

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT

OIL CONSERVATION DIVISION
P. O. BOX 2088
SANTA FE, NEW MEXICO 87501

RECEIVED

Form C-122
Revised 10-1-78

MAR - 5 '90

clsf
File

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Type Test ☒ Initial ☐ Annual ☐ Special		Test Date 1-5-90		ARTESIA, OFFICE	
Company Great Western Drilling Company			Connection No		
Pool Pecos Slope Abo			Formation Abo		Unit
Completion Date 10-25-89		Total Depth 4050	Plug Back TD 4,047'	Elevation GL 3909	Form or Lease Name Quail Federal Cor.
Eq. Size 4 1/2	Wt. d	Set At 4050	Perforations: From 3714 To 4001		Well No. 6
Tbg. Size 2 3/8	Wt. 4.7	Set At 3,999'	Perforations: From open To end		Unit Sec. Twp. Rge. J 15 6S 25E
Type Well - Single - Bradenhead - G.C. or G.O. Multiple Single			Packer Set At None		County Chaves
Producing Thru Tbg.		Reservoir Temp. °F 101 3850	Mean Annual Temp. °F 60	Baro. Press. - P _a 13.2	State NM
L 3850	H 3850	G _g .722	% CO ₂ .12	% N ₂ 4.72	% H ₂ S --
Prover 2"		Meter Run		Taps	

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.	Temp. °F	Press. p.s.i.g.		Temp. °F
SI							930		930		72 hrs.
1.	2	x	1/8	920		50	920		935		1 hr.
2.	2	x	3/16	875		56	875		890		1 hr.
3.	2	x	7/32	841		56	841		860		1 hr.
4.	2	x	1/4	807		56	807		830		1 hr.
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor, F _{pv}	Rate of Flow Q, Mcfd
1	.2648		933.2	1.010	1.177	1.139	335
2	.6082		888.2	1.004	1.177	1.130	721
3	.8393		854.2	1.004	1.177	1.124	952
4	1.087		820.2	1.004	1.177	1.119	1,179
5							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	Mat/bbl.
1.	1.41	510	1.31	.771	Dry Gas	
2.	1.34	516	1.33	.783	A.P.I. Gravity of Liquid Hydrocarbons	Dry
3.	1.29	516	1.33	.791	Specific Gravity Separator Gas	.722
4.	1.24	516	1.33	.798	Specific Gravity Flowing Fluid	XXXXXX
5.					Critical Pressure * 661	P.S.I.A.
					Critical Temperature * 387	R

NO.	P _r ²	P _w	P _w ²	P _r ² - P _w ²
1	908.0	824.5	65.1	
2	868.5	754.3	135.3	
3	837.1	700.7	188.9	
4	808.2	653.2	236.4	
5				

(1) $\frac{P_r^2}{P_r^2 - P_w^2} = 3.763$

AOF = 0 $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 3.617$

(2) $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 3.068$

Post ID-2
8-3-90
comp & BK

Absolute Open Flow	3,617	Mcfd @ 15.025	Angle of Slope @	49.9	Slope, n	.846
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Remarks: * = corrected to 4.72% N₂
AOF cal. from known BHP's. Cal. back to surface
BHP's obtained with Amerada RPG-3 instrument

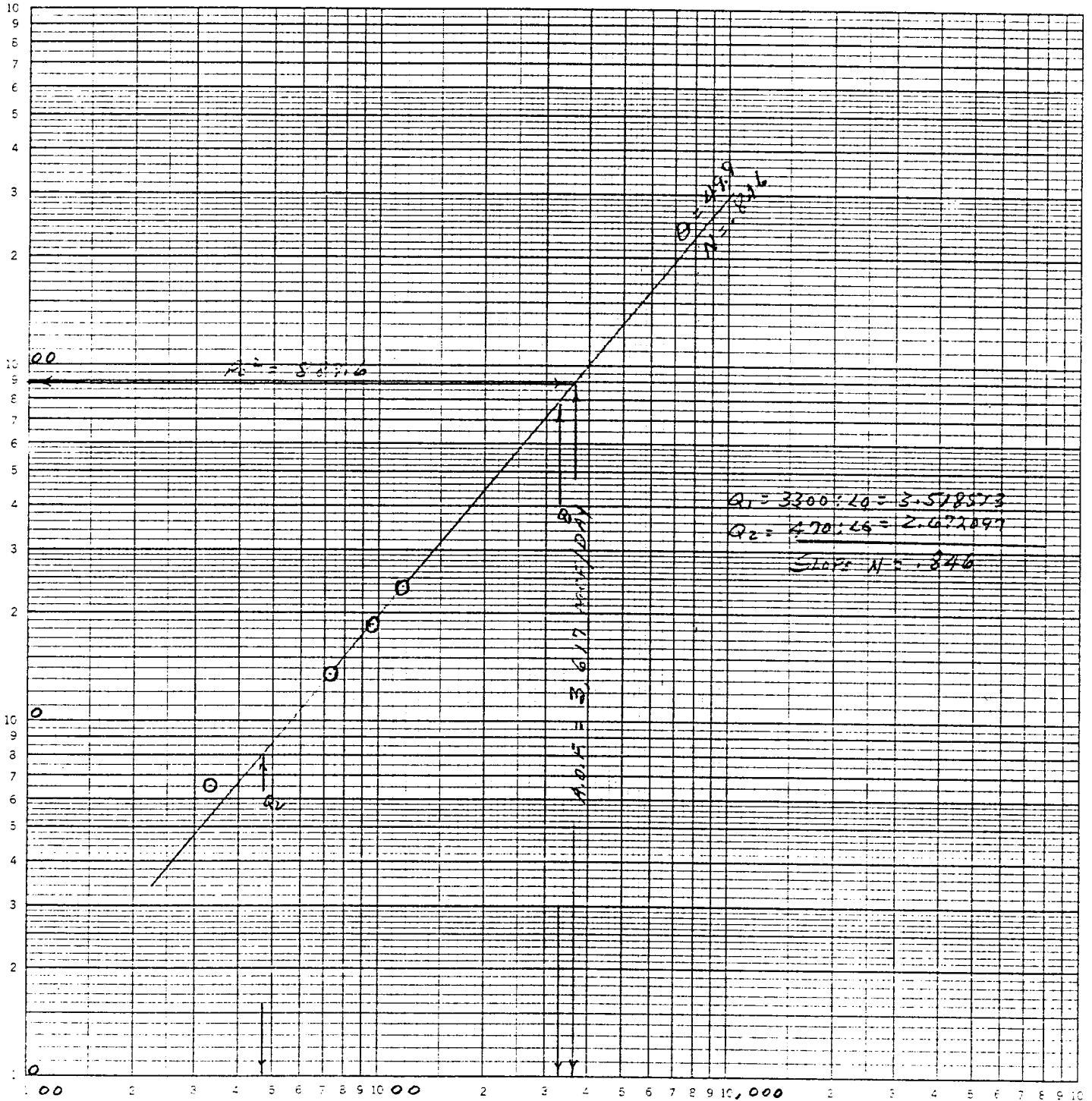
Approved By Division	Conducted By: John West Engineering	Calculated By: TRM	Checked By: TRM
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GREAT WESTERN DRILLING CO.
Quail Fed. No. 6

J - 15 - 6S - 25E
Chaves Co., NM
1-5-90

167400

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



WORK SHEET FOR CALCULATION OF WELLHEAD PRESSURES (P_{wh} or P_w)

FROM KNOWN BOTTOM HOLE PRESSURE (P_b or P_s)

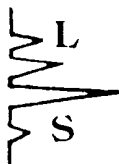
COMPANY Great Western Drilling LEASE COAL WELL NO. 6 DATE 1-5-90

LOCATION: Unit J Section 15 Township 6-S Range 25-S

L 3850 H 3850 L/H 1.000 G .722 % CO₂ .12 % N₂ 4.72 % H₂S ---

GH 2700.7 P_{CT} 4441 T_{CT} 25.87

LINE	1	2	3	4	5	6	7	8
1	T _w (W.H. • R)	534	534	534	534	534	534	534
2	T _s (B.H. • R)	534	534	534	534	534	534	534
3	T = $\frac{T_w + T_s}{2}$	547.5	547.5	547.5	547.5	547.5	547.5	547.5
4	Z (Est.)	1.829	1.829	1.829	1.829	1.829	1.829	1.829
5	TZ	444.5	444.5	444.5	444.5	444.5	444.5	444.5
6	GH/TZ	6.252	6.161	6.184	6.124	6.139	6.090	6.090
7	e ^s (Table XIV)	1.264	1.259	1.260	1.258	1.258	1.256	1.256
8	P _{wh} or P _s	1019.2	1019.2	979.2	979.2	938.2	905.2	905.2
9	P _{wh} or P _s 2	1035.8	1035.8	944.1	944.1	880.2	819.4	819.4
10	P _{wh} or P _s 2 = P _{wh} 2 = P _s 2 / e ^s	821.5	821.5	752.6	752.6	699.2	651.9	651.9
11	P _{wh} or P _w	706.4	706.4	867.5	867.5	836.1	807.4	807.4
12	P _{wh} or P _w 2 = $\frac{P_{wh} + P_s}{2}$ or $\frac{P_{wh} + P_s}{2}$	922.4	922.4	920.8	921.3	887.1	851.3	851.3
13	P _{wh} or P _w 2 = (P/P _{CT})	1.45	1.45	1.39	1.39	1.34	1.29	1.29
14	T _{wh} or T _w 2 = (T/T _{CT})	1.41	1.41	1.41	1.41	1.41	1.41	1.41
15	Z (Table XI)	1.829	1.829	1.829	1.829	1.829	1.829	1.829



LABORATORY SERVICES

1331 Tasker Drive
Hobbs, New Mexico 88240

Telephone: (505) 397-3713

FOR: John West Engineering
Attention: Mr. Buz Thomason
412 N. Dal Paso
Hobbs, New Mexico 88240

SAMPLE
IDENTIFICATION: Quail Fed. #6
COMPANY: Great Western
LEASE:
PLANT:

SAMPLE DATA: DATE SAMPLED: 1/5/90 GAS (x) LIQUID ()
ANALYSIS DATE: 1/7/90 SAMPLED BY: West Eng.
PRESSURE — PSIG ANALYSIS BY: Rolland Perry
SAMPLE TEMP. °F:
ATMOS. TEMP. °F:

REMARKS:

COMPONENT ANALYSIS

COMPONENT		MOL PERCENT	GPM	LIQ. VOL. PERCENT
Hydrogen Sulfide	(H ₂ S)	--		
Nitrogen	(N ₂)	4.72		
Carbon Dioxide	(CO ₂)	0.12		
Methane	(C ₁)	83.57		
Ethane	(C ₂)	4.59	1.171	
Propane	(C ₃)	1.88	0.518	
I-Butane	(C ₄)	0.36	0.118	
N-Butane	(NC ₄)	0.77	0.243	
I-Pentane	(C ₅)	0.34	0.125	
N-Pentane	(NC ₅)	0.39	0.141	
Hexane	(C ₆)	3.26	1.504	
Heptanes Plus	(C ₇ +)			
		<u>100.00</u>	<u>3.820</u>	

BTU/CU. FT.—DRY 1198
AT 14.650 WET 1174

SPECIFIC GRAVITY—CALCULATED 0.722
MEASURED

VAPOR PRESSURE (ABSOLUTE)—CALCULATED

26# GASOLINE— 1.855

CU. FT./GAL. —

TEST DATE: January 5, 1990
TEST DEPTH: 3,850 FEET

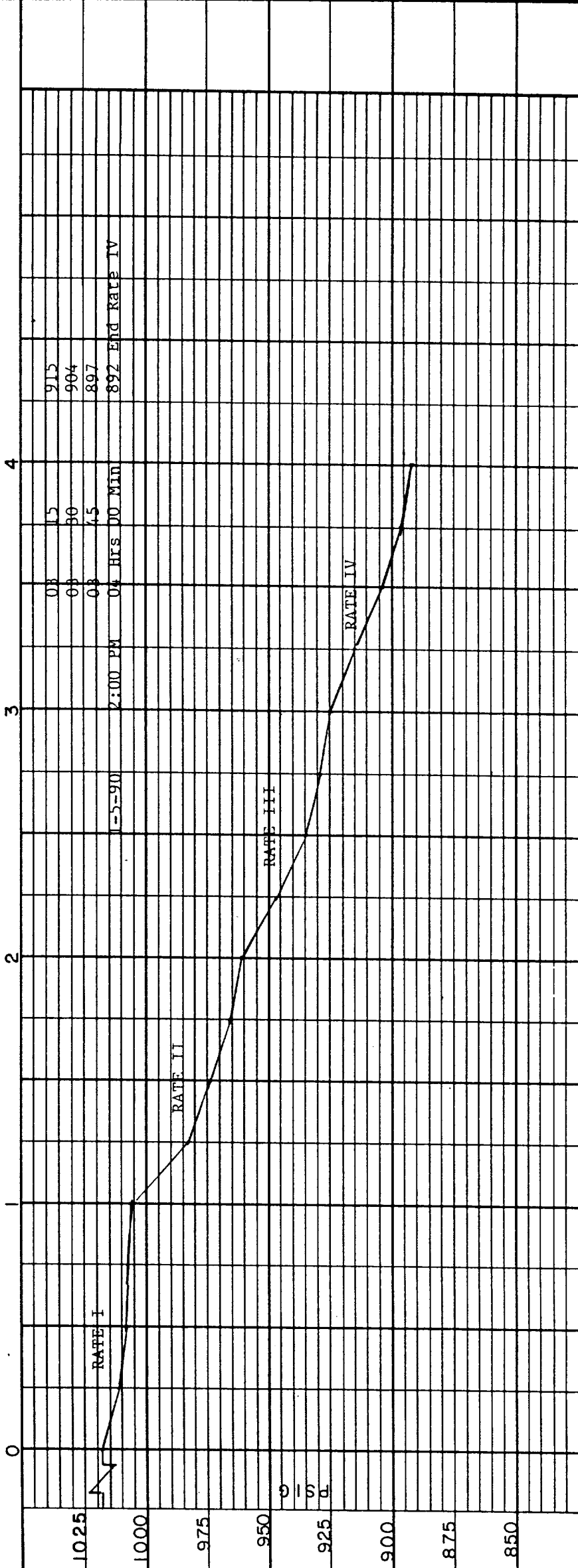
ELEMENT NO.: 18129
RANGE: 0-2500 PSI
CLOCK NO.: 27521
RANGE: 0-24 HOUR

GREAT WESTERN DRILLING COMPANY
Quail Federal No. 6

B H P to use for calculating A O F Test

DATE	TIME	CUM HRS/MIN	PSIG @ 3,850 FEET
1-5-90	9:40 AM		1018 Gauge reached 3,850 feet
	10:00 AM	00 Hrs 00 Min	1018 Open choke, begin test
		00 15	1011
		00 30	1009
11:00 AM		00 45	1008
		01 00	1006 End Rate I
		01 15	983
		01 30	974
11:45 AM		01 45	966
12:00noon		02 00	961 End Rate II
		02 15	947
		02 30	935
		02 45	929
1:00 PM		03 00	925 End Rate III

TIME-IN HOURS



TEST DATE:
TEST DEPTH:

JANUARY 5 to 8, 1990
3,850 FEET

ELEMENT NO.:
RANGE:
CLOCK NO.:
RANGE:

18129
0-2500 PSI
20607
0-72 HOUR

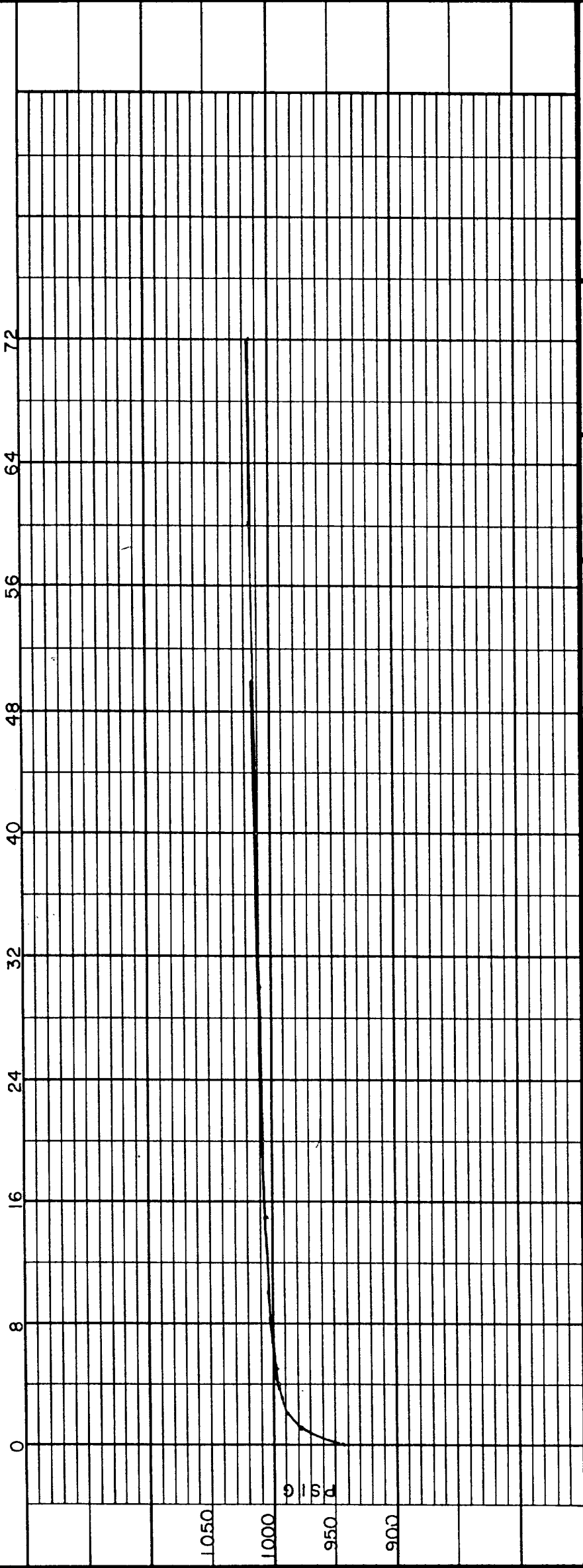
GREAT WESTERN DRILLING COMPANY

Quail Federal No. 6

Bottom Hole Pressure Build-up Curce

NOTE:SEE TABULATION OF PRESSURE AND TIME ON ATTACHED SHEET.

TIME-IN HOURS



GREAT WESTERN DRILLING COMPANY
 QUAIL FEDERAL NO. 6
 BOTTOM HOLE PRESSURE BUILD-UP TEST
 TABULATION OF TIMES AND PRESSURES

TEST CONDUCTED BY:
 JOHN WEST ENGINEERING

TEST DATE: January 5 - 8, 1990
 TEST DEPTH: 3850 Feet
 ELEMENT NO.: 18129 (0 - 2500 PSI)
 OPERATOR: B. Thomason

<u>DATE</u>	<u>TIME</u>	<u>CUM. HRS./MIN.</u>	<u>PSIG @ 3850 FEET</u>
1-5-90	2:45 PM	00 Hrs. 00 Min.	945, gauge reached 3850'
		00 15	959
		00 30	969
		00 45	974
	3:45 PM	01 00	979
		01 30	984
	4:45 PM	02 00	990
		02 30	992
	5:45 PM	03 00	993
		03 30	996
	6:45 PM	04 00	997
1-5-90	7:45 PM	05 00	998
1-6-90	12:45 AM	10 00	1004
	5:45 AM	15 00	1006
	10:45 AM	20 00	1008
1-6-90	8:45 PM	30 00	1010
1-7-90	6:45 AM	40 00	1011
1-7-90	4:45 PM	50 00	1014
1-8-90	2:45 AM	60 00	1015
1-8-90	2:45 PM	72 00	1016, chart ran down, end test