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	

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
Damage Ratio	$DR = .183\ \frac{P^* - P_f}{m}$	—
Theoretical Potential w / Damage Removed	$Q_1 = Q\ DR$	BPD
Approx. Radius of Investigation	$r_i = 4.63\ \sqrt{kt}$	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	$S = 1.151\ \left[\frac{m(P^*) - m(P_f)}{m} - \text{LOG}\ \frac{kt}{\phi\ \mu\ c_t r_w^2} + 3.23 \right]$	—
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	$r_i = 0.032 \sqrt{\frac{kt}{\phi \mu c_t}}$	ft

HALLIBURTON

SERVICES

TICKET NO. 43932900

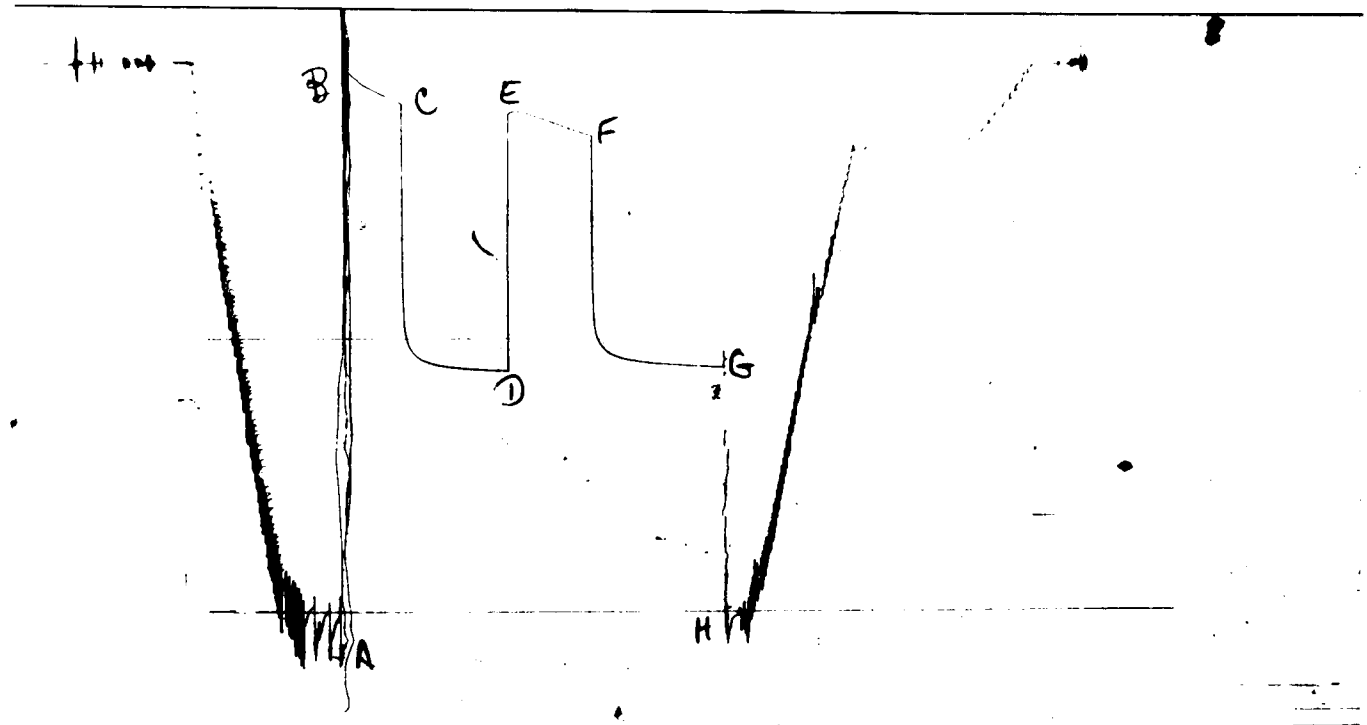
01-NOV-82

NESS CITY

FORMATION TESTING SERVICE REPORT

LEGAL LOCATION SEC. - TWP. - RNG.	FIELD AREA	COUNTY	STATE
13-17-30		LANE	KANSAS BJ/NM

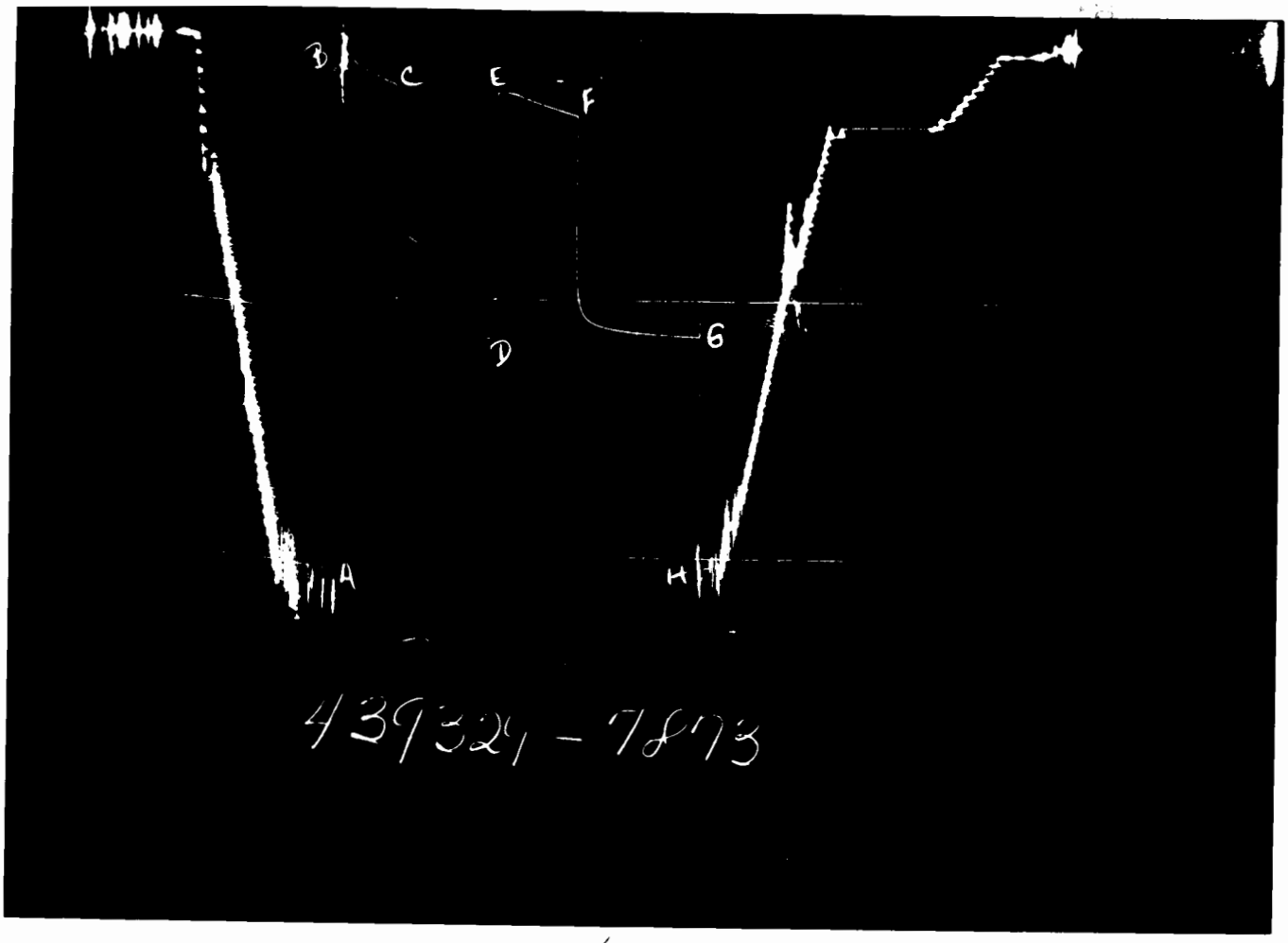
LEASE NAME	WELL NO.	TEST NO.	TESTED INTERVAL	LEASE OWNER/COMPANY NAME
GRUSING	1-F	1	4153.' - 4215.'	DONALD C. SLAWSON



439329 – 228

GAUGE NO: 228 DEPTH: 4147.0 BLANKED OFF: NO HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2207	2025.7			
B	INITIAL FIRST FLOW	40	27.8	30.0	31.2	F
C	FINAL FIRST FLOW	142	148.3			
C	INITIAL FIRST CLOSED-IN	142	148.3	60.0	59.5	C
D	FINAL FIRST CLOSED-IN	1118	1125.1			
E	INITIAL SECOND FLOW	183	177.6	45.0	46.3	F
F	FINAL SECOND FLOW	264	262.2			
F	INITIAL SECOND CLOSED-IN	264	262.2	75.0	73.0	C
G	FINAL SECOND CLOSED-IN	1108	1111.4			
H	FINAL HYDROSTATIC	2098	2018.6			



GAUGE NO: 7873 ✓ DEPTH: 4212.0 ✓ BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2207	2043.8			
B	INITIAL FIRST FLOW	60	52.4	30.0	31.2	F
C	FINAL FIRST FLOW	178	178.6			
C	INITIAL FIRST CLOSED-IN	178	178.6	60.0	59.5	C
D	FINAL FIRST CLOSED-IN	1156	1155.4			
E	INITIAL SECOND FLOW	203	200.7	45.0	46.3	F
F	FINAL SECOND FLOW	288	290.1			
F	INITIAL SECOND CLOSED-IN	288	290.1	75.0	73.0	C
G	FINAL SECOND CLOSED-IN	1140	1140.7			
H	FINAL HYDROSTATIC	2098	2041.7			

EQUIPMENT & HOLE DATA

FORMATION TESTED: KANSAS CITY
NET PAY (ft): 6.0
GROSS TESTED FOOTAGE: 62.0
ALL DEPTHS MEASURED FROM: KELLY BUSHING
CASING PERFS. (ft):
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2840
TOTAL DEPTH (ft): 4215.0
PACKER DEPTH(S) (ft): 4153
FINAL SURFACE CHOKE (in): 0.250
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.50
MUD VISCOSITY (sec): 42
ESTIMATED HOLE TEMP. (°F): 108
ACTUAL HOLE TEMP. (°F): ___ @ ___ ft

TICKET NUMBER: 43932900

DATE: 10-21-82 TEST NO: 1

TYPE DST: OPEN HOLE

HALLIBURTON CAMP: NESS CITY

TESTER: D. DAHARSH

WITNESS: RICH ROBBA

DRILLING CONTRACTOR: DONALD C. SLAWSON

FLUID PROPERTIES FOR RECOVERED MUD & WATER

SOURCE	RESISTIVITY	CHLORIDES
MUD PITS	___ @ ___ °F	2500 ppm
RECOVERY	___ @ ___ °F	24000 ppm
	___ @ ___ °F	___ ppm
	___ @ ___ °F	___ ppm
	___ @ ___ °F	___ ppm
	___ @ ___ °F	___ ppm

SAMPLER DATA

Psig AT SURFACE:
cu.ft. OF GAS:
cc OF OIL:
cc OF WATER:
cc OF MUD:
TOTAL LIQUID cc:

HYDROCARBON PROPERTIES

OIL GRAVITY (°API): 31.0 @ 60°F
GAS/OIL RATIO (cu.ft. per bbl):
GAS GRAVITY:

CUSHION DATA

TYPE	AMOUNT	WEIGHT

RECOVERED:

650 FEET -TOTAL RECOVERY CONSISTING OF 90 FEET OF GAS IN THE PIPE, 210 FEET CLEAN GASSY OIL, 30 FEET OF WATERY OIL CUT MUD -10% WATER, 40% OIL, 50% MUD- 120 FEET WATERY OIL CUT MUD - 8% WATER, 8% OIL AND 84% MUD - SEE REMARKS FOR REMAINDER OF RECOVERY.

MEASURED FROM TESTER VALVE

REMARKS:

RECOVERY CONTINUED - 60 FEET OF SLIGHTLY OIL CUT WATERY MUD - 6% WATER, 2% OIL AND 92% MUD, 230 FEET OF WATERY MUD - 40% WATER AND 60% MUD.

HT-500 CHART NOT READABLE - APPEARS TO BE HAND DRAWN

TYPE & SIZE MEASURING DEVICE: _____ TICKET NO: 43932900

TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
10-21-82					
1945					CALLED OUT.
2145					ON LOCATION.
10-22-82					
0000					PICKED UP AND MADE UP THE TOOL.
0025					TOOL IN THE TABLE.
0035					STARTED TOOL TO THE BOTTOM.
0211					TOOL ON BOTTOM.
0215					TOOL OPENED WITH A WEAK BLOW
					WHICH WAS BUILDING TO 12" IN
					10 MINUTES.
0245					TOOL CLOSED.
0345					TOOL REOPENED WITH A WEAK BLOW
					WHICH WAS BUILDING TO 12" IN
					10 MINUTES.
0430					TOOL CLOSED.
0545					TOOL OFF BOTTOM.
0840					TOOL IN THE TABLE.
0915					TOOL BROKE AND LAID DOWN.
1000					JOB COMPLETE.

TICKET NO: 43932900	GAUGE NO: 228
CLOCK NO: 14248 HOUR: 12	DEPTH: 4147.0

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	27.8			
	2	5.0	48.4	20.5		
	3	10.0	79.0	30.7		
	4	15.0	98.3	19.2		
	5	20.0	115.3	17.0		
	6	25.0	131.4	16.1		
C	7	31.2	148.3	16.9		
			FIRST CLOSED-IN			
C	1	0.0	148.3			
	2	4.0	1034.1	885.9	3.6	0.941
	3	8.0	1070.2	921.9	6.4	0.689
	4	12.0	1088.1	939.8	8.7	0.556
	5	16.0	1096.9	948.6	10.6	0.470
	6	20.0	1103.6	955.3	12.2	0.409
	7	24.0	1108.4	960.1	13.5	0.362
	8	28.0	1112.1	963.8	14.7	0.325
	9	32.0	1114.8	966.5	15.8	0.295
	10	36.0	1116.9	968.6	16.7	0.271
	11	40.0	1119.0	970.7	17.5	0.250
	12	44.0	1120.5	972.2	18.2	0.233
	13	48.0	1122.6	974.3	18.9	0.217
	14	52.0	1123.8	975.5	19.5	0.204
	15	56.0	1125.1	976.9	20.0	0.192
D	16	59.5	1125.1	976.9	20.5	0.183
			SECOND FLOW			
E	1	0.0	177.6			
	2	8.0	180.5	2.8		
	3	16.0	197.5	17.0		
	4	24.0	215.6	18.1		
	5	32.0	233.8	18.2		
	6	40.0	251.1	17.3		
F	7	46.3	262.2	11.1		
			SECOND CLOSED-IN			
F	1	0.0	262.2			
	2	5.0	1034.0	771.8	4.7	1.215
	3	10.0	1063.0	800.7	8.8	0.943
	4	15.0	1075.8	813.6	12.5	0.791
	5	20.0	1084.4	822.2	15.9	0.688
	6	25.0	1090.0	827.8	18.9	0.613
	7	30.0	1094.7	832.5	21.6	0.555
	8	35.0	1098.7	836.5	24.1	0.507
	9	40.0	1101.5	839.3	26.4	0.468
	10	45.0	1103.8	841.5	28.5	0.435

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
			SECOND CLOSED-IN - CONTINUED			
	11	50.0	1105.7	843.4	30.4	0.407
	12	55.0	1107.9	845.6	32.2	0.382
	13	60.0	1109.1	846.8	33.8	0.360
	14	65.0	1111.0	848.7	35.3	0.341
	15	70.0	1112.8	850.5	36.8	0.324
G	16	73.0	1111.4	849.1	37.6	0.314

REMARKS:

TICKET NO: 43932900	GAUGE NO: 7873
CLOCK NO: 16165 HOUR: 12	DEPTH: 4212.0

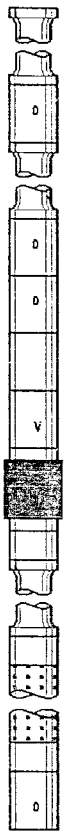
HALLIBURTON SERVICES

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	52.4			
	2	5.0	82.9	30.5		
	3	10.0	111.9	29.0		
	4	15.0	130.1	18.2		
	5	20.0	146.3	16.2		
	6	25.0	162.7	16.4		
C	7	31.2	178.6	16.0		
			FIRST CLOSED-IN			
C	1	0.0	178.6			
	2	4.0	1065.3	886.7	3.5	0.947
	3	8.0	1100.1	921.5	6.3	0.691
	4	12.0	1118.9	940.3	8.7	0.555
	5	16.0	1128.5	949.9	10.6	0.470
	6	20.0	1134.7	956.1	12.2	0.408
	7	24.0	1139.3	960.7	13.6	0.362
	8	28.0	1142.7	964.1	14.7	0.325
	9	32.0	1145.1	966.5	15.8	0.295
	10	36.0	1147.7	969.1	16.7	0.271
	11	40.0	1149.7	971.1	17.5	0.250
	12	44.0	1151.7	973.1	18.3	0.233
	13	48.0	1151.9	973.3	18.9	0.217
	14	52.0	1153.9	975.3	19.5	0.204
	15	56.0	1154.8	976.2	20.0	0.192
D	16	59.5	1155.4	976.8	20.5	0.183
			SECOND FLOW			
E	1	0.0	200.7			
	2	8.0	207.5	6.8		
	3	16.0	225.8	18.3		
	4	24.0	244.8	19.0		
	5	32.0	261.7	17.0		
	6	40.0	277.8	16.1		
F	7	46.3	290.1	12.2		
			SECOND CLOSED-IN			
F	1	0.0	290.1			
	2	5.0	1058.4	768.3	4.7	1.221
	3	10.0	1090.1	800.0	8.9	0.942
	4	15.0	1104.3	814.2	12.6	0.790
	5	20.0	1113.4	823.3	15.9	0.688
	6	25.0	1118.9	828.8	18.9	0.613
	7	30.0	1123.4	833.3	21.6	0.554
	8	35.0	1126.5	836.4	24.1	0.507
	9	40.0	1130.0	839.9	26.4	0.468
	10	45.0	1131.9	841.8	28.5	0.435

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
			SECOND CLOSED-IN - CONTINUED			
	11	50.0	1134.6	844.5	30.4	0.407
	12	55.0	1136.0	845.9	32.2	0.382
	13	60.0	1137.4	847.3	33.8	0.360
	14	65.0	1138.9	848.8	35.4	0.341
	15	70.0	1140.3	850.2	36.8	0.324
G	16	73.0	1140.7	850.6	37.6	0.314

REMARKS:

TICKET NO. 43932900



		O.D.	I.D.	LENGTH	DEPTH
1	DRILL PIPE.....	4.500	3.826	4009.0	
50	IMPACT REVERSING SUB.....	5.000	3.000	1.0	4010.0
1	DRILL PIPE.....	4.500	3.826	124.0	
12	DUAL CIP VALVE.....	5.000	0.870	6.0	
60	HYDROSPRING TESTER.....	5.000	0.750	5.0	4145.0
80	AP RUNNING CASE.....	5.000	3.000	4.0	4147.0
16	VR SAFETY JOINT.....	5.000	1.000	3.0	
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	4153.0
5	CROSSOVER.....	5.000	3.000	1.0	
1	DRILL PIPE.....	4.500	3.826	31.0	
5	CROSSOVER.....	5.000	3.000	1.0	
20	FLUSH JOINT ANCHOR.....	5.000	3.000	21.0	
83	HT-500 TEMPERATURE CASE.....	5.000		1.5	4210.0
81	BLANKED-OFF RUNNING CASE.....	5.000		4.0	4212.0

TOTAL DEPTH 4215.0

EQUIPMENT DATA

TEMPERATURE RECORDER CHART

10° each circle

LEASE NAME	WELL NO.	TEST NO.	TESTED INTERVAL	COUNTY	STATE	LEASE OWNER/COMPANY NAME
GRUSING	1-4	2	4253.' - 4289.'	LANE	KANSAS	DUNHILL L. SLAWSON

LEGAL LOCATION SEC. - TWP. - RNG.	FIELD AREA
13-17-30	

HALLIBURTON

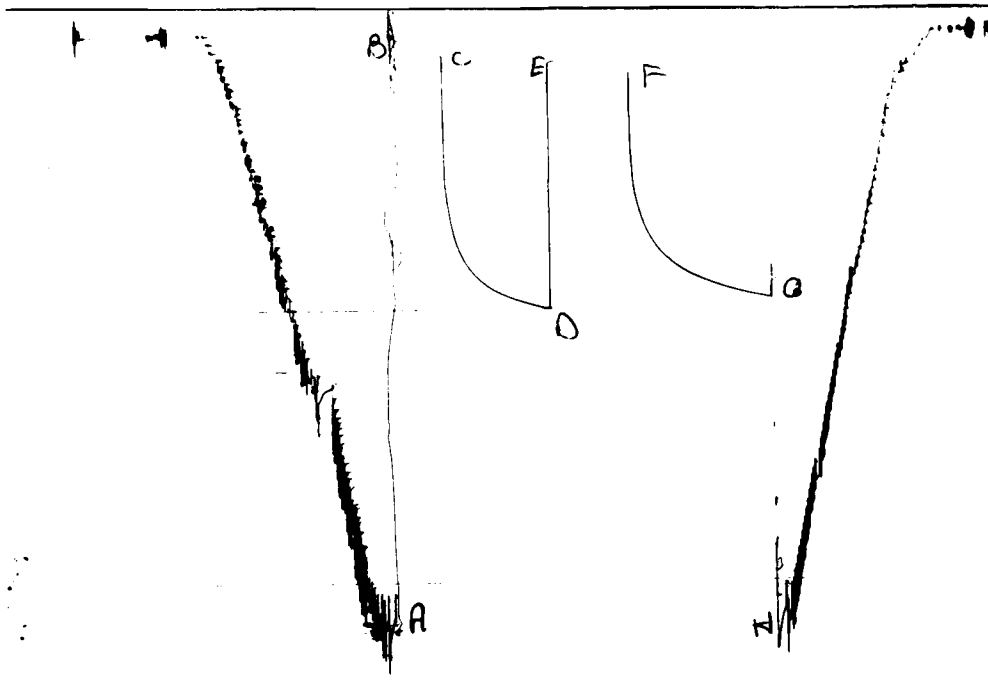
SERVICES

TICKET NO. 43933000

01-NOV-82

NESS CITY

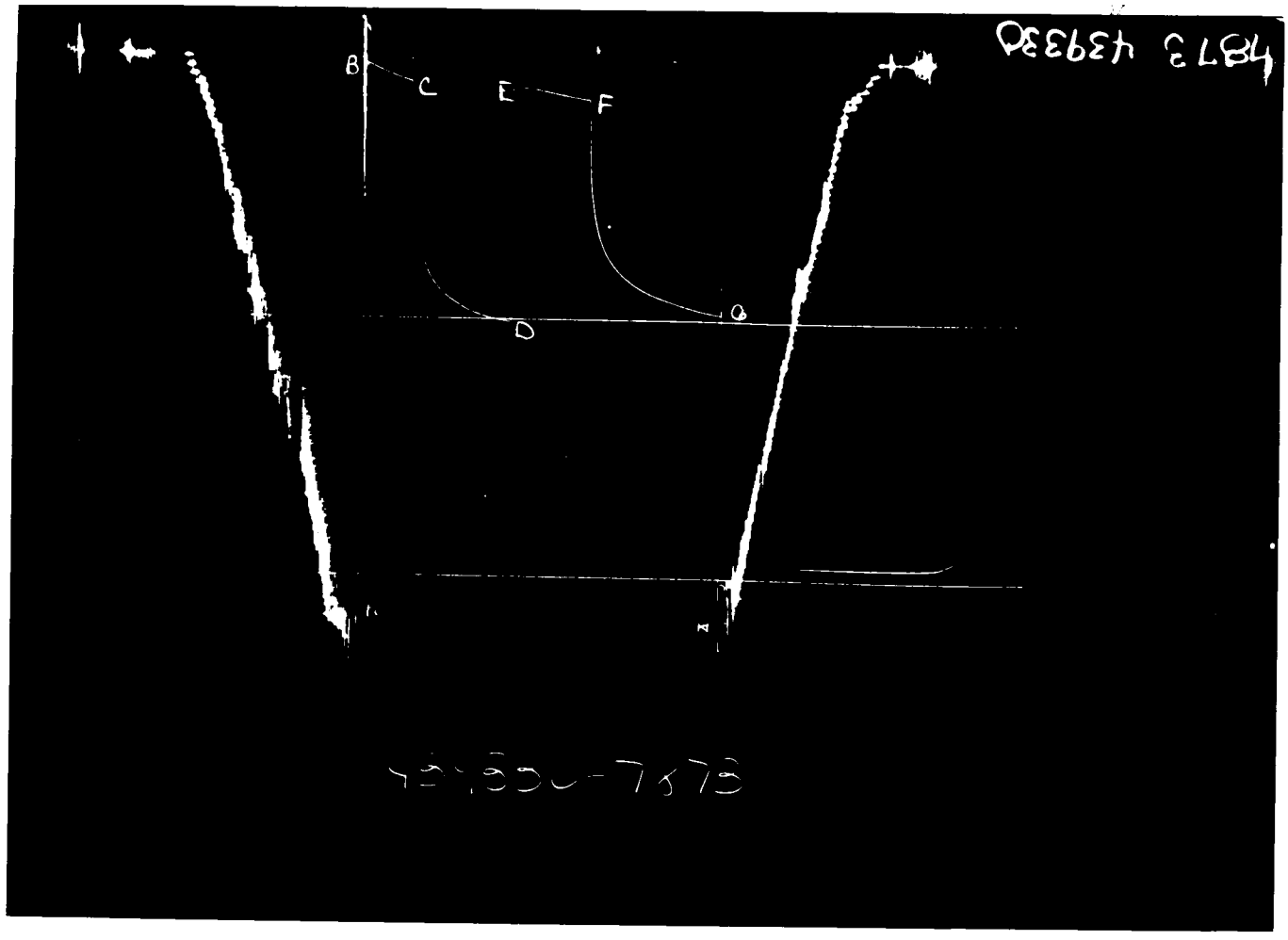
FORMATION TESTING SERVICE REPORT



439330-228

GAUGE NO: 228 DEPTH: 4247.0 BLANKED OFF: NO HOUR OF CLOCK: 12

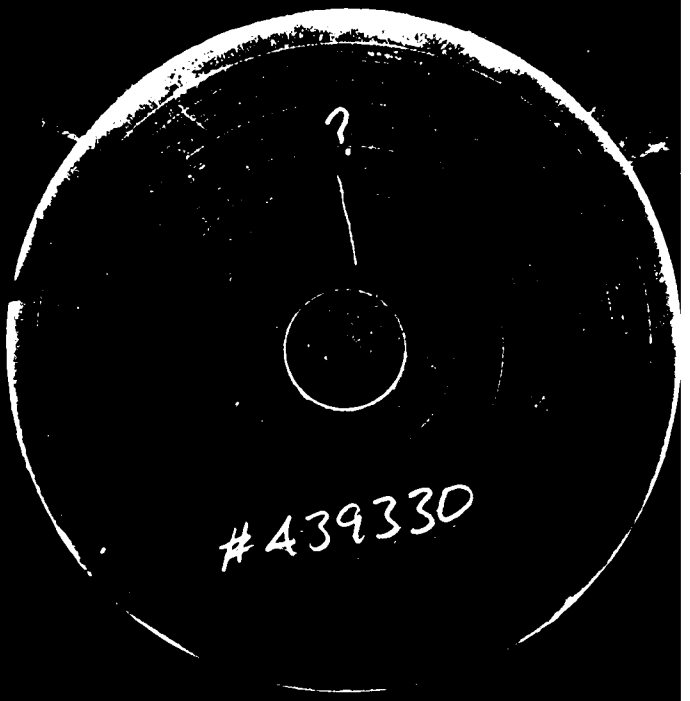
ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2117.4				
B	INITIAL FIRST FLOW	13.2		30.0	28.1	F
C	FINAL FIRST FLOW	79.8				
C	INITIAL FIRST CLOSED-IN	79.8		60.0	58.7	C
D	FINAL FIRST CLOSED-IN	1004.6				
E	INITIAL SECOND FLOW	113.5		45.0	45.2	F
F	FINAL SECOND FLOW	144.7				
F	INITIAL SECOND CLOSED-IN	144.7		75.0	78.1	C
G	FINAL SECOND CLOSED-IN	971.5				
H	FINAL HYDROSTATIC	2089.6				



GAUGE NO: 7873 DEPTH: 4266.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2119.7				
B	INITIAL FIRST FLOW	18.7		30.0	28.1	F
C	FINAL FIRST FLOW	86.4				
C	INITIAL FIRST CLOSED-IN	86.4		60.0	58.7	C
D	FINAL FIRST CLOSED-IN	1011.7				
E	INITIAL SECOND FLOW	114.8		45.0	45.2	F
F	FINAL SECOND FLOW	150.6				
F	INITIAL SECOND CLOSED-IN	150.6		75.0	78.1	C
G	FINAL SECOND CLOSED-IN	979.6				
H	FINAL HYDROSTATIC	2090.8				

TEMPERATURE RECORDER CHART



10° each circle

LEGAL LOCATION SEC. - TWP. - RNG.		FIELD AREA		COUNTY		STATE	
13-17-30				LANE		KANSAS	SM/IC

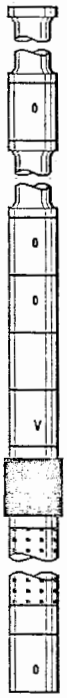
LEASE NAME	WELL NO.	TEST NO.	TESTED INTERVAL	LEASE OWNER/COMPANY NAME
BRUSING	1-T	3	4302. - 4343.	DUNNE & JETTON

HALLIBURTON
SERVICES

TICKET NO. 43933100
01-NOV-82
NESS CITY

FORMATION TESTING SERVICE REPORT

TICKET NO. 43933100



		O.D.	I.D.	LENGTH	DEPTH
1	DRILL PIPE.....	4.500	3.826	4161.0	
50	IMPACT REVERSING SUB.....	5.000	3.000	1.0	4162.0
1	DRILL PIPE.....	4.500	3.826	124.0	
12	DUAL CIP VALVE.....	5.000	0.870	6.0	
60	HYDROSPRING TESTER.....	5.000	0.750	5.0	4297.0
80	AP RUNNING CASE.....	5.000	3.000	4.0	4299.0
16	VR SAFETY JOINT.....	5.000	1.000	3.0	
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	4305.0
20	FLUSH JOINT ANCHOR.....	5.000	3.000	37.0	
83	HT-500 TEMPERATURE CASE.....	5.000		1.5	4345.0
81	BLANKED-OFF RUNNING CASE.....	5.000		4.0	4346.0
	TOTAL DEPTH				4349.0

EQUIPMENT DATA

TYPE & SIZE MEASURING DEVICE: _____ TICKET NO: 43933100

TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
10-23-82					
1600					CALLED OUT
1730					ON LOCATION
1800					PICKED UP AND MADE UP TOOL
1820					TOOL IN TABLE
1840					STARTED TOOL TO BOTTOM
1956					ON BOTTOM
2000					OPENED TOOL WITH VERY WEAK
					SURFACE BLOW DYING IN 5 MINUTES
2030					CLOSED TOOL
2100					OPENED TOOL WITH NO BLOW
2130					CLOSED TOOL
2200					OFF BOTTOM
2320					TOOL IN TABLE
10-24-82					
0000					TOOL BROKE AND LAID DOWN
0100					JOB COMPLETED

EQUIPMENT & HOLE DATA

FORMATION TESTED: MARMATON
NET PAY (ft):
GROSS TESTED FOOTAGE: 44.0
ALL DEPTHS MEASURED FROM: KELLY BUSHING
CASING PERFS. (ft):
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2840
TOTAL DEPTH (ft): 4349.0
PACKER DEPTH(S) (ft): 4305
FINAL SURFACE CHOKE (in): 0.250
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.40
MUD VISCOSITY (sec): 50
ESTIMATED HOLE TEMP. (°F):
ACTUAL HOLE TEMP. (°F): 109 @ 4345.0 ft

TICKET NUMBER: 43933100

DATE: 10-23-82 TEST NO: 3

TYPE DST: OPEN HOLE

HALLIBURTON CAMP: NESS CITY

TESTER: D. DAHARSH

WITNESS: RICH ROBBA

DRILLING CONTRACTOR: DONALD C. SLAWSON

FLUID PROPERTIES FOR RECOVERED MUD & WATER

SOURCE	RESISTIVITY		CHLORIDES
MUD PITS		@ °F	3000 ppm
		@ °F	ppm
		@ °F	ppm
		@ °F	ppm
		@ °F	ppm
		@ °F	ppm

SAMPLER DATA

Psig AT SURFACE:
cu.ft. OF GAS:
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

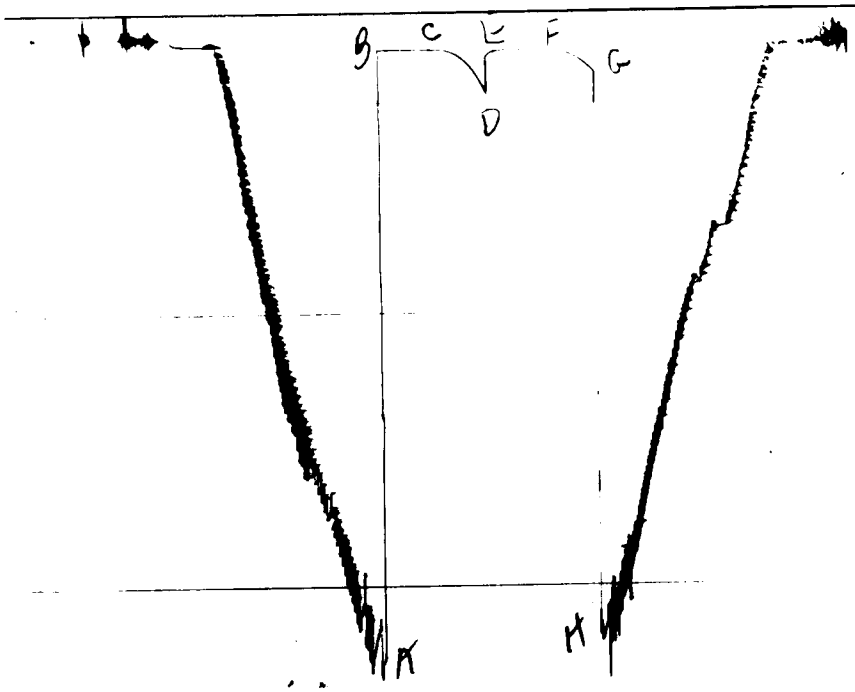
TYPE	AMOUNT	WEIGHT

RECOVERED:

20 FEET OF DRILLING MUD WITH NO OIL SPOTS

MEASURED FROM TESTER VALVE

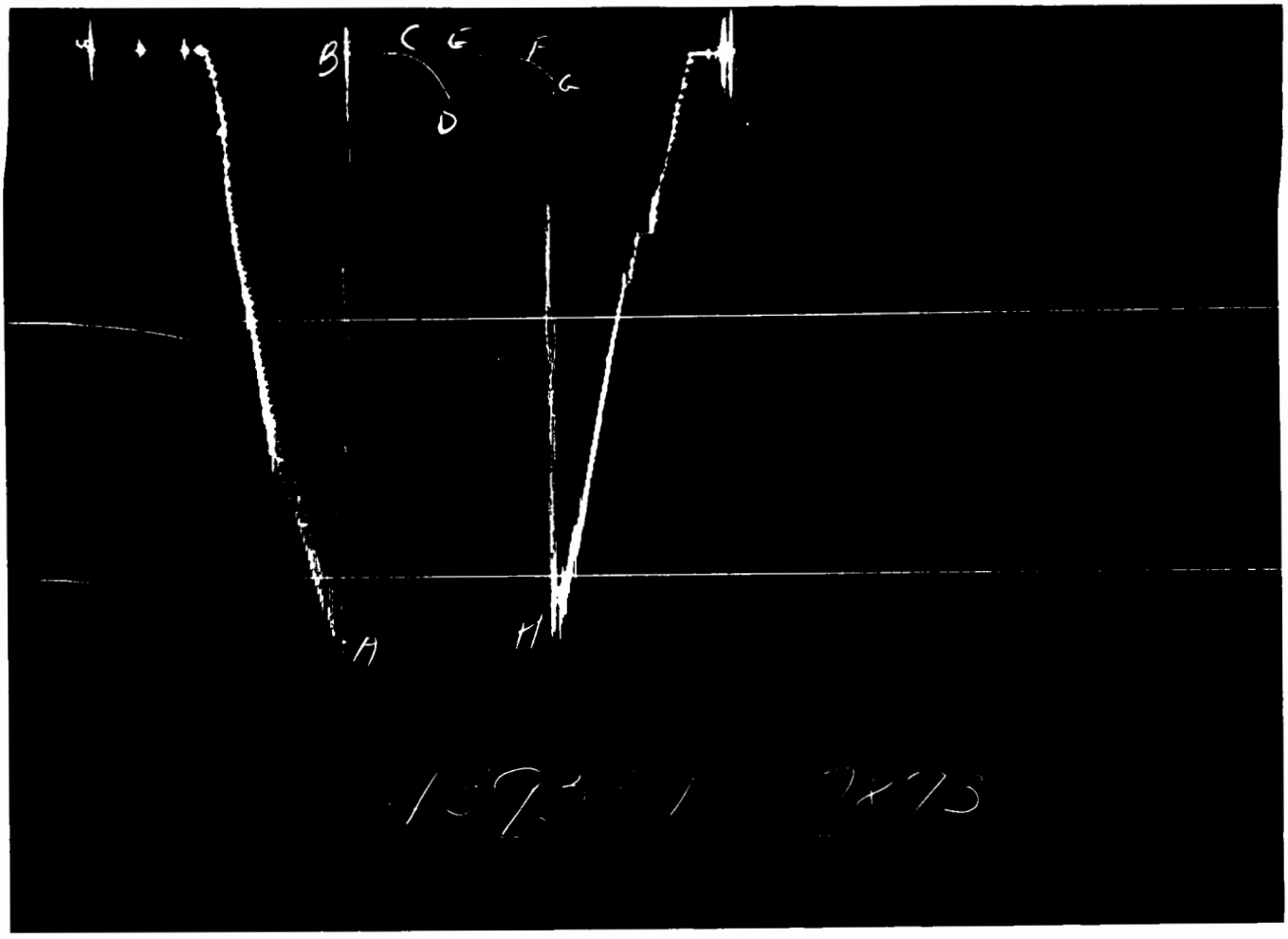
REMARKS:



439331 228

GAUGE NO: 228 DEPTH: 4346.0 BLANKED OFF: YES HOUR OF CLOCK: 12

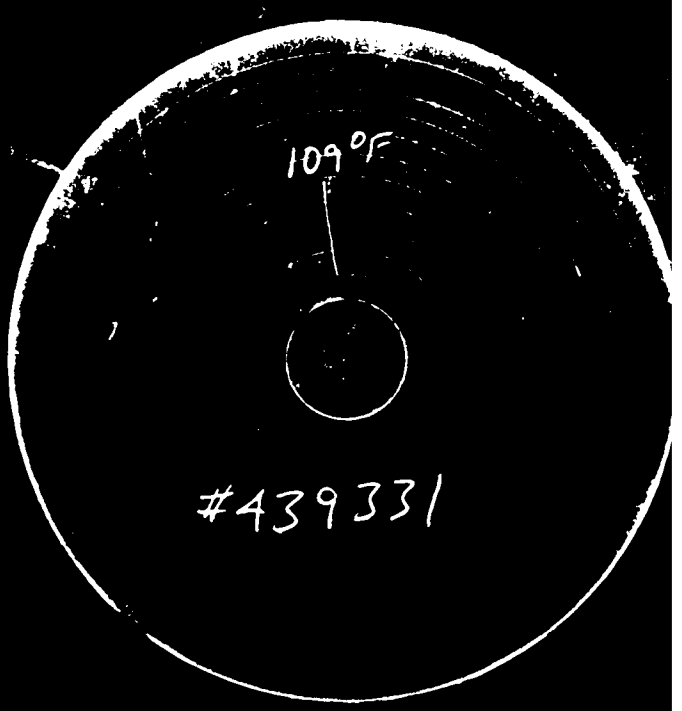
ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2267	2158.0			
B	INITIAL FIRST FLOW	51	46.5	30.0	30.0	F
C	FINAL FIRST FLOW	51	45.0			
C	INITIAL FIRST CLOSED-IN	51	45.0	30.0	30.0	C
D	FINAL FIRST CLOSED-IN	203	205.8			
E	INITIAL SECOND FLOW	61	71.4	30.0	30.0	F
F	FINAL SECOND FLOW	61	45.0			
F	INITIAL SECOND CLOSED-IN	61	45.0	30.0	30.0	C
G	FINAL SECOND CLOSED-IN	132	127.0			
H	FINAL HYDROSTATIC	2207	2140.7			



GAUGE NO: 7873 DEPTH: 4299.0 BLANKED OFF: NO HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC		2113.4			
B	INITIAL FIRST FLOW		12.6	30.0	30.0	F
C	FINAL FIRST FLOW		8.9			
C	INITIAL FIRST CLOSED-IN		8.9	30.0	30.0	C
D	FINAL FIRST CLOSED-IN		178.2			
E	INITIAL SECOND FLOW		26.3	30.0	30.0	F
F	FINAL SECOND FLOW		15.6			
F	INITIAL SECOND CLOSED-IN		15.6	30.0	30.0	C
G	FINAL SECOND CLOSED-IN		101.8			
H	FINAL HYDROSTATIC		2094.1			

TEMPERATURE RECORDER CHART



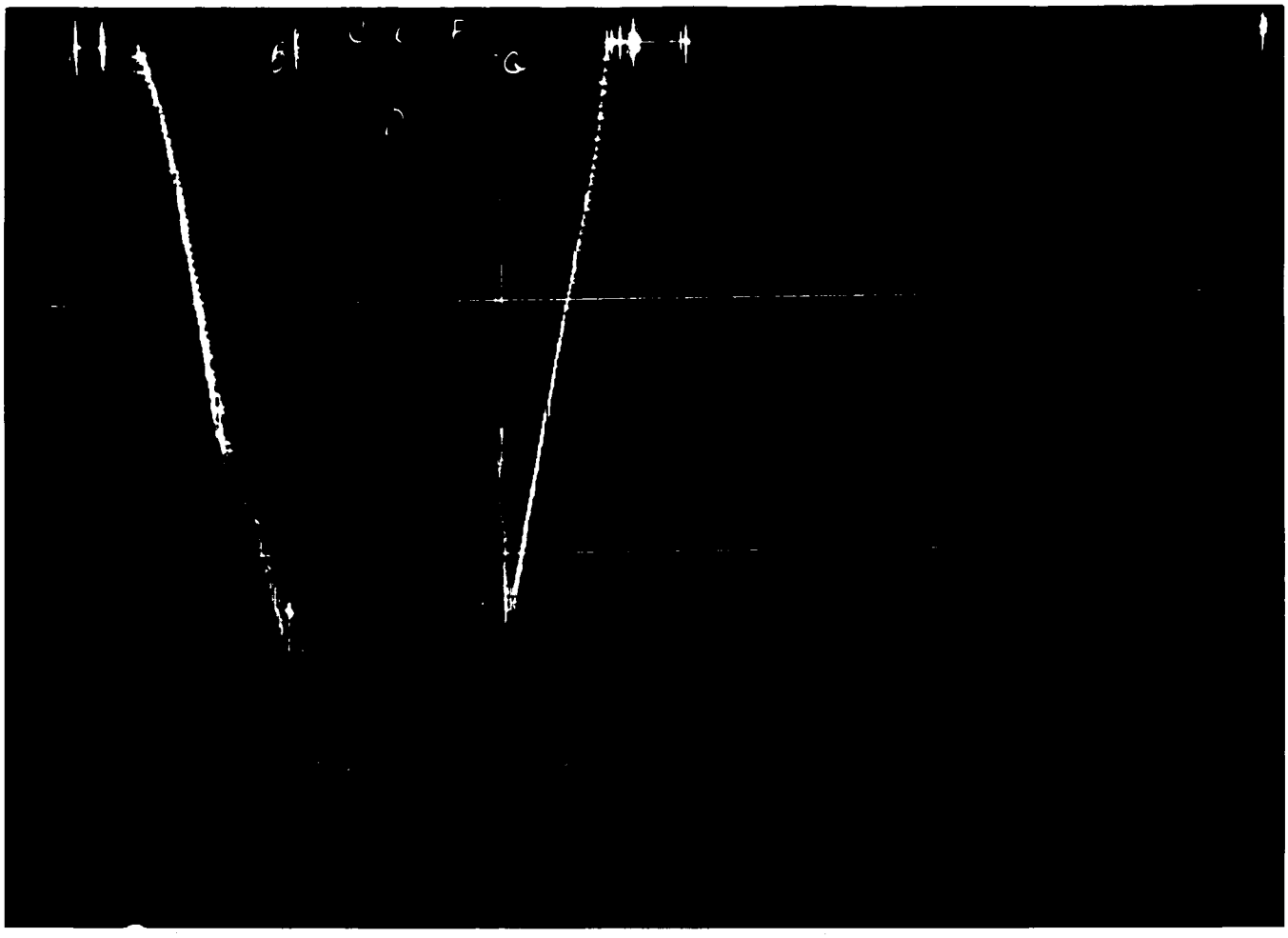
10° each circle

GRUSING LEASE NAME	1-1 WELL NO.	4 TEST NO.	4431. - 4488. TESTED INTERVAL		DUNNELL L.L. OLIVOUN LEASE OWNER/COMPANY NAME
LEGAL LOCATION SEC. - TWP. - RNG. 13-17-30W		FIELD AREA WILDCAT		COUNTY LANE	STATE KANSAS SM/IC

HALLIBURTON
SERVICES

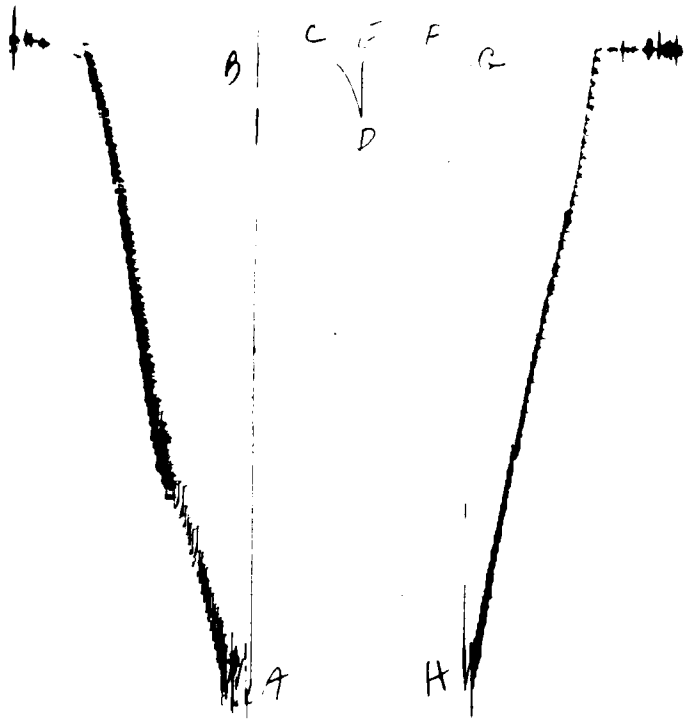
TICKET NO. 43554700
01-NOV-82
NESS CITY

FORMATION TESTING SERVICE REPORT



GAUGE NO: 7873 DEPTH: 4427.0 BLANKED OFF: NO HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC		2191.6			
B	INITIAL FIRST FLOW		7.9	30.0	30.0	F
C	FINAL FIRST FLOW		7.8			
C	INITIAL FIRST CLOSED-IN		7.8	30.0	30.0	C
D	FINAL FIRST CLOSED-IN		240.3			
E	INITIAL SECOND FLOW		24.5	30.0	30.0	F
F	FINAL SECOND FLOW		10.7			
F	INITIAL SECOND CLOSED-IN		10.7	30.0	30.0	C
G	FINAL SECOND CLOSED-IN		43.6			
H	FINAL HYDROSTATIC		2196.7			



4355.7. 228

GAUGE NO: 228 DEPTH: 4465.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2227	2233.2			
B	INITIAL FIRST FLOW	41	34.8	30.0	30.0	F
C	FINAL FIRST FLOW	41	34.2			
C	INITIAL FIRST CLOSED-IN	41	34.2	30.0	30.0	C
D	FINAL FIRST CLOSED-IN	264	262.8			
E	INITIAL SECOND FLOW	41	63.1	30.0	30.0	F
F	FINAL SECOND FLOW	41	35.7			
F	INITIAL SECOND CLOSED-IN	41	35.7	30.0	30.0	C
G	FINAL SECOND CLOSED-IN	61	64.7			
H	FINAL HYDROSTATIC	2227	2239.2			

EQUIPMENT & HOLE DATA

FORMATION TESTED: PAWNEE
NET PAY (ft):
GROSS TESTED FOOTAGE: 31.0
ALL DEPTHS MEASURED FROM: KELLY BUSHING
CASING PERFS. (ft):
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2840
TOTAL DEPTH (ft): 4468.0
PACKER DEPTH(S) (ft): 4437
FINAL SURFACE CHOKE (in): 0.250
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.60
MUD VISCOSITY (sec): 59
ESTIMATED HOLE TEMP. (°F): 118
ACTUAL HOLE TEMP. (°F): ___ @ ___ ft

TICKET NUMBER: 43554700

DATE: 10-24-82 TEST NO: 4

TYPE DST: OPEN HOLE

HALLIBURTON CAMP: NESS CITY

TESTER: J. THOMPSON

WITNESS: R. ROBBA

DRILLING CONTRACTOR: DONALD C. SLAWSON

FLUID PROPERTIES FOR RECOVERED MUD & WATER

SOURCE	RESISTIVITY	CHLORIDES
PIT	___ @ ___ °F	3000 ppm
	___ @ ___ °F	___ ppm
	___ @ ___ °F	___ ppm
	___ @ ___ °F	___ ppm
	___ @ ___ °F	___ ppm
	___ @ ___ °F	___ ppm

SAMPLER DATA

Psig AT SURFACE:
cu.ft. OF GAS:
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:

10 FEET OF DRILLING MUD WITH NO SHOW OF OIL

MEASURED FROM TESTER VALVE

REMARKS:

TYPE & SIZE MEASURING DEVICE: _____ TICKET NO: 43554700

TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
10-24-82					
1600					CALLED OUT
1700					ON LOCATION-RIG PULLING PIPE
1720					PICKED UP TOOL
1750					SET TOOL IN TABLE
1755					RIG STARTED PIPE
1935					ON BOTTOM
1940					OPENED TOOL WITH A WEAK BLOW
					DYING IN 20 MINUTES
2010					CLOSED TOOL
2040					OPENED TOOL WITH NO BLOW
2110					CLOSED TOOL
2140					OFF BOTTOM
2255					IN TABLE
2335					RIG BROKE DOWN TOOL
2345					JOB COMPLETED

TICKET NO. 43554700

		O.D.	I.D.	LENGTH	DEPTH
1	DRILL PIPE.....	4.500	3.826	4351.0	
50	IMPACT REVERSING SUB.....	5.000	3.000	1.0	4352.0
1	DRILL PIPE.....	4.500	3.826	62.0	
5	CROSSOVER.....	5.000	3.000	1.0	
12	DUAL CIP VALVE.....	5.000	0.870	6.0	
60	HYDROSPRING TESTER.....	5.000	0.750	5.0	4425.0
80	AP RUNNING CASE.....	5.000	3.060	4.0	4427.0
16	VR SAFETY JOINT.....	5.000	1.000	3.0	
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	4437.0
20	FLUSH JOINT ANCHOR.....	5.000	3.840	25.0	
81	BLANKED-OFF RUNNING CASE.....	5.000	2.440	4.0	4465.0
	TOTAL DEPTH				4468.0

EQUIPMENT DATA

HALLIBURTON

SERVICES

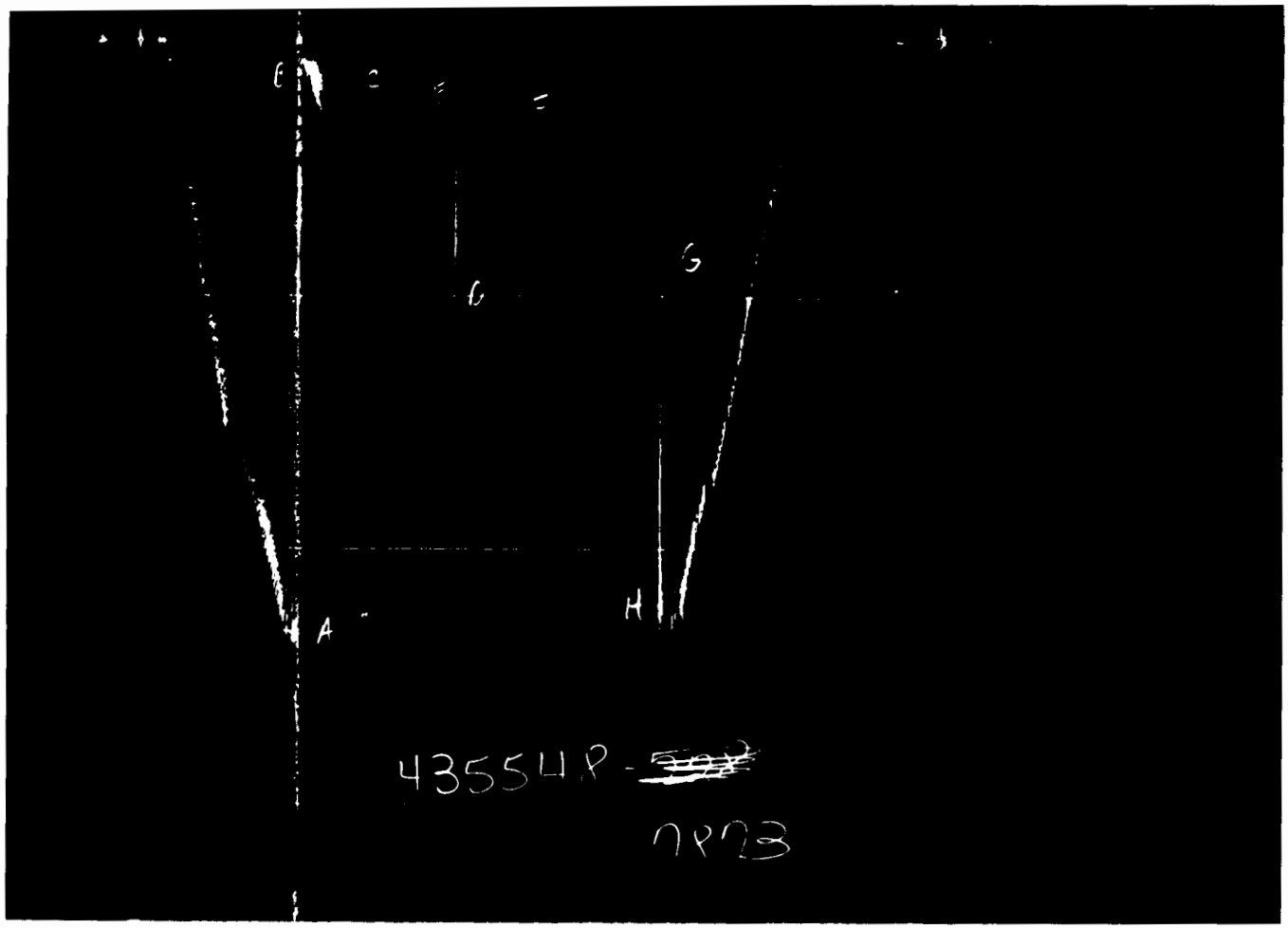
TICKET NO. 43554800

01-NOV-82

NESS CITY

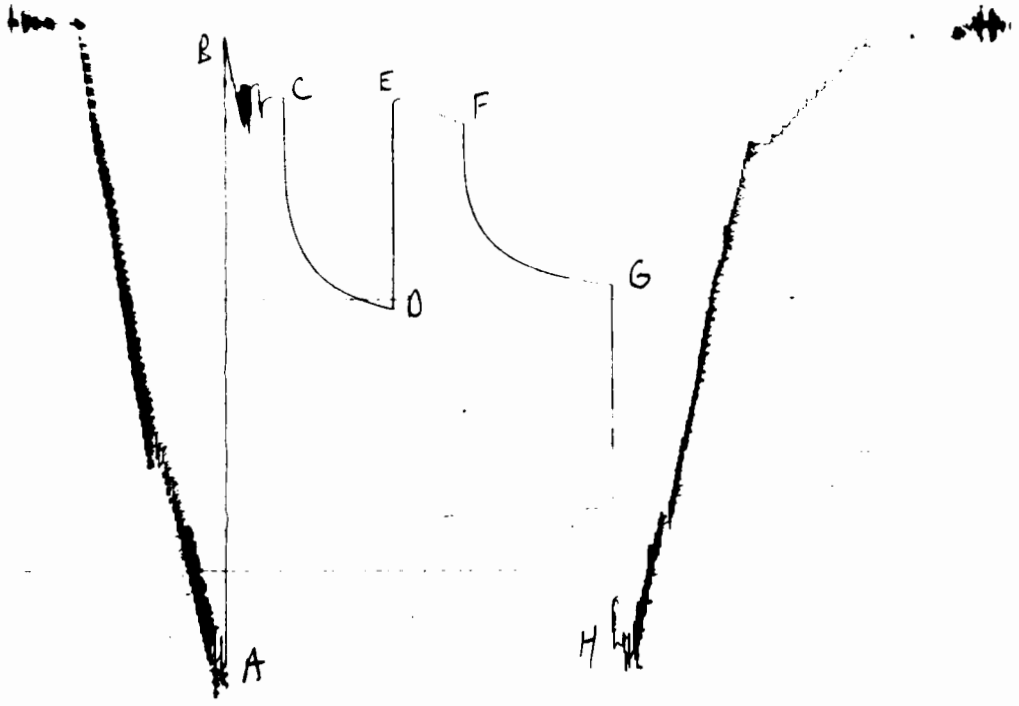
FORMATION TESTING SERVICE REPORT

LEASE NAME	WELL NO.	TEST NO.			LEASE OWNER/COMPANY NAME
DUNKLU L. OLMSUN	1	5			DUNKLU L. OLMSUN
LEGAL LOCATION SEC. - TWP. - RNG.	FIELD AREA	TESTED INTERVAL	COUNTY	STATE	
13-17-30W	WILDCAT	4401' - 4550'	LANE	KANSAS PW/NM	



GAUGE NO: 7873 ✓ DEPTH: 4451.0 ✓ BLANKED OFF: NO HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2287 2264	2236.4			
B	INITIAL FIRST FLOW	20	52.8	30.0	30.3	F
C	FINAL FIRST FLOW	264 180	198.7			
C	INITIAL FIRST CLOSED-IN	264	198.7	60.0	59.9	C
D	FINAL FIRST CLOSED-IN	1028 995	1002.0			
E	INITIAL SECOND FLOW	264	225.2	45.0	39.0	F
F	FINAL SECOND FLOW	346 327	329.8			
F	INITIAL SECOND CLOSED-IN	346	329.8	75.0	80.9	C
G	FINAL SECOND CLOSED-IN	940 907	912.3			
H	FINAL HYDROSTATIC	2267 2204	2224.4			



435548 - ~~7873~~ 228

GAUGE NO: 228 DEPTH: 4547.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC		2300.9			
B	INITIAL FIRST FLOW		44.5	30.0	30.3	F
C	FINAL FIRST FLOW		272.2			
C	INITIAL FIRST CLOSED-IN		272.2	60.0	59.9	C
D	FINAL FIRST CLOSED-IN		1041.6			
E	INITIAL SECOND FLOW		298.1	45.0	39.0	F
F	FINAL SECOND FLOW		367.3			
F	INITIAL SECOND CLOSED-IN		367.3	75.0	80.9	C
G	FINAL SECOND CLOSED-IN		957.9			
H	FINAL HYDROSTATIC		2267.9			

EQUIPMENT & HOLE DATA

FORMATION TESTED: CHEROKEE- JHN ZN.
NET PAY (ft):
GROSS TESTED FOOTAGE: 89.0
ALL DEPTHS MEASURED FROM: KELLY BUSHING
CASING PERFS. (ft):
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2840
TOTAL DEPTH (ft): 4550.0
PACKER DEPTH(S) (ft): 4461
FINAL SURFACE CHOKE (in): 0.250
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.20
MUD VISCOSITY (sec): 51
ESTIMATED HOLE TEMP. (°F): 120
ACTUAL HOLE TEMP. (°F): ___ @ _____ ft

TICKET NUMBER: 43554800

DATE: 10-25-82 TEST NO: 5

TYPE DST: OPEN HOLE

HALLIBURTON CAMP: NESS CITY

TESTER: J. THOMPSON

WITNESS: R. ROBBA

DRILLING CONTRACTOR: COMPANY TOOLS

FLUID PROPERTIES FOR RECOVERED MUD & WATER

SOURCE	RESISTIVITY	CHLORIDES
PIT	____ @ ____ °F	3000 ppm
SAMPLER Recovery	____ @ ____ °F	3000 ppm
	____ @ ____ °F	____ ppm
	____ @ ____ °F	____ ppm
	____ @ ____ °F	____ ppm
	____ @ ____ °F	____ ppm

SAMPLER DATA

Psig AT SURFACE:
cu.ft. OF GAS:
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
NONE		

RECOVERED:

120 FEET OF GAS IN THE PIPE
100 FEET OIL CUT MUD - 35% OIL - 65% MUD
660 FEET OF MUD CUT OIL - 60% OIL - 40% MUD
60 FEET MUD CUT OIL - 50% OIL AND 50% MUD - NO WATER
820 FEET - TOTAL RECOVERY

MEASURED FROM TESTER VALVE

REMARKS:

CHARTS INDICATE SEVERE PLUGGING DURING THE INITIAL FLOW PERIOD.
DRILL PIPE O.D. AND I.D. NOT REPORTED.

TYPE & SIZE MEASURING DEVICE: _____					TICKET NO: 43554800
TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
10-25-82					
1515					CALLED OUT.
1700					ON LOCATION - RIG PULLING PIPE.
1720					PICKED UP AND MADE UP TOOL.
1750					SET TOOL IN THE TABLE.
1800					RIG STARTED PIPE.
1905					TOOL ON BOTTOM.
1910					OPENED TOOL WITH A STRONG BLOW
					OFF BOTTOM OF THE BUCKET.
1940					CLOSED TOOL FOR THE FIRST CIP.
2040					OPENED TOOL WITH A STRONG BLOW
					OFF BOTTOM OF THE BUCKET.
2125					CLOSED TOOL FOR THE FINAL CIP.
2240					OFF BOTTOM.
10-26-82					
0115					IN THE TABLE.
0145					TOOL BROKE AND LAID DOWN.
0200					JOB COMPLETE.

TICKET NO: 43554800	HALLIBURTON SERVICES	GAUGE NO: 7873
CLOCK NO: 16165 HOUR: 12		DEPTH: 4451.0

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	52.8			
C	2	30.3	198.7	145.9		
			FIRST CLOSED-IN			
C	1	0.0	198.7			
	2	4.0	677.0	478.3	3.5	0.936
	3	8.0	763.7	565.0	6.3	0.682
	4	12.0	820.1	621.4	8.6	0.547
	5	16.0	856.7	658.0	10.5	0.461
	6	20.0	885.8	687.1	12.1	0.401
	7	24.0	908.2	709.5	13.4	0.355
	8	28.0	928.6	729.9	14.6	0.319
	9	32.0	944.3	745.6	15.6	0.289
	10	36.0	955.9	757.2	16.5	0.266
	11	40.0	966.8	768.1	17.3	0.245
	12	44.0	976.8	778.1	18.0	0.228
	13	48.0	984.4	785.7	18.6	0.213
	14	52.0	990.6	791.9	19.2	0.200
	15	56.0	996.5	797.8	19.7	0.188
D	16	59.9	1002.0	803.3	20.1	0.178
			SECOND FLOW			
E	1	0.0	225.2			
	2	5.0	228.0	2.8		
	3	10.0	245.8	17.8		
	4	15.0	263.7	17.9		
	5	20.0	280.8	17.2		
	6	25.0	294.2	13.4		
	7	30.0	306.4	12.2		
	8	35.0	318.8	12.3		
F	9	39.0	329.8	11.0		
			SECOND CLOSED-IN			
F	1	0.0	329.8			
	2	5.0	648.1	318.3	4.7	1.173
	3	10.0	715.5	385.7	8.7	0.900
	4	15.0	758.2	428.4	12.3	0.750
	5	20.0	787.6	457.8	15.5	0.649
	6	25.0	811.9	482.1	18.4	0.576
	7	30.0	831.9	502.0	20.9	0.520
	8	35.0	847.1	517.3	23.2	0.474
	9	40.0	859.5	529.7	25.3	0.437
	10	45.0	869.9	540.1	27.3	0.405
	11	50.0	878.3	548.4	29.0	0.378
	12	55.0	885.7	555.9	30.7	0.354
	13	60.0	892.2	562.4	32.2	0.333

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
			SECOND CLOSED-IN - CONTINUED			
	14	65.0	898.5	568.7	33.5	0.315
	15	70.0	903.6	573.8	34.8	0.299
	16	75.0	907.7	577.9	36.0	0.284
G	17	80.9	912.3	582.5	37.3	0.269

REMARKS:

TICKET NO: 43554800	GAUGE NO: 228
CLOCK NO: 14248 HOUR: 12	DEPTH: 4547.0

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	44.5			
C	2	30.3	272.2	227.6		
			FIRST CLOSED-IN			
C	1	0.0	272.2			
	2	4.0	728.1	455.9	3.5	0.933
	3	8.0	807.5	535.3	6.4	0.679
	4	12.0	858.1	585.9	8.6	0.547
	5	16.0	896.7	624.5	10.5	0.462
	6	20.0	924.8	652.6	12.1	0.401
	7	24.0	946.7	674.5	13.4	0.355
	8	28.0	964.2	692.0	14.5	0.319
	9	32.0	980.5	708.3	15.6	0.289
	10	36.0	993.4	721.2	16.5	0.266
	11	40.0	1004.8	732.6	17.3	0.245
	12	44.0	1014.0	741.8	18.0	0.228
	13	48.0	1022.1	749.9	18.6	0.213
	14	52.0	1029.7	757.6	19.2	0.200
	15	56.0	1036.2	764.1	19.7	0.188
D	16	59.9	1041.6	769.5	20.1	0.178
			SECOND FLOW			
E	1	0.0	298.1			
	2	5.0	277.4	-20.6		
	3	10.0	285.7	8.3		
	4	15.0	301.3	15.6		
	5	20.0	316.4	15.1		
	6	25.0	331.6	15.2		
	7	30.0	345.0	13.5		
	8	35.0	357.3	12.2		
F	9	39.0	367.3	10.0		
			SECOND CLOSED-IN			
F	1	0.0	367.3			
	2	5.0	694.5	327.2	4.6	1.176
	3	10.0	759.1	391.8	8.7	0.901
	4	15.0	801.9	434.6	12.3	0.750
	5	20.0	830.9	463.6	15.5	0.650
	6	25.0	855.2	487.9	18.4	0.576
	7	30.0	873.5	506.2	21.0	0.519
	8	35.0	888.6	521.3	23.3	0.474
	9	40.0	901.2	533.9	25.3	0.437
	10	45.0	912.0	544.7	27.3	0.405
	11	50.0	921.8	554.5	29.0	0.378
	12	55.0	929.7	562.4	30.7	0.354
	13	60.0	936.8	569.5	32.2	0.333

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
			SECOND CLOSED-IN - CONTINUED			
	14	65.0	943.4	576.1	33.5	0.315
	15	70.0	948.4	581.1	34.8	0.299
	16	75.0	953.5	586.2	36.0	0.284
G	17	80.9	957.9	590.6	37.3	0.269

REMARKS:

TICKET NO. 43554800

		O.D.	I.D.	LENGTH	DEPTH
1	DRILL PIPE.....			4189.0	
4	FLEX WEIGHT.....	4.500	2.764	186.0	
50	IMPACT REVERSING SUB.....	5.000	3.000	1.0	4375.0
4	FLEX WEIGHT.....	4.500	2.750	62.0	
5	CROSSOVER.....	5.000	3.000	1.0	
12	DUAL CIP VALVE.....	5.000	0.670	6.0	
60	HYDROSPRING TESTER.....	5.000	0.750	5.0	4449.0
80	AP RUNNING CASE.....	5.000	3.060	4.0	4451.0
16	VR SAFETY JOINT.....	5.000	1.000	3.0	
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	4461.0
5	CROSSOVER.....	5.000	3.000	1.0	
4	FLEX WEIGHT.....	4.500	2.750	63.0	
5	CROSSOVER.....	5.000	3.000	1.0	
20	FLUSH JOINT ANCHOR.....	5.000	3.840	18.0	
81	BLANKED-OFF RUNNING CASE.....	5.000	2.440	4.0	4547.0
	TOTAL DEPTH				4550.0

EQUIPMENT DATA