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File

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special		Test Date 12/15/82		RECEIVED	
Company Western Reserves Oil Company		Connection None			
Pool Pecos Slope		Formation Abo		DEC 27 1982	
Completion Date 12/15/82		Total Depth 3795'			
Csg. Size 4 1/2"		Set At 3796'		Perforations: From 3680' To 3702'	
Trq. Size 2 3/8"		Set At 3662'		Perforations: Open Ended	
Type Well - Single - Brdhead - G.G. or G.O. Multiple Single				Packer Set At None	
Producing Thru Tubing		Reservoir Temp. °F 90		Mean Annual Temp. °F 60	
Baro. Press. - P _a 13.2		State New Mexico		County Chaves	
L 3691'		H -		G _g 0.7202	
% CO ₂ 4.959		% N ₂ 10.296		% H ₂ S -	
Prover -		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							940	43	728	43	141.5 hrs
1.	2.900	0.750	92	70	45	932	58	728	58	1.0 hr	
2.	2.900	1.250	93	20	40	925	56	728	56	1.0 hr	
3.	2.900	1.250	93	48	34	920	56	728	56	1.0 hr	
4.	2.900	1.250	94	86	36	905	55	728	55	1.0 hr	
5.	2.900	1.500	94	80	38	895	56	728	56	1.0 hr	

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, F _{pv}	Rate of Flow Q, Mcd
1	2.675	85.81	105.2	1.015	1.178	-	274.46
2	7.615	46.09	106.2	1.020	1.178	-	421.72
3	7.615	71.40	106.2	1.026	1.178	-	657.14
4	7.615	96.02	107.2	1.024	1.178	-	882.02
5	11.230	92.61	107.2	1.022	1.178	-	1252.09

NO.	P ₁	Temp. °R	T ₁	Z	Gas Liquid Hydrocarbon Ratio	Dry Gas	Mcf/bbl.
1	0.16	505	1.41	-	A.P.I. Gravity of Liquid Hydrocarbons	-	Deq.
2	0.16	500	1.39	-	Specific Gravity Separator Gas	0.7202	XXXXXX
3	0.16	494	1.38	-	Specific Gravity Flowing Fluid	XXXXX	
4	0.16	496	1.38	-	Critical Pressure	671	P.S.I.A.
5	0.16	498	1.39	-	Critical Temperature	359	R

NO.	P ₁ ²	P _w *	P ₂ ²	P ₂ ² - P _w ²	(1) $\frac{P_c^2}{P_2^2 - P_w^2} = 77.79$	(2) $\left[\frac{P_c^2}{P_2^2 - P_w^2} \right]^n = 18.25$
1	1078.2	1162.5	4.3			
2	1075.2	1156.1	10.7			
3	1073.2	1151.8	15.0			
4	1069.2	1143.2	23.6			
5	1061.2	1126.1	40.7			

Absolute Open Flow 11993 Mcd @ 15.025 Angle of Slope @ 56° 18' Slope, n 0.667

Remarks: * BOTTOM HOLE PRESSURE @ (+86) 3691' USED FOR PRESSURE CALCULATIONS

Approved By Division	Conducted By: JAFREL SERVICES, INC.	Calculated By: Joe A. Coleman	Checked By: PE#2208 Joe A. Coleman
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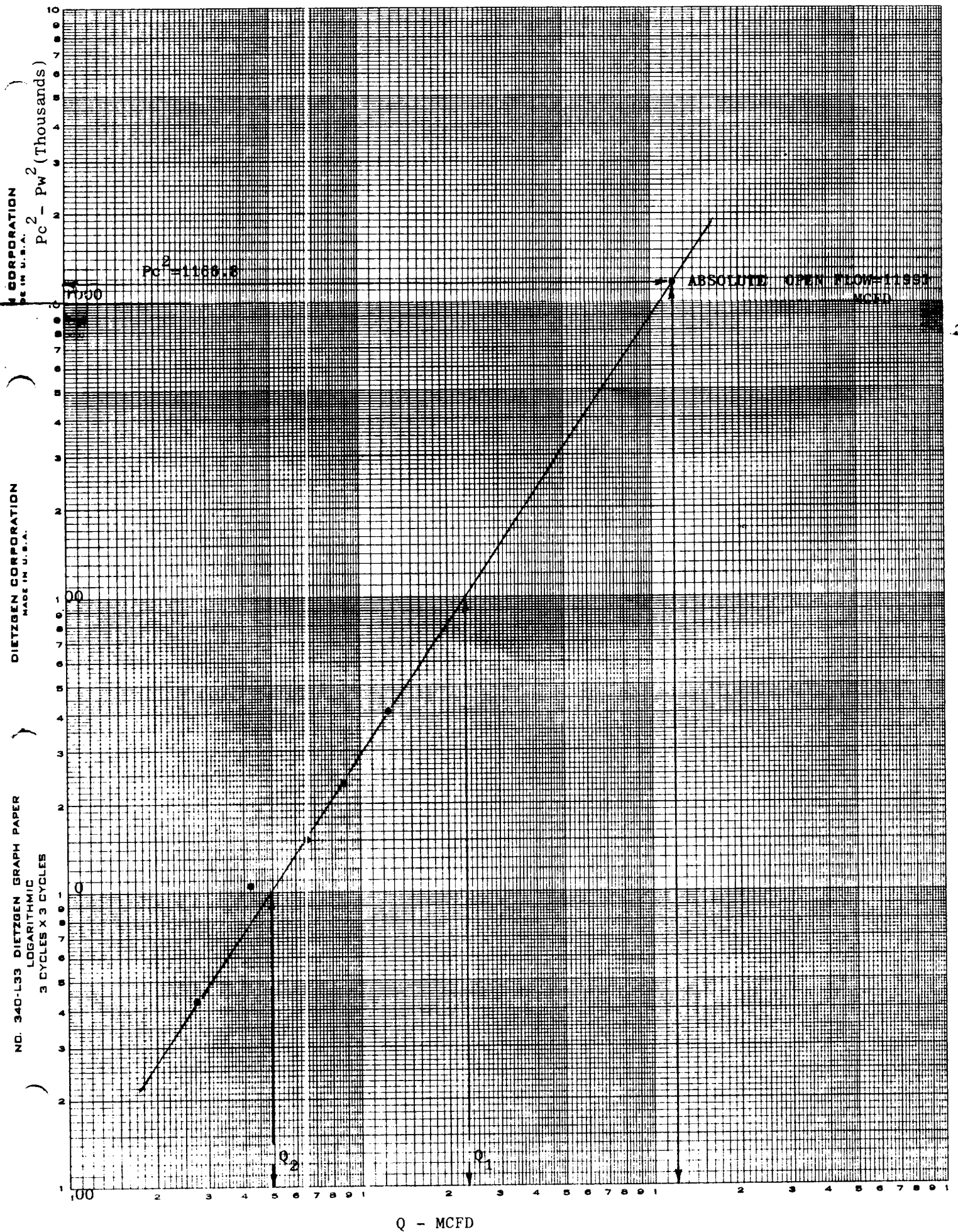
COMPANY: Western Reserves Oil Company

WELL: Bravo Federal, No. 3

LOCATION: F 30-6s-25e

COUNTY: Chaves

DATE: December 14, 1982



$$Q_1 = 2300 \text{ MCFD}; \quad \text{Log } Q_1 = 3.36173$$

$$Q_2 = 495 \text{ MCFD}; \quad \text{Log } Q_2 = 2.69461$$

$$N = \frac{3.36173 - 2.69461}{0.66712} = 0.667$$

**NEW-TEX
LAB**

PHONE 505/393-3561

P. O. BOX 1161

611 W. SNYDER

HOBBS, NEW MEXICO 88240

ANALYSIS CERTIFICATE

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

ANALYSIS NUMBER: 8850
DATE OF RUN: 12/16/82
DATE SECURED: 12/15/82

SAMPLE IDENT: WESTERN RESERVE - BRAVO FEDERAL #5
SAMPLING PRESS: SAMPLING TEMP:

REMARKS: STATIC PRESSURE 93; MCF/D 695; TEMPERATURE 34 F
REMARKS: EDDY COUNTY NEW MEXICO

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

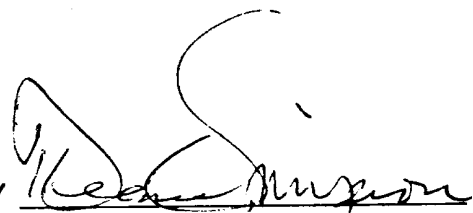
	MOLE PERCENT	GAL/ MCF
NITROGEN	10.296	
CARBON DIOXIDE	4.959	
METHANE	75.822	
ETHANE	5.042	1.345
PROPANE	2.067	0.567
ISO-BUTANE	0.358	0.117
NORMAL BUTANE	0.731	0.230
ISO-PENTANE	0.221	0.081
NORMAL PENTANE	0.240	0.087
HEXANES	0.133	0.055
HEPTANES PLUS	0.131	0.060
TOTAL	100.000	2.542

PROPANE GPM:	0.57	BUTANES GPM:	0.35
ETHANE GPM:	1.34	PENTANES PLUS GPM:	0.28

SPECIFIC GRAV (CALO): 0.7202
MOLE WEIGHT: 20.87

HHV-BTU/CU FT	PRESSURE (PSIA)	WET	DRY
14.696		938	975
14.650		955	972
14.730		960	977
14.735		960	977

ANALYZED BY: R. H. HAMILTON

APPROVED BY: 

JARREL SERVICES, INC.

POST OFFICE BOX 1654

PHONE 505 393-5396

HOBBS, NEW MEXICO 88240

COMPANY: Western Reserves Oil Company

WELL: Bravo Federal, No. 5

FIELD: Pecos Slope - Abo

CHRONOLOGICAL PRESSURE DATA

DATE	STATUS OF WELL	TIME	ELAPSED TIME		SURFACE PRESSURE		BHP @ (+86)	
			HRS.	MIN.	TBG	CSG	3630'	3691' PSIG
1982								
12/15	Shut in 141.5 hrs. Run Static Gradient w/Tandem Bombs & hung Bombs @ 3630'	9:30 AM	-	-	940 DWT	728	1065	1067
							MCF/D	
	Started 1st Rate	10:00 AM	0	30	940	728	1065	1067
	Finished 1st Rate	11:00	1	00	932	728	274.46	1063
	& Started 2nd Rate							
	Finished 2nd Rate	12:00 N	1	00	925	728	421.72	1060
	& Started 3rd Rate							
	Finished 3rd Rate	1:00 PM	1	00	920	728	657.14	1058
	& Started 4th Rate							
	Finished 4th Rate	2:00	1	00	905	728	882.02	1051
	& Started 5th Rate							
	Finished 5th Rate	3:00	1	00	895	728	1252.09	1045
	& Shut in for Buildup							
	Shut in	3:15	0	15	-	-	1054	1056
	"	3:30	0	30	-	-	1056	1058
	"	3:45	0	45	-	-	1058	1060
	"	4:00	1	00	-	-	1060	1062
	"	5:00	2	00	-	-	1060	1062
	"	6:00	3	00	-	-	1062	1064
	"	7:00	4	00	-	-	1062	1064
	"	8:00	5	00	-	-	1062	1064
	"	9:00	6	00	-	-	1063	1065
	"	10:00	7	00	-	-	1063	1065
	"	11:00	8	00	-	-	1065	1067
	"	12:00	9	00	-	-	1065	1067
12/16	"	1:00 AM	10	00	-	-	1067	1069
	"	2:00	11	00	-	-	1067	1069
	"	3:00	12	00	-	-	1069	1071
	"	4:00	13	00	-	-	1069	1071
	"	5:00	14	00	-	-	1069	1071
	"	6:00	15	00	-	-	1071	1073
	"	7:00	16	00	-	-	1072	1074
	Pulled Bombs	8:00	17	00	952 B	-	1072	1074

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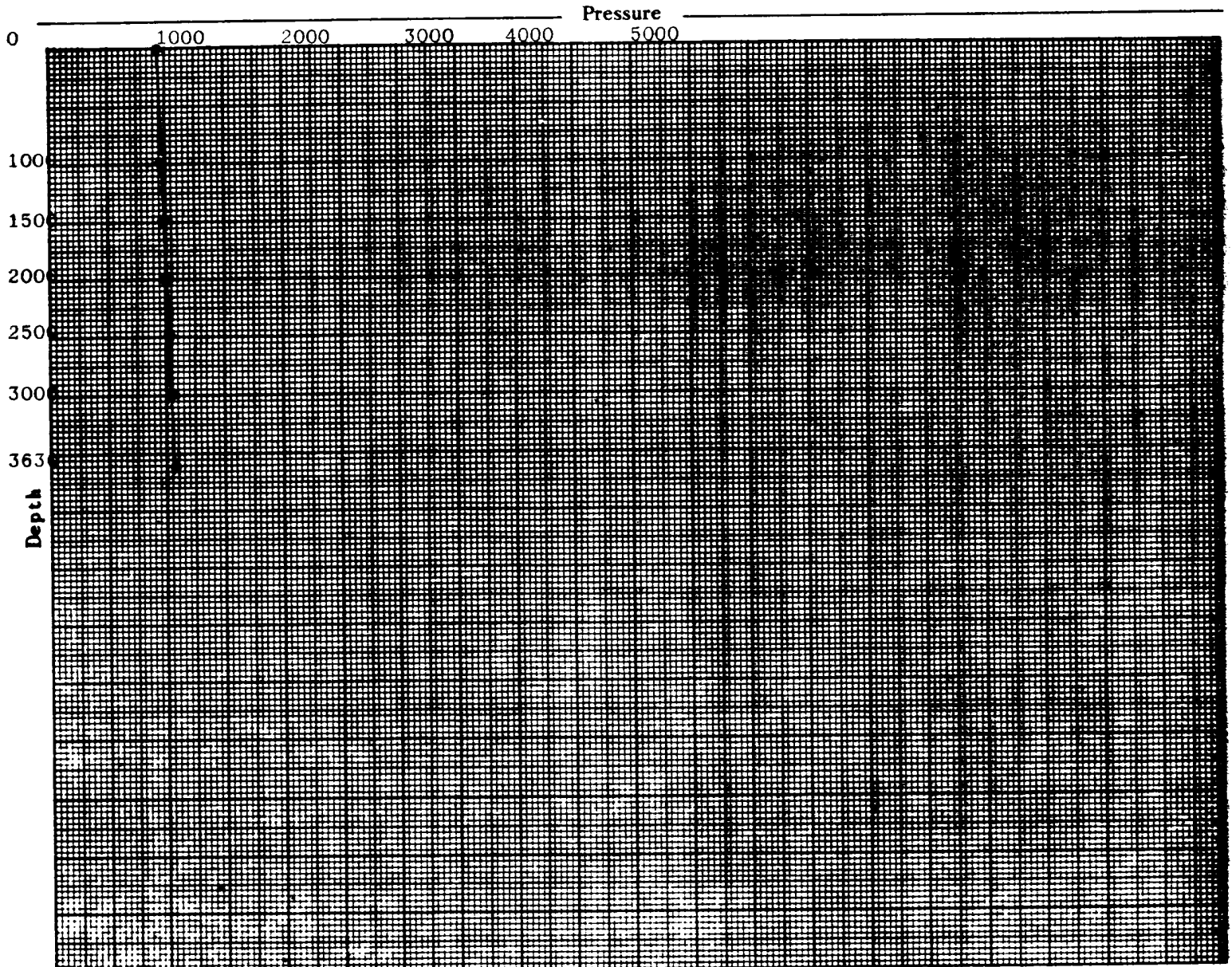
BOTTOM HOLE PRESSURE RECORD

OPERATOR Western Reserves Oil Company
FIELD Pecos Slope
FORMATION Abo
LEASE Bravo Federal WELL #5
COUNTY Chaves STATE New Mexico
DATE 12/15/82 TIME 9:30 AM
Status Shut in
Test Depth 3630'
Time S. I. 141.5 hrs. Last test date -
Tub Pres. 940 BHP last test -
Cas. Pres. 750 BHP change -
Elev. 3777' GL+8' Fluid top None
Datum (+86)** Water top None
Temp. 90 F Run by JSI #35
Cal. No. A2410N Chart No. 1

Depth	Pressure	Gradient
0	940	-
1000	969	.029
1500	986	.034
2000	1003	.034
2500	1021	.036
3000	1040	.038
3630	1065	.038
3691 (+86)	1067 * **	(.038)

* Extrapolated Pressure

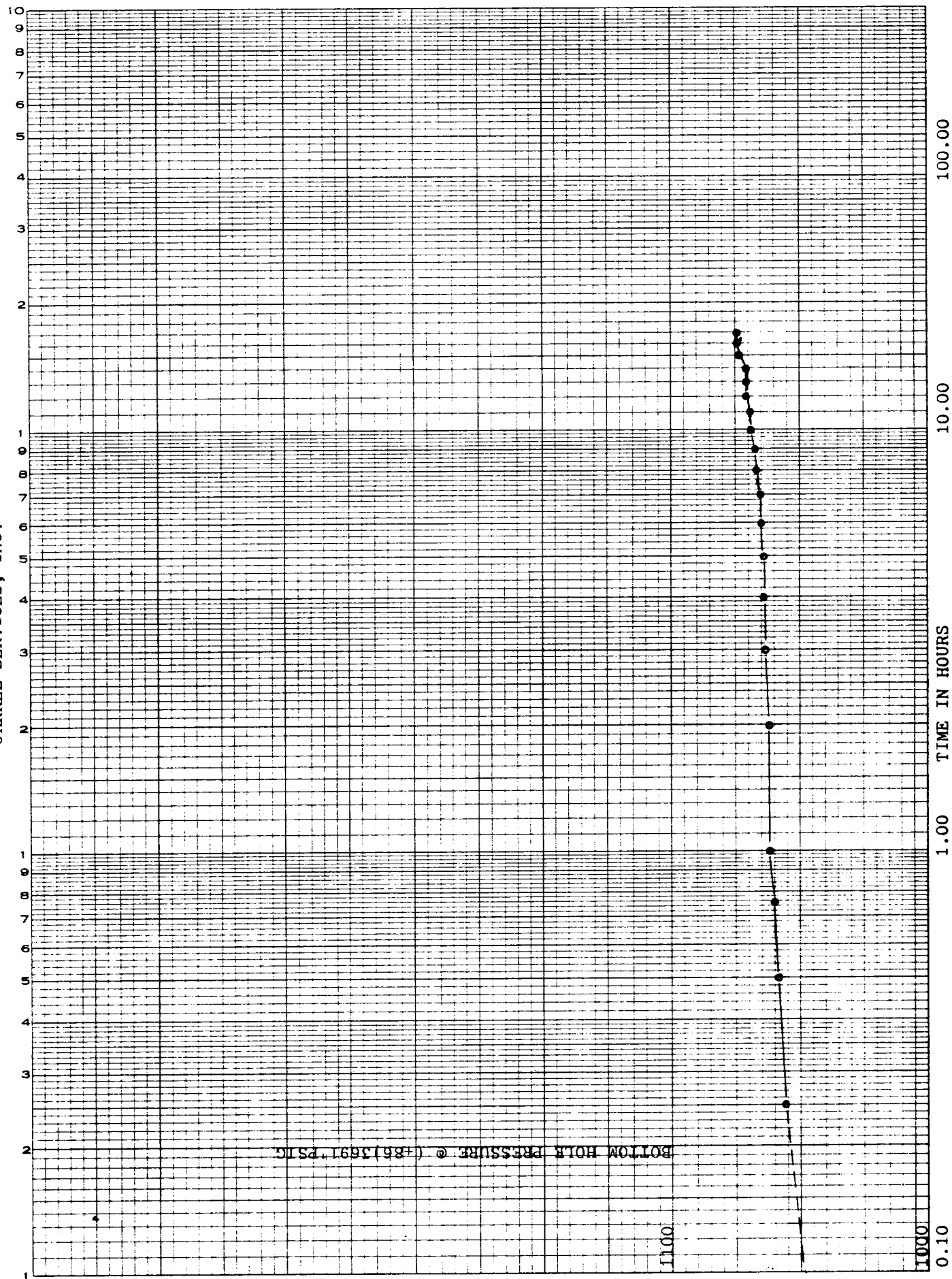
** Midpoint of Casing Perforations



DIETZGEN CORPORATION
MADE IN U. S. A.

NO. 340R-L310 DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
3 CYCLES X 10 DIVISIONS PER INCH

JARREL SERVICES, INC.



JARREL SERVICES, INC.

POST OFFICE BOX 1654

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HOBBS, NEW MEXICO 88240

BOTTOM HOLE PRESSURE RECORD

OPERATOR Western Reserves Oil Company
 FIELD Pecos Slope
 FORMATION Abo
 LEASE Bravo Federal WELL # 5
 COUNTY Chaves STATE New Mexico
 DATE 12/16/82 TIME 8:00 AM
 Status Shut in
 Test Depth 3630'
 Time S. I. 17.0 hrs. Last test date 12/15/82
 Tub Pres. 952 BHP last test 1067
 Cas. Pres. - BHP change 7# Gain
 Elev. 3777' GL+8' Fluid top None
 Datum (+86)** Water top None
 Temp. 90° F Run by JSI #35
 Cal. No. A2410N Chart No. 2

Depth	Pressure	Gradient
0	952	-
1000	975	.023
1500	992	.034
2000	1010	.036
2500	1028	.036
3000	1047	.038
3630	1072	.038
3691 (+86)	1074 * **	(.038)

* EXTRAPOLATED PRESSURE

** MIDPOINT OF CASING PERFORATIONS

