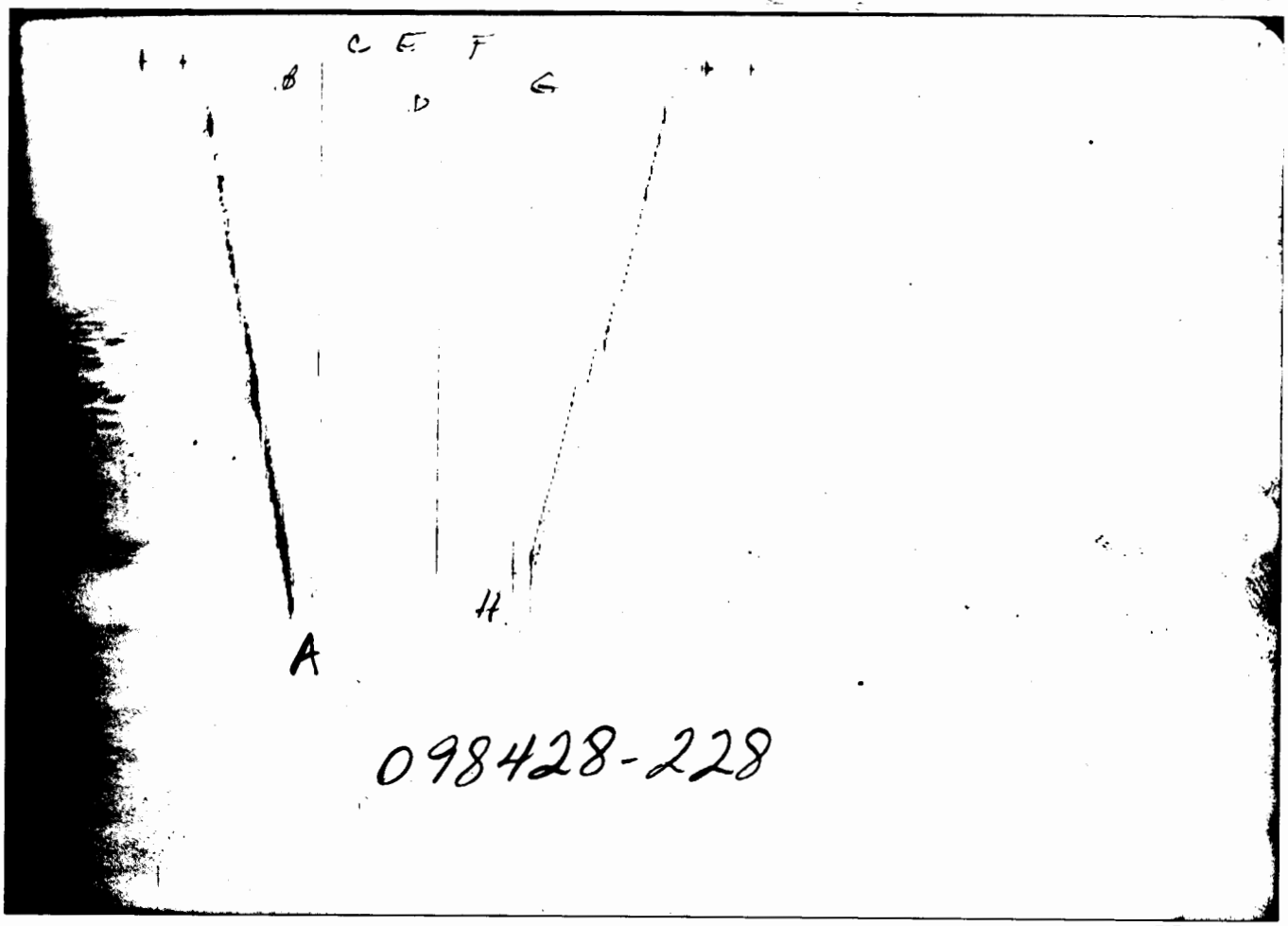
TICKET NO. 09842800
28-MAY-85
NESS CITY

FORMATION TESTING SERVICE REPORT

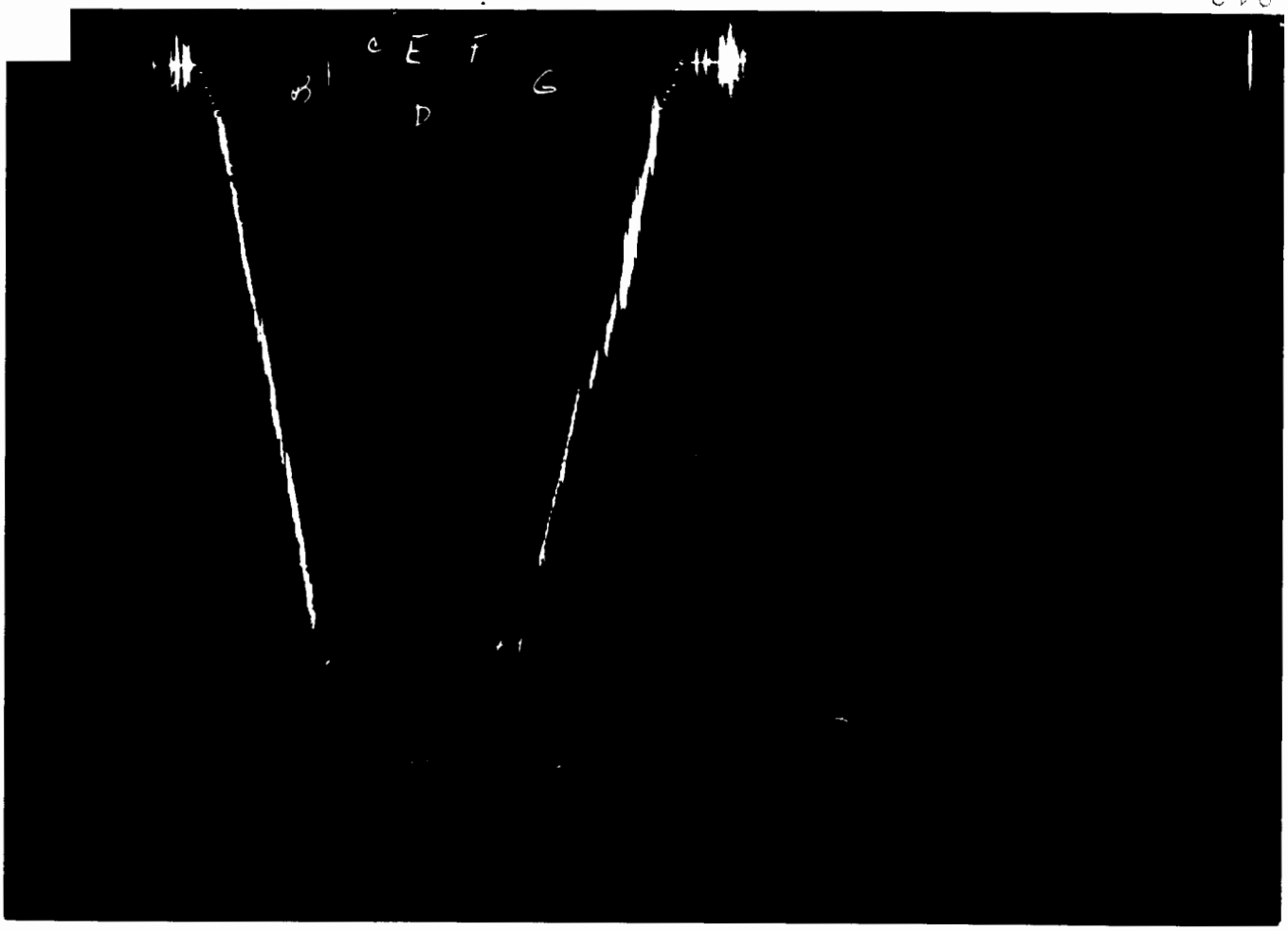
LEASE NAME: BARNES	WELL NO.: 1	TEST NO.: 1			
LEGAL LOCATION SEC. - TWP. - RNG.: 26-16S-21W	FIELD AREA		TESTED INTERVAL: 4070.0 - 4112.0		
COUNTY: NESS	STATE: KANSAS				
LEASE OWNER/COMPANY NAME: SUNBURST EXPLORATION COMPANY, INC.					

SW - NE - SE



GAUGE NO: 228 DEPTH: 4054.0 BLANKED OFF: NO HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2063	2060.5			
B	INITIAL FIRST FLOW	10	8.8	30.0	30.0	F
C	FINAL FIRST FLOW	10	9.5			
C	INITIAL FIRST CLOSED-IN	10	9.5	30.0	30.0	C
D	FINAL FIRST CLOSED-IN	60	59.2			
E	INITIAL SECOND FLOW	20	22.1	30.0	30.0	F
F	FINAL SECOND FLOW	20	23.1			
F	INITIAL SECOND CLOSED-IN	20	23.1	30.0	30.0	C
G	FINAL SECOND CLOSED-IN	40	37.3			
H	FINAL HYDROSTATIC	2063	2059.3			



GAUGE NO: 7873 DEPTH: 4109.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC		2092.5			
B	INITIAL FIRST FLOW		41.4	30.0	30.0	F
C	FINAL FIRST FLOW		42.0			
C	INITIAL FIRST CLOSED-IN		42.0	30.0	30.0	C
D	FINAL FIRST CLOSED-IN		92.5			
E	INITIAL SECOND FLOW		53.2	30.0	30.0	F
F	FINAL SECOND FLOW		54.7			
F	INITIAL SECOND CLOSED-IN		54.7	30.0	30.0	C
G	FINAL SECOND CLOSED-IN		70.6			
H	FINAL HYDROSTATIC		2085.9			

EQUIPMENT & HOLE DATA

FORMATION TESTED: FORT SCOTT CHEROKEE
NET PAY (ft): 3.0
GROSS TESTED FOOTAGE: 42.0
ALL DEPTHS MEASURED FROM: KELLY BUSHING
CASING PERFS. (ft): _____
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2220.0 KELLY BUSHING
TOTAL DEPTH (ft): 4112.0
PACKER DEPTH(S) (ft): 4064, 4070
FINAL SURFACE CHOKE (in): _____
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.70
MUD VISCOSITY (sec): 45
ESTIMATED HOLE TEMP. (°F): 110
ACTUAL HOLE TEMP. (°F): ___ @ _____ ft

TICKET NUMBER: 09842800

DATE: 5-21-85 TEST NO: 1

TYPE DST: OPEN HOLE

HALLIBURTON CAMP:
NESS CITY

TESTER: B. CROSSWHITE
S. NUTTING

WITNESS: B. MATHEISON

DRILLING CONTRACTOR:
WHITE AND ELLIS #2

FLUID PROPERTIES FOR RECOVERED MUD & WATER

SOURCE	RESISTIVITY	CHLORIDES
	@ °F	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:

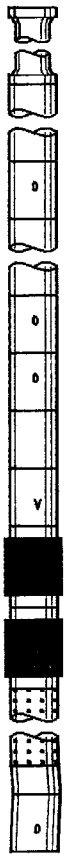
10 FEET OF DRILLING MUD

MEASURED FROM TESTER VALVE

REMARKS:

TYPE & SIZE MEASURING DEVICE: ____________________ | TICKET NO: 09842800

TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
5-21-85					
1152					ON BOTTOM
1155	.25"BH				OPENED TOOL WITH A WEAK SURFACE
					BLOW THAT DIED IN 10 MINUTES
1225					CLOSED TOOL
1255	.25"BH				OPENED TOOL WITH NO BLOW
1325					CLOSED TOOL
1355					OFF BOTTOM



		O.D.	I.D.	LENGTH	DEPTH
1	DRILL PIPE.....	4.500	3.826	3711.0	
3	DRILL COLLARS.....	6.250	2.250	210.0	
50	IMPACT REVERSING SUB.....	5.000	2.250	1.0	3921.0
3	DRILL COLLARS.....	6.250	2.250	120.0	
12	DUAL CIP VALVE.....	5.000	0.870	6.0	
60	HYDROSPRING TESTER.....	5.000	0.750	5.0	4052.0
80	AP RUNNING CASE.....	5.000	2.250	4.0	4054.0
16	VR SAFETY JOINT.....	5.000	1.000	3.0	
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	4064.0
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	4070.0
20	FLUSH JOINT ANCHOR.....	5.000	2.370	35.0	
83	HT-500 TEMPERATURE CASE.....	5.000		1.0	4107.0
81	BLANKED-OFF RUNNING CASE.....	5.000		4.0	4109.0

TOTAL DEPTH 4112.0

EQUIPMENT DATA

TEMPERATURE RECORDER CHART

APPROX 110°

098428

10° each circle

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	$S = 1.151\left[\frac{m(P^*) - m(P_f)}{m} - \text{LOG}\left(\frac{k(t/60)}{\phi\ \mu\ c_t r_w^2}\right) + 3.23\right]$	—
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	$r_i = 0.032\sqrt{\frac{k(t/60)}{\phi\mu c_t}}$	ft

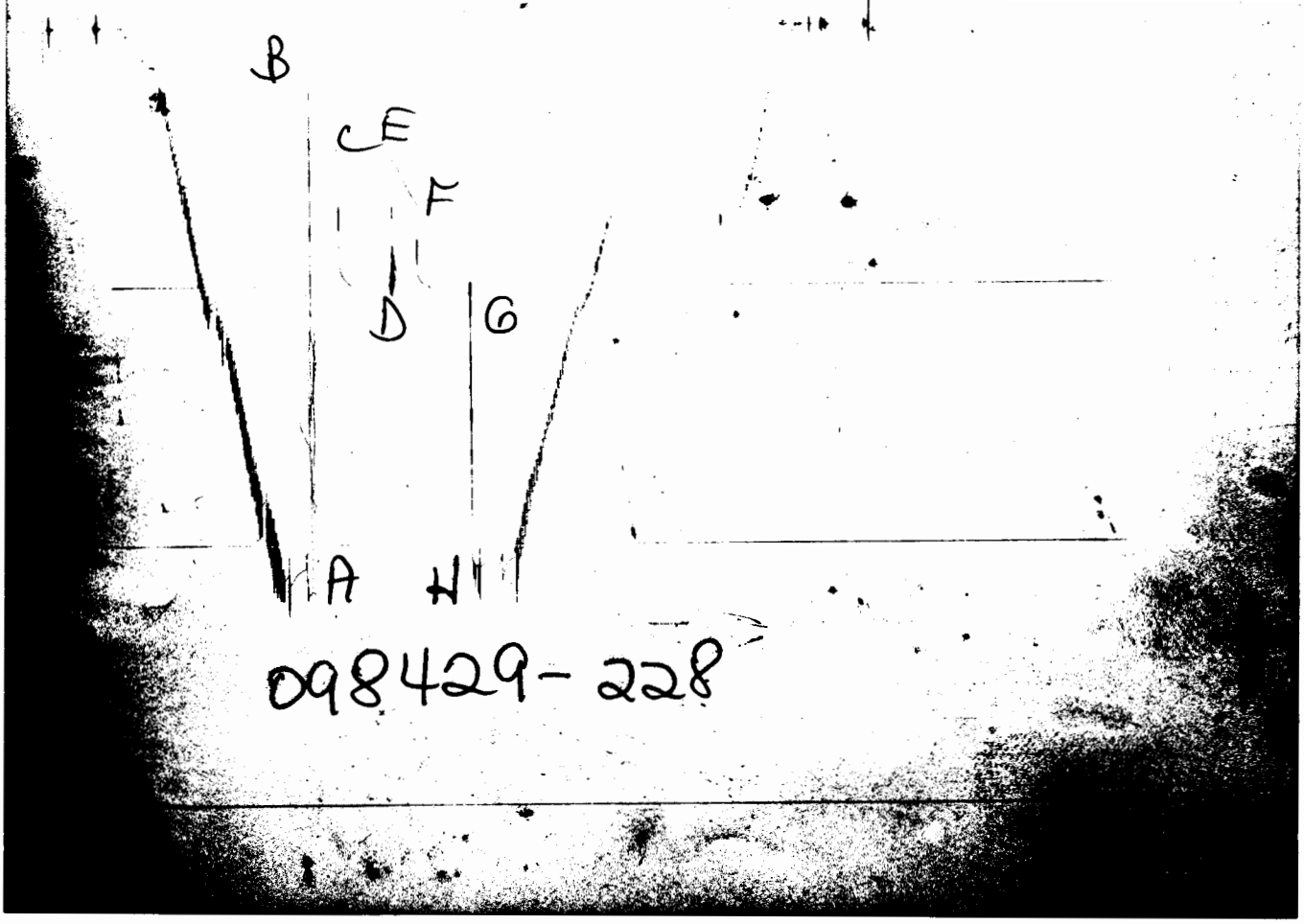
HALLIBURTON
SERVICES

TICKET NO. 09842900
28-MAY-85
NESS CITY

FORMATION TESTING SERVICE REPORT

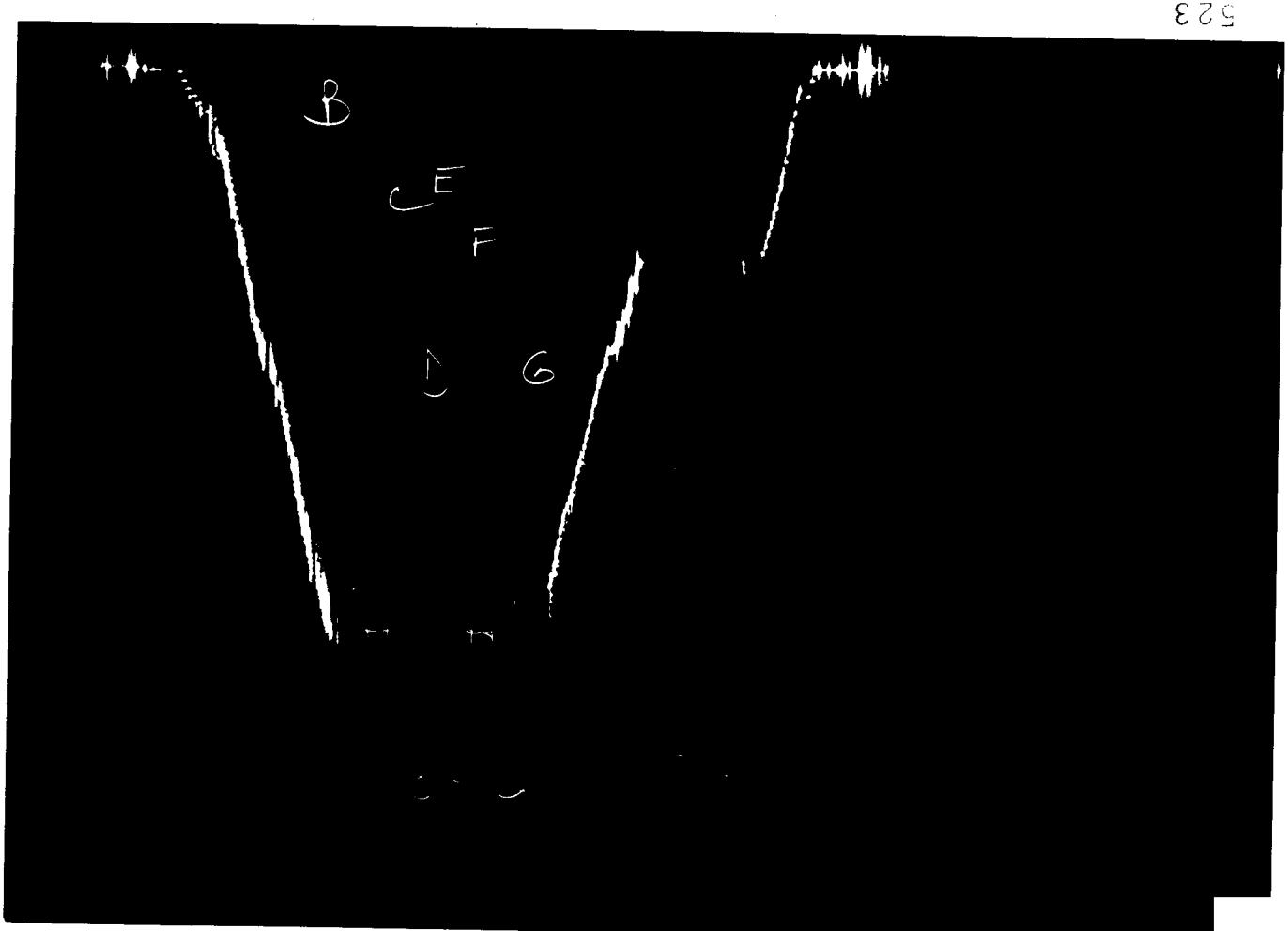
BARNES	1	2	4096.0 - 4125.0	SUNBURST EXPLORATION COMPANY, INC
LEASE NAME	WELL NO.	TEST NO.	TESTED INTERVAL	LEASE OWNER/COMPANY NAME

LEGAL LOCATION SEC. 26 - TWP. 16 SOUTH - RNG. 21 WEST	FIELD AREA	COUNTY NESS	STATE KANSAS	PM



GAUGE NO: 228 DEPTH: 4080.0 BLANKED OFF: NO HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	2083	2091.0			
B	INITIAL FIRST FLOW	101	98.3	15.0	16.5	F
C	FINAL FIRST FLOW	485	483.9			
C	INITIAL FIRST CLOSED-IN	485	483.9	30.0	29.9	C
D	FINAL FIRST CLOSED-IN	1025	1028.9			
E	INITIAL SECOND FLOW	506	514.8	15.0	14.1	F
F	FINAL SECOND FLOW	665	684.5			
F	INITIAL SECOND CLOSED-IN	665	684.5	30.0	29.5	C
G	FINAL SECOND CLOSED-IN	1025	1029.0			
H	FINAL HYDROSTATIC	2063	2071.6			



GAUGE NO: 7873 DEPTH: 4122.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC		2117.0			
B	INITIAL FIRST FLOW		134.4	15.0	16.5	F
C	FINAL FIRST FLOW		517.9			
C	INITIAL FIRST CLOSED-IN		517.9	30.0	29.9	C
D	FINAL FIRST CLOSED-IN		1059.2			
E	INITIAL SECOND FLOW		544.6	15.0	14.1	F
F	FINAL SECOND FLOW		716.0			
F	INITIAL SECOND CLOSED-IN		716.0	30.0	29.5	C
G	FINAL SECOND CLOSED-IN		1058.0			
H	FINAL HYDROSTATIC		2094.6			

EQUIPMENT & HOLE DATA

FORMATION TESTED: CHEROKEE
NET PAY (ft): 7.0
GROSS TESTED FOOTAGE: 29.0
ALL DEPTHS MEASURED FROM: KB
CASING PERFS. (ft):
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2220.0 KELLY BUSHING
TOTAL DEPTH (ft): 4125.0
PACKER DEPTH(S) (ft): 4090, 4096
FINAL SURFACE CHOKE (in):
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.70
MUD VISCOSITY (sec): 45
ESTIMATED HOLE TEMP. (°F):
ACTUAL HOLE TEMP. (°F): 120 @ 4120.0 ft

TICKET NUMBER: 09842900

DATE: 5-22-85 TEST NO: 2

TYPE DST: OPEN HOLE

HALLIBURTON CAMP: NESS CITY

TESTER: B. CROSSWHITE
S. NUTTING

WITNESS: B. MATHEISON

DRILLING CONTRACTOR: WHITE & ELLIS #2

FLUID PROPERTIES FOR RECOVERED MUD & WATER

SOURCE	RESISTIVITY	CHLORIDES
	@ °F	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:

1488 FEET OF SALTWATER - NO SHOW OF OIL

MEASURED FROM TESTER VALVE

REMARKS:

TYPE & SIZE MEASURING DEVICE: ______________________ TICKET NO: 09842900

TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
5-22-85					
0218					ON BOTTOM
0221					OPENED TOOL - FAIR BLOW
					INCREASING TO BOTTOM OF
					BUCKET IN 1 MINUTE.
0236					CLOSED TOOL
0306					REOPENED TOOL - FAIR BLOW
					INCREASING TO BOTTOM OF BUCKET
					IN 3 MINUTES.
0321					CLOSED TOOL
0351					TOOL OFF BOTTOM

TICKET NO: 09842900

CLOCK NO: 27315 HOUR: 12

HALLIBURTON SERVICES

GAUGE NO: 228

DEPTH: 4080.0

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	98.3			
	2	3.0	205.0	106.8		
	3	6.0	276.3	71.3		
	4	9.0	342.5	66.1		
	5	12.0	405.2	62.7		
	6	15.0	461.5	56.3		
C	7	16.5	483.9	22.4		
			FIRST CLOSED-IN			
C	1	0.0	483.9			
	2	2.0	957.6	473.8	1.8	0.969
	3	4.0	978.2	494.3	3.2	0.712
	4	6.0	991.7	507.8	4.4	0.575
	5	8.0	1000.4	516.5	5.4	0.486
	6	10.0	1006.3	522.4	6.2	0.423
	7	12.0	1011.6	527.8	7.0	0.375
	8	14.0	1014.9	531.1	7.6	0.338
	9	16.0	1018.3	534.5	8.1	0.308
	10	18.0	1020.4	536.6	8.6	0.282
	11	20.0	1022.7	538.9	9.0	0.261
	12	22.0	1024.5	540.7	9.4	0.243
	13	24.0	1025.9	542.0	9.8	0.227
	14	26.0	1026.8	542.9	10.1	0.213
	15	28.0	1027.9	544.0	10.4	0.201
D	16	29.9	1028.9	545.0	10.6	0.191
			SECOND FLOW			
E	1	0.0	514.8			
	2	2.0	525.1	10.3		
	3	4.0	554.0	28.8		
	4	6.0	584.6	30.6		
	5	8.0	610.5	25.9		
	6	10.0	638.0	27.4		
	7	12.0	661.8	23.8		
F	8	14.1	684.5	22.6		
			SECOND CLOSED-IN			
F	1	0.0	684.5			
	2	2.0	980.2	295.7	1.9	1.209
	3	4.0	993.5	309.0	3.5	0.935
	4	6.0	1002.3	317.9	5.0	0.784
	5	8.0	1007.1	322.7	6.3	0.684
	6	10.0	1012.6	328.1	7.5	0.608
	7	12.0	1015.6	331.1	8.6	0.549
	8	14.0	1018.9	334.5	9.6	0.503
	9	16.0	1020.9	336.5	10.5	0.464

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
			SECOND CLOSED-IN - CONTINUED			
	10	18.0	1023.1	338.7	11.3	0.431
	11	20.0	1024.2	339.8	12.1	0.402
	12	22.0	1025.2	340.8	12.8	0.378
	13	24.0	1026.2	341.8	13.4	0.357
	14	26.0	1027.8	343.3	14.1	0.337
	15	28.0	1028.5	344.0	14.6	0.320
G	16	29.5	1029.0	344.5	15.0	0.309

REMARKS:

TICKET NO: 09842900

CLOCK NO: 14248 HOUR: 12

HALLIBURTON SERVICES

GAUGE NO: 7873

DEPTH: 4122.0

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	134.4			
	2	3.0	238.4	103.9		
	3	6.0	314.1	75.8		
	4	9.0	378.7	64.6		
	5	12.0	439.9	61.2		
	6	15.0	494.7	54.8		
C	7	16.5	517.9	23.2		
			FIRST CLOSED-IN			
C	1	0.0	517.9			
	2	2.0	991.5	473.6	1.8	0.964
	3	4.0	1011.6	493.7	3.2	0.708
	4	6.0	1022.8	504.9	4.4	0.573
	5	8.0	1031.3	513.4	5.4	0.485
	6	10.0	1037.6	519.7	6.2	0.422
	7	12.0	1041.5	523.6	6.9	0.375
	8	14.0	1045.5	527.6	7.6	0.338
	9	16.0	1048.7	530.8	8.1	0.307
	10	18.0	1050.5	532.6	8.6	0.282
	11	20.0	1052.0	534.1	9.0	0.261
	12	22.0	1054.1	536.2	9.4	0.243
	13	24.0	1055.6	537.7	9.8	0.227
	14	26.0	1057.6	539.7	10.1	0.213
	15	28.0	1058.6	540.7	10.4	0.201
D	16	29.9	1059.2	541.3	10.6	0.191
			SECOND FLOW			
E	1	0.0	544.6			
	2	2.0	557.1	12.6		
	3	4.0	588.5	31.4		
	4	6.0	617.0	28.5		
	5	8.0	644.5	27.4		
	6	10.0	670.3	25.8		
	7	12.0	692.5	22.2		
F	8	14.1	716.0	23.5		
			SECOND CLOSED-IN			
F	1	0.0	716.0			
	2	2.0	1012.1	296.1	1.9	1.216
	3	4.0	1025.8	309.7	3.5	0.937
	4	6.0	1034.0	318.0	5.0	0.787
	5	8.0	1040.0	324.0	6.4	0.682
	6	10.0	1043.1	327.1	7.5	0.609
	7	12.0	1046.6	330.6	8.6	0.550
	8	14.0	1049.1	333.1	9.6	0.503
	9	16.0	1050.7	334.6	10.5	0.463

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
			SECOND CLOSED-IN - CONTINUED			
	10	18.0	1052.7	336.6	11.3	0.432
	11	20.0	1054.1	338.0	12.1	0.403
	12	22.0	1055.2	339.1	12.8	0.378
	13	24.0	1056.2	340.1	13.4	0.356
	14	26.0	1057.0	340.9	14.0	0.338
	15	28.0	1057.6	341.5	14.6	0.320
G	16	29.5	1058.0	341.9	15.0	0.309

REMARKS:

TICKET NO. 09842900

		O.D.	I.D.	LENGTH	DEPTH
1	DRILL PIPE.....	4.500	3.826	3736.0	
3	DRILL COLLARS.....	6.250	2.250	210.0	
50	IMPACT REVERSING SUB.....	5.000	2.750	1.0	3946.0
3	DRILL COLLARS.....	6.250	2.250	120.0	
5	CROSSOVER.....	5.000	2.750	1.0	
12	DUAL CIP VALVE.....	5.000	0.870	6.0	
60	HYDROSPRING TESTER.....	5.000	0.750	5.0	4078.0
80	AP RUNNING CASE.....	5.000	2.250	4.0	4080.0
16	VR SAFETY JOINT.....	5.000	1.000	3.0	
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	4090.0
70	OPEN HOLE PACKER.....	6.750	1.530	6.0	4096.0
20	FLUSH JOINT ANCHOR.....	5.000	2.370	22.0	
83	HT-500 TEMPERATURE CASE.....	5.000		1.0	4120.0
81	BLANKED-OFF RUNNING CASE.....	5.000		4.0	4122.0
	TOTAL DEPTH				4125.0

EQUIPMENT DATA

TEMPERATURE RECORDER CHART

098429

10° each circle

...TIONS 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	$S = 1.151 \left[\frac{m(P^*) - m(P_f)}{m} - \text{LOG}\left(\frac{k(t/60)}{\phi\ \mu\ c_t r_w^2}\right) + 3.23 \right]$	—
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	$r_i = 0.032 \sqrt{\frac{k(t/60)}{\phi \mu c_t}}$	ft