



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

9-28-92

BRUCE KING
GOVERNOR

POST OFFICE BOX 1980
HOBBS, NEW MEXICO 88241-1980
(505) 393-6161

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

DHC - 862

RE: Proposed:

MC _____
DHC X _____
NSL _____
NSP _____
SWD _____
WFX _____
PMX _____

Gentlemen:

I have examined the application for the:

Pacific Enterprises Oil Co. USA State 23 #2-F 23-23-34
Operator Lease & Well No. Unit S-T-R

and my recommendations are as follows:

OK

Yours very truly,

Jerry Sexton
Supervisor, District 1

/ed

PACIFIC ENTERPRISES OIL COMPANY (USA)

**OIL CONSERVATION DIVISION
DISTRICT I OFFICE
BOX 1980
HOBBS, NEW MEXICO 88240**

4245 Kemp Blvd.
Suite 600
Wichita Falls, TX 76308
(817) 692-3003
(817) 689-2343

Attn: Jerry Sexton

Please find attached one copy of an application from **PACIFIC ENTERPRISES OIL COMPANY (USA)** for approval to downhole commingle the Antelope Ridge (Atoka) and the Antelope Ridge (Morrow) zones in the State 23 ~~Com~~ 2, located Unit F, Section 23, T23S, R34E Lea County, New Mexico. Two copies of this application are being mailed to the OIL CONSERVATION DIVISION office in Santa Fe, NM.

Please contact the undersigned at the letterhead address or (817) 692-3003 if further information is required.

Regards,
**PACIFIC ENTERPRISES
OIL COMPANY (USA)**



Donald L. Black
Operations Engineer

APPLICATION FOR APPROVAL TO DOWNHOLE COMMINGLE

Operator: PACIFIC ENTERPRISES OIL COMPANY (USA)

Address: 4245 Kemp Boulevard, Suite 600
Wichita Falls, Texas 76308

Lease Name: State 23 Com 2

Location: Unit F, Section 23, T23S, R34E NMPM Lea County, New Mexico

Pools: Antelope Ridge (Atoka)
Antelope Ridge (Morrow)

Plat: Attached

FORM C-116: Current Form C-116 for Antelope Ridge (Morrow) attached. The Antelope Ridge (Atoka) is incapable of sustained production due to high friction pressure losses caused by small size production tubing.

Decline Curves: Attached. Please note that the Atoka interval has not produced since 1988.

Bottomhole Pressures: Atoka - 1604 PSIA @ 12042'
Morrow - 898 PSIA @ 13265'

Due to the small size (1-1/2" O.D.) of the Atoka production tubing no direct measurement of the pressure of that interval is possible. Therefore the above bottomhole pressure was calculated based on surface shutin pressure.

The bottomhole pressure for the Morrow was likewise calculated from an 84 hour surface shutin pressure. We believe that this pressure is approaching that of static pressure and should be acceptable for determining reservoir pressure.

Fluid Characteristics: Analyses attached. Precipitation is not expected from mixing of produced fluids.

Combined Value: Attached is a "GAS CONTRACT BRIEF" for August, 1992 prepared by the PACIFIC ENTERPRISES OIL COMPANY (USA)'s Marketing Department showing the price paid for gas from the State 23 Com 1 (Antelope Ridge (Atoka) field) and the State 23 Com 2 (presently Antelope Ridge (Morrow) field production only) are identical. No decrease in value in the commingled gas stream from the State 23 Com 2 is anticipated.

Allocation Formula: Recommend that gas production from the commingled zones be allocated evenly between the two zones. No production tests from the Atoka interval have occurred since 1/88. No reliable estimate of potential production from the Atoka can be made.

The Morrow formation of the State 23 Com 2 does not now produce condensate, therefore all such production from the commingled zones must be allocated to the Antelope Ridge (Atoka) field.

Offset Operators Notification: All operators offsetting the subject well have been notified via registered mail.

General: Small diameter tubing (please see attached wellbore schematic) was installed in January 8, 1988 on the Atoka in an effort to improve lifting velocities and keep fluid unloaded. Friction pressures were greater than predicted and resulted in that interval becoming incapable of production.

Permission is requested to downhole commingle the Atoka and Morrow zones in this well by perforating the 2-7/8" tubing opposite the lowermost Atoka interval and producing up the long string of tubing. The additional gas volume from the Atoka will aid in keeping the long string of tubing from loading with produced fluid.

Waste will be prevented by production of gas reserves now left in the ground.

The figure is a geological map of the Bell Lake and Antelope Ridge areas. It displays various geological units, including the Bell Lake Unit, Antelope Ridge Unit, and Citation O&G (Oper). The map is divided into sections by dashed lines, and a scale bar is provided at the bottom. Numerous well locations are marked with names like Phillips, Conoco, Exxon, and H.B.U., along with their respective coordinates and depths. Structural features like the Bell Lake Fault and Antelope Ridge Fault are indicated. The map also shows various other units and features, such as the Texas West O&G Unit and the E.F. Sanchez Unit.

Submit 2 copies to Appropriate District Office.

DISTRICT I
P.O. Box 1980, Hobbs, NM 88240

DISTRICT II

P.O. Drawer DD, Artesia, NM 88210

DISTRICT III

1000 Rio Brazos Rd., Aztec, NM 87410

State of New Mexico
Energy, Minerals and Natural Resources Department

Form C-116
Revised 1/1/89

OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

GAS - OIL RATIO TEST

Operator Pacific Enterprises Oil Company (USA)		Pool Antelope Ridge (Morrow)		County Lea											
Address 4245 Kemp, Ste. 600, Wichita Falls, TX 76308		TYPE OF TEST - (X)		Completion ☐ Special ☒											
LEASE NAME	WELL NO.	LOCATION			DATE OF TEST	CHOKE SIZE	TBG. PRESS.	DAILY ALLOW. ABLE	LENGTH OF TEST HOURS	PROD. DURING TEST			GAS - OIL RATIO CU.FT/BBL.		
		U	S	T						R	WATER BBL.S.	GRAV. OIL		OIL BBL.S.	GAS M.C.F.
State 23 Com	#2	F	23	23S	34E	8/22/92	64/64"	120		24	3	N/A	0	462	N/A

Instructions:

During gas-oil ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 25 percent. Operator is encouraged to take advantage of this 25 percent tolerance in order that well can be assigned increased allowables when authorized by the Division.

Gas volumes must be reported in MCF measured at a pressure base of 15.025 psia and a temperature of 60° F. Specific gravity base will be 0.60.

Report casing pressure in lieu of tubing pressure for any well producing through casing.

(See Rule 301, Rule 1116 & appropriate pool rules.)

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

Signature

Donald L. Black, Operations Engineer

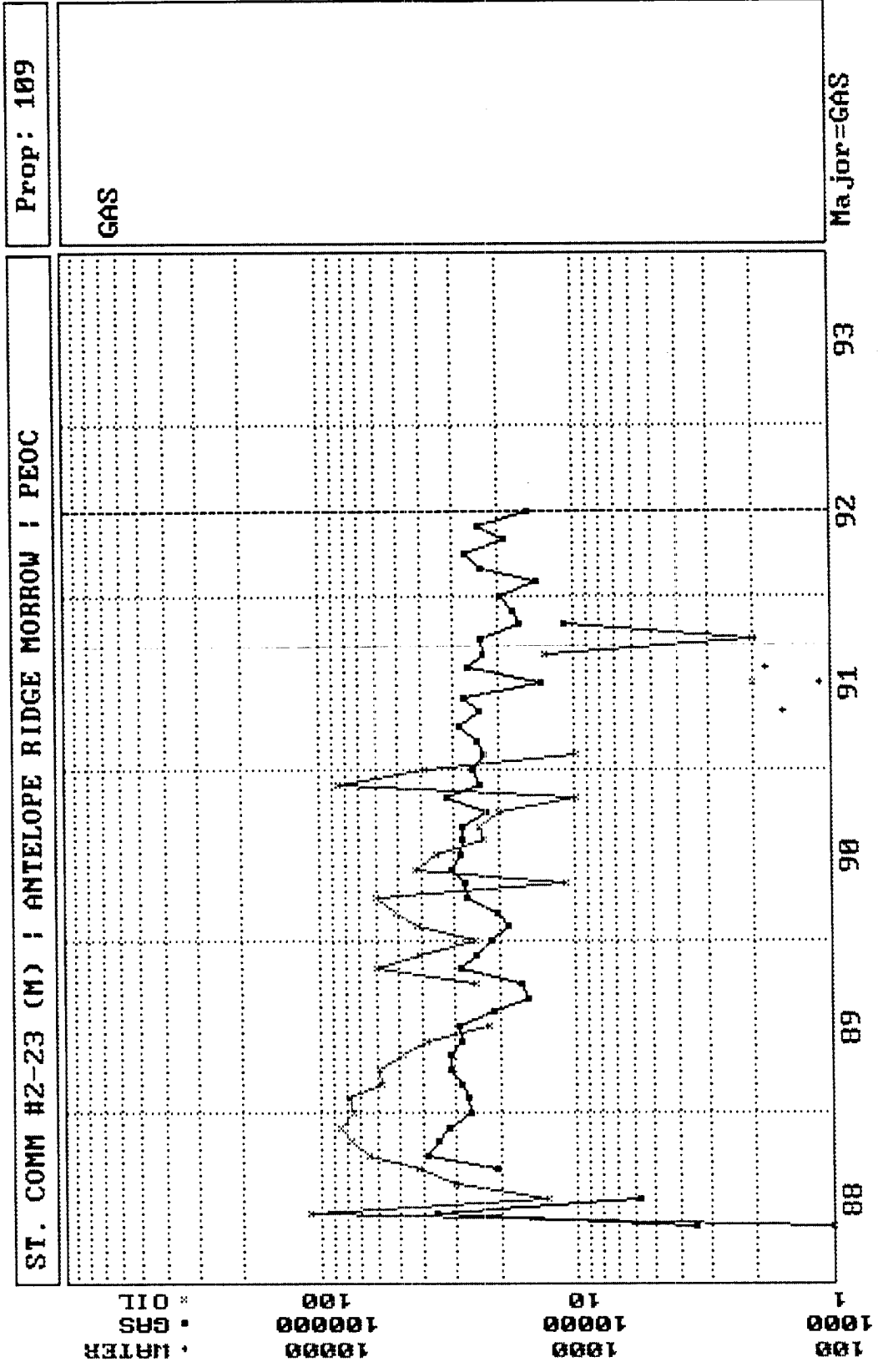
Printed name and title

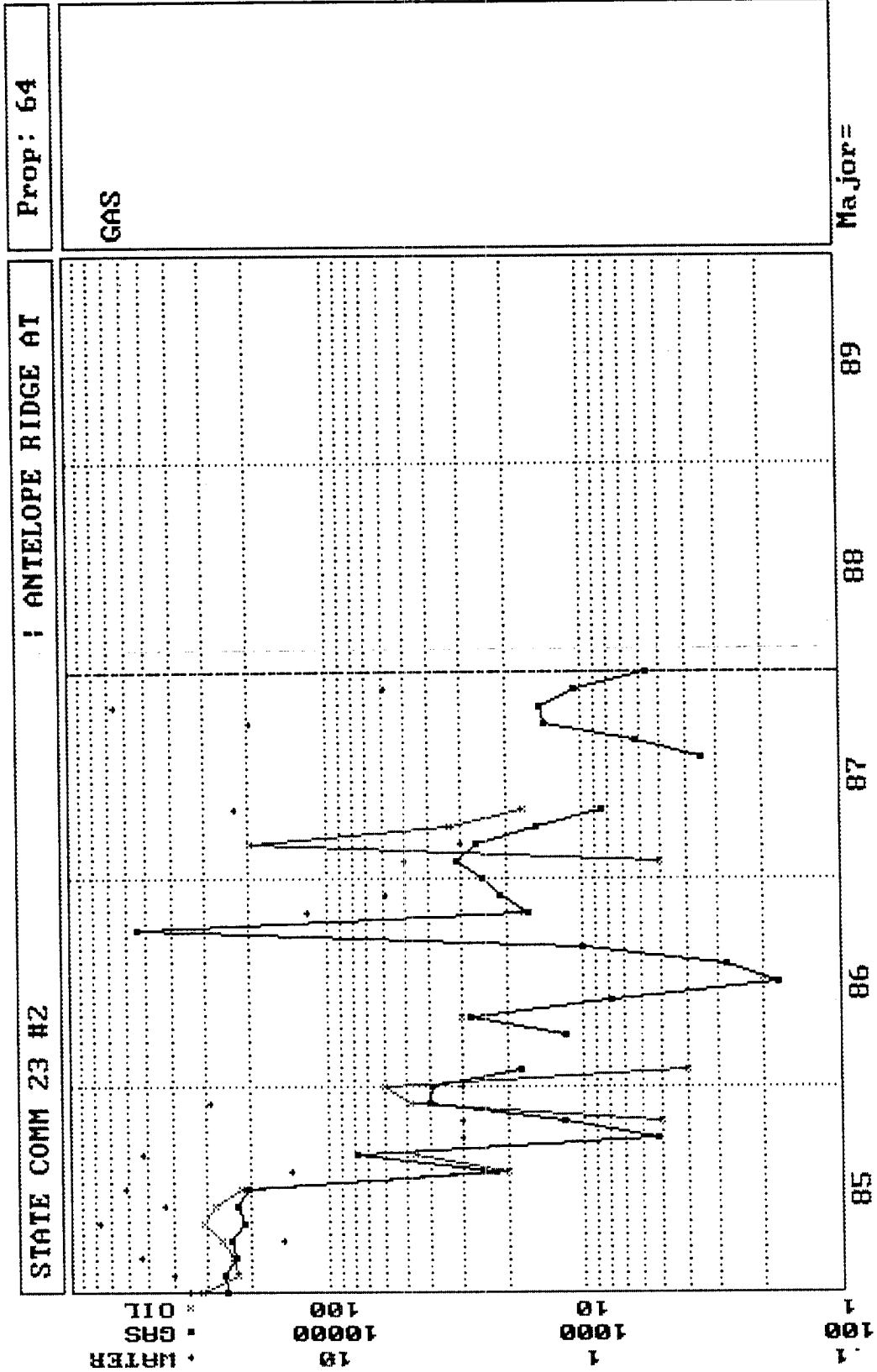
9/21/92

Date

817/692-3003

Telephone No.





--QUICK BHP--

Calculate BHP and Z-factor from surface shut-in pressure

09/10/92

WELL NAME : State 23 Com 2 Morrow
 GAS GRAVITY: 0.60 % N2 0.21
 CONDENSATE (YES=1): 0 % CO2 0.53 %
 RESERVOIR TEMP: 177 'F % H2S 0.00 %
 SURFACE TEMP: 70 'F Pc = 674.49 %
 DEPTH OF ZONE: 13,265 feet Tc = 356.51

SURFACE PRES	BHP	Z	BHP/Z
psia	psia		psia
680	898	0.9344	961

Written by
 Doug Boone
 Version 1.0
 Copyright 1988

--QUICK BHP--

Calculate BHP and Z-factor from surface shut-in pressure

09/10/92

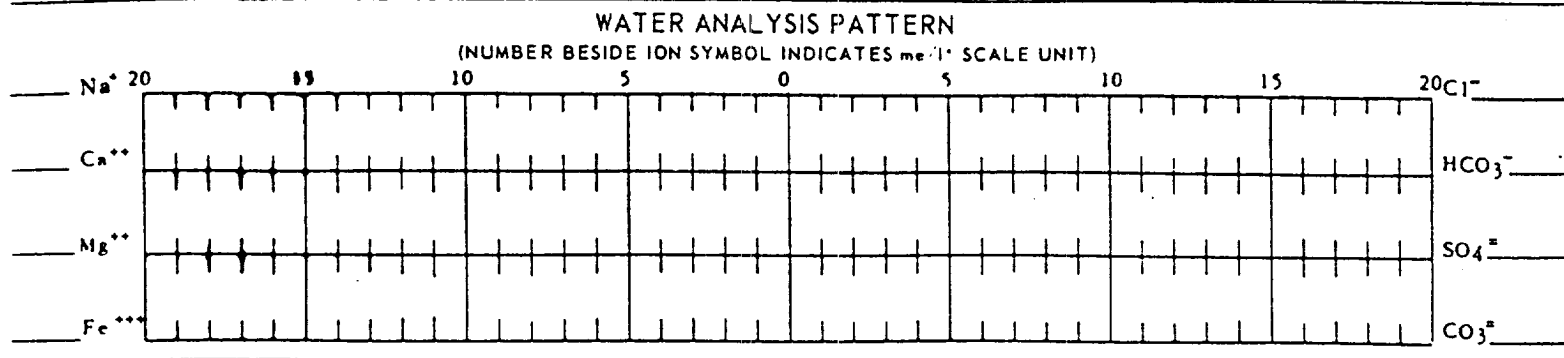
WELL NAME : State 23 Com 2 Atoka
 GAS GRAVITY: 0.62 % N2 0.71
 CONDENSATE (YES=1): 1 % CO2 0.00 %
 RESERVOIR TEMP: 154 'F % H2S 0.00 %
 SURFACE TEMP: 70 'F Pc = 668.47 %
 DEPTH OF ZONE: 12,042 feet Tc = 362.96

SURFACE PRES	BHP	Z	BHP/Z
psia	psia		psia
1,200	1,604	0.8742	1,835

Written by
 Doug Boone
 Version 1.0
 Copyright 1988

BAROID TREATING CHEMICALS

COMPANY Natomas of North America					SHEET NUMBER	
FIELD					DATE 8/12/80	
COUNTY OR PARISH Lea					STATE N.M.	
LEASE OR UNIT State Comm		WELL(S) NAME OR NO. 23-2		WATER SOURCE (FORMATION) South Separator Morrow		
DEPTH, FT.	WHT, F	SAMPLE SOURCE	TEMP, F	WATER, BBL/DAY	OIL, BBL/DAY	GAS, MMCF/DAY
DATE SAMPLED		TYPE OF WATER ☒ PRODUCED ☐ SUPPLY ☐ WATERFLOOD ☐ SALT WATER DISPOSAL				



DISSOLVED SOLIDS

CATIONS	me/l*	ppm mg/l*
Total Hardness	86	
Calcium, Ca ⁺⁺	68	1360
Magnesium, Mg ⁺⁺	18	220
Iron (Total) Fe ⁺⁺⁺		
Barium, Ba ⁺⁺	.07	5
Sodium, Na ⁺ (calc.)	989	22751

ANIONS	me/l*	ppm mg/l*
Chloride, Cl ⁻	1056	37500
Sulfate, SO ₄	10	500
Carbonate, CO ₃		
Bicarbonate, HCO ₃ ⁻	8.4	512
Hydroxyl, OH		
Sulfide, S ⁻	less than 1	

DISSOLVED GASES

Hydrogen Sulfide, H ₂ S	mg/l*
Carbon Dioxide, CO ₂	mg/l*
Oxygen, O ₂	mg/l*

PHYSICAL PROPERTIES

pH	7.4
Eh (Redox Potential)	MV
Specific Gravity	
Turbidity, JTU Units	
Total Dissolved Solids (calc.)	62848 mg/l*
Stability Index @ 68 F	+32
@ 122 F	+1.00
CaSO ₄ Solubility @ 68 F	57.62 mg/l*
@ 104 F	59.26 mg/l*
Max. CaSO ₄ Possible (calc.)	10 mg/l*
Max. BaSO ₄ Possible (calc.)	mg/l*
Residual Hydrocarbons	ppm (Vol/Vol)

SUSPENDED SOLIDS (QUALITATIVE)

Iron Sulfide ☐ Iron Oxide ☐ Calcium Carbonate ☐ Acid Insoluble ☐

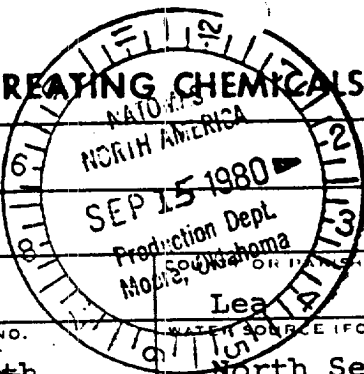
REMARKS AND RECOMMENDATIONS:

* NOTE: me/l and mg/l are commonly used interchangeably for epm and ppm respectively. Where epm and ppm are used, corrections should be made for specific gravity.

ENGINEER K.W. Keeton	DIST. NO. 21	ADDRESS P.O. Box 1697, Hobbs	OFFICE PHONE 393-3938	HOME PHONE 392-7303
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BAROID TREATING CHEMICALS

COMPANY Natomas of North America		SHEET NUMBER	
FIELD		DATE 8/12/80	
LEASE OR UNIT		STATE N.M.	
WELL NAME OR NO. 23-2 North		WATER SOURCE (FORMATION) North Separator Atoka	
DEPTH, FT.	BHT, F	SAMPLE SOURCE	TEMP, F
DATE SAMPLED		TYPE OF WATER ☒ PRODUCED ☐ SUPPLY ☐ WATERFLOOD ☐ SALT WATER DISPOSAL	



WATER ANALYSIS PATTERN (NUMBER BESIDE ION SYMBOL INDICATES mg/l* SCALE UNIT)											
Na ⁺ 20	15	10	5	0	5	10	15	20	Cl ⁻		
Ca ⁺⁺									HCO ₃ ⁻		
Mg ⁺⁺									SO ₄ ⁼		
Fe ⁺⁺⁺									CO ₃ ⁼		

DISSOLVED SOLIDS

CATIONS	me/l*	ppm
Total Hardness	3	
Calcium, Ca ⁺⁺	1	20
Magnesium, Mg ⁺⁺	2	24
Iron (Total) Fe ⁺⁺⁺		
Barium, Ba ⁺⁺	.3	20
Sodium, Na ⁺ (calc.)	17	392
ANIONS		
Chloride, Cl ⁻	17	600
Sulfate, SO ₄	.5	25
Carbonate, CO ₃		
Bicarbonate, HCO ₃ ⁻	2.6	159
Hydroxyl, OH ⁻		
Sulfide, S ⁻	less than 1	

DISSOLVED GASES

Hydrogen Sulfide, H ₂ S	mg/l*
Carbon Dioxide, CO ₂	mg/l*
Oxygen, O ₂	mg/l*

PHYSICAL PROPERTIES

pH	5.9
Eh (Redox Potential)	MV
Specific Gravity	
Turbidity, JTU Units	
Total Dissolved Solids (calc.)	1240 mg/l*
Stability Index @ 68 F	-2.08
@ 122 F	-1.68
CaSO ₄ Solubility @ F	mg/l*
@ F	mg/l*
Max. CaSO ₄ Possible (calc.)	.5 mg/l*
Max. BaSO ₄ Possible (calc.)	mg/l*
Residual Hydrocarbons	ppm (Vol/Vol)

SUSPENDED SOLIDS (QUALITATIVE)

Iron Sulfide ☐ Iron Oxide ☐ Calcium Carbonate ☐ Acid Insoluble ☐

REMARKS AND RECOMMENDATIONS:

* NOTE: me/l and mg/l are commonly used interchangeably for epn and ppm respectively. Where epn and ppm are used, corrections should be made for specific gravity.

ENGINEER K.W. Keeton	DIST. NO. 21	ADDRESS P.O. Box 1697, Hobbs	OFFICE PHONE 393-3938	HOME PHONE 392-7303
ANALYZED	DATE	DISTRIBUTION	AREA OR	DISTRICT OFFICE

GAS CONTRACT BRIEF

BRIEF # 1201NEW CONTRACT BRIEF _____
AMENDMENT BRIEF _____PERMIANK# 4051

OPERATOR: VARIOUS (See Attached)		DATE:	
PURCHASER: <u>AQUILA GAS MARKETING</u>		PREPARED BY: <u>RANDY KEMPER</u>	
ATTN: <u>MARK GURLEY</u>		PEOC IS: JOA _____ CONTRACT <u>XX</u> CHANGE OF PURCHASER: ☒ YES _____ NO PO PREPARED BY: ☒ PEOC _____ PURCHASER CONTRACT DATE: <u>7/1/90</u> TERM: <u>AUGUST 1992</u>	
WELL NAME(S):		NOMINATION:	
<u>STATE COM 1-23, 2-23</u>		<u>1,479 MMBTU/D</u>	
FIELD:	CO/PARISH:	STATE:	
BASE PRICE: (PRICE/MMBTU + TAX REIMBURSEMENT - (*TYPE AMOUNT)) X Btu - PRICE/MCF W/TAX (\$ <u>1.87</u> + _____ - _____) X _____ = \$ <u>1.87</u> *DEDUCTIONS: 1) TREATING 2) GATHERING 3) TRANSPORTATION 4) DEHYDRATION 5) COMPRESSION			
BTU: @SAT _____ @DRY <u>XX</u> @ACTUAL _____			
INVOICING REQUIREMENTS: <u>YES, INVOICE AT 1.87 PER MMBTU (DRY)</u>			
PAYOR IF OTHER THAN PURCHASER: <u>AQUILA</u>			
ACCOUNTS TO PEOC FOR: NET _____ GROSS _____ PEOC, et al _____			
ROYALTY PAID BY: PURCHASER _____ OPERATOR _____ PEOC <u>XX</u>			
BUYER TAX REIMBURSEMENT: YES _____ NO <u>XX</u>			
TAXES REMITTED BY: PURCHASER _____ OPERATOR _____ PEOC <u>XX</u>			
GATHERER/TRANSPORTER: <u>GCM/EL PASO</u>			
DELIVERY POINT: <u>EL PASO</u>			
BEST EFFORTS CONTRACT: <u>XX</u> TAKE OR RELEASE: _____ TAKE OR PAY: _____			
COMMENTS: <u>PEOC PREPARES P/O</u> <u>VOLS. SOLD INTO EL PASO & PEOC PAYS TRANSPORT</u> <u>TO GCM @ \$.09 PER MMBTU</u>			

Permian Basin

DISTRIBUTION:

- 1) ~~BLACK~~
- 2) BAKER
- 3) KEMPER
- 4) BRIEF BOOK 1201

- 5) LAND DEPT. - ROD SMITH
- 6) ACCOUNTING DEPT. - C. NICKEL
- 7) TAX DEPT. - W. FINLEY
- ORIGINAL: HOLDING FILE/CONTRACT FILE

RECEIVED

AUG 27 1992

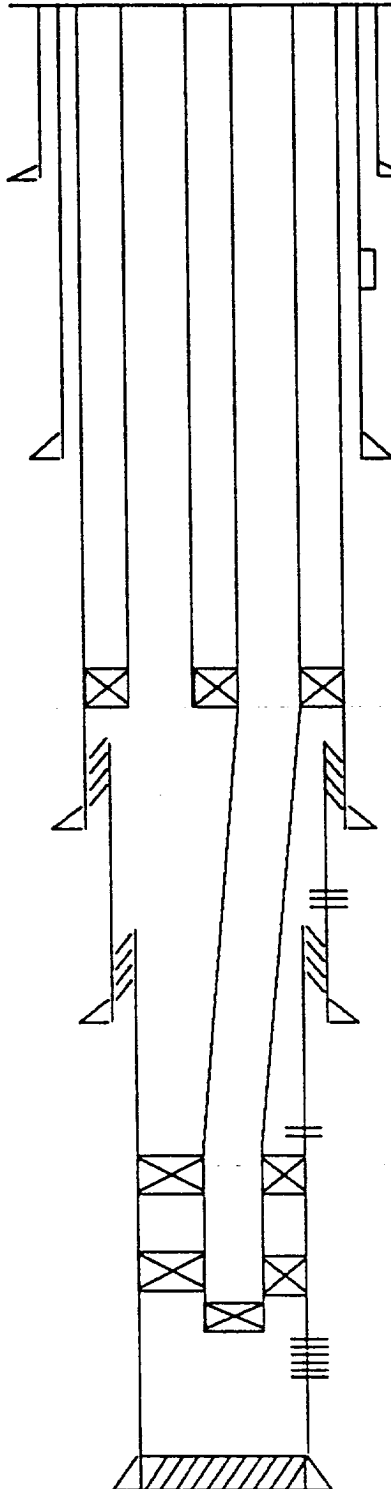
WICHITA FALLS
OPERATIONS

PACIFIC ENTERPRISES OIL COMPANY (USA)

STATE COM #2-23

1980' FNL, 1980' FWL, Sec. 23, T23S R34E, Lea Co., NM

3/18/92



GR 3389'
KB 3414'

Antelope Ridge Field

20" 94#/ft H-40 @682'
Cmtd w/ 925 sx HLC
Tail w/ 500 sx Class C
Cmt to surface

Spud date: 6/20/79
Completion: 12/4/79
Reworked: 8/25/79

Producing from Morrow 13,232'-298'

DV Tool @1,471'
Cmtd w/ 1200 sx HLC
Tail w/ 200 sx Class C

Stimulation:

Morrow 800 G Acetic acid
Atoka EO 500 G 7-1/2% Acetic acid
U. Atoka - none

13-3/8" csg @5090'
Cmtd w/ 1575 sx HLC
Tail w/ 350 sx Class C

IP: Morrow 7262 MCFD, 133 BOPD
11 BWPD @4990# FTP
Atoka 4455 MCFD, 204 BOPD
64 BWPD @3110# FTP

Current Production:

Morrow: 715 MCFD, 6 BWPD @120# FTP
Atoka: None

9-5/8" x 3-1/2" x 2-7/8" RDH pkr
@11,250'

Tubing data:

Short String: 1/8/88
2-7/8" A95 pup, xo, 11,250' (approx)
1-1/2" IJ, xo, seal assy, xo, 1100' (approx)
1-1/4" IJ

9-5/8" 47#/ft P-110 @11,900'
Cmtd w/ 325 sx HLC
Tail w/ 320 sx Class H
Atoka Perfs: 12,033-12,052'
TOL (5") @12,402'

Long String: 9/23/81

342 jts 2-7/8" CS-HYD, xo
9-5/8" RDH pkr, 25 jts 2-7/8" tbq.
42' blast jt, 11 jts, 2-7/8" 8.7# PH6, xo, 13 jts
2-3/8" CS, 30' blast jt, 4 jts 2-3/8" CS, seal assy

7-7/8" 39#/ft P-110 @12,680'
Cmtd w/ 165 sx
Atoka "EO" Perfs: 12,796-12,802'

4-1/2" Otis "WB" pkr @12,943'

4-1/2" Otis "WB" pkr @13,000'
Plug stuck in SN. Perfed tailpipe.

Morrow perfs: 13,232-13,298'

PBTD = 13,481'
5" 23#/ft P-110 @13,598'
TD = 13,600'