

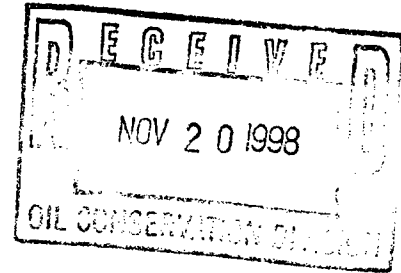


ARCO Permian

600 North Mariefeld
Midland, TX 79701-4373
P.O. Box 1610
Midland, TX 79702-1610
Telephone 915-688-5570
Facsimile 915-688-5956
Email ecasbee@mail.arco.com

Elizabeth A. Casbeer
Regulatory/Compliance Analyst

DHC 12/10/98
~~2146~~ 2146



November 18, 1998

New Mexico Oil Conservation Division
ATTN: David Catanach
2040 S. Pacheco Street
Santa Fe, NM 87505

RE: Application of ARCO Permian
for Downhole Commingling on
Red Lake "3" Federal Well Numbers 1 and 2
Red Lake (QGSA) and NE Red Lake (Glor-Yeso) Fields
Eddy Co., NM

Mr. Catanach:

ARCO Permian respectfully requests administrative approval for downhole commingling on the Red Lake "3" Federal Well Numbers 1 and 2. Attached are the supporting documents for this application.

If you have any questions, please contact me at 915/688-5570. Please send the approved permit to:

ARCO Permian
ATTN: E. A. CASBEER, Room 959-54
P. O. Box 1610
Midland, TX 79702

Yours very truly,

Elizabeth A. Casbeer
Regulatory Compliance Analyst

Attachments

xc: Bureau of Land Management
Carlsbad Resource Area
P. O. Box 1778
Carlsbad, NM 88220
Larry Henson - EUN
Dennis Braaten - 62923/MIO
Donald Knipe - 61323/MIO
Central Files - 041/MIO
R/C Files

DISTRICT I

P.O. Box 1980, Hobbs, NM 88241-1980

DISTRICT II

811 South First St., Artesia, NM 88210-2835

DISTRICT III

1000 Rio Brazos Rd, Aztec, NM 87410-1693

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION

2040 S. Pacheco
Santa Fe, New Mexico 87505-6429Form C-107-A
New 3-12-96

APPROVAL PROCESS:

☐ Administrative ☐ Hearing

EXISTING WELLBORE

☒ YES ☐ NO

APPLICATION FOR DOWNHOLE COMMINGLING

ARCO Permian

Operator

Address

Red Lake "3" Fed

2

E-3-T185-R27E

Eddy

Lease

Well No.

Unit Ltr. - Sec - Twp - Rge

County

OGRID NO. 000990

Property Code

API NO. 30-015-29802

Spacing Unit Lease Types: (check 1 or more)

Federal ☒ State ☐ (and/or) Fee ☐

The following facts are submitted in support of downhole commingling:	Upper Zone	Intermediate Zone	Lower Zone
1. Pool Name and Pool Code	Red Lake (QGSA)		NE Red Lake (Glorioso)
2. Top and Bottom of Pay Section (Perforations)	to be perforated: 1856-2328		3150-3360
3. Type of production (Oil or Gas)	Oil		Oil
4. Method of Production (Flowing or Artificial Lift)	Art. Lift		Art. Lift
5. Bottomhole Pressure Oil Zones - Artificial Lift: Gas & Oil - Flowing: All Gas Zones: Estimated Current Measured Current Estimated Or Measured Original	(Current) 70 Producing after perfs & put on pump b. (Original)	a. b.	a. 75 b.
6. Oil Gravity ($^{\circ}$ API) or Gas BTU Content	40-42%		42%
7. Producing or Shut-In?	Awaiting Perfs		Producing
Production Marginal? (yes or no)	Expected in 3 to 6 months		yes
* If Shut-In, give date and oil/gas/water rates of last production Note: For new zones with no production history, applicant shall be required to attach production estimates and supporting data	Date: Rates: NA	Date: Rates:	Date: Rates: NA
* If Producing, give date and oil/gas/water rates of recent test (within 60 days)	Date: Rates: NA	Date: Rates:	Date: 9-2-98 Rates: 10 BOPD, 8MCFD, 186 BWPD
8. Fixed Percentage Allocation Formula - % for each zone	Oil: 68 % Gas: 68 %	Oil: % Gas: %	Oil: 32 % Gas: 32 %

9. If allocation formula is based upon something other than current or past production, or is based upon some other method, submit attachments with supporting data and/or explaining method and providing rate projections or other required data.

10. Are all working, overriding, and royalty interests identical in all commingled zones? ☒ Yes ☐ No
If not, have all working, overriding, and royalty interests been notified by certified mail? ☐ Yes ☐ No
Have all offset operators been given written notice of the proposed downhole commingling? ☒ Yes ☐ No11. Will cross-flow occur? ☐ Yes ☒ No If yes, are fluids compatible, will the formations not be damaged, will any cross-flowed production be recovered, and will the allocation formula be reliable. ☐ Yes ☐ No (If No, attach explanation)12. Are all produced fluids from all commingled zones compatible with each other? ☒ Yes ☐ No13. Will the value of production be decreased by commingling? ☐ Yes ☒ No (If Yes, attach explanation)14. If this well is on, or communitized with, state or federal lands, either the Commissioner of Public Lands or the United States Bureau of Land Management has been notified in writing of this application. ☒ Yes ☐ No

15. NMOCD Reference Cases for Rule 303(D) Exceptions: ORDER NO(S).

16. ATTACHMENTS:

- * C-102 for each zone to be commingled showing its spacing unit and acreage dedication.
- * Production curve for each zone for at least one year. (If not available, attach explanation.)
- * For zones with no production history, estimated production rates and supporting data.
- * Data to support allocation method or formula.
- * Notification list of all offset operators.
- * Notification list of working, overriding, and royalty interests for uncommon interest cases.
- * Any additional statements, data, or documents required to support commingling.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE

Regulatory/
Compliance Analyst

DATE 11-18-98

TYPE OR PRINT NAME Elizabeth A. Casbeer

TELEPHONE NO. (915) 688-5570

DISTRICT I

P.O. Box 1980, Hobbs, NM 88241-1980

State of New Mexico

Energy, Minerals and Natural Resources Department

Form C-102

Revised February 10, 1994
Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

DISTRICT II

P.O. Drawer DD, Artesia, NM 88211-0719

DISTRICT III

1000 Rio Brazos Rd., Aztec, NM 87410

OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

DISTRICT IV

P.O. Box 2088, Santa Fe, NM 87504-2088

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-29802	Pool Code 96210	Pool Name UNDESIGNATED EMPIRE (YESO)
Property Code	Property Name RED LAKE "3" FEDERAL	Well Number 2
OGRID No. 000990	Operator Name ARCO PERMIAN	Elevation 3567

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	3	18 S	27 E		2005	NORTH	990	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Dedicated Acres 40		Joint or Infill	Consolidation Code		Order No.				

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

LOT 4 38.58 AC.	LOT 3 38.87 AC.	LOT 2 39.17 AC.	LOT 1 39.46 AC.	OPERATOR CERTIFICATION I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief. <i>Elizabeth A. Casbeer</i> Signature ELIZABETH A. CASBEE Printed Name REG. /COMP. ANALYST Title 2/9/98 Date
NAD 27 NME Y=646665.16 N X=519088.56 E				

WELLBORE SCHEMATIC

ARCO PERMIAN RED LAKE 3 FEDERAL NO. 2

2005' FNL & 990' FWL (E)
Sec. 3, T-18-S, R-27-E,
Eddy County, NM
API: 30-015-029802
Spudded: 10/27/97
Completed: 12/08/97

Surface Casing 8 5/8" 24#
Cmt'd w/525 sx, Circ.
Shoe @ 1115'

KB: 3561' GL: 3554'

Production Casing 5-1/2" 15.5#
Cement w/650 sx, Shoe @ 3600'
Cement Circulated to Surface

Perforations (1SPF)

3150', 3160'; 3170', 3180', 3190', 3200',
3210', 3220', 3230', 3240', 3250', 3260',
3270', 3280', 3290', 3300', 3310', 3320',
3330', 3340', 3350', 3360'

TD @ 3600'

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE*

(See other in-
structions on
reverse side)FORM APPROVED
OMB NO. 1004-0137

Expires: February 28, 1995

5. LEASE DESIGNATION AND SERIAL NO.

LC-028805B

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME, WELL NO.

RED LAKE "3" FED 2

9. API WELL NO.

30-015-29802

10. FIELD AND POOL, OR WILDCAT
UNDESIGNATED EMPIRE
(YESO)11. SEC., T., R., M., OR BLK.
AND SURVEY OR AREA
3-T18S-R27E12. COUNTY OR
PARISH
EDDY13. STATE
NM

1a. TYPE OF WELL:

OIL
WELL ☒GAS
WELL ☐DRY ☐

Other _____

b. TYPE OF COMPLETION:

NEW
WELL ☒WORK
OVER ☐DEEP-
EN ☐PLUG
BACK ☐DIFF.
RESER ☐

Other _____

2. NAME OF OPERATOR

ARCO Permian

3. ADDRESS AND TELEPHONE NO.

P.O. Box 1610, Midland, TX 79702

915-688-5570

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*

At surface

2005'FNL, 990'FNL

At top prod. interval reported below

At total depth

14. PERMIT NO.

DATE ISSUED

8/18/97

15. DATE SPUDDED

10/27/97

16. DATE T.D. REACHED

11/3/97

17. DATE COMPL. (Ready to prod.)

12/8/97

18. ELEVATIONS (DP, RKB, RT, GR, ETC.)*

3567'

19. ELEV. CASINGHEAD

20. TOTAL DEPTH, MD & TVD

3600

21. PLUG, BACK T.D., MD & TVD

3566

22. IF MULTIPLE COMPL.,
HOW MANY*23. INTERVALS
DRILLED BY
→

ROTARY TOOLS

X

CABLE TOOLS

24. PRODUCING INTERVAL(S), OF THIS COMPLETION - TOP, BOTTOM, NAME (MD AND TVD)*

3150-3360

25. WAS DIRECTIONAL
SURVEY MADE

N

26. TYPE ELECTRIC AND OTHER LOGS RUN

CPNL

27. WAS WELL CORED

N

28. CASING RECORD (Report all strings set in well)

CASING SIZE/GRADE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	TOP OF CEMENT, CEMENTING RECORD	AMOUNT PULLED
8-5/8	24	1115	11	CIRC	NA
5-1/2	15.5	3600	7-7/8	CIRC	NA

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)
2-7/8	3381	

31. PERFORATION RECORD (Interval, size and number)

3150-3360 (1 SPF)

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD) AMOUNT AND KIND OF MATERIAL USED

3150-3360

ACID W/26460 GAL 20%;

3780 GAL 15%

33 *

PRODUCTION

DATE FIRST PRODUCTION

1/6/98

PRODUCTION METHOD (Flowing, gas lift, pumping - size and type of pump)

FLOWING

WELL STATUS (Producing or
shut-in)

PRODUCING

DATE OF TEST

1/23/98

HOURS TESTED

24

CHOKE SIZE

PROD'N. FOR
TEST PERIOD →

OIL - BBL.

2

GAS - MCF.

10

WATER - BBL.

350

GAS - OIL RATIO

5000

FLOW, TUBING PRESS.

52

CASING PRESSURE

CALCULATED
24-HOUR RATE →

OIL - BBL.

GAS - MCF.

WATER - BBL.

OIL GRAVITY - API (CORR.)

41.9

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)

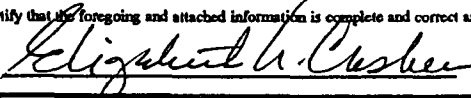
SOLD

TEST WITNESSED BY

35. LIST OF ATTACHMENTS

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED



TITLE

REGULATORY COMPLIANCE

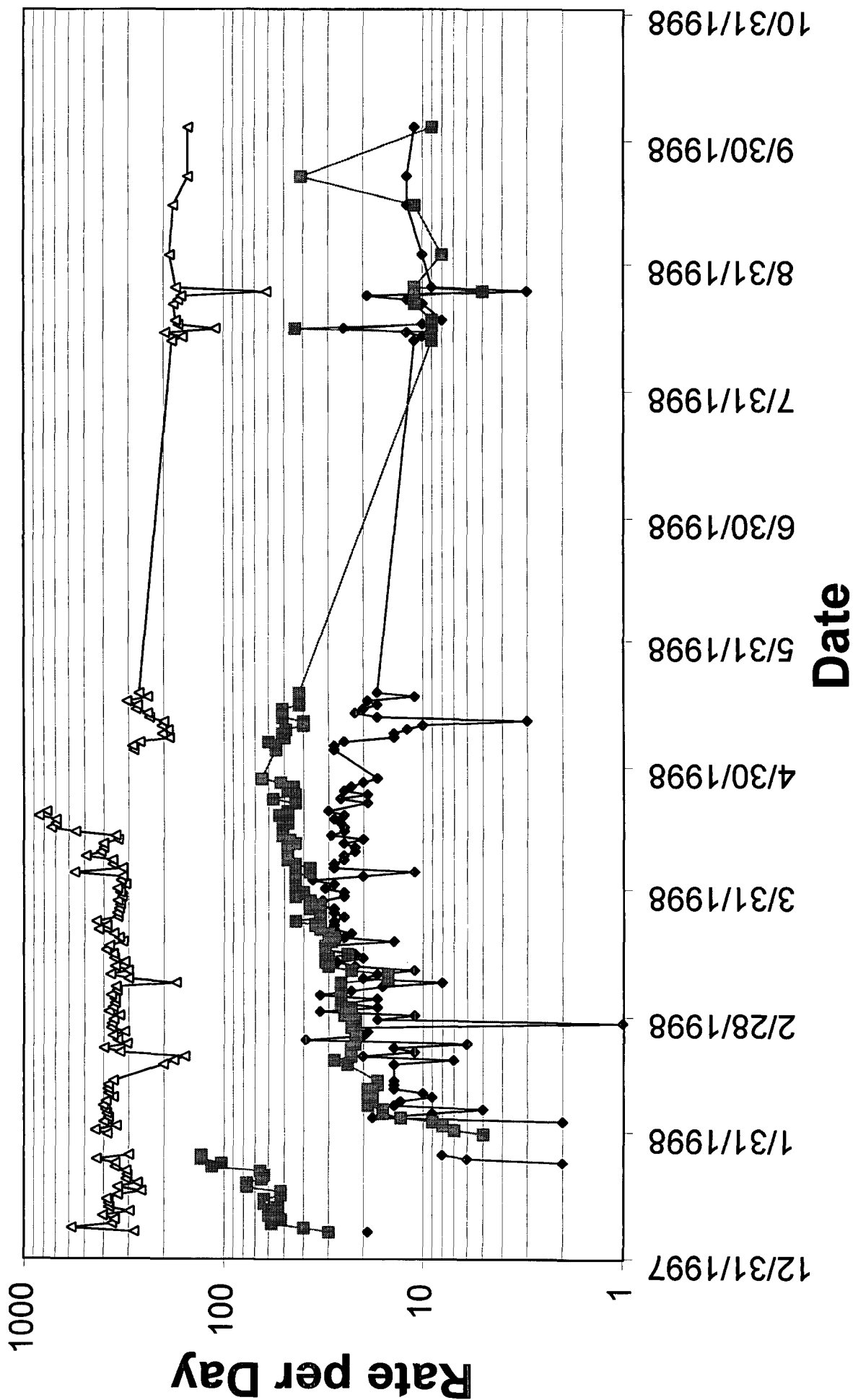
DATE

2/9/98

*(See Instructions and Spaces for Additional Data on Reverse Side)

Redlake 3 Federal #2 (Yeso)

—●— OIL —■— MCF —△— WTR



Redlake "3" Federal No. 2

Allocation Formula

Formation	Net Pay Determination	Feet of Pay	% of Total
Redlake (QGSA)	Net Pay > 6%	115	0.68
NE Redlake (Glor- Yeso)	Net Pay > 6%	53	0.32
Summary		168	

Log data is attached. Because rate data is not yet available for the San Andres Zone, we believe net pay is an acceptable means to allocate production.

3 #2 Peary



COMPENSATED PHOTO-DENSITY COMPENSATED NEUTRON SPECTRAL GAMMA LOG

LOCATION 2005' FNL & 990' FVL PRVNC/CO. EDDY FIELD WILDCAT WELL RED LAKE FED. "3" NO.2 COMPANY ARCO PERMIAN	COMPANY ARCO PERMIAN <i>Tops on 5' Limit</i> WELL RED LAKE FED. "3" NO.2 FIELD WILDCAT PROVINCE/COUNTY EDDY COUNTRY/STATE NEW MEXICO/U.S.A. PERMIT NUMBER 30-105-29802			
	LOCATION 2005' FNL & 990' FVL SEC. 3. T-18S. R-27E			OTHER SERVICES LCS DLS/MLS AST
	LSD	SEC	TVP	RCE
		03	18S	27E
PERMANENT DATUM GROUND LEVEL. ELEVATION 3554 FT. LOC MEASURED FROM K.B. 6 FT. ABOVE PERMANENT DATUM DRILLING MEASURED FROM K.B.				ELEVATIONS: KB 3554 - FF 3575 DF 3554 - FF CL 3554 - FF 3567
DATE	04-NOV-97			G 3567
RUN NUMBER	ONE			
DEPTH-DRILLER	3600 FT.			
DEPTH-LOGGER	3601 FT.			
FIRST READING	3599 FT.			
LAST READING	100 FT.			
CASING-DRILLER	1113 FT.			
CASING-LOGGER	1124 FT.			
BIT SIZE	7 7/8 INCH			
HOLE FLUID TYPE	SALT GEL			
DENS./VISC.	9.6	30		
PH/FLUID LOSS	9	NC		
SAMPLE SOURCE	PIT			
RM @ MEAS TEMP	0.055 @ 84 F			
RMF @ MEAS TEMP	0.055 @ 84 F			
RMC @ MEAS TEMP				
SOURCE: RMF/RMC	CALC			
RM @ BHT	0.50 @ 88 F			
TIME SINCE CIRC	5 HOURS			
MAX REC TEMP	88 DEG. F.			
EQUIPMENT/BASE	VI031	MDD		
RECORDED BY	GILBERT			
WITNESSED BY	MR. PEARY			

Solo replay on btm

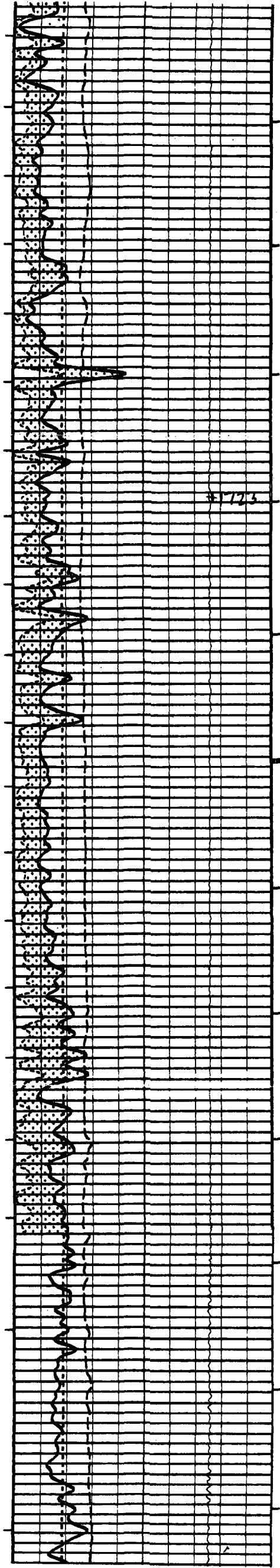
32' net pay

(+21' wet in y.)

@ 640 sz

Mar dug ~ 25 BOPD @ 352w

SA 105' net > 6% xpld.



1800

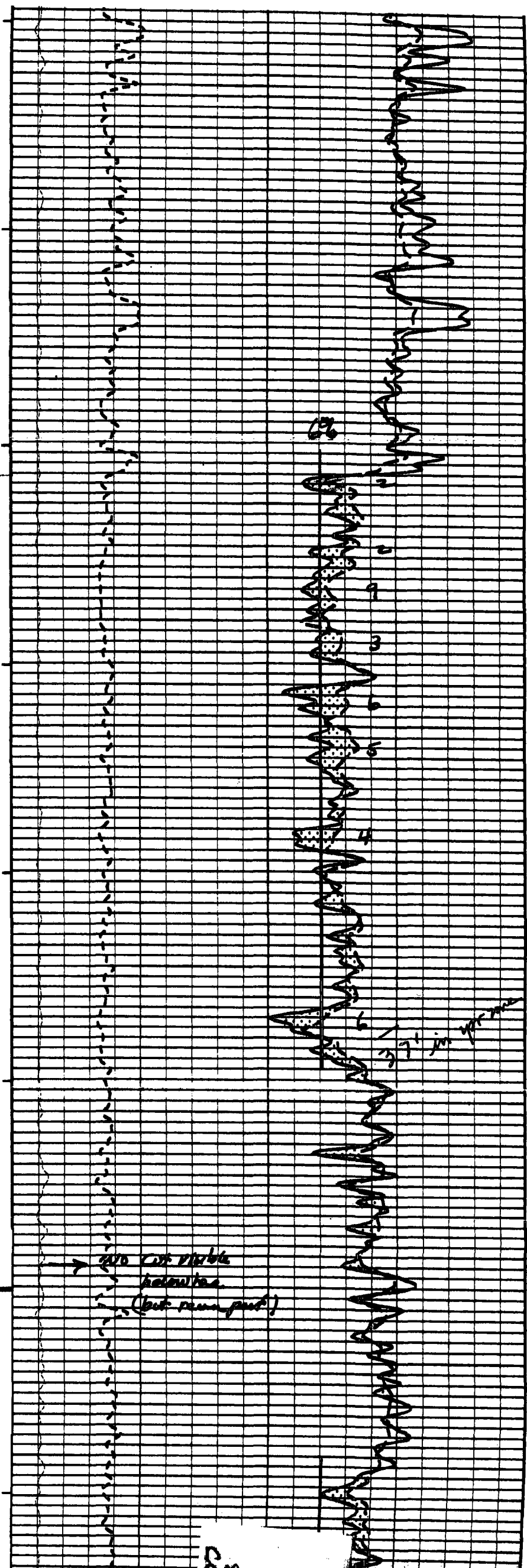
1650

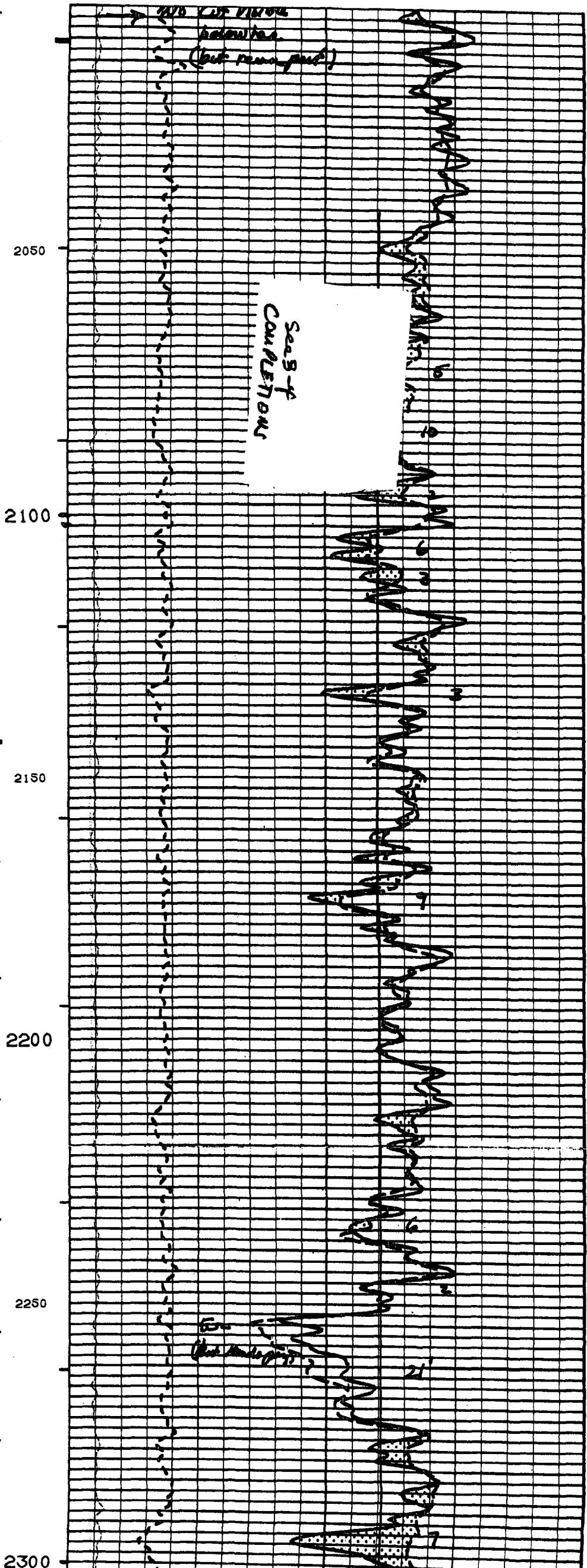
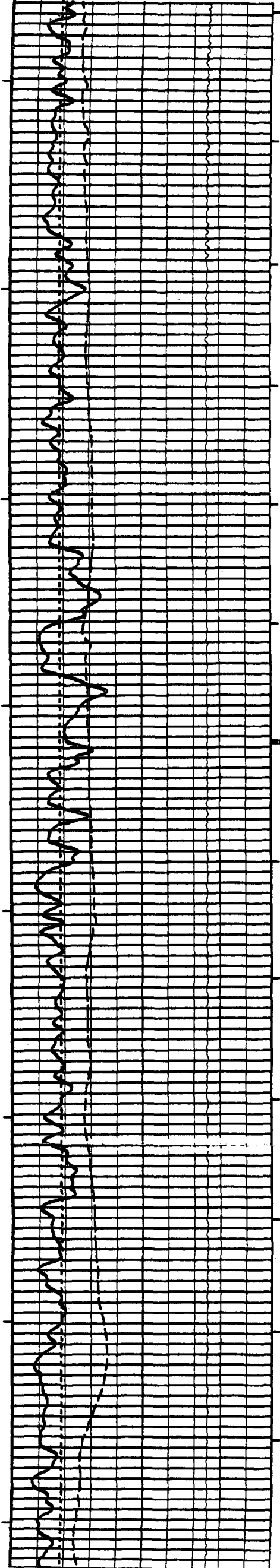
1900

1950

2000

2050



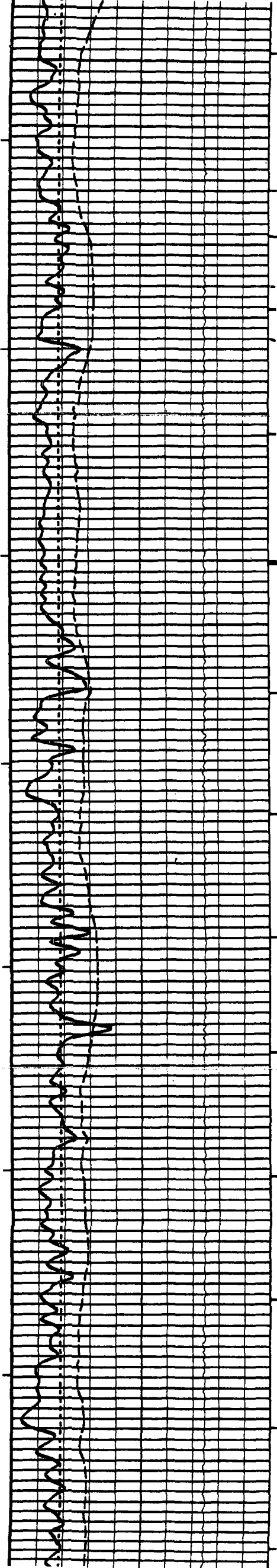


2050
2100
2150
2200
2250
2300

→ No cut vision
indicated
(but ramped)

See 3-4
COMPLETION

See 3-4
COMPLETION



2300

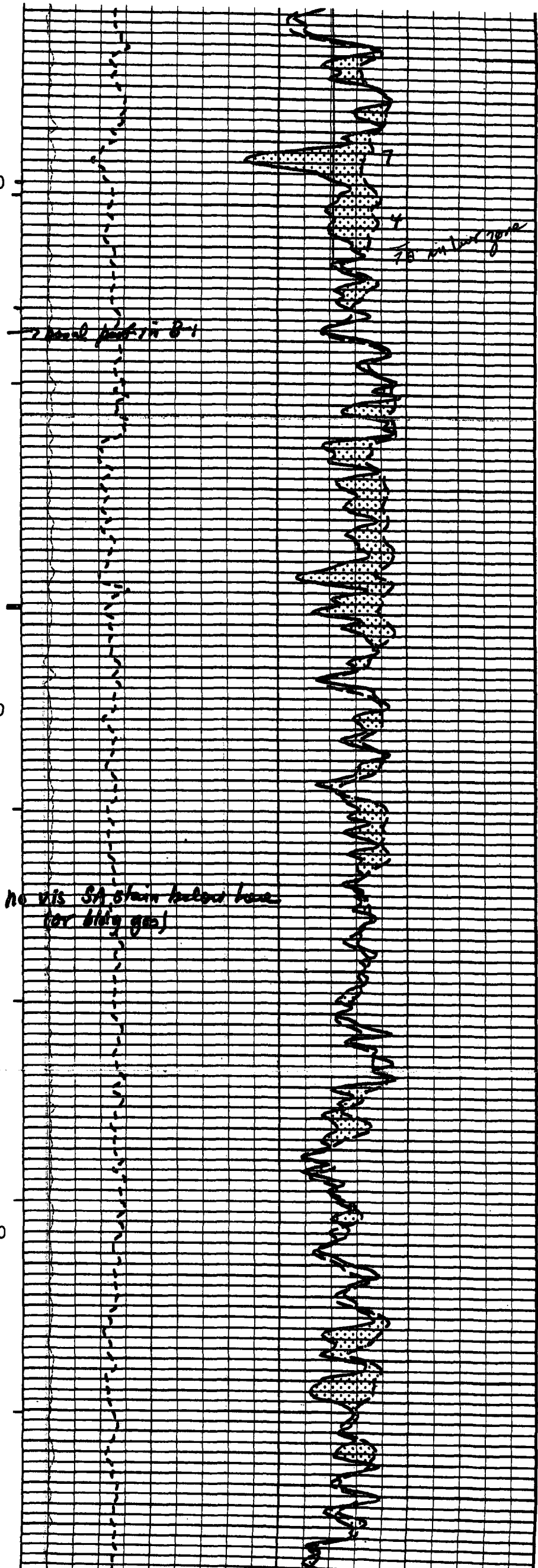
2350

2400

2450

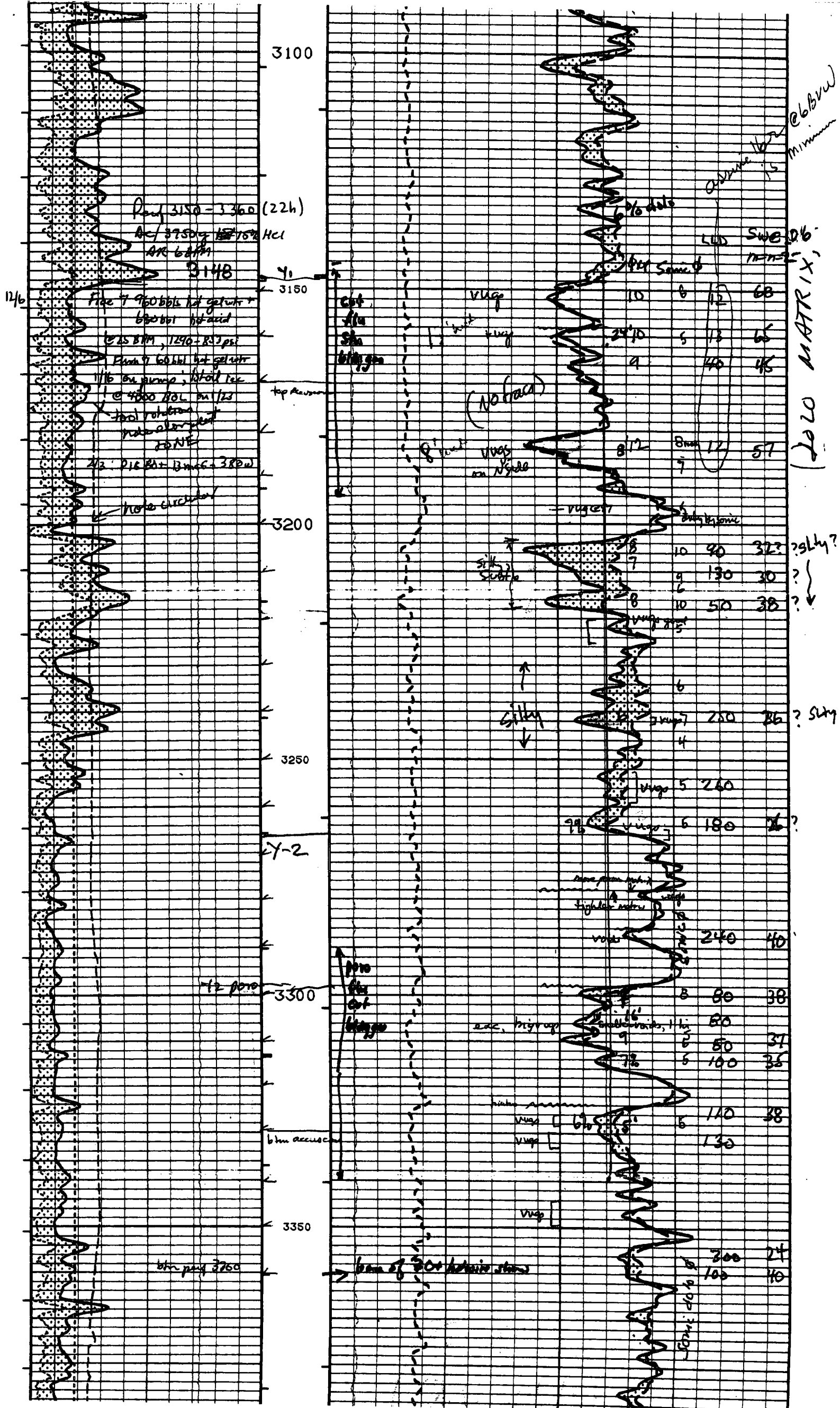
2500

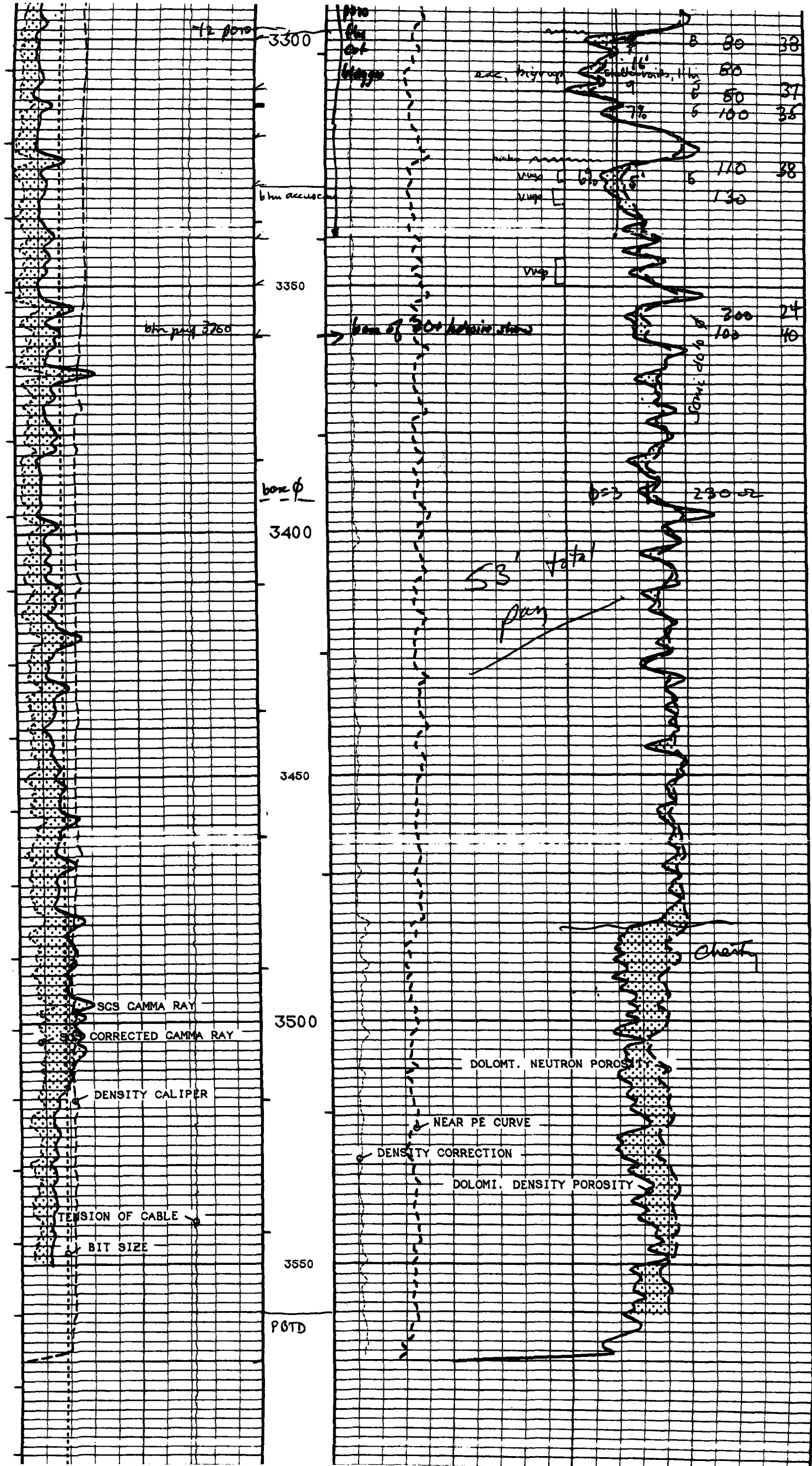
2550



no vis SA stain below here
(or big gas)

7B m. l. zone







Laboratory Services, Inc.

1331 Tasker Drive
Hobbs, New Mexico 88240
Telephone: (505) 397-3713

SULFUR IN CRUDE OIL

ARCO Permian
Attention: Mr. Rolland Taylor
P. O. Box 1089
Eunice, New Mexico 88231

Jan 27, 1998

	Sulfur	API Gravity @ 60° F	Specific Gravity @ 60° F
Red Lake "3" #1 (YESO)	0.3826 wt. %	42.4	0.9137
Red Lake "3" #2 (YESO)	0.3323 wt. %	41.9	0.8160

Thank You,
Rolland Perry

YESO Oil Samples

L
S

Laboratory Services, Inc.
1331 Tasker Drive
Hobbs, New Mexico 88240
Telephone: (505) 397-3713

SULFUR IN CRUDE OIL

ARCO Permian
Attention: Mr. Roland Taylor
P. O. Box 1089
Eunice, New Mexico 88231

Jul 28, 1998
Sample Date: 7/27/98 2:00 PM

	Sulfur	API Gravity @ 60° F	Specific Gravity @ 60° F
→ West Red Lake 4 Fed. #1 San Andres	0.4943 wt. %	41.8	0.8165
West Red Lake 4 Fed. #2 Yeso	0.3687 wt. %	40.0	0.8251
→ Lago Rosa 4 Fed. #4 San Andres	0.4794 wt. %	40.2	0.8241
Lago Rosa 4 Fed. #5 Yeso	0.4332 wt. %	40.2	0.8241

Thank You,
Rolland Perry

Offset San Andres Oil Samples



Combined YESO & San Andres Offset Waters

(Scaling tendency decreases with mixing of San Andres)

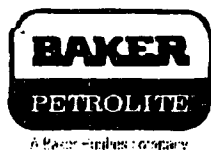
Analysis: 22382

Water Analysis Report from Baker Petrolite

Summary of Mixing Waters

Sample Number	051873	106619
Company	ARCO PERMIAN	ARCO
Lease	REDLAKE	LAGO ROSA 4
Well	WELL #1	FED #4
Sample Location	WELLHEAD	WELLHEAD
Anions (mg/L)		
Chloride	122,233	39,939
Bicarbonate	1,039	1,000
Carbonate	0.00	0.00
Sulfate	3,611	4,596
Phosphate	0.00	0.00
Borate	0.00	0.00
Silicate	0.00	0.00
Cations (mg/L)		
Sodium	53,950	25,340
Magnesium	6,934	276
Calcium	11,969	2,150
Strontium	58.0	21.0
Barium	0.40	0.20
Iron	35.0	1.00
Potassium	899	229
Aluminum	0.00	0.00
Chromium	0.00	0.00
Copper	0.00	0.00
Lead	0.00	0.00
Manganese	0.00	0.00
Nickel	0.00	0.00
Anion/Cation Ratio	1.00	1.00
TDS (mg/L)	200,729	73,553
Density (g/cm)	1.13	1.05
Sampling Date	1/6/98	7/23/98
Account Manager		DON BLACKSTOCK
Analyst	DON BLACKSTOCK	SHEILA DEARMAN
Analysis Date		7/29/98
pH at time of sampling		5.90
pH at time of analysis	6.37	
pH used in Calculations	6.37	5.90

PRODUCT WARRANTY, DISCLAIMER AND LIMITATION OF LIABILITY ARE FOUND ON THE BACK OF THIS SHEET



YESO Water

Water Analysis Report from Petrolite Corporation

ARCO PERMIAN

REDLAKE

WELL #1

WELLHEAD

Summary		Analysis: 51873					
Anion/Cation Ratio	1.00	Anions	mg/L	meq/L	Cations	mg/L	meq/L
TDS (mg/L or g/m ³)	200,729	Chloride	122,233	3,448	Sodium	53,950	2,347
Density (g/cm ³ or tonne/m ³)	1.127	Bicarbonate	1,039	17.0	Magnesium	6,934	571
Chemical Treatment		Carbonate	0.00	0.00	Calcium	11,969	597
Sample Condition		Sulfate	3,611	75.2	Strontium	58.0	1.32
Sampling Date	1/6/98	Phosphate	N/A	N/A	Barium	0.40	0.01
Sampled by		Borate	N/A	N/A	Iron	35.0	1.25
Submitted by	DON BLACKSTOCK	Silicate	N/A	N/A	Potassium	899	23.0
Analysis Date	1/15/98	Hydrogen Sulfide			Aluminum	N/A	N/A
Sample analysis number	51873	pH at time of sampling			Chromium	N/A	N/A
		pH at time of analysis		6.37	Copper	N/A	N/A
		pH used in Calculations		6.37	Lead	N/A	N/A
					Manganese	N/A	N/A
					Nickel	N/A	N/A

Predictions of Saturation Index and Amount of Scale in lb/1000bbl

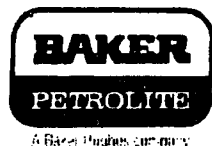
Pressure (psi)		Temp.	Calcite CaCO ₃		Gypsum CaSO ₄ ·2H ₂ O		Anhydrite CaSO ₄		Celestite SrSO ₄		Barite BaSO ₄	
CO ₂	Total	°F	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount
2.71	0.00	80	1.13	151	0.50	1,335	0.52	1,080	-0.14		0.79	0.18
3.34	0.00	100	1.22	161	0.44	1,235	0.52	1,085	-0.16		0.61	0.16
4.00	0.00	120	1.31	170	0.39	1,144	0.55	1,117	-0.17		0.44	0.14
4.66	0.00	140	1.39	179	0.35	1,063	0.61	1,169	-0.16		0.30	0.11

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

Note 3: CO₂ Pressure is absolute pressure. Total Pressure is gauge pressure.

PRODUCT WARRANTY, DISCLAIMER AND LIMITATION OF LIABILITY ARE FOUND ON THE BACK OF THIS SHEET



Offset San Andres Water

Water Analysis Report by Baker Petrolite

ARCO
LAGO ROSA 4
FED #4
WELLHEAD

Account Manager
DON BLACKSTOCK

Summary		Analysis of Sample 106619 @ 75°F					
Sampling Date	7/23/98	Anions	<i>mg/l</i>	<i>meq/l</i>	Cations	<i>mg/l</i>	<i>meq/l</i>
Analysis Date	7/29/98	Chloride	39939	1127	Sodium	25340	1102
Analyst	HEILA DEARMAN	Bicarbonate	1000	16.4	Magnesium	276	22.7
		Carbonate	0.00	0.00	Calcium	2150	107
TDS (mg/l or g/m ³)	73552.6	Sulfate	4596	95.7	Strontium	21.0	0.48
Density (g/cm ³ or tonne/m ³)	1.046	Phosphate	N/A	N/A	Barium	0.20	0.00
Anion/Cation Ratio	1.00	Borate	N/A	N/A	Iron	1.00	0.04
		Silicate	N/A	N/A	Potassium	229	5.86
Carbon Dioxide	0 PPM				Aluminum	N/A	N/A
Oxygen		Hydrogen Sulfide		100 PPM	Chromium	N/A	N/A
					Copper	N/A	N/A
		pH at time of sampling		5.90	Lead	N/A	N/A
		pH at time of analysis			Manganese	N/A	N/A
		pH used in Calculations		5.90	Nickel	N/A	N/A

Conditions		Values Calculated at the Given Conditions - Amounts of Scale in lb/1000bbl										
Temp.	Gauge Press.	Calcite CaCO3		Gypsum CaSO4.2H2O		Anhydrite CaSO4		Celestite SrSO4		Barite BaSO4		CO2 Press.
°F	psi	Index	Amount	Index	Amount	Index	Amount	Index	Amount	Index	Amount	psi
80	0.	-0.12		0.11	387	0.08	212	-0.13		0.98	0.10	10.6
100	0.	-0.00		0.07	251	0.10	276	-0.14		0.80	0.10	13.4
120	0.	0.12	28.2	0.04	148	0.15	399	-0.14		0.65	0.09	16.4
140	0.	0.24	56.5	0.02	76.3	0.22	561	-0.13		0.52	0.08	19.5

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered.

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the five scales.

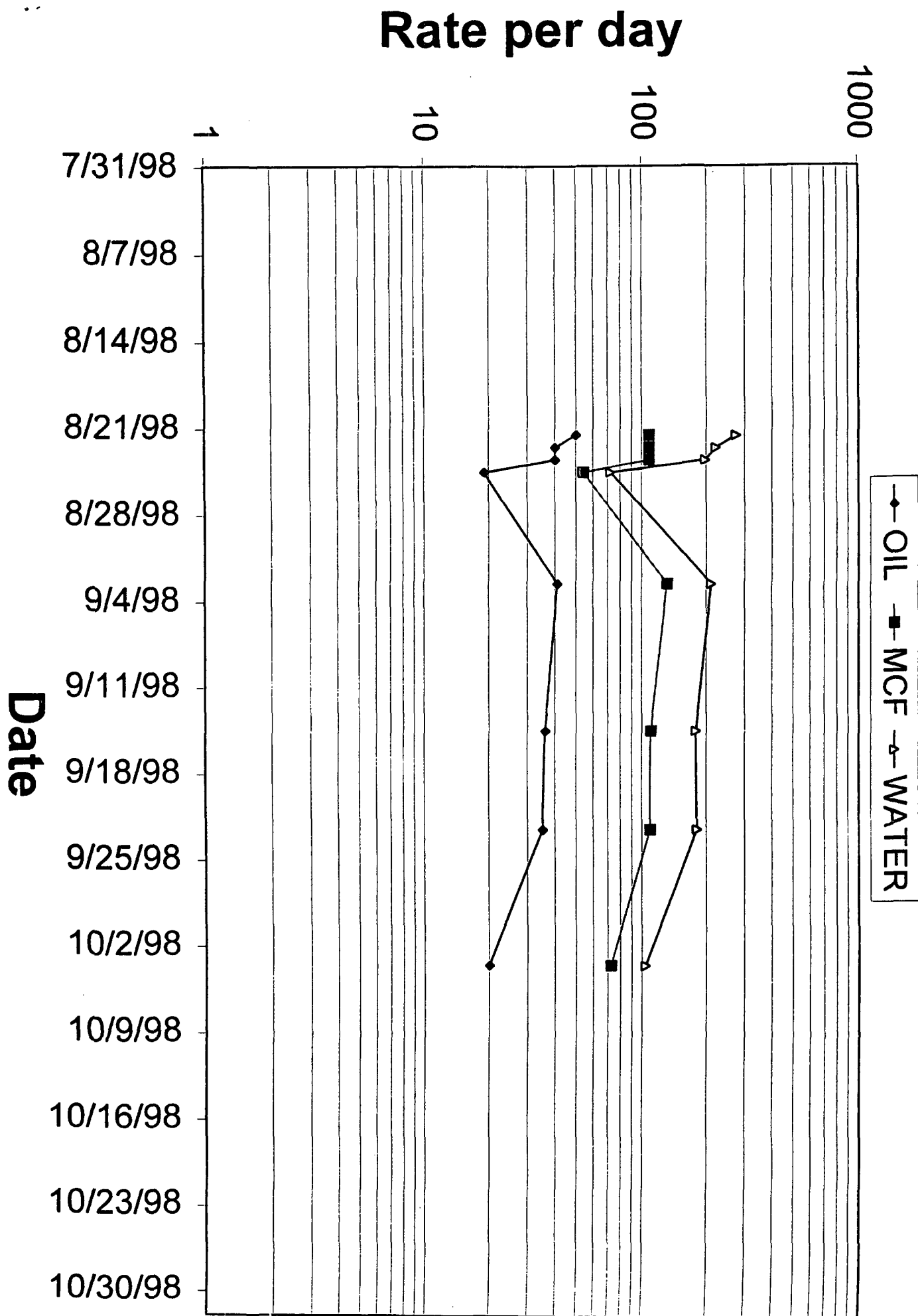
Note 3: The reported CO₂ pressure is actually the calculated CO₂ fugacity. It is usually nearly the same as the CO₂ partial pressure.

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Offset San Andres Rate Plat Vermillion "3" Federal No. 4 (San Andres)



ARCO Permian
Downhole Commingling
Red Lake "3" Federal Well No. 1
API: 30-015-29801
1650' FNL & 330' FWL (E)
Section 3, 18-S, 27-E
Eddy County, New Mexico

Surface Owners for Unit E (Lot 5):

Bureau of Land Management
Carlsbad Resource Area
P. O. Box 1778
Carlsbad, NM 88220

Bogle, Ltd.
P. O. Box 460
Dexter, NM 88230-0460

Offset Operators:

Altura Energy, Ltd.
Attn: Mr. Jerry D. West
P.O. Box 4294
Houston, TX 77210-4294

Devon Energy Corp.
Attn: Mr. Ken Gray
20 North Broadway #1500
Oklahoma City, OK 73102

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Midland, TX 79702

ARCO Permian
Red Lake "3" Federal
Red Lake (QCSA) & NE Red Lake (GLOR-YESO) Fields
E-3-T185-R27E
Eddy Co., NM

