

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special						Test Date 1/18/83	
Company Exxon Company USA				Connection None			
Pool Many Gates				Formation Morrow			
Completion Date 1/13/83		Total Depth 10000'		Plug Back TD 9800'		Elevation 4044' GL	
Farm or Lease Name Isler Federal							
Ceq. Size 5 1/2"		Wt. 17.0		Set At 4.892		Perforations: From 8924' To 9410'	
Trq. Size 2 7/8"		Wt. 6.5		Set At 2.441		Perforations: Open Ended From To	
Type Well - Single - Brdenhead - G.G. or G.O. Multiple Single						Packer Set At 8860'	
Producing Thru Tubing		Reservoir Temp. °F 170° 8871'		Mean Annual Temp. °F 60		Baro. Press. - P _a 13.2	
L 9167'		H -		G _g 0.6743		Prover -	
				% CO ₂ 0.904		% H ₂ S -	
				% N ₂ 1.520		Meter Run 2,900	
						Taps F	

FLOW DATA							TUBING DATA		CASING DATA		Duration of Flow
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g. DWT	Temp. °F	Press. p.s.i.g.	Temp. °F	
SI							2063	61	PACKER		26.0 hrs
1.	2.90	4/64	0.750	510	5	76	1880	58			1.0 hr
2.	2.90	5/64	0.750	520	8	79	1750	58			1.0 hr
3.	2.90	5.5/64	0.750	510	13	79	1595	59			1.0 hr
4.	2.90	6/64	0.750	525	19	78	1395	59			1.0 hr
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor F _g	Super Compress. Factor, F _{pv}	Rate of Flow Q, Mcf/d
1	2.675	51.15	523.2	0.9850	1.218	1.049	172.20
2	2.675	65.31	533.2	0.9822	1.218	1.049	219.24
3	2.675	82.47	523.2	0.9822	1.218	1.048	276.58
4	2.675	101.12	538.2	0.9831	1.218	1.051	340.41
5							

NO.	P _r	Temp. °R	T _g	Z	Gas Liquid Hydrocarbon Ratio	Dry Gas	Mcf/bbl.
1	0.78	536	1.43	0.908	A.P.I. Gravity of Liquid Hydrocarbons	-	Deg.
2	0.80	539	1.44	0.908	Specific Gravity Separator Gas	0.6743	XXXXXX
3	0.78	539	1.44	0.910	Specific Gravity Flowing Fluid	XXXXXX	
4	0.80	538	1.43	0.906	Critical Pressure	670	P.S.I.A.
5					Critical Temperature	375	R

NO.	P _i	P _w *	P _w ²	P _c ² - P _w ²
1	2802.2	2569.2	6600.8	1251.5
2		2416.2	5838.0	2014.3
3		2222.2	4938.2	2914.1
4		2001.2	4004.8	3847.5
5				

$$(1) \frac{P_c^2}{P_c^2 - P_w^2} = 3.90$$

$$AOF = Q \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 552.48$$

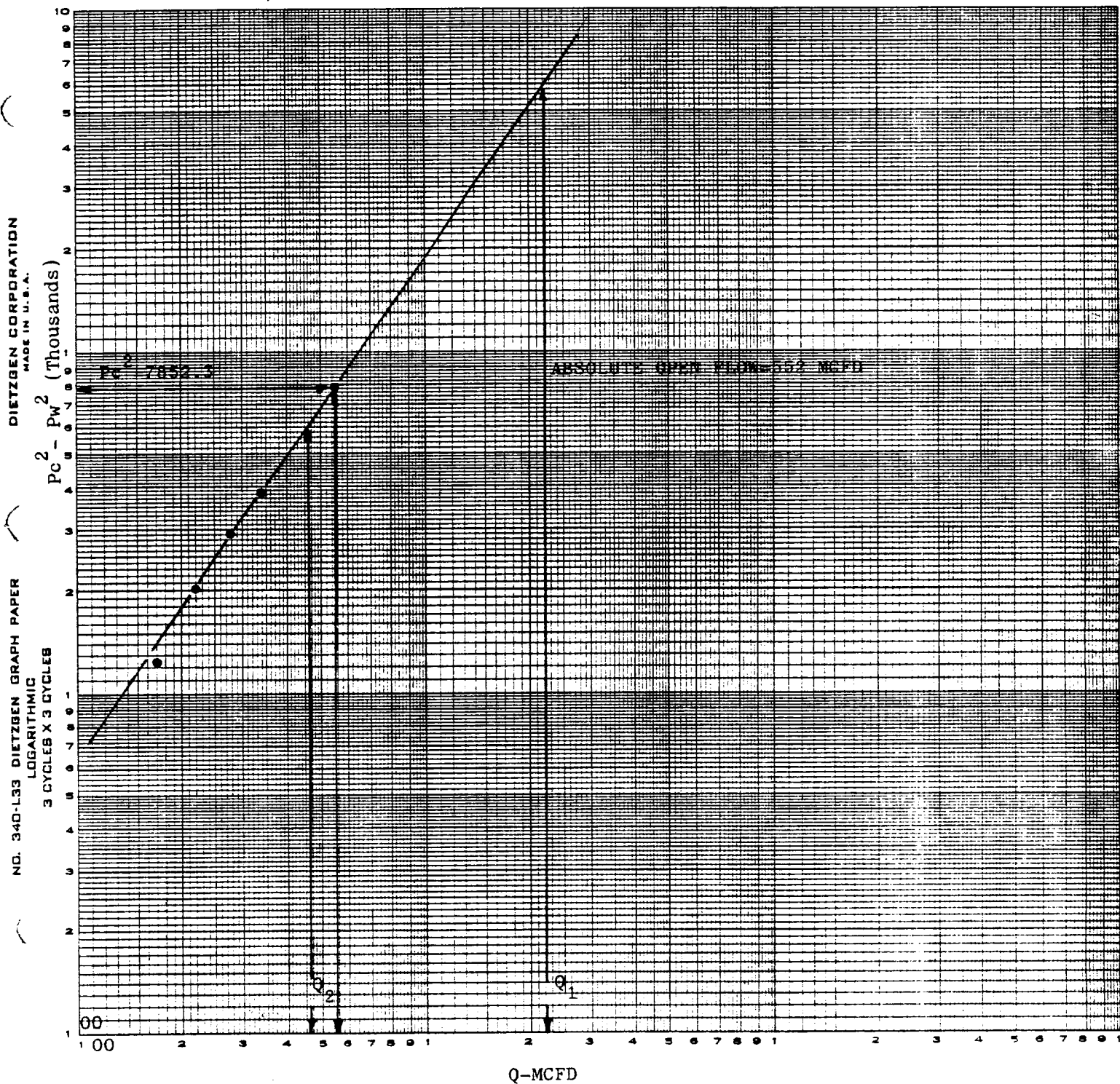
$$(2) \left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 2.52$$

Absolute Open Flow	552	Mcf @ 15.025	Angle of Slope @	55° 47'	Slope, n	0.680
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Remarks: * BOTTOM HOLE PRESSURE @ (-5123)9167' USED FOR PRESSURE CALCULATIONS

Approved By Division	Conducted By: JARREL WELL TESTING, INC	Calculated By: Joe A. Coleman	Checked By: #PE 2208 Joe A. Coleman
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COMPANY: Exxon Company USA
 WELL: Isler Federal, No. 4
 LOCATION: P 30 - 9s - 30e
 COUNTY: Chaves
 DATE: January 18, 1983



$$Q_1 = 2200 \text{ MCFD}; \quad \text{Log } Q_1 = 3.34242$$

$$Q_2 = 460 \text{ MCFD}; \quad \text{Log } Q_2 = 2.66276$$

$$N = \frac{0.67966}{0.67966} = 0.680$$

**NEW-TEX
LAB**

PHONE 505/393-3561

P. O. BOX 1161

611 W. SNYDER

HOBBS, NEW MEXICO 88240

ANALYSIS CERTIFICATE

CLIENT: JARREL WELL TESTING
ADDRESS: BOX 1457
CITY, STATE: HOBBS NM 88240

ANALYSIS NUMBER: 9033
DATE OF RUN: 01/17/83
DATE SECURED: 01/17/83

SAMPLE IDENT: EXXON COMPANY USA - ISCLER FEDERAL
SAMPLING PRESS: SAMPLING TEMP:

***** GAS ANALYSIS *****

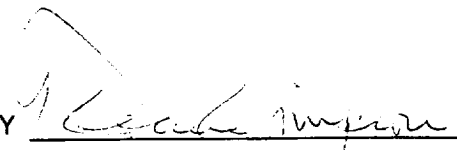
	MOLE PERCENT	GAL/ MCF
NITROGEN	1.520	
CARBON DIOXIDE	0.904	
METHANE	85.015	
ETHANE	7.329	1.955
PROPANE	2.850	0.782
ISO-BUTANE	0.627	0.205
NORMAL BUTANE	0.735	0.231
ISO-PENTANE	0.348	0.127
NORMAL PENTANE	0.213	0.077
HEXANES	0.195	0.080
HEPTANES PLUS	0.264	0.121
TOTAL	100.000	3.578

PROPANE GPM:	0.78	BUTANES GPM:	0.44
ETHANE GPM:	1.96	PENTANES PLUS GPM:	0.40

SPECIFIC GRAV (CALC): 0.6743
MOLE WEIGHT: 19.55

HHV-BTU/CU FT	PRESSURE (PSIA)	WET	DRY
14.696		1131	1151
14.650		1127	1147
14.730		1134	1154
14.735		1134	1154

ANALYZED BY: R. H. HAMILTON

APPROVED BY: 

JARREL SERVICES, INC.

POST OFFICE BOX 1654

PHONE 505 393-8396

HOBBS, NEW MEXICO 88240

COMPANY: Exxon Company USA

WELL: Isler Federal, No. 4

FIELD: Many Gates - Morrow

CHRONOLOGICAL PRESSURE DATA

DATE	STATUS OF WELL	TIME	ELAPSED TIME		SURFACE PRESSURE		BHP @ (-5123)	
			HRS.	MIN.	TBG	CSG	8871'	9167'PSI
1983								
1/18	Shut in 26.0 hrs. Run Static Gradient w/Tandem Bombs & Set Bombs off @ 8871'	10:15 AM	-	-	2063 DWT	PKR	2764	2789
	Started 1st Rate	11:30	1	15	2063	MCF/D	2764	2789
	Finished 1st Rate	12:30 PM	1	00	1880	172.20	2534	2556
	& Started 2nd Rate							
	Finished 2nd Rate	1:30	1	00	1750	219.24	2382	2403
	& Started 3rd Rate							
	Finished 3rd Rate	2:30	1	00	1595	276.58	2189	2209
	& Started 4th Rate							
	Finished 4th Rate	3:30	1	00	1395	340.41	1969	1988
	& Started Production							
	Test on 5/64" Choke							
	Flowing	3:45	0	15	1387	237.0	1963	1982
	"	4:00	0	30	1382	220.0	1954	1973
	"	4:15	0	45	1375	250.0	1960	1979
	"	4:30	1	00	1365	237.0	1941	1960
	"	5:00	1	30	1353	187.0	1941	1960
	"	5:30	2	00	1347	187.0	1941	1960
	"	6:00	2	30	1345	186.0	1941	1960
	"	7:00	3	30	1333	175.0	1941	1960
	"	8:00	4	30	1317	165.0	1935	1954
	"	9:00	5	30	1300	165.0	1923	1942
	"	10:00	6	30	1282	145.0	1914	1933
	"	11:00	7	30	1265	145.0	1901	1920
	"	12:00 MN	8	30	1250	145.0	1901	1920
1/19	"	1:00 AM	9	30	1235	145.0	1892	1911
	"	2:00	10	30	1235	205.0	1892	1911
	"	3:00	11	30	1235	185.0	1892	1911
	"	4:00	12	30	1230	165.0	1895	1914
	"	5:00	13	30	1217	165.0	1895	1914
	"	6:00	14	30	1205	145.0	1898	1917
	"	7:00	15	30	1195	145.0	1898	1917
	"	8:00	16	30	1190	160.0	1898	1917
	"	9:00	17	30	1187	200.0	1898	1917
	Fished Bombs	9:30	18	00	1186	-	1898	1917
	Flowing	10:00	18	30	1185	180.0	-	-
	"	11:00	19	30	1178	185.0	-	-
	Set Bombs @ 8871'	11:30	20	00	-	-	1858	1881
	Flowing	12:00 N	20	30	1167	210.0	1858	1881
	"	1:00 PM	21	30	1161	208.0	1858	1881
	"	2:00	22	30	1155	210.0	1858	1881
	"	3:00	23	30	1148	210.0	1861	1884
	Shut in for Buildup	3:30	24	00	1144	210.0	1861	1884

WELL: Isler Federal, No. 4PAGE: 2

DATE	STATUS OF WELL	TIME	ELAPSED TIME		SURFACE PRESSURE		BHP @ (-5123)	
			HRS.	MIN.	TBG	CSG	8871'	9167' PSIG
	Shut in	3:35	0	05	-	-	1877	1902
	"	3:40	0	10	-	-	1898	1923
	"	3:45	0	15	-	-	1917	1942
	"	3:50	0	20	-	-	1926	1951
	"	3:55	0	25	-	-	1948	1973
	"	4:00	0	30	-	-	1966	1991
	"	4:05	0	35	-	-	1981	2006
	"	4:10	0	40	-	-	2000	2025
	"	4:15	0	45	-	-	2019	2044
	"	4:20	0	50	-	-	2037	2062
	"	4:25	0	55	-	-	2053	2078
	"	4:30	1	00	-	-	2075	2100
	"	4:45	1	15	-	-	2112	2137
	"	5:00	1	30	-	-	2143	2168
	"	5:15	1	45	-	-	2180	2205
	"	5:30	2	00	-	-	2214	2239
	"	6:00	2	30	-	-	2245	2270
	"	6:30	3	00	-	-	2273	2298
	"	7:30	4	00	-	-	2351	2376
	"	8:30	5	00	-	-	2410	2435
	"	9:30	6	00	-	-	2450	2475
	"	10:30	7	00	-	-	2494	2519
	"	11:30	8	00	-	-	2531	2556
1/20	"	12:30 AM	9	00	-	-	2562	2587
	"	1:30	10	00	-	-	2606	2631
	"	2:30	11	00	-	-	2637	2662
	"	3:30	12	00	-	-	2665	2690
	"	4:30	13	00	-	-	2693	2718
	"	5:30	14	00	-	-	2711	2736
	"	6:30	15	00	-	-	2733	2758
	"	7:30	16	00	-	-	2742	2767
	"	8:30	17	00	-	-	2755	2780
	"	9:30	18	00	-	-	2764	2789
	"	10:30	19	00	-	-	2780	2805
	"	11:30	20	00	-	-	2789	2814
	"	12:30 PM	21	00	-	-	2804	2829
	"	1:30	22	00	-	-	2811	2836
	"	2:30	23	00	-	-	2817	2842
	"	3:30	24	00	-	-	2826	2851
	"	4:30	25	00	-	-	2832	2857
	"	5:30	26	00	-	-	2848	2873
	"	6:30	27	00	-	-	2851	2876
	Cross Flow	7:30	28	00	-	-	2851	2876
	Shut in	8:30	29	00	-	-	2845	2870
	"	9:30	30	00	-	-	2835	2860
	"	10:30	31	00	-	-	2826	2851
	"	11:30	32	00	-	-	2823	2848
1/21	"	12:30 AM	33	00	-	-	2814	2839
	"	1:30	34	00	-	-	2814	2839
	"	2:30	35	00	-	-	2814	2839
	"	3:30	36	00	-	-	2814	2839
	"	4:30	37	00	-	-	2814	2839
	"	5:30	38	00	-	-	2814	2839
	"	6:30	39	00	-	-	2814	2839
	"	7:30	40	00	-	-	2814	2839
	"	8:30	41	00	-	-	2817	2842

WELL: Isler Federal, No. 4

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DATE	STATUS OF WELL	TIME	ELAPSED TIME		SURFACE PRESSURE		BHP @ (-5123)	
			HRS.	MIN.	TBG	CSG	8871'	9167'PSI
1/22	Shut in	9:30	42	00	-	-	2820	2845
	"	10:30	43	00	-	-	2820	2845
	"	11:30	44	00	-	-	2820	2845
	"	12:30 PM	45	00	-	-	2826	2851
	"	1:30	46	00	-	-	2835	2860
	"	2:30	47	00	-	-	2835	2860
	"	3:30	48	00	-	-	2835	2860
	"	4:30	49	00	-	-	2842	2867
	"	5:30	50	00	-	-	2842	2867
	"	6:30	51	00	-	-	2845	2870
	"	7:30	52	00	-	-	2848	2873
	"	8:30	53	00	-	-	2848	2873
	"	9:30	54	00	-	-	2851	2876
	"	10:30	55	00	-	-	2854	2879
	"	11:30	56	00	-	-	2854	2879
	"	12:30 AM	57	00	-	-	2854	2879
	"	1:30	58	00	-	-	2854	2879
	"	2:30	59	00	-	-	2854	2879
	"	3:30	60	00	-	-	2854	2879
	"	4:30	61	00	-	-	2854	2879
	"	5:30	62	00	-	-	2857	2882
	"	6:30	63	00	-	-	2863	2888
	"	7:30	64	00	-	-	2866	2891
	"	8:30	65	00	-	-	2870	2895
	"	9:30	66	00	-	-	2873	2898
	"	10:30	67	00	-	-	2873	2898
	"	11:30	68	00	-	-	2873	2898
	"	12:30 PM	69	00	-	-	2876	2901
	"	1:30	70	00	-	-	2882	2907
	"	2:30	71	00	-	-	2882	2907
	"	3:30	72	00	-	-	2882	2907
	"	4:30	73	00	-	-	2888	2913
	"	5:30	74	00	-	-	2888	2913
	"	6:30	75	00	-	-	2888	2913
	"	7:30	76	00	-	-	2891	2916
	"	8:30	77	00	-	-	2894	2919
	"	9:30	78	00	-	-	2898	2923
	"	10:30	79	00	-	-	2901	2926
	"	11:30	80	00	-	-	2901	2926
1/23	"	12:30 AM	81	00	-	-	2904	2929
	"	1:30	82	00	-	-	2907	2932
	"	2:30	83	00	-	-	2910	2935
	"	3:30	84	00	-	-	2910	2935
	"	4:30	85	00	-	-	2913	2938
	"	5:30	86	00	-	-	2913	2938
	"	6:30	87	00	-	-	2913	2938
	"	7:30	88	00	-	-	2916	2941
	"	8:30	89	00	-	-	2919	2944
	"	9:30	90	00	-	-	2922	2947
	"	10:30	91	00	-	-	2922	2947
	"	11:30	92	00	-	-	2925	2950
	"	12:30 PM	93	00	-	-	2929	2954
	"	1:30	94	00	-	-	2929	2954
	"	2:30	95	00	-	-	2932	2957
	"	3:30	96	00	-	-	2932	2957

WELL: Isler Federal, No. 4
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DATE	STATUS OF WELL	TIME	ELASPED TIME		SURFACE PRESSURE		BHP @ (-5123)	
			HRS.	MIN.	TBG	CSG	8871'	9167'PSI
1/24	Shut in	4:30	97	00	-	-	2932	2957
	"	5:30	98	00	-	-	2935	2960
	"	6:30	99	00	-	-	2935	2960
	"	7:30	100	00	-	-	2935	2960
	"	8:30	101	00	-	-	2938	2963
	"	9:30	102	00	-	-	2941	2966
	"	10:30	103	00	-	-	2944	2969
	"	11:30	104	00	-	-	2944	2969
	"	12:30 AM	105	00	-	-	2944	2969
	"	1:30	106	00	-	-	2947	2972
	"	2:30	107	00	-	-	2950	2975
	"	3:30	108	00	-	-	2953	2978
	"	4:30	109	00	-	-	2957	2982
	"	5:30	110	00	-	-	2957	2982
	"	6:30	111	00	-	-	2957	2982
	"	7:30	112	00	-	-	2957	2982
	"	8:30	113	00	-	-	2957	2982
	"	9:30	114	00	-	-	2960	2985
	"	10:30	115	00	-	-	2960	2985
	Fished Bombs	11:30						
	Run Static Gradient	12:30 PM	116	00	2248	-	2960	2985

JARREL SERVICES, INC.

POST OFFICE BOX 1654

PHONES 505 393-5396 — 393-8274

HOBBS, NEW MEXICO 88240

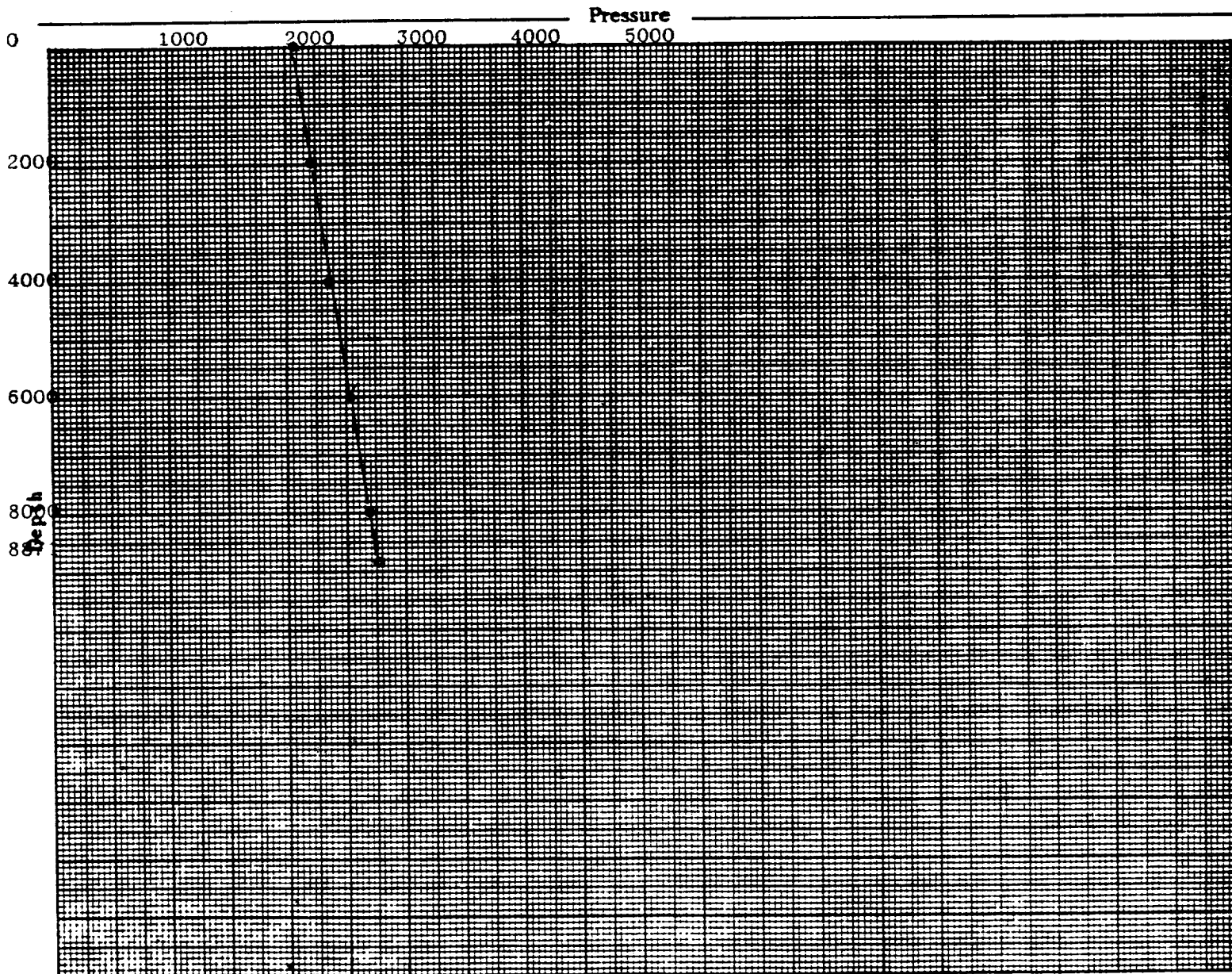
BOTTOM HOLE PRESSURE RECORD

OPERATOR Exxon Company USA
 FIELD Many Gates
 FORMATION Morrow
 LEASE Isler Federal WELL #4
 COUNTY Chaves STATE New Mexico
 DATE 1/18/83 TIME 10:15 AM
 Status Shut in
 Test Depth 8871'
 Time S. I. 26.0 hrs Last test date -
 Tub Pres. 2063 DWT BHP last test -
 Cas. Pres. PKR BHP change -
 Elev. 4044' GL+17' Fluid top None
 Datum (-5123)** Water top None
 Temp. @ 170 F Run by JSI #10
 Cal. No. A36825N Chart No. 1

Depth	Pressure	Gradient
0	2063	-
2000	2201	.069
4000	2361	.080
6000	2525	.082
8000	2691	.083
8871	2764	.084
9167 (-5123)	2789 * **	(.084

* EXTRAPOLATED PRESSURE

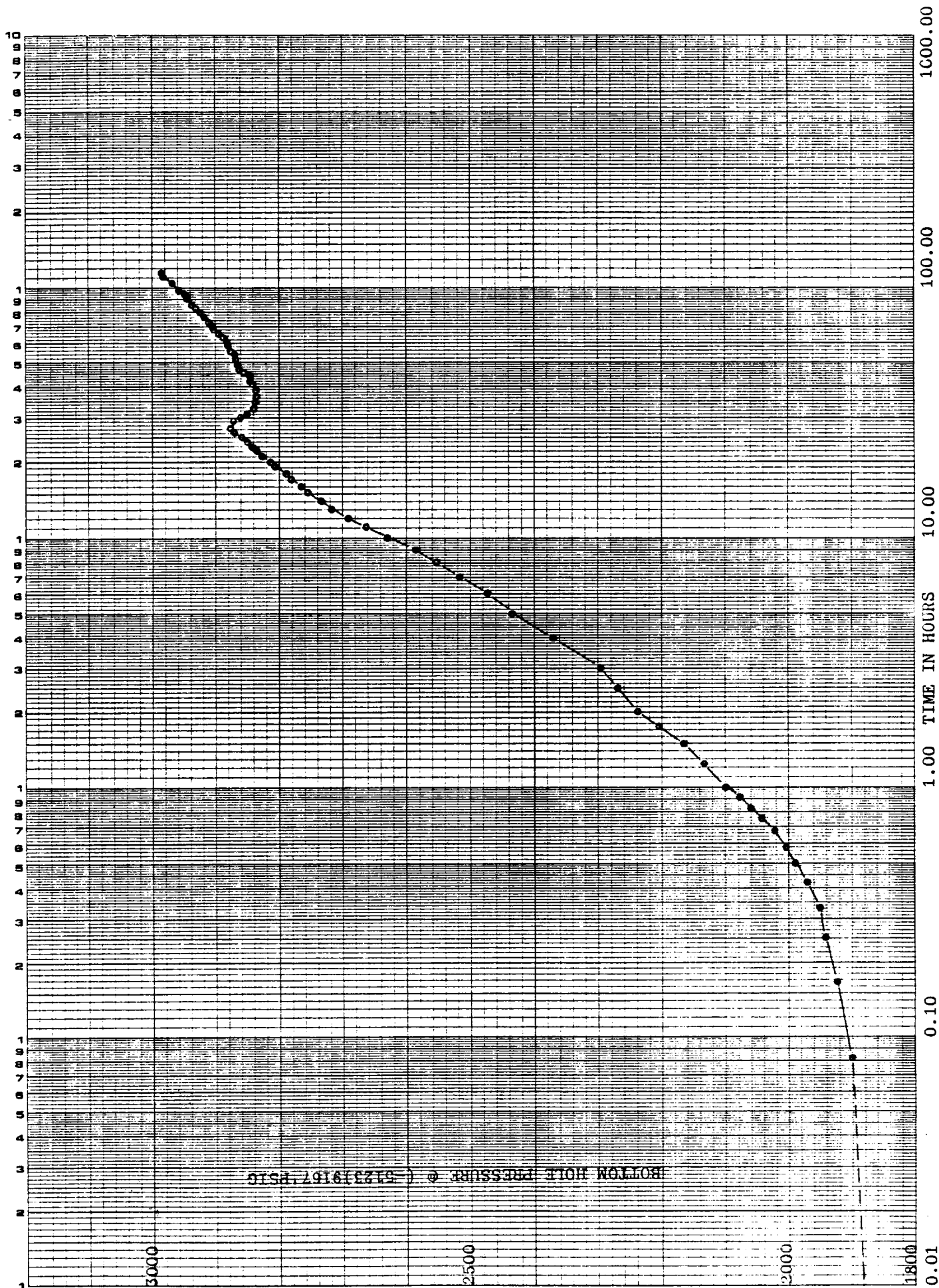
** MIDPOINT OF CASING PERFORATIONS



DIETZGEN CORPORATION
MADE IN U.S.A.

NO. 34DR-L510 DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
5 CYCLES X 10 DIVISIONS PER INCH

JARREL SERVICES, INC.



JARREL SERVICES, INC.

POST OFFICE BOX 1654

PHONES 505 393-5396 — 393-8274

HOBBS, NEW MEXICO 88240

OPERATOR Exxon Company USA
 FIELD Many Gates
 FORMATION Morrow
 LEASE Isler Federal WELL # 4
 COUNTY Chaves STATE New Mexico
 DATE 1/24/83 TIME 12:30 PM
 Status Shut in
 Test Depth 8871'
 Time S. I. 116.0 hour Last test date 1/18/83
 Tub Pres. 2248 BHP last test 2789
 Cas. Pres. PKR BHP change 196# Gain
 Elev. 4044' GL+17' Fluid top None
 Datum (-5123)** Water top None
 Temp. 170 F Run by JSI #10
 Cal. No. A36825N Chart No. 2

BOTTOM HOLE PRESSURE RECORD

Depth	Pressure	Gradient
0	2248	-
2000	2405	.079
4000	2563	.079
6000	2723	.080
8000	2887	.082
8871	2960	.084
9167 (-5123)	2985 * **	(.084)

* EXTRAPOLATED PRESSURE
 ** MIDPOINT OF CASING PERFORATIONS

