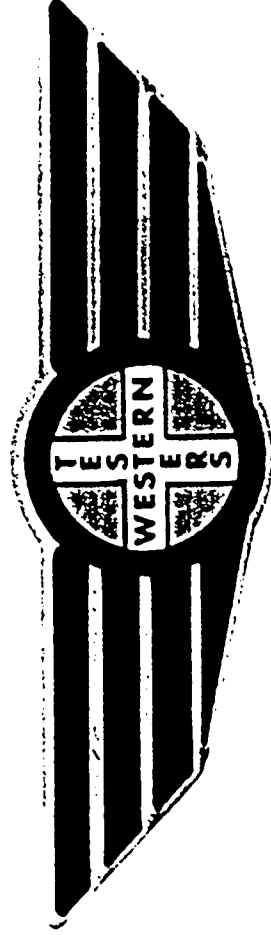


FORMATION TEST REPORT



Home Office:

Wichita, Kansas 67201

P.O. Box 1599

Phone (316) 262-5861

WESTERN TESTING CO. INC.
SUBSURFACE PRESSURE SURVEY

DATE	:	8-7-87	TICKET	:	13033
CUSTOMER	:	GRAVES DRILLING CO. INC.	LEASE	:	RALPH
WELL	:	#2	TEST:	:	1
ELEVATION	:	1396 KB	GEOLOGIST	:	A. RATZLAFF
SECTION	:	17	FORMATION	:	MISSISSIPPI
RANGE	:	5W	TOWNSHIP	:	28S
	:	COUNTY :	STATE	:	KANSAS
GAUGE SN#	:	13762	RANGE :	:	3925
	:		CLOCK	:	12

INTERVAL FROM	:	3801	TO	:	3822	TOTAL DEPTH	:	3822
DEPTH OF SELECTIVE ZONE	:							
PACKER DEPTH	:	3796	SIZE	:	6.63			
PACKER DEPTH	:	3801	SIZE	:	6.63			
PACKER DEPTH	:		SIZE	:				
PACKER DEPTH	:		SIZE	:				

DRILLING CON.	:	DUKE RIG #2			
MUD TYPE	:	CHEMICAL	VISCOSITY	:	46
WEIGHT	:	9.7	WATER LOSS (CC)	:	16.0
CHLORIDES (PPM)	:	6000			
JARS-MAKE	:	-	SERIAL NUMBER	:	-
DID WELL FLOW ?	:	GAS	REVERSED OUT ?	:	NO

DRILL COLLAR LENGTH	:	0	FT	I.D. inch	:	0.00
WEIGHT PIPE LENGTH	:	282	FT	I.D. inch	:	2.90
DRILL PIPE LENGTH	:	3498	FT	I.D. inch	:	3.80
TEST TOOL LENGTH	:	21	FT	TOOL SIZE	:	5.50
ANCHOR LENGTH	:	21	FT	ANCHOR SIZE	:	5.50
SURFACE CHOKE SIZE	:	.75	IN	BOTTOM CHOKE SIZE	:	.75
MAIN HOLE SIZE	:	7.875	IN	TOOL JOINT SIZE	:	4.5 XH

BLOW COMMENT #1	:	INITIAL FLOW-STRONG BLOW OFF BOTTOM OF BUCKET.
BLOW COMMENT #2	:	FINAL FLOW-STRONG BLOW OFF BOTTOM OF BUCKET.
BLOW COMMENT #3	:	GAS TO SURFACE IN 2 MINUTES ON THE FINAL FLOW
BLOW COMMENT #4	:	SEE ATTACHED FLOW CHART.

RECOVERED : 63 FT OF: SLIGHTLY GAS CUT MUD

Total Barrels Fluid = 0.51
Total Fluid Prod Rate = 7.80 BFPD
Indicated Wtr Rate = 0.74 BWPD

REMARK 1 :
REMARK 2 :
REMARK 3 :
REMARK 4 :

SET PACKER(S) : 3:00 PM

TIME STARTED OFF BOTTOM : 6:00 PM

WELL TEMPERATURE : 116

INITIAL HYDROSTATIC PRESSURE

(A) 1976

INITIAL FLOW PERIOD MIN: 35

(B) 48 PSI TO (C) : 48

INITIAL CLOSED IN PERIOD MIN: 42

(D) 859

FINAL FLOW PERIOD MIN: 60

(E) 52 PSI TO (F) : 52

FINAL CLOSED IN PERIOD MIN: 45

(G) 822

FINAL HYDROSTATIC PRESSURE

(H) 1927

GAS FLOW REPORT

Date : 8-7-87 Ticket # : 13033
 Customer : GRAVES DRILLING CO. INC. Lease : RALPH
 Well : #2 Test : 1 Geologist : A. RATZLAFF
 Elevation (KB) : 1396 Formation : MISSISSIPPI
 Section : 17 Township : 28S
 Range : 5W County : KINGMAN State : KANSAS
 Gauge SN # : 13762 Range : 3925 Clock : 12

TIME GAUGE (MIN)	TESTER TYPE	ORFICE SIZE	PRESSURE (PSI)	FLOW DESCRIPTION
---------------------	-------------	----------------	-------------------	------------------

PRE FLOW

SECOND FLOW

10	MERLA	1/4"	2 " OF WTR	2370 CFPD
20			20.0	7510 CFPD
30			26.0	8560 CFPD
40			26.0	8560 CFPD
50			26.0	8560 CFPD
55			26.0	8560 CFPD

Gas Bottle SN # : 21
 Date Bottle Filled : 8-7-87
 Date to be Invoiced :

WESTERN TESTING CO. INC.
WICHITA - KANSAS

Pressure Transient Report

COMPANY : GRAVES DRILLING CO. INC.
RIG : KINGMAN-KANSAS
FIELD : RALPH
WELL : #2
DATE : 8-7-87
GAUGE NO : 13762

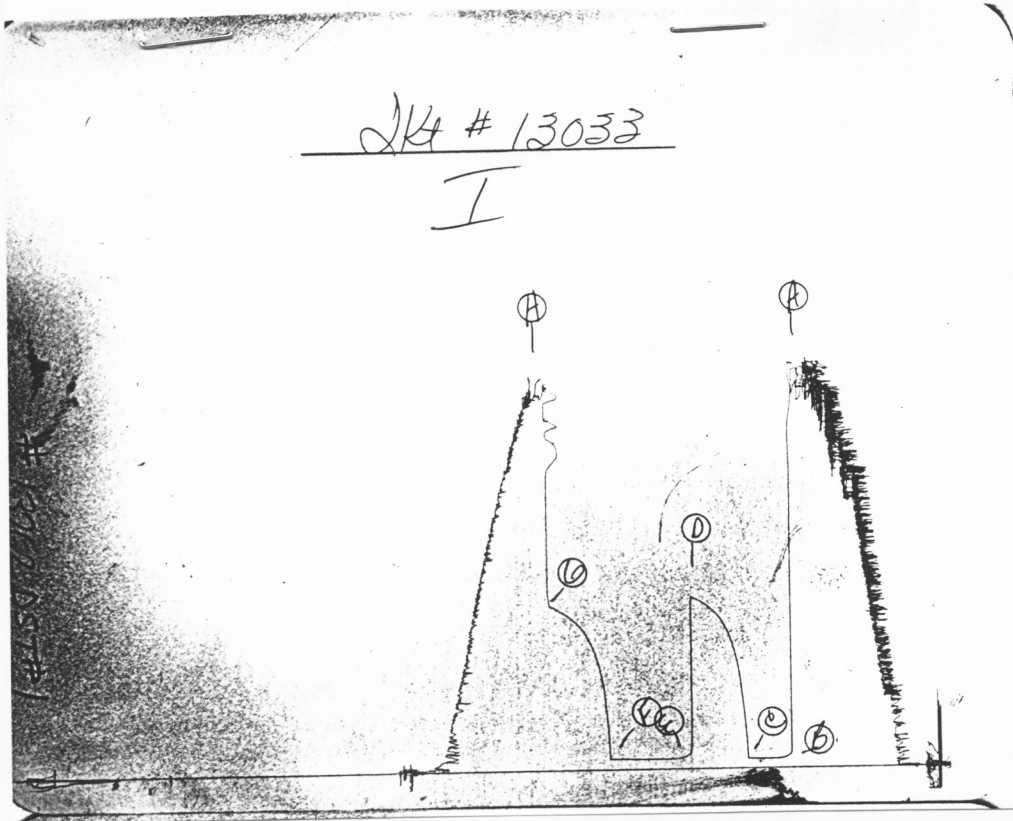
OPERATIONAL COMMENTS

COMPANY : GRAVES DRILLING CO. INC.
WELL : #2
GAUGE # : 13762
DATE : 7/ 8/87

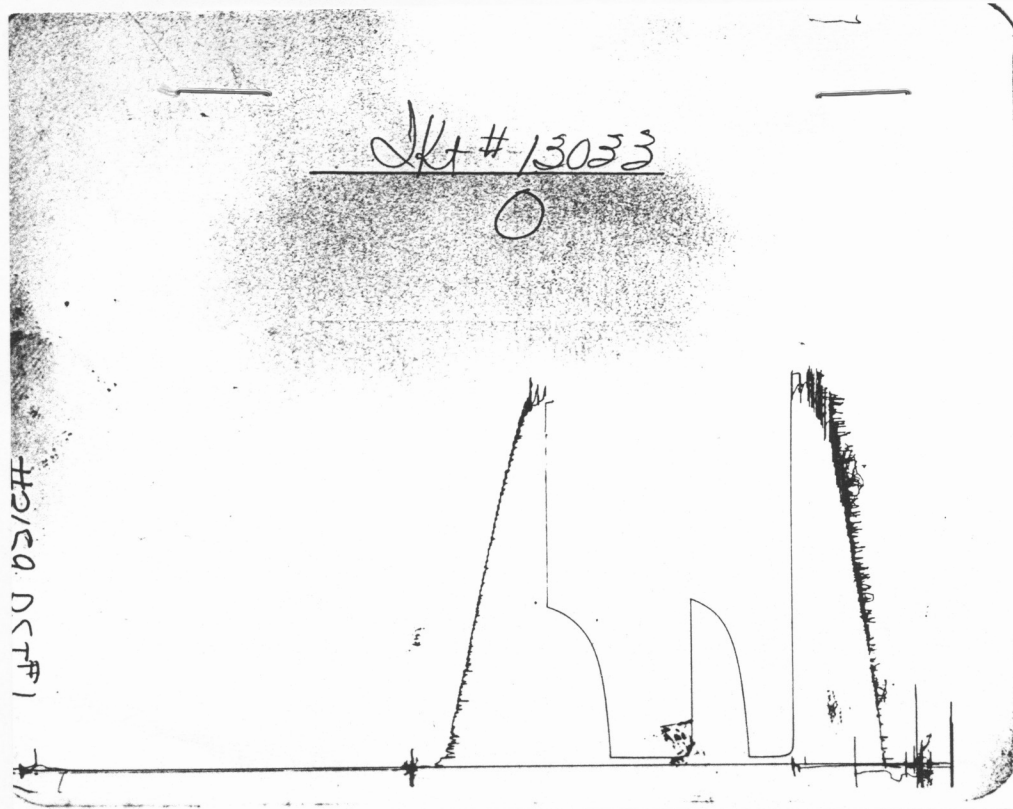
FIELD : RALPH
JOB # : 13033
DEPTH : 3822
TEST :

DATA No.	REAL TIME HR:MN:SS	ELAPSE TIME DELTA HOURS	PRESSURE PSIG	TEMP DEG F	DELTA P Pi-P(i-1)
1	3: 0: 0	0.000	48.000	116.00	0.000
2	3: 4:59	0.083	48.000	116.00	0.000
3	3:10: 0	0.167	48.000	116.00	0.000
4	3:15: 0	0.250	48.000	116.00	0.000
5	3:19:59	0.333	48.000	116.00	0.000
6	3:25: 0	0.417	48.000	116.00	0.000
7	3:30: 0	0.500	48.000	116.00	0.000
8	3:34:59	0.583	48.000	116.00	0.000
9	3:37:59	0.633	295.000	116.00	247.000
10	3:40:59	0.683	446.000	116.00	151.000
11	3:43:59	0.733	541.000	116.00	95.000
12	3:46:59	0.783	619.000	116.00	78.000
13	3:49:59	0.833	671.000	116.00	52.000
14	3:52:59	0.883	716.000	116.00	45.000
15	3:55:59	0.933	747.000	116.00	31.000
16	3:58:59	0.983	774.000	116.00	27.000
17	4: 1:59	1.033	794.000	116.00	20.000
18	4: 4:59	1.083	809.000	116.00	15.000
19	4: 7:59	1.133	825.000	116.00	16.000
20	4:10:59	1.183	838.000	116.00	13.000
21	4:13:59	1.233	849.000	116.00	11.000
22	4:16:59	1.283	859.000	116.00	10.000
23	4:18: 0	1.300	52.000	116.00	-807.000
24	4:21:59	1.367	52.000	116.00	0.000
25	4:26:59	1.450	52.000	116.00	0.000
26	4:31:59	1.533	52.000	116.00	0.000
27	4:36:59	1.617	52.000	116.00	0.000
28	4:41:59	1.700	52.000	116.00	0.000
29	4:46:59	1.783	52.000	116.00	0.000
30	4:51:59	1.867	52.000	116.00	0.000
31	4:56:59	1.950	52.000	116.00	0.000
32	5: 1:59	2.033	52.000	116.00	0.000
33	5: 6:59	2.117	52.000	116.00	0.000
34	5:11:59	2.200	52.000	116.00	0.000
35	5:16:59	2.283	52.000	116.00	0.000
36	5:19:59	2.333	286.000	116.00	234.000
37	5:22:59	2.383	427.000	116.00	141.000
38	5:25:59	2.433	513.000	116.00	86.000
39	5:28:59	2.483	581.000	116.00	68.000
40	5:31:59	2.533	624.000	116.00	43.000
41	5:34:59	2.583	664.000	116.00	40.000
42	5:37:59	2.633	696.000	116.00	32.000
43	5:40:59	2.683	722.000	116.00	26.000
44	5:43:59	2.733	742.000	116.00	20.000
45	5:46:59	2.783	760.000	116.00	18.000
46	5:49:59	2.833	774.000	116.00	14.000
47	5:52:59	2.883	788.000	116.00	14.000
48	5:55:59	2.933	799.000	116.00	11.000
49	5:58:59	2.983	814.000	116.00	15.000
50	6: 1:59	3.033	822.000	116.00	8.000

WESTERN TESTING CO. INC.

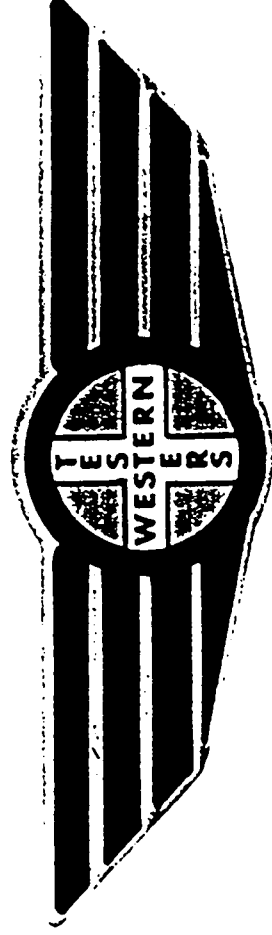


Inside Recorder



Outside Recorder

FORMATION TEST REPORT



Home Office:

Wichita, Kansas 67201

P.O. Box 1599

Phone (316) 262-5861

WESTERN TESTING CO. INC.
SUBSURFACE PRESSURE SURVEY

DATE	:	8-8-87	TICKET	:	13034
CUSTOMER	:	GRAVES DRILLING CO. INC.	LEASE	:	RALPH
WELL	:	#2	TEST:	:	2
ELEVATION	:	1396 KB	GEOLOGIST	:	A. RATZLAFF
SECTION	:	17	FORMATION	:	MISSISSIPPI
RANGE	:	5W	TOWNSHIP	:	28S
	:	COUNTY :	STATE	:	KANSAS
GAUGE SN#	:	13762	RANGE :	:	3925
	:		CLOCK	:	12

INTERVAL FROM	:	3836	TO	:	3849	TOTAL DEPTH	:	3849
DEPTH OF SELECTIVE ZONE	:							
PACKER DEPTH	:	3831	SIZE	:	6.63			
PACKER DEPTH	:	3836	SIZE	:	6.63			
PACKER DEPTH	:		SIZE	:				
PACKER DEPTH	:		SIZE	:				

DRILLING CON.	:	DUKE RIG #2			
MUD TYPE	:	CHEMICAL	VISCOSITY	:	46
WEIGHT	:	9.7	WATER LOSS (CC)	:	16.0
CHLORIDES (PPM)	:	6000			
JARS-MAKE	:	-	SERIAL NUMBER	:	
DID WELL FLOW ?	:	GAS	REVERSED OUT ?	:	

DRILL COLLAR LENGTH	:	0	FT	I.D. inch	:	0.00
WEIGHT PIPE LENGTH	:	282	FT	I.D. inch	:	2.90
DRILL PIPE LENGTH	:	3533	FT	I.D. inch	:	3.80
TEST TOOL LENGTH	:	21	FT	TOOL SIZE	:	5.50
ANCHOR LENGTH	:	13	FT	ANCHOR SIZE	:	5.50
SURFACE CHOKE SIZE	:	.75	IN	BOTTOM CHOKE SIZE	:	.75
MAIN HOLE SIZE	:	7.875	IN	TOOL JOINT SIZE	:	4.5 XH

BLOW COMMENT #1 : INITIAL FLOW-STRONG BLOW OFF BOTTOM OF BUCKET IN
3 MINUTES.

BLOW COMMENT #2 : FINAL FLOW-STRONG BLOW OFF BOTTOM OF BUCKET.

BLOW COMMENT #3 :

BLOW COMMENT #4 :

RECOVERED : 50 FT OF: GAS CUT MUD / FEW OIL SPECKS
RECOVERED : 62 FT OF: GAS CUT MUD / FEW OIL SPECKS
RECOVERED : 62 FT OF: GAS CUT MUDDY WATER

CHLORIDES: 45000 PPM

Total Barrels Fluid = 1.42
Total Fluid Prod Rate = 22.74 BFPD
Indicated Wtr Rate = 2.22 BWPD

REMARK 1 :
REMARK 2 : GAS TO SURFACE IN 5 MINUTES ON THE FINAL SHUT-IN.
REMARK 3 :
REMARK 4 :

SET PACKER(S) :	6:15 AM	TIME STARTED OFF BOTTOM :	9:15 AM
WELL TEMPERATURE :	119		
INITIAL HYDROSTATIC PRESSURE		(A)	2056
INITIAL FLOW PERIOD MIN:	30	(B)	58 PSI TO (C) : 60
INITIAL CLOSED IN PERIOD MIN:	45	(D)	717
FINAL FLOW PERIOD MIN:	60	(E)	84 PSI TO (F) : 91
FINAL CLOSED IN PERIOD MIN:	45	(G)	574
FINAL HYDROSTATIC PRESSURE		(H)	2004

WESTERN TESTING CO. INC.
WICHITA - KANSAS

Pressure Transient Report

COMPANY : GRAVES DRILLING CO. INC.
RIG : KINGMAN-KANSAS
FIELD : RALPH
WELL : #2
DATE : 8-8-87
GAUGE NO : 13762

OPERATIONAL COMMENTS

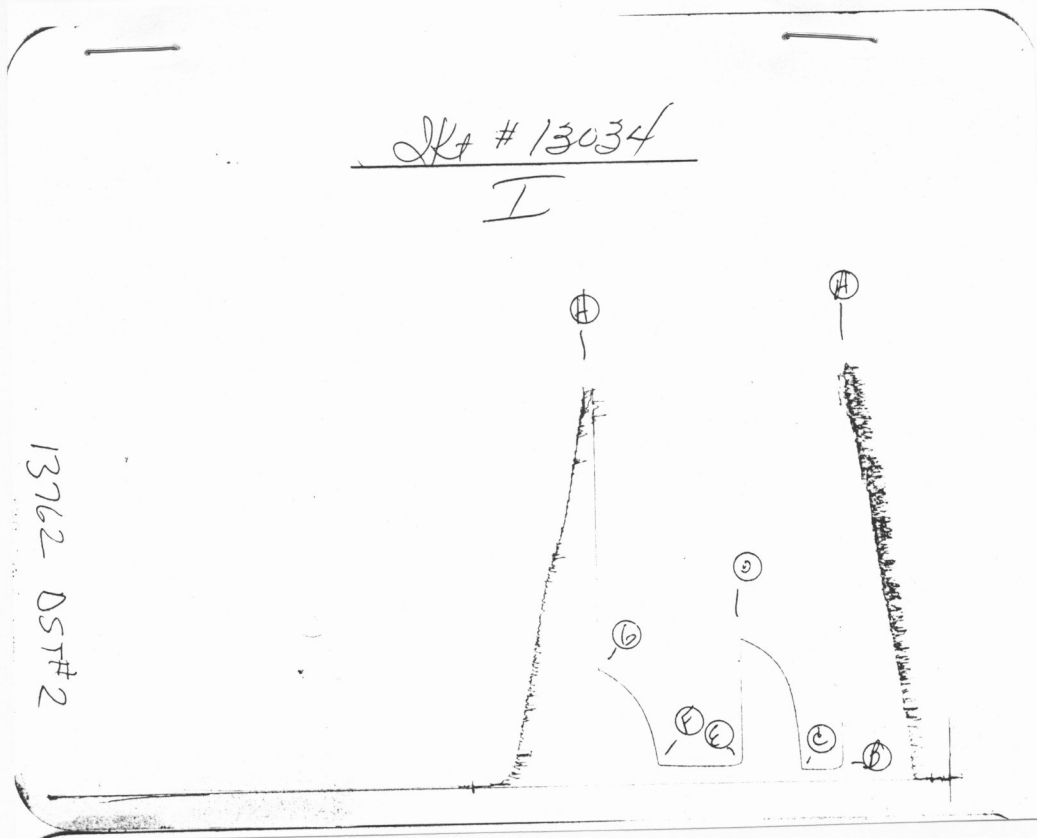
GAS TO SURFACE IN 5 MINUTES ON THE FINAL SHUT-IN.

COMPANY : GRAVES DRILLING CO. INC.
WELL : #2
GAUGE # : 13762
DATE : 8/ 8/87

FIELD : RALPH
JOB # : 13034
DEPTH : 3849
TEST :

DATA No.	REAL TIME HR:MN:SS	ELAPSE TIME DELTA HOURS	PRESSURE PSIG	TEMP DEG F	DELTA P Pi-P(i-1)
1	6:15: 0	0.000	58.000	119.00	0.000
2	6:19:59	0.083	58.000	119.00	0.000
3	6:25: 0	0.167	58.000	119.00	0.000
4	6:30: 0	0.250	58.000	119.00	0.000
5	6:34:59	0.333	58.000	119.00	0.000
6	6:40: 0	0.417	59.000	119.00	1.000
7	6:45: 0	0.500	60.000	119.00	1.000
8	6:48: 0	0.550	240.000	119.00	180.000
9	6:51: 0	0.600	380.000	119.00	140.000
10	6:54: 0	0.650	468.000	119.00	88.000
11	6:57: 0	0.700	517.000	119.00	49.000
12	7: 0: 0	0.750	557.000	119.00	40.000
13	7: 3: 0	0.800	587.000	119.00	30.000
14	7: 6: 0	0.850	609.000	119.00	22.000
15	7: 9: 0	0.900	631.000	119.00	22.000
16	7:12: 0	0.950	648.000	119.00	17.000
17	7:15: 0	1.000	663.000	119.00	15.000
18	7:18: 0	1.050	676.000	119.00	13.000
19	7:21: 0	1.100	688.000	119.00	12.000
20	7:24: 0	1.150	699.000	119.00	11.000
21	7:27: 0	1.200	708.000	119.00	9.000
22	7:30: 0	1.250	717.000	119.00	9.000
23	7:31: 0	1.267	84.000	119.00	-633.000
24	7:34:59	1.333	84.000	119.00	0.000
25	7:40: 0	1.417	84.000	119.00	0.000
26	7:45: 0	1.500	84.000	119.00	0.000
27	7:49:59	1.583	84.000	119.00	0.000
28	7:55: 0	1.667	84.000	119.00	0.000
29	8: 0: 0	1.750	84.000	119.00	0.000
30	8: 4:59	1.833	85.000	119.00	1.000
31	8:10: 0	1.917	86.000	119.00	1.000
32	8:15: 0	2.000	87.000	119.00	1.000
33	8:19:59	2.083	88.000	119.00	1.000
34	8:25: 0	2.167	89.000	119.00	1.000
35	8:30: 0	2.250	91.000	119.00	2.000
36	8:33: 0	2.300	180.000	119.00	89.000
37	8:36: 0	2.350	265.000	119.00	85.000
38	8:39: 0	2.400	321.000	119.00	56.000
39	8:42: 0	2.450	368.000	119.00	47.000
40	8:45: 0	2.500	403.000	119.00	35.000
41	8:48: 0	2.550	431.000	119.00	28.000
42	8:51: 0	2.600	456.000	119.00	25.000
43	8:54: 0	2.650	477.000	119.00	21.000
44	8:57: 0	2.700	494.000	119.00	17.000
45	9: 0: 0	2.750	513.000	119.00	19.000
46	9: 3: 0	2.800	531.000	119.00	18.000
47	9: 6: 0	2.850	544.000	119.00	13.000
48	9: 9: 0	2.900	554.000	119.00	10.000
49	9:12: 0	2.950	564.000	119.00	10.000
50	9:15: 0	3.000	574.000	119.00	10.000

WESTERN TESTING CO. INC.

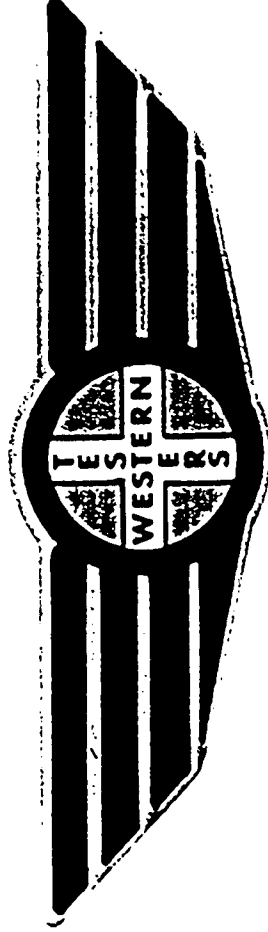


Inside Recorder



Outside Recorder

FORMATION TEST REPORT



Home Office:

Wichita, Kansas 67201

P.O. Box 1599

Phone (316) 262-5861

WESTERN TESTING CO. INC.
SUBSURFACE PRESSURE SURVEY

DATE	:	8-8-87	TICKET	:	13035
CUSTOMER	:	GRAVES DRILLING CO. INC.	LEASE	:	RALPH
WELL	:	#2	TEST:	:	3
ELEVATION	:	1396 KB	GEOLOGIST	:	A. RATZLAFF
SECTION	:	17	FORMATION	:	MISSISSIPPI
RANGE	:	5W	TOWNSHIP	:	28S
	:	COUNTY :	STATE	:	KANSAS
GAUGE SN#	:	13762	RANGE	:	3925
	:		CLOCK	:	12

INTERVAL FROM	:	3849	TO	:	3867	TOTAL DEPTH	:	3867
DEPTH OF SELECTIVE ZONE	:							
PACKER DEPTH	:	3844	SIZE	:	6.63			
PACKER DEPTH	:	3849	SIZE	:	6.63			
PACKER DEPTH	:		SIZE	:				
PACKER DEPTH	:		SIZE	:				

DRILLING CON.	:	DUKE RIG #2			
MUD TYPE	:	CHEMICAL	VISCOSITY	:	46
WEIGHT	:	9.7	WATER LOSS (CC)	:	16.0
CHLORIDES (PPM)	:	6000			
JARS-MAKE	:	-	SERIAL NUMBER	:	
DID WELL FLOW ?	:	-	REVERSED OUT ?	:	-

DRILL COLLAR LENGTH	:	0	FT	I.D. inch	:	0.00
WEIGHT PIPE LENGTH	:	282	FT	I.D. inch	:	2.90
DRILL PIPE LENGTH	:	3546	FT	I.D. inch	:	3.80
TEST TOOL LENGTH	:	21	FT	TOOL SIZE	:	5.50
ANCHOR LENGTH	:	18	FT	ANCHOR SIZE	:	5.50
SURFACE CHOKE SIZE	:	.75	IN	BOTTOM CHOKE SIZE	:	.75
MAIN HOLE SIZE	:	7.875	IN	TOOL JOINT SIZE	:	4.5 XH

BLOW COMMENT #1 : INITIAL FLOW-WEAK BLOW BUILDING TO STRONG IN
20 MINUTES.

BLOW COMMENT #2 : FINAL FLOW-STRONG BLOW OFF BOTTOM OF BUCKET.

BLOW COMMENT #3 :

BLOW COMMENT #4 :

RECOVERED : 124 FT OF: SLIGHTLY OIL & GAS CUT MUD
25% GAS-10% OIL-65% MUD

Total Barrels Fluid = 1.01
Total Fluid Prod Rate = 16.21 BFPD
Indicated Oil Rate = 1.62 BOPD
Indicated Wtr Rate = 1.05 BWPD

REMARK 1 :
REMARK 2 : RECOVERED 1050 FEET OF GAS ABOVE FLUID.
REMARK 3 :
REMARK 4 :

SET PACKER(S) :	10:35 PM	TIME STARTED OFF BOTTOM :	1:35 AM
WELL TEMPERATURE :	120		
INITIAL HYDROSTATIC PRESSURE		(A)	1960
INITIAL FLOW PERIOD MIN:	30	(B)	48 PSI TO (C) : 48
INITIAL CLOSED IN PERIOD MIN:	45	(D)	843
FINAL FLOW PERIOD MIN:	60	(E)	69 PSI TO (F) : 69
FINAL CLOSED IN PERIOD MIN:	45	(G)	729
FINAL HYDROSTATIC PRESSURE		(H)	1933

WESTERN TESTING CO. INC.
WICHITA - KANSAS

Pressure Transient Report

COMPANY : GRAVES DRILLING CO. INC.
RIG : KINGMAN-KANSAS
FIELD : RALPH
WELL : #2
DATE : 8-8-87
GAUGE NO : 13762

OPERATIONAL COMMENTS

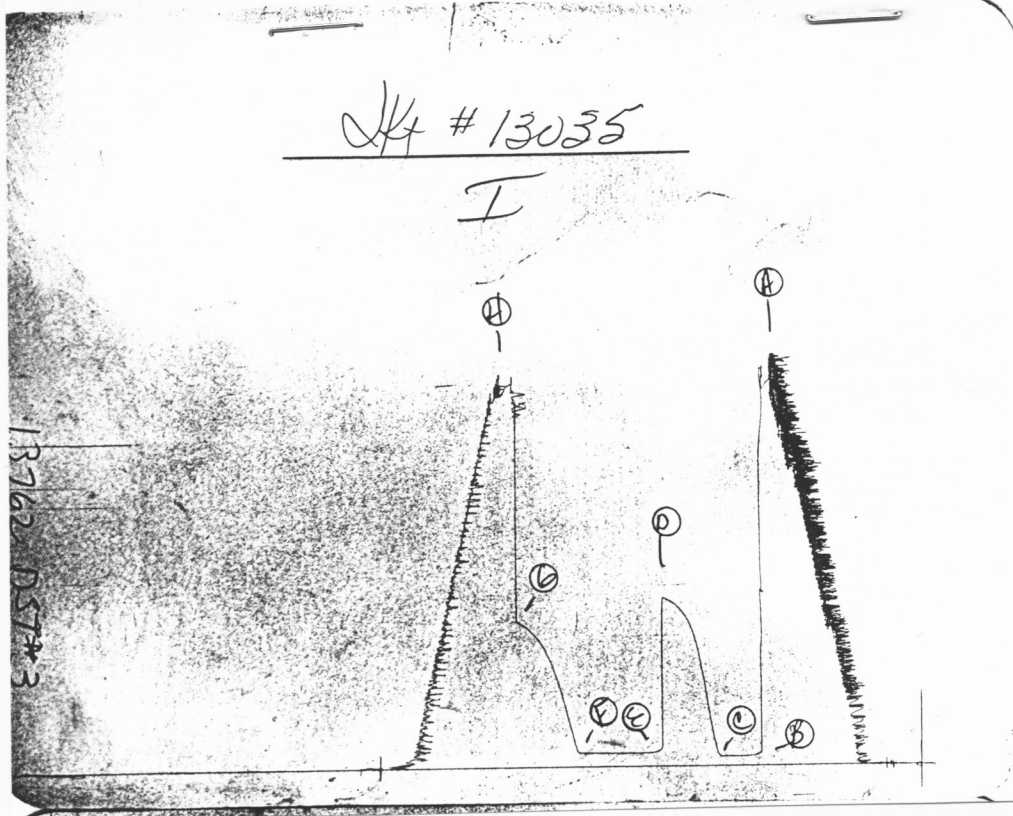
RECOVERED 1050 FEET OF GAS ABOVE FLUID.

COMPANY : GRAVES DRILLING CO. INC.
WELL : #2
GAUGE # : 13762
DATE : 8/ 8/87

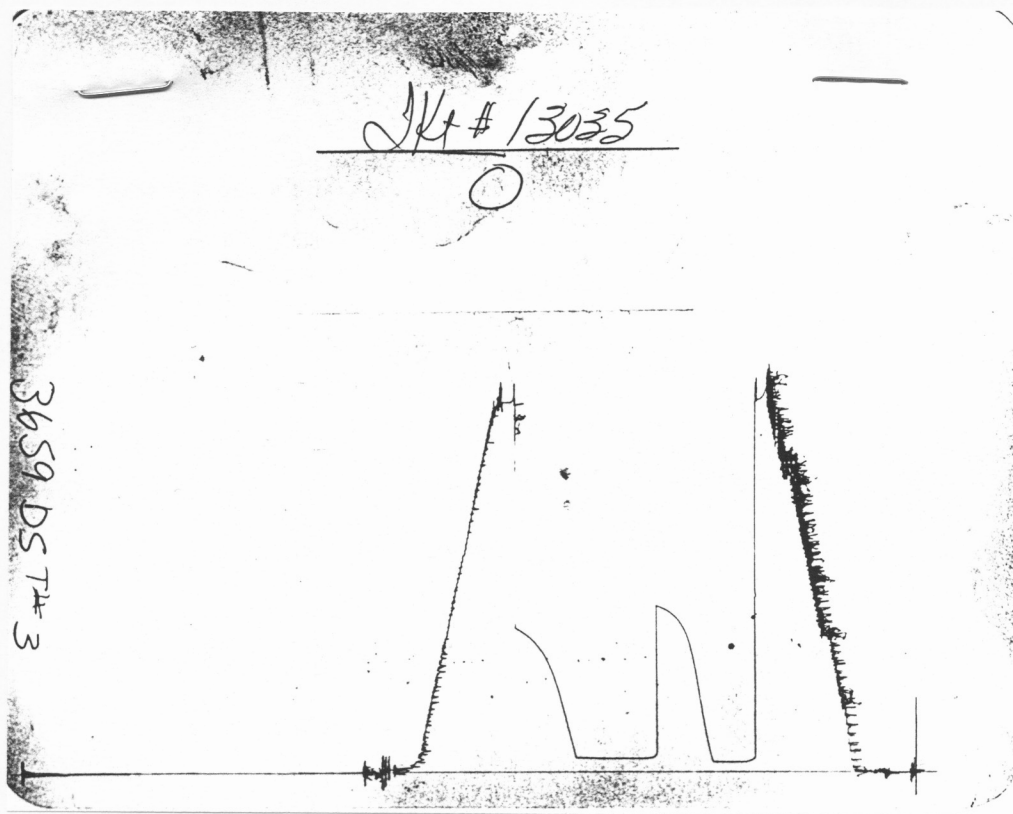
FIELD : RALPH
JOB # : 13035
DEPTH : 3867
TEST :

DATA No.	REAL TIME HR:MN:SS	ELAPSE TIME DELTA HOURS	PRESSURE PSIG	TEMP DEG F	DELTA P Pi-P(i-1)
1	10:35: 0	0.000	48.000	120.00	0.000
2	10:39:59	0.083	48.000	120.00	0.000
3	10:45: 0	0.167	48.000	120.00	0.000
4	10:50: 0	0.250	48.000	120.00	0.000
5	10:54:59	0.333	48.000	120.00	0.000
6	11: 0: 0	0.417	48.000	120.00	0.000
7	11: 5: 0	0.500	48.000	120.00	0.000
8	11: 8: 0	0.550	77.000	120.00	29.000
9	11:11: 0	0.600	168.000	120.00	91.000
10	11:14: 0	0.650	266.000	120.00	98.000
11	11:17: 0	0.700	380.000	120.00	114.000
12	11:20: 0	0.750	484.000	120.00	104.000
13	11:23: 0	0.800	587.000	120.00	103.000
14	11:26: 0	0.850	662.000	120.00	75.000
15	11:29: 0	0.900	718.000	120.00	56.000
16	11:32: 0	0.950	753.000	120.00	35.000
17	11:35: 0	1.000	779.000	120.00	26.000
18	11:38: 0	1.050	803.000	120.00	24.000
19	11:41: 0	1.100	819.000	120.00	16.000
20	11:44: 0	1.150	830.000	120.00	11.000
21	11:47: 0	1.200	838.000	120.00	8.000
22	11:50: 0	1.250	843.000	120.00	5.000
23	11:51: 0	1.267	69.000	120.00	-774.000
24	11:54:59	1.333	69.000	120.00	0.000
25	12: 0: 0	1.417	69.000	120.00	0.000
26	12: 5: 0	1.500	69.000	120.00	0.000
27	12: 9:59	1.583	69.000	120.00	0.000
28	12:15: 0	1.667	69.000	120.00	0.000
29	12:20: 0	1.750	69.000	120.00	0.000
30	12:24:59	1.833	69.000	120.00	0.000
31	12:30: 0	1.917	69.000	120.00	0.000
32	12:35: 0	2.000	69.000	120.00	0.000
33	12:39:59	2.083	69.000	120.00	0.000
34	12:45: 0	2.167	69.000	120.00	0.000
35	12:50: 0	2.250	69.000	120.00	0.000
36	12:53: 0	2.300	147.000	120.00	78.000
37	12:56: 0	2.350	222.000	120.00	75.000
38	12:59: 0	2.400	291.000	120.00	69.000
39	13: 2: 0	2.450	360.000	120.00	69.000
40	13: 5: 0	2.500	419.000	120.00	59.000
41	13: 8: 0	2.550	474.000	120.00	55.000
42	13:11: 0	2.600	525.000	120.00	51.000
43	13:14: 0	2.650	569.000	120.00	44.000
44	13:17: 0	2.700	607.000	120.00	38.000
45	13:20: 0	2.750	639.000	120.00	32.000
46	13:23: 0	2.800	662.000	120.00	23.000
47	13:26: 0	2.850	682.000	120.00	20.000
48	13:29: 0	2.900	700.000	120.00	18.000
49	13:32: 0	2.950	715.000	120.00	15.000
50	13:35: 0	3.000	729.000	120.00	14.000

WESTERN TESTING CO. INC.



Inside Recorder

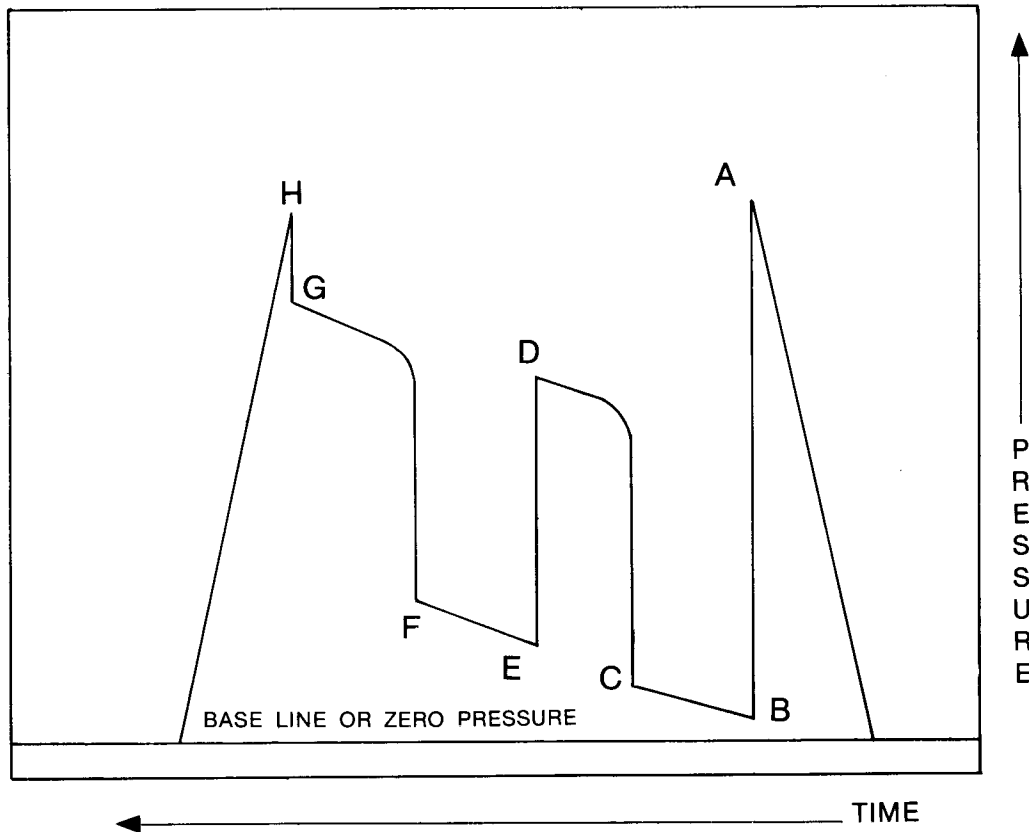


Outside Recorder

COMPANY TERMS

Western Testing Co., Inc. shall not be liable for damages of any kind to the property or personnel of the one for whom a test is made or for any loss suffered or sustained directly or indirectly through the use of its equipment, of its statements or opinion concerning the results of any test. Tools lost or damaged in the hole shall be paid at cost by the party for whom the test is made.

AK-1 Recorders



A - Initial Hydrostatic

B - First Initial Flow

C - First Final Flow

D - Initial Shut-In

E - Second Initial Flow

F - Second Final Flow

G - Final Shut-In

H - Final Hydrostatic