

W MEXICO OIL CONSERVATION COMMISSION
MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL RECEIVED

Form C-122
Revised 9-1-64

Type test: ☒ Initial RETEST ☐ Annual ☐ Special						Test Date: 4-8-81		MAY 4 1981	
Company: GREAT WESTERN DRILLING Co.						Location: AIR		O. C. D. ARTESIA, OFFICE	
Well: WILDCAT						Formation: MORROW		Unit: 0	
Completion Date: 2-11-81		Total Depth: 9,370		Plug back To: 9,370		Elevation: 3,279 KB		Form. or Lease Name: KAISER Co.	
Coq. Size: 5.5	Wt. 17	d 4.892	Set At 9,370	Perforations: 9,312.5 To 9,341.5		Well No. 1			
Tiq. Size: 2.375	Wt. 4.7	d 1.995	Set At 9,178.8	Perforations: From OPEN To ENDED		Unit 0		Sec. 19	Twp. 18S
Type Well - Single - Brokenhead - G.G. or G.O. Multiple: SINGLE						Packer Set At: 9,171.0		County: EDDY	
Producing Thru: TUBING		Reservoir Temp. °F: 162° 9,327		Mean Annual Temp. °F: 60		Baro. Press. - 14		State: NEW MEXICO	
L 9,327	H 9,327	Gg .634	% CO ₂ 1.83	% N ₂ .6	% H ₂ S 0	Prover		Meter Run 4"	Tags: FLG.

FLOW DATA						TUBING DATA		CASING DATA		Duration of Flow	
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. hw	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.	Temp. °F	of Flow
SI							2505.0	60	3195.0	60	309 HRS
1.	4.0	X	1.250	450.0	4.0	95	2380.0	80	3013.1	80	1.0
2.	4.0	X	1.250	458.0	11.0	90	2309.0	74	2934.7	74	1.0
3.	4.0	X	1.250	455.0	26.0	92	2112.0	69	2694.8	69	1.0
4.	4.0	X	1.250	450.0	82.0	82	1640.0	67	2116.1	67	1.0
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super. Compress. Factor, Fpv	Rate of Flow Q, Mcfd
1	7.6610	43.04	463.2	.9680	1.2559	1.0336	414.
2	7.6610	71.99	471.2	.9723	1.2559	1.0353	697.
3	7.6610	110.33	468.2	.9706	1.2559	1.0347	1066.0
4	7.6610	194.89	463.2	.9795	1.2559	1.0358	1903.
5.							

NO.	P _g	Temp. °R	T _g	Z	Gas Liquid Hydrocarbon Ratio	Mcf/Sbl.
1	.68	555	1.53	.936	A.P.I. Gravity of Liquid Hydrocarbons 55.0	
2	.70	550	1.52	.933	Specific Gravity Separator Gas .6340	X X X X X X X X
3	.69	552	1.52	.934	Specific Gravity Flowing Fluid X X X X X	
5					Critical Pressure 678 P.S.I.A.	677 P.S.I.A.
					Critical Temperature 362 °R	362 °R

NO.	P ₁ ²	P _w ²	P ₁ ² - P _w ²	(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.7872$	(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.7280$
1	3026.3	9158.5	1134.		
2	2947.9	8690.1	1602.		
3	2708.0	7333.3	2959.		
4	2129.3	4533.9	5759.		
5					

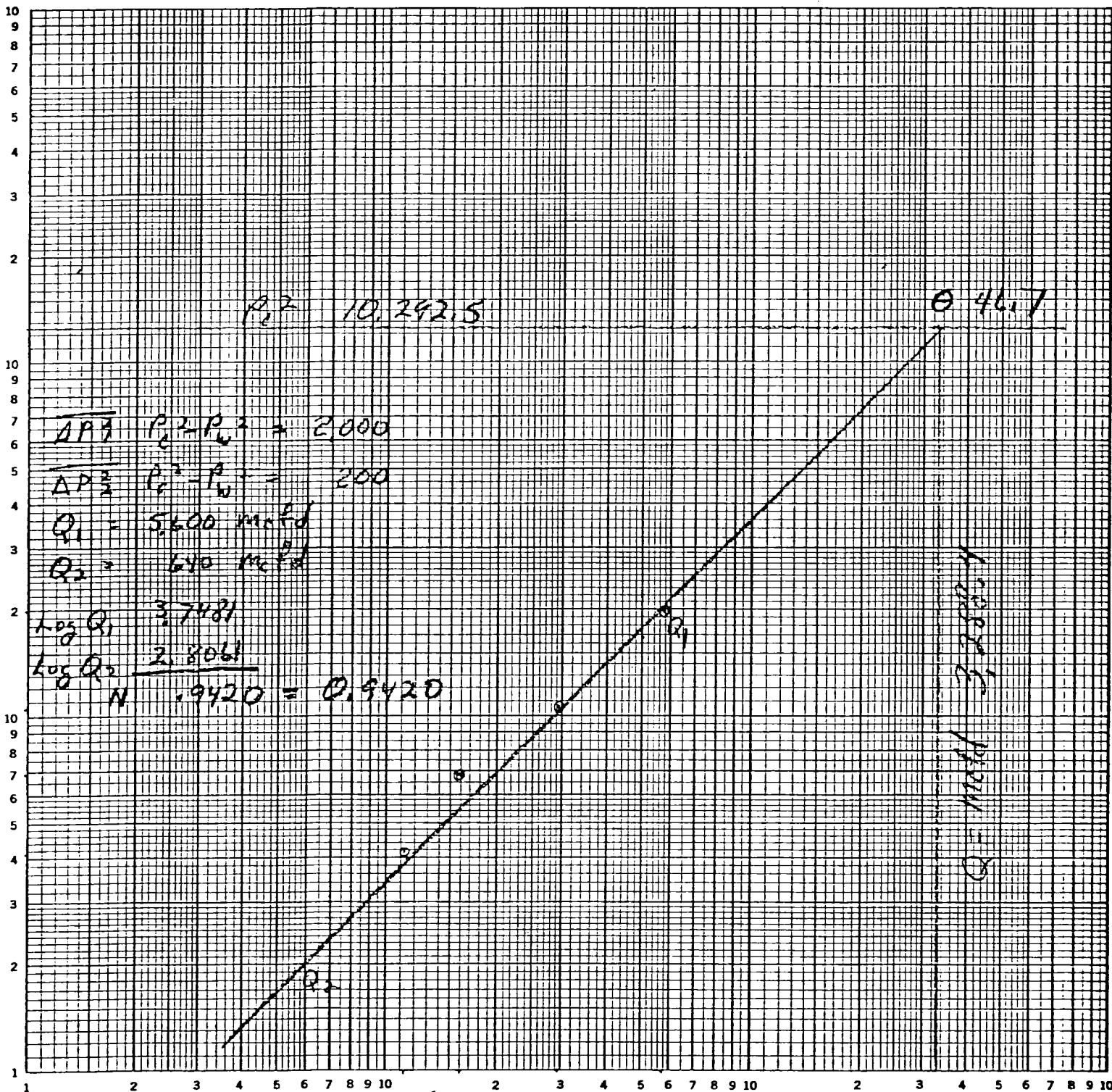
Absolute Open Flow: 3,288.4 Mcfd @ 15.025		Angle of Slope α: 46.7		Slope, n: .9429	
Remarks:					
Approved by Commission:		Conducted By: DON BENNETT		Calculated By: WOHLFORD & JENKINS	
				Checked By:	

Great Western Drilling
Kaiser Well No. 1
Unit 0 Sec 19 Twn 18S Rgn 27E

46 7403

$P_c^2 - P_w^2$

K+S LOGARITHMIC 3 X 3 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.



AOP

Q mcf/day

OKLAHOMA CORPORATE COMMISSION - OIL & GAS CONSERVATION DIVISION RECEIVED
 380 Jim Thorpe Building-Oklahoma City Oklahoma 73105
 BACK - PRESSURE TEST FOR NATURAL GAS WELLS

MAY 4 1981

Lease Name: KAISER NO. 1 OTC No.:
 Well No.: 1 SEC: 19 TWP: 18S RGE: 27E County: EDDY O. C. D.
 State: NEW MEXICO Type test: FOUR POINT-RETEST Test date: 4-8-81
 Company: GREAT WESTERN DRILLING Connection: NONE-NEW WELL
 Field: WILDCAT Pool No.: Reservoir: MORROW
 Location: Compl date: 2-11-81 Tot depth: 9370 Plug back: 9370
 Elev.: 3279.9 KB Type compl: SINGLE Packer set at: 0
 Prod. thru: TUBING BHT: 162.0 F Atm temp: 60 F Baro press.: 13.2 PSI
 Size: METER RUN 4 in Taps: FLANGE L: 9327 H: 9327 Gg: .634
 %CO2: 1.83 %N2: .6 %H2S: 0 API WELL NO.: 31
 Size(in) Wt(#/Ft) Set at ***** Perforation *****
 Casing 5.500 17.00 9370 from 9313 to 9342
 Tubing 2.375 4.70 9179 from 0 to 0

***** FLOW DATA *****					** TUBING **		** CASING **		* DURATION *
No.	Orifice Size	Press PSIG	Diff in/RTS	Temp F	Press PSIG	Temp F	Press PSIG	Temp F	Dur. of Flow(hrs)
SI					2505.0	60.0	3195.0	60.0	309.00
1	1.2500	450.0	4.00	95	2380.0	80.0	3013.1	80.0	1.00
2	1.2500	458.0	11.00	90	2309.0	74.0	2934.7	74.0	1.00
3	1.2500	455.0	26.00	92	2112.0	69.0	2694.8	69.0	1.00
4	1.2500	450.0	82.00	82	1640.0	67.0	2116.1	67.0	1.00

***** RATE OF FLOW CALCULATION *****							
No.	Coeff. (24hrs)	SQRT (Hw*Pw)	Press Pm	Flow (Ft)	Temp (Fg)	Gravity (Fpv)	Rate of Flow(Q)
1	7.6610	43.04	463.2	.9680	1.2559	1.0336	414.
2	7.6610	71.99	471.2	.9723	1.2559	1.0353	697.
3	7.6610	110.33	468.2	.9706	1.2559	1.0347	1066.
4	7.6610	194.89	463.2	.9795	1.2559	1.0358	1903.

***** **GAS LIQUID HYDROCARBON CALCULATION**				
No.	Pr	Temp. R	Tr	Z
1	.68	555.	1.53	.936
2	.70	550.	1.52	.933
3	.69	552.	1.52	.934
4	.68	542.	1.50	.932

Ratio .000 MCF/BBL
 API Gravity 55.0 DEG.
 Specific Gravity:
 Separator Gas .6340
 Flowing Fluid .6340
 Critical Press 678 PSIA 677 PSIA
 Critical Temp 362 R 362 R

Pc 3208.2 (Pc)2 10292.5

	Pw	(Pw)2	(Pc)2 - (Pw)2
1	3026.3	9158.5	1134.0
2	2947.9	8690.1	1602.0
3	2708.0	7333.3	2959.0
4	2129.3	4533.9	5759.0

WHAOF = Q * ((Pc)2 / ((Pc)2 - (Pw)2))n = 1.7280
 = 3288.4 \ 3117.4

Calculated Well Head Open Flow: 3288.4 MCFPD Slope: .9420 Angle: 46.7 Deg.
 3117.4 MCFPD .8500 49.6 Deg.

REMARKS

APPROVED BY COMMISSION CONDUCTED BY CALCULATED BY CHECKED BY
 Wohlford & Jenkins
 Gas Consultants

OKLAHOMA CORPORATION COMMISSION-OIL & GAS CONSERVATION DIVISION
WORK SHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (Pc or Pw)
FORM 1016C (1969)

Company: GREAT WESTERN DRILLING

LEASE: KAISER NO. 1

Well No.: 1

Date: 4-8-81

L: 9327 H: 9327 L/H: 1.0000 G: .634 %CO2: 1.83 %N2: .60 %H2S: .00

Pcr: 678 Tcr: 362

FLOW RATE NO. 1

DOWN HOLE CALCULATION

INTERVAL NO. 1		ID: 1.995	Fr: .0177767	Qm: .414 MMCFPD		(L/H) (FrQm) 2: .0000543		
		OD: .000						
H	GH	37.5GH	P(n)	P(r)	T	T(r)	Z	P/Z
P/TZ	(P/TZ) 2	L/H(FrQm) 2	11+12	I(n)	M	N	M*N	SUM(M*N)
0	.00	0	2393.20	3.53	540	1.49	.76500	3128
5.793	.03356	.00005	.033616	172.335	0	.000	0	0
4589	2909.74	109115	2707.44	3.99	580	1.60	.81800	3309
5.703	.03253	.00005	.032580	175.049	314	347.3851	109162	109162
9179	5819.49	218230	3016.54	4.45	620	1.71	.86600	3483
5.612	.03149	.00005	.031548	177.886	309	352.9351	109093	218255

DELTA P = 623.3 Psi P(N) = 3016.5 Psia AT 9179 Ft

INTERVAL NO. 2		ID: 4.892	Fr: .0017145	Qm: .414 MMCFPD		(L/H) (FrQm) 2: .0000005		
		OD: .000						
H	GH	37.5GH	P(n)	P(r)	T	T(r)	Z	P/Z
P/TZ	(P/TZ) 2	L/H(FrQm) 2	11+12	I(n)	M	N	M*N	SUM(M*N)
9179	5819.49	218230	3016.47	4.45	620	1.71	.86600	3483
5.612	.03149	.00000	.031492	178.194	309	.000	0	218255
9253	5866.40	219990	3021.40	4.46	621	1.71	.86700	3484
5.609	.03146	.00000	.031457	178.295	4	356.489	1759	219990
9327	5913.32	221749	3026.34	4.47	622	1.72	.87000	3478
5.593	.03128	.00000	.031277	178.807	4	357.102	1761	221752

DELTA P = 9.9 Psi P(N) = 3026.3 Psia AT 9327 Ft

UPHOLE CALCULATION

H	GH	37.5GH	P(n)	P(r)	T	T(r)	Z	P/Z
P/TZ	(P/TZ) 2	L/H(FrQm) 2	11+12	I(n)	M	N	M*N	SUM(M*N)
9327	5913.32	221749	3026.33	4.47	622	1.72	.87000	3478
5.593	.03128	.00000	.031276	178.811	0	.000	0	221752
4663	2956.66	110874	2708.71	4.00	571	1.58	.81000	3344
5.857	.03430	.00000	.034299	170.749	317	349.5591	11026	110723
0	.00	0	2372.90	3.50	520	1.43	.72500	3272
6.294	.03962	.00000	.039617	158.877	335	329.6261	110692	31

DELTA P = 651.8 Psi P(N) = 2374.6 Psia AT 0 Ft

OKLAHOMA CORPORATION COMMISSION-OIL & GAS CONSERVATION DIVISION
WORK SHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (Pc or Pw)
FORM 1016C (1969)

Company: GREAT WESTERN DRILLING

LEASE: KAISER NO. 1

Well No.: 1

Date: 4-8-81

L: 9327 H: 9327 L/H: 1.0000 G: .634 %CO₂: 1.83 %N₂: .60 %H₂S: .00
Pcr: 678 Tcr: 362

FLOW RATE NO. 2

DOWN HOLE CALCULATION

INTERVAL NO. 1		ID: 1.995	Fr: .0177767	Qm: .697 MMCFPD				
		OD: .000		(L/H) (FrQm) 2: .0001537				
H	GH	37.5GH	P(n)	P(r)	T	T(r)	Z	P/Z
P/TZ	(P/TZ) 2	L/H(FrQm) 2	11+12	I(n)	M	N	M*N	SUM(M*N)
0	.00	0	2322.20	3.43	534	1.47	.75200	3088
5.783	.03344	.00015	.033595	172.135	0	.000	0	0
4589	2909.74	109115	2634.75	3.89	577	1.59	.81300	3240
5.614	.03151	.00015	.031667	177.273	312	349.407	109206	109206
9179	5819.49	218230	2938.62	4.34	620	1.71	.86400	3401
5.480	.03004	.00015	.030189	181.539	303	358.811	109031	218238

DELTA P = 616.0 Psi P(N) = 2938.2 Psia AT 9179 Ft

INTERVAL NO. 2		ID: 4.892	Fr: .0017145	Qm: .697 MMCFPD				
		OD: .000		(L/H) (FrQm) 2: .0000014				
H	GH	37.5GH	P(n)	P(r)	T	T(r)	Z	P/Z
P/TZ	(P/TZ) 2	L/H(FrQm) 2	11+12	I(n)	M	N	M*N	SUM(M*N)
9179	5819.49	218230	2938.23	4.34	620	1.71	.86400	3400
5.480	.03003	.00000	.030029	182.483	303	.000	0	218238
9253	5866.40	219990	2943.05	4.34	621	1.71	.86400	3406
5.483	.03006	.00000	.030060	182.389	4	364.872	1758	219989
9327	5913.32	221749	2947.87	4.35	622	1.72	.86800	3396
5.460	.02981	.00000	.029814	183.139	4	365.528	1762	221752

DELTA P = 9.6 Psi P(N) = 2947.9 Psia AT 9327 Ft

UPHOLE CALCULATION

H	GH	37.5GH	P(n)	P(r)	T	T(r)	Z	P/Z
P/TZ	(P/TZ) 2	L/H(FrQm) 2	11+12	I(n)	M	N	M*N	SUM(M*N)
9327	5913.32	221749	2947.87	4.35	622	1.72	.86800	3396
5.460	.02981	.00000	.029812	183.148	0	.000	0	221752
4663	2956.66	110874	2638.21	3.89	571	1.58	.80800	3265
5.718	.03270	.00000	.032698	174.879	309	358.027	110866	110883
0	.00	0	2310.30	3.41	520	1.43	.72500	3186
6.128	.03755	.00000	.037554	163.182	327	338.061	110852	30

DELTA P = 636.1 Psi P(N) = 2311.8 Psia AT 0 Ft

OKLAHOMA CORPORATION COMMISSION-OIL & GAS CONSERVATION DIVISION
WORK SHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (Pc or Pw)
FORM 1016C (1969)

Company: GREAT WESTERN DRILLING

LEASE: KAISER NO. 1

Well No.: 1

Date: 4-8-81

L: 9327 H: 9327 L/H: 1.0000 G: .634 %CO₂: 1.83 %N₂: .60 %H₂S: .00
Pcr: 678 Tcr: 362

FLOW RATE NO. 3

DOWN HOLE CALCULATION

INTERVAL NO. 1		ID: 1.995	Fr: .0177767	Qm: 1.066 MMCFPD				
		OD: .000		(L/H) (FrQm) 2: .0003592				
H	GH	37.5GH	P(n)	P(r)	T	T(r)	Z	P/Z
P/TZ	(P/TZ) 2	L/H(FrQm) 2	11+12	I(n)	M	N	M*N	SUM(M*N)
0	.00	0	2125.20	3.14	529	1.46	.74800	2841
5.371	.02885	.00036	.029205	183.901	0	.000	0	0
4589	2909.74	109115	2416.90	3.57	574	1.59	.81200	2976
5.179	.02682	.00036	.027177	190.550	291	374.450	109226	109226
9179	5819.49	218230	2699.85	3.98	620	1.71	.85900	3143
5.065	.02566	.00036	.026014	194.704	282	385.253	109009	218235

DELTA P = 573.9 Psi P(N) = 2699.1 Psia AT 9179 Ft

INTERVAL NO. 2		ID: 4.892	Fr: .0017145	Qm: 1.066 MMCFPD				
		OD: .000		(L/H) (FrQm) 2: .0000033				
H	GH	37.5GH	P(n)	P(r)	T	T(r)	Z	P/Z
P/TZ	(P/TZ) 2	L/H(FrQm) 2	11+12	I(n)	M	N	M*N	SUM(M*N)
9179	5819.49	218230	2699.09	3.98	620	1.71	.85900	3142
5.064	.02564	.00000	.025644	197.460	282	.000	0	218235
9253	5866.40	219990	2703.54	3.99	621	1.71	.85900	3147
5.066	.02566	.00000	.025668	197.369	4	394.828	1758	219989
9327	5913.32	221749	2708.00	4.00	622	1.72	.86300	3137
5.045	.02545	.00000	.025454	198.196	4	395.565	1763	221752

DELTA P = 8.9 Psi P(N) = 2708.0 Psia AT 9327 Ft

UPHOLE CALCULATION

H	GH	37.5GH	P(n)	P(r)	T	T(r)	Z	P/Z
P/TZ	(P/TZ) 2	L/H(FrQm) 2	11+12	I(n)	M	N	M*N	SUM(M*N)
9327	5913.32	221749	2707.99	4.00	622	1.72	.86300	3137
5.045	.02545	.00000	.025450	198.223	0	.000	0	221752
4663	2956.66	110874	2422.22	3.57	571	1.58	.80700	3001
5.257	.02763	.00000	.027632	190.237	285	388.460	111011	110738
0	.00	0	2121.72	3.13	520	1.43	.72700	2918
5.612	.03150	.00000	.031499	178.176	300	368.414	110709	28

DELTA P = 584.9 Psi P(N) = 2123.1 Psia AT 0 Ft

OKLAHOMA CORPORATION COMMISSION-OIL & GAS CONSERVATION DIVISION
 WORK SHEET FOR CALCULATION OF STATIC COLUMN WELLHEAD PRESSURE (Pc or Pw)
 FORM 1016C (1969)

Company: GREAT WESTERN DRILLING

LEASE: KAISER NO. 1

Well No.: 1

Date: 4-8-81

L: 9327 H: 9327 L/H: 1.0000 G: .634 %CO2: 1.83 %N2: .60 %H2S: .00
 Pcr: 678 Tcr: 362

FLOW RATE NO. 4

DOWN HOLE CALCULATION

INTERVAL NO. 1		ID: 1.995	Fr: .0177767	Qm: 1.903 MMCFPD				
		OD: .000	(L/H) (FrQm) 2: .0011438					
H	GH	37.5GH	P(n)	P(r)	T	T(r)	Z	P/Z
P/TZ	(P/TZ) 2	L/H(FrQm) 2	11+12	I(n)	M	N	M*N	SUM(M*N)
0	.00	0	1653.20	2.44	527	1.45	.76700	2155
4.090	.01673	.00114	.017872	228.852	0	.000	0	0
4589	2909.74	109115	1889.70	2.79	573	1.58	.82100	2301
4.012	.01609	.00114	.017238	232.730	236	461.582	109163	109163
9179	5819.49	218230	2122.61	3.13	620	1.71	.86600	2451
3.950	.01560	.00114	.016748	235.864	232	468.593	109142	218306

DELTA P = 469.1 Psi P(N) = 2122.3 Psia AT 9179 Ft

INTERVAL NO. 2		ID: 4.892	Fr: .0017145	Qm: 1.903 MMCFPD				
		OD: .000	(L/H) (FrQm) 2: .0000106					
H	GH	37.5GH	P(n)	P(r)	T	T(r)	Z	P/Z
P/TZ	(P/TZ) 2	L/H(FrQm) 2	11+12	I(n)	M	N	M*N	SUM(M*N)
9179	5819.49	218230	2122.30	3.13	620	1.71	.86600	2450
3.950	.01560	.00001	.015610	253.018	232	.000	0	218306
9253	5866.40	219990	2125.78	3.14	621	1.71	.86600	2454
3.951	.01561	.00001	.015623	252.911	3	505.929	1758	219989
9327	5913.32	221749	2129.25	3.14	622	1.72	.86900	2450
3.939	.01552	.00001	.015529	253.679	3	506.590	1762	221751

DELTA P = 7.0 Psi P(N) = 2129.3 Psia AT 9327 Ft

UPHOLE CALCULATION

H	GH	37.5GH	P(n)	P(r)	T	T(r)	Z	P/Z
P/TZ	(P/TZ) 2	L/H(FrQm) 2	11+12	I(n)	M	N	M*N	SUM(M*N)
9327	5913.32	221749	2129.25	3.14	622	1.72	.86900	2450
3.939	.01552	.00000	.015518	253.853	0	.000	0	221751
4663	2956.66	110874	1907.36	2.81	571	1.58	.82100	2323
4.069	.01655	.00000	.016554	245.780	221	499.633	110864	110884
0	.00	0	1675.83	2.47	520	1.43	.75100	2231
4.291	.01842	.00000	.018415	233.030	231	478.810	110857	27

DELTA P = 452.5 Psi P(N) = 1676.7 Psia AT 0 Ft

WOHLFORD AND JENKINS COMPUTER PROGRAM
IOCC TEST PROCEDURE - OKL. JMA

Company: GREAT WESTERN DRILLING
Lease Name: KAISER NO. 1
Reservoir: MORROW

Reference No.: 3125541 RECEIVED
Zone No.: 40100000
Date: 4-8-81

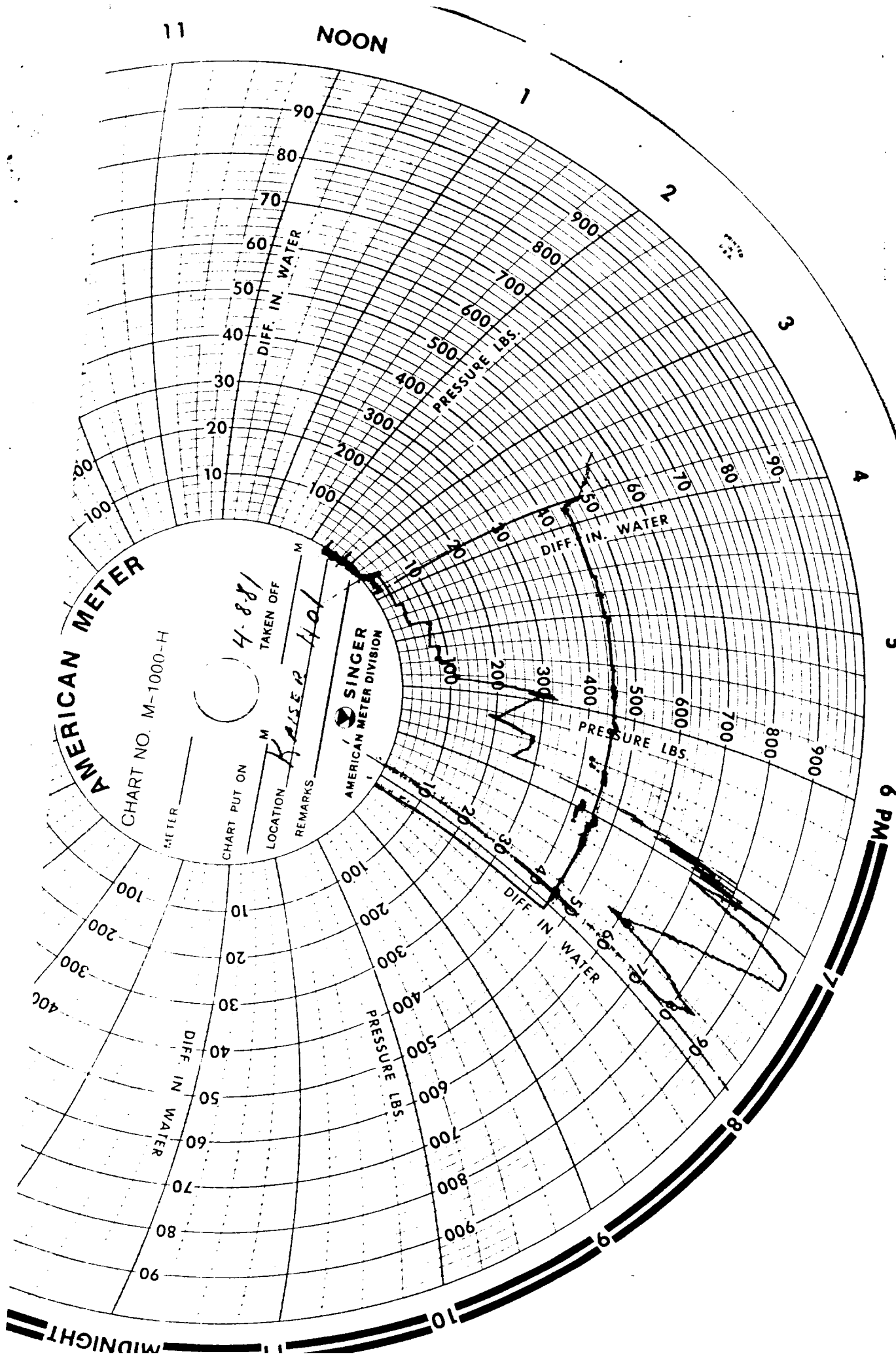
MAY 4 1981

O. C. D.
ARTESIA, OFFICE

P/Z CALCULATION

SI. PRESSURE	BOTTOM HOLE TEMP	BOTTOM HOLE PRESS	Z-FAC	P/Z
2505.0 psig	162.0 -F	3208.2 psia	.8770	3658.1

L = 9327 Feet



AMERICAN METER

CHART NO. M-1000-H

METER

CHART PUT ON

LOCATION

TAKEN OFF

REMARKS

4-88

RAISER

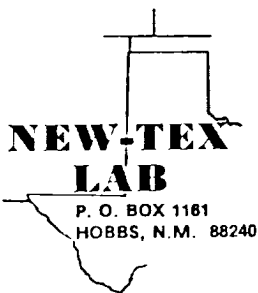
1401

SINGER
AMERICAN METER DIVISION

NOON

MIDNIGHT

6 PM



RECEIVED

MAY 4 1981

O. C. D.
ARTESIA, OFFICENo. 4630
Run No.
Date of Run 3-14-81
Date Secured 3-13-81

CERTIFICATE OF ANALYSIS

A Sample of Kaiser #1
Secured from Great Western Drilling
At Box 515 Secured by Bennett Wireline
Lovington, NM 88260 Time _____ Date _____
Sampling conditions _____ Press _____
Temp. _____

FRACTIONAL ANALYSIS

Percentage Composition

MOL % LIQ. % G.P.M.

Carbon Dioxide	1.833	
Air		
Nitrogen	.602	
Oxygen		
Hydrogen sulfide		
Hydrogen		
Methane	89.709	
Ethane	5.213	1.390
Propane	1.501	.412
Butanes		
Iso-Butane	.265	.086
N-Butane	.428	.135
Pentanes		
Iso-Pentane	.108	.039
N-Pentane	.094	.034
Hexanes	.058	.024
Heptanes	.188	.087
Octanes		
TOTAL	100.000	2.207

Calc. Sp. Gr. 0.6343
Calc. A.P.I. _____
Calc. Vapor Press. _____ PSIA
Sp. Gr. _____
Mol. Wt. 18.39

LIQUID CONTENT (GAL./MCF)

Propane Calc. G.P.M.	.412
Butanes Calc. G.P.M.	.221
Pentanes Plus. G.P.M.	.184
Ethane Calc. G.P.M.	1.390
*RVP Gasoline G.P.M.	

B.T.U./Cu. Ft. @ 14.696 P.S.I.A.
Dry Basis 1090
Wet Basis 1061
Sulfur Analysis by Titration
Gr./100 Cu. Ft.
Hydrogen Sulfide
Mercaptans
Sulfides
Residual Sulfur
Total Sulfur

Run by Deane Simpson Checked by _____ Approved by Deane Simpson

Additional Data and Remarks