FLUID SAMPLER DATA

Sampler Pressure 250 P.S.I.G. at Surface
Recovery: Cu. Ft. Gas 2.70
cc. Oil
cc. Water
cc. Mud
Tot. Liquid cc.
Gravity ° API @ °F.
Gas/Oil Ratio cu. ft./bbl.

	RESISTIVITY	CHLORIDE CONTENT
Recovery Water	@ °F.	ppm
Recovery Mud	@ °F.	
Recovery Mud Filtrate	@ °F.	ppm
Mud Pit Sample	@ °F.	
Mud Pit Sample Filtrate	@ °F.	ppm

Mud Weight 9.2 vis 48 cp

Date	12-4-71	Ticket Number	431438
Kind of Job	OPEN HOLE	Halliburton District	ARTESIA
Tester	MR. MURDOCK	Witness	MR. BROOKS
Drilling Contractor	MC VEY DRILLING COMPANY BC S		

EQUIPMENT & HOLE DATA

Formation Tested Morrow
Elevation 3474' KB Ft.
Net Productive Interval 18' Ft.
All Depths Measured From 14' Rotary Table
Total Depth 8880' Ft.
Main Hole/Casing Size 7 7/8"
Drill Collar Length 737' I.D. 2.25"
Drill Pipe Length 7900' I.D. 3.826"
Packer Depth(s) 8754' - 8760' Ft.
Depth Tester Valve 8723' Ft.

Cushion TYPE AMOUNT Ft. Depth Back Pres. Valve Surface Choke 1" ADJ. Bottom Choke 3/4"

Recovered 340 Feet of Drilling mud
Recovered Feet of
Recovered Feet of
Recovered Feet of
Recovered Feet of

Meas. From Tester Valve

RECEIVED
JAN 5 1972

Remarks See production test data sheet.

CHARTS INDICATE PARTIAL PLUGGING OF ANCHOR PERFORATIONS DURING FIRST FLOW PERIOD.

TEMPERATURE	Gauge No. 1920 Depth: 8741 Ft.		Gauge No. 1919 Depth: 8876 Ft.		Gauge No. Depth: Ft.		TIME	
	24 Hour Clock		24 Hour Clock		Hour Clock		Tool Opened	3:00 P.M.
Est. °F.	Blanked Off No		Blanked Off Yes		Blanked Off			
Actual 154°F.	Pressures		Pressures		Pressures		Tool Closed	10:30 P.M.
	Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic	UTR	4269	4298	4326				
First Period Flow Initial	115	120	466	471			—	—
First Period Flow Final	184	192	442	478			30	29
First Period Closed in	3171	3211	3149	3186			60	60
Second Period Flow Initial	207	150	233	212			—	—
Second Period Flow Final	230	236	233	249			120	121
Second Period Closed in	3401	3397	3379	3372			240	240
Third Period Flow Initial							—	—
Third Period Flow Final								
Third Period Closed in								
Final Hydrostatic	4271	4253	4275	4287			—	—

UTR = Unable to read

Legal Location Sec. - Twp. - Rng.	24 - 18S - 25E
Lease Name	LINCK
Well No.	1
Test No.	2
Field Area	PENASCO
Tested Interval	8760' - 8880'
County	EDDY
State	NEW MEXICO
Lease Owner/Company Name	READING AND BATES, INCORPORATED

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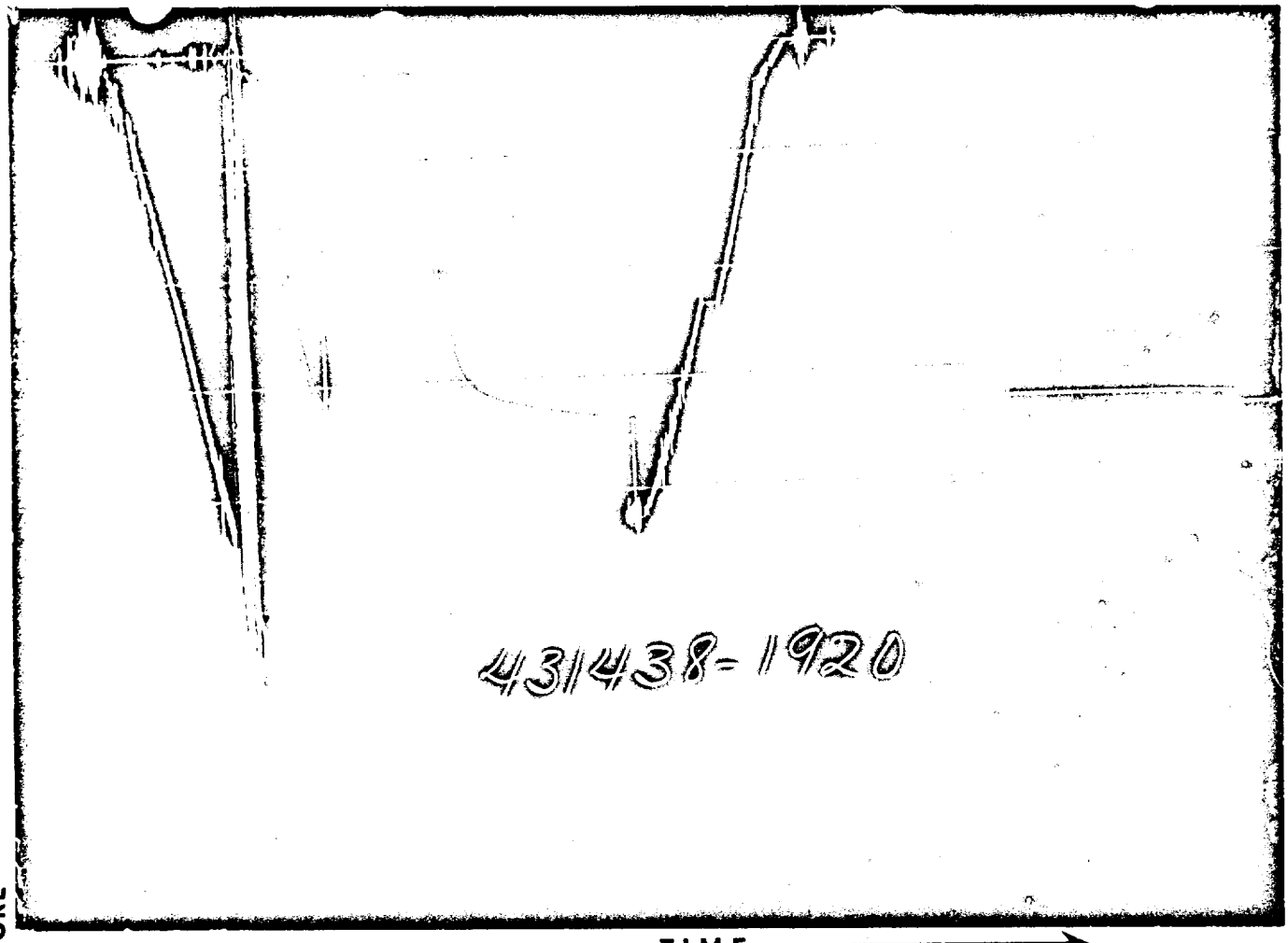
FORMATION TEST DATA

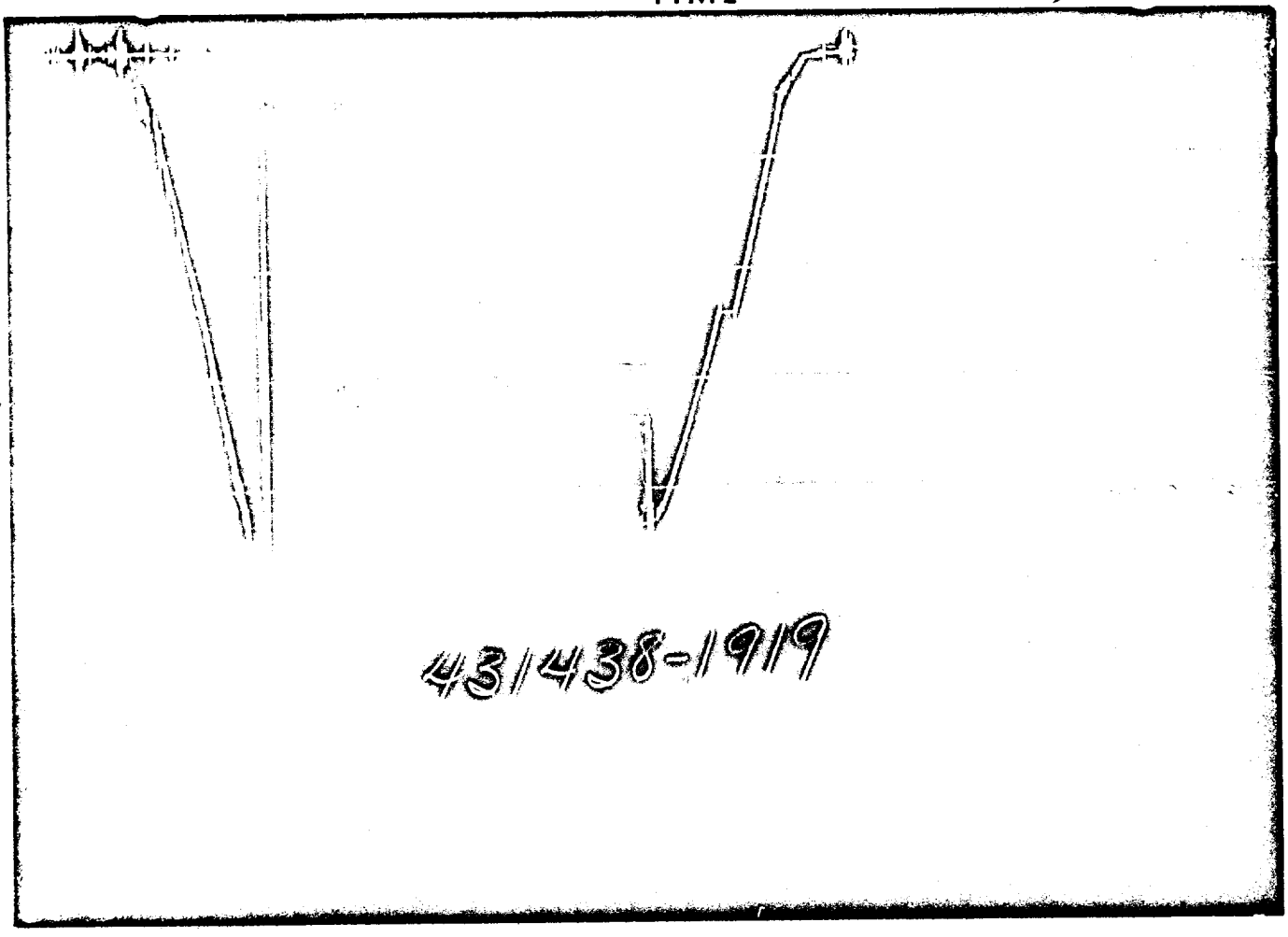
LITTLE'S 08430 10M 4/69—55, 8415

(13)

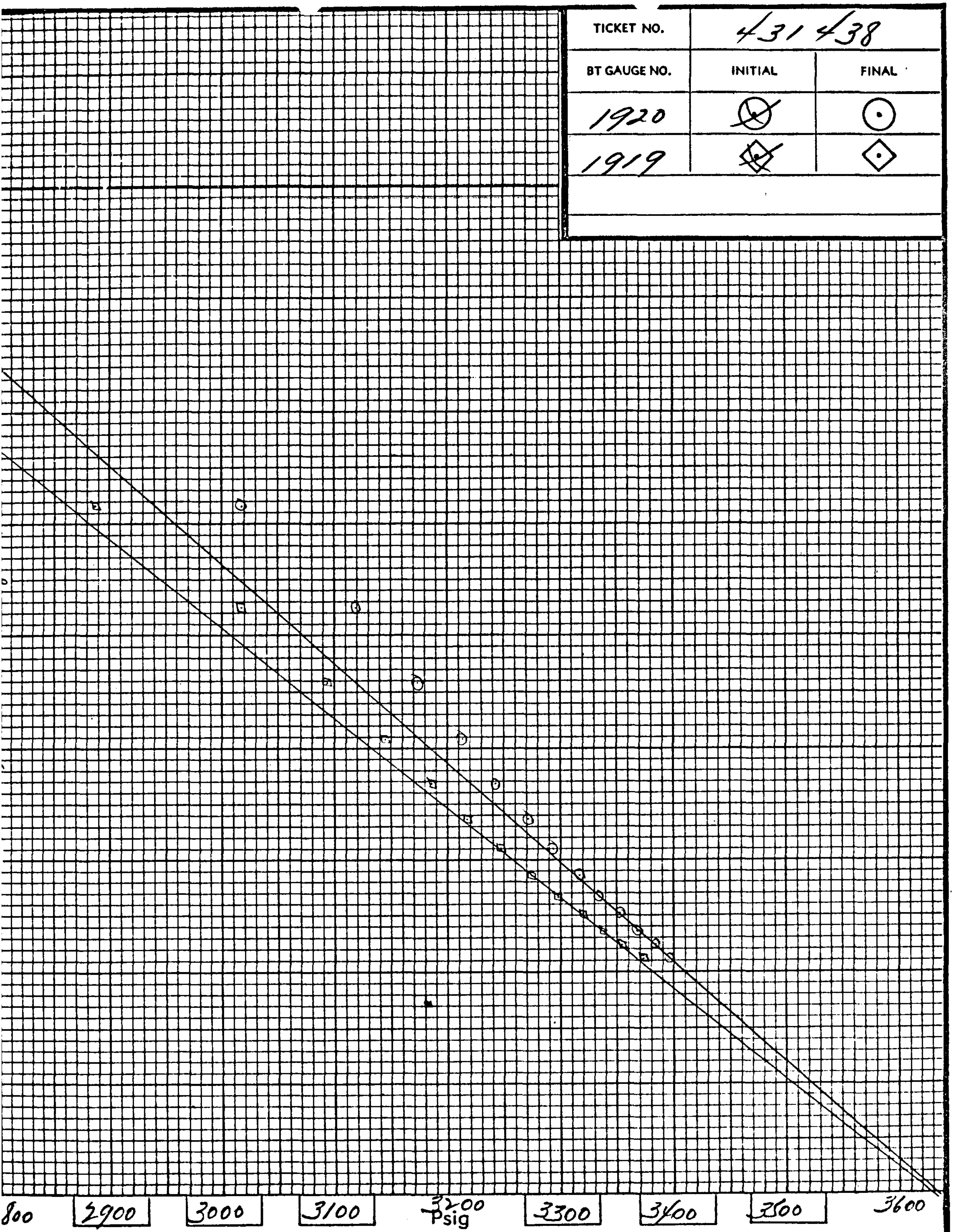


PRESSURE

TIME



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



EXTRAPOLATED PRESSURE GRAPH

Gauge No. 1920			Depth 8741'			Clock No. 2493			24 hour	Ticket No. 431438				
	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"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
0	.0000	120	.0000	-----	192	.0000	150	.0000	-----	236					
1	.1010	192	.0207	.769	928	.0673	240	.0540	1.017	2014					
2			.0414	.536	1450	.1346	247	.1080	.756	2755					
3			.0621	.419	1883	.2018	238	.1620	.616	3018					
4			.0828	.346	2227	.2691	236	.2160	.525	3119					
5			.1035	.295	2507	.3364	236	.2700	.459	3174					
			.1242	.258	2734	.4070	236*	.3240	.409	3213					
			.1449	.229	2904			.3780	.369	3243					
8			.1656	.206	3032			.4320	.337	3271					
9			.1863	.188	3131			.4860	.310	3294					
10			.2070	.172	3211			.5400	.287	3317					
11								.5940	.268	3335					
12								.6480	.251	3353					
13								.7020	.236	3369					
14								.7560	.223	3383					
15								.8100	.211	3397					

Gauge No. 1919					Depth 8876'			Clock No. 2492			24 hour				
0	.0000	471	.0000	-----	478	.0000	212	.0000	-----	249					
1	.0970	478	.0199	.768	1044	.0673	252	.0536	1.017	1799					
2			.0398	.536	1543	.1346	263	.1072	.755	2580					
3			.0597	.419	1945	.2018	256	.1608	.616	2887					
4			.0796	.346	2261	.2691	252	.2144	.525	3018					
			.0995	.295	2522	.3364	249	.2680	.459	3094					
6			.1194	.258	2723	.4070	249*	.3216	.409	3145					
7			.1393	.229	2891			.3752	.369	3186					
8			.1592	.206	3018			.4288	.337	3218					
9			.1791	.187	3117			.4824	.310	3248					
10			.1990	.172	3186			.5360	.287	3274					
11								.5896	.268	3299					
12								.6432	.251	3320					
13								.6968	.236	3338					
14								.7504	.223	3556					
15								.8040	.211	3372					
Reading Interval					6		20			16					Minutes

REMARKS: *Interval = 21 minutes

Gas Production

B.T. Gauge Numbers			1920	1919	Ticket Number		431438	
			PRESSURE	PRESSURE				
Initial Hydrostatic			4269	4326	Elevation		3474	ft.
Final Hydrostatic			4253	4287	Production Rate	1st Flow	-	MCF
1st Flow	Initial	Time	120	471		2nd Flow	110.25	MCF
	Final	29	192	478		3rd Flow	-	MCF
	Closed In Pressure	60	3211	3186	Hole Size		7.875	in.
2nd Flow	Initial	Time	150	212	Footage Tested	Net	18	ft.
	Final	121	236	249	Mud Weight		9.2	lbs./gal.
	Closed In Pressure	240	3397	3372	Gas Viscosity		0.023	cp
3rd Flow	Initial	Time			Gas Gravity	Estimated	0.60	—
	Final				Gas Compressibility		0.90	—
	Closed In Pressure				Temperature		154	°F
Extrapolated Static Pressure		1st	-	-				
		2nd	3631	3626				
		3rd	-	-				
Slope P/10		1st	-	-				
		2nd	2514	2400				
		3rd	-	-				

Remarks:

SUMMARY

	B.T. Gauge No. 1920 Depth 8741'			B.T. Gauge No. 1919 Depth 8876'			
PRODUCT / EQUATION	FIRST	SECOND	THIRD	FIRST	SECOND	THIRD	UNITS
Transmissability $\frac{Kh}{\mu} = \frac{1637\ Q_g\ ZT}{m}$		14.53			13.50		md. ft. / cp
Theoretical Flow Capacity $Kh = \frac{Kh}{\mu}\ \mu$		0.334			0.310		md. ft.
Average Effective $K = \frac{Kh}{h}$		-			-		md.
Permeability $K_1 = \frac{Kh}{h_1}$		0.019			0.017		md.
Indicated Flow Capacity $(Kh)_g = \frac{3200\ Q_g\ \mu\ ZT\ \text{Log}(0.472\ b/r_w)}{P_s^2 - P_f^2}$		0.160			0.156		md. ft.
Damage Ratio $DR = \frac{\text{Theo. Flow Cap}}{\text{Indicated Flow Cap}} \frac{Kh}{(Kh)_g}$		2.09			1.99		—
Indicated Flow Rate $OF_1 = \frac{Q_g\ P_s^2}{P_s^2 - P_f^2}$ Max.		110.7			110.7		MCFD
$OF_2 = \frac{Q_g\ P_s}{\sqrt{P_s^2 - P_f^2}}$ Min.		110.4			110.5		MCFD
Theoretical Potential Rate $OF_3 = OF_1\ DR$ Max.		231.5			220.9		MCFD
$OF_4 = OF_2\ DR$ Min.		231.0			220.4		MCFD
Approx. Radius of Investigation $b \leftrightarrows \sqrt{Kt}$ or $\sqrt{Kt_0}$		-			-		ft.
$b_1 \leftrightarrows \sqrt{K_1 t}$ or $\sqrt{K_1 t_0}$		1.99			1.94		ft.
Potentiometric Surface * $Pot. = (El - GD) + (2.319\ Ps)$		3153			3006		ft.

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INTERPRETATIONS AND CALCULATIONS

LITTLE'S 83414 8/

Casing perfs. _____ Bottom choke _____ Surf. temp _____ °F Ticket No. 431438

Gas gravity _____ Oil gravity _____ GOR _____

Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F

Date Time 12-4-71 d.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
3:00					Opened tool - slid 15' to total depth
					Weak blow
3:15					Good blow
3:30					Closed tool Gas to surface
4:30	½"				Opened tool
4:40	"	85	124		
4:55	"	100	147		
5:00	"	90	132		Decreasing
5:15	"	80	117.6		
5:30	"	75	110.25		
5:45	"	75	110.25		
6:00	"	75	110.25		
6:30	"	75	110.25		Closed tool
10:30					Pulled tools

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PRODUCTION TEST DATA

LITTLE'S

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	O. D.	I. D.	LENGTH	DEPTH
Reversing Sub	6 3/4"	2.50"	1'	
Water Cushion Valve				
Drill Pipe	4½"	3.826"	7900'	
Drill Collars	6 3/4"	2.25"	737'	
Handling Sub & Choke Assembly				
Dual CIP Valve				
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	4'	8723'
Multiple CIP Sampler	5"	-	4'	
Extension Joint	5"	1"	10'	
AP Running Case	5"	3.87"	5'	8741'
Hydraulic Jar	5"	1.75"	5'	
VR Safety Joint	5"	1"	3'	
Pressure Equalizing Crossover				
Packer Assembly	6 3/4"	1.53"	6'	8754'
Distributor				
Packer Assembly	6 3/4"	1.53"	6'	8760'
Flush Joint Anchor				
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	6 3/4"	2.25"	84'	
Flush Joint Anchor	5 3/4"	3.87"	28'	
Blanked-Off B.T. Running Case	5 3/4"	2.50"	5'	8876'