MERIDIAN OIL

OIL CONSERVATION DIVISION
RECEIVED

'91 MAR 29 AM 9 10

March 27, 1991

Mr William J. LeMay
N. M. Oil Conservation Division
P. O. Box 2088
Santa Fe, N.M. 87501-2088

Re: Cain #3R MV-CH
1610' FSL; 810' FEL
Section 30, T29N R09W
San Juan County, N. M.

Dear Mr. LeMay:

Meridian Oil Inc. is applying for an administrative downhole commingling order for the referenced well in the Blanco Mesaverde and Otero Chacra fields. The ownership of the zones to be commingled is common. The offset operator to the north and southeast is Amoco Production company, Mesa Ltd. to the southwest, with Meridian Oil having acreage to the south. The Bureau of Land Management and these offset operators will receive notification of this proposed downhole commingling.

This well has produced since December 1979 from the Mesaverde interval. With a maximum producing capacity of 60 MCF/D, the well is only a marginal producer. It is listed as "marginal" on the San Juan Basin Proration Schedule. The Mesaverde has trouble producing due to a small amount of liquid production. The addition of the Chacra gas to the producing stream could help lift the small amount of Mesaverde liquids (less than 2 BLPD). This would greatly enhance the Mesaverde producing efficiency thus prevent waste of the Mesaverde gas reserves.

Meridian Oil recently completed a study of the Chacra wells in a four township area. It concluded that although substantial gas reserves are present in the Chacra reservoir, they definitely do not provide economic justification to drill. Commingling the Chacra with the Mesaverde in this well will enable the well to produce its Chacra reserves which otherwise would probably be wasted. The eight nearest Chacra wells to the referenced well (within a 2-1/2 mile radius) have an average cumulative of only 157 MMCF with a current average producing rate of only 44 MCF/D. Clearly, Chacra reserves exist in the vicinity of this well, however, the small amount of reserves indicated can not justify drilling operations. The only way to produce these reserves and prevent the waste of Chacra reserves is to utilize an existing wellbore.

Granting this application will be in the best interest of conservation, the prevention of waste, and the protection of correlative rights.

We plan to commingle this well by pulling the tubing, perforating and stimulating the Chacra, and running a single string of tubing.

The reservoir characteristics of each of the subject zones are such that underground waste would not be caused by the proposed downhole commingling. The fluids from each zone are compatible and no precipitates will be formed to cause damage to either reservoir. See the attached fluid analyses and compatibility tests. The compatibility tests were run on the nearby Mesaverde well, Albright #7A, and Chacra well, Albright #2J. Fluid analyses from the subject Mesaverde well were similar to the Albright #7A MV. The daily production will not exceed the limit of Rule 303c, Section 1a, Part 1. The District Office in Aztec will be notified anytime the commingled well is shut-in for seven (7) consecutive days.

The shut-in pressure for the subject Mesaverde well and the nearby Chacra well, Reid #26, are 410 psi and 530 psi, respectively.

To allocate the commingled production to each of the zones, Meridian will consult with the District Supervisor of the Aztec District Office of the Division to determine an allocation formula for each of the productive zones. This will be done using flow tests from the Mesaverde and Chacra during recompletion operations.

Included with this letter is a plat showing ownership of offsetting leases, a copy of the letters to the offset operators and BLM, wellbore diagram, production curve, pertinent data sheet, and a detailed report of fluid compatibility.

Yours truly,

G. T. Dunn
Regional Production Engineer

PMP:pmp
attachments

cc: Frank Chavez - OCD

MERIDIAN OIL

March 27, 1991

Bureau of Land Management
1235 La Plata Hwy.
Farmington, N. M. 87401

Gentlemen:

Meridian Oil, Inc. is in the process of applying for a downhole commingling order for their Cain #3R MV well located 1610' FSL 810' FEL, Section 30 T29N R09W, N.M.P.M., San Juan County, New Mexico, in the Blanco Mesaverde and Otero Chacra.

The purpose of this letter is to notify you of such action. If you have no objections to the proposed commingling order, we would appreciate your signing the attached copy of this letter and returning it to this office.

Your prompt attention to this matter would be appreciated.

Yours truly,

G. T. Dunn
Regional Production Engineer

PMP:pmp

The above downhole commingling request is hereby approved:

_____

Date:_____

MERIDIAN OIL

March 27, 1991

Mesa Limited Partnership
P.O. Box 2009
Amarillo, Texas 79189-2009

Gentlemen:

Meridian Oil, Inc. is in the process of applying for a downhole commingling order for their Cain #3R MV well located 1610' FSL 810' FEL, Section 30 T29N R09W, N.M.P.M., San Juan County, New Mexico, in the Blanco Mesaverde and Otero Chacra.

The purpose of this letter is to notify you of such action. If you have no objections to the proposed commingling order, we would appreciate your signing the attached copy of this letter and returning it to this office.

Your prompt attention to this matter would be appreciated.

Yours truly,

G. T. Dunn
Regional Production Engineer

PMP:pmp

The above downhole commingling request is hereby approved:

_____

Date:_____

MERIDIAN OIL

March 27,1991

Amoco Production Company
Attn: Mr. Larry Emmons
P.O. Box 800
Denver, Colorado 80201

Dear Mr. Emmons:

Meridian Oil, Inc. is in the process of applying for a downhole commingling order for their Cain #3R MV well located 1610' FSL 810' FEL, Section 30 T29N R09W, N.M.P.M., San Juan County, New Mexico, in the Blanco Mesaverde and Otero Chacra.

The purpose of this letter is to notify you of such action. If you have no objections to the proposed commingling order, we would appreciate your signing the attached copy of this letter and returning it to this office.

Your prompt attention to this matter would be appreciated.

Yours truly,

G. T. Dunn
Regional Production Engineer

PMP:pmp

The above downhole commingling request is hereby approved:

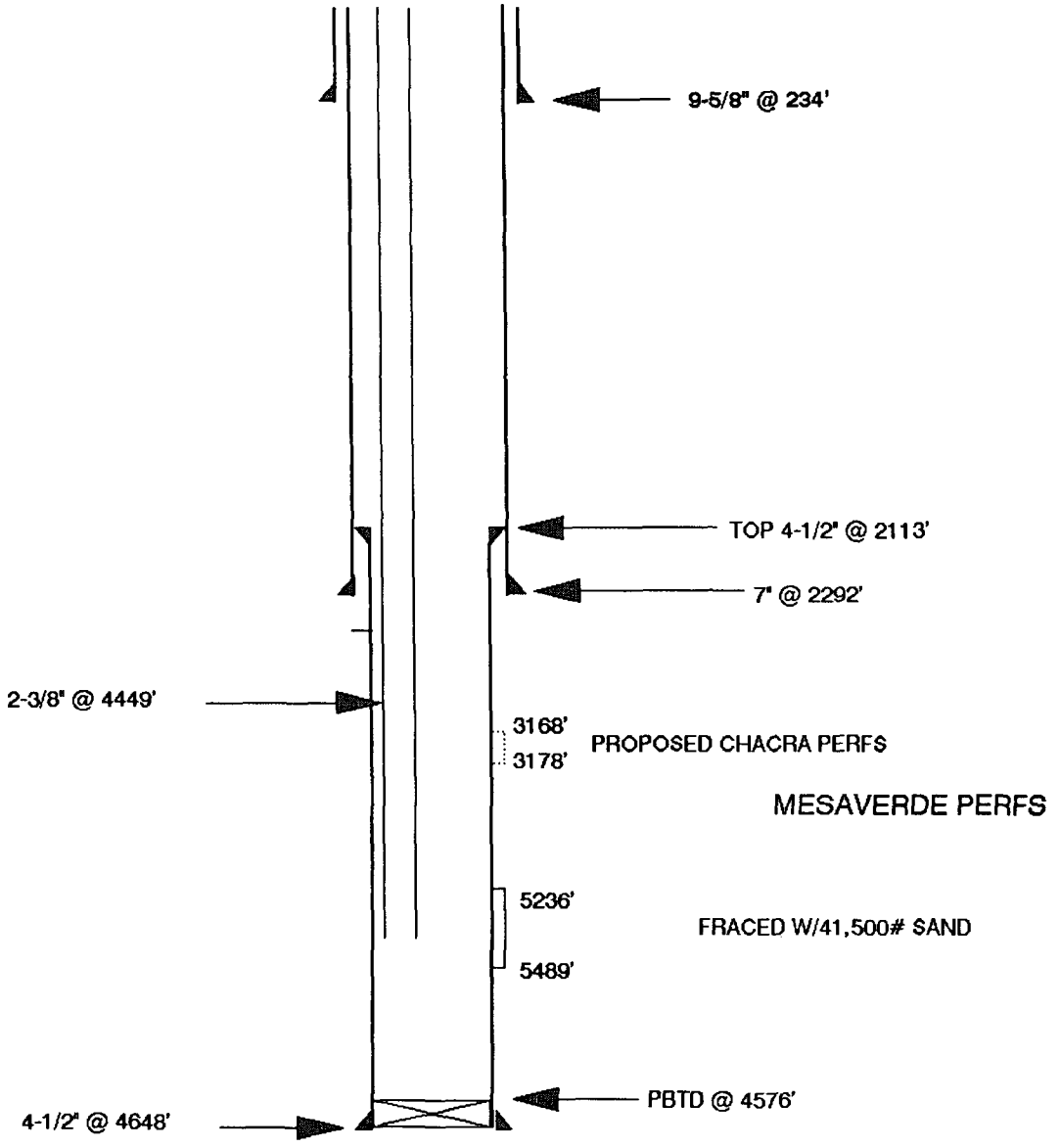
_____

Date:_____

CAIN #3R MV

UNIT I SECTION 30 T29N R09W

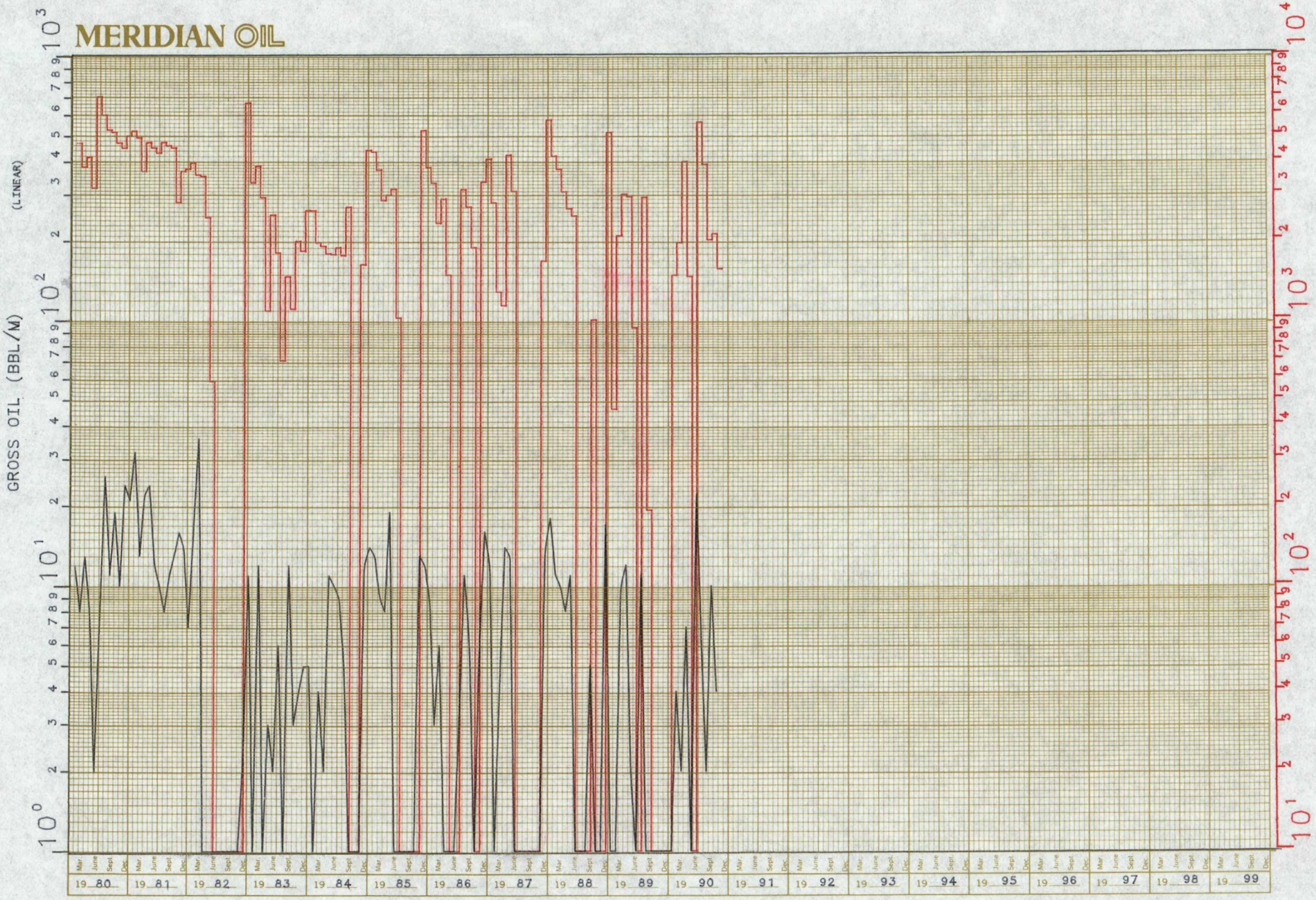
SAN JUAN COUNTY, NEW MEXICO



PROJECT : XX
STATE : NEW MEXICO
COUNTY : SAN JUAN
LOCATION : 30I29N 9W
PAGE NUMBER : 0000001-A

DWIGHTS NUMBER : 30429N09W30I00MV
LEASE/WELL NAME : CAIN
RESERVOIR :
FIELD : BLANCO MESAVERDE (PRORATED GAS)
OPERATOR : SOUTHLAND ROYALTY CO

3R



OIL BY MONTH

GAS BY MONTH

MERIDIAN OIL

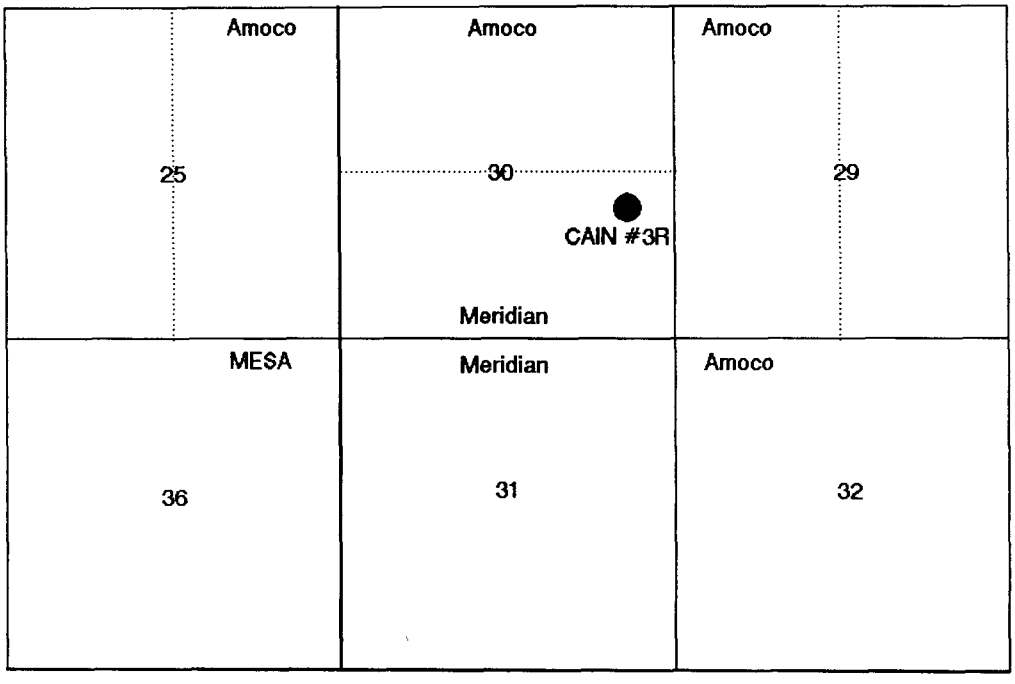
Commingle Application for

Chacra - Mesaverde

Cain #3R CH/MV

San Juan County, N. M.

Mesaverde & Chacra Leasehold



T 29 N

R10W R09W

Pertinent Data Sheet - CAIN #3R MV

Location: 1610'FSL 810' FEL, SEC. 30 T29N R09W, SAN JUAN COUNTY, N.M.

Field: Blanco Mesaverde

Elevation: 5701'GR
12'KB

TD: 4651'
PBTD: 4576'

DP#: 7727
GWI: 100.00% SRT
NRI: 82.36% SRT

Completed: 10-18-78

Initial Potential:
AOP=3078 MCF/D; Q=2338 MCF/D; SICP= 880 PSI

Casing Record:

Hole Size	Csg. Size	Wt. & Grade	Depth Set	Cement	Top/Cmt.
12-1/4"	9-5/8"	36# K-55	234'	142 cu ft	CIRC. CMT
8-3/4"	7"	20# K-55	2292'	268 sx	1225' TS
6-1/4"	4-1/2"	10.5# K-55	2113'-4648'	442 sx	3066' CBL

Tubing Record: 2-3/8" 4.7# CSR-55 4449' 140 JTS

Formation Tops:

Ojo Alamo	1068'
Fruitland	1758'
Pictured Cliffs	2042'
Lewis	2195'
Chacra	3146'
Cliffhouse	3742'
Menefee	3772'
Point Lookout	4338'

Logging Record: Induction, Density

Stimulation: Spotted 370 gals 7-1/2% HCl. Perfed 4050', 55', 60', 65', 4306', 10', 16', 43', 47', 55', 60', 65', 83', 4423', 43', 50', 4511', 15'. Balled off w/27 balls & 1550 gals 15% HCL. Fraced w/41,500# 20/40 sand & 78,036 gals water.

Workover History: None

Production History: Well 1st delivered 2-17-79. Cumulative is 384 MMCF & 1,234 BO. Present Capacity is 60 MCF/D & 0.1 BOPD.

PMP

ANALYSIS NO. 51-38-91

FIELD RECEIPT NO. _____

API FORM 45-1

API WATER ANALYSIS REPORT FORM

Company	Sample No.	Date Sampled
Meridian Oil		01-24-91

Field	Legal Description	County or Parish	State
-	Sec 30 T29N R9W	San Juan	NM

Lease or Unit	Well	Depth	Formation	Water, B/D
Cain	# 3R		Mesa Verde	

Type of Water (Produced, Supply, etc.)	Sampling Point	Sampled By
Produced		

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	272	11.84
Calcium, Ca	11	.56
Magnesium, Mg	4	.34
Barium, Ba		
Potassium, K^+	2	.05

ANIONS		
Chloride, Cl	276	7.79
Sulfate, SO_4	0	0
Carbonate, CO_3	0	0
Bicarbonate, HCO_3	305	5.00
Hydroxide, OH	0	0

Total Dissolved Solids (calc.) 870.

Iron, Fe (total) ~~#,##~~ 0.0 ppm

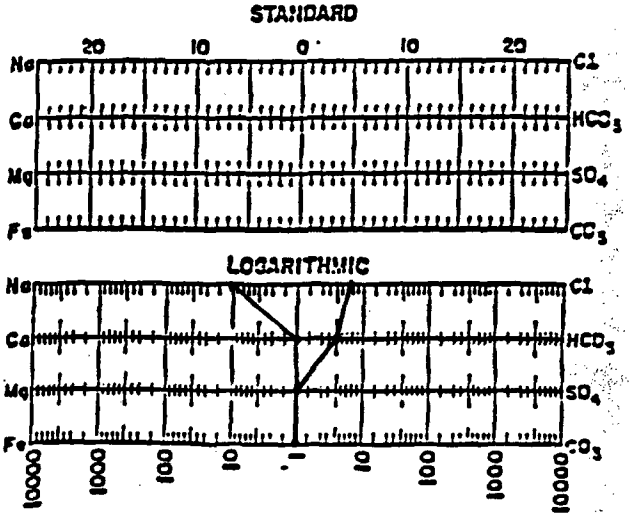
Sulfide, as H_2S neg

REMARKS & RECOMMENDATIONS:

OTHER PROPERTIES

pH	7.36
Specific Gravity, 60/60 F.	1.00
Resistivity (ohm-meters) 70 F.	8.0
Total hardness	45

WATER PATTERNS — *me/l*



ANALYST: L Lee

THE WESTERN COMPANY OF
NORTH AMERICA, FARMINGTON. NM
(505) 327-6222

Please refer any questions to: BRIAN AULT , District Engineer

MERIDIAN OIL
ALBRIGHT 7A - MESA VERDE
ALBRIGHT 2J - CHACRA
LEASE FLUIDS

LABORATORY INVESTIGATION

OF

ALBRIGHT MESA VERDE AND CHACRA FLUIDS COMPATABILITY

JANUARY 23, 1991

PREPARED FOR:

MERIDIAN OIL, INC
MIKE PIPPIN
PETROLEUM ENGINEER

PREPARED BY:

BRIAN P. AULT
PETROLEUM ENGINEER
WESTERN COMPANY OF
NORTH AMERICA

SERVICE POINT
FARMINGTON, NEW MEXICO
505-327-6222

MERIDIAN OIL
ALBRIGHT 7A - MESA VERDE
ALBRIGHT 2J - CHACRA
LEASE FLUIDS

SUMMARY OF RESULTS

1. No precipitation of materials was observed from either admixture of fluids.

2. Emulsion testing was performed. There should be no serious concern over the formation of a stabilized emulsion at well bore temperatures.

3. The cloud point of oil mixtures dropped or remained the same upon mixing of fluids.

4. According to calculations not enough cool down from gas expansion will occur to alter paraffin deposition significantly.

MERIDIAN OIL
ALBRIGHT 7A - MESA VERDE
ALBRIGHT 2J - CHACRA
LEASE FLUIDS

ALBRIGHT 7-1 MV/CH
SAN JUAN COUNTY, NEW MEXICO

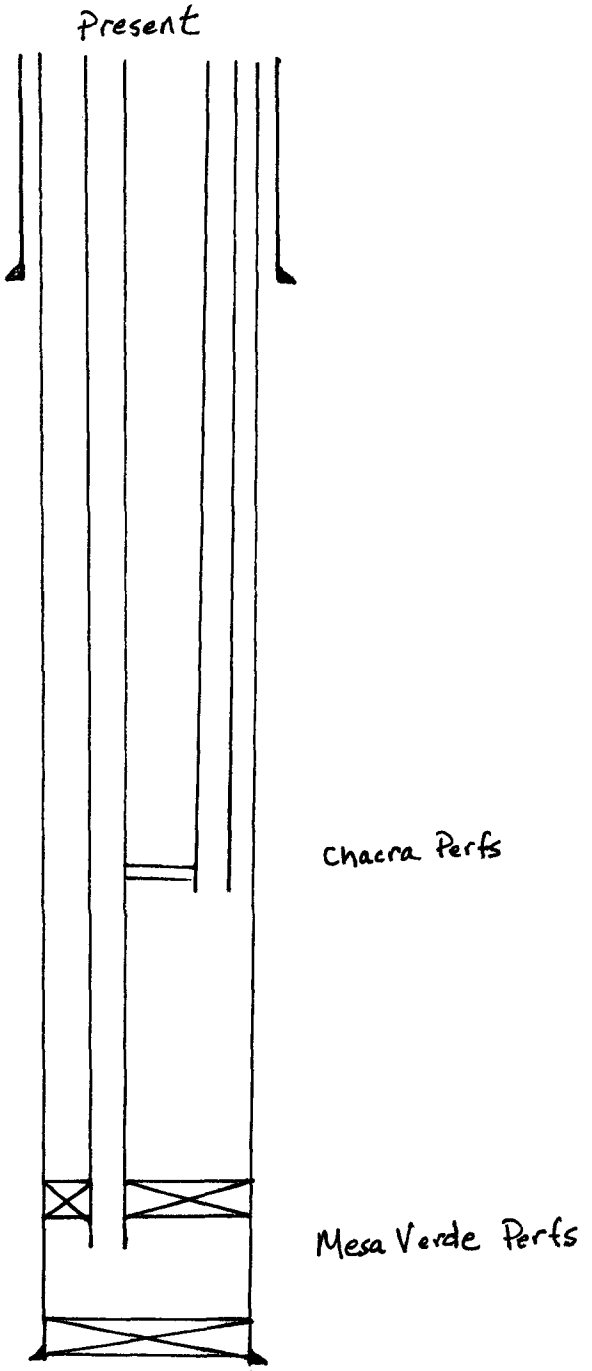


FIGURE 1

MERIDIAN OIL
ALBRIGHT 7A - MESA VERDE
ALBRIGHT 2J - CHACRA
LEASE FLUIDS

ALBRIGHT 7-A MV/CH
SAN JUAN COUNTY, NEW MEXICO

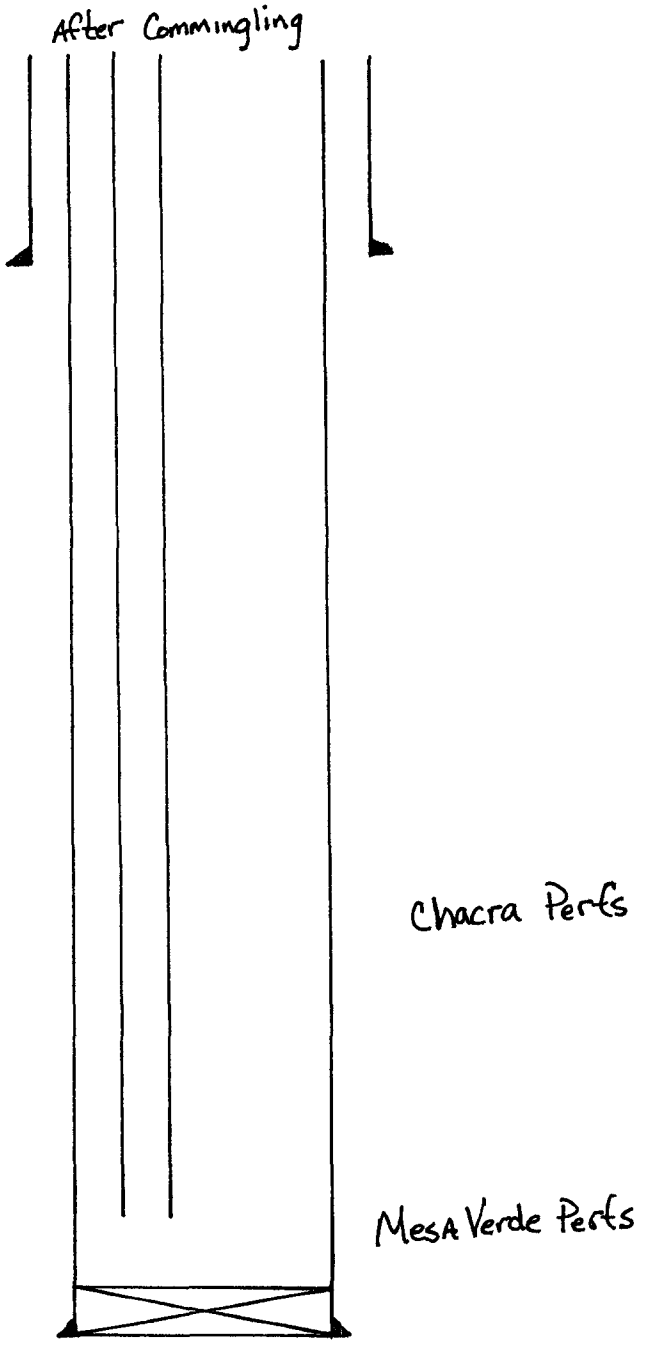


FIGURE 2

MERIDIAN OIL
ALBRIGHT 7A - MESA VERDE
ALBRIGHT 2J - CHACRA
LEASE FLUIDS

On Thursday, January 10, 1991, a request for laboratory work was placed by Mike Pippin, Petroleum Engineer of Meridian Oil, Inc.

PURPOSE

Two oil samples were received of Mr. Pippin with the request we investigate the concern of potentially detrimental effects due to commingling of Mesa Verde and Chacra fluids in the Albright 7A wellbore.

INVESTIGATION

1. Background information - current wellbore.

   a. Figure 1

   b. Figure 2

   c. BHST Gradient: 1.375° f/100 ft.

   d. Current production problems are primarily due to paraffin deposition from surface down to more/less 1000' depth.

   e. Commingling Order Mixture Requirements:

      The commingling requests present the mixing of Albright 7-A Mesa Verde fluids with Albright 2-J Chacra fluids.

      The tests performed simulated the mixture of fluids that may result from this commingling action. Each oil component was analyzed for API gravity, paraffin, pour point and cloud point. Each water component was analyzed for dissolved solids, pH, specific gravity and resistivity. The mixture of oils addressed the potential increase in precipitation of materials and the potential increase in paraffin content by a synergistic effect of mixing oils of different constitution. Emulsion tests simulated the mixing environment of the wellbore where the water component of a fluid could be tied up in a resulting emulsion without the ability to break out and allow separation of the oil and water constituents. The emulsion test results

present the number of ml (% of mixture) of water breakout at listed time intervals. The volume of test sample (mixture) used in the emulsion tests is 100 ml.

2. Concerns to address in analysis:

   a. The precipitation of materials produced by the admixture of oils of potentially different constitution.

   b. The creation of emulsions due to the admixture of different fluids.

   c. Increased paraffin deposition by additive properties of oils.

   d. Increased paraffin deposition due to the reduction of temperature accompanying gas expansion.

3. Steps taken in analysis

   a. API Analysis of oils including: API Gravity
      Pour Point
      Cloud Point
      Paraffin Content

   b. Discussion with Mr. Pippen regarding the well bore production environment, e.g., mode of hydrocarbon production, pump type and operation, water components of production fluids, current paraffin problems, etc.

   c. Mixing of oils in appropriate cases with additional cloud point testing to determine resulting fluid characteristics.

   d. API Water Analysis

   e. Emulsion tendency testing via mixing of fluids in appropriate cases.

MERIDIAN OIL
ALBRIGHT 7A - MESA VERDE
ALBRIGHT 2J - CHACRA
LEASE FLUIDS

DATA

SAMPLE #1 - ALBRIGHT 7A	
ZONE	MESA VERDE
API GRAVITY @ 60° F	55.1°
CLOUD POINT	60°F
POUR POINT	<10°F
PARAFFIN CONTENT	0.91%
SAMPLE #2 - ALBRIGHT 2J	
ZONE	CHACRA
API GRAVITY @ 60° F	54.10°
CLOUD POINT	<10° F
POUR POINT	<10° F
PARAFFIN CONTENT	0%
SAMPLE #3 50:50 MIX OF ALBRIGHT 7A AND 2J FLUIDS	
ZONE	50:50 MIX MV/CH
API GRAVITY @ 60° F	53.20°
CLOUD POINT	48°F
POUR POINT	<10° F
PARAFFIN CONTENT	0.27%

CALCULATIONS

Cool down effects due to gas expansion:

Reference: Perry's Handbook of Chemical Engineering

RE : Adiabatic Expansion of Ethane, Methane

$T_s + T_r (P_s/P_r) (K-1/K)$, where

T_s = Surface Temperature

T_r = Reservoir Temperature

P_s = Surface Pressure

P_r = Reservoir Pressure

K = Specific Heat at constant pressure/Specific heat at constant volume

Assumed values for maximum cool down due to gas expansion:

T_s = Unknown

T_r = 140°F

P_s = 500 psi

P_r = 1500 psi

K = 1.2

T_s = 140 (500/1500) 0.1667

T_s = 117°F

NOTE:

A total cooldown of 23°F would be expected

ANALYSIS NO. 51-03-91

FIELD RECEIPT NO. _____

API FORM 45-1

API WATER ANALYSIS REPORT FORM

Company	Sample No.	Date Sampled
Meridian Oil		01-11-91 @ 1:30

Field	Legal Description	County or Parish	State
-	5 2 2 T 29N R 10 W		

Lease or Unit	Well	Depth	Formation	Water, B/D
Albright	7-A		Mesa Verde	

Type of Water (Produced, Supply, etc.)	Sampling Point	Sampled By

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	1258	54.68
Calcium, Ca	38	1.90
Magnesium, Mg	9	.74
Barium, Ba	—	—
Potassium, K^+	18	.46

ANIONS		
Chloride, Cl	1977	55.78
Sulfate, SO_4	0	0
Carbonate, CO_3	0	0
Bicarbonate, HCO_3	122	2.00
OH	0	0

Total Dissolved Solids (calc.) 3422

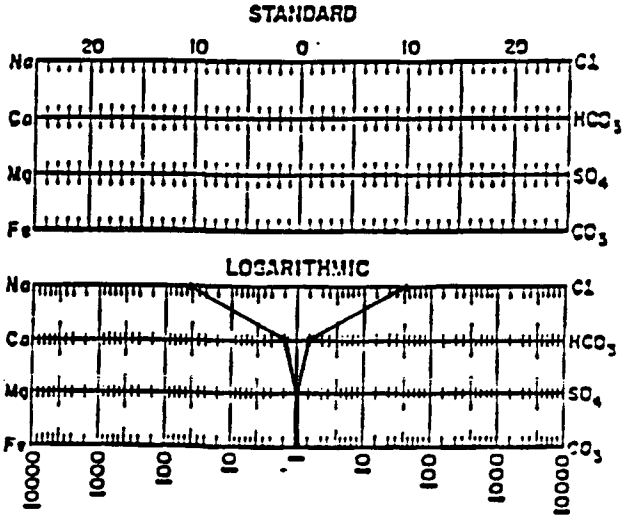
Iron, Fe (total) #, ## 0,0 ppm

Sulfide, as H_2S neg

OTHER PROPERTIES

pH	6.55
Specific Gravity, 60/60 F.	1.002
Resistivity (ohm-meters) 72 F.	1.64
Total hardness	132

WATER PATTERNS — me/l



REMARKS & RECOMMENDATIONS:

ANALYST: Lee

THE WESTERN COMPANY OF
NORTH AMERICA, FARMINGTON, NM
(505) 327-6222

Please refer any questions to: **BRIAN AULT**, District Engineer

Date 01-16-91

51-01-91

Rocky Mountain Region

THE WESTERN COMPANY

Oil Analysis

Operator Meridian Oil
Well Albright 7-A
Field 5 22 T29N R10W
Formation Mesa Verde
Depth
County San Juan
State NM

Date Sampled 01-11-91
Date Received 01-15-91
Submitted By Mike Pippin
Worked By LLee
Sample Description 500 mL clear brown oil + 0% free H_2O.

API Gravity 55.1 ° at 60°F
Paraffin Content .91 % by weight
Asphaltene Content —— % by weight
Pour Point <10 °F
Cloud Point 60 °F

Comments:

Analyst LLee

Paraffin Content

wt. beaker + sample _____
- wt. beaker - 81.407
(wt. sample) 2.869

wt. Buchner funnel, watch glass, and filter papers 146.223

After filtering:

wt. beaker + paraffin residue 81.408
- wt. beaker (from above) 81.407
(wt. paraffin in beaker) .001

wt. funnel, glass, papers + paraffin residue 146.248
- wt. funnel, watch glass filter papers from above 146.223
(wt. paraffin in these) .025

Total wt. paraffin:

wt. paraffin in beaker .001
+ wt. paraffin in others .025
Total paraffin .026 grams

Paraffin content (%) =

$\frac{.026}{2.869} = \frac{\text{Total paraffin}}{\text{Sample wt.}} \times 100 = .91\ \%$

Asphaltene Content

wt. tube + sample _____
- wt. tube - _____
(wt. sample) _____

wt. tube & residue _____
- wt. tube - _____
(wt. residue) _____

Asphaltene content (%)

$\frac{\text{wt. residue}}{\text{wt. sample}} \times 100 =$ _____

S.G. = $\frac{7.55}{10.0}$ @ 68°F = .755

°API @ 68°F = $\frac{141.5}{\text{S.G.}} - 131.5 = 55.917$

Temp. Correction: °API @ 60°F

55.917 - .859 = 55.06 or 55.1 °API @ 60°F

ANALYSIS NO. 51-02-91

FIELD RECEIPT NO. _____

API FORM 45-1

API WATER ANALYSIS REPORT FORM

Company	Sample No.	Date Sampled
Meridian Oil		01-11-91 @ 1:45

Field	Legal Description	County or Parish	State
	S22 T29N R10W		

Lease or Unit	Well	Depth	Formation	Water, B/D
Albright	2-J		Chacra	

Type of Water (Produced, Supply, etc.)	Sampling Point	Sampled By

DISSOLVED SOLIDS

CATIONS	mg/l	me/l
Sodium, Na (calc.)	2982	129.65
Calcium, Ca	48	2.40
Magnesium, Mg	15	1.20
Barium, Ba	—	—
Potassium, K^+	18	.46

ANIONS		
Chloride, Cl	4601	129.79
Sulfate, SO_4	0	0
Carbonate, CO_3	0	0
Bicarbonate, HCO_3	239	3.92
OH	0	0

Total Dissolved Solids (calc.) 7903

Iron, Fe (total) ##### 0.0 ppm

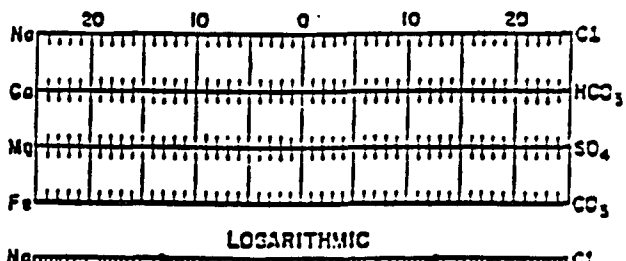
Sulfide, as H_2S neg

OTHER PROPERTIES

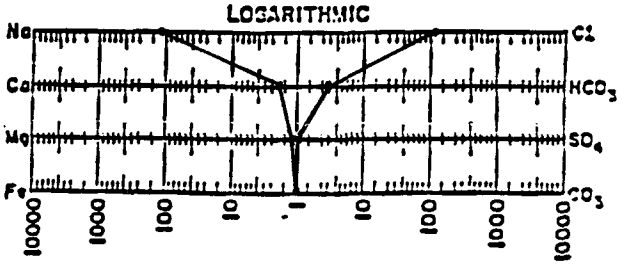
pH	7.25
Specific Gravity, 60/60 F.	1.007
Resistivity (ohm-meters) 72F.	.75
Total hardness	180

WATER PATTERNS — me/l

STANDARD



LOGARITHMIC



REMARKS & RECOMMENDATIONS:

ANALYST: Lee

THE WESTERN COMPANY OF
NORTH AMERICA, FARMINGTON, NM
(505) 327-6222

Please refer any questions to: **BRIAN AULT**, District Engineer

Date 01-17-91
51-02-91

Rocky Mountain Region

THE WESTERN COMPANY

Oil Analysis

Operator Meridian Oil
Well Albright 2-J
Field Sec 7 T29N R10W
Formation Chacra
Depth
County San Juan
State NM

Date Sampled 01-11-91
Date Received 01-15-91
Submitted By Mike Pippin
Worked By LHee
Sample Description 115 mL
clear oil + 400 mL (78%)
free H2O.

API Gravity 54.1 ° at 60°F
Paraffin Content 0 % by weight
Asphaltene Content —— % by weight
Pour Point <10 °F
Cloud Point <10 °F

Comments:

Analyst LLee

Paraffin Content

wt. beaker + sample _____
- wt. beaker - 98.160
(wt. sample) 2.956

wt. Buchner funnel, watch glass, and filter papers 122.664

After filtering:

wt. beaker + paraffin residue 98.160
- wt. beaker (from above) 98.160
(wt. paraffin in beaker) 0

wt. funnel, glass, papers + paraffin residue 122.664
- wt. funnel, watch glass filter papers from above 122.664
(wt. paraffin in these) 0

Total wt. paraffin:

wt. paraffin in beaker 0
+ wt. paraffin in others 0
Total paraffin 0 grams

Paraffin content (%) =

$\frac{0}{2.956} = \frac{\text{Total paraffin}}{\text{Sample wt.}} \times 100 = 0$ %

Asphaltene Content

wt. tube + sample _____
- wt. tube - _____
(wt. sample) _____

wt. tube & residue _____
- wt. tube - _____
(wt. residue) _____

Asphaltene content (%)

$\frac{\text{wt. residue}}{\text{wt. sample}} \times 100 =$ _____

S.G. = $\frac{7.56}{10.0}$ @ 75°F = .756

°API @ 75°F = $\frac{141.5}{S.G.} - 131.5 = 55.669$

Temp. Correction: °API @ 60°F

55.669 - 1.570 = 54.1 °API @ 60°F

Date 01-19-91

51-03-91

Rocky Mountain Region

THE WESTERN COMPANY

Oil Analysis

Operator Meridian Oil
Well Albright 7-A/Albright 2-J
Field S22 T29N R10W
Formation Mesa Verde/Chacra
Depth
County San Juan
State NM

Date Sampled 01-11-91
Date Received 01-15-91
Submitted By Mike Pippin
Worked By Lee
Sample Description 50/50 mix of Albright 7-A oil & Albright 2-J oil.

API Gravity 53.2 ° at 60°F
Paraffin Content .27 % by weight
Asphaltene Content —— % by weight
Pour Point <10 °F
Cloud Point 48 °F

Comments:

Analyst LLee

Paraffin Content

wt. beaker + sample _____
- wt. beaker - 81.405
(wt. sample) 2.918

wt. Buchner funnel, watch glass, and filter papers 146.234

After filtering:

wt. beaker + paraffin residue 81.407
- wt. beaker (from above) 81.405
(wt. paraffin in beaker) .002

wt. funnel, glass, papers + paraffin residue 146.240
- wt. funnel, watch glass filter papers from above 146.234
(wt. paraffin in these) .006

Total wt. paraffin:

wt. paraffin in beaker .002
+ wt. paraffin in others .006
Total paraffin .008 grams

Paraffin content (%) =

$\frac{.008}{2.918} = \frac{\text{Total paraffin}}{\text{Sample wt.}} \times 100 = .27\ \%$

Asphaltene Content

wt. tube + sample _____
- wt. tube - _____
(wt. sample) _____

wt. tube & residue _____
- wt. tube - _____
(wt. residue) _____

Asphaltene content (%)

$\frac{\text{wt. residue}}{\text{wt. sample}} \times 100 =$ _____

S.G. = $\frac{7.60}{10.0}$ @ 74°F = .760

°API @ 74°F = $\frac{141.5}{\text{S.G.}} - 131.5 = 54.684$

Temp. Correction: °API @ 60°F

54.684 - 1.441 = 53.24 or 53.2 °API @ 60°F

ANALYSIS #
DATE: 01-21-91

water-oil Fig. 1
~~ACID-OIL~~ EMULSION TESTS DATA SHEET

OPERATOR: Meridian Oil
WELL: Albright 7-A & 2-J
FIELD: Saa T29N R10W
FORMATION: Mesa Verde/Chacra
DEPTH:
COUNTY: San Juan

SUBMITTED BY: Mike Pippin
SOURCE OF SAMPLE: wellhead
DATE SAMPLED: 01-11-91
DATE RECEIVED: 01-15-91
API GRAVITY OF OIL: 53.2° @ 60°F

TYPE & CONC. OF FLUID: 7.5% 2-J oil + 25.5% 2-J H_2O +32.5% 7-A oil + 34.5% 7-A H_2O
~~TYPE & CONC. OF INHIBITOR~~:
~~TYPE & CONC. OF SOLIDS~~:
TEST TEMPERATURE: 76°F
~~OIL/TREATMENT FLUID RATIO~~:
ANALYSIS BY: Lee

PERCENTAGE OF ORIGINAL ~~ACID~~ water SEPARATED AT VARIOUS TIME INTERVALS AFTER EMULSIFYING

Test Number	1															
Additives & Concentration, Gal/1000 Gal																
Elapsed Time	Time	Vol	Time	Vol	Time	Vol	Time	Vol	Time	Vol	Time	Vol	Time	Vol	Time	Vol
1 min	1	59.5	2		3		4		5		6		7		8	
2	2		3		4		5		6		7		8		9	
3	3		4		5		6		7		8		9		10	
4	4		5		6		7		8		9		10		11	
5	5		6		7		8		9		10		11		12	
6	6		7		8		9		10		11		12		13	
7	7		8		9		10		11		12		13		14	
8	8		9		10		11		12		13		14		15	
9	9		10		11		12		13		14		15		16	
10	10		11		12		13		14		15		16		17	
20	20		21		22		23		24		25		26		27	
30	30		31		32		33		34		35		36		37	
Total Vol (ml)		59.5														
Vol. Emulsion / Sludge																
Solids*																
Interface**	V	1 mL														
Vol. Sediment																

REMARKS:

* Preferential wetting of solids: OB=oil-wet bottom; OO=oil-wet oil phase; WB=water-wet bottom; WO=water-wet oil phase
OI=oil-wet interface; WI=water-wet interface
** Interface: F=Fluid; S=Solid; V=Viscous

7.5 mL Albright 2-J Chacra oil + 25.5 mL Albright 2-J Chacra water
+ 32.5 mL Albright 7-A Mesa Verde oil + 34.5 mL Albright 7-A Mesa Verde H_2O.

Date 02-22-91

#91-08-91

Rocky Mountain Region

THE WESTERN COMPANY

Oil Analysis

Operator Meridian Oil
Well Cain 3R
Field Sec 30 T29N R9W
Formation Mesa Verde
Depth
County San Juan
State New Mexico

Date Sampled 01-24-91
Date Received 02-19-91
Submitted By
Worked By LHee
Sample Description ≈ 320 mL brown oil with 0% free water.

API Gravity 56.4 ° at 60°F
Paraffin Content 1.3 % by weight
Asphaltene Content — % by weight
Pour Point <8 °F
Cloud Point 48 °F

Comments:

Analyst LLee

P.O. Drawer 360 • Farmington, N.M. 87499

Paraffin Content

wt. beaker + sample ____
- wt. beaker - 98.159 g
(wt. sample) 3.03 g

wt. Buchner funnel, watch glass, and filter papers 146.254 g

After filtering:

wt. beaker + paraffin residue 98.162 g
- wt. beaker (from above) 98.159 g
(wt. paraffin in beaker) .003 g

wt. funnel, glass, papers + paraffin residue 146.290 g
- wt. funnel, watch glass filter papers from above 146.254 g
(wt. paraffin in these) .036 g

Total wt. paraffin:

wt. paraffin in beaker .003 g
+ wt. paraffin in others .036 g
Total paraffin .039 grams

Paraffin content (%) =

$\frac{.039}{3.03} = \frac{\text{Total paraffin}}{\text{Sample wt.}} \times 100 =$ 1.3 %

Asphaltene Content

wt. tube + sample ____
- wt. tube - ____
(wt. sample) ____

wt. tube & residue ____
- wt. tube - ____
(wt. residue) ____

Asphaltene content (%)

$\frac{\text{wt. residue}}{\text{wt. sample}} \times 100 =$ ____

Specific Gravity $= \frac{18.69}{25.0} = .7476$ @ 72°F

°API @ 72°F:

$\frac{141.5}{S.G.} - 131.5 = 57.772$ °API @ 72°F

Temperature Correction for 60°API:

57.772 - 1.333 = 56.439 OR

56.44 °API

STATE OF NEW MEXICO

ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
AZTEC DISTRICT OFFICE

1000 RIO BRAZOS ROAD
AZTEC, NEW MEXICO 87410
(505) 334-6178

Date: 4/19/91

Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504-2088

RE: Proposed MC_____ Proposed DHC X
Proposed NSL_____ Proposed SWD_____
Proposed WFX_____ Proposed PMX_____
Proposed NSP_____ Proposed DD_____

Gentlemen:

I have examined the application received on 4/3/91

for the Meridian (OPERATOR) Cain #3R (LEASE & WELL NO.)

I-30-29N-9W (UL-S-T-R) and my recommendations are as follows:

Approve

Yours truly,

OIL CONSERVATION DIVISION
RECEIVED
'91 APR 23 AM 10 26