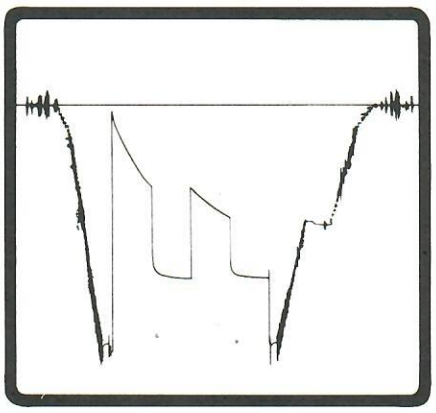
FORMATION TESTING SERVICE REPORT



31-12S-50

#22-C-31

Bledsoe

HALLIBURTON SERVICES
Duncan, Oklahoma 73536
A Halliburton Company

1296-R5 L—Southwestern

NOMENCLATURE

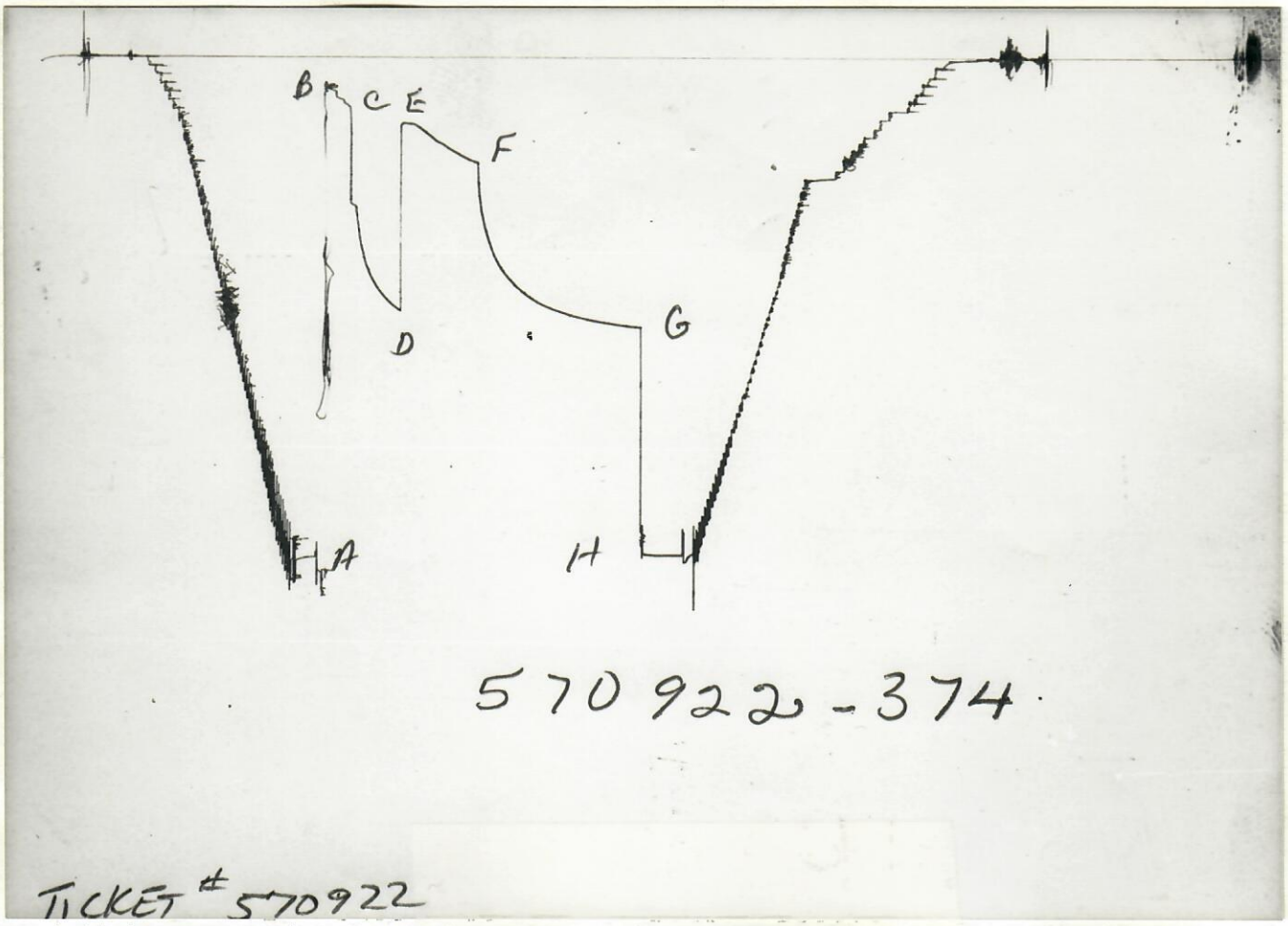
B	=	Formation Volume Factor (Res Vol / Std Vol)	—
c_t	=	System Total Compressibility	(Vol / Vol) / psi
DR	=	Damage Ratio	—
h	=	Estimated Net Pay Thickness	Ft
k	=	Permeability	md
m	=	(Liquid) Slope Extrapolated Pressure Plot	psi/cycle
		(Gas) Slope Extrapolated m(P) Plot	MM psi^2/ cp/cycle
$m(P^*)$	=	Real Gas Potential at P^*	MM psi^2/cp
$m(P_f)$	=	Real Gas Potential at P_f	MM psi^2/cp
AOF_1	=	Maximum Indicated Absolute Open Flow at Test Conditions	MCFD
AOF_2	=	Minimum Indicated Absolute Open Flow at Test Conditions	MCFD
P^*	=	Extrapolated Static Pressure	Psig
P_f	=	Final Flow Pressure	Psig
Q	=	Liquid Production Rate During Test	BPD
Q_1	=	Theoretical Liquid Production w/ Damage Removed	BPD
Q_g	=	Measured Gas Production Rate	MCFD
r_i	=	Approximate Radius of Investigation	Ft
r_w	=	Radius of Well Bore	Ft
S	=	Skin Factor	
t	=	Total Flow Time Previous to Closed-in	Minutes
Δt	=	Closed-in Time at Data Point	Minutes
T	=	Temperature Rankine	°R
ϕ	=	Porosity	—
μ	=	Viscosity of Gas or Liquid	cp
Log	=	Common Log	

HALLIBURTON
SERVICES

TICKET NO. 57092200
15-OCT-84
LAMAR

FORMATION TESTING SERVICE REPORT

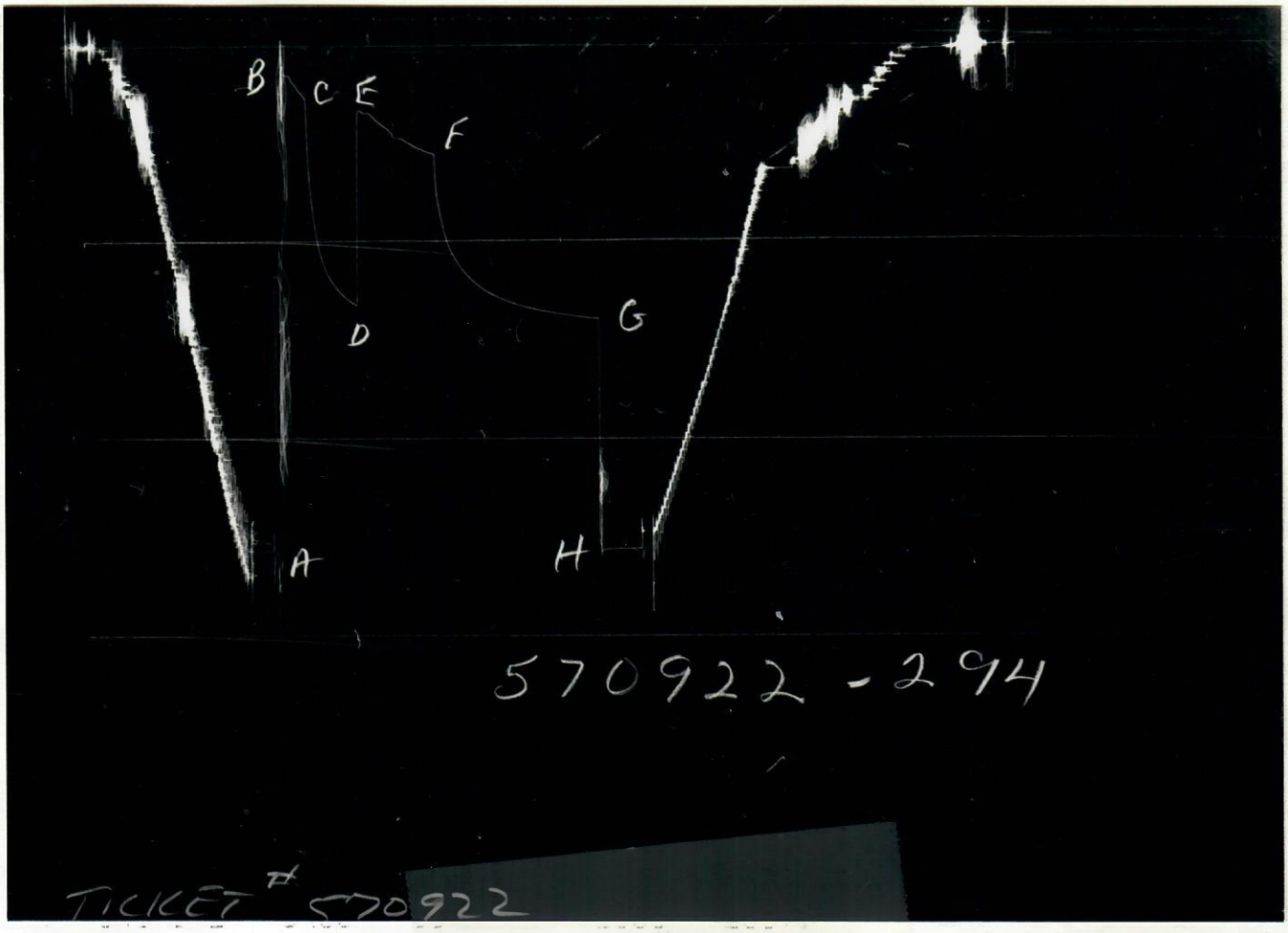
BLEDSOE 6	22 C-31	1	5499.' - 5513.'		CHAMPLIN PETROLEUM COMPANY
LEASE NAME	WELL NO.	TEST NO.	TESTED INTERVAL		LEASE OWNER/COMPANY NAME
LEGAL LOCATION SEC. - TWP. - RNG.	31-12S-50W	FIELD AREA	BLEDSOE RANCH	COUNTY CHEYENNE	STATE COLORADO OR



TICKET # 570922

GAUGE NO: 374 DEPTH: 5476.5 BLANKED OFF: NO HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2541	2555.6			
B	INITIAL FIRST FLOW	146	164.9	15.0	13.5	F
C	FINAL FIRST FLOW	247	257.2			
C	INITIAL FIRST CLOSED-IN	247	257.2	30.0	28.5	C
D	FINAL FIRST CLOSED-IN	1294	1299.4			
E	INITIAL SECOND FLOW	333	341.0	45.0	44.8	F
F	FINAL SECOND FLOW	532	542.8			
F	INITIAL SECOND CLOSED-IN	532	542.8	90.0	93.2	C
G	FINAL SECOND CLOSED-IN	1371	1379.4			
H	FINAL HYDROSTATIC	2541	2548.9			



GAUGE NO: 294 DEPTH: 5510.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2559	2567.7			
B	INITIAL FIRST FLOW	146	148.6	15.0	13.5	F
C	FINAL FIRST FLOW	266	270.3			
C	INITIAL FIRST CLOSED-IN	266	270.3	30.0	28.5	C
D	FINAL FIRST CLOSED-IN	1319	1322.1			
E	INITIAL SECOND FLOW	343	332.2	45.0	44.8	F
F	FINAL SECOND FLOW	545	557.5			
F	INITIAL SECOND CLOSED-IN	545	557.5	90.0	93.2	C
G	FINAL SECOND CLOSED-IN	1395	1389.6			
H	FINAL HYDROSTATIC	2559	2554.5			

EQUIPMENT & HOLE DATA

FORMATION TESTED: MARMATON
NET PAY (ft):
GROSS TESTED FOOTAGE: 14.0
ALL DEPTHS MEASURED FROM: KELLY BUSHING
CASING PERFS. (ft):
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 0
TOTAL DEPTH (ft): 5513.0
PACKER DEPTH(S) (ft): 5492, 5499
FINAL SURFACE CHOKE (in):
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 8.90
MUD VISCOSITY (sec): 55
ESTIMATED HOLE TEMP. (°F):
ACTUAL HOLE TEMP. (°F): 148 @ 5507.5 ft

TICKET NUMBER: 57092200

DATE: 10-4-84 TEST NO: 1

TYPE DST: OPEN HOLE

HALLIBURTON CAMP: LAMAR

TESTER: KUEHLE

WITNESS: COOPER

DRILLING CONTRACTOR: MURFIN DRILLING #14

FLUID PROPERTIES FOR RECOVERED MUD & WATER

SOURCE	RESISTIVITY		CHLORIDES
PIT SAMPLE	1.380 @	66 °F	2406 ppm
BOTTOM SAMPLE	0.300 @	56 °F	12030 ppm
SAMPLE WATER	0.280 @	70 °F	13000 ppm
	@	°F	ppm
	@	°F	ppm
	@	°F	ppm

SAMPLER DATA

Psig AT SURFACE: 350
cu.ft. OF GAS: 1.25
cc OF OIL: 1050
cc OF WATER: 1100
cc OF MUD: 0
TOTAL LIQUID cc: 2150

HYDROCARBON PROPERTIES

OIL GRAVITY (°API): 39.6 @ 60°F
GAS/OIL RATIO (cu.ft. per bbl): 189
GAS GRAVITY:

CUSHION DATA

TYPE	AMOUNT	WEIGHT

RECOVERED:

635' OF GAS CUT OIL WITH A TRACE OF MUD
586' OF SALTY WATER WITH TRACE OF MUD

MEASURED FROM TESTER VALVE

REMARKS:

TOP AND MIDDLE SAMPLES OF GAS CUT OIL CONTAINED A TRACE OF WATER

SAMPLER OIL HAD A TRACE OF MUD (OR SOLIDS).

GRIND OUT: 47.4% OIL, 52% WATER, .6% SOLIDS.

STAIR STEPPING OCCURRED ON BOTH GAUGES.

TYPE & SIZE MEASURING DEVICE: 2" MERLA TESTER					TICKET NO: 57092200
TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
10-4-84					
0715					CALLED OUT
1000					ON LOCATION-RIG PULLING DRILL
					COLLARS
1100					STARTED MAKING UP TOOLS
1120					STARTED IN HOLE
1250					ON BOTTOM-MADE UP LINES
1305					OPENED TOOL WITH A STRONG BLOW
					OFF BOTTOM OF BUCKET, LESS THAN
					1 MINUTE, STEADY THROUGHOUT
					FLOW.
1320					CLOSED TOOL
1335					GAS TO SURFACE
1350					OPENED TOOL TO 2" FLOW LINE
		2			1/8" ORIFICE IMMEDIATE
1355		4			
1400		5			
1415		6			
1420		7			
1425		8			
1430		10			
1435		11			STABILIZED AT 11 PSI THROUGH-
					OUT FLOW PERIOD. CLOSED TOOL
1605					RIGGED DOWN LINES, PULLED
					PACKERS FREE
1615					STARTED OUT OF HOLE
1930					OUT OF HOLE

TICKET NO: 57092200	GAUGE NO: 374
CLOCK NO: 28316 HOUR: 12	DEPTH: 5476.5

HALLIBURTON SERVICES

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
		FIRST FLOW				
B	1	0.0	164.9			
	2	1.0	162.5	-2.4		
	3	2.0	162.8	0.3		
	4	3.0	165.7	2.9		
	5	4.0	169.2	3.5		
	6	5.0	172.9	3.7		
	7	6.0	176.6	3.7		
	8	7.0	210.8	34.2		
	9	8.0	217.5	6.7		
	10	9.0	220.8	3.3		
	11	10.0	227.0	6.3		
	12	12.0	244.1	17.0		
C	13	13.5	257.2	13.2		
		FIRST CLOSED-IN				
C	1	0.0	257.2			
[1]	2	3.0	762.8	505.6	2.4	0.744
	3	4.0	843.2	585.9	3.1	0.643
	4	5.0	909.7	652.5	3.7	0.566
	5	6.0	965.5	708.3	4.1	0.514
	6	7.0	998.0	740.7	4.6	0.468
	7	8.0	1039.0	781.8	5.0	0.430
	8	9.0	1068.0	810.8	5.4	0.399
	9	10.0	1090.4	833.1	5.7	0.372
	10	12.0	1135.9	878.7	6.4	0.327
	11	14.0	1166.3	909.0	6.9	0.294
	12	16.0	1195.2	937.9	7.3	0.266
	13	18.0	1217.6	960.4	7.7	0.243
	14	20.0	1236.6	979.4	8.1	0.225
	15	22.0	1254.4	997.2	8.4	0.208
	16	24.0	1270.8	1013.6	8.7	0.194
	17	26.0	1283.6	1026.4	8.9	0.182
D	18	28.5	1299.4	1042.2	9.2	0.169
		SECOND FLOW				
E	1	0.0	341.0			
	2	3.0	340.5	-0.5		
	3	6.0	342.6	2.1		
	4	9.0	349.4	6.8		
	5	12.0	368.5	19.0		
	6	15.0	389.4	20.9		
	7	18.0	408.4	19.0		
	8	21.0	430.9	22.5		
	9	24.0	445.1	14.2		
	10	27.0	463.1	18.0		
	11	30.0	478.4	15.3		
	12	33.0	494.7	16.2		

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
		SECOND FLOW - CONTINUED				
	13	36.0	509.2	14.5		
	14	39.0	522.8	13.7		
	15	42.0	534.5	11.7		
F	16	44.8	542.8	8.3		
		SECOND CLOSED-IN				
F	1	0.0	542.8			
	2	1.0	735.0	192.2	1.0	1.766
	3	2.0	792.0	249.2	1.9	1.482
	4	3.0	837.6	294.8	2.8	1.316
	5	4.0	880.7	337.9	3.8	1.190
	6	5.0	908.8	366.0	4.6	1.104
	7	6.0	940.1	397.3	5.4	1.032
	8	7.0	965.3	422.5	6.2	0.972
	9	8.0	987.1	444.4	7.0	0.921
	10	9.0	1009.0	466.2	7.8	0.875
	11	10.0	1029.1	486.3	8.5	0.835
	12	12.0	1062.9	520.1	9.9	0.769
	13	14.0	1092.7	550.0	11.3	0.713
	14	16.0	1115.9	573.1	12.6	0.667
	15	18.0	1138.2	595.4	13.8	0.627
	16	20.0	1157.5	614.7	14.9	0.593
	17	22.0	1176.5	633.7	16.0	0.562
	18	24.0	1191.0	648.2	17.0	0.536
	19	26.0	1207.1	664.3	18.0	0.511
	20	28.0	1220.5	677.7	18.9	0.490
	21	30.0	1232.0	689.2	19.8	0.469
	22	35.0	1257.2	714.4	21.9	0.426
	23	40.0	1278.7	735.9	23.7	0.391
	24	45.0	1295.3	752.6	25.4	0.361
	25	50.0	1310.9	768.1	26.9	0.336
	26	55.0	1324.5	781.7	28.3	0.314
	27	60.0	1336.4	793.6	29.6	0.295
	28	70.0	1353.6	810.8	31.8	0.263
	29	80.0	1367.3	824.5	33.7	0.238
	30	90.0	1376.4	833.6	35.4	0.217
G	31	93.2	1379.4	836.6	35.9	0.211

LEGEND:
[1] STAIR-STEP

REMARKS:
STAIR STEPPING THROUGHOUT INITIAL FLOW

TICKET NO. 57092200

		O.D.	I.D.	LENGTH	DEPTH
1	DRILL PIPE.....	4.500	3.826	4872.5	
3	DRILL COLLARS.....	6.250	2.250	492.5	
50	IMPACT REVERSING SUB.....	6.000	2.750	1.0	5364.9
3	DRILL COLLARS.....	6.250	2.250	93.6	
5	CROSSOVER.....	6.250	2.250	1.0	
11	HANDLING SUB & CHOKE ASSEMBLY...	4.500	3.826	4.0	
13	DUAL CIP SAMPLER.....	5.000	0.750	7.0	
60	HYDROSPRING TESTER.....	5.000	0.750	5.0	5474.5
80	AP RUNNING CASE.....	5.000	2.250	4.0	5476.5
15	JAR.....	5.030	1.750	5.0	
16	VR SAFETY JOINT.....	5.000	1.000	3.0	
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	5491.5
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	5499.0
20	FLUSH JOINT ANCHOR.....	5.000	3.400	7.0	
83	HT-500 TEMPERATURE CASE.....	5.000		1.5	5507.5
81	BLANKED-OFF RUNNING CASE.....	5.000		4.0	5510.0
	TOTAL DEPTH				5513.0

EQUIPMENT DATA

TICKET NO: 57092200	GAUGE NO: 294
CLOCK NO: 18764 HOUR: 12	DEPTH: 5510.0

HALLIBURTON SERVICES

FIRST FLOW

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
B	1	0.0	148.6			
	2	1.0	144.7	-3.8		
	3	2.0	146.6	1.9		
	4	3.0	155.2	8.6		
	5	4.0	155.1	-0.1		
	6	5.0	160.4	5.3		
	7	6.0	183.6	23.1		
	8	7.0	193.7	10.1		
	9	8.0	205.0	11.3		
	10	9.0	217.9	12.9		
	11	10.0	229.3	11.4		
	12	12.0	252.8	23.4		
C	13	13.5	270.3	17.5		

FIRST CLOSED-IN

C	1	0.0	270.3			
	2	1.0	561.8	291.5	0.9	1.167
	3	2.0	702.5	432.2	1.7	0.892
	4	3.0	794.3	524.0	2.5	0.737
	5	4.0	869.5	599.2	3.1	0.639
	6	5.0	931.6	661.3	3.6	0.570
	7	6.0	990.5	720.2	4.2	0.510
	8	7.0	1031.6	761.3	4.6	0.467
	9	8.0	1064.8	794.5	5.0	0.431
	10	9.0	1097.9	827.6	5.4	0.398
	11	10.0	1121.8	851.5	5.8	0.371
	12	12.0	1164.8	894.5	6.4	0.328
	13	14.0	1199.0	928.7	6.9	0.293
	14	16.0	1226.1	955.8	7.3	0.266
	15	18.0	1247.8	977.5	7.7	0.243
	16	20.0	1265.7	995.4	8.1	0.224
	17	22.0	1281.9	1011.6	8.4	0.208
	18	24.0	1297.3	1027.0	8.7	0.194
	19	26.0	1309.2	1039.0	8.9	0.182
D	20	28.5	1322.1	1051.8	9.2	0.169

SECOND FLOW

E	1	0.0	332.2	
	2	3.0	332.8	0.5
	3	6.0	345.6	12.8
	4	9.0	354.3	8.8
	5	12.0	383.8	29.4
	6	15.0	404.5	20.8
	7	18.0	424.9	20.4
	8	21.0	450.2	25.3
	9	24.0	474.3	24.1
	10	27.0	480.9	6.7
	11	30.0	497.3	16.4

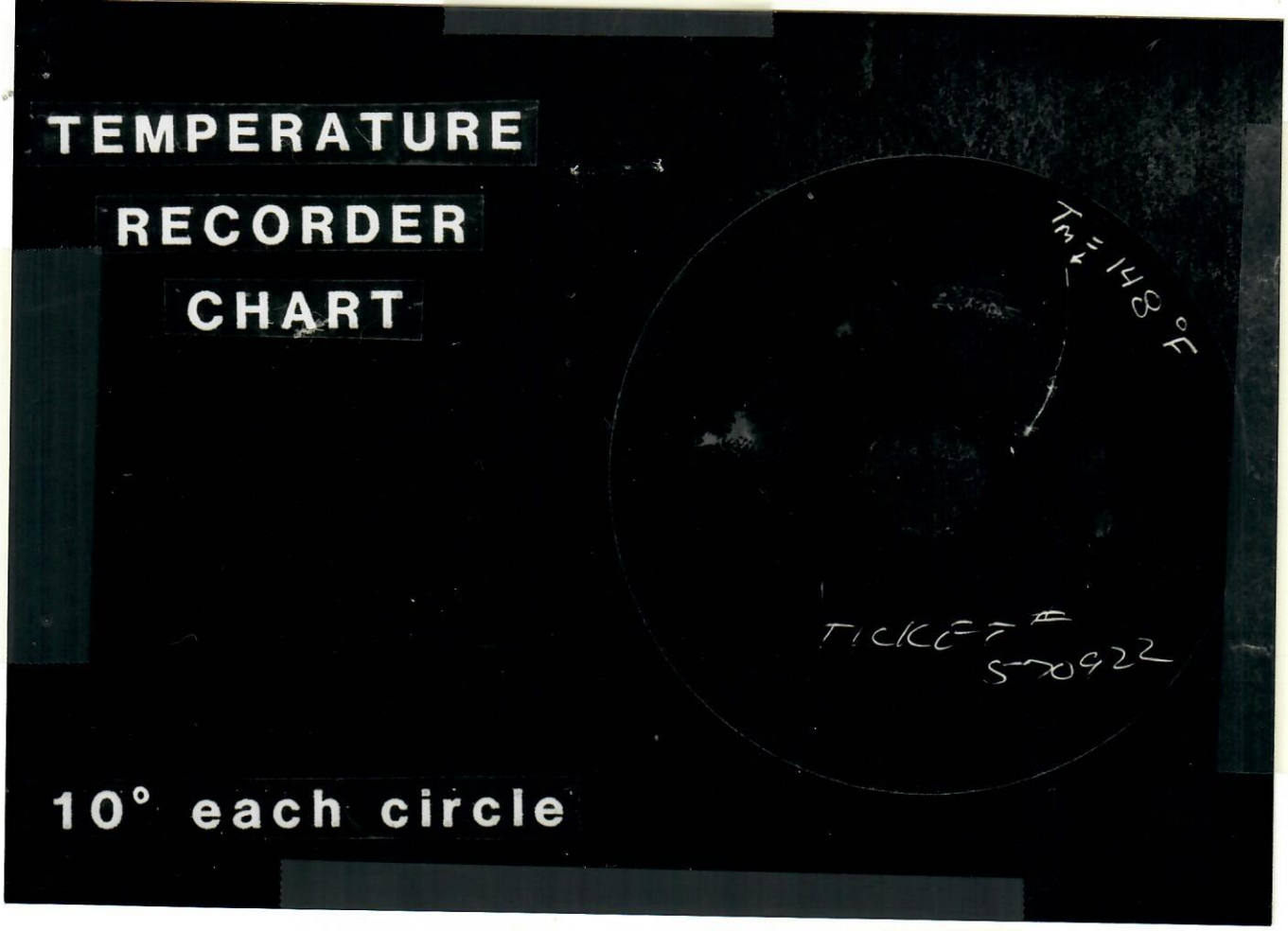
SECOND FLOW - CONTINUED

	12	33.0	513.1	15.8
	13	36.0	527.2	14.1
	14	39.0	538.9	11.7
	15	42.0	548.8	10.0
F	16	44.8	557.5	8.7

SECOND CLOSED-IN

F	1	0.0	557.5			
	2	1.0	744.7	187.2	1.0	1.754
	3	2.0	805.0	247.5	1.9	1.479
	4	3.0	856.9	299.4	2.9	1.310
	5	4.0	899.2	341.7	3.7	1.196
	6	5.0	937.1	379.6	4.6	1.105
	7	6.0	968.3	410.8	5.4	1.032
	8	7.0	999.8	442.4	6.3	0.968
	9	8.0	1023.8	466.3	7.1	0.917
	10	9.0	1046.1	488.6	7.8	0.872
	11	10.0	1062.3	504.8	8.5	0.836
	12	12.0	1095.1	537.6	9.9	0.769
	13	14.0	1124.0	566.5	11.3	0.714
	14	16.0	1146.3	588.8	12.6	0.667
	15	18.0	1167.4	609.9	13.8	0.627
	16	20.0	1185.7	628.3	14.9	0.593
	17	22.0	1203.7	646.3	16.0	0.563
	18	24.0	1219.5	662.0	17.0	0.535
	19	26.0	1232.8	675.3	18.0	0.511
	20	28.0	1244.5	687.0	18.9	0.489
	21	30.0	1256.0	698.5	19.8	0.469
	22	35.0	1278.8	721.3	21.9	0.426
	23	40.0	1298.9	741.4	23.7	0.391
	24	45.0	1314.4	756.9	25.4	0.361
	25	50.0	1328.2	770.7	26.9	0.336
	26	55.0	1339.1	781.6	28.3	0.314
	27	60.0	1348.9	791.4	29.6	0.295
	28	70.0	1365.2	807.7	31.8	0.263
	29	80.0	1378.0	820.6	33.7	0.238
	30	90.0	1388.2	830.7	35.4	0.217
G	31	93.2	1389.6	832.1	35.9	0.211

REMARKS:



Indicated Flow Capacity	$kh = \frac{1637\ Q_g\ T}{m}$	md-ft
Average Effective Permeability	$k = \frac{kh}{h}$	md
Skin Factor	$S = 1.151 \left[\frac{m(P^*) - m(P_f)}{m} - \text{LOG} \frac{k(t/60)}{\phi\ \mu\ c_t r_w^2} + 3.23 \right]$	—
Damage Ratio	$DR = \frac{m(P^*) - m(P_f)}{m(P^*) - m(P_f) - 0.87\ mS}$	—
Indicated Flow Rate (Maximum)	$AOF_1 = \frac{Q_g\ m(P^*)}{m(P^*) - m(P_f)}$	MCFD
Indicated Flow Rate (Minimum)	$AOF_2 = Q_g \sqrt{\frac{m(P^*)}{m(P^*) - m(P_f)}}$	MCFD
Approx. Radius of Investigation	$r_i = 0.032 \sqrt{\frac{k(t/60)}{\phi \mu c_t}}$	ft