

MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

RECEIVED

Type Test ☒ Initial ☐ Annual ☐ Special		Test Date 10-31-81		660 FNL	
Company SANDERS PETROLEUM CORPORATION		Connection AIR NEW WELL		1980 FEL	
Pool UNDESIGNATED		Formation ABO		Unit B	
Completion Date 10-31-81		Total Depth 4960		Plug Back TD 4900	
Elevation 3564 KB		Farm or Lease Name MCKAY SAMEDAN		Well No. 1	
Csg. Size 4.50		Well 10.5		Set At 4.052	
Perforations: From 4207 To 4222		Set At 4940		Perforations: From OPEN To ENDED	
Type Well - Single - Bradenhead - G.C. or G.O. Multiple SINGLE		Packer Set At NONE		County CHAVES	
Producing Thru 4214		Reservoir Temp. °F 4214 100°		Mean Annual Temp. °F 60	
Baro. Press. - P _a 13.2		State NEW MEXICO		Unit Sec. Twp. Rge. B 16 7S 26E	
L 4214		H 4214		G _g 0.6410	
% CO ₂ 0.138		% N ₂ 7.992		% H ₂ S 0	
Prover		Meter Run 3"		Taps FLANGE	

FLOW DATA							TUBING DATA		CASING DATA		Duration of Flow
NO.	Flow Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	TEMP. ° F.	B.H.P.	Temp. ° F.	
SI							972	58	1085		168
1.	3"	X	1.5	400	5.0	58	857	58	969		1
2.	3"	X	1.5	405	9.1	61	744	61	859		1
3.	3"	X	1.5	403	15.0	65	570	65	718		1
4.	3"	X	1.5	405	17.3	72	427	72	592		1
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, Mcfd
1	11.4100	45.45	413.2	1.0019	1.2490	1.0342	671
2	11.4100	61.69	418.2	.9990	1.2490	1.0336	908
3	11.4100	79.01	416.2	.9952	1.2490	1.0325	1157
4	11.4100	85.06	418.2	.9887	1.2490	1.0314	1236
5.							

NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio _____ Mcf/bbl.
1	.63	518	1.49	.935	A.P.I. Gravity of Liquid Hydrocarbons _____ Deg.
2	.64	521	1.50	.936	Specific Gravity Separator Gas _____ 6410.
3	.63	525	1.51	.938	Specific Gravity Flowing Fluid _____ X X X X X
4	.64	532	1.53	.940	Critical Pressure _____ 658 _____ P.S.I.A.
5					Critical Temperature _____ R _____ 347 _____ R

NO.	P _r	P _w	P _w ²	P _r ² - P _w ²
1	1098.2	982.2	964.7	241
2	1206.0	872.2	760.7	445
3		731.2	534.7	671
4		605.2	366.3	840
5				

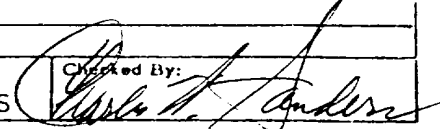
(1) $\frac{P_r^2}{P_r^2 - P_w^2} = 1.4358$

AOF = 0 $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 1481.0$

(2) $\left[\frac{P_r^2}{P_r^2 - P_w^2} \right]^n = 1.1982$

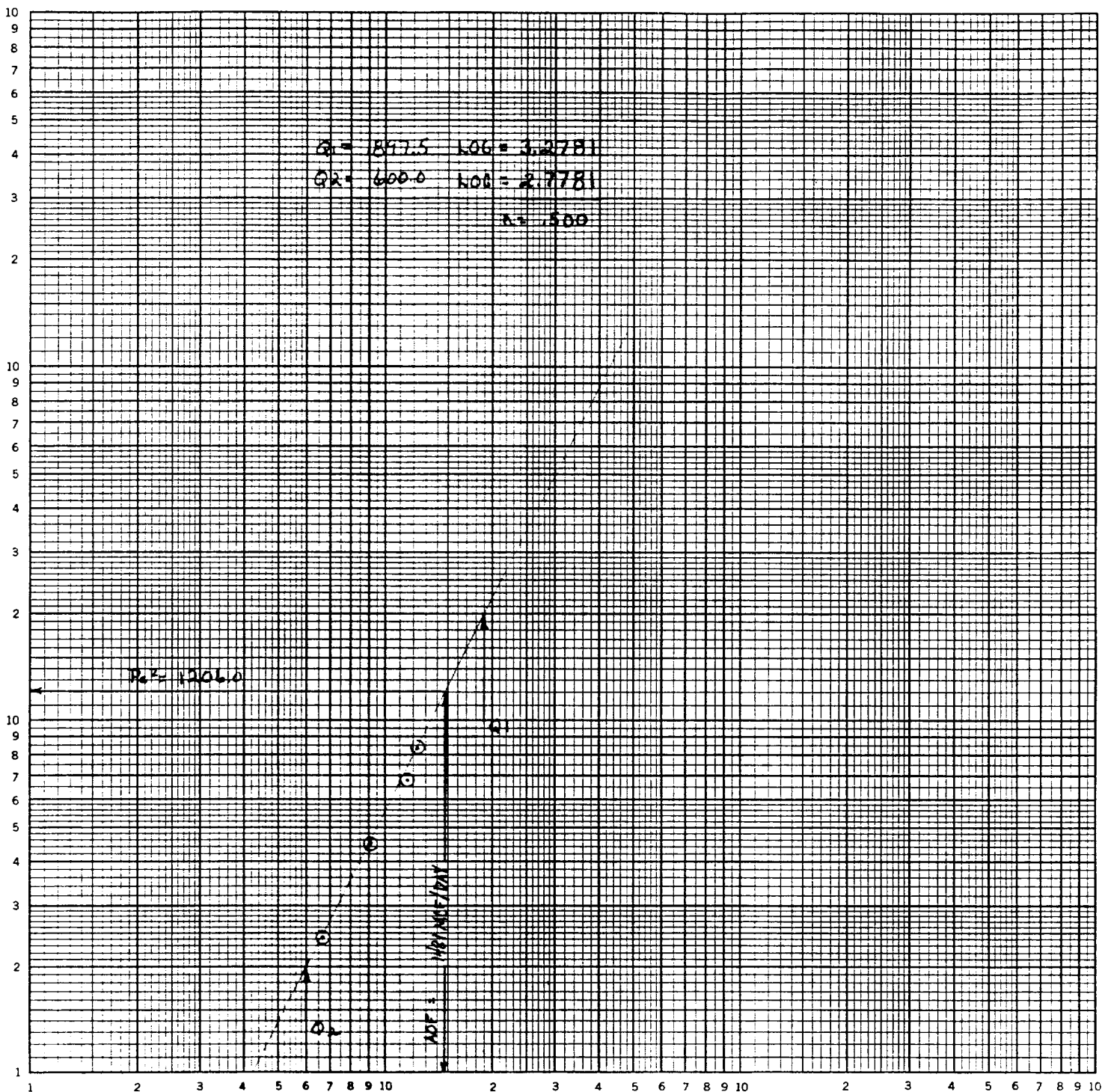
Absolute Open Flow _____ 1481.0 _____ Mcfd @ 15.025	Angle of Slope @ _____ 63.4	Slope, n _____ .5000
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Remarks: BOTTOM HOLE PRESSURES RECORDED WITH TANDUM AMERADA PRESSURE ELEMENTS.

Approved by Division _____	Conducted By: RICHARD TOWNLEY	Calculated By: WOHLFORD & JENKINS	Checked By: 
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46 7403

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



$$\Delta P_1^2 = P_c^2 - P_w^2 = 2000$$

$$\Delta P_2^2 = P_c^2 - P_w^2 = 200$$

BENNETT - CATHEY
 Artesia, New Mexico 88210
SUBSURFACE PRESSURE MEASUREMENTS

COMPANY SANDERS PETROLEUM WELL NAME MC KAY SAMEDAN
 DATE OF TEST 10-31-81 TO 11-1-81 FORMATION ABO PAGE 1 OF 2

CHART READINGS AND CALCULATIONS FOR BUILDUP OR DRAWDOWN TEST

ELEMENT NUMBER RPG3 #18753 RANGE 7600 LBS.
 CLOCK NUMBER 11520 RANGE 48 HOURS
 TIME WELL SHUT IN 1615 HOURS AFTER FOUR POINT TEST
 TIME CLOCK STARTED 0716 HOURS
 DEAD WEIGHT ELEMENT ON SURFACE 987 SHUT IN LBS.
 TIME ELEMENT REACHED BOTTOM 0919 HOURS
 DEAD WEIGHT ELEMENT ON BOTTOM 987 LBS.
 ELEMENT SET AT 4214 FEET.
 TEMPERATURE 4214 FT. 100 °F.
 DEAD WEIGHT AT THE END OF 184 HOURS 19 MINUTES.
 TANDUM ELEMENT RPG3 #9526 , RANGE 0-8,100 LBS.

DATE	HOUR	TIME	DEFLECTION in/inches	CALCULATED PRESSURE psig	CORRECTION P ± PC psig	CORRECTED PRESSURE psia	PRESSURE AT MID-POINT OF PERFORATIONS psia
10-31-81							
SHUT IN D.W.		1200		1085	13.2		1098
START TEST	0	1215		1085	13.2		1098
	1/4	1230		1002	13.2		1015
	1/2	1245		989	13.2		1002
	3/4	1300		979	13.2		992
END RATE 1	1	1315		969	13.2		982
	1-1/4	1350		908	13.2		921
	1-1/2	1345		888	13.2		901
	1-3/4	1400		874	13.2		887
END RATE 2	2	1415		859	13.2		872
	2-1/4	1430		775	13.2		788
	2-1/2	1445		752	13.2		765
	2-3/4	1500		737	13.2		750
END RATE 3	3	1515		718	13.2		731
	3-1/4	1530		641	13.2		654
	3-1/2	1545		622	13.2		635
	3-3/4	1600		611	13.2		624
END RATE 4	4	1615		592	13.2		605
START BUILD UP	0	1615		592	13.2		605
	1/4	1630		826	13.2		839
	1/2	1645		870	13.2		883
	3/4	1700		897	13.2		910
	1	1715		908	13.2		921
	1-1/4	1730		927	13.2		940
	1-1/2	1745		935	13.2		948
	1-3/4	1800		947	13.2		960
	2	1815		954	13.2		967
	2-1/4	1830		962	13.2		975
	2-1/2	1845		969	13.2		982
	2-3/4	1900		973	13.2		986
	3	1915		979	13.2		982
	3-1/2	1945		987	13.2		1000
	4	2015		992	13.2		1005
	4-1/2	2045		999	13.2		1012
	5	2115		1004	13.2		1017
	6	2215		1011	13.2		1024
	7	2315		1019	13.2		1032

COMPANY SANDERS PETROLEUM WELL NAME MC KAY SAMEDAN
DATE OF TEST 10-31-81 TO 11-1-81 LOCATION ABO PAGE 2 OF 2

[illegible]

NEW-TEX LAB

P. O. BOX 1161
HOBBS, N.M. 88240

CERTIFICATE OF ANALYSIS

No. 5944
Run No. _____
Date of Run 11-03-81
Date Secured _____

A Sample of Sanders Petroleum McKay San Medam #1
Secured from Bennet-Cathey Wireline
At Box 787 Secured by _____
Artesia, New Mexico 88210 Time _____ Date _____
Sampling conditions _____ Press _____
Temp. _____ Station No. _____

FRACTIONAL ANALYSIS

Percentage Composition

MOL % LIQ. % G.P.M.

Carbon Dioxide	.138		
Air			
Nitrogen	7.992		
Oxygen			
Hydrogen sulfide			
Hydrogen			
Methane	85.468		
Ethane	3.900	1.040	
Propane	1.334	.366	
Butanes			
Iso-Butane	.227	.074	
N-Butane	.431	.136	
Pentanes			
Iso-Pentane	.132	.048	
N-Pentane	.146	.053	
Hexanes	.098	.040	
Heptanes	Plus .134	.062	
Octanes			
TOTAL	100.000	1.819	

Calc. Sp. Gr.— 0.6410
Calc. A.P.I.— _____
Calc. Vapor Press.— _____ PSIA
Sp. Gr. _____
Mol. Wt. 18.57

LIQUID CONTENT (GAL./MCF)

Propane Calc. G.P.M. .366
Butanes Calc. G.P.M. .210
Pentanes Plus. G.P.M. .203
Ethane Calc. G.P.M. 1.040
_____ RVP Gasoline G.P.M. _____
B.T.U./Cu. Ft. @ 14.696 P.S.I.A.
Dry Basis 1011
Wet Basis 993
Sulfur Analysis by Titration
Gr./100 Cu. Ft. _____
Hydrogen Sulfide _____
Mercaptans _____
Sulfides _____
Residual Sulfur _____
Total Sulfur _____

Run by R. H. Hamilton Checked by Deane Simpson Approved by Deane Simpson

Additional Data and Remarks

TEST DATE: 10-31-81 TO 11-1-81
TEST DEPTH: 4214 FEET

ELEMENT NO.: Rpg3 #18753 & Rpg3 #9526

RANGE: 7600 LBS. & 8,100 LBS.

CLOCKS: 11520 & G3179

RANGE: 48 HOURS & 144 HOURS

OPERATOR: STEVE HARWELL

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

CHARLES SANDERS

SANDERS PETROLEUM

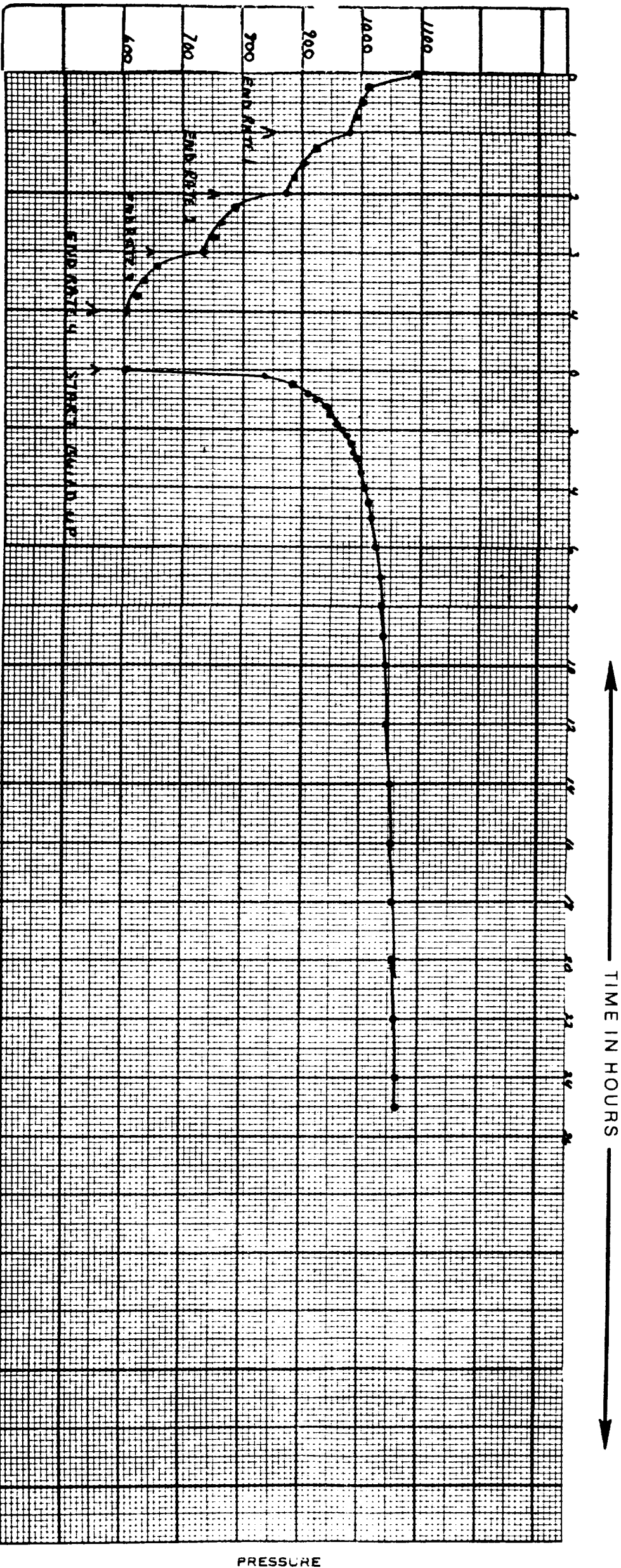
MC KAY & SAMEDAN
WELL NO. 1

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

Drawn By

Scale: As Shown

BENNETT-
CATHEY
WELL SERVICES





BENNETT-CATHEY WIRE LINE SERVICE



P. O. BOX 787
ARTESIA, NEW MEXICO 88210
Phone 746-3281

BOTTOM HOLE PRESSURE SURVEY REPORT

OPERATOR SANDERS PETROLEUM
LEASE MC KAY & SAMEDAN
WELL NO. 1
POOL FORMATION ABO
DATE 10-31-81 TIME 0919 HOURS
STATUS SHUT IN TEST DEPTH 4214 FEET
TIME S.I. 1200 HRS. LAST TEST DATE FIRST TEST
CAS. PRES. 10-24-81 BHP LAST TEST
TUB. PRES. 972 BHP CHANGE
ELE. FLUID TOP
DATUM PLANE WATER TOP
DATUM PSIA 1097 RUN BY STEVE HARWELL
TEMP 100° PRESSURE RANGE 7600 LBS.
CLOCK NO. 11520
ELEMENT NO. RPG3 #18753

DEPTH	PRESSURE	GRADIENT
0	972	
1,000	1009	3.7
2,000	1037	2.8
3,000	1067	3.0
4,064	1094	2.54
4,214	1097	2.0

TIME B.H.P. MEASURED: 0919 HOURS

LENGTH OF TIME WELL SHUT IN: 184 HOURS
19 MINUTES

