

CRUDE OIL TESTING, INC.

DATE 4/11/84

TEST TICKET NO. 4084

Company: A. Scott Ritchie
 Company Address: 125 N. Market Suite 950 Wichita KS 67202
 Location: Sec. 3 Twp. 12S Range 22W Co. Trego State KS
 Well Name & Number: W.H.R. #2 Code E15

ENGINEERING	Elevation	2396 KB	Drill Pipe Length	3267	ID 3.8 "
DATA	Mud Viscosity	45	Weight Pipe Length	114	ID 2.76"
	Mud Weight	9.65	Drill Collar Length		
	Water Loss	8.8	Top Packer Depth	3638	
	Type of Mud	Starch	Bottom Packer Depth	3643	
	Anchor Length	53	Tool Joint Size	4.5	FH
	Hole Size	7 7/8	Test Tool Size	5 1/2	
	Casing Size	8 5/8	Packer Size	6 3/4	
	Surface Choke	3/4	Reversed Out	No	
	Bottom Choke	3/4	Recorder #	13253	
	Extra Equipment		None		

REMARKS DST #1

FORMATION	Toronto/Lans Zone Top	Test Type Conventional
	Interval 3643 To 3696	Total Depth 3696
	Open 30 Shut In 45	Open 30 Shut In 45
	Packer(s) Set 04:28AM	Started Off Bottom 07:00AM
	Blow 1st Opening Weak increasing blow to 1 inch in bucket.	
	2nd Opening Weak increasing blow to 1.5 in. in bucket.	

RECOVERY	Total Feet	90
	Recovered	90 feet of Muddy water

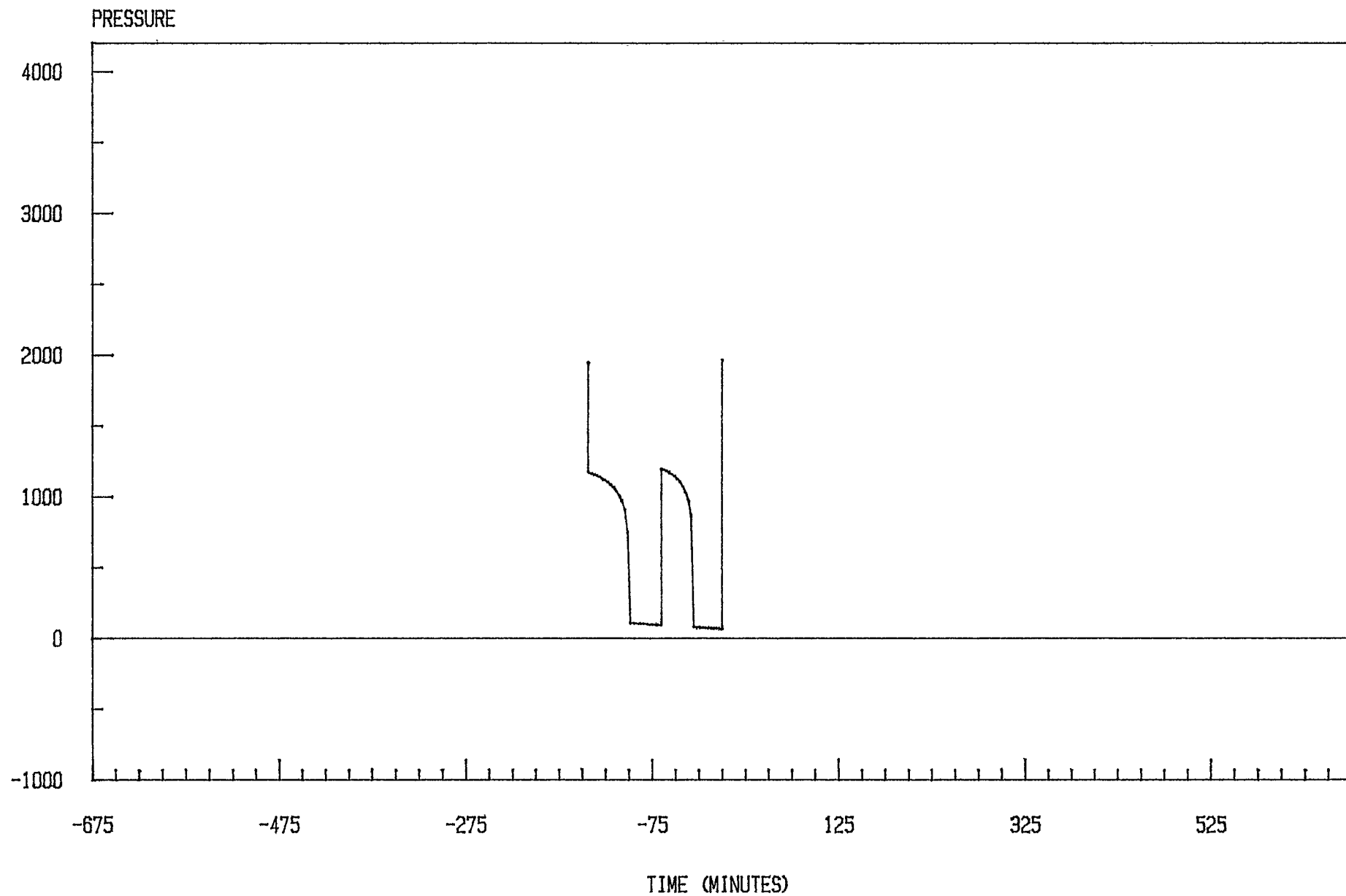
CALCULATED	Gas	Oil	Water	48	Mud	42
RECOVERY	Gravity (Oil)		Test Water Chlorides	60,000	PPM	
	Test Area Temperature	108F	Mud System Chlorides	40,000	PPM	

		FIELD READING	OFFICE READING	
PRESSURE	(A) Initial Hydrostatic Mud	2030	1966	PSI
	(B) First Initial Flow Pressure	69	67	PSI
	(C) First Final Flow Pressure	81	79	PSI
	(D) Initial Closed-In Pressure	1196	1198	PSI
	(E) Second Initial Flow Pressure	93	94	PSI
	(F) Second Final Flow Pressure	104	109	PSI
	(G) Final Closed-In Pressure	1150	1174	PSI
	(H) Final Hydrostatic Mud	2007	1947	PSI

CRUDE OIL TESTING INC Test 4084 DST 1

FOR: A. Scott Ritchie

04/11/84



PRESSURE BREAKDOWN

TEST TICKET NO. 4084

DST Number: 1 Recorder Number: 13253 Clock Number: 23934

First Flow Pressure	Initial Shut-In	Second Flow Pressure	Final Shut-In
Mins. Press.	Mins. Press.	Mins. Press.	Mins. Press.
0 66	0 79	0 94	0 109
3 69	3 874	3 94	3 754
6 71	6 978	6 96	6 907
9 71	9 1033	9 97	9 970
12 72	12 1074	12 97	12 1010
15 73	15 1107	15 100	15 1041
18 76	18 1129	18 101	18 1066
21 77	21 1147	21 102	21 1088
24 77	24 1161	24 104	24 1104
27 78	27 1174	27 105	27 1118
30 79	30 1185	30 108	30 1129
	33 1194	33 109	33 1141
	35 1198		36 1151
			39 1158
			42 1165
			45 1172
			46 1174

EQUIPMENT DATA

TOOL SEQUENCE REPORT

DST Number: 1

TEST TICKET NO. 4084

WELL NAME: W.H.R. #2

WELL LOCATION: 3-12S-22W

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	3267.00	3.826	4.50
3	Weight Pipe	114.00	2.760	4.50
8	Circulating Sub	1.00	3.000	5.00
9	Shut-In Tool	5.45	0.870	5.00
10	Hydraulic Tool	5.60	1.000	5.00
14	Packer	5.35	1.530	6.75
14	Packer	5.35	1.530	6.75
6	Anchor	49.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
	Total Depth	3455.75		

CALCULATED RECOVERY ANALYSIS

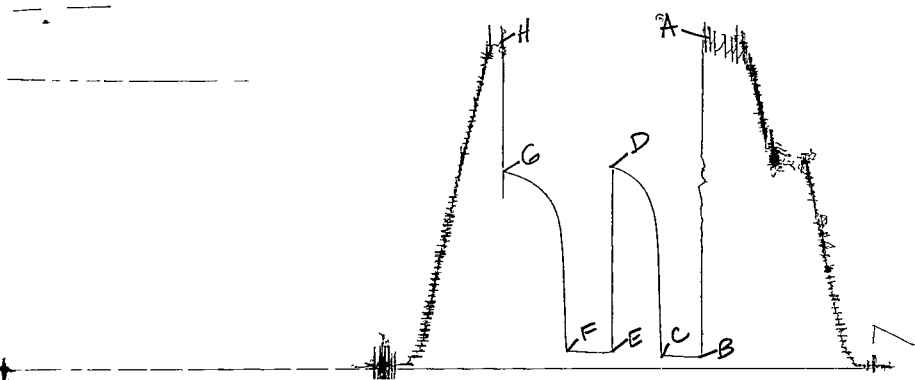
DST Number: 1

TEST TICKET NO. 4084

Sample #	Total Feet	***** Gas %	***** Feet	***** Oil %	***** Feet	***** Mud %	***** Feet
1	30	0.00	0.00	0.00	0.00	50.00	15.00
2	60	0.00	0.00	0.00	0.00	45.00	27.00
TOTAL	<u>90</u>	0.00	<u>0.00</u>	0.00	<u>0.00</u>	46.67	<u>42.00</u>

Sample #	**** Water %	*** Feet	Chlorides (PPM)	Resistivity (Ohms)	Temperature (Deg)
1	50.00	15.00	60,000		
2	55.00	33.00	60,000		
TOTAL	53.33	<u>48.00</u>			

TOP
13253
DST #1
4084



Bottom

13250

DST#1

4084



CRUDE OIL TESTING, INC.

DATE 4/13/84

TEST TICKET NO. 4085

Company: A. Scott Ritchie
 Company Address: 125 N. Market Suite 950 Wichita KS 67202
 Location: Sec. 3 Twp. 12S Range 22W Co. Trego State KS
 Well Name & Number: W.H.R. #2 Code E15

ENGINEERING DATA	Elevation	2396 KB	Drill Pipe Length	3516	ID 3.8 "
	Mud Viscosity	46	Weight Pipe Length		
	Mud Weight	9.9	Drill Collar Length	112	ID 2.25"
	Water Loss	7	Top Packer Depth	3800	
	Type of Mud	Starch	Bottom Packer Depth	3805	
	Anchor Length	127	Tool Joint Size	4.5	FH
	Hole Size	7 7/8	Test Tool Size	5 1/2	
	Casing Size	8 5/8	Packer Size	6 3/4	
	Surface Choke	3/4	Reversed Out	No	
	Bottom Choke	3/4	Recorder #	13253	
	Extra Equipment		None		

REMARKS DST #2

FORMATION Lansing Zone 140-220 Test Type Conventional
 Interval 3805 To 3932 Total Depth 3932
 Open 30 Shut In 30 Open 30 Shut In 30
 Packer(s) Set 08:13AM Started Off Bottom 10:15AM
 Blow 1st Opening Weak decreasing blow died in 5 min.
 2nd Opening No blow, flushed tool, no help.

RECOVERY Total Feet 5
 Recovered 5 feet of Drilling mud

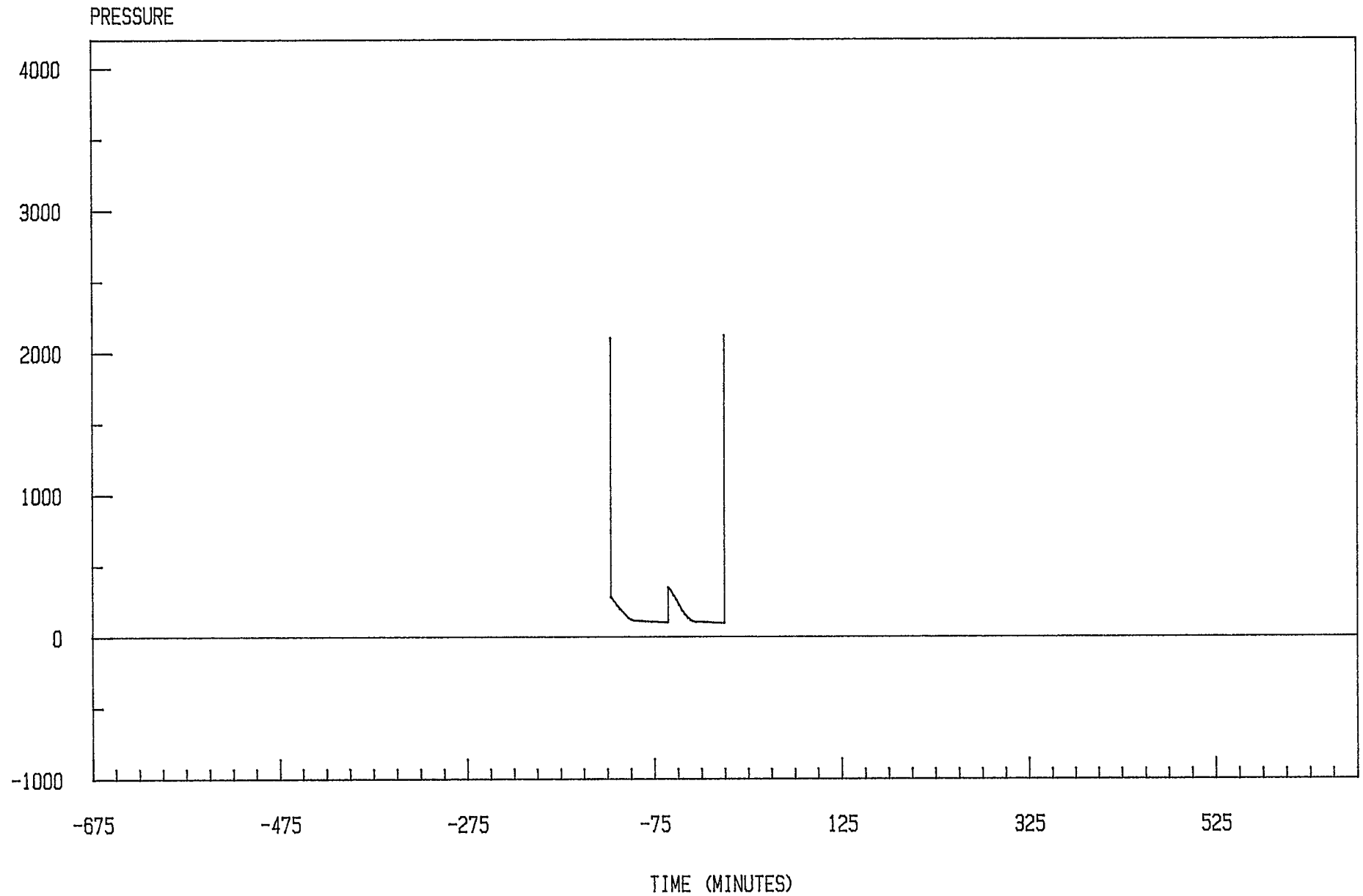
CALCULATED RECOVERY	Gas	Oil	Water	Mud	5
	Gravity (Oil)		Test Water Chlorides		PPM
	Test Area Temperature	112F	Mud System Chlorides	36,000	PPM

		FIELD READING	OFFICE READING	
PRESSURE	(A) Initial Hydrostatic Mud	2122	2119	PSI
	(B) First Initial Flow Pressure	104	98	PSI
	(C) First Final Flow Pressure	104	106	PSI
	(D) Initial Closed-In Pressure	347	350	PSI
	(E) Second Initial Flow Pressure	104	104	PSI
	(F) Second Final Flow Pressure	104	113	PSI
	(G) Final Closed-In Pressure	278	280	PSI
	(H) Final Hydrostatic Mud	2099	2103	PSI

CRUDE OIL TESTING INC Test 4085 DST 2

FOR: A. Scott Ritchie

04/13/84



PRESSURE BREAKDOWN

TEST TICKET NO. 4085

DST Number: 2 Recorder Number: 13253 Clock Number: 23934

First Flow Pressure	Initial Shut-In	Second Flow Pressure	Final Shut-In
Mins. Press.	Mins. Press.	Mins. Press.	Mins. Press.
0 97	0 105	0 103	0 112
3 97	3 109	3 103	3 114
6 99	6 118	6 104	6 114
9 99	9 137	9 104	9 123
12 100	12 160	12 107	12 134
15 102	15 188	15 107	15 155
18 104	18 226	18 107	18 176
21 104	21 263	21 108	21 198
24 105	24 294	24 109	24 223
27 105	27 329	27 111	27 249
30 105	30 349	30 112	30 276
			31 279

EQUIPMENT DATA

TOOL SEQUENCE REPORT

DST Number: 2

TEST TICKET NO. 4085

WELL NAME: W.H.R. #2

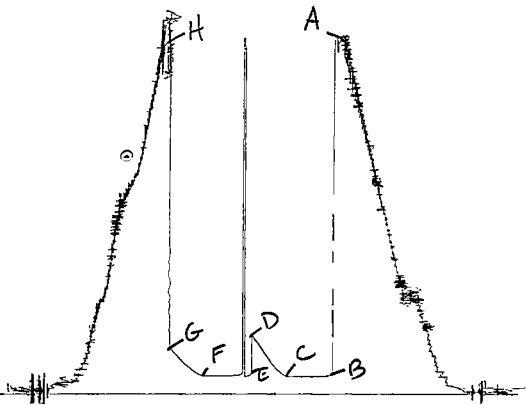
WELL LOCATION: 3-12S-22W

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	3516.00	3.826	4.50
4	Drill Collar - 6"	112.00	2.250	6.00
8	Circulating Sub	1.00	3.000	5.00
9	Shut-In Tool	5.45	0.870	5.00
10	Hydraulic Tool	5.60	1.000	5.00
14	Packer	5.35	1.530	6.75
14	Packer	5.35	1.530	6.75
6	Anchor	123.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
	Total Depth	3776.75		

TOP
DST #2

13253

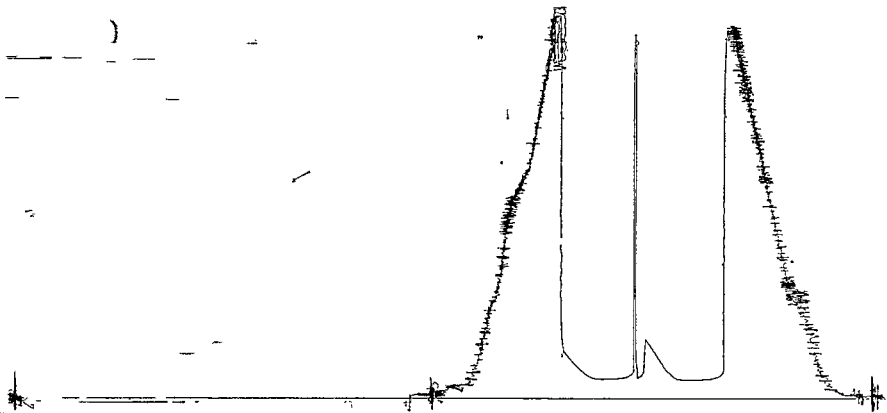
4085



Bottom
DS#2

13250

4085



CRUDE OIL TESTING, INC.

DATE 4/14/84

TEST TICKET NO. 4086

Company: A. Scott Ritchie
 Company Address: 125 N. Market Suite 950 Wichita KS 67202
 Location: Sec. 3 Twp. 12S Range 22W Co. Trego State KS
 Well Name & Number: W.H.R. #2 Code E15

ENGINEERING DATA	Elevation	2396 KB	Drill Pipe Length	3640	ID 3.8 "
	Mud Viscosity	44	Weight Pipe Length		
	Mud Weight	9.7	Drill Collar Length	112	ID 2.25"
	Water Loss	11.2	Top Packer Depth	4008	
	Type of Mud	Starch	Bottom Packer Depth	4013	
	Anchor Length	47	Tool Joint Size	4.5	FH
	Hole Size	7 7/8	Test Tool Size	5 1/2	
	Casing Size	8 5/8	Packer Size	6 3/4	
	Surface Choke	3/4	Reversed Out	No	
	Bottom Choke	3/4	Recorder #	13253	
	Extra Equipment		None		

REMARKS DST #3

FORMATION	Marmaton	Zone	Test Type	Conventional
	Interval 4013	To 4060	Total Depth	4060
	Open 45	Shut In 60	Open 45	Shut In 60
	Packer(s) Set	02:28AM	Started Off Bottom	06:00AM
	Blow 1st Opening Weak increasing blow to 9 inches in bucket. 2nd Opening Weak increasing blow to 9 inches in bucket.			

RECOVERY Total Feet 245
 Recovered 245 feet of Slightly gassy mud cut oil

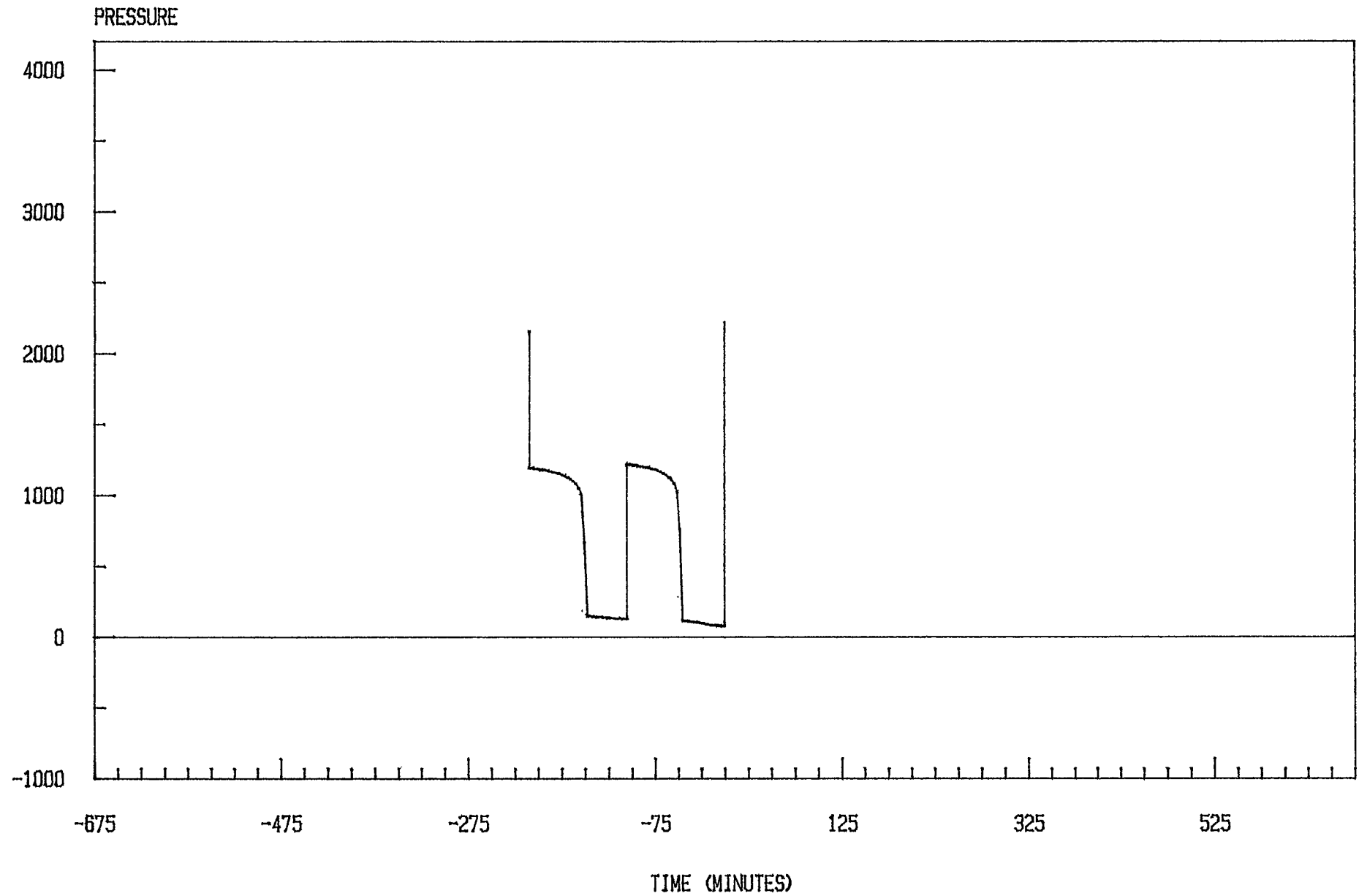
CALCULATED RECOVERY	Gas	4	Oil	219.9	Water	1.45	Mud	19.65
	Gravity (Oil)				Test Water Chlorides		PPM	
	Test Area Temperature		118F		Mud System Chlorides		34,000 PPM	

		FIELD READING	OFFICE READING	
PRESSURE	(A) Initial Hydrostatic Mud	2226	2216	PSI
	(B) First Initial Flow Pressure	69	75	PSI
	(C) First Final Flow Pressure	116	114	PSI
	(D) Initial Closed-In Pressure	1219	1218	PSI
	(E) Second Initial Flow Pressure	127	127	PSI
	(F) Second Final Flow Pressure	139	147	PSI
	(G) Final Closed-In Pressure	1184	1193	PSI
	(H) Final Hydrostatic Mud	2203	2152	PSI

CRUDE OIL TESTING INC Test 4086 DST 3

FOR: A. Scott Ritchie

04/14/84



PRESSURE BREAKDOWN

TEST TICKET NO. 4086

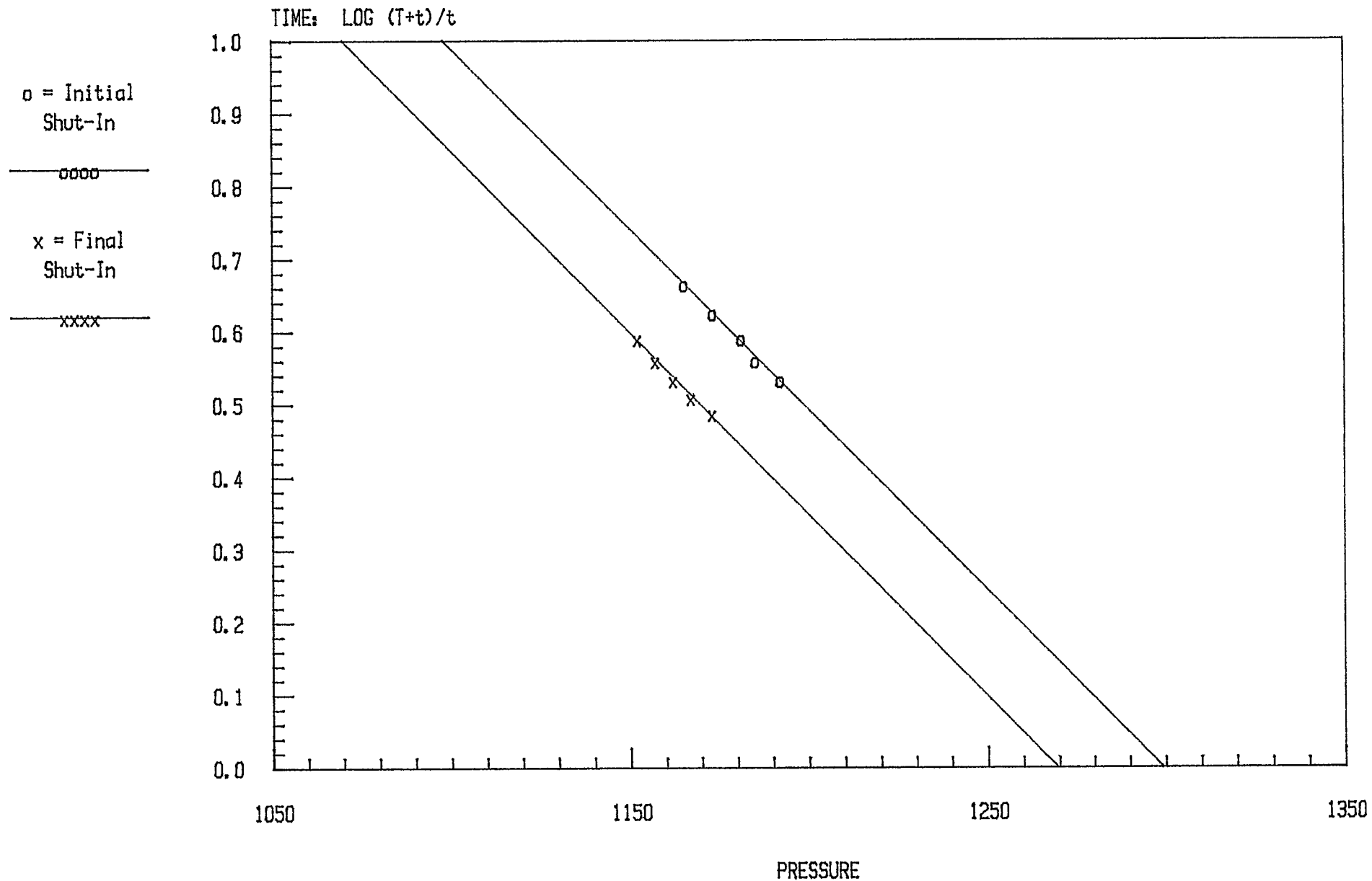
DST Number: 3 Recorder Number: 13253 Clock Number: 23934

First Flow Pressure	Initial Shut-In	Second Flow Pressure	Final Shut-In
Mins. Press.	Mins. Press.	Mins. Press.	Mins. Press.
0 74	0 114	0 126	0 147
3 76	3 764	3 126	3 666
6 77	6 1026	6 127	6 1002
9 77	9 1079	9 127	9 1048
12 79	12 1108	12 128	12 1078
15 82	15 1127	15 131	15 1098
18 86	18 1143	18 132	18 1113
21 90	21 1155	21 133	21 1125
24 95	24 1165	24 135	24 1135
27 97	27 1173	27 138	27 1143
30 101	30 1181	30 139	30 1152
33 103	33 1185	33 139	33 1157
36 105	36 1192	36 142	36 1162
39 110	39 1196	39 145	39 1167
42 111	42 1200	42 147	42 1173
45 114	45 1204		45 1176
	48 1208		48 1180
	51 1211		51 1183
	54 1213		54 1185
	57 1216		57 1188
	60 1217		60 1191
			62 1192

CRUDE OIL TESTING INC TEST 4086 DST 3

FOR: A. Scott Ritchie

4/14/84



ZONE EVALUATION - Page 1

DST NUMBER 3

TEST TICKET NO. 4086

Company: A. Scott Ritchie

Date: 4/14/84

Drill Collar Feet	ID	Weight Feet	Pipe ID	Drill Pipe Feet	Pipe ID	Average ID	Gals/ Foot
112	2.250	0	0.000	108	3.800	3.0106	0.370

Bbls Recovered/Test = 1.3352 Est Bbls/Day = 22.1005 T = 87

PRESS. TIME		Initial Shut-In T/t (T+t)/t LOG T/t LOG (T+t)/t			
1192	36	2.417	3.417	0.38322	0.53360
1185	33	2.636	3.636	0.42101	0.56067
1181	30	2.900	3.900	0.46240	0.59106
1173	27	3.222	4.222	0.50816	0.62554
1165	24	3.625	4.625	0.55931	0.66511

Press. Time		Final Shut-In T/t (T+t)/t Log T/t Log (T+t)/t			
1173	42	2.071	3.071	0.31627	0.48734
1167	39	2.231	3.231	0.34845	0.50931
1162	36	2.417	3.417	0.38322	0.53360
1157	33	2.636	3.636	0.42101	0.56067
1152	30	2.900	3.900	0.46240	0.59106

IP(0)	IP(1)	FP(0)	FP(1)	M	Log (T+t)/t Kh/B	DR	Q1	Pts
1294.1	1102.7	1288.9	1051.1	237.8	15.113	1.773	39.195	1,3
1292.9	1102.6	1288.3	1051.1	237.2	15.149	1.775	39.235	1-3
1297.8	1098.7	1277.7	1061.6	216.1	16.631	1.851	40.912	1-4
1299.0	1097.7	1269.3	1069.6	199.7	17.995	1.921	42.455	1-5

Graph Data For Points

Initial Time Pressure		Final Time Pressure	
0.5336	1192	0.4873	1173
0.5606	1185	0.5093	1167
0.5910	1181	0.5336	1162
0.6255	1173	0.5606	1157
0.6651	1165	0.5910	1152

Graph Data For Lines

0	1299.04	0	1269.31
1	1097.69	1	1069.62

ZONE EVALUATION - Page 2

DST Number 3

TEST TICKET NO. 4086

Company: A. Scott Ritchie

Date: 4/14/84

P.S.I. Slope Cycle (From Log $\frac{T + t}{t}$)

$$M = G_0 - G_1 \quad 199.69$$

Damage Ratio:

$$DR = .183 \frac{P_s - P_f}{M} \quad 1.92$$

Effective Pay:

$$\frac{Kh}{B} = \frac{162.6 Q}{M} \quad 18.00 \text{ Md. Ft.}$$

Theoretical Potential With
Damage Removed (for DR greater than 1):

$$Q_1 = Q DR \quad 42.45 \text{ Bbls/Day}$$

Production:

1.34 Bbls/Hour

$$Q = \frac{1440 R}{T} \quad 22.10 \text{ Bbls/Day}$$

These calculations are based upon information furnished by you and taken from drill stem test pressure charts and are furnished for your information. In furnishing such calculations and evaluations, Crude Oil Testing Inc. is merely expressing an opinion. You agree that Crude Oil Testing Inc. makes no warranty as to the accuracy of such calculations or opinions, and Crude Oil Testing Inc. shall not be liable for any loss or damage, whether due to negligence or otherwise in connection with such calculations and opinions.

EQUIPMENT DATA

TOOL SEQUENCE REPORT

DST Number: 3

TEST TICKET NO. 4086

WELL NAME: W.H.R. #2

WELL LOCATION: 3-12S-22W

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	3640.00	3.826	4.50
4	Drill Collar - 6"	112.00	2.250	6.00
8	Circulating Sub	1.00	3.000	5.00
9	Shut-In Tool	5.45	0.870	5.00
10	Hydraulic Tool	5.60	1.000	5.00
14	Packer	5.35	1.530	6.75
14	Packer	5.35	1.530	6.75
6	Anchor	43.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
	Total Depth	3820.75		

CALCULATED RECOVERY ANALYSIS

DST Number: 3

TEST TICKET NO. 4086

Sample #	Total Feet	***** Gas %	**** Feet	***** Oil %	**** Feet	***** Mud %	**** Feet
1	5	20.00	1.00	30.00	1.50	45.00	2.25
2	60	0.00	0.00	80.00	48.00	20.00	12.00
3	60	5.00	3.00	90.00	54.00	3.00	1.80
4	120	0.00	0.00	97.00	116.40	3.00	3.60
TOTAL	<u>245</u>	1.63	<u>4.00</u>	89.76	<u>219.90</u>	8.02	<u>19.65</u>

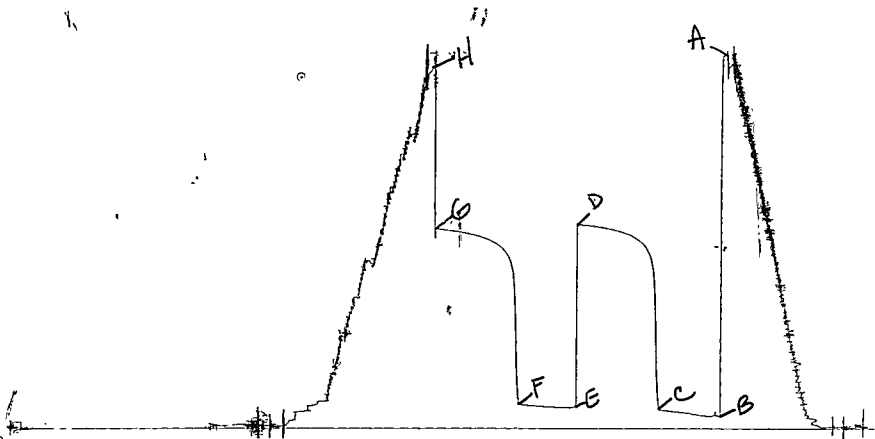
Sample #	**** Water %	*** Feet	Chlorides (PPM)	Resistivity (Ohms)	Temperature (Deg)
1	5.00	0.25			
2	0.00	0.00			
3	2.00	1.20			
4	0.00	0.00			
TOTAL	0.59	<u>1.45</u>			

TOP

13253

DST #3

4086



Bottom
13250
DS#3
4086

