



Meridian oil inc.  
P.O. Box 4289  
Farmington, NM 87499

Subject: Sun Ray comingled water tests

Four samples were received from the Sun Ray #D-1-A and D-2-A for comingled water tests to ensure no incompatibilities would exist between the water and oil from the producing zones from the Sun Ray lease.

The following samples were received,  
Mesa Verde oil & water From the D-1-A ( only enough water API tests)  
Pictured Cliffs oil & water from the D-1-A  
Pictured Cliffs oil from the D-2-A (no water)  
Mesa Verde oil & water from the D-2-A

API water analysis were performed on the individual waters then mixed equally and another API water test was done on the comingled sample. Nothing on the comingled test appeared out of the ordinary. Please see the attached reports.

API oil gravities were performed on the individual oils, then a combined gravity and compatability tests were done.

D-1-A MV oil = 40\*  
D-2-A MV oil = 48.8\*  
D-2-A PC oil = 55.2\*  
A combined gravity of 47.4\* was noted

The oils were combined and mixed at high speed then allowed to sit static to see if any incompatibilities could be noticed. The oils mixed well with no visable precipatations or emulsions.

The oils were also combined with formation waters and mixed at high speed to see if any emulsions could be generated. These results showed the oils breaking out clean with no interfaceing or emulsions.

### CONCLUSION

Based on the tests performed on the oil & waters in question, no precipatants, emulsionsor other undesireable reactions occoured that could otherwise have damaging effects from the comingling of these fluids.

## BJ SERVICES

## API WATER ANALYSIS

Company: MERIDIAN OIL INC.	W.C.N.A. Sample No.:
Field:	Legal Description:
Well: SUNRAY D-2-A	Lease or Unit:
Depth:	Water.B/D:
Formation: PC	Sampling Point:
State: NM	Sampled By: MOI
County: SAN JUAN	Date Sampled: 03/11/96
Type of Water(Produced,Supply, ect.): PROD.	

## PROPERTIES

pH: 5.56	Iron, Fe(total): 3
Specific Gravity: 1.004	Sulfide as H <sub>2</sub> S: 0
Resistivity (ohm-meter): 10.00	Total Hardness:
Temperature: 78F	(see below)

## DISSOLVED SOLIDS

CATIONS	mg/l	me/l		
Sodium, Na:	184	:	8	
Calcium, Ca:	12	:	1	Sample(ml): 10.0 ml of EDTA: .30
Magnesium, Mg:	2	:	0	Sample(ml): 10.0 ml of EDTA: .10
Barium, Ba:	N/A	:	N/A	
Potassium, K:	16	:	0	
ANIONS	mg/l	me/l		
N: .500 Chloride, Cl:	177	:	5	Sample(ml): 10.0 ml of AgNO <sub>3</sub> : .10
Sulfate, SO <sub>4</sub> :	80	:	2	
Carbonate, CO <sub>3</sub> :		:		Sample(ml): 1.0 ml of H <sub>2</sub> SO <sub>4</sub> :
Bicarbonate, HCO <sub>3</sub> :	122	:	2	Sample(ml): 25.0 ml of H <sub>2</sub> SO <sub>4</sub> : .50
Total Dissolved Solids (calculated):	593			
Total Hardness:	40			Sample(ml): 10.0 ml of EDTA: .40

REMARKS AND RECOMMENDATIONS:

## BJ SERVICES

## API WATER ANALYSIS

Company: MERIDIAN OIL INC.	W.C.N.A. Sample No.:
Field:	Legal Description:
Well: SUNRAY D-1-A	Lease or Unit:
Depth:	Water.B/D:
Formation: PC	Sampling Point:
State: NM	Sampled By: MOI
County: SAN JUAN	Date Sampled: 03/11/96
Type of Water(Produced,Supply, ect.): PROD.	

## PROPERTIES

pH: 7.50	Iron, Fe(total): 1
Specific Gravity: 1.010	Sulfide as H <sub>2</sub> S: 0
Resistivity (ohm-meter): .76	Total Hardness:
Temperature: 78F	(see below)

## DISSOLVED SOLIDS

CATIONS	mg/l	me/l	
Sodium, Na:	2323	: 101	
Calcium, Ca:	40	: 2	Sample(ml): 10.0 ml of EDTA: 1.00
Magnesium, Mg:	2	: 0	Sample(ml): 10.0 ml of EDTA: .10
Barium, Ba:	N/A	: N/A	
Potassium, K:	410	: 11	
ANIONS	mg/l	me/l	
N: .500 Chloride, Cl:	3722	: 105	Sample(ml): 10.0 ml of AgNO <sub>3</sub> : 2.10
Sulfate, SO <sub>4</sub> :	30	: 1	
Carbonate, CO <sub>3</sub> :		:	Sample(ml): 1.0 ml of H <sub>2</sub> SO <sub>4</sub> :
Bicarbonate, HCO <sub>3</sub> :	488	: 8	Sample(ml): 25.0 ml of H <sub>2</sub> SO <sub>4</sub> : 2.00
Total Dissolved Solids (calculated):	7015		
Total Hardness:	100		Sample(ml): 10.0 ml of EDTA: 1.00

REMARKS AND RECOMMENDATIONS:

## BJ SERVICES

## API WATER ANALYSIS

Company: MERIDIAN OIL INC.	W.C.N.A. Sample No.:
Field:	Legal Description:
Well: SUNRAY D-2-A	Lease or Unit:
Depth:	Water.B/D:
Formation: MV	Sampling Point:
State: NM	Sampled By: MOI
County: SAN JUAN	Date Sampled: 03/11/96
Type of Water(Produced,Supply, ect.): PROD.	

## PROPERTIES

pH: 5.87	Iron, Fe(total): 3
Specific Gravity: 1.005	Sulfide as H <sub>2</sub> S: 0
Resistivity (ohm-meter): 10.00	Total Hardness:
Temperature: 78F	(see below)

## D I S S O L V E D SOLIDS

CATIONS	mg/l	me/l		
Sodium, Na:	184	:	8	
Calcium, Ca:	4	:	0	Sample(ml): 10.0 ml of EDTA: .10
Magnesium, Mg:	2	:	0	Sample(ml): 10.0 ml of EDTA: .10
Barium, Ba:	N/A	:	N/A	
Potassium, K:	6	:	0	
ANIONS	mg/l	me/l		
N: .500 Chloride, Cl:	177	:	5	Sample(ml): 10.0 ml of AgNO <sub>3</sub> : .10
Sulfate, SO <sub>4</sub> :	30	:	1	
Carbonate, CO <sub>3</sub> :		:		Sample(ml): 1.0 ml of H <sub>2</sub> SO <sub>4</sub> :
Bicarbonate, HCO <sub>3</sub> :	122	:	2	Sample(ml): 25.0 ml of H <sub>2</sub> SO <sub>4</sub> : .50
Total Dissolved Solids (calculated):	525			
Total Hardness:	20			Sample(ml): 10.0 ml of EDTA: .20

REMARKS AND RECOMMENDATIONS:

## BJ SERVICES

## API WATER ANALYSIS

Company: MERIDIAN OIL INC.	W.C.N.A. Sample No.:
Field:	Legal Description:
Well: SUNRAY COMINGLED WATERS	Lease or Unit:
Depth:	Water.B/D:
Formation: MV/PC	Sampling Point:
State: NM	Sampled By: MOI
County: SAN JUAN	Date Sampled: 03/11/96
Type of Water(Produced,Supply, ect.): PROD.	

## PROPERTIES

pH: 7.63	Iron, Fe(total): 0
Specific Gravity: 1.005	Sulfide as H <sub>2</sub> S: 0
Resistivity (ohm-meter): 1.50	Total Hardness:
Temperature: 78F	(see below)

## DISSOLVED SOLIDS

CATIONS	mg/l	me/l	
Sodium, Na:	1380	: 60	
Calcium, Ca:	24	: 1	Sample(ml): 10.0 ml of EDTA: .60
Magnesium, Mg:	2	: 0	Sample(ml): 10.0 ml of EDTA: .10
Barium, Ba:	N/A	: N/A	
Potassium, K:	230	: 6	
ANIONS	mg/l	me/l	
N: .500 Chloride, Cl:	2127	: 60	Sample(ml): 10.0 ml of AgNO <sub>3</sub> : 1.20
Sulfate, SO <sub>4</sub> :	30	: 1	
Carbonate, CO <sub>3</sub> :		:	Sample(ml): 1.0 ml of H <sub>2</sub> SO <sub>4</sub> :
Bicarbonate, HCO <sub>3</sub> :	342	: 6	Sample(ml): 25.0 ml of H <sub>2</sub> SO <sub>4</sub> : 1.40
Total Dissolved			
Solids (calculated):	4135		
Total Hardness:	70		Sample(ml): 10.0 ml of EDTA: .70

REMARKS AND RECOMMENDATIONS:

Analysis No. \_\_\_\_\_  
Date \_\_\_\_\_

The Western Company

Oil Analysis

Operator MERIDIAN OIL INC Date Sampled \_\_\_\_\_  
Well SunRay D-2-A Date Received 3-12-46  
Field \_\_\_\_\_ Submitted By MOI  
Formation Pictured Cliffs Worked By D. Shepherd  
Depth \_\_\_\_\_ Sample Description \_\_\_\_\_  
County San Juan \_\_\_\_\_  
State NM \_\_\_\_\_

API Gravity 55 ° at 60°F  
\*Paraffin Content \_\_\_\_\_ % by weight  
\*Asphaltene Content \_\_\_\_\_ % by weight  
Pour Point \_\_\_\_\_ °F  
Cloud Point \_\_\_\_\_ °F

Comments: oil is clear condensate

Analyst 

\*Report calculations and data on back.

Analysis No. \_\_\_\_\_  
Date \_\_\_\_\_

The Western Company

Oil Analysis

Operator MERIDIAN OIL INC Date Sampled \_\_\_\_\_  
Well SUNRAY D-Z-A Date Received 3-12-96  
Field \_\_\_\_\_ Submitted By MOI  
Formation Mesa Verde Worked By D. Shepherd  
Depth \_\_\_\_\_ Sample Description \_\_\_\_\_  
County SAN JUAN \_\_\_\_\_  
State NM \_\_\_\_\_

API Gravity 48.6° at 60°F  
\*Paraffin Content \_\_\_\_\_ % by weight  
\*Asphaltene Content \_\_\_\_\_ % by weight  
Pour Point \_\_\_\_\_ °F  
Cloud Point \_\_\_\_\_ °F

Comments: oil is clear to light green with a Solids  
And Emulsion Phase.

Analyst DS

\*Report calculations and data on back.

Analysis No. \_\_\_\_\_  
Date \_\_\_\_\_

The Western Company

Oil Analysis

Operator MERIDIAN OIL INC Date Sampled \_\_\_\_\_  
Well SunRay D-1-A Date Received 3-12-46  
Field \_\_\_\_\_ Submitted By MOI  
Formation MESA VERDE Worked By D. Shepherd  
Depth \_\_\_\_\_ Sample Description \_\_\_\_\_  
County SAN JUAN \_\_\_\_\_  
State NM \_\_\_\_\_

API Gravity 40. ° at 60°F  
\*Paraffin Content \_\_\_\_\_ % by weight  
\*Asphaltene Content \_\_\_\_\_ % by weight  
Pour Point \_\_\_\_\_ °F  
Cloud Point \_\_\_\_\_ °F

Comments: oil is Amber Colored. Emulsified with  
Solids. AND Parrafin

Analyst 

\*Report calculations and data on back.



The Western Company  
Oil Analysis

Operator MERIDIAN OIL INC. Date Sampled \_\_\_\_\_  
Well SUN Ray Mixed oils Date Received 3-12-96  
Field \_\_\_\_\_ Submitted By \_\_\_\_\_  
Formation PC/MV. Worked By D. Shepherd  
Depth \_\_\_\_\_ Sample Description \_\_\_\_\_  
County \_\_\_\_\_ Combined D-1-A + D-2-A  
State \_\_\_\_\_ oil samples

API Gravity 47.4° at 60°F  
\*Paraffin Content \_\_\_\_\_ % by weight  
\*Asphaltene Content \_\_\_\_\_ % by weight  
Pour Point \_\_\_\_\_ °F  
Cloud Point \_\_\_\_\_ °F

Comments:

Analyst \_\_\_\_\_

\*Report calculations and data on back.

# SUNRAY D #1A

AS OF 7/19/95

BLANCO MESAVERDE/AZTEC PICTURED CLIFFS EXT.  
UNIT P, SEC 21, T30N, R10W, SAN JUAN COUNTY, NM

COMPLETED 4/09/81  
ELEVATION 6426' GL  
KB 13'

OJO ALAMO @ 1662'

KIRTLAND @ 1788'

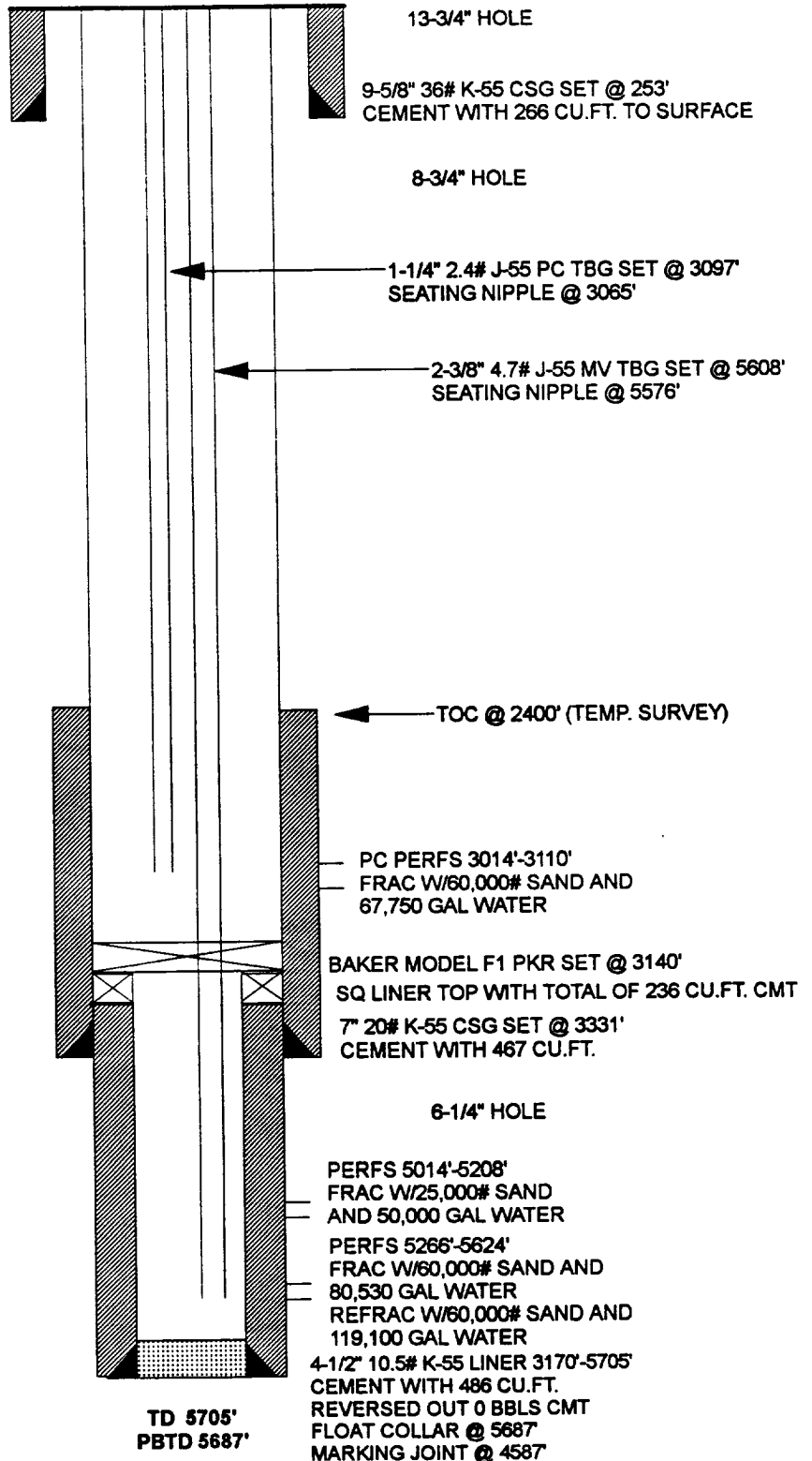
FRUITLAND @ 2659'

PICTURED CLIFFS @ 3002'

MESAVERDE @ 4536'

MENEFEE @ 4797'

POINT LOOKOUT @ 5282'



**Pertinent Data Sheet -Sunray D #1A**

**Location:** NW/4 1660' FNL, 1760' FWL, Unit P, Section 21, T30N, R10W,  
Lat. 36.800720, Long. 107.892334 by TDG  
San Juan County, New

**Field:** Blanco Mesaverde/Aztec Pictured Cliffs      **Elevation:** 6426' GL  
**KB:** 13'

**TD:** 5705'  
**PBTD:** 5687'

**Completed:** 04-09-81

**Spud Date:** 02-08-80

**DP No:** 53617A/53617B

**Prop. No:** 012600400

**Fed. No:** SF 078204

**Casing/Liner Record:**

<u>Hole Size</u>	<u>Csg Size</u>	<u>Wt. &amp; Grade</u>	<u>Depth Set</u>	<u>Cement</u>	<u>Top/Cement</u>
13 3/4"	9 5/8"	36# K-55	253'	266 cu. ft.	to surface
8 3/4"	7"	20# K-55	3331'	267 cu. ft.	2400' (TS)
6 1/4"	4 1/2" Liner	10.5# K-55	3170'-5705'	486 cu. ft.	Reversed out 0 bbls cmt

Squeezed line top twice with a total of 236 cu. ft. of cement.

Float Collar @ 5687'

Marking Joint @ 4587'

**Tubing Record:** 2 3/8" 4.7 # J-55 tubing set at 5562'. Seating Nipple @ 5528'. Baker Model G-22 seal  
assembly set @ 3140'. 1 1/4" 2.4# J-55 PC tubing set at 3097'. Seating Nipple @ 3065'.  
Production packer is a F1 model.

**Formation Tops:**

Ojo Alamo:	1662'	Mesaverde:	4536'
Kirtland:	1788'	Menefee:	4797'
Fruitland:	2659'	Point Lookout:	5282'
Pictured Cliffs:	3002'		

**Logging Record:** ISFL, FDC, IL-GR, Temp. Survey

**Stimulation:** Sand water fractured Lower Point Lookout 5266'-5624' with 80,530 gallons of water and  
60,000# of sand. Refractured with 119,100 gallons of water and 60,000# of sand.

Sand water fractured Massive Point Lookout 5014'-5208' with 50,000 gallons of water and  
25,000# of sand.

Sand water fractured Pictured Cliffs 3014'-3110' with 67,750 gallons of water and 60,000# of  
sand.

**Workover History:**

None

**Sunray D #1A - Mesaverde**  
**Menefee / Cliffhouse Payadd**  
 Lat-Long by TDG: 36.800720 - 107.892334  
 NW/4 Section 21, T30N-R10W  
**REVISED PROCEDURE 3/15/96**

Below is the revised completion procedure for the Sunray D #1A. The original completion was for a 30# linear gel and has been revised to a cross link gel with 15% resin coated sand. Due to the continual efforts to reduce costs, a completion method has been identified for savings in the overall completion cost. The amount of gelled water necessary to pump the same amount of sand is significantly less with a cross link fluid. In addition, the high viscosity cross link fluid will minimize banking of sand which will allow resin coated sand to set up near the wellbore. In 1995, Area 45 was successful in reducing costs by decreasing amount of water and clean up time. Since there is not an indication that the linear gel completion has better reserves than a cross link gel, it is recommended that the Sunray D #1A be completed with a cross link fluid and resin coated sand.

1. Hold safety meeting. MIRU. Comply with all MOI, BLM and NMOCD rules and regulations. Install 6 frac tanks and 1x400 bbl rig tank. Fill each frac tank with 3#s of biocide and filtered (25 micron) 1% KCl water.
2. Obtain and record all wellhead pressures. ND WH, NU BOP. TOOH w/ 1-1/4" tubing set @ 3097'. Send 1-1/4" tubing to the yard for salvage. (Mesaverde and Pictured Cliffs will be commingled.) Release seal assembly with straight pull (no anchor) @ 3140' and TOOH w/ 2-3/8" tubing set at 5608'. Replace bad tubing as necessary.
3. TIH w/ an 80 40 CJ milling tool w/ an 87 shoe. Mill 7" F1 production packer @ 3140'. TOOH w/ packer.
4. PU 7" (20#) casing scraper, TIH and run casing scraper to 3165'. TOOH.
5. TIH with 2-3/8" tubing, 4-1/2" (10.5#) casing scraper and 3-7/8" bit. CO to PBTD of 5687'. TOOH.
6. TIH w/ 4-1/2" CIBP and set @ 5000'. Load hole w/ 1% KCL water if possible. Spot Cliffhouse /Menefee interval w/  $\pm$  350 gallons of inhibited 15% HCL acid. TOOH.
7. RU wireline and run CBL-GR-CCL from  $\pm$  4990' to liner top at 3170'.
8. Perforate the following Cliffhouse/Menefee interval top down using 3-1/8" HSC guns with 12 gram charges and 0.31" diameter holes. (26 Perfs Total).

<b>4540</b>	<b>4678</b>	<b>4808</b>
<b>4573</b>	<b>4683</b>	<b>4833</b>
<b>4610</b>	<b>4723</b>	<b>4868</b>
<b>4616</b>	<b>4750</b>	<b>4894</b>
<b>4635</b>	<b>4773</b>	<b>4920</b>
<b>4642</b>	<b>4778</b>	<b>4940</b>
<b>4650</b>	<b>4784</b>	<b>4958</b>
<b>4654</b>	<b>4790</b>	<b>4970</b>
<b>4670</b>	<b>4795</b>	

Inspect guns to ensure all perforations fired. RD wireline.

9. TIH w/ 4-1/2" fullbore packer and 2-3/8" tubing. Set packer @  $\pm$  4985'. Load hole w/ water and pressure test casing and CIBP to 3800 psi. Release packer, PUH to  $\pm$  150' above top perforation and reset packer.

Sunray D #1A  
Mesaverde Payadd  
August 24, 1995

10. **Maximum allowable treating pressure is 3800 psi during acid job.** Pump 1500 gallons of 15% HCL acid @  $\pm 8$  Bls/min dropping 7/8" diameter RCN ball sealers spaced evenly throughout the job (2 balls per perforation hole). Release packer, TIH and knock balls off. TOOH.
11. TIH w/ 4-1/2" packer,  $\pm 200'$  of 2-3/8" tubing and  $\pm 3100'$  of 3-1/2" frac string. Set packer @  $\pm 3300'$ .
12. Hold safety meeting. **Maximum allowable surface treating pressure is 6000 psi.** (At static conditions, maximum allowable surface pressure is **3800 psi.**)
13. Pressure test surface lines to 7000 psi. (1000 psi over maximum treating pressure but less than the working pressure of the lines.) Fracture stimulate the Cliffhouse/Menefee interval @ 45 BPM using 30# cross link gel and 140m lbs of sand (15% resin coated). Do not over displace during flush. (Stage flush as soon as sand concentration begins to fall.) Shut in well immediately after completion of the stimulation until pressure falls to zero. Leave well shut in for a minimum of 3 hours to allow gel to break.
14. Release packer and TOOH laying down frac string and standing back 2-3/8" tubing.
15. TIH w/ 3-7/8" bit and 2-3/8" tubing and CO to CIBP @  $\pm 5000'$  until sand production is minimal. Obtain pitot gauge. Drill up CIBP set @ 5000'. CO to PBD (5687'). PU above the Mesaverde perforations and flow the well naturally, making short trips for clean up when necessary. Obtain pitot gauge.
16. When sand has diminished, TOOH.
17. RU wireline and set a 4-1/2" RBP @ 3200'. TIH w/ 2-3/8" tubing and flow the Pictured Cliffs interval. Obtain pitot gauge for the Pictured Cliffs interval.
18. TIH w/ retrieving head and release RBP set @ 3150' and TOOH.
19. TIH with one joint of 2-3/8", 4.7#, J-55 tubing w/ expendable check, an F-nipple, then the remaining 2-3/8" production tubing. Land tubing near bottom Mesaverde perforation (5624').
20. ND BOP's, NU WH. Pump off expendable check. Obtain final pitot gauge up the tubing. If well will not flow on it's own, make swab run to FN. If swab run is not necessary, run a broach to ensure that the tubing is clear. RD and MOL. Return well to production.

Sunray D #1A  
Mesaverde Payadd  
August 24, 1995

Approval:

PJ Bet  
Drilling Superintendent

Approval:

Gerald P. Ejeda 3-18-96  
Northwest Basin Team Leader

**Contacts:**

Engineer - Mary Ellen Lutey  
Office - (599-4052)  
Home - (325-9387)  
Pager - (324-2671)

OR

Jimmy Smith  
Office - (326-9713)  
Home - (325-3061)  
Pager - (324-2420)

Frac Consultant - Mark Byars  
Pager - (327-8470)  
Mobile - (320-0349)  
Home - (327-0096)

OR

Mike Martinez  
Pager - (599-7429)  
Mobile - (860-7518)  
Home - (326-4861)

# Anticipated Stimulation Procedure

General Information		Well Configuration		Formation and Stimulation Data	
Well Name:	Sunray D #1A	Casing:	4-1/2", 10.5# 1700 FT	Max Treating Pressure*	6000 psi
Location:	Sec. 21, T30N, R10W		3-1/2", 9.5# 3100 FT	Frac Gradient:	0.6 psi/ft
Formation:	Cliffhouse/Menefee	Tubing:	2-3/8", 4.7# 200 FT	BH Temp:	145 deg. F
Vendors		Capacity:	0.0159 0.01223 0.00387	Antic. Treating Rate:	45 BPM
Stimulation:	Dowell (325-5096)	PBTD	5000 ft	Antic. BH Treating Pres:	2,853 psi
Tagging:	None	Top Perf:	4540 ft	Antic. Surf Treating Pres:	5,967 psi
		Bot Perf:	4970 ft	Percent Pad:	15%
		Midpoint:	4755 ft	Net Pay:	140 ft
Fluid:	30# Cross Link Gel	Perforations		lb prop/net ft pay:	1,000 lb/ft
Note:		1 spf	0.31 " holes	Job Duration:	39.6 min
		26 holes	12 " penetration	Perf friction	950 psi
				Total friction	5,173 psi

## Stimulation Schedule

Sand Data						Fluid Data				Rate and Time Data			Comments
Tag	Stage	Sand	Conc	Stage	Cum	Stage	Cum	Stage	Cum	Slurry	Stage	Cum	
		Mesh	ppg	lbs	lbs	gals	gals	gals	gals	bpm	min	min	
	Pad	N/A	0.0	0	0	9,000	9,000	9,000	9,000	45.0	4.8	4.8	
No	2	20/40	1.0	18,000	18,000	18,000	27,000	18,821	27,821	45.0	10.0	14.7	
No	3	20/40	2.0	24,000	42,000	12,000	39,000	13,094	40,915	45.0	6.9	21.6	
No	4	20/40	3.0	45,000	87,000	15,000	54,000	17,052	57,967	45.0	9.0	30.7	
No	5	20/40	4.0	32,000	119,000	8,000	62,000	9,459	67,426	45.0	5.0	35.7	
No	6	20/40	5.0	21,000	140,000	4,200	66,200	5,158	72,584	45.0	2.7	38.4	
	Flush	N/A	0.0	0	140,000	2,319	68,519	2,319	74,903	45.0	1.2	39.6	
Total					lb/ft	Total	Total			Ave.	Total		
						140,000	1,000	68,519	74,903	45.0	39.6		

## Volumes and Additives

## Equipment

Water Volume= 68,519 treat + 3,426 excess = 71,945 gallons (MOI)	Tanks: 5.0 x 400 bbl frac tanks (supplied by MOI).
Water Volume= 1,631 treat + 82 excess = 1,713 bbls (MOI)	Filled w/ 1,713 bbls 2% KCl water (supplied by MOI).
Fluid Volume: 1,713 bbl designed treating volume	Mix on the fly equipment. (PCM)
20/40 Arizona Sand: 119,000 lbs Resin Coated: 21,000	Sand King.
Fluid: 3# Bactericide per tank (added before filling with water).	Blender.
Filtered 1% KCL water (supplied by MOI) and heated to 70 degrees.	Fluid Pumps as required.
6.8 gal/1000 Liquid Gel Concentrate	
6 gal/1000 Cross Linker/Activator (.2# Borate, 2% Caustic & 98% H2O)	
1 gal/1000 Surfactant	
Breaker: St1-2: 1-2# encap., St3-4: 1# oxid., St5-6: 2-3# oxid., 1g Amine	
If necessary: Buffer and Caustic	
Radioactive Tagging	
None	

## Comments and Special Instructions

**MAXIMUM ALLOWABLE TREATING PRESSURE IS 6000 PSI.\***

Frac down 3-1/2" frac string w/ 100' of 2-3/8" tubing and a packer set in the 4-1/2" liner.

Hold safety meeting with everyone on location before pressure testing surface lines.

Pressure test surface lines to 7000 psi (1000 over max allowable but less than working pressure).

Adjust flush rate and volume according to potential for well to be on vacuum.

(If well is on a vacuum, cut flush by 15%.)

\*At static conditions, maximum allowable treating pressure is 3000 psi.

Production Engineer: Mary Ellen Lutey (pager #324-2671)

PJB 3/15/96

OIL CONSERVATION DIVISION

NORTHWEST NEW MEXICO PACKER-LEAKAGE TEST

Operator Meridian Oil, Inc. Lease Sunray D Well No. 1A  
Location  
of Well: Unit F Sect 21 Twp. 30n Rge. 10W County San Juan

	NAME OF RESERVOIR OR POOL	TYPE OF PROD. (Oil or Gas)	METHOD OF PROD. (Flow or Art. Lift)	PROD. MEDIUM (Tbg. or Csg.)
Upper Completion	Pictured Cliffs	GAS	FLOW	TBG
Lower Completion	Mesaverde	GAS	FLOW	TBG

PRE-FLOW SHUT-IN PRESSURE DATA

Upper Completion	Hour, date shut-in <u>7/7/95</u>	Length of time shut-in <u>7 Days</u>	SI press. psig <u>308</u>	Stabilized? (Yes or No)
Lower Completion	<u>7/7/95</u>	<u>5 Days</u>	<u>369</u>	

FLOW TEST NO. 1

Commenced at (hour, date)*		12-Jul-95		Zone producing (Upper or Lower)	
TIME (hour, date)	LAPSED TIME SINCE*	PRESSURE		PROD. ZONE TEMP	REMARKS
		Upper Completion	Lower Completion		
10-Jul		302	0		
11-Jul		302	368		
12-Jul		308	369		
13-Jul		309	329		
14-Jul		309	310		

Production rate during test

Oil: BOPD based on Bbls. in Hours. Grav. GOR

Gas: MCFPD; Tested thru (Orifice or Meter):

MID-TEST SHUT-IN PRESSURE DATA

Upper Completion	Hour, date shut-in	Length of time shut-in	SI press. psig	Stabilized? (Yes or No)
Lower Completion	Hour, date shut-in	Length of time shut-in	SI press. psig	Stabilized? (Yes or No)

(Continue on reverse side)