

MULTI POINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-61

RECEIVED

Type Test ☒ Initial ☐ Annual ☐ Special				Test Date 12-22-82	
Company STEVENS OPERATING CORP. ✓				Connection AIR NEW WELL	
Pool PECOS SLOPE U.D. ✓				Formation ABO	
Completion Date 12-17-82		Total Depth 6150		Plug Hole 1 5212	
Well Site 5.500		Well ID 17.0		Elevation 0	
Flow Site 2.375		Flow ID 4.7		Well No. 1	
Type Well - Single - (Vardenhead - G.O. or G.O. Multiple) S. NGLE				Packer Set At 0	
Producing Thru TUBING		Reservoir Temp. °F 102		Mean Annual Temp. °F 60	
Baro. Press. - P _a 13.2		State NEW MEXICO		County CHAVES	
L 4334		H 4334		Q _g 0.707	
% CO ₂ 0.18		% N ₂ 19.16		% H ₂ S 0	
Prover 2.0		Meter Run 0		Type 0	

FLOW DATA						TUBING DATA		B.H.P. DATA		Duration of Flow	
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. in. H ₂ O	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.		CHOKE
SI							921		1042		54 HRS.
1	2.00 X 0.313		300	0	51	863	60	991	15/64	1	
2	2.00 X 0.313		530	0	53	760	60	878	16/64	1	
3	2.00 X 0.313		585	0	52	674	60	773	17.5/64	1	
4	2.00 X 0.313		610	0	50	615	60	665	19/64	1	
5											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{P/P_m}$	Pressure P _m	Flow Temp. Factor F _t	Gravity Factor F _g	Super Compress. Factor, F _{sp}	Rate of Flow Q, Mhd
1	1.67	0	313.2	1.0088	1.1893	1.0259	645.
2	1.67	0	543.2	1.0068	1.1893	1.0439	1136.
3	1.67	0	598.2	1.0078	1.1893	1.0488	1258.
4	1.67	0	623.2	1.0098	1.1893	1.0517	1317.
5							

NO.	P ₁	Temp. °F	Q	Z	Gas Liquid Hydrocarbon Ratio _____ Mol/bbl.	
1	0.49	511.	1.51	0.950	A.P.I. Gravity of Liquid Hydrocarbons _____ Deg.	
2	0.86	513.	1.51	0.918	Specific Gravity Separator Gas _____ 0.707	
3	0.94	512.	1.51	0.909	Specific Gravity Flowing Fluid _____ XXXXXX	
4	0.98	510.	1.50	0.904	Critical Pressure _____ 635. _____ P.S.I.A. _____ P.S.I.A.	
5					Critical Temperature _____ 340. _____ °F _____ °F	

NO.	P ₁	P ₂	R ₁	R ₂	P ₂ ² - R ₂ ²
1	1008.	891.	793.	82.	
2	794.	792.	627.	248.	
3	618.	699.	489.	386.	
4	460.	604.	365.	510.	
5					

$$(1) \frac{P_2^2}{P_2^2 - R_2^2} = 1.7162$$

$$AOF = Q \left[\frac{R_2^2}{P_2^2 - R_2^2} \right]^n = 1728.$$

$$(2) \left[\frac{R_2^2}{P_2^2 - R_2^2} \right]^n = 1.3118$$

Absolute Open Flow	1728.	Mhd @ 15.025	Angle of Slope	63.3	Slope, n	0.503
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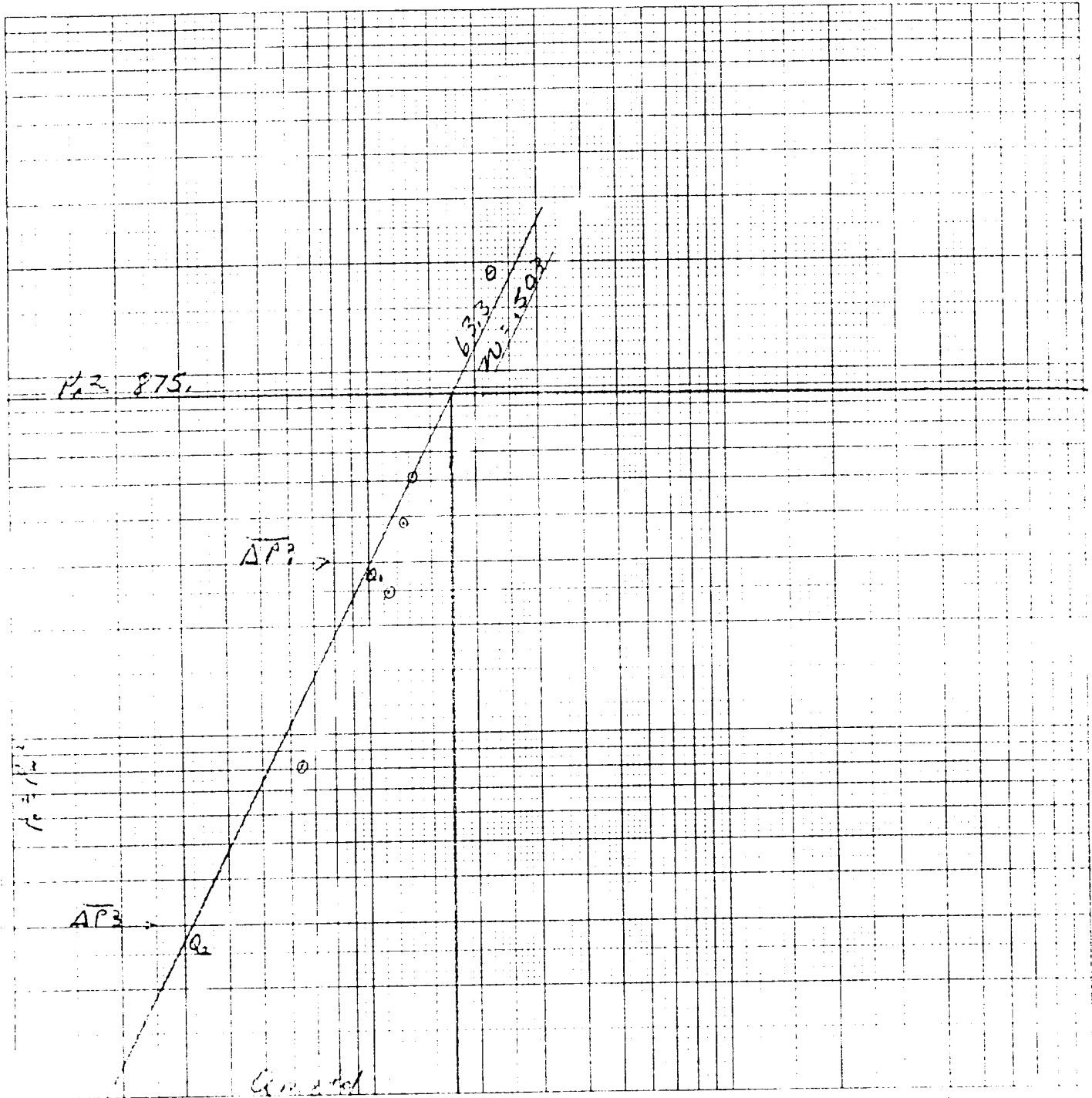
Remarks: BOTTOM HOLE PRESSURE MEASURED WITH AMARADA PRESSURE ELEMENT.

Approved By Commission	Conducted By: DON BENNETT	Calculated By: BENNETT-CATHEY	Checked By:
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Doc. No. 1
 Unit D. S. 1712. 200
 01. 10. 1912

12-22-22

46 7400



AP_3 1011.200

Q_2 30

Q_1 1011.

Q_2 318

1.8 Q_1 3.005

1.8 Q_2 2.502

" " .003

TEST DEPTH: 4,083 FEET

ELEMENT NO.: RPG3# 23194

RANGE: 5,025 LBS.

CLOCKS: 27743

RANGE: 48 HRS.

OPERATOR: BOB HERREN

Note: See Attached Sheet for Tabulation of Pressure
And Time.

MIKE VOWELL

STEVENS OPERATING

HANNIGAN FEDERAL A WELL NO. 1

BENNETT-CATHEY WIRE LINE SERVICE

Box 787

Artesia, N.M. 88210

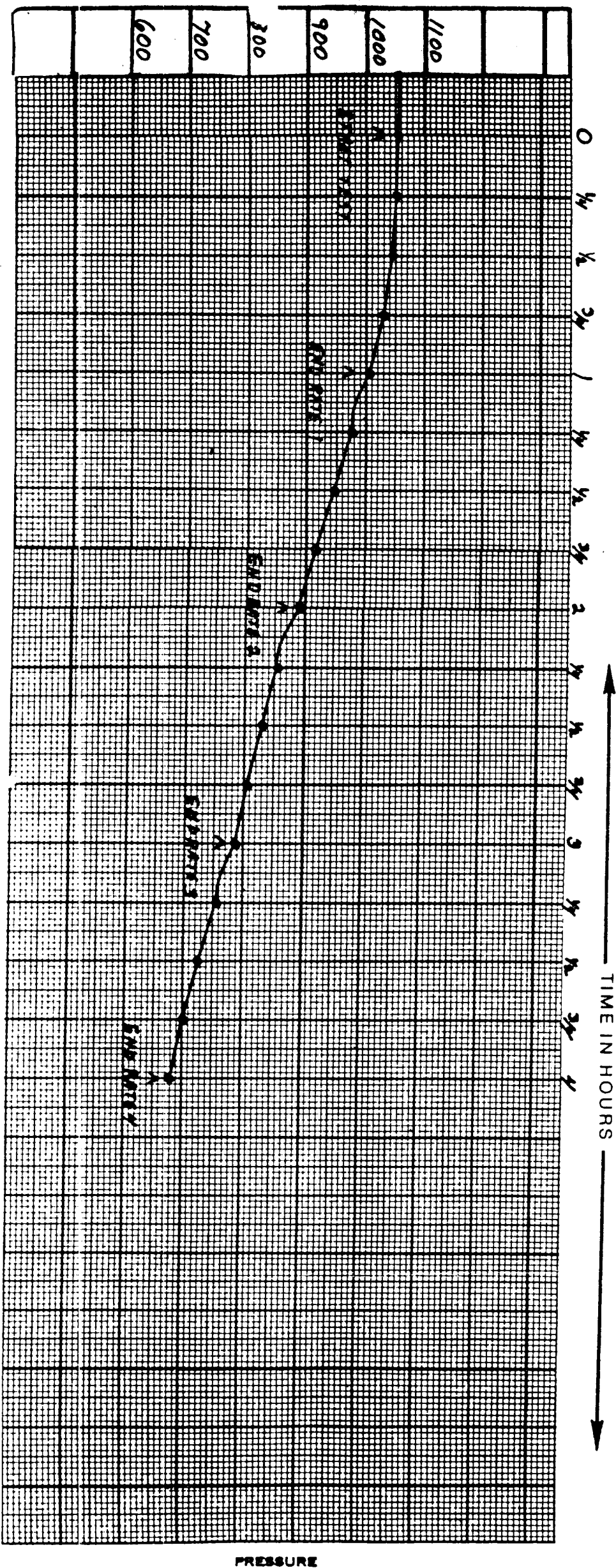
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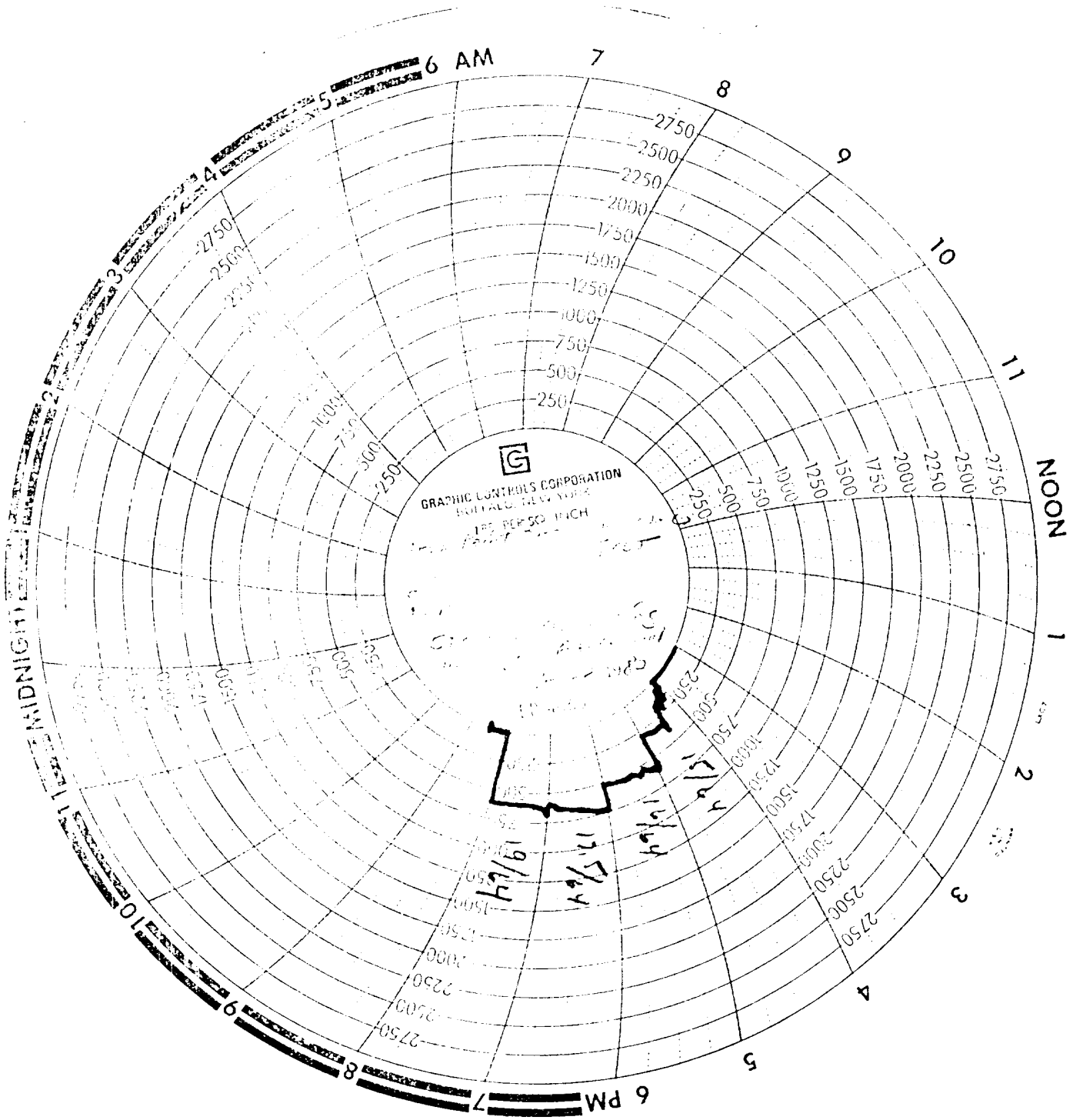
Drawn By

Scale: As Shown

BENNETT-
CATHEY
WELL SERVICES

4 POINT BACK PRESSURE TEST







PRECISION SERVICE INC.
Flow Measurement Engineers
Analysis Results Summary
Casper, WY 82601

Run No. 2
Date Run 12-24-82
Date Sampled 12-22-82

Analysis For: STEVENS OPERATING CO.

Lease: Hannigan 1-A Federal

Producer Stevens Operating

Location _____

County CHAVES

State NEW MEXICO

Purpose _____

Sampled By _____

Sampling Temp _____ °F

Atmos Temp. 62 °F

Volume/day _____

Formation _____

Pressure on Boreb 660

PSIG; Line Pressure _____

PSIG _____

Gas Component

Analysis

Press. Base: 14.65

	Mol. %	Liq. %	GPM Per MCF
Carbon Dioxide CO ₂	<u>.175</u>		
Oxygen O ₂			
Nitrogen N ₂	<u>19.161</u>		
Hydrogen Sulfide H ₂ S			
Methane C ₁	<u>72.547</u>		<u>12.296</u>
Ethane C ₂	<u>4.308</u>		<u>1.149</u>
Propane C ₃	<u>2.043</u>		<u>.561</u>
Iso-Butane IC ₄	<u>.357</u>		<u>.116</u>
Nor-Butane NC ₄	<u>.698</u>		<u>.220</u>
Iso-Pentane IC ₅	<u>.212</u>		<u>.077</u>
Nor-Pentane NC ₅	<u>.210</u>		<u>.076</u>
Hexanes C ₆			
Heptanes C ₇	<u>.288</u>		<u>.118</u>
Heptanes Plus C ₇ +			
Total	<u>100.000</u>		<u>14.613</u>
Pentane + G.P.M.			<u>.272</u>
OPANE + G.P.M.			<u>1.168</u>

BTU Dry 924
BTU Wet 908
Calc. Specific Gravity 707

@ Std. Press. 14.696

BTU Dry 927
BTU Wet 911

Calc. Vap. Press. #/Sq.In. _____

Reid Vap. Press. #/Sq.In. _____

Z Factor .9980
N Value 1.3131
Ave Mol Wt 20.4461

Run by JAP

Calculated By JAP

marks: _____

Distribution: _____

COMPANY STEVENS OPERATING WELL NAME HANNIGAN FEDERAL A WELL NO. 1
DATE OF TEST 12-22-82 FORMATION ABO PAGE 1 OF 1
4 POINT BACK PRESSURE TEST

ELEMENT NUMBER	RPG3# 23194	RANGE	5,025
CLOCK NUMBER	27743	RANGE	48 HRS.
TIME WELL SHUT IN	1000 HR. 12-20-82		
TIME CLOCK STARTED	1002 HR. 12-22-82		
DEAD WEIGHT ELEMENT ON SURFACE	927	PSIA SHUT IN	LBS.
TIME ELEMENT REACHED BOTTOM	1305 HRS.	12-22-82	
DEAD WEIGHT ELEMENT ON BOTTOM	927	PSIA SHUT IN	LBS.
ELEMENT SET AT	4,083		FEET.
TEMPERATURE	4,083	FT.	102° °F.
DEAD WEIGHT AT THE END OF	54	HOURS	0 MINUTES.

[illegible]

BENNETT - CATHEY
 Artesia, New Mexico 88210
SUBSURFACE PRESSURE MEASUREMENTS

COMPANY STEVENS OPERATING WELL NAME HANNIGAN FEDERAL A WELL NO. 1
 DATE OF TEST 12-22-82 TO 12-23-82 FORMATION ABO PAGE 1 OF 1

24 HRS. BUILD-UP TEST

CHART READINGS AND CALCULATIONS FOR BUILDUP OR DRAWDOWN TEST

ELEMENT NUMBER RPG3#23194 RANGE 5,025 LBS.
 CLOCK NUMBER 27743 RANGE 48 HRS.
 TIME WELL SHUT IN 2000 HRS. 12-22-82
 TIME CLOCK STARTED 1002 HRS. 12-22-82
 DEAD WEIGHT ELEMENT ON SURFACE 927 PSIA SHUT IN LBS.
 TIME ELEMENT REACHED BOTTOM 1305 HRS. 12-22-82
 DEAD WEIGHT ELEMENT ON BOTTOM 927 PSIA SHUT IN LBS.
 ELEMENT SET AT 4,083 FEET.
 TEMPERATURE 4,083 FT. 103° °F.
 DEAD WEIGHT AT THE END OF 24 HOURS 45 MINUTES.

836
PSIA

DATE	HOUR	TIME	DEFLECTION in/inches	CALCULATED PRESSURE psig	CORRECTION P ± PC psig	CORRECTED PRESSURE psia	PRESSURE AT MID-POINT OF PERFORATIONS psia
12-22-82	0	2000		649	13.2	662	678
	1/4	2015		725	13.2	738	754
	1/2	2030		775	13.2	788	804
	3/4	2045		807	13.2	820	836
	1	2100		826	13.2	839	855
	1 1/4	2115		845	13.2	858	874
	1 1/2	2130		860	13.2	873	889
	1 3/4	2145		872	13.2	885	901
	2	2200		883	13.2	896	912
	2 1/4	2215		891	13.2	904	920
	2 1/2	2230		900	13.2	913	929
	2 3/4	2245		906	13.2	919	935
	3	2300		911	13.2	924	940
	3 1/4	2315		918	13.2	931	947
	3 1/2	2330		925	13.2	938	954
	3 3/4	2345		930	13.2	943	959
	4	2400		934	13.2	947	963
	4 1/2	2430		942	13.2	955	971
2-23-82	5	0100		950	13.2	963	979
	5 1/2	0130		955	13.2	968	984
	6	0200		960	13.2	973	989
	6 1/2	0230		964	13.2	977	993
	7	0300		968	13.2	981	997
	8	0400		975	13.2	988	1004
	9	0500		981	13.2	994	1010
	10	0600		987	13.2	1000	1016
	11	0700		992	13.2	1005	1021
	12	0800		996	13.2	1009	1025
	14	1000		1004	13.2	1017	1033
	16	1200		1010	13.2	1023	1039
	18	1400		1015	13.2	1028	1044
	20	1600		1020	13.2	1033	1049
	22	1800		1025	13.2	1038	1054
	24	2000		1027	13.2	1040	1056
	24 3/4	2034		1029	13.2	1042	1058

TEST DATE: 12-22-82 TO 12-23-82
TEST DEPTH: 4,083 FEET

ELEMENT NO.: RPG3# 23194
RANGE: 5,025 LBS.

CLOCKS: 27743
RANGE: 48 HRS.

OPERATOR: BOB HERREN

Note: See Attached Sheet for Tabulation of Pressure
And Time.

24 HR. BUILD UP TEST

MIKE VOWELL

STEVENS OPERATING

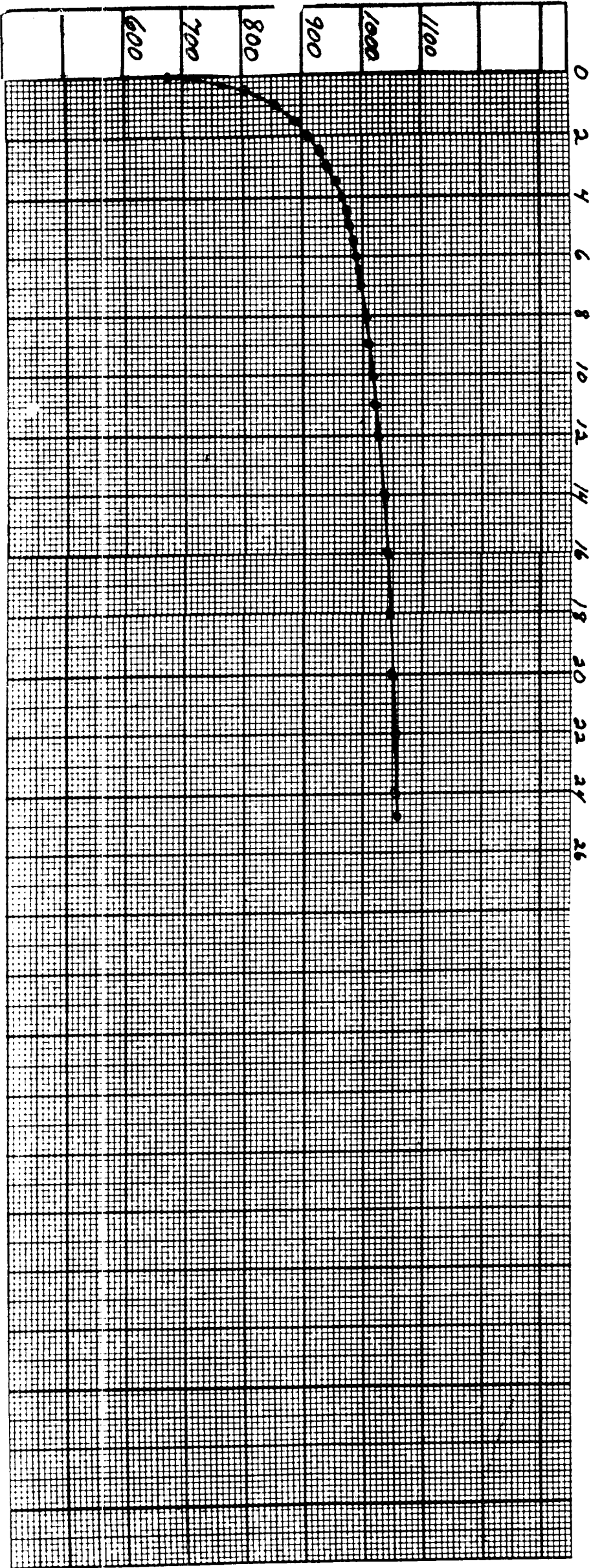
HANNIGAN FEDERAL A WELL NO. 1

BENNETT-CATHEY WIRE LINE SERVICE
Box 787
Artesia, N.M. 88210
505/746-3281

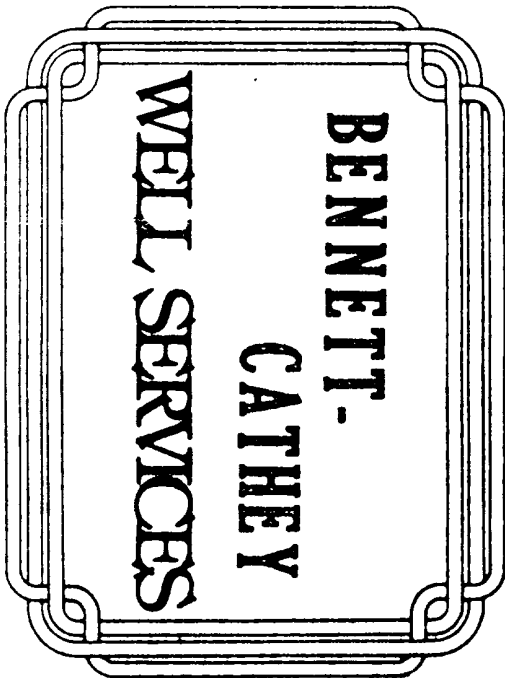
Drawn By

Scale: As Shown

TIME IN HOURS



PRESSURE





BENNETT-CATHEY WIRE LINE SERVICE

P. O. BOX 787

ARTESIA, NEW MEXICO 88210

Phone (505) 746-3281



BOTTOM HOLE PRESSURE SURVEY REPORT

OPERATOR STEVENS OPERATING
LEASE HANNIGAN FEDERAL A
WELL NO. 1
POOL FORMATION SBO
DATE 12-23-82 TIME 1305 HRS.
CO. MAN MIKE VOWELL
STATUS SHUT IN TEST DEPTH 4,334 FEET
TIME S.I. 1000 HRS. LAST TEST DATE FIRST TEST
12-20-82 BHP LAST TEST
TUB. PRES. 927 LB. BHP CHANGE
CAS. PRES. FLUID TOP
DATUM PLANE WATER TOP
DATUM PSIA 1055 LB RUN BY BOB HERREN
TEMP 103° CLOCK # 27743
PRESSURE RANGE 5,025 LBS.
ELEMENT NO. RPG3# 23914

DEPTH	PRESSURE	GRADIENT
0	927	
1,000	953	2.6
3,936	1030	2.6
4,083	1039	6.1
4,334	1055	6.34

TIME B.H.P. MEASURED 1305 HRS.
LENGTH OF TIME WELL SHUT IN 54 HRS. 0 MIN.

