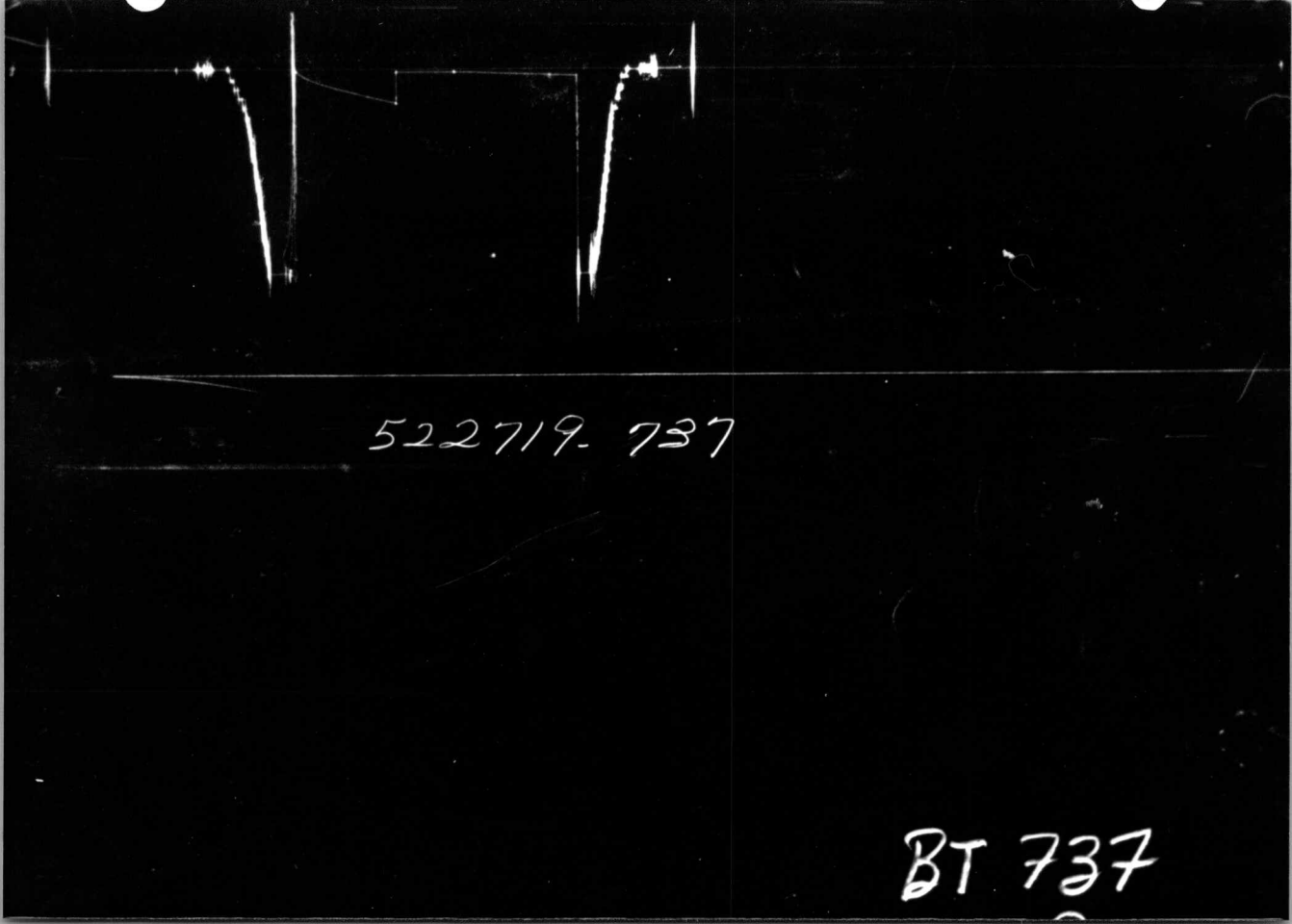




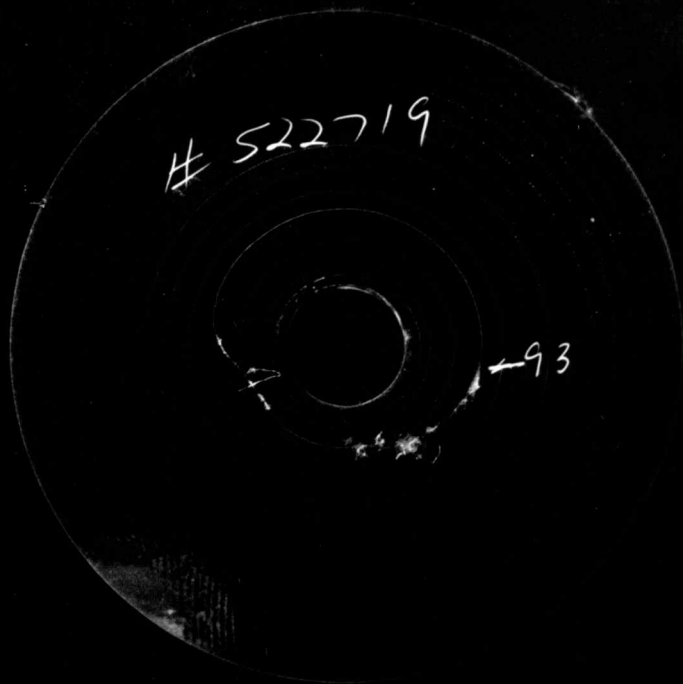
522719- 737

BT 737

522719-397

BT 397
Bottom

TEMPERATURE
RECORDER
CHART



10° each circle

MAES

Lease Name

9 Well No.

1 Test No.

1280' to 1320' Tested Interval

SOHIO PETROLEUM COMPANY
Lease Owner/Company NameLegal Location
Sec. - Twp. - Rng. 14 19S 9WField
Area
Mea. From Tester ValveCounty
RICEState
KANSAS

FLUID SAMPLE DATA				Date 3-30-79		Ticket Number 522719	
Sampler Pressure _____ P.S.I.G. at Surface				Kind of Job OPEN HOLE TEST		Halliburton District EL DORADO	
Recovery: Cu. Ft. Gas _____				Tester STEVE CANNON		Witness S. BRYANT	
cc. Oil _____				Drilling Contractor RED TIGER DRILLING COMPANY RIG #3			
cc. Water _____				EQUIPMENT & HOLE DATA BJ			
cc. Mud _____				Formation Tested Herrington Sand			
Tot. Liquid cc. _____				Elevation 1742' GL Ft.			
Gravity _____ ° API @ _____ °F.				Net Productive Interval 40' Ft.			
Gas/Oil Ratio _____ cu. ft./bbl.				All Depths Measured From Ground Level			
RESISTIVITY _____ CHLORIDE CONTENT _____				Total Depth 1320' Ft.			
Recovery Water @ _____ °F. _____ ppm				Main Hole/Casing Size 7 7/8" Hole- 8 5/8" Csg.			
Recovery Mud @ _____ °F. _____ ppm				Drill Collar Length 235' I.D. 2.25"			
Recovery Mud Filtrate @ _____ °F. _____ ppm				Drill Pipe Length 1097' ? I.D. 2.764" WP			
Mud Pit Sample @ _____ °F. _____ ppm				Packer Depth(s) 1274' 1280' Ft.			
Mud Pit Sample Filtrate @ _____ °F. _____ ppm				Depth Tester Valve 1253' Ft.			
Mud Weight 9.8 vis 38 sec							
TYPE		AMOUNT		Depth Back Surface		Bottom	
Cushion				Ft. Pres. Valve		Choke 1/4" Choke 3/4"	
Recovered 10		Feet of drilling mud					
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Recovered		Feet of					
Remarks SEE PRODUCTION TEST DATA SHEET....							
TEMPERATURE		Gauge No. 737		Gauge No. 397		Gauge No.	
		Depth: 1258' Ft.		Depth: 1317' Ft.		Depth: Ft.	
		12 Hour Clock		12 Hour Clock		Hour Clock	
Est. _____ °F.		Blanked Off NO		Blanked Off YES		Blanked Off	
1315' @						Tool _____ A.M.	
Actual 93 °F.						Opened 0701 P.M.	
		Pressures		Pressures		Pressures	
		Field Office		Field Office		Field Office	
Initial Hydrostatic		671.2 702		706.3		Reported _____ Computed _____	
First Period Flow Initial		6.8 34		42.4		Minutes _____ Minutes _____	
Flow Final		6.8 35		38.8		1 _____	
Closed in		109.1 141		139.5		60 _____	
Second Period Flow Initial		9.4 35		44.1		_____	
Flow Final		9.4 35		39.7		32 _____	
Closed in		20.6 44		51.2		70 _____	
Third Period Flow Initial						_____	
Flow Final						_____	
Closed in						_____	
Final Hydrostatic		667.8 698		700.0		_____	

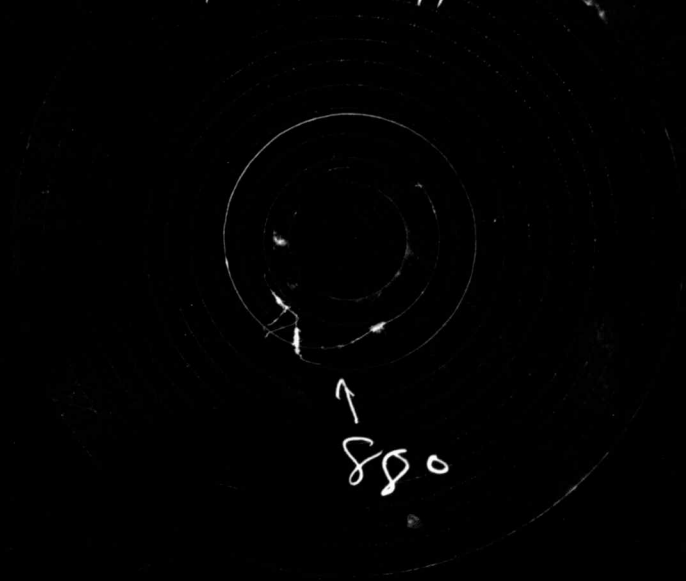
Casing perms. _____ Bottom choke _____ Surf. temp. 45 °F Ticket No. 522719
 Gas gravity _____ Oil gravity _____ GOR _____
 Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F
 INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED Merla, 2" Quick Change

[illegible]

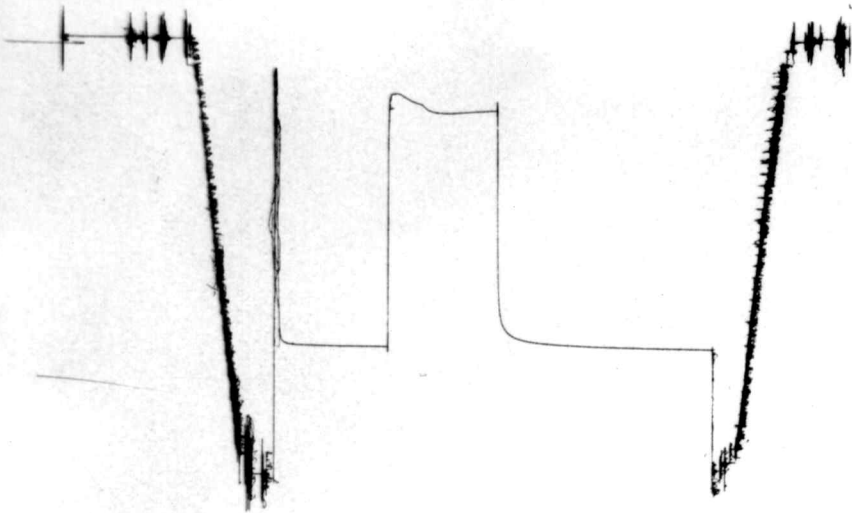
	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Reversing Sub	5.75"	3.75"	1.00'	
Water Cushion Valve				
Drill Pipe	4.50"	2.764"	1097' ? WP	
Drill Collars	6.25"	2.25"	235'	
Handling Sub & Choke Assembly	5.87"	3.00"	5.00'	
Dual CIP Valve	5.00"	.87"	5.00'	1248'
Dual CIP Sampler DOUBLE PIN	5.80"	2.25"	1.00'	
Hydro-Spring Tester	5.00"	.75"	5.00'	1253'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5.00"	3.75"	4.00'	1258'
Hydraulic Jar	5.00"	1.75"	5.00'	
VR Safety Joint	5.00"	1.00"	3.00'	
Pressure Equalizing Crossover				
Packer Assembly	6.75"	1.53"	6.00'	1274'
Distributor				
Packer Assembly	6.75"	1.53"	6.00'	1280'
Flush Joint Anchor	5.00"	2.37"	33'	
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor HT. 500 TEMP.	5.00"		2.00'	
Blanked-Off B.T. Running Case	5.00"	2.44"	4.00'	1317'
Total Depth				1320'

TEMPERATURE
RECORDER
CHART

586591

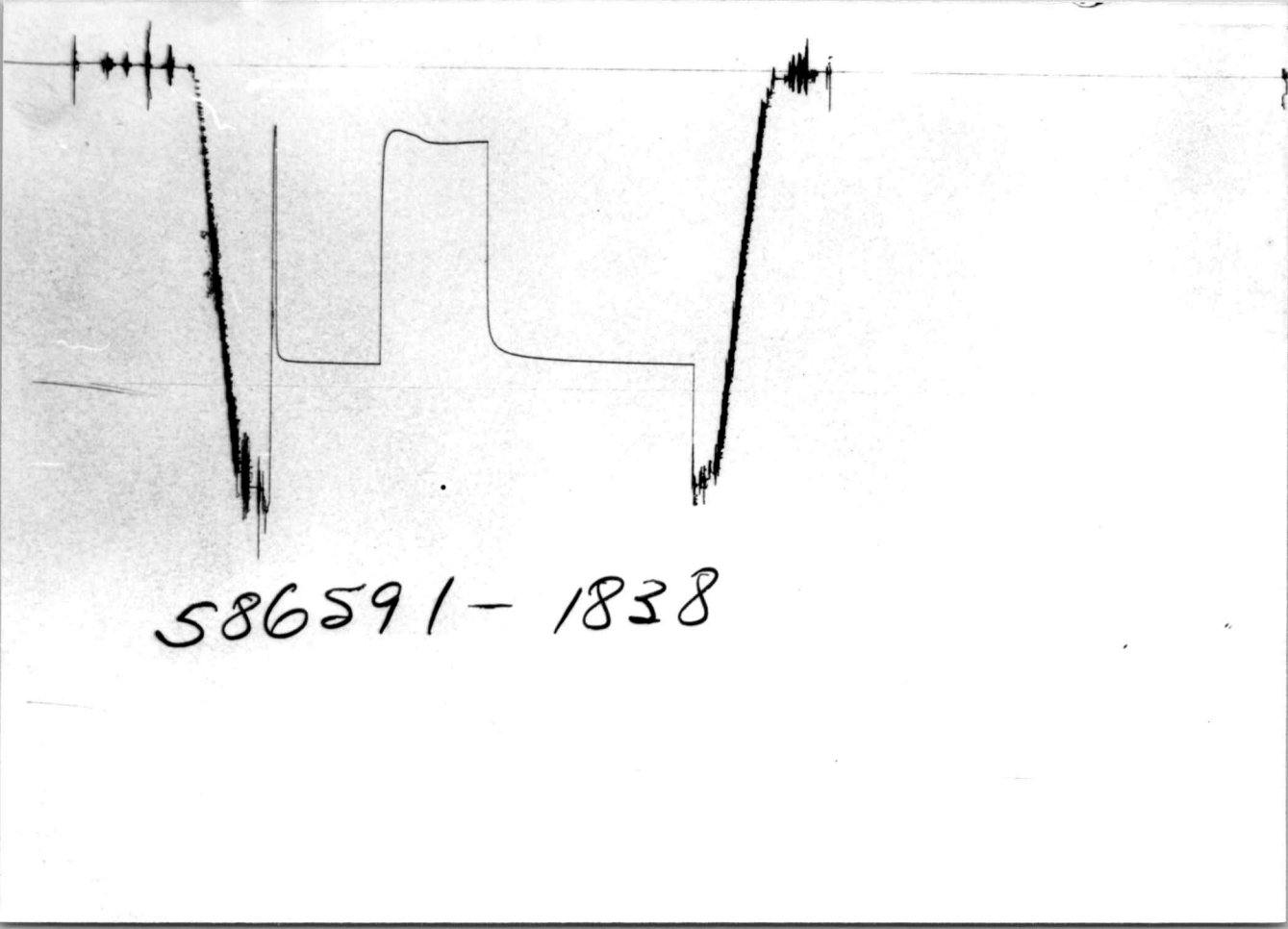


10° each circle



586591-6041

1041



586591-1838

MAES

Lease Name

9

Well No.

2

Test No.

2425 - 2475'

Tested Interval

SOHIO PETROLEUM COMPANY

Lease Owner/Company Name

Legal Location
Sec. - Twp. - Rng.

14 19S 9W

Field Area
Meo. From Tester ValveCounty
RICEState
KANSAS

FLUID SAMPLE DATA				Date		Ticket Number	
Sampler Pressure <u>125</u> P.S.I.G. at Surface				4-2-79		586591	
Recovery: Cu. Ft. Gas <u>1.402</u>				Kind of Job <u>OPEN HOLE</u>		Halliburton District <u>GREAT BEND</u>	
cc. Oil _____				Tester <u>MR. KUHN</u>		Witness <u>MR. ALBRIGHT</u>	
cc. Water _____				Drilling Contractor <u>RED TIGER DRILLING COMPANY RIG # 3 sm</u>			
cc. Mud _____				EQUIPMENT & HOLE DATA			
Tot. Liquid cc. _____				Formation Tested <u>Severy sand</u>			
Gravity _____ ° API @ _____ °F.				Elevation <u>1742'</u> ground level Ft.			
Gas/Oil Ratio _____ cu. ft./bbl.				Net Productive Interval <u>18'</u> Ft.			
RESISTIVITY _____ CHLORIDE CONTENT _____				All Depths Measured From <u>Kelly bushing</u>			
Recovery Water _____ @ _____ °F. _____ ppm				Total Depth <u>2475'</u> Ft.			
Recovery Mud _____ @ _____ °F. _____ ppm				Main Hole/Casing Size <u>7 7/8"</u>			
Recovery Mud Filtrate _____ @ _____ °F. _____ ppm				Drill Collar Length <u>1116'</u> I.D. <u>2.764"</u> WP			
Mud Pit Sample _____ @ _____ °F. _____ ppm				Drill Pipe Length <u>1286'</u> I.D. <u>3.826"</u>			
Mud Pit Sample Filtrate _____ @ _____ °F. _____ ppm				Packer Depth(s) <u>2420-2425'</u> Ft.			
Mud Weight <u>9.1</u> vis <u>35</u> sec				Depth Tester Valve <u>2403'</u> Ft.			
Cushion		TYPE	AMOUNT	Depth Back Pres. Valve	Surface Choke	Bottom Choke	
					<u>1 1/4"</u>	<u>3/4"</u>	
Recovered		<u>130</u>	Feet of	gas cut muddy water			
Recovered			Feet of				
Recovered			Feet of				
Recovered			Feet of				
Recovered			Feet of				
Remarks		SEE PRODUCTION TEST DATA SHEET					
TEMPERATURE		Gauge No. <u>6041</u>	Gauge No. <u>1838</u>	Gauge No. _____	TIME		
Depth: <u>2408</u> Ft.		Depth: <u>2471</u> Ft.	Depth: _____ Ft.	Depth: _____ Ft.			
Est. _____ °F.		<u>12</u> Hour Clock	<u>12</u> Hour Clock	Hour Clock	Tool _____ A.M.		
Blanked Off <u>NO</u>		Blanked Off <u>YES</u>	Blanked Off _____	Blanked Off _____	Opened <u>0700</u> P.M.		
<u>2470</u>					Opened _____ A.M.		
Actual <u>88</u> °F.		Pressures	Pressures	Pressures	Bypass <u>1101</u> P.M.		
	Field	Office	Field	Office	Field	Office	Reported
							Minutes
Initial Hydrostatic		<u>1298.2</u>	<u>1309</u>	<u>1325.6</u>			
First Period	Flow Initial	<u>100.9</u>	<u>183</u>	<u>284.9</u>			
	Flow Final	<u>89.5</u>	<u>183</u>	<u>189.1</u>			
	Closed in	<u>904.3</u>	<u>929</u>	<u>929.8</u>			
Second Period	Flow Initial	<u>182.4</u>	<u>183</u>	<u>291.6</u>			
	Flow Final	<u>207.6</u>	<u>225</u>	<u>229.1</u>			
	Closed in	<u>906.8</u>	<u>912</u>	<u>919.9</u>			
Third Period	Flow Initial						
	Flow Final						
	Closed in						
Final Hydrostatic		<u>1266.6</u>	<u>1292</u>	<u>1299.9</u>			

9

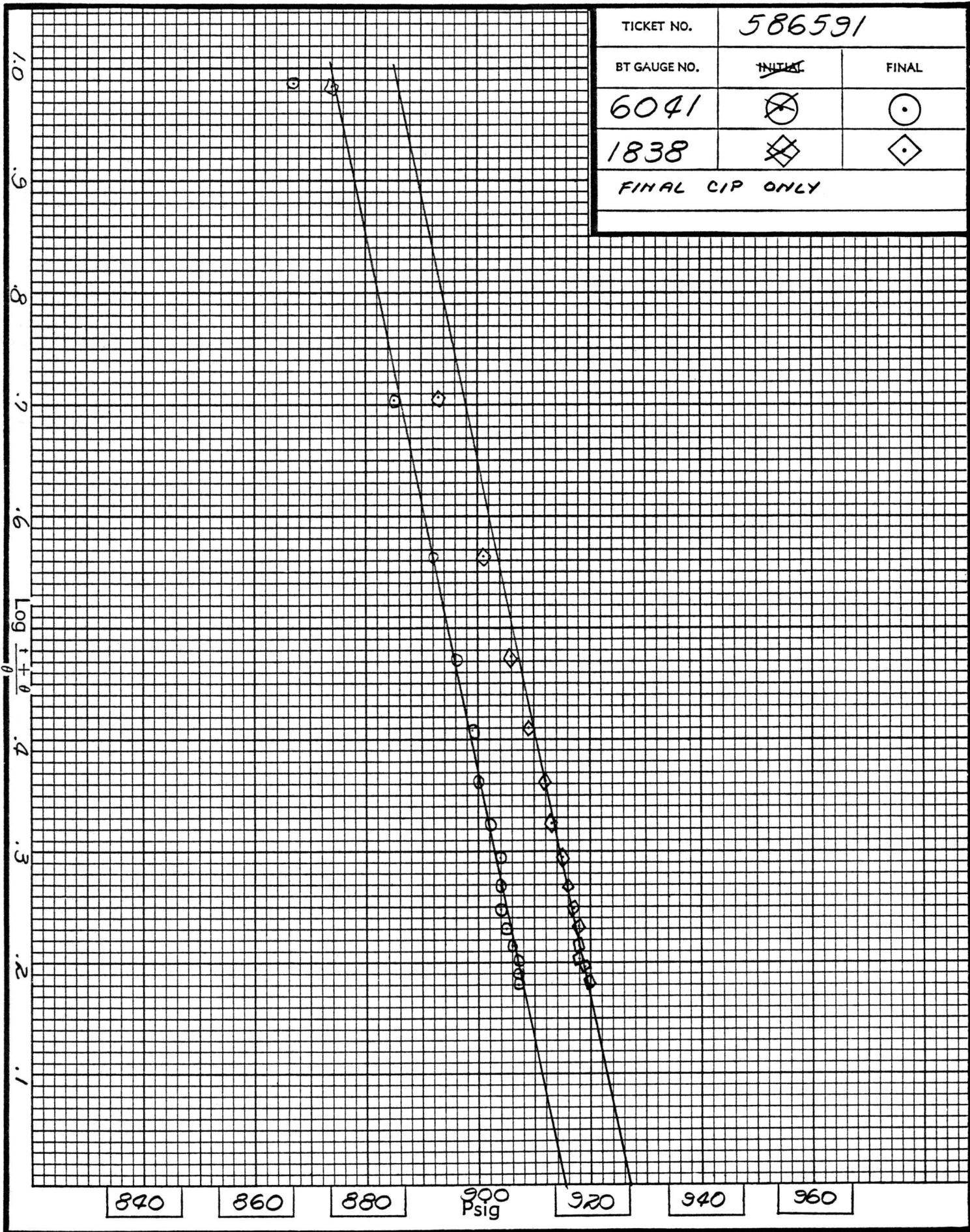
Casing perms. _____ Bottom choke _____ Surf. temp _____ °F Ticket No. 586591
Gas gravity _____ Oil gravity _____ GOR _____
Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F
INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED 2" Merla tester

[illegible]

Gauge No.		6041		Depth		2408'		Clock No.		14235		12 hour		Ticket No.		586591	
First Flow Period		First Closed In Pressure		Second Flow Period		Second Closed In Pressure		Third Flow Period		Third Closed In Pressure		Time Defl. .000"		Time Defl. .000"		Time Defl. .000"	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } t + \frac{\theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } t + \frac{\theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } t + \frac{\theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.
0	.0000	100.9	---	.0000	182.4	.0000	---	.0000	207.6	.0000	---	.0000	207.6	.0000	---	.0000	207.6
1	.0060	89.5	.113	.0397	161.2	.0397	.987	.0464**	867.1	.0464**	.987	.0464**	867.1	.0464**	.987	.0464**	867.1
2			.006	.0794	179.1	.0794	.704	.0993	884.9	.0993	.704	.0993	884.9	.0993	.704	.0993	884.9
3			.041	.1191	191.3	.1191	.562	.1523	892.2	.1523	.562	.1523	892.2	.1523	.562	.1523	892.2
4			.031	.1588	211.7	.1588	.472	.2053	896.2	.2053	.472	.2053	896.2	.2053	.472	.2053	896.2
5			.025	.1985	216.6	.1985	.408	.2582	898.7	.2582	.408	.2582	898.7	.2582	.408	.2582	898.7
6			.021	.2382	215.7	.2382	.361	.3112	900.3	.3112	.361	.3112	900.3	.3112	.361	.3112	900.3
7			.018	.2779	214.1	.2779	.324	.3642	901.9	.3642	.324	.3642	901.9	.3642	.324	.3642	901.9
8			.016	.3176	211.7	.3176	.294	.4171	903.5	.4171	.294	.4171	903.5	.4171	.294	.4171	903.5
9			.014	.3573	210.0	.3573	.269	.4701	903.5	.4701	.269	.4701	903.5	.4701	.269	.4701	903.5
10			.013	.3970	207.6	.3970	.248	.5231	904.3	.5231	.248	.5231	904.3	.5231	.248	.5231	904.3
11			.011	.4367	203.5	.4367	.230	.5761	905.2	.5761	.230	.5761	905.2	.5761	.230	.5761	905.2
12			.009	.4764	203.5	.4764	.215	.6290	906.0	.6290	.215	.6290	906.0	.6290	.215	.6290	906.0
13			.008	.5161	204.3	.5161	.202	.6819	906.8	.6819	.202	.6819	906.8	.6819	.202	.6819	906.8
14			.007	.5558	204.3	.5558	.190	.7350	906.8	.7350	.190	.7350	906.8	.7350	.190	.7350	906.8
15			.006	.5955	204.3	.5955	.180	.7880	906.8	.7880	.180	.7880	906.8	.7880	.180	.7880	906.8

Gauge No.		1838		2471'		3722		12 hour	
First Flow Period		First Closed In Pressure		Second Flow Period		Second Closed In Pressure		Third Flow Period	
Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } t + \frac{\theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	$\text{Log } t + \frac{\theta}{\theta}$	Time Defl. .000"	PSIG Temp. Corr.
0	.0000	284.9	---	.0000	291.6	.0000	---	.0000	229.1
1	.0070	189.1	.131	.0401	199.9	.0466**	.989	.0466**	873.7
2			.070	.0802	201.6	.0998	.707	.0998	892.7
3			.048	.1203	212.4	.1531	.564	.1531	900.9
4			.037	.1604	229.1	.2063	.474	.2063	905.9
5			.029	.2005	235.8	.2595	.410	.2595	909.2
6			.025	.2406	237.4	.3128	.363	.3128	911.7
7			.021	.2807	235.8	.3660	.325	.3660	913.3
8			.019	.3208	233.3	.4193	.295	.4193	915.0
9			.017	.3609	231.6	.4725	.270	.4725	915.9
10			.015	.4010	229.1	.5257	.249	.5257	916.6
11			.013	.4411	229.1	.5789	.232	.5789	917.5
12			.011	.4812	229.1	.6322	.216	.6322	918.3
13			.009	.5213	229.1	.6855	.203	.6855	918.3
14			.008	.5614	229.1	.7387	.187	.7387	919.1
15			.007	.6015	229.1	.7920	.180	.7920	919.9
Reading Interval		*		6		8		Minutes	

REMARKS: *First 10 intervals are equal to 3 minutes each, next 4 intervals are equal to 6 minutes each, Last interval is equal to 7 minutes. ** First interval is equal to 7 minutes.



Gas Production

B.T. Gauge Numbers			6041	1838	Ticket Number		586591
Initial Hydrostatic			1298.2	1325.6	Elevation		1742 ft.
Final Hydrostatic			1266.6	1299.9	1st Flow		- MCF
1st Flow	Initial	Time	100.9	284.9	Production Rate	2nd Flow	*2163 MCF
	Final	1	89.5	189.1		3rd Flow	- MCF
	Closed In Pressure	61	904.3	929.8		Hole Size	7.875 in.
2nd Flow	Initial	Time	182.4	291.6	Footage Tested		18 ft.
	Final	60	207.6	229.1	Mud Weight		9.1 lbs./gal.
	Closed In Pressure	119	906.8	919.9	Gas Viscosity		0.014 cp
3rd Flow	Initial	Time			Gas Gravity		Est. 0.65 —
	Final				Gas Compressibility		0.85 —
	Closed In Pressure				Temperature		88 °F
Extrapolated Static Pressure			1st				
			2nd	915			927
			3rd				
Slope P/10			1st				
			2nd	874			885
			3rd				

Remarks: *-Charts indicate bottom hole flowing pressure had not stabilized prior to closing tool.

SUMMARY		B.T. Gauge No. 6041 Depth 2408'			B.T. Gauge No. 1838 Depth 2471'			UNITS
PRODUCT	EQUATION	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	
Transmissibility	$\frac{Kh}{\mu} = \frac{1637 Q_g ZT}{m}$		22485.9			21671.9		md. ft. cp
Theoretical Flow Capacity	$Kh = \frac{Kh}{\mu} \mu$		314.803			303.407		md. ft.
Average Effective Permeability	$K = \frac{Kh}{h}$		-			-		md.
	$K_1 = \frac{Kh}{h_1}$		17.490			16.856		md.
Indicated Flow Capacity	$(Kh)_s = \frac{3200 Q_g \mu ZT \log(0.472 b/r_w)}{P_s^2 - P_r^2}$		97.284			95.293		md. ft.
Damage Ratio	$DR = \frac{\text{Theo. Flow Cap}}{\text{Indicated Flow Cap}} \frac{Kh}{(Kh)_s}$		3.236			3.184		—
Indicated Flow Rate	$OF_1 = \frac{Q_g}{P_s^2 - P_r^2} \frac{P_s^2}{P_r^2} \text{ Max.}$		2280			2304		MCFD
	$OF_2 = \frac{Q_g}{\sqrt{P_s^2 - P_r^2}} \frac{P_s}{P_r} \text{ Min.}$		2221			2232		MCFD
Theoretical Potential Rate	$OF_3 = OF_1 DR \text{ Max.}$		7379			7334		MCFD
	$OF_4 = OF_2 DR \text{ Min.}$		7187			7107		MCFD
Approx. Radius of Investigation	$b \approx \sqrt{Kt} \text{ or } \sqrt{Kt_0}$		-			-		ft.
	$b_1 \approx \sqrt{K_1 t} \text{ or } \sqrt{K_1 t_0}$		33			32		ft.
Potentiometric Surface *	$Pot. = (EI - GD) + (2.319 Ps)$		-2177			2054		ft.

NOTICE: These calculations are based upon information furnished by you and taken from Drill Stem Test pressure charts, and are furnished you for your information. In furnishing such calculations and evaluations based thereon, Halliburton is merely expressing its opinion. You agree that Halliburton makes no warranty express or implied as to the accuracy of such calculations or opinions, and that Halliburton shall not be liable for any loss or damage, whether due to negligence or otherwise, in connection with such calculations and opinions.

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Reversing Sub				
Water Cushion Valve				
Drill Pipe	4 $\frac{1}{2}$ "	3.826"	1286'	
Drill Collars	4 $\frac{1}{2}$ "	2.764"	1116'	Weight Pipe
Handling Sub & Choke Assembly				
Dual CIP Valve				
Dual CIP Sampler	5"	.75"	95.25"	2396'
Hydro-Spring Tester	5"	.75"	60.21"	2403'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	3.06"	49.63"	2408'
Hydraulic Jar	5"	1.75"	60"	
VR Safety Joint	5"	1"	33.40"	
Pressure Equalizing Crossover				
Packer Assembly	6 3/4"	1.53"	48.89"	2420'
Distributor				
Packer Assembly	6 3/4"	1.53"	48.89"	2425'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars --- weight Pipe	4 $\frac{1}{2}$ "	2.764"	30'	
Anchor Pipe Safety Joint				
Packer Assembly				
Distributor				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor	5"	3"	16'	
Blanked-Off B.T. Running Case	5"	2.44"	48.71"	2471'
Total Depth				2475'