

NEW MEXICO OIL CONSERVATION COMMISSION
MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

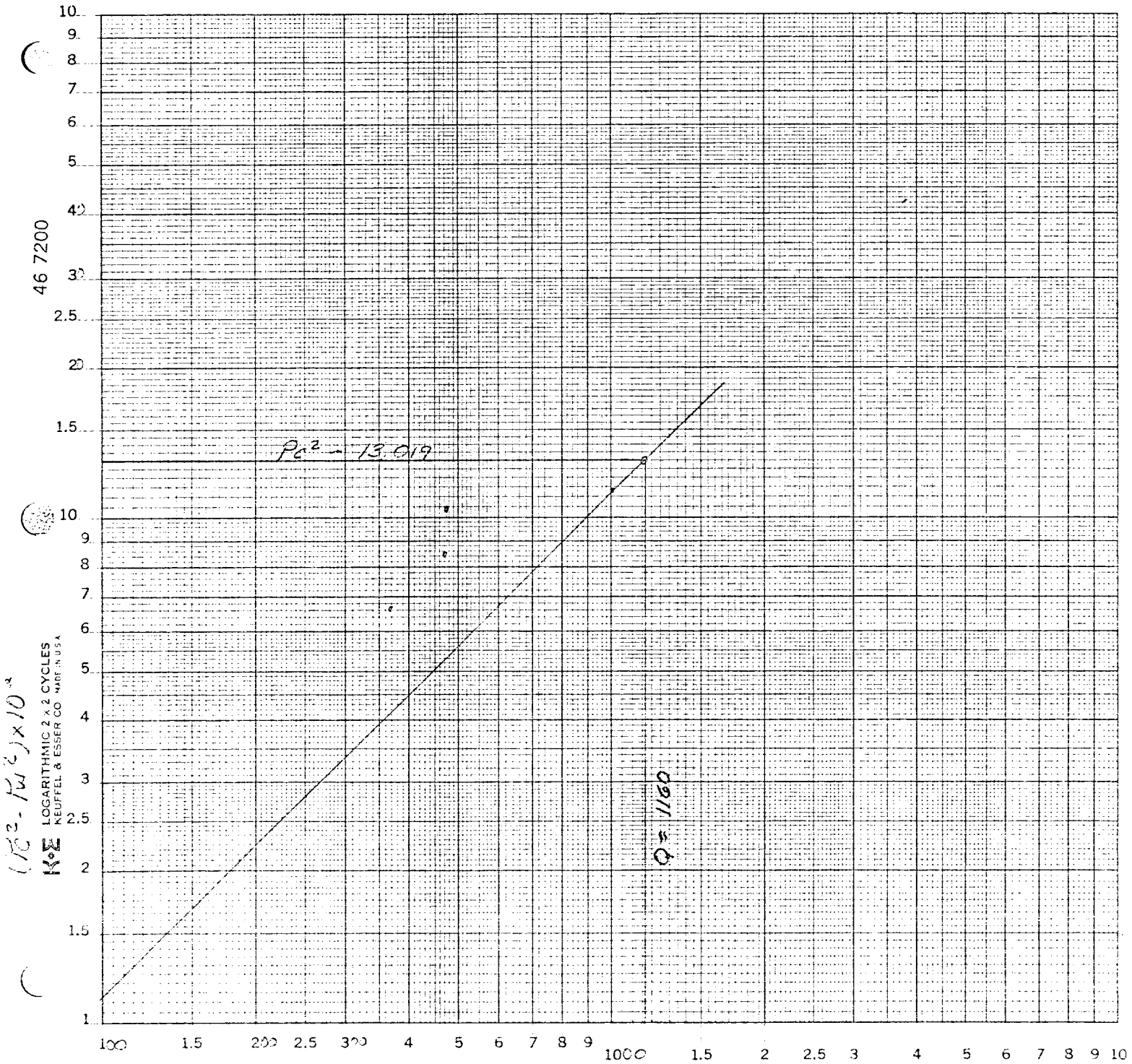
Form C-122
Revised 9-1-65

Type Test <input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual <input type="checkbox"/> Special				Test Date 9-18-81							
Company AMOCO PRODUCTION CO.			Connection EL PASO NATURAL GAS CO.								
Pool WEST OSUDO MORROW			Formation MORROW		Unit						
Completion Date 4-29-81		Total Depth 13825.	Plug Back TD 13500.	Elevation 3694.	Farm or Lease Name WATKINS A GAS COM.						
Csg. Size 4.500	Wt. 15.1	d 3.826	Set At 13824	Perforations: From 13308. To 13377.							
Tbg. Size 2.375	Wt. 4.7	d 1.995	Set At 13175.	Perforations: From 0. To 0.							
Type Well - Single - Bradenhead - G.C. or G.O. Multiple SINGLE				Packer Set At 10694	County LEA						
Producing Thru TUBING		Reservoir Temp. *F 206. @ 13343	Mean Annual Temp. *F 60.0	Baro. Press. - P _a 13.2	State NEW MEXICO						
L 13343.	H 13343.	G _g 0.674	% CO ₂ 0.53	% N ₂ 0.78	% H ₂ S 0.						
Prover 0.	Meter Run 4.0	Taps FLANGE									
FLOW DATA			TUBING DATA		CASING DATA						
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	Duration of Flow
SI							3595.	67.			15.5
1.	4.03 x 1.250			315.	4.8	76.	2635.	68.	0.	0.	1.0
2.	4.03 x 1.250			322.	7.8	81.	2117.	68.	0.	0.	1.0
3.	4.03 x 1.250			387	7.8	84.	1589.	68.	0.	0.	1.0
4.	4.03 x 1.250			393	30.2	78.	1290.	70.	0.	0.	1.0
5.											
RATE OF FLOW CALCULATIONS											
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor F _L	Gravity Factor F _g	Super Compress. Factor, F _{pv}	Rate of Flow Q, Mcfd				
1	7.47	39.86	328.2	0.9850	1.2179	1.0321	369.				
2.	7.47	51.26	335.2	0.9804	1.2179	1.0321	472.				
3.	7.47	51.64	340.2	0.9777	1.2179	1.0321	474.				
4.	7.47	109.48	396.2	0.9831	1.2179	1.0383	1017.				
5.											
NO.	P _r	Temp. *R	T _r	Z	Gas Liquid Hydrocarbon Ratio _____ 3.2 _____ Mcf/bbl.						
1.	0.49	536.	1.42	0.939	A.P.I. Gravity of Liquid Hydrocarbons _____ 46.2 _____ Deg.						
2.	0.50	541.	1.43	0.939	Specific Gravity Separator Gas 0.674 _____ X X X X X X X X X						
3.	0.51	544.	1.44	0.939	Specific Gravity Flowing Fluid _____ X X X X X						
4.	0.59	538.	1.42	0.928	Critical Pressure _____ 670. _____ P.S.I.A.						
5.					Critical Temperature _____ 379. _____ R						
P _c 3608.2 P _c ² 13019											
NO	P _i ²	P _w	P _w ²	P _c ² - P _w ²	(1) $\frac{P_c^2}{P_c^2 - P_w^2} = 1.1474$ (2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1.1474$						
1	7013.	2637.	6955.	6063.	AOF = Q $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n = 1167$						
2	4538.	2120.	4493.	8526.							
3	2567.	1592.	2536.	10483.							
4	1698.	1293.	1673.	11346							
5											
Absolute Open Flow _____ 1167 _____ Mcfd @ 15.025					Angle of Slope θ _____ 45 _____		Slope, n _____ 1.000 _____				
Remarks: _____											
Approved By Commission:			Conducted By: JOHN WEST ENGR.			Calculated By: D. ETHERIDGE			Checked By: L. W. SHEPPARD		

REMARKS

Due to a liquid loading problem, a reasonable alignment between three or more points (on the Q vs. $P_c^2 - P_w^2$ plot) could not be established. Drawing a straight line through the best average of these points would require an "n" value of greater than 1. Therefore, a straight line, with an exponent "n" of 1, was drawn through the point corresponding to the highest rate of flow and an AOF rate was then calculated.

Watkins 'A' GAS Com No.



Q, MCF

SUGGESTED FIELD DATA (SEE INSTRUCTIONS TO FILE)

Type Test <input checked="" type="checkbox"/> Initial <input type="checkbox"/> Annual	Test Date 9-18-81	Lease No. or Serial No.
Company Amoco Production Co.	Operator EPNG CO	Allotee
Field West Osuda Morrow	Unit C	
Completion Date 4-29-81	Total Depth 13,825	Production 3693.8 GL
Completion Depth 46,743 - 6,625	Perforations 11,650	Farm or Lease Name Watkins "A" Gas Co
Completion Interval 4 1/2" Linger 15.1 * 3.824 11,146 - 13,824	From To 13,300 - 13,377	Well No. 1
Completion Interval 2 3/8" 4.7 1.995 13,175	From To open Ende b	Sec. Two-Box 22 20 South 35 East
Type Completion (Describe) Single	Packer Set At 10,694	County or Parish Lea
Producing Interval Tubing	Reservoir Temp. 206° C	State New Mexico
	60	Prover 4" Flange

DATE	ELAP. TIME	Wellhead Working Pressure				Pressure	Temp.	Grav.	Grav.	REMARKS
		Tub. Psg.	Cas. Psg.	Temp. F	Pressure					
9:30	40	3595						1250	Shut-in 0-500	
10:00									open well to purge LINE	
10:10									open well to purge Pipe Line	
11:45		3215							Req test	
12:00		2930		67°	8.09	2.4	74°	1.250	1 9/64 choke	
12:15		2800		67°	8.10	2.4	75°		357 mcf/day	
12:30		2712		68°	8.10	2.2	75°			
12:45		2635		68°	315 psig	4.84"	76°			
1:00		2435		68°	8.16	3.4	78°	1.250	1 1/64 choke	
1:15		2320		68°	8.18	3.1	79°		457 mcf/day	
1:30		2207		68°	8.19	3.0	80°			
1:45		2117		68°	322 psig	7.84"	81°			
2:00		1832		68°	8.25	4.6	83°		1 1/64 choke	
2:15		1697		68°	8.25	4.2	83°		459 mcf/day	
2:30		1604		68°	8.25	2.8	84°			
2:45		1521		68°	327 psig	7.84"	84°			
3:00		1310		68°	8.41	8.0	86°		2 1/64 choke	
3:15		1124		70°	331 psig	12.25"	84°		578 mcf/day	
3:30		1270		70°	8.30	4.5	84°		Choke wide open 4 3/64	
3:45		1207		70°	8.30	5.0	85°		Made 8' to 12' = 4"	
4:00		1294		70°	8.40	4.4	86°		987 mcf/day	
4:15		1255		70°	8.90	5.5	78°			
4:30		1290		70°	393 psig	30.25"	70°		Made 62' in last hour	
API Gravity		46.2 @ 76°						made 29 Bbls Condensate during test		
Liquor		44.4 @ 60°								

**NEW-TEX
LAB**

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

No. 5651
Run No. 9-21-81
Date of Run 9-21-81
Date Secured 9-18-81

CERTIFICATE OF ANALYSIS

A Sample of Amoco Production Co. Watkins "A" Gas Com #1
Secured from John West Engineering
At 412 N Dal Paso Secured by _____
Hobbs, NM 88240 Time _____ Date _____
Sampling conditions _____ Press _____
Temp. _____

FRACTIONAL ANALYSIS

Percentage Composition

	MOL %	LIQ. %	G.P.M.
Carbon Dioxide	.530		
Air			
Nitrogen	.780		
Oxygen			
Hydrogen sulfide			
Hydrogen			
Methane	84.937		
Ethane	8.454		2.255
Propane	2.992		.821
Butanes			
Iso-Butane	.351		.115
N-Butane	.911		.286
Pentanes			
Iso-Pentane	.232		.085
N-Pentane	.256		.093
Hexanes	.182		.075
Heptanes	.375		.173
Octanes			
TOTAL	100.000		3.903

Calc. Sp. Gr. 0.6742
Calc. A.P.I. _____
Calc. Vapor Press. _____ PSIA
Sp. Gr. _____
Mol. Wt. 19.56

LIQUID CONTENT (GAL./MCF)

Propane Calc. G.P.M. .821
Butanes Calc. G.P.M. .401
Pentanes Plus. G.P.M. .426
Ethane Calc. G.P.M. 2.255
_____ RVP Gasoline G.P.M. _____
B.T.U./Cu. Ft. @ 14.696 P.S.I.A.
Dry Basis 1173
Wet Basis 1152
Sulfur Analysis by Titration
Gr./100 Cu. Ft. _____
Hydrogen Sulfide _____
Mercaptans _____
Sulfides _____
Residual Sulfur _____
Total Sulfur _____

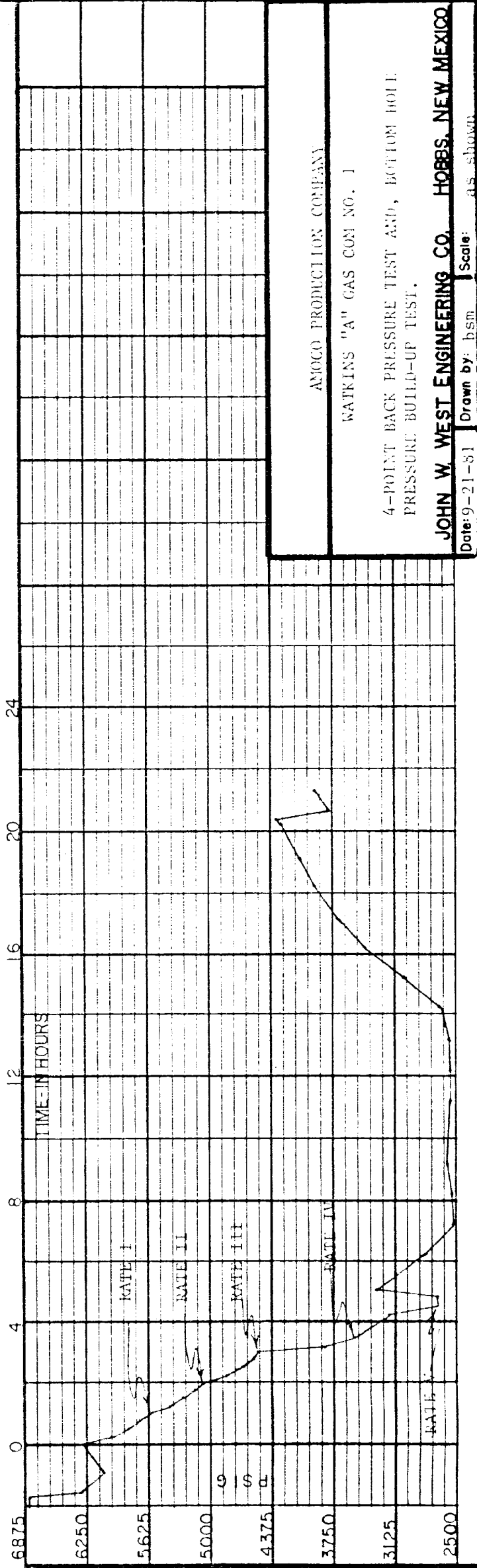
Run by R H Hamilton Checked by Deane Simpson Approved by Deane Simpson

Additional Data and Remarks

TEST DATE: SEPTEMBER 18-19, 1981
 TEST DEPTH: 13,343 feet

ELEMENT NO: 18449
 RANGE: 0-8050 psi
 CLOCK NO: 25358
 RANGE: 0-24 Hours

Note: See tabulation of Times and Pressures on attached sheet.



AMOCO PRODUCTION COMPANY

WATKINS "A" GAS CON NO. 1

4-POINT BACK PRESSURE TEST AND, BOTTOM HOLE
 PRESSURE BUILD-UP TEST.

JOHN W WEST ENGINEERING CO. HOBBS, NEW MEXICO

Date: 9-21-81 Drawn by: bsm Scale: as shown

AMOCO PRODUCTION COMPANY
 WATKINS "A" GAS COM NO. 1
 4-POINT BACK PRESSURE POINT TEST AND,
 BOTTOM HOLE PRESSURE BUILD-UP TEST.
 TABULATION OF TIMES AND PRESSURES

TEST CONDUCTED BY:
 JOHN WEST ENGINEERING COMPANY

TEST DATE: SEPTEMBER 18-19, 1981
 TEST DEPTH: 13,343 FEET
 ELEMENT NO: 18449 (0-8050 psi)
 OPERATOR: W.S.

<u>DATE</u>	<u>TIME</u>	<u>CUM HRS. /MIN.</u>		<u>PSIG @ 13,343 FEET</u>
9-18-81	9:45 A.M.			6740 Gauge reached 13,343 Feet
	10:00 A.M.			6740
	10:30 A.M.			6320
	11:00 A.M.			6108
	11:45 A.M.	00 Hrs.	00 Min.	6268 10/64 Choke
	12:00 Noon	00	15	6000
	12:15 P.M.	00	30	5852
	12:30 P.M.	00	45	5740
	12:45 P.M.	01	00	5612 END RATE I
		01	15	5392 11/64
		01	30	5260
		01	45	5152
	1:45 P.M.	02	00	5080 END RATE II
		02	15	4819 14/64
		02	30	4651
		02	45	4566
	2:45 P.M.	03	00	4510 END RATE III
		03	15	3847 20/64
		03	30	3512 END RATE IV
		03	45	3399 48/64
		04	00	3262
		04	15	3161
9-18-81	4:30 P.M.	04	30	2702 END RATE V, SHUT-IN
9-18-81	4:55 P.M.	00 Hrs.	00 Min.	3310 15/64 Open Choke
	5:55 P.M.	01	00	2829
	6:55 P.M.	02	00	2641
	7:55 P.M.	03	00	2600
	8:55 P.M.	04	00	2616
	9:55 P.M.	05	00	2555
	10:55 P.M.	06	00	2547
9-18-81	11:55 P.M.	07	00	2592
9-19-81	12:55 A.M.	08	00	2653
	1:55 A.M.	09	00	3008
	2:55 A.M.	10	00	3444
	3:55 A.M.	11	00	3722
	4:55 A.M.	12	00	3956
	5:55 A.M.	13	00	4137
	6:55 A.M.	14	00	4253
	7:25 A.M.	14	30	4357
	7:55 A.M.	15	00	3863
9-19-18	8:30 A.M.	15	35	4068 Chart ran down, End Test.

BOTTOM HOLE PRESSURE SURVEY REPORT

OPERATOR AMOCO PRODUCTION COMPANY
 LEASE WATKINS "A" NO. 1
 WELL NO. 1
 FIELD _____
 DATE 9-18-81 TIME 9:45 A.M.
 STATUS Shut-in TEST DEPTH 13,343'
 TIME S.I. _____ LAST TEST DATE _____
 CAS. PRES. _____ BHP LAST TEST _____
 TUB. PRES. 3597 BHP CHANGE _____
 ELEV. _____ FLUID TOP _____
 DATUM _____ WATER TOP _____
 TEMP _____ RUN BY W.S.
 CLOCK NO. 25358 GAUGE NO. 19389
 ELEMENT NO. 18449 (0-8050 psi)

DEPTH	PRESSURE	GRADIENT
000	3597	
12243	6244	.216
12743	6468	.448
13243	6696	.456
13343	6740	.440

