

MERIDIAN OIL

HUERFANO UNIT #225/#112

SAN JUAN COUNTY, NM

DAKOTA/GALLUP FORMATION



The Western Company

LABORATORY INVESTIGATION

PREPARED FOR

**JAMES A. SMITH
PRODUCTION ENGINEER**

SERVICE POINT

FARMINGTON, NM

(505) 327-6222

PREPARED BY

LOREN L. DIEDE

DISTRICT ENGINEER

FARMINGTON

APRIL 6, 1992

SALES REPRESENTATIVE

LOREN L. DIEDE

FM020360



Meridian Oil
Huerfano unit #225 & 112

Three samples were submitted for laboratory analysis on April 2nd, 1992 by Mr. James A. Smith, Production Engineer for Meridian Oil.

These samples were to be analyzed to determine if commingling the fluids would have any adverse effects on the production.

The samples submitted were:

1. Dakota produced water (Huerfano #225)
2. Dakota produced oil (Huerfano #225)
3. Gallup produced oil (Huerfano #112)

Laboratory analysis performed:

1. Oil analysis of each sample.
 - a. API gravity
 - b. Pour point
 - c. Cloud point
2. Water analysis of water sample:
 - a. API water analysis
3. Observation and analysis of commingled oil and water.
 - a. Oil analysis
 - b. Emulsion
 - c. Separation
 - d. Precipitation

Meridian Oil
Huerfano unit #225 & #112

Results of the analysis:
Dakota produced water.

ph : 6.50
resistivity: 0.58
Sp.Gr. : 1.005

Cations

Sodium : 3337.09 mg/l
Calcium : 200.4 mg/l
Magnesium : 340.2 mg/l
Potassium : 101.0 mg/l

Anions

Chloride : 6336.0 mg/l
Sulfate : 30.0 mg/l
Bicarbonate: 390.0 mg/l

Total TDS : 10,383.69 mg/l

Dakota Produced Oil

Appearance : light brown oil
API gravity@60' : 60.6
Cloud point : 39°F
Pour point : <10°F

Gallup Produced Oil

Appearance : dark brown oil
API gravity @60' : 41.8
Cloud point : <10°F
Pour point : <10°F

Commingled mixture of oils: 50:50

Appearance : dark brown oil
API gravity @60' : 49.0
Cloud point : <10°F
Pour point : <10°F

Meridian Oil
Huerfano unit #225 & #112

Summary of results:

1. No precipitation of materials was observed from the mixing of these fluids.
2. The mixture of two oils showed no adverse effects regarding: pour point, cloud point, or precipitation of solids.
3. The mixture of the two oils and the Dakota water showed no adverse effects regarding: emulsion, precipitation of solids.

The laboratory analysis forms are attached to this report.

ANALYSTS NO. 52-03-47

FIELD RECEIPT NO. _____

API FORM 45-1

API WATER ANALYSIS REPORT FORM

Company	<u>Mexican Oil</u>	Sample No.	<u>52-03-47</u>	Date Sampled	<u>2-2-47</u>
Field	<u>Sec. 30, T-26 N. R. 10 W</u>	County or Parish	<u>San Juan</u>	State	<u>N.M.</u>
Lease or Unit	<u>Well - 100-1-1-225</u>	Depth	<u>Dakota</u>	Water, B. D.	
Type of Water (Produced, Supply, etc.)		Sampling Point		Sampled By	

DISSOLVED SOLIDS

CATIONS	mg/l	meq/l
Sodium, Na (calc.)	<u>2237.09</u>	<u>45.15</u>
Calcium, Ca	<u>200.4</u>	<u>10.0</u>
Magnesium, Mg	<u>240.2</u>	<u>23.0</u>
Barium, Ba	<u>—</u>	<u>—</u>
Potassium, K	<u>101.0</u>	<u>2.69</u>

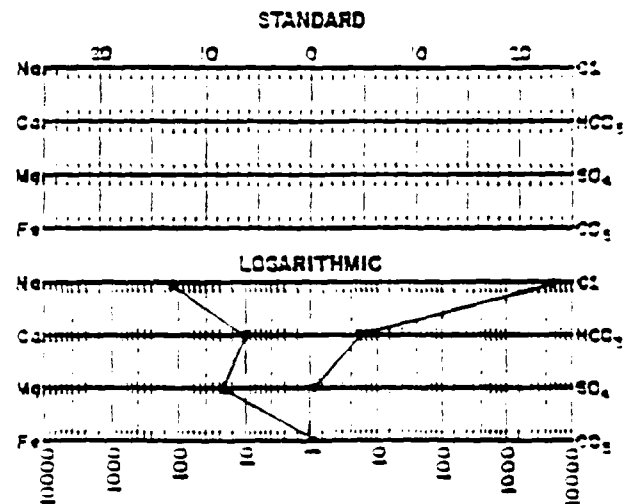
OTHER PROPERTIES

pH	<u>6.50</u>
Specific Gravity, 60/60 F.	<u>1.05</u>
Resistivity (ohm-meters)	<u>72 F.</u>
Total Hardness	<u>1400</u>

ANIONS

Chloride, Cl	<u>2336</u>	<u>178.72</u>
Sulfate, SO ₄	<u>30</u>	<u>0.624</u>
Bicarbonate, CO ₃	<u>0.0</u>	<u>0.0</u>
Carbonate, HCO ₃	<u>390</u>	<u>6.39</u>
Hydroxide, OH	<u>0.0</u>	<u>0.0</u>

WATER PATTERNS — meq/l

Total Dissolved Solids (calc.) 10,353.69Fe (total) 0.0
Sds. as H₂S 0.0

MARKS & RECOMMENDATIONS:

ANALYST: [Signature]

PLEASE REFER ANY QUESTIONS TO:

WESTERN CO. OF NORTH AMERICA
KINGSTON, N.M.

O. 327-6222



Date 4-4-92

Rocky Mountain Region

THE WESTERN COMPANY

Oil Analysis

Operator <u>Meridian Oil</u>	Date Sampled _____
Well <u>Huerfano Unit # 225</u>	Date Received <u>4-2-92</u>
Field <u>Sec. 30, T26N, R10W</u>	Submitted By <u>J. Smith</u>
Formation <u>Dakota</u>	Worked By <u>L. Diede</u>
Depth _____	Sample Description _____
County <u>San Juan</u>	<u>light brown oil/condensate</u>
State <u>NM</u>	_____

API Gravity 60.6 ° at 60°F

Paraffin Content _____ % by weight

Asphaltene Content _____ % by weight

Pour Point 410 °F

Cloud Point 39 °F

Comments:

Analyst JD



Date 4-4-92

Rocky Mountain Region

THE WESTERN COMPANY

Oil Analysis

Operator Mesacon Oil Date Sampled _____
Well Huerfano Unit #112 Date Received 4-2-92
Field Sec - T 26N, R 12W Submitted By J. Smith
Formation Gallup Worked By L. Diede
Depth _____ Sample Description _____
County San Juan dark brown oil.
State N.M.

API Gravity 41.8 ° at 60°F

Paraffin Content _____ % by weight

Asphaltene Content _____ % by weight

Pour Point <10 °F

Cloud Point <10 °F

Comments:

Analyst AD



Date 4-4-92

Rocky Mountain Region

THE WESTERN COMPANY

Oil Analysis

Operator Meridian Oil Date Sampled _____
Well Huerfano Unit #225/112 Date Received 4-2-92
Field _____ Submitted By J. Smith
Formation _____ Worked By L. Dieder
Depth _____ Sample Description _____
County San Juan Mixture of Gallup
State NM Dakota Oils (50:50)

API Gravity 49.2° at 60°F

Paraffin Content _____% by weight

Asphaltene Content _____% by weight

Pour Point <10 °F

Cloud Point <10 °F

Comments: No precipitates present
Oils mixed easily, with no
separations noted.

Analyst _____