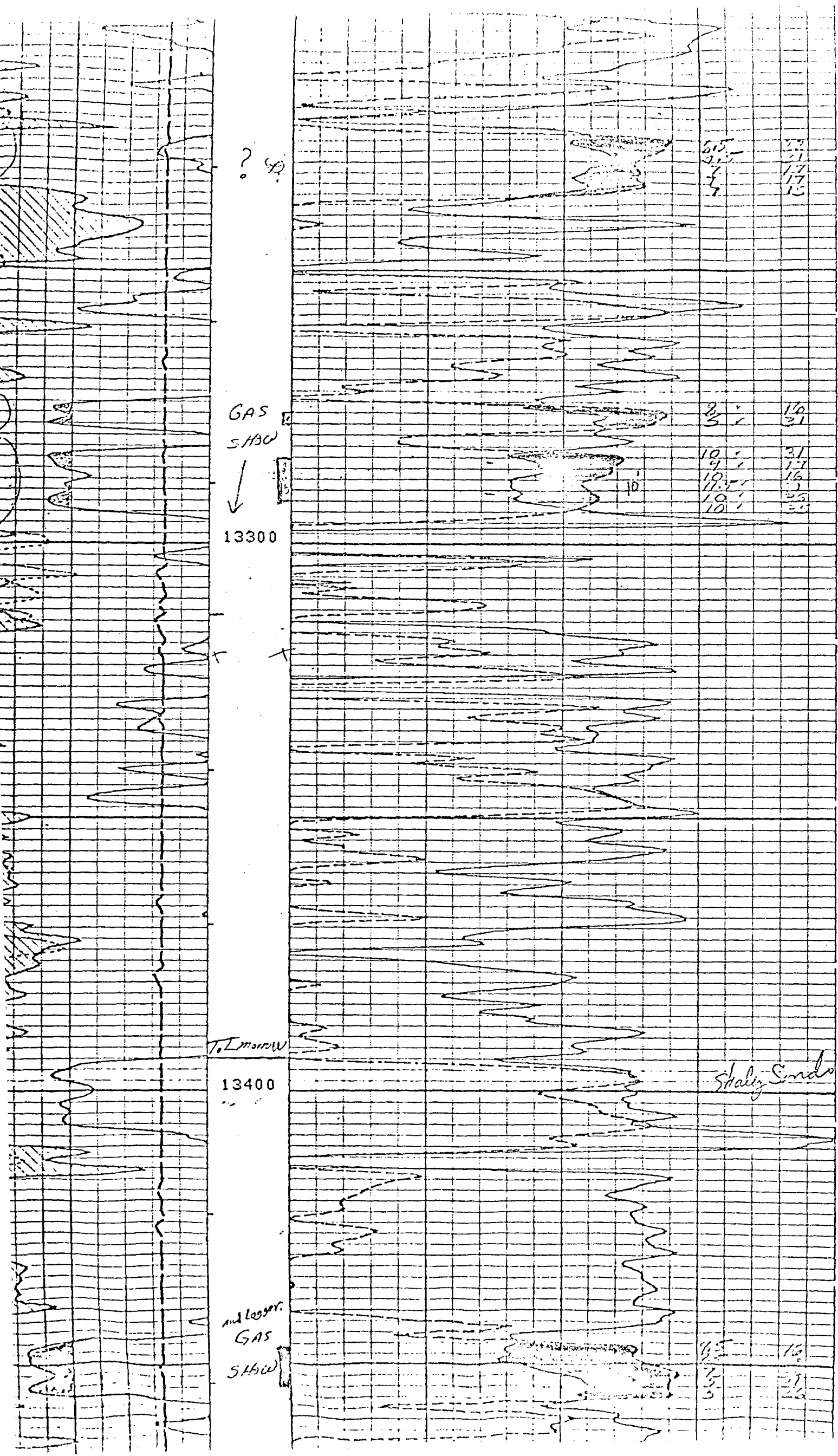
INVESTMENT PARAMETERS EFFECTIVE DATE: 9/79

PRESENT WORTH

	BEFORE TAX	AFTER TAX		BEFORE TAX	AFTER TAX
5%	2,375,666	1,188,315	RATE OF RETURN	> 100.0	> 100.0
10%	2,189,166	1,085,814	PROFITABILITY INDEX	5.19	2.57
20%	1,897,761	927,030	PAYOUT, YRS	0.2	0.3
50%	1,377,043	646,372	INITIAL INVESTMENT	421,875	

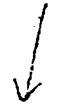
Option: AFE





? &

GAS
SHOW



13300

To L. Morrow

13400

and logg.
GAS
SHOW

6.5
3.5
7

22
21
17
17
15

2
3

10
31

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17.5
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10

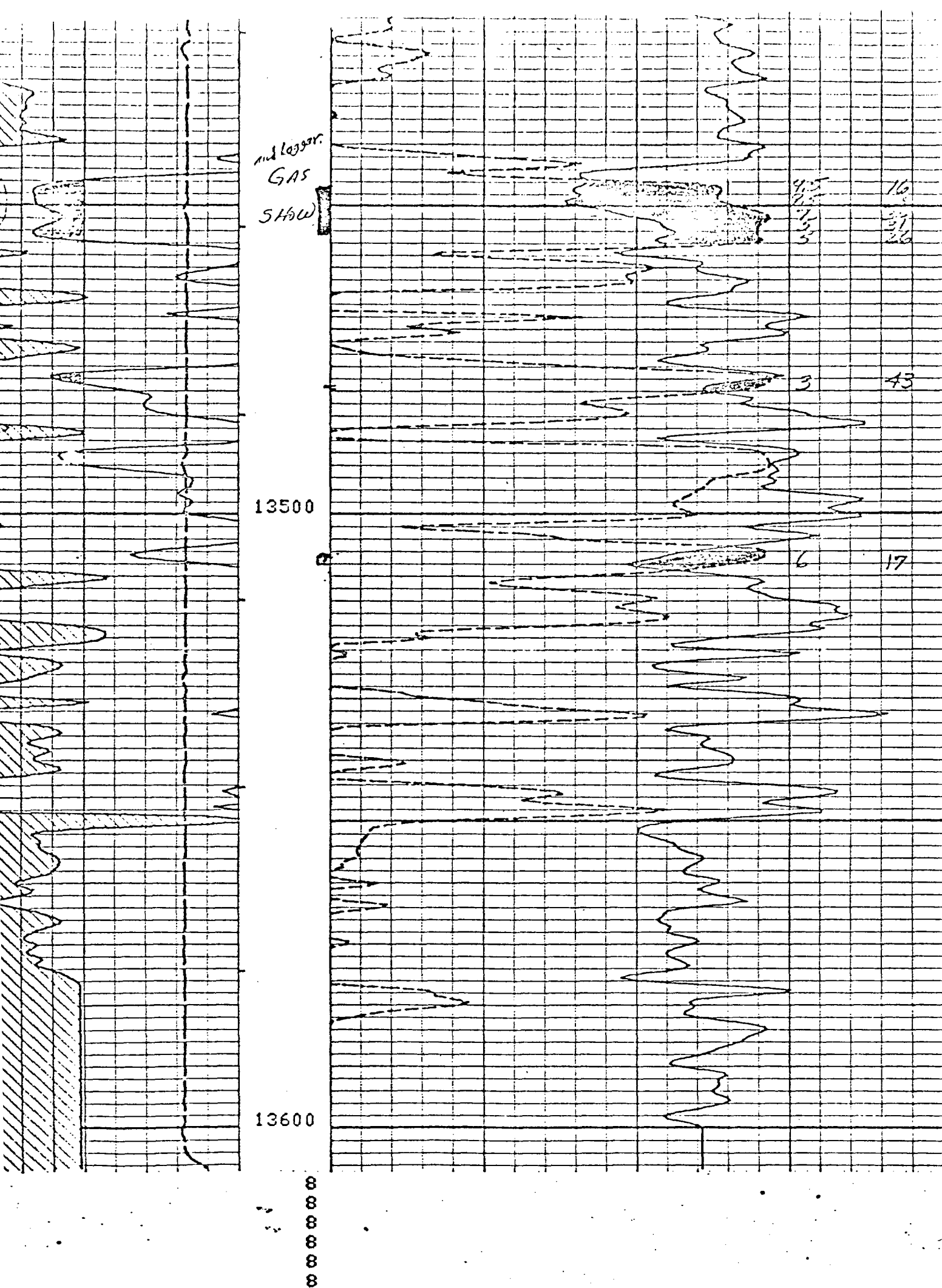
31
17
16
31
25
26

Shaly Sands

1.5
2
3

10
31
26

Ken Rogers 7-1-20
with the 7-1-20



GR (GAPI)	200.0		
TENS(LB)	3000.		
CALI(IN)	16.00	NPHI()	-0.100
GR (GAPI)	100.0	DPHI()	-0.100

PARAMETERS

AME UNIT VALUE

NAME UNIT VALUE

NAME UNIT VALUE

COMPANY: UNION OIL CO. OF CALIFORNIA
WELL: MADURO FEDERAL UNIT #1
FIELD: WILDCAT
COUNTY: LEA
NATION: USA
ALTITUDE:

STATE: NEW MEXICO

LONGITUDE:

LOCATION: 1980 FSL + 1980 FEL

SEC: 29

TWP: 19S

RGE: 33E

PERMANENT DATUM: GL
ELEVATION OF PERMANENT DATUM: 3583.6 FEET

LOG MEASURED FROM: KB

DRILLING MEASURED FROM: KB

ELEVATION-

K.B.: 3603.0 FEET D.F.: 3602.0 FEET G.L.: 3583.6 FEET

OTHER SERVICES-

HL FDC

HC SONIC

OLD HERE

DATE: 79/7/19

PROGRAM TAPE VERSION NO.: 14.4

WELL NUMBER: 2

SERVICE ORDER NUMBER: 76945

API SERIAL NUMBER:

LOGGING UNIT NUMBER: 8069

LOGGING UNIT LOCATION: HOBBS

LOGGING COMPANY CODE: 3402

ENGINEER'S NAME: MOBARAK

WITNESS' NAME: MCKINNEY

TOTAL DEPTH-

DRILLER: 13660.0 FEET LOGGER: 13663.0 FEET

BOTTOM LOG INTERVAL: 13662.0 FEET

TOP LOG INTERVAL: 5160.0 FEET

HOISTING SIZE	WEIGHT	BOTTOM	BOTTOM
		DRILLER	LOGGER
9.625 IN	0.0 LB/F	5160.0 FEET	5160.0 FEET

BIT SIZE	DEPTH
7.875 IN	13663. FEET

DRILLING FLUID TYPE:

DENSITY: 10.20 LB/G

PH: 9.600

VISCOSITY: 41.00 SEC

FLUID LOSS: 7.800 ML

	SOURCE	MEASURED	TEMPERATURE	BOTTOM HOLE
		RESISTIVITY		RESISTIVITY
FLUID SAMPLE	CIRC	0.09 OHMS	68.0 DF	3.05 OHMS
FLUID FILTRATE SAMPLE	MEAS	0.06 OHMS	69.0 DF	2.06 OHMS

MAXIMUM RECORDED TEMPERATURE: 0.0 DF

TIME CIRCULATION STOPPED: 1200 7-21

TIME LOGGER ON BOTTOM: 1200 7-21

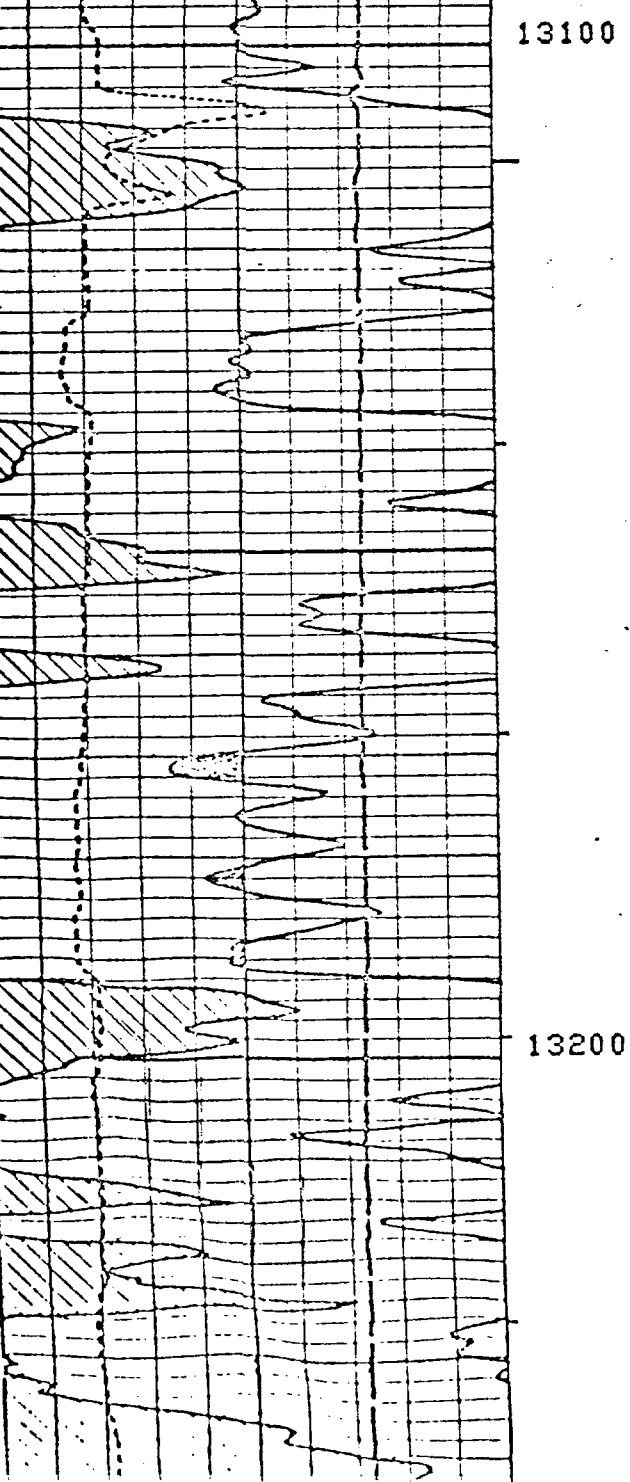
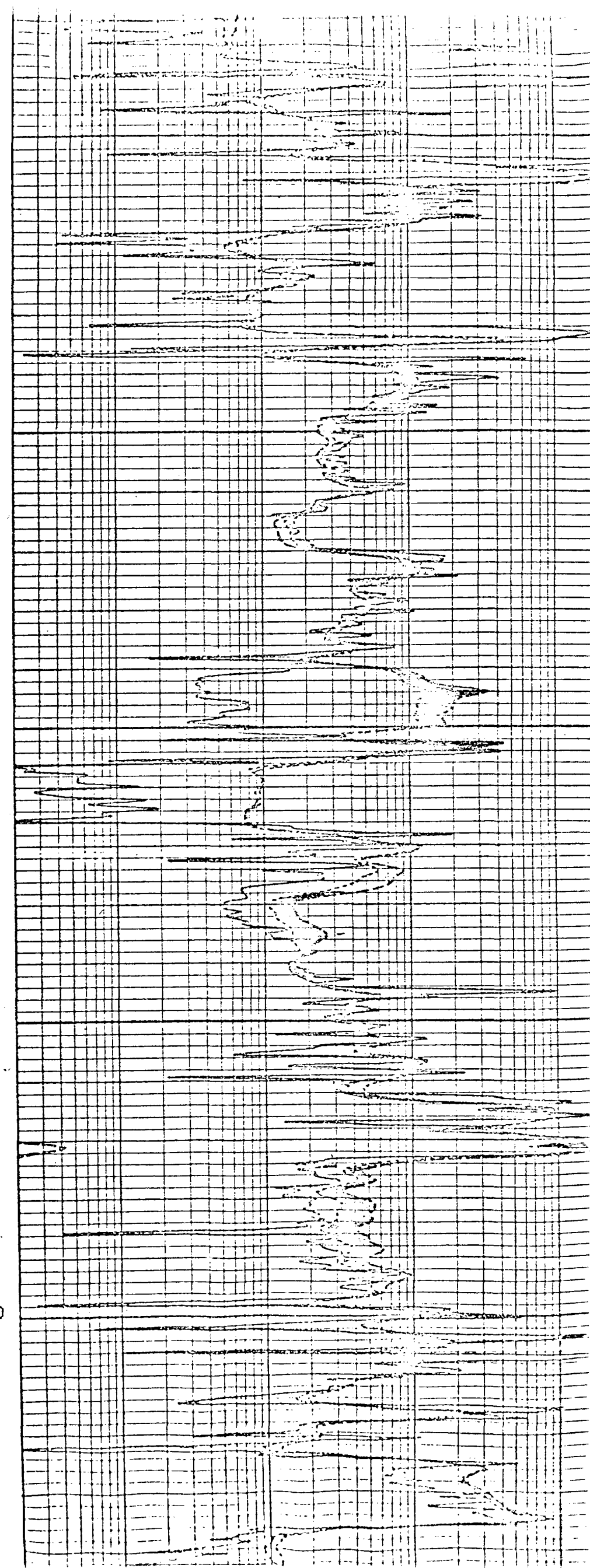
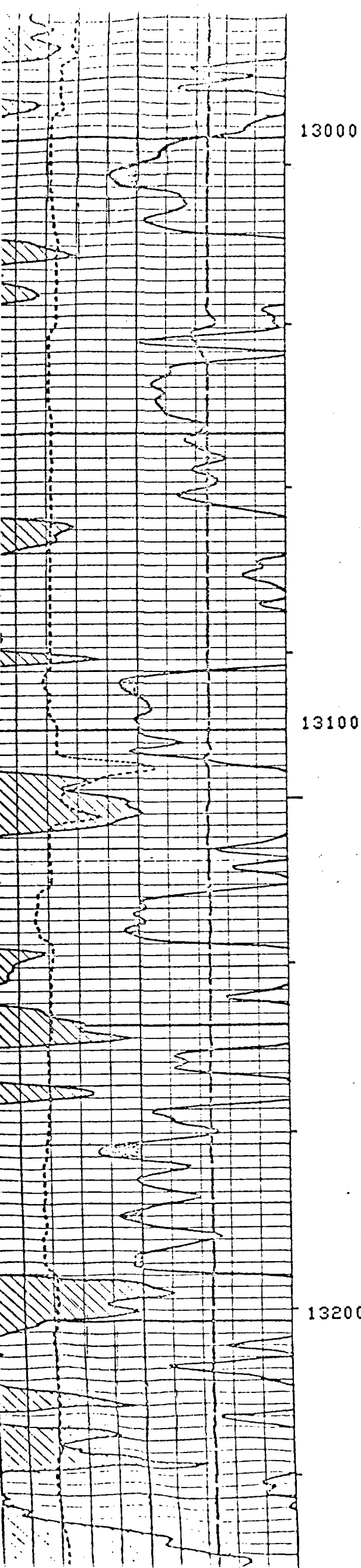
CL MUD APPARENTLY CAUSING GR TO READ HI

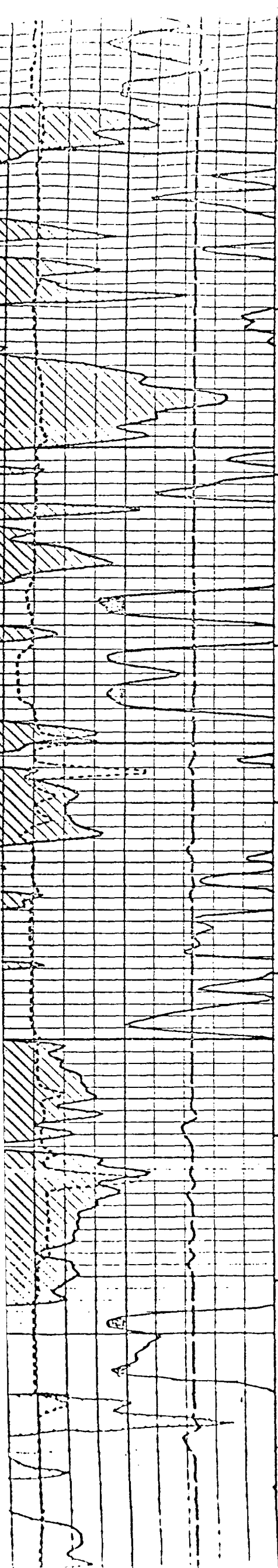
MUD TYPE - KCL POLYMER DRISPAC

REMARKS-

HL PPM 80000

EQUIPMENT NUMBERS-

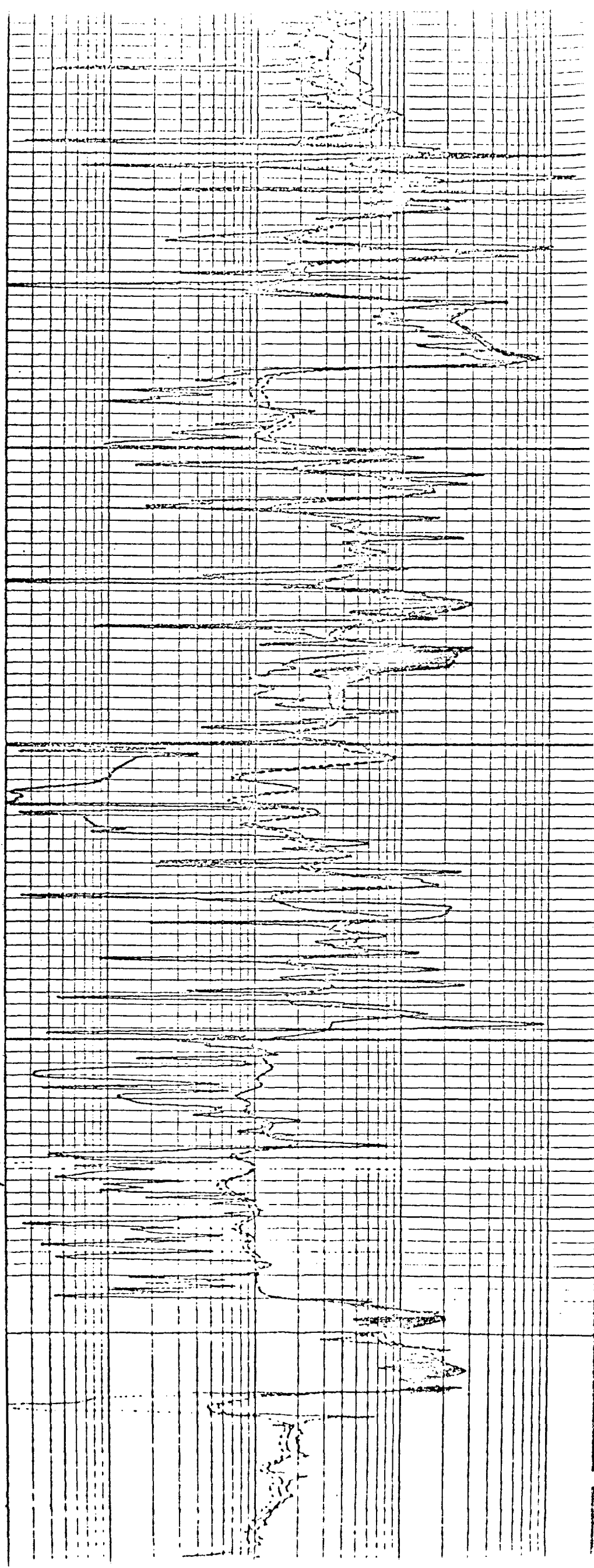


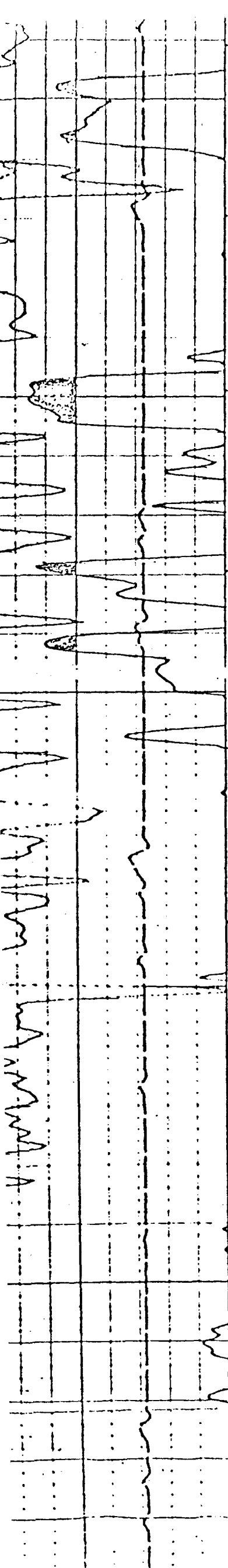


13200

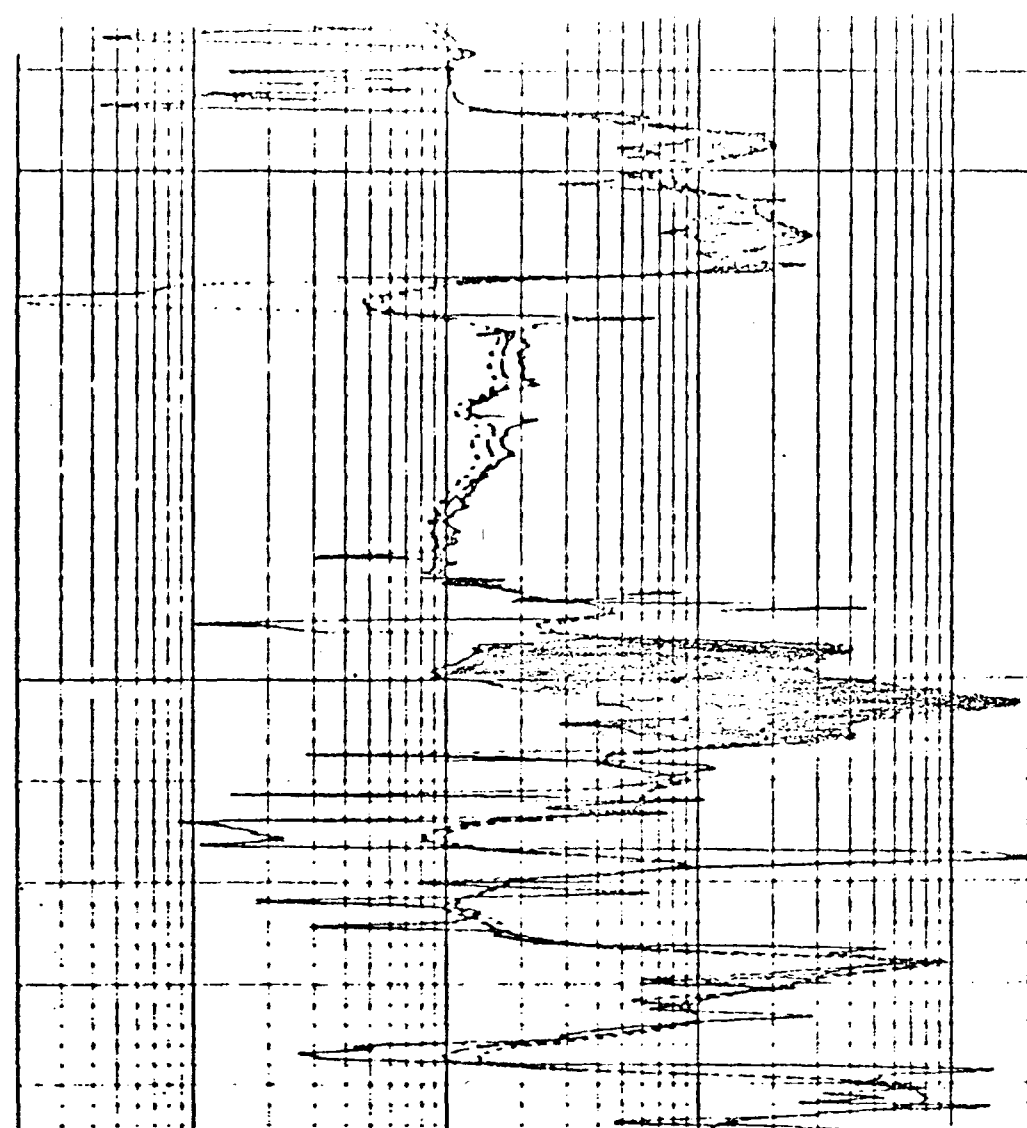
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13400

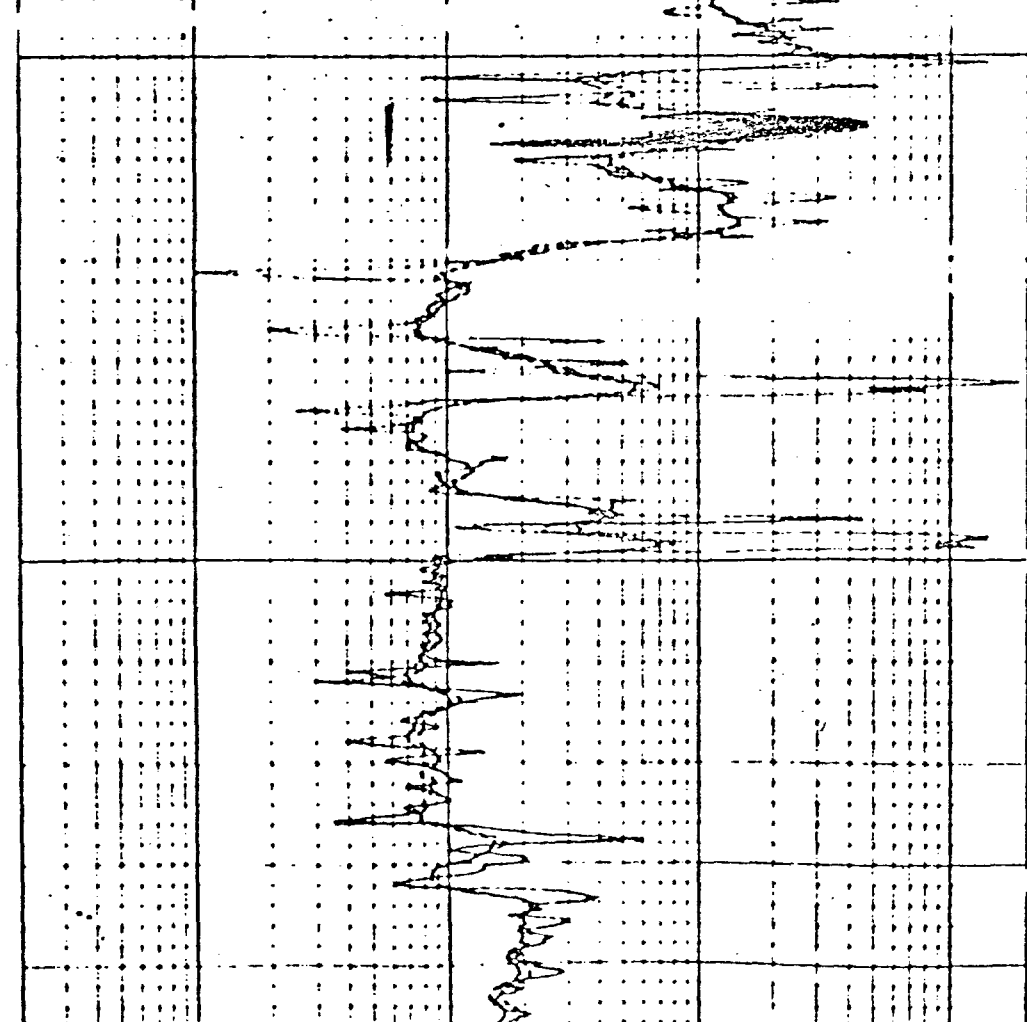




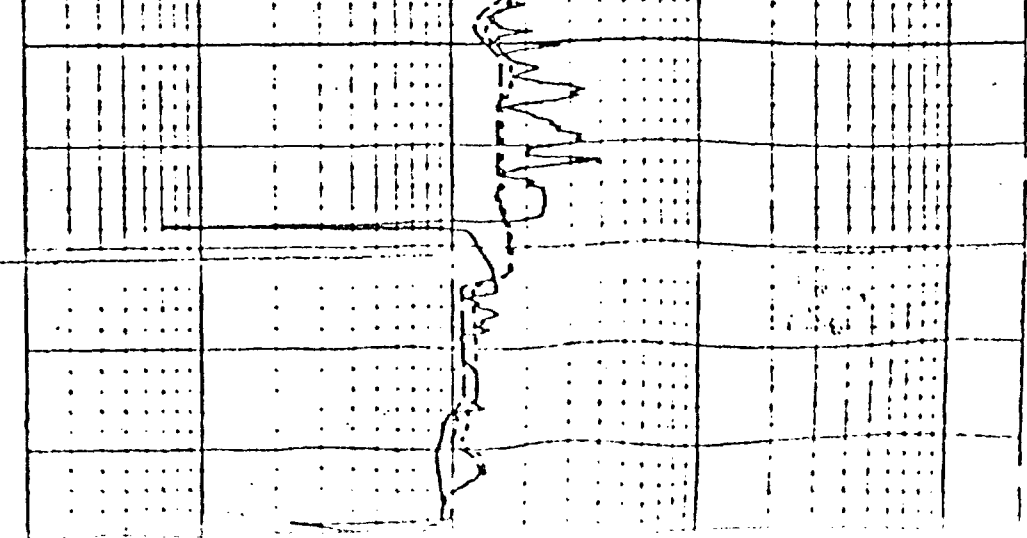
13400



13500



13600



25079
 10187
 14040

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PHOTO
COPY
NOT
FOR
REPRODUCTION

☐ UNION AC. ☐

☐ OPEN AC. ☐

☐ RECOMMENDED
☒ FEDERAL UNIT

AC.

UNION OIL CO. OF CALIFORNIA
CENTRAL REGION
MIDLAND DISTRICT

LAND PLAT OF
MADURO PROS. - 8138 &
LAGUNA PROS. - 7729
LEA COUNTY, NEW MEXICO
WELL RECOMMENDATION
DATE: 8-15-79 SCALE: 1"=4,000'

☐ UNION AC. ☐ RECOMMENDED AC.
☐ OPEN AC. ☒ FEDERAL UNIT

OIL CONSERVATION DIVISION

P. O. BOX 2088

SANTA FE, NEW MEXICO 87501

January 7, 1980

Union Oil Company of California
P. O. Box 671
Midland, Texas 79702

Attention: Richard R. Oelze

Re: Case No. 6516
Maduro Unit
1980 Plan of Development
and Operation

Gentlemen:

We hereby approve the 1980 Plan of Development and Operation for the Maduro Unit, Lea County, New Mexico, subject to like approval by the United States Geological Survey and the Commissioner of Public Lands.

One approved copy of the Plan is returned herewith.

Yours very truly,

JOE D. RAMEY
Director

JDR/EP/fd
enc.

cc: U.S.G.S. - Roswell
Commissioner of Public Lands

C
O
P
Y

Union Oil and Gas Division: Central Region

Union Oil Company of California
500 North Mariefeld, Midland, Texas 79701
P.O. Box 671, Midland, Texas 79702
Telephone (915) 682-9731



Robert V. Lockhart
District Land Manager
Midland District

October 11, 1979

*cc
11-180
S/P
Case 6516*

Oil Conservation Division
Energy & Minerals Department
P. O. Box 2088
Santa Fe, New Mexico

Attn: Mr. Joe D. Ramey, Director

Gentlemen:

Maduro Unit
Lea County, New Mexico
T-19-S, R-33-E, N.M.P.M.

Enclosed for your review please find two (2) copies of Union Oil Company of California's "Initial Plan of Development and Operation for Maduro Unit Area."

Union, as Operator, respectfully requests your consideration and approval of this plan. Should you have any additional questions, please contact the undersigned.

Sincerely yours,

UNION OIL COMPANY OF CALIFORNIA

Richard R. Oelze
Richard R. Oelze
Landman

RRO/jr
Encls.

INITIAL PLAN OF DEVELOPMENT AND OPERATION

FOR

MADURO UNIT AREA

LEA COUNTY, NEW MEXICO

TO: The Director
Oil Conservation Division
Energy and Minerals Department
P. O. Box 2088
Santa Fe, New Mexico 87501

UNION OIL COMPANY OF CALIFORNIA, as Unit Operator for the Maduro Unit Area, pursuant to the provisions of Section 10 of the Unit Agreement for Development and Operation of the Maduro Unit Area dated May 3, 1979, (No. 14-08-0001-18027), respectfully submits for the approval of the Director, Oil Conservation Division, or its duly authorized representative, this Initial Plan of Development and Operation for the Maduro Unit Area. This plan is for the period ending December 31, 1980.

The initial exploratory well, Maduro Federal Unit No. 1, was drilled in NW/4 SE/4, Section 29, Township 19 South, Range 33 East. This well was completed on August 2, 1979, as a well capable of producing in paying quantities under the terms of the Unit Agreement, with an initial potential AOF of 6,686 MCFGPD plus 28 bbls. of condensate per MMCFG from Morrow perforations at 13,446 to 13,457 feet. This well is currently shut-in waiting gas sale negotiations and a pipeline connection, and it is anticipated the actual runs will be commenced during the last quarter of 1979.

In the meantime, we are currently formulating plans to drill an additional Unit well in this reservoir during the last quarter of 1979. For the calendar year 1980, our plans are to monitor the production of the first unit well and also the second unit well if it is a successful producer. Based on the production of these wells, our preliminary plan is to commence a third unit well in the latter half of 1980. It is anticipated that the initial participating area for the Morrow formation in this Maduro Unit will be established as Section 29 and should this second and/or third Unit well be completed during the period covered by this Initial Plan of Development and Operation, a revised participating area will be determined.

This Initial Plan of Development and Operation shall constitute the further obligations required under the Maduro Unit Agreement for the period ending December 31, 1980, and may be modified or supplemented from time to time with the approval of the Oil Conservation Division Director when necessary to meet changed conditions or to protect the interest of all parties to the Unit Agreement.

Approval of this Initial Plan of Development and Operation for the Maduro Unit Area is respectfully requested.

Submitted this 11th day of October, 1979.

UNION OIL COMPANY OF CALIFORNIA

By: Robert V. Lockhart
Robert V. Lockhart *rro*
District Land Manager

Approved 11/7 19 80
[Signature]
Director
Oil Conservation Division
Energy and Minerals Department

APPROVED SUBJECT TO LIKE APPROVAL
BY THE UNITED STATES GEOLOGICAL
SURVEY AND BY THE COMMISSIONER OF PUBLIC LANDS
OF THE STATE OF NEW MEXICO.