

**CONFIDENTIAL**

Release Date 2-7-86



Apache 852  
BHP Petroleum, Inc. (Monsanto Oil C  
NE SW 2-40N-28E 6 Navajo 138

COUNTY APACHE AREA TEEC NOS POS LEASE NO. NAVAJO T.L. 14-20-603-419C

WELL NAME Dry Mesa (Monsanto) Thompson Gas Prod. Coleman Oil Gas  
6 NAVAJO - 138 BIM SW CDP

LOCATION NE SW SEC 2 TWP 40N RANGE 28E FOOTAGE 1,685.5' FSL, 2,289.7' FWL  
 ELEV 5696.8' GR 1170 KB SPUD DATE 6/26/85 STATUS Producing TOTAL DEPTH 5525  
 COMP. DATE 8/7/85

CASING IZE	DEPTH	CEMENT	LINER SIZE & DEPTH	DRILLED BY ROTARY
13 3/8"	118'	117 Class B	5 1/2" 5539'	DRILLED BY CABLE TOOL
12 1/4"	1236'	510 Lite		PRODUCTIVE RESERVOIR
5 1/2"	5539'	250 Lite		INITIAL PRODUCTION

FORMATION TOPS	DEPTHS	SOURCE		REMARKS
		L.L.	E.L.	
Akah	4544'			
Barker Creek	4701'			
Molas	5101'			
Leadville	5176'			
Devonian	5414'			

ELECTRIC LOGS	PERFORATED INTERVALS	PROD. INTERVALS	SAMPLE LOG
DIL, LDT-CNL, LSS		5256-5266'	SAMPLE DESCRP.
		5272 - 5285'	SAMPLE NO. <u>1857</u>
			CORE ANALYSIS
			DSTs

REMARKS 9B Leadville & re-complete IP paradox APP. TO PLUG \_\_\_\_\_  
 PLUGGING REP. \_\_\_\_\_  
 COMP. REPORT \_\_\_\_\_

WATER WELL ACCEPTED BY By Mrs. G.D.  
 BOND CO. BHP Petroleum Co., Inc. BOND NO. 811-66-21  
MONSANTO COMPANY DATE 328-61-65  
 BOND AMT. \$25,000.00 CANCELLED 10-1-90 ORGANIZATION REPORT X  
 FILING RECEIPT \_\_\_\_\_ LOC. PLAT X WELL BOOK X PLAT BOOK X  
 API NO. 02-001-20283 DATE ISSUED \_\_\_\_\_ DEDICATION NE SW 1/4 SEC. 2

PERMIT NUMBER 852  
 (over)

FORM 3160-4  
(July 1992)

SUBMIT IN THIS CATEGORY  
(See instructions on reverse side)

FORM APPROVED  
OMB NO. 1004-0137  
Expires: February 28, 1995

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

WELL COMPLETION OR RECOMPLETION REPORT AND LOG\*

1a. TYPE OF WORK  
 OIL WELL  GAS WELL  DRY  Other \_\_\_\_\_

1b. TYPE OF WELL  
 NEW WELL  WORK OVER  DEEPEN  PLUG BACK  DIFF RESVR  Other \_\_\_\_\_

2. NAME OF OPERATOR  
**COLEMAN OIL & GAS, INC.**

3. ADDRESS AND TELEPHONE NO.  
**DRAWER 3337, FARMINGTON, N.M. 87499, (505) 327-0356**

4. LOCATION OF WELL (Report locations clearly and in accordance with any State requirements.)\*  
 At Surface **1690' FSL & 2290 FWL, SECTION 2, T40E, R28E**  
 At top prod. interval reported below  
 At total depth

5. LEASE DESIGNATION AND SERIAL NO.  
**14-20-603-4190**

6. IF INDIAN, ALLOTTEE OR TRIBE NAME  
**NAVAJO**

7. UNIT AGREEMENT NAME  
**N/A**

8. FARM OR LEASE NAME, WELL NO.  
**TRACT #138 DRY MESA #6**

9. API WELL NO.  
**02-001-20283**

10. FIELD AND POOL OR WILDCAT  
**BLACK ROCK**

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA  
**2-T40N-R28E**

12. COUNTY OR PARISH  
**APACHE**

13. STATE  
**AZ**

14. PERMIT NO.  
**00852**

DATE ISSUED  
**10/4/84**

15. DATE SPUNDED  
**6/26/85**

16. DATE T.D. REACHED  
**7/18/85**

17. DATE COMPL. (Ready to prod.)  
**8/7/85**

18. ELEVATIONS (DF, RKB, RT, OR, ETC.)\*  
**5710 KB, 5709 DF, 5697 GL**

19. ELEV. CASINGHEAD  
**N/A**

20. TOTAL DEPTH, MD & TVD  
**5540**

21. PLUG BACK T.D., MD & TVD  
**5251'KB CIBP @ 5170'KB**

22. IF MULTIPLE COMPL.,  
**N/A**

23. INTERVALS  
 DRILLED BY **RT**

24. PRODUCING INTERVAL(S), OF THIS COMPLETION--TOP, BOTTOM, NAME (MD AND TVD)\*  
**4954-4963 PINKERTON TRAIL 2 JSPF 18-.41" HOLES**

25. WAS DIRECTIONAL SURVEY MADE  
**NO**

26. TYPE ELECTRIC AND OTHER LOGS RUN  
**DIL, LDT-CNL, LSS (ORIGINAL) GAMMA RAN FOR CORRELATION WITH ORIGINAL OPEN HOLE.**

27. WAS WELL CORED  
**YES (ORIGINALLY)**

23. 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
13 3/8" K-55	54	117	17 1/4	SURFACE	
8 5/8" K-55	24	1236	12 3/4	SURFACE	
5 1/2" J-55	15.5	5540	8 1/2	CEMENT TOP @ 3990 FT	

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
					2 7/8"	4968.05 FT. KB.	4848 FT. KB.

31. PERFORATION RECORD (Interval, size and number)

INTERVAL	SIZE	NUMBER
4954-4963	.41"	18
4783-4789	.41"	12

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

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
4954-4963	200 GALS/FT 20% HCL W/ ADD.
4783-4789	SQUEEZED W/ 75 SACKS CLASS B CEMENT ESTIMATED 30 SACKS BEHIND PIPE

33. PRODUCTION

DATE FIRST PRODUCTION  
**06/18/99**

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

WELL STATUS (Producing or shut-in)  
**PRODUCING**

DATE OF TEST  
**06/20/99**

HOURS TESTED  
**24**

CHOKE SIZE  
**1"**

PROD. FOR TEST PERIOD  
**0**

OIL-BBL.  
**0**

GAS-MCF.  
**800**

WATER-BBL.  
**20**

GAS-WTR RATIO  
**40,000 SCF/BBL**

FLOW TUBING PRESS.  
**450 PSIG**

CASING PRESSURE  
**0 PSIG**

CALCULATED 24-HOUR RATE  
**0**

OIL-BBL.  
**0**

GAS-MCF.  
**800**

WATER-BBL.  
**20**

OIL GRAVITY-API (CORR.)  
**NONE**

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)  
**GAS SOLD TO WESTERN GAS**

TEST WITNESSED BY  
**MH**

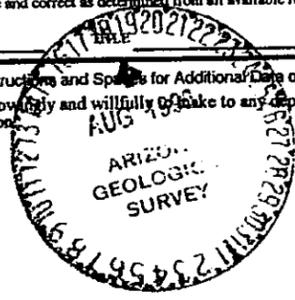
35. LIST OF ATTACHMENTS

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

SIGNED Michael T. Hester ENGINEER DATE 08/16/1999

(See Instructions and Specifications for Additional Data on Reverse Side)

Title: 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.



PIN 852

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals, and all drill-stems, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries).		38. GEOLOGIC MARKERS				
FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	TOP	
					MEAS. DEPTH	TRUE VERT. DEPTH
INTERVALS TESTED WITH COMPLETION RIG THROUGH SEPARATOR. GAS WAS VENTED AND BURNED THROUGH FLARE STACK.						
PINKERTON TRAIL	INTERVAL TESTED 4954 FT. KB.	4963 FT. KB.	FLOW / SWAB TESTED ESTIMATED FROM 600 MCF TO 1.5 MMCF/DAY WITH 20-30 BARRELS WATER			
BARKER CREEK	INTERVAL TESTED 4783 FT. KB.	4789 FT. KB.	FLOW / SWAB TESTED INTERMITTENT FLOW WITH STRONG BLOW WHILE SWABBING, DIES IN 15 MINUTES. AVERAGED 150 BBLs WATER IN 8 HOURS WITH INITIAL FLUID LEVEL @ 2300 FT. KB AND A FINAL FLUID LEVEL @ 2700 FT. KB.			

RECEIVED

SEP 16 1985

WELL COMPLETION OR RECOMPLETION REPORT AND WELL LOG

DESIGNATE TYPE OF COMPLETION:										O & G CONS. COMM.									
New Well	<input checked="" type="checkbox"/>	Work-Over	<input type="checkbox"/>	Deepen	<input type="checkbox"/>	Plug Back	<input type="checkbox"/>	Same Reservoir	<input type="checkbox"/>	Different Reservoir	<input type="checkbox"/>	Oil	<input checked="" type="checkbox"/>	Gas	<input type="checkbox"/>	Dry	<input type="checkbox"/>		
DESCRIPTION OF WELL AND LEASE																			
Operator <b>Monsanto Oil Company</b>						Address Suite 600, 5613 DTC Parkway Englewood, Colorado 80111													
Federal, State or Indian Lease Number or name of lessor if free lease 14-20-603-4190-Navajo Tract 138						Well Number 6		Field & Reservoir Dry Mesa Field - Mississippian											
Location 1689.5' ESL & 2289.7' FWL						County Apache													
Sec. TWP-Range or Block & Survey Sec. 2-T40N-R28E																			
Date spudded 6/26/85		Date total depth reached 7/18/85		Date completed, ready to produce 8/7/85		Elevation of well (Gr.) 5697		Elevation of casing hd. flange N/A		feet									
Total depth 5540'		P.B.T.D. 5251'		Single, dual or triple completion? Single				If this is a dual or triple completion, furnish separate report for each completion.											
Producing interval (s) for this completion Leadville: 5256-5266'; 5272-5285'						Rotary tools used (interval) 0-5540'				Cable tools used (interval) N/A									
Was this well directionally drilled?		Was directional survey made?		Was copy of directional survey filed?				Date filed											
Type of electrical or other logs run (check logs filed with the commission) DIL, LDT-CNL, LSS												Date filed 7/85							
CASING RECORD																			
Casing (report all strings set in well - conductor, surface, intermediate, producing, etc.)																			
Purpose		Size hole drilled		Size casing set		Weight (lb./ft.)		Depth set		Sacks cement		Amt. pulled							
		17-1/4"		13-3/8"		54# K-55		118'		117 Class "B"		N/A							
		12-1/4"		8-5/8"		24# K-55		1236'		510 Lite, 238 Cl."B"		N/A							
		7-7/8"		5-1/2"		15.5#		5539'		250 Lite, 150 Cl."B"		N/A							
TUBING RECORD						LINER RECORD													
Size 2-7/8 in.		Depth set 5251 ft.		Packer set at 5216 ft.		Size in.		Top ft.		Bottom ft.		Sacks cement		Screen (ft)					
PERFORATION RECORD																			
Number per ft.		Size & type		Depth Interval		Am't. & kind of material used		Depth Interval											
4		0.50"		5300-5314'		200 gallons		5300-5314'											
4		0.50"		5272-5285'		50 sks Class "B"		5300-5314'											
4		0.50"		5256-5266'		INITIAL PRODUCTION 500 gal. 28% HCl		5272-85'; 5256-66'											
Date of first production 8/7/85		Producing method (indicate if flowing, gas lift or pumping-if pumping, show size & type of pump): Pumping 2" rod pump																	
Date of test 8/23/85		Hrs. tested 24		Choke size N/A		Oil prod. during test 146 bbls.		Gas prod. during test 21 MCF		Water prod. during test 200 bbls.		Oil gravity 40.0°API (Corr)							
Tubing pressure N/A		Casing pressure N/A		Cal'ed rate of Production per 24 hrs. Oil 146 bbls.		Gas 21 MCF		Water 200 bbls.		Gas-oil ratio 144									
Disposition of gas (state whether vented, used for fuel or sold): Oil sold - gas used on lease																			
CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the <u>Regional Production Manager</u> of the <u>Monsanto Oil Company</u> (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.																			
September 11, 1985 Date						Signature <u>K. J. Ebner</u> K. J. Ebner													
Permit No. 00852						STATE OF ARIZONA OIL & GAS CONSERVATION COMMISSION Well Completion or Recompletion Report and Well Log Form No. 4 File One Copy													

SAC:js

DETAIL OF FORMATIONS PENETRATED

852

FORMATION	TOP	BOTTOM	DESCRIPTION*
Akah	4544'	4544'	Geologic markers
Barker Creek	4701'	4701'	" "
Molas	5101'	5101'	" "
Leadville	5176'	5176'	" "
Devonian	5414'	5414'	" "
Leadville	5280'	5300'	Core #1 Leadville Formation
Barker Creek	4765'	4797'	DST #1 TO/SI 220 min TO/SI 2 hr/4 hr IH 2406 FH 2379 IF 173-346 FF 320-982 ISI 1431 FSI 1418 Recovered 2915' water.
Leadville	5306'	5325'	DST #2 TO/SI 15 min/1 hr TO/SI 2 hr/4 hr IH 2679 FH 2679 IF 27-67 FF 80-281 ISI 1507 FSI 1533 Recovered 180' trace oil and gas cut mud and 408' water.
Leadville	5325'	5340'	DST #3 TO/SI 15 min/1 hr TO/SI 2 hr/4 hr IH 2732 FH 2719 IF 40-66 FF 80-174 ISI 1533 FSI 1547 Recovered 100' highly oil and gas cut mud; 263' water and oil cut mud.

\* Show all important zones of porosity, detail of all cores, and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries.

INSTRUCTIONS:

Attach drillers log or other acceptable log of well.

This Well Completion or Recompletion report and well log shall be filed with the State of Arizona Oil and Gas Conservation Commission not later than thirty days after project completion.

Form No. 4

RECORDED

256 10 1082

RECORDED

STATE: ARIZONA  
COUNTY: APACHE  
API: 02-001-20283-0002  
FIELD: BLACK ROCK  
WELL CLASS: DG  
COLEMAN OIL&GAS INC

RE-ENTRY

2-40N-28E  
SE NE SW  
1690 FSL 2290 FWL SEC  
STATUS: GAS-WO

6 DRY MESA TRACT 138

SPUD: 06/01/1999 (EST) COMP: 06/20/1999 ELEV: 5710 KB 5709 DF 5697 GR  
TD: 5540 FMTD: DEVONIAN PBTD: 5251 DTD: 5540  
CONTR: NOT REPORTED (VERTICAL)

5540 DTD 5251 PB COMP:06/20/1999 # 01 IPF OIL: 0 BPD GAS: 800 MCFD WTR: 20 BBL GOR  
40000 64/64 CK FTP 450 PROD ZONE: PERF (PINKERTON TRAIL) 4954-4963 JET W/ 2 PF ; ;  
FIRST REPORT AND COMPLETION

LOCATION DATA: 16 MI SW TEEC NOS POS, AZ WITHIN MISSISSIPPIAN OIL; ORIGINALLY  
PERMITTED AS 1686 FSL 2290 FWL ; ;  
OWWO: OLD INFO: 02-001-20283-0001 FORMERLY COLEMAN OIL & GAS 6 DRY MESA TRACT  
138 EL: 5699 GR. SPUD:06/12/1999 TBG: 2 7/8 IN@ 4968; OTD: 5540 PB: 5170 COMP:06/18/1999

(OVER)  
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COLEMAN OIL&GAS INC

API: 02-001-20283-0002, 2-40N-28E

6 DRY MESA TRACT 138

(CONTINUED)

# 01 IPF GAS: 800 MCFD WTR: 20 BBL 64/64 CK FTP 450 PROD ZONE: PERF (PINKERTON  
TRAIL) 4954-4963 W/ 18  
TUBING: 2 7/8 IN@ 4968;  
PROD TEST(S): # 01 (LEADVILLE) 5256-5285; GAS: UG BRIDGE PLUG 5170 FT 5256-5285;  
PRODUCING INTERVALS DATA: # 01 PERF (PINKERTON TRAIL) 4954-4963 JET W/ 2 PF; ACID  
(4954-4963) W/ 200 GAL ACID 20% HCL ADDITIVE: HCL OIL: 0 BPD GAS: 800 MCFD WTR: 20  
BBL FTP 450; GOR: 40000 64/64 CK  
OPER ADD: P O DRAWER 3337, FARMINGTON, NM 87499-3337. ;

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11/03/2000

CARD# 0001-AZ

STATE: ARIZONA  
COUNTY: APACHE  
API: 02-001-20283-0001  
FIELD: DRY MESA  
WELL CLASS: DG  
OPR: COLEMAN OIL & GAS

RE-ENTRY

40N-28E 2  
SE NE SW  
1690 FSL 2290 FWL SEC  
STATUS: GAS-WO

P/N  
852

6 DRY MESA TRACT 138

SPUD: 06/12/1999 COMP: 06/18/1999 ELEV: 5699 GR  
ID: 5540 FM/D: DEVONIAN PBD: 5170 DTD: 5540  
CONTR: NOT RPTD (VERTICAL)  
PROJ DEPTH/FM: 4963 PENNSYLVANIAN LEASE TYPE: OTHER TARGET OBJ: GAS

5540 DTD COMP 06/18/1999 # 001 IPF GAS: 800 MCFD WTR: 20 BBL 64/64 FTP 450 PROD ZONE:  
PERF (PINKERTON TRAIL) 4954-4963; NO CORES OR DSTS; FIRST REPORT AND COMPLETION

LOCATION DATA: 16 MI SW TEEC NOS POS, AZ WITHIN MISSISSIPPIAN OIL; ORIGINALLY PERMITTED AS  
1686 FSL 2290 FWL;  
OLD INFO: 02-001-20283 FORMERLY MONSANTO COMPANY 6 NAVAJO TRACT 138 EL: 5710 KB. SPUD  
06/26/1985 CSG: 13 3/8 IN @ 118 W/117 SACK, 8 5/8 IN @ 1238 W/748 SACK, 5 1/2 IN @ 5539 W/400 SACK;  
TBG: 2 7/8 IN @ 5251; LOG TOPS: LEADVILLE 5176 OTD 5540 PB 5251 COMP 08/15/1985 # 001 IPF OIL: 146  
BPD GAS: 21 MCFD WTR: 200 BBL GOR 144 OIL GTY: 40 16/64 CK PROD ZONE: PERF (LEADVILLE)  
5256-5285 (GROSS) W/ 4 PF  
TUBING: 2 7/8 IN @ 4968;

(OVER)

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12/17/1999

CARD# 0001-AZ

COLEMAN OIL & GAS

API: 02-001-20283-0001

6 DRY MESA TRACT 138

(CONTINUED)

PROD TEST(S): # 001 PERF (BARKER CREEK) 4783-4789 W/ 2 PF; UNKNOWN WTR: 150 BBL SQUEEZED  
4783-4789;

PRODUCING INTERVALS DATA: # 001 PERF (PINKERTON TRAIL) 4954-4963; ACID (4954-4963) 200  
GAL/FT 20% HCL GAS: 800 MCFD WTR: 20 BBL FTP 450;  
OPER ADD: CO;

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12/17/1999

CARD# 0001-AZ

COLEMAN OIL GAS, INC.  
 Dry Mesa #6  
 1690' FSL 2290' FWL  
 SEC 2, T40N, R28E

*21N852*

TUBING STRING  
 140 JOINTS 4438.00 FT.  
 TUBING ANCHOR  
 4 JOINTS 126.80 FT.  
 SEATING NIPPLE  
 PERFORATED SUB  
 2 JOINTS 63.40 FT.  
 TAPPED BULL PLUG

2 3/8" SN @ 4577.45 FT. KB.  
 2 3/8" ANCHOR @ 4447.90 FT. KB.  
 2 3/8" BTM TBG @ 4646.36 FT. KB.  
 SN 1.78 I.D.

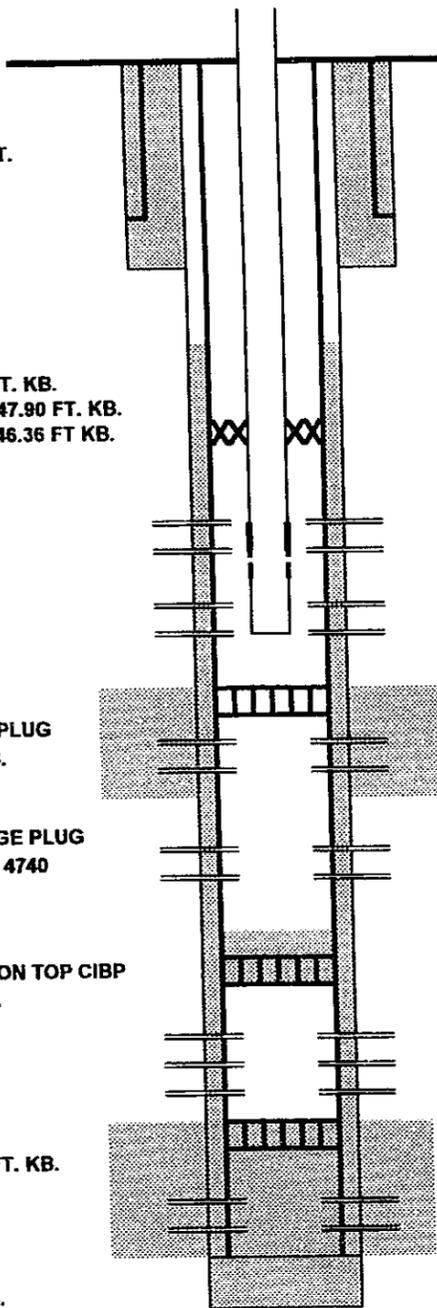
CAST IRON BRIDGE PLUG  
 SET @ 4740 FT. KB.

RETRIEVABLE BRIDGE PLUG  
 SET MAY 04, 2000 @ 4740

10 SACKS CEMENT ON TOP CIBP  
 CIBP @ 5170 FT. KB.

RETAINER @ 5292 FT. KB.

T.D. @ 5540 FT. KB.



CONDUCTOR CASING  
 13 3/8" CSG. @ 117 FT. KB  
 CEMENTED WITH 100 SXS

SURFACE CASING  
 8 5/8" CSG. @ 1236 FT. KB  
 CEMENTED WITH 748 SXS

PRODUCTION CASING  
 5 1/2", 15.5#, J-55, @ 5426-5766 FT KB.  
 CEMENTED WITH 400 SXS

TOP OF CEMENT @ 3990 FT. KB.

DESERT CREEK PERFORATIONS @  
 4573-4583 AND 4593-4597

AKAH PERFORATIONS @  
 4627-4632 AND 4643-4647

BARKER CREEK SQUEEZED WITH  
 30 SACKS OF CLASS B CEMENT  
 PRESSURE TESTED TO 1000 PSIG.  
 ON JUNE 15, 1999  
 PERFORATIONS @4783-4789

PINKERTON TRAIL PERFORATIONS @  
 4954-4963

LEADVILLE INTERVAL  
 PERFORATIONS @

5256-5266  
 5272-5285

PERFORATIONS NON COMMERCIAL 7/85  
 5256-5266  
 5272-5285



OFF: (505) 325-5667  
 FAX: (505) 327-1496



LAB: (505) 325-1556  
 FAX: (505) 327-1496

71N 852

**ANALYTICAL REPORT**

Date: 14-Jul-00

Client:	Coleman Oil and Gas Company	Client Sample Info:	Coleman Oil and Gas
Work Order:	0006053	Client Sample ID:	Dry Mesa Well #6 <b>852</b>
Lab ID:	0006053-04A	Matrix:	AQUEOUS
Project:	Coleman Oil and Gas	Collection Date:	6/22/2000 1:30:00 PM
		COC Record:	10759

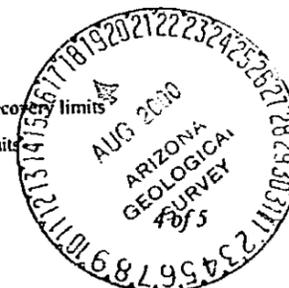
Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
<b>CALCIUM, DISSOLVED</b>		<b>E215.1</b>				Analyst: HR
Calcium	31900	2500		mg/L	10000	7/10/2000
<b>IRON, DISSOLVED</b>		<b>E236.1</b>				Analyst: HR
Iron	110	4		mg/L	40	7/11/2000
<b>POTASSIUM, DISSOLVED</b>		<b>E258.1</b>				Analyst: HR
Potassium	700	100		mg/L	400	6/30/2000
<b>MAGNESIUM, DISSOLVED</b>		<b>E242.1</b>				Analyst: HR
Magnesium	1360	120		mg/L	500	7/10/2000
<b>SODIUM, DISSOLVED</b>		<b>E273.1</b>				Analyst: HR
Sodium	10600	1250		mg/L	5000	6/30/2000
<b>ALKALINITY, TOTAL</b>		<b>M2320 B</b>				Analyst: HR
Alkalinity, Bicarbonate (As CaCO3)	440	5		mg/L CaCO3	1	6/29/2000
Alkalinity, Carbonate (As CaCO3)	ND	5		mg/L CaCO3	1	6/29/2000
Alkalinity, Hydroxide	ND	5		mg/L CaCO3	1	6/29/2000
Alkalinity, Total (As CaCO3)	440	5		mg/L CaCO3	1	6/29/2000
<b>CHLORIDE</b>		<b>E325.3</b>				Analyst: HR
Chloride	69700	1		mg/L	1	6/29/2000
<b>HARDNESS, TOTAL</b>		<b>M2340 B</b>				Analyst: HR
Hardness (As CaCO3)	85300	1		mg/L	1	7/11/2000
<b>PH</b>		<b>E150.1</b>				Analyst: HR
pH	7.26	2		pH units	1	6/23/2000
<b>RESISTIVITY (@ 25 DEG. C)</b>		<b>M2510 C</b>				Analyst: HR
Resistivity	0.105	0.001		ohm-m	1	6/27/2000
<b>SPECIFIC GRAVITY</b>		<b>M2710 F</b>				Analyst: HR
Specific Gravity	1.091	0.001		Units	1	6/28/2000
<b>SULFATE</b>		<b>M4500-SO4 D</b>				Analyst: HR
Sulfate	810	5		mg/L	1	6/29/2000
<b>TOTAL DISSOLVED SOLIDS</b>		<b>E160.1</b>				Analyst: HR
Total Dissolved Solids (Residue, Filterable)	135000	40		mg/L	1	6/27/2000
<b>TOTAL DISSOLVED SOLIDS</b>		<b>CALC</b>				Analyst: HR
Total Dissolved Solids (Calculated)	115300	40		mg/L	1	7/11/2000

Prof 4573-4647 Desert Check + Alkal

Qualifiers: PQL - Practical Quantitation Limit  
 ND - Not Detected at Practical Quantitation Limit  
 J - Analyte detected below Practical Quantitation Limit  
 B - Analyte detected in the associated Method Blank  
 S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits  
 E - Value above quantitation range  
 Surr - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -



OFF: (505) 325-5667  
 FAX: (505) 327-1496



LAB: (505) 325-1556  
 FAX: (505) 327-1496

**ANALYTICAL REPORT**

Date: 14-Jul-00

<b>Client:</b> Coleman Oil and Gas Company	<b>Client Sample Info:</b> Coleman Oil and Gas
<b>Work Order:</b> 0006053	<b>Client Sample ID:</b> Dry Mesa Comp. #2, 3, 10, & 6
<b>Lab ID:</b> 0006053-05A <b>Matrix:</b> AQUEOUS	<b>Collection Date:</b> 6/22/2000
<b>Project:</b> Coleman Oil and Gas	<b>COC Record:</b> 10759

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
<b>CALCIUM, DISSOLVED</b>		<b>E215.1</b>				Analyst: HR
Calcium	3770	250		mg/L	1000	7/10/2000
<b>IRON, DISSOLVED</b>		<b>E236.1</b>				Analyst: HR
Iron	1.2	0.1		mg/L	1	7/11/2000
<b>POTASSIUM, DISSOLVED</b>		<b>E258.1</b>				Analyst: HR
Potassium	520	100		mg/L	400	6/30/2000
<b>MAGNESIUM, DISSOLVED</b>		<b>E242.1</b>				Analyst: HR
Magnesium	540	50		mg/L	200	7/10/2000
<b>SODIUM, DISSOLVED</b>		<b>E273.1</b>				Analyst: HR
Sodium	11000	1250		mg/L	5000	6/30/2000
<b>ALKALINITY, TOTAL</b>		<b>M2320 B</b>				Analyst: HR
Alkalinity, Bicarbonate (As CaCO3)	960	5		mg/L CaCO3	1	6/29/2000
Alkalinity, Carbonate (As CaCO3)	ND	5		mg/L CaCO3	1	6/29/2000
Alkalinity, Hydroxide	ND	5		mg/L CaCO3	1	6/29/2000
Alkalinity, Total (As CaCO3)	960	5		mg/L CaCO3	1	6/29/2000
<b>CHLORIDE</b>		<b>E325.3</b>				Analyst: HR
Chloride	21100	1		mg/L	1	6/29/2000
<b>HARDNESS, TOTAL</b>		<b>M2340 B</b>				Analyst: HR
Hardness (As CaCO3)	11600	1		mg/L	1	7/11/2000
<b>PH</b>		<b>E150.1</b>				Analyst: HR
pH	6.16	2		pH units	1	6/23/2000
<b>RESISTIVITY (@ 25 DEG. C)</b>		<b>M2510 C</b>				Analyst: HR
Resistivity	0.177	0.001		ohm-m	1	6/27/2000
<b>SPECIFIC GRAVITY</b>		<b>M2710 F</b>				Analyst: HR
Specific Gravity	1.029	0.001		Units	1	6/28/2000
<b>SULFATE</b>		<b>M4500-SO4 D</b>				Analyst: HR
Sulfate	1230	5		mg/L	1	6/29/2000
<b>TOTAL DISSOLVED SOLIDS</b>		<b>E160.1</b>				Analyst: HR
Total Dissolved Solids (Residue, Filterable)	43600	40		mg/L	1	6/27/2000
<b>TOTAL DISSOLVED SOLIDS</b>		<b>CALC</b>				Analyst: HR
Total Dissolved Solids (Calculated)	38700	40		mg/L	1	7/11/2000

**Qualifiers:**

PQL - Practical Quantitation Limit  
 ND - Not Detected at Practical Quantitation Limit  
 J - Analyte detected below Practical Quantitation Limit  
 B - Analyte detected in the associated Method Blank

S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits  
 E - Value above quantitation range  
 Surr: - Surrogate



P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667  
FAX: (505) 327-1496



LAB: (505) 325-1556  
FAX: (505) 327-1496

**On Site Technologies, LTD.**

Date: 14-Jul-00

CLIENT: Coleman Oil and Gas Company  
Project: Coleman Oil and Gas  
Lab Order: 0006053

**CASE NARRATIVE**

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition.  
Methods for Chemical Analysis of Water and Wastes, EPA-600/4-79-020, March 1983.  
Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992.

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

Any quality control and/or data qualifiers associated with this laboratory order will be flagged in the analytical result page(s) or the quality control summary report(s).

Cation-Anion Balance 0006053-01A Dry Mesa Well #2  
Total Cation-Anion = 867.86 meq/L  
Difference Cation-Anion = 54.47 meq/L  
% Difference = 6.3 %

Cation-Anion Balance 0006053-02A Dry Mesa Well #3  
Total Cation-Anion = 910.78 meq/L  
Difference Cation-Anion = 15.66 meq/L  
% Difference = 1.7 %

Cation-Anion Balance 0006053-03A Dry Mesa Well #10  
Total Cation-Anion = 1177.25 meq/L  
Difference Cation-Anion = 52.37 meq/L  
% Difference = 4.4 %

Cation-Anion Balance 0006053-04A Dry Mesa Well #6 852  
Total Cation-Anion = 4175.30 meq/L  
Difference Cation-Anion = 194.97 meq/L  
% Difference = 4.7 %

Cation-Anion Balance 0006053-05A Dry Mesa Well Composite  
Total Cation-Anion = 1359.66 meq/L  
Difference Cation-Anion = 84.97 meq/L  
% Difference = 6.2 %



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

**SUNDRY NOTICES AND REPORTS ON WELLS**  
Do not use this form for proposals to drill or reenter an abandoned well. Use Form 3160-3 (APD) for such proposals.

FORM APPROVED  
OMB No. 1004-0135  
Expires July 31, 1996

**SUBMIT IN TRIPLICATE - Other instructions on reverse side**

1.  Oil Well  Gas Well  Other

2. Name of Operator  
**Coleman Oil & Gas, Inc.**

3a. Address  
**Drawer 3337, Farmington N.M. 87499**

3b. Phone No. (include area code)  
**(505)327-7160**

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)  
**1690' FSL & 2290' FWL, Section 2, T40N, R28E**

5. Lease Serial No.  
**14-20-603-4190**

6. If Indian, Allottee or Tribe Name  
**Navajo**

7. If Unit or CA/Agreement, Name and/or No.  
**P/N 852**

8. Well Name and No.  
**Navajo Tract 138 #6**

9. API Well No.  
**02-001-20283**

10. Field and Pool, or Exploratory Area  
**Dry Mesa Field**

11. County or Parish, State  
**Apache County, AZ.**

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Deepen
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Fracture Treat
	<input type="checkbox"/> New Construction
	<input checked="" type="checkbox"/> Plug Back
	<input type="checkbox"/> Production (Start/Resume)
	<input type="checkbox"/> Reclamation
	<input checked="" type="checkbox"/> Recomplete
	<input type="checkbox"/> Temporarily Abandon
	<input type="checkbox"/> Water Disposal
	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Well Integrity
	<input type="checkbox"/> Other _____

13. Describe Proposed or Completed Operations (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

- MIRU WORKOVER UNIT & SAFETY EQUIPMENT. POOH WITH RODS & ROD PUMP. NIPPLED DOWN WELLHEAD AND NIPPLED UP B.O.P.. POOH WITH PRODUCTION TUBING.
- RIH AND POOH WITH BIT AND SCRAPER. RIH WITH CIBP AND SET @ 5170 FT. KB. ROLLED HOLE CLEAN AND PRESSURED CASING, CIBP AND PIPE RAMS TO 1000 PSIG. HELD PRESSURE.
- RIGGED UP CEMENTERS INC AND BALANCED 10 SACKS OF CLASS B ON TOP OF CIBP.
- PERFORATED FROM 4954-4963 ( PINKERTON TRAIL ) AND 4783-4789 ( BARKER CREEK ) 2 JSPF, 30-.41" HOLES.
- ACIDIZED WITH 200 GALLONS PER FOOT OF 20% HCL WITH ADDITIVES.
- SWABBED AND FLOW TESTED WELL WITH BRIDGE PLUG AND PACKER.
- ISOLATED AND SQUEEZED OFF PERFORATIONS 4783-4789 ( BARKER CREEK ) WITH 75 SKS. CLASS B CEMENT ESTIMATED 30 SKS. OF CEMENT BEHIND PIPE. DRILLED OUT CEMENT & PRESSURE TESTED TO 1000 PSIG (HE
- RIH WITH PRODUCTION PACKER AND 2 7/8" TUBING. PUT WELL ON PRODUCTION.

14. I hereby certify that the foregoing is true and correct  
Name (Printed/Typed)

Michael T. Hanson  
Signature: *Michael T. Hanson*  
Title: Engineer  
Date: July 20, 1999

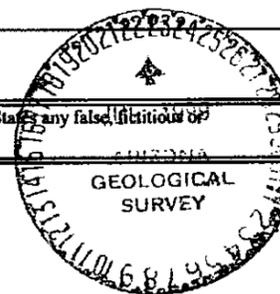
THIS SPACE FOR FEDERAL OR STATE USE

Approved by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on reverse)



COLEMAN OIL GAS, INC.  
Dry Mesa #6

CONDUCTOR CASING  
13 3/8" CSG. @ 117 FT. KB  
CEMENTED WITH 100 SXS

SURFACE CASING  
8 5/8" CSG. @ 1236 FT. KB  
CEMENTED WITH 748 SXS

PRODUCTION CASING  
5 1/2", 15.5#, J-55, @ 5426-5766 FT KB.  
CEMENTED WITH 400 SXS

TUBING STRING  
157 JOINTS 2 7/8" TOTAL 4836.46 FT.  
4 JOINTS 2 7/8" TOTAL 113.28 FT.

2 7/8" SN @ 4846 FT. KB.  
SB PKR @ 4848 FT. KB.  
2 7/8" BTM TBG @ 4968.05 FT KB.  
SN 2.24 I.D.  
SMALL BORE PACKER-ARROW SET I  
ID 2.041"

10 SACKS CEMENT ON TOP CIBP  
CIBP @ 5170 FT. KB.

RETAINER @ 5292 FT. KB.

T.D. @ 5540 FT. KB.

*Permit # 852*

TOP OF CEMENT @ 3990 FT. KB.

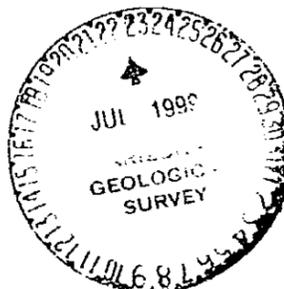
BARKER CREEK SQUEEZED WITH  
30 SACKS OF CLASS B CEMENT  
PRESSURE TESTED TO 1000 PSIG.  
ON JUNE 15, 1999  
PERFORATIONS @4783-4789

PINKERTON TRAIL PERFORATIONS @  
4954-4963

LEADVILLE INTERVAL  
PERFORATIONS @

5256-5266  
5272-5285

PERFORATIONS NON COMMERCIAL 7/85  
5256-5266  
5272-5285



In Lieu of  
Form 3160-5  
(June 1990)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

FORM APPROVED  
Budget Bureau No. 1004-0135  
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir. Use "APPLICATION FOR PERMIT-" for such proposals

SUBMIT IN TRIPLICATE		5. Lease Designation and Serial No. 14-20-603-4190
		6. If Indian, Allottee or Tribe Name Navajo Tract 138
		7. If Unit or CA, Agreement Designation
1. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other	8. Well Name and No. <i>7/W 852</i> Tract 138 #6	
2. Name of Operator COLEMAN OIL & GAS, INC.	9. API Well No. 02-001-20283	
3. Address and Telephone No. DRAWER 3337 FARMINGTON, NM 87499 505-327-0356	10. Field and Pool, or Exploratory Area Dry Mesa Field	
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) 1689.5' FSL & 2289.7 FWL, Section 2, T40N, R28E	11. County or Parish, State Apache County, AZ.	

CHECK APPROPRIATE BOX(es) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
<input checked="" type="checkbox"/> Notice of Intent	<input checked="" type="checkbox"/> Abandonment	<input type="checkbox"/> Change of Plans
<input type="checkbox"/> Subsequent Report	<input checked="" type="checkbox"/> Recompletion	<input type="checkbox"/> New Construction
<input type="checkbox"/> Final Abandonment	<input type="checkbox"/> Plugging Back	<input type="checkbox"/> Non-Routine Fracturing
	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> Water Shut-Off
	<input type="checkbox"/> Altering Casing	<input type="checkbox"/> Conversion to Injection
	<input type="checkbox"/> Other _____	<input type="checkbox"/> Dispose Water
		(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)\*

ABANDON LEADVILLE (5256-5266, 5272-5285) PERFORATIONS BY SETTING CAST IRON BRIDGE PLUG @ 5150 FEET. , WITH A MINIMUM OF 50 FEET OF CEMENT ON TOP OF BRIDGE PLUG. TOP OF LEADVILLE IS AT 5178 FT.

PERFORATE AND ACIDIZE PARADOX FORMATIONS, SWAB TEST AND PUT ON PRODUCTION.

SEE ATTACHED PROCEDURE



14. I hereby certify that the foregoing is true and correct

Signed Michael T. Harmon Title OPERATIONS MANAGER Date March 1, 1999

(This space for Federal or State office use)

Approved by \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_  
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

\*See Instruction on Reverse Side

*P/W 852*

LEASE NAME: NAVAJO TRACT 138 DRY MESA #6  
LOCATION: NESW SEC 2 T40N R28E  
APACHE COUNTY, AZ

DATE: March 1, 1999

FIELD: DRY MESA  
SURFACE: NAVAJO  
MINERALS: 14-20-603-4190

ELEV: GL 5697  
KB 5710  
PBD

WORKOVER PROCEDURE: SET BRIDGE PLUG AND ISOLATE LEADVILLE PERFORATIONS.  
PERFORATE AND ACIDIZE PARADOX PERFORATIONS.

1. MOL AND RU WORKOVER RIG WITH BOP, PUMP, FLAT TANK AND POWER SWIVEL. LAY 2" FLOW LINE TO THE FLAT TANK, WHICH SHOULD BE DOWN WIND FROM THE RIG.
2. BLOW WELL DOWN & KILL, IF NECESSARY, WITH PRODUCED WATER. LAY DOWN RODS AND PUMP. NIPPLE DOWN WELL HEAD, AND INSTALL 6" BOPS AND H2S EQUIPMENT.
3. POOH WITH 2 7/8" TUBING.
4. RIH WITH 4 3/4" BIT, AND 5 1/2" CASING SCRAPER TO BRIDGE PLUG SETTING DEPTH.
5. LAY DOWN 2 7/8 TUBING AND SEND TO FRONTIER INSPECTION TO BE INSPECTED.
6. SET CAST IRON BRIDGE PLUG @ 5150 FEET. PUT MINIMUM OF 50 FEET OF CEMENT ON TOP OF BRIDGE PLUG. PICK UP INSPECTED YELLOW BAND 2 3/8" TUBING. ROLL HOLE WITH CLEAN PRODUCED WATER. PRESSURE TEST PIPE RAMS, AND CASING TO 1000 PSIG. POOH WITH 2 3/8" TUBING.
7. PERFORATE THE FOLLOWING ZONES @ 2JSPF. DEPTHS TO BE CORRELATED WITH OPEN HOLE LOGS.

PINKERTON TRAIL	4954-4963	9 FT.	18 HOLES
BARKER CREEK	4783-4789	6 FT.	12 HOLES
AKAH	4643-4647	4 FT.	8 HOLES
AKAH	4627-4632	5 FT.	10 HOLES
DESERT CREEK	4593-4597	4 FT.	8 HOLES
DESERT CREEK	4573-4583	10 FT.	20 HOLES
8. RIH WITH BRIDGE PLUG AND PACKER, SWAB TEST IF TIME PERMITS.

9. ISOLATE WITH BRIDGE PLUG AND PACKER, TREAT WITH 20% HCL WITH ADDITIVES. 150 GALLONS PER FOOT OF PERFORATIONS AS FOLLOWS.

A. SET RPB @ ± 5100 FT. AND PACKER @ ± 4850 FT.  
PINKERTON TRAIL 4954-4963 9 FT. 1350 GALLONS

B. SET RPB @ ± 4850 FT. AND PACKER @ ± 4700 FT.  
BARKER CREEK 4783-4789 6 FT. 900 GALLONS

C. SET RBP @ ± 4700 FT. AND PACKER @ ± 4615 FT.  
AKAH 4643-4647 4 FT. 600 GALLONS  
AKAH 4627-4632 5 FT. 750 GALLONS

D. SET RBP @ ± 4615 FT. AND PACKER @ ± 4550 FT.  
DESERT CREEK 4593-4597 4 FT. 600 GALLONS  
DESERT CREEK 4573-4583 10 FT. 1500 GALLONS

TOTAL TREATMENT 38 FT WITH 5700 GALLONS 20 % HCL WITH ADDITIVES.

10. AFTER TREATING, SET RBP @ ± 5100 FEET AND SET PACKER @ ± 4550 FEET. FLOW/SWAB TEST WELL. IF WELL IS MAKING EXCESSIVE WATER, ISOLATE AND TEST EACH INTERVAL AS TREATED ABOVE BEFORE PROCEEDING TO STEP #10.

\*\*\*\* AFTER ACID HAS BEEN RECOVERED AND PRODUCTION STABILIZED PROCEED TO STEP 11.

11. POOH WITH RBP AND RIH WITH PRODUCTION TUBING AS FOLLOWS.  
2 3/8" NOTCHED COLLAR, 2 JOINTS OF 2 3/8" TUBING, 1-4 FT. PERFORATED SUB, SEATING NIPPLE, FIVE HUNDRED FEET OF 2 3/8" TUBING, ARROW SET I PRODUCTION PACKER AND 2 3/8" TUBING. SET PACKER @ ± 4000 FT. KB. WITH BOTTOM OF TUBING @ ± 4650 FT. KB. (IF WELL NEEDS TO BE ROD PUMPED THEN REPLACE PRODUCTION PACKER WITH ANCHOR CATCHED AND RUN PUMP AND RODS).

12. PUT ON PRODUCTION.

PREPARED BY: MICHAEL T. HANSON

**SUNDRY NOTICES AND REPORT ON WELLS**

1. Name of Operator DRY MESA CORPORATION

2. OIL WELL  GAS WELL  OTHER  (Specify) \_\_\_\_\_

3. Well Name WELLS #1 #2, #3, #5, AND #6

Location \_\_\_\_\_

Sec. 1, 2, 11, 12 Twp. 40N Rge. 28E County APACHE, Arizona

4. Federal, State, or Indian Lease, or lessor's name if fee lease NAVAJO LEASE #14-20-603-4190 TRACT 138

5. Field or Pool Name DRY MESA FIELD

6. Check Appropriate Box to Indicate Nature of Notice, Report, or Other data

NOTICE OF IN SUBSEQUENT REPORT OF:

TEST WATER SHUT-OFF	<input type="checkbox"/>	PULL OR ALTER CASING	<input type="checkbox"/>	WATER SHUT-OFF	<input type="checkbox"/>	MONTHLY PROGRESS	<input type="checkbox"/>
FRACTURE TREAT	<input type="checkbox"/>	DIRECTIONAL DRILL	<input type="checkbox"/>	FRACTURE TREATMENT	<input type="checkbox"/>	REPAIRING WELL	<input type="checkbox"/>
SHOOT OR ACIDIZE	<input checked="" type="checkbox"/>	PERFORATE CASING	<input checked="" type="checkbox"/>	SHOOTING OR ACIDIZING	<input type="checkbox"/>	ALTERING CASING	<input type="checkbox"/>
REPAIR WELL	<input type="checkbox"/>	CHANGE PLANS	<input type="checkbox"/>	(OTHER) _____	<input type="checkbox"/>	ABANDONMENT	<input type="checkbox"/>

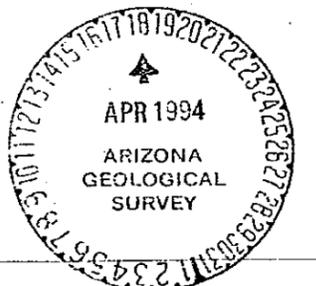
(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

7. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

Dry Mesa Corporation is preparing to workover two wells and repair or enhance production on two others. This work will commence when the major creditor has approved the proposed work. The actual work planned on the wells is outlined on the following pages. It is estimated that this work will begin on or about April 20, 1994.

Additionally, Dry Mesa Corporation would like to perform an MIT on SWD Well #1 while there is equipment on the lease. The MIT will conform to the tougher of the EPA/State of AZ requirements. The exact time and date of this test are flexible depending on all of the interested party's schedules

The appropriate forms will be submitted following completion of the work.



8. I hereby certify that the foregoing is true and correct.

Signed Bob Haupt Title Geologist Date April 15, 1994

Permit No. 852

**STATE OF ARIZONA**  
**OIL AND GAS CONSERVATION COMMISSION**  
 Sundry Notices and Report On wells  
 File One Copy

Form No. 25

**DRY MESA CORPORATION PROPOSED WORKOVER SUMMARY**  
(REVISED 3/8/94)

Dry Mesa Corporation has requested that funding be granted to do workovers on wells in Dry Mesa Field, Apache County, Arizona. The purpose of the workovers is to raise the oil and gas production and thereby raise income from Dry Mesa Field. A summary of the field's present condition, proposed work, cost estimate for such work, and expected results follows.

**PRESENT FIELD CONDITION**

Due to factors listed elsewhere in this summary, Dry Mesa Field has been essentially shut down since June, 1993. Dry Mesa Field contains three gas wells, one oil well, and one water disposal well. If the wells were capable of producing at full capacity, this would be their current state:

Gas Well #2 could be expected to produce 250 - 400 MCF/day  
Gas Well #5 could be expected to produce 35 MCF/day  
Gas Well #3 will not produce against line pressure, 0 MCF/day  
Oil Well #6 could be expected to produce 30 - 35 bbls oil/day  
SWD Well #1 This well is needed to dispose of produced water from #6. Well #6 is not economic without well #1.

---

TOTALS: 285 - 435 MCF/ day 30 - 35 bbls oil/day  
Monthly Income (less royalty and gas transport fee of 27%): \$19,800 (low) - \$ 26,500 (high)  
(assuming Gas Price \$1.80/MCF & Oil Price \$14.00/bbl)

---

**Current Operations**

The gas sales line experiences freeze ups during the coldest winter days. This situation will require a dehydrator to fix. This will not be necessary until next October or November.

Dry Mesa Corporation is paying Western Gas Processors 27% of the produced gas for their services of gathering, metering, transporting, and selling Dry Mesa gas. Western has agreed in principle to reduce this 27% cost to 15% provided Dry Mesa raise gas production by working over at least two of the wells. This 13% drop in rate with no real drop in service makes a strong argument for working over at least two wells initially. Dry Mesa and Black Rock Field wells typically have high initial production rates with a steep monthly decline until the production rate reaches approximately 600 MCF/day. At 600 MCF/day, the decline rate moderates. For this reason, it is most financially beneficial to have the gas contract changed as early in the well's life after the workover as possible. Another advantage of working over the wells one after another is the potential savings in rig move expenses and possible volume discounts from the service companies.



This well has excellent potential in 4 other zones. These 4 zones have been judge to be commercial and productive by DST, core, gas flows during the redrill, and/or production in equivalent zones in Black Rock Field wells. Estimated reserves after the workover are .9 - 1.1 BCF. Initial production should be in the 800 to 1,500 MCF/day range.

This well should be in good mechanical shape; packer refurbishing should be the only equipment expense needed.

The existing lined drill pit can be used for workover fluid evaporation from this well and Well #2. The BLM has requested that the pit be substantially reduced in size but will allow it to remain in it's present condition if it is being used for a constructive purpose. Eventually, there will be a pit size reduction expense (requiring bulldozer work) for this well.

#### **Proposed Workover**

1. kill well, remove wellhead, nipple up BOP stack
2. pull tubing and packer
3. run casing scraper to TD
4. perforate four zones (45' total)
6. acidize using straddle packer, plan on 50 gal 28% HCL per ft of perf, total acid volume - 2,250 gal. (this is a very small acid treatment)
7. run tubing and packer, nipple down BOP, install wellhead
8. swab and flow well.
9. 4 point test well.
10. hook up well to sales meter and produce.

#### **Economics**

A cost estimate for the proposed workover and a table displaying various production and economic models for Well #5 are included in this summary. The estimated workover cost for this well is \$24,000 (high) - \$20,000 (low). The first month's income after workover is estimated to be \$57,000 (high) - \$26,000 (low). Payout will occur within the first month in either model. Gross income for the first year (less royalty and gas transport fee) would be \$368,000 (high) - \$209,000 (low).

#### **Well #6 and Well #1**

Well #6 may need it's pump replaced. This is a very normal expense; pumps last for 6 months to 2 years and it is time for a replacement. Since the well has been shut in for 8 months, normal maintenance will need to be done on all of the pumping equipment. The well has always responded with flush production when ever it has been shut-in for extended periods. It is estimated that the initially daily oil production rate could be in the 55 bbls/day range. This flush production will taper off over several months and production should stabilize around 35 bbls/day. The well will be able to maintain 30+ bbls/day for the entire year.

Well #6 produces approximately 500 bbls water/day. For this reason, it is absolutely necessary to have disposal Well #1 in operation. The injection line and pump were in operating order when last shut in.



Well # 6 and # 1 Continued

The water volume meter that is required for this well by the EPA will need to be repaired or replaced.

**Procedure:**

Start up well, observe for pump condition, if the pump appears shot, proceed with replacement,

**Proposed Workover (if needed)**

- 1. unhook pump jack, nipple up BOP
- 2. pull rods and pump
- 3. replace pump, run in pump and rods
- 4. nipple down BOP, hookup pump jack

**Economics**

A cost estimate for the proposed workover and a table displaying various production and economic models for Well #6 and #1 are included in this summary. The estimated workover cost for these wells is \$8,350 (high) - \$2,250 (low). The first month's income after workover is estimated to be \$19,250. Payout will occur within the first month. Gross Income for the first year would be \$151,700.



### Well Cost Estimate Sheet

(costs are estimated based on similar past service)

Prepared for: Dry Mesa Field - Well # 6 and 1

Item	Price per/	Est. Time or Volume	Item Total
<b>Well #6</b>			
Rig Time	\$1,800 / day	2 days	\$3,600
Pump Replacement			\$2,500
P. M. on Motor, Jack, and Treater	(oil and filters, gaskets, antifreeze, etc.)		\$500
<b>Well #1</b>			
P. M. on Injection Motor	(oil and filters, gaskets, antifreeze, etc.)		\$250
Water Volume Meter Repair/Replace			\$1,500
15% Contingency			\$1,253
<b>TOTALS</b>			<b>\$9,603</b>

Both wells were in operating condition when shut-in in June 1993. The pump may or may not be bad in well #6. After performing routine maintenance on the well's engines and other equipment, Well #6 should be produced for several days to evaluate the oil pump's condition. If it is acceptable, this workover will not be necessary at this time.



Well #3 and Well #6 - Economic Models

Month	WELL #3						WELL #6					
	Current			With Compressor			Current			After Workover		
	IP - 0 MCF/day Monthly Volume	Monthly Income	27% Trans. Fee IP - 400 MCF/day Monthly Volume	Monthly Income	15% Trans. Fee IP - 400 MCF/day Monthly Volume	Monthly Income	IP - 0 Bbls / Day Monthly Volume	Monthly Income	IP - 55 Bbls/day Monthly Volume	Monthly Income	Monthly Income	
1	0	\$0	12,000	\$13,140	12,000	\$15,300	0	\$0	1,650	\$19,250	\$19,250	
2	0	\$0	11,500	\$12,593	11,500	\$14,663	0	\$0	1,080	\$12,600	\$12,600	
3	0	\$0	11,000	\$12,045	11,000	\$14,025	0	\$0	1,050	\$12,250	\$12,250	
4	0	\$0	10,500	\$11,498	10,500	\$13,388	0	\$0	1,045	\$12,192	\$12,192	
5	0	\$0	10,000	\$10,950	10,000	\$12,750	0	\$0	1,040	\$12,133	\$12,133	
6	0	\$0	9,500	\$10,403	9,500	\$12,113	0	\$0	1,035	\$12,075	\$12,075	
7	0	\$0	9,000	\$9,855	9,000	\$11,475	0	\$0	1,030	\$12,017	\$12,017	
8	0	\$0	8,600	\$9,417	8,600	\$10,965	0	\$0	1,025	\$11,958	\$11,958	
9	0	\$0	8,200	\$8,979	8,200	\$10,455	0	\$0	1,020	\$11,900	\$11,900	
10	0	\$0	7,800	\$8,541	7,800	\$9,945	0	\$0	1,015	\$11,842	\$11,842	
11	0	\$0	7,400	\$8,103	7,400	\$9,435	0	\$0	1,010	\$11,783	\$11,783	
12	0	\$0	7,200	\$7,884	7,200	\$9,180	0	\$0	1,005	\$11,725	\$11,725	
TOTALS :	0	\$0	112,700	\$123,407	112,700	\$143,693	0	\$0	13,005	\$151,725	\$151,725	

**ASSUMPTIONS:**

Income: GAS = (Monthly MCF \* Gas Price \* (1 - Transport Fee)) \* (1 - Royalty)  
 OIL = Monthly Bbls \* Oil Price \* (1 - Royalty)

Gas Price: \$1.80  
 Oil Price: \$14.00  
 Royalty: 1/6  
 Transport: 27% (unless specified to be 15%)  
 Decline: Gas - Modeled after Watson "Type B" well in Reserve Estimate Report  
 Oil - 55 Bbls flush production dropping to 35 bls/day in 2 months, 6% yearly decline after that  
 Month: 30 days  
 Volume: MCF / Bbls



**OPERATOR'S CERTIFICATE OF COMPLIANCE AND AUTHORIZATION  
TO TRANSPORT OIL OR GAS FROM LEASE**

Federal, State or Indian Lease Number, or lessor's name if fee lease <b>14-20-603-4190</b>		Field <b>Dry Mesa</b>	Reservoir <b>Leadville</b>
Survey or Sec-Twp-Rge <b>Sec 1,2,11,12, T40N,R28E</b>		County <b>Apache</b>	State <b>Arizona</b>
Operator <b>Dry Mesa Corporation</b>			
ADDRESS ALL CORRESPONDENCE CONCERNING THIS FORM TO:			
Street <b>P. O. Box 5446</b>		City <b>Farmington</b>	State <b>New Mexico 87499</b>
Above named operator authorizes (name of transporter) <b>Gary-Williams Energy Corporation</b>			
Transporter's street address <b>370 17th Street, Suite 5300</b>		City <b>Denver</b>	State <b>Colorado 80202-5653</b>
Field address <b>89 Road 4990, Bloomfield, New Mexico 87413</b>			
Oil, condensate, gas well gas, casinghead gas			
To transport	<b>100</b>	% of the	<b>oil</b> from said lease.
OTHER GATHERERS TRANSPORTING FROM THIS LEASE ARE AS FOLLOWS:			
Name of gatherer	% transported	Product transported	
Indicate whether or not this certificate is for a new lease. If not a new lease, indicate whether or not it is a change of operator, change of lease name, change of gatherer, or a consolidation or subdivision of leases and give effective date of change.			
<p><b>This form is submitted because a change gatherer for the oil. The change was effective July 1, 1990</b></p>			

The undersigned certifies that the rules and regulations of the State of Arizona Oil & Gas Conservation Commission have been complied with in drilling and producing operations on this lease, except as noted above, and that the above transporter is authorized to transport the above specified percentage of the allowable oil or gas produced from the above described property, and that this authorization will be valid until further notice or until cancelled by the State of Arizona Oil & Gas Conservation Commission.

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the President of the Dry Mesa Corporation (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

August 24, 1990  
Date

*Kenneth Reed*  
Signature

Date approved: \_\_\_\_\_

**STATE OF ARIZONA  
OIL & GAS CONSERVATION COMMISSION**

By *[Signature]* *[Signature]*  
Permit No. 852

**STATE OF ARIZONA  
OIL & GAS CONSERVATION COMMISSION**  
Operator's Certificate of Compliance & Authorization to  
Transport Oil or Gas from Lease  
File Two Copies  
Form No. 5

OPERATOR CERTIFICATE OF COMPLIANCE AND AUTHORIZATION TO TRANSPORT OIL OR GAS FROM LEASE		
Federal, State or Indian Lease Number, or lessor's name if fee lease 14-20-603-4190	Field Dry Mesa	Reservoir Leadville
Survey or Sec-Twp-Rge Sec. 2, T40N, R28E	County Apache	State Arizona
Operator Dry Mesa Corporation		
ADDRESS ALL CORRESPONDENCE CONCERNING THIS FORM TO:		
Street P. O. Box 5446	City Farmington	State New Mexico 87499
Above named operator authorizes (name of transporter) The Permian Corporation		
Transporter's street address P. O. Box 1183	City Houston	State Texas 77251
Field address 2502 West Main, Farmington, New Mexico 87501		
Oil, condensate, gas well gas, casinghead gas		
To transport	100 % of the Oil	from said lease.
OTHER GATHERERS TRANSPORTING FROM THIS LEASE ARE AS FOLLOWS:		
Name of gatherer Hay Hot Oil	% transported 100	Product transported water produced from lease
Indicate whether or not this certificate is for a new lease. If not a new lease, indicate whether or not it is a change of operator, change of lease name, change of gatherer, or a consolidation or subdivision of leases and give effective date of change.  Change Of Operator February 1, 1989		

The undersigned certifies that the rules and regulations of the State of Arizona Oil & Gas Conservation Commission have been complied with in drilling and producing operations on this lease, except as noted above, and that the above transporter is authorized to transport the above specified percentage of the allowable oil or gas produced from the above described property, and that this authorization will be valid until further notice or until cancelled by the State of Arizona Oil & Gas Conservation Commission.

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the President, Sec.-Treasurer of the Dry Mesa Corporation (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

Date 4-12-89  
Signature Kenneth E. [unclear]

Date approved: 1/9/90  
STATE OF ARIZONA  
OIL & GAS CONSERVATION COMMISSION

By: [Signature]

Permit No. 852 + 115,77,106

RECEIVED  
APR 19 1989  
O & G CON. COMM.

STATE OF ARIZONA  
OIL & GAS CONSERVATION COMMISSION  
Operator's Certificate of Compliance & Authorization to  
Transport Oil or Gas from Lease  
File Two Copies  
Form No. 8

Form 3160-5  
November 1983  
(Formerly 9-331)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE  
(Other instructions on reverse side)

Form approved.  
Budget Bureau No. 1004-0144  
Expires August 31, 1985

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT" for such proposals.)

1.  OIL WELL  GAS WELL  OTHER

2. NAME OF OPERATOR  
Dry Mesa Corporation

3. ADDRESS OF OPERATOR  
#15 Willowbrook, Wichita, Kansas 67207

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements. See also space 17 below.)  
At surface  
1690' FSL & 2289' FWL, Sec. 2, T40N, R28E

5. LEASE DESIGNATION AND SERIAL NO.  
14-20-603-4190

6. IF INDIAN, ALLOTTEE OR TRIBE NAME  
Navajo

7. UNIT AGREEMENT NAME

8. FARM OR LEASE NAME  
Navajo Tract 138

9. WELL NO.  
6 *# 852*

10. FIELD AND POOL, OR WILDCAT  
Dry Mesa

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA  
Sec. 2, T40N, R28E  
C&SRM

12. COUNTY OR PARISH; 13. STATE  
Apache AZ

14. PERMIT NO.  
852

15. ELEVATIONS (Show whether of ST. OR, etc.)  
5677' GL

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO		SUBSEQUENT REPORT OF:	
WATER SHUT-OFF	REPAIRING WELL	WATER SHUT-OFF	REPAIRING WELL <input checked="" type="checkbox"/>
REPAIRING WELL	ALTERING CASING	REPAIRING WELL	ALTERING CASING
ALTERING CASING	ABANDONMENT	ALTERING CASING	ABANDONMENT
ABANDONMENT		ABANDONMENT	

Note: Report results of multiple completion on Well Completion, Recapture, Retort and Log form.

The rods and tubing will be pulled from this well, inspected and replaced if necessary, the pump w-ll be replaced and any other remedial work that deems to be necessary will be done.

The above work was completed and the well put back on production on April 21, 1989.

AZ OIL & GAS  
CONSERVATION COMMISSION  
MAY 19 1989

18. I hereby certify that the foregoing is true and correct

SIGNED *Kenneth [Signature]* TITLE President DATE 5/16/89  
~~3/22/89~~

(This space for Federal or State office use)

APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_

CONDITIONS OF APPROVAL, IF ANY:

\*See Instructions on Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

RECEIVED  
JUL 10 1985

*Handwritten initials*

Form 9-331  
Dec. 1973

O & G CONS. COMM.

Form Approved.  
Budget Bureau No. 42-R1424

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

**SUNDRY NOTICES AND REPORTS ON WELLS**  
(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well  gas well  other

2. NAME OF OPERATOR  
Monsanto Oil Company

3. ADDRESS OF OPERATOR Suite 600, 5613 DTC  
Parkway, Englewood, Colorado 80111

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)  
AT SURFACE: 1689.5' FSL & 2289.7' FWL  
AT TOP PROD. INTERVAL:  
AT TOTAL DEPTH:

5. LEASE  
14-20-603-4190

6. IF INDIAN, ALLOTTEE OR TRIBE NAME  
Navajo

7. UNIT AGREEMENT NAME  
NA

8. FARM OR LEASE NAME  
Navajo Tract 138

9. WELL NO.  
6

10. FIELD OR WILDCAT NAME  
Dry Mesa Field

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA  
Sec. 2 T40N-R28E

12. COUNTY OR PARISH | 13. STATE  
Apache | Arizona

14. API NO.  
02-001-20283

15. ELEVATIONS (SHOW DF, KDB, AND WD)  
5409', 5410', 5600'

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:	SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF <input type="checkbox"/>	<input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	<input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	<input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	<input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	<input type="checkbox"/>
MULTIPLE COMPLETE <input type="checkbox"/>	<input type="checkbox"/>
CHANGE ZONES <input type="checkbox"/>	<input type="checkbox"/>
ABANDON* <input type="checkbox"/>	<input type="checkbox"/>
(other) <u>Setting and Cementing Casing</u>	

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)\*

Spudded well at 7 p.m. June 26, 1985.

Set 106' of 13-3/8" 54 ppf K-55 conductor at 118'. Cemented with 138 cubic feet of Class 'B' cement. Circulated cement to surface. Conductor run and cemented on June 26, 1985.

On June 28, 1985 ran 30 jts. 8-5/8" 24 ppf K-55 surface casing set at 1236'. Cemented with 923 cubic feet of 'Lite' cement followed by 165 cubic feet of Class 'B'. Cement circulated to surface. Cement settled, ran 1" down 8-5/8" x 13-3/8" annulus and cemented back to surface with 116 cubic feet of Class 'B' cement. Cement remained at surface. Waited on cement 8 hrs. Pressure test casing to 1000 psi for 30 mins., held OK.

Subsurface Safety Valve: Manu. and Type \_\_\_\_\_ Set @ \_\_\_\_\_ Ft.

18. I hereby certify that the foregoing is true and correct  
SIGNED K. J. Ebner TITLE Reg. Prod. Mgr. DATE July 3, 1985  
(This space for Federal or State office use)

APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_  
CONDITIONS OF APPROVAL, IF ANY:  
JRG:js

RECEIVED

JUL 10 1985

Form 9-331  
Dec. 1973

Form Approved.  
Budget Bureau No. 42-R1424

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well  gas well  other

2. NAME OF OPERATOR

Monsanto Oil Company

3. ADDRESS OF OPERATOR Suite 600, 5613 DTC Parkway, Englewood, Colorado 80111

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17 below.)  
AT SURFACE: 1689.5' FSL & 2289.7' FWL  
AT TOP PROD. INTERVAL:  
AT TOTAL DEPTH:

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:

TEST WATER SHUT-OFF   
FRACTURE TREAT   
SHOOT OR ACIDIZE   
REPAIR WELL   
PULL OR ALTER CASING   
MULTIPLE COMPLETE   
CHANGE ZONES   
ABANDON\*

SUBSEQUENT REPORT OF:

(other)  Setting and Cementing Casing

5. LEASE  
14-20-603-4190  
6. IF INDIAN, ALLOTTEE OR TRIBE NAME  
Navajo  
7. UNIT AGREEMENT NAME  
NA  
8. FARM OR LEASE NAME  
Navajo Tract 138  
9. WELL NO.  
6  
10. FIELD OR WILDCAT NAME  
Dry Mesa Field  
11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA  
Sec. 2 T40N-R28E  
12. COUNTY OR PARISH 13. STATE  
Apache Arizona  
14. API NO.  
02-001-20283  
15. ELEVATIONS (SHOW DF, KDB, AND WD)  
5409', 5410', 5600'

(NOTE: Report results of multiple completion or zone change on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)\*

Spudded well at 7 p.m. June 26, 1985.

Set 106' of 13-3/8" 54 ppf K-55 conductor at 118'. Cemented with 138 cubic feet of Class 'B' cement. Circulated cement to surface. Conductor run and cemented on June 26, 1985.

On June 28, 1985 ran 30 jts. 8-5/8" 24 ppf K-55 surface casing set at 1236'. Cemented with 923 cubic feet of 'Lite' cement followed by 165 cubic feet of Class 'B'. Cement circulated to surface. Cement settled, ran 1" down 8-5/8" x 13-3/8" annulus and cemented back to surface with 116 cubic feet of Class 'B' cement. Cement remained at surface. Waited on cement 8 hrs. Pressure test casing to 1000 psi for 30 mins., held OK.

Subsurface Safety Valve: Manu. and Type \_\_\_\_\_ Set @ \_\_\_\_\_ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED K. J. Ebner TITLE Reg. Prod. Mgr. DATE July 3, 1985

(This space for Federal or State office use)

APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_  
CONDITIONS OF APPROVAL, IF ANY:

JRG:js

RECEIVED

JUL 10 1985

Form Approved.  
Budget Bureau No. 42-R1424

Form 9-331  
Dec. 1973

UNITED STATES O & G CONS. COMM.  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use Form 9-331-C for such proposals.)

1. oil well  gas well  other

2. NAME OF OPERATOR  
Monsanto Oil Company

3. ADDRESS OF OPERATOR Suite 600, 5613 DTC  
Parkway, Englewood, Colorado 80111

4. LOCATION OF WELL (REPORT LOCATION CLEARLY. See space 17  
below.)  
AT SURFACE: 1689.5' FSL & 2289.7' FWL  
AT TOP PROD. INTERVAL:  
AT TOTAL DEPTH:

16. CHECK APPROPRIATE BOX TO INDICATE NATURE OF NOTICE,  
REPORT, OR OTHER DATA

REQUEST FOR APPROVAL TO:	SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF <input type="checkbox"/>	<input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	<input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	<input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	<input type="checkbox"/>
PULL OR ALTER CASING <input type="checkbox"/>	<input type="checkbox"/>
MULTIPLE COMPLETE <input type="checkbox"/>	<input type="checkbox"/>
CHANGE ZONES <input type="checkbox"/>	<input type="checkbox"/>
ABANDON* <input type="checkbox"/>	<input type="checkbox"/>
(other) <u>Setting and Cementing Casing</u>	

5. LEASE  
14-20-603-4190

6. IF INDIAN, ALLOTTEE OR TRIBE NAME  
Navajo

7. UNIT AGREEMENT NAME  
NA

8. FARM OR LEASE NAME  
Navajo Tract 138

9. WELL NO.  
6

10. FIELD OR WILDCAT NAME  
Dry Mesa Field

11. SEC., T., R., M., OR BLK. AND SURVEY OR  
AREA  
Sec. 2 T40N-R28E

12. COUNTY OR PARISH | 13. STATE  
Apache | Arizona

14. API NO.  
02-001-20283

15. ELEVATIONS (SHOW DF, KDB, AND WD)  
5409', 5410', 5600'

(NOTE: Report results of multiple completion or zone  
change on Form 9-330.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates,  
including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and  
measured and true vertical depths for all markers and zones pertinent to this work.)\*

Spudded well at 7 p.m. June 26, 1985.

Set 106' of 13-3/8" 54 ppf K-55 conductor at 118'. Cemented with 138 cubic feet of Class 'B' cement. Circulated cement to surface. Conductor run and cemented on June 26, 1985.

On June 28, 1985 ran 30 jts. 8-5/8" 24 ppf K-55 surface casing set at 1236'. Cemented with 923 cubic feet of 'Lite' cement followed by 165 cubic feet of Class 'B'. Cement circulated to surface. Cement settled, ran 1" down 8-5/8" x 13-3/8" annulus and cemented back to surface with 116 cubic feet of Class 'B' cement. Cement remained at surface. Waited on cement 8 hrs. Pressure test casing to 1000 psi for 30 mins., held OK.

Subsurface Safety Valve: Manu. and Type \_\_\_\_\_ Set @ \_\_\_\_\_ Ft.

18. I hereby certify that the foregoing is true and correct

SIGNED K. J. Ebner TITLE Reg. Prod. Mgr. DATE July 3, 1985

(This space for Federal or State office use)

APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_  
CONDITIONS OF APPROVAL, IF ANY:

JRG:js

RECEIVED  
AUG 19 1985

OPERATOR'S CERTIFICATE OF COMPLIANCE AND AUTHORIZATION  
TO TRANSPORT OIL OR GAS FROM LEASE

Navajo Tract 138-6

Federal, State or Indian Lease Number, or lessor's name if fee lease 14-20-603-4190	Field Dry Mesa Field	Reservoir Mississippian
Survey or Sec-Twp-Rge Sec. 2-T40N-R28E	County Apache	State Arizona
Operator Monsanto Oil Company		
ADDRESS ALL CORRESPONDENCE CONCERNING THIS FORM TO:		
Street Suite 600 5613 DTC Parkway	City Englewood	State Colorado 80111
Above named operator authorizes (name of transporter) The Permian Corporation		
Transporter's street address P. O. Box 1183	City Houston	State Texas 77001
Field address N/A		
Oil, condensate, gas well gas, casinghead gas		
To transport 100 % of the oil produced from said lease.		
OTHER GATHERERS TRANSPORTING FROM THIS LEASE ARE AS FOLLOWS:		
Name of gatherer	% transported	Product transported
None		

The undersigned certifies that the rules and regulations of the State of Arizona Oil & Gas Conservation Commission have been complied with in drilling and producing operations on this lease, except as noted above, and that the above transporter is authorized to transport the above specified percentage of the allowable oil or gas produced from the above described property, and that this authorization will be valid until further notice or until cancelled by the State of Arizona Oil & Gas Conservation Commission.

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the Regional Production Manager of the Monsanto Oil Company (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

Date August 12, 1985 Signature K. J. Ebner  
Date approved: 8/19/85

STATE OF ARIZONA  
OIL & GAS CONSERVATION COMMISSION  
By: R. A. Ytana  
Permit No. 852

SAC:js

STATE OF ARIZONA  
OIL & GAS CONSERVATION COMMISSION  
Operator's Certificate of Compliance & Authorization to  
Transport Oil or Gas from Lease  
File Two Copies  
Form No. 8



Form 3160-3  
(November 1983)  
(formerly 9-331C)

**RECEIVED**  
OCT 4 1984  
UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT O & G CONS. COMM.

Form approved.  
Budget Bureau No. 1004-6130  
Expires August 31, 1985

**APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK**

1A. TYPE OF WORK DRILL <input checked="" type="checkbox"/> DEEPEN <input type="checkbox"/> PLUG BACK <input type="checkbox"/>		5. LEASE DESIGNATION AND SERIAL NO. 14-20-603-4190	
B. TYPE OF WELL OIL WELL <input checked="" type="checkbox"/> GAS WELL <input type="checkbox"/> OTHER <input type="checkbox"/>		6. IF INDIAN, ALLOTTEE OR TRIBE NAME Navajo	
2. NAME OF OPERATOR Monsanto Company		7. UNIT AGREEMENT NAME NA	
3. ADDRESS OF OPERATOR c/o Haymaker & Associates P. O. Box 2440, Casper, WY 82602-2440		8. FARM OR LEASE NAME Navajo Tract 138	
4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.) At surface 1,689.5' FSL & 2,289.7' FWL Sec. 2 At proposed prod. zone same		9. WELL NO. 6	
14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE* 16 miles southwest of Teec Nos Pos, Arizona.		10. FIELD AND POOL, OR WILDCAT Dry Mesa Field	
10. DISTANCE FROM PROPOSED* LOCATION TO NEAREST PROPERTY OR LEASE LINE, FT. (Also to nearest drlg. unit line, if any) 1,698.5'	16. NO. OF ACRES IN LEASE 2,357	11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA NE 1/4 SW 1/4 Sec. 2- T40N-R28E.	
18. DISTANCE FROM PROPOSED LOCATION* TO NEAREST WELL, DRILLING, COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT. 1,400'	19. PROPOSED DEPTH 5,600'	12. COUNTY OR PARISH Apache	
21. ELEVATIONS (Show whether DF, RT, GR, etc.) 5,696.8' GR.		13. STATE Arizona	
22. APPROX. DATE WORK WILL START* October 1, 1984		17. NO. OF ACRES ASSIGNED TO THIS WELL 40	
20. ROTARY OR CABLE TOOLS Rotary		23. PROPOSED CASING AND CEMENTING PROGRAM	

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17 1/2"	13 3/8"	48# H-40 STC	100'	Cement to surface w/100 sx Class B
12 1/4"	8 5/8"	24# K-55 STC	1,200'	Cement to surface w/500 sx Class B
7 7/8"	5 1/2"	15.5# K-55 STC	5,600'	Cement TD to 3300' w 400 sx Lite

The Monsanto Company proposes to drill a 5,600' test of the Devonian Formation.

1. Drill 17 1/2" hole to 100', set 13 3/8" casing and cement to surface.
2. Drill 12 1/4" hole to 1,200', set 8 5/8" casing and cement to surface.
3. Drill 7 7/8" to T.D. or 5,600', log test and with production set 5 1/2", 15.5# casing perforate and stimulate as necessary.
4. All casing strings will be pressure tested to 0.2 psi/ft. or 1,000 psi (whichever is greater) prior to drilling the plug after cementing. Test pressure should not exceed the internal pressure of the casing.

- Exhibits Attached
- |                                       |                                 |
|---------------------------------------|---------------------------------|
| A. Location and Elevation Plat        | E. Access Road Map              |
| B. Ten-point Compliance Program       | F. Radius Map of Wells in Area  |
| C. Blowout Preventer Diagram          | G. Drill Pad Layout, Cut & Fill |
| D. Multipoint Requirements for A.P.D. | H. Cross-Sections               |
|                                       | I. Drilling Facilities Layout   |

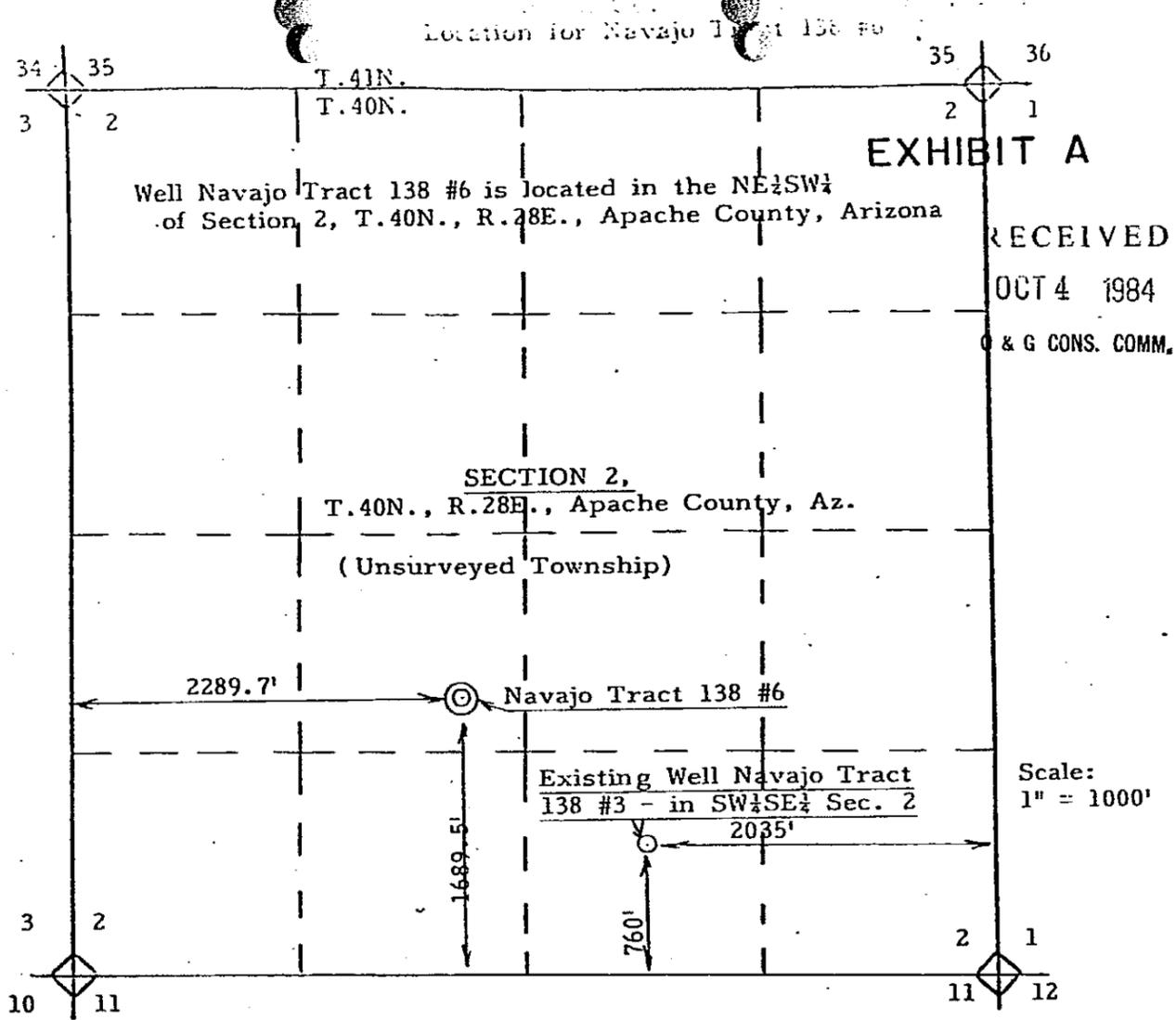
IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: If proposal is to deepen or plug back, give data on present productive zone and proposed new productive zone. If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

24. SIGNED E. R. Haymaker TITLE Agent for Monsanto Company DATE Sept. 17, 1984  
E. R. Haymaker  
(This space for Federal or State office use)

PERMIT NO. \_\_\_\_\_ APPROVAL DATE \_\_\_\_\_  
APPROVED BY \_\_\_\_\_ TITLE \_\_\_\_\_ DATE \_\_\_\_\_  
CONDITIONS OF APPROVAL, IF ANY:

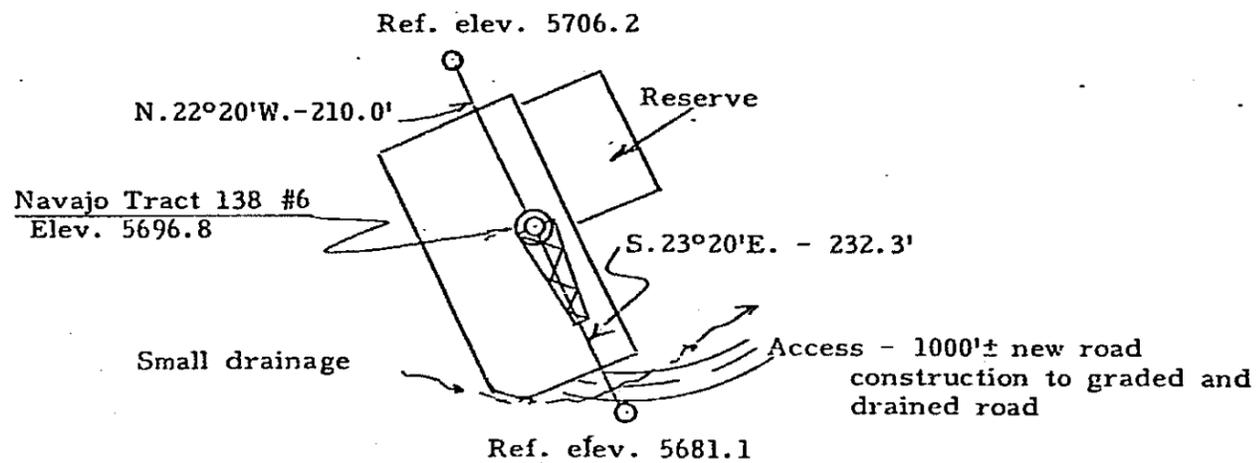
\*See Instructions On Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.



Note: Horizontal and vertical location for Well 138 #6 is based on existing well 138 #3. Horizontal and vertical location for 138 #3 supplied by Monsanto Oil Co. T.40N., R. 28E. is an unsurveyed township.

Vegetation: Sparse grass.  
Soil: Sandy.

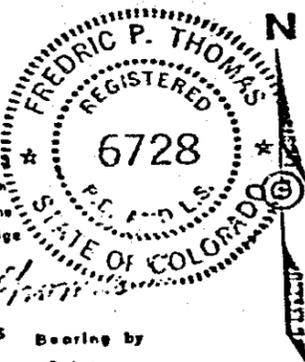


Scale: 1" = 200'

KNOW ALL MEN BY THESE PRESENTS:  
THAT I, FREDRIC P. THOMAS, do hereby certify that I prepared this plat from an actual and accurate survey of the land and that the same is true and correct to the best of my knowledge and belief.

FREDRIC P. THOMAS  
Reg. L.S. and P.E.  
Colo. Reg. No. 6728

Bearing by  
Solar  
observation



THOMAS Engineering Inc.

215 N. Linden  
Cortez, Colorado  
565-4496

RECEIVED  
OCT 4 1984  
O & G CONS. COMM.

EXHIBIT "B"  
DRILLING PROGRAM

Attached to Form 3160-3  
Company: Monsanto Company  
Well Name & Number: Navajo Tract 138 #6  
Well Location: 1,689.5' FSL & 2,289.7' FWL  
Sec. 2, T. 40 N., R. 28 E.  
County: Apache State: Arizona

I. Estimated Important Geologic Markers

Chinle	1,166'
De Chelly	2,057
Hermosa	3,817
Ismay	4,367
Desert Creek	4,497
Molas	5,162
Leadville	5,202
Devonian	5,450
Pre-Cambrian	5,550
T.D.	5,600

II. Estimated Depths of Anticipated Water, Oil, Gas or Minerals

Ismay	4,367'	Oil, Gas or Water
Desert Creek	4,497	" " " "
Leadville	5,202	" " " "
Devonian	5,450	" " " "

III. Operator's Minimum Specifications for Pressure Control

Exhibit "C" is a schematic diagram of the blowout preventer equipment. The BOP's will be hydraulically tested to the full working pressure after nipping up and after any use under pressure. Pipe rams will be operationally checked each 24-hour period and blind rams and with annular preventer each time pipe is pulled out of the hole.

Accessories to BOP's include an upper and a lower kelly cock, floor safety valve, drill string BOP and choke manifold with pressure rating equivalent to the BOP stack.

B. Testing Procedures

1. All ram-type preventers will be tested to the rated working pressure of the stack or to 70% of the minimum internal yield of the casing (whichever is less).
2. The annular-type preventers will be tested to 50% of their rated working pressures.
3. Tests must be run at the time of installation, prior to drilling out of each casing shoe, and at least every 14 days.

IV. Casing and Cementing Program - All new casing

Casing	Wt/ft	Grade	Feet	Joint	Cement
13 3/8"	48	H-40	100'	STC	100 sx Class "B"
8 5/8"	24	K-55	1,200'	STC	500 sx " "
5 1/2"	15.5	K-55	5,600'	STC	400 sx Lite

All potentially productive hydrocarbon zones will be cemented off.

V. Auxiliary Equipment to be used

1. A kelly cock will be kept in the string.
2. A float may be used at the bit.
3. A 2 man mud logging unit will monitor drilling fluids for this well.
4. A stabbing valve will be on the floor to be stabbed into the drill pipe when kelly is not in string.

VI. The Type and Characteristics of the Proposed Circulating Muds

Mud system will be gel-chemical with adequate stocks of sorptive agents and other materials on site to handle any anticipated down-hole problem as well as possible spills of fuel and oil on the surface.

Interval (Feet)	Mud Weight (lbs/gal.)	Viscosity (sec/qt.)	Fluid Loss (ml/30 min.)	Mud Type
0 - 1,200'	8.5 - 9.0	35-50	No control	Spud mud
1,200' - 2,800' (approx.)*	8.3 - 8.7	26-29	No control	flocculant
2,800' - Total Depth (5,600')	9.0 -10.5**	35.45	15 cc's or less	Dispersed

NOTE: The above fluid properties are meant only as a guide, and should be adjusted to meet the actual wellsite conditions.

\* Mud up earlier if hole problems develop.

\*\*Water flows are extremely prevalent in this area and may require higher mud weights.

VII. The Testing, Logging, and Coring Programs to be Followed

- (1) DST's will be run wherever shows are found at the discretion of the geologist.
- (2) Logging Programs:  
GR w/CAL TD-4,000', DIL-SFL, VHC Sonic, FDC - CNL.
- (3) Two 60' cores are planned for the lower Leadville.
- (4) Any fluid stimulation will be determined at time of completion.

VIII. Any Anticipated Abnormal Pressures or Temperatures Expected

No abnormal pressures or temperatures have been noted or reported in wells drilled in the area, nor at the depths anticipated in this well.

No hydrogen sulfide or other hazardous fluids or gases have been found, reported or known to exist at these depths in the area.

IX. The Anticipated Starting Date and Duration of the Operations

The anticipated starting date is set for as soon as possible after examination and approval of all drilling requirements.

The operations should be completed within 45 days after spudding the well.

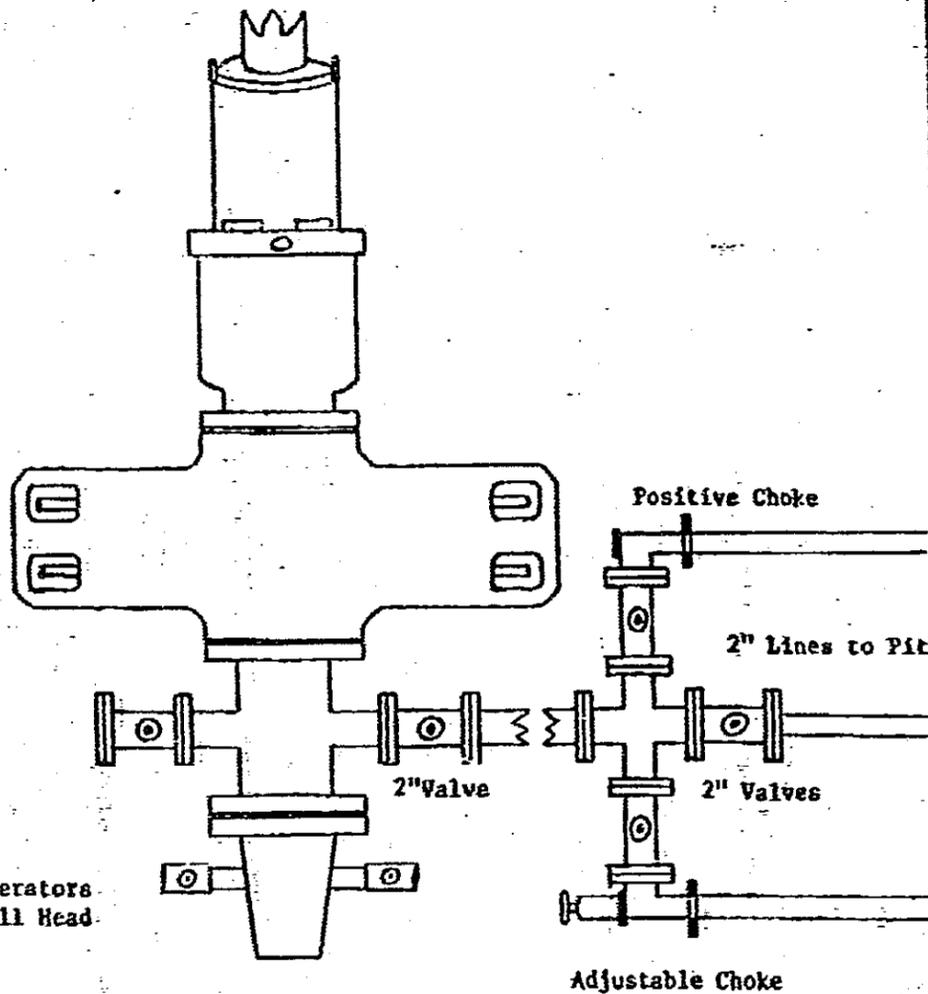
EXHIBIT C

FOR ORDER  
**4**  
DEPT. OF ENERGY  
FOUR CORNERS DRILLING CO.  
P. O. BOX 1067  
SARASOTA, NEW MEXICO 87414

Blow Out Preventer  
with Pipe and  
Blind Rams

2" Valve

Operators  
Well Head



10" 3000psi WP

**APPLICATION FOR PERMIT TO DRILL OR RE-ENTER**

APPLICATION TO DRILL

RE-ENTER OLD WELL

**RECEIVED**

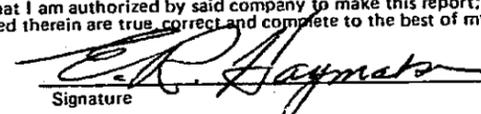
NAME OF COMPANY OR OPERATOR		OCT 4 1984
Monsanto Company		O & G CONS. COMM.
Address	City	State
P. O. Box 2440	Casper	Wyoming 82602-2440
Drilling Contractor		
We do not have a drilling rig at this date.		
Address		

**DESCRIPTION OF WELL AND LEASE**

Federal, State or Indian Lease Number, or if fee lease, name of lessor	Well number	Elevation (ground)
Navajo - T.L. 14-20-603-4190	Navajo Tr 138-6	5,696.8'
Nearest distance from proposed location to property or lease line:	Distance from proposed location to nearest drilling, completed or applied--for well on the same lease:	
1,689.5 feet	1,400 feet	
Number of acres in lease:	Number of wells on lease, including this well, completed in or drilling to this reservoir:	
2,357	1	
If lease, purchased with one or more wells drilled, from whom purchased:	Name	Address
NA		
Well location (give footage from section lines)	Section--township--range or block and survey	Dedication (Comply with Rule 105)
1,689.5' FSL & 2,289.7' FWL	Sec. 2-T40N-R28E., S.R. Mer.	N/2SW/4 Sec. 2
Field and reservoir (if wildcat, so state)	County	
Dry Mesa Field, Devonian Test	Apache	
Distance in miles, and direction from nearest town or post office		
16 miles southwest of Teec Nos Pos, Arizona		
Proposed depth:	Rotary or cable tools	Approx. date work will start
5,600'	Rotary	Oct. 15, 1984
Bond Status	Organization Report	Filing Fee of \$25.00
Amount <del>\$150,000</del> <b>\$25,000</b>	On file Or attached	Attached X

Remarks:  
The bond status and organization report are being filed by the Monsanto Company office in Denver, Colorado.

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the Agent of the Monsanto Company (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

  
 Signature  
 October 2, 1984  
 Date

Permit Number: 852  
 Approval Date: 10-6-84  
 Approved By: R. A. Yama

Notice: Before sending in this form be sure that you have given all information requested. Much unnecessary correspondence will thus be avoided.

**STATE OF ARIZONA**  
**OIL & GAS CONSERVATION COMMISSION**  
 Application to Drill or Re-enter  
 File Two Copies

Form No. 3

1. Operator shall outline the dedicated acreage for *both* oil and gas wells on the plat.
2. A registered professional engineer or land surveyor registered in the State of Arizona or approved by the Commission shall show on the plat the location of the well and certify this information in the space provided.
3. ALL DISTANCES SHOWN ON THE PLAT MUST BE FROM THE OUTER BOUNDARIES OF THE SECTION.
4. Is the Operator the only owner in the dedicated acreage outlined on the plat below? YES  NO .
5. If the answer to question four is "no," have the interests of all the owners been consolidated by communitization agreement or otherwise? YES  NO . If answer is "yes," Type of Consolidation \_\_\_\_\_
6. If the answer to question four is "no," list all the owners and their respective interests below:

Owner Navajo Tribe	Land Description T40N-R28E. Sec. 1, 2, 11 & 12 (Tract 138)
Monsanto Company - Lessee	T40N-R28E. Sec. 1, 2, 11 & 12 (Tract 138)

**CERTIFICATION**

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

Name: *E.R. Haymaker*

Position: Agent

Company: Haymaker & Associates

Date: October 2, 1984

I hereby certify that the well location shown on the plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

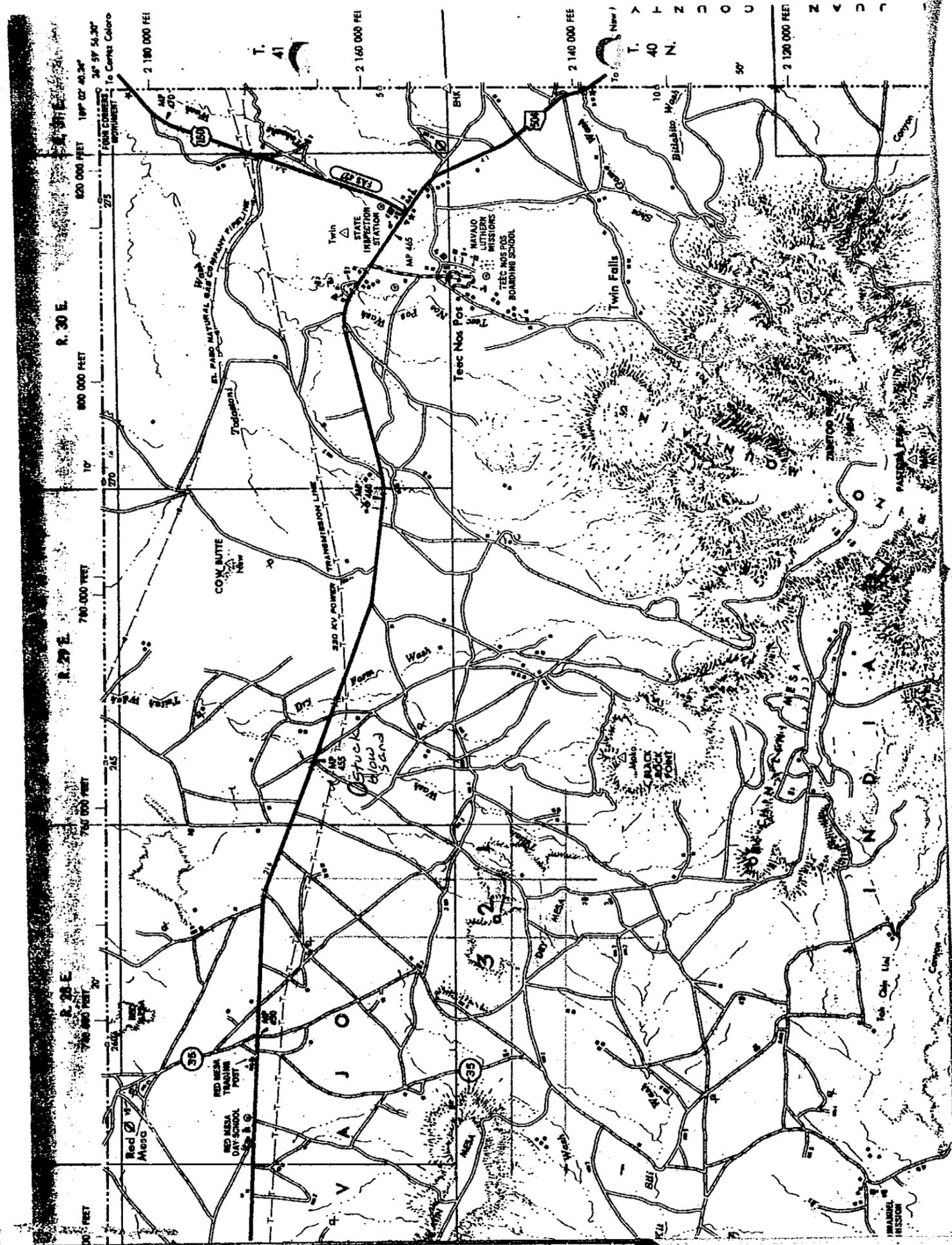
Date Surveyed: Sept. 6, 1984

Registered Professional Engineer and/or Land Surveyor  
Thomas Engineering Inc.  
See attached plat

Certificate No. 6728

**PROPOSED CASING PROGRAM**

Size of Casing	Weight	Grade & Type	Top	Bottom	Cementing Depths	Sacks Cement	Type
13 3/8"	48#	H-40 STC	Surface	100'	Cement to surface	100 sx.	Class B
8 5/8"	24#	K-55 STC	Surface	1,200'	" " "	500 sx.	" "
5 1/2"	15.5#	K-55 STC	Surface	5,600'	TD to 3,300'	400 sx.	Lite





# PERMIT TO DRILL

This constitutes the permission and authority from the  
**OIL AND GAS CONSERVATION COMMISSION,  
STATE OF ARIZONA,**

To: MONSANTO CO.  
(OPERATOR)

to drill a well to be known as

6 Navajo 138  
(WELL NAME)

located 1,689.5' from South Line & 2,289.7 from West Line

Section 2 Township 40N Range 28E, Apache County, Arizona.

The \_\_\_\_\_ of said  
Section, Township and Range is dedicated to this well.

Said well is to be drilled substantially as outlined in the attached Application and must be drilled  
in full compliance with all applicable laws, statutes, rules and regulations of the State of Arizona.

Issued this 4th day of October, 19 84.

**OIL AND GAS CONSERVATION COMMISSION**

By R. A. Yanna  
ENFORCEMENT EXECUTIVE DIRECTOR

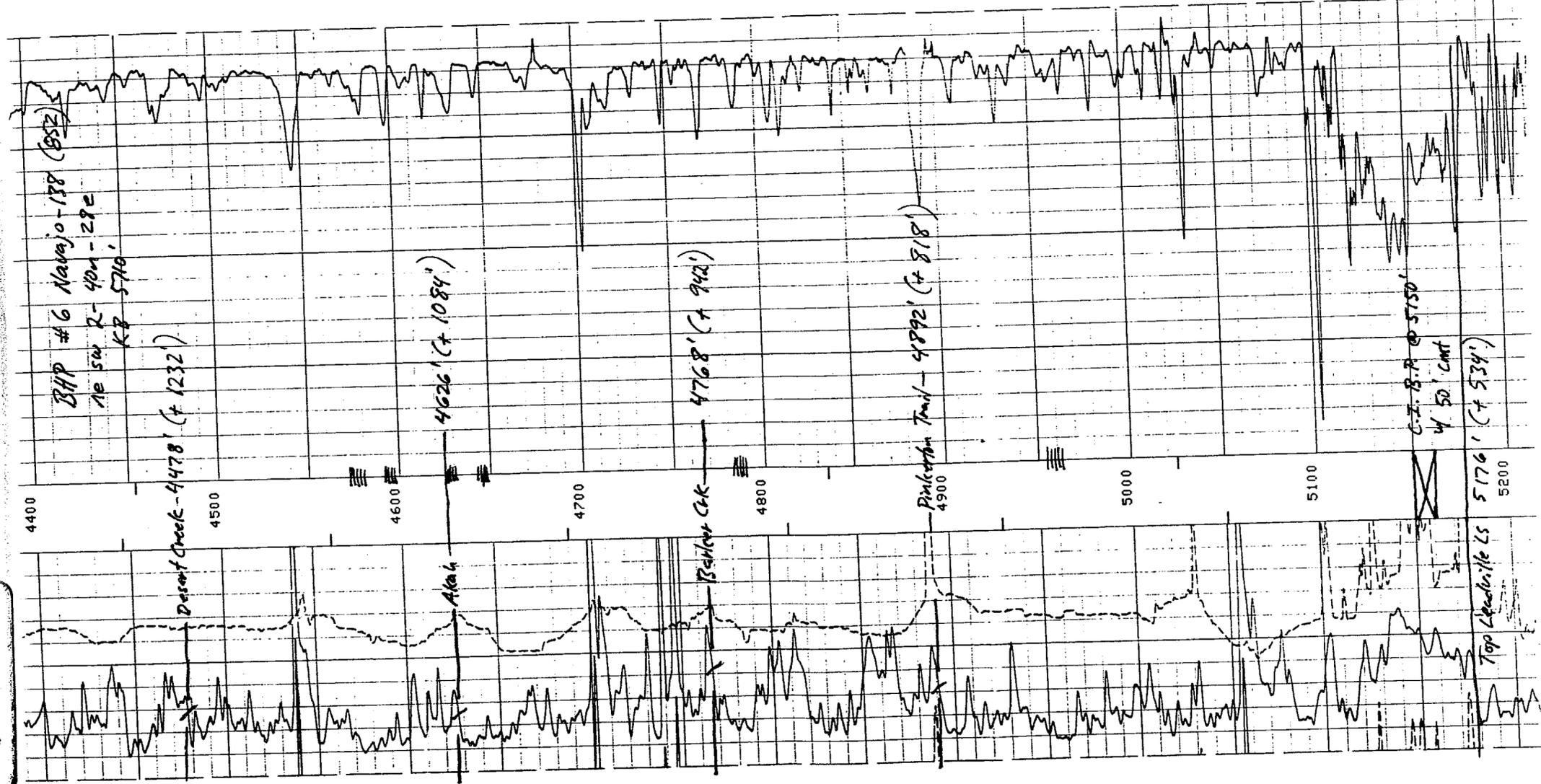
PERMIT 00052

RECEIPT NO. 2549

A.P.I. NO. 028001-20283

State of Arizona  
Oil & Gas Conservation Commission  
Permit to Drill

FORM NO. 27



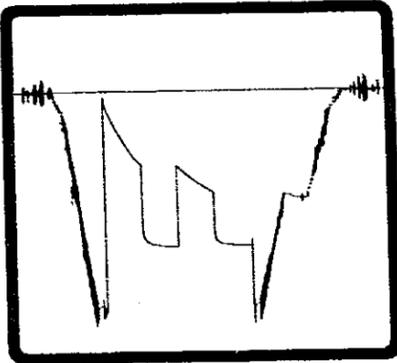
Apache 852  
 (Monsanto Oil Co.)  
 Navajo 138

P/U 852

RECEIVED  
JUL 19 1985  
O & G CONS. COMM.

*AKS*

# FORMATION TESTING SERVICE REPORT



LEASE NAME NAVRJO TRIBL 138 WELL NO. 6 TEST NO. 1 TESTED INTERVAL \_\_\_\_\_  
MONSANTO OIL COMPANY  
LEASE OWNER/COMPANY NAME



Duncan, Oklahoma 73536

 A Halliburton Company

## NOMENCLATURE

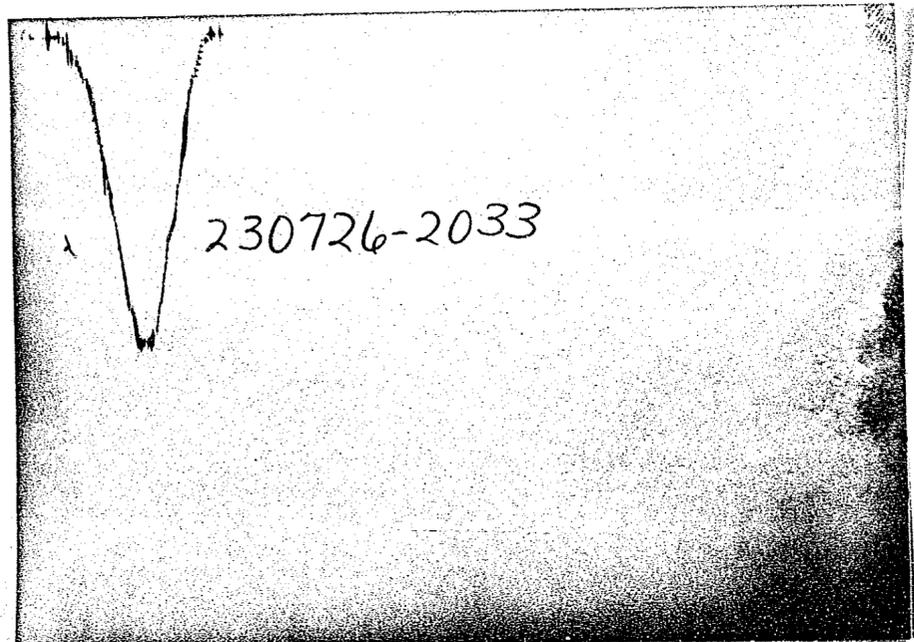
B	= Formation Volume Factor (Res Vol / Std Vol)	—
$C_1$	= System Total Compressibility	(Vol / Vol) / psi
DR	= Damage Ratio	—
h	= Estimated Net Pay Thickness	Ft
k	= Permeability	md
m	{ (Liquid) Slope Extrapolated Pressure Plot	psi/cycle
	{ (Gas) Slope Extrapolated m(P) Plot	MM psi <sup>2</sup> /cp/cycle
$m(P^*)$	= Real Gas Potential at $P^*$	MM psi <sup>2</sup> ·cp
$m(P_1)$	= Real Gas Potential at $P_1$	MM psi <sup>2</sup> ·cp
$AOF_1$	= Maximum Indicated Absolute Open Flow at Test Conditions	MCFD
$AOF_2$	= Minimum Indicated Absolute Open Flow at Test Conditions	MCFD
$P^*$	= Extrapolated Static Pressure	Psig
$P_1$	= Final Flow Pressure	Psig
Q	= Liquid Production Rate During Test	BPD
$Q_1$	= Theoretical Liquid Production w/ Damage Removed	BPD
$Q_g$	= Measured Gas Production Rate	MCFD
$r_i$	= Approximate Radius of Investigation	Ft
$r_w$	= Radius of Well Bore	Ft
S	= Skin Factor	—
t	= Total Flow Time Previous to Closed-in	Minutes
$\Delta t$	= Closed-in Time at Data Point	Minutes
T	= Temperature Rankine	°R
$\phi$	= Porosity	—
$\mu$	= Viscosity of Gas or Liquid	cp
Log	= Common Log	—



TICKET NO. 23072600  
16-JUL-85  
FARMINGTON

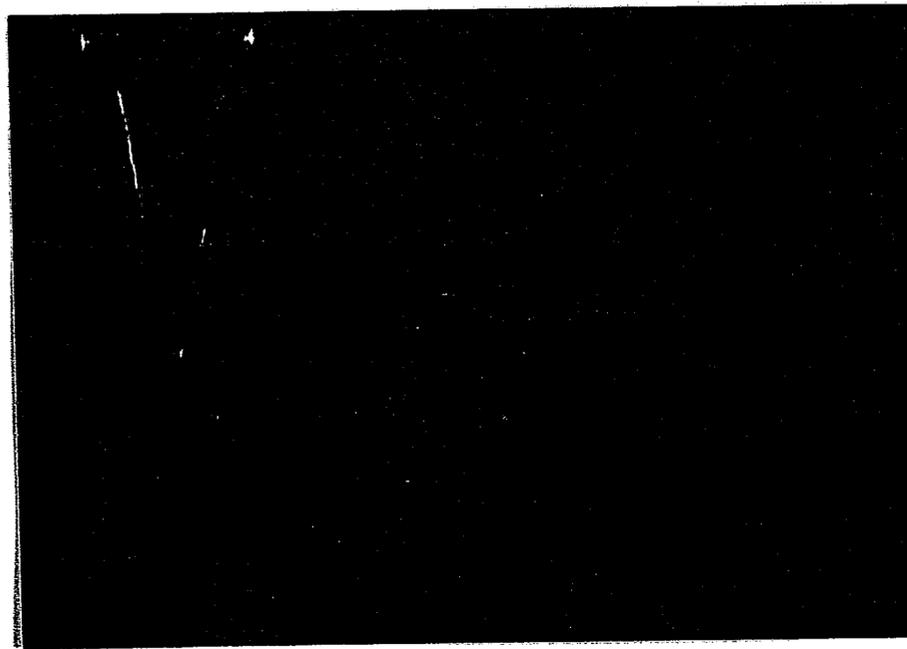
## FORMATION TESTING SERVICE REPORT

LEASE NAME	NAVajo TRIBAL 138	WELL NO.	5	TEST NO.	1	TESTED INTERVAL	
LEGAL LOCATION	2-40N-29E	FIELD AREA		COUNTY	APACHE	STATE	ARIZONA
REQ MESA							
LEASE OWNER/COMPANY NAME	MONSANTO OIL COMPANY						
	Mesaquite 852 011						
	Mesaquite 852 011						
	Mesaquite 852 011						



GAUGE NO: 2033 DEPTH: \_\_\_\_\_ BLANKED OFF: NO HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	FAILED TO REACH BOTTOM					



GAUGE NO: 2032 DEPTH: \_\_\_\_\_ BLANKED OFF: YES HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	FAILED TO REACH BOTTOM					

Apache 852  
 Monsanto 011  
 138



TICKET NO. 23072600

		O.D.	I.D.	LENGTH	DEPTH
1	DRILL PIPE.....	4.500	3.826		
3	DRILL COLLARS.....	6.250	2.250	600.0	
50	IMPACT REVERSING SUB.....	6.000	3.000	1.0	
3	DRILL COLLARS.....	6.250	2.250	93.0	
5	CROSSOVER.....	6.000	3.000	1.0	
13	DUAL CIP SAMPLER.....	5.030	0.750	7.0	
60	HYDROSPRING TESTER.....	5.000	0.750	5.0	
80	AP RUNNING CASE.....	5.000	2.250	4.0	
15	JAR.....	5.030	1.750	5.0	
16	VR SAFETY JOINT.....	5.000	1.000	3.0	
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	
20	FLUSH JOINT ANCHOR.....	5.750	3.000	25.0	
81	BLANKED-OFF RUNNING CASE.....	5.750		4.0	
TOTAL DEPTH					4796.0

EQUIPMENT DATA

**EQUATIONS FOR DST LIQUID WELL ANALYSIS**

Transmissibility  $\frac{kh}{\mu} = \frac{162.6 QB}{m}$  md-ft  
cp

Indicated Flow Capacity  $kh = \frac{kh}{\mu} \mu$  md-ft

Average Effective Permeability  $k = \frac{kh}{h}$  md

Skin Factor  $S = 1.151 \left[ \frac{P^* - P_f}{m} - \text{LOG} \left( \frac{k(t/60)}{\phi \mu c_f a^2} \right) - 3.23 \right]$  —

Damage Ratio  $DR = \frac{P^* - P_f}{P^* - P_f - 0.87 mS}$  —

Theoretical Potential w/ Damage Removed  $Q_1 = Q DR$  BPD

Approx. Radius of Investigation  $r_i = 0.032 \sqrt{\frac{k(t/60)}{\phi \mu c_f}}$  ft

**EQUATIONS FOR DST GAS WELL ANALYSIS**

Indicated Flow Capacity  $kh = \frac{1637 Q_g T}{m}$  md-ft

Average Effective Permeability  $k = \frac{kh}{h}$  md

Skin Factor  $S = 1.151 \left[ \frac{m(P^*) - m(P_f)}{m} - \text{LOG} \left( \frac{k(t/60)}{\phi \mu c_f a^2} \right) - 3.23 \right]$  —

Damage Ratio  $DR = \frac{m(P^*) - m(P_f)}{m(P^*) - m(P_f) - 0.87 mS}$  —

Indicated Flow Rate (Maximum)  $AOF_1 = \frac{Q_g m(P^*)}{m(P^*) - m(P_f)}$  MCFD

Indicated Flow Rate (Minimum)  $AOF_2 = Q_g \sqrt{\frac{m(P^*)}{m(P^*) - m(P_f)}}$  MCFD

Approx. Radius of Investigation  $r_i = 0.032 \sqrt{\frac{k(t/60)}{\phi \mu c_f}}$  ft

Apache 852  
Monsanto 011  
NAVAJO 138

P/A 852

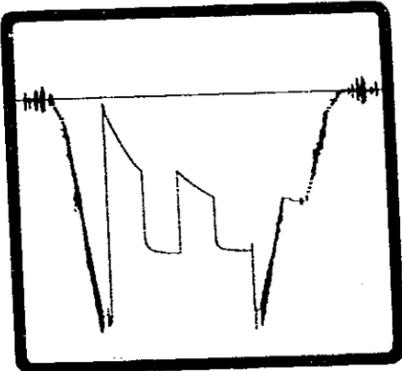
RECEIVED

JUL 22 1985

O & G CONS. COMM.

*OKA*

# FORMATION TESTING SERVICE REPORT



LEASE NAME NRYRJO TRIBBL 138

WELL NO. 6

TEST NO. 2

TESTED INTERVAL 4765.0 - 4796.0

MONSANTO OIL COMPANY  
LEASE OWNER/COMPANY NAME



Duncan, Oklahoma 73536

 A Halliburton Company

## NOMENCLATURE

B	= Formation Volume Factor (Res Vol / Std Vol)	—
$C_t$	= System Total Compressibility	(Vol / Vol) / psi
DR	= Damage Ratio	—
h	= Estimated Net Pay Thickness	Ft
k	= Permeability	md
m	{ (Liquid) Slope Extrapolated Pressure Plot	psi/cycle
	{ (Gas) Slope Extrapolated m(P) Plot	MM psi <sup>2</sup> /cp/cycle
$m(P^*)$	= Real Gas Potential at $P^*$	MM psi <sup>2</sup> /cp
$m(P_f)$	= Real Gas Potential at $P_f$	MM psi <sup>2</sup> /cp
$AOF_1$	= Maximum Indicated Absolute Open Flow at Test Conditions	MCFD
$AOF_2$	= Minimum Indicated Absolute Open Flow at Test Conditions	MCFD
$P^*$	= Extrapolated Static Pressure	Psig
$P_f$	= Final Flow Pressure	Psig
Q	= Liquid Production Rate During Test	BPD
$Q_1$	= Theoretical Liquid Production w/ Damage Removed	BPD
$Q_g$	= Measured Gas Production Rate	MCFD
$r_i$	= Approximate Radius of Investigation	Ft
$r_w$	= Radius of Well Bore	Ft
S	= Skin Factor	—
t	= Total Flow Time Previous to Closed-in	Minutes
$\Delta t$	= Closed-in Time at Data Point	Minutes
T	= Temperature Rankine	°R
$\phi$	= Porosity	—
$\mu$	= Viscosity of Gas or Liquid	cp
Log	= Common Log	—

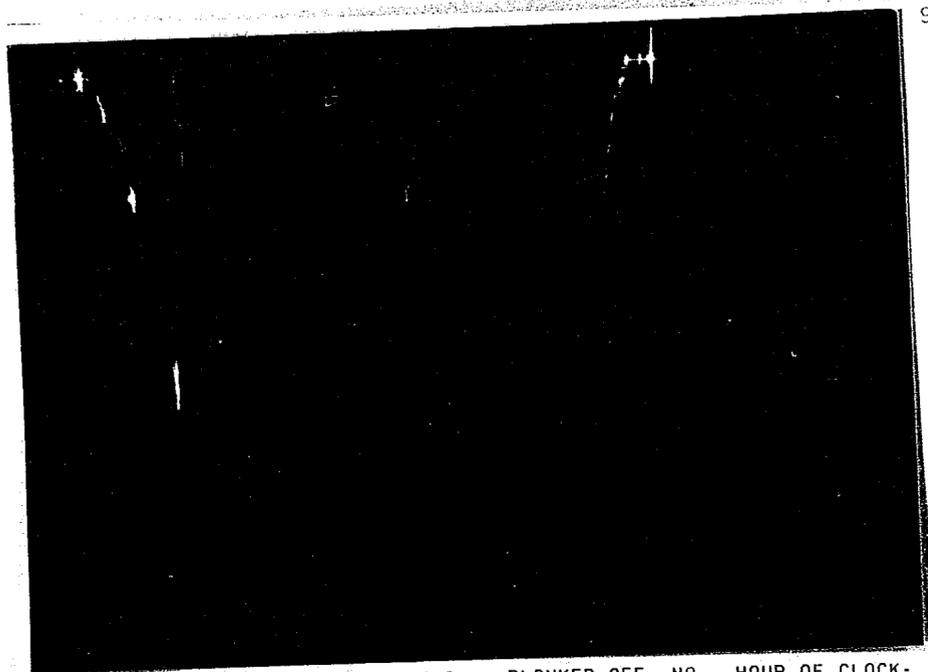


TICKET NO. 23072700  
17-JUL-85  
FARMINGTON

FORMATION TESTING SERVICE REPORT

LEGAL LOCATION: NEVADO TRIBAL 138  
 LEASE NAME: \_\_\_\_\_  
 WELL NO.: 6  
 TEST NO.: 2  
 FIELD: ARIZONA  
 COUNTY: ARIZONA  
 STATE: ARIZONA  
 REO MESA  
 TESTED INTERVAL: 4795.0 - 4795.0  
 MONSANTO OIL COMPANY  
 LEASE OWNER/COMPANY NAME: \_\_\_\_\_

Apache 852  
 Nonsanto Oil  
 Nevada 138



99

GAUGE NO: 2033 DEPTH: 4744.0 BLANKED OFF: NO HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2425	2376.9			
B	INITIAL FIRST FLOW	133	155.1	15.0	15.4	F
C	FINAL FIRST FLOW	347	367.8			
C	INITIAL FIRST CLOSED-IN	347	367.8	220.0	218.9	C
D	FINAL FIRST CLOSED-IN	1413	1412.1			
E	INITIAL SECOND FLOW	280	310.0	120.0	121.9	F
F	FINAL SECOND FLOW	961	976.3			
F	INITIAL SECOND CLOSED-IN	961	976.3	245.0	243.8	C
G	FINAL SECOND CLOSED-IN	1400	1411.5			
H	FINAL HYDROSTATIC	2345	2342.9			



GAUGE NO: 2032 DEPTH: 4793.0 BLANKED OFF: YES HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2406	2396.2			
B	INITIAL FIRST FLOW	173	181.8	15.0	15.4	F
C	FINAL FIRST FLOW	346	378.5			
C	INITIAL FIRST CLOSED-IN	346	378.5	220.0	218.9	C
D	FINAL FIRST CLOSED-IN	1431	1421.0			
E	INITIAL SECOND FLOW	320	315.2	120.0	121.9	F
F	FINAL SECOND FLOW	982	987.4			
F	INITIAL SECOND CLOSED-IN	982	987.4	245.0	243.8	C
G	FINAL SECOND CLOSED-IN	1418	1419.8			
H	FINAL HYDROSTATIC	2379	2361.6			

mpache 852  
011  
Aluminum, Inc. (Monsanto 011)  
NAVAJO 138



TICKET NO: 23072700  
CLOCK NO: 9756 HOUR: 24



GAUGE NO: 2033  
DEPTH: 4744.0

REF	MINUTES	PRESSURE	AP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
FIRST FLOW					
B 1	0.0	155.1			
2	3.0	200.6	45.5		
3	6.0	233.5	32.9		
4	9.0	280.3	46.8		
5	12.0	321.0	40.7		
C 6	15.4	367.8	46.8		
FIRST CLOSED-IN					
C 1	0.0	367.8			
2	1.0	977.7	609.9	0.9	1.230
3	2.0	1216.8	849.0	1.8	0.930
4	3.0	1267.0	899.2	2.5	0.790
5	4.0	1303.2	935.4	3.2	0.685
6	5.0	1324.6	956.8	3.8	0.610
7	6.0	1339.7	972.0	4.3	0.552
8	7.0	1351.2	983.4	4.8	0.504
9	8.0	1360.8	993.0	5.3	0.465
10	9.0	1368.9	1001.1	5.7	0.433
11	10.0	1375.4	1007.6	6.0	0.405
12	12.0	1386.0	1018.3	6.7	0.357
13	14.0	1393.5	1025.7	7.3	0.321
14	16.0	1399.7	1030.9	7.8	0.292
15	18.0	1401.5	1033.7	8.3	0.268
16	20.0	1404.1	1036.3	8.7	0.248
17	22.0	1406.1	1038.3	9.0	0.230
18	24.0	1407.3	1039.5	9.4	0.215
19	26.0	1408.4	1040.6	9.7	0.201
20	28.0	1408.9	1041.1	9.9	0.190
21	30.0	1410.0	1042.2	10.2	0.180
22	35.0	1410.4	1042.6	10.7	0.158
23	40.0	1410.8	1043.0	11.1	0.141
24	45.0	1411.1	1043.3	11.5	0.127
25	50.0	1411.5	1043.7	11.7	0.116
26	55.0	1412.1	1044.3	12.0	0.107
27	60.0	1412.1	1044.3	12.2	0.099
28	70.0	1412.4	1044.6	12.6	0.086
29	80.0	1412.3	1044.5	12.9	0.078
30	90.0	1412.8	1045.0	13.1	0.068
31	100.0	1412.9	1045.1	13.3	0.062
32	110.0	1412.9	1045.1	13.5	0.057
33	120.0	1412.9	1045.1	13.6	0.052
34	135.0	1412.6	1044.9	13.8	0.047
35	150.0	1412.6	1044.9	13.9	0.042
36	165.0	1412.6	1044.9	14.1	0.039
37	180.0	1412.8	1045.0	14.2	0.036
38	195.0	1412.9	1045.1	14.2	0.033
39	210.0	1412.9	1045.1	14.3	0.031
D 40	218.9	1412.1	1044.3	14.4	0.029

REF	MINUTES	PRESSURE	AP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
SECOND FLOW					
E 1	0.0	310.0			
2	10.0	441.0	131.0		
3	20.0	538.9	98.0		
4	30.0	615.9	77.0		
5	40.0	690.6	74.7		
6	50.0	745.2	54.6		
7	60.0	793.9	48.7		
8	70.0	832.8	38.8		
9	80.0	866.0	33.2		
10	90.0	896.8	30.8		
11	100.0	924.7	27.9		
12	110.0	948.9	24.2		
F 13	121.9	976.3	27.5		
SECOND CLOSED-IN					
F 1	0.0	976.3			
2	1.0	1252.2	275.8	1.0	2.158
3	2.0	1315.0	338.6	2.0	1.840
4	3.0	1335.5	359.1	2.9	1.669
5	4.0	1347.4	371.1	3.9	1.552
6	5.0	1356.9	380.5	4.8	1.455
7	6.0	1364.6	388.3	5.8	1.375
8	7.0	1371.4	395.1	6.7	1.314
9	8.0	1376.9	400.5	7.6	1.259
10	9.0	1381.5	405.2	8.4	1.212
11	10.0	1385.5	409.2	9.3	1.168
12	12.0	1392.0	415.7	11.0	1.095
13	14.0	1396.0	419.7	12.7	1.034
14	16.0	1399.3	423.0	14.3	0.981
15	18.0	1401.5	425.1	15.9	0.935
16	20.0	1404.1	427.8	17.5	0.895
17	22.0	1405.2	428.9	19.0	0.859
18	24.0	1405.7	429.4	20.5	0.827
19	26.0	1406.9	430.6	21.9	0.798
20	28.0	1407.9	431.5	23.3	0.771
21	30.0	1408.3	431.9	24.6	0.746
22	35.0	1408.9	432.6	27.9	0.692
23	40.0	1409.3	433.0	31.0	0.648
24	45.0	1410.0	433.6	33.9	0.608
25	50.0	1410.7	434.3	36.7	0.573
26	55.0	1410.7	434.3	39.3	0.544
27	60.0	1410.7	434.3	41.8	0.517
28	70.0	1410.7	434.3	46.4	0.471
29	80.0	1411.3	435.0	50.5	0.434
30	90.0	1411.3	435.0	54.4	0.402
31	100.0	1411.3	435.0	57.8	0.375
32	110.0	1411.6	435.2	61.1	0.352
33	120.0	1411.6	435.2	64.0	0.331
34	135.0	1412.0	435.6	68.1	0.305
35	150.0	1412.0	435.6	71.7	0.282

REMARKS:

TICKET NO: 23072700  
CLOCK NO: 9756 HOUR: 24



GAUGE NO: 2033  
DEPTH: 4744.0

REF	MINUTES	PRESSURE	AP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
SECOND CLOSED-IN - CONTINUED					
36	165.0	1412.0	435.6	74.9	0.263
37	180.0	1412.0	435.6	77.9	0.246
38	195.0	1412.0	435.6	80.6	0.231
39	210.0	1412.0	435.6	83.0	0.218
40	225.0	1412.0	435.6	85.3	0.207
41	240.0	1412.0	435.6	87.3	0.196
G 42	243.8	1411.5	435.1	87.8	0.194

REMARKS:

Apache 852  
 Halliburton, Inc. (Monsanto Oil)  
 Houston, Texas 77002-1388

TICKET NO: 23072700  
CLOCK NO: 7276 HOUR: 24



GAUGE NO: 2032  
DEPTH: 4793.0

REF	MINUTES	PRESSURE	AP	$\frac{1 \times \Delta t}{1 + \Delta t}$	$\log \frac{1 + \Delta t}{\Delta t}$
FIRST FLOW					
B 1	0.0	181.8	34.4		
2	3.0	216.2	34.4		
3	6.0	249.5	33.2		
4	9.0	292.0	42.6		
5	12.0	334.3	42.3		
C 6	15.4	378.5	44.2		
FIRST CLOSED-IN					
C 1	0.0	378.5			
2	1.0	951.8	573.3	0.9	1.226
3	2.0	1223.2	844.7	1.8	0.932
4	3.0	1281.8	903.3	2.5	0.786
5	4.0	1314.1	935.6	3.2	0.684
6	5.0	1334.4	956.0	3.8	0.611
7	6.0	1351.2	972.7	4.3	0.551
8	7.0	1363.3	984.9	4.8	0.505
9	8.0	1372.6	994.1	5.3	0.465
10	9.0	1379.0	1000.6	5.7	0.431
11	10.0	1386.8	1008.4	6.1	0.403
12	12.0	1397.3	1018.8	6.7	0.358
13	14.0	1403.3	1024.9	7.3	0.322
14	16.0	1408.3	1029.9	7.8	0.292
15	18.0	1411.9	1033.5	8.3	0.268
16	20.0	1414.3	1035.8	8.7	0.247
17	22.0	1416.0	1037.5	9.0	0.230
18	24.0	1417.1	1038.6	9.4	0.215
19	26.0	1417.7	1039.3	9.7	0.201
20	28.0	1418.4	1039.9	9.9	0.190
21	30.0	1419.2	1040.7	10.2	0.180
22	35.0	1419.8	1041.4	10.7	0.158
23	40.0	1420.2	1041.8	11.1	0.141
24	45.0	1421.1	1042.7	11.5	0.127
25	50.0	1421.1	1042.7	11.8	0.116
26	55.0	1421.1	1042.7	12.0	0.107
27	60.0	1421.5	1043.1	12.2	0.099
28	70.0	1421.5	1043.1	12.6	0.086
29	80.0	1421.5	1043.1	12.9	0.076
30	90.0	1421.5	1043.1	13.1	0.068
31	100.0	1421.7	1043.2	13.3	0.062
32	110.0	1421.7	1043.2	13.5	0.057
33	120.0	1421.7	1043.2	13.6	0.052
34	135.0	1421.7	1043.2	13.8	0.047
35	150.0	1421.7	1043.2	13.9	0.042
36	165.0	1421.7	1043.2	14.0	0.039
37	180.0	1421.7	1043.2	14.1	0.036
38	195.0	1421.7	1043.2	14.2	0.033
39	210.0	1421.7	1043.2	14.3	0.031
D 40	218.9	1421.0	1042.6	14.4	0.029

REF	MINUTES	PRESSURE	AP	$\frac{1 \times \Delta t}{1 + \Delta t}$	$\log \frac{1 + \Delta t}{\Delta t}$
SECOND FLOW					
E 1	0.0	315.2			
2	10.0	452.5	137.3		
3	20.0	550.7	98.2		
4	30.0	628.5	77.7		
5	40.0	699.1	70.7		
6	50.0	757.5	58.4		
7	60.0	804.0	46.5		
8	70.0	842.1	38.1		
9	80.0	875.1	33.0		
10	90.0	905.8	30.7		
11	100.0	934.1	28.3		
12	110.0	957.4	23.3		
F 13	121.9	987.4	29.9		
SECOND CLOSED-IN					
F 1	0.0	987.4			
2	1.0	1275.6	288.3	1.0	2.153
3	2.0	1323.3	335.9	1.9	1.849
4	3.0	1342.5	355.1	2.9	1.669
5	4.0	1356.2	368.8	3.9	1.551
6	5.0	1365.8	378.5	4.8	1.454
7	6.0	1373.9	386.5	5.8	1.377
8	7.0	1380.6	393.2	6.7	1.312
9	8.0	1386.0	398.7	7.5	1.260
10	9.0	1391.2	403.8	8.4	1.212
11	10.0	1395.7	408.3	9.3	1.167
12	12.0	1401.2	413.8	11.0	1.095
13	14.0	1405.2	417.8	12.7	1.035
14	16.0	1409.0	421.6	14.3	0.982
15	18.0	1411.2	423.9	15.9	0.937
16	20.0	1413.2	425.9	17.5	0.895
17	22.0	1414.4	427.1	19.0	0.859
18	24.0	1415.1	427.7	20.5	0.827
19	26.0	1415.7	428.4	21.8	0.798
20	28.0	1416.0	428.6	23.3	0.770
21	30.0	1415.7	428.4	24.6	0.746
22	35.0	1417.4	430.1	27.9	0.692
23	40.0	1417.7	430.4	31.0	0.646
24	45.0	1418.6	431.3	33.9	0.607
25	50.0	1418.8	431.4	36.6	0.574
26	55.0	1418.8	431.4	39.3	0.543
27	60.0	1418.8	431.4	41.7	0.517
28	70.0	1419.0	431.7	46.4	0.471
29	80.0	1419.2	431.8	50.5	0.434
30	90.0	1419.7	432.3	54.3	0.402
31	100.0	1419.7	432.3	57.8	0.375
32	110.0	1420.2	432.9	61.1	0.352
33	120.0	1420.2	432.9	64.0	0.331
34	135.0	1420.5	433.1	68.1	0.305
35	150.0	1420.5	433.1	71.7	0.282

REMARKS:

TICKET NO: 23072700  
CLOCK NO: 7276 HOUR: 24



GAUGE NO: 2032  
DEPTH: 4793.0

REF	MINUTES	PRESSURE	AP	$\frac{1 \times \Delta t}{1 + \Delta t}$	$\log \frac{1 + \Delta t}{\Delta t}$
SECOND CLOSED-IN - CONTINUED					
36	165.0	1419.8	432.5	74.9	0.263
37	180.0	1419.8	432.5	77.9	0.246
38	195.0	1419.7	432.3	80.6	0.231
39	210.0	1419.7	432.3	83.0	0.218
40	225.0	1419.7	432.3	85.3	0.207
41	240.0	1419.7	432.3	87.3	0.196
G 42	243.8	1419.8	432.5	87.8	0.194

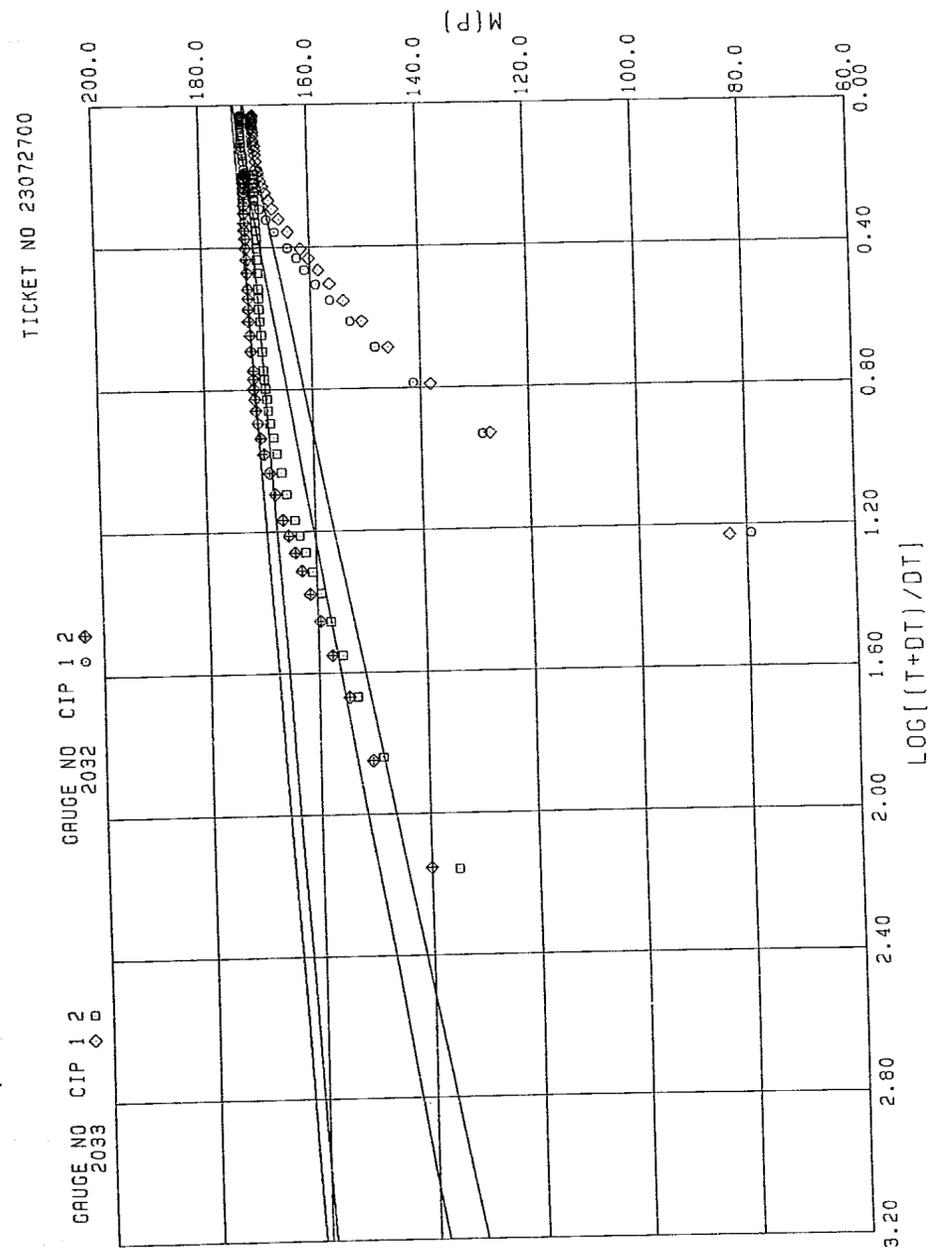
REMARKS:

Pacheco 852 Oil  
 Mousanto  
 Navajo 138

TICKET NO. 23072700

		O.D.	I.D.	LENGTH	DEPTH
1		4.500	3.826	4036.0	
3		6.250	2.250	600.0	
50		6.000	3.000	1.0	4637.0
3		6.250	2.250	93.0	
5		6.000	3.000	1.0	
13		5.030	0.750	7.0	
60		5.000	0.750	5.0	4742.0
80		5.000	2.250	4.0	4744.0
15		5.030	1.750	5.0	
16		5.000	1.000	3.0	
70		6.750	1.530	6.0	4759.0
70		6.750	1.530	6.0	4765.0
20		5.750	3.000	25.0	
81		5.750		4.0	4793.0
TOTAL DEPTH					4796.0

EQUIPMENT DATA



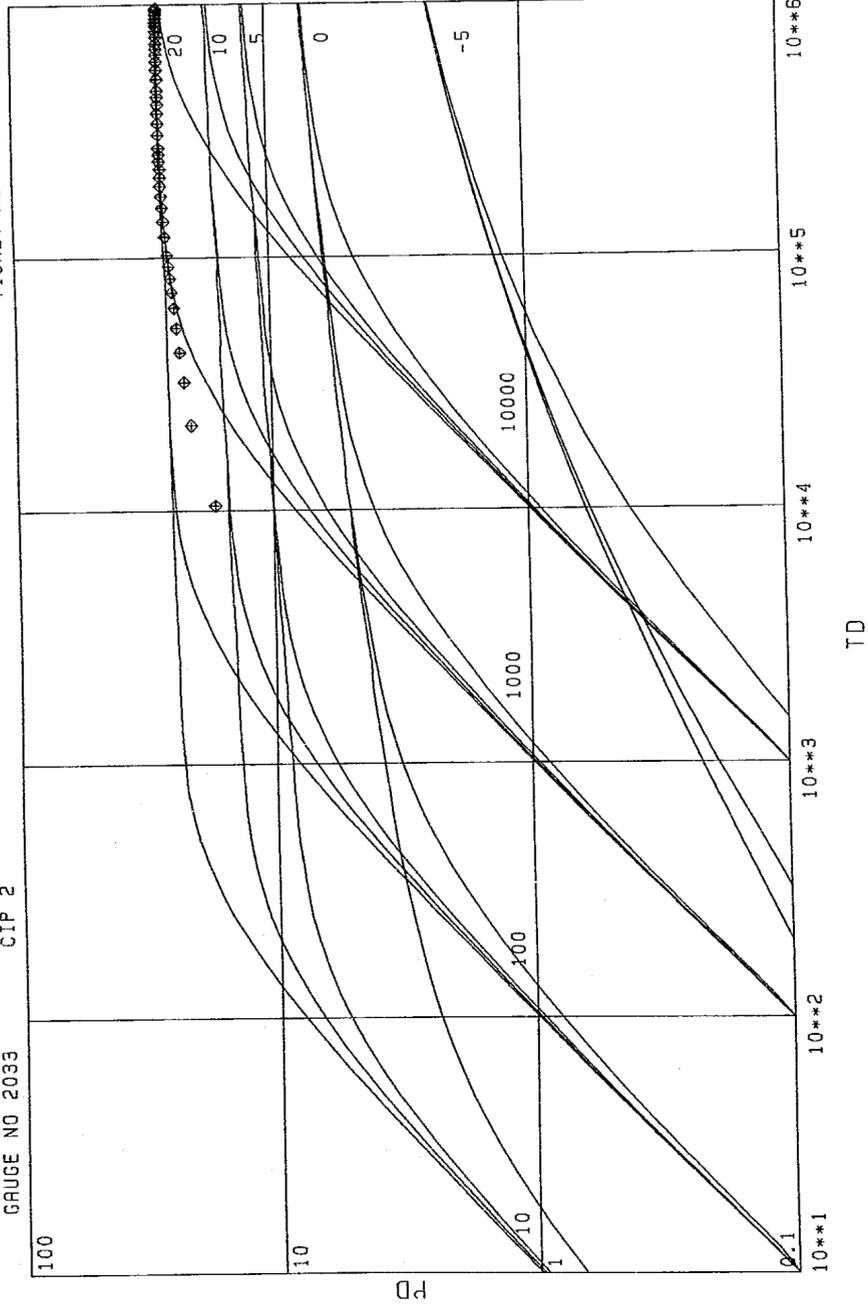
Apache 852  
 (Monsanto Oil Co.)  
 Navajo 138



TICKET NO 23072700

CIP 2

GAUGE NO 2033

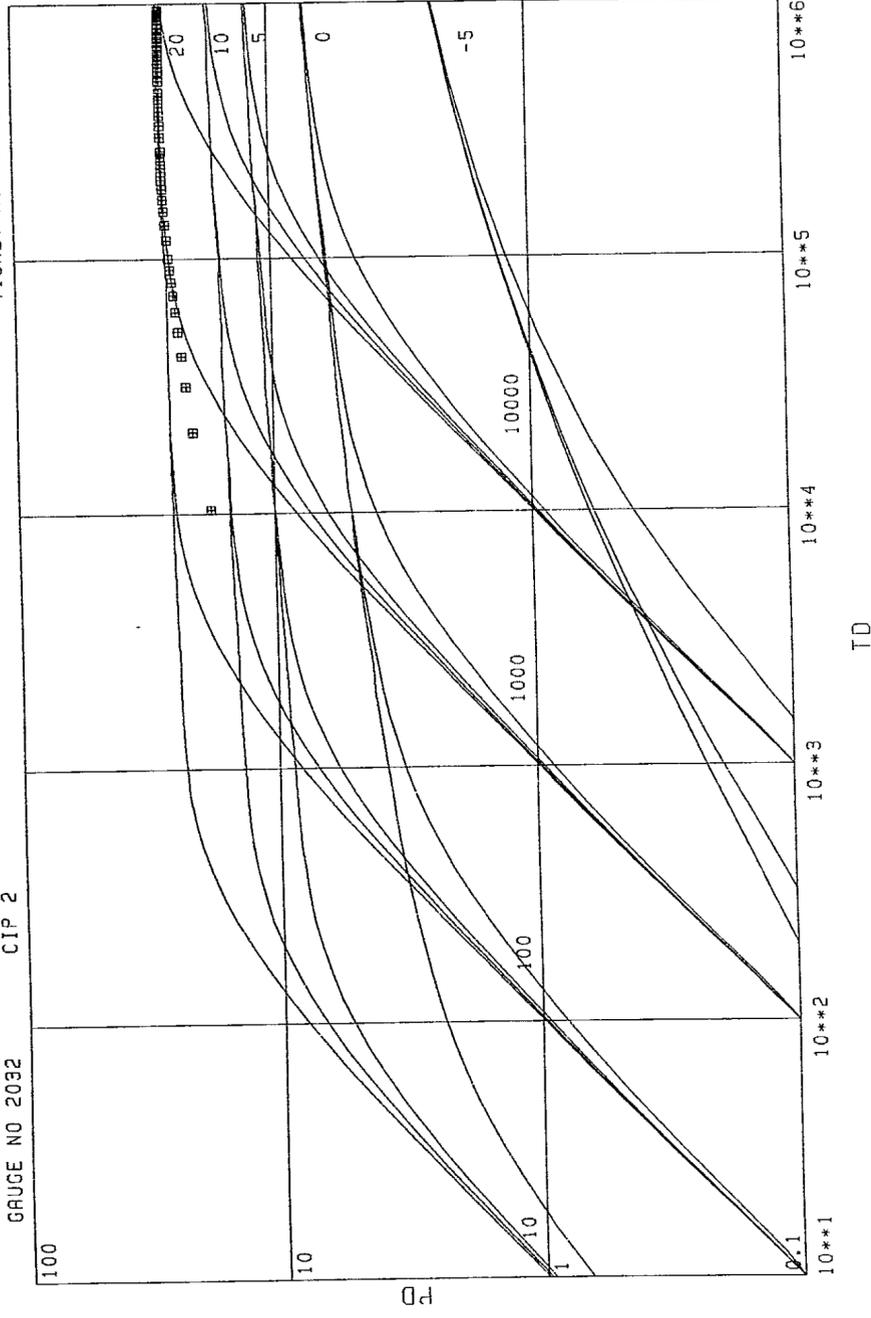


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TICKET NO 23072700

CIP 2

GAUGE NO 2032



Apache 852  
Monsanto Oil  
Monsanto Inc.  
Newark, N.J.

TICKET NUMBER 23072700

**SUMMARY OF RESERVOIR PARAMETERS**  
USING HORNER METHOD FOR GAS WELLS

GAS GRAVITY 0.600 TEMPERATURE 125.0 °F  
 NET PAY 10.0 ft POROSITY 10.0 %  
 RADIUS OF WELL BORE 0.328 ft VISCOSITY 0.014 cp  
 GAS DEVIATION FACTOR 0.872 GAS PROPERTIES AT 1427.7 psig  
 SYSTEM COMPRESSIBILITY 620.44 ×10<sup>-6</sup> vol/vol/psi

GAUGE NUMBER	2033	2033	2032	2032			
GAUGE DEPTH	4744.0	4744.0	4793.0	4793.0			
FLOW AND CIP PERIOD	1	2	1	2			UNITS
FINAL FLOW PRESSURE	367.8	976.3	378.5	987.4			psig
TOTAL FLOW TIME	15.4	137.3	15.4	137.3			min
CALC. STATIC PRESSURE P*	1419.1	1420.1	1426.8	1427.7			psig
EXTRAPOLATED PRESSURE m(P*)	171.5	171.8	173.4	173.6			mmpsi <sup>2</sup> /cp
ONE CYCLE PRESSURE m(P <sub>10</sub> )	159.0	167.9	162.5	169.7			mmpsi <sup>2</sup> /cp
PRODUCTION RATE Q		258.0		258.0			MCFD
FLOW CAPACITY kh		62.7486		62.7488			md-ft
PERMEABILITY k		6.27486		6.27488			md
SKIN FACTOR S		20.3		20.3			
DAMAGE RATIO DR		4.6		4.6			
INDICATED RATE MAX AOF <sub>1</sub>		498.9		503.4			MCFD
INDICATED RATE MIN AOF <sub>2</sub>		358.8		360.4			MCFD
THEORETICAL RATE DR×AOF <sub>1</sub>		2282.4		2307.2			MCFD
THEORETICAL RATE DR×AOF <sub>2</sub>		1641.3		1651.8			MCFD
RADIUS OF INVESTIGATION r <sub>i</sub>		130.0		130.0			ft

REMARKS: CALCULATION SERVICES WERE PERFORMED UPON THE SECOND CLOSED-IN PERIOD READINGS ONLY. A RELATIVELY ACCURATE PRODUCTION RATE WAS UNAVAILABLE FOR THE INITIAL FLOW PERIOD. THE PRODUCTION RATE USED FOR ALL CALCULATIONS WAS THE FINAL REPORTED PRODUCTION RATE. BECAUSE THE WELL HAD NOT YET STABILIZED, THIS USE OF THIS RATE IS SOMEWHAT QUESTIONABLE. AFTER CLOSE OBSERVATION OF THE CHARTS AND LOG-LOG PLOTS, THE LATTER CLOSED-IN PERIOD POINTS WERE ASSUMED TO BE REPRESENTATIVE OF THE PSEUDO-STEADY STATE REGIME. THE SELECTION OF HORNER LINES WAS BASED UPON THIS ASSUMPTION. ALL CALCULATIONS ARE RELATIVE TO GAS AND ASSUME 100% GAS PRODUCTION. BECAUSE THERE WAS A SUBSTANTIAL AMOUNT OF WATER PRODUCED, THIS ASSUMPTION IS SOMEWHAT QUESTIONABLE.

NOTICE: THESE CALCULATIONS ARE BASED UPON INFORMATION FURNISHED BY YOU AND TAKEN FROM DRILL STEM PRESSURE CHARTS, AND ARE FURNISHED YOU FOR YOUR INFORMATION. IN FURNISHING SUCH CALCULATIONS AND EVALUATIONS BASED THEREON, HALLIBURTON IS MERELY EXPRESSING ITS OPINION. YOU AGREE THAT HALLIBURTON MAKES NO WARRANTY EXPRESS OR IMPLIED AS TO THE ACCURACY OF SUCH CALCULATIONS OR OPINIONS, AND THAT HALLIBURTON SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, WHETHER DUE TO NEGLIGENCE OR OTHERWISE, IN CONNECTION WITH SUCH OPINIONS.

TICKET NUMBER 23072700

**SUMMARY OF RESERVOIR PARAMETERS**  
USING CURVE MATCH METHOD FOR GAS WELLS

GAS GRAVITY 0.600 TEMPERATURE 125.0 °F  
 NET PAY 10.0 ft POROSITY 10.0 %  
 RADIUS OF WELLBORE 0.328 ft VISCOSITY 0.014 cp  
 GAS DEVIATION FACTOR 0.872 GAS PROPERTIES AT 1428.0 psig  
 SYSTEM COMPRESSIBILITY 620.32 ×10<sup>-6</sup> vol/vol/psi

GAUGE NUMBER	2033	2033	2032	2032			
GAUGE DEPTH	4744.0	4744.0	4793.0	4793.0			
FLOW AND CIP PERIOD	1	2	1	2			UNITS
FINAL FLOW PRESSURE P <sub>f</sub>	367.8	976.3	378.5	987.4			psig
TOTAL FLOW TIME t	15.4	137.3	15.4	137.3			min
PRODUCTION RATE Q		258.0		258.0			MCFD
t <sub>d</sub> AT 1 HOUR		457542.		447986.			
P <sub>d</sub> AT 100 psi		6.157		6.169			
C <sub>d</sub>		13.5		13.0			
SKIN S		20.0		20.0			
TRANSMISSIBILITY kh/μ		4032.6		4040.1			md-ft/cp
FLOW CAPACITY kh		56.5767		56.6813			md-ft
PERMEABILITY k		5.65767		5.66813			md
DAMAGE RATIO DR		3.6		3.8			
RADIUS OF INVESTIGATION r <sub>i</sub>		0.0		0.0			ft

REMARKS:

NOTICE: THESE CALCULATIONS ARE BASED UPON INFORMATION FURNISHED BY YOU AND TAKEN FROM DRILL STEM PRESSURE CHARTS, AND ARE FURNISHED YOU FOR YOUR INFORMATION. IN FURNISHING SUCH CALCULATIONS AND EVALUATIONS BASED THEREON, HALLIBURTON IS MERELY EXPRESSING ITS OPINION. YOU AGREE THAT HALLIBURTON MAKES NO WARRANTY EXPRESS OR IMPLIED AS TO THE ACCURACY OF SUCH CALCULATIONS OR OPINIONS, AND THAT HALLIBURTON SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, WHETHER DUE TO NEGLIGENCE OR OTHERWISE, IN CONNECTION WITH SUCH OPINIONS.

Hatche 852 011  
 (Monsanto 011)  
 NWA 138

## EQUATIONS FOR DST LIQUID WELL ANALYSIS

$$\text{Transmissibility} \quad \frac{kh}{\mu} = \frac{162.6 \text{ QB}}{m} \quad \frac{\text{md-ft}}{\text{cp}}$$

$$\text{Indicated Flow Capacity} \quad kh = \frac{kh}{\mu} \mu \quad \text{md-ft}$$

$$\text{Average Effective Permeability} \quad k = \frac{kh}{h} \quad \text{md}$$

$$\text{Skin Factor} \quad S = 1.151 \left[ \frac{P^* - P_i}{m} - \text{LOG} \left( \frac{k(t/60)}{\phi \mu c_r r_w^2} \right) - 3.23 \right] \text{---}$$

$$\text{Damage Ratio} \quad \text{DR} = \frac{P^* - P_i}{P^* - P_i - 0.87 \text{ mS}} \text{---}$$

$$\text{Theoretical Potential w/ Damage Removed} \quad Q_1 = Q \text{ DR} \quad \text{BPD}$$

$$\text{Approx. Radius of Investigation} \quad r_i = 0.032 \sqrt{\frac{k(t/60)}{\phi \mu c_i}} \quad \text{ft}$$

## EQUATIONS FOR DST GAS WELL ANALYSIS

$$\text{Indicated Flow Capacity} \quad kh = \frac{1637 Q_g T}{m} \quad \text{md-ft}$$

$$\text{Average Effective Permeability} \quad k = \frac{kh}{h} \quad \text{md}$$

$$\text{Skin Factor} \quad S = 1.151 \left[ \frac{m(P^*) - m(P_i)}{m} - \text{LOG} \left( \frac{k(t/60)}{\phi \mu c_r r_w^2} \right) - 3.23 \right] \text{---}$$

$$\text{Damage Ratio} \quad \text{DR} = \frac{m(P^*) - m(P_i)}{m(P^*) - m(P_i) - 0.87 \text{ mS}} \text{---}$$

$$\text{Indicated Flow Rate (Maximum)} \quad \text{AOF}_1 = \frac{Q_g m(P^*)}{m(P^*) - m(P_i)} \quad \text{MCFD}$$

$$\text{Indicated Flow Rate (Minimum)} \quad \text{AOF}_2 = Q_g \sqrt{\frac{m(P^*)}{m(P^*) - m(P_i)}} \quad \text{MCFD}$$

$$\text{Approx. Radius of Investigation} \quad r_i = 0.032 \sqrt{\frac{k(t/60)}{\phi \mu c_i}} \quad \text{ft}$$

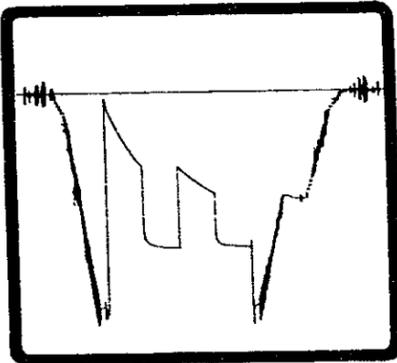
Permit #852

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JUL 24 1985

D & G CONS. COMM.

# FORMATION TESTING SERVICE REPORT



LEASE NAME

NAVARO TRACT

138-6

WELL NO.

3

TEST NO.

5306.0 - 5325.0

TESTED INTERVAL

MONSANTO OIL COMPANY  
LEASE OWNER/COMPANY NAME



Duncan, Oklahoma 73536

 A Halliburton Company

## NOMENCLATURE

B	= Formation Volume Factor (Res Vol / Std Vol)	—
$c_t$	= System Total Compressibility	(Vol / Vol) / psi
DR	= Damage Ratio	—
h	= Estimated Net Pay Thickness	Ft
k	= Permeability	md
m	{ (Liquid) Slope Extrapolated Pressure Plot	psi/cycle
	{ (Gas) Slope Extrapolated m(P) Plot	MM psi <sup>2</sup> /cp/cycle
m(P*)	= Real Gas Potential at P*	MM psi <sup>2</sup> /cp
m(P <sub>i</sub> )	= Real Gas Potential at P <sub>i</sub>	MM psi <sup>2</sup> /cp
AOF <sub>1</sub>	= Maximum Indicated Absolute Open Flow at Test Conditions	MCFD
AOF <sub>2</sub>	= Minimum Indicated Absolute Open Flow at Test Conditions	MCFD
P*	= Extrapolated Static Pressure	Psig
P <sub>i</sub>	= Final Flow Pressure	Psig
Q	= Liquid Production Rate During Test	BPD
Q <sub>1</sub>	= Theoretical Liquid Production w/ Damage Removed	BPD
Q <sub>g</sub>	= Measured Gas Production Rate	MCFD
r <sub>i</sub>	= Approximate Radius of Investigation	Ft
r <sub>w</sub>	= Radius of Well Bore	Ft
S	= Skin Factor	—
t	= Total Flow Time Previous to Closed-in	Minutes
Δt	= Closed-in Time at Data Point	Minutes
T	= Temperature Rankine	°R
φ	= Porosity	—
μ	= Viscosity of Gas or Liquid	cp
Log	= Common Log	—



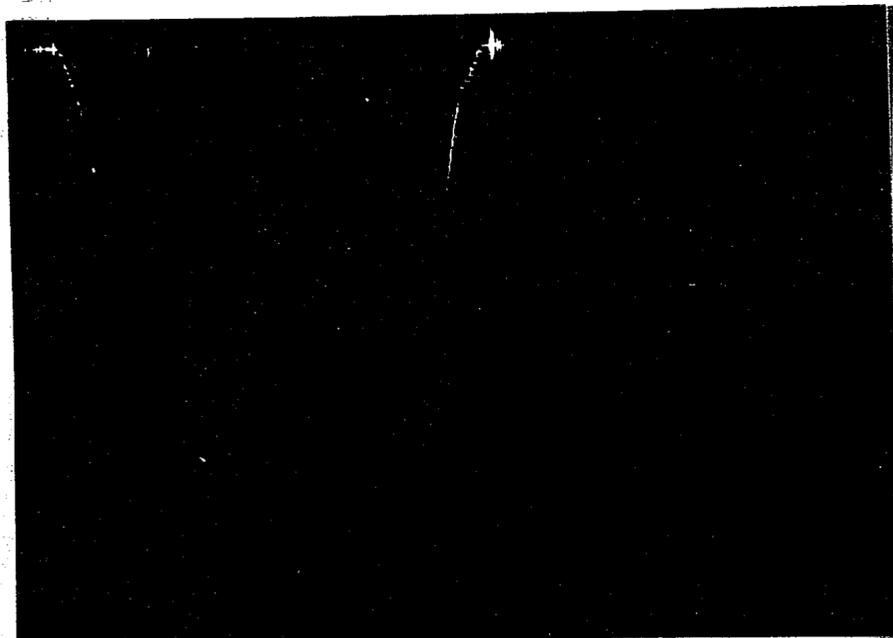
TICKET NO. 23063300  
18-JUL-85  
FARMINGTON

## FORMATION TESTING SERVICE REPORT

873

NAVAJO TRACT	138-6	TEST NO.	3	5305.0 - 5325.0
LEASE NAME	WELL NO.	TESTED INTERVAL		
LEGAL LOCATION	2 40N 28W	FIELD	DRY MESA	MONSANTO OIL COMPANY
SEC - TWP - RNG		AREA		LEASE OWNER/COMPANY NAME
		COUNTY	GRACIE	STATE
				ARIZONA
				SM

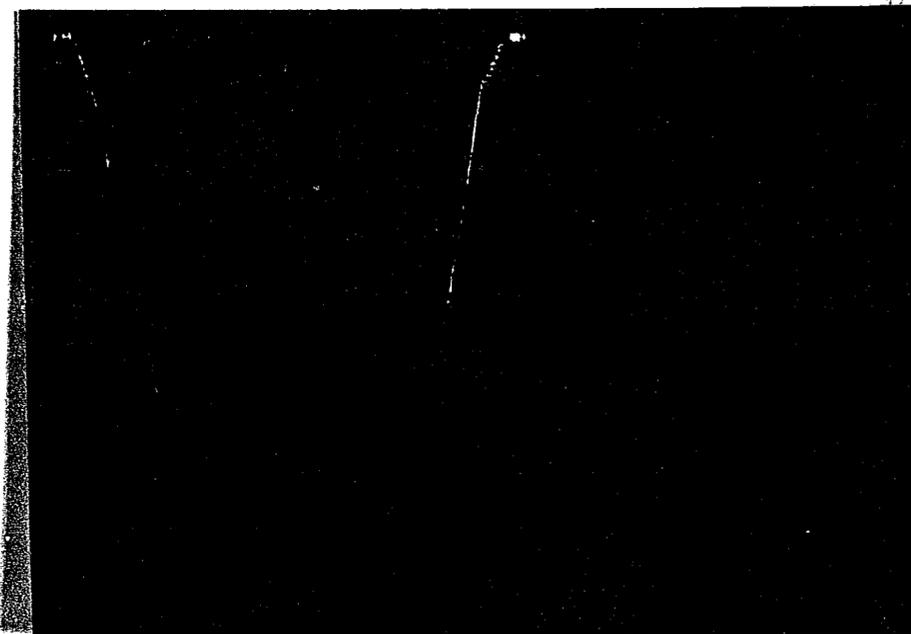
Gracie 852  
 Monsanto Oil  
 Co., Inc. (Monsanto Oil  
 Co.) Navajo 138



078

GAUGE NO: 2033 DEPTH: 5285.0 BLANKED OFF: NO HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2831	2694.7			
B	INITIAL FIRST FLOW	67	25.2			
C	FINAL FIRST FLOW	80	62.1	15.0	13.8	F
C	INITIAL FIRST CLOSED-IN	80	62.1			
D	FINAL FIRST CLOSED-IN	1537	1523.1	60.0	61.3	C
E	INITIAL SECOND FLOW	93	83.4			
F	FINAL SECOND FLOW	307	284.1	120.0	119.9	F
F	INITIAL SECOND CLOSED-IN	307	284.1			
G	FINAL SECOND CLOSED-IN	1537	1523.8	240.0	239.9	C
H	FINAL HYDROSTATIC	2658	2679.5			



GAUGE NO: 2032 DEPTH: 5322.0 BLANKED OFF: YES HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2679	2724.1			
B	INITIAL FIRST FLOW	27	62.5			
C	FINAL FIRST FLOW	67	77.6	15.0	4.8	F
C	INITIAL FIRST CLOSED-IN	67	77.6			
D	FINAL FIRST CLOSED-IN	1507	1538.2	60.0	61.3	C
E	INITIAL SECOND FLOW	80	98.5			
F	FINAL SECOND FLOW	281	305.4	120.0	119.9	F
F	INITIAL SECOND CLOSED-IN	281	305.4			
G	FINAL SECOND CLOSED-IN	1533	1541.1	240.0	239.9	C
H	FINAL HYDROSTATIC	2679	2682.8			

... Inc. (Monsanto Oil Co.)  
... NAVARRO 138

<b>EQUIPMENT &amp; HOLE DATA</b>		TICKET NUMBER: 23063300		
FORMATION TESTED: LEADVILLE		DATE: 7-12-85 TEST NO: 3		
NET PAY (ft): 12.0		TYPE DST: OPEN HOLE		
GROSS TESTED FOOTAGE: 19.0		HALLIBURTON CAMP: FARMINGTON		
ALL DEPTHS MEASURED FROM: KELLY BUSHING		TESTER: D. AULD		
CASING PERFS. (ft):		WITNESS: MR. JONES		
HOLE OR CASING SIZE (in): 7.875		DRILLING CONTRACTOR: COLEMAN #2		
ELEVATION (ft): 5697.0 GROUND LEVEL				
TOTAL DEPTH (ft): 5325.0				
PACKER DEPTH(S) (ft): 5300, 5306				
FINAL SURFACE CHOKE (in):				
BOTTOM HOLE CHOKE (in): 0.750				
MUD WEIGHT (lb/gal): 9.70				
MUD VISCOSITY (sec): 42				
ESTIMATED HOLE TEMP. (°F):				
ACTUAL HOLE TEMP. (°F): 132 @ 5321.0 ft				
<b>FLUID PROPERTIES FOR RECOVERED MUD &amp; WATER</b>		<b>SAMPLER DATA</b>		
SOURCE	RESISTIVITY	CHLORIDES	Pstg AT SURFACE: 135.0	
PIT	1.366 @ 70 °F	ppm	cu. ft. OF GAS: 0.160	
TOP	8.130 @ 65 °F	ppm	cc OF OIL: 100.0	
MIDDLE	0.390 @ 72 °F	ppm	cc OF WATER: 1740.0	
BOTTOM	0.340 @ 72 °F	ppm	cc OF MUD:	
SAMPLER	0.370 @ 68 °F	ppm	TOTAL LIQUID cc: 1840.0	
	@ °F	ppm		
<b>HYDROCARBON PROPERTIES</b>		<b>CUSHION DATA</b>		
OIL GRAVITY (°API): @ °F		TYPE	AMOUNT	WEIGHT
GAS/OIL RATIO (cu. ft. per bbl):				
GAS GRAVITY:				
<b>RECOVERED:</b>			MEASURED FROM TESTER VALVE	
180 FEET OF OIL & GAS CUT MUD 408 FEET OF WATER				
<b>REMARKS:</b>				
CLOCK STOPPED DURING FIRST FLOW PERIOD ON GAUGE #2032...ONLY 4.8 MINUTES OF FLOW RECORDED.				

TYPE & SIZE MEASURING DEVICE:					TICKET NO: 23063300
TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
7-12-85					
0142					ON LOCATION
0200					PICKED UP TOOL
0240					TOOL ON TRIP IN
0516	BH	.5 OZ.			OPENED TOOL
0517	"	2 OZ.			
0518	"	2 OZ.			
0519	"	2.75 OZ.			
0520	"	3.75 OZ.			
0521	"	4 OZ.			
0522	"	4 OZ.			
0523	"	4 OZ.			
0524	"	4.5 OZ.			
0525	"	4.75 OZ.			
0526	"	5 OZ.			
0527	"	5 OZ.			
0528	"	5.25 OZ.			
0529	"	5.25 OZ.			
0530	"	5.5 OZ.			
0531	"	5.75 OZ.			CLOSED TOOL
0631	"	.5 OZ.			OPENED TOOL
0632	"	1 OZ.			
0633	"	2 OZ.			
0634	"	2.5 OZ.			
0635	"	3 OZ.			
0636	"	3.75 OZ.			
0637	"	4 OZ.			
0638	"	4 OZ.			
0639	"	4.25 OZ.			
0640	"	4.5 OZ.			
0641	"	4.75 OZ.			
0646	"	5.5 OZ.			
0651	"	6 OZ.			
0656	"	6.75 OZ.			
0701	"	7.5 OZ.			
0706	"	7.75 OZ.			
0711	BH	7.85 OZ.			

Pacheco 852 Oil  
 (Monsanto Oil)  
 Navajo 138

TYPE & SIZE MEASURING DEVICE: _____					TICKET NO: 23063300
TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
0716	"	8 OZ.			
0721	1/8" BH	8.5 OZ.			FLOWING
0726	"	8.75 OZ.			
0731	"	8.75 OZ.			
0741	"	9 OZ.			
0751	"	9 OZ.			
0801	"	9 OZ.			
0811	"	8.25 OZ.			
0821	"	8.25 OZ.			
0831	"	8 OZ.			CLOSED TOOL
1231					OPENED BYPASS. TRIPPED OUT OF HOLE
1430					JOB COMPLETED

TICKET NO: 23063300  
 CLOCK NO: 9756 HOUR: 24



GAUGE NO: 2033  
 DEPTH: 5285.0

REF	MINUTES	PRESSURE	AP	$\frac{1 \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
FIRST FLOW					
B 1	0.0	25.2			
2	1.0	26.1	0.9		
3	2.0	31.6	5.5		
4	3.0	35.5	3.9		
5	4.0	38.2	2.7		
6	5.0	42.1	3.9		
7	6.0	44.7	2.7		
8	7.0	47.7	2.9		
9	8.0	49.5	1.9		
10	9.0	51.7	2.1		
11	10.0	53.7	2.0		
12	11.0	55.4	1.7		
13	12.0	57.7	2.3		
14	13.0	59.6	1.9		
C 15	13.8	62.1	2.5		
FIRST CLOSED-IN					
C 1	0.0	62.1			
2	1.0	85.6	23.5	0.9	1.174
3	2.0	155.2	93.1	1.7	0.901
4	3.0	245.7	183.6	2.4	0.752
5	4.0	530.9	468.8	3.1	0.649
6	5.0	1014.2	952.1	3.7	0.576
7	6.0	1261.2	1199.1	4.2	0.520
8	7.0	1364.0	1301.9	4.7	0.472
9	8.0	1409.1	1347.0	5.1	0.437
10	9.0	1437.4	1375.3	5.4	0.405
11	10.0	1456.4	1394.3	5.8	0.376
12	12.0	1475.6	1413.5	6.4	0.332
13	14.0	1485.7	1423.6	6.9	0.299
14	16.0	1493.8	1431.7	7.4	0.270
15	18.0	1499.8	1437.7	7.8	0.247
16	20.0	1503.9	1441.8	8.2	0.229
17	22.0	1507.4	1445.3	8.5	0.212
18	24.0	1510.7	1448.6	8.8	0.197
19	26.0	1512.7	1450.6	9.0	0.185
20	28.0	1514.0	1451.9	9.3	0.174
21	30.0	1515.6	1453.5	9.5	0.165
22	35.0	1518.3	1456.2	9.9	0.145
23	40.0	1520.0	1457.9	10.3	0.129
24	45.0	1520.7	1458.6	10.6	0.116
25	50.0	1522.3	1460.1	10.8	0.106
26	55.0	1522.3	1460.1	11.1	0.097
D 27	61.3	1523.1	1460.9	11.3	0.088
SECOND FLOW					
E 1	0.0	83.4			
2	5.0	83.9	0.5		

REF	MINUTES	PRESSURE	AP	$\frac{1 \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
SECOND FLOW - CONTINUED					
3	10.0	94.8	10.8		
4	15.0	106.0	11.2		
5	20.0	116.6	10.6		
6	25.0	126.7	10.2		
7	30.0	136.2	9.5		
8	35.0	145.6	9.4		
9	40.0	154.9	9.4		
10	45.0	164.7	9.8		
11	50.0	173.0	8.3		
12	55.0	182.5	9.5		
13	60.0	190.8	8.3		
14	65.0	199.2	8.4		
15	70.0	207.1	7.9		
16	75.0	215.1	8.0		
17	80.0	223.4	8.3		
18	85.0	231.2	7.8		
19	90.0	239.8	8.7		
20	95.0	247.7	7.9		
21	100.0	255.5	7.8		
22	105.0	262.6	7.1		
23	110.0	269.8	7.2		
24	115.0	277.0	7.2		
F 25	119.9	284.1	7.1		
SECOND CLOSED-IN					
F 1	0.0	284.1			
2	1.0	364.9	80.8	1.0	2.120
3	2.0	457.3	173.2	2.0	1.835
4	2.9	630.9	346.8	2.9	1.666
5	3.0	657.3	373.2	2.9	1.662
6	4.0	848.3	564.2	3.9	1.537
7	5.0	1086.0	801.9	4.8	1.444
8	6.0	1234.2	950.0	5.7	1.370
9	7.0	1346.1	1062.0	6.7	1.303
10	8.0	1393.4	1109.3	7.5	1.250
11	9.0	1422.8	1138.7	8.4	1.201
12	10.0	1441.0	1156.9	9.3	1.158
13	12.0	1465.5	1181.4	11.0	1.084
14	14.0	1477.6	1193.5	12.7	1.024
15	16.0	1485.5	1201.4	14.3	0.972
16	18.0	1491.7	1207.6	15.9	0.925
17	20.0	1496.1	1211.9	17.4	0.886
18	22.0	1499.8	1215.7	18.9	0.850
19	24.0	1502.2	1218.1	20.4	0.817
20	26.0	1504.7	1220.6	21.8	0.788
21	28.0	1506.7	1222.6	23.1	0.762
22	30.0	1508.2	1224.0	24.5	0.736
23	35.0	1510.9	1226.8	27.7	0.683
24	40.0	1513.1	1229.0	30.8	0.638
25	45.0	1514.8	1230.7	33.6	0.599
26	50.0	1515.9	1231.8	36.4	0.565
27	55.0	1517.5	1233.4	39.0	0.535

REMARKS:

Apache 852 Oil  
 (Monsanto Oil)  
 Navajo 138

080

TICKET NO: 23063300  
CLOCK NO: 9756 HOUR: 24



GAUGE NO: 2033  
DEPTH: 5285.0

REF	MINUTES	PRESSURE	ΔP	$\frac{1 \times \Delta t}{1 + \Delta t}$	$\log \frac{1 + \Delta t}{\Delta t}$	REF	MINUTES	PRESSURE	ΔP	$\frac{1 \times \Delta t}{1 + \Delta t}$	$\log \frac{1 + \Delta t}{\Delta t}$
SECOND CLOSED-IN - CONTINUED											
28	60.0	1518.1	1234.0	41.4	0.509						
29	70.0	1519.3	1235.2	46.0	0.464						
30	80.0	1520.1	1236.0	50.0	0.427						
31	90.0	1520.9	1236.8	53.8	0.395						
32	100.0	1521.5	1237.3	57.2	0.369						
33	110.0	1521.5	1237.3	60.4	0.345						
34	120.0	1521.9	1237.7	63.2	0.325						
35	135.0	1522.5	1238.4	67.2	0.299						
36	150.0	1523.5	1239.3	70.7	0.277						
37	165.0	1524.0	1239.9	73.9	0.258						
38	180.0	1524.0	1239.9	76.7	0.241						
39	195.0	1524.0	1239.9	79.3	0.227						
40	210.0	1524.0	1239.9	81.7	0.214						
41	225.0	1524.0	1239.9	83.9	0.203						
G 42	239.9	1523.8	1239.7	85.9	0.192						

REMARKS:

100

TICKET NO: 23063300  
CLOCK NO: 7276 HOUR: 24



GAUGE NO: 2032  
DEPTH: 5322.0

REF	MINUTES	PRESSURE	ΔP	$\frac{1 \times \Delta t}{1 + \Delta t}$	$\log \frac{1 + \Delta t}{\Delta t}$	REF	MINUTES	PRESSURE	ΔP	$\frac{1 \times \Delta t}{1 + \Delta t}$	$\log \frac{1 + \Delta t}{\Delta t}$
FIRST FLOW											
B 1	0.0	62.5									
C 2	4.8	77.6	15.1								
FIRST CLOSED-IN											
C 1	0.0	77.6									
2	1.0	107.2	29.6	0.8	0.779						
3	2.0	153.6	76.0	1.4	0.530						
4	3.0	267.7	190.0	1.9	0.410						
5	4.0	450.9	373.3	2.2	0.340						
6	5.0	821.3	743.7	2.4	0.289						
7	6.0	1146.0	1068.4	2.7	0.254						
8	7.0	1346.2	1268.6	2.8	0.226						
9	8.0	1413.7	1336.1	3.0	0.203						
10	9.0	1445.8	1368.2	3.1	0.184						
11	10.0	1463.3	1385.7	3.2	0.170						
12	12.0	1484.6	1407.0	3.4	0.146						
13	14.0	1497.8	1420.2	3.6	0.128						
14	16.0	1503.7	1426.1	3.7	0.113						
15	18.0	1510.9	1433.3	3.8	0.102						
16	20.0	1515.6	1438.0	3.8	0.093						
17	22.0	1519.6	1442.0	3.9	0.085						
18	24.0	1522.7	1445.1	4.0	0.079						
19	26.0	1524.8	1447.2	4.0	0.073						
20	28.0	1527.3	1449.7	4.1	0.068						
21	30.0	1529.0	1451.4	4.1	0.064						
22	35.0	1531.8	1454.2	4.2	0.055						
23	40.0	1533.9	1456.3	4.3	0.049						
24	45.0	1534.7	1457.1	4.3	0.044						
25	50.0	1536.0	1458.4	4.4	0.040						
26	55.0	1538.0	1460.3	4.4	0.036						
D 27	61.3	1538.2	1460.6	4.4	0.032						
SECOND FLOW											
E 1	0.0	98.5									
2	5.0	99.7	1.2								
3	10.0	110.0	10.3								
4	15.0	122.1	12.1								
5	20.0	132.1	10.0								
6	25.0	142.0	9.9								
7	30.0	150.8	8.8								
8	35.0	159.5	8.7								
9	40.0	168.8	9.3								
10	45.0	179.5	10.7								
11	50.0	188.9	9.5								
12	55.0	196.6	7.6								
13	60.0	201.6	5.1								
14	65.0	209.0	7.3								
15	70.0	223.5	14.5								
SECOND FLOW - CONTINUED											
16	75.0	232.8	9.3								
17	80.0	241.4	8.5								
18	85.0	247.9	6.5								
19	90.0	258.2	10.3								
20	95.0	265.4	7.2								
21	100.0	273.1	7.7								
22	105.0	280.3	7.2								
23	110.0	287.2	6.9								
24	115.0	294.0	6.8								
F 25	119.9	305.4	11.3								
SECOND CLOSED-IN											
F 1	0.0	305.4									
2	1.0	539.3	233.9	1.0	2.106						
3	2.0	699.6	394.3	2.0	1.802						
4	3.0	943.8	638.4	2.9	1.627						
5	4.0	1148.2	842.8	3.9	1.508						
6	5.0	1316.5	1011.1	4.8	1.416						
7	6.0	1381.6	1076.3	5.7	1.337						
8	7.0	1429.3	1123.9	6.7	1.272						
9	8.0	1453.4	1148.0	7.6	1.217						
10	9.0	1466.6	1161.2	8.4	1.172						
11	10.0	1476.0	1170.6	9.3	1.127						
12	12.0	1489.3	1183.9	10.9	1.057						
13	14.0	1499.2	1193.8	12.6	0.996						
14	16.0	1506.3	1200.9	14.2	0.943						
15	18.0	1510.5	1205.1	15.7	0.899						
16	20.0	1514.5	1209.1	17.2	0.859						
17	22.0	1517.2	1211.8	18.7	0.824						
18	24.0	1519.1	1213.7	20.1	0.792						
19	26.0	1520.9	1215.5	21.5	0.763						
20	28.0	1522.7	1217.3	22.8	0.737						
21	30.0	1523.9	1218.5	24.1	0.713						
22	35.0	1527.5	1222.1	27.3	0.659						
23	40.0	1529.4	1224.0	30.3	0.614						
24	45.0	1530.7	1225.4	33.1	0.576						
25	50.0	1532.2	1226.8	35.7	0.543						
26	55.0	1532.8	1227.5	38.2	0.514						
27	60.0	1533.9	1228.5	40.5	0.488						
28	65.0	1534.7	1229.3	42.7	0.465						
29	70.0	1534.7	1229.3	44.8	0.444						
30	80.0	1535.6	1230.2	48.7	0.408						
31	90.0	1537.0	1231.7	52.3	0.377						
32	100.0	1537.4	1232.0	55.5	0.352						
33	110.0	1538.0	1232.6	58.4	0.329						
34	120.0	1538.5	1233.1	61.1	0.309						
35	135.0	1539.4	1234.0	64.8	0.284						
36	150.0	1539.8	1234.4	68.1	0.263						
37	165.0	1539.9	1234.5	71.0	0.244						
38	180.0	1539.9	1234.5	73.6	0.228						
39	195.0	1540.6	1235.2	76.0	0.215						
40	210.0	1540.7	1235.3	78.2	0.202						

REMARKS:  
CLOCK APPARENTLY STOPPED DURING FIRST FLOW PERIOD....ONLY 4.8 MINUTES RECORDED.

Spacine 852  
Monsanto Oil Co  
NAYAGO 138

TICKET NO: 23063300

CLOCK NO: 7276 HOUR: 24



GAUGE NO: 2032

DEPTH: 5322.0

REF	MINUTES	PRESSURE	AP	$\frac{1 \times \Delta t}{1 + \Delta t}$	$\log \frac{1 + \Delta t}{\Delta t}$	REF	MINUTES	PRESSURE	AP	$\frac{1 \times \Delta t}{1 + \Delta t}$	$\log \frac{1 + \Delta t}{\Delta t}$
SECOND CLOSED-IN - CONTINUED											
41	225.0	1540.7	1235.3	80.2	0.191						
G 42	239.9	1541.1	1235.7	82.0	0.182						

REMARKS:  
CLOCK APPARENTLY STOPPED DURING FIRST FLOW PERIOD....ONLY 4.8 MINUTES RECORDED.

TICKET NO. 23063300

	O.D.	I.D.	LENGTH	DEPTH
1 DRILL PIPE.....	4.500	3.826	4398.0	
4 FLEX WEIGHT.....	4.500	2.764	179.0	
3 DRILL COLLARS.....	6.250	2.500	602.0	
50 IMPACT REVERSING SUB.....	6.000	3.000	1.0	5180.0
3 DRILL COLLARS.....	6.250	2.500	91.0	
5 CROSSOVER.....	6.000	3.000	1.0	
13 DUAL CIP SAMPLER.....	5.000	0.750	7.0	
60 HYDROSPRING TESTER.....	5.000	0.750	5.0	5283.0
80 AP RUNNING CASE.....	5.000	2.250	4.0	5285.0
15 JAR.....	5.000	1.750	5.0	
16 VR SAFETY JOINT.....	5.000	1.000	3.0	
70 OPEN HOLE PACKER.....	6.750	1.530	6.0	5300.0
70 OPEN HOLE PACKER.....	6.750	1.530	6.0	5306.0
20 FLUSH JOINT ANCHOR.....	5.750	2.500	13.0	
81 BLANKED-OFF RUNNING CASE.....	5.750		4.0	5322.0
TOTAL DEPTH				5325.0

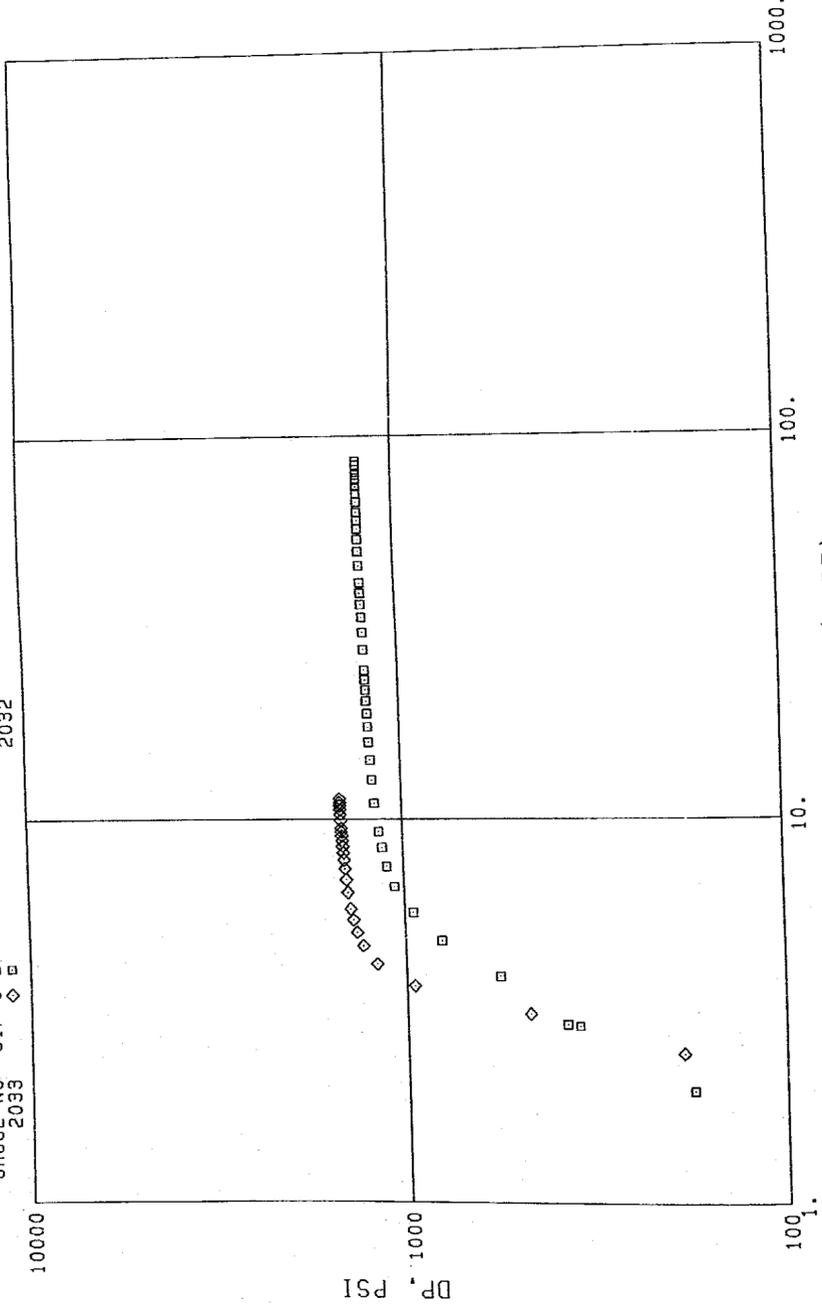
EQUIPMENT DATA

Hatch 852  
Monsanto Oil Co  
Narato 138

TICKET NO 23063300

GAUGE NO CIP 1 2  
2032

GAUGE NO CIP 1 2  
2033

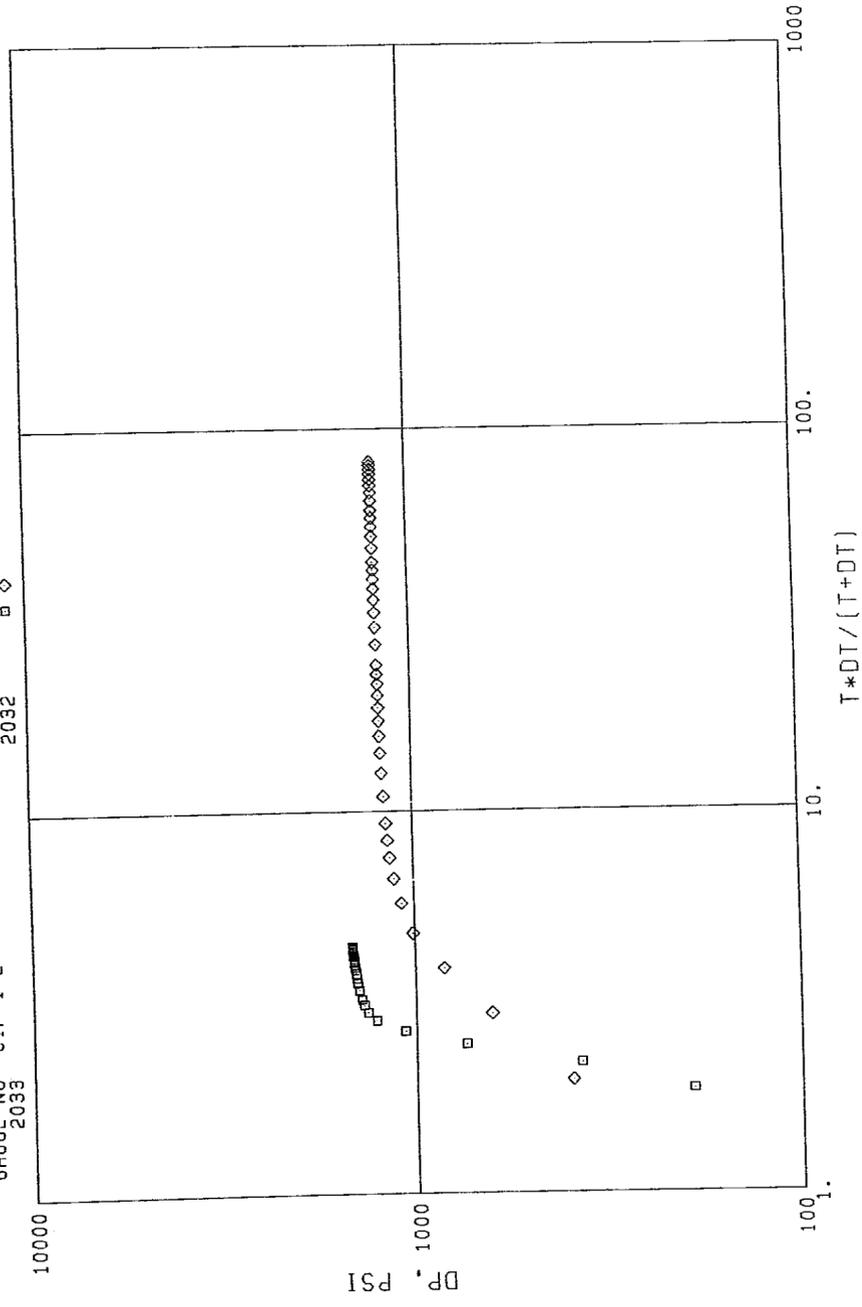


884

TICKET NO 23063300

GAUGE NO CIP 1 2  
2032

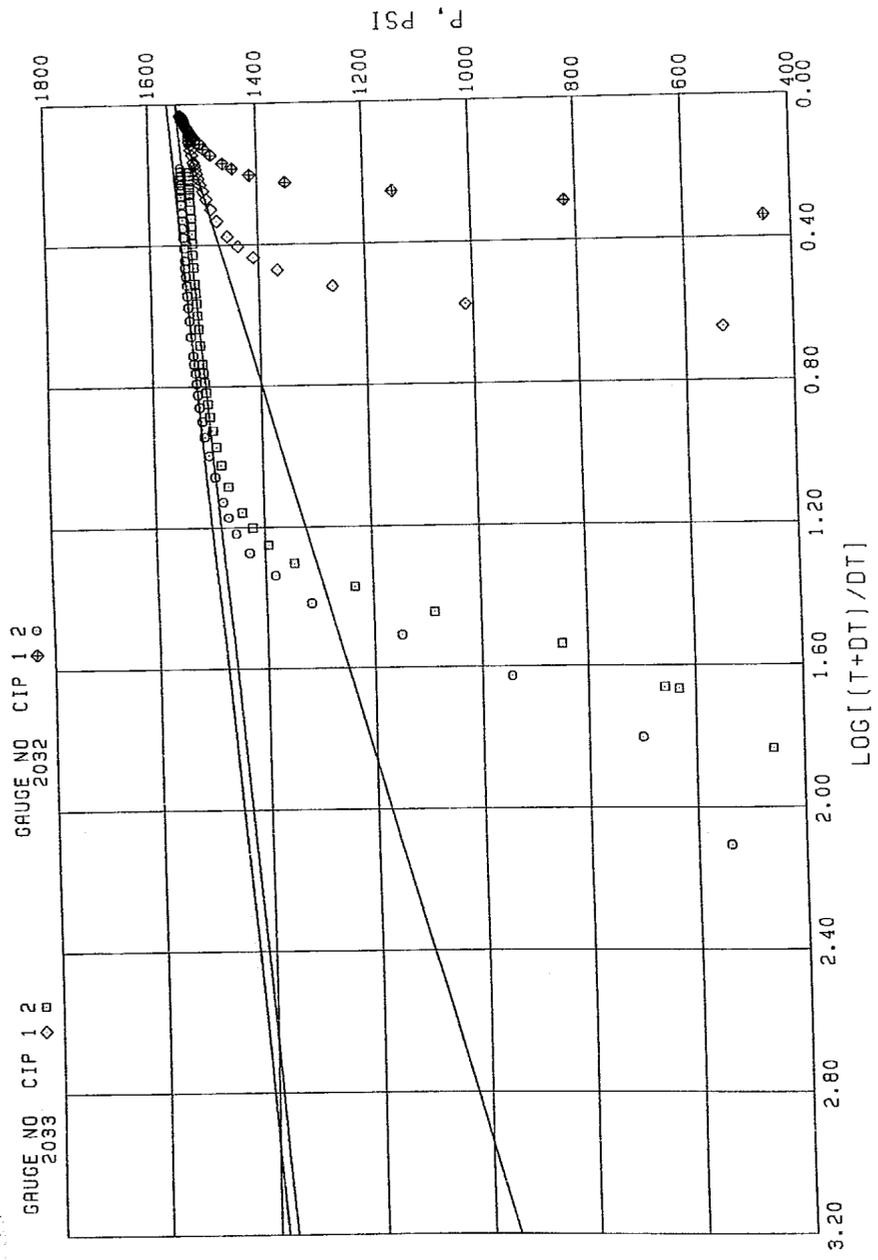
GAUGE NO CIP 1 2  
2033



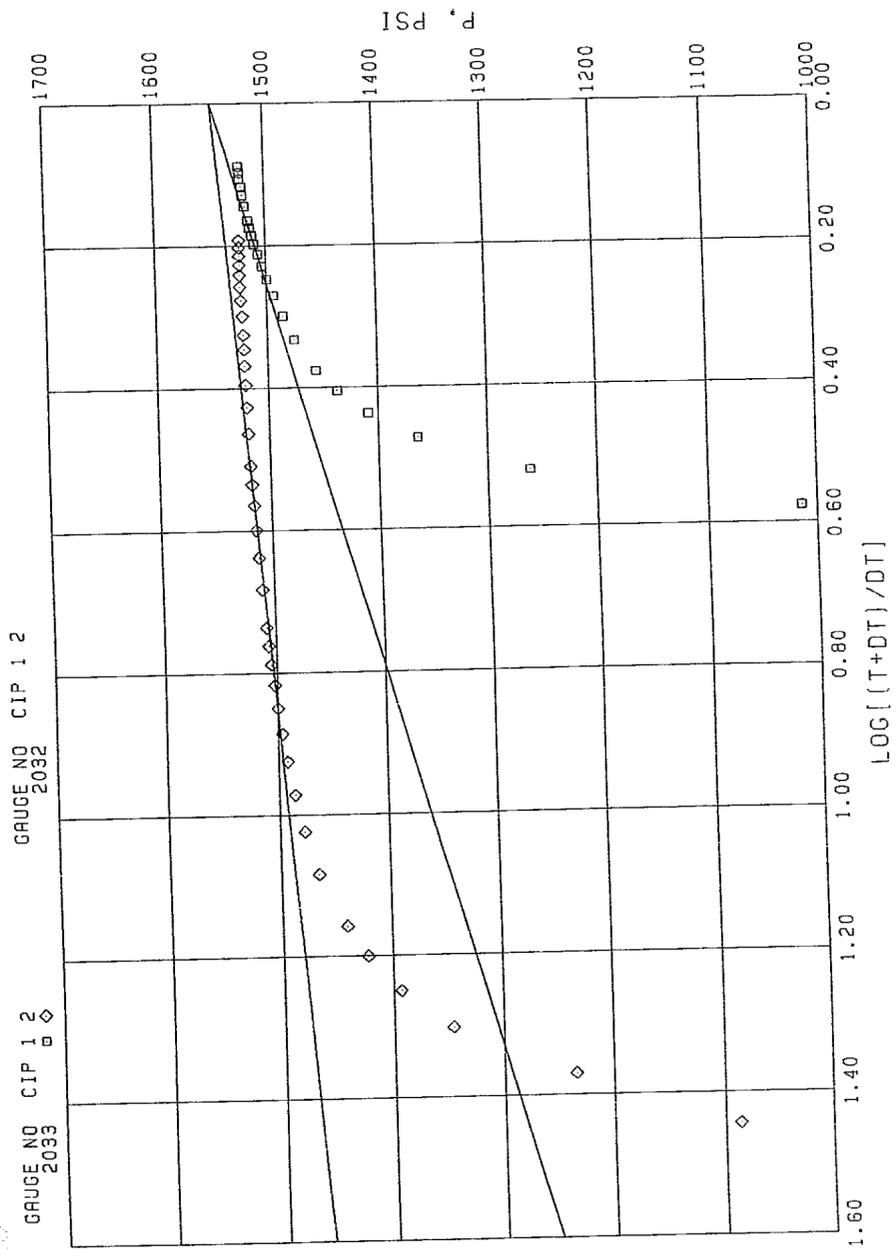
885

Apache 852  
Oil Co  
Monsanto, Inc. (Monsanto Oil Co)  
Navajo 138

TICKET NO 23063300



TICKET NO 23063300

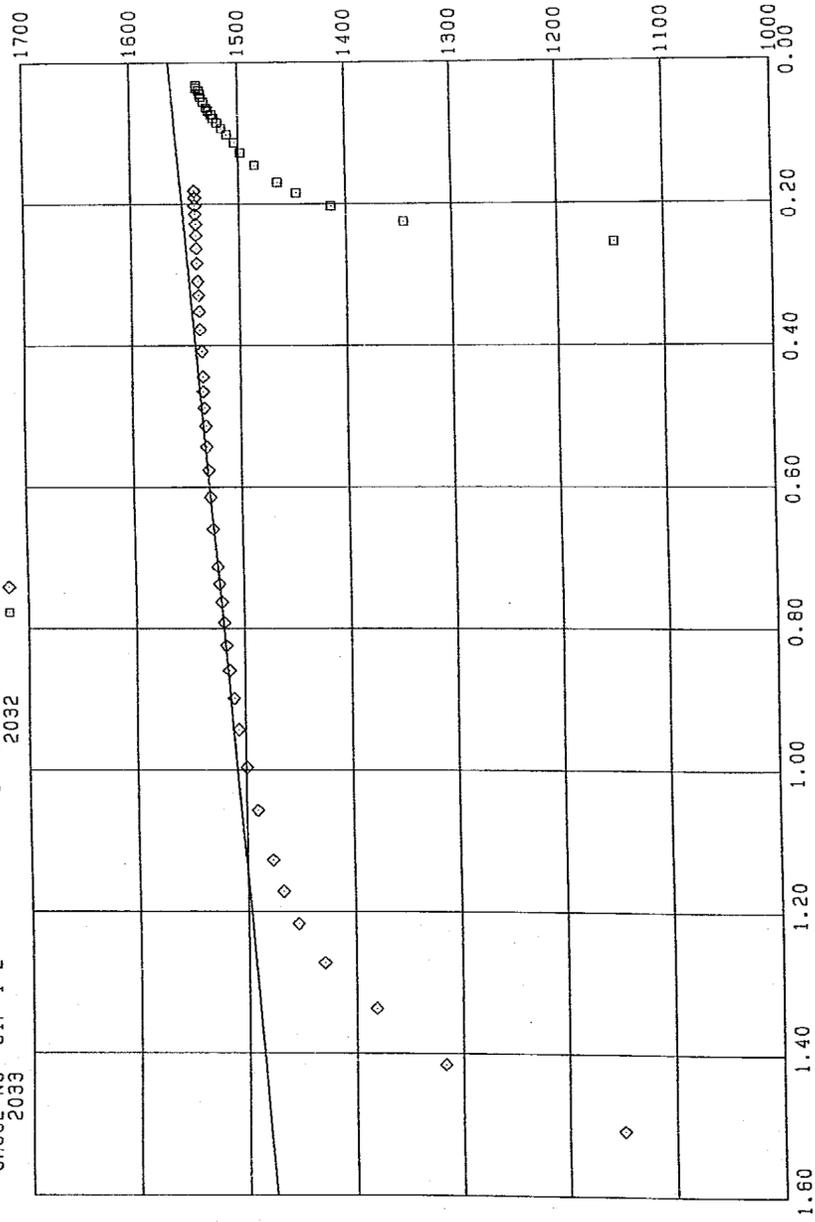


Machine 952  
OIL  
Monsanto  
Navajo 138

TICKET NO 23063300

GAUGE NO CIP 1 2  
2032

GAUGE NO CIP 1 2  
2033

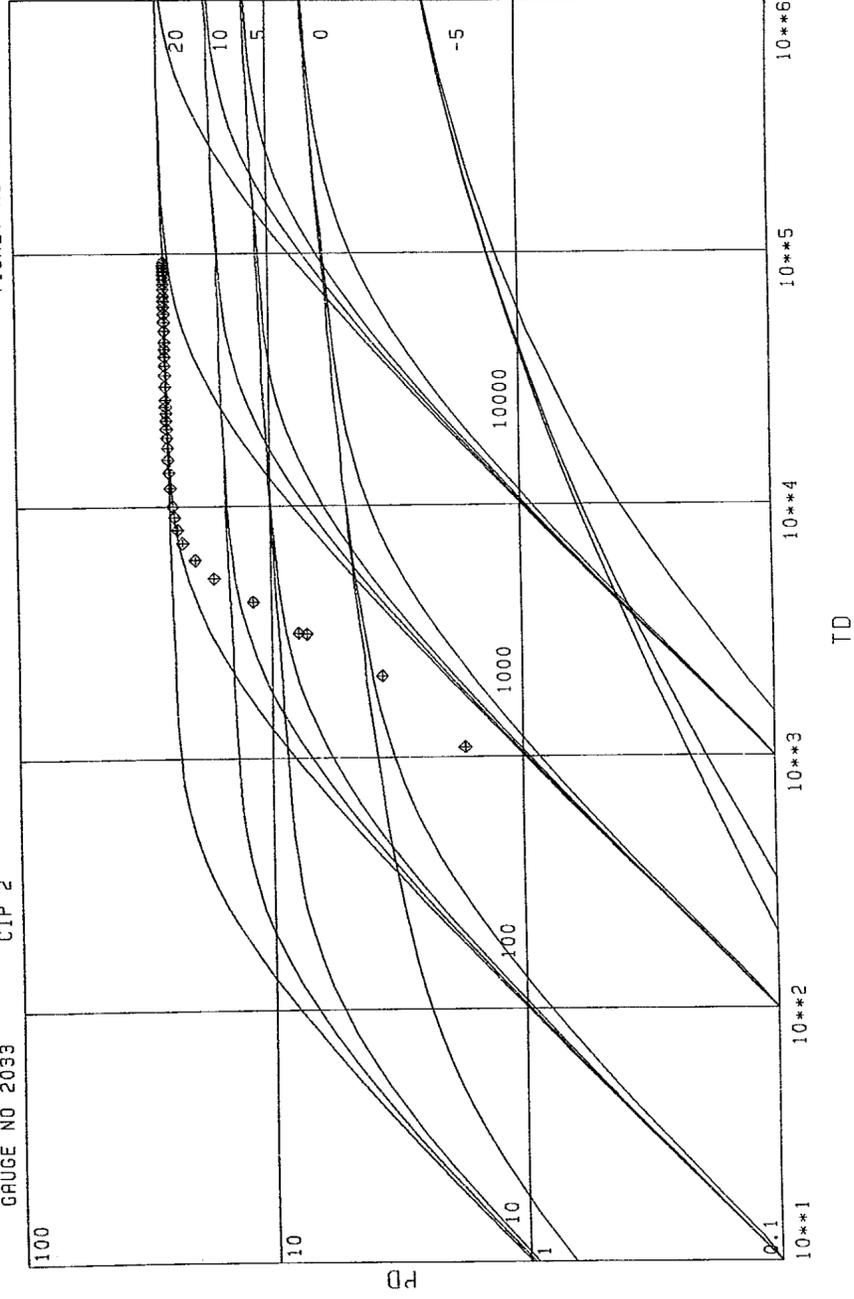


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TICKET NO 23063300

CIP 2

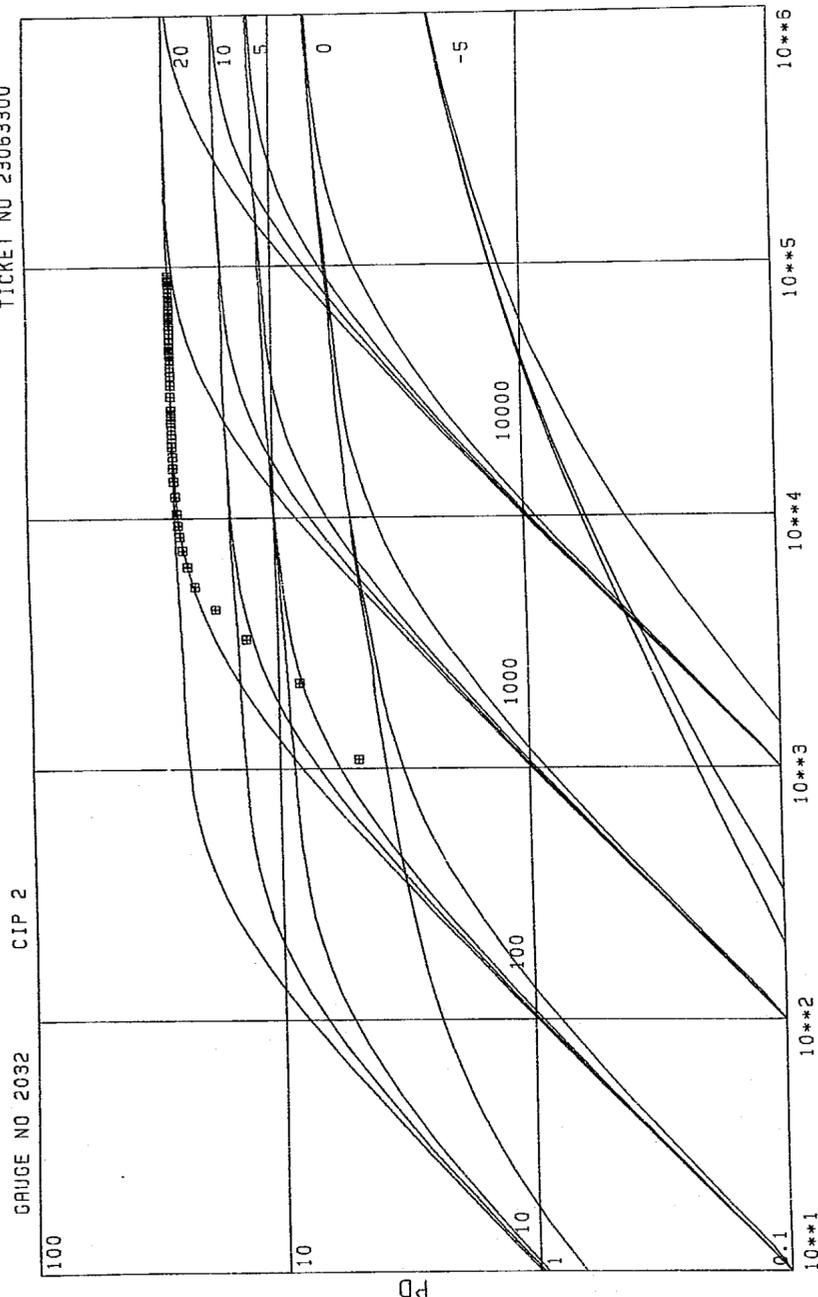
GAUGE NO 2033



88

Spache 852  
Monsanto Oil Co  
Navajo 138

TICKET NO 23063300



CIP 2

GAUGE NO 2032

058

TD

TICKET NUMBER 23063300

**SUMMARY OF RESERVOIR PARAMETERS**  
USING HORNER METHOD FOR LIQUID WELLS

OIL GRAVITY 0.0 °API@60°F WATER SALINITY 2.0 % SALT  
 GAS GRAVITY 0.700 FLUID GRADIENT 0.4395 psi/ft  
 GAS/OIL RATIO 0.0 SCF/STB FLUID PROPERTIES AT 1563.3 psig  
 TEMPERATURE 132.0 °F VISCOSITY 0.516 cp  
 NET PAY 12.0 ft FMT VOL FACTOR 1.012 Rvol/Svol  
 POROSITY 10.0 % SYSTEM COMPRESSIBILITY 7.72 x10<sup>-6</sup> vol/vol/psi  
 PIPE CAPACITY FACTORS 0.00607 0.00742 0.01422 bbl/ft

GAUGE NUMBER	2033	2033	2032	2032		
GAUGE DEPTH	5285.0	5285.0	5322.0	5322.0		
FLOW AND CIP PERIOD	1	2	1	2		UNITS
FINAL FLOW PRESSURE P <sub>f</sub>	62.1	284.1	77.6	305.4		psig
TOTAL FLOW TIME t	13.8	133.7	4.8	124.6		min
EXTRAPOLATED PRESSURE P*	1547.2	1547.2		1563.3		psig
ONE CYCLE PRESSURE	1361.2	1491.8		1507.9		psig
PRODUCTION RATE Q		34.3		34.8		BPD
TRANSMISSIBILITY kh/μ		101.8		103.5		md-ft cp
FLOW CAPACITY kh		52.5757		53.4301		md-ft
PERMEABILITY k		4.38131		4.45251		md
SKIN FACTOR S		20.3		20.3		
DAMAGE RATIO DR		4.5		4.5		
POTENTIAL RATE Q <sub>1</sub>		154.1		156.7		BPD
RADIUS OF INVESTIGATION r <sub>i</sub>		158.4		154.2		ft

REMARKS: ALL CALCULATED RESERVOIR PARAMETERS ARE RELATIVE TO 100% WATER PRODUCTION. THE FLOW RATE WAS DETERMINED USING THE PRESSURE CHANGE METHOD.

AN ANALYSIS OF THE INITIAL CLOSED-IN PERIODS COULD NOT BE PERFORMED DUE TO INSUFFICIENT PRIOR FLOW DATA FROM WHICH TO DETERMINE A FLOW RATE.

**NOTICE:**

THESE CALCULATIONS ARE BASED UPON INFORMATION FURNISHED BY YOU AND TAKEN FROM DRILL STEM PRESSURE CHARTS, AND ARE FURNISHED TO YOU FOR YOUR INFORMATION. IN FURNISHING SUCH CALCULATIONS AND EVALUATIONS BASED THEREON, HALLIBURTON IS MERELY EXPRESSING ITS OPINION. YOU AGREE THAT HALLIBURTON MAKES NO WARRANTY EXPRESS OR IMPLIED AS TO THE ACCURACY OF SUCH CALCULATIONS OR OPINIONS, AND THAT HALLIBURTON SHALL NOT BE LIABLE FOR ANY LOSS OR DAMAGE, WHETHER DUE TO NEGLIGENCE OR OTHERWISE, IN CONNECTION WITH SUCH OPINIONS.

Halliburton, Inc. (Monsanto Oil Co.)  
 8811 North Loop West, Suite 138  
 Houston, Texas 77060  
 Apache 852

TICKET NUMBER 23063300

**SUMMARY OF RESERVOIR PARAMETERS**  
USING CURVE MATCH METHOD FOR LIQUID WELLS

OIL GRAVITY	0.0	°API@60°F	WATER SALINITY	2.0	% SALT
GAS GRAVITY	0.700		FLUID GRADIENT	0.4395	psi/ft
GAS/OIL RATIO	0.0	SCF/STB	FLUID PROPERTIES AT	1563.3	psig
TEMPERATURE	132.0	°F	VISCOSITY	0.516	cp
NET PAY	12.0	ft	FMT VOL FACTOR	1.012	Rvol/Svol
POROSITY	10.0	%	SYSTEM COMPRESSIBILITY	7.72	×10 <sup>-6</sup> vol/vol/psi
PIPE CAPACITY FACTORS	0.00607			0.00742	
				0.01422	bbl/ft

GAUGE NUMBER	2033	2032					
GAUGE DEPTH	5285.0	5322.0					
FLOW AND CIP PERIOD	2	2					UNITS
FINAL FLOW PRESSURE	P <sub>f</sub>	284.1	305.4				psig
TOTAL FLOW TIME	t	133.7	124.6				min
PRODUCTION RATE	Q	34.3	34.8				BPD
t <sub>d</sub> AT 1 HOUR		44556.	45141.				
P <sub>d</sub> AT 100 psi		2.103	2.094				
C <sub>d</sub>		277.4	93.6				
SKIN	S	20.0	20.0				
TRANSMISSIBILITY	kh/μ	103.0	104.3				md-ft cp
FLOW CAPACITY	kh	53.1986	53.8436				md-ft
PERMEABILITY	k	4.43321	4.48697				md
DAMAGE RATIO	DR	3.9	4.2				
POTENTIAL RATE	Q <sub>i</sub>	134.0	145.0				BPD
RADIUS OF INVESTIGATION	r <sub>i</sub>	159.3	154.8				ft

REMARKS:

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**EQUATIONS FOR DST LIQUID WELL ANALYSIS**

Transmissibility  $\frac{kh}{\mu} = \frac{162.6 OB}{m}$  md-ft  
cp

Indicated Flow Capacity  $kh = \frac{kh}{\mu} \mu$  md-ft

Average Effective Permeability  $k = \frac{kh}{h}$  md

Skin Factor  $S = 1.151 \left[ \frac{P^* - P_f}{m} - \text{LOG} \left( \frac{k(t/60)}{h \mu c_{r,w}^2} \right) - 3.23 \right]$

Damage Ratio  $DR = \frac{P^* - P_f}{P^* - P_i - 0.87 mS}$

Theoretical Potential w/ Damage Removed  $Q_i = Q DR$  BPD

Approx. Radius of Investigation  $r_i = 0.032 \sqrt{\frac{k(t/60)}{h \mu c_i}}$  ft

**EQUATIONS FOR DST GAS WELL ANALYSIS**

Indicated Flow Capacity  $kh = \frac{1637 Q_g T}{m}$  md-ft

Average Effective Permeability  $k = \frac{kh}{h}$  md

Skin Factor  $S = 1.151 \left[ \frac{m(P^*) - m(P_f)}{m} - \text{LOG} \left( \frac{k(t/60)}{h \mu c_{r,w}^2} \right) - 3.23 \right]$

Damage Ratio  $DR = \frac{m(P^*) - m(P_f)}{m(P^*) - m(P_i) - 0.87 mS}$

Indicated Flow Rate (Maximum)  $AOF_1 = \frac{Q_g m(P^*)}{m(P^*) - m(P_i)}$  MCFD

Indicated Flow Rate (Minimum)  $AOF_2 = Q_g \sqrt{\frac{m(P^*)}{m(P^*) - m(P_i)}}$  MCFD

Approx. Radius of Investigation  $r_i = 0.032 \sqrt{\frac{k(t/60)}{h \mu c_i}}$  ft

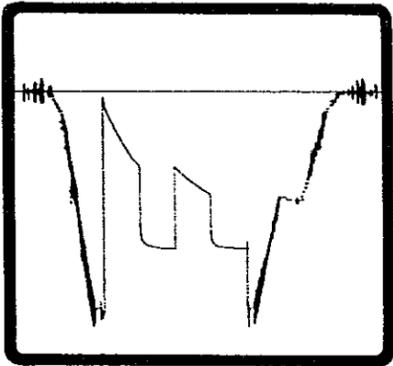
Halliburton, Inc. (Houston) 011  
2486 Nevada 118  
Buache 852

RECEIVED

JUL 26 1985

O & G CONS. COMM

# FORMATION TESTING SERVICE REPORT



NAVajo TRACT 138  
LEASE NAME

6  
WELL NO.

4  
TEST NO.

5325.0 - 5340.0  
TESTED INTERVAL

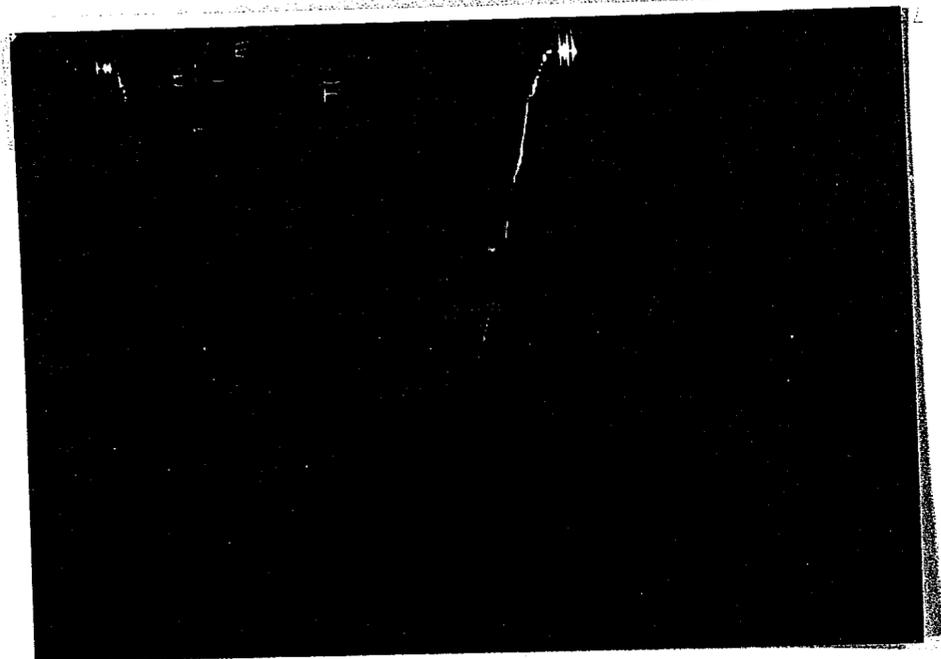
HONSHANTO OIL COMPANY  
LEASE OWNER/COMPANY NAME



Duncan, Oklahoma 73536

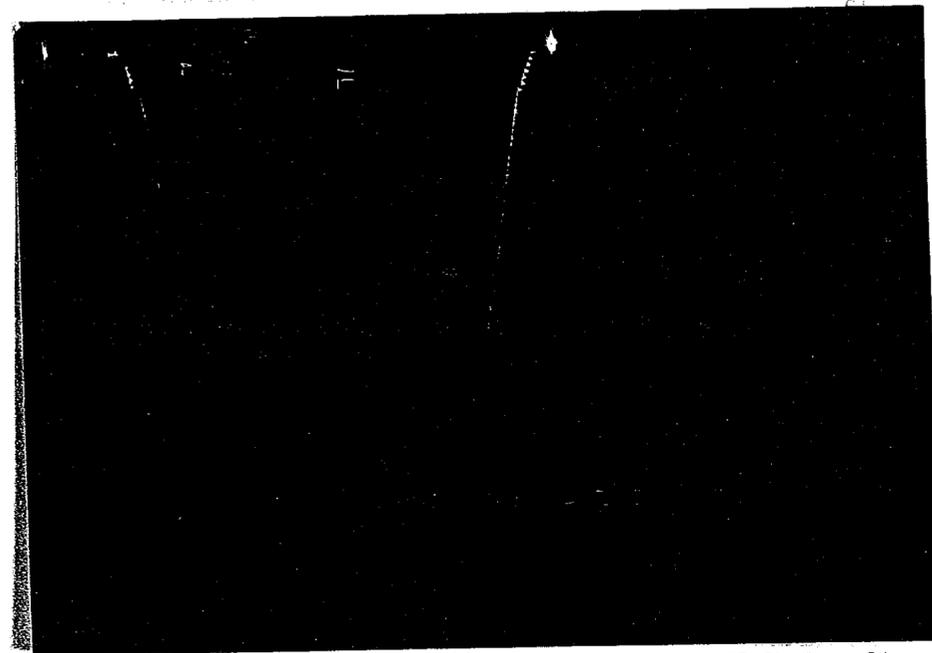
 A Halliburton Company





GAUGE NO: 2032 DEPTH: 5303.0 BLANKED OFF: NO HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2712	2710.1			
B	INITIAL FIRST FLOW	27	11.4			
C	FINAL FIRST FLOW	40	35.9	16.0	16.6	F
C	INITIAL FIRST CLOSED-IN	40	35.9			
D	FINAL FIRST CLOSED-IN	1511	1529.1	61.0	59.8	C
E	INITIAL SECOND FLOW	53	45.9			
F	FINAL SECOND FLOW	160	171.8	120.0	121.0	F
F	INITIAL SECOND CLOSED-IN	160	171.8			
G	FINAL SECOND CLOSED-IN	1524	1529.4	240.0	239.7	C
H	FINAL HYDROSTATIC	2685	2708.4			



GAUGE NO: 2033 DEPTH: 5337.0 BLANKED OFF: YES HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2733	2734.0			
B	INITIAL FIRST FLOW	40	43.5			
C	FINAL FIRST FLOW	67	75.9	16.0	16.6	F
C	INITIAL FIRST CLOSED-IN	67	75.9			
D	FINAL FIRST CLOSED-IN	1533	1547.9	61.0	59.8	C
E	INITIAL SECOND FLOW	80	69.1			
F	FINAL SECOND FLOW	174	189.4	120.0	121.0	F
F	INITIAL SECOND CLOSED-IN	174	189.4			
G	FINAL SECOND CLOSED-IN	1547	1549.1	240.0	239.7	C
H	FINAL HYDROSTATIC	2719	2730.1			

Apache 852  
 Monsanto Oil Co  
 Navajo 138





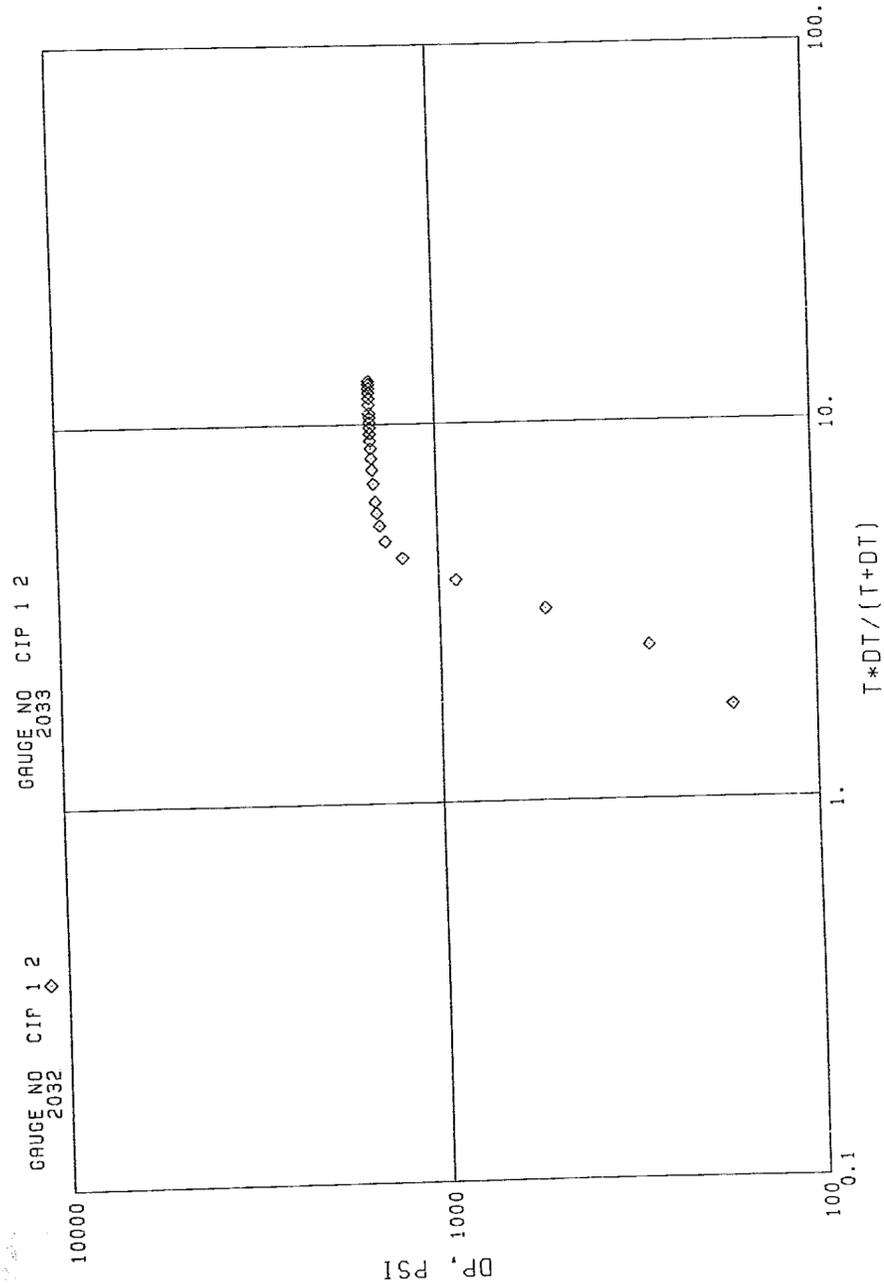


TICKET NO. 23077800

	O.D.	I.D.	LENGTH	DEPTH
1 DRILL PIPE.....	4.500	3.826	4441.0	
4 FLEX WEIGHT.....	4.500	2.764	179.0	
3 DRILL COLLARS.....	6.250	2.750	602.0	
50 IMPACT REVERSING SUB.....	6.000	3.000	1.0	5299.0
3 DRILL COLLARS.....	6.250	2.750	91.0	
13 DUAL CIP SAMPLER.....	5.030	0.870	7.0	
60 HYDROSPRING TESTER.....	5.000	0.750	5.0	5298.0
80 AP RUNNING CASE.....	5.000	2.250	4.0	5303.0
15 JAR.....	5.030	1.750	5.0	
16 VR SAFETY JOINT.....	5.000	1.000	3.0	
70 OPEN HOLE PACKER.....	6.750	1.530	6.0	5319.0
70 OPEN HOLE PACKER.....	6.750	1.530	6.0	5325.0
20 FLUSH JOINT ANCHOR.....	5.750	3.000	10.0	
81 BLANKED-OFF RUNNING CASE.....	5.750		4.0	5337.0
TOTAL DEPTH				5340.0

EQUIPMENT DATA

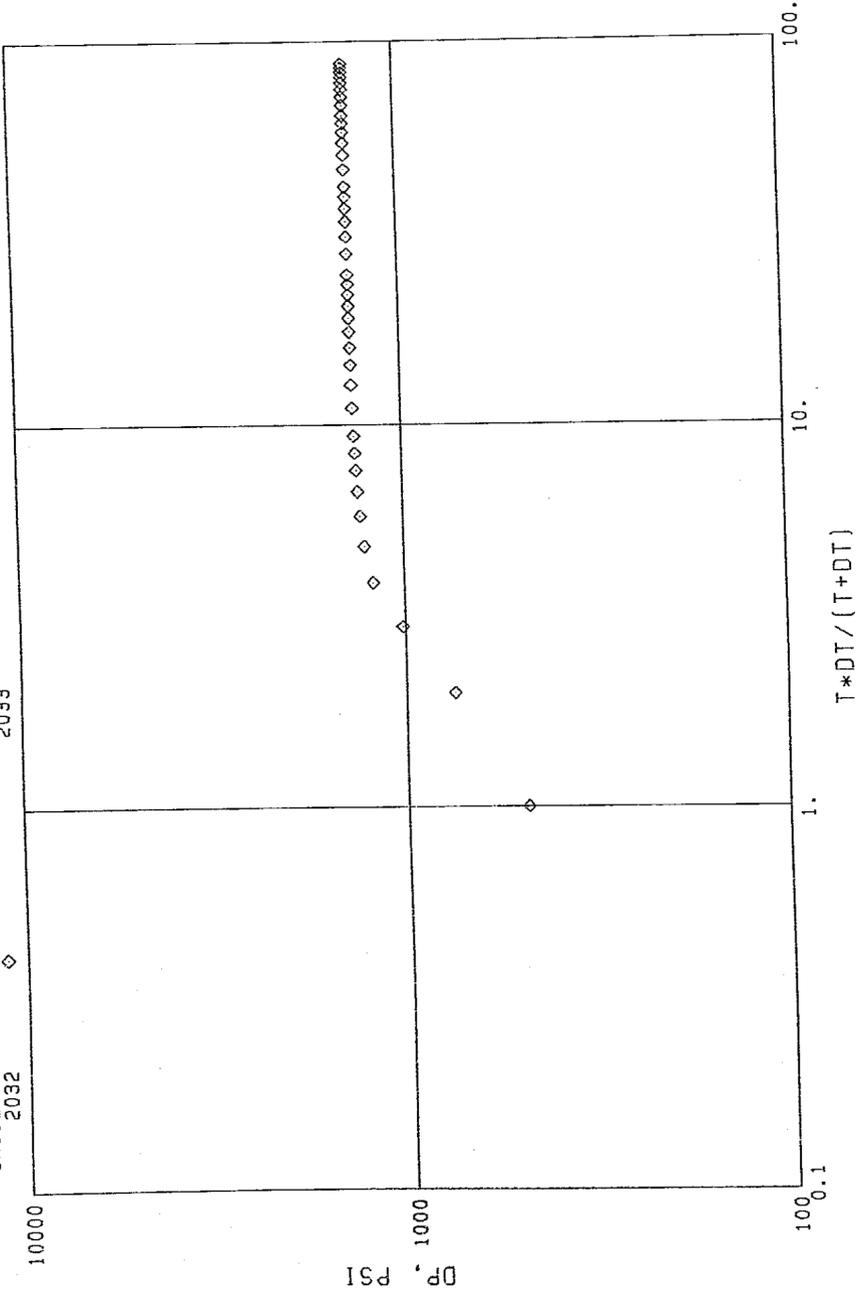
TICKET NO 23077800



Wachter 852  
Monsanto Oil Co  
Albany, Inc. (Monsanto Oil Co)  
Albany, N.Y. 12206

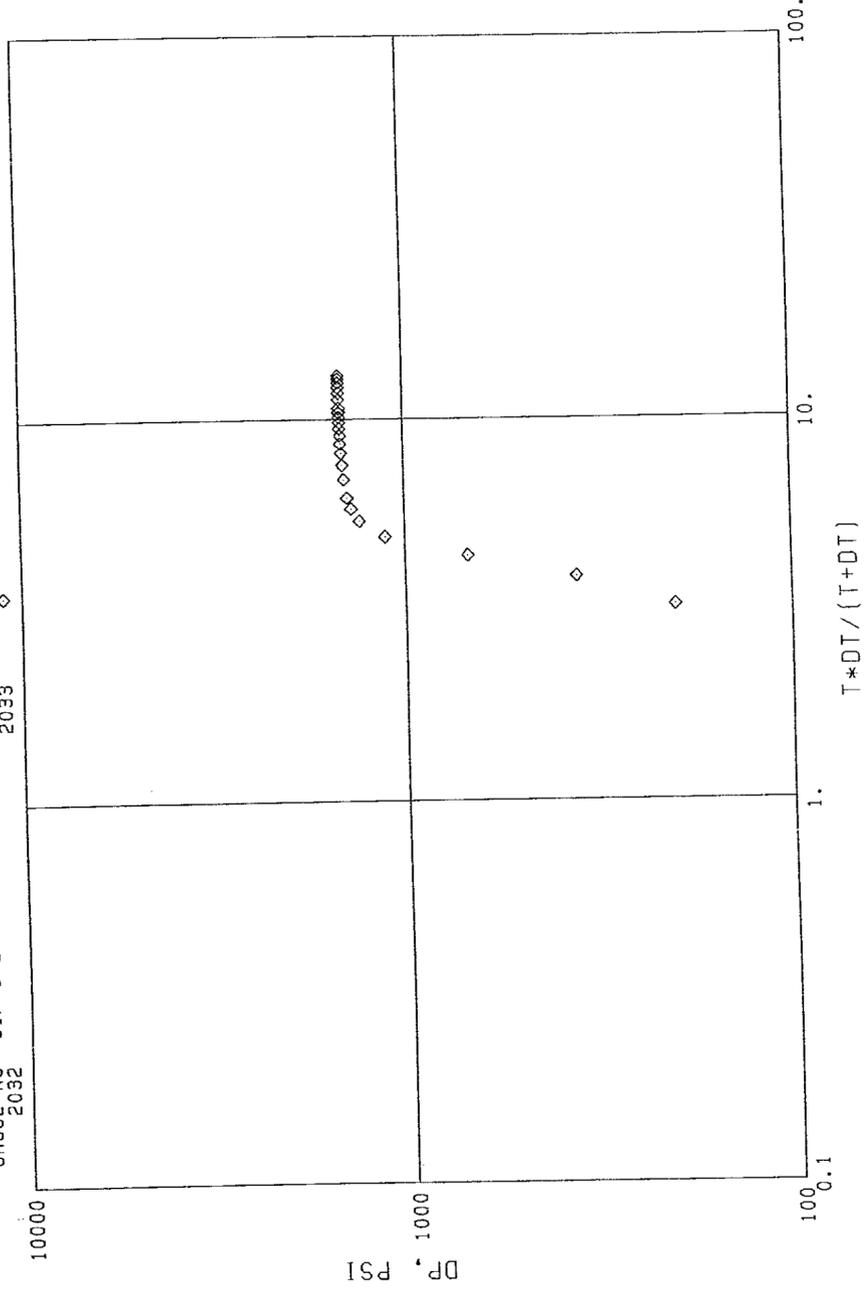
TICKET NO 23077800

GAUGE NO CIP 1 2  
2032



TICKET NO 23077800

GAUGE NO CIP 1 2  
2033



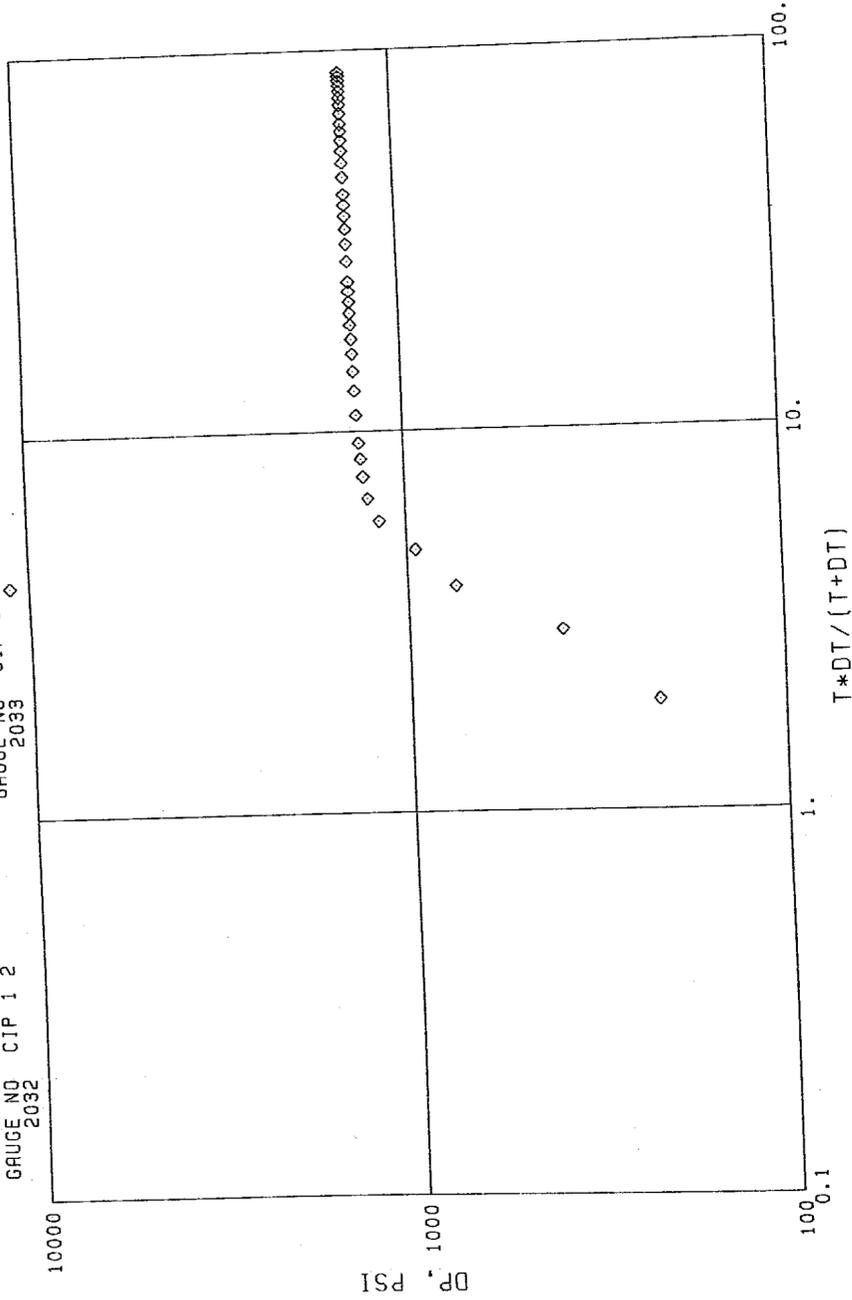
Gauge 852  
Monsanto Oil Co  
Nawato 138



TICKET NO 23077800

GAUGE NO CIP 1 2  
2033

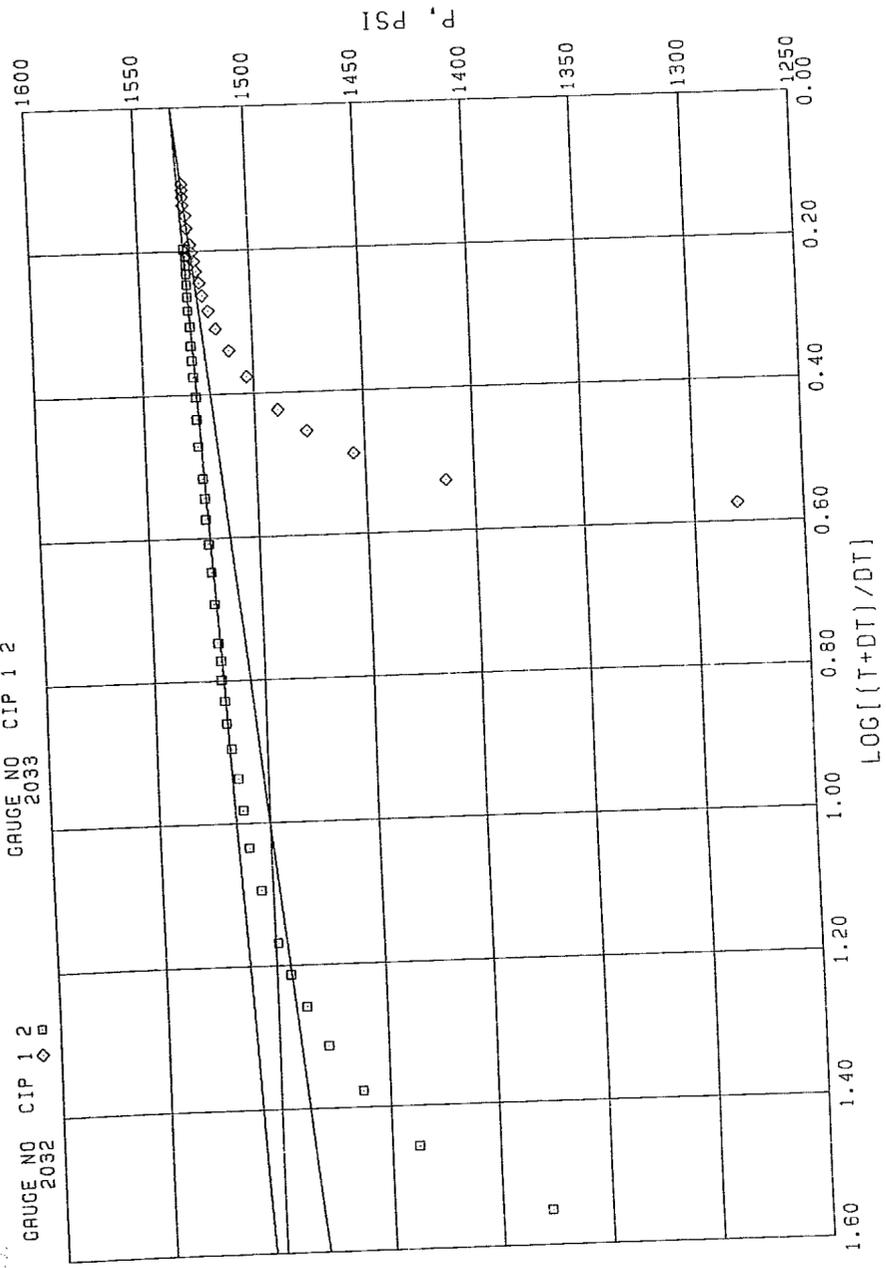
GAUGE NO CIP 1 2  
2032



TICKET NO 23077800

GAUGE NO CIP 1 2  
2033

GAUGE NO CIP 1 2  
2032



852  
011  
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TICKET NUMBER 23077800

**SUMMARY OF RESERVOIR PARAMETERS**  
USING HORNER METHOD FOR LIQUID WELLS

OIL GRAVITY	0.0	°API@60°F	WATER SALINITY	0.3	% SALT
GAS GRAVITY	0.700		FLUID GRADIENT	0.4342	psi/ft
GAS/OIL RATIO	0.0	SCF/STB	FLUID PROPERTIES AT	1552.8	psig
TEMPERATURE	132.0	°F	VISCOSITY	0.494	cp
NET PAY	0.0	ft	FMT VOL FACTOR	1.012	Rvol/Svol
POROSITY	10.0	%	SYSTEM COMPRESSIBILITY	7.72	$\times 10^{-6}$ vol/vol/psi
PIPE CAPACITY FACTORS	0.00735		0.00742		0.01422
					bbf/ft

	2032	2032	2033	2033		
GAUGE NUMBER						
GAUGE DEPTH	5303.0	5303.0	5337.0	5337.0		
FLOW AND CIP PERIOD	1	2	1	2		UNITS
FINAL FLOW PRESSURE	$P_f$	35.9	171.8	75.9	189.4	psig
TOTAL FLOW TIME	$t$	16.6	137.5	16.6	137.5	min
EXTRAPOLATED PRESSURE	$P^*$	1532.9	1532.9	1552.8	1552.8	psig
ONE CYCLE PRESSURE		1500.1	1515.4	1519.2	1534.9	psig
PRODUCTION RATE	$Q$		25.7		25.8	BPD
TRANSMISSIBILITY	$kh/\mu$		241.8		237.9	$\frac{md-ft}{cp}$
FLOW CAPACITY	$kh$		119.468		117.507	md-ft
PERMEABILITY	$k$		7.96456		7.83380	md
SKIN FACTOR	$S$		83.3		81.6	
DAMAGE RATIO	$DR$		15.0		14.7	
POTENTIAL RATE	$Q_t$		386.4		380.8	BPD
RADIUS OF INVESTIGATION	$r_t$		221.5		219.6	ft

REMARKS: ALL CALCULATED RESERVOIR PARAMETERS ARE RELATIVE TO 100% WATER PRODUCTION.

AN ANALYSIS OF THE INITIAL CLOSED-IN PERIODS COULD NOT BE PERFORMED DUE TO INSUFFICIENT PRIOR FLOW DATA FROM WHICH TO DETERMINE A RELIABLE FLOW RATE.

THE CALCULATED SKIN FACTOR OF 81.6 MAY BE QUESTIONABLE-- HOWEVER, THE ACTUAL VALUE IS BELIEVED TO BE VERY HIGH.

THE REPORTED TESTED INTERVAL OF 16" WAS USED IN PLACE OF NET PAY FOR CALCULATION PURPOSES.

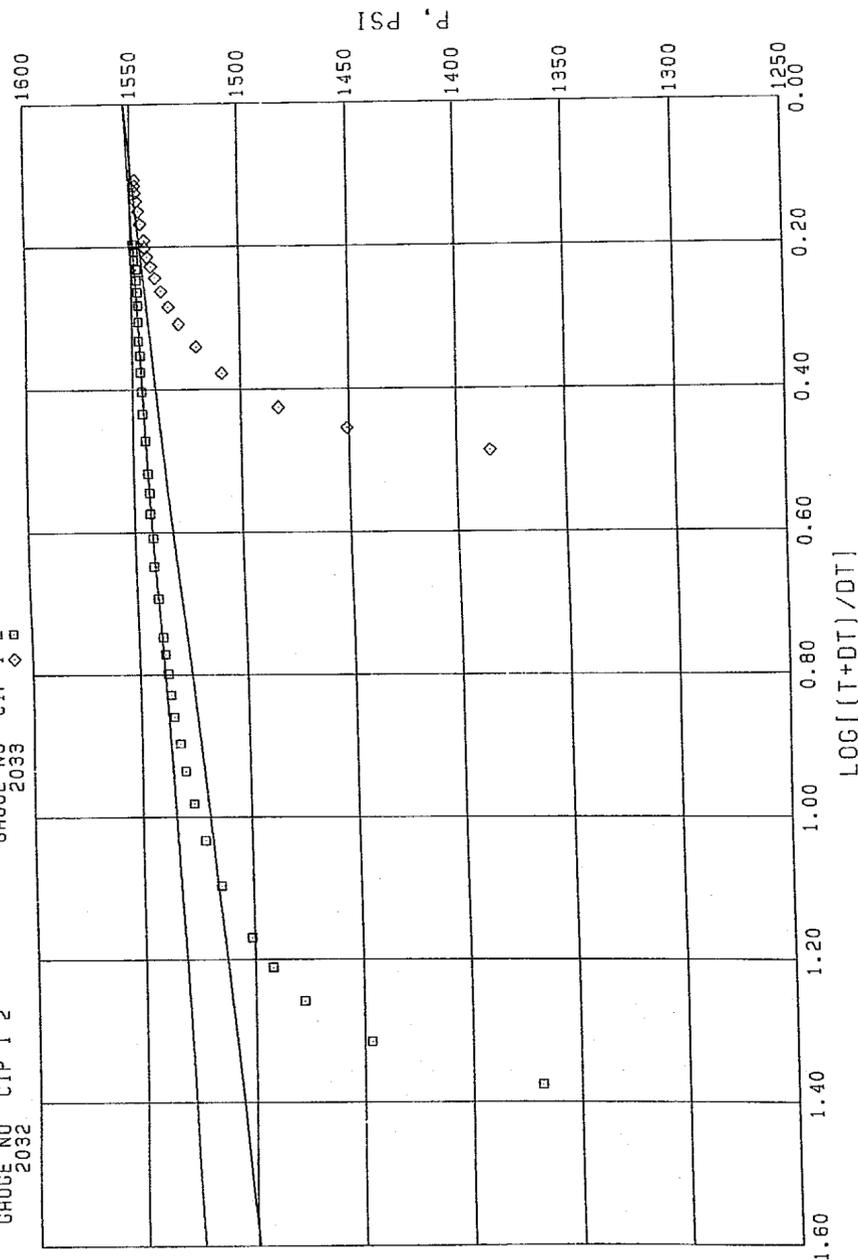
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TICKET NO 23077800

GAUGE NO CIP 1 2  
2033

GAUGE NO CIP 1 2  
2032



Hatche 852  
Oil Co  
Navajo 138

### EQUATIONS FOR DST LIQUID WELL ANALYSIS

Transmissibility	$\frac{kh}{\mu} = \frac{162.6 QB}{m}$	$\frac{\text{md-ft}}{\text{cp}}$
Indicated Flow Capacity	$kh = \frac{kh}{\mu} \mu$	md-ft
Average Effective Permeability	$k = \frac{kh}{h}$	md
Skin Factor	$S = 1.151 \left[ \frac{P^* - P_i}{m} - \text{LOG} \left( \frac{k(t/60)}{\phi \mu C_i r_w^2} \right) - 3.23 \right]$	—
Damage Ratio	$DR = \frac{P^* - P_i}{P^* - P_i - 0.87 mS}$	—
Theoretical Potential w / Damage Removed	$Q_i = Q DR$	BPD
Approx. Radius of Investigation	$r_i = 0.032 \sqrt{\frac{k(t/60)}{\phi \mu C_i}}$	ft

### EQUATIONS FOR DST GAS WELL ANALYSIS

Indicated Flow Capacity	$kh = \frac{1637 Q_g T}{m}$	md-ft
Average Effective Permeability	$k = \frac{kh}{h}$	md
Skin Factor	$S = 1.151 \left[ \frac{m(P^*) - m(P_i)}{m} - \text{LOG} \left( \frac{k(t/60)}{\phi \mu C_i r_w^2} \right) - 3.23 \right]$	—
Damage Ratio	$DR = \frac{m(P^*) - m(P_i)}{m(P^*) - m(P_i) - 0.87 mS}$	—
Indicated Flow Rate (Maximum)	$AOF_1 = \frac{Q_g m(P^*)}{m(P^*) - m(P_i)}$	MCFD
Indicated Flow Rate (Minimum)	$AOF_2 = Q_g \sqrt{\frac{m(P^*)}{m(P^*) - m(P_i)}}$	MCFD
Approx. Radius of Investigation	$r_i = 0.032 \sqrt{\frac{k(t/60)}{\phi \mu C_i}}$	ft

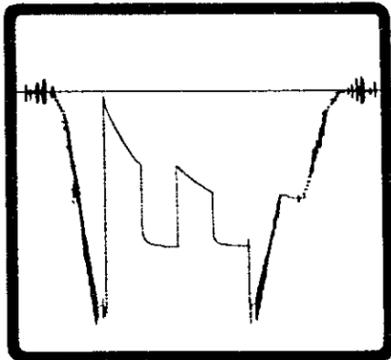
... Inc. (Monsanto Oil Co.)  
 ... Navajo 138

852

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*Handwritten initials*

# FORMATION TESTING SERVICE REPORT



NAVAJO TRACT  
 LEASE NAME  
 138-6  
 WELL NO.  
 5  
 TEST NO.  
 5220.0 - 5307.0  
 TESTED INTERVAL  
 HONSHANTO OIL COMPANY  
 LEASE OWNER/COMPANY NAME



Duncan, Oklahoma 73538

 A Halliburton Company

852

## NOMENCLATURE

B	= Formation Volume Factor (Res Vol / Std Vol)	—
$C_t$	= System Total Compressibility	(Vol / Vol) / psi
DR	= Damage Ratio	—
h	= Estimated Net Pay Thickness	ft
k	= Permeability	md
m	{ (Liquid) Slope Extrapolated Pressure Plot	psi <sup>2</sup> /cycle
	{ (Gas) Slope Extrapolated m(P) Plot	MM psi <sup>2</sup> /cp/cycle
$m(P^*)$	= Real Gas Potential at $P^*$	MM psi <sup>2</sup> /cp
$m(P_f)$	= Real Gas Potential at $P_f$	MM psi <sup>2</sup> /cp
$AOF_1$	= Maximum Indicated Absolute Open Flow at Test Conditions	MCFD
$AOF_2$	= Minimum Indicated Absolute Open Flow at Test Conditions	MCFD
$P^*$	= Extrapolated Static Pressure	Psig
$P_f$	= Final Flow Pressure	Psig
Q	= Liquid Production Rate During Test	BPD
$Q_1$	= Theoretical Liquid Production w/ Damage Removed	BPD
$Q_g$	= Measured Gas Production Rate	MCFD
$r_i$	= Approximate Radius of Investigation	ft
$r_w$	= Radius of Well Bore	ft
S	= Skin Factor	—
t	= Total Flow Time Previous to Closed-in	Minutes
$\Delta t$	= Closed-in Time at Data Point	Minutes
T	= Temperature Rankine	°R
$\phi$	= Porosity	—
$\mu$	= Viscosity of Gas or Liquid	cp
Log	= Common Log	—



TICKET NO. 23048600  
22-JUL-85  
FARRINGTON

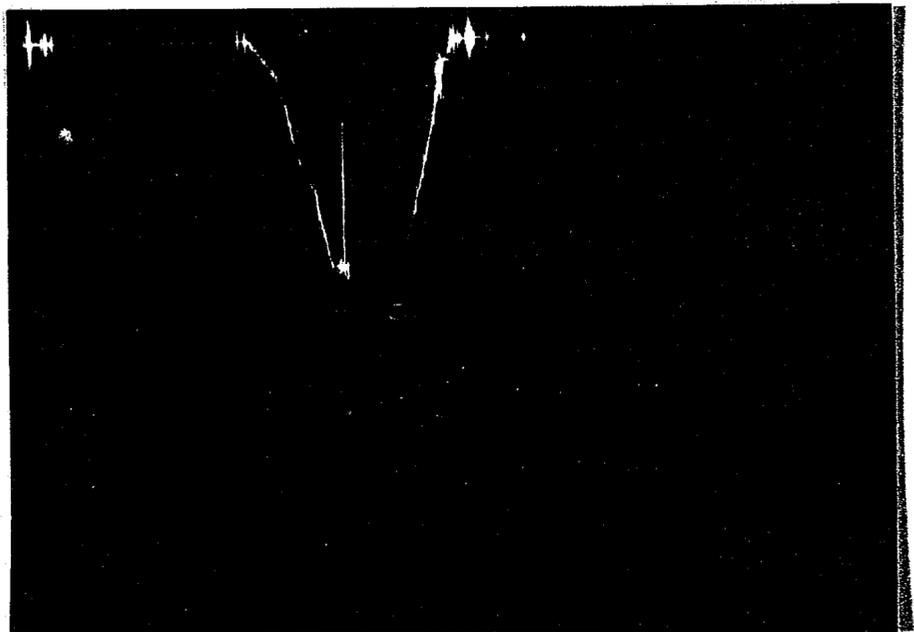
## FORMATION TESTING SERVICE REPORT

LEASE NAME	NAVAJO TRACT	WELL NO.	138-6	TEST NO.	5	TESTED INTERVAL	5220.0 - 5307.0	LEASE OWNER/COMPANY NAME	MONSANTO OIL COMPANY
LEGAL LOCATION	2 - 40 NORTH - 28 EAST	FIELD AREA	DRY MESA	COUNTY	APACHE	STATE	ARIZONA		
SEC. - TWP. - RNG.									

Apache 952 Oil Co  
Monsanto, Inc. (Monsanto Oil Co)  
NAVAJO TRACT, 6 NORTH - 138

210

213



GAUGE NO: 1475 DEPTH: 5198.0 BLANKED OFF: NO HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2732	2706.3			
B	FINAL HYDROSTATIC	2732	2706.3			

GAUGE NO: 105 DEPTH: 5238.0 BLANKED OFF: YES HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2736	2717.5			
B	FINAL HYDROSTATIC	2736	2717.5			

Gauge 852  
 Mousanto 011  
 138  
 NAVAFB



TICKET NO. 23048600

		O.D.	I.D.	LENGTH	DEPTH
1	DRILL PIPE.....	4.500	3.826	4338.0	
3	DRILL COLLARS.....	6.250	2.750	816.0	
50	IMPACT REVERSING SUB.....	6.000	3.000	1.0	5154.0
3	DRILL COLLARS.....	6.250	2.750	30.0	
5	CROSSOVER.....	6.000	3.000	1.0	
13	DUAL CIP SAMPLER.....	5.030	0.750	7.0	
60	HYDROSPRING TESTER.....	5.000	0.750	5.0	5196.0
80	AP RUNNING CASE.....	5.000	2.250	4.0	5198.0
15	JAR.....	5.030	1.750	5.0	
16	VR SAFETY JOINT.....	5.000	1.000	3.0	
17	PRESSURE EQUALIZING CROSSOVER...	5.000	2.620	1.0	
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	5214.0
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	5220.0
20	FLUSH JOINT ANCHOR.....	5.750	3.000	10.0	
5	CROSSOVER.....	6.000	3.000	1.0	
20	FLUSH JOINT ANCHOR.....	5.000	2.370	4.0	
17	PRESSURE EQUALIZING CROSSOVER...	5.000	2.620	1.0	
81	BLANKED-OFF RUNNING CASE.....	5.000		4.0	5238.0
5	CROSSOVER.....	6.000	3.000	1.0	
5	CROSSOVER.....	6.000	3.000	1.0	
5	CROSSOVER.....	6.000	3.000	1.0	
3	DRILL COLLARS.....	6.250	2.750	60.0	
5	CROSSOVER.....	6.000	3.000	1.0	
5	CROSSOVER.....	6.000	3.000	1.0	
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	5307.0
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	5313.0
90	SIDE WALL ANCHOR.....	6.750		5.0	5318.0
	TOTAL DEPTH				5540.0

EQUIPMENT DATA

EQUATIONS FOR DST LIQUID WELL ANALYSIS

Transmissibility  $\frac{kh}{\mu} = \frac{162.6 QB}{m}$   $\frac{md-ft}{cp}$

Indicated Flow Capacity  $kh = \frac{kh}{\mu}$   $md-ft$

Average Effective Permeability  $k = \frac{kh}{h}$   $md$

Skin Factor  $S = 1.151 \left[ \frac{P^* - P_f}{m} - \text{LOG} \left( \frac{k(t/60)}{\phi \mu c_f r_w^2} \right) - 3.23 \right]$

Damage Ratio  $DR = \frac{P^* - P_f}{P^* - P_f - 0.87 mS}$

Theoretical Potential w Damage Removed  $Q_1 = Q DR$   $BPD$

Approx. Radius of Investigation  $r_i = 0.032 \sqrt{\frac{k(t/60)}{\phi \mu c_i}}$   $ft$

EQUATIONS FOR DST GAS WELL ANALYSIS

Indicated Flow Capacity  $kh = \frac{1637 Q_g T}{m}$   $md-ft$

Average Effective Permeability  $k = \frac{kh}{h}$   $md$

Skin Factor  $S = 1.151 \left[ \frac{m(P^*) - m(P_f)}{m} - \text{LOG} \left( \frac{k(t/60)}{\phi \mu c_f r_w^2} \right) - 3.23 \right]$

Damage Ratio  $DR = \frac{m(P^*) - m(P_f)}{m(P^*) - m(P_f) - 0.87 mS}$

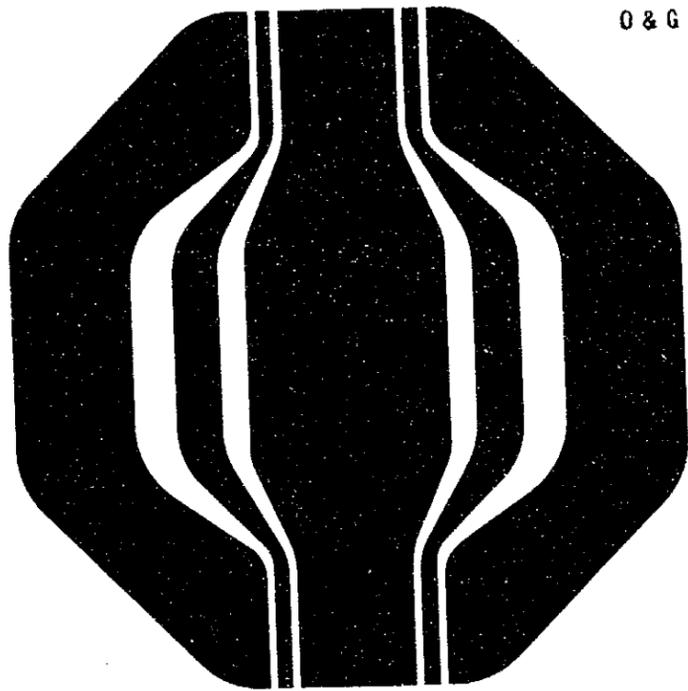
Indicated Flow Rate (Maximum)  $AOF_1 = \frac{Q_g m(P^*)}{m(P^*) - m(P_f)}$   $MCFD$

Indicated Flow Rate (Minimum)  $AOF_2 = Q_g \sqrt{\frac{m(P^*)}{m(P^*) - m(P_f)}}$   $MCFD$

Approx. Radius of Investigation  $r_i = 0.032 \sqrt{\frac{k(t/60)}{\phi \mu c_i}}$   $ft$

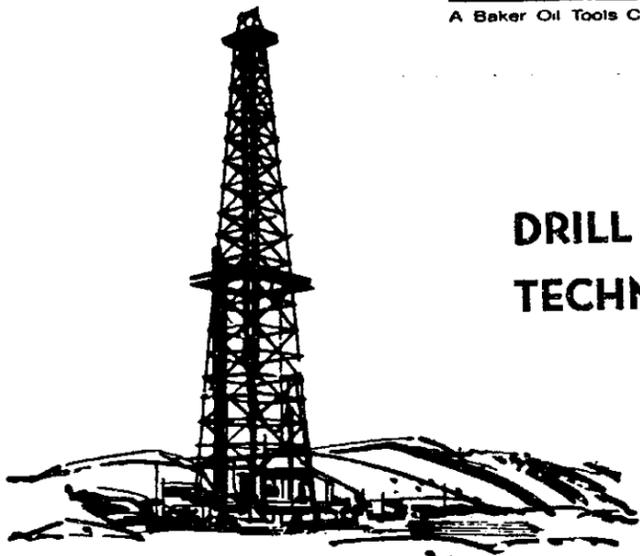
... Inc. (Houston) 011  
 ... 138

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**LYNES**

**BAKER**  
PRODUCTION TECHNOLOGY  
A Baker Oil Tools Company



DRILL STEM TEST  
TECHNICAL SERVICE REPORT

Operator Monsanto Oil  
5613 DTC Parkway Suite 600  
Address Englewood, CO 80111

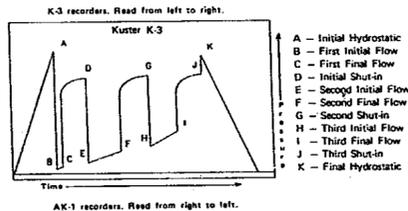
Well Name and No. Navajo Tract 138 #6  
Ticket No. 00764  
Date 7-17-85

DST No. 6  
No. Final Copies 18

**GUIDE TO INTERPRETATION AND IDENTIFICATION OF LYNES DRILL STEM TEST PRESSURE CHARTS**

In making any interpretation, our employees will give Customer the benefit of their best judgment as to the correct interpretation. Nevertheless, since all interpretations are opinions based on inferences from electrical, mechanical or other measurements, we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not be liable or responsible, except in the case of gross or wilful negligence on our part, for any loss, costs, damages or expenses incurred or sustained by Customer resulting from any interpretation made by any of our agents or employees.

**CODE USED ON CHART ENVELOPES**



**NOMENCLATURE**

Symbol	Definition	DST Unit
k	permeability	millidarcys (md)
h	pay thickness	feet (ft.)
u	viscosity	centipoise
T	reservoir temperature	°Rankin (°R)
z	gas compressibility factor at average condition	
q <sub>sc</sub>	gas production rate	MCF/d
M	Horner slope for liquid analysis	PSI/Cycle
Mg	Horner slope for (P <sup>2</sup> ) gas analysis	PSI <sup>2</sup> /Cycle
Pi	initial static reservoir pressure	PSI
Pwf	flowing bottom hole pressure	PSI
φ	porosity	(fraction)
rw	well bore radius	ft.
S	skin factor	
AOF	absolute open flow	MCF/d
D. R.	damage ratio	
re	external drainage radius	ft.
ISIP	initial shut-in pressure	PSI
FSIP	final shut-in pressure	PSI
b	approx. radius of investigation	ft.
t	flowing time	hrs.
B	formation volume factor	
q	liquid production rate	bbbls/day
c	gas compressibility	1/PSI
c	liquid compressibility	1/PSI

**A. Liquid Calculations**

1. Transmissibility  $Kh = 162.6 \frac{qB}{u}$
2. Capacity  $Kh = Kh \times u$
3. Permeability  $K = \frac{Kh}{h}$
4. Skin Factor  $S = 1.151 \left[ \frac{P_i - P_{wf}}{m} \cdot \log \frac{Kt}{\phi \mu c_{r_w}^2} + 3.2275 \right]$
5. Pressure Drop Due to Skin  $\Delta P_{skin} = \frac{162.6 B q u}{Kh} \times 0.869S$  or  $\Delta P_{skin} = 0.869 M S$
6. Damage Ratio  $\frac{P_i - P_{wf}}{m} \left[ \log \frac{Kt}{\phi \mu c_{r_w}^2} - 3.2275 \right]$
7. Productivity Index  $P.I. = \frac{qB}{P_i - P_{wf}}$
8. Productivity Index Damage Removed  $\frac{qB}{P_i - P_{wf}} = P.I. \times D.R.$
9. Radius of Investigation  $b = 0.029 \sqrt{\frac{Kt}{\phi \mu c}}$
10. Depletion Factor %  $\frac{ISIP - FSIP}{ISIP} \times 100$

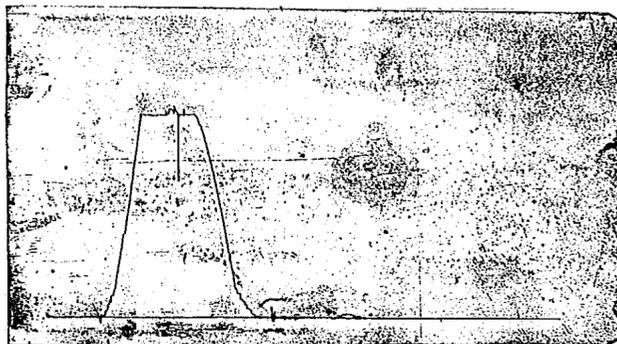
**B. Gas Calculations**

1. Transmissibility  $Kh = 1637 \frac{T \alpha_{sc}}{u}$
2. Capacity  $Kh \times u = Kh$
3. Permeability  $K = \frac{Kh}{h}$
4. Apparent Skin Factor  $S = 1.151 \left[ \frac{P_i^2 - P_{wf}^2}{Mg} \cdot \log \left( \frac{Kt}{\phi \mu c_{r_w}^2} \right) + 3.2275 \right]$
5. Pressure Drop Due to Skin  $\Delta P_{skin} = P_i - P_{wf} = \sqrt{(P_{wf}^2) + 0.869 Mg S}$
6. Damage Ratio  $\frac{P_i^2 - P_{wf}^2}{Mg} \left[ \log \frac{Kt}{\phi \mu c_{r_w}^2} - 3.2275 \right]$
7. Absolute Open Flow  $Mg \left[ \log \frac{Kt}{\phi \mu c_{r_w}^2} - 3.2275 + .869S \right]$
8. AOF Damage removed  $AOF \times DR$
9. Estimated Stabilized AOF  $\frac{(P_i^2) (Kh)}{3283 u z \left[ \log \left( \frac{4.72 re}{rw} \right) + 2.303 \right]}$
10. Radius of Investigation  $b = 0.029 \sqrt{\frac{Kt}{\phi \mu c}}$
11. Depletion %  $\frac{ISIP - FSIP}{ISIP} \times 100$

**LYNES**

TECHNICAL SERVICES, Security Life Bldg. • Suite 1350 • 1616 Glenarm • Denver, Colorado 80202 • Phone. (303) 573-8027

Contractor <u>Coleman</u>	Top Choke <u>1"</u>	Flow No. 1 <u>---</u> Min.
Rig No. <u>---</u>	Bottom Choke <u>3/4"</u>	Shut-in No. 1 <u>---</u> Min.
Spot <u>---</u>	Size Hole <u>7 7/8"</u>	Flow No. 2 <u>---</u> Min.
Sec. <u>2</u>	Size Rat Hole <u>---</u>	Shut-in No. 2 <u>---</u> Min.
Twp. <u>40N</u>	Size & Wt. D. P. <u>4 1/2" XH 16.60#</u>	Flow No. 3 <u>---</u> Min.
Rng. <u>28E</u>	Size Wt. Pipe <u>---</u>	Shut-in No. 3 <u>---</u> Min.
Field <u>Dry Mesa</u>	I. D. of D. C. <u>2 1/2"</u>	
County <u>Apache</u>	Length of D. C. <u>881 ft</u>	Bottom Hole Temp. <u>---</u>
State <u>Arizona</u>	Total Depth <u>5540 ft</u>	Mud Weight <u>9.8+</u>
Elevation <u>---</u>	Interval Tested <u>5221-5307 ft</u>	Gravity <u>---</u>
Formation <u>---</u>	Type of Test <u>Inflate Straddle</u>	Viscosity <u>44</u>



**Outside Recorder**

PRD Make Kuster K-3  
 No. 1234 Cap. 4000 @ 5228'

	Press	Corrected
Initial Hydrostatic	A	---
Final Hydrostatic	K	---
Initial Flow	B	---
Final Initial Flow	C	---
Initial Shut-in	D	---
Second Initial Flow	E	---
Second Final Flow	F	---
Second Shut-in	G	---
Third Initial Flow	H	---
Third Final Flow	I	---
Third Shut-in	J	---

Lynes Dist. Cortez, CO  
 Our Tester: Bryan Scott  
 Witnessed By: Howard Jones

Did Well Flow - Gas No Oil No Water No  
 RECOVERY IN PIPE:

MISRUN: Unable to maintain a packer seat.

Operator Nonsanto Oil  
 Address 5613 DTC Parkway Suite 600  
Englewood, CO 80111  
 Well Name and No. Navajo Tract 138 #6  
 Ticket No. 00764  
 Date 7-17-85  
 DST No. 6  
 No. Final Copies 18

Form 1

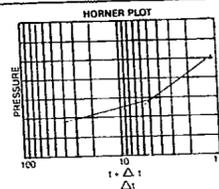
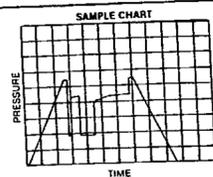
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Apache 852  
 Nonsanto Oil Co. (Nonsanto Oil Co.)  
 Navajo Tract 138

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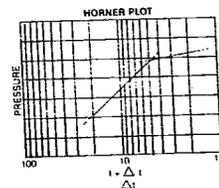
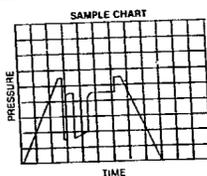
### Lynes Guide to Detection of Geological Anomalies



**Horner Plot Slope Breaks Upward**

**Possible Causes**

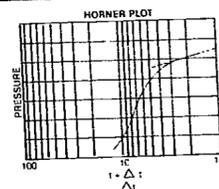
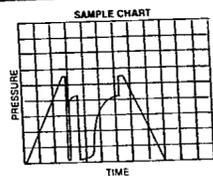
- (1) decrease in pay thickness away from the wellbore
- (2) decrease in permeability away from the wellbore
- (3) increase in viscosity of reservoir fluid (fluid contact)
- (4) barrier within the radius of investigation



**Horner Plot Slope Breaks Downward**

**Possible Causes**

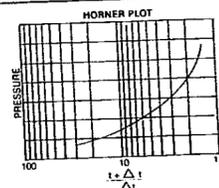
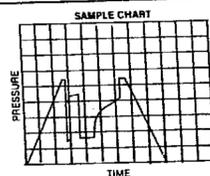
- (1) increase in pay thickness away from the wellbore
- (2) increase in permeability away from the wellbore
- (3) decrease in viscosity away from the wellbore



**Early Time Deviation of Horner Plot**

**Possible Causes**

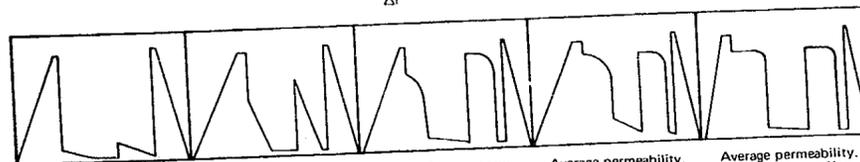
- (1) wellbore damage due to filtrate invasion, drilling solids, etc.
- (2) partial penetration of pay zone
- (3) plugging or choking of perforations (casing test only)
- (4) wellbore storage effects (low permeability gas wells)



**Horner Plot Slope Continually Increasing**

**Possible Causes**

- (1) well between two parallel boundaries (channel sand)
- (2) induced hydraulic fractures



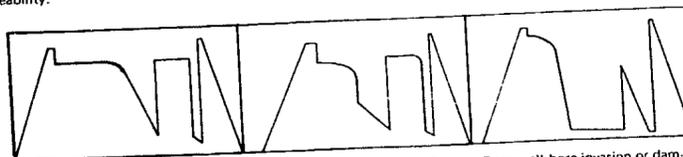
Very low permeability. Usually only mud recovered from interval tested. Virtually no permeability.

Slightly higher permeability. Again usually mud recovered.

Slightly higher permeability. Small recovery. less than 200 ft.

Average permeability. Final and initial shut-ins differ by 50 psi.

Average permeability. Strong damage effect. High shut-in pressure. low flow pressure.

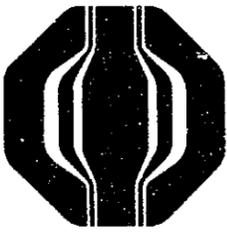


Excellent permeability where final flow final shut-in pressure.

High permeability where ISIP and FSIP are within 10 psi.

Deep well bore invasion or damage. Final shut-in higher than the initial shut-in.

...ache 852  
... (Monsanto 011  
... 138



**LYNES**

1616 Glenarm Pl.  
Suite 1350  
Denver, CO 80202  
1-303-573-8027

852

CORE ANALYSIS REPORT

FOR

MONSANTO OIL COMPANY

NAVAJO TRACT # 138-6

DRY MESA

APACHE, ARIZONA



**CORE LABORATORIES**

CORE LABORATORIES, INC.  
Petroleum Reservoir Engineering  
DALLAS, TEXAS

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CORE ANALYSIS REPORT

FOR

MONSANTO OIL COMPANY

NAVAJO TRACT # 138-6  
DRY MESA  
APACHE, ARIZONA

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc. and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operations, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

**CORE LABORATORIES, INC.**  
*Petroleum Reservoir Engineering*

FILE NO : 3803-003391  
 ANALYSTS : DSFEV  
 ELEVATION: 5697 GL

DALLAS, TEXAS  
 DATE : 12-JUL-1985  
 FORMATION : LEADVILLE  
 DRUG. FLUID: WBM  
 LOCATION : NE, SW SEC. 2-T40N-R28E

MONSANTO OIL COMPANY  
 NAVAJO TRACT # 138-6  
 DRY MESA  
 APACHE, ARIZONA

FULL DIAMETER ANALYSIS-BOYLE'S LAW POROSITY

SAMPLE NUMBER	DEPTH	PERM. TO AIR (MD) MAXIMUM	TO AIR (MD) 90 DEG	FOR. He	FLUID SATS. OIL	WTR	GRAIN DEN	DESCRIPTION
LEADVILLE FORMATION CORE # 1 5280-5300								
1	5280.0-81.0	<0.01	*	4.6	17.3	39.5	2.84	DOL LTGRY VFXLN SL/CALC SL/VUG R
2	5281.0-82.0	0.01	*	5.8	12.4	28.5	2.85	DOL LTGRY VFXLN SL/CALC SL/VUG R
3	5282.0-83.0	0.16	*	5.1	12.6	25.2	2.85	DOL LTGRY VFXLN SL/CALC SL/VUG OVF
4	5283.0-84.0	0.13	*	5.6	4.7	37.7	2.85	DOL LTGRY VFXLN SL/CALC SL/VUG OVF
5	5284.0-85.0	0.02	*	4.9	5.3	52.9	2.83	DOL LTGRY VFXLN SL/CALC SL/VUG OVF
6	5285.0-86.0	0.07	*	4.4	3.3	39.2	2.84	DOL LTGRY VFXLN SL/CALC OVF
7	5286.0-87.0	0.04	*	5.3	2.6	20.4	2.82	DOL LTGRY VFXLN SL/CALC CVF
8	5287.0-88.0	0.01	*	3.4	6.6	52.5	2.84	DOL LTGRY VFXLN SL/CALC SL/VUG
9	5288.0-89.0	0.03	*	5.1	3.8	53.5	2.84	DOL LTGRY VFXLN SL/CALC SL/VUG
10	5289.0-90.0	0.79	0.72	4.8	3.1	56.4	2.85	DOL LTGRY VFXLN SL/CALC SL/VUG
11	5290.0-91.0	0.84	0.37	7.0	5.6	44.8	2.85	DOL LTGRY VFXLN SL/CALC SL/VUG
12	5291.0-92.0	1.23	0.01	7.3	2.0	36.4	2.86	DOL LTGRY VFXLN SL/CALC SL/VUG
13	5292.0-93.0	0.03	*	3.3	2.7	32.1	2.86	DOL LTGRY VFXLN SL/CALC SL/VUG
14	5293.0-94.0	0.05	*	2.8	5.4	43.5	2.85	DOL LTGRY VFXLN SL/CALC R
15	5294.0-95.0	0.01	*	3.9	0.0	46.0	2.84	DOL LTGRY VFXLN SL/CALC
16	5295.0-96.0	0.02	*	2.2	0.0	54.4	2.85	DOL LTGRY FNXLN SL/CALC CVF
17	5296.0-97.0	1.38	0.34	2.4	0.0	41.9	2.84	DOL LTGRY VFXLN SL/CALC CVF
18	5297.0-98.0	0.01	*	3.0	0.0	68.2	2.84	DOL LTGRY VFXLN SL/CALC CVF
19	5298.0-99.0	0.01	*	3.9	5.2	52.3	2.84	DOL LTGRY VFXLN SL/CALC CVF
20	5299.0-00.0	0.16	*	1.5	0.0	59.0	2.85	DOL LTGRY VFXLN SL/CALC CVF

\*\* DENOTES FRACTURE PERMEABILITY

R DENOTES CORE RUBBLE ZONE

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CORE LABORATORIES, INC.  
Petroleum Reservoir Engineering

FILE NO : 3803-003391  
ANALYSTS : DSFEV

DALLAS, TEXAS  
DATE : 12-JUL-1985  
FORMATION : LEADVILLE

MONSANTO OIL COMPANY  
NAVAJO TRACT # 138-6

FULL DIAMETER ANALYSIS--BOYLE'S LAW POROSITY

SAMPLE NUMBER	DEPTH	PERM. TO AIR (MD) MAXIMUM	POR. He	FLUID SATS. OIL	WTR	GRAIN DEN	DESCRIPTION

OVF DENOTES OPEN VERTICAL FRACTURE

CVF DENOTES CLOSED VERTICAL FRACTURE

\* SAMPLE NOT SUITABLE FOR FULL DIAMETER ANALYSIS

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**CORE LABORATORIES, INC.**  
*Petroleum Reservoir Engineering*

FILE NO. : 3803-003391  
 ANALYSTS : DS:EV

DALLAS, TEXAS  
 DATE : 12-JUL-1985  
 FORMATION : LEADVILLE

MONSANTO OIL COMPANY  
 NAVAJO TRACT # 138-6

\*\*\* CORE SUMMARY AVERAGES FOR 1 ZONE \*\*\*

DEPTH INTERVAL: 5280.0 TO 5300.0  
 FEET OF CORE ANALYZED : 20.0 FEET OF CORE INCLUDED IN AVERAGES: 20.0

--- SAMPLES FALLING WITHIN THE FOLLOWING RANGES WERE AVERAGED ---  
 (UNCORRECTED FOR SLIPPAGE)

PERMEABILITY MAXIMUM RANGE (MD.) : 0.00 TO 100.  
 HELIUM POROSITY RANGE (%) : 0.0 TO 100.0  
 OIL SATURATION RANGE (%) : 0.0 TO 100.0  
 WATER SATURATION RANGE (%) : 0.0 TO 100.0

SHALE SAMPLES EXCLUDED FROM AVERAGES.

AVERAGES FOR DEPTH INTERVAL: 5280.0 TO 5300.0

AVERAGE PERMEABILITY (MILLIDARCIES)	: 0.25	PRODUCTIVE CAPACITY (MILLIDARCY-FEET)	: 5.0
ARITHMETIC PERMEABILITY	: 0.05	ARITHMETIC CAPACITY	: 1.1
GEOMETRIC PERMEABILITY	: 0.01	GEOMETRIC CAPACITY	: 0.23
HARMONIC PERMEABILITY	: 0.01	HARMONIC CAPACITY	: 0.24
GEOMETRIC MAXIMUM & 90 DEG PERM.	: 4.3	GEOMETRIC MAXIMUM & 90 DEG CAPACITY	: 42.3
AVERAGE POROSITY (PERCENT)	: 5.4	AVERAGE TOTAL WATER SATURATION (PERCENT OF PORE SPACE)	: 40.6
AVERAGE RESIDUAL OIL SATURATION (PERCENT OF PORE SPACE)		AVERAGE CONNATE WATER SATURATION ** (PERCENT OF PORE SPACE)	

\*\* ESTIMATED FROM TOTAL  
 WATER SATURATION.

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**CORE LABORATORIES, INC.**  
*Petroleum Reservoir Engineering*  
 DALLAS, TEXAS

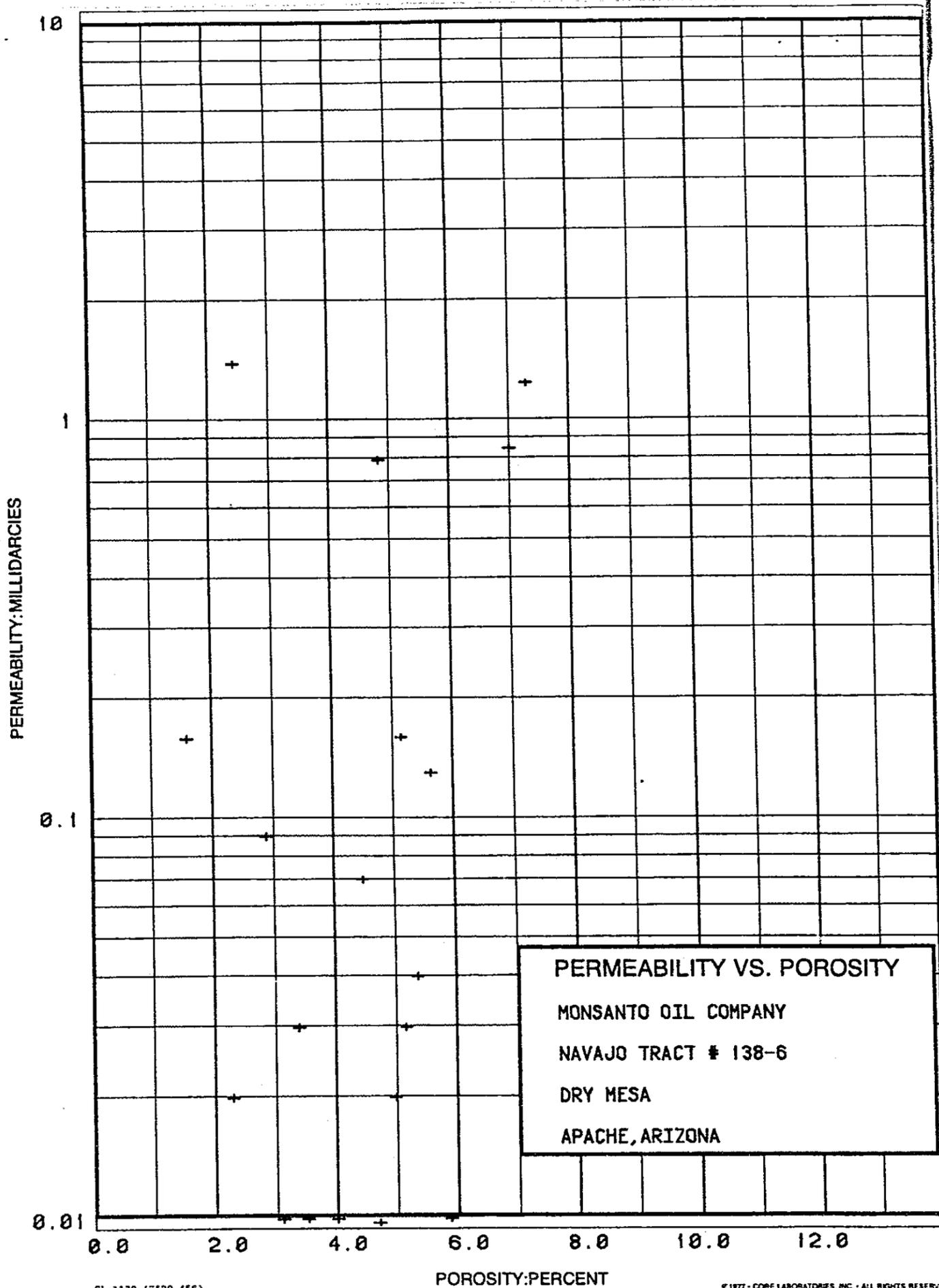
PERMEABILITY VS POROSITY

COMPANY: MONSANTO OIL COMPANY                      WELL : NAVAJO TRACT # 138-6  
 FIELD : DRY MESA                                      COUNTY, STATE: APACHE, ARIZONA

AIR PERMEABILITY : MD - HORIZONTAL                      ( UNCORRECTED FOR SLIPPAGE )  
 POROSITY : PERCENT                                      HELIUM

DEPTH INTERVAL	RANGE & SYMBOL	PERMEABILITY MINIMUM MAXIMUM	POROSITY MIN. MAX.	POROSITY AVERAGE	PERMEABILITY AVERAGES	
					ARITHMETIC	HARMONIC GEOMETRIC
5280.0 - 5300.0	1 (+)	0.000 100.0	0.0 50.0	4.3	0.25	0.01 0.05

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**CORE LABORATORIES, INC.**  
*Petroleum Reservoir Engineering*  
DALLAS, TEXAS

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: MONSANTO OIL COMPANY  
FIELD : DRY MESA

WELL : NAVAJO TRACT # 138-6  
COUNTY, STATE: APACHE, ARIZONA

AIR PERMEABILITY : MD. ( HORIZONTAL ) RANGE USED 0.000 TO 100.  
POROSITY : PERCENT ( HELIUM ) RANGE USED 0.0 TO 46.0

(PERMEABILITY UNCORRECTED FOR SLIPPAGE)

DEPTH LIMITS : 5280.0 - 5300.0 INTERVAL LENGTH : 20.0  
FEET ANALYZED IN ZONE : 20.0 LITHOLOGY EXCLUDED : NONE

DATA SUMMARY

FOROSITY	PERMEABILITY AVERAGES
AVERAGE	ARITHMETIC HARMONIC GEOMETRIC
-----	-----
4.3	0.25 0.01 0.05

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**CORE LABORATORIES, INC.**  
*Petroleum Reservoir Engineering*  
 DALLAS, TEXAS

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: MONSANTO OIL COMPANY  
 FIELD : DRY MESA

WELL : NAVAJO TRACT # 138-6  
 COUNTY, STATE: APACHE, ARIZONA

GROUPING BY POROSITY RANGES					
POROSITY RANGE	FEET IN RANGE	AVERAGE POROSITY	AVERAGE PERM. (GEOM.)	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
0.0 - 2.0	1.0	1.5	0.160	5.0	5.0
2.0 - 4.0	8.0	3.1	0.030	40.0	45.0
4.0 - 6.0	9.0	5.1	0.048	45.0	90.0
6.0 - 8.0	2.0	7.2	1.0	10.0	100.0

TOTAL NUMBER OF FEET = 20.0

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**CORE LABORATORIES, INC.**  
*Petroleum Reservoir Engineering*  
 DALLAS, TEXAS

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: MONSANTO OIL COMPANY  
 FIELD : DRY MESA  
 WELL : NAVAJO TRACT # 138-6  
 COUNTY, STATE: APACHE, ARIZONA

GROUPING BY PERMEABILITY RANGES

PERMEABILITY RANGE	FEET IN RANGE	AVERAGE PERM. (GEOM.)	AVERAGE PERM. (ARITH)	AVERAGE POROSITY	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
0.005 - 0.010	1.0	0.005	0.005	4.6	5.0	5.0
0.010 - 0.020	5.0	0.010	0.010	4.0	25.0	30.0
0.020 - 0.039	4.0	0.024	0.025	3.9	20.0	50.0
0.039 - 0.078	2.0	0.053	0.055	4.8	10.0	60.0
0.078 - 0.156	2.0	0.108	0.110	4.2	10.0	70.0
0.156 - 0.312	2.0	0.160	0.160	3.3	10.0	80.0
0.625 - 1.250	3.0	0.935	0.953	6.4	15.0	95.0
1.250 - 2.500	1.0	1.4	1.4	2.4	5.0	100.0

TOTAL NUMBER OF FEET = 20.0

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**CORE LABORATORIES, INC.**  
*Petroleum Reservoir Engineering*  
 DALLAS, TEXAS

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: MONSANTO OIL COMPANY  
 FIELD : DRY MESA

WELL : NAVAJO TRACT # 138-6  
 COUNTY, STATE: APACHE, ARIZONA

POROSITY-FEET OF STORAGE CAPACITY LOST FOR SELECTED POROSITY CUT OFF

POROSITY CUT OFF	FEET LOST	CAPACITY LOST (%)	FEET REMAINING	CAPACITY REMAINING (%)	ARITH MEAN	MEDIAN
0.0	0.0	0.0	20.0	100.0	4.3	4.2
2.0	1.0	1.7	19.0	98.3	4.5	4.3
4.0	9.0	30.6	11.0	69.4	5.4	
6.0	18.0	83.4	2.0	16.6	7.2	
8.0	20.0	100.0	0.0	0.0		

TOTAL STORAGE CAPACITY IN POROSITY-FEET = 86.3

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**CORE LABORATORIES, INC.**  
*Petroleum Reservoir Engineering*  
 DALLAS, TEXAS

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: MONSANTO OIL COMPANY  
 FIELD : DRY MESA

WELL : NAVAJO TRACT # 138-6  
 COUNTY, STATE: APACHE, ARIZONA

POROSITY-FEET OF STORAGE CAPACITY LOST FOR SELECTED POROSITY CUT OFF

POROSITY CUT OFF	FEET LOST	CAPACITY LOST (%)	FEET REMAINING	CAPACITY REMAINING (%)	ARITH MEAN	MEDIAN
0.0	0.0	0.0	20.0	100.0	4.3	4.2
2.0	1.0	1.7	19.0	98.3	4.5	4.3
4.0	9.0	30.6	11.0	69.4	5.4	
6.0	18.0	83.4	2.0	16.6	7.2	
8.0	20.0	100.0	0.0	0.0		

TOTAL STORAGE CAPACITY IN POROSITY-FEET = 86.3

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**CORE LABORATORIES, INC.**  
*Petroleum Reservoir Engineering*  
 DALLAS, TEXAS

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

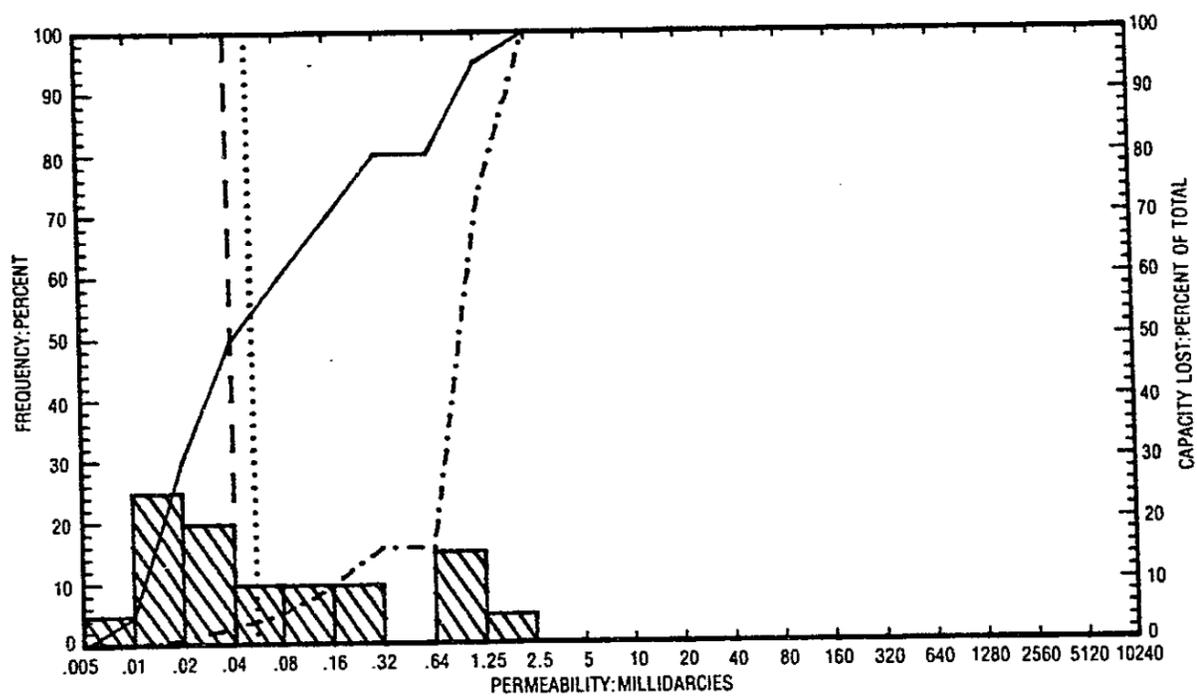
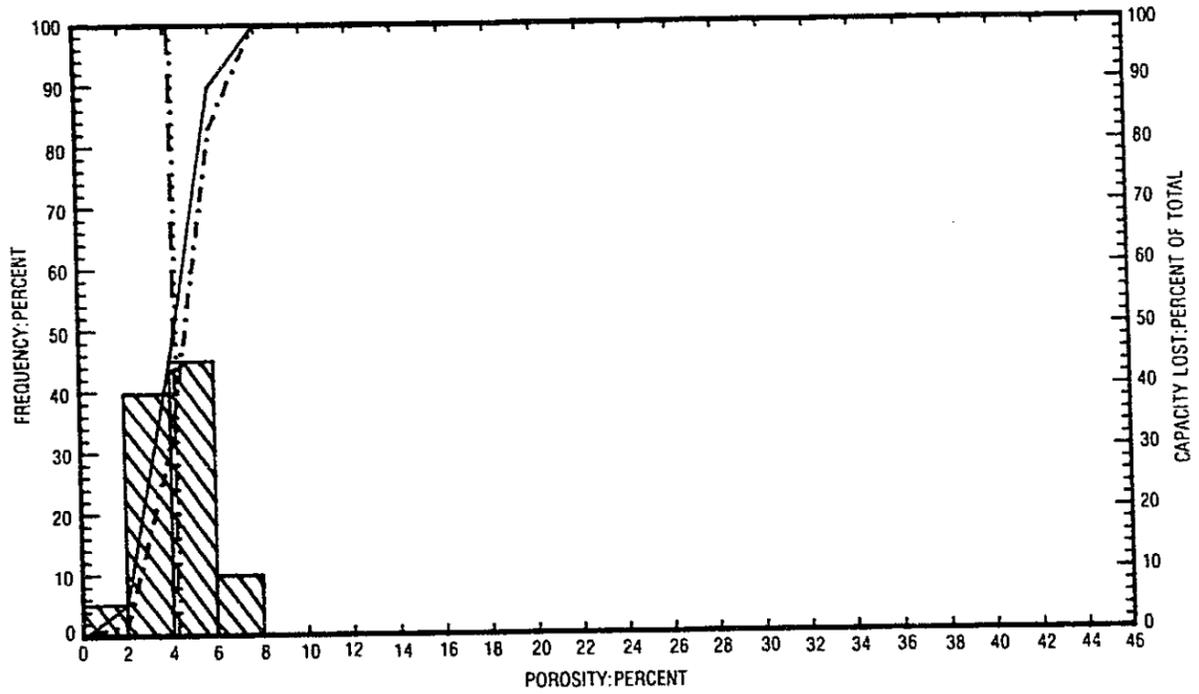
COMPANY: MONSANTO OIL COMPANY                      WELL : NAVAJO TRACT # 138-6  
 FIELD : IRY MESA    COUNTY, STATE: APACHE, ARIZONA

MILLIDARCY-FEET OF FLOW CAPACITY LOST FOR SELECTED PERMEABILITY CUT OFF

PERMEABILITY CUT OFF	FEET LOST	CAPACITY LOST (%)	FEET REMAINING	CAPACITY REMAINING (%)	GEOM MEAN	MEDIAN
0.005	0.0	0.0	20.0	100.0	0.05	0.04
0.010	1.0	0.1	19.0	99.9	0.07	0.05
0.020	6.0	1.1	14.0	98.9	0.13	0.11
0.039	10.0	3.1	10.0	96.9	0.25	0.22
0.078	12.0	5.3	8.0	94.7	0.37	0.31
0.156	14.0	9.6	6.0	90.4	0.55	0.79
0.312	16.0	16.0	4.0	84.0	1.03	
0.625	16.0	16.0	4.0	84.0	1.03	
1.250	19.0	72.7	1.0	27.3	1.38	
2.	20.0	100.0	0.0	0.0		

TOTAL FLOW CAPACITY IN MILLIDARCY-FEET (ARITHMETIC) = 5.04

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PERMEABILITY AND POROSITY HISTOGRAMS

MONSANTO OIL COMPANY  
 NAVAJO TRACT # 138-6  
 DRY MESA  
 APACHE, ARIZONA

LEGEND  
 ARITHMETIC MEAN POROSITY .....  
 GEOMETRIC MEAN PERMEABILITY .....  
 MEDIAN VALUE .....  
 CUMULATIVE FREQUENCY .....  
 CUMULATIVE CAPACITY LOST .....  
 (Note: The legend uses various line styles to represent these metrics, which correspond to the lines in the histograms above.)



**CORE LABORATORIES, INC.**

*Petroleum Reservoir Engineering*

COMPANY	MONSANTO OIL COMPANY	FILE NO.	3803-003391
WELL	NAVAJO TRACT # 138-6	DATE	12-JUL-1985
FIELD	DRY MESA	ENGRS.	DS;EV
COUNTY	APACHE	FORMATION	LEADVILLE
	STATE AZ	ELEV.	5697 GL
	DRLG. FLD.	WBM	CORES

## CoRes Log

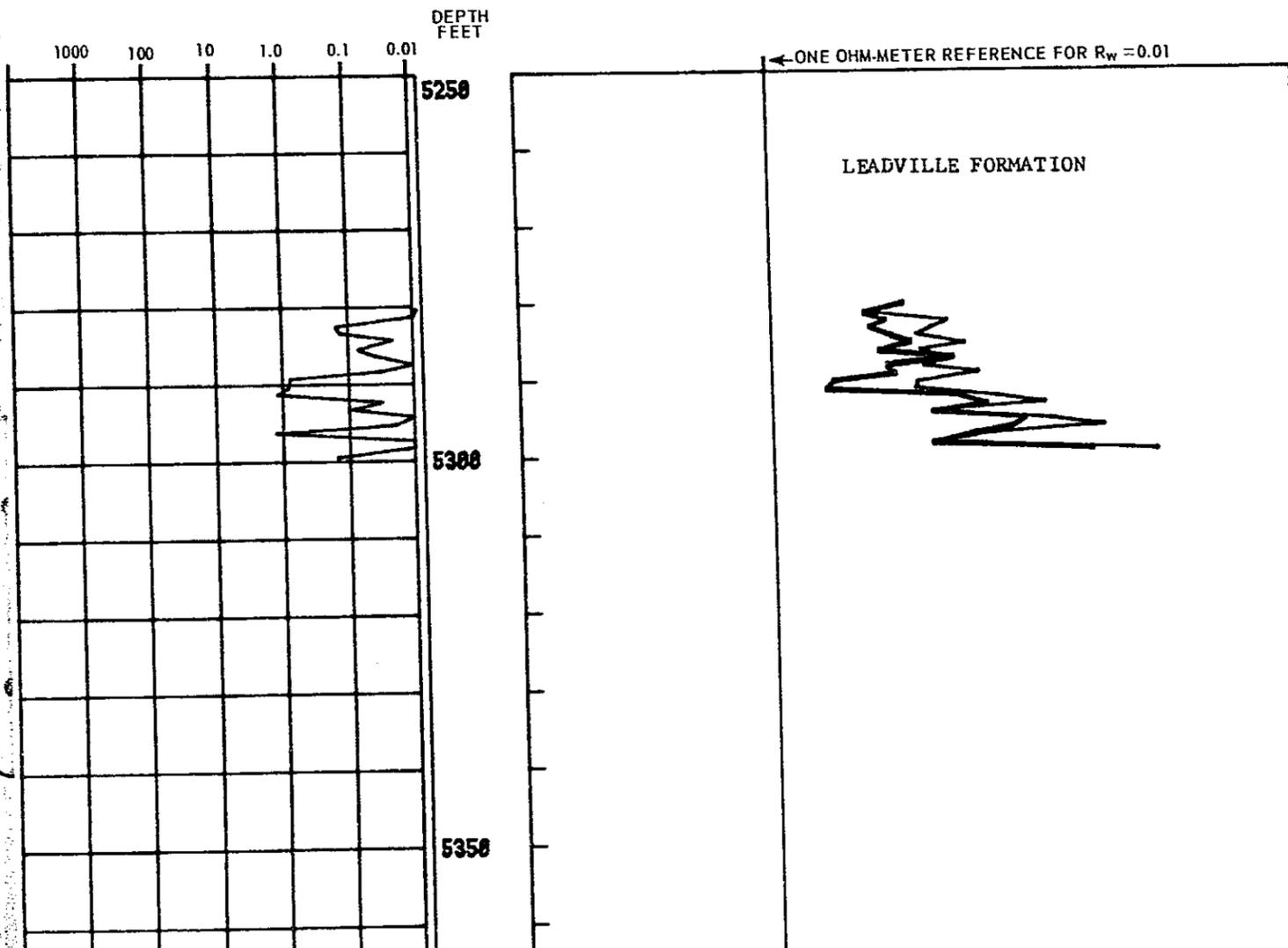
### CORE and RESISTIVITY EVALUATION

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RESISTIVITY PARAMETERS:  $a = 1.0$   $m = 2.0$   $n = 2.0$  . Depths 5280.0 to 5300.0 .  
 $a =$   $m =$   $n =$  . Depths \_\_\_\_\_ to \_\_\_\_\_ .

PERMEABILITY  
MILLIDARCIES

CORE ANALYSIS CALCULATED RESISTIVITY  
 $R_o =$  OHM-METERS AT 100%  $S_w$  \_\_\_\_\_  
 $R_{mp} =$  OHM-METERS AT CRITICAL  $S_w$  \_\_\_\_\_





Petroleum Reservoir Engineering

**CORE LABORATORIES, INC.**

COMPANY MONSANTO OIL COMPANY FILE NO. 3003-003391  
 WELL NAVAJO TRACT # 138-0 DATE 12-JUL-1985  
 FIELD DRY MESA ELEV. 5097 GL  
 COUNTY APACHE STATE ARIZONA DRLG. FLD. WBM CORES \_\_\_\_\_  
 LOCATION NE, SW SEC. 2-T40N-R28E FORMATION LEADVILLE

**CORRELATION COREGRAPH**

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VERTICAL SCALE: 5" = 100'

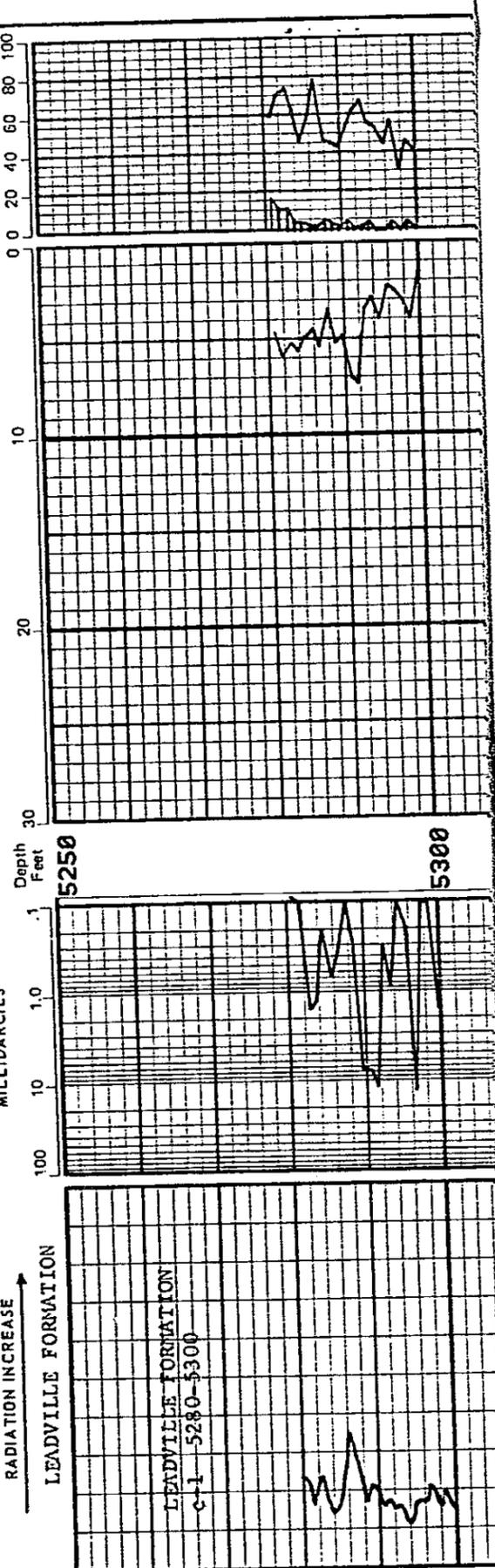
**Total Water**  
 PERCENT PORE SPACE  
 100 80 60 40 20 0

**Oil Saturation**  
 PERCENT PORE SPACE  
 0 0 20 40 60 80 100

**Porosity**  
 PERCENT  
 20 30 40 50 60 70 80 90 100

**Permeability** x0.1  
 MILLIDARCIES  
 100 10 1.0 0.1

**Gamma Ray**  
 RADIATION INCREASE



**DRY MESA FIELD**

**Operator:** RIM Southwest Corporation

**Bond Company\*:** Indian lands, evidence of bond posted with BIA

RLI Insurance Co. \$150,000 BIA Nationwide Bond No. RLB0003993

**Date of Bond:** 11/26/01

**Date approved:** \_\_\_\_\_

**\* Pursuant to Commission motion of October 31, 1997, no bond is required with State of Arizona upon evidence of bond posted with the BIA.**

**Permits covered by this bond posted with the BIA:**

Dry Mesa Field      077  
                                 106  
                                 115  
                                 852 ✓  
                                 907

Black Rock Field    559  
                                 581  
                                 868  
                                 871  
                                 875  
                                 882

**RIM Southwest Corporation**

5 Inverness Drive East  
Englewood, Colorado 80112  
(303) 799-9828 ext. # 303  
(303) 799-4259 (fax)

December 3, 2001

Arizona Geological Survey  
Mr. Steve Rauzi  
416 W. Congress St., Suite 100  
Tucson, Arizona 85701

Re: Dry Mesa  
Navajo Tribal #138 #2 SW NW sec 12 T40N R28E  
Navajo Tribal #138 #3 SW SE sec 2 T40N R28E  
Navajo Tribal #138 #6 NE SW sec 2 T40N R28E  
Navajo Tribal #138 #10 NW SE sec 12 T40N R28E  
Navajo Tribal #138 #1 SWD NE SW sec 11 T40N R28E  
Apache CO., Arizona

Dear Mr. Rauzi:

Rim Southwest Corporation has assumed operations of the above wells from Coleman Oil & Gas effective November 1, 2001. The wells are covered by our Navajo Nation, Nation wide bond in the amount of \$150,000. The bond number is RLB3993 and is with AON Underwriters Indemnity. If you have any more questions do not hesitate to call me.

Sincerely,

*Ken Kundrik*  
Ken Kundrik  
Operations Engineer



**SUNDRY NOTICES AND REPORTS ON WELLS**

1. Name of Operator Coleman Oil & Gas, Inc.

2. OIL WELL  GAS WELL  OTHER  (Specify) \_\_\_\_\_

3. Well Name See below

Location See below

Sec. 1,2,11,12 Twp. 40N Rge. 28E County Apache, Arizona

4. Federal, State, or Indian Lease Number, or lessor's name if fee lease 14-20-603-4190

5. Field or Pool Name Dry Mesa

6. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	WEEKLY PROGRESS <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	DIRECTIONAL DRILL <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	PERFORATE CASING <input type="checkbox"/>	SHOOTING OR ACIDIZING <input type="checkbox"/>	ALTER CASING <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	(OTHER) <u>Change of Operator</u>	ABANDONMENT <input type="checkbox"/>
(OTHER) _____			<input checked="" type="checkbox"/>

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log, Form 4)

1. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

**WELLS:**

- Navajo Tract 138 #10, NW SE Section 12-T40N-R28E
- Navajo Tract 138 #1 SWD, NE NE Section 11-T40N-R28E
- Navajo Tract 138 #02, SW NW Section 12-T40N-R28E
- Navajo Tract 138 #03, SW SE Section 2-T40N-R28E
- ✓ Navajo Tract 138 #06, NE SW Section 2-T40N-R28E

Effective August 1, 2001, Coleman Oil & Gas, Inc. sold all of it's interest in the above lease and all of the wells on the lease with equipment to:

RIM Southwest Corporation  
 5 Inverness Drive East  
 Englewood, Colorado 80112  
 Phone: (303) 799-9828

RIM Southwest Corporation will become operator of these wells effective November 1, 2001.

8. I hereby certify that the foregoing is true and correct.

Signed Kenneth J. Kuldrik Title Operations Engineer Date 11/7/01  
 Kenneth J. Kuldrik

Permit No. 852

**STATE OF ARIZONA**  
**OIL & GAS CONSERVATION COMMISSION**  
 Sundry Notice and Reports On Wells  
 Form No. 25 File One Copy

P.O. DRAWER 3337  
FARMINGTON, NM 87499

OFFICE: 505-327-0356  
FAX: 505-327-9425



COLEMAN OIL & GAS, INC.

Bryan Lewis  
e-mail: cogblewis@yahoo.com

Wednesday, November 07, 2001

Mr. Steven L. Rauzi  
Arizona Oil & Gas Conservation Commission  
416 West Congress Suite 100  
Tuscon, AZ 85701

**RE: Dry Mesa Wells**

Dear Mr. Rauzi:

Enclosed is one signed original Sundry Notice relating to the change of ownership and operator on the Dry Mesa wells in Apache County. Please call with any questions or additional requirements.

Sincerely,

Bryan Lewis  
Landman

*file 852*

**SUNDRY NOTICES AND REPORTS ON WELLS**

1. Name of Operator Coleman Oil & Gas, Inc.  
 2. OIL WELL  GAS WELL  OTHER  (Specify) \_\_\_\_\_  
 3. Well Name See below  
 Location See below  
 Sec. 1,2,11,12 Twp. 40 North Rge. 28 East County Apache, Arizona  
 4. Federal, State, or Indian Lease Number, or lessor's name if fee lease 14-20-603-4190

5. Field or Pool Name \_\_\_\_\_

6. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	WEEKLY PROGRESS <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	DIRECTIONAL DRILL <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	PERFORATE CASING <input type="checkbox"/>	SHOOTING OR ACIDIZING <input type="checkbox"/>	ALTER CASING <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>		ABANDONMENT <input type="checkbox"/>
(OTHER) _____		(OTHER) <u>Change of Operator</u>	<input checked="" type="checkbox"/>

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log, Form 4)

1. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

**WELLS: including**

- Navajo Tract 138 # 10
- Navajo Tract 138 # 10 SWD
- Navajo Tract 138 # 02
- Navajo Tract 138 # 03
- ✓ Navajo Tract 138 # 06

Effective 08/01/01 Coleman Oil & Gas, Inc. sold all of its interest in the aforementioned lease and all of the wells on the lease to:

**RIM Southwest Corporation**  
 5 Inverness Drive East  
 Englewood, CO 80112  
 Phone: (303) 799-9828 Fax: (303) 799-4259

RIM Southwest Corporation will become operator of these wells as of 11/01/01.

8. I hereby certify that the foregoing is true and correct.

Signed [Signature] Title Vice President Date November 06, 2001  
G. Chris Coleman

Permit No. 852

**STATE OF ARIZONA**  
**OIL & GAS CONSERVATION COMMISSION**  
 Sundry Notice and Reports On Wells  
 Form No. 25 File One Copy

5/96

### ORGANIZATION REPORT

Full Name of the Company, Organization, or Individual **COLEMAN OIL & GAS, INC.**

Mailing Address and Phone Number  
**P O DRAWER 3337, FARMINGTON, NM 87499 (505) 327-0356**

Plan of Organization (State whether organization is a corporation joint stock association, firm or partnership, or individual)  
**CORPORATION**

Purpose of Organization (State type of business in which engaged)  
**OIL & GAS EXPLORATION & PRODUCTION**

If a reorganization, give name and address of previous organization

If a foreign corporation give (1) State where incorporated	(2) Name and mailing address of state agent	(3) Date of permit to do business in state
<b>NEW MEXICO</b>	<b>CT CORPORATION SYSTEM 3225 N CENTRAL AVE, PHOENIX, AZ 85012</b>	<b>SEPTEMBER 26, 1997</b>
Principal Officers or Partners (if partnership) NAME	TITLE	MAILING ADDRESS
<b>GEORGE E. COLEMAN</b>	<b>PRESIDENT/ SECRETARY</b>	<b>1800 McDONALD ROAD FARMINGTON, NM 87401</b>
<b>G. CHRIS COLEMAN</b>	<b>VICE-PRESIDENT/ TREASURER</b>	<b>1909 CHILTON CT FARMINGTON, NM 87401</b>
<b>JAMES C. ANDERSON</b>	<b>VICE-PRESIDENT</b>	<b>2585 S. ST PAUL DENVER, CO 80210</b>

DIRECTORS NAME	MAILING ADDRESS
<b>GEORGE E. COLEMAN</b>	<b>1800 McDONALD ROAD, FARMINGTON, NM 87401</b>
<b>G. CHRIS COLEMAN</b>	<b>1909 CHILTON CT, FARMINGTON, NM 87401</b>
<b>BARBARA M. COLEMAN</b>	<b>1800 McDONALD ROAD, FARMINGTON, NM 87401</b>

CERTIFICATE I, the undersigned, under the penalty of perjury state that I am the **VICE-PRESIDENT** of the **COLEMAN OIL & GAS, INC.** (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

*George E. Coleman*  
 Signature

**7-11-01**  
 Date

STATE OF ARIZONA  
 OIL & GAS CONSERVATION COMMISSION  
 Organization Report  
 File One Copy  
 Form No. 1

Mail completed form to  
 Oil and Gas Program Administrator  
 Arizona Geological Survey  
 416 W Congress., #100  
 Tucson, AZ 85701



**WALSH**

ENGINEERING & PRODUCTION CORP.

Petroleum Engineering Consulting  
Lease Management  
Contract Pumping

7415 East Main  
Farmington, New Mexico 87402  
(505) 327-4892

November 6, 1997

FAX 520 770-3505

TO: Steve Rauzi

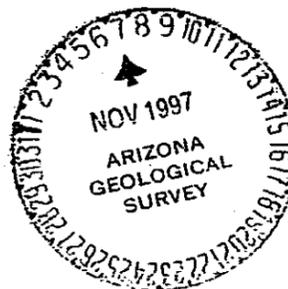
FROM: Ruth Rogge

As per your conversation with Chris Coleman, enclosed please find an approved Designation of Operator and also a copy of approved Letter of Credit Bond No. 564 for Coleman/Thompson.

I am also enclosing a copy of letter received from Mr. Clint W. Smith concerning bonding on this lease. I will send you copies of the above in the mail today.

If you need anything else, please give me a call.

rr



P/N 852

09/17/97 11:22 FAX 505 327 4862

COLEMAN OIL GAS

002

March 1983

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF INDIAN AFFAIRS

(Submit in triplicate to appropriate  
BIA office)

DESIGNATION OF OPERATOR

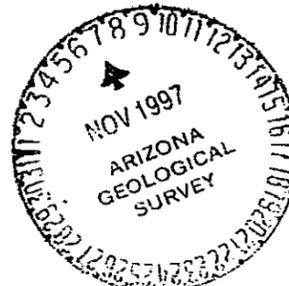
The undersigned is, on the records of the Bureau of Indian Affairs, holder of lease

AREA OFFICE:  
LEASE NO: 14-20-603-4190

and hereby designates

NAME: Thompson Engineering & Production Corporation

ADDRESS: 7415 East Main Farmington, N.M. 87402-5180



as his operator and local agent, with full authority to act in his behalf in complying with the terms of the lease and regulations applicable thereto and on whom the authorized officer may serve written or oral instructions in securing compliance with the Operating Regulations (43 CFR 3160 and 25 CFR 211 and 212) with respect to (describe acreage to which this designation is applicable):

T40N, R28 E, G&SRM  
Section 1, 2 -ALL ( Fractional )  
Section 11 and 12-ALL  
2365.09 Acres, Surveyed, Apache County, Arizona

Bond coverage under 25 CFR 211, 212 or 225 for lease activities conducted by the above named designated operator is under Bond Number Letter Of Credit #564 (attach copy). Evidence of bonding is required prior to the commencement of operations.

It is understood that this designation of operator does not relieve the lessee of responsibility for compliance with the terms of the lease and the Operating Regulations. It is also understood that this designation of operator does not constitute an assignment of any interest in the lease.

In case of default on the part of the designated operator, the lessee will make full and prompt compliance with all regulations, lease terms, stipulations, or orders of the Secretary of the Interior or his representative.

Attach all appropriate documentation relevant to this document.

The lessee agrees promptly to notify the authorized officer of any change in the designated operator.

George E. Coleman  
(Signature of lessee)

George E. Coleman, President

Coleman Oil & Gas, Inc. P.O. Drawer 3337 Farmington, N.M.  
(Address) 87499

July 1, 1997

APPROVED, PRESIDENT'S SECRETARY'S DELEGATION ORDER 209 DE, & SECRETARY'S ORDER NOS. 3150 AND 3177, AND 10 BIAW BULLETIN 13, AS AMENDED.

Glenn A. Peterson ACTING DIRECTOR  
APPROVED BY TITLE

9/12/97  
(Date)

09/17/97 11:22 FAX 327 4962

COLEMAN OIL GAS

001



United States Department of the Interior

BUREAU OF INDIAN AFFAIRS  
NAVAJO AREA OFFICE

P. O. Box 1060  
Gallup, New Mexico 87305

IN REPLY  
REFER TO:

ARES/543

SEP 12 1997

*Dry Man  
File.*

Mr. Chris Coleman  
Coleman Oil and Gas, Inc.  
P. O. Box Drawer 3337  
Farmington, New Mexico 87499-3337

Dear Mr. Coleman:

Enclosed for your information and use is an approved original copy of Designation of Operator between Coleman Oil & Gas, Inc., and Thompson Engineering & Production Corporation on Navajo Tribal Oil and Gas Lease No. 14-20-603-4190.

Please note that all other concerned parties will be furnished their approved copy of the Designation of Operator for their use.

Sincerely,

*Dale Underwood*  
Acting Area Realty Officer

Enclosure





**United States Department of the Interior**

**BUREAU OF INDIAN AFFAIRS  
NAVAJO AREA OFFICE**

**P. O. Box 1060  
Gallup, New Mexico 87305-1060**

IN REPLY  
REFER TO:

ARES/543

AUG 22 1997

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

Mr. Chris Coleman  
Coleman Oil and Gas, Inc.  
P. O. Drawer 3337  
Farmington, New Mexico 87499-3337

Dear Mr. Coleman:

Enclosed for your information and file is a copy of the approved Letter of Credit Bond No. 564 for the amount of \$75,000 for lease No. 14-20-603-4190. The original copy will be on file in our office.

If you have any further questions, you may contact Ms. Bertha Spencer, Realty Specialist, at (520) 871-5938.

Sincerely,

*Dale Underwood*

Acting Area Realty Officer

Enclosure





**First National Bank of Farmington**  
Charter Member FDIC

RECEIVED

AUG 7 1997

NAVAJO AREA OFFICE  
BRANCH OF REAL ESTATE SERVICES

RECEIVED

JUL 14 1997

NAVAJO AREA OFFICE  
BRANCH OF REAL ESTATE SERVICES

RECEIVED  
AUG 10 1997  
NAVAJO AREA OFFICE  
REAL ESTATE SERVICES

June 30, 1997

**IRREVOCABLE LETTER OF CREDIT**

First National Bank of Farmington  
P.O. Box 4540  
Farmington, NM 87499-4540

Letter of Credit No. 564

Amount: U.S. \$75,000.00

Beneficiary:  
Bureau of Indian Affairs  
Navajo Area Office  
P.O. Box 1060  
Gallup, NM 87305-1060

Applicant:  
Coleman Oil and Gas, Inc.  
Thompson Engineering & Production Corp.  
P.O. Drawer 3337  
Farmington, NM 87499-3337

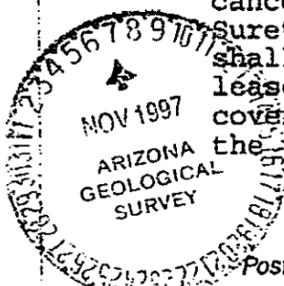
Date of Issue:  
6/30/97

Expiration Date: Written Approval of BIA

Gentlemen:

First National Bank of Farmington ("Surety") hereby issues our Irrevocable Letter of Credit No. 564 in favor of the Bureau of Indian Affairs, Navajo Area Office, hereinafter referred to as Beneficiary for the account of Coleman Oil & Gas, Inc. ("Principal") for the sum of up to, but not exceeding, Seventy-Five Thousand and No/100 U.S. Dollars (\$75,000.00) available by your draft. This Irrevocable Letter of Credit is a guarantee that the operator/lessee/assignee/permittee shall well and truly perform and fulfill all the undertakings, covenants, terms, and conditions of said agreement and the applicable federal regulations (25 CFR, 30 CFR and 43 CFR). The draft will be made available upon written certification from the Area Director, Navajo Area, stating that such amounts are due and payable. Each sight draft so drawn and presented shall be honored by us if presented. This Letter of Credit refers to x oil and gas x activities on the entire: Navajo Lease Allotment No: BIA 14-20-603-4190.

It is the express condition of this Letter of Credit that it shall be in effect until the Area Director, Navajo Area, in writing, cancels said Letter of Credit upon request of the Principal or Surety. The Principal and Surety agree that the Letter of Credit shall extend to and include all extensions and renewals of the lease/permit/agreement covered by this Letter of Credit, such coverage to continue without interruption due to the expiration of the term set forth therein.



**Sharing the Hometown Spirit**

Post Office Box 4540 • Farmington, New Mexico 87499-4540 • (505)326-9000 • TDD(TYY) 326-9035



Coleman Oil & Gas, Inc.  
Letter of Credit No. 564  
June 30, 1997  
Page 2

The Surety hereby waives any right to notice of any modification of any lease/permit/agreement, or obligation thereunder whether effected by extension of time for performance, by commitment of such lease to unit, cooperative, or communitization agreement, by waiver, suspension, or change in rental, by minimum royalty payment, by compensatory royalty payment, or otherwise, and this Letter of Credit is to remain in full force and effect notwithstanding.

The Principal and Surety agree that the neglect or forbearance of any obligee under this Letter of credit in enforcing the payment of any obligations or the performance of any other covenant, condition, or agreement of any such lease/permit/agreement shall not in any way release the Principal and Surety, or either of them, from any liability under this Letter of Credit.

The original signed Letter of Credit will be presented to the Surety by the Bureau of Indian Affairs along with any draft presented pursuant to this Letter of Credit, and will be surrendered to the Surety with any draft which draws the full amount, or the balance remaining available, under the Letter of Credit.

PROVIDED, that in the event supervision over all the tracts to which this bond applies is relinquished by the Secretary of the Interior and the lessee/permittee/assignee/operator/contractor shall have made all payments then due under the agreement and shall have fully performed all obligations on their part to be performed up to the time of relinquishment of supervision, the liability of this bond shall be of no further force and effect.



Coleman Oil & Gas, Inc.  
Letter of Credit No. 564  
June 30, 1997  
Page 3

IN PRESENCE OF:

Corporate Principal:

Coleman Oil & Gas, Inc.  
P.O. Drawer 3337  
Farmington, NM 87499-3337

Attest: Jeff E. Coleman

By: G. Chris Coleman  
G. Chris Coleman

Title: Vice President

Thompson Engineering & Production Corp.  
204 North Auburn  
Farmington, NM 87401

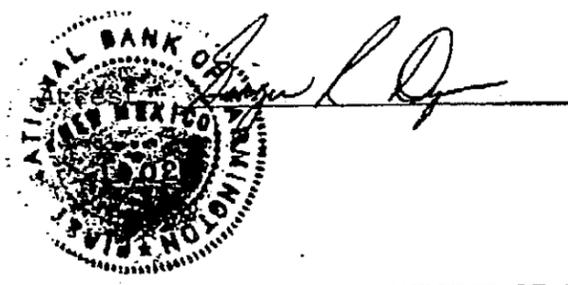
Attest: Paul C. Thompson

By: Paul C. Thompson  
Paul C. Thompson

Title: President

Issuing Agent:

First National Bank of Farmington  
P.O. Box 4540  
Farmington, NM 87499-4540



By: Dennis E. Peterson  
Dennis E. Peterson

Title: Executive Vice President

DEPARTMENT OF THE INTERIOR  
Bureau of Indian Affairs

August 21, 1997

APPROVED: Pursuant to Secretarial  
Redelegation Order 209 DM8,  
Secretary's Order ~~XXXXXX~~  
~~XXXXXX~~ and ~~XXXXXX~~ BIAM Bulletin  
~~XXXXXX~~ Nos. 3150 and  
3177, and 10 BIAM Bulletin Area Director  
13, as Amended Genni Denetson  
**ACTING**  
**Sharing the Hometown Spirit**

NOV. 06 '97 (TUE) 10:05



August 1, 1997

United States Department of the Interior  
Bureau of Indian Affairs  
PO Box 1060  
Gallup, NM 87305-1060

Attention: Acting Area Director

Dear Sir:

On March 19, 1997, the Board of Directors of First National Bank of Farmington duly elected Dennis Peterson as Executive Vice President of First National Bank and thereby conveyed authority to Mr. Peterson to act on behalf of the Bank.

Mr. Peterson is indeed authorized to sign the Irrevocable Letter of Credit in question for Coleman Oil & Gas, Inc. on behalf of First National Bank of Farmington.

If you have further questions you may contact me at 505-324-9548.

Sincerely,

Ginger R. Dye  
Executive Secretary to the Board of Directors

RECEIVED  
AUG 02 1997  
NAVAJO AREA OFFICE  
BRANCH OF REAL ESTATE SERVICES



RECEIVED

AUG 7 1997

NAVAJO AREA OFFICE  
BRANCH OF REAL ESTATE SERVICES

**CWS**  
Clint W. Smith, P.C.

931 E. Southern Ave., #212  
Mesa, Arizona 85204  
(602) 892-9300  
(602) 545-9252 (Fax)

November 4, 1997

Mr. Chris Coleman  
Coleman Oil & Gas  
P.O. Drawer 3337  
Farmington, NM 87499

Re: Dry Mesa Corporation

Dear Chris:

It has come to our attention that your company has not yet posted the required bonds with the Arizona Oil and Gas Commission. Accordingly, we have not been able to recover our bond there. As you know, your cooperation is required, pursuant to the court's order, "to ensure that transfer documents are lodged with the appropriate governmental agencies," so that we may recover our cash bond.

Please take immediate action to obtain a bond with the State of Arizona so that we may recover our bond. If I have not heard from you within ten days, we will be forced to initiate litigation to enforce our rights. I will look forward to hearing from you.

Very truly yours,

  
Clint W. Smith



**OIL AND GAS CONSERVATION COMMISSION**

From the Meeting of October 31, 1997

**COMMISSION POLICY ON PUBLIC AND INDIAN LAND**

Mr. Rauzi reported that the Commission holds bonds for companies drilling on public and Indian lands even though companies drilling on public land are required to post a bond with the federal government and companies drilling on Indian land are required to post a bond with the BIA. He reported that the bonds held by the Commission are duplicate bonds.

Mr. Lanshe moved, seconded by Dr. Clay:

**THAT THE ADMINISTRATOR RELEASE DUPLICATE BONDS IF EVIDENCE OF  
BONDS HELD WITH THE FEDERAL GOVERNMENT OR BIA IS OBTAINED**

Motion carried unanimously.

**ORGANIZATION REPORT**

Full Name of the Company, Organization, or Individual  
THOMPSON ENGINEERING & PRODUCTION CORP.

Mailing Address and Phone Number  
7415 E. Main Farmington, New Mexico 87402 505 327-4892

Plan of Organization (State whether organization is a corporation, joint stock association, firm or partnership, or Individual Corporation)  
Corporation

Purpose of Organization (State type of business in which engaged)  
Oil & Gas

If a reorganization, give name and address of previous organization

If a foreign corporation, give (1) State where incorporated	(2) Name and mailing address of state agent	(3) Date of permit to do business in state
Principal Officers or Partners (if partnership) NAME	TITLE	MAILING ADDRESS
Paul C. Thompson	President	7415 E. Main Farmington, New Mexico 87402
Leslie W. Thompson	Vice President	7415 E. Main Farmington, New Mexico 87402

DIRECTORS NAME	MAILING ADDRESS

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the President of the THOMPSON ENGR. & PROD. CORP. (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

Paul C. Thompson  
 Signature

8/29/97  
 Date



Mail completed form to:  
 Oil and Gas Program Administrator  
 Arizona Geological Survey  
 416 W. Congress, #100  
 Tucson, AZ 85701

STATE OF ARIZONA  
**OIL & GAS CONSERVATION COMMISSION**  
 Organization Report  
 File One Copy  
 Form No. 1

852

OPERATOR'S CERTIFICATE OF COMPLIANCE AND AUTHORIZATION TO TRANSPORT OIL OR GAS FROM LEASE		
Federal, State, or Indian Lease Number, or lessor's name if fee lease	Field Dry Mesa Field	Reservoir <sup>gas</sup> Pennsylvanian <del>Mississippian</del> <sup>oil</sup> Leadville
Survey or Sec-Twp-Rge 11, 1, 12, 2, -T40N-R28E	County Apache	State Arizona
Operator THOMPSON ENGR. & PROD. CORP.		
ADDRESS ALL CORRESPONDENCE CONCERNING THIS FORM TO:		
Street 7415 E. Main	City Farmington	State New Mexico 87402
Above named operator authorizes (name of transporter) Giant Refining Company		
Transporter's street address 23733 Scottsdale Rd.	City Scottsdale	State AZ 85255
Field Address		
Oil, condensate, gas well gas, casinghead gas		
To transport	100 % of the	oil from said lease
OTHER GATHERERS TRANSPORTING FROM THIS LEASE ARE AS FOLLOWS:		
Name of gatherer Western Gas Resources	% transported 100	Product transported Gas
Indicate whether or not this certificate is for a new lease. If not a new lease, indicate whether or not it is a change of operator, change of lease name, change of gatherer, or a consolidation or subdivision of leases and give effective date of change. Change in Operator from Dry Mesa Corporation 15 Willowbrook Wichita, Kansas 67207		

The undersigned certifies that the rules and regulations of the State of Arizona Oil & Gas Conservation Commission have been complied with in drilling and producing operations on this lease, except as noted above, and that the above transporter is authorized to transport the above specified percentage of the allowable oil or gas produced from the above described property, and that this authorization will be valid until further notice or until cancelled by the State of Arizona Oil & Gas Conservation Commission.

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the President of the THOMPSON ENGR. & PROD. CORP. (company), and that I am authorized by said company to make this report; that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

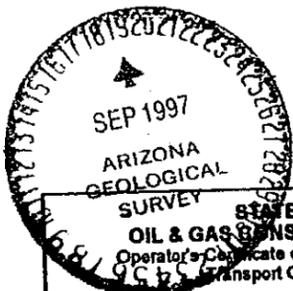
Date 8/29/97

Signature Paul C. Thompson  
Paul C. Thompson

Date approved: 9-19-97

By: SL Rainey  
STATE OF ARIZONA  
OIL & GAS CONSERVATION COMMISSION

Permit No. 106, 115, 213, 852



Mail two copies of completed form to:  
Oil & Gas Program Administrator  
Arizona Geological Survey  
416 W. Congress #100  
Tucson AZ 85701-1315

Form No. 8

**DRY MESA CORPORATION**

16 Willowbrook  
Wichita, Kansas 67207  
(316) 684-0420

Steve Rauzi  
Oil and Gas Program Administrator  
Arizona Geological Survey  
~~845 North Park, #100~~ 416 W. Congress # 100  
Tucson, Arizona 85719  
85701

July 22, 1997

*file 852*

**Notice of Sale and Request for Termination of Bond Liability**

Effective July 1, 1997, Dry Mesa Corporation (DMC) did sell to Coleman Oil & Gas all of DMC's interests, responsibilities, and operations in Dry Mesa Field located on Navajo lease #14-20-603-4190 which includes all of Sections 1, 2, 11, and 12, T40N - R28E, Apache county, Arizona. Coleman Oil & Gas will assume operations of the field effective July 1, 1997 and will be the Operator of Record.

Included in this sale are the wells named below and all surface facilities and production equipment located on this lease.

Well #1            API #02-001-05159        SWD Well  
NE/4 NE/4 Sec 11, T40N - R28E, Apache County, Arizona

Well #2            API #02-001-05303        Gas Well  
SW/4 NW/4 Sec 12, T40N - R28E, Apache County, Arizona

Well #3            API #02-001-05305        Gas Well  
SW/4 SE/4 Sec 2, T40N - R28E, Apache County, Arizona

Well #5            API #02-001-05160        Gas Well  
SW/4 SW/4 Sec 1, T40N - R28E, Apache County, Arizona

Well #6            API #02-001-20283        Oil Well  
NE/4 NW/4 Sec 2, T40N - R28E, Apache County, Arizona

Upon written conformation of this sale and acceptance of financial responsibility (posting of bond) for the above named wells by Coleman Oil & Gas, DMC requests that all liabilities and obligations that DMC may have under it's existing Arizona Producers Bond concerning these wells be terminated.

Sincerely,

*Bob Hand*

Bob Hand  
Dry Mesa Corporation

*file 852*



Fife Symington  
Governor

State of Arizona  
**Arizona Geological Survey**

416 W. Congress, Suite 100  
Tucson, Arizona 85701  
(520) 770-3500



Larry D. Fellows  
Director and State Geologist

July 10, 1997

Mr. Paul Thompson  
Thompson Engineering & Production  
7415 E. Main  
Farmington, New Mexico 87402

852

Dear Mr. Thompson:

Mr. Alan Emmendorfer has informed me that Thompson Engineering & Production will be operating the Dry Mesa Field, Arizona, on behalf of Coleman Oil & Gas. Welcome to Arizona.

To facilitate the transfer, I am enclosing some of our forms (with references to pertinent rules) that you should complete and file with this office as soon as possible. These include:

- (1) Organization report (A.A.C. R12-7-194),
- (2) Designation of operator (A.A.C. R12-7-101(11)),
- (3) Operator's certificate of compliance and authorization to transport oil or gas from lease (A.A.C. R12-7-183),
- (4) Performance bond or alternative assignment (A.A.C. R12-7-103),
- (5) Monthly producer's report (A.A.C. R12-7-161), and
- (6) a few Sundry notices.

Legible copies of these forms are acceptable.

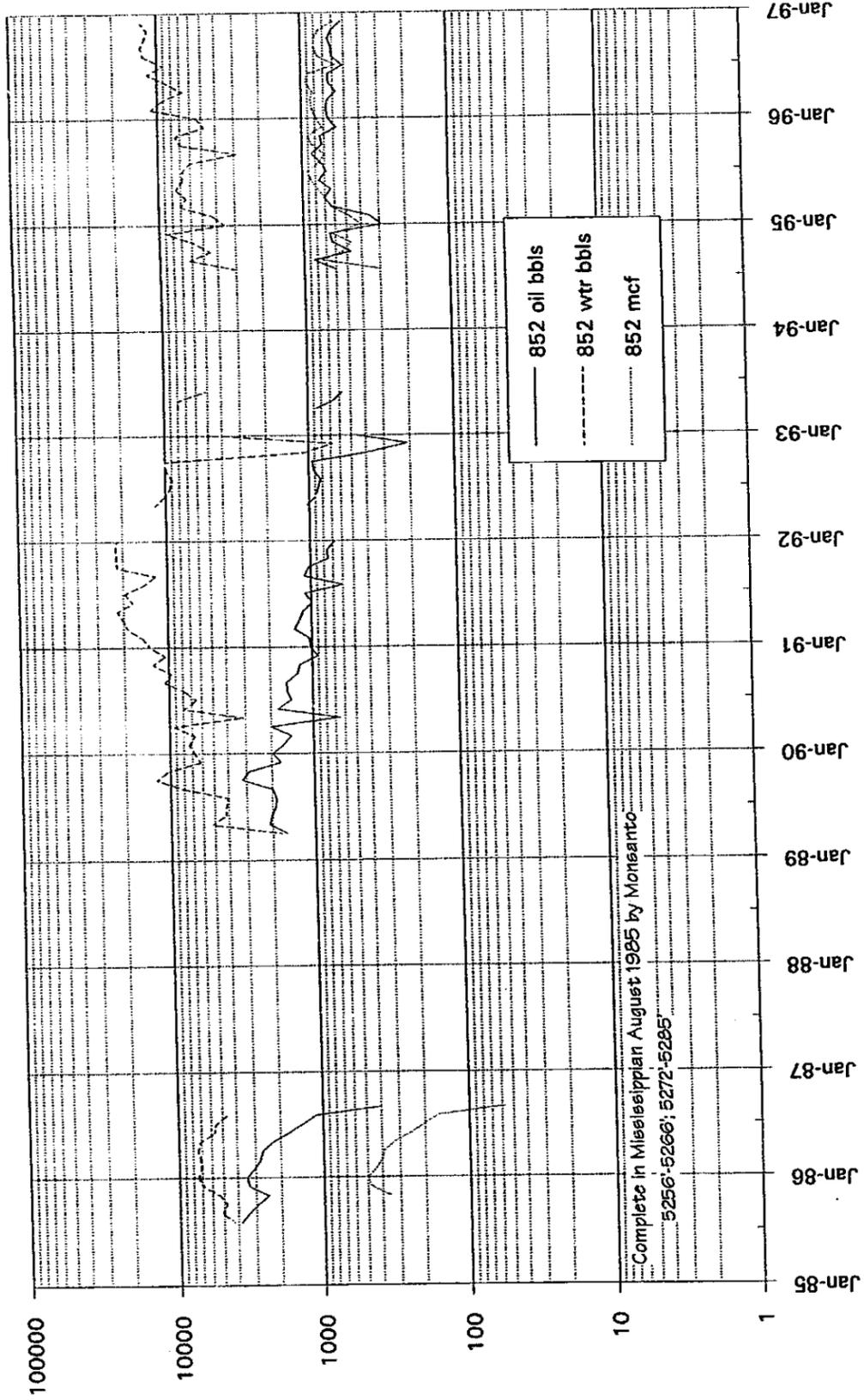
Let me know if we may be of assistance or answer any questions.

Sincerely,

Steven L. Rauzi  
Oil & Gas Program Administrator

Enclosures

**MONTHLY PRODUCTION AT 6 NAVAJO-138 (852), ARIZONA: AUG 1985 - DEC 1996**  
ne sw 2-40n-28e, Dry Mesa Field, Apache County



14-20-603-4190 (GC)  
3163.1 (07347)

MAY 13 1994

CERTIFIED--RETURN RECEIPT REQUESTED  
P 866 760 517

Mr. Ken Hand  
Dry Mesa Corporation  
No. 15 Willow Brook  
Wichita, Kansas 67207

77  
106  
115  
213  
852

Dear Mr. Hand:

On May 12, 1994, a joint inspection was performed by representatives from the Bureau of Indian Affairs (Navajo Area Office), Navajo Nation Minerals Department, Bureau of Land Management and Dry Mesa Corporation on Navajo Tribal Lease 14-20-603-4190. It was determined and agreed to by all parties that Dry Mesa Corporation has satisfied the stipulations of "Notice to Shut Down Operations" (No. NM07094BS001) issued October 15, 1993, by the Bureau of Land Management.

Dry Mesa Corporation is hereby notified that the Notice to Shut Down Operations is lifted and may resume operation of Navajo Tribal Lease 14-20-603-4190.

If you have any questions, please contact Mike Flaniken with this office at (505) 599-6381.

Sincerely,

/s/ John L. Keller

John L. Keller  
Assistant District Manager  
Division of Mineral Resources

cc:  
Mr. Akhtar Zaman  
The Navajo Nation  
Minerals Department  
P. O. Box 146  
Window Rock, AZ 86515

Bureau of Indian Affairs  
Navajo Area Office  
P. O. Box 1060  
Gallup, NM 87305-1060

Mr. James Miles  
Indian Minerals Office  
1400 La Plata Highway  
Farmington, NM 87401

AZ OIL & GAS  
CONSERVATION COMMISSION

JUN 10 1994



Fife Symington  
Governor

State of Arizona  
**Arizona Geological Survey**

845 North Park Avenue, #100  
Tucson, Arizona 85719  
(602) 882-4795



Larry D. Fellows  
Director and State Geologist

March 8, 1994

Mr. Kenneth R. Hand  
Dry Mesa Corporation  
15 Willowbrook  
Wichita, KS 67207

Dear Mr. Hand:

According to our records, Dry Mesa Corporation posted a \$25,000 state-wide performance bond on November 24, 1989, to cover its operations in the State of Arizona. Dry Mesa Corporation, therefore, meets the current bonding requirements of the Arizona Oil and Gas Conservation Commission to operate its existing, permitted oil and gas wells in Arizona.

Our records further indicate that Dry Mesa Corporation's bond currently covers six active permits at the Navajo-O (BIA 14-20-603-716) lease and five active permits at the Navajo-138 (BIA 14-20-603-4190) lease.

Please let me know if I can be of further assistance.

Sincerely,

Steven L. Rauzi  
Oil & Gas Program Administrator

c Dennis Peterson, First National Bank, Farmington, NM



Fife Symington  
Governor

State of Arizona  
**Arizona Geological Survey**

845 North Park Avenue, #100  
Tucson, Arizona 85719  
(602) 882-4795



Larry D. Fellows  
Director and State Geologist

June 29, 1993

Mr. Ken Hand  
Dry Mesa Corporation  
15 Willowbrook  
Wichita, KS 67207

852

Re: Sale and designation of operator at Dry Mesa Field (Navajo tract 138)

Dear Ken:

I talked with Bob this morning about your pending sale of the Dry Mesa Field to Chuska Energy Company. As a result of our conversation, I have enclosed several copies of our "Designation of Operator" form so that you may officially notify this office of the transfer.

With respect to transfer of the wells, A.A.C. R12-7-103.B (copy enclosed) requires three things before the Commission can release your bonded responsibility for the wells. These are (1) that you properly notify the Commission in writing of what is being transferred, (2) that the transferee declare to the Commission in writing acceptance and bonded responsibility for the wells, and (3) the Commission approves the transfer.

With respect to transfer of the disposal well, A.A.C. R12-7-178 (copy enclosed) requires that you notify the Commission on the "Designation of Operator" form in triplicate before the proposed transfer date. The Commission will send a copy of the approved form to the former and proposed operator along with a copy of the order authorizing injection.

Please let me know if I can be of further assistance in this matter.

Sincerely,

Steven L. Rauzi  
Oil & Gas Program Administrator

Enclosures

852



**Oil and Gas Conservation Commission**  
STATE OF ARIZONA

5150 N. 16th STREET, SUITE B-141  
PHOENIX, ARIZONA 85016  
PHONE: (602) 255-5161

October 24, 1990

Federal Insurance Company  
1990 Post Oak Boulevard, Suite 1100  
Houston, TX 77056-3812

RE: BHP Petroleum Company Inc.  
Statewide Oil Drilling Bond #8111-66-21

Gentlemen:

In reply to your letter of October 22, 1990, this Commission approves the termination of the captioned bond effective October 1, 1990.

Sincerely,

*Steven L. Rauzi*

Steven L. Rauzi  
Oil & Gas Specialist



CHUBB GROUP OF INSURANCE COMPANIES

1990 Post Oak Boulevard, Suite 1100, Houston, Texas 77056-3912 - Phone: (713) 623-0160

October 22, 1990

CERTIFIED MAIL P 437 804 656

State of Arizona  
Oil & Gas Conservation Commission  
5150 North 16th Street  
Suite B-141  
Phoenix, Arizona 85016

RE: Request for Termination of Bond

Principal: BHP Petroleum Company, Inc.  
Obligee: State of Arizona  
Bond Number: 8111-66-21  
Amount: \$25,000  
Description: Statewide Oil Drilling Bond

Gentlemen:

Information has reached us that the above captioned bond is no longer required and should be terminated effective October 1, 1990.

We would like to request that you please return the original bond to our office for cancellation. If you are unable to locate our original bond, we would like to be relieved of all liability under our bond as of October 1, 1990. Accordingly, we would like to be relieved of all past, present and future liability under our bond as of that date.

Would you please acknowledge receipt of this cancellation by signing below and returning it to us at the above address.

Thank you for your cooperation in this matter.

Very truly yours,

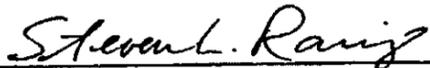
FEDERAL INSURANCE COMPANY

  
Mark Smith  
Surety Department

ACKNOWLEDGED BY:

TITLE:

DATE:



Oil & Gas Specialist

10/24/90



**Oil and Gas Conservation Commission**  
STATE OF ARIZONA

5150 N. 16th STREET, SUITE B-141  
PHOENIX, ARIZONA 85016  
PHONE: (602) 255-5161

*Permit 852*

September 18, 1990

Mr. Dwight Tickle  
BHP Petroleum (Americas) Inc.  
5847 San Felipe, Suite 3600  
Houston, TX 77057

RE: BHP bonds 731451 and 81116621

Dear Mr. Tickle:

Jerry W. Bair requested that I send a copy of BHP bonds 731451 and 81116621 to your attention. I have also enclosed a copy of R. A. Ybarra's 12/24/87 letter to J. W. Bair.

Since the new operator has filed their own bond, you may now request cancellation of the BHP bonds.

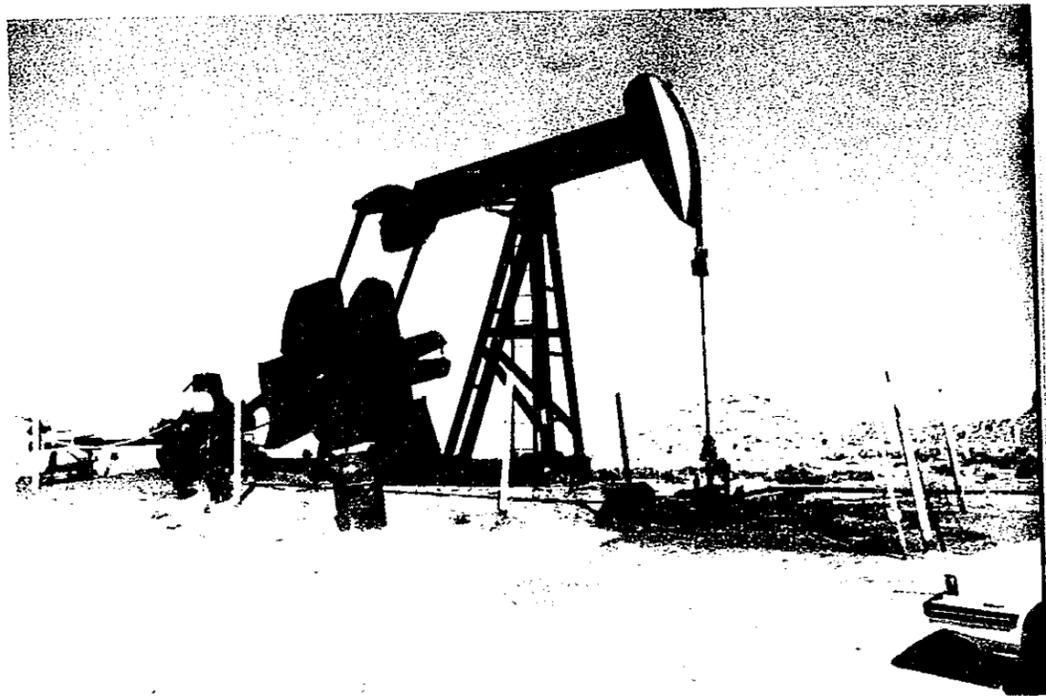
Let me know if I can be of further assistance.

Sincerely,

*Steven L. Rauzi*

Steven L. Rauzi  
Oil & Gas Specialist

Enclosures



14A Dry Mesa (P/N 852)

1082 Cross Creek (Muxant) Navajo 138-7

2, 40N-28E

AZ OIL & GAS  
CONSERVATION COMMISSION

JAN 26 1990

CROSS CREEK CORPORATION  
P.O. BOX 1957  
DUNCAN, OK. 73534-1957

January 23, 1989

Arizona Oil & Gas Commission  
5150 N 16th Street B141  
Phoenix, Az. 85016

RE: Dry Mesa Field , Tract 138 Lease  
Teec Nos Pos Field, Navajo "0"

Attention: Dan Brennan

Dear Sir:

Enclosed herewith please find copies of the following  
information:

Tax Sale Notice  
Letter to Apache County Treasurer  
Agreement of Sale & Purchase

If you have any questions please feel free to call.

Thank you,



Scott L. Hand  
Cross Creek Corporation

CROSS CREEK CORPORATION  
P.O. BOX 1957  
DUNCAN, OK. 73534-1957

AZ OIL & GAS  
CONSERVATION COMMISSION  
JAN 26 1990

January 23, 1990

Lavere O. Connolly  
Apache County Treasurer  
P.O. Box 699  
St. Johns, Az. 85936

RE: Parcel ID 989-12-700-00-8

Dear Mr. Connolly:

Enclosed herewith please find a copy of the Agreement of Sale and Purchase from Cross Creek Corporation to Ken R. Hand d/b/a Dry Mesa Corporation effective February 15, 1989 for Operating Rights of the leases this tax statement covers. For your convenience I have highlighted the following items:

- #2) Buyer's Representations (c)
- #5) Taxes
- #7) Effective Date
- #15) Miscellaneous

Cross Creek Corporation has mailed or delivered to Kenneth R. Hand d/b/a Dry Mesa Corporation, P.O. Box 5446, Farmington, NM 87499 and/or #15 Willowbrook, Wichita, Ks. 67207, any and all tax statements, requests and demands as follows:

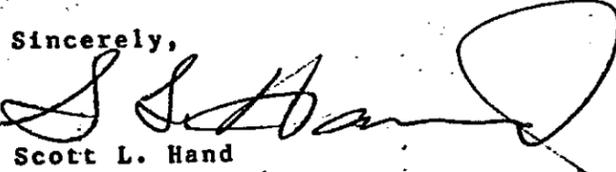
- a) Copy 1988 Tax Statement, delivered 2/13/89
- b) Original 1988 Tax Stment, delivered 2/14/89
- c) Delinquent Tax Notice, mailed 10/5/89
- d) 1989 Original Tax Statement, mailed 10/5/89
- e) Tax Sale Notice, mailed 1/23/89

We have also notified by mail, the sale of these properties, to the Arizona Department of Revenue, Division of Evaluation and Equalization, Sales, Use & Severance Tax Division and Apache County Tax Assessor.

We are asking that any further request regarding these properties be sent to the current operator, Kenneth R. Hand d/b/a Dry Mesa Corporation at the address or addresses above.

Thank you for your prompt attention and cooperation in this matter.

Sincerely,

  
Scott L. Hand  
Vice-President/Secretary

cc: Kenneth R. Hand d/b/a Dry Mesa Corporation  
cc: Arizona Oil & Gas Commission

**AZ OIL & GAS  
CONSERVATION COMMISSION**

LAVERE O. CONNOLLY  
APACHE COUNTY TREASURER  
P. O. BOX 699  
ST. JOHNS, ARIZONA 85936  
TELEPHONE: (602) 337-4364 EXT. 252

JAN 26 1990

JAN 22 REC'D

JANUARY 8, 1990

CROSS CREEK CORP.  
SCOTT HAND  
P. O. BOX 447  
FARMINGTON, N. M. 77057

PARCEL ID 989-12-700-00-8  
DESCRIPTION VALUE OF PRODUCING OIL AND GAS INTEREST

**\*\* TAX SALE NOTICE \*\***

YEAR	RECEIPT	TAX CERT	TAX	INTEREST	TOTAL
88 F	43741		8,993.06	1,438.89	10,431.95
89 F	43644		4,403.62	88.07	4,491.69
TOTAL IF PAID BY FEBRUARY 1, 1990					14,923.64

PAYMENT MUST BE MADE BY CERTIFIED CHECK, CASHIERS CHECK, OR POSTAL MONEY ORDER.  
THIS PARCEL HAS DELINQUENT TAXES. ADDITIONAL TAXES, INTEREST, AND PENALTIES MAY BE DUE.  
UNDER THE PROVISIONS OF THE STATUTES COVERING DELINQUENT TAXES, IT IS MANDATORY FOR ME TO ADVERTISE & SELL ALL TAXES OLDER THAN 1989, WHICH ARE OUTSTANDING AGAINST THIS PROPERTY AFTER FEBRUARY 1, 1990 (ARS #42-385).

SINCERELY YOURS,  
LAVERE O. CONNOLLY  
APACHE COUNTY TREASURER

JAN 26 1990

AGREEMENT OF SALE AND PURCHASE

This agreement made and entered into this <sup>15<sup>th</sup></sup> day of February, 1989 by and between CROSS CREEK CORPORATION, an Oklahoma corporation, with an office and place of business at #30 Road 1990, Farmington, New Mexico 87499; hereinafter sometimes called "Seller," and DRY MESA CORPORATION, a Delaware corporation, with an office and place of business at #15 Willowbrook, Wichita, Kansas 67207, hereinafter sometimes called "Buyer."

Seller agrees to sell and Buyer agrees to buy for the sum described hereinafter the following described and referred to properties and interests which are together hereinafter sometimes referred to as the "Subject Interests."

All of Seller's right, title and interest in and to:

1. All of those properties, rights and interests described on Exhibit "A", attached hereto and made a part hereof for all purposes, together with all operating rights as to the oil, gas and mineral leases described on Exhibit "A".
2. Together with all units associated with the oil, gas and mineral leases noted on said Exhibit and all personal property, improvements, moveables, easements, permits, licenses, servitudes and rights-of-way situated upon or used or useful or held for future use in connection with the exploration, development, maintenance or operation of the properties, rights and interests described in No. 1 hereinabove or the production, treating, storing or transportation of the oil, gas or other minerals produced from such leases, including, but not by way of limitation, wells, tanks, boilers, buildings, fixtures, machinery and other equipment, pipelines, power lines, telephone and telegraph lines, roads and other appurtenances situated upon or used or useful or held for future use in connection with the exploration, development, maintenance or operation of the properties, rights and interests described in No. 1 hereinabove or the production, treating, storing or transportation of oil, gas or other minerals produced from the properties, rights and interests described in No. 1 hereinabove.

This agreement does not cover the sale and conveyance of any gas purchase pipelines, gas purchase facilities or gas purchase contracts.

This agreement and conveyance is made and accepted subject to the following terms and conditions:

1. Seller's Representations: Seller represents to Buyer:
  - (a) That the Subject Interests include all the property rights acquired by CROSS CREEK CORPORATION on those leases. (See Exhibit "A".)
  - (b) That, to the best of Seller's knowledge, there are no administrative proceedings, litigations or claims pending (other than those listed below), affecting or relating to the ownership, use, operation or maintenance of the Subject Interests.
  - (c) That, to the best of Seller's knowledge, all oil and gas leases, contracts, licenses, easements, permits and other rights and interests comprising

any portion of the Subject Interests are now and shall be as of the date of closing in full force and effect according to their respective terms and provisions and that all rights granted thereby are valid and subsisting, and Seller has received no notices or demands affecting or relating to such rights.

- (d) That, to the best of Seller's knowledge, all payments of rentals, royalties, and other charges, if any, required by the terms and provisions of the oil, gas and mineral leases, contracts, licenses, permits and easements comprising any portion of the Subject Interests to be made prior to closing date to prevent forfeiture or termination thereof shall have been fully and timely paid.
- (e) That all consents, waivers or permissions required for the valid and effective conveyance and assignment to Buyer of any rights or interests included within the Subject Interests have been obtained or will be obtained prior to the date of closing, and, if requested by Buyer, satisfactory evidence thereof will be furnished to Buyer at or before the date of closing.
- (f) That Seller has caused no lien to attach to any of the Subject Interests.
- (g) Seller has full power and authority to enter into and perform its obligations under this agreement and has taken all proper corporate action to authorize entering into this agreement and the performance of its obligations hereunder.
- (h) That Seller shall not have received, prior to the closing date, any prepayment for production of oil, gas or other minerals from the Subject Interests produced subsequent to the effective date hereof except payments for which Seller will make proper accounting to Buyer on the date of closing.
- (i) The conveyance and assignment from Seller to Buyer of the Subject Interests will contain no warranty of title to the Subject Interests, either expressed or implied, except that as to those items listed on Exhibit "A". Seller warrants that the Subject Interests have not been disposed of, mortgaged or encumbered by Cross Creek Corporation.

2. Buyer's Representations: Buyer represents to Seller:

- (a) That Buyer is negotiating this transaction and entering into this contract for its own account.
- (b) That Buyer will promptly cooperate in the closing of the transaction evidenced hereby after being informed by Seller that the papers necessary for such conveyance have been prepared.
- (c) That Buyer will promptly post a bond necessary to meet the requirements of operation of the Subject Interests. The buyer will accept any and all liabilities that should occur by the absence of such bonds.

3. Buyer's Conditions to Closing: The obligations of Buyer under this agreement to purchase the Subject Interests

shall, at Buyer's option, be conditioned upon the following:

- (a) Seller shall have performed all of the terms and provisions contained in this agreement to be performed.
  - (b) At the date of closing, no suit, action or other proceeding shall be pending or threatened in which it is sought to restrict or prohibit the consummation of the sale of the Subject Interests as contemplated by this agreement or in which title of Seller to any part of the Subject Interests is brought into question.
4. Records, Contracts and Files: If requested by Buyer, all original lease and land records, and all existing contracts, well files, including all well logs, core analyses, drilling records, filed forms, and all other materials pertaining to the Subject Interests in possession of Seller and copies or duplicates of which Buyer does not have shall be delivered to Buyer and, as of closing, shall become the property of Buyer as a part of the Subject Interests.
  5. ~~Property and/or interests in the Subject Interests shall be the responsibility of Buyer.~~ Necessary Interest Taxes that remain unpaid against the ~~Subject Interests~~ shall be the responsibility of Buyer.
  6. Conditions and Covenants: Buyer agrees that from and after the effective date, hereinafter noted, it will assume and carry out all conditions and covenants and obligations contained in the leases, contracts, licenses, easements and permits comprising the Subject Interests which Buyer is legally obligated to perform. Seller declares that, to the best of its knowledge, such conditions, covenants and obligations have been fully complied with and performed down to the effective date hereinafter noted and agrees to hold Buyer harmless from any claim or judgment arising out of Seller's failure to so comply with and perform any such conditions, covenants and obligations with which Seller was legally obligated to comply or as to which Seller was legally obligated to perform.
  7. ~~The conveyance and assignment of Subject Interests to Buyer shall be made effective as to the date~~ above.
  8. The Buyer will assume ownership of any and all oil remaining in the tanks on the Subject Interests. The Seller will receive all monies for oil sold before the effective date and will pay all royalties and severance taxes due upon said production. After such royalties and taxes are paid, fifty (50) percent of the remaining monies will be paid to Hay Hot Oil under the terms of Exhibit "C", and the remaining fifty (50) percent will be credited to Sun's Interest.
  9. Closing Date: This sale and purchase shall be consummated and closed on the day first written above.
  10. Operation of Subject Interests: All costs and expenses of the operation of the Subject Interests after the effective date shall be charged to the account of Buyer and shall be paid solely by Buyer.
  11. Delivery of Records, Contracts and Files: At the time of

closing, or as soon thereafter as possible, Seller shall deliver to Buyer all records, contracts, files and other materials herein required to be furnished and delivered by Seller and which have not already been so delivered to Buyer. At closing, Seller shall then deliver to Buyer instruments of assignment and conveyance covering all of the Subject Interests duly executed and acknowledged on behalf of Seller.

12. Payment of Purchase Price: Buyer agrees to assume the liabilities as shown on Exhibit "B". The liability to Hay Hot Oil, Incorporated will be met under the conditions as set out in an agreement between Hay Hot Oil, Incorporated and Cross Creek Corporation and attached as Exhibit "C". The liability to Cross Creek Corporation will be met by and in a promissory note and agreement between the Buyer and Seller and a copy herein attached as Exhibit "D".
13. Negotiations of This Sale and Purchase: Each party represents that it has negotiated this transaction only through its own personnel and has incurred no obligation to any agent or broker for any commission in connection with this transaction.
14. Entire Agreement: This agreement contains the entire agreement between the parties hereto with respect to the transaction covered hereby and supersedes all prior agreements between the parties, oral or written, relating to the subject matter of this agreement. This agreement shall extend to and be binding upon the heirs, successors and assigns of the parties hereto. An assignment shall be executed in consummation of this agreement. Any conflict between said assignment and this agreement shall be resolved in favor of this agreement.
15. Miscellaneous:
  - (a) The personal property, improvements and moveables included in the Subject Interests are to be conveyed without any warranties, expressed or implied, as to quality, merchantability or fitness for use of or for a particular purpose. Additionally, such items will be conveyed "as is" and "where is."
  - (b) ~~Buyer agrees to indemnify and hold Seller harmless from any and all claims, attorneys' fees, demands, costs, expenses or losses, including fines, damages, rulings and judgments accruing on and after the effective date and based on or in any way related to the use, operation, maintenance or repair or maintenance of the personal property, improvements and moveables included in the Subject Interests.~~
  - (c) ~~Buyer agrees that in connection with this transaction, it solely assumes the responsibility to properly and promptly plug and abandon all wells needing such operations and located on the Subject Interests.~~
  - (d) ~~Buyer shall fully comply with all rules, regulations, orders, laws and rulings with respect to the Subject Interests and agrees to indemnify and hold Seller harmless from any attorneys' fees, judgments and damages accruing on and after the effective date and resulting from Buyer's failure to so comply.~~

- (e) Buyer shall fully comply with all terms, covenants and conditions of the oil, gas and mineral leases included in the Subject Interests and all related documentation and agrees to indemnify and hold Seller harmless from all claims, demands, fines, attorneys' fees, judgments and damages accruing on and after the effective date and resulting from Buyer's failure to comply.
- (f) Buyer hereby agrees to indemnify and hold harmless Seller from all attorneys' fees, costs, fines, damages, claims, judgments, and losses, accruing after said effective date, and resulting from, arising out of our association with Buyer or our operations as to the Subject Interests, or any part thereof.
- (g) Buyer and Seller, for themselves and any related business concerns, hereby waive and release any and all claims and causes of action in favor of Buyer or Seller, and any related business concern, against Buyer or Seller, and any related business concern, and arising out of the contractual or business relationship of Buyer and Seller, or any related business, as to the Subject Interests, excluding this Agreement of Sale and Purchase and said Assignment executed pursuant to this Agreement of Sale and Purchase. If this waiver and release is legally ineffectual then Buyer and Seller hereby agrees to indemnify and hold harmless each other from any and all claims, damages and causes of action in behalf of each (or in behalf of any affiliate or related business concern of each) except for those claims, damages and causes of action arising by virtue of or pursuant to this Agreement of Sale and Purchase or said Assignment, and arising out of, related to or associated with the contractual or business relationship of Seller (or any affiliate or related business concern of Seller) with Buyer (or any affiliate or related business concern of Buyer) as to the Subject Interests.
- (h) The conveyance of the Subject Interests shall be made specifically subject to any and all conveyances, reservations and matters of record in Apache County, Arizona, or the Bureau of Land Management, even though such conveyances, reservations and matters are not specifically recited herein or in said conveyance, to any gas purchase contracts currently in force as to the Subject Interests, if any, and to all non-consent elections by seller or its predecessors in interest.

This agreement may be executed in one or more counterparts, each of which shall have the same validity as the original. This instrument is signed effective as to the date first written above.

SELLER: CROSS CREEK CORPORATION

  
S. L. Hand  
Vice President/Secretary

BUYER: DRY MESA CORPORATION

  
Kenneth R. Hand  
President

EXHIBIT "A"

LEASE SCHEDULE

LEASE NO.	NAME	LEASE DATE & TERM	BASIC RI	ORRI BURDEN	DESCRIPTION	GROSS ACRES	NET ACRES
BIA 14-20-603-4190	Navajo Tract 138	05/28/58 HBP	16.67%	-0-	Township 40 North, Range 28 East Section 1 : All Section 2 : All Section 11 : All Section 12 : All	2,357.00	1,178.50
					Apache County, Arizona		
BIA 14-20-603-716	Teec Nos Pos	10/07/54	12.5%	-0-	Township 41 North, Range 30 East Section 23: S $\frac{1}{4}$ Section 25: W $\frac{1}{2}$ NW $\frac{1}{4}$ , N $\frac{1}{2}$ SW $\frac{1}{4}$ Section 26: NE $\frac{1}{4}$	640.00	640.00



**Oil and Gas Conservation Commission**

STATE OF ARIZONA

5150 N. 16th STREET, SUITE B-141  
PHOENIX, ARIZONA 85016  
PHONE: (602) 255-5161

BEFORE THE OIL AND GAS CONSERVATION COMMISSION  
OF THE STATE OF ARIZONA

In the matter of the Hearing called  
by the Oil and Gas Conservation  
Commission of the State of Arizona  
for the purpose of considering:

CASE NO. 62  
ORDER NO. 56

The application of Chuska Energy Company  
to establish a rule for 160-acre spacing  
in the Black Rock Field, Apache County,  
Arizona

ORDER OF THE COMMISSION

This cause was considered at 10:05 A.M. on September  
15, 1989 at Phoenix, Arizona by the OIL AND GAS CONSERVATION  
COMMISSION OF THE STATE OF ARIZONA, hereinafter referred to  
as the COMMISSION.

The COMMISSION, a quorum being present, having  
considered the facts presented and being fully advised in  
the premises, finds as follows:

FINDINGS:

(1) THAT the COMMISSION has jurisdiction of the  
subject matter thereof, pursuant to ARS 27-504 and 27-516 A.12.

(2) THAT adequate geological and engineering data has  
been presented to the COMMISSION to conclude that the  
Paradox formation in the subject area is a pool and a  
separate common source of supply of gas and associated  
hydrocarbons.

(3) THAT 640-acre spacing will not adequately drain  
the reservoir, resulting in waste of the resource.

(4) THAT spacing of less than 160 acres per well would  
result in drilling of unnecessary wells.

Chuska Energy Company  
Page - 2 -

(5) THAT 160 acres is not less than the maximum area that can be effectively drained in an efficient and economical manner by a single well producing gas and associated hydrocarbon from the Paradox formation in subject area.

(6) THAT it is in the best interest of the people of the STATE OF ARIZONA that the application for 160-acre spacing in Black Rock Field, Apache County, Arizona be approved.

THEREFORE the COMMISSION orders:

(1) THAT there be established 160-acre spacing units for the production of gas and associated hydrocarbons in the following area:

T40N-R29E G&SRB&M

Sec 7, W 1/2 and SE 1/4	Sec 18, N 1/2 and SE 1/4
8, S 1/2	20, NE 1/4
9, S 1/2	21, All
15, W 1/2	22, All
16, All	23, SW 1/4
17, All	26, NW 1/4
	27, N 1/2

T40N-R28E G&SRB&M

Sec 1, All	Sec 11, All
Sec 2, All	Sec 12, All

(2) THAT the 160-acre spacing units shall correspond with governmental quarter sections according to the protracted governmental survey of the area.

(3) THAT except as provided in Section 4 below, no gas well shall be drilled closer than 660 feet from the outer boundary of any quarter section, in the area spaced.

(4) THAT the following existing wells are designated as the unit wells for the spacing unit in which they are located even though they are exceptional locations.

O&G Permit #	Name	Spacing Unit
115	Dry Mesa (Texas Pacific) 138-3Navajo	SE 1/4 Sec 2 T40N-R28E
615	Chuska (American Fuels) Black Rock 2 (1Navajo AC)	NE 1/4 Sec 17 T40N-R29E
581	Chuska (Am Fuel, CSO) Black Rock 3 (1-16 Navajo)	NW 1/4 Sec 16 T40-R29E

Chuska Energy Company  
Page - 3 -

(5) THAT the producing interval to which this order applies is the Pennsylvanian Paradox formation correlative with the interval 4567 feet to 5558 feet in the well Chuska Energy (American Fuels) Black Rock #2 (1Navajo AC) located in Section 17, T40N-R29E, Apache County, Arizona.

OIL AND GAS CONSERVATION COMMISSION

BY J. Dale Nations  
J. Dale Nations, Chairman

DATE 9/29/89

(SEAL)

ATTEST:

Daniel J. Brennan  
Daniel J. Brennan  
Executive Director

DATE October 2, 1989



**Oil and Gas Conservation Commission**

STATE OF ARIZONA

3110 N. 19th AVENUE, SUITE 190

PHOENIX, ARIZONA 85015

PHONE: (602) 255-5161

July 17, 1989

Ms. Pam Beelman  
Marsh & McLennan  
10 Broadway  
St. Louis, MO 63102

Re: Monsanto Oil Company  
Bond No. 328-6165

Dear Ms. Beelman:

I have enclosed a copy of Mr. R. A. Ybarra's letter of 16 July 1986 to Mr. Barney E. Sullivan authorizing release of Monsanto Oil Company Bond No. 328-6165. This authorization for release is still valid.

We respectfully request documentation of the canceled bond for our files.

If we can be of further assistance, please let us know.

Sincerely,

*Steven L. Rauzi*

Steven L. Rauzi  
Oil and Gas Specialist

Encl.



**Oil and Gas Conservation Commission**

STATE OF ARIZONA  
3110 N. 19th AVENUE, SUITE 190  
PHOENIX, ARIZONA 85015  
PHONE: (602) 255-5161

April 6, 1989

Mr. K. R. Hand  
Dry Mesa Corporation  
P. O. Box 5446  
Farmington, NM 87499

Dear Mr. Hand:

Regarding our telephone conversation on April 5, 1989, I have enclosed the following forms to properly document the transfer of property at the Teec Nos Pos and Dry Mesa Fields from Cross Creek Corporation to Dry Mesa Corporation.

- Form 1: Organization Report (File 1 copy)
- Form 2: Performance Bond (File 2 copies)
- Form 8: Operators Certificate of Compliance and Authorization to Transport Oil or Gas From Lease (File 2 copies)
- Form 16: Producers Monthly Report (File 1 copy monthly)

As for the particular wells involved in the sale, the Arizona Oil and Gas Conservation Commission accepts copies of the Sundry Notices sent to the BLM that provide the legal description, well locations, and the status as of the date of sale.

Sincerely,

*Steven L. Rauzi*

Steven L. Rauzi  
Oil & Gas Specialist

Encl.

852



**Oil and Gas Conservation Commission**  
STATE OF ARIZONA

3110 N. 19th AVENUE, SUITE 190  
PHOENIX, ARIZONA 85015  
PHONE: (602) 255-5161

December 24, 1987

BHP Petroleum  
5613 DTC Parkway, Ste 600  
Englewood, CO 80111

Attn: J. W. Bair

Gentlemen:

Thank you for your letter of Dec. 21, 1987, confirming the sale of property in the Dry Mesa and Teec Nos Pos fields to Cross Creek Corp.

Please be aware that your bonds (Nos. 731451 and 8111-66-21) on these properties cannot be released until Cross Creek files their own bond(s), which to date they have not done.

If we can be of any assistance, please advise.

Sincerely,

*R. A. Ybarra*  
R. A. Ybarra  
Enforcement Director

RAY:lr

RECEIVED

DEC 23 1987

O & G CONS. COMM.

Suite 600  
5613 DTC Parkway  
Englewood, Colorado 80111  
Telephone (303) 850-9090  
DEX: (303) 850-9110

December 21, 1987



Oil and Gas Conservation Commission  
State of Arizona  
Suite 190  
3220 N. 19th Avenue  
Phoenix, Arizona 85015  
Attn: R. A. Ybarra

Re: Transfer of Property  
Dry Mesa and Teec Nos Pos Fields  
Apache County, Arizona

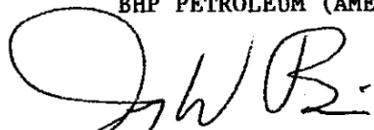
Gentlemen:

Pursuant to your letter dated October 14, 1987 (copy attached), this is to notify you that Tract 138 property in Dry Mesa Field and property in Teec Nos Pos Field, Apache County, Arizona, has been sold by BHP Petroleum (Americas) to Cross Creek Corporation, P. O. Box 1957, Duncan, Oklahoma 73534. Operations were assumed from BHP by Cross Creek at 7:00 a.m. on April 1, 1987. A list of wells involved is attached.

If you have any further questions, please do not hesitate to contact us.

Very truly yours,

BHP PETROLEUM (AMERICAS) INC.

  
Jerry W. Bair

/js  
Attachment



**Oil and Gas Conservation Commission**

STATE OF ARIZONA

3110 N. 19th AVENUE, SUITE 190

PHOENIX, ARIZONA 85015

PHONE: (602) 255-5161

October 14, 1987

BHP Petroleum Company, Inc.  
1300 Post Oak Tower  
5051 Westheimer  
Houston, TX 77056

RE: Transfer of Property  
Dry Mesa and Teec Nos Pos Fields  
Apache County, Arizona

Gentlemen:

We understand that certain wells located in the above-captioned fields have been transferred to Cross Creek Corp., effective July 20, 1987.

Please be informed that BHP is also required to notify the Commission in writing to confirm the transfer. Identify and give a location for each well transferred and confirm the effective date of transfer.

Your bonds, Nos. 731451 and 8111-66-21, will be released as soon as we receive proper bonding from the new operator.

If you have any questions on this matter, please call.

Sincerely,

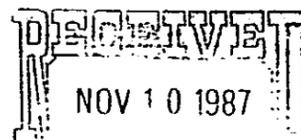
*R. A. Ybarra*

R. A. Ybarra  
Enforcement Director

/kb

cc: Cross Creek Corp.  
P. O. Box 447  
Farmington, NM 87499-0447

NOV 4 1987



BHP PETROLEUM  
DNV LAND DEPT.

WELL LOCATIONS

BHF Petroleum (Americas) Inc.

<u>Well Name</u>	<u>Description</u>
Old Trading Post #1	790' FSL and 1850' FWL Sec. 10, T26N, R14W
Navajo "0" #1	1880' FWL and 660' FSL Sec. 23, T41N, R30E
Navajo "0" #2	1830' FSL and 1930' FEL Sec. 23, T41N, R30E
Navajo "0" #3	1000' FSL and 900' FWL Sec. 23, T41N, R30E
Navajo "0" #4	660' FSL and 660' FEL Sec. 23, T41N, R30W
Navajo "0" #5	560' FNL and 660' FEL Sec. 26, T41N, R30E
Navajo Tract 138 #1	660' FNL and 660' FEL Sec. 11, T40N, R28E
Navajo Tract 138 #2	1980' FNL and 660' FWL Sec. 12, T40N, R28E
Navajo Tract 138 #3	760' FSL and 2035' FEL Sec. 2, T40N, R28E
Navajo Tract 138 #6	1689.5' FSL and 2289.7' FWL Sec. 2, T40N, R28E

1300 Post Oak Tower  
5051 Westheimer  
Houston, Texas 77056  
Telephone (713) 877-5999  
Fax (713) 877-5950  
Telex 262496



August 19, 1986

Mr. R. A. Ybarra  
Enforcement Director  
Oil & Gas Conservation Commission  
State of Arizona  
1645 West Jefferson, Suite 420  
Phoenix, Arizona 85007

Re: BHP Petroleum (Americas)-  
Bond #731451  
BHP Petroleum Company -  
Bond #8111-66-21

Dear Mr. Ybarra:

Pursuant to your request July 16, 1986 of Ms. Diana Jones, we submit the following well information by company:

BHP Petroleum Company Apache County, Arizona  
Formerly: Monsanto Oil Company  
Dry Mesa Field  
Navajo Tract 138  
Well #'s

State Permit No.

1	77
2	106
3	115
6	852 ✓

Legal Description on the above is: Sec 1, 2, 11 & 12 TWP 40N-29.

BHP Petroleum (Americas) Apache County, Arizona  
Teec Nos Pos, Ismay Field  
Navajo Tribal '0'

<u>Well #'s</u>	<u>State Permit No.</u>	<u>Section No.</u>	TWP 41N-30E.
1	232	23	
2	582	23	
3	640	23	
4	663	23	
5	678	26	
6	683	25	
9	687	26	



OFFICE OF  
**Oil and Gas Conservation Commission**  
STATE OF ARIZONA

1645 WEST JEFFERSON, SUITE 420  
PHOENIX, ARIZONA 85007  
PHONE: (602) 255-5161

August 6, 1986

BHP Petroleum (Americas) Inc.  
217 North Water Street  
Wichita, KS 67201

Re: Well No. 6 Navajo-138  
Dry Mesa Field  
Apache County

Gentlemen:

Our records show that samples on subject well have not been received at this office.

Please give this matter your immediate attention.

Sincerely,

*R. A. Ybarra*  
R. A. Ybarra  
Enforcement Director

lr



OFFICE OF  
**Oil and Gas Conservation Commission**  
STATE OF ARIZONA  
1645 WEST JEFFERSON, SUITE 420  
PHOENIX, ARIZONA 85007  
PHONE: (602) 255-5181

July 16, 1986

Mr. Barney E. Sullivan  
Manager, Bonds & Insurance  
BHP Petroleum (Americas) Inc.  
217 North Water Street  
Wichita, KS 67201

Re: BHP Petroleum Company Inc.  
Blanket Bond No. 811-66-21  
Dry Mesa Field  
Apache County

Dear Mr. Sullivan:

This letter is to inform you that the above-captioned bond has been received and approved by the Commission, and that effective July 15, 1986, the old Monsanto Oil Company bond No. 328-6165 is eligible for release.

Enclosed is a copy of the approved bond.

If I can be of further assistance, please let me know.

Sincerely,

*R. A. Ybarra*  
R. A. Ybarra  
Enforcement Director

lr  
Encl.

RECEIVED

JUL 7 1986

217 North Water Street  
Post Office Box 1201  
Wichita, Kansas 67201  
Telephone (316) 265-7721  
Fax (316) 264-6929  
Telex II (910) 741-6940

CERTIFIED MAIL O & G CONSV. COMM.

July 3, 1986



**BHP**  
**Petroleum**  
(Americas) Inc

State of Arizona  
Oil & Gas Conservation Commission  
Attn: Ms. Katie Barnes  
1645 West Jefferson, Suite 420  
Phoenix, Arizona 85007

Re: Statewide Drilling Bond  
BHP Petroleum Company Inc.  
Bond #8111-66-21

Dear Ms. Barnes:

Enclosed please find two copies of the captioned bond for our new subsidiary, BHP Petroleum Company Inc., formerly Monsanto Oil Company. Along with this bond is a rider accepting the liability for the old Monsanto Oil Company bond #328-6165/10720. We would appreciate you forwarding to us at the address set out above, the original copy of the old bond or a letter of release so we may cancel same.

Thank you for your assistance and should you have any questions or need additional information, please advise.

Very truly yours,

BHP PETROLEUM (AMERICAS) INC.

*Barney E. Sullivan*  
Barney E. Sullivan  
Manager, Bonds & Insurance

:dj

Enclosures

CANCELLED  
10-24-90



PERFORMANCE BOND  
KNOW ALL MEN BY THESE PRESENTS

Bond Serial No. 8111-66-21

That we: BHP PETROLEUM COMPANY INC.

of the County of HARRIS in the State of TEXAS

as principal, and FEDERAL INSURANCE COMPANY

of WARREN, NEW JERSEY

AUTHORIZED TO DO BUSINESS WITHIN THE STATE OF ARIZONA.  
as surety, are held and firmly bound unto the State of Arizona and the Oil and Gas Conservation Commission, hereinafter referred to as the "Commission", in the penal sum of \$25,000 (Twenty-five thousand dollars and no/100) lawful money of the United States, for which payment, well and truly to be made, we bind ourselves, and each of us, and each of our heirs, executors, administrators or successors, and assigns jointly and severally, firmly by these presents.

The conditions of this obligation are that, whereas the above bounden principal proposes to drill a well or wells for oil, gas or stratigraphic purposes in and upon the following described land situated within the State, to-wit:

Statewide

(May be used as blanket bond or for single well)

NOW, THEREFORE, if the above bounden principal shall comply with all the provisions of the Laws of this State and the rules, regulations and orders of the Commission, especially with reference to the requirements of A.R.S. § 27-516, providing for the proper drilling, casing and plugging of said well or wells, and filing with the Oil and Gas Conservation Commission all notices and records required by said Commission, then in the event said well or wells do not produce oil or gas in commercial quantities, or cease to produce oil or gas in commercial quantities, this obligation is void; otherwise it shall remain in full force and effect.

Whenever the principal shall be, and declared by the Oil and Gas Conservation Commission in violation of the Laws of this State and the rules, regulations and orders of the Commission, the surety shall promptly:

1. Remedy the violation by its own efforts, or
2. Obtain a bid or bids for submission to the Commission to remedy the violation, and upon determination by the Commission and the Surety of the lowest responsible bidder, arrange for a contract between such bidder and the Commission, and make available as work progresses sufficient funds to pay the cost of remedying the violation; but not exceeding, including other costs and damages for which the surety may be liable hereunder, the amount set forth in the first paragraph hereof.

Liability under this bond may not be terminated without written permission of this Commission.

WITNESS our hands and seals, this 13th day of June

**CANCELLED**  
DATE 10-24-90

BHP PETROLEUM COMPANY, INC.  
Principal



WITNESS our hands and seals, this 13th day of June

FEDERAL INSURANCE COMPANY P.O. Box 1615, Warren, New Jersey 07064

Roberta J. Heppman Surety Attorney-in-Fact

Jerry A. Underwood (Surety, Resident Arizona Agent If issued in a state other than Arizona)



(If the principal is a corporation, the bond should be executed by its duly authorized officers, with the seal of the corporation affixed. When principal or surety executes this bond by agent, power of attorney or other evidence of authority must accompany the bond.)

Approved  
Date 7/15/86  
STATE OF ARIZONA  
OIL & GAS CONSERVATION COMMISSION  
By: R. G. Ytana

STATE OF ARIZONA  
OIL & GAS CONSERVATION COMMISSION  
Bond  
File Two Copies  
Form No. 2

Permit No. \_\_\_\_\_

POWER OF ATTORNEY

Know all Men by these Presents, That the FEDERAL INSURANCE COMPANY, 15 Mountain View Road, Warren, New Jersey, a New Jersey Corporation, has constituted and appointed, and does hereby constitute and appoint W. C. Cohen, Jr., Paul C. Yankey, Jr., R. B. Matassarini, Joe E. Moddrell, Jr., Joseph C. Lukens, Scott Post, Richard H. King, Richard K. Stone, Jay E. Chapple, John J. Ziegelmeyer, Jr., Roberta I. Heorman, Susan C. Warren, Judy K. Lynch of Wichita, Kansas and Stanley G. Wilkerson, Donald D. Westcott, Howard C. Evans, Velma M. Pollock and Katherine J. Bredahl of Topeka, Kansas-----

each its true and lawful Attorney-in-Fact to execute under such designation in its name and to affix its corporate seal to and deliver for and on its behalf as surety thereon or otherwise, bonds of any of the following classes, to-wit:

- 1. Bonds and Undertakings filed in any suit, matter or proceeding in any Court, or filed with any Sheriff or Magistrate, for the doing or not doing of anything specified in such Bond or Undertaking.
2. Surety bonds to the United States of America or any agency thereof, including those required or permitted under the laws or regulations relating to Customs or Internal Revenue; License and Permit Bonds or other indemnity bonds under the laws, ordinances or regulations of any State, City, Town, Village, Board or other body or organization, public or private; bonds to Transportation Companies, Lost Instrument bonds; Lease bonds, Workers' Compensation bonds, Miscellaneous Surety bonds and bonds on behalf of Notaries Public, Sheriffs, Deputy Sheriffs and similar public officials.
3. Bonds on behalf of contractors in connection with bids, proposals or contracts.

In Witness Whereof, the said FEDERAL INSURANCE COMPANY has, pursuant to its By-Laws, caused these presents to be signed by its Assistant Vice-President and Assistant Secretary and its corporate seal to be hereto affixed this 30th day of November 1983

Corporate Seal



Richard D. O'Connor Assistant Secretary

CANCELLED 10-24-90 DATE

FEDERAL INSURANCE COMPANY By

George McClellan Assistant Vice-President

STATE OF NEW JERSEY } ss. County of Somerset

On this 30th day of November 1983, before me personally came Richard D. O'Connor to me known and by me known to be Assistant Secretary of the FEDERAL INSURANCE COMPANY, the corporation described in and which executed the foregoing Power of Attorney, and the said Richard D. O'Connor being by me duly sworn, did depose and say that he is Assistant Secretary of the FEDERAL INSURANCE COMPANY and knows the corporate seal thereof, that the seal affixed to the foregoing Power of Attorney is such corporate seal and was thereto affixed by authority of the By-Laws of said Company, and that he signed said Power of Attorney as Assistant Secretary of said Company by like authority, and that he is acquainted with George McClellan and knows him to be the Assistant Vice-President of said Company, and that the signature of said George McClellan subscribed to said Power of Attorney is in the genuine handwriting of said George McClellan and was thereto subscribed by authority of said By-Laws and in deponent's presence

Notarial Seal



acknowledged and sworn to before me on the date above written

Alice Lequard Notary Public

CERTIFICATION

ALICE LEQUARD NOTARY PUBLIC OF NEW JERSEY, My Commission Expires June 28, 1988

STATE OF NEW JERSEY } ss. County of Somerset

I, the undersigned, Assistant Secretary of the FEDERAL INSURANCE COMPANY, do hereby certify that the following is a true excerpt from the By-Laws of the said Company as adopted by its Board of Directors on March 11, 1953 and most recently amended March 11, 1983 and that this By-Law is in full force and effect.

ARTICLE XVII.

Section 2 All bonds, undertakings, contracts and other instruments other than as above for and on behalf of the Company which it is authorized by law or its charter to execute, may and shall be executed in the name and on behalf of the Company either by the Chairman or the Vice-Chairman or the President or a Vice-President, jointly with the Secretary or an Assistant Secretary, under their respective designations, except that any one or more officers or attorneys-in-fact designated in any resolution of the Board of Directors or the Executive Committee, or in any power of attorney executed as provided for in Section 3 below, may execute any such bond, undertaking or other obligation as provided in such resolution or power of attorney.

Section 3 All powers of attorney for and on behalf of the Company may and shall be executed in the name and on behalf of the Company, either by the Chairman or the Vice-Chairman or the President or a Vice-President or an Assistant Vice-President, jointly with the Secretary or an Assistant Secretary, under their respective designations. The signature of such officers may be engraved, printed or lithographed.

I further certify that said FEDERAL INSURANCE COMPANY is duly licensed to transact fidelity and surety business in each of the States of the United States of America, District of Columbia, Puerto Rico, and each of the Provinces of Canada with the exception of Prince Edward Island, and is also duly licensed to become sole surety on bonds, undertakings, etc., permitted or required by law.

I, the undersigned Assistant Secretary of FEDERAL INSURANCE COMPANY, do hereby certify that the foregoing Power of Attorney is in full force and effect.

Given under my hand and the seal of said Company at Warren, N.J. this 13th day of June 1986

Corporate Seal



M. Stanton Assistant Secretary

R I D E R

**CANCELLED**  
BOND NO. 8111-66+21  
DATE 10-24-90

It is hereby agreed by and between the undersigned principal and surety in consideration for the additional premium or consideration paid for this rider, if any, and the consent by the State of Arizona to terminate the liability on Bond No. 328 6165/10720 carrying the principals Monsanto Company and Monsanto Oil Co., a wholly owned subsidiary of Monsanto Co.

now known as BHP Petroleum Company Inc. a wholly owned subsidiary of BHP Petroleum (Americas) Inc., and American Insurance Company as Surety, the undersigned principal and surety hereby assume any and all liabilities that may be outstanding on Bond No. 328 6165/10720 provided, however, that this rider shall not act to increase the potential or cumulative liability of the Surety above the face amount of the bond to which this rider attaches.

Executed this 13th day of June, 1986.

\_\_\_\_\_  
\_\_\_\_\_  
BHP PETROLEUM COMPANY INC.  
(Principal)

By: [Signature]  
FEDERAL INSURANCE COMPANY  
(Surety Name)  
15 Mountain View Rd., P.O. Box  
(Surety City & State) Warren, NJ 07061

By: [Signature]  
Roberta I. Heorman, Attorney-in-Fact

[Signature]  
Jerry A. Underwood  
Resident Arizona Agent  
Jerry A. Underwood



Allan Wild  
(303) 850 9090

777 PIN



OFFICE OF  
**Oil and Gas Conservation Commission**  
STATE OF ARIZONA  
1645 WEST JEFFERSON, SUITE 420  
PHOENIX, ARIZONA 85007  
PHONE: (602) 255-5181

May 14, 1985

Monsanto Oil Company  
Suite 600  
5613 DTC Parkway  
Englewood, CO 80111

RE: Well No. 6 Navajo - P/N 852  
Dry Mesa Field

Gentlemen:

This is in response to your Sundry Notice of May 6, 1985 requesting an extension of 90 days on the Permit to Drill on subject well.

Your request is approved and will be extended until August 6, 1985.

If I may be of further assistance, please advise.

Sincerely,

*R. A. Ybarra*  
R. A. Ybarra  
Enforcement Director

/kb

SUNDRY NOTICES AND REPORTS ON WELLS

RECEIVED

MAY 10 1985

O & G CONS. COMM.

*OK  
CARR  
RAY*

1. Name of Operator Monsanto Oil Company  
 2. OIL WELL  GAS WELL  OTHER  (Specify) \_\_\_\_\_  
 3. Well Name Navajo Tract 138 Well #6  
 Location 1689.5' FSL & 2289.7' FWL  
 Sec. 2 Twp. 40 North Rge. 28 East County Apache Arizona.  
 4. Federal, State or Indian Lease Number, or lessor's name if fee lease 14-20-603-4190

5. Field or Pool Name Dry Mesa Field

6. Check Appropriate Box to Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
TEST WATER SHUT-OFF <input type="checkbox"/>	PULL OR ALTER CASING <input type="checkbox"/>	WATER SHUT-OFF <input type="checkbox"/>	MONTHLY PROGRESS <input type="checkbox"/>
FRACTURE TREAT <input type="checkbox"/>	DIRECTIONAL DRILL <input type="checkbox"/>	FRACTURE TREATMENT <input type="checkbox"/>	REPAIRING WELL <input type="checkbox"/>
SHOOT OR ACIDIZE <input type="checkbox"/>	PERFORATE CASING <input type="checkbox"/>	SHOOTING OR ACIDIZING <input type="checkbox"/>	ALTERING CASING <input type="checkbox"/>
REPAIR WELL <input type="checkbox"/>	CHANGE PLANS <input type="checkbox"/>	(OTHER) <input type="checkbox"/>	ABANDONMENT <input type="checkbox"/>

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

7. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)

Monsanto Oil Company requests an extension of 90 days from the date of this Sundry on the Permit to Drill the above well. Permit number 00852 was granted on October 4, 1984. Monsanto Oil Company was unable to commence operations within the original 90-day permit period due to unforeseen circumstances.

Upon approval of this request for an extension of Permit 00852, Monsanto Oil Company will commence operations within 90 days.

8. I hereby certify that the foregoing is true and correct.

Signed

*K. J. Ebner*  
K. J. Ebner

Title Regional Prod. Mgr. Date May 6, 1985

STATE OF ARIZONA  
OIL & GAS CONSERVATION COMMISSION  
Sundry Notices and Reports On Wells  
File Two Copies

Form No. 25

Permit No. \_\_\_\_\_

JRG:js

State of Arizona  
**DEPARTMENT OF WATER RESOURCES**  
99 E. Virginia Avenue, Phoenix, Arizona 85004



*AKK  
copy to  
each file*

BRUCE BABBITT, Governor  
WESLEY E. STEINER, Director

October 16, 1984

O & G CONS. COM. 1

R. A. Ybarra  
Oil and Gas Conservation Commission  
1645 West Jefferson, Suite 420  
Phoenix, Arizona 85007

Re: Proposed Exploratory Wells Number 2-19 Federal  
and Number 6 Navajo-138 - *PERMIT 552*

*PERMIT 553*

Dear Mr. Ybarra:

We are in receipt of your letters dated October 2, 1984 and October 5, 1984 requesting a review of the construction plans, as to the potential for groundwater contamination. In both cases the proposed plans should be adequate.

If you have any questions, please feel free to call.

Sincerely,

A handwritten signature in cursive script that reads "Michael R. Long".

Michael R. Long  
Chief Hydrologist

dg

**Think Conservation!**

Office of Director 255-1554

Administration 255-1550, Water Resources and Flood Control Planning 255-1566, Dam Safety 255-1541,  
Flood Warning Office 255-1548, Water Rights Administration 255-1581, Hydrology 255-1586.



OFFICE OF

**Oil and Gas Conservation Commission**

STATE OF ARIZONA

1645 WEST JEFFERSON, SUITE 420

PHOENIX, ARIZONA 85007

PHONE: (602) 255-5161

October 5, 1984

Mr. Johnny Jones  
Haymaker & Associates  
P.O. Box 2440  
Casper, WY 82602-2440

Re: State Permit 852  
6 Navajo-138

Dear Johnny:

Enclosed are approved application for permit to drill, permit to drill, receipt, and report on proposed operations.

If we can be of further assistance, please advise.

Sincerely,

*R. A. Ybarra*  
R. A. Ybarra  
Enforcement Director

Enclosures

RAY/rga



OFFICE OF  
**Oil and Gas Conservation Commission**  
STATE OF ARIZONA

1645 WEST JEFFERSON, SUITE 420  
PHOENIX, ARIZONA 85007  
PHONE: (602) 255-5161

October 5, 1984

Mr. Ed Nemecek  
Dept. of Water Resources  
99 E. Virginia  
Phoenix, AZ

Re: Proposed Development Well  
Well No. 6 Navajo-138  
NE/4 SW/4 Sec.2-T.40N.,R.28E.  
Dry Mesa Field

Attention: Mr. Nemecek

Enclosed for your files is a copy of an approved application to drill subject development well to a total depth of 5600'. Also enclosed is a copy of the report on proposed operations.

Proposed surface and production strings of casing on this well will be cemented with sufficient cement to segregate all fluids (oil, gas, and water) behind the casings.

Regarding exploratory wells, we will hold the applications in abeyance until we receive requested groundwater data from your agency. If we don't hear from you within 10 days from the date of request, we will use our own source of water data to evaluate the applications.

If you have any questions on this matter, please call us.

*R.A. Ybarra*  
R. A. Ybarra  
Enforcement Director

Enclosures

RAY/rga



**HAYMAKER & ASSOCIATES**

Professional Petroleum and Geological Engineering Services  
2122 W. Melodi Lane, Suite 2, Ph. (307) 234-6186  
P. O. Box 2440, Casper, Wyoming 82602-2440

RECEIVED

OCT 4 1984

O & G CONS. COMM.

October 2, 1984

Mr. A. K. Doss  
Oil & Gas Conservation Commission  
State of Arizona  
1645 W. Jefferson, Suite 420  
Phoenix, Arizona 85007

Re: Application for Permit to Drill  
Monsanto Company well Navajo Tract 138-6  
NE $\frac{1}{4}$ SW $\frac{1}{4}$  Sec. 2-T40N-R28E., G-S.R. Mer.,  
Apache County, Arizona  
Lease #T.L. 14-20-603-4190

Dear Mr. Doss:

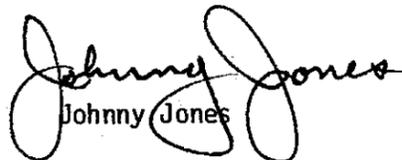
We are sending you two completed copies of your APD Form #3 with attached B.L.M. Applications to Drill, survey plats and drilling programs; also a check in the amount of \$25.00.

Your required Form #1 and Form #2 are being completed by Monsanto Company's Denver office and will be sent directly to your office.

If you have any questions relative to the subject well, please call us.

Very truly yours,

HAYMAKER & ASSOCIATES

  
Johnny Jones

Enclosures

852

ORGANIZATION REPORT

RECEIVED

JUN 2 1986

Full Name of the Company, Organization, or Individual

BHP Petroleum Company Inc.

Post Office Address (Box or Street Address)

5613 DTC Parkway, Suite 600, Englewood, CO 80111

O & G CONS. COMM.

Plan of Organization (State whether organization is a corporation, joint stock association, firm or partnership, or individual)

Corporation

Purpose of Organization (State type of business in which engaged)

Oil and Gas Exploration and Production

If a reorganization, give name and address of previous organization.

Monsanto Oil Company, 5613 DTC Parkway, Suite 600, Englewood, CO 80111

If a foreign corporation, give (1) State where incorporated

(2) Name and post office address of state agent

(3) Date of permit to do business in state

Principal Officers or Partners (if partnership) NAME	TITLE	POST OFFICE ADDRESS
Richard W. Volk	Chairman and C.E.O.	550 California Street San Francisco, CA 94104
Frederic A. Tietz	President	1300 Post Oak Tower 5051 Westheimer Houston, TX 77056
J. William Soderman	Vice President Exploration	" "
Mark V. Kelley	Vice President Production	" "
Dennis W. Loughridge	V.P., Finance & Development	" "
W. Robert Hine, Jr.	V.P., Human Resources	" "
Edwin W. Parker II	V.P. and General Counsel	" "

DIRECTORS NAME	POST OFFICE ADDRESS

CERTIFICATE: I, the undersigned, under the penalty of perjury, state that I am the \_\_\_\_\_ of the \_\_\_\_\_ (company), and that I am authorized by said company to make this report; and that this report was prepared under my supervision and direction and that the facts stated therein are true, correct and complete to the best of my knowledge.

Signature Bernard A. Wirth  
Bernard A. Wirth

Date May 30, 1986

STATE OF ARIZONA  
OIL & GAS CONSERVATION COMMISSION  
Organization Report  
File One Copy  
Form No. 1