Tenneco Oil
Exploration and Production
A Tenneco Company

Western Rocky Mountain Division

6162 South Willow Drive
P.O. Box 3249
Englewood, Colorado 80155
(303) 740-4800

RECEIVED
JUL 1 1988
OIL CONSERVATION DIVISION
SANTA FE

June 27, 1988

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

Attention: William LeMay

Re: SWD Application
Meridian Oil Inc
Pump Canyon SWD No. 1
Sec. 7, T30N,R8W
San Juan County, New Mexico

Gentlemen:

Attached is a copy of a letter waiver from Meridian Oil, Inc., which has been executed on behalf of Tenneco indicating we have no objection to Meridian's proposed Pump Canyon SWD No. 1 located in Sec. 7, T30N,R8W, San Juan County, New Mexico.

Yours very truly,

TENNECO OIL COMPANY

Carley Watkins
Manager, Joint Interest

kc/1395Z
Attachment

cc: L. Jones
J. Pack
Meridian Oil, Inc.
Farmington, New Mexico

MERIDIAN OIL

June 6, 1988

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

Dear Mr. LeMay;

This is a request for a salt water disposal well located in the Morrison/Entrada formation.

It is intended to locate the Meridian Oil Inc.'s Pump Canyon SWD #1 at 1725' from the South line and 1850' from the East line of Section 7, T30N-R8W, San Juan County, New Mexico.

A copy of this application is being submitted to all offset operators by certified mail with a request that they furnish your Santa Fe office with a Waiver of Objection, and return one copy to this office.

Attached is the C-108, with accompanying support data for this proposal.

Sincerely Yours,

R. E. Fraley

Richard E. Fraley
Regional Production Engineer

WSS/lm
Encl.

WAIVER

Tenneco Oil Co hereby waives objection to Meridian Oil Inc.'s Pump Canyon SWD #1 as proposed above.

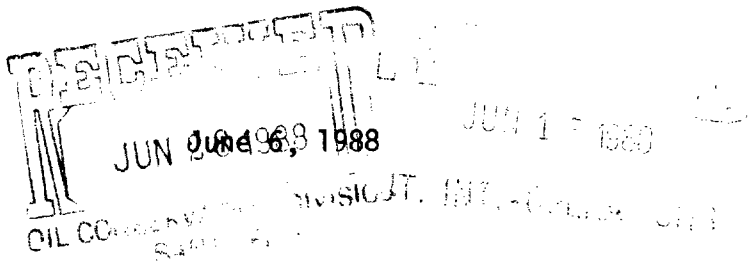
BY: _____ Date 6/29/88

c: Conoco Inc.
Unicon Producing Co.
Tenneco Oil Co.

RECEIVED

Meridian Oil Inc., 3535 East 30th St., P.O. Box 4289, Farmington, New Mexico 87499-4289, Telephone:505-327-0251

MERIDIAN OIL



June 6, 1988

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

Dear Mr. LeMay;

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It is intended to locate the Meridian Oil Inc.'s Pump Canyon SWD #1 at 1725' from the South line and 1850' from the East line of Section 7, T30N-R8W, San Juan County, New Mexico.

A copy of this application is being submitted to all offset operators by certified mail with a request that they furnish your Santa Fe office with a Waiver of Objection, and return one copy to this office.

Attached is the C-108, with accompanying support data for this proposal.

Sincerely Yours,

R. E. Fraley

Richard E. Fraley
Regional Production Engineer

WSS/lm
Encl.

WAIVER

Union Texas Petroleum, operator for Unicon Producing Co., hereby waives objection to Meridian Oil Inc.'s Pump Canyon SWD #1 as proposed above.

BY: W R Cooper Date 6/23/88

c: Conoco Inc.
Unicon Producing Co.
Tenneco Oil Co.

MERIDIAN OIL

December 22, 1988

State of New Mexico
Oil Conservation Division
ATTN: Mr. Ernie Bush
1000 Rio Brazos Road
Aztec, New Mexico 87410

Dear Mr. Bush:

In order to comply with Order No. SWD-344, the following has been enclosed:

1. Revised Completion Procedure and wellbore diagram. This represents completion only in the Entrada formation.

2. Bottom hole pressure curves from the step rate test performed on December 18, 1988.

3. Water analysis from swab runs made prior to the step rate test. The samples appear to be a mixture of Entrada formation water and load water.

4. Cement bond log, showing 7" casing with cement top at ±4460', 100% bond across 9 5/8" shoe, and good bond to the liner top.

As more data becomes available, the results will be sent directly to your office.

Further verbal approval is sought to initiate water injection operations by December 27, 1988 after the following conditions have been met:

- NMOCD witness annulus pressure test of 4 1/2" internally coated tie-back string. This will ensure that no communication exists between seals and Entrada formation.
- 4 1/2" - 7" annulus is filled with packer fluid preventing corrosion.
- Pressure recording devices that will be installed to continuously monitor tubing and annulus pressure.
- Pressure limiting device that will not allow more than 1000 psig applied tubing head pressure.
- A volume totalizer that will measure cumulative bbls. injected.

Please contact me at 326-9712 at your earliest convenience.

Very truly yours,

R. E. Fraley

R. E. Fraley
Regional Production Engineer

REF:WSS:car
Enclosures (as stated)
cc: David Catanach

Meridian Oil Inc. 3535 East 30th St. P.O. Box 4289 Farmington, New Mexico 87499-4289 Telephone 505-327-0251

Pertinent Data Sheet - Pump Canyon SWD #1

Location: 1725' FSL, 1850' FEL, Sec. 7, T30N-R8W, San Juan County, NM

Field: Entrada Morrison **Elevation:** 5972'GL **TD:** 8510'
5986'KB

Casing Record:

Hole Dia.	Csg. Size	Jts. Run	Wt. & Grade	Depth Set	Cement Vol.	Top Cement
26"	20"	12	106&133# K-55	117'	875 sx	Surface
17.5"	13 3/8"	74	68 & 61# K-55	3072'	1700 sx	Surface
12.25"	9 5/8"	60	40# N-80	5536'	900 sx	L.T.
				2921' (Liner, top)		
8.75"	7"	187	23# N-80	8202'	140 sx	
			S.T. @	7364'	600 sx	4530'
6.25"	4 1/2"	12	11.6# N-80	8510'		
				8164' (Liner, top)		Uncemented

Formation Tops:

San Jose	Surface	Mancos	5438'
Ojo Alamo	1450'	Gallup	6284'
Kirtland	1650'	Greenhorn	6985'
Fruitland	2388'	Graneros	7044'
Pic. Cliffs	2753'	Dakota	7139'
Lewis	2910'	Morrison	7388'
Chacra	3436'	Bluff	7909'
Cliffhouse	4385'	Todilto	8221'
Menefee	4602'	Entrada	8236'
Pt. Lookout	4987'	Carmel	8466'

Logging Record: DIL, LDT, CNL, NGT, SDT, Frac Height

Coring Record: Side wall cores @ 8241', 8251', 8261', 8274', 8280' and 8461'. K_{air} = 0.03 to <0.01 MD; K_w = 0.0 MD; ϕ avg. = 4.35%.

Pertinent Information: Lost 1400 bbls of LCM mud at 8273' - 8276' during drilling operations. Set 7" at 8202' with external packer at 8196'. Drill to TD with air-foam. During sidewall coring operations recovered large amount iron fines. Probable cause corrosion problems associated with air drilling, extent unknown.

Vendors:

Perforators:	Petro Wireline (505) 326-6669
Treatment Co:	Halliburton Company (505) 325-3575
Packer:	Baker Services-Brown Packer (505) 325-0216
Pressure Bomb:	Tefteller, Inc. (505) 325-1731
Hy-Tech Tools:	Ponder Fishing Tools (505) 325-8961

Tanks Required: 1735 bbls - 370 bbl/tank = 5 tanks

****Use Fruitland Coal water, filtered to 1 micron nominal.

Special Considerations: This will be an injection well, very tight matrix formation, use caution when applying pipe dope (doping pin ends would be better).

Completion Procedure

Pump Canyon SWD #1

1. Notify BLM and NMOCD that completion procedures are commencing.

2. MOL with completion rig, hold safety meeting, install safety signs and proper fire equipment at strategic points. Comply with all BLM, NMOCD and MOI safety regulations. RU.

3. NU 5000# BOP, test operation.

4. Make sure that fluid level is above 4400'. RU wireline unit, run CCL-GR from 8510' (PBTD) to liner top at 8164', then run CCL-GR-CBL from 8164' to 7130'. Run CBL across estimated cement top at ±4530'. Locate top of fluid. Set CIBP at ±8509'.
   - Evaluate CBL for possible squeeze job.
   - If micro annulus is present, relog with 1000 psi applied pressure.

5. Perforate the Entrada Sandstone using a 3 1/8" steel carrier gun with 0.42" diameter, 10 grams from the bottom up. Use caution, well may go on a vacuum.

   8236' - 8264' = 28'
   8270' - 8286' = 16'
   8294' - 8308' = 14'
   8344' - 8358' = 14' Mid-point = 8351'
   8426' - 8434' = 8'
   8440' - 8448' = 8'
   8460' - 8466' = 6'

   - Use 1 spf 120° phase for a total of 94 shots.

6. RD wireline unit, release.

7. Shoot fluid level, record depth and time.

8. PU Hy-Tech tool and packer assembly on 2 7/8" workstring. Set packer at ±8120'. Stroke tool to establish returns. Record estimated volume of fluid recovered. Pump Failed
   - If fluid is muddy, continue operations until fluid cleans up.
   - If continuous muddy fluid and high rate, consider landing tubing. RU swabbing unit and swab until well cleans up.
   - If no returns, release packer, TOOH, check tool.
   - Obtain three samples marked with date, time, depth, formation and well name.

9. Load backside with filtered water. Pressure test casing to 5000 psi. Have BLM and NMOCD witness test. Hold for 10 minutes. Release packer. TOOH.

10. Prepare to run step rate test. Preset recorder to every 30 seconds for 5 hours, then every minute for the rest of the test. Set pressure bomb at ±8380'. Have BLM and NMOCD witness step rate test.

11. Rig up pump trucks and frac van. Pressure test lines to 3500 psi. Inject as follows:

    - Load hole with water.
    - Start pumping at 1/2 BPM for 15 minutes. Then every 15 minutes increase by 1/2 BPM, until 5 BPM is obtained.
    - Note: Plot pressure vs. rate. When parting pressure observed, shut pumps down for falloff test.
    - Adjust rates depending on pressure response.
    - Recover bomb after 24 hours in the hole.

12. If step rate test indicates that fracture treatment is unnecessary, continue completion procedures, otherwise implement fracture design.

13. PU Brown type CPH liner packer, seal assembly and 6' tieback sleeve on 2 7/8" workstring. Sting into liner top at 8164'. Set packer. TOOH laying down 2 7/8" tubing.

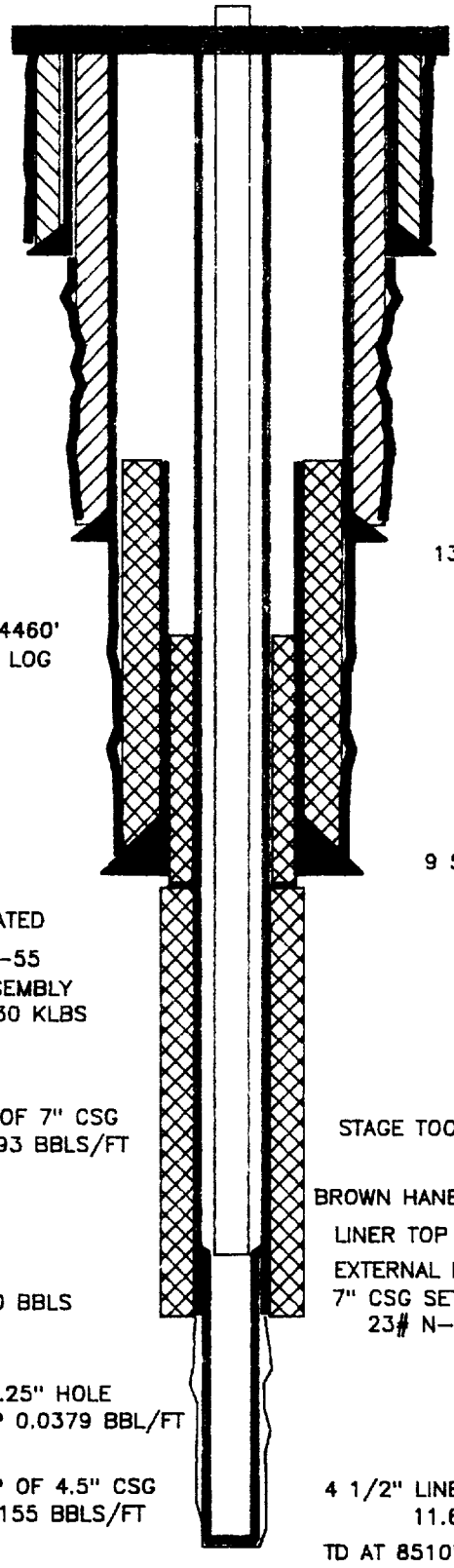
14. PU 4 1/2" seal assembly on 4 1/2" 10.5# J-55 internally coated injection string. Sting into tieback sleeve. Set 30,000 lbs. on packer. Test backside to 3000 psi for 10 minutes. Add corrosion inhibitor to backside. RD BOP, RU wellhead. Release rig.

Approved: D.C. Walker by T.D.H.
D. C. Walker

WSS:car

PUMP CANYON SWD #1

WELLBORE DIAGRAM
ENTRADA COMPLETION



GL AT 5982'

OJO ALAMO AT 1450'
KIRTLAND AT 1650'
FRUITLAND AT 2388'
PICTURED CLIFFS AT 2753'
LEWIS AT 2910'

CHARCA AT 3436'

CLIFF HOUSE AT 4385'
MENEFEE AT 4602'

POINT LOOKOUT AT 4987'

MANCOUS AT 5438'

GALLUP AT 6284'
GREENHORN AT 6985'
GRANEROS AT 7044'

DAKOTA AT 7139'

MORRISON AT 7390'

BLUFF AT 7909'

TODILTO AT 8211'
ENTRADA AT 8236'

CARMEL AT 8466'

12/22/88
CASH

CMT TO SURFACE

20" COND AT 495'
106.5# K-55

LINER TOP AT 2921'

13 3/8" INTMD AT 3075'
68# K-55

TOP CEMENT AT 4460'
CEMENT BOND LOG

9 5/8" LINER AT 5536'
40# N-80

TUBING: INT-COATED
4 1/2" 10.5# J-55
WITH 6' SEAL ASSEMBLY
SET DOWN +/- 30 KLBS

CAP OF 7" CSG
0.0393 BBLS/FT

STAGE TOOL AT 7364'

BROWN HANER WITH 6' SEAL SLEAVE
LINER TOP AT 8164'
EXTERNAL PACKER AT 8196'
7" CSG SET AT 8202'
23# N-80

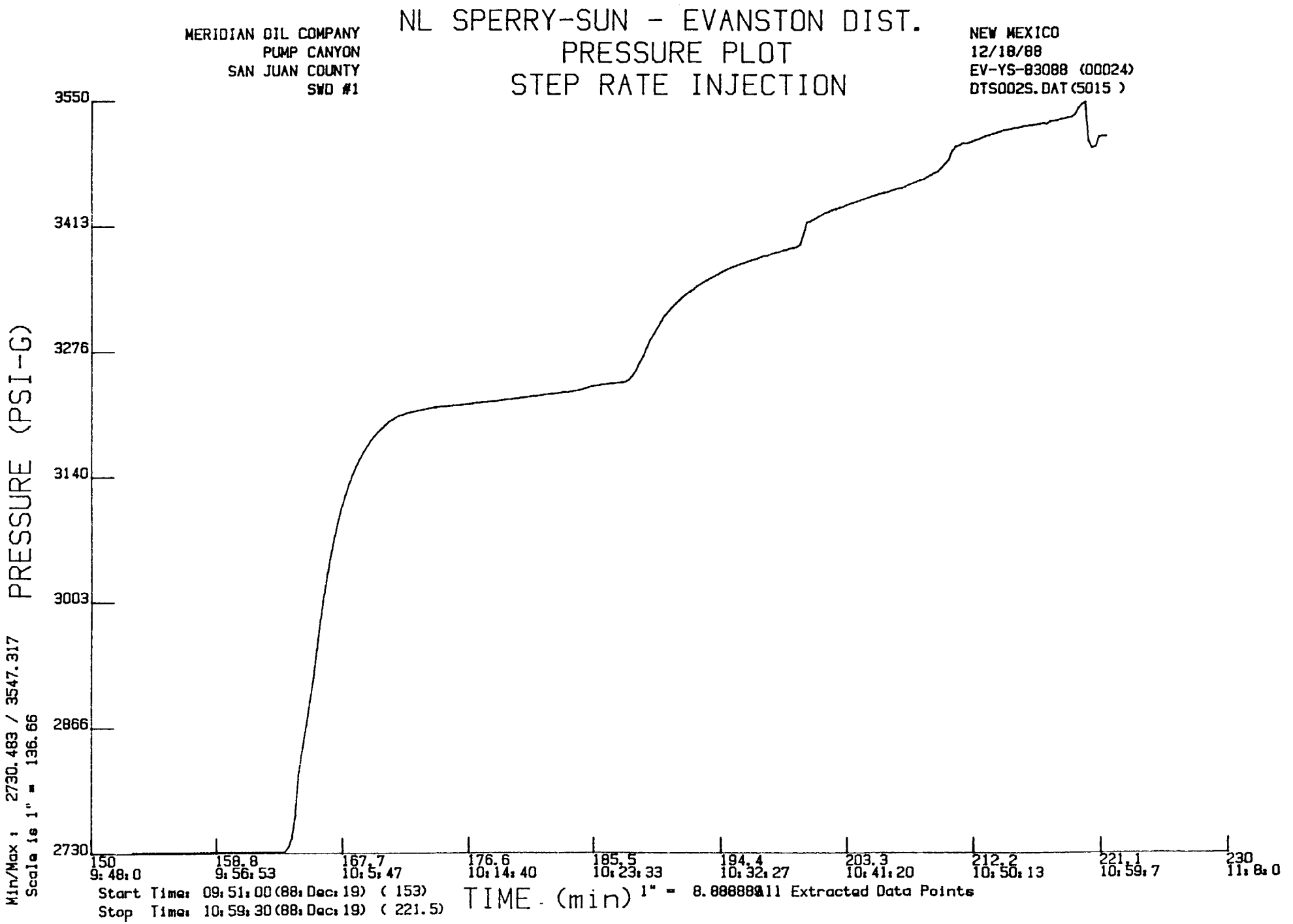
HOLE CAP = 330 BBLS

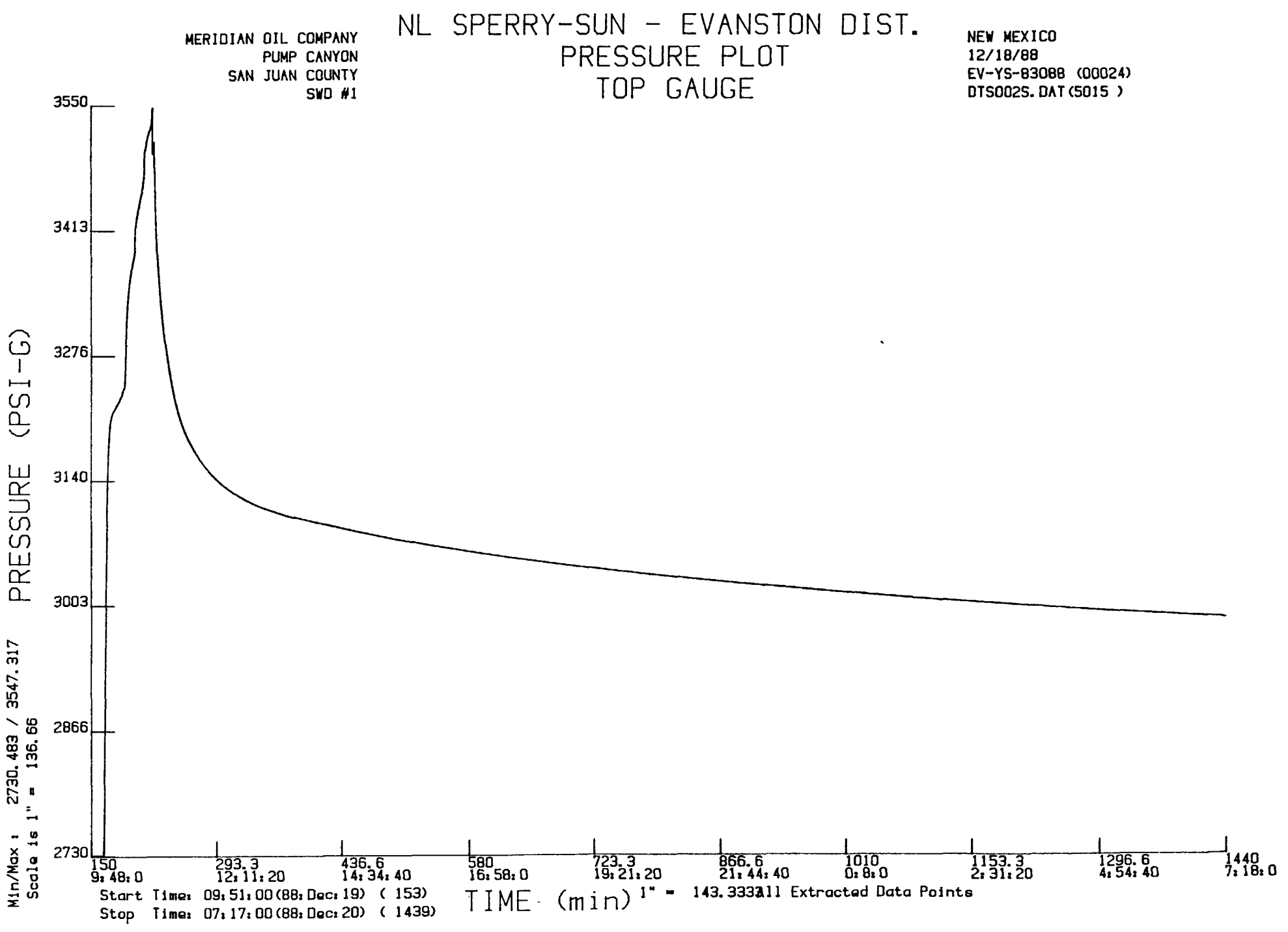
6.25" HOLE
CAP 0.0379 BBL/FT

CAP OF 4.5" CSG
0.0155 BBLS/FT

4 1/2" LINER SET AT 8510'
11.6# N-80 UNCEMENTED

TD AT 8510'


NL SPERRY-SUN - EVANSTON DIST.
PRESSURE PLOT
STEP RATE INJECTION
MERIDIAN OIL COMPANY
PUMP CANYON
SAN JUAN COUNTY
SWD #1
NEW MEXICO
12/18/88
EV-YS-83088 (00024)
DTS002S.DAT(5015)
PRESSURE (PSI-G)
3550
3413
3276
3140
3003
2866
2730
Min/Max : 2730.483 / 3547.317
Scale is 1" = 136.66
150
9:48:0
158.8
9:56:53
167.7
10:5:47
176.6
10:14:40
185.5
10:23:33
194.4
10:32:27
203.3
10:41:20
212.2
10:50:13
221.1
10:59:7
230
11:8:0
Start Time: 09:51:00(88:Dec:19) (153)
Stop Time: 10:59:30(88:Dec:19) (221.5)
TIME (min) 1" = 8.888888
All Extracted Data Points


NL SPERRY-SUN - EVANSTON DIST.
PRESSURE PLOT
TOP GAUGE
MERIDIAN OIL COMPANY
PUMP CANYON
SAN JUAN COUNTY
SWD #1
NEW MEXICO
12/18/88
EV-YS-83088 (00024)
DTS002S.DAT(5015)
PRESSURE (PSI-G)
3550
3413
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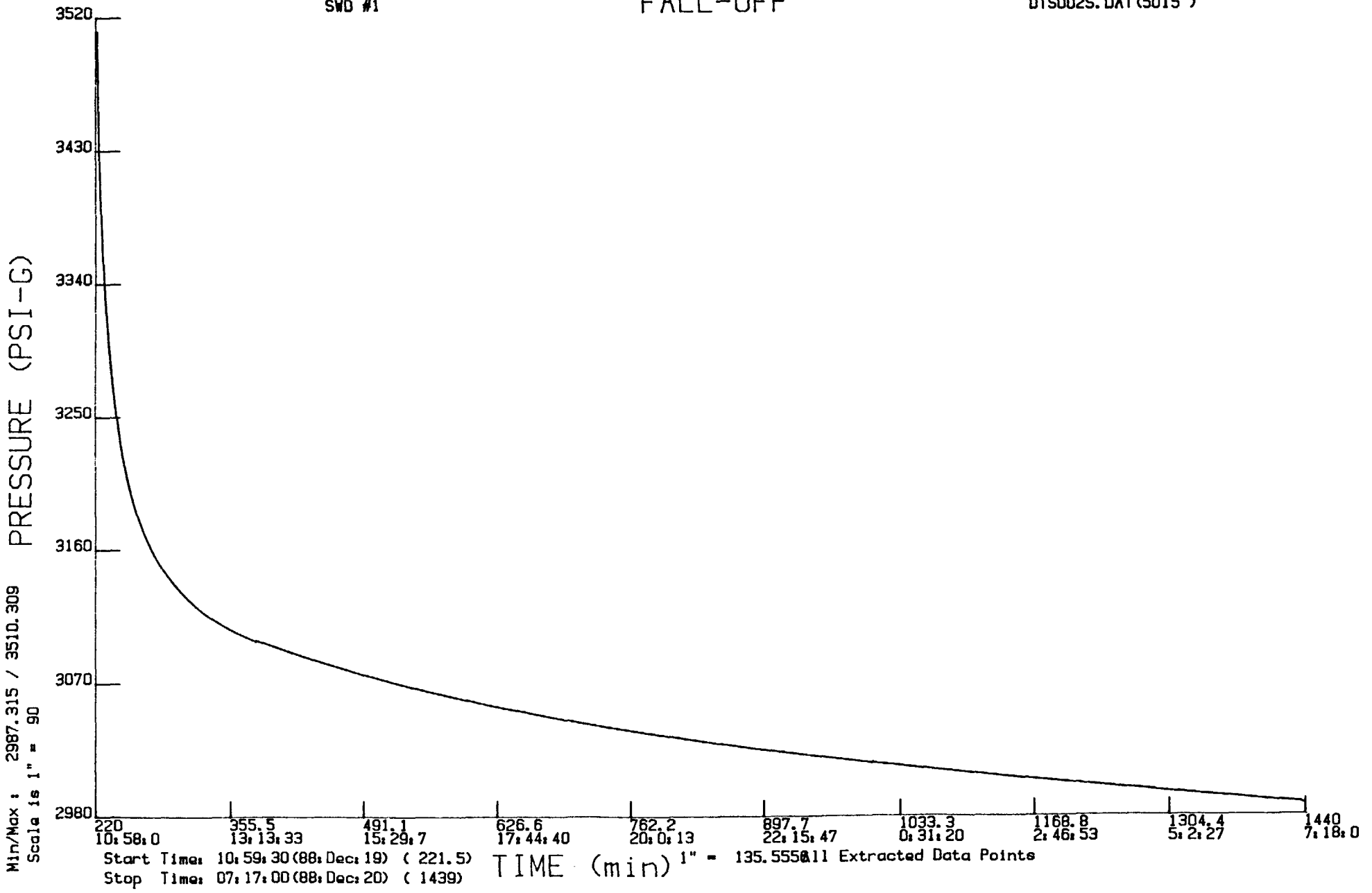
2866
2730
Min/Max : 2730.483 / 3547.317
Scale is 1" = 136.66
150
9:48:0
293.3
12:11:20
436.6
14:34:40
580
16:58:0
723.3
19:21:20
866.6
21:44:40
1010
0:8:0
1153.3
2:31:20
1296.6
4:54:40
1440
7:18:0
Start Time: 09:51:00(88:Dec:19) (153)
Stop Time: 07:17:00(88:Dec:20) (1439)
TIME (min) 1" = 143.333All Extracted Data Points

MERIDIAN OIL COMPANY
PUMP CANYON
SAN JUAN COUNTY
SWD #1

NL SPERRY-SUN - EVANSTON DIST.
PRESSURE PLOT
FALL-OFF

NEW MEXICO
12/18/88
EV-YS-83088 (00024)
DTS002S.DAT(5015)



Inter-Mountain Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

API WATER ANALYSIS REPORT FORM

CLIENT: **Meridian Oil Co.**

Date Sampled: 12/16/88 @ 1030 Well Location: Pump Canyon SWD #1
Date Received: 12/21/88
Date Analyzed: 12/21/88
Date Reported: 12/21/88 IML Lab Number: F2337

Dissolved Solids			Other Properties	
Cations	mg/l	me/l		
Sodium, Na	5370	233.57	pH, s.u.....	8.18
Sodium, Na (calc.).....	4930	214.57	Specific Gravity 60/60 F	1.013
Calcium, Ca.....	16	1.30	Resistivity (ohm-meter). @ 77 F.	0.498
Magnesium, Mg.....	71	3.53		
Barium, Ba.....	---	---		

Item 3A
SWD-339

Anions		
Chloride, Cl.....	6565	185.18
Sulfate, SO4.....	1200	25.00
Carbonate, CO3.....	-0-	-0-
Bicarbonate, HCO3.....	567	9.15

Total Dissolved Solids (180C), mg/l... 15500

Total Dissolved Solids (calc.), mg/l.. 13790

Sulfide, as H2S..... ---

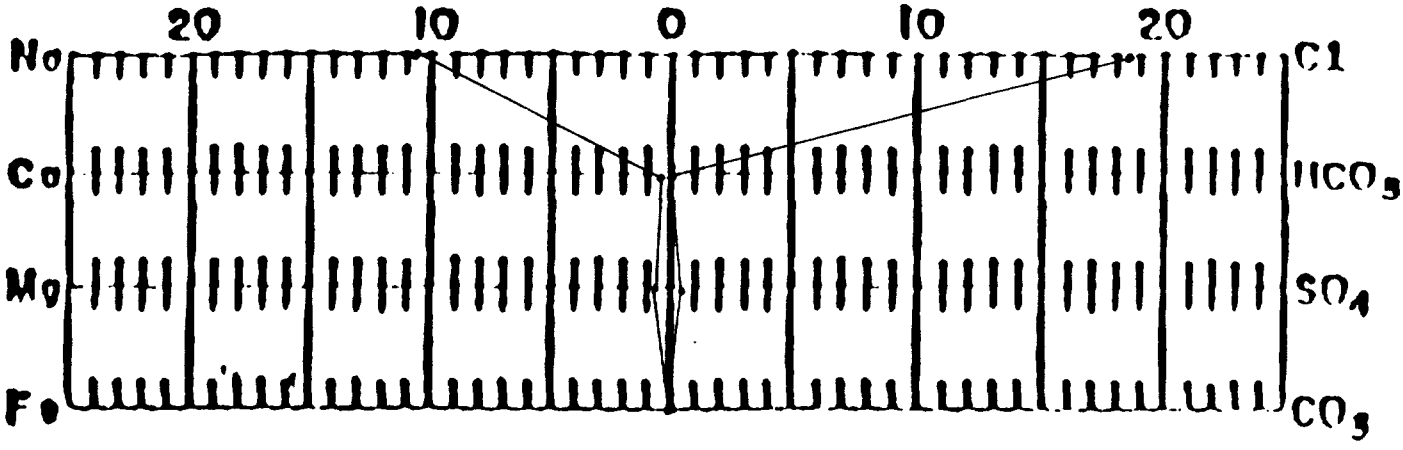
Approved by: Ron R Richardson
Ron R. Richardson
Laboratory Director

iml
Inter-Mountain
Laboratories, Inc.

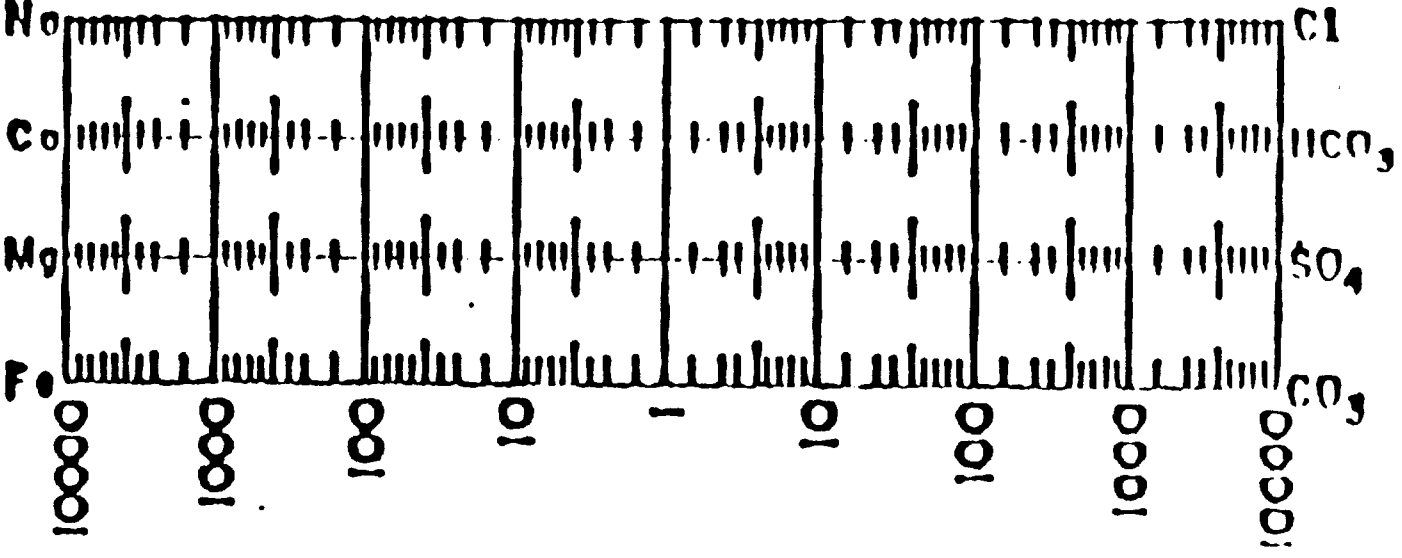
2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

WATER PATTERNS — *me/l*

STANDARD



LOGARITHMIC



12/16/88 - 10:30

Inter·Mountain
Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

API WATER ANALYSIS REPORT FORM

CLIENT: **Meridian Oil Co.**

Date Sampled: 12/16/88 @ 1730
Date Received: 12/21/88
Date Analyzed: 12/21/88
Date Reported: 12/21/88

Well Location: Pump Canyon SWD #1

IML Lab Number: F2338

Dissolved Solids

Cations	mg/l	me/l
Sodium, Na	5370	233.57
Sodium, Na (calc.)	4880	212.33
Calcium, Ca	30	2.46
Magnesium, Mg	141	7.06
Barium, Ba	---	---

Anions

Chloride, Cl	6840	192.96
Sulfate, SO4	825	17.19
Carbonate, CO3	-0-	-0-
Bicarbonate, HCO3	713	11.70

Total Dissolved Solids (180C), mg/l... 15510

Total Dissolved Solids (calc.), mg/l.. 13990

Sulfide, as H2S..... ---

Other Properties

pH, s.u.	7.18
Specific Gravity 60/60 F	1.012
Resistivity (ohm-meter). @ 77 F.	0.499

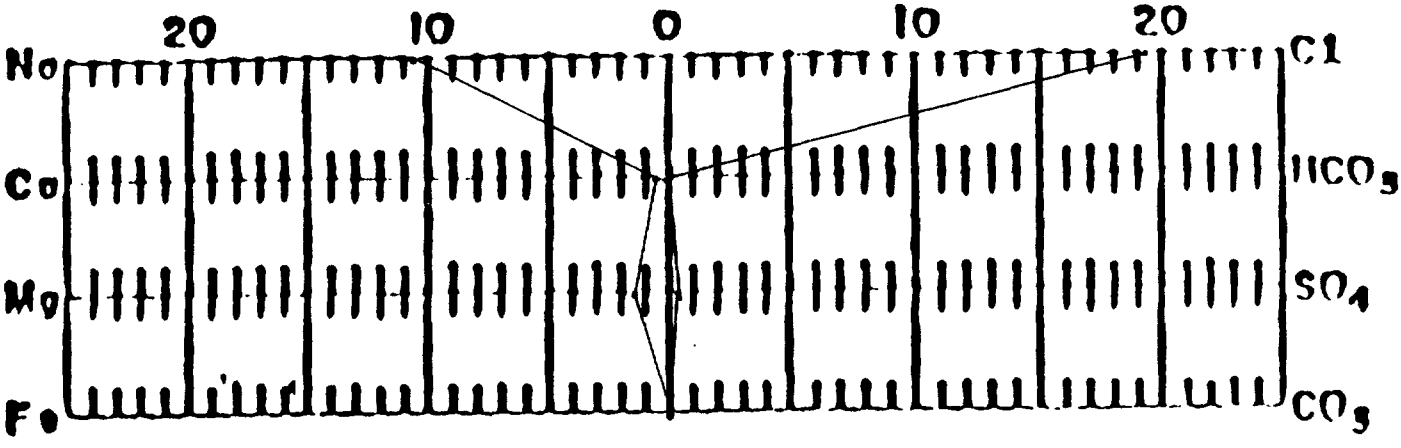
Approved by: Ron R Richardson
Ron R. Richardson
Laboratory Director

imi
Inter-Mountain
Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

WATER PATTERNS — *me/l*

STANDARD



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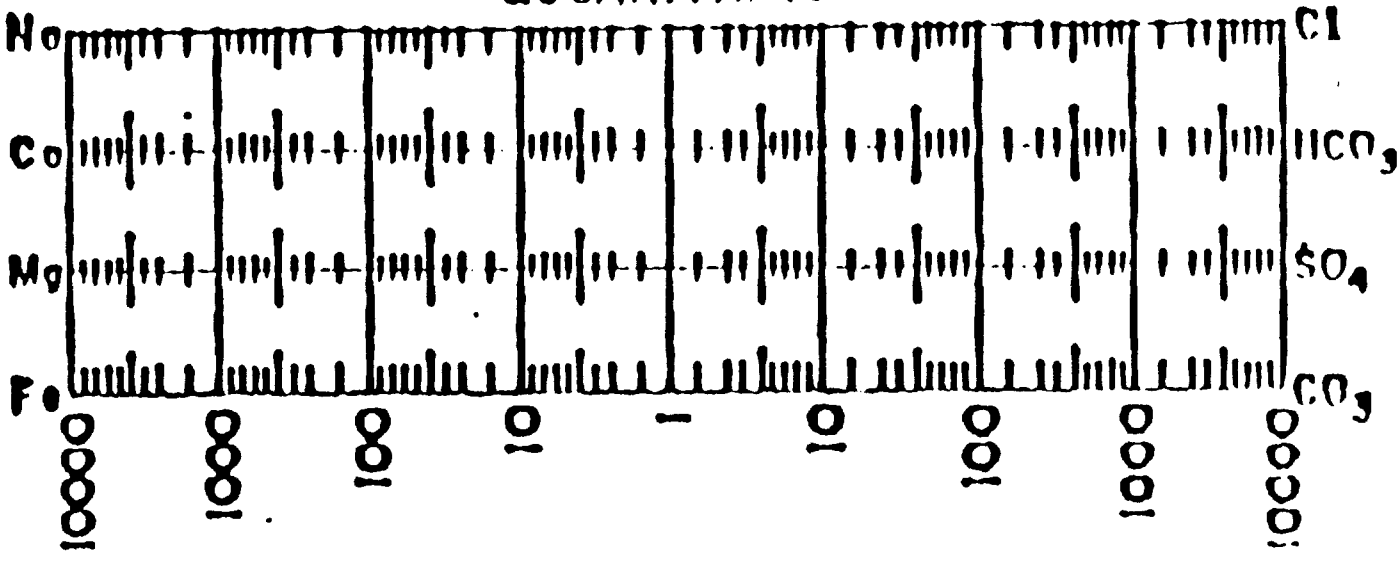


12/16/88 17:30 hrs

Inter·Mountain
Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

API WATER ANALYSIS REPORT FORM

CLIENT: Meridian Oil Co.

Date Sampled: 12/17/88
Date Received: 12/21/88
Date Analyzed: 12/21/88
Date Reported: 12/21/88

Well Location: 1st Run

IML Lab Number: F2339

Dissolved Solids

Cations	mg/l	me/l
Sodium, Na	5280	229.67
Sodium, Na (calc.)	4820	209.47
Calcium, Ca	13	1.10
Magnesium, Mg	30	1.51
Barium, Ba	---	---

Anions		
Chloride, Cl	6470	192.96
Sulfate, SO4	850	17.71
Carbonate, CO3	-0-	-0-
Bicarbonate, HCO3	719	11.78

Total Dissolved Solids (180C), mg/l... 14270

Total Dissolved Solids (calc.), mg/l.. 13370

Sulfide, as H2S..... ---

Other Properties

pH, s.u.	8.10
Specific Gravity 60/60 F	1.021
Resistivity (ohm-meter). @ 77 F.	0.483

Approved by: Ron R. Richardson

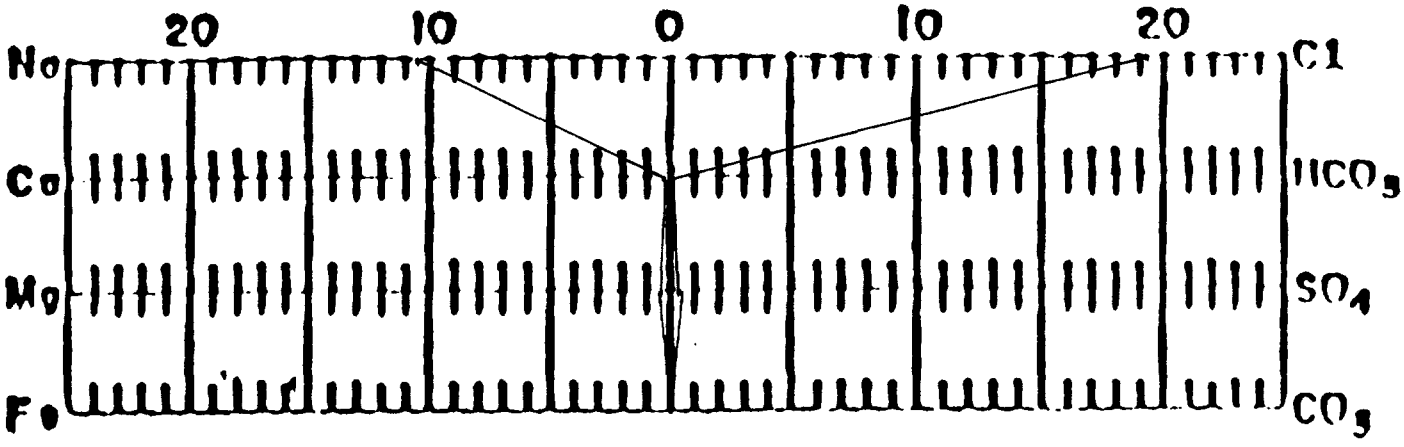
Ron R. Richardson
Laboratory Director

Inter-Mountain
Laboratories, Inc.

2506 West Main Street
Farmington, New Mexico 87401
Tel. (505) 326-4737

WATER PATTERNS — *me/l*

STANDARD



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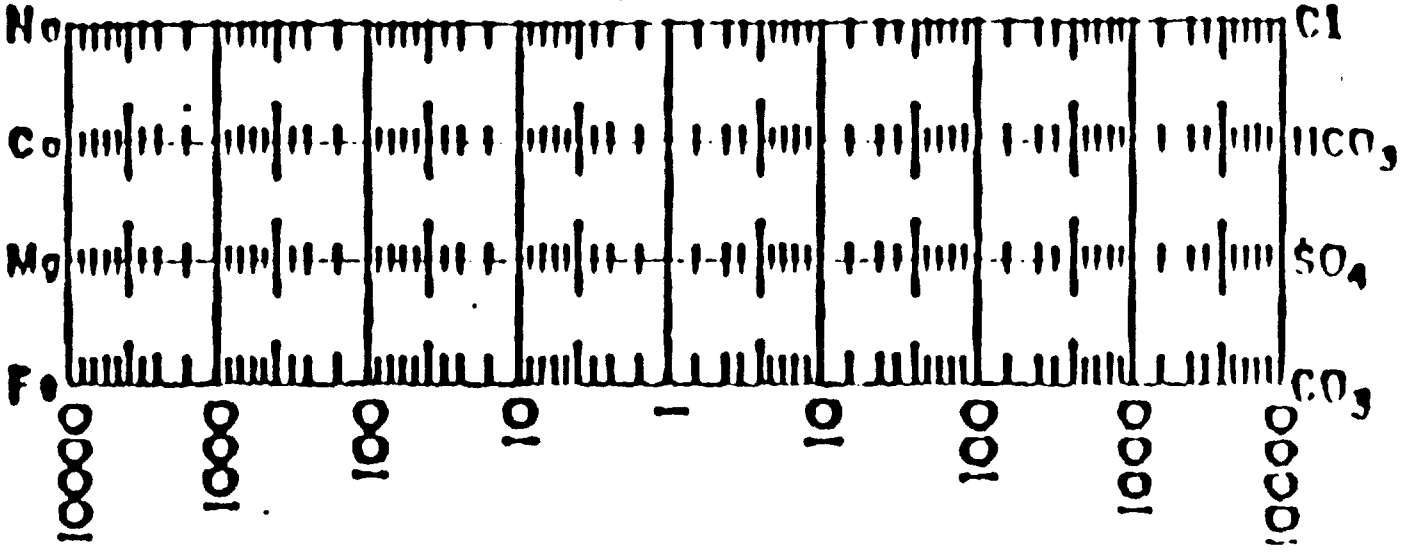

12/17/88