



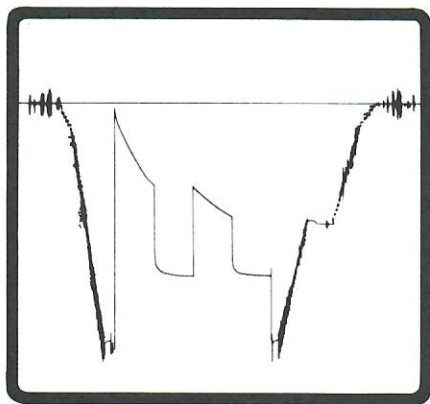
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JUN 12 1986

COLORADO OIL & GAS CONS. COMM.

FORMATION TESTING SERVICE REPORT



Duncan, Oklahoma 73536



A Halliburton Company

NOMENCLATURE

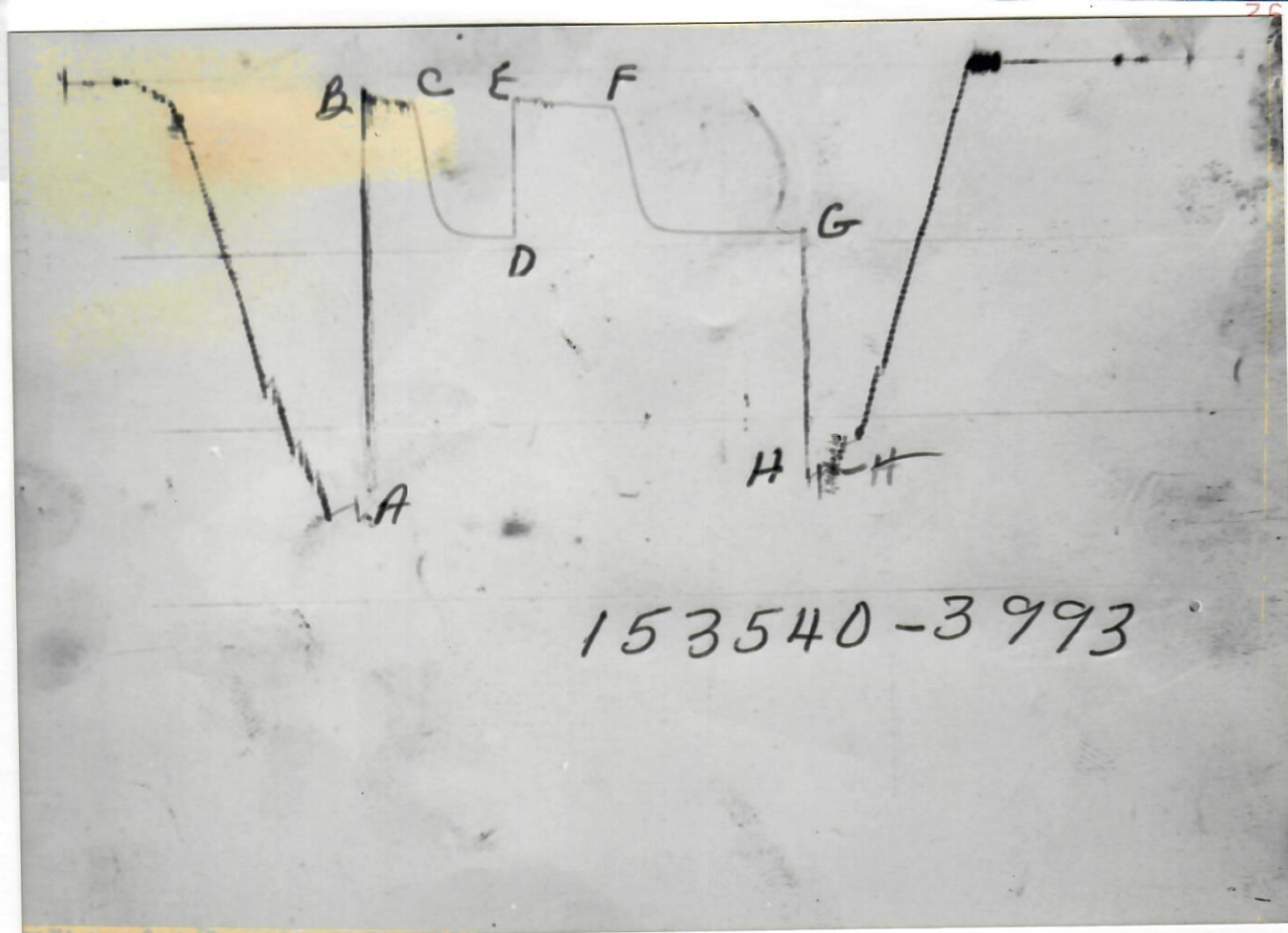
B	= Formation Volume Factor (Res Vol / Std Vol)	—
C_t	= System Total Compressibility	(Vol / Vol) / psi
DR	= Damage Ratio	—
h	= Estimated Net Pay Thickness	Ft
k	= Permeability	md
m	{ = (Liquid) Slope Extrapolated Pressure Plot	psi/cycle
		(Gas) Slope Extrapolated m(P) Plot
		MM psi ² /cp/cycle
m(P*)	= 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	



TICKET NO. 15354000
06-JUN-86
LAMAR

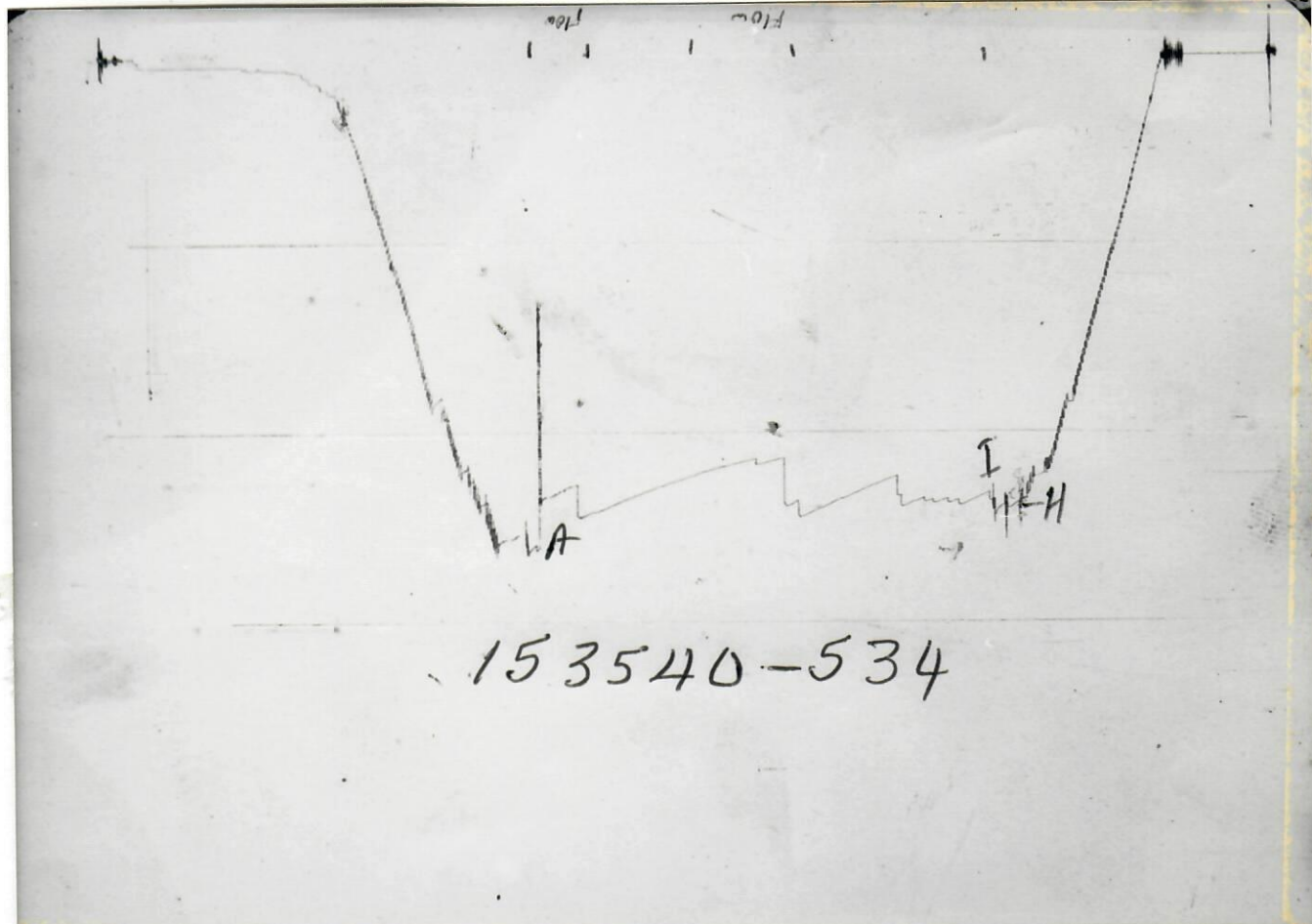
FORMATION TESTING SERVICE REPORT

LEASE NAME		WELL NO.		TEST NO.		TESTED INTERVAL		TXO PRODUCTION CORPORATION	
TALBERT		2		2		5025.0 - 5186.0		LEASE OWNER/COMPANY NAME	
LEGAL LOCATION		SEC. - TWP. - RNG.		FIELD AREA		COUNTRY		STATE	
18-16S-41W				STOCKHOLM		CHEYENNE		COLORADO DR	



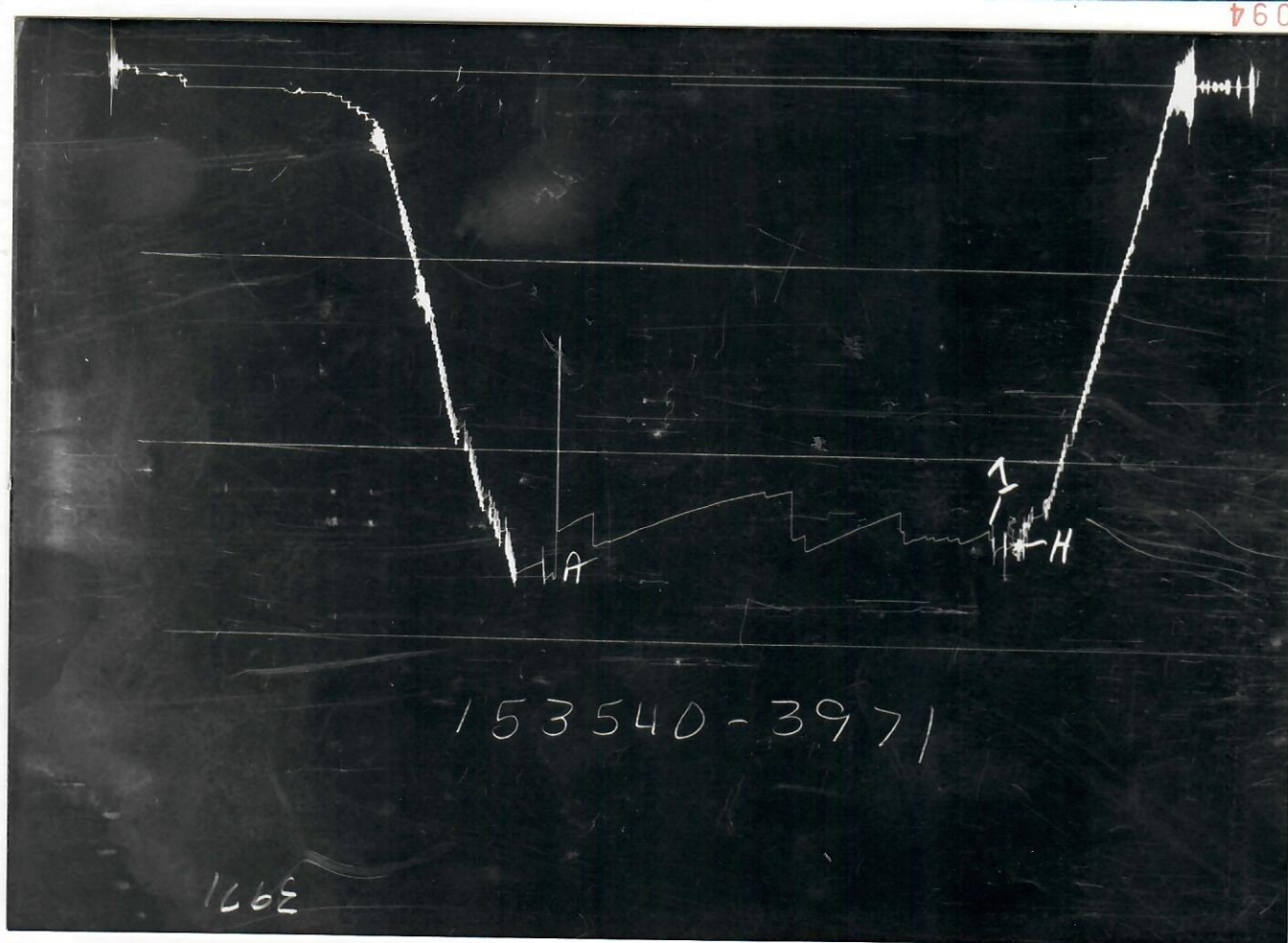
GAUGE NO: 3993 DEPTH: 5003.0 BLANKED OFF: NO HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2530	2440.9			
B	INITIAL FIRST FLOW	114	96.0			
C	FINAL FIRST FLOW	200	151.0	30.0	31.7	F
C	INITIAL FIRST CLOSED-IN	200	151.0			
D	FINAL FIRST CLOSED-IN	939	934.2	60.0	60.4	C
E	INITIAL SECOND FLOW	143	157.1			
F	FINAL SECOND FLOW	200	206.4	60.0	63.2	F
F	INITIAL SECOND CLOSED-IN	200	206.4			
G	FINAL SECOND CLOSED-IN	939	942.3	120.0	114.7	C
H	FINAL HYDROSTATIC	2331	2325.2			
I	HYDROSTATIC RELEASE					



GAUGE NO: 534 DEPTH: 5183.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC		2536.7			
B	INITIAL FIRST FLOW			30.0		F
C	FINAL FIRST FLOW					
C	INITIAL FIRST CLOSED-IN			60.0		C
D	FINAL FIRST CLOSED-IN					
E	INITIAL SECOND FLOW			60.0		F
F	FINAL SECOND FLOW					
F	INITIAL SECOND CLOSED-IN			120.0		C
G	FINAL SECOND CLOSED-IN					
H	FINAL HYDROSTATIC		2380.8			
I	HYDROSTATIC RELEASE		2326.2			



GAUGE NO: 3971 DEPTH: 5297.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC		2592.5			
B	INITIAL FIRST FLOW			30.0		F
C	FINAL FIRST FLOW					
C	INITIAL FIRST CLOSED-IN			60.0		C
D	FINAL FIRST CLOSED-IN					
E	INITIAL SECOND FLOW			60.0		F
F	FINAL SECOND FLOW					
F	INITIAL SECOND CLOSED-IN			120.0		C
G	FINAL SECOND CLOSED-IN					
H	FINAL HYDROSTATIC		2434.1			
I	HYDROSTATIC RELEASE		2381.3			

EQUIPMENT & HOLE DATA

FORMATION TESTED: MORROW

NET PAY (ft): 15.0

GROSS TESTED FOOTAGE: 161.0

ALL DEPTHS MEASURED FROM: KELLY BUSHING

CASING PERFS. (ft):

HOLE OR CASING SIZE (in): 7.875

ELEVATION (ft): 3941.0 KELLY BUSHING

TOTAL DEPTH (ft): 5300.0

PACKER DEPTH(S) (ft): 5018. 5025. 5186

FINAL SURFACE CHOKE (in):

BOTTOM HOLE CHOKE (in): 0.750

MUD WEIGHT (lb/gal): 9.20

MUD VISCOSITY (sec): 55

ESTIMATED HOLE TEMP. (°F): 138

ACTUAL HOLE TEMP. (°F): 145 @ 5295.0 ft

TICKET NUMBER: 15354000

DATE: 5-30-86 TEST NO: 2

TYPE DST: OFF BT. STRADDLE

HALLIBURTON CAMP:

LAMAR

TESTER: PAINTER

WITNESS: TOM BROCK

DRILLING CONTRACTOR:

MURFIN #23

FLUID PROPERTIES FOR RECOVERED MUD & WATER

SOURCE

RESISTIVITY

CHLORIDES

	@ °F	ppm
	@ °F	ppm
	@ °F	ppm
	@ °F	ppm
	@ °F	ppm
	@ °F	ppm

SAMPLER DATA

Pstg AT SURFACE: 360.0

cu.ft. OF GAS: 0.800

cc OF OIL:

cc OF WATER:

cc OF MUD:

TOTAL LIQUID cc:

HYDROCARBON PROPERTIES

OIL GRAVITY (°API): @ °F

GAS/OIL RATIO (cu.ft. per bbl):

GAS GRAVITY:

CUSHION DATA

TYPE AMOUNT WEIGHT

RECOVERED:

240' OF VERY GASSY MUD WITH OIL CUT TRACE

MEASURED FROM
TESTER VALVE

REMARKS:

- LENGTHS OF DRILL PIPE AND DRILL COLLARS RUN ABOVE THE REVERSING SUB WERE NOT REPORTED.
- CHARTS INDICATES PARTIAL PLUGGING DURING BOTH FLOW PERIODS.
- IT APPEARS THE MIDDLE GAUGE (#534) WAS NOT GETTING PRESSURE RESPONSES FROM THE FLOW AND CLOSED IN PERIODS AND RECORDED THE SAME PRESSURE RESPONSES AS THE BOTTOM GAUGE RUN BELOW THE BOTTOM PACKER. THIS IS APPARENTLY DUE TO MECHANICAL DIFFICULTIES WITH THE PRESSURE EQUALIZING EQUIPMENT.

TYPE & SIZE MEASURING DEVICE: _____					TICKET NO: 15354000
TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
5-30-86					
1130					MET AT CAFE-REQUESTED TO
					RETURN TO LOCATION AS SOON AS
					POSSIBLE FOR DST #2
1200					ON LOCATION
1230					STARTED MAKING TOOLS
1400					WAITED ON REPAIR PARTS FOR TOOL
1430					TOOL COMPLETED-STARTED IN HOLE
1722					TAGGED BOTTOM
1724	BH				OPENED TOOL WITH A MODERATE
					BLOW
1727					4" IN BUCKET, MODERATE BLOW IN
					3 MINUTES, HAD 4" THROUGHOUT
					FLOW PERIOD
1754	BH				SHUT IN TOOL-MAINTAIN BLOW
					THROUGHOUT PERIOD, WEAKENING
					AFTER 30 MINUTES-SHUT IN 2",
					NO BLOW
1854	BH				OPENED TOOL WITH A WEAK BLOW
					1 1/2" IN BUCKET
1859					4" IN BUCKET
1904					BOTTOM OF BUCKET
1909					BOTTOM OF BUCKET-STRONGER
					BLOW
1914					STABILIZED
1954	BH				CLOSED TOOL WITH NO GAS TO
					SURFACE
2154					PULLED OFF BOTTOM (GAINED
					APPROXIMATELY 2000#)
5-31-86					
0245					TOOL BROKE DOWN-READY TO LOAD
					OUT
0400					CALLED IN ALL RESULTS AND
					WORK ORDERS BEFORE LOADING
					TOOLS OUT

TICKET NO: 15354000

CLOCK NO: 18765 HOUR: 12


HALLIBURTON
SERVICES































GAUGE NO: 3993

DEPTH: 5003.0

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	96.0			
2	5.0	125.0	29.1		
3	10.0	127.5	2.4		
4	15.0	142.3	14.8		
5	20.0	140.3	-2.0		
6	25.0	156.0	15.7		
C 7	31.7	151.0	-5.0		
FIRST CLOSED-IN					
C 1	0.0	151.0			
2	1.0	193.3	42.3	0.9	1.528
3	2.0	230.1	79.1	1.8	1.236
4	3.0	267.1	116.1	2.7	1.067
5	4.0	320.4	169.4	3.6	0.949
6	5.0	369.7	218.7	4.3	0.866
7	6.0	437.0	286.0	5.0	0.798
8	7.0	498.2	347.3	5.7	0.744
9	8.0	572.1	421.2	6.4	0.694
10	9.0	624.4	473.4	7.0	0.656
11	10.0	678.7	527.7	7.6	0.619
12	12.0	750.9	599.9	8.7	0.562
13	14.0	803.2	652.2	9.7	0.513
14	16.0	835.4	684.4	10.6	0.474
15	18.0	860.9	709.9	11.5	0.441
16	20.0	879.8	728.8	12.3	0.412
17	22.0	891.7	740.7	13.0	0.387
18	24.0	900.6	749.7	13.6	0.366
19	26.0	906.7	755.8	14.3	0.346
20	28.0	912.3	761.3	14.9	0.329
21	30.0	917.0	766.0	15.4	0.313
22	35.0	923.5	772.5	16.6	0.280
23	40.0	927.8	776.8	17.7	0.253
24	45.0	930.8	779.8	18.6	0.231
25	50.0	932.0	781.1	19.4	0.213
26	55.0	933.6	782.6	20.1	0.197
D 27	60.4	934.2	783.2	20.8	0.183
SECOND FLOW					
E 1	0.0	157.1			
2	6.0	147.4	-9.7		
3	12.0	154.5	7.1		
4	18.0	150.7	-3.8		
5	24.0	170.2	19.5		
6	30.0	179.9	9.7		
7	36.0	178.6	-1.3		
8	42.0	189.3	10.7		
9	48.0	192.5	3.1		
10	54.0	198.3	5.8		

REF	MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
SECOND FLOW - CONTINUED					
11	60.0	203.0	4.7		
F 12	63.2	206.4	3.4		
SECOND CLOSED-IN					
F 1	0.0	206.4			
2	1.0	232.4	25.9	1.0	1.982
3	2.0	257.2	50.7	2.0	1.682
4	3.0	283.2	76.8	2.9	1.512
5	4.0	307.8	101.3	3.8	1.392
6	5.0	336.8	130.4	4.8	1.299
7	6.0	369.3	162.9	5.6	1.226
8	7.0	410.9	204.5	6.5	1.161
9	8.0	454.4	248.0	7.4	1.107
10	9.0	500.7	294.3	8.2	1.063
11	10.0	553.3	346.9	9.0	1.021
12	12.0	652.1	445.7	10.7	0.948
13	14.0	728.2	521.8	12.2	0.891
14	16.0	785.1	578.7	13.7	0.841
15	18.0	828.0	621.6	15.1	0.797
16	20.0	856.7	650.3	16.5	0.759
17	22.0	876.3	669.9	17.9	0.725
18	24.0	890.1	683.7	19.2	0.695
19	26.0	899.6	693.2	20.4	0.667
20	28.0	906.6	700.2	21.6	0.643
21	30.0	912.0	705.6	22.8	0.619
22	35.0	920.2	713.8	25.6	0.570
23	40.0	924.9	718.5	28.1	0.528
24	45.0	927.1	720.6	30.5	0.492
25	50.0	929.2	722.8	32.8	0.462
26	55.0	931.3	724.9	34.8	0.436
27	60.0	933.3	726.9	36.8	0.412
28	70.0	935.6	729.2	40.3	0.372
29	80.0	936.6	730.2	43.4	0.340
30	90.0	938.4	732.0	46.2	0.313
31	100.0	939.0	732.6	48.7	0.290
32	110.0	940.1	733.7	50.9	0.270
G 33	114.7	942.3	735.9	51.9	0.262



REMARKS:

		O.D.	I.D.	LENGTH	DEPTH
1		DRILL PIPE.....	4.500	3.826	
3		DRILL COLLARS.....	6.250	2.250	
50		IMPACT REVERSING SUB.....	5.750	2.250	1.0
5		CROSSOVER.....	5.750	2.250	0.7
11		HANDLING SUB & CHOKE ASSEMBLY...	5.750	2.250	4.7
13		DUAL CIP SAMPLER.....	5.750	0.750	7.0
60		HYDROSPRING TESTER.....	5.000	0.750	5.0
80		AP RUNNING CASE.....	5.000	2.250	4.1
15		JAR.....	5.000	0.870	5.0
16		VR SAFETY JOINT.....	5.000	1.000	2.8
17		PRESSURE EQUALIZING CROSSOVER...	5.000	1.000	1.0
70		OPEN HOLE PACKER.....	6.750	1.530	5.8
5		CROSSOVER.....	5.750	2.250	0.7
5		CROSSOVER.....	5.750	2.250	0.7
70		OPEN HOLE PACKER.....	6.750	1.530	5.8
20		FLUSH JOINT ANCHOR.....	5.000	2.250	23.0
17		PRESSURE EQUALIZING CROSSOVER...	5.000	1.000	1.0
22		BLANK ANCHOR.....	5.000	2.250	5.0
5		CROSSOVER.....	5.500	2.250	0.7
3		DRILL COLLARS.....	6.250	2.250	120.8
5		CROSSOVER.....	5.500	2.250	1.0
17		PRESSURE EQUALIZING CROSSOVER...	5.000	2.250	0.9
81		BLANKED-OFF RUNNING CASE.....	5.000	2.250	4.1
70		OPEN HOLE PACKER.....	6.750	1.530	5.8
5		CROSSOVER.....	5.000	2.250	0.4
5		CROSSOVER.....	5.750	2.250	0.9
3		DRILL COLLARS.....	6.250	2.250	91.9
5		CROSSOVER.....	5.750	2.250	0.7
5		CROSSOVER.....	5.750	2.250	0.7
20		FLUSH JOINT ANCHOR.....	5.000	2.250	10.0

CONTINUED

EQUIPMENT DATA

TICKET NO. 15354000

		O.D.	I.D.	LENGTH	DEPTH
83		HT-500 TEMPERATURE CASE.....	5.000	1.5	5295.0
81		BLANKED-OFF RUNNING CASE.....	5.000	4.1	5297.0
TOTAL DEPTH					5300.0

EQUIPMENT DATA

EQUATIONS FOR DST LIQUID WELL ANALYSIS

Transmissibility	$\frac{kh}{\mu} = \frac{162.6 QB}{m}$	$\frac{\text{md-ft}}{\text{cp}}$
Indicated Flow Capacity	$kh = \frac{kh}{\mu} \mu$	md-ft
Average Effective Permeability	$k = \frac{kh}{h}$	md
Skin Factor	$S = 1.151 \left[\frac{P^* - P_f}{m} - \text{LOG} \left(\frac{k(t/60)}{\phi \mu c_f r_w^2} \right) + 3.23 \right] -$	—
Damage Ratio	$DR = \frac{P^* - P_f}{P^* - P_f - 0.87 mS}$	—
Theoretical Potential w / Damage Removed	$Q_1 = Q DR$	BPD
Approx. Radius of Investigation	$r_i = 0.032 \sqrt{\frac{k(t/60)}{\phi \mu c_f}}$	ft

EQUATIONS FOR DST GAS WELL ANALYSIS

Indicated Flow Capacity	$kh = \frac{1637 Q_g T}{m}$	md-ft
Average Effective Permeability	$k = \frac{kh}{h}$	md
Skin Factor	$S = 1.151 \left[\frac{m(P^*) - m(P_f)}{m} - \text{LOG} \left(\frac{k(t/60)}{\phi \mu c_f r_w^2} \right) + 3.23 \right] -$	—
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	$r_i = 0.032 \sqrt{\frac{k(t/60)}{\phi \mu c_f}}$	ft

TEMPERATURE

RECORDER

CHART



10° each circle