759

LEGAL LOCATION SEC. - TWP. - RNG.	FIELD AREA	COUNTY	STATE
33-6-21		GRAHAM	KANSAS OR

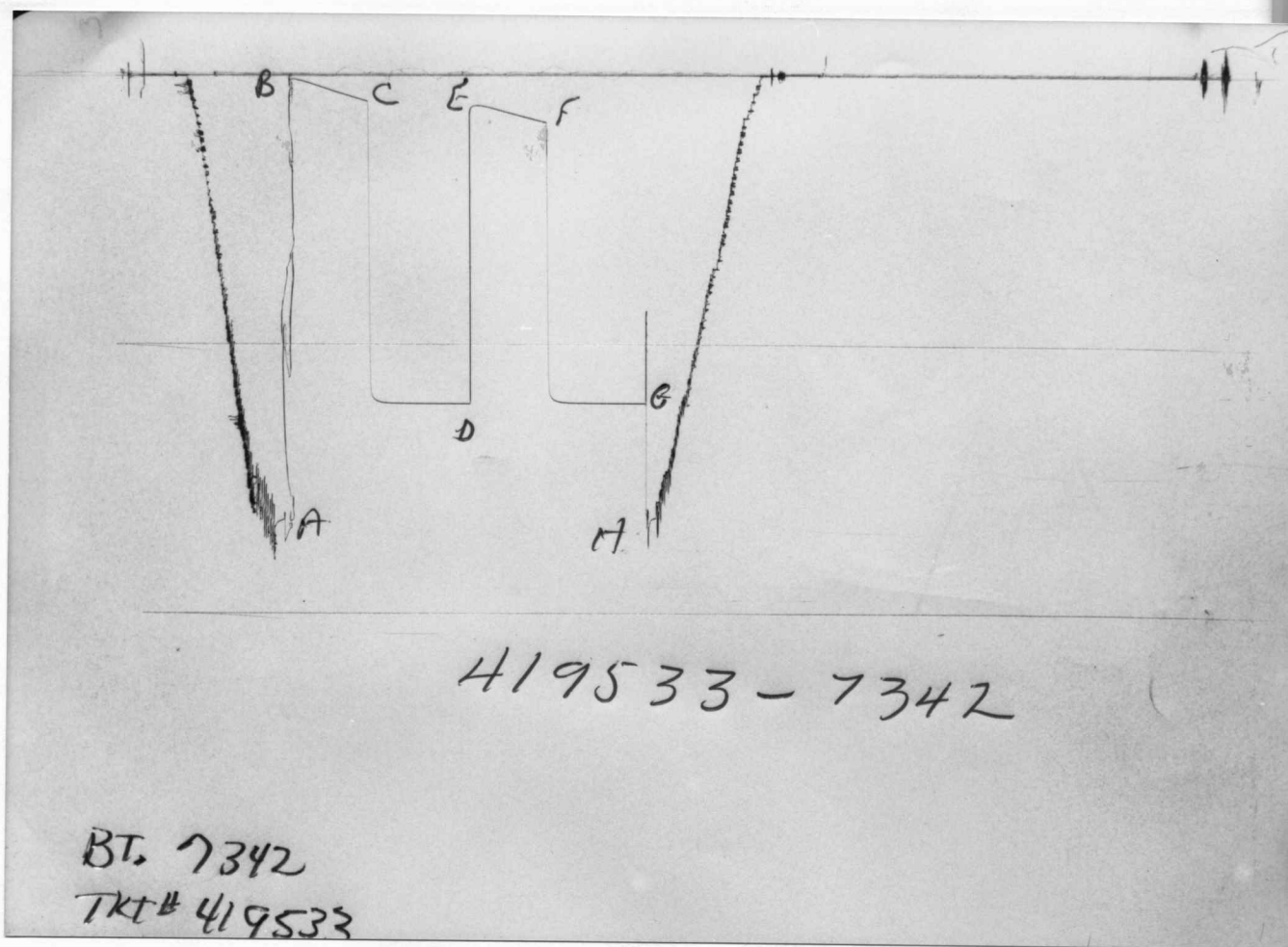
LEASE NAME	WELL NO.	TEST NO.	TESTED INTERVAL	LEASE OWNER/COMPANY NAME
JOHNSON "B"	1	1	3401.0 - 3425.0	K & E PETROLEUM INCORPORATED

WELL FILE

HALLIBURTON
SERVICES

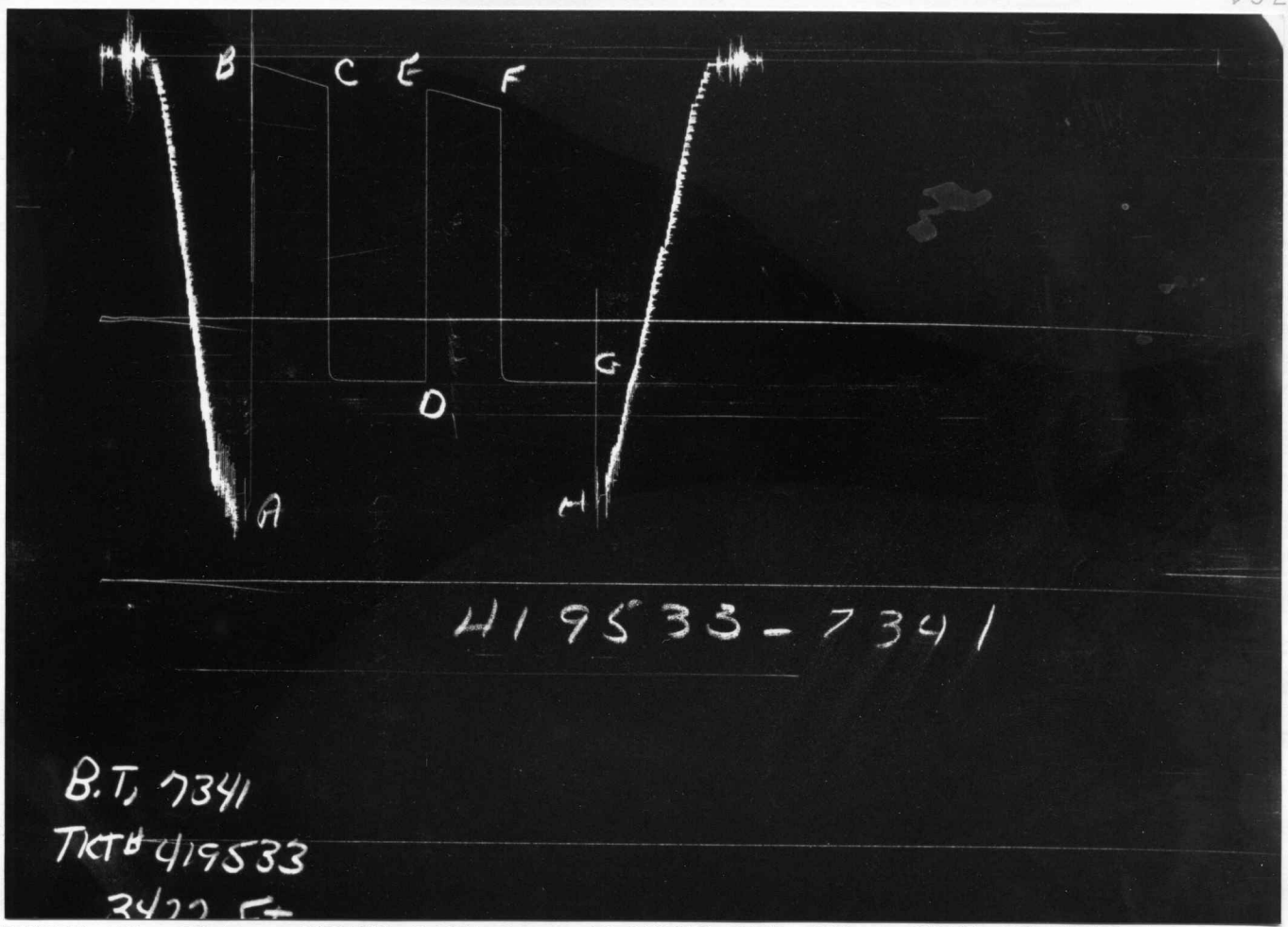
TICKET NO. 41953300
06-OCT-86
HAYS

FORMATION TESTING SERVICE REPORT



GAUGE NO: 7342 DEPTH: 3388.0 BLANKED OFF: NO HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	1651.5				
B	INITIAL FIRST FLOW	18.4		45.0	46.4	F
C	FINAL FIRST FLOW	97.5				
C	INITIAL FIRST CLOSED-IN	97.5		60.0	59.8	C
D	FINAL FIRST CLOSED-IN	1219.2				
E	INITIAL SECOND FLOW	141.1		45.0	45.5	F
F	FINAL SECOND FLOW	176.3				
F	INITIAL SECOND CLOSED-IN	176.3		60.0	58.3	C
G	FINAL SECOND CLOSED-IN	1217.7				
H	FINAL HYDROSTATIC	1644.5				



GAUGE NO: 7341 DEPTH: 3422.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	1658	1662.8			
B	INITIAL FIRST FLOW	19	27.1	45.0	46.4	F
C	FINAL FIRST FLOW	112	115.4			
C	INITIAL FIRST CLOSED-IN	112	115.4	60.0	59.8	C
D	FINAL FIRST CLOSED-IN	1230	1234.1			
E	INITIAL SECOND FLOW	112	127.1	45.0	45.5	F
F	FINAL SECOND FLOW	187	195.3			
F	INITIAL SECOND CLOSED-IN	187	195.3	60.0	58.3	C
G	FINAL SECOND CLOSED-IN	1230	1233.7			
H	FINAL HYDROSTATIC	1658	1659.8			

EQUIPMENT & HOLE DATA

FORMATION TESTED: TOPEKA
NET PAY (ft): 6.0
GROSS TESTED FOOTAGE: 24.0
ALL DEPTHS MEASURED FROM: KELLY BUSHING
CASING PERFS. (ft): _____
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2235.0
TOTAL DEPTH (ft): 3425.0
PACKER DEPTH(S) (ft): 3395, 3401
FINAL SURFACE CHOKE (in): _____
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.30
MUD VISCOSITY (sec): 46
ESTIMATED HOLE TEMP. (°F): _____
ACTUAL HOLE TEMP. (°F): 94 @ 3420.0 ft

TICKET NUMBER: 41953300

DATE: 9-30-86 TEST NO: 1

TYPE DST: OPEN HOLE

HALLIBURTON CAMP: HAYS

TESTER: MEL CHILDERS

WITNESS: TIM PRIEST

DRILLING CONTRACTOR: ABERCROMBIE #4

FLUID PROPERTIES FOR RECOVERED MUD & WATER

SOURCE	RESISTIVITY	CHLORIDES
SAMPLE OF DST	_____ @ ____°F	58480 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:

347' OF SLIGHTLY OIL CUT WATERY MUD
160' OF (5% OIL, 5% WATER, 88% MUD AND 2% SOLIDS)
64' OF (5% OIL, 50% WATER, 43% MUD AND 2% SOLIDS)
123' OF (1% OIL, 96% WATER AND 3% SOLIDS)

MEASURED FROM TESTER VALVE

REMARKS:

TYPE & SIZE MEASURING DEVICE: ______________________________ TICKET NO: 41953300

TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
9-30-86					
0530	.25BH				OPENED TOOL WITH A WEAK BUILDING
					BLOW TO 11" IN 45 MINUTES
0615					CLOSED TOOL WITH NO BLOW
0715					OPENED TOOL WITH A WEAK BLOW IN
					3.5 MINUTES, BUILDING TO 8" IN
					45 MINUTES
0800					CLOSED TOOL WITH NO BLOW
0900					TOOL OFF BOTTOM

TICKET NO: 41953300	GAUGE NO: 7342
CLOCK NO: 4205 HOUR: 12	DEPTH: 3388.0

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	18.4			
	2	5.0	19.8	1.4		
	3	10.0	27.6	7.8		
	4	15.0	37.6	10.0		
	5	20.0	47.4	9.8		
	6	25.0	58.3	10.8		
	7	30.0	68.1	9.8		
	8	35.0	77.3	9.3		
	9	40.0	87.6	10.3		
	10	45.0	96.2	8.6		
C	11	46.4	97.5	1.3		
			FIRST CLOSED-IN			
C	1	0.0	97.5			
	2	1.0	1183.2	1085.7	1.0	1.680
	3	2.0	1198.1	1100.6	1.9	1.382
	4	3.0	1204.8	1107.3	2.9	1.211
	5	4.0	1208.7	1111.1	3.7	1.101
	6	5.0	1211.3	1113.8	4.5	1.009
	7	6.0	1213.1	1115.6	5.3	0.942
	8	7.0	1214.9	1117.4	6.1	0.881
	9	8.0	1215.7	1118.2	6.8	0.833
	10	9.0	1216.5	1119.0	7.5	0.789
	11	10.0	1217.2	1119.7	8.2	0.751
	12	12.0	1217.9	1120.4	9.5	0.686
	13	14.0	1218.3	1120.8	10.7	0.635
	14	16.0	1218.6	1121.1	11.9	0.591
	15	18.0	1218.6	1121.1	13.0	0.553
	16	20.0	1218.6	1121.1	14.0	0.521
	17	22.0	1218.6	1121.1	14.9	0.492
	18	24.0	1219.3	1121.8	15.8	0.467
	19	26.0	1219.3	1121.8	16.7	0.444
	20	28.0	1219.2	1121.7	17.5	0.424
	21	30.0	1219.1	1121.6	18.2	0.405
	22	35.0	1219.1	1121.6	19.9	0.367
	23	40.0	1219.2	1121.7	21.5	0.334
	24	45.0	1219.2	1121.7	22.8	0.308
	25	50.0	1219.2	1121.7	24.1	0.285
	26	55.0	1219.2	1121.7	25.1	0.266
D	27	59.8	1219.2	1121.7	26.1	0.249
			SECOND FLOW			
E	1	0.0	141.1			
	2	5.0	113.8	-27.3		
	3	10.0	117.5	3.6		
	4	15.0	125.5	8.0		
	5	20.0	133.8	8.3		
	6	25.0	142.5	8.7		

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
			SECOND FLOW - CONTINUED			
	7	30.0	151.5	9.0		
	8	35.0	160.0	8.5		
	9	40.0	167.9	7.9		
F	10	45.5	176.3	8.4		
			SECOND CLOSED-IN			
F	1	0.0	176.3			
	2	1.0	1179.8	1003.6	1.0	1.980
	3	2.0	1196.0	1019.7	1.9	1.674
	4	3.0	1203.0	1026.7	2.9	1.499
	5	4.0	1207.0	1030.7	3.8	1.382
	6	5.0	1209.3	1033.0	4.8	1.286
	7	6.0	1211.2	1034.9	5.6	1.212
	8	7.0	1212.8	1036.5	6.5	1.147
	9	8.0	1214.0	1037.7	7.3	1.097
	10	9.0	1214.5	1038.3	8.2	1.048
	11	10.0	1214.9	1038.6	9.0	1.007
	12	12.0	1215.7	1039.5	10.6	0.938
	13	14.0	1216.3	1040.0	12.1	0.879
	14	16.0	1217.0	1040.7	13.6	0.829
	15	18.0	1217.3	1041.1	15.1	0.785
	16	20.0	1217.7	1041.4	16.4	0.748
	17	22.0	1217.7	1041.4	17.7	0.714
	18	24.0	1217.7	1041.4	19.0	0.684
	19	26.0	1217.7	1041.4	20.2	0.657
	20	28.0	1217.7	1041.4	21.5	0.631
	21	30.0	1217.7	1041.4	22.6	0.609
	22	35.0	1217.7	1041.4	25.4	0.559
	23	40.0	1217.7	1041.4	27.9	0.518
	24	45.0	1217.7	1041.4	30.2	0.483
	25	50.0	1217.7	1041.4	32.4	0.453
	26	55.0	1217.7	1041.4	34.4	0.427
G	27	58.3	1217.7	1041.4	35.7	0.411

REMARKS:

TICKET NO: 41953300	GAUGE NO: 7341
CLOCK NO: 3930 HOUR: 12	DEPTH: 3422.0

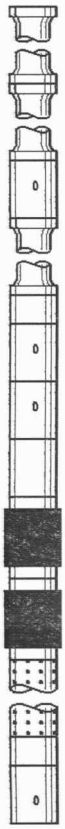
HALLIBURTON SERVICES

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	27.1			
	2	5.0	38.6	11.4		
	3	10.0	44.4	5.8		
	4	15.0	54.3	9.9		
	5	20.0	64.4	10.1		
	6	25.0	74.9	10.5		
	7	30.0	84.2	9.3		
	8	35.0	94.2	10.0		
	9	40.0	103.4	9.2		
	10	45.0	112.7	9.4		
C	11	46.4	115.4	2.7		
		FIRST CLOSED-IN				
C	1	0.0	115.4			
	2	1.0	1201.2	1085.7	1.0	1.674
	3	2.0	1217.4	1101.9	1.9	1.385
	4	3.0	1223.9	1108.4	2.8	1.219
	5	4.0	1227.2	1111.8	3.7	1.103
	6	5.0	1229.4	1114.0	4.5	1.015
	7	6.0	1230.2	1114.7	5.4	0.938
	8	7.0	1230.6	1115.2	6.1	0.881
	9	8.0	1231.1	1115.7	6.8	0.832
	10	9.0	1231.1	1115.7	7.5	0.790
	11	10.0	1231.7	1116.2	8.2	0.751
	12	12.0	1232.4	1117.0	9.5	0.688
	13	14.0	1232.4	1117.0	10.7	0.636
	14	16.0	1232.9	1117.4	11.9	0.591
	15	18.0	1232.9	1117.4	13.0	0.553
	16	20.0	1232.9	1117.4	14.0	0.521
	17	22.0	1233.2	1117.7	14.9	0.492
	18	24.0	1233.2	1117.7	15.8	0.467
	19	26.0	1233.2	1117.7	16.7	0.444
	20	28.0	1233.2	1117.7	17.5	0.424
	21	30.0	1233.3	1117.9	18.2	0.406
	22	35.0	1233.7	1118.3	19.9	0.366
	23	40.0	1233.7	1118.3	21.5	0.334
	24	45.0	1233.7	1118.3	22.8	0.308
	25	50.0	1233.7	1118.3	24.1	0.285
	26	55.0	1233.7	1118.3	25.2	0.265
D	27	59.8	1234.1	1118.6	26.1	0.249
		SECOND FLOW				
E	1	0.0	127.1			
	2	5.0	127.0	-0.1		
	3	10.0	134.0	7.0		
	4	15.0	142.4	8.4		
	5	20.0	150.9	8.4		
	6	25.0	160.3	9.5		

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
		SECOND FLOW - CONTINUED				
	7	30.0	170.0	9.6		
	8	35.0	178.2	8.2		
	9	40.0	186.5	8.2		
F	10	45.5	195.3	8.8		
		SECOND CLOSED-IN				
F	1	0.0	195.3			
	2	1.0	1205.0	1009.7	1.0	1.967
	3	2.0	1219.5	1024.2	2.0	1.664
	4	3.0	1224.4	1029.1	2.9	1.497
	5	4.0	1227.3	1032.0	3.9	1.375
	6	5.0	1228.1	1032.9	4.7	1.290
	7	6.0	1229.2	1034.0	5.6	1.212
	8	7.0	1230.0	1034.7	6.5	1.149
	9	8.0	1230.4	1035.1	7.3	1.098
	10	9.0	1230.9	1035.7	8.2	1.052
	11	10.0	1231.2	1035.9	9.0	1.010
	12	12.0	1231.7	1036.4	10.6	0.937
	13	14.0	1232.2	1037.0	12.1	0.880
	14	16.0	1232.2	1037.0	13.6	0.829
	15	18.0	1232.6	1037.3	15.0	0.786
	16	20.0	1232.9	1037.6	16.4	0.748
	17	22.0	1232.9	1037.6	17.8	0.714
	18	24.0	1233.2	1038.0	19.0	0.684
	19	26.0	1233.3	1038.1	20.3	0.656
	20	28.0	1233.4	1038.2	21.4	0.632
	21	30.0	1233.6	1038.4	22.6	0.609
	22	35.0	1233.6	1038.4	25.3	0.560
	23	40.0	1233.7	1038.4	27.9	0.518
	24	45.0	1233.7	1038.4	30.2	0.483
	25	50.0	1233.7	1038.4	32.4	0.453
	26	55.0	1233.7	1038.4	34.4	0.427
G	27	58.3	1233.7	1038.4	35.7	0.411

REMARKS:

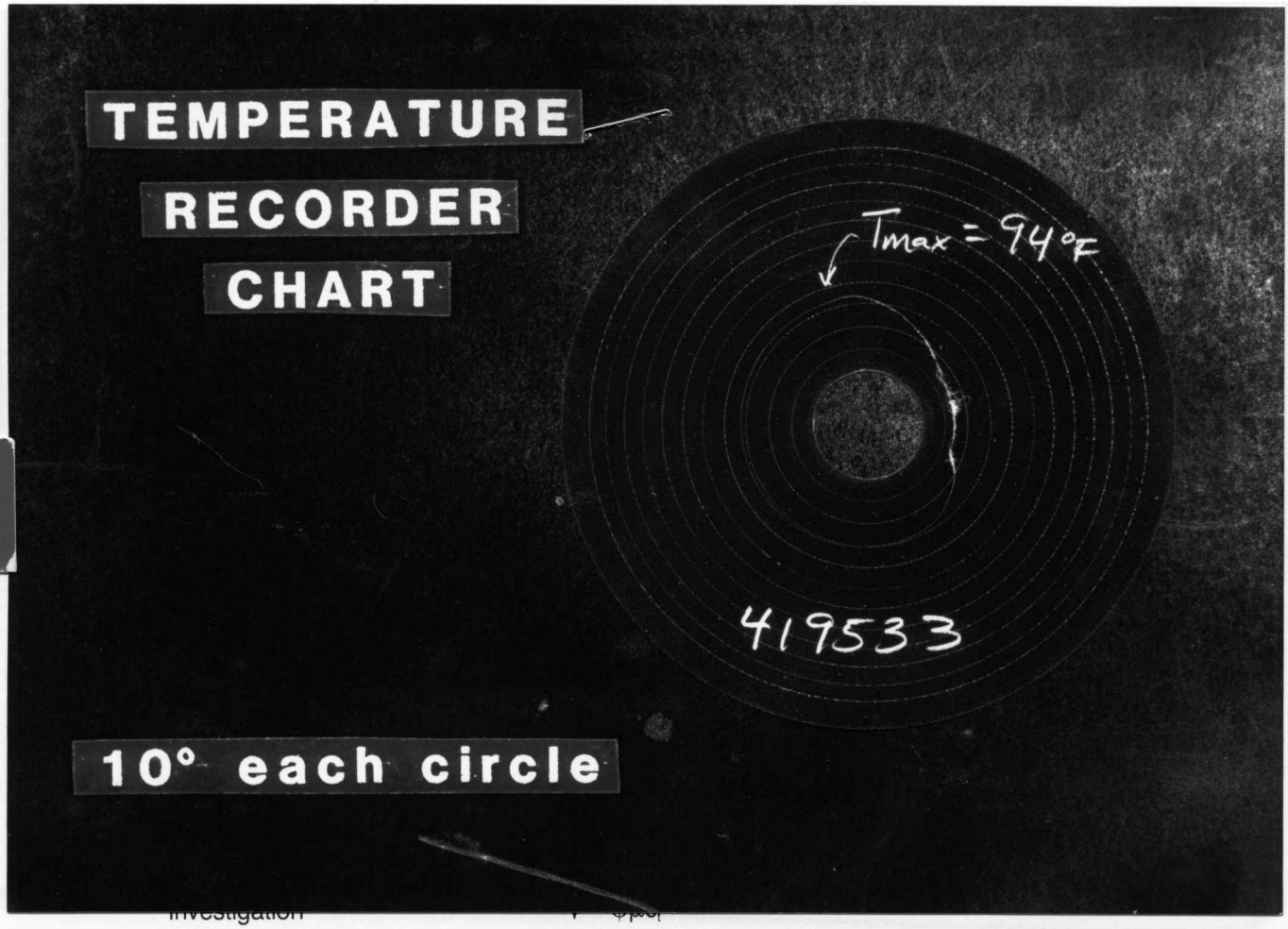
TICKET NO. 41953300



		O.D.	I.D.	LENGTH	DEPTH
1	DRILL PIPE.....	4.500	3.826	2774.5	
4	FLEX WEIGHT.....	4.500	2.950	346.7	
50	IMPACT REVERSING SUB.....	5.750	2.750	1.0	3122.0
4	FLEX WEIGHT.....	4.500	2.950	252.9	
5	CROSSOVER.....	5.000	2.950	1.0	
12	DUAL CIP VALVE.....	5.000	0.870	6.0	
60	HYDROSPRING TESTER.....	5.000	0.750	5.0	3386.0
80	AP RUNNING CASE.....	5.000	2.250	4.1	3388.0
70	OPEN HOLE PACKER.....	6.750	1.530	5.8	3395.0
70	OPEN HOLE PACKER.....	6.750	1.530	5.8	3401.0
20	FLUSH JOINT ANCHOR.....	5.000	2.370	16.4	
83	HT-500 TEMPERATURE CASE.....	5.000		1.5	3420.0
81	BLANKED-OFF RUNNING CASE.....	5.000		4.3	3422.0

TOTAL DEPTH 3425.0

EQUIPMENT DATA



EQUATIONS FOR DST GAS WELL ANALYSIS

Indicated Flow Capacity	$kh = \frac{.001637\ Q_g\ T}{m}$	md-ft
Average Effective Permeability	$k = \frac{kh}{h}$	md
Skin Factor	$S = 1.151 \left[\frac{m(P^*)-m(P_f)}{m} - LOG\left(\frac{k\ (t/60)}{\phi\ \mu\ c_t r_w^{\ 2}}\right) + 3.23 \right]$	
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

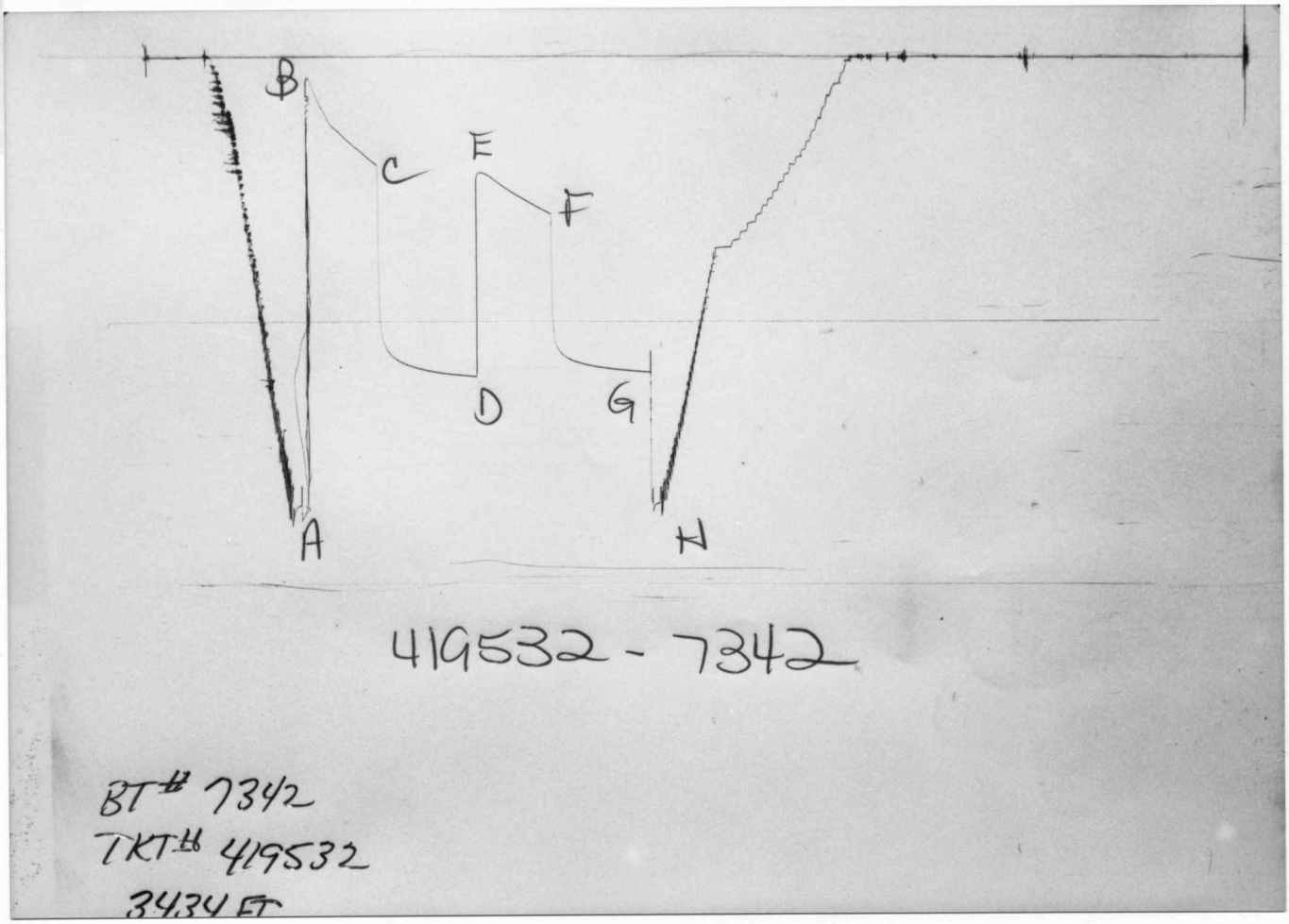
HALLIBURTON
SERVICES

TICKET NO. 41953200
06-OCT-86
HAYS

FORMATION TESTING SERVICE REPORT

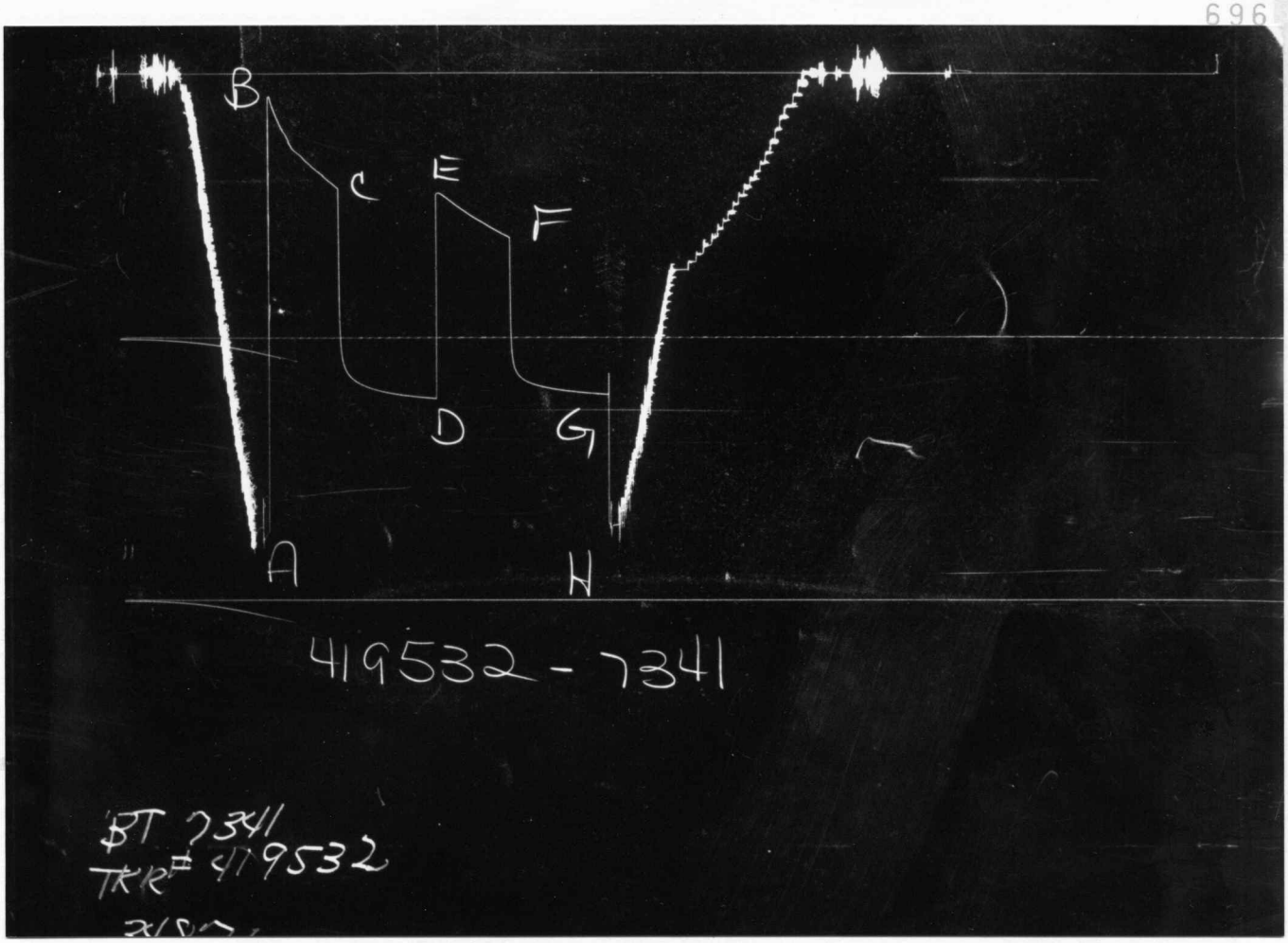
LEASE NAME	WELL NO.	TEST NO.	TESTED INTERVAL	LEASE OWNER/COMPANY NAME
JOHNSON "B"	1	2	3447.0 - 3490.0	K & E PETROLEUM, INCORPORATED

LEGAL LOCATION SEC. - TWP. - RNG.	FIELD AREA	COUNTY	STATE
33 - 6 - 21		GRAHAM	KANSAS PW



GAUGE NO: 7342 DEPTH: 3434.0 BLANKED OFF: NO HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC		1700.7			
B	INITIAL FIRST FLOW		81.1	44.0	43.2	F
C	FINAL FIRST FLOW		410.1			
C	INITIAL FIRST CLOSED-IN		410.1	60.0	60.2	C
D	FINAL FIRST CLOSED-IN		1209.3			
E	INITIAL SECOND FLOW		438.7	45.0	45.2	F
F	FINAL SECOND FLOW		595.3			
F	INITIAL SECOND CLOSED-IN		595.3	60.0	60.4	C
G	FINAL SECOND CLOSED-IN		1193.1			
H	FINAL HYDROSTATIC		1691.5			



GAUGE NO: 7341 DEPTH: 3487.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	1714	1723.8			
B	INITIAL FIRST FLOW	75	86.5	44.0	43.2	F
C	FINAL FIRST FLOW	431	439.0			
C	INITIAL FIRST CLOSED-IN	431	439.0	60.0	60.2	C
D	FINAL FIRST CLOSED-IN	1230	1233.5			
E	INITIAL SECOND FLOW	449	455.5	45.0	45.2	F
F	FINAL SECOND FLOW	617	624.6			
F	INITIAL SECOND CLOSED-IN	617	624.6	60.0	60.4	C
G	FINAL SECOND CLOSED-IN	1211	1218.8			
H	FINAL HYDROSTATIC	1714	1715.0			

EQUIPMENT & HOLE DATA

FORMATION TESTED: TORONTO
NET PAY (ft): 4.0
GROSS TESTED FOOTAGE: 43.0
ALL DEPTHS MEASURED FROM: KB
CASING PERFS. (ft):
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2235.0
TOTAL DEPTH (ft): 3490.0
PACKER DEPTH(S) (ft): 3441, 3447
FINAL SURFACE CHOKE (in):
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.50
MUD VISCOSITY (sec): 45
ESTIMATED HOLE TEMP. (°F):
ACTUAL HOLE TEMP. (°F): 96 @ 3485.0 ft

TICKET NUMBER: 41953200
DATE: 9-30-86 TEST NO: 2
TYPE DST: OPEN HOLE
HALLIBURTON CAMP: HAYS
TESTER: MEL CHILDERS
WITNESS: TIM PRIEST
DRILLING CONTRACTOR: ABERCROMBIE #4

FLUID PROPERTIES FOR RECOVERED MUD & WATER

SOURCE	RESISTIVITY	CHLORIDES
DST SAMPLE	@ °F	60200 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): 38.0 @ 70°F
GAS/OIL RATIO (cu.ft. per bbl):
GAS GRAVITY:

CUSHION DATA

TYPE	AMOUNT	WEIGHT

RECOVERED:

527 FEET OF CLEAN GASSY OIL
589 FEET OF MUD CUT OIL OF WHICH 322' = 22% MUD - 3% WATER - 75% OIL; 267' = 35% MUD - 8% WATER - 57% OIL
129 FEET OF MUDDY WATER (5% OIL/10% MUD/85% WATER)

MEASURED FROM TESTER VALVE

REMARKS:

RECOVERY CONTINUED:
248 FEET OF WATER
1488 FEET OF TOTAL FLUID RECOVERED

TYPE & SIZE MEASURING DEVICE: ______ | TICKET NO: 41953200

TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
9-30-86					
1911	.25"BH				OPENED TOOL - STRONG BLOW
					OFF BOTTOM OF BUCKET IN 3
					MINUTES.
1955					CLOSED TOOL - WEAK BUILDING
					BLOW OFF BOTTOM OF BUCKET IN
					25 MINUTES AND BLOW REMAINDER
					OF SHUT IN.
2055					REOPENED TOOL - STRONG BLOW
					OFF BOTTOM OF BUCKET IN 5
					MINUTES.
2140					CLOSED TOOL - WEAK BUILDING
					BLOW - COMES OFF BOTTOM OF
					BUCKET IN 15 MINUTES. BLED OFF
					AND BLOW REBUILDS ITSELF TO 8"
					AT END OF ONE HOUR.
2240					TOOL OFF BOTTOM

TICKET NO: 41953200

CLOCK NO: 4205 HOUR: 12

HALLIBURTON SERVICES

GAUGE NO: 7342

DEPTH: 3434.0

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	81.1			
	2	3.0	100.8	19.7		
	3	6.0	148.3	47.5		
	4	9.0	190.9	42.6		
	5	12.0	222.3	31.4		
	6	15.0	257.8	35.4		
	7	18.0	274.3	16.5		
	8	21.0	291.9	17.6		
	9	24.0	310.7	18.8		
	10	27.0	327.4	16.7		
	11	30.0	342.7	15.3		
	12	33.0	357.8	15.0		
	13	36.0	375.1	17.3		
	14	39.0	389.9	14.8		
	15	42.0	405.1	15.2		
C	16	43.2	410.1	5.0		
			FIRST CLOSED-IN			
C	1	0.0	410.1			
	2	1.0	980.9	570.8	1.0	1.628
	3	2.0	1040.9	630.8	1.9	1.347
	4	3.0	1071.1	660.9	2.8	1.183
	5	4.0	1088.7	678.6	3.7	1.068
	6	5.0	1102.5	692.4	4.5	0.983
	7	6.0	1112.8	702.6	5.3	0.911
	8	7.0	1120.4	710.3	6.0	0.855
	9	8.0	1127.9	717.7	6.8	0.805
	10	9.0	1133.1	723.0	7.5	0.761
	11	10.0	1138.5	728.4	8.1	0.726
	12	12.0	1146.5	736.4	9.4	0.663
	13	14.0	1153.7	743.6	10.6	0.612
	14	16.0	1159.7	749.6	11.7	0.568
	15	18.0	1165.9	755.7	12.7	0.532
	16	20.0	1170.0	759.8	13.7	0.500
	17	22.0	1173.9	763.7	14.6	0.471
	18	24.0	1177.2	767.1	15.4	0.447
	19	26.0	1180.6	770.5	16.2	0.425
	20	28.0	1183.7	773.5	17.0	0.405
	21	30.0	1186.3	776.1	17.7	0.387
	22	35.0	1192.2	782.0	19.3	0.349
	23	40.0	1196.8	786.7	20.8	0.318
	24	45.0	1200.6	790.4	22.0	0.292
	25	50.0	1203.5	793.3	23.2	0.270
	26	55.0	1206.3	796.2	24.2	0.252
D	27	60.2	1209.3	799.2	25.1	0.235
			SECOND FLOW			
E	1	0.0	438.7			
			SECOND FLOW - CONTINUED			
	2	3.0	438.4	-0.3		
	3	6.0	444.0	5.6		
	4	9.0	455.7	11.7		
	5	12.0	469.8	14.1		
	6	15.0	483.4	13.6		
	7	18.0	497.0	13.6		
	8	21.0	509.9	12.9		
	9	24.0	521.2	11.3		
	10	27.0	531.9	10.7		
	11	30.0	542.7	10.8		
	12	33.0	553.5	10.9		
	13	36.0	564.5	11.0		
	14	39.0	574.2	9.7		
	15	42.0	583.9	9.7		
F	16	45.2	595.3	11.4		
			SECOND CLOSED-IN			
F	1	0.0	595.3			
	2	1.0	1008.8	413.4	1.0	1.946
	3	2.0	1067.3	472.0	2.0	1.653
	4	3.0	1089.9	494.6	2.9	1.487
	5	4.0	1103.8	508.5	3.8	1.363
	6	5.0	1112.8	517.5	4.7	1.273
	7	6.0	1120.4	525.1	5.7	1.194
	8	7.0	1125.8	530.4	6.5	1.135
	9	8.0	1131.1	535.8	7.3	1.081
	10	9.0	1135.7	540.3	8.2	1.033
	11	10.0	1139.4	544.1	9.0	0.994
	12	12.0	1146.6	551.3	10.6	0.922
	13	14.0	1151.1	555.7	12.1	0.865
	14	16.0	1154.8	559.5	13.5	0.815
	15	18.0	1159.0	563.7	15.0	0.771
	16	20.0	1163.0	567.7	16.3	0.734
	17	22.0	1166.0	570.7	17.6	0.700
	18	24.0	1168.6	573.3	18.9	0.670
	19	26.0	1171.0	575.6	20.1	0.643
	20	28.0	1173.1	577.8	21.3	0.619
	21	30.0	1174.9	579.6	22.4	0.596
	22	35.0	1179.6	584.3	25.1	0.547
	23	40.0	1183.0	587.7	27.5	0.506
	24	45.0	1186.3	590.9	29.8	0.472
	25	50.0	1188.9	593.6	31.9	0.442
	26	55.0	1191.7	596.4	33.9	0.416
G	27	60.4	1193.1	597.8	35.9	0.391

REMARKS:

TICKET NO: 41953200

CLOCK NO: 3930 HOUR: 12

HALLIBURTON SERVICES

GAUGE NO: 7341

DEPTH: 3487.0

FIRST FLOW

REF		MINUTES	PRESSURE	ΔP
B	1	0.0	86.5	
	2	3.0	129.3	42.9
	3	6.0	176.0	46.6
	4	9.0	214.7	38.7
	5	12.0	246.6	31.9
	6	15.0	285.4	38.8
	7	18.0	302.2	16.9
	8	21.0	318.6	16.4
	9	24.0	337.4	18.7
	10	27.0	354.7	17.3
	11	30.0	370.4	15.7
	12	33.0	384.9	14.5
	13	36.0	402.7	17.8
	14	39.0	418.1	15.4
	15	42.0	434.1	16.0
C	16	43.2	439.0	4.9

FIRST CLOSED-IN

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
C	1	0.0	439.0			
	2	1.0	967.9	529.0	1.0	1.652
	3	2.0	1064.1	625.1	1.9	1.348
	4	3.0	1097.4	658.4	2.8	1.190
	5	4.0	1118.3	679.3	3.7	1.069
	6	5.0	1130.2	691.2	4.4	0.987
	7	6.0	1140.7	701.7	5.3	0.914
	8	7.0	1148.6	709.6	6.1	0.853
	9	8.0	1155.5	716.5	6.8	0.804
	10	9.0	1160.4	721.4	7.4	0.763
	11	10.0	1165.4	726.4	8.1	0.727
	12	12.0	1173.8	734.8	9.4	0.662
	13	14.0	1180.7	741.8	10.6	0.611
	14	16.0	1185.8	746.8	11.7	0.568
	15	18.0	1191.0	752.0	12.7	0.532
	16	20.0	1195.1	756.2	13.7	0.500
	17	22.0	1199.1	760.2	14.6	0.471
	18	24.0	1202.5	763.5	15.4	0.447
	19	26.0	1205.7	766.8	16.2	0.424
	20	28.0	1208.3	769.4	17.0	0.405
	21	30.0	1210.7	771.7	17.7	0.387
	22	35.0	1216.4	777.5	19.3	0.349
	23	40.0	1220.9	781.9	20.8	0.318
	24	45.0	1224.4	785.5	22.0	0.292
	25	50.0	1228.1	789.2	23.2	0.270
	26	55.0	1230.4	791.4	24.2	0.252
D	27	60.2	1233.5	794.6	25.1	0.235

SECOND FLOW

REF		MINUTES	PRESSURE	ΔP
E	1	0.0	455.5	

SECOND FLOW - CONTINUED

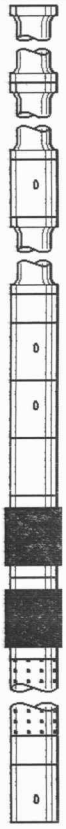
REF		MINUTES	PRESSURE	ΔP
	2	3.0	459.3	3.8
	3	6.0	472.8	13.5
	4	9.0	486.5	13.7
	5	12.0	500.6	14.0
	6	15.0	513.9	13.3
	7	18.0	527.0	13.1
	8	21.0	539.0	12.1
	9	24.0	551.2	12.2
	10	27.0	560.9	9.8
	11	30.0	571.8	10.9
	12	33.0	583.2	11.4
	13	36.0	593.8	10.6
	14	39.0	604.6	10.8
	15	42.0	613.9	9.3
F	16	45.2	624.6	10.8

SECOND CLOSED-IN

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
F	1	0.0	624.6			
	2	1.0	1035.6	410.9	1.0	1.952
	3	2.0	1095.7	471.0	1.9	1.663
	4	3.0	1120.2	495.6	2.9	1.481
	5	4.0	1133.2	508.6	3.8	1.363
	6	5.0	1143.0	518.4	4.7	1.272
	7	6.0	1150.0	525.3	5.6	1.199
	8	7.0	1155.7	531.0	6.5	1.136
	9	8.0	1161.3	536.7	7.3	1.081
	10	9.0	1165.2	540.6	8.2	1.035
	11	10.0	1168.8	544.1	9.0	0.994
	12	12.0	1174.6	549.9	10.5	0.923
	13	14.0	1179.8	555.1	12.1	0.865
	14	16.0	1183.5	558.8	13.5	0.815
	15	18.0	1186.4	561.7	15.0	0.771
	16	20.0	1189.5	564.9	16.3	0.734
	17	22.0	1192.1	567.5	17.6	0.700
	18	24.0	1195.1	570.5	18.9	0.671
	19	26.0	1196.9	572.2	20.1	0.644
	20	28.0	1199.3	574.7	21.3	0.619
	21	30.0	1201.2	576.5	22.4	0.596
	22	35.0	1204.9	580.2	25.1	0.547
	23	40.0	1208.1	583.5	27.5	0.507
	24	45.0	1211.1	586.5	29.8	0.472
	25	50.0	1213.7	589.1	31.9	0.442
	26	55.0	1216.6	592.0	33.9	0.416
G	27	60.4	1218.8	594.2	35.9	0.391

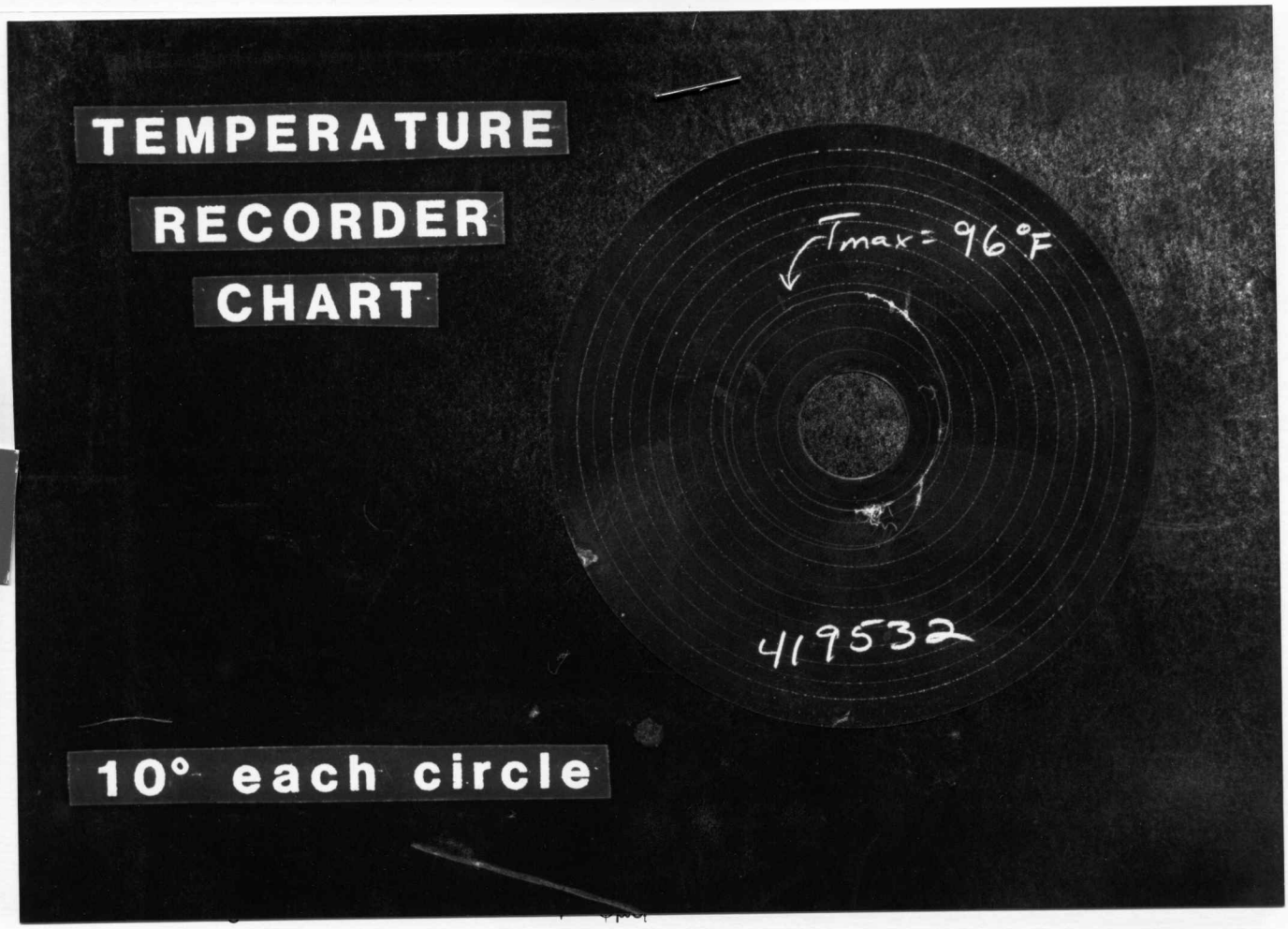
REMARKS:

TICKET NO. 41953200



		O.D.	I.D.	LENGTH	DEPTH
1	DRILL PIPE.....	4.500	3.826	2820.8	
4	FLEX WEIGHT.....	4.500	2.950	346.7	
50	IMPACT REVERSING SUB.....	5.750	2.750	1.0	3167.2
4	FLEX WEIGHT.....	4.500	2.950	252.9	
5	CROSSOVER.....	5.000	2.950	1.0	
12	DUAL CIP VALVE.....	5.000	0.870	6.0	
60	HYDROSPRING TESTER.....	5.000	0.750	5.0	3432.0
80	AP RUNNING CASE.....	5.000	2.250	4.1	3434.0
70	OPEN HOLE PACKER.....	6.750	1.530	5.8	3441.0
70	OPEN HOLE PACKER.....	6.750	1.530	5.8	3447.0
20	FLUSH JOINT ANCHOR.....	5.000	2.370	35.4	
83	HT-500 TEMPERATURE CASE.....	5.000		1.5	3485.0
81	BLANKED-OFF RUNNING CASE.....	5.000		4.3	3487.0
	TOTAL DEPTH				3490.0

EQUIPMENT DATA



EQUATIONS FOR DST GAS WELL ANALYSIS

Indicated Flow Capacity	$kh = \frac{.001637\ Q_g\ T}{m}$	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

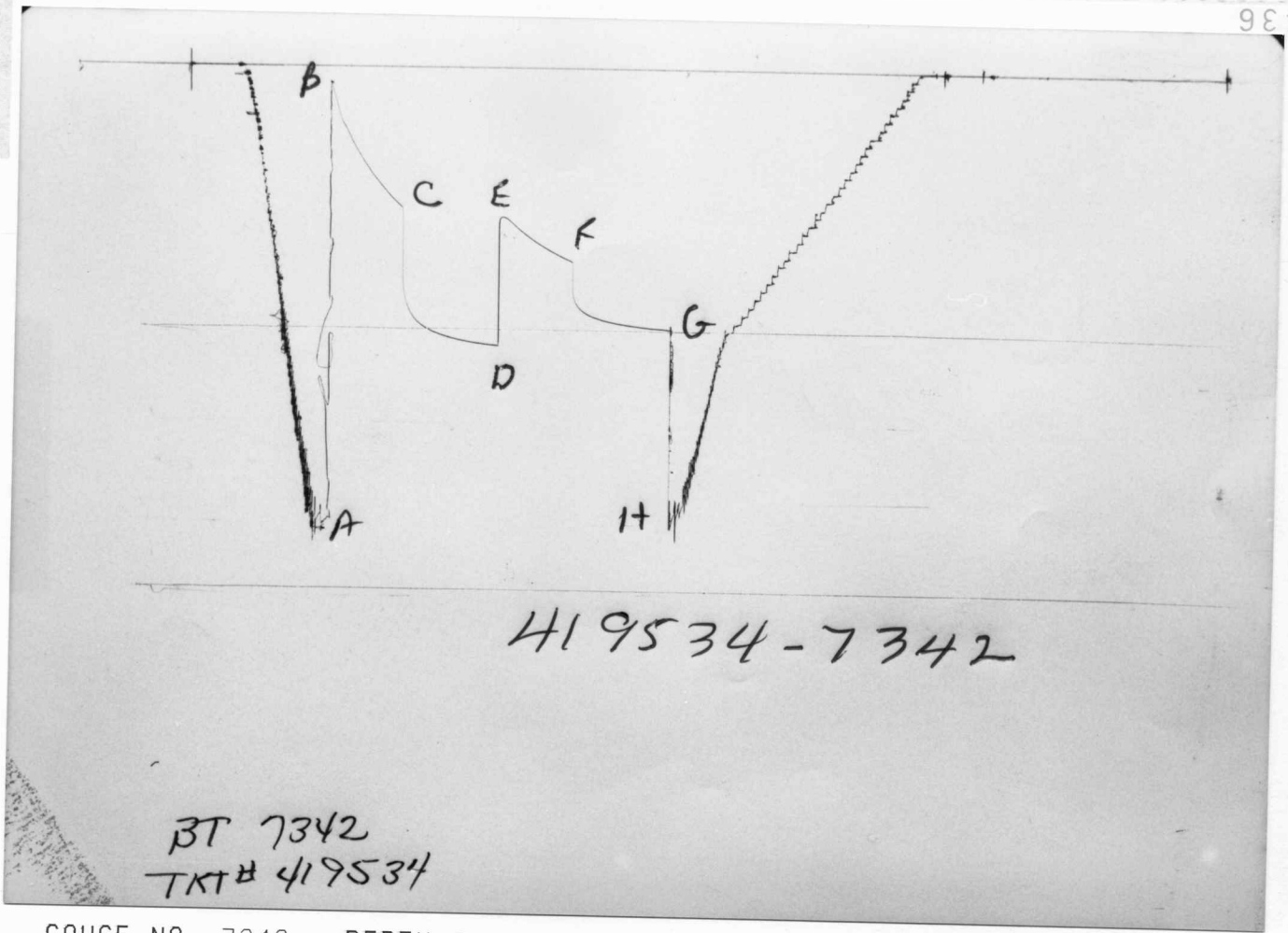
HALLIBURTON
SERVICES

TICKET NO. 41953400
07-OCT-86
HAYS

FORMATION TESTING SERVICE REPORT

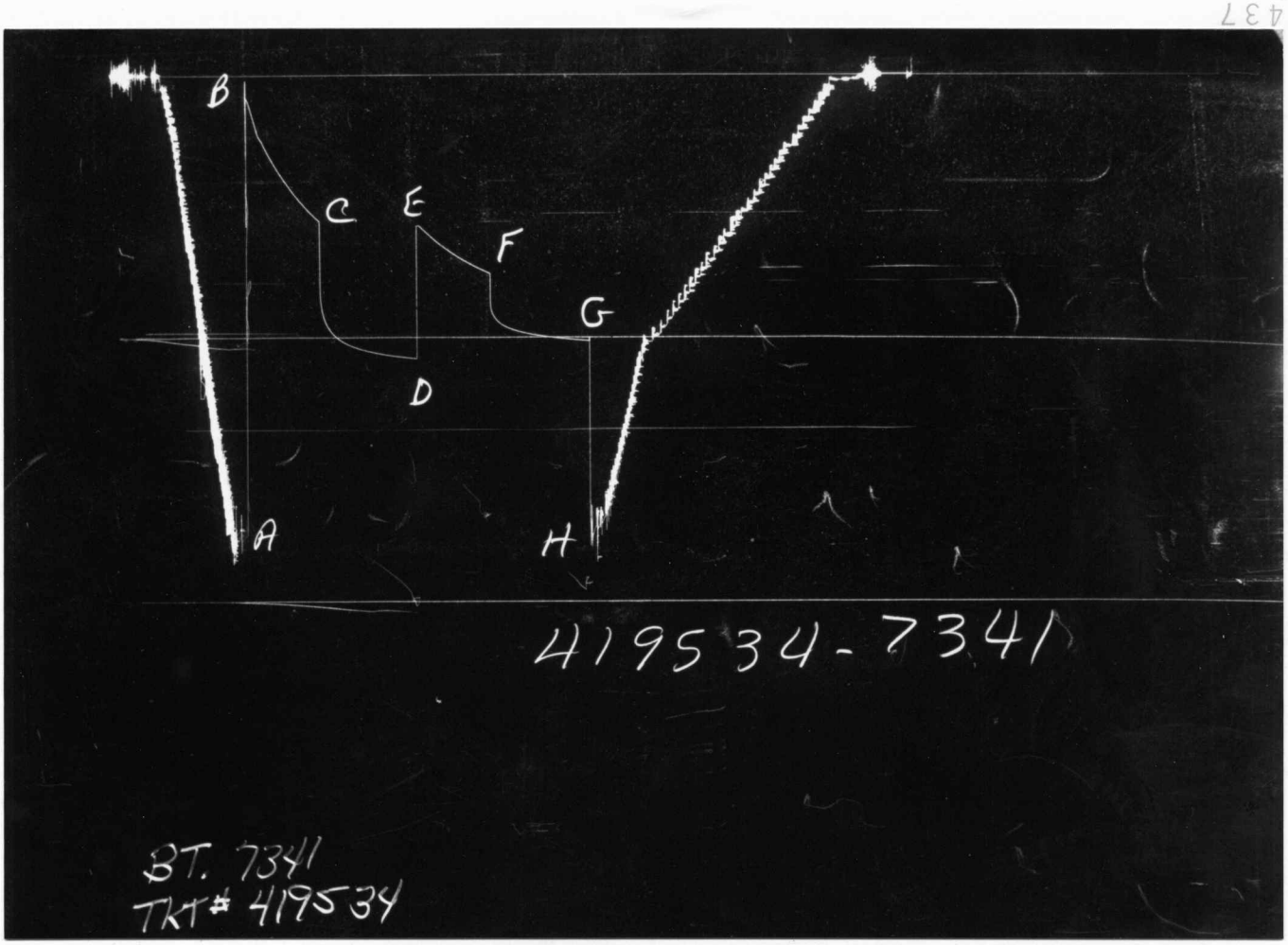
JOHNSON "B"	1	3	3487.0 - 3515.0	K & E PETROLEUM INCORPORATED
LEASE NAME	WELL NO.	TEST NO.	TESTED INTERVAL	LEASE OWNER/COMPANY NAME

LEGAL LOCATION SEC. - TWP. - RNG.	FIELD AREA	COUNTY	STATE
33-6-21		GRAHAM	KANSAS OR



GAUGE NO: 7342 DEPTH: 3474.0 BLANKED OFF: NO HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC		1713.5			
B	INITIAL FIRST FLOW		60.2	44.0	44.5	F
C	FINAL FIRST FLOW		535.0			
C	INITIAL FIRST CLOSED-IN		535.0	60.0	59.0	C
D	FINAL FIRST CLOSED-IN		1057.8			
E	INITIAL SECOND FLOW		567.2	45.0	45.0	F
F	FINAL SECOND FLOW		734.4			
F	INITIAL SECOND CLOSED-IN		734.4	60.0	60.4	C
G	FINAL SECOND CLOSED-IN		991.2			
H	FINAL HYDROSTATIC		1699.7			



GAUGE NO: 7341 DEPTH: 3512.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	1714	1729.7			
B	INITIAL FIRST FLOW	75	86.3	44.0	44.5	F
C	FINAL FIRST FLOW	561	556.2			
C	INITIAL FIRST CLOSED-IN	561	556.2	60.0	59.0	C
D	FINAL FIRST CLOSED-IN	1081	1076.7			
E	INITIAL SECOND FLOW	561	573.8	45.0	45.0	F
F	FINAL SECOND FLOW	747	754.8			
F	INITIAL SECOND CLOSED-IN	747	754.8	60.0	60.4	C
G	FINAL SECOND CLOSED-IN	1006	1010.6			
H	FINAL HYDROSTATIC	1714	1714.9			

EQUIPMENT & HOLE DATA

FORMATION TESTED: KANSAS CITY "A"
NET PAY (ft): 3.0
GROSS TESTED FOOTAGE: 28.0
ALL DEPTHS MEASURED FROM: KELLY BUSHING
CASING PERFS. (ft): _____
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2235.0
TOTAL DEPTH (ft): 3515.0
PACKER DEPTH(S) (ft): 3481, 3487
FINAL SURFACE CHOKE (in): _____
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.50
MUD VISCOSITY (sec): 43
ESTIMATED HOLE TEMP. (°F): _____
ACTUAL HOLE TEMP. (°F): 96 @ 3510.0 ft

TICKET NUMBER: 41953400

DATE: 10-1-86 TEST NO: 3

TYPE DST: OPEN HOLE

HALLIBURTON CAMP: HAYS

TESTER: MEL CHILDERS

WITNESS: TIM PRIEST

DRILLING CONTRACTOR: ABERCROMBIE #4

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): 37.4 @ 60°F
GAS/OIL RATIO (cu.ft. per bbl): _____
GAS GRAVITY: _____

CUSHION DATA

TYPE	AMOUNT	WEIGHT

RECOVERED:

1921' OF CLEAN GASSY OIL
125' OF MUD CUT OIL (35% MUD)

MEASURED FROM TESTER VALVE

REMARKS:

TYPE & SIZE MEASURING DEVICE: ______________________

TICKET NO: 41953400

TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
10-1-86					
0913					TOOL ON BOTTOM
0916	.25BH				OPENED TOOL WITH A STRONG BLOW
					OFF BOTTOM OF BUCKET IN 1 1/2
					MINUTES
1000					CLOSED TOOL WITH A WEAK
					BUILDING BLOW. OFF BOTTOM OF
					BUCKET IN 20 MINUTES
1100					REOPENED TOOL WITH A STRONG BLOW
					OFF BOTTOM OF BUCKET IN 2 MIN.
1145					CLOSED TOOL WITH A WEAK BUILDING
					BLOW TO 3 1/2" IN BUCKET
1245					TOOL OFF BOTTOM

TICKET NO: 41953400

CLOCK NO: 4205 HOUR: 12

HALLIBURTON SERVICES

GAUGE NO: 7342

DEPTH: 3474.0

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	60.2			
	2	3.0	124.0	63.7		
	3	6.0	190.2	66.2		
	4	9.0	230.0	39.8		
	5	12.0	268.7	38.7		
	6	15.0	304.6	35.9		
	7	18.0	336.0	31.4		
	8	21.0	365.9	29.9		
	9	24.0	392.1	26.2		
	10	27.0	418.3	26.3		
	11	30.0	440.9	22.6		
	12	33.0	463.7	22.7		
	13	36.0	485.1	21.4		
	14	39.0	503.5	18.4		
	15	42.0	520.9	17.4		
C	16	44.5	535.0	14.1		
			FIRST CLOSED-IN			
C	1	0.0	535.0			
	2	1.0	864.6	329.6	1.0	1.656
	3	2.0	892.1	357.1	1.9	1.371
	4	3.0	910.9	375.9	2.8	1.198
	5	4.0	925.6	390.6	3.7	1.082
	6	5.0	936.8	401.8	4.5	0.993
	7	6.0	946.5	411.5	5.3	0.927
	8	7.0	955.1	420.1	6.0	0.869
	9	8.0	962.6	427.6	6.8	0.818
	10	9.0	969.5	434.5	7.5	0.775
	11	10.0	974.8	439.8	8.2	0.737
	12	12.0	984.4	449.4	9.5	0.672
	13	14.0	992.8	457.8	10.7	0.620
	14	16.0	999.8	464.8	11.8	0.578
	15	18.0	1006.5	471.5	12.8	0.540
	16	20.0	1011.3	476.3	13.8	0.508
	17	22.0	1016.0	481.0	14.7	0.480
	18	24.0	1020.7	485.7	15.6	0.456
	19	26.0	1025.2	490.2	16.4	0.433
	20	28.0	1027.6	492.6	17.2	0.414
	21	30.0	1031.4	496.4	17.9	0.395
	22	35.0	1038.1	503.1	19.6	0.356
	23	40.0	1043.8	508.8	21.1	0.325
	24	45.0	1048.8	513.8	22.4	0.299
	25	50.0	1052.6	517.6	23.6	0.277
	26	55.0	1056.3	521.3	24.6	0.258
D	27	59.0	1057.8	522.8	25.4	0.244
			SECOND FLOW			
E	1	0.0	567.2			

REF		MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
			SECOND FLOW - CONTINUED			
	2	3.0	568.6	1.4		
	3	6.0	578.2	9.6		
	4	9.0	593.8	15.7		
	5	12.0	611.1	17.3		
	6	15.0	626.2	15.0		
	7	18.0	640.3	14.1		
	8	21.0	654.5	14.2		
	9	24.0	666.9	12.4		
	10	27.0	679.0	12.1		
	11	30.0	689.3	10.3		
	12	33.0	699.5	10.1		
	13	36.0	709.2	9.8		
	14	39.0	719.0	9.8		
	15	42.0	727.4	8.5		
F	16	45.0	734.4	7.0		
			SECOND CLOSED-IN			
F	1	0.0	734.4			
	2	1.0	877.0	142.6	1.0	1.967
	3	2.0	893.6	159.2	2.0	1.655
	4	3.0	903.2	168.9	2.9	1.487
	5	4.0	911.2	176.8	3.8	1.371
	6	5.0	917.8	183.4	4.8	1.274
	7	6.0	922.5	188.1	5.6	1.203
	8	7.0	927.5	193.1	6.5	1.139
	9	8.0	931.4	197.0	7.3	1.086
	10	9.0	934.5	200.2	8.1	1.042
	11	10.0	938.3	203.9	9.0	0.999
	12	12.0	943.5	209.1	10.6	0.928
	13	14.0	947.5	213.2	12.1	0.870
	14	16.0	951.7	217.3	13.5	0.821
	15	18.0	956.4	222.0	15.0	0.777
	16	20.0	959.0	224.6	16.3	0.739
	17	22.0	961.1	226.7	17.6	0.706
	18	24.0	964.1	229.7	18.9	0.675
	19	26.0	966.6	232.2	20.1	0.648
	20	28.0	968.6	234.2	21.3	0.623
	21	30.0	971.1	236.8	22.5	0.601
	22	35.0	975.8	241.4	25.2	0.551
	23	40.0	979.5	245.1	27.6	0.511
	24	45.0	982.9	248.6	30.0	0.476
	25	50.0	986.8	252.5	32.1	0.446
	26	55.0	988.1	253.8	34.1	0.420
G	27	60.4	991.2	256.8	36.1	0.395

REMARKS:

TICKET NO: 41953400

CLOCK NO: 3930 HOUR: 12

HALLIBURTON SERVICES

GAUGE NO: 7341

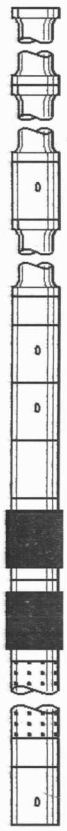
DEPTH: 3512.0

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	86.3			
2	3.0	133.8	47.6		
3	6.0	200.4	66.6		
4	9.0	246.7	46.3		
5	12.0	284.6	37.9		
6	15.1	320.2	35.6		
7	18.0	352.0	31.7		
8	21.0	382.0	30.1		
9	24.0	409.6	27.6		
10	27.0	435.5	25.8		
11	30.0	459.5	24.0		
12	33.0	483.2	23.7		
13	36.0	503.7	20.6		
14	39.0	517.2	13.5		
15	42.0	535.3	18.1		
C 16	44.5	556.2	21.0		
		FIRST CLOSED-IN			
C 1	0.0	556.2			
2	1.0	887.8	331.5	1.0	1.643
3	2.0	915.9	359.6	1.9	1.367
4	3.0	934.0	377.7	2.8	1.203
5	4.0	948.7	392.5	3.7	1.086
6	5.0	959.2	403.0	4.5	0.999
7	6.0	969.4	413.2	5.3	0.925
8	7.0	976.9	420.7	6.1	0.865
9	8.0	983.4	427.2	6.8	0.819
10	9.0	989.5	433.3	7.5	0.774
11	10.0	995.9	439.6	8.2	0.736
12	12.0	1005.4	449.2	9.5	0.673
13	14.0	1014.0	457.7	10.7	0.621
14	16.0	1020.1	463.9	11.8	0.578
15	18.0	1025.7	469.4	12.8	0.541
16	20.0	1030.6	474.4	13.8	0.509
17	22.0	1035.4	479.1	14.7	0.481
18	24.0	1039.8	483.6	15.6	0.455
19	26.0	1043.7	487.5	16.4	0.434
20	28.0	1046.7	490.4	17.2	0.414
21	30.0	1050.0	493.7	17.9	0.396
22	35.0	1056.5	500.2	19.6	0.357
23	40.0	1061.9	505.7	21.1	0.325
24	45.0	1066.6	510.3	22.4	0.299
25	50.0	1070.6	514.3	23.6	0.277
26	55.0	1074.1	517.9	24.6	0.258
D 27	59.0	1076.7	520.5	25.4	0.244
		SECOND FLOW			
E 1	0.0	573.8			

REF	MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t+\Delta t}$	$\log \frac{t+\Delta t}{\Delta t}$
	SECOND FLOW - CONTINUED				
2	3.0	580.3	6.5		
3	6.0	597.9	17.6		
4	9.0	616.0	18.1		
5	12.0	631.5	15.5		
6	15.0	646.7	15.1		
7	18.0	660.8	14.1		
8	21.0	673.8	13.0		
9	24.0	686.2	12.4		
10	27.0	697.9	11.6		
11	30.0	708.9	11.1		
12	33.0	719.2	10.3		
13	36.0	729.0	9.8		
14	39.0	738.5	9.6		
15	42.0	747.3	8.7		
F 16	45.0	754.8	7.5		
		SECOND CLOSED-IN			
F 1	0.0	754.8			
2	1.0	900.4	145.6	1.0	1.967
3	2.0	916.0	161.2	2.0	1.651
4	3.0	924.8	170.0	2.9	1.490
5	4.0	933.3	178.5	3.8	1.368
6	5.0	939.7	184.9	4.8	1.275
7	6.0	943.6	188.8	5.6	1.205
8	7.0	948.8	194.0	6.5	1.138
9	8.0	952.2	197.4	7.3	1.088
10	9.0	955.5	200.7	8.2	1.039
11	10.0	959.0	204.2	9.0	0.999
12	12.0	964.3	209.5	10.6	0.929
13	14.0	968.5	213.7	12.1	0.870
14	16.0	972.1	217.3	13.6	0.818
15	18.0	976.0	221.2	15.0	0.776
16	20.0	978.6	223.8	16.3	0.739
17	22.0	981.4	226.6	17.7	0.705
18	24.0	984.0	229.2	19.0	0.675
19	26.0	986.5	231.7	20.2	0.648
20	28.0	988.5	233.7	21.3	0.623
21	30.0	990.7	235.9	22.5	0.601
22	35.0	994.6	239.9	25.1	0.552
23	40.0	999.3	244.5	27.7	0.510
24	45.0	1002.3	247.5	30.0	0.476
25	50.0	1005.3	250.5	32.1	0.446
26	55.0	1008.0	253.2	34.1	0.420
G 27	60.4	1010.6	255.8	36.1	0.395

REMARKS:

TICKET NO. 41953400



		O.D.	I.D.	LENGTH	DEPTH
1	DRILL PIPE.....	4.500	3.826	2860.5	
4	FLEX WEIGHT.....	4.500	2.950	346.7	
50	IMPACT REVERSING SUB.....	5.750	2.750	1.0	3208.0
4	FLEX WEIGHT.....	4.500	2.950	252.9	
5	CROSSOVER.....	5.000	2.950	1.0	
12	DUAL CIP VALVE.....	5.000	0.870	6.0	
60	HYDROSPRING TESTER.....	5.000	0.750	5.0	3472.0
80	AP RUNNING CASE.....	5.000	2.250	4.1	3474.0
70	OPEN HOLE PACKER.....	6.750	1.530	5.8	3481.0
70	OPEN HOLE PACKER.....	6.750	1.530	5.8	3487.0
20	FLUSH JOINT ANCHOR.....	5.000	2.370	20.4	
83	HT-500 TEMPERATURE CASE.....	5.000		1.5	3510.0
81	BLANKED-OFF RUNNING CASE.....	5.000		4.3	3512.0
	TOTAL DEPTH				3515.0

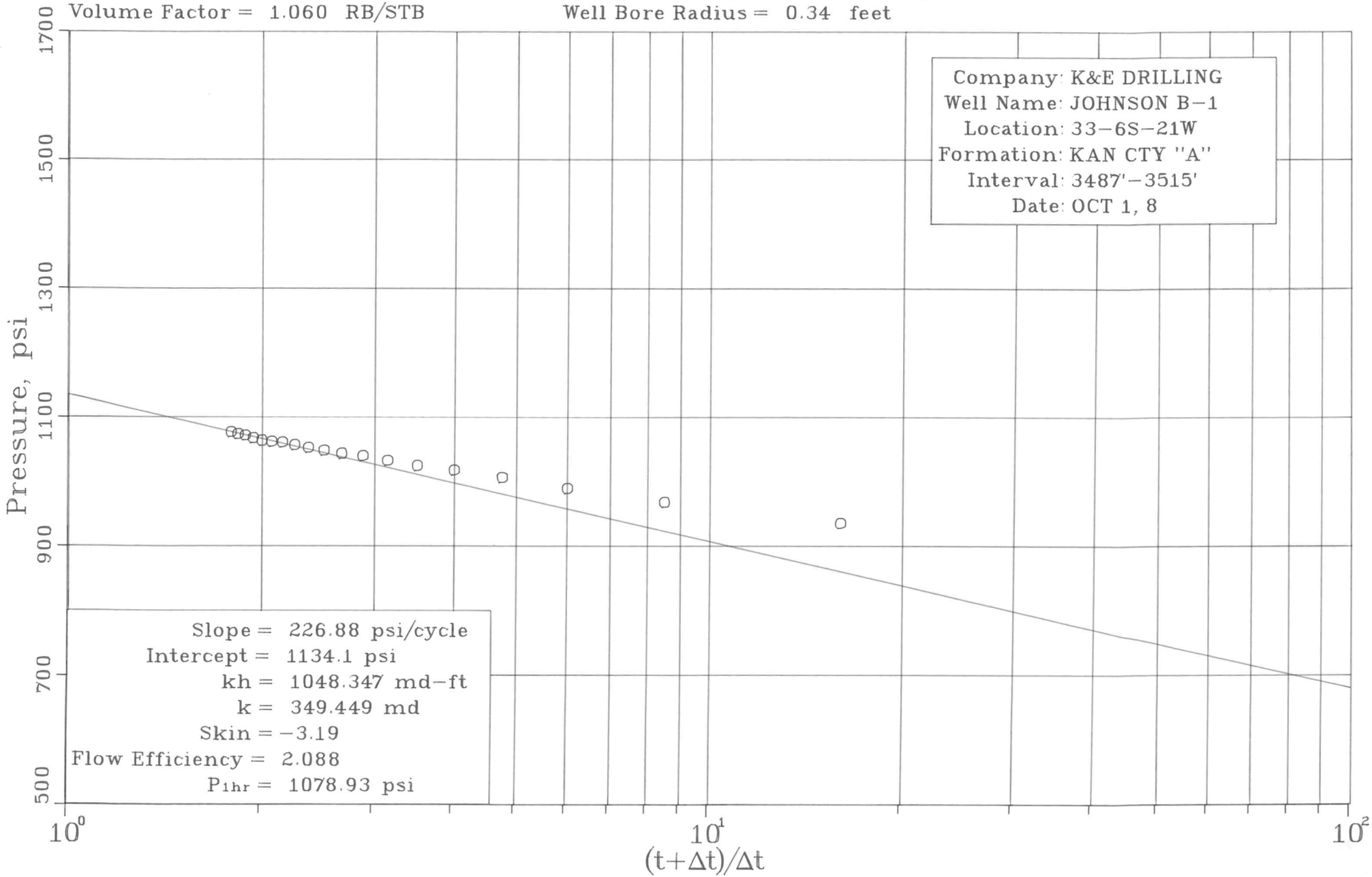
EQUIPMENT DATA

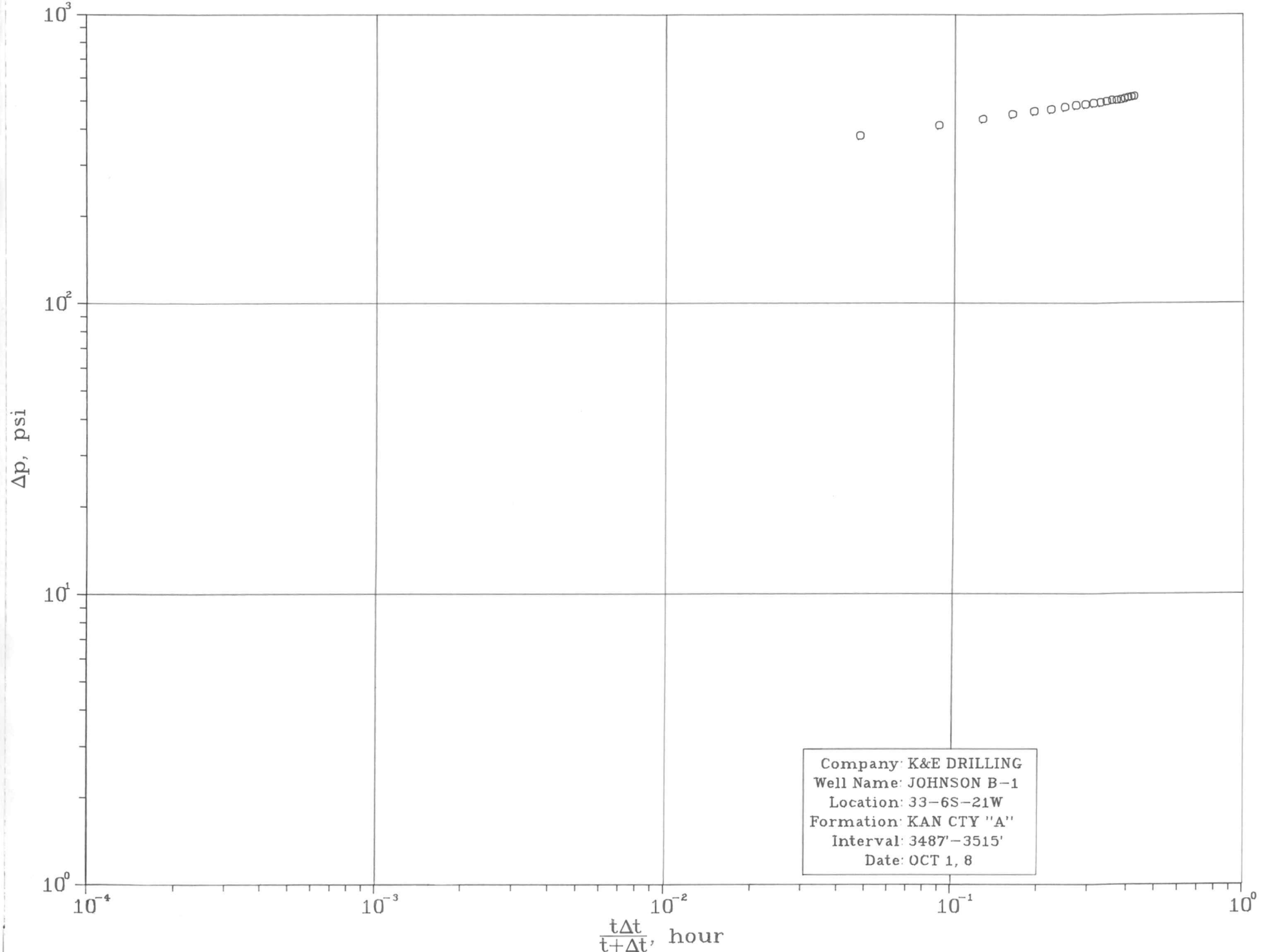
INITAL

End Points = 1.789 1.882
Oil Flow Rate = 345.000 BOPD
Volume Factor = 1.060 RB/STB

Viscosity = 4.000 cp
Compressibility = 2.50×10^{-5} 1/psi
Well Bore Radius = 0.34 feet

Porosity = 0.15
Net Pay = 3. feet




10^3
10^2
10^1
10^0
Δp, psi
10^{-4}
10^{-3}
10^{-2}
10^{-1}
10^0
$\frac{t\Delta t}{t+\Delta t}$, hour
Company: K&E DRILLING
Well Name: JOHNSON B-1
Location: 33-6S-21W
Formation: KAN CTY "A"
Interval: 3487'-3515'
Date: OCT 1, 8

PANL 10/02/86

WELL IDENTIFICATION
****

K&E DRILLING
JOHNSON B-1
33-6S-21W
KAN CTY "A"
3487'-3515'
OCT 1, 8

1 CIP

TEST INFORMATION
****

TEST TYPE . . . . . BUILD UP
WELL TYPE . . . . . OIL
FLOW TIME . . . . . 0.8 HOURS

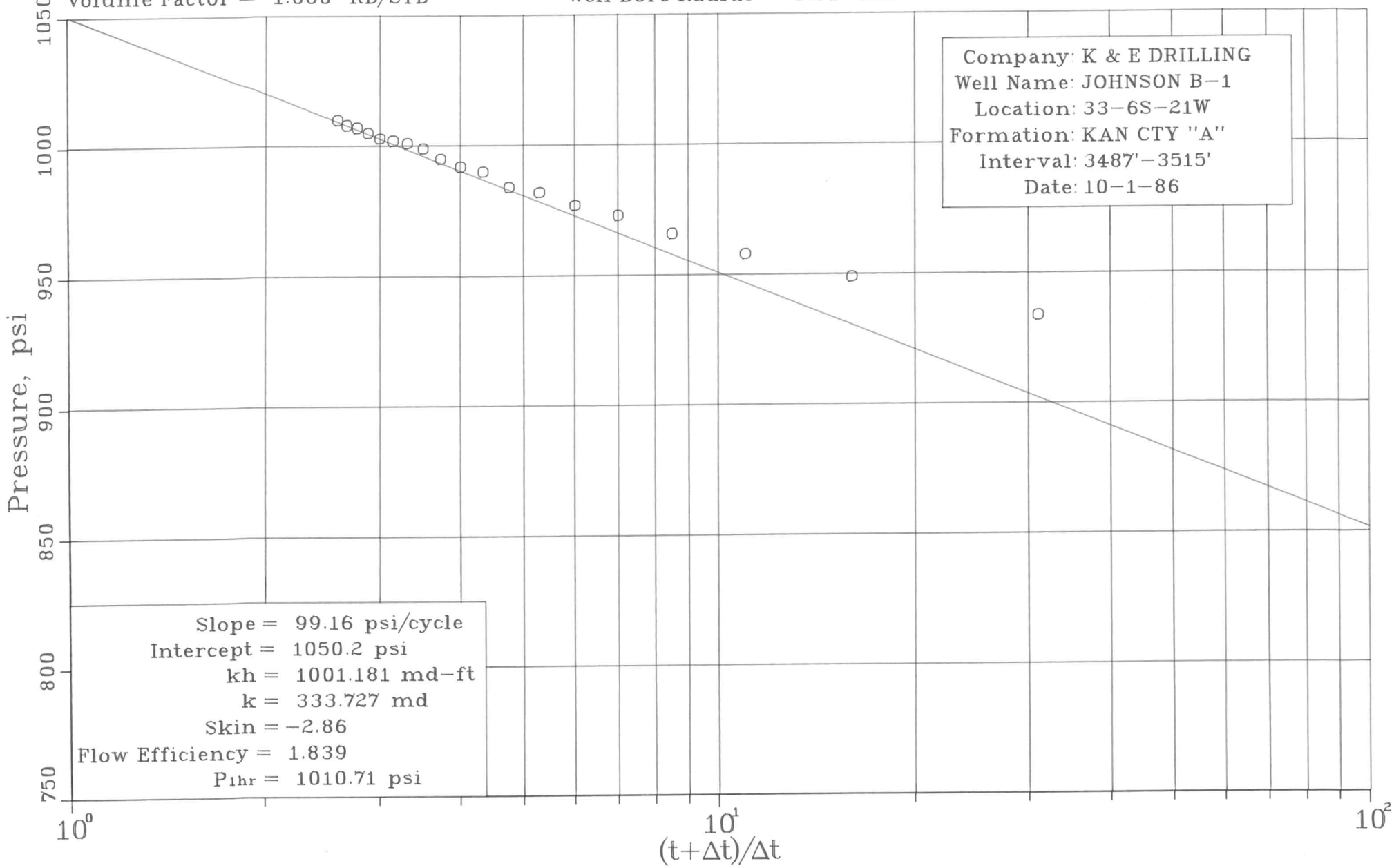
DT (HOUR)	SQRT DT	(T+DT)/DT	P (PSI)	DP (PSI)
0.002	0.041	451.000	556.00	0.0
0.050	0.224	16.000	936.00	380.00
0.100	0.316	8.500	969.00	413.00
0.150	0.387	6.000	990.00	434.00
0.200	0.447	4.750	1007.00	451.00
0.250	0.500	4.000	1018.00	462.00
0.300	0.548	3.500	1025.00	469.00
0.350	0.592	3.143	1033.00	477.00
0.400	0.632	2.875	1040.00	484.00
0.450	0.671	2.667	1044.00	488.00
0.500	0.707	2.500	1049.00	493.00
0.550	0.742	2.364	1053.00	497.00
0.600	0.775	2.250	1057.00	501.00
0.650	0.806	2.154	1061.00	505.00
0.700	0.837	2.071	1062.00	506.00
0.750	0.866	2.000	1064.00	508.00
0.800	0.894	1.937	1068.00	512.00
0.850	0.922	1.882	1072.00	516.00
0.900	0.949	1.833	1074.00	518.00
0.950	0.975	1.789	1077.00	521.00

FINAL

End Points = 2.579 2.765
Oil Flow Rate = 144.000 BOPD
Volume Factor = 1.060 RB/STB

Viscosity = 4.000 cp
Compressibility = 2.50×10^{-5} 1/psi
Well Bore Radius = 0.34 feet

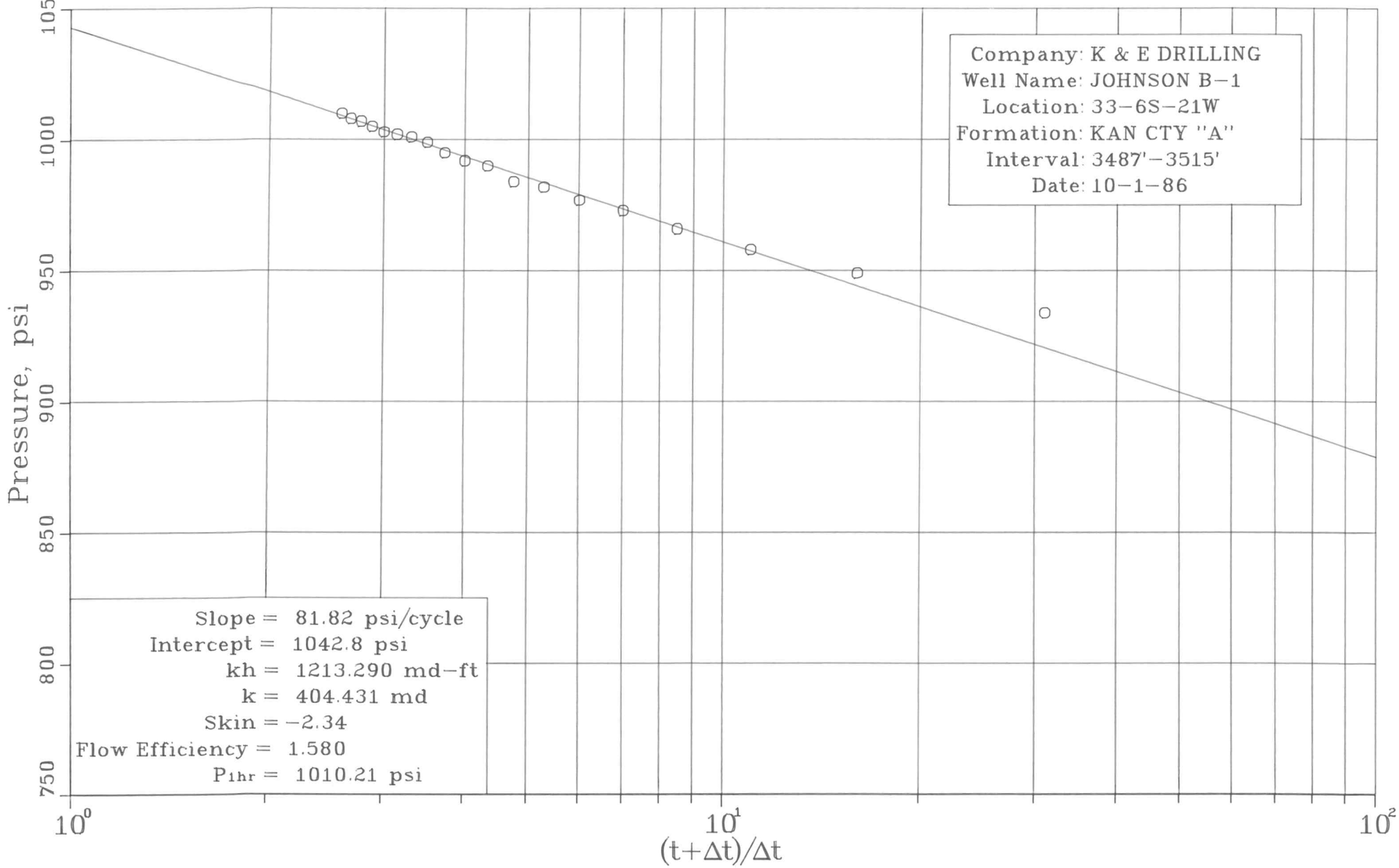
Porosity = 0.15
Net Pay = 3. feet

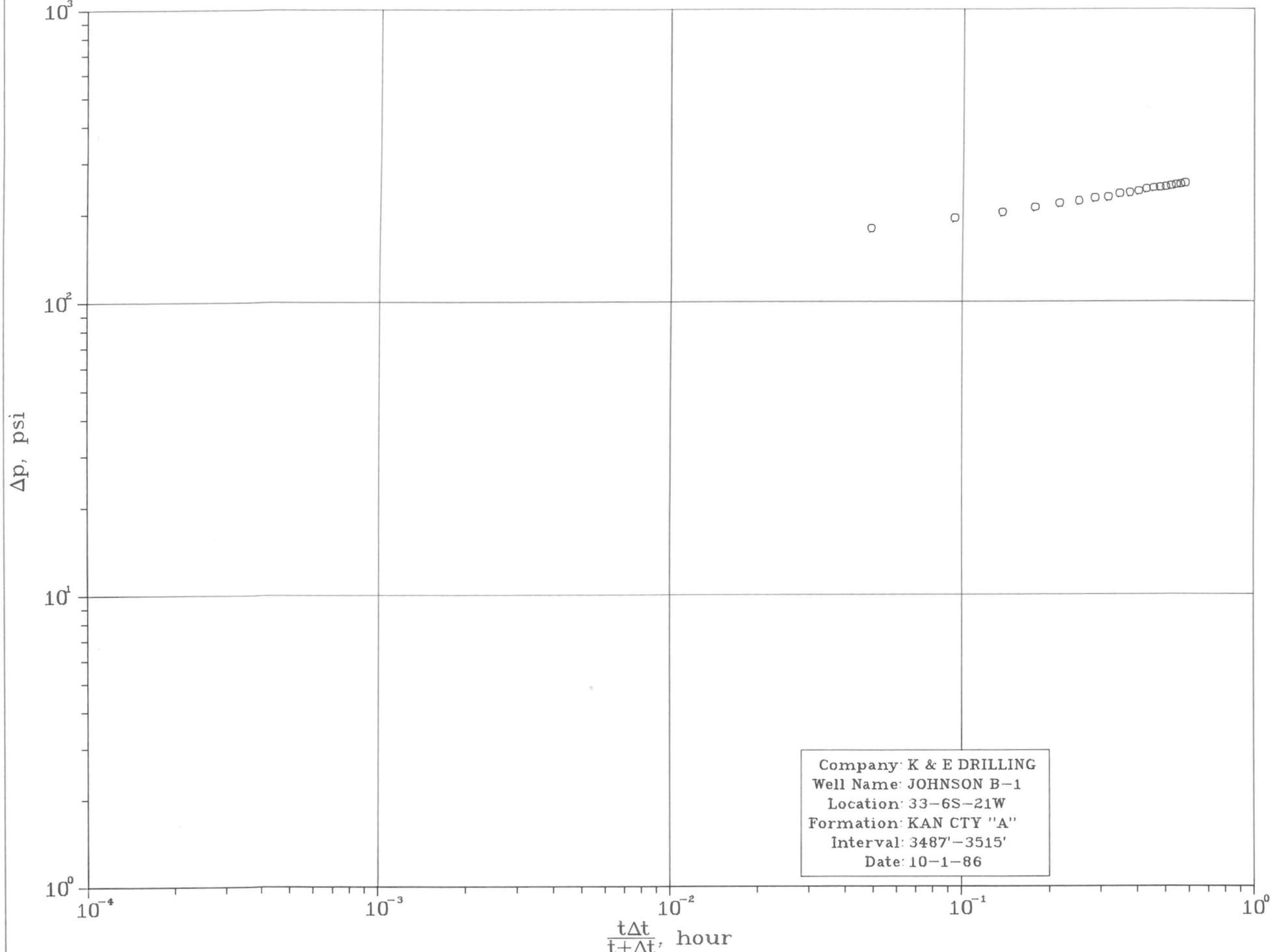


End Points = 3.000 3.727
Oil Flow Rate = 144.000 BOPD
Volume Factor = 1.060 RB/STB

Viscosity = 4.000 cp
Compressibility = 2.50×10^{-5} 1/psi
Well Bore Radius = 0.34 feet

Porosity = 0.15
Net Pay = 3. feet




10^3
10^2
10^1
10^0
Δp, psi
10^{-4}
10^{-3}
10^{-2}
10^{-1}
10^0
$\frac{t\Delta t}{t+\Delta t}$, hour
Company: K & E DRILLING
Well Name: JOHNSON B-1
Location: 33-6S-21W
Formation: KAN CTY "A"
Interval: 3487'-3515'
Date: 10-1-86

PANL 10/02/86

WELL IDENTIFICATION
****

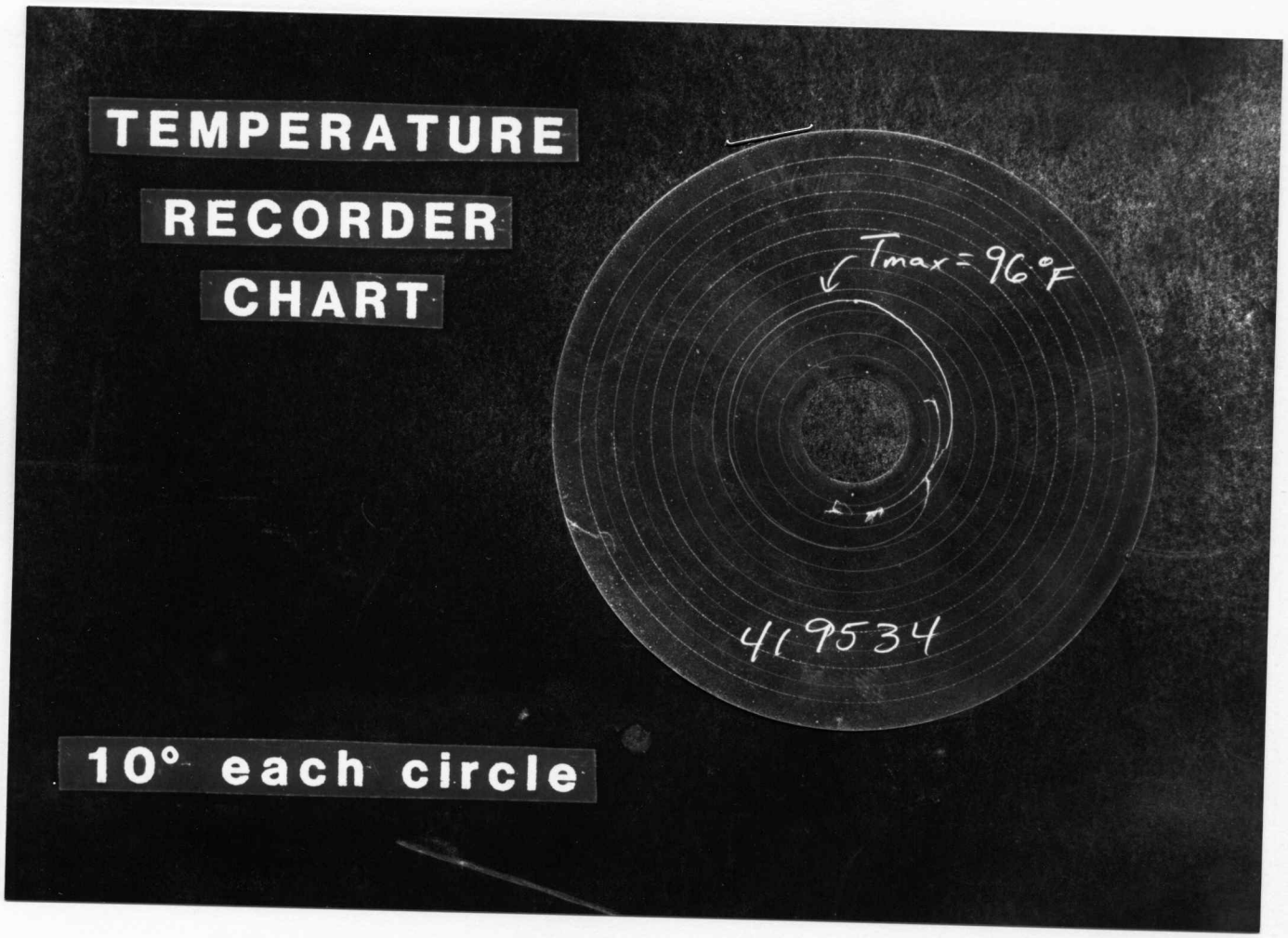
K & E DRILLING
JOHNSON B-1
33-6S-21W
KAN CTY "A"
3487'-3515'
10-1-86

2-CIP

TEST INFORMATION
****

TEST TYPE . . . . . BUILD UP
WELL TYPE . . . . . OIL
FLOW TIME . . . . . 1.5 HOURS

DT (HOUR)	SQRT DT	(T+DT)/DT	P (PSI)	DP (PSI)
0.002	0.041	900.999	756.00	0.0
0.050	0.224	31.000	934.00	178.00
0.100	0.316	16.000	949.00	193.00
0.150	0.387	11.000	958.00	202.00
0.200	0.447	8.500	966.00	210.00
0.250	0.500	7.000	973.00	217.00
0.300	0.548	6.000	977.00	221.00
0.350	0.592	5.286	982.00	226.00
0.400	0.632	4.750	984.00	228.00
0.450	0.671	4.333	990.00	234.00
0.500	0.707	4.000	992.00	236.00
0.550	0.742	3.727	995.00	239.00
0.600	0.775	3.500	999.00	243.00
0.650	0.806	3.308	1001.00	245.00
0.700	0.837	3.143	1002.00	246.00
0.750	0.866	3.000	1003.00	247.00
0.800	0.894	2.875	1005.00	249.00
0.850	0.922	2.765	1007.00	251.00
0.900	0.949	2.667	1008.00	252.00
0.950	0.975	2.579	1010.00	254.00



EQUATIONS FOR DST GAS WELL ANALYSIS

Indicated Flow Capacity	$kh = \frac{.001637\ Q_g\ T}{m}$	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

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HALLIBURTON SERVICES

TICKET NO. 41953500

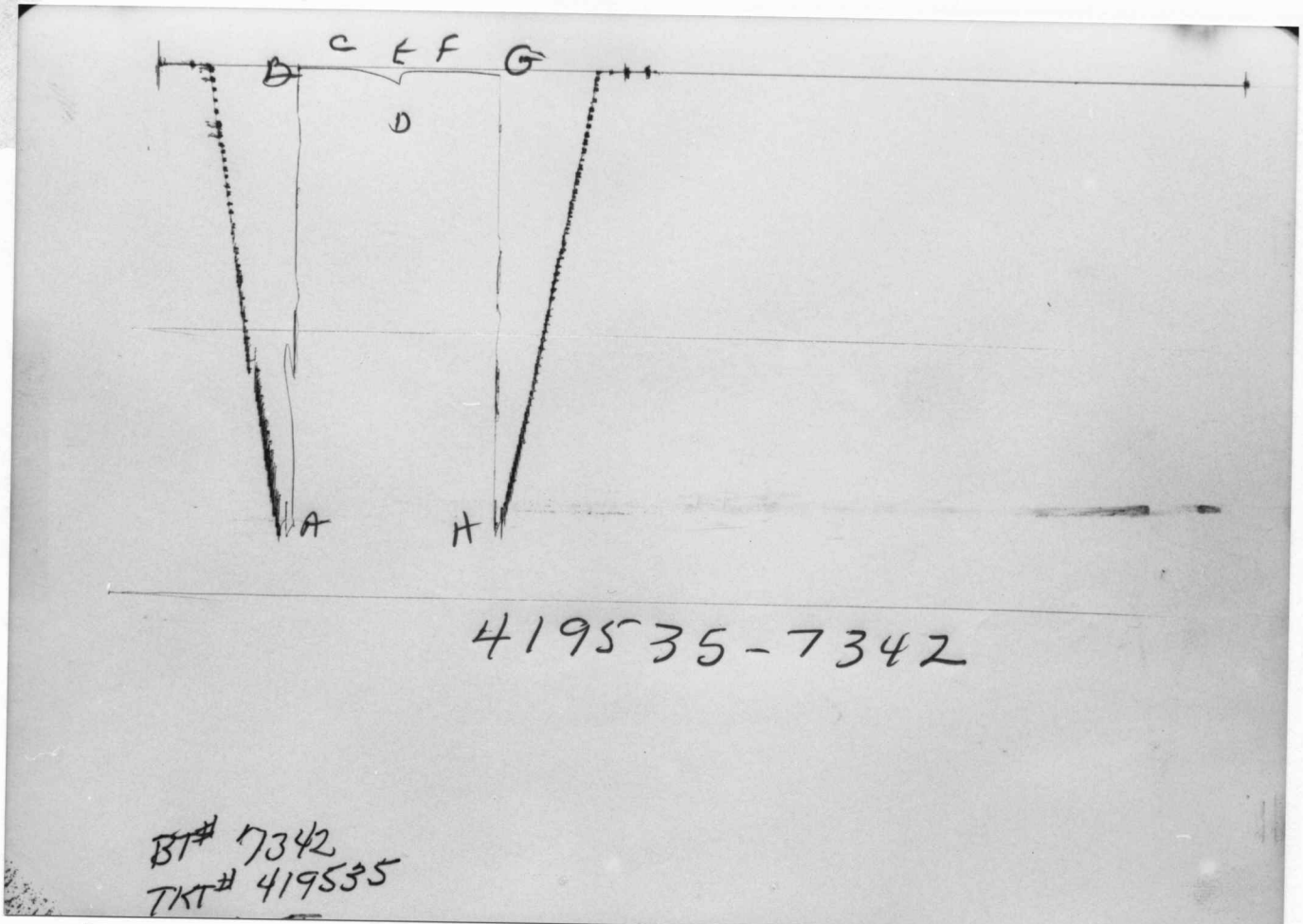
06-OCT-86

HAYS

FORMATION TESTING SERVICE REPORT

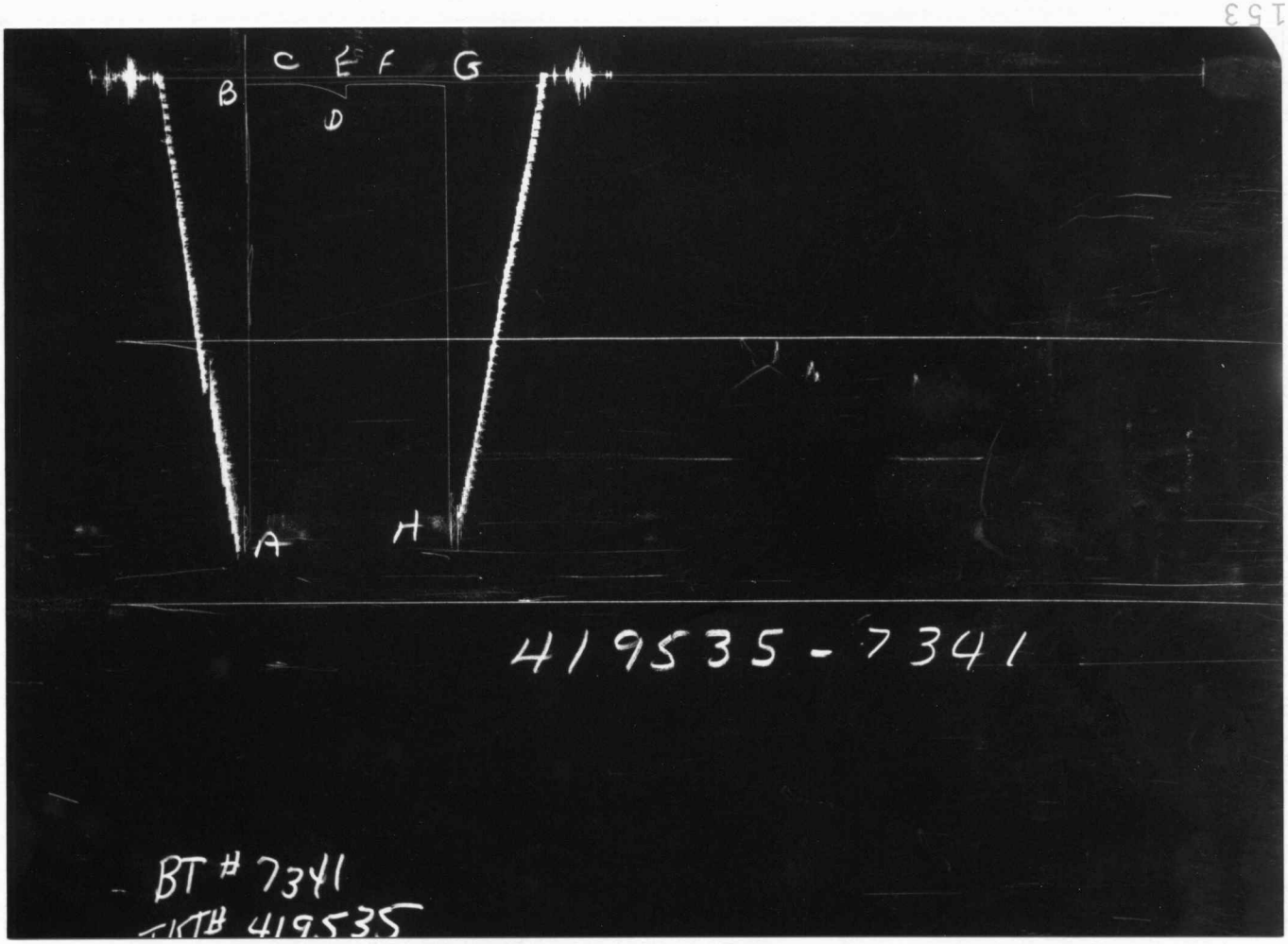
LEASE NAME	JOHNSON "B"
WELL NO.	1
TEST NO.	4
TESTED INTERVAL	3514.0 - 3540.0
LEASE OWNER/COMPANY NAME	K & E PETROLEUM INCORPORATED
LEGAL LOCATION SEC. - TWP. - RNG.	33-6-21
FIELD AREA	
COUNTY	GRAHAM
STATE	KANSAS DR

WELL FILE



GAUGE NO: 7342 DEPTH: 3501.0 BLANKED OFF: NO HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC		1736.5			
B	INITIAL FIRST FLOW		7.8	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		61.3			
E	INITIAL SECOND FLOW		47.7	30.0	30.0	F
F	FINAL SECOND FLOW		12.0			
F	INITIAL SECOND CLOSED-IN		12.0	30.0	30.0	C
G	FINAL SECOND CLOSED-IN		20.6			
H	FINAL HYDROSTATIC		1705.1			



GAUGE NO: 7341 DEPTH: 3537.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	1751	1750.9			
B	INITIAL FIRST FLOW	19	24.6	30.0	30.0	F
C	FINAL FIRST FLOW	19	24.6			
C	INITIAL FIRST CLOSED-IN	19	24.6	30.0	30.0	C
D	FINAL FIRST CLOSED-IN	75	81.3			
E	INITIAL SECOND FLOW	19	36.5	30.0	30.0	F
F	FINAL SECOND FLOW	19	27.4			
F	INITIAL SECOND CLOSED-IN	19	27.4	30.0	30.0	C
G	FINAL SECOND CLOSED-IN	37	36.7			
H	FINAL HYDROSTATIC	1733	1715.2			

EQUIPMENT & HOLE DATA

FORMATION TESTED: _____
NET PAY (ft): 3.0
GROSS TESTED FOOTAGE: 26.0
ALL DEPTHS MEASURED FROM: KELLY BUSHING
CASING PERFS. (ft): _____
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2235.0
TOTAL DEPTH (ft): 3540.0
PACKER DEPTH(S) (ft): 3508, 3514
FINAL SURFACE CHOKE (in): _____
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.30
MUD VISCOSITY (sec): 46
ESTIMATED HOLE TEMP. (°F): _____
ACTUAL HOLE TEMP. (°F): 95 @ 3535.0 ft

TICKET NUMBER: 41953500

DATE: 10-2-86 TEST NO: 4

TYPE DST: OPEN HOLE

HALLIBURTON CAMP: HAYS

TESTER: MEL CHILDERS

WITNESS: TIM PRIEST

DRILLING CONTRACTOR: ABERCROMBIE #4

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' OF MUD

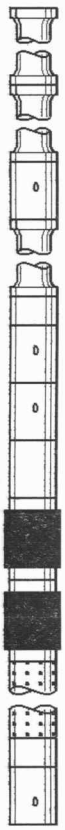
MEASURED FROM TESTER VALVE

REMARKS:

TYPE & SIZE MEASURING DEVICE: ______________________ | TICKET NO: 41953500

TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
10-1-86					
2300	.25BH				TOOL ON BOTTOM
2313					OPENED TOOL WITH A WEAK BLOW
					DIED IN 10 MINUTES
2343					CLOSED TOOL WITH NO BLOW
10-2-86					
0013					OPENED TOOL WITH NO BLOW
0043					CLOSED TOOL WITH NO BLOW
0113					TOOL OFF BOTTOM

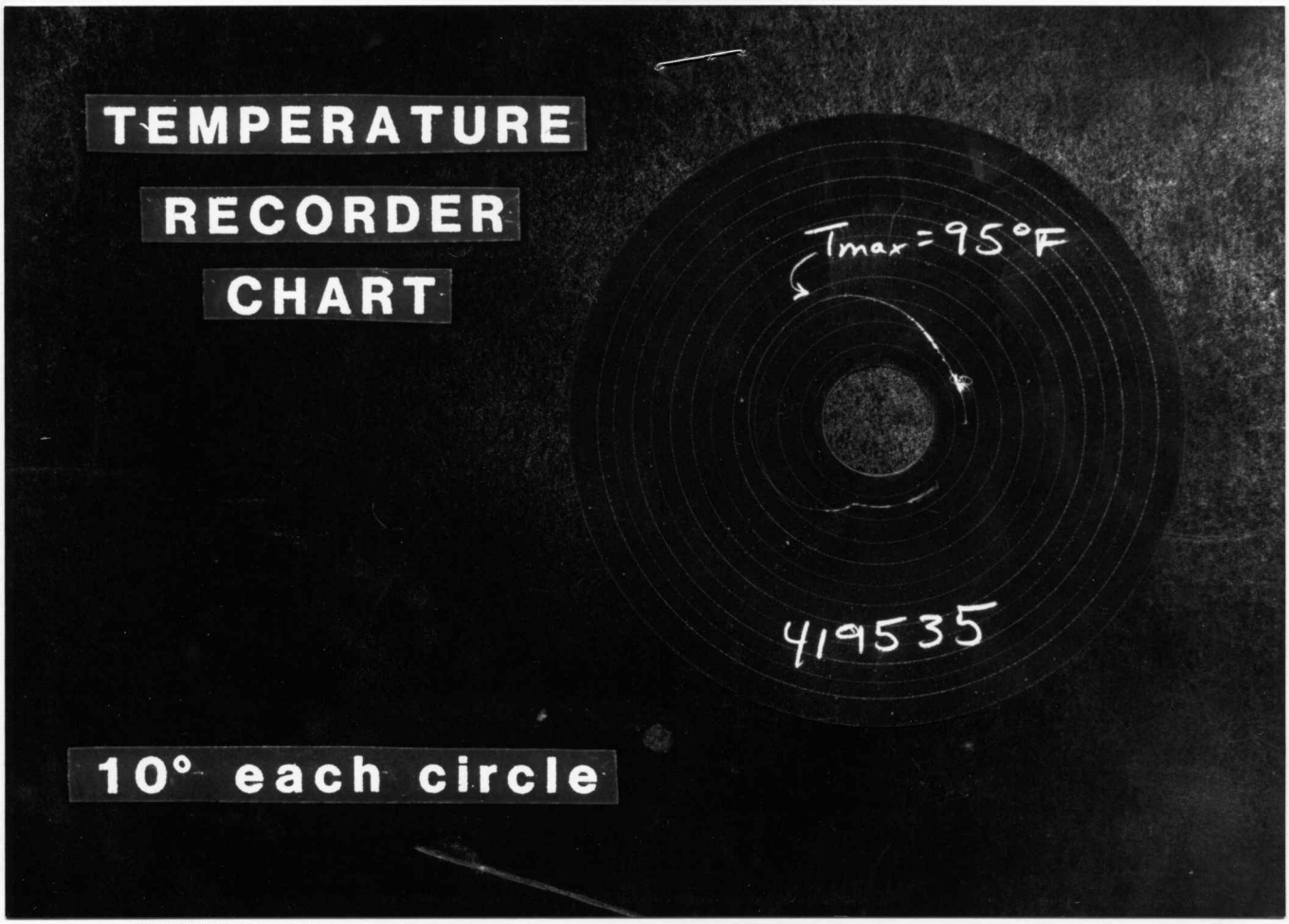
TICKET NO. 41953500



		O.D.	I.D.	LENGTH	DEPTH
1	DRILL PIPE.....	4.500	3.826	2887.5	
4	FLEX WEIGHT.....	4.500	2.950	346.7	
50	IMPACT REVERSING SUB.....	5.750	2.750	1.0	3235.0
4	FLEX WEIGHT.....	4.500	2.950	252.9	
5	CROSSOVER.....	5.000	2.950	1.0	
12	DUAL CIP VALVE.....	5.000	0.870	6.0	
60	HYDROSPRING TESTER.....	5.000	0.750	5.0	3499.0
80	AP RUNNING CASE.....	5.000	2.250	4.1	3501.0
70	OPEN HOLE PACKER.....	6.750	1.530	5.8	3508.0
70	OPEN HOLE PACKER.....	6.750	1.530	5.8	3514.0
20	FLUSH JOINT ANCHOR.....	5.000	2.370	18.4	
83	HT-500 TEMPERATURE CASE.....	5.000		1.5	3535.0
81	BLANKED-OFF RUNNING CASE.....	5.000		4.3	3537.0

TOTAL DEPTH 3540.0

EQUIPMENT DATA



EQUATIONS FOR DST GAS WELL ANALYSIS

Indicated Flow Capacity	$kh = \frac{.001637\ Q_g\ T}{m}$	md-ft
Average Effective Permeability	$k = \frac{kh}{h}$	md
Skin Factor	$S = 1.151 \left[\frac{m(P^*)-m(P_f)}{m} - LOG \left(\frac{k\ (t/60)}{\phi\ \mu\ c_t r_w^2} \right) + 3.23 \right]$	
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

035

LEASE NAME	WELL NO.	TEST NO.	TESTED INTERVAL	LEASE OWNER/COMPANY NAME
JOHNSON "B"	1	5	3537.0 - 3565.0	K & E PETROLEUM, INCORPORATED

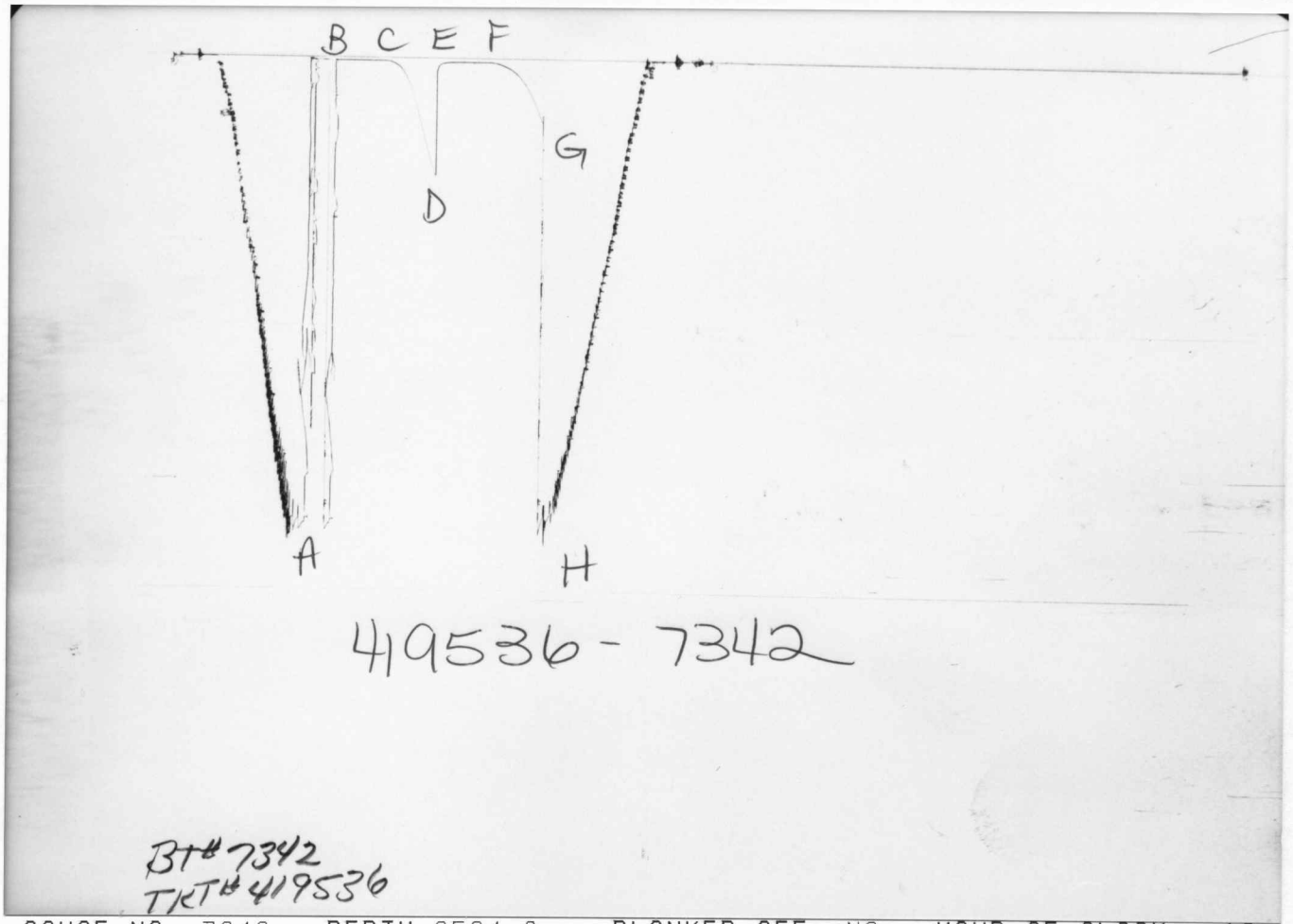
LEGAL LOCATION SEC. - TWP. - RNG.	FIELD AREA	COUNTY	STATE
33 - 6 - 21		GRAHAM	KANSAS PW

TICKET NO. 41953600

06-OCT-86

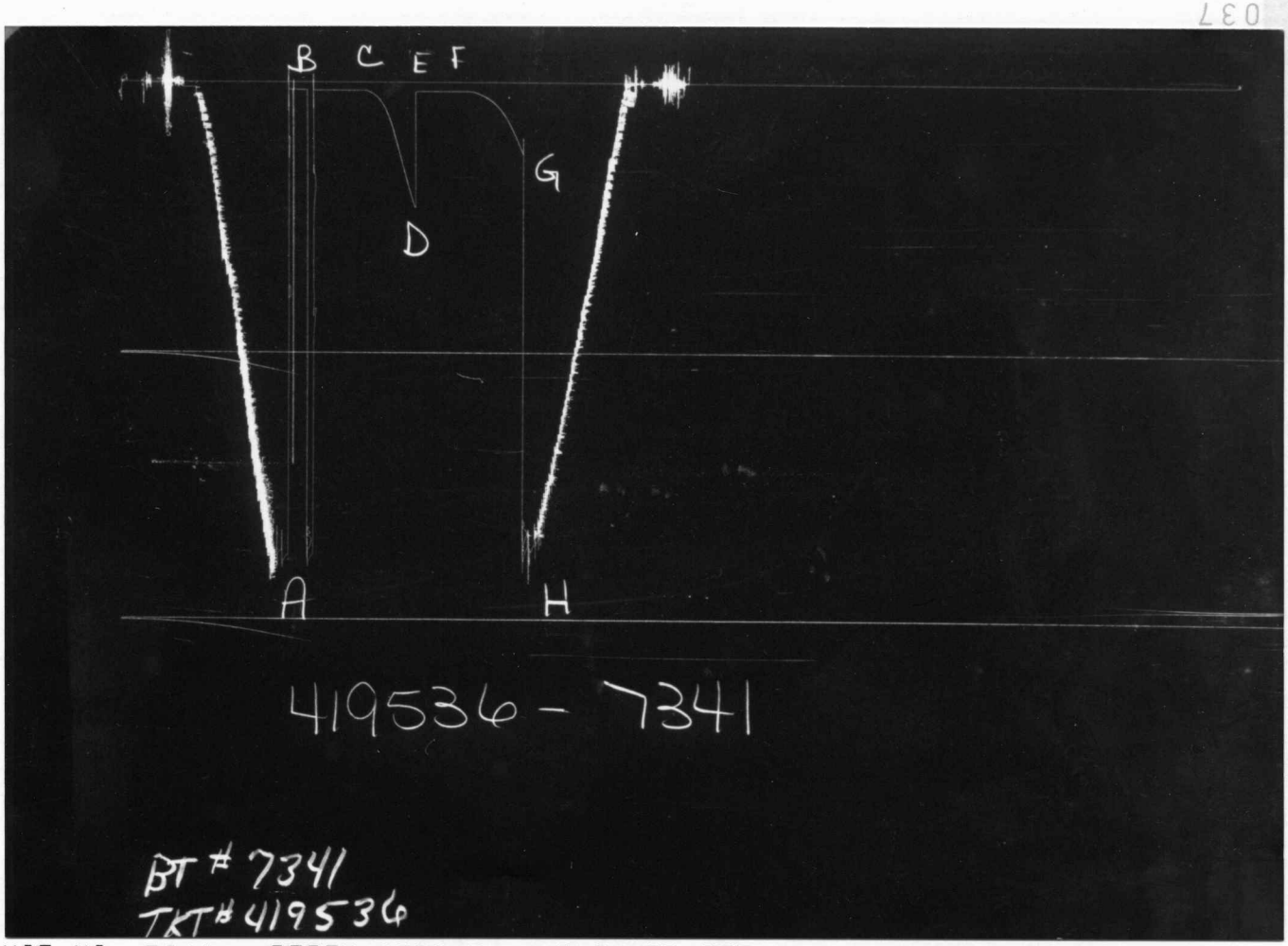
HAYS

FORMATION TESTING SERVICE REPORT



GAUGE NO: 7342 DEPTH: 3524.0 BLANKED OFF: NO HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC		1748.1			
B	INITIAL FIRST FLOW		11.2	30.0	30.0	F
C	FINAL FIRST FLOW		11.2			
C	INITIAL FIRST CLOSED-IN		11.2	30.0	30.0	C
D	FINAL FIRST CLOSED-IN		441.6			
E	INITIAL SECOND FLOW		45.5	30.0	30.0	F
F	FINAL SECOND FLOW		14.7			
F	INITIAL SECOND CLOSED-IN		14.7	35.0	35.0	C
G	FINAL SECOND CLOSED-IN		240.2			
H	FINAL HYDROSTATIC		1720.1			



GAUGE NO: 7341 DEPTH: 3562.0 BLANKED OFF: YES HOUR OF CLOCK: 12

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	1770	1761.4			
B	INITIAL FIRST FLOW	19	27.0	30.0	30.0	F
C	FINAL FIRST FLOW	19	30.3			
C	INITIAL FIRST CLOSED-IN	19	30.3	30.0	30.0	C
D	FINAL FIRST CLOSED-IN	468	466.6			
E	INITIAL SECOND FLOW	19	37.0	30.0	30.0	F
F	FINAL SECOND FLOW	19	34.2			
F	INITIAL SECOND CLOSED-IN	19	34.2	35.0	35.0	C
G	FINAL SECOND CLOSED-IN	262	267.4			
H	FINAL HYDROSTATIC	1751	1729.9			

EQUIPMENT & HOLE DATA

FORMATION TESTED: KANSAS CITY
NET PAY (ft): 6.0
GROSS TESTED FOOTAGE: 28.0
ALL DEPTHS MEASURED FROM: KB
CASING PERFS. (ft):
HOLE OR CASING SIZE (in): 7.875
ELEVATION (ft): 2235.0
TOTAL DEPTH (ft): 3565.0
PACKER DEPTH(S) (ft): 3531, 3537
FINAL SURFACE CHOKE (in):
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.30
MUD VISCOSITY (sec): 46
ESTIMATED HOLE TEMP. (°F):
ACTUAL HOLE TEMP. (°F): 94 @ 3560.0 ft

TICKET NUMBER: 41953600

DATE: 10-2-86 TEST NO: 5

TYPE DST: OPEN HOLE

HALLIBURTON CAMP: HAYS

TESTER: MEL CHILDERS

WITNESS: TIM PRIEST

DRILLING CONTRACTOR: ABERCROMBIE #4

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:

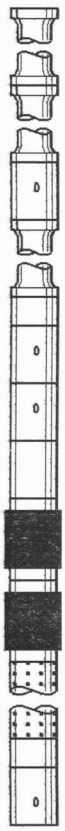
10 FEET OF MUD

MEASURED FROM TESTER VALVE

REMARKS:

TYPE & SIZE MEASURING DEVICE:					TICKET NO: 41953600
TIME	CHOKE SIZE	SURFACE PRESSURE PSI	GAS RATE MCF	LIQUID RATE BPD	REMARKS
10-2-86					
0942					TOOL ON BOTTOM
0945	.25"BH				OPENED TOOL - NO BLOW
					RESET
0955					PICKED-UP AND FLUSHED TOOL
1000					OPENED TOOL - WEAK BLOW DIED
					IN 10 MINUTES.
1030					CLOSED TOOL - NO BLOW
1100					REOPENED TOOL - NO BLOW
1130					CLOSED TOOL - NO BLOW
1205					TOOL OFF BOTTOM

TICKET NO. 41953600



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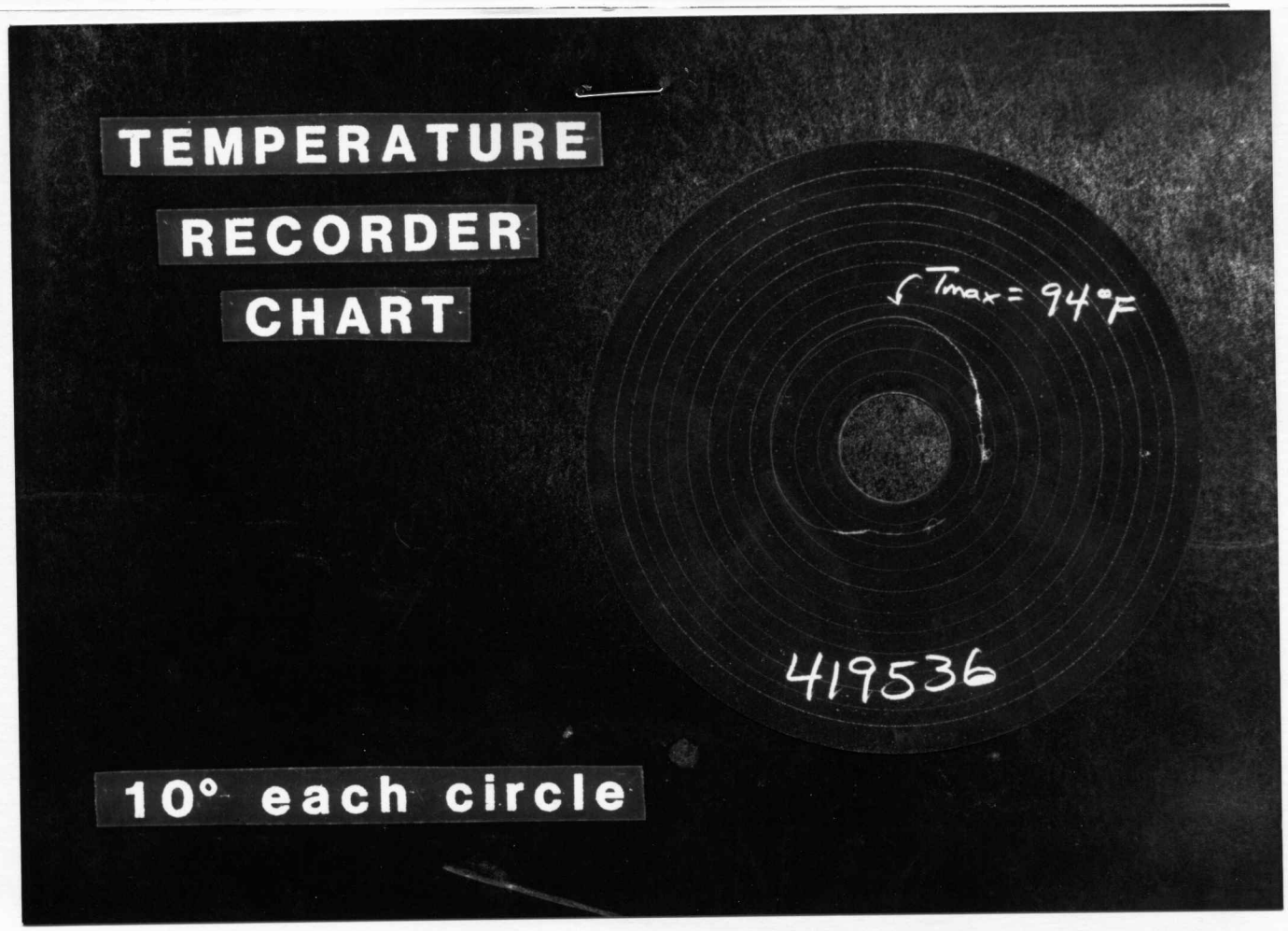
5	CROSSOVER.....	5.000	2.950	1.0	
12	DUAL CIP VALVE.....	5.000	0.870	6.0	
60	HYDROSPRING TESTER.....	5.000	0.750	5.0	3522.0
80	AP RUNNING CASE.....	5.000	2.250	4.1	3524.0
70	OPEN HOLE PACKER.....	6.750	1.530	5.8	3531.0
70	OPEN HOLE PACKER.....	6.750	1.530	5.8	3537.0
20	FLUSH JOINT ANCHOR.....	5.000	2.370	20.4	
83	HT-500 TEMPERATURE CASE.....	5.000		1.5	3560.0
81	BLANKED-OFF RUNNING CASE.....	5.000		4.3	3562.0
	TOTAL DEPTH				3565.0

EQUIPMENT DATA



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