

Legal Location  
Sec. - Twp. - Rng. NE/NE/NW

28-30S-3W

Field Area  
WILD CAT

County  
SUMNER

State  
KANSAS

BEAL

Well No.

Test No.

4277' - 4280'

Tested Interval

MACK OIL COMPANY

Lease Owner/Company Name

<b>FLUID SAMPLE DATA</b>				Date	12-5-70	Ticket Number	201374	
Sampler Pressure _____ P.S.I.G. at Surface Recovery: Cu. Ft. Gas _____ cc. Oil _____ cc. Water _____ cc. Mud _____ Tot. Liquid cc. _____				Kind of Job	OPEN HOLE	Halliburton District	WINFIELD	
Gravity _____ ° API @ _____ ° F. Gas/Oil Ratio _____ cu. ft./bbl.				Tester	J. DURHAM	Witness	MR. SINGLETON	
RESISTIVITY _____ CHLORIDE CONTENT _____ Recovery Water _____ @ _____ ° F. _____ ppm Recovery Mud _____ @ _____ ° F. _____ ppm Recovery Mud Filtrate _____ @ _____ ° F. _____ ppm Mud Pit Sample _____ @ _____ ° F. _____ ppm Mud Pit Sample Filtrate _____ @ _____ ° F. _____ ppm Mud Weight _____ 9.4 vis _____ 38 cp				Drilling Contractor	THOMAS DRILLING COMPANY	BC S		
<b>EQUIPMENT &amp; HOLE DATA</b>								
				Formation Tested	Simpson Sand			
				Elevation	1347'	KB	Ft.	
				Net Productive Interval	3'		Ft.	
				All Depths Measured From	Kelly Bushing			
				Total Depth	4280'		Ft.	
				Main Hole/Casing Size	7 7/8"			
				Drill Collar Length	298'	I.D. 2 1/2"		
				Drill Pipe Length	3961	I.D. 3.826"		
				Packer Depth(s)	4277' Ft.			
				Depth Tester Valve	4267'		Ft.	
TYPE		AMOUNT	Depth Back	DCIP	Surface	Bottom		
Cushion			Ft. Pres. Valve	4263	Choke	3/4"	Choke 3/4"	
Recovered	140	Feet of	Gas in drill pipe					Meas. From Tester Valve
Recovered	640	Feet of	Gas cut muddy salt water					
Recovered		Feet of						
Recovered		Feet of						
Recovered		Feet of						
Remarks Tool opened for 29 minute first flow with strong blow in 20 minutes. Closed tool for 46 minute first closed in pressure. Reopened tool for 60 minute second flow with strong blow in 30 minutes. Closed tool for 45 minute second closed in pressure.								
TEMPERATURE	Gauge No. 737	Gauge No.	Gauge No.	TIME				
	Depth: 4271 Ft.	Depth: Ft.	Depth: Ft.					
Est. 117 °F.	12 Hour Clock	Hour Clock	Hour Clock	Tool = <del>AM</del> P.M.				
	Blanked Off No	Blanked Off	Blanked Off	Opened 5:40 P.M.				
Actual °F.	Pressures		Pressures		Pressures		Tool 7:55 AM	
	Field	Office	Field	Office	Field	Office	Closed P.M.	
Initial Hydrostatic	-	2110					Reported Minutes	
First Period	Flow Initial	17	21				Computed Minutes	
	Flow Final	138	144				30	
	Flow Closed in	1464	1453				45	
Second Period	Flow Initial	155	148				46	
	Flow Final	310	315				60	
	Flow Closed in	1429	1420				45	
Third Period	Flow Initial							
	Flow Final							
Final Hydrostatic	-	2085						

MAIL - 5

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Halliburton Company  
Duncan, Oklahoma

Gauge No. 737			Depth 4271'				Clock No. 4204			12 hour		Ticket No. 201374			
First Flow Period		First Closed In Pressure			Second Flow Period		Second Closed In Pressure			Third Flow Period		Third Closed In Pressure			
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } \frac{t + \theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } \frac{t + \theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } \frac{t + \theta}{\theta}$	PSIG Temp. Corr.
0	.0000	21	.0000		144	.0000	148	.0000		315					
1	.0345	37	.0339		1335	.0687	180	.0345		1303					
2	.0690	65	.0678		1378	.1373	210	.0689		1342					
3	.1035	89	.1018		1401	.2060	239	.1034		1363					
4	.1380	109	.1357		1416	.2747	265	.1378		1378					
5	.1725	128	.1696		1428	.3434	290	.1723		1390					
6	.2000	144*	.2035		1435	.4120	315	.2067		1399					
7			.2374		1442			.2412		1407					
8			.2714		1447			.2756		1415					
9			.3120		1453**			.3100		1420					
10															
11															
12															
13															
14															
15															

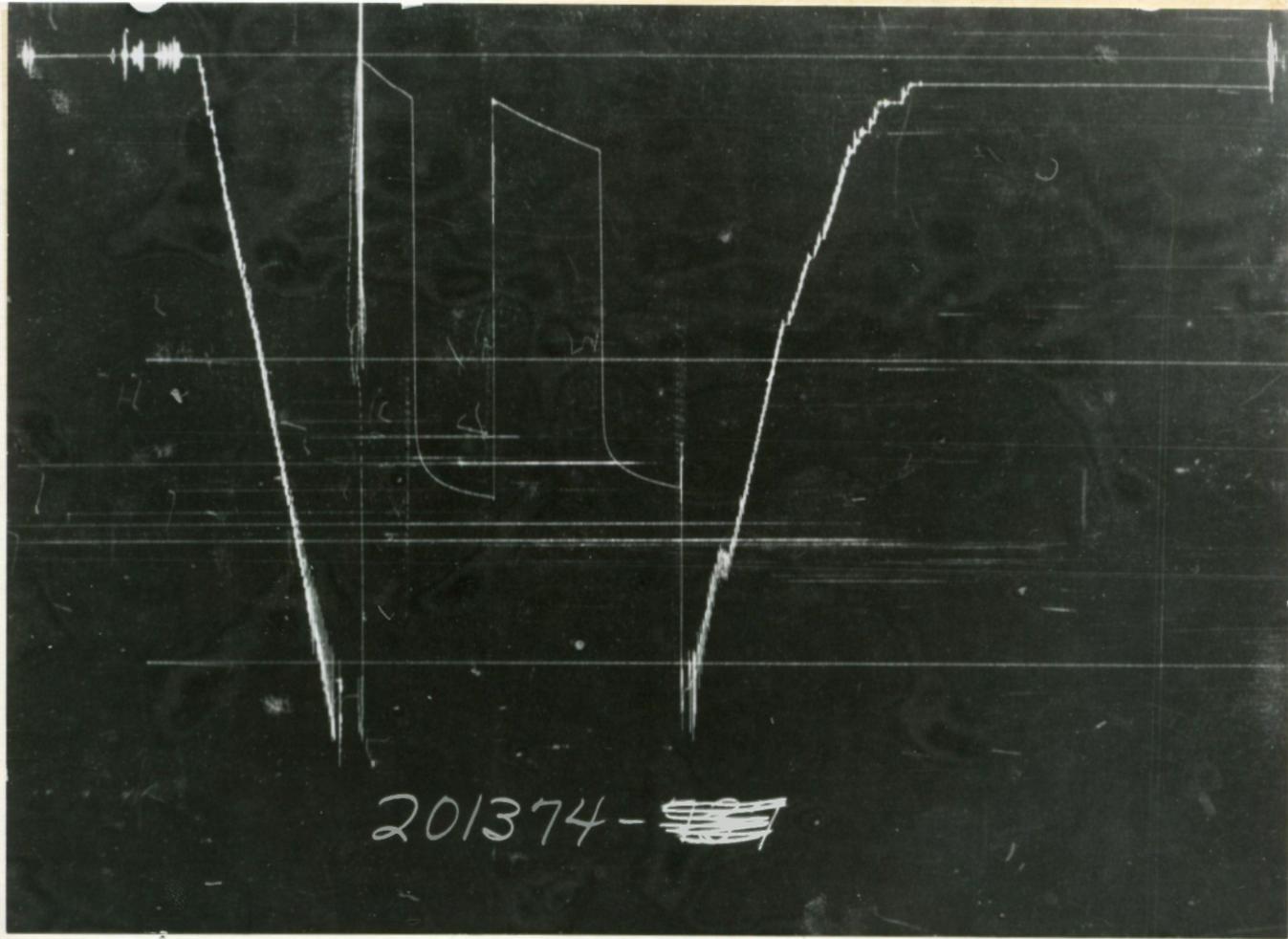
Gauge No.	Depth	Clock No.	hour
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			

Reading Interval 5      5      10      5      Minutes

REMARKS: \*Interval = 4 minutes      \*\*Interval = 6 minutes

	O. D.	I. D.	LENGTH	DEPTH
Reversing Sub .....	5 3/4"	2 3/4"	1'	
Water Cushion Valve .....				
Drill Pipe .....	4 1/2"	3.826"	3961'	
Drill Collars .....	6 1/2"	2 1/2"	298'	
Handling Sub & Choke Assembly .....				
Dual CIP Valve .....	5"	3/4"	4'	
Dual CIP Sampler .....				
Hydro-Spring Tester .....	5"	3/4"	4'	4267'
Multiple CIP Sampler .....				
Extension Joint .....				
AP Running Case .....	5"	2 1/4"	4'	4271'
Hydraulic Jar .....				
VR Safety Joint .....				
Pressure Equalizing Crossover .....				
Packer Assembly .....	6 3/4"	2 1/4"	4'	4277'
Distributor .....				
Packer Assembly .....				
Flush Joint Anchor .....	5"	2 1/4"	3'	
Pressure Equalizing Tube .....				
Blanked-Off B.T. Running Case .....				
Drill Collars .....				
Anchor Pipe Safety Joint .....				
Packer Assembly .....				
Packer Assembly .....				
Anchor Pipe Safety Joint .....				
Side Wall Anchor .....				
Drill Collars .....				
Flush Joint Anchor .....				
Blanked-Off B.T. Running Case .....				

PRESSURE



TIME

Each Horizontal Line Equal to 1000 p.s.i.

BEAL  
 Lease Name  
 Legal Location Sec. - Twp. - Rng. 28 - 30S - 3W  
 NE/NE/NW  
 Well No. 1  
 Field Area WILDCAT  
 Tested Interval 4268' - 4274'  
 County SUMNER  
 State KANSAS  
 Lease Owner/Company Name MACK OIL COMPANY

FLUID SAMPLE DATA		Date	12-8-70	Ticket Number	404301
Sampler Pressure _____ P.S.I.G. at Surface	Kind of Job	OPEN HOLE	Halliburton District	WINFIELD	
Recovery: Cu. Ft. Gas _____	Tester	MR. DURHAM	Witness	MR. SINGLETON	
cc. Oil _____	Drilling Contractor	THOMAS DRILLING COMPANY	IC	S	
cc. Water _____	EQUIPMENT & HOLE DATA				
cc. Mud _____	Formation Tested	Simpson			
Tot. Liquid cc. _____	Elevation	1347' KB Ft.			
Gravity _____ ° API @ _____ °F.	Net Productive Interval	6' Ft.			
Gas/Oil Ratio _____ cu. ft./bbl.	All Depths Measured From	Kelly Bushing			
	Total Depth	4295' Ft.			
	Main Hole/Casing Size	7 7/8"			
	Drill Collar Length	112'	I.D.	2 1/4"	
	Drill Pipe Length	4130'	I.D.	3.826"	
	Packer Depth(s)	4268' - 4274' Ft.			
	Depth Tester Valve	4258' Ft.			

RECOVERY WATER	RESISTIVITY	CHLORIDE CONTENT	DCIP VALVE	Surface Choke	Bottom Choke
Recovery Water _____ @ _____ °F. _____ ppm			4254'	1/4"	3/4"
Recovery Mud _____ @ _____ °F.					
Recovery Mud Filtrate _____ @ _____ °F. _____ ppm					
Mud Pit Sample _____ @ _____ °F.					
Mud Pit Sample Filtrate _____ @ _____ °F. _____ ppm					
Mud Weight _____ 10.0 vis _____ 53 cp					

TYPE	AMOUNT	Depth Back Pres. Valve	DCIP VALVE	Surface Choke	Bottom Choke
Cushion	-	Ft.	4254'	1/4"	3/4"
Recovered	630 Feet of				
	Gassy oil				
Recovered	150 Feet of				
	Heavy gas & oil cut mud				
Recovered	450 Feet of				
	Saltwater				
Recovered	Feet of				
Recovered	Feet of				

Remarks Opened tool for 30 minute first flow with blow building to strong in 4 minutes. Closed tool for 30 minute initial closed in pressure. Reopened tool for 30 minute second flow with a strong blow; gas to surface in 30 minutes...too weak to measure. Closed tool for 30 minute second closed in pressure.

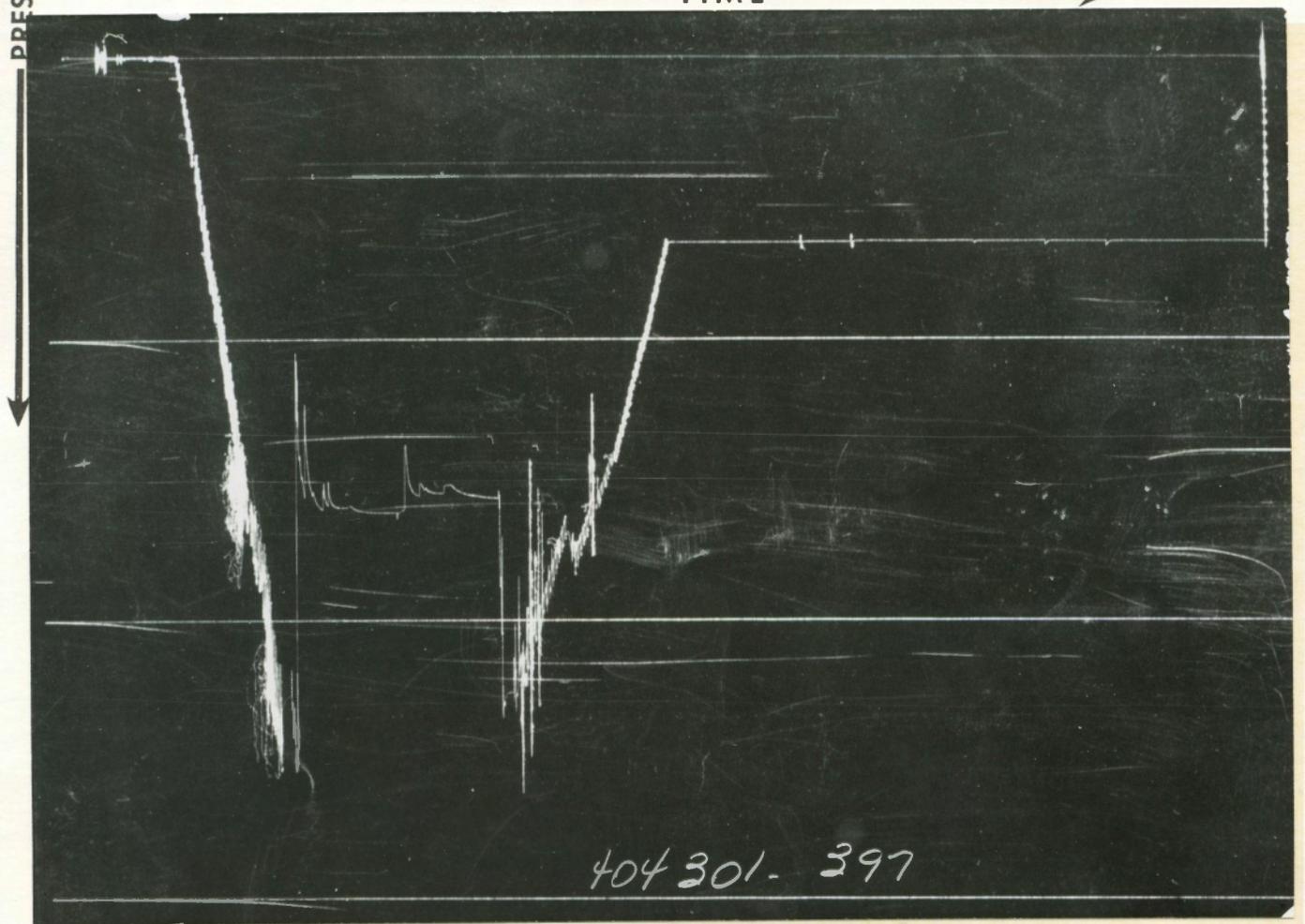
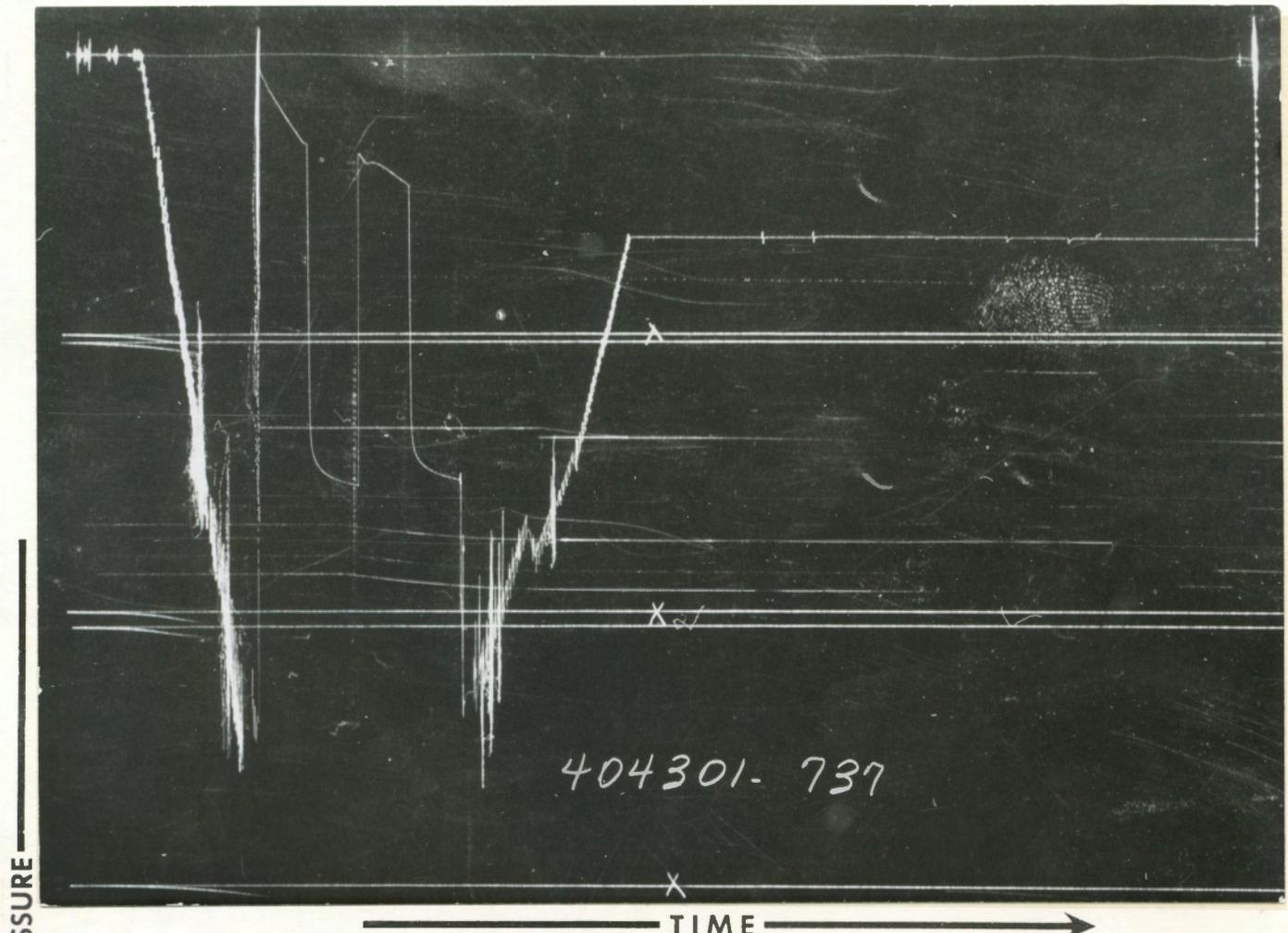
TEMPERATURE	Gauge No. 737		Gauge No. 397		Gauge No.		TIME	
	Depth:	4262' Ft.	Depth:	4291' Ft.	Depth:	Ft.	Tool	XXXX.
Est. 117 °F.	12 Hour Clock		12 Hour Clock		Hour Clock		Opened	4:50 P.M.
	Blanked Off NO		Blanked Off YES		Blanked Off		Closed	6:20 P.M.
Actual °F.	Pressures		Pressures		Pressures		Reported	Computed
	Field	Office	Field	Office	Field	Office	Minutes	Minutes
Initial Hydrostatic	-	2239	-	2269				
First Period	Flow Initial	52	46					
	Flow Final	310	311		HYDROSTATIC		30	30
	Closed in	1498	1499		RELEASE		30	30
Second Period	Flow Initial	345	345					
	Flow Final	448	453				30	30
	Closed in	1481	1479		1562		30	30
Third Period	Flow Initial							
	Flow Final							
	Closed in							
Final Hydrostatic	-	2228	-	2255				

Gauge No. 737			Depth 4262'			Clock No. 4204			12 hour		Ticket No. 404301				
First Flow Period			First Closed In Pressure			Second Flow Period		Second Closed In Pressure			Third Flow Period		Third Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log} \frac{t + \theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log} \frac{t + \theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log} \frac{t + \theta}{\theta}$	PSIG Temp. Corr.
0	.000	46	.000		311	.000	345	.000		453					
1	.041	109	.0208		1383	.0416	378	.0207		1372					
2	.082	168	.0416		1429	.0832	380	.0414		1413					
3	.123	224	.0624		1451	.1248	402	.0621		1431					
4	.164	274	.0832		1465	.1664	428	.0828		1444					
5	.205	311	.1040		1474	.2080	453	.1035		1453					
6			.1248		1482			.1242		1460					
7			.1456		1488			.1449		1466					
8			.1664		1492			.1656		1472					
9			.1872		1497			.1863		1476					
10			.2080		1499			.2070		1479					
11															
12															
13															
14															
15															

Gauge No. 397			Depth 4291'			Clock No. 3121			12 hour		
0											
1									1562		
2											
3			BLANKED OFF BELOW BOTTOM PACKER... HYDROSTATIC RELEASE								
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
Reading Interval	6		3		6		3			Minutes	

REMARKS:

	O. D.	I. D.	LENGTH	DEPTH
Reversing Sub	5 3/4"	2 3/4"	1'	
Water Cushion Valve				
Drill Pipe	4 1/2"	3.826"	4130'	
Drill Collars	6 1/4"	2 1/4"	112'	
Handling Sub & Choke Assembly				
Dual CIP Valve	5"	3/4"	4'	
Dual CIP Sampler				
Hydro-Spring Tester	5"	3/4"	4'	4258'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	2 1/4"	4'	4262'
Hydraulic Jar				
VR Safety Joint				
Pressure Equalizing Crossover				
Packer Assembly	6 3/4"	2 1/4"	4'	4268'
Distributor				
Packer Assembly				
Flush Joint Anchor	5"	2 1/4"	6'	
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly	6 3/4"	2 1/4"	4'	4274'
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5"	2 1/4"	17'	
Blanked-Off B.T. Running Case	5"	2 1/4"	4'	4291'



Each Horizontal Line Equal to 1000 p.s.i.

## NOMENCLATURE

<b>b</b>	= Approximate Radius of Investigation .....	Feet
<b>b<sub>1</sub></b>	= Approximate Radius of Investigation (Net Pay Zone h) .....	Feet
<b>D.R.</b>	= Damage Ratio .....	—
<b>EI</b>	= Elevation .....	Feet
<b>GD</b>	= B.T. Gauge Depth (From Surface Reference) .....	Feet
<b>h</b>	= Interval Tested .....	Feet
<b>h<sub>1</sub></b>	= Net Pay Thickness .....	Feet
<b>K</b>	= Permeability .....	md
<b>K<sub>1</sub></b>	= Permeability (From Net Pay Zone h) .....	md
<b>m</b>	= Slope Extrapolated Pressure Plot (Psi <sup>2</sup> /cycle Gas) .....	psi/cycle
<b>OF<sub>1</sub></b>	= Maximum Indicated Flow Rate .....	MCF/D
<b>OF<sub>2</sub></b>	= Minimum Indicated Flow Rate .....	MCF/D
<b>OF<sub>3</sub></b>	= Theoretical Open Flow Potential with/Damage Removed Max. ....	MCF/D
<b>OF<sub>4</sub></b>	= Theoretical Open Flow Potential with/Damage Removed Min. ....	MCF/D
<b>P<sub>s</sub></b>	= Extrapolated Static Pressure .....	Psig.
<b>P<sub>f</sub></b>	= Final Flow Pressure .....	Psig.
<b>P<sub>o</sub></b>	= Potentiometric Surface (Fresh Water *) .....	Feet
<b>Q</b>	= Average Adjusted Production Rate During Test .....	bbls/day
<b>Q<sub>1</sub></b>	= Theoretical Production w/Damage Removed .....	bbls/day
<b>Q<sub>g</sub></b>	= Measured Gas Production Rate .....	MCF/D
<b>R</b>	= Corrected Recovery .....	bbls
<b>r<sub>w</sub></b>	= Radius of Well Bore .....	Feet
<b>t</b>	= Flow Time .....	Minutes
<b>t<sub>o</sub></b>	= Total Flow Time .....	Minutes
<b>T</b>	= Temperature Rankine .....	°R
<b>Z</b>	= Compressibility Factor .....	—
<b>μ</b>	= Viscosity Gas or Liquid .....	CP
<b>Log</b>	= Common Log	

\* Potentiometric Surface Reference to Rotary Table When Elevation Not Given,  
Fresh Water Corrected to 100° F.