FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface
Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water _____
cc. Mud _____
Tot. Liquid cc. _____
Gravity 33 (estimated) API @ _____ °F.
Gas/Oil Ratio _____ cu. ft./bbl.

		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 37 cp

Date 1-29-76 Ticket Number 795272
Kind of Job OPEN HOLE TEST Halliburton District HAYS
Tester MR. KERNS Witness L.L. SMITH
Drilling Contractor ABERCROMBIE DRILLING COMPANY #10 PW S

EQUIPMENT & HOLE DATA

Formation Tested Tarkio
Elevation 1750' K.B. Ft.
Net Productive Interval 5' Ft.
All Depths Measured From Kelly Bushing
Total Depth 2420' Ft.
Main Hole/Casing Size 7 7/8" - 8 5/8"
Drill Collar Length 824' WP I.D. 2.764" W.P.
Drill Pipe Length 1533' I.D. 3.340"
Packer Depth(s) 2383' - 2387' Ft.
Depth Tester Valve 2370' Ft.

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

Recovered 186 Feet of Gas in pipe.
Recovered 248 Feet of Slightly oil cut gassy mud.
Recovered Feet of
Recovered Feet of
Recovered Feet of

Remarks SEE PRODUCTION TEST DATA SHEET.....

TEMPERATURE	Gauge No. 738		Gauge No. 272		Gauge No.		TIME	
	Depth: 2371' Ft.		Depth: 2416' Ft.		Depth: Ft.			
	12 Hour Clock		12 Hour Clock		Hour Clock		Tool Opened	A.M. 10:20 P.M.
Est. °F.	Blanked Off No		Blanked Off Yes		Blanked Off		Opened	11:13 A.M.
2415' Actual 80 °F.	Pressures		Pressures		Pressures		Bypass	14:11 P.M.
	Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic		1200	1221	1227				
First Period Flow Initial		72	98	102			———	———
First Period Flow Final		89	107	112			21	22
First Period Closed in		304	331	327			60	59
Second Period Flow Initial		95	116	123			———	———
Second Period Flow Final		117	134	137			60	60
Second Period Closed in		303	322	324			90	90
Third Period Flow Initial							———	———
Third Period Flow Final								
Third Period Closed in								
Final Hydrostatic		1187	1195	1194			———	———

Legal Location Sec. - Twp. - Rng. 8 - 12S - 15W
Lease Name OSWALD & WILCOX
Well No. 27
Test No. 1
Tested Interval 2387' - 2420'
Field Area FAIRPORT
County RUSSELL
State KANSAS
Lease Owner/Company Name SOHIO PETROLEUM COMPANY
Mea. From Tester Valve

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FORMATION TEST DATA

LITTLE'S 96671 10M 8/74

(9)

Casing perfs._____ Bottom choke_____ Surf. temp_____ °F Ticket No. 795272

Gas gravity_____ Oil gravity_____ GOR_____

Spec. gravity_____ Chlorides_____ ppm Res._____ @_____ °F

INDICATE TYPE AND SIZE OF GAS MEASURING DEVICE USED_____

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
05:05					Time called out.
06:40					On location.
					Rig was C.F.S. for 25 minutes.
07:05					Started out of hole with bit.
08:30					Picked up and made up tool.
08:55					Tool through rotary table. 15' from
					bottom of tool. Sat down on bridge and
					opened. Tool did slide 15' to get on
					bottom.
10:13					Opened by-pass.
10:17					On bottom with tool.
10:20					Opened tool with a weak blow, increasing
					to a fair blow
10:41					Closed tool.
11:41					Reopened tool with a good to strong
					blow.
12:41					Closed tool.
14:11					Off bottom with tool.
15:10					Tool through rotary table.
15:40					Tool loaded onto truck.

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PRODUCTION TEST DATA

LITTLE'S 66672 9M 8/74

Gauge No. 738			Depth 2371'			Clock No. 14280			12 hour	Ticket No. 795272				
	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	.000	72	.000	-----	89	.000	95	.000	-----	117					
1	.0129*	74	.0206**	.897	144	.0692	100	.0421	1.154	197					
2	.0387	77	.0481	.597	211	.1384	104	.0841	.882	243					
3	.0646	81	.0755	.460	249	.2076	108	.1262	.733	265					
4	.0904	84	.1030	.376	268	.2768	111	.1683	.634	276					
5	.1162	86	.1304	.320	279	.3460	114	.2104	.562	283					
6	.1420	89	.1579	.279	285	.4150	117	.2524	.506	288					
7			.1854	.247	290			.2945	.461	290					
8			.2128	.222	293			.3366	.424	294					
9			.2403	.202	296			.3786	.393	296					
10			.2677	.185	298			.4207	.366	298					
11			.2952	.171	299			.4628	.343	299					
12			.3227	.158	301			.5048	.323	300					
13			.3501	.148	302			.5469	.305	301					
14			.3776	.139	304			.5890	.289	302					
15			.4050	.131	304			.6310	.275	303					
Gauge No. 272			Depth 2416'			Clock No. 10288			12 hour						
0	.000	102	.000	-----	112	.000	123	.000	-----	137					
1	.0134 *	102	.0201**	.920	166	.0677	121	.0407	1.164	216					
2	.0401	103	.0470	.616	234	.1353	124	.0813	.892	262					
3	.0668	106	.0738	.476	271	.2030	128	.1220	.743	285					
4	.0936	108	.1006	.391	292	.2707	131	.1627	.643	297					
5	.1203	110	.1275	.333	302	.3384	134	.2034	.570	303					
6	.1470	112	.1544	.290	309	.4060	137	.2440	.514	308					
7			.1812	.258	314			.2847	.469	311					
8			.2081	.232	317			.3254	.431	314					
9			.2349	.211	319			.3660	.400	318					
10			.2618	.194	321			.4067	.373	319					
11			.2886	.179	323			.4474	.350	320					
12			.3155	.166	325			.4880	.329	321					
13			.3423	.155	326			.5287	.311	323					
14			.3692	.146	326			.5694	.295	324					
15			.3960	.137	327			.6100	.280	324					
Reading Interval	4		4			10		6							Minutes

REMARKS:

* = 2 minutes ** = 3 minutes

(b)

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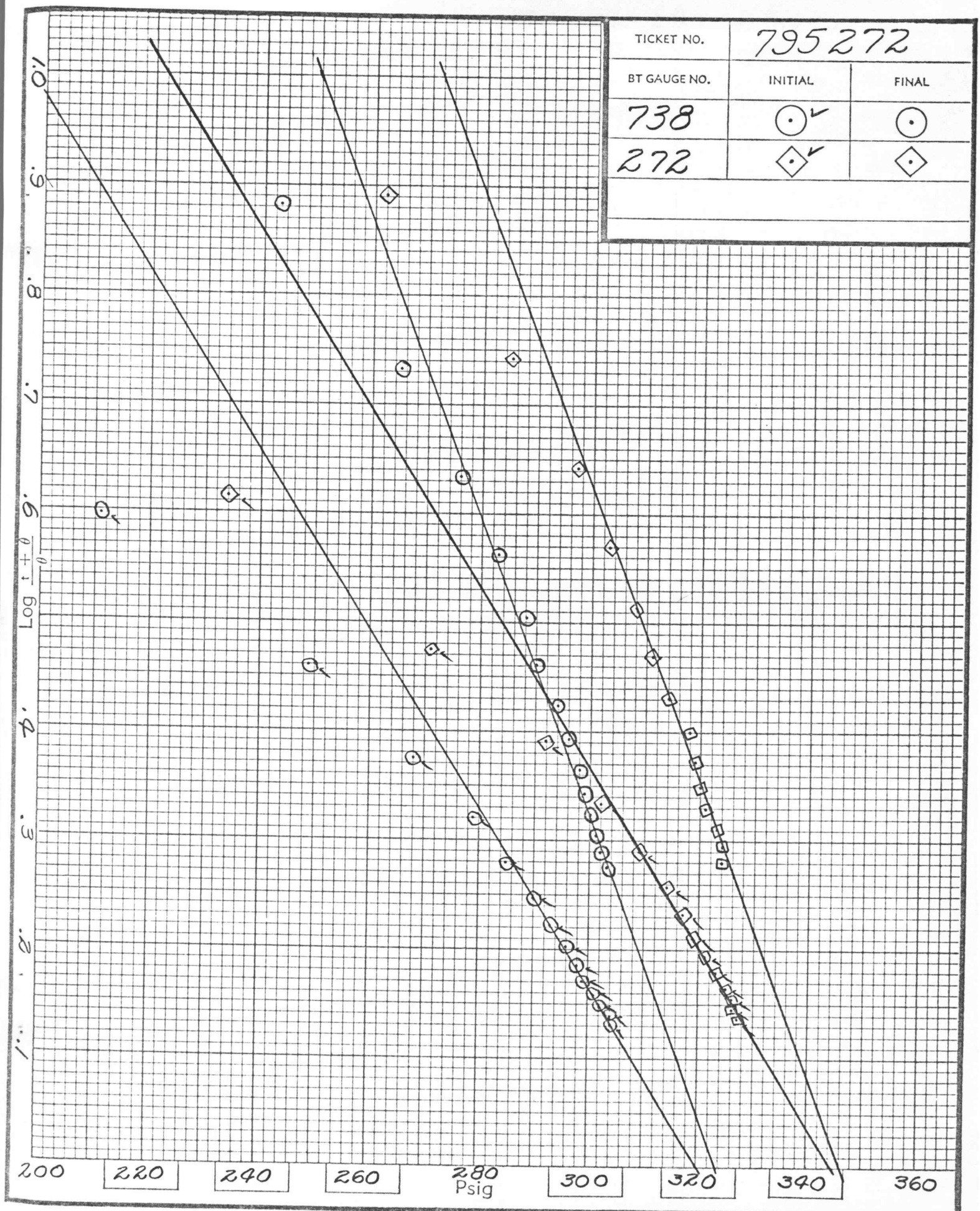
SPECIAL PRESSURE DATA



EXTRAPOLATED PRESSURE GRAPH

Liquid Production

B.T. Gauge Numbers			738	272
			PRESSURE	PRESSURE
Initial Hydrostatic			1200	1227
Final Hydrostatic			1187	1194
1st Flow	Initial	Time	72	102
	Final	22	89	112
	Closed In Pressure	59	304	327
2nd Flow	Initial	-	95	123
	Final	60	117	137
	Closed In Pressure	90	303	324
3rd Flow	Initial	Time		
	Final			
	Closed In Pressure			
Extrapolated Static Pressure		1st	320	344
		2nd	323	346
		3rd	-	-
Slope P/10		1st	198	222
		2nd	250	272
		3rd	-	-

Ticket Number		795272	
Elevation		1750	ft.
Indicated Production	1st Flow	16	bbls./day
	2nd Flow	9	bbls./day
	3rd Flow	-	bbls./day
Drill Collar Length		824	ft.
Drill Collar I.D.		2.764	in.
Drill Pipe Factor		0.1422	bbls./ft.
Hole Size		7.875	in.
Footage Tested		5	ft.
Mud Weight		9.4	lbs./gal.
Viscosity, Oil ~~or Water~~		14.0	cp
Oil API Gravity	Estimated	33	—
Water Specific Gravity		-	—
Temperature		80	°F

Remarks:

SUMMARY

PRODUCT	EQUATION	B.T. Gauge No. 738 Depth 2371' FIRST	SECOND	THIRD	B.T. Gauge No. 272 Depth 2416' FIRST	SECOND	THIRD	UNITS
Production	$Q = \frac{1440\ R}{t}$	21	10		16	9		bbls. day
Transmissibility	$\frac{Kh}{\mu} = \frac{162.6\ Q}{m}$	28.677	21.727		12.508	20.173		$\frac{md.\ ft.}{cp}$
Indicated Flow Capacity	$Kh = \frac{Kh}{\mu}\ \mu$	401.478	304.169		301.109	282.409		md. ft.
Average Effective Permeability	$K = \frac{Kh}{h}$	-	-		-	-		md.
	$K_1 = \frac{Kh}{h_f}$	80.296	60.834		60.222	56.482		md.
Damage Ratio	$DR = .183\ \frac{Ps - Pf}{m}$	0.347	0.517		0.348	0.517		—
Theoretical Potential w/Damage Removed	$Q_1 = Q\ DR$	21	10		16	9		bbls. day
Approx. Radius of Investigation	$b \leftrightarrows \sqrt{Kt}$ or $\sqrt{Kt_0}$	-	-		-	-		ft.
	$b_1 \leftrightarrows \sqrt{K_1 t}$ or $\sqrt{K_1 t_0}$	42	71		36	68		ft.
Potentiometric Surface *	$Pot. = El - GD + 2.319\ Ps$	121	128		132	136		ft.

TICKET NO. 795272

	O. D.	I. D.	LENGTH	DEPTH
Drill Pipe or Tubing				
Reversing Sub	5.00" I.F.	2.25"	1'	
Water Cushion Valve				
Drill Pipe	4.00"	3.340"	1533'	
Drill Collars ...Weight Pipe.....	4 1/2"	2.764"	824'	
Handling Sub & Choke Assembly				
Dual CIP Valve	5"	.87"	5'	2365'
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	5'	2370'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	3.06"	4'	2371'
Hydraulic Jar	5"	1.75"	5'	
VR Safety Joint	5"	1.00"	3'	
Pressure Equalizing Crossover				
Packer Assembly	6 3/4"	1.53"	4'	2383'
Distributor				
Packer Assembly	6 3/4"	1.53"	4'	2387'
Flush Joint Anchor				
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	5"	2.84"	33'	
Blanked-Off B.T. Running Case	5"	2.44"	4'	2416'
Total Depth				2420'

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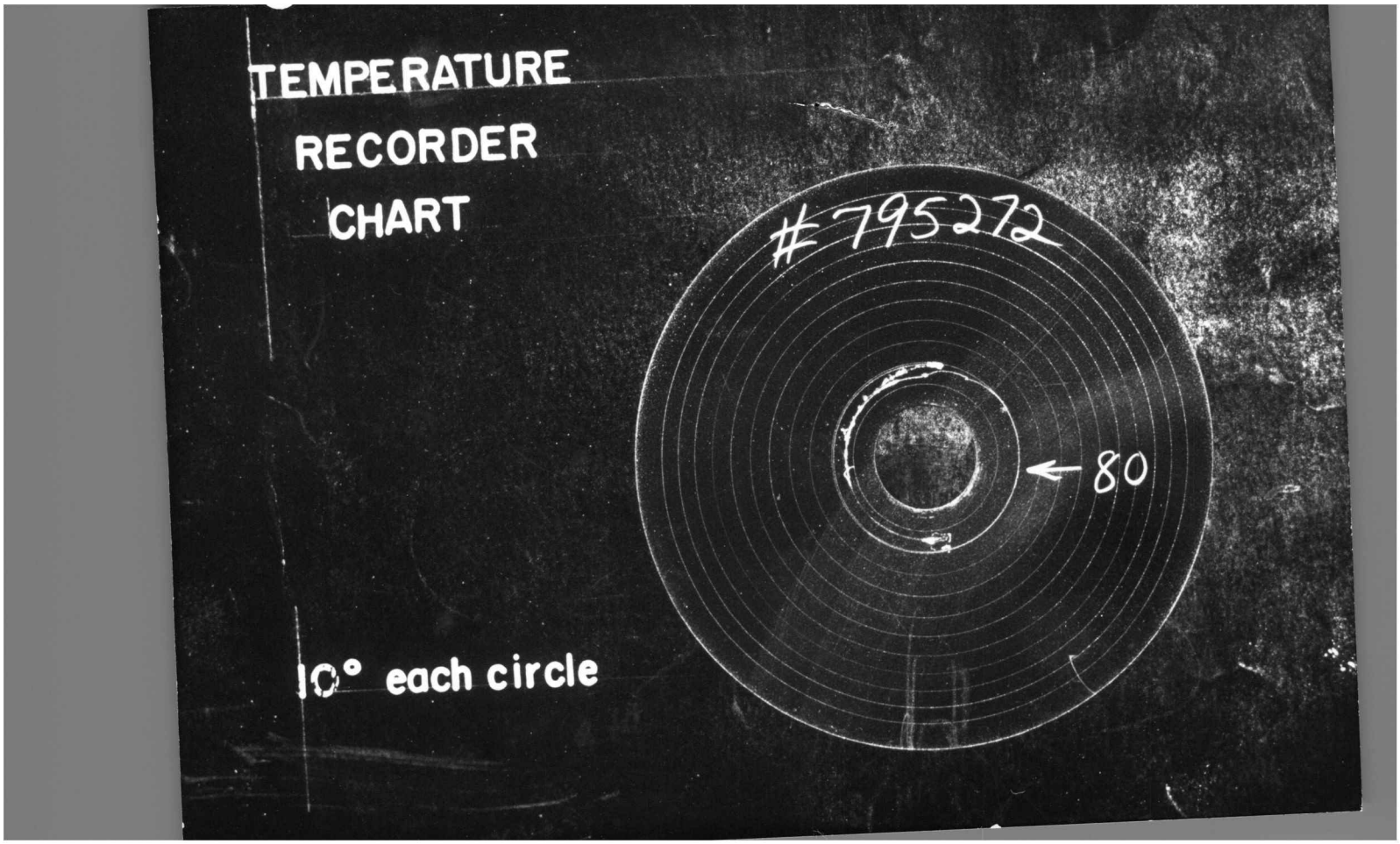
EQUIPMENT DATA

LITTLE'S 96678 75C 8/74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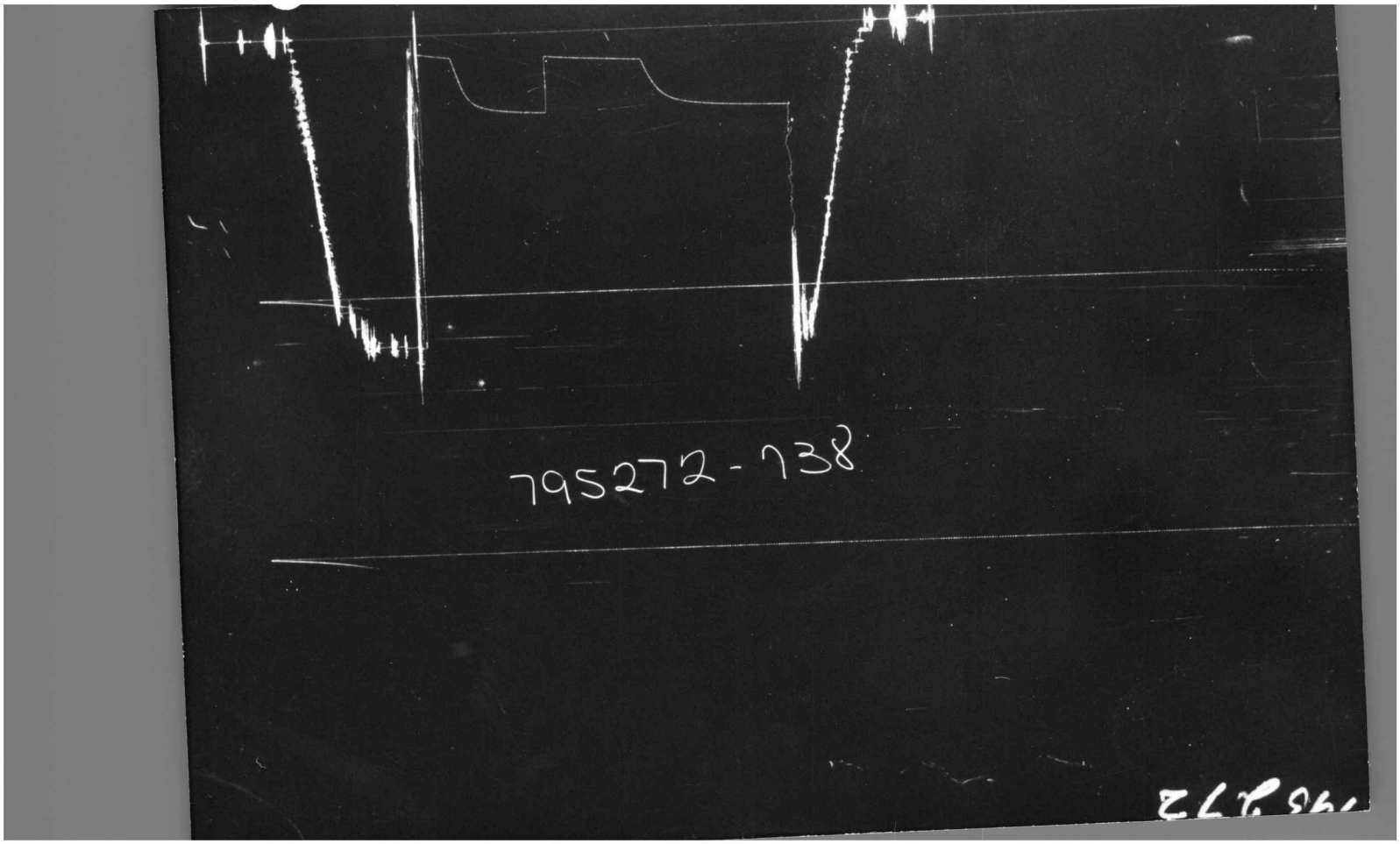
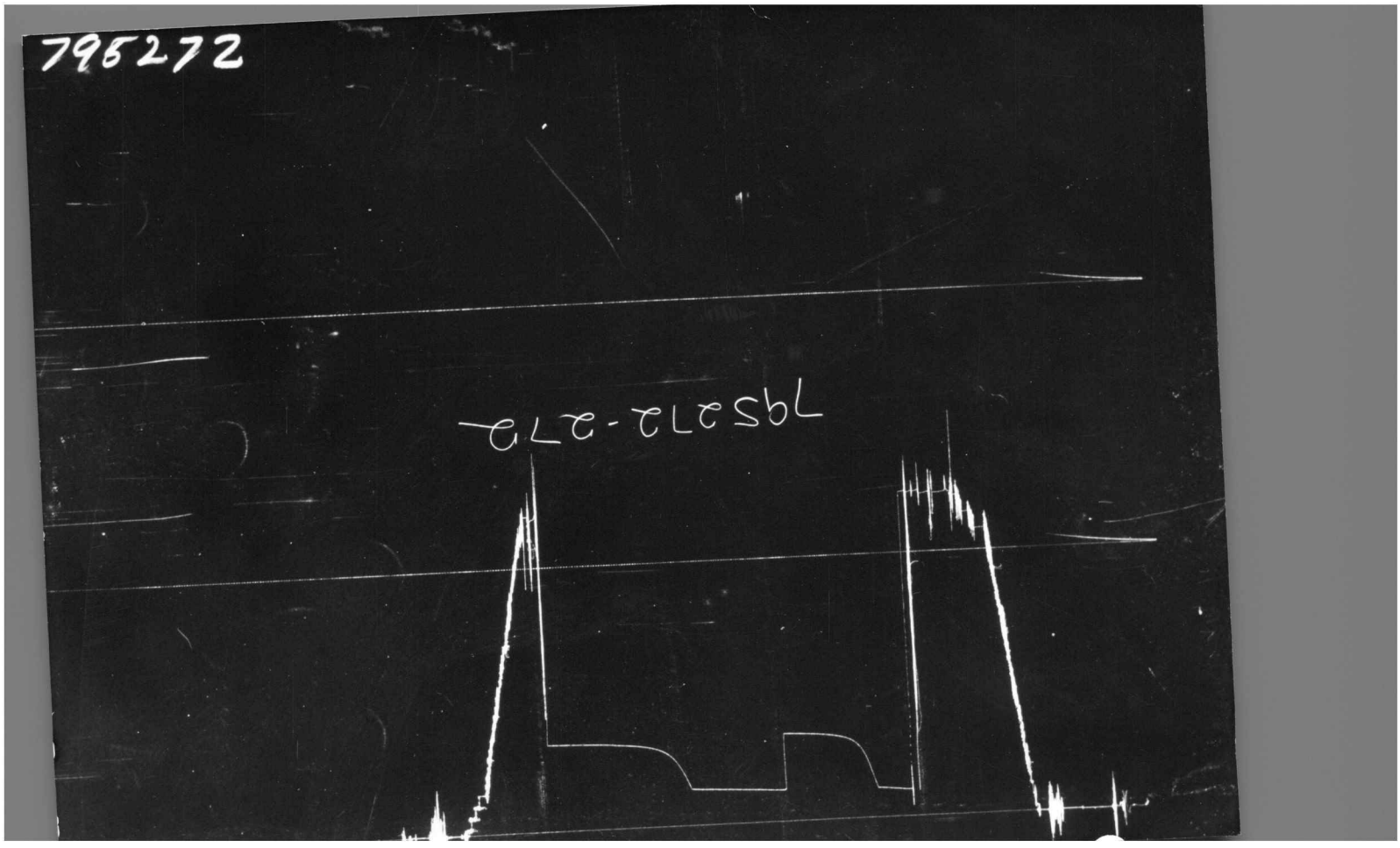
RECORDER
CHART
#795272
80
10° each circle


795272-738


796272