

**MERIDIAN OIL**

NEW MEXICO OIL CONSERVATION DIVISION  
RECEIVED

MAR 8 1996

March 4, 1996

New Mexico Oil Conservation Division  
Attention: Mr. William LeMay  
P.O. Box 2088  
310 Old Santa Fe Trail  
Santa Fe, New Mexico 87501

RE: Sunray J #1A  
SE/4, Section 7, T30N, R10W  
San Juan County, New Mexico  
Downhole Commingling Request

Dear Mr. LeMay:

Meridian Oil Inc. is applying for administrative approval to downhole commingle the above referenced well in the Blanco Mesaverde and Aztec Pictured Cliffs intervals during the proposed workover. The zones to be commingled have common ownership. Meridian Oil operates all the acreage surrounding the referenced well. (See attached offset operator / owner plat.) We therefore waive the offset operator notice requirement and request that the NMOCD consider this application as expeditiously as possible. The Bureau of Land Management will receive notification of this proposed downhole commingling application.

This well has produced since 1981 as a dual well from the Mesaverde and Pictured Cliffs. The well is presently not a good producer due to poor producing efficiency. It had a producing capacity in 1995 of 143 mcf/d and 57 mcf/d, respectively. The commingling of the subject well will result in better producing efficiency for both intervals. A possible future artificial lift system, such as a plunger will be more efficient with the intervals commingled. Granting this application will be in the best interest of conservation, the prevention of waste, and the protection of correlative rights.

The proposed project is to fracture stimulate bypassed pay in the existing Mesaverde completion. Commingling should enhance this well's producing life and provide an economical means of recovering reserves from both zones. We plan to commingle this well during the proposed workover by pulling the Pictured Cliffs tubing and the Mesaverde tubing and packer seal assembly. The permanent packer will be extracted and a single string of tubing will be landed in the lower producing interval.

The reservoir characteristics of each of the subject zones are such that underground waste would not be caused by the proposed downhole commingling. The compatibility analysis of fluids from two offset wells (Sunray J #1A and Sunray J #2A) in the Pictured Cliffs and Mesaverde indicate that the fluids from each zone are compatible and no precipitates will be formed to cause damage to either reservoir. (See attachment.) Shut in pressures for the two formations are within a 50% variance. (Surface pressures for the Mesaverde and Pictured Cliffs are 303 psi and 231 psi, respectively.)

New Mexico Oil Conservation Division  
Mr. William LeMay  
Sunray J #1A  
Downhole Commingling Request  
Page Two

The allocation of the commingled production will be calculated using production history and flow tests obtained from the Pictured Cliffs and Mesaverde during workover operations. Meridian Oil Inc., will consult with the District Supervisor of the Aztec District Office of the Division for approval of the allocation.

Approval of this commingling application will prevent resources from being wasted and protect correlative rights. Attached with this letter are plats showing ownership of the offsetting leases for both the Mesaverde and Pictured Cliffs, a copy of the letter sent to the Bureau of Land Management, fluid compatibility analysis, a wellbore diagram, pertinent data sheet, and a workover procedure.

Sincerely,

A handwritten signature in cursive script that reads "Mary Ellen Lutey".

Mary Ellen Lutey  
Production Engineer

MEL:mel

Attachments

cc: Frank T. Chavez - NMOCD/Aztec  
Peggy Bradfield - MOI Regulatory  
Bureau of Land Management  
Well File

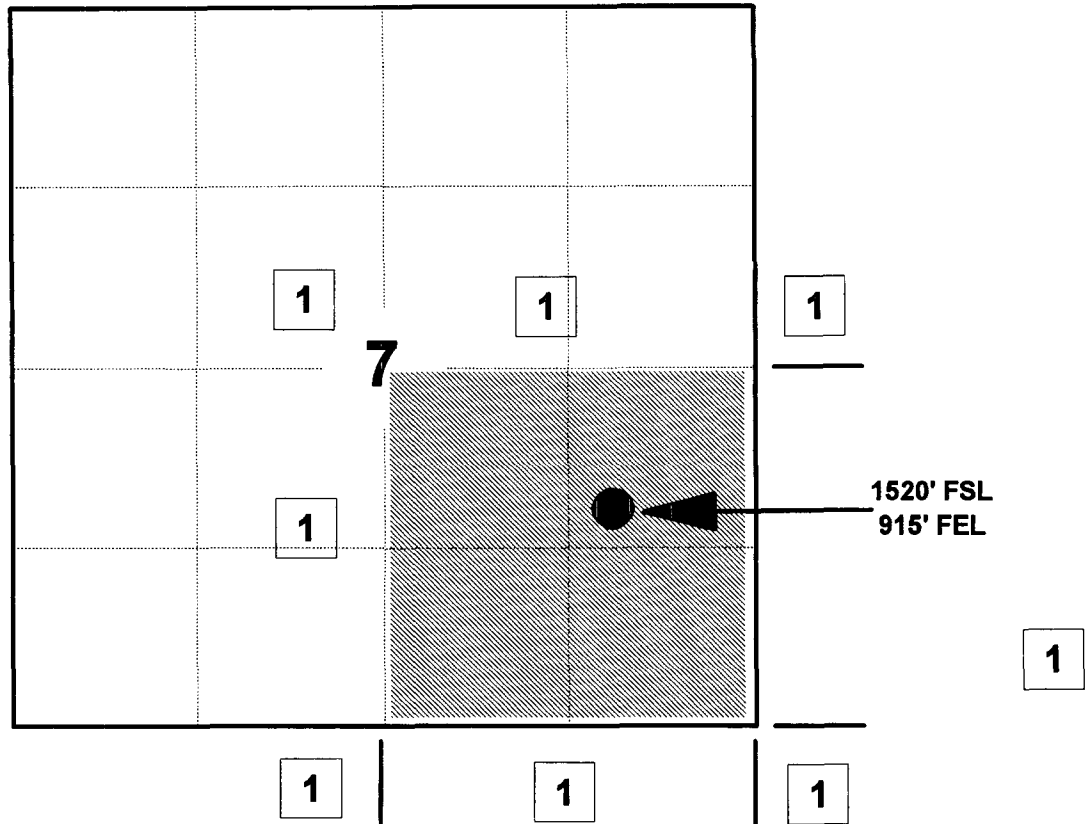
# MERIDIAN OIL INC

## SUNRAY J #1A

OFFSET OPERATOR \ OWNER PLAT

Pictured Cliffs / Mesaverde Formations Commingle

Township 30 North, Range 10 West



1) Meridian Oil Inc

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Pictured Cliffs Formation

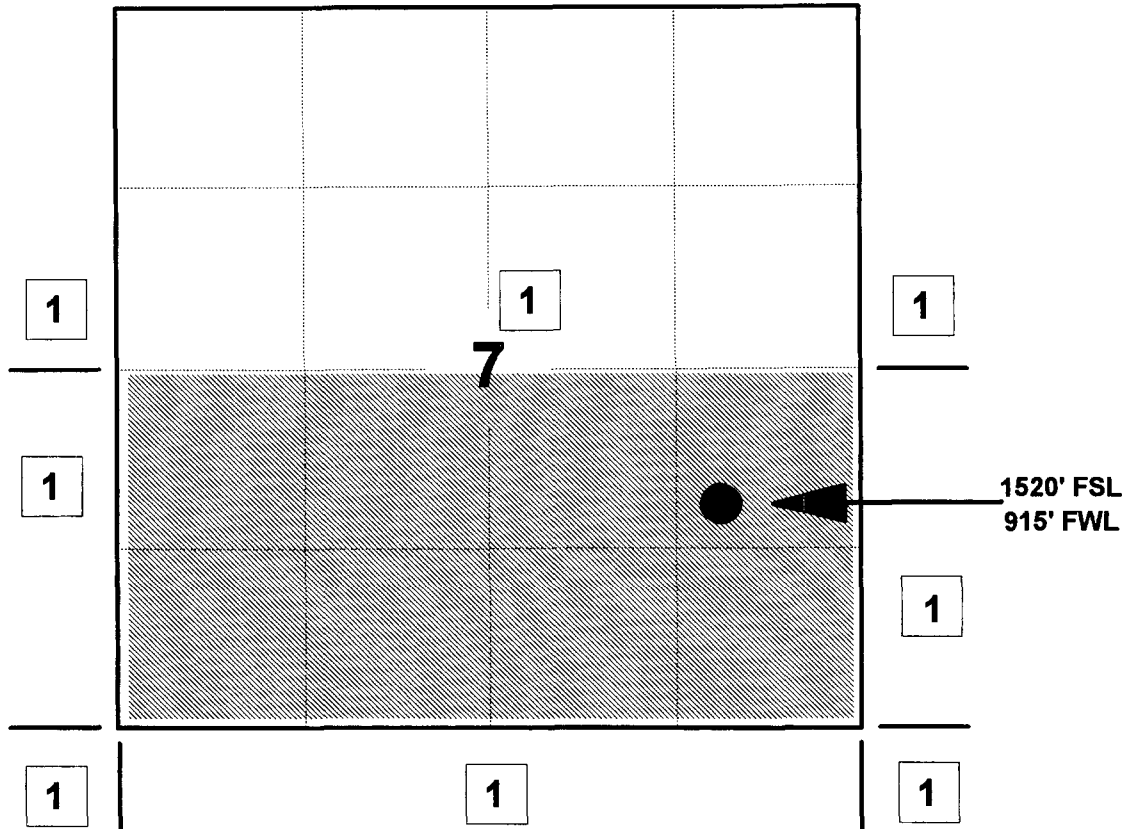
# MERIDIAN OIL INC

## SUNRAY J #1A

OFFSET OPERATOR \ OWNER PLAT

Pictured Cliffs / Mesaverde Formations Commingle

Township 30 North, Range 10 West



1) Meridian Oil Inc

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Mesaverde Formation

# MERIDIAN OIL

March 15, 1996

Bureau of Land Management  
1235 La Plata Highway  
Farmington, New Mexico 87401

RE: Sunray J #1A  
SE/4, Section 7, T30N, R10W  
San Juan County, New Mexico  
Downhole Commingling Request

Gentlemen:

Meridian Oil Inc. is in the process of applying for a downhole commingling order from the New Mexico Oil Conservation Division (NMOCD) for the referenced well located in San Juan County, New Mexico. The approved application will commingle the Mesaverde and the Pictured Cliffs fields.

The purpose of this letter is to notify you of Meridian's application. If you have no objections to the NMOCD issuing a commingling order, we would appreciate your signing this letter and returning the original to Mr. LeMay at the following address with a copy to this office:

New Mexico Oil Conservation Division  
Mr. William LeMay  
P.O. Box 2088  
Santa Fe, New Mexico 87501

Your prompt attention to this matter would be appreciated.

Sincerely,



Mary Ellen Lutey  
Production Engineer

MEL:mel

**The undersigned hereby waives objection to the referenced  
Downhole Commingle Request.**

**Company/Owner:** \_\_\_\_\_

**Title:** \_\_\_\_\_

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



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 compatibility 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 visible precipitations 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 interfacial or emulsions.

### CONCLUSION

Based on the tests performed on the oil & waters in question, no precipitants, emulsions or other undesirable reactions occurred 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:
Tempature: 78F	(see below)

## D I S S O L V E D 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:
Tempature: 78F	(see below)

## D I S S O L V E D 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.  
 Field:  
 Well: SUNRAY D-2-A  
 Depth:  
 Formation: MV  
 State: NM  
 County: SAN JUAN

W.C.N.A. Sample No.:  
 Legal Description:  
 Lease or Unit:  
 Water.B/D:  
 Sampling Point:  
 Sampled By: MOI  
 Date Sampled: 03/11/96

Type of Water(Produced,Supply, ect.): PROD.

## PROPERTIES

pH: 5.87  
 Specific Gravity: 1.005  
 Resistivity (ohm-meter): 10.00  
 Temperature: 78F

Iron, Fe(total): 3  
 Sulfide as H<sub>2</sub>S: 0  
 Total Hardness:  
 (see below)

## DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na:	184 :	8
Calcium, Ca:	4 :	0
Magnesium, Mg:	2 :	0
Barium, Ba:	N/A :	N/A
Potassium, K:	6 :	0

Sample(ml): 10.0 ml of EDTA: .10  
 Sample(ml): 10.0 ml of EDTA: .10

ANIONS	mg/l	me/l
N: .500 Chloride, Cl:	177 :	5
Sulfate, SO <sub>4</sub> :	30 :	1
Carbonate, CO <sub>3</sub> :	:	
Bicarbonate, HCO <sub>3</sub> :	122 :	2

Sample(ml): 10.0 ml of AgNO<sub>3</sub>: .10  
 Sample(ml): 1.0 ml of H<sub>2</sub>SO<sub>4</sub>:  
 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:
Tempature: 78F	(see below)

## D I S S O L V E D 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 Sun Ray 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 49.4° 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 3-12-96  
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.

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

The Western Company

Oil Analysis

Operator MERIDIAN OIL INC. Date Sampled \_\_\_\_\_  
Well SUN Ray Mixed oils Date Received 3-12-46  
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.

STATE OF NEW MEXICO  
ENERGY and MINERALS  
DEPARTMENT

This form is not to  
be used for reporting  
packer leakage tests  
in Southeast New Mexico

OIL CONSERVATION DIVISION

Page 1  
Revised 10/01/78

NORTHWEST NEW MEXICO PACKER-LEAKAGE TEST

Operator MERIDIAN OIL, INC Lease SUNRAY J Well No. 1A

Location of Well: Unit 1 Sect 7 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	CSG

PRE-FLOW SHUT-IN PRESSURE DATA

Upper Completion	Hour, date shut-in	Length of time shut-in	SI press. psig	Stabilized? (Yes or No)
	8/4/95	7 DAYS	231	
Lower Completion	Hour, date shut-in	Length of time shut-in	SI press. psig	Stabilized? (Yes or No)
	8/4/95	5 DAYS	303	

FLOW TEST NO. 1

Commenced at (hour, date)*		9-Aug-95		Zone producing (Upper or Lower)	
TIME (hour, date)	LAPSED TIME SINCE*	PRESSURE		PROD. ZONE	REMARKS
		Upper Completion	Lower Completion	TEMP	
8-Jul		229	301		
8-Jul		230	303		
9-Jul		231	303		
10-Jul		235	252		
11-Jul		237	251		

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)

# SUNRAY J #1A

AS OF 7/12/95

BLANCO MESAVERDE/PICTURED CLIFFS  
UNIT I, SEC 7, T30N, R10W, SAN JUAN COUNTY, NM

COMPLETED 8/27/80

OJO ALAMO @ 1468'

KIRTLAND @ 1572'

FRUITLAND @ 2528'

PICTURED CLIFFS @ 2847'

MESAVERDE @ 4378'

MENEFEE @ 4635'

POINT LOOKOUT @ 5126'

9-5/8" 36# K-55 CSG SET @ 224'  
CEMENT WITH 224 CU.FT. TO SURFACE

TOC @ 1400' (TEMP. SURVEY)

1-1/4" 2.4# J-55 PC TBG SET @ 2952'  
SEATING NIPPLE @ 2920'

2-3/8" 4.7# J-55 MV TBG SET @ 5450'  
SEATING NIPPLE @ 5419'

PC PERFS 2848'-2980'  
FRAC W/78,000# SAND AND  
84,000 GAL WATER

7" 20# K-55 CSG SET @ 3158'  
CEMENT WITH 392 CU.FT.

SEAL ASSM. IN POLISHED BORE  
RECEPTACLE (PBR) SET @ 3004'

PL PERFS 4948'-5475'  
FRAC W/76,000# SAND AND  
156,000 GAL WATER

4-1/2" 10.5# K-55 LINER 2990'-5582'  
CEMENT WITH 452 CU.FT. TO LINER TOP

TD 5582'  
PBD 5564'



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

**Location:** SE/4 1550' FSL, 915' FEL, Unit I, Section 7, T30N, R10W,  
Lat. 36.822845, Long. 107.918335 by TDG  
San Juan County, New Mexico

**Field:** Blanco Mesaverde, Aztec Pictured Cliffs

**Elevation:** 6273' KB

**TD:** 5582'

**COTD:** 5564'

**Completed:** 08-27-80

**Spud Date:** 02-26-80

**DP No:** 53623A/53623B

**Prop. No:** 072256900

**Fed. No:** NM 03195

**Casing/Liner Record:**

<b><u>Csg Size</u></b>	<b><u>Wt. &amp; Grade</u></b>	<b><u>Depth Set</u></b>	<b><u>Cement</u></b>	<b><u>Top/Cement</u></b>
9 5/8"	36# K-55	224'	224 cu. ft.	to surface
7"	20# K-55	3158'	392 cu. ft.	1400' (TS)
4 1/2" Liner	10.5# K-55	2990'-5582'	452 cu. ft.	Liner Top

**Tubing Record:** MV-177 joints of 2 3/8" 4.7# tubing set at 5450'. Seating Nipple @ 5419'. Seal assembly in Polished Bore Receptacle (PBR) set @ 3004'. PC-93 joints of 1 1/4" tubing set at 2952'. Seating nipple at 2920'.

**Formation Tops:**

Ojo Alamo:	1468'	Mesaverde:	4378'
Kirtland:	1572'	Menefee:	4635'
Fruitland:	2528'	Point Lookout:	5126'
Pictured Cliffs:	2847'		

**Logging Record:** I/SFL, FDC, ISF, Temp. Survey

**Stimulation:** Sand water fractured Point Lookout intervals between 4948' and 5475' with 156,000 gallons of water and 76,000# of sand.

Sand water fractured Pictured Cliffs intervals between 2848' and 2980' with 84,000 gallons of water and 78,000# of sand.

**Workover History:**

None

**Sunray J #1A - Mesaverde**  
Cliffhouse and Menefee Payadd  
Lat-Long by TDG: 36.822845 - 107.918335  
SE/4 Section 7, T30N-R10W  
August 31, 1995

1. Hold safety meeting. MIRU. Comply with all MOI, BLM and NMOCD rules and regulations. Install 13 frac tanks and 1x400 bbl rig tank. Fill each frac tank with 5#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 @ 2652'. TOOH w/ 2-3/8" tubing set at 5450' and seal assembly. Replace bad tubing as necessary.
3. PU 7" (20#) casing scraper, TIH and run casing scraper to 2990'. TOOH.
4. TIH with 2-3/8" tubing and 3-3/4" bit. CO to PBTD of 5564'. TOOH.
5. TIH w/ 4-1/2" CIBP and set CIBP @ 4930'. Load hole w/ 1% KCL water if possible. Spot Menefee interval ( $\pm 4900'$  -  $\pm 4700'$ ) w/ 135 gallons of inhibited 15% HCL acid. TOOH.
6. RU wireline and run CBL-GR-CCL from  $\pm 4930'$  to TOC in 4-1/2" casing (run CBL to find TOC in liner). Run CNL from 4930' to 4200'. Send copy of logs to engineering and perforation intervals will be provided.
7. Perforate the Menefee interval ( $\pm 4700'$  -  $\pm 4900'$ ) top down using 3-1/8" HSC guns with 12 gram charges and 0.31" diameter holes. (Intervals will be provided after reviewing logs.) Inspect guns to ensure all perforations fired. RD wireline.
8. TIH w/ 4-1/2" fullbore packer,  $\pm 200'$  of 2-3/8" tubing and 2-7/8" N-80 frac string. Set packer @  $\pm 4915'$ . 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. Monitor the backside during balloff throughout the job.
9. **Maximum allowable treating pressure is 3800 psi during acid job.** Pump 1500 gallons of 15% HCL acid @ 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 to  $\pm 3100'$  and reset packer.
10. Hold safety meeting. Monitor the backside during stimulation. **Maximum allowable surface treating pressure is 6000 psi @ 25 Bbls/min.** If rate is reduced, the maximum pressure will be lower. (See stimulation schedule for maximum pressures for various rates.)
11. 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 Menefee interval @ 30 BPM using 30# linear gel and 80m lbs of sand tagged w/ Iridium. (Final stimulation procedure will be attached after reviewing logs.) Do not over displace during flush. Shut in well immediately after completion of the stimulation until pressure falls to zero.
12. Release packer and TOOH standing back frac string. Check and inspect packer. RU wireline and set a 4-1/2" RBP @  $\pm 4675'$ . Dump sand on top of RBP w/ dump bailer.
13. Perforate Cliffhouse interval ( $\pm 4640'$  -  $\pm 4320'$ ) top down using 3-1/8" HSC guns with 12 gram charges and 0.31" diameter holes. (Perforation interval will be provided after reviewing logs.) Inspect guns to ensure all perforations fired. RD wireline.

Sunray J #1A  
Mesaverde Payadd  
August 31, 1995

14. TIH w/ 4-1/2" fullbore packer,  $\pm 200'$  of 2-3/8" tubing and 2-7/8" N-80 frac string. Set packer @  $\pm 4650'$ . Load hole w/ water and pressure test RBP to 3800 psi. Release packer, PUH to  $\pm 150'$  above top perforation and reset packer. Monitor the backside during balloff throughout the job.
15. **Maximum allowable treating pressure is 3800 psi during acid job.** Pump 1500 gallons of 15% HCL acid @ 8 Bbls/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 to 3100' and reset packer.
16. Hold safety meeting. Monitor the backside during stimulation. **Maximum allowable surface treating pressure is 6000 psi @ 25 Bbls/min.** If rate is reduced, the maximum pressure will be lower. (See stimulation schedule for maximum pressures for various rates.)
17. 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 interval @ 30 BPM using 30# linear gel and 105m lbs of sand tagged w/ Iridium. (Final stimulation procedure will be attached after reviewing logs.) Do not over displace during flush. Shut in well immediately after completion of the stimulation until pressure falls to zero.
18. Release packer and TOOH laying down frac string.
19. TIH w/ retrieving head and CO to RBP @  $\pm 4675'$  until sand production is minimal. Obtain pitot gauge for Cliffhouse interval. Release RBP @ 4675' and TOOH.
20. TIH w/ 3-3/4" bit and drill up CIBP set @ 4930'. CO to PBD (5564'). PU above the Mesaverde perforations and flow the well naturally, making short trips for clean up when necessary. Obtain pitot gauge for Mesaverde after clean up.
21. When sand has diminished, TOOH.
22. RU wireline company. Run After Frac GR from 5000' to top of tracer activity.
23. TIH with one joint of 2-3/8", 4.7#, J-55 tubing w/ expendable check, an F-nipple, then approximately 2440' of tubing, model G locator seal assembly and then the remaining 2-3/8" production tubing. Land tubing near bottom perforation (5475').
24. TIH w/ on joint of 1-1/4" tubing w/ expendable check, an F-nipple, then the remaining 1-1/4" tubing. Land tubing @ 2652'
25. ND BOP's, NU WH. Pump off expendable checks. Obtain final pitot. RD and MOL. Return well to production.