& GEOLOGICAL LABORATORIES

CHEMISTS GEOLOGISTS ENGINEERS

CASPER, WYOMING

October 14, 1957

Sunray Mid-Continent Oil Company
1101 Wilco Bldg.
Midland, Texas

Re: Back Pressure Test
Federal I No. 1
San Juan County, New Mexico
October 9, 1957

E-11-29N-14W

Gentlemen:

Attached are data sheets showing the results of the one point back pressure test on your Federal No.I-1 well, San Juan County, New Mexico.

The absolute open flow potential was calculated by New Mexico State recommended methods and was found to be 1,360 Mcf per day. After being shut-in for 72 hours the bottom hole pressure was measured as 1151 psig with 805 psig on the tubing and 160 psig on the casing.

On October 3, 1957, an attempt was made to test the well by the regulation four point method with a pressure bomb in the hole. The pressure failed to level off and because there was considerable water production the test was discontinued. The well practically killed itself with water.

October 9th the one point back pressure test was taken by flowing through the tubing through a separator. The rate of flow was sufficiently large that it was not considered good practice to leave the bomb on bottom. Static pressure at this time checked the 1151 psig measured later. At the end of the three (3) hour flow period the bomb was lowered to datum (3500) within 15 minutes after flow was discontinued and pressure recorded at datum at that time was 687 psig. This pressure was used to calculate absolute volume. Gas volumes were measured with an orifice well tester from the separator.

Chemical & Geological Laboratories were happy to have been of service to you and your firm and trust the work was completed to your satisfaction.

Very truly yours,

CHEMICAL & GEOLOGICAL LABORATORIES

F. Ray Wheeler

F. Ray Wheeler
Manager, Engineering Department

FRW:bb

CLI-10
PRAIRIE PUBLISHING CO — 59269

CHEMICAL & GEOLOGICAL LABORATORIES

521 South Center St. P. O. Box 279
Casper, Wyoming

GAS ANALYSIS REPORT

Field Wildcat, New Mexico
Operator Sunray Mid-Continent Oil Company
Formation Depths
Analyzed by SMB
Remarks Gas sample taken before back pressure tests 12 pm, 10-3-57

Well No. New Mexico Federal No. I-1
Location
Lab. No. E 1505
Date October 15, 1957

ORSAT ANALYSIS

	% by Volume
Oxygen	
Nitrogen	
Carbon dioxide	
Hydrogen sulfide	
Methane	
Ethane and higher	
Specific Gravity (calculated)	
Specific Gravity (observed)	
Gross B.t.u. per cu. ft. at 60° F. and 14.7 psia	

HYDROGEN SULFIDE
(by Tutwiler Method)

Grains of hydrogen sulfide per 100 cu. ft. of gas at 60° F. and 14.7 psia

Percentage of hydrogen sulfide

PODBIELNIAK
Low Temperature Fractionation

	% by Volume	G. P. M.
Oxygen	0	
Nitrogen	2.00	
Carbon dioxide	0.82	
Hydrogen sulfide	0	
Methane	82.76	
Ethane	7.10	
Propane	4.34	1.191
Isobutane	1.00	0.326
N-butane	1.19	0.374
Isopentane	0.30	0.109
N-pentane	0.33	0.119
Hexanes & higher	0.16	0.074
TOTAL	100.00	2.193

Gross B.t.u. at 60°F. and 14.7 psia by Pod. 1177
Specific Gravity by Pod. 0.695
Specific Gravity by Weight 0.694

G. P. M.

Actual pentanes +	0.302
Calculated at 12 lbs.	-
Calculated at 15 lbs.	0.305
Calculated at 22 lbs.	0.353
Calculated at 26 lbs.	0.388

Vapor pressure (calculated) of actual pentanes + 14.48

Remarks and Conclusions:

CHEMICAL & GEOLOGICAL LABORATORIES

GLENDIVE CASPER .. FARMINGTON
EDMONTON CALGARY REGINA

FIELD NOTES AND READINGS

Well No.: **Federal I - No. 1** Location: **San Juan County, New Mexico**

Date: **October 9, 1957** Elevation: **5460 KB**

Bar. Press.: **13.2 psi** Top fm.: **Perfs. - 3493 - 3505** T.D.: **3510**

Time Hours	Orifice in.	Working Pressure psig. Tubing	Working Pressure psia Casing	Ps psia.	Choke T. F.	Remarks
0	S.I.	444	665			Open @ 10:45 am to sep. flowing gas and water. Flow meter was 2" size with 1¼" orifice.
½	3/4	110	404		80	
1	3/4	102	390		80	
1 ½	3/4	100	380		80	
2	3/4	100	377		80	
2 ½	3/4	96	375		80	Well was flowing through 2" EUE tubing. Rate too large to keep bomb on bottom during flow.
3	3/4	96	372	700.2	80	

Bomb was lowered to bottom within 15 minutes after shutting well in. Pressure recorded was 687 psig @ 3500.

After 72 hours S.I. time- BHP 1151 psig - 1164.2 psia

CHEMICAL & GEOLOGICAL LABORATORIES

GLENDIVE CASPER FARMINGTON
EDMONTON CALGARY REGINA

ONE POINT

GAS WELL BACK PRESSURE TEST

Field: **Wildcat** County: **San Juan** State: **New Mexico**

Well Owner: **Sunray Mid-Continent Oil Co.** Lease: **Federal I** Well No: **1**

Location: Date of Test: **October 9, 1957**

Elevation: **5460 KB** Top Formation: P.T.D.: **3510**
Bottom Formation:
Date Completed: Midpoint: **or datum - 3500**
Perforations - 3493 - 3505
Formation: **Point Lookout** Casing: **5½" O.D.**
Tubing: **2" EUE @ 3502**
Average Gravity of gas: **0.650** Bottom-hole Temperature: **126° F.**

FIELD DATA

Run No.	Time of Run	Choke	Temperature	Stabilized Pressure psia
1	3	3/4	80°	**109.2 on tubing** **385.2 on casing**

VOLUME CALCULATIONS

Run No.	Stabilized Pressure psia	Coefficient	Gravity Factor	Temperature Factor	Compressibility Factor	Volume Mcf per day
1	109.2	($1\frac{1}{4}$" orifice - 14.7 psig = 952.2 x .9608 x .9813	-			897.8 MCF

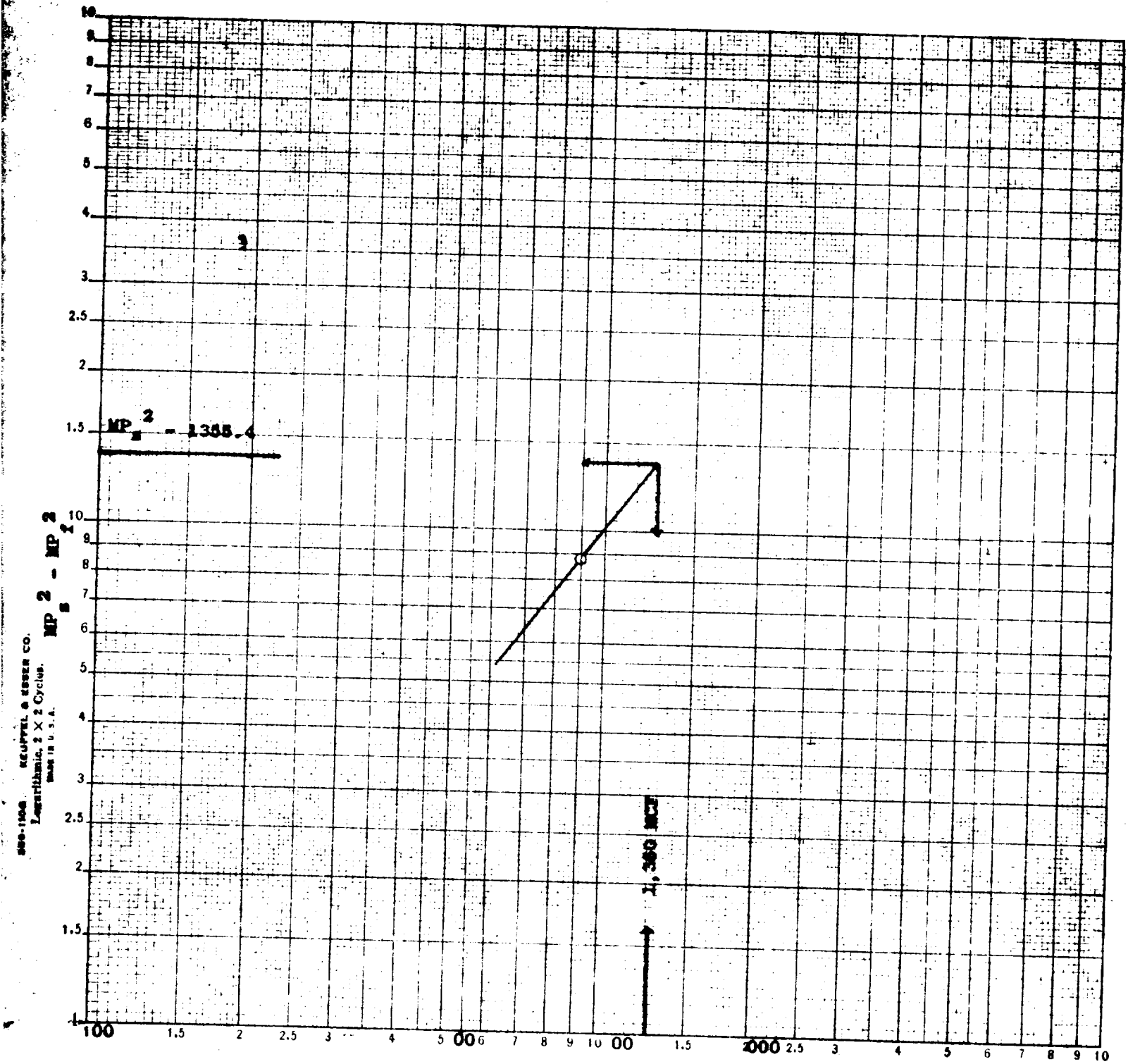
PRESSURE CALCULATIONS

P_s	1164.2	MP_s^2	1,355.4		
P_{f_1}	700.2	$MP_{f_1}^2$	490.3	$MP_s^2 - MP_{f_1}^2$	865.1
P_{f_2}		$MP_{f_2}^2$		$MP_s^2 - MP_{f_2}^2$	
P_{f_3}		$MP_{f_3}^2$		$MP_s^2 - MP_{f_3}^2$	
P_{f_4}		$MP_{f_4}^2$		$MP_s^2 - MP_{f_4}^2$	

Absolute potential, **- 1,360 MCF** MCF

Shut-in well head pressure: **805 psig on tubing**
160 psig on casing

Sunray Mid-Continent Oil Company
New Mexico Federal No. 1-4
Wildcat, New Mexico



Absolute Open Flow - 1,360 MCF
Shut-in well head pressure:
Tubing - 805 psig
Casing - 160 psig

CHEMICAL & GEOLOGICAL LABORATORIES

CHEMISTS GEOLOGISTS ENGINEERS

P. O. BOX 278
CASPER, WYOMING

October 14, 1957

Sunray Mid-Continent Oil Company
1101 Wilco Bldg.
Midland, Texas

Re: Back Pressure Test
Federal I No. 1
San Juan County, New Mexico
October 9, 1957

Gentlemen:

Attached are data sheets showing the results of the one point back pressure test on your Federal No.I-1 well, San Juan County, New Mexico.

The absolute open flow potential was calculated by New Mexico State recommended methods and was found to be 1,360 Mcf per day. After being shut-in for 72 hours the bottom hole pressure was measured as 1151 psig with 805 psig on the tubing and 160 psig on the casing.

On October 3, 1957, an attempt was made to test the well by the regulation four point method with a pressure bomb in the hole. The pressure failed to level off and because there was considerable water production the test was discontinued. The well practically killed itself with water.

October 9th the one point back pressure test was taken by flowing through the tubing through a separator. The rate of flow was sufficiently large that it was not considered good practice to leave the bomb on bottom. Static pressure at this time checked the 1151 psig measured later. At the end of the three (3) hour flow period the bomb was lowered to datum (3500) within 15 minutes after flow was discontinued and pressure recorded at datum at that time was 687 psig. This pressure was used to calculate absolute volume. Gas volumes were measured with an orifice well tester from the separator.

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Very truly yours,

CHEMICAL & GEOLOGICAL LABORATORIES

F. Ray Wheeler
Manager, Engineering Department

FRW: bb

CHEMICAL & GEOLOGICAL LABORATORIES

521 South Center St. P. O. Box 279
Casper, Wyoming

GAS ANALYSIS REPORT

Field Wildcat, New Mexico
Operator Sunray Mid-Continent Oil Company
Formation Depths
Analyzed by SMB
Remarks Gas sample taken before back pressure tests 12 pm, 10-3-57

Well No. New Mexico Federal No. I-1
Location
Lab. No. E 1505
Date October 15, 1957

ORSAT ANALYSIS

	% by Volume
Oxygen	
Nitrogen	
Carbon dioxide	
Hydrogen sulfide	
Methane	
Ethane and higher	
Specific Gravity (calculated)	
Specific Gravity (observed)	
Gross B.t.u. per cu. ft. at 60° F. and 14.7 psia	

HYDROGEN SULFIDE
(by Tutwiler Method)

Grains of hydrogen sulfide per 100 cu. ft. of gas at 60° F. and 14.7 psia

Percentage of hydrogen sulfide

PODBIELNIAK
Low Temperature Fractionation

	% by Volume	G. P. M.
Oxygen	0	
Nitrogen	2.00	
Carbon dioxide	0.82	
Hydrogen sulfide	0	
Methane	82.76	
Ethane	7.10	
Propane	4.34	1.191
Isobutane	1.00	0.326
N-butane	1.19	0.374
Isopentane	0.30	0.109
N-pentane	0.33	0.119
Hexanes & higher	0.16	0.074
TOTAL	100.00	2.193

Gross B.t.u. at 60° F. and 14.7 psia by Pod.	1177
Specific Gravity by Pod.	0.695
Specific Gravity by Weight	0.694

G. P. M.

Actual pentanes +	0.302
Calculated at 12 lbs.	-
Calculated at 15 lbs.	0.305
Calculated at 22 lbs.	0.353
Calculated at 26 lbs.	0.388

Vapor pressure (calculated) of actual pentanes + 14.48

Remarks and Conclusions:

CHEMICAL & GEOLOGICAL LABORATORIES

GLENDIVE CASPER FARMINGTON
EDMONTON CALGARY REGINA

FIELD NOTES AND READINGS

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½	3/4	110	404		80	
1	3/4	102	390		80	
1 ½	3/4	100	380		80	
2	3/4	100	377		80	
2 ½	3/4	96	375		80	Well was flowing through 2" EUE tubing. Rate too large to keep bomb on bottom during flow.
3	3/4	96	372	700.2	80	

Bomb was lowered to bottom within 15 minutes after shutting well in. Pressure recorded was 687 psig @ 3500.

After 72 hours S.I. time- BHP 1151 psig - 1164.2 psia

CHEMICAL & GEOLOGICAL LABORATORIES

GLENDIVE CASPER FARMINGTON
EDMONTON CALGARY REGINA

ONE POINT

GAS WELL BACK PRESSURE TEST

Field: **Wildcat** County: **San Juan** State: **New Mexico**

Well Owner: **Sunray Mid-Continent Oil Co.** Lease: **Federal I** Well No: **1**

Location: Date of Test: **October 9, 1957**

Elevation: **5460 KB** Top Formation: P.T.D.: **3510**
Bottom Formation:
Date Completed. Midpoint: **or datum - 3500**
Perforations - 3493 - 3505
Formation: **Point Lookout** Casing: **5½" O.D.**
Tubing: **2" EUE @ 3502**
Average Gravity of gas: **0.650** Bottom-hole Temperature: **126° F.**

FIELD DATA

Run No.	Time of Run	Choke	Temperature	Stabilized Pressure psia
1	3	3/4	80°	**109.2 on tubing** **385.2 on casing**

VOLUME CALCULATIONS

Run No.	Stabilized Pressure psia	Coefficient	Gravity Factor	Temperature Factor	Compressibility Factor	Volume Mcf per day
1	**109.2**	**(1¼" orifice - 14.7 psig = 952.2 x .9608 x .9813**			**-**	**897.8**

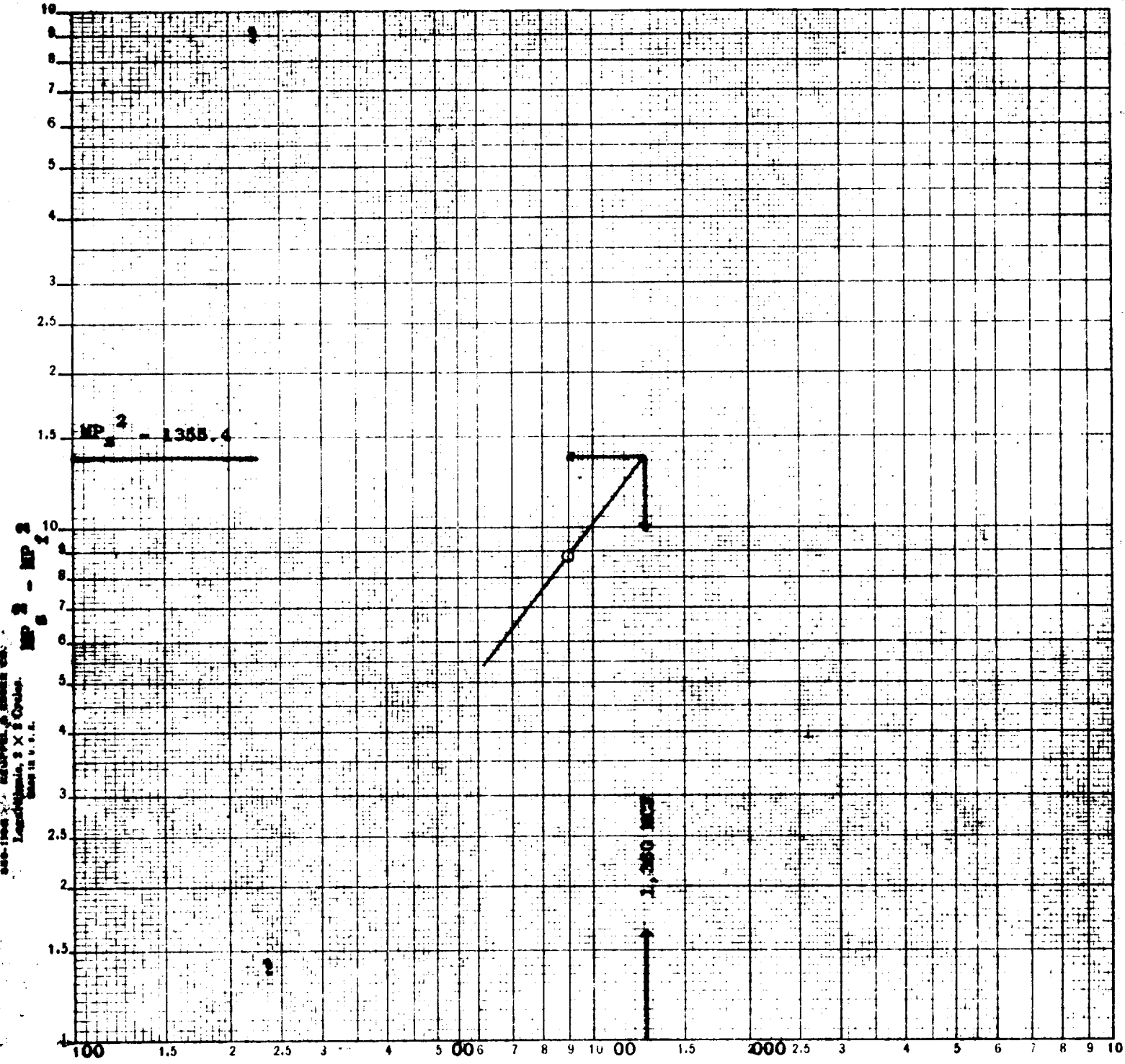
PRESSURE CALCULATIONS

P_s	1164.2	MPs^2	1,355.4		
Pf_1	700.2	MPf_1^2	490.3	$MPs^2 - MPf_1^2$	865.1
Pf_2		MPf_2^2		$MPs^2 - MPf_2^2$	
Pf_3		MPf_3^2		$MPs^2 - MPf_3^2$	
Pf_4		MPf_4^2		$MPs^2 - MPf_4^2$	

Absolute potential, **- 1,360 MCF**

Shut-in well head pressure: **805 psig on tubing**
160 psig on casing

Sunray Mid-Continent Oil Company
New Mexico Federal No. 1-A
Wildcat, New Mexico



Absolute Open Flow - 1,360 MCF
Shut-in well head pressure:
Tubing - 805 psig
Casing - 160 psig

CHEMICAL & GEOLOGICAL LABORATORIES

CHEMISTS GEOLOGISTS ENGINEERS

BOX 279
WYOMING

October 14, 1957

Sunray Mid-Continent Oil Company
1101 Wilco Bldg.
Midland, Texas

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Federal I No. 1
San Juan County, New Mexico
October 9, 1957

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Casper, Wyoming

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Analyzed by SMB
Remarks Gas sample taken before back pressure tests 12 pm, 10-3-57

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Location _____
Lab. No. E 1505
Date October 15, 1957

ORSAT ANALYSIS

	% by Volume
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Carbon dioxide	
Hydrogen sulfide	
Methane	
Ethane and higher	
Specific Gravity (calculated)	
Specific Gravity (observed)	
Gross B.t.u. per cu. ft. at 60° F. and 14.7 psia	

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(by Tutwiler Method)

Grains of hydrogen sulfide per 100 cu. ft. of gas at 60° F. and 14.7 psia	
Percentage of hydrogen sulfide	

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Low Temperature Fractionation

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CHEMICAL & GEOLOGICAL LABORATORIES

GLENDIVE CASPER FARMINGTON
EDMONTON CALGARY REGINA

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2	3/4	100	377		80	
2 ½	3/4	96	375		80	Well was flowing through
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Bomb was lowered to bottom within 15 minutes after shutting well in. Pressure recorded was 687 psig @ 3500.

After 72 hours S.I. time- BHP 1151 psig - 1164.2 psia

CHEMICAL & GEOLOGICAL LABORATORIES

GLENDIVE CASPER FARMINGTON
EDMONTON CALGARY REGINA

ONE POINT

GAS WELL BACK PRESSURE TEST

Field: Wildcat **County:** San Juan **State:** New Mexico

Well Owner: Sunray Mid-Continent Oil Co. **Lease:** Federal I **Well No:** 1

Location: **Date of Test:** October 9, 1957

Elevation: 5460 KB **Top Formation:** **P.T.D.:** 3510

Bottom Formation:

Date Completed: **Midpoint:** or datum - 3500

Perforations - 3493 - 3505

Formation: Point Lookout **Casing:** 5½" O.D.

Tubing: 2" EUE @ 3502

Average Gravity of gas: 0.650 **Bottom-hole Temperature:** 126° F.

FIELD DATA

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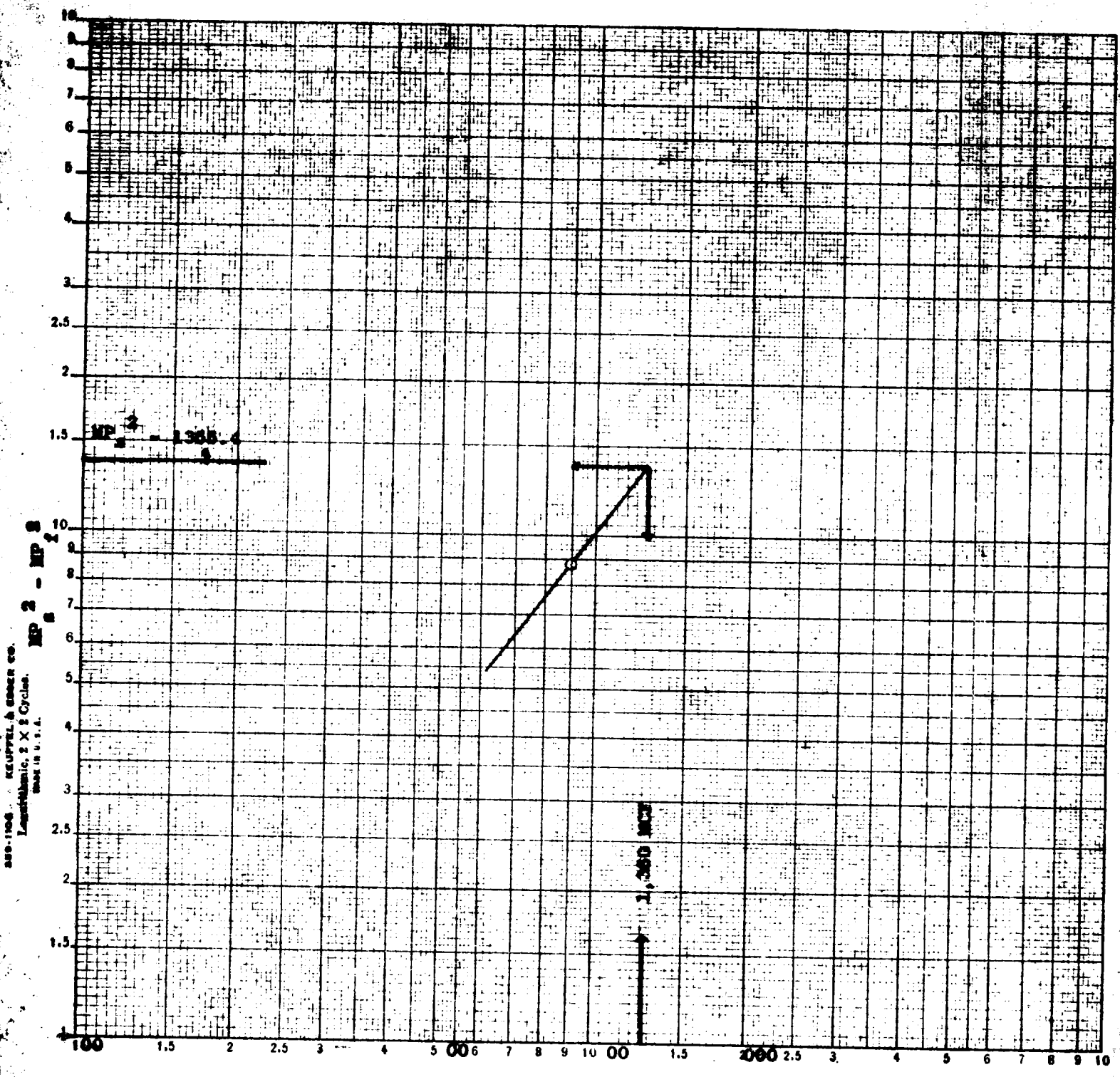
P_{f_2}		$MP_{f_2}^2$		$MP_s^2 - MP_{f_2}^2$	
P_{f_3}		$MP_{f_3}^2$		$MP_s^2 - MP_{f_3}^2$	
P_{f_4}		$MP_{f_4}^2$		$MP_s^2 - MP_{f_4}^2$	

Absolute potential, - 1,360 MCF

Shut-in well head pressure: 805 psig on tubing
160 psig on casing

Sunray Mid-Continent Oil Company
New Mexico Federal No. 1-[illegible]
Wildcat, [illegible] Mexico



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Shut-in well head pressure:
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Casing - 160 psig