

8-6-21W

CRUDE OIL TESTING, INC.

DATE 6/3/84

TEST TICKET NO. 4323

Company: A. Scott Ritchie
 Company Address: 125 N. Market Suite 950 Wichita KS 67202
 Location: Sec. 8 Twp. 6S Range 21W Co. Graham ✓ State KS
 Well Name & Number: Boys #1 ✓ Code E16

ENGINEERING DATA	Elevation 2191 KB	Drill Pipe Length 2287	ID 3.8 "
	Mud Viscosity 45	Weight Pipe Length 727	ID 2.76"
	Mud Weight 9.7	Drill Collar Length 355	ID 2.25"
	Water Loss 5.6	Top Packer Depth 3386	
	Type of Mud Drispac	Bottom Packer Depth 3391	
	Anchor Length 31	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 # 13251	
	Extra Equipment	None	

REMARKS DST #1

FORMATION	Toronto Zone	Test Type Conventional
	Interval 3391 To 3422	Total Depth 3422
	Open 30 Shut In 45	Open 30 Shut In 45
	Packer(s) Set 06:15AM	Started Off Bottom 08:45AM
	Blow 1st Opening Fair blow incr. to bottom of bkt. in 23 min.	
	2nd Opening Medium blow off bottom of bucket in 18 min.	

RECOVERY Total Feet 814
 Recovered 604 feet of Gas in pipe
 Recovered 210 feet of Mud cut oil

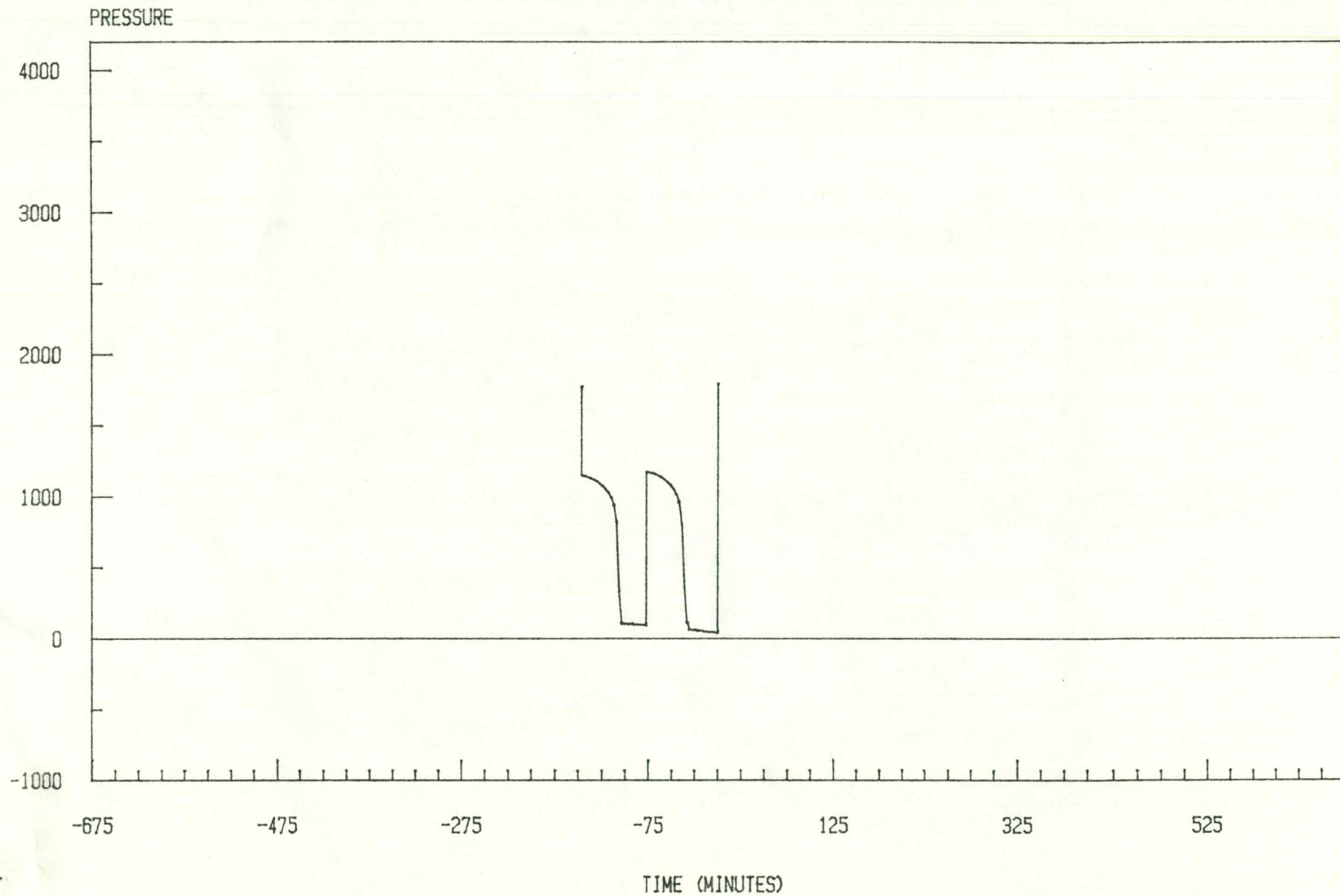
CALCULATED RECOVERY	Gas 15 Oil 99 Water Mud 96
	Gravity (Oil) Test Water Chlorides PPM
	Test Area Temperature 110F Mud System Chlorides 5,000 PPM

	FIELD READING	OFFICE READING	
PRESSURE (A) Initial Hydrostatic Mud	1795	1790	PSI
(B) First Initial Flow Pressure	44	39	PSI
(C) First Final Flow Pressure	66	63	PSI
(D) Initial Closed-In Pressure	1180	1174	PSI
(E) Second Initial Flow Pressure	88	91	PSI
(F) Second Final Flow Pressure	99	106	PSI
(G) Final Closed-In Pressure	1146	1148	PSI
(H) Final Hydrostatic Mud	1773	1772	PSI

CRUDE OIL TESTING INC Test 4323 DST 1

FOR: A. Scott Ritchie

06/03/84



PRESSURE BREAKDOWN

TEST TICKET NO. 4323

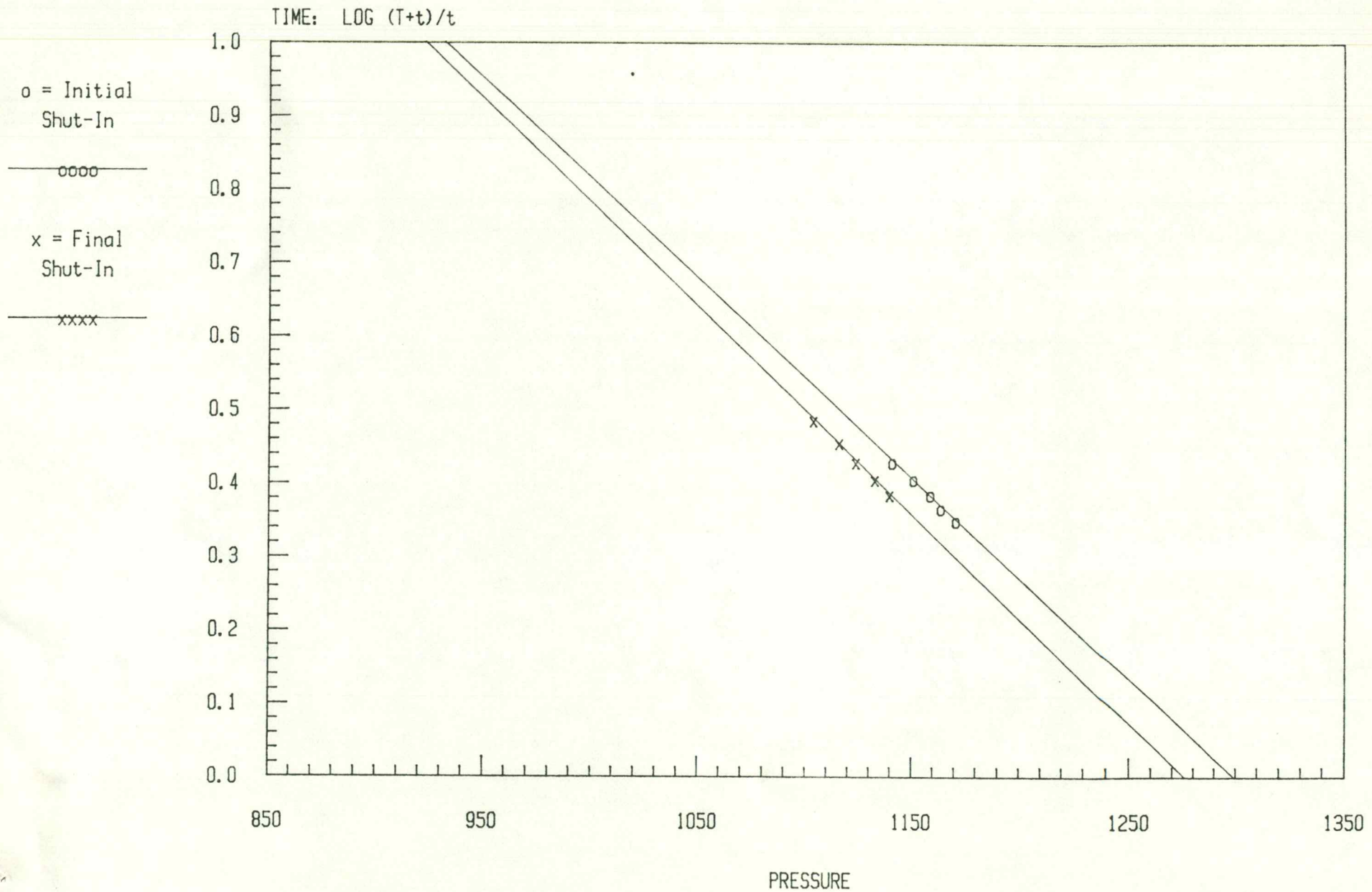
DST Number: 1 Recorder Number: 13251 Clock Number: 23935

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Mins.	Press.	Mins.	Press.	Mins.	Press.	Mins.	Press.
0	38	0	63	0	90	0	105
3	41	3	112	3	93	3	334
6	41	6	355	6	95	6	817
9	42	9	808	9	95	9	939
12	45	12	958	12	96	12	993
15	50	15	1015	15	99	15	1028
18	52	18	1051	18	100	18	1051
21	57	21	1079	21	103	21	1070
24	57	24	1096	24	105	24	1087
27	60	27	1115	26	105	27	1103
30	63	30	1129			30	1115
		33	1140			33	1123
		36	1150			36	1132
		39	1158			39	1139
		42	1163			42	1144
		45	1170			44	1147
		47	1173				

CRUDE OIL TESTING INC TEST 4323 DST 1

FOR: A. Scott Ritchie

6/3/84



ZONE EVALUATION - Page 1

DST NUMBER 1

TEST TICKET NO. 4323

Company: A. Scott Ritchie

Date: 6/3/84

Drill Collar Feet	ID	Weight Feet	Pipe ID	Drill Pipe Feet	Pipe ID	Average ID	Gals/ Foot
99	2.250	0	2.760	0	3.800	2.2500	0.207

Bbls Recovered/Test = 0.5216 Est Bbls/Day = 13.4137 T = 56

PRESS. TIME		Initial Shut-In			
		T/t	(T+t)/t	LOG T/t	LOG (T+t)/t
1170	45	1.244	2.244	0.09498	0.35111
1163	42	1.333	2.333	0.12494	0.36798
1158	39	1.436	2.436	0.15712	0.38666
1150	36	1.556	2.556	0.19189	0.40749
1140	33	1.697	2.697	0.22967	0.43088

Press. Time		Final Shut-In			
		T/t	(T+t)/t	Log T/t	Log (T+t)/t
1139	39	1.436	2.436	0.15712	0.38666
1132	36	1.556	2.556	0.19189	0.40749
1123	33	1.697	2.697	0.22967	0.43088
1115	30	1.867	2.867	0.27107	0.45738
1103	27	2.074	3.074	0.31682	0.48771

Time Option is Log (T+t)/t							
IP(0)	IP(1)	FP(0)	FP(1)	M	Kh/B	DR	Q1 Pts
1288.5	951.0	1278.9	917.1	361.9	6.028	1.505	20.184 1,3
1287.6	951.3	1279.3	917.0	362.3	6.020	1.504	20.175 1-3
1291.1	945.2	1271.7	928.3	343.4	6.352	1.532	20.548 1-4
1299.2	931.4	1275.8	922.3	353.5	6.170	1.517	20.344 1-5

Graph Data For Points

Initial Time Pressure		Final Time Pressure	
0.3511	1170	0.3866	1139
0.3679	1163	0.4074	1132
0.3866	1158	0.4308	1123
0.4074	1150	0.4573	1115
0.4308	1140	0.4877	1103

Graph Data For Lines

0	1299.19	0	1275.83
1	931.43	1	922.33

ZONE EVALUATION - Page 2

DST Number 1

TEST TICKET NO. 4323

Company: A. Scott Ritchie

Date: 6/3/84

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

$$M = G_0 - G_1 \quad 353.50$$

Damage Ratio:

$$DR = .183 \frac{P_s - P_f}{M} \quad 1.52$$

Effective Pay:

$$\frac{Kh}{B} = \frac{162.6 Q}{M} \quad 6.17 \text{ Md. Ft.}$$

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

$$Q_1 = Q DR \quad 20.34 \text{ Bbls/Day}$$

Production:

0.52 Bbls/Hour

$$Q = \frac{1440 R}{T} \quad 13.41 \text{ Bbls/Day}$$

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: 1

TEST TICKET NO. 4323

WELL NAME: Boys #1

WELL LOCATION: 8-6S-21W

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	2287.00	3.826	4.50
3	Weight Pipe	727.00	2.760	4.50
4	Drill Collar - 6"	355.00	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	27.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
Total Depth		3421.75		

CALCULATED RECOVERY ANALYSIS

DST Number: 1

TEST TICKET NO. 4323

Sample #	Total Feet	***** Gas %	***** Feet	***** Oil %	***** Feet	***** Mud %	***** Feet
1	30	0.00	0.00	70.00	21.00	30.00	9.00
2	60	5.00	3.00	60.00	36.00	35.00	21.00
3	60	15.00	9.00	55.00	33.00	30.00	18.00
4	60	5.00	3.00	15.00	9.00	80.00	48.00
TOTAL	<u>210</u>	7.14	<u>15.00</u>	47.14	<u>99.00</u>	45.71	<u>96.00</u>

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

CRUDE OIL TESTING, INC.

DATE 6/3/84

TEST TICKET NO. 4324

Company: A. Scott Ritchie
 Company Address: 125 N. Market Suite 950 Wichita Ks 67202
 Location: Sec. 8 Twp. 6S Range 21W Co. Graham State KS
 Well Name & Number: Boys #1 Code E16

ENGINEERING DATA	Elevation 2191 KB	Drill Pipe Length 2314	ID 3.8 "
	Mud Viscosity 45	Weight Pipe Length 727	ID 2.76"
	Mud Weight 9.7	Drill Collar Length 355	ID 2.25"
	Water Loss 5.6	Top Packer Depth 3413	
	Type of Mud Drispac	Bottom Packer Depth 3418	
	Anchor Length 22	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 Yes	
	Bottom Choke 3/4	Recorder # 13251	
	Extra Equipment	Circ. sub	

REMARKS DST #2
 Gas to surface in 10 min. on 1st open.
 Strong blow on both shutins.

FORMATION Lansing Zone Top Test Type Conventional
 Interval 3418 To 3440 Total Depth 3440
 Open 15 Shut In 30 Open 15 Shut In 30
 Packer(s) Set 06:30PM Started Off Bottom 08:00PM
 Blow 1st Opening Strong blow off bottom of bucket in 15 sec.
 2nd Opening Blow off bottom of bucket when tool opened.

RECOVERY Total Feet 2100
 Recovered 336 feet of Gassy oil
 Recovered 1764 feet of Reversed into truck (no samples)

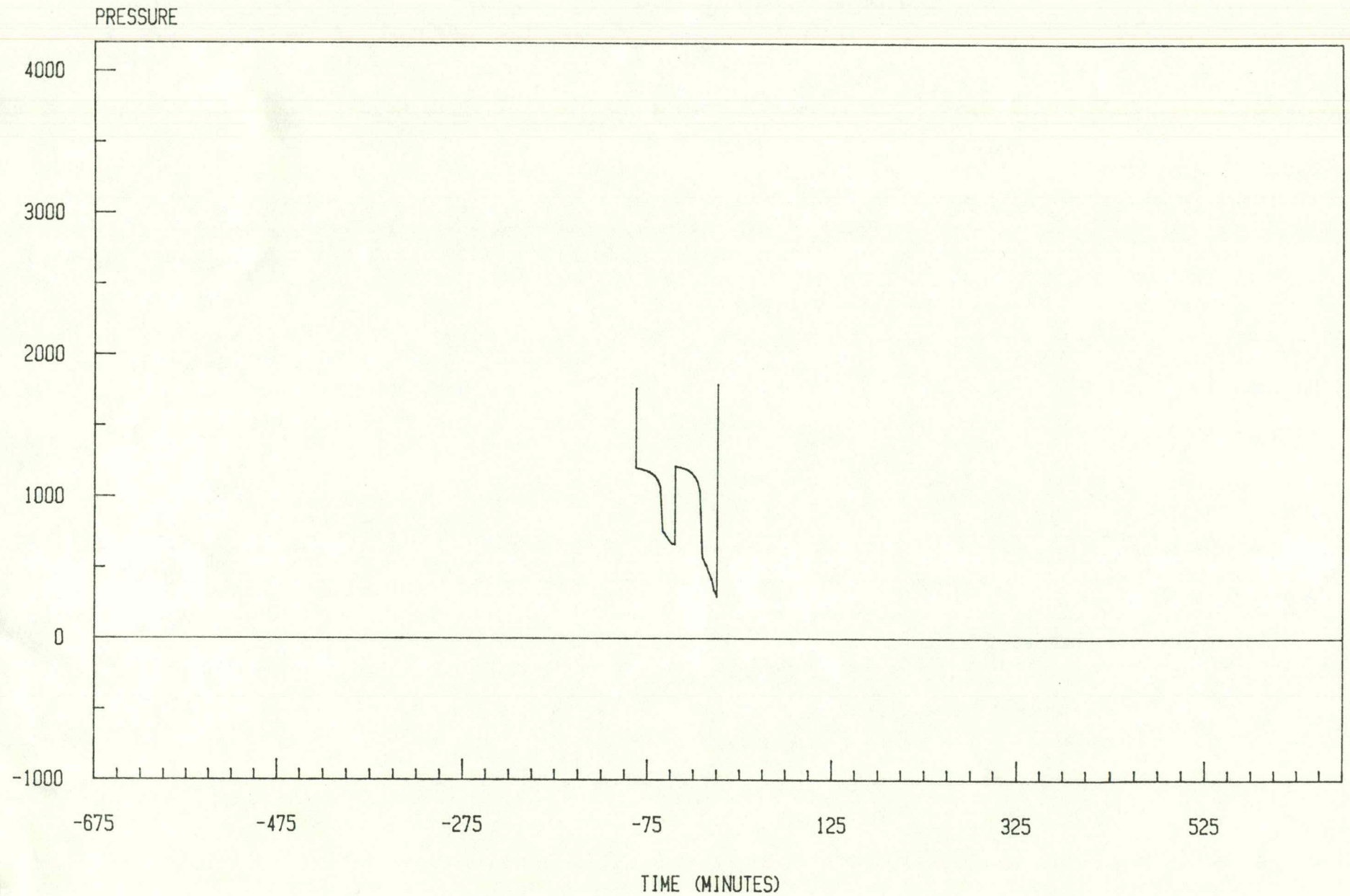
CALCULATED RECOVERY Gas 52.4 Oil 265.5 Water Mud 18.1
 Gravity (Oil) 36 Test Water Chlorides PPM
 Test Area Temperature 110F Mud System Chlorides 5,000 PPM

	FIELD READING	OFFICE READING	
PRESSURE (A) Initial Hydrostatic Mud	1784	1793	PSI
(B) First Initial Flow Pressure	300	296	PSI
(C) First Final Flow Pressure	564	569	PSI
(D) Initial Closed-In Pressure	1226	1216	PSI
(E) Second Initial Flow Pressure	667	666	PSI
(F) Second Final Flow Pressure	769	756	PSI
(G) Final Closed-In Pressure	1215	1204	PSI
(H) Final Hydrostatic Mud	1761	1764	PSI

CRUDE OIL TESTING INC Test 4324 DST 2

FOR: A. Scott Ritchie

06/03/84



PRESSURE BREAKDOWN

TEST TICKET NO. 4324

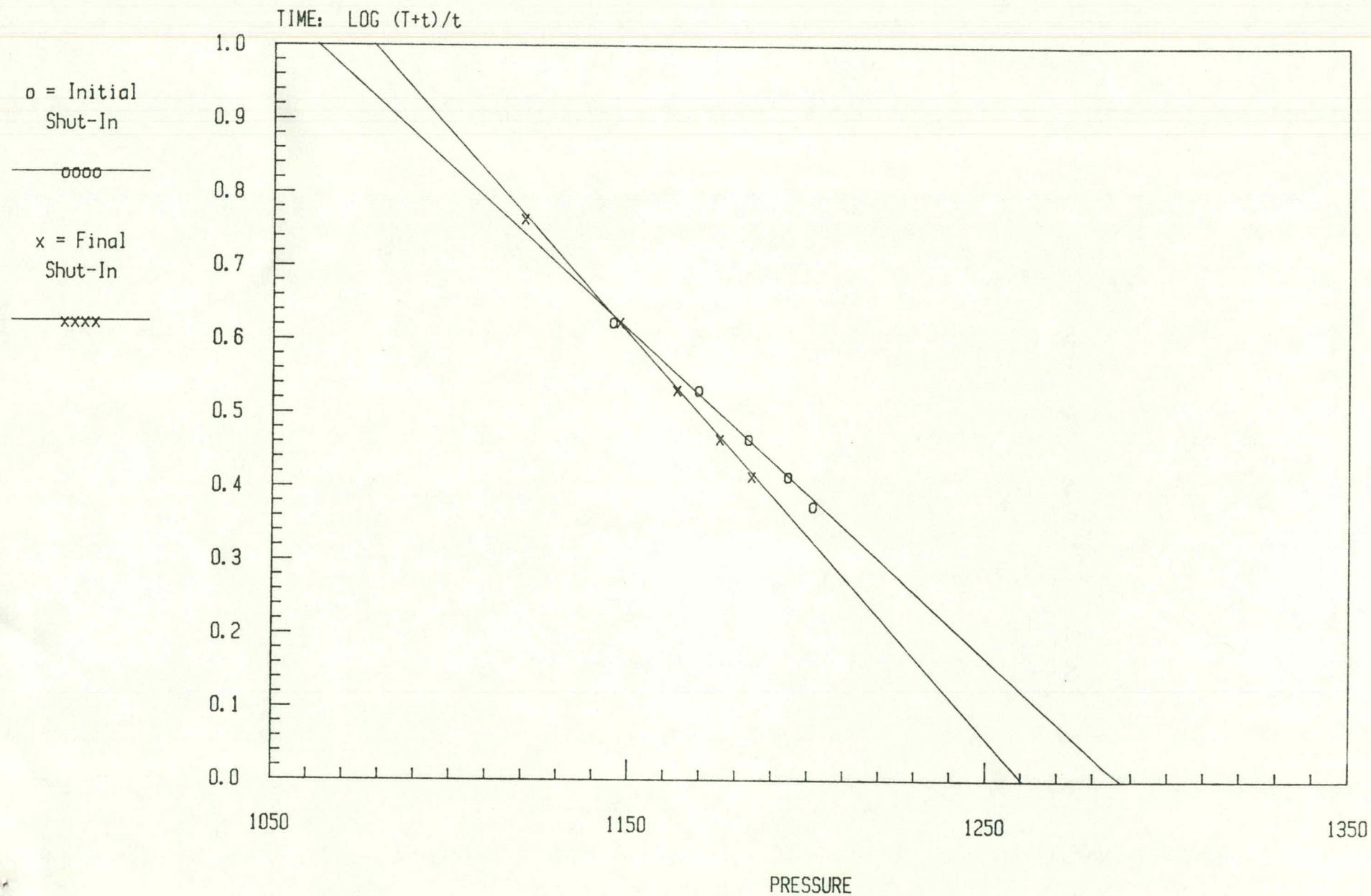
DST Number: 2 Recorder Number: 13251 Clock Number: 23935

First Flow Pressure	Initial Shut-In	Second Flow Pressure	Final Shut-In
Mins. Press.	Mins. Press.	Mins. Press.	Mins. Press.
0 296	0 569	0 665	0 756
3 340	3 1046	3 669	3 1069
6 420	6 1112	6 692	6 1120
9 465	9 1145	9 722	9 1147
12 516	12 1169	12 751	12 1163
15 561	15 1183	13 756	15 1175
16 569	18 1194		18 1184
	21 1201		21 1189
	24 1207		24 1195
	27 1212		27 1200
	30 1216		30 1203

CRUDE OIL TESTING INC TEST 4324 DST 2

FOR: A. Scott Ritchie

6/3/84



ZONE EVALUATION - Page 1

DST NUMBER 2

TEST TICKET NO. 4324

Company: A. Scott Ritchie

Date: 6/3/84

Drill Collar Feet	ID	Weight Pipe Feet	ID	Drill Pipe Feet	ID	Average ID	Gals/ Foot
266	2.250	0	2.760	0	3.800	2.2500	0.207

Bbls Recovered/Test = 2.7014 Est Bbls/Day = 134.1395 T = 29

Initial Shut-In					
PRESS.	TIME	T/t	(T+t)/t	LOG T/t	LOG (T+t)/t
1201	21	1.381	2.381	0.14018	0.37675
1194	18	1.611	2.611	0.20713	0.41683
1183	15	1.933	2.933	0.28631	0.46736
1169	12	2.417	3.417	0.38322	0.53360
1145	9	3.222	4.222	0.50816	0.62554

Final Shut-In					
Press.	Time	T/t	(T+t)/t	Log T/t	Log (T+t)/t
1184	18	1.611	2.611	0.20713	0.41683
1175	15	1.933	2.933	0.28631	0.46736
1163	12	2.417	3.417	0.38322	0.53360
1147	9	3.222	4.222	0.50816	0.62554
1120	6	4.833	5.833	0.68425	0.76592

Time Option is Log (T+t)/t								
IP(0)	IP(1)	FP(0)	FP(1)	M	Kh/B	DR	Q1	Pts
1275.8	1077.2	1259.0	1079.1	179.8	121.288	1.370	183.827	1,3
1276.5	1077.0	1259.0	1079.1	179.9	121.242	1.370	183.809	1-3
1279.2	1073.1	1257.9	1080.4	177.5	122.894	1.375	184.485	1-4
1287.5	1062.1	1260.5	1077.7	182.8	119.344	1.364	183.031	1-5

Graph Data For Points

Initial		Final	
Time	Pressure	Time	Pressure
0.3767	1201	0.4168	1184
0.4168	1194	0.4673	1175
0.4673	1183	0.5336	1163
0.5336	1169	0.6255	1147
0.6255	1145	0.7659	1120

Graph Data For Lines

0	1287.49	0	1260.48
1	1062.10	1	1077.72

ZONE EVALUATION - Page 2

DST Number 2

TEST TICKET NO. 4324

Company: A. Scott Ritchie

Date: 6/3/84

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

$$M = G_0 - G_1 \quad 182.76$$

Damage Ratio:

$$DR = .183 \frac{P_s - P_f}{M} \quad 1.36$$

Effective Pay:

$$\frac{Kh}{B} = \frac{162.6 Q}{M} \quad 119.34 \text{ Md. Ft.}$$

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

$$Q_1 = Q DR \quad 183.03 \text{ Bbls/Day}$$

Production:

2.70 Bbls/Hour

$$Q = \frac{1440 R}{T} \quad 134.14 \text{ Bbls/Day}$$

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: 2

TEST TICKET NO. 4324

WELL NAME: Boys #1

WELL LOCATION: 8-6S-21W

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	2314.00	3.826	4.50
3	Weight Pipe	727.00	2.760	4.50
4	Drill Collar - 6"	355.00	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	18.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
	Total Depth	3439.75		

CALCULATED RECOVERY ANALYSIS

DST Number: 2

TEST TICKET NO. 4324

Sample #	Total Feet	***** Gas %	***** Feet	***** Oil %	***** Feet	***** Mud %	***** Feet
1	30	10.00	3.00	90.00	27.00	0.00	0.00
2	62	40.00	24.80	60.00	37.20	0.00	0.00
3	62	15.00	9.30	85.00	52.70	0.00	0.00
4	62	15.00	9.30	80.00	49.60	5.00	3.10
5	60	5.00	3.00	85.00	51.00	10.00	6.00
6	60	5.00	3.00	80.00	48.00	15.00	9.00
TOTAL	<u>336</u>	15.60	<u>52.40</u>	79.02	<u>265.50</u>	5.39	<u>18.10</u>

Sample #	***** Water %	*** Feet	Chlorides (PPM)	Resistivity (Ohms)	Temperature (Deg)
1	0.00	0.00			
2	0.00	0.00			
3	0.00	0.00			
4	0.00	0.00			
5	0.00	0.00			
6	0.00	0.00			
TOTAL	0.00	<u>0.00</u>			

CRUDE OIL TESTING, INC.

DATE 6/4/84

TEST TICKET NO. 4325

Company: A. Scott Ritchie
 Company Address: 125 N. Market Suite 950 Wichita KS 67202
 Location: Sec. 8 Twp. 6S Range 21W Co. Graham State KS
 Well Name & Number: Boys #1 Code E16

ENGINEERING DATA	Elevation	2191 KB	Drill Pipe Length	2429	ID 3.8 "
	Mud Viscosity	52	Weight Pipe Length	727	ID 2.76"
	Mud Weight	9.8	Drill Collar Length	265	ID 2.25"
	Water Loss	6	Top Packer Depth	3438	
	Type of Mud	Drispac	Bottom Packer Depth	3443	
	Anchor Length	26	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	Yes	
	Bottom Choke	3/4	Recorder #	13251	
	Extra Equipment		Circ. sub		

REMARKS DST #3
 Gas to surface in 7 min.

FORMATION Lansing Zone 35 & 50 Test Type Conventional
 Interval 3443 To 3469 Total Depth 3469
 Open 15 Shut In 30 Open 15 Shut In 30
 Packer(s) Set 12:00PM Started Off Bottom 01:30PM
 Blow 1st Opening Strong blow off bottom of bucket in 30 sec.
 2nd Opening Strong blow when tool opened.

RECOVERY Total Feet 1600
 Recovered 232 feet of Slightly mud cut gassy oil
 Recovered 1368 feet of Reversed to truck

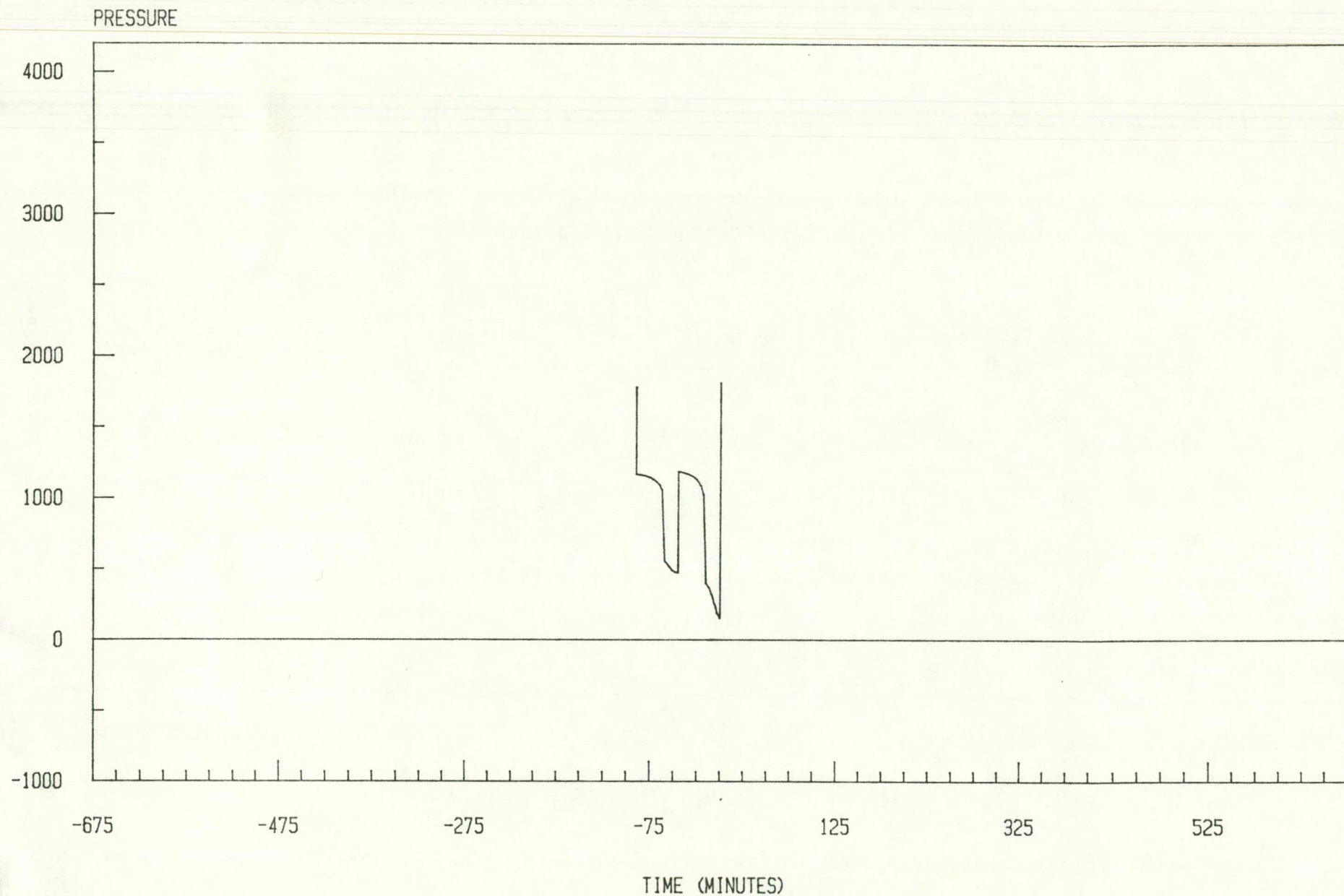
CALCULATED RECOVERY Gas 46.9 Oil 149.1 Water Mud 36
 Gravity (Oil) 35 Test Water Chlorides PPM
 Test Area Temperature 115F Mud System Chlorides 4,000 PPM

	FIELD READING	OFFICE READING	
PRESSURE (A) Initial Hydrostatic Mud	1807	1810	PSI
(B) First Initial Flow Pressure	161	157	PSI
(C) First Final Flow Pressure	403	401	PSI
(D) Initial Closed-In Pressure	1180	1185	PSI
(E) Second Initial Flow Pressure	472	474	PSI
(F) Second Final Flow Pressure	564	557	PSI
(G) Final Closed-In Pressure	1169	1168	PSI
(H) Final Hydrostatic Mud	1784	1781	PSI

CRUDE OIL TESTING INC Test 4325 DST 3

FOR: A. Scott Ritchie

06/04/84



PRESSURE BREAKDOWN

TEST TICKET NO. 4325

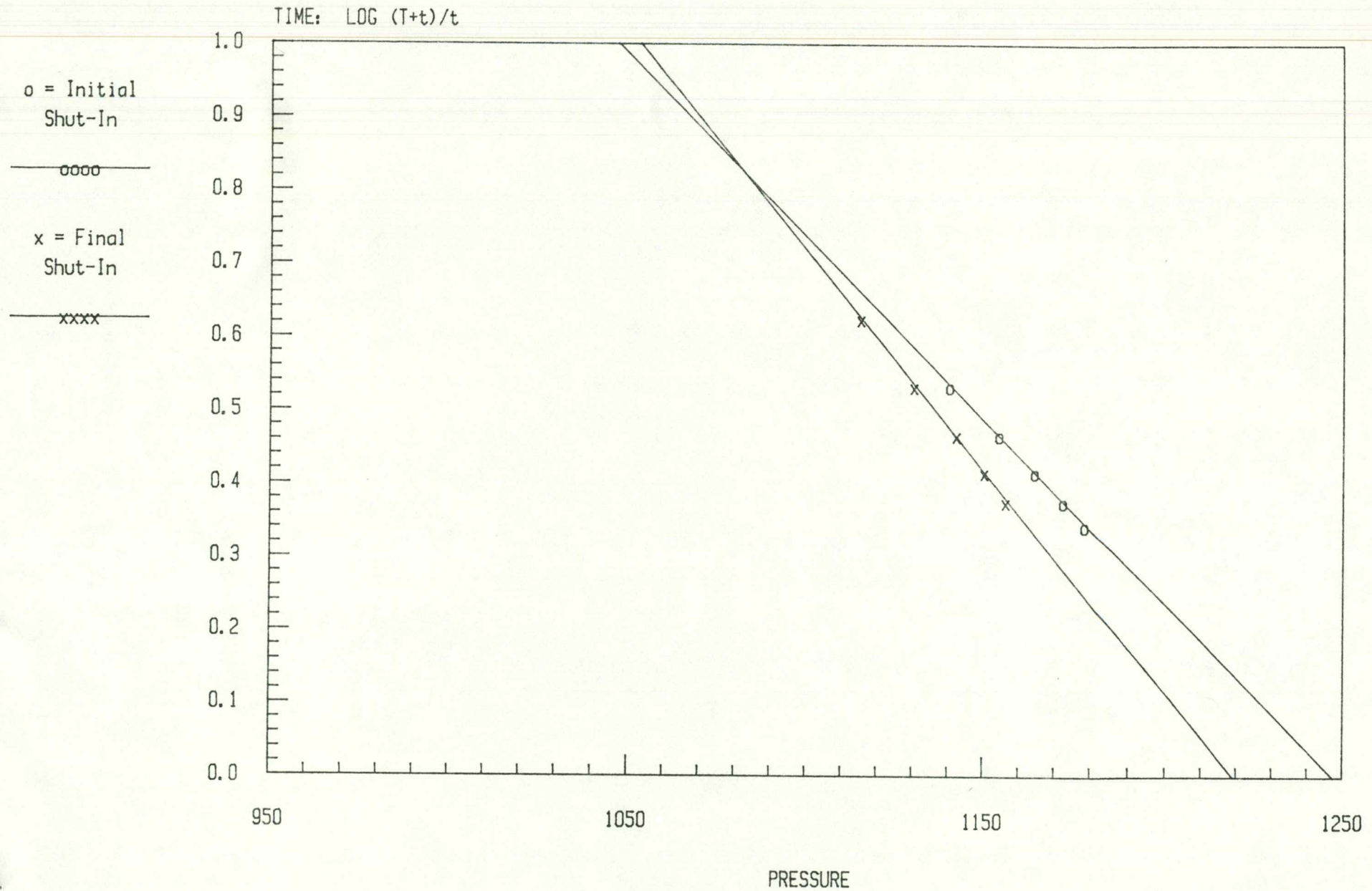
DST Number: 3 Recorder Number: 13251 Clock Number: 23935

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Mins. Press.		Mins. Press.		Mins. Press.		Mins. Press.	
0	156	0	400	0	474	0	556
3	186	3	1029	3	477	3	1059
6	256	6	1091	6	490	6	1095
9	322	9	1119	9	515	9	1115
12	370	12	1140	12	543	12	1130
15	400	15	1154	14	556	15	1142
		18	1164			18	1150
		21	1172			21	1156
		24	1178			24	1161
		27	1183			27	1165
		30	1185			30	1168
						31	1168

CRUDE OIL TESTING INC TEST 4325 DST 3*

FOR: A. Scott Ritchie

6/4/84



ZONE EVALUATION - Page 1

DST NUMBER 3

TEST TICKET NO. 4325

Company: A. Scott Ritchie

Date: 6/4/84

Drill Collar Feet	ID	Weight Pipe Feet	ID	Drill Pipe Feet	ID	Average ID	Gals/ Foot
149	2.250	0	2.760	0	3.800	2.2500	0.207

Bbls Recovered/Test = 1.5171 Est Bbls/Day = 75.3303 T = 29

Initial Shut-In					
PRESS.	TIME	T/t	(T+t)/t	LOG T/t	LOG (T+t)/t
1178	24	1.208	2.208	0.08219	0.34406
1172	21	1.381	2.381	0.14018	0.37675
1164	18	1.611	2.611	0.20713	0.41683
1154	15	1.933	2.933	0.28631	0.46736
1140	12	2.417	3.417	0.38322	0.53360

Final Shut-In					
Press.	Time	T/t	(T+t)/t	Log T/t	Log (T+t)/t
1156	21	1.381	2.381	0.14018	0.37675
1150	18	1.611	2.611	0.20713	0.41683
1142	15	1.933	2.933	0.28631	0.46736
1130	12	2.417	3.417	0.38322	0.53360
1115	9	3.222	4.222	0.50816	0.62554

Time Option is Log (T+t)/t								
IP(0)	IP(1)	FP(0)	FP(1)	M	Kh/B	DR	Q1	Pts
1244.2	1051.8	1214.2	1059.7	154.5	79.276	1.662	125.205	1,3
1244.4	1051.7	1214.3	1059.7	154.7	79.193	1.661	125.153	1-3
1245.4	1050.0	1218.9	1053.1	165.9	73.850	1.617	121.792	1-4
1247.5	1046.7	1219.2	1052.7	166.4	73.593	1.615	121.630	1-5

Graph Data For Points

Initial		Final	
Time	Pressure	Time	Pressure
0.3440	1178	0.3767	1156
0.3767	1172	0.4168	1150
0.4168	1164	0.4673	1142
0.4673	1154	0.5336	1130
0.5336	1140	0.6255	1115

Graph Data For Lines

0	1247.47	0	1219.16
1	1046.71	1	1052.72

ZONE EVALUATION - Page 2

DST Number 3

TEST TICKET NO. 4325

Company: A. Scott Ritchie

Date: 6/4/84

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

$$M = G_0 - G_1$$

166.44

Damage Ratio:

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

1.61

Effective Pay:

$$\frac{Kh}{B} = \frac{162.6 Q}{M}$$

73.59 Md. Ft.

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

$$Q_1 = Q DR$$

121.63 Bbls/Day

Production:

1.52 Bbls/Hour

$$Q = \frac{1440 R}{T}$$

75.33 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. 4325

WELL NAME: Boys #1

WELL LOCATION: 8-6S-21W

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	2429.00	3.826	4.50
3	Weight Pipe	727.00	2.760	4.50
4	Drill Collar - 6"	265.00	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	22.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
	Total Depth	3468.75		

CALCULATED RECOVERY ANALYSIS

DST Number: 3

TEST TICKET NO. 4325

Sample #	Total Feet	***** Gas %	***** Feet	***** Oil %	***** Feet	***** Mud %	***** Feet
1	50	20.00	10.00	80.00	40.00	0.00	0.00
2	62	45.00	27.90	55.00	34.10	0.00	0.00
3	60	5.00	3.00	60.00	36.00	35.00	21.00
4	60	10.00	6.00	65.00	39.00	25.00	15.00
TOTAL	<u>232</u>	20.22	<u>46.90</u>	64.27	<u>149.10</u>	15.52	<u>36.00</u>

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

CRUDE OIL TESTING, INC.

DATE 6/5/84

TEST TICKET NO. 4326

Company: A. Scott Ritchie
 Company Address: 125 N. Market Suite 950 Wichita KS 67202
 Location: Sec. 8 Twp. 6S Range 21W Co. Graham State KS
 Well Name & Number: Boys #1 Code E16

ENGINEERING DATA	Elevation	2194 KB	Drill Pipe Length	2450	ID 3.8 "
	Mud Viscosity	45	Weight Pipe Length	727	ID 2.76"
	Mud Weight	9.7	Drill Collar Length	265	ID 2.25"
	Water Loss	6	Top Packer Depth	3459	
	Type of Mud	Drispac	Bottom Packer Depth	3464	
	Anchor Length	25	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	Yes	
	Bottom Choke	3/4	Recorder #	13251	
	Extra Equipment		Circ. sub		

REMARKS DST #4
 Gas to surface in 9 min.

FORMATION Lansing Zone 70 & 90 Test Type Conventional
 Interval 3464 To 3489 Total Depth 3489
 Open 15 Shut In 30 Open 15 Shut In 30
 Packer(s) Set 01:30AM Started Off Bottom 03:00AM
 Blow 1st Opening Strong blow off bottom of bucket in 30 sec.
 2nd Opening Strong blow when tool opened.

RECOVERY Total Feet 1500
 Recovered 212 feet of Mud cut gassy oil
 Recovered 1288 feet of Reversed to truck (no sample)

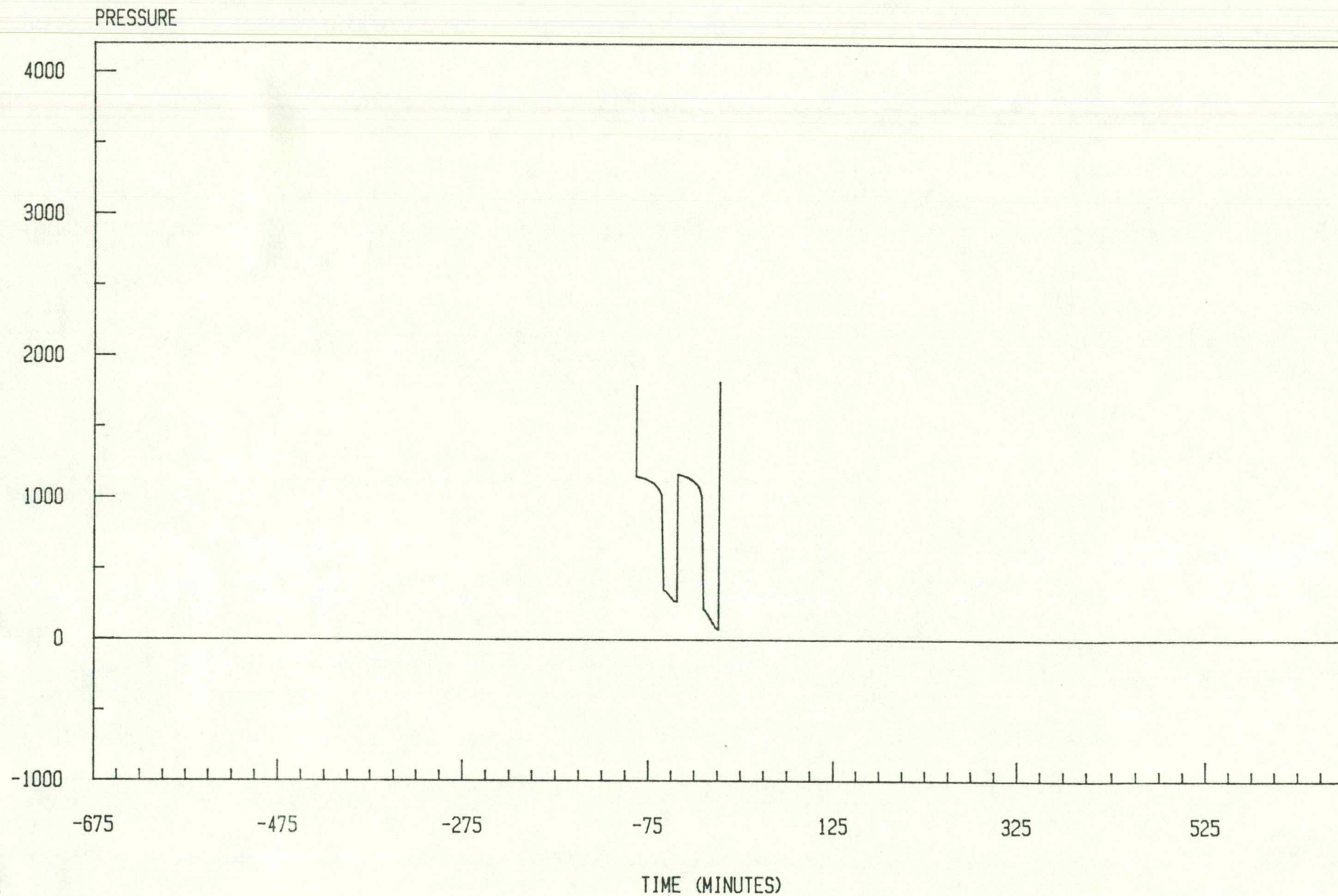
CALCULATED RECOVERY	Gas	24.4	Oil	139.6	Water	Mud	48
	Gravity (Oil)	42	Test Water Chlorides		PPM		
	Test Area Temperature		116F	Mud System Chlorides		5,000	PPM

		FIELD READING	OFFICE READING	
PRESSURE	(A) Initial Hydrostatic Mud	1795	1816	PSI
	(B) First Initial Flow Pressure	66	72	PSI
	(C) First Final Flow Pressure	207	218	PSI
	(D) Initial Closed-In Pressure	1169	1167	PSI
	(E) Second Initial Flow Pressure	277	270	PSI
	(F) Second Final Flow Pressure	346	349	PSI
	(G) Final Closed-In Pressure	1158	1151	PSI
	(H) Final Hydrostatic Mud	1773	1789	PSI

CRUDE OIL TESTING INC Test 4326 DST 4

FOR: A. Scott Ritchie

06/05/84



PRESSURE BREAKDOWN

TEST TICKET NO. 4326

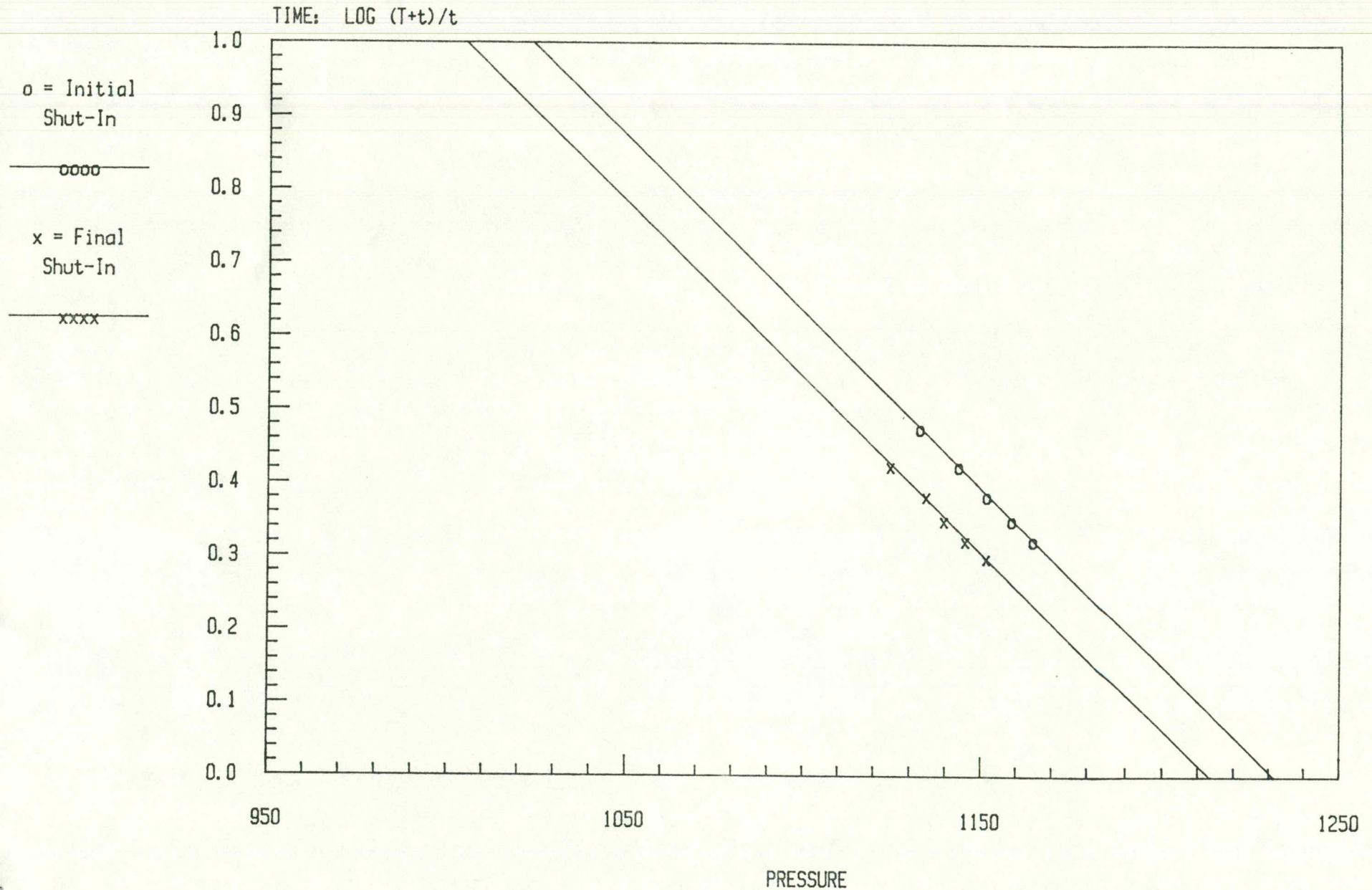
DST Number: 4 Recorder Number: 13251 Clock Number: 23935

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Mins. Press.		Mins. Press.		Mins. Press.		Mins. Press.	
0	72	0	217	0	269	0	349
3	84	3	1018	3	273	3	1021
6	118	6	1077	6	297	6	1059
9	152	9	1102	9	323	9	1085
12	183	12	1119	12	342	12	1103
15	212	15	1132	14	349	15	1113
16	217	18	1143			18	1124
		21	1151			21	1134
		24	1158			24	1139
		27	1164			27	1145
		29	1167			30	1151
						31	1151

CRUDE OIL TESTING INC TEST 4326 DST 4

FOR: A. Scott Ritchie

6/5/84



ZONE EVALUATION - Page 1

DST NUMBER 4

TEST TICKET NO. 4326

Company: A. Scott Ritchie

Date: 6/5/84

Drill Collar Feet	ID	Weight Pipe Feet	ID	Drill Pipe Feet	ID	Average ID	Gals/ Foot
140	2.250	0	2.760	0	3.800	2.2500	0.207

Bbls Recovered/Test = 1.3731 Est Bbls/Day = 65.9069 T = 30

Initial Shut-In					
PRESS.	TIME	T/t	(T+t)/t	LOG T/t	LOG (T+t)/t
1164	27	1.111	2.111	0.04576	0.32451
1158	24	1.250	2.250	0.09691	0.35218
1151	21	1.429	2.429	0.15490	0.38535
1143	18	1.667	2.667	0.22185	0.42597
1132	15	2.000	3.000	0.30103	0.47712

Final Shut-In					
Press.	Time	T/t	(T+t)/t	Log T/t	Log (T+t)/t
1151	30	1.000	2.000	0.00000	0.30103
1145	27	1.111	2.111	0.04576	0.32451
1139	24	1.250	2.250	0.09691	0.35218
1134	21	1.429	2.429	0.15490	0.38535
1124	18	1.667	2.667	0.22185	0.42597

Time Option is Log (T+t)/t								
IP(0)	IP(1)	FP(0)	FP(1)	M	Kh/B	DR	Q1	Pts
1233.3	1019.7	1221.6	987.0	234.6	45.681	1.605	105.752	1,3
1233.3	1019.7	1221.3	987.2	234.1	45.783	1.606	105.841	1-3
1231.0	1024.0	1210.8	1009.6	201.3	53.243	1.705	112.347	1-4
1231.5	1023.1	1213.4	1004.4	209.0	51.285	1.679	110.639	1-5

Graph Data For Points

Initial		Final	
Time	Pressure	Time	Pressure
0.3245	1164	0.3010	1151
0.3521	1158	0.3245	1145
0.3853	1151	0.3521	1139
0.4259	1143	0.3853	1134
0.4771	1132	0.4259	1124

Graph Data For Lines

0	1231.50	0	1213.37
1	1023.12	1	1004.41

ZONE EVALUATION - Page 2

DST Number 4

TEST TICKET NO. 4326

Company: A. Scott Ritchie

Date: 6/5/84

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

$$M = G_0 - G_1 \quad 208.96$$

Damage Ratio:

$$DR = .183 \frac{P_s - P_f}{M} \quad 1.68$$

Effective Pay:

$$\frac{Kh}{B} = \frac{162.6 Q}{M} \quad 51.28 \text{ Md. Ft.}$$

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

$$Q_1 = Q DR \quad 110.64 \text{ Bbls/Day}$$

Production:

$$1.37 \text{ Bbls/Hour}$$

$$Q = \frac{1440 R}{T}$$

$$65.91 \text{ Bbls/Day}$$

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: 4

TEST TICKET NO. 4326

WELL NAME: Boys #1

WELL LOCATION: 8-6S-21W

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	2450.00	3.826	4.50
3	Weight Pipe	727.00	2.760	4.50
4	Drill Collar - 6"	265.00	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	21.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
	Total Depth	3488.75		

CALCULATED RECOVERY ANALYSIS

DST Number: 4

TEST TICKET NO. 4326

Sample #	Total Feet	***** Gas %	**** Feet	***** Oil %	**** Feet	***** Mud %	**** Feet
1	30	10.00	3.00	90.00	27.00	0.00	0.00
2	62	20.00	12.40	80.00	49.60	0.00	0.00
3	60	5.00	3.00	45.00	27.00	50.00	30.00
4	60	10.00	6.00	60.00	36.00	30.00	18.00
TOTAL	<u>212</u>	11.51	<u>24.40</u>	65.85	<u>139.60</u>	22.64	<u>48.00</u>

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

CRUDE OIL TESTING, INC.

DATE 6/5/84

TEST TICKET NO. 4327

Company: A. Scott Ritchie
 Company Address: 125 N. Market Suite 950 Wichita KS 67202
 Location: Sec. 8 Twp. 6S Range 21W Co. Graham State KS
 Well Name & Number: Boys #1 Code E16

ENGINEERING DATA	Elevation 2194 KB	Drill Pipe Length 2485	ID 3.8 "
	Mud Viscosity 46	Weight Pipe Length 727	ID 2.76"
	Mud Weight 9.7	Drill Collar Length 265	ID 2.25"
	Water Loss 6.4	Top Packer Depth 3494	
	Type of Mud Drispac	Bottom Packer Depth 3499	
	Anchor Length 14	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 # 13251	
	Extra Equipment	None	

REMARKS DST #5

FORMATION	Lansing Zone 100	Test Type Conventional
	Interval 3499 To 3513	Total Depth 3513
	Open 30 Shut In 45	Open 30 Shut In 45
	Packer(s) Set 02:45PM	Started Off Bottom 05:15PM
	Blow 1st Opening Weak blow died in 15 min.	
	2nd Opening No blow.	

RECOVERY	Total Feet 20
	Recovered 20 feet of Slightly oil specked mud

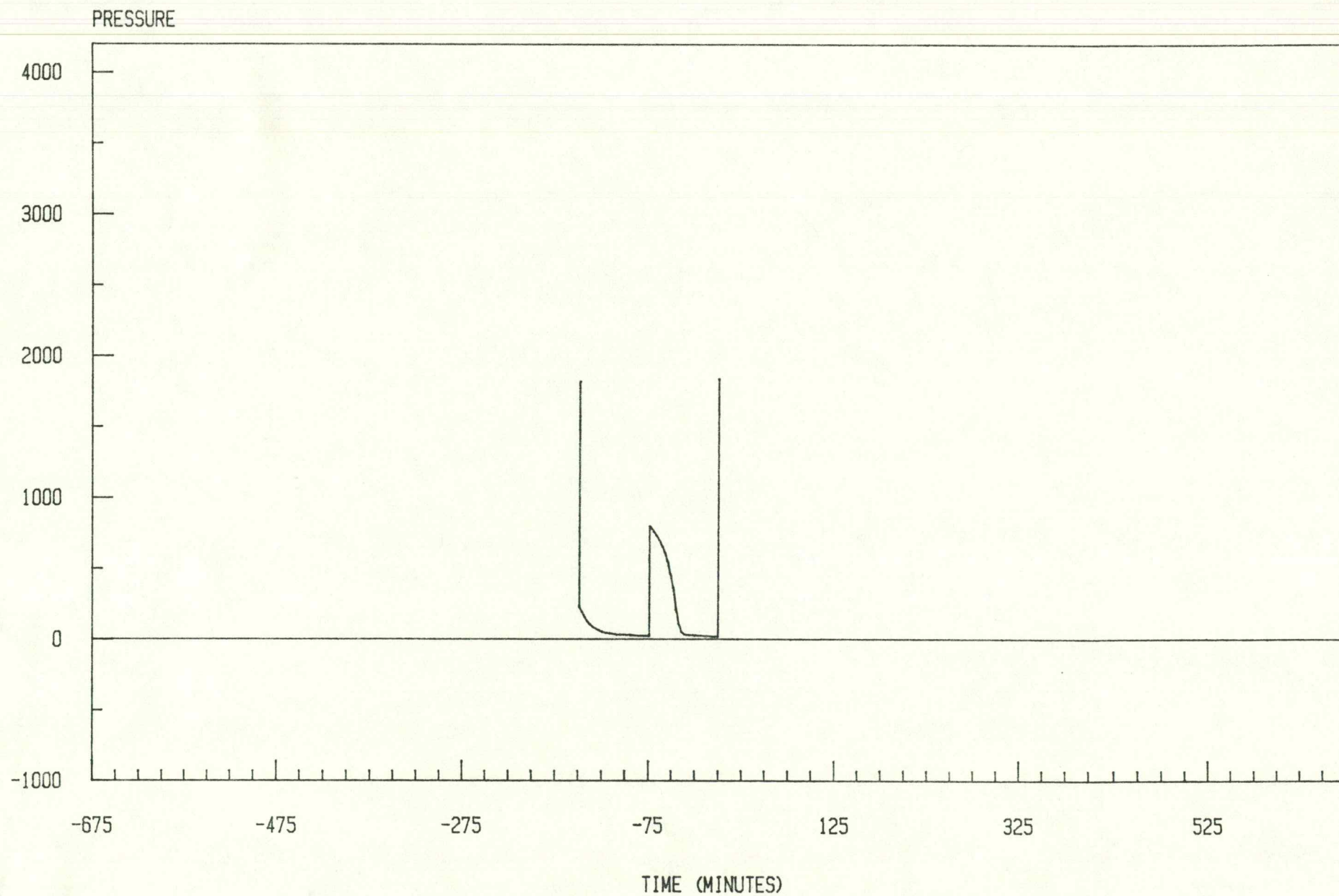
CALCULATED RECOVERY	Gas	Oil	Water	Mud
	Gravity (Oil)		Test Water Chlorides	PPM
	Test Area Temperature 110F		Mud System Chlorides	3,000 PPM

		FIELD READING	OFFICE READING	
PRESSURE	(A) Initial Hydrostatic Mud	1841	1840	PSI
	(B) First Initial Flow Pressure	33	20	PSI
	(C) First Final Flow Pressure	33	32	PSI
	(D) Initial Closed-In Pressure	804	802	PSI
	(E) Second Initial Flow Pressure	33	25	PSI
	(F) Second Final Flow Pressure	33	34	PSI
	(G) Final Closed-In Pressure	242	232	PSI
	(H) Final Hydrostatic Mud	1818	1820	PSI

CRUDE OIL TESTING INC Test 4327 DST 5

FOR: A. Scott Ritchie

06/05/84



PRESSURE BREAKDOWN

TEST TICKET NO. 4327

DST Number: 5 Recorder Number: 13251 Clock Number: 23935

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Mins.	Press.	Mins.	Press.	Mins.	Press.	Mins.	Press.
0	20	0	32	0	25	0	34
3	22	3	33	3	26	3	35
6	22	6	37	6	27	6	38
9	25	9	53	9	27	9	41
12	25	12	109	12	27	12	44
15	26	15	213	15	28	15	47
18	29	18	361	18	29	18	50
21	29	21	465	21	33	21	57
24	30	24	553	24	33	24	67
27	32	27	615	27	34	27	78
30	32	30	661	30	34	30	89
		33	702			33	107
		36	734			36	130
		39	765			39	160
		42	789			42	200
		44	801			45	231

EQUIPMENT DATA
TOOL SEQUENCE REPORT

DST Number: 5

TEST TICKET NO. 4327

WELL NAME: Boys #1

WELL LOCATION: 8-6S-21W

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	2485.00	3.826	4.50
3	Weight Pipe	727.00	2.760	4.50
4	Drill Collar - 6"	265.00	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	10.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
	Total Depth	3512.75		

CRUDE OIL TESTING, INC.

DATE 6/6/84

TEST TICKET NO. 4328

Company: A. Scott Ritchie
 Company Address: 125 N. Market Suite 950 Wichita Ks 67202
 Location: Sec. 8 Twp. 6S Range 21W Co. Graham State KS
 Well Name & Number: Boys #1 Code E16

ENGINEERING DATA	Elevation	2194 KB	Drill Pipe Length	2554	ID 3.8 "
	Mud Viscosity	45	Weight Pipe Length	696	ID 2.76"
	Mud Weight	9.7	Drill Collar Length	265	ID 2.25"
	Water Loss	6.4	Top Packer Depth		
	Type of Mud	Driscac	Bottom Packer Depth	3532	
	Anchor Length	59	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 #	13251	
	Extra Equipment		None		

REMARKS DST #6

FORMATION Kansas City Zone 140 160 180 Test Type Conventional
 Interval 3532 To 3591 Total Depth 3591
 Open 30 Shut In 45 Open 30 Shut In 45
 Packer(s) Set 07:00AM Started Off Bottom 09:30AM
 Blow 1st Opening Fair blow increased to 9 in. in bucket.
 2nd Opening 9 inch blow decreasing to 1 inch.

RECOVERY Total Feet 920
 Recovered 402 feet of Gas in pipe
 Recovered 518 feet of Gassy mud cut oil

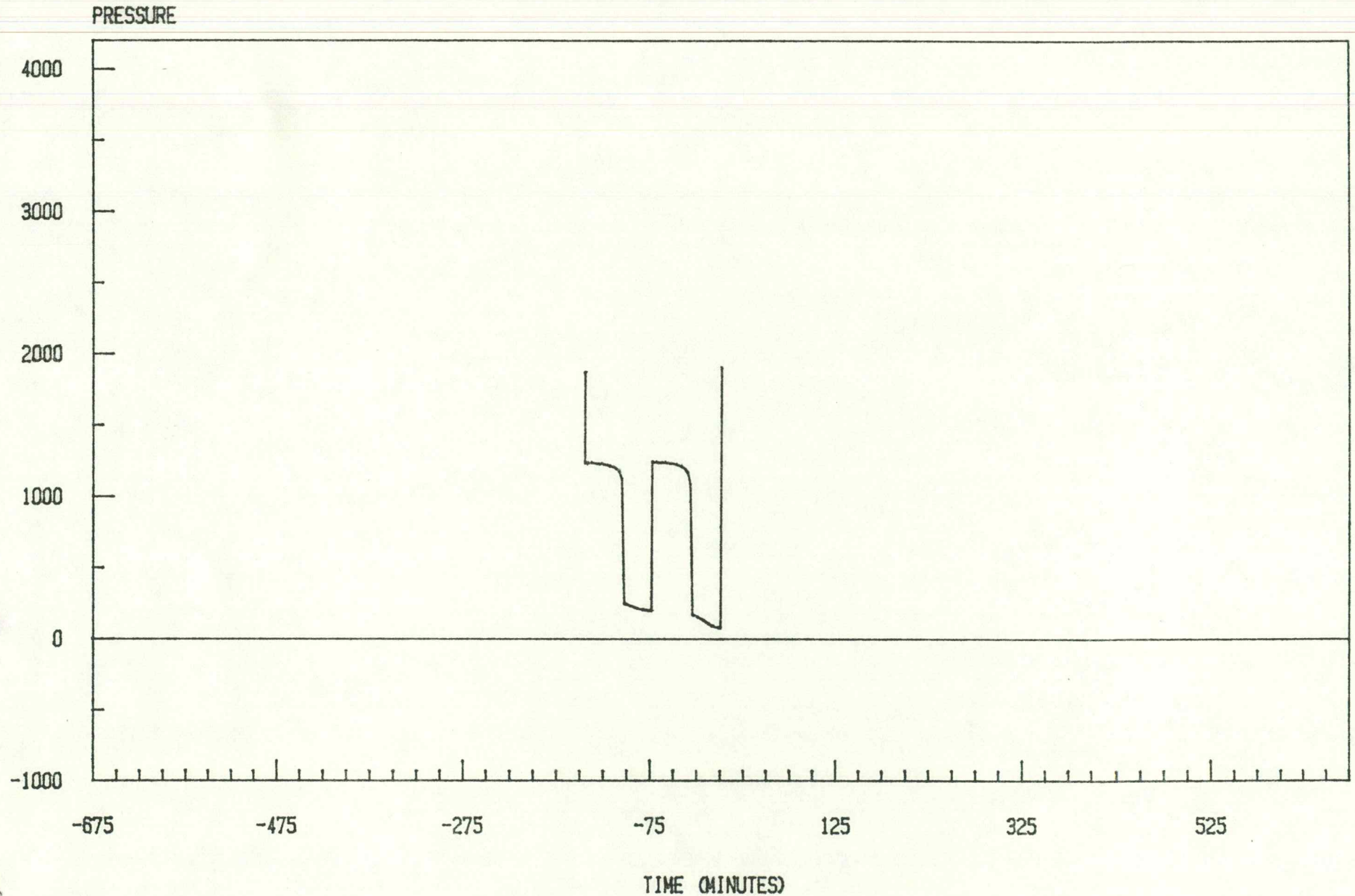
CALCULATED RECOVERY Gas 68.4 Oil 269.8 Water Mud 179.3
 Gravity (Oil) Test Water Chlorides PPM
 Test Area Temperature 114F Mud System Chlorides 4,000 PPM

		FIELD READING	OFFICE READING	
PRESSURE	(A) Initial Hydrostatic Mud	1875	1904	PSI
	(B) First Initial Flow Pressure	77	75	PSI
	(C) First Final Flow Pressure	173	168	PSI
	(D) Initial Closed-In Pressure	1249	1242	PSI
	(E) Second Initial Flow Pressure	196	198	PSI
	(F) Second Final Flow Pressure	242	247	PSI
	(G) Final Closed-In Pressure	1237	1238	PSI
	(H) Final Hydrostatic Mud	1852	1873	PSI

CRUDE OIL TESTING INC Test 4328 DST 6

FOR: A. Scott Ritchie

06/06/84



PRESSURE BREAKDOWN

TEST TICKET NO. 4328

DST Number: 6

Recorder Number: 13251

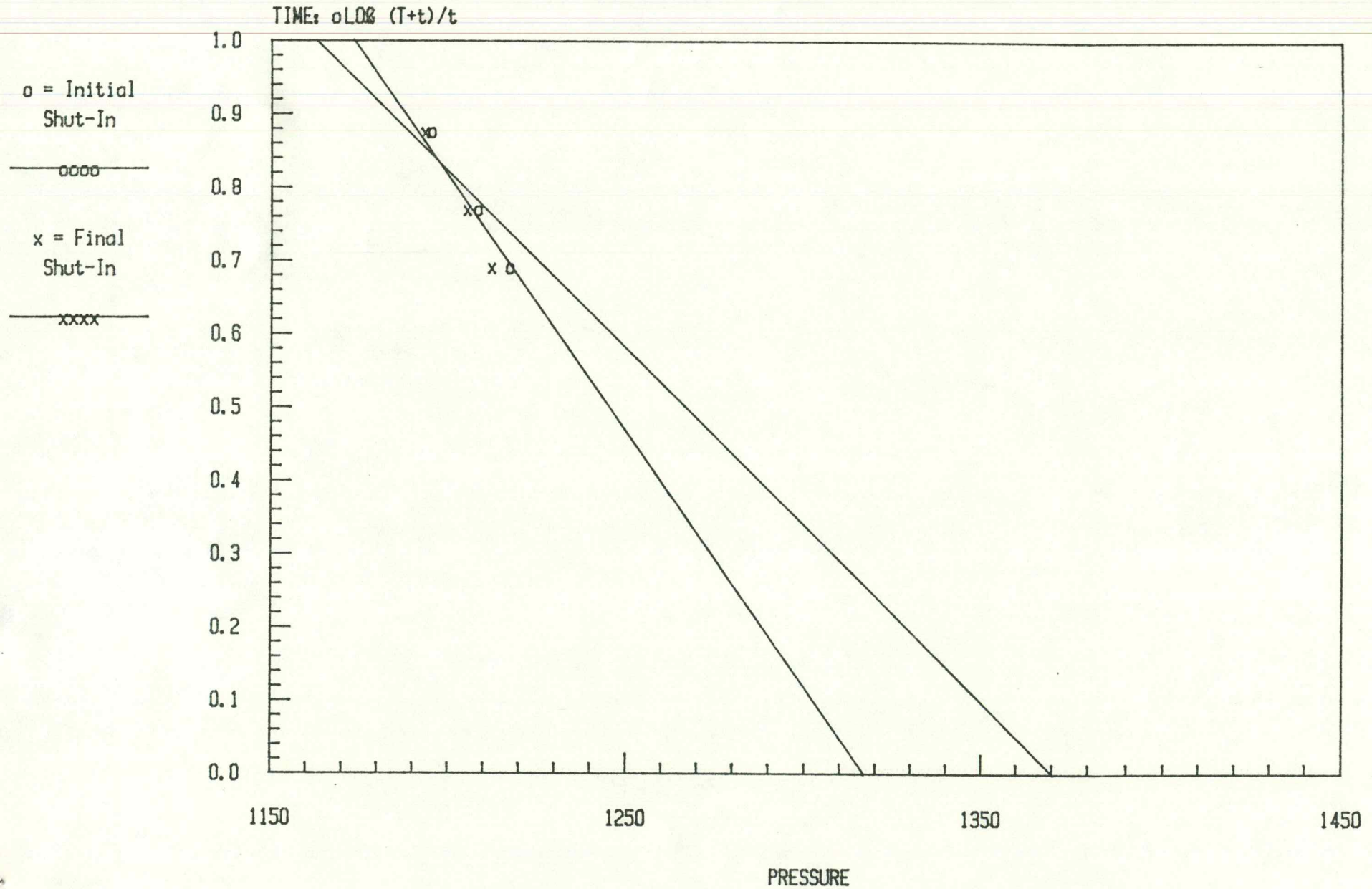
Clock Number: 23935

First Flow Pressure	Initial Shut-In	Second Flow Pressure	Final Shut-In
Mins. Press.	Mins. Press.	Mins. Press.	Mins. Press.
0 74	0 168	0 198	0 246
3 78	3 1088	3 198	3 1122
6 82	6 1168	6 200	6 1177
9 92	9 1195	9 202	9 1193
12 103	12 1208	12 207	12 1205
15 116	15 1217	15 213	15 1212
18 129	18 1222	18 221	18 1218
21 141	21 1228	21 228	21 1222
24 153	24 1230	24 233	24 1226
27 162	27 1234	27 241	27 1227
30 168	30 1236	29 246	30 1230
	33 1238		33 1233
	36 1238		36 1234
	39 1240		39 1235
	42 1241		42 1235
	44 1242		43 1237

CRUDE OIL TESTING INC TEST 4328 DST 6*

FOR: A. Scott Ritchie

6/6/84



ZONE EVALUATION - Page 1

DST NUMBER 6

TEST TICKET NO. 4328

Company: A. Scott Ritchie

Date: 6/6/84

Drill Collar Feet	ID	Weight Pipe Feet	ID	Drill Pipe Feet	ID	Average ID	Gals/ Foot
265	2.250	5	2.760	0	3.800	2.2591	0.208

Bbls Recovered/Test = 1.3602 Est Bbls/Day = 33.1988 T = 59

PRESS. TIME		Initial Shut-In			
		T/t	(T+t)/t	LOG T/t	LOG (T+t)/t
1217	15	3.933	4.933	0.59476	0.69314
1208	12	4.917	5.917	0.69167	0.77208
1195	9	6.556	7.556	0.81661	0.87827
1168	6	9.833	10.833	0.99270	1.03476
1088	3	19.667	20.667	1.29373	1.31527

Press. Time		Final Shut-In			
		T/t	(T+t)/t	Log T/t	Log (T+t)/t
1212	15	3.933	4.933	0.59476	0.69314
1205	12	4.917	5.917	0.69167	0.77208
1193	9	6.556	7.556	0.81661	0.87827
1177	6	9.833	10.833	0.99270	1.03476
1122	3	19.667	20.667	1.29373	1.31527

Time Option is Log (T+t)/t							
IP(0)	IP(1)	FP(0)	FP(1)	M	Kh/B	DR	Q1 Pts
1299.4	1180.5	1283.1	1180.5	102.6	52.596	1.562	51.855 1,3
1299.7	1180.6	1284.0	1180.7	103.2	52.301	1.553	51.564 1-3
1318.3	1174.7	1284.3	1180.6	103.7	52.069	1.546	51.335 1-4
1370.3	1162.5	1316.9	1173.0	143.9	37.506	1.114	36.977 1-5

Graph Data For Points

Initial Time Pressure		Final Time Pressure	
0.6931	1217	0.6931	1212
0.7720	1208	0.7720	1205
0.8782	1195	0.8782	1193
1.0347	1168	1.0347	1177
1.3152	1088	1.3152	1122

Graph Data For Lines

0	1370.31	0	1316.91
1	1162.46	1	1172.98

ZONE EVALUATION - Page 2

DST Number 6

TEST TICKET NO. 4328

Company: A. Scott Ritchie

Date: 6/6/84

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

$$M = G_0 - G_1 \quad 143.93$$

Damage Ratio:

$$DR = .183 \frac{P_s - P_f}{M} \quad 1.11$$

Effective Pay:

$$\frac{Kh}{B} = \frac{162.6}{M} \frac{Q}{M} \quad 37.51 \text{ Md. Ft.}$$

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

$$Q_1 = Q DR \quad 36.98 \text{ Bbls/Day}$$

Production:

$$1.36 \text{ Bbls/Hour}$$

$$Q = \frac{1440}{T} R \quad 33.20 \text{ Bbls/Day}$$

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: 6

TEST TICKET NO. 4328

WELL NAME: Boys #1

WELL LOCATION: 8-6S-21W

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	2554.00	3.826	4.50
3	Weight Pipe	696.00	2.760	4.50
4	Drill Collar - 6"	265.00	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
6	Anchor	55.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
	Total Depth	3590.40		

CALCULATED RECOVERY ANALYSIS

DST Number: 6

TEST TICKET NO. 4328

Sample #	Total Feet	***** Gas %	***** Feet	***** Oil %	***** Feet	***** Mud %	***** Feet
1	30	5.00	1.50	45.00	13.50	50.00	15.00
2	62	10.00	6.20	55.00	34.10	35.00	21.70
3	62	0.00	0.00	50.00	31.00	50.00	31.00
4	62	20.00	12.40	50.00	31.00	30.00	18.60
5	62	5.00	3.10	55.00	34.10	40.00	24.80
6	60	25.00	15.00	55.00	33.00	20.00	12.00
7	120	20.00	24.00	60.00	72.00	20.00	24.00
8	60	10.00	6.00	35.00	21.00	55.00	33.00
TOTAL	<u>518</u>	13.17	<u>68.20</u>	52.07	<u>269.70</u>	34.77	<u>180.10</u>

Sample #	**** Water %	*** Feet	Chlorides (PPM)	Resistivity (Ohms)	Temperature (Deg)
1	0.00	0.00			
2	0.00	0.00			
3	0.00	0.00			
4	0.00	0.00			
5	0.00	0.00			
6	0.00	0.00			
7	0.00	0.00			
8	0.00	0.00			
TOTAL	0.00	<u>0.00</u>			

CRUDE OIL TESTING, INC.

DATE 6/6/84

TEST TICKET NO. 4343

Company: A. Scott Ritchie
 Company Address: 125 N. Market Suite 950 Wichita Ks 67202
 Location: Sec. 8 Twp. 6S Range 21W Co. Graham State KS
 Well Name & Number: Boys #1 Code E16

ENGINEERING DATA	Elevation	2194 KB	Drill Pipe Length	2578	ID 3.8 "
	Mud Viscosity	46	Weight Pipe Length	727	ID 2.76"
	Mud Weight	9.9	Drill Collar Length	265	ID 2.25"
	Water Loss	7.2	Top Packer Depth		
	Type of Mud	Driscap	Bottom Packer Depth	3588	
	Anchor Length	32	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 #	13251	
	Extra Equipment		None		

REMARKS DST #7
 Weak blow on 2nd shutin.

FORMATION Kansas City Zone 200 220 Test Type Conventional
 Interval 3588 To 3620 Total Depth 3620
 Open 30 Shut In 45 Open 30 Shut In 45
 Packer(s) Set 09:30PM Started Off Bottom 12:00AM
 Blow 1st Opening Weak blow increasing to 7 inches in bucket.
 2nd Opening Medium blow increasing to 7.5 in. in bucket.

RECOVERY Total Feet 250
 Recovered 50 feet of Gas in pipe
 Recovered 200 feet of Slightly gassy mud cut oil

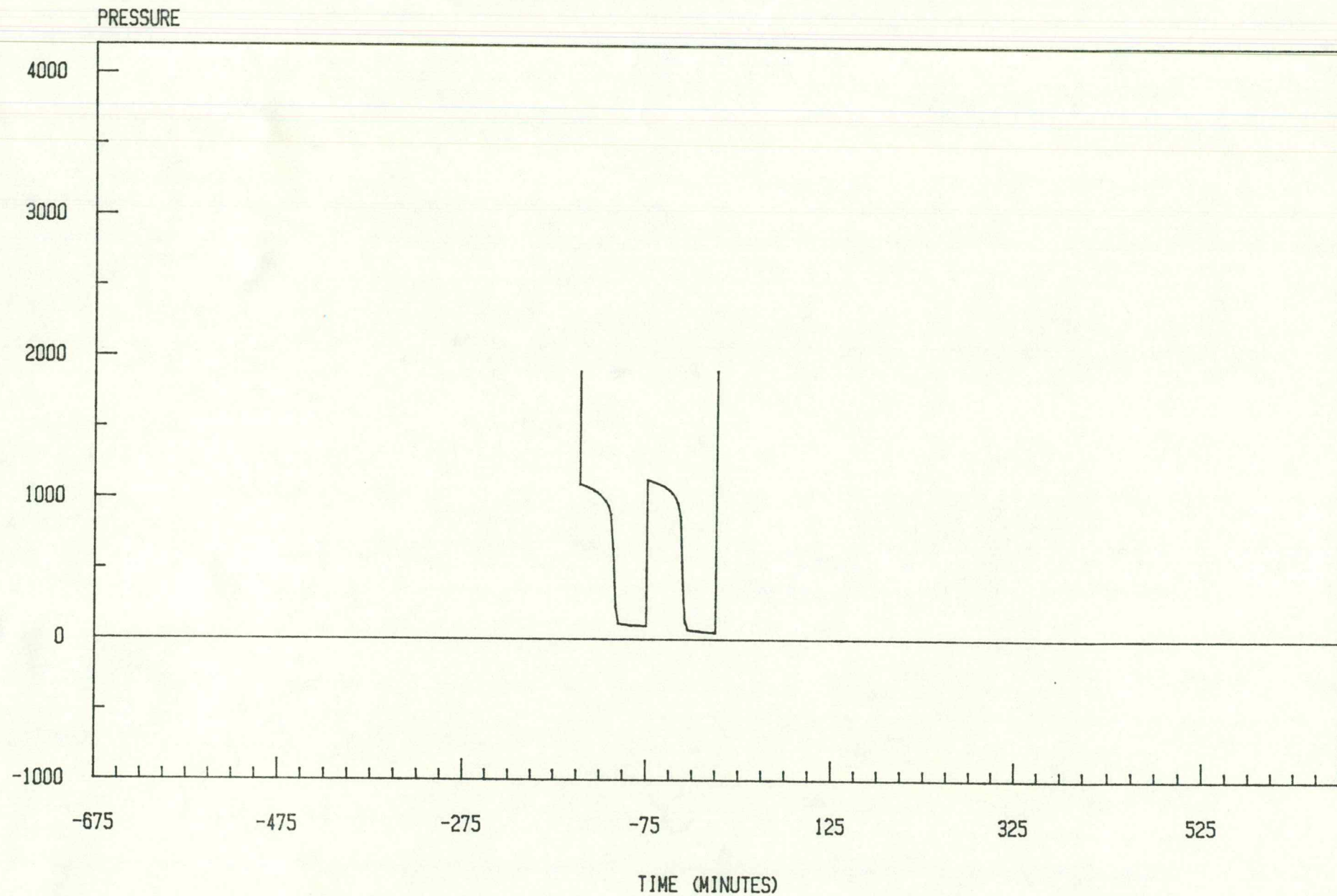
CALCULATED RECOVERY Gas 13 Oil 131 Water Mud 56
 Gravity (Oil) 36 Test Water Chlorides PPM
 Test Area Temperature 112F Mud System Chlorides 4,000 PPM

	FIELD READING	OFFICE READING	
PRESSURE (A) Initial Hydrostatic Mud	1886	1898	PSI
(B) First Initial Flow Pressure	44	46	PSI
(C) First Final Flow Pressure	55	67	PSI
(D) Initial Closed-In Pressure	1123	1128	PSI
(E) Second Initial Flow Pressure	88	92	PSI
(F) Second Final Flow Pressure	99	112	PSI
(G) Final Closed-In Pressure	1089	1094	PSI
(H) Final Hydrostatic Mud	1864	1892	PSI

CRUDE OIL TESTING INC Test 4343 DST 7

FOR: A. Scott Ritchie

06/06/84



PRESSURE BREAKDOWN

TEST TICKET NO. 4343

DST Number: 7

Recorder Number: 13251

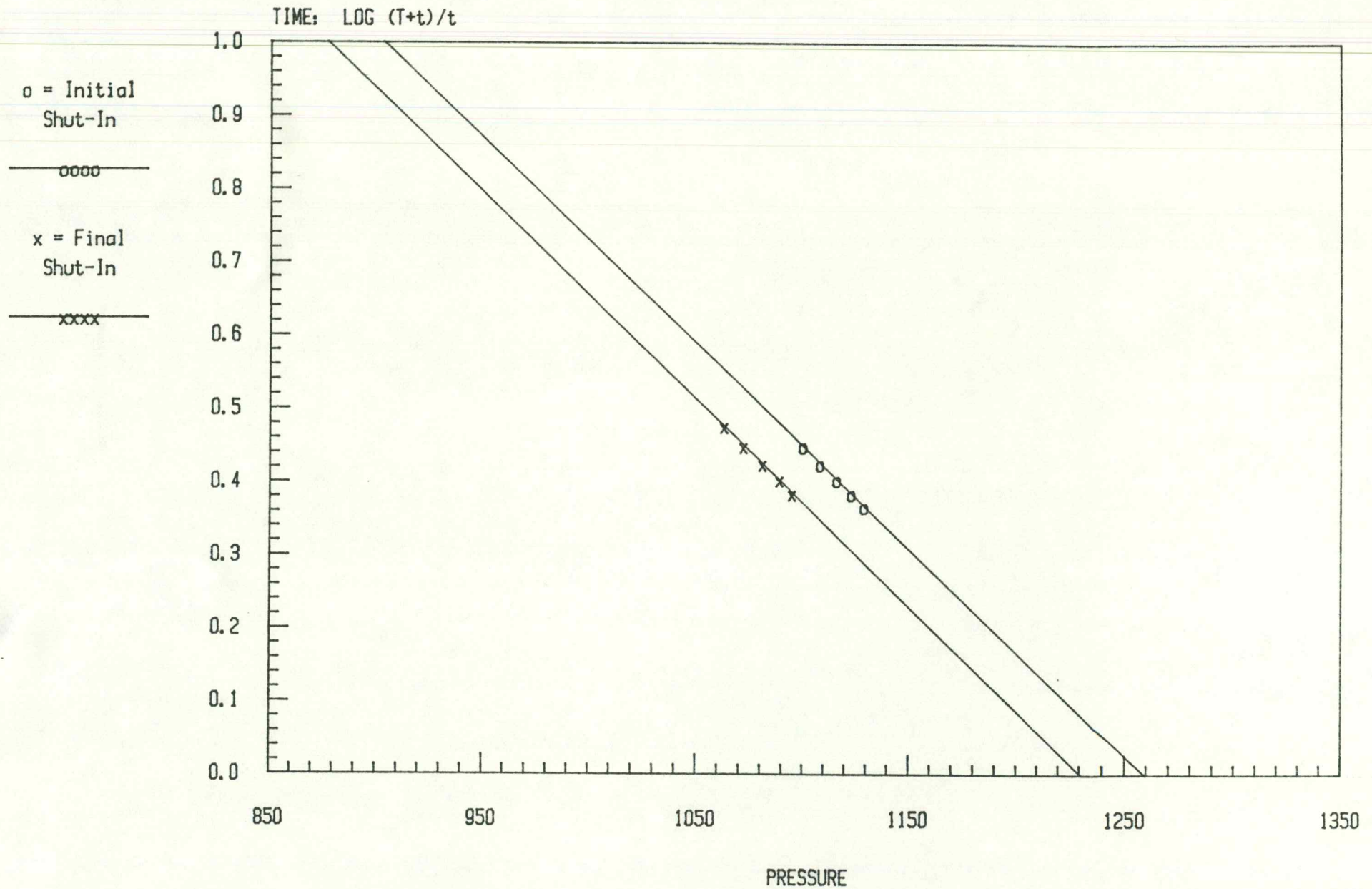
Clock Number: 23935

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Mins. Press.		Mins. Press.		Mins. Press.		Mins. Press.	
0	45	0	66	0	92	0	111
3	48	3	120	3	93	3	222
6	48	6	394	6	95	6	639
9	49	9	869	9	95	9	880
12	50	12	965	12	96	12	945
15	52	15	1006	15	97	15	977
18	56	18	1031	18	100	18	1002
21	58	21	1053	21	103	21	1022
24	60	24	1067	24	105	24	1038
27	63	27	1081	27	108	27	1050
30	66	30	1091	30	111	30	1062
		33	1099			33	1071
		36	1107			36	1080
		39	1115			39	1088
		42	1122			42	1094
		45	1128			43	1094

CRUDE OIL TESTING INC TEST 4343⁴ DST 7^{*}

FOR: A. Scott Ritchie

6/6/84



ZONE EVALUATION - Page 1

DST NUMBER 7

TEST TICKET NO. 4343

Company: A. Scott Ritchie

Date: 6/6/84

Drill Collar Feet	ID	Weight Pipe Feet	ID	Drill Pipe Feet	ID	Average ID	Gals/ Foot
131	2.250	0	2.760	0	3.800	2.2500	0.207

Bbls Recovered/Test = 0.6442 Est Bbls/Day = 15.4617 T = 60

Initial Shut-In					
PRESS.	TIME	T/t	(T+t)/t	LOG T/t	LOG (T+t)/t
1128	45	1.333	2.333	0.12494	0.36798
1122	42	1.429	2.429	0.15490	0.38535
1115	39	1.538	2.538	0.18709	0.40457
1107	36	1.667	2.667	0.22185	0.42597
1099	33	1.818	2.818	0.25964	0.44997

Final Shut-In					
Press.	Time	T/t	(T+t)/t	Log T/t	Log (T+t)/t
1094	42	1.429	2.429	0.15490	0.38535
1088	39	1.538	2.538	0.18709	0.40457
1080	36	1.667	2.667	0.22185	0.42597
1071	33	1.818	2.818	0.25964	0.44997
1062	30	2.000	3.000	0.30103	0.47712

Time Option is Log (T+t)/t								
IP(0)	IP(1)	FP(0)	FP(1)	M	Kh/B	DR	Q1	Pts
1258.7	903.5	1226.8	882.1	344.7	7.294	1.505	23.269	1,3
1258.8	903.4	1227.3	882.0	345.2	7.282	1.504	23.256	1-3
1261.6	899.0	1232.5	874.1	358.4	7.015	1.486	22.970	1-4
1259.3	902.6	1230.7	876.8	353.9	7.104	1.492	23.066	1-5

Graph Data For Points

Initial		Final	
Time	Pressure	Time	Pressure
0.3679	1128	0.3853	1094
0.3853	1122	0.4045	1088
0.4045	1115	0.4259	1080
0.4259	1107	0.4499	1071
0.4499	1099	0.4771	1062

Graph Data For Lines

0	1259.27	0	1230.67
1	902.63	1	876.79

ZONE EVALUATION - Page 2

DST Number 7

TEST TICKET NO. 4343

Company: A. Scott Ritchie

Date: 6/6/84

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

$$M = G_0 - G_1$$

353.88

Damage Ratio:

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

1.49

Effective Pay:

$$\frac{K_h}{B} = \frac{162.6 Q}{M}$$

7.10 Md. Ft.

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

$$Q_1 = Q DR$$

23.07 Bbls/Day

Production:

0.64 Bbls/Hour

$$Q = \frac{1440 R}{T}$$

15.46 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: 7

TEST TICKET NO. 4343

WELL NAME: Boys #1

WELL LOCATION: 8-6S-21W

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	2578.00	3.826	4.50
3	Weight Pipe	727.00	2.760	4.50
4	Drill Collar - 6"	265.00	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
6	Anchor	28.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
	Total Depth	3618.40		

CALCULATED RECOVERY ANALYSIS

DST Number: 7

TEST TICKET NO. 4343

Sample #	Total Feet	***** Gas %	***** Feet	***** Oil %	***** Feet	***** Mud %	***** Feet
1	20	5.00	1.00	85.00	17.00	10.00	2.00
2	60	5.00	3.00	75.00	45.00	20.00	12.00
3	60	5.00	3.00	75.00	45.00	20.00	12.00
4	60	10.00	6.00	40.00	24.00	50.00	30.00
TOTAL	<u>200</u>	6.50	<u>13.00</u>	65.50	<u>131.00</u>	28.00	<u>56.00</u>

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

CRUDE OIL TESTING, INC.

DATE 6/8/84

TEST TICKET NO. 4344

Company: A. Scott Ritchie
 Company Address: 125 N. Market Suite 950 Wichita KS 67202
 Location: Sec. 8 Twp. 6S Range 21W Co. Graham State KS
 Well Name & Number: Boys #1 Code E16

ENGINEERING DATA	Elevation 2194 KB	Drill Pipe Length 2644	ID 3.8 "
	Mud Viscosity 48	Weight Pipe Length 727	ID 2.76"
	Mud Weight 9.9	Drill Collar Length 265	ID 2.25"
	Water Loss 5.6	Top Packer Depth 3653	
	Type of Mud Drispac	Bottom Packer Depth 3658	
	Anchor Length 26	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 # 13251	
	Extra Equipment	None	

REMARKS DST #8

FORMATION Arbuckle Zone Test Type Conventional
 Interval 3658 To 3684 Total Depth 3684
 Open 30 Shut In 30 Open 30 Shut In 30
 Packer(s) Set 01:30PM Started Off Bottom 03:30PM
 Blow 1st Opening Very weak blow died in 18 min.
 2nd Opening No blow.

RECOVERY Total Feet 10
 Recovered 5 feet of Free oil
 Recovered 5 feet of Oil cut mud

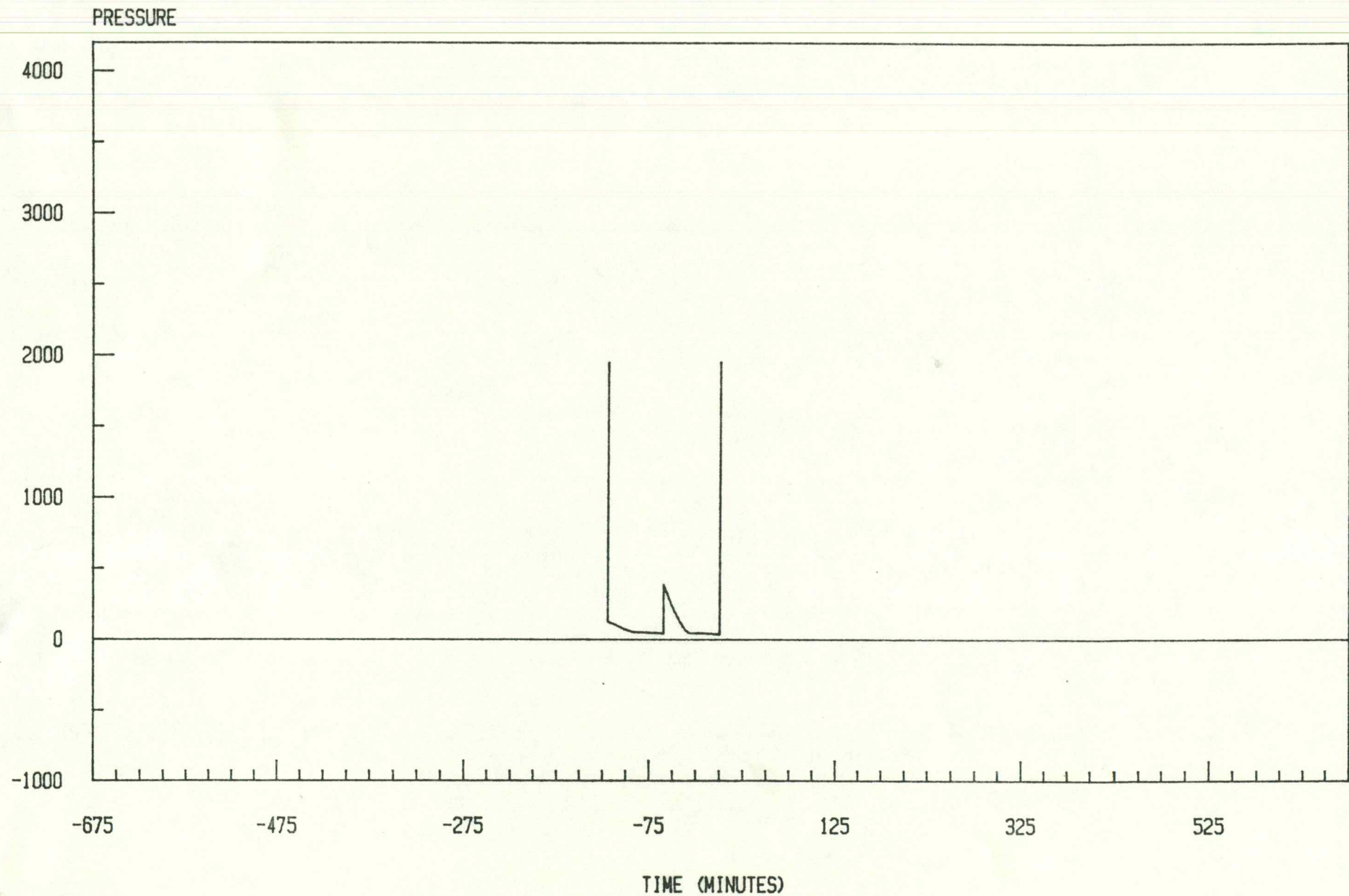
CALCULATED RECOVERY Gas Oil Water Mud
 Gravity (Oil) Test Water Chlorides PPM
 Test Area Temperature 116F Mud System Chlorides 3,000 PPM

	FIELD READING	OFFICE READING	
PRESSURE (A) Initial Hydrostatic Mud	1943	1947	PSI
(B) First Initial Flow Pressure	33	33	PSI
(C) First Final Flow Pressure	33	40	PSI
(D) Initial Closed-In Pressure	380	381	PSI
(E) Second Initial Flow Pressure	33	38	PSI
(F) Second Final Flow Pressure	33	47	PSI
(G) Final Closed-In Pressure	115	122	PSI
(H) Final Hydrostatic Mud	1920	1945	PSI

CRUDE OIL TESTING INC Test 4344 DST 8

FOR: A. Scott Ritchie

06/08/84



PRESSURE BREAKDOWN

TEST TICKET NO. 4344

DST Number: 8

Recorder Number: 13251

Clock Number: 23935

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Mins.	Press.	Mins.	Press.	Mins.	Press.	Mins.	Press.
0	33	0	40	0	37	0	47
3	33	3	44	3	40	3	50
6	34	6	60	6	40	6	56
9	37	9	86	9	41	9	63
12	37	12	118	12	41	12	71
15	38	15	156	15	42	15	80
18	40	18	193	18	44	18	89
21	40	21	237	21	45	21	100
24	40	24	282	24	47	24	108
27	40	27	334	27	47	27	115
30	40	30	381	30	47	30	122

EQUIPMENT DATA
TOOL SEQUENCE REPORT

DST Number: 8

TEST TICKET NO. 4344

WELL NAME: Boys #1

WELL LOCATION: 8-6S-21W

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	2644.00	3.826	4.50
3	Weight Pipe	727.00	2.760	4.50
4	Drill Collar - 6"	265.00	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	22.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
	Total Depth	3683.75		

CRUDE OIL TESTING, INC.

DATE 6/8/84

TEST TICKET NO. 4345

Company: A. Scott Ritchie
 Company Address: 125 N. Market Suite 950 Wichita KS 67202
 Location: Sec. 8 Twp. 6S Range 21W Co. Graham State KS
 Well Name & Number: Boys #1 Code E16

ENGINEERING DATA	Elevation 2194 KB	Drill Pipe Length 2674	ID 3.8 "
	Mud Viscosity 48	Weight Pipe Length 727	ID 2.76"
	Mud Weight 9.9	Drill Collar Length 265	ID 2.25"
	Water Loss 5.6	Top Packer Depth	
	Type of Mud Drispac	Bottom Packer Depth 3684	
	Anchor Length 10	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 # 13251	
	Extra Equipment	None	

REMARKS DST #9
 Bottom clock stopped on last shutin.

FORMATION Arbuckle Zone Test Type Conventional
 Interval 3684 To 3694 Total Depth 3694
 Open 30 Shut In 45 Open 30 Shut In 45
 Packer(s) Set 01:45AM Started Off Bottom 04:15AM
 Blow 1st Opening Weak blow steady at 1 inch in bucket.
 2nd Opening No blow.

RECOVERY Total Feet 20
 Recovered 20 feet of Slightly oil cut mud

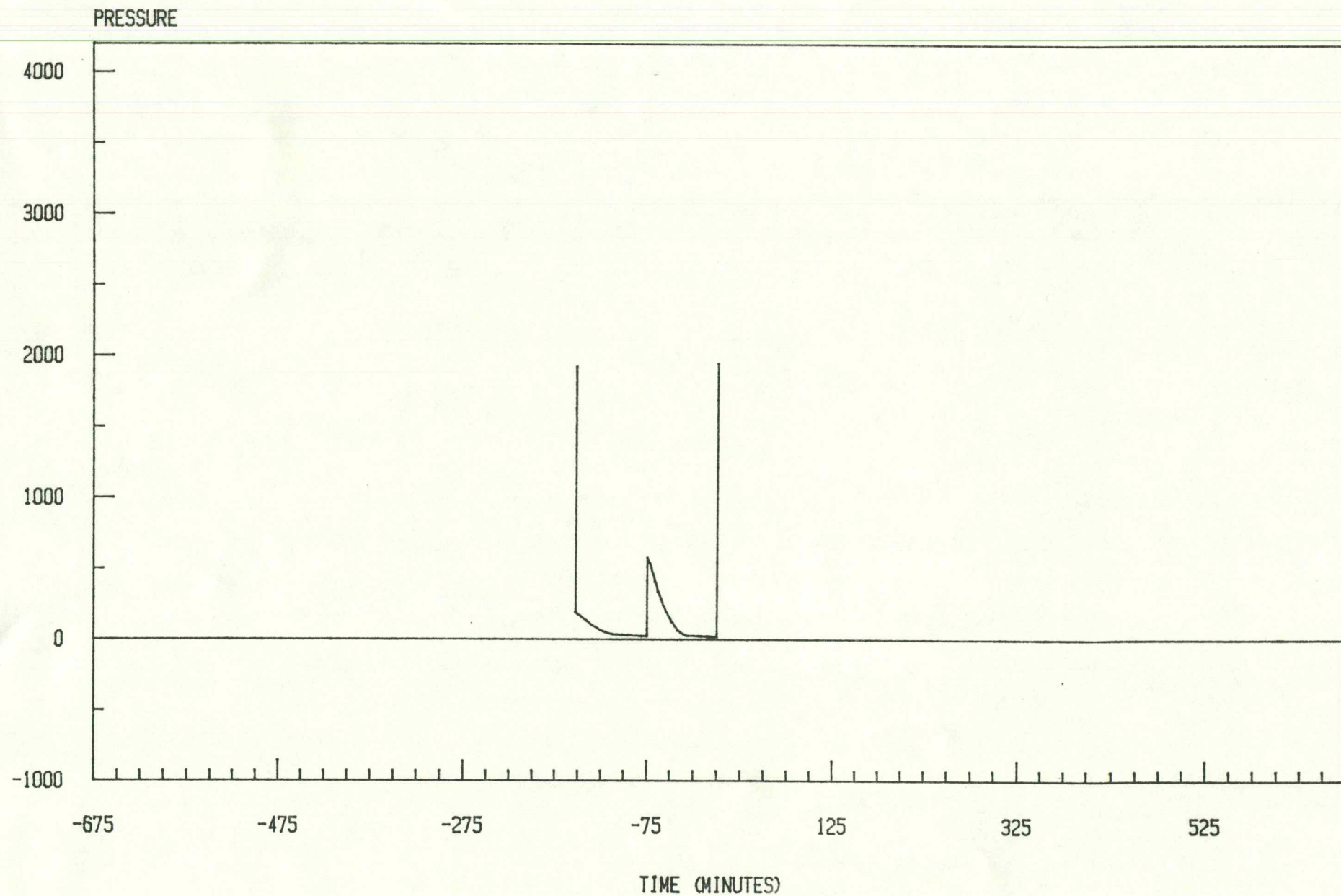
CALCULATED RECOVERY Gas Oil 2 Water Mud 18
 Gravity (Oil) Test Water Chlorides PPM
 Test Area Temperature 116F Mud System Chlorides 4,000 PPM

	FIELD READING	OFFICE READING	
PRESSURE (A) Initial Hydrostatic Mud	1943	1945	PSI
(B) First Initial Flow Pressure	22	20	PSI
(C) First Final Flow Pressure	22	26	PSI
(D) Initial Closed-In Pressure	587	575	PSI
(E) Second Initial Flow Pressure	33	23	PSI
(F) Second Final Flow Pressure	33	33	PSI
(G) Final Closed-In Pressure	184	194	PSI
(H) Final Hydrostatic Mud	1920	1922	PSI

CRUDE OIL TESTING INC Test 4345 DST 9

FOR: A. Scott Ritchie

06/08/84



PRESSURE BREAKDOWN

TEST TICKET NO. 4345

DST Number: 9 Recorder Number: 13251 Clock Number: 23935

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Mins. Press.		Mins. Press.		Mins. Press.		Mins. Press.	
0	20	0	26	0	22	0	33
3	20	3	30	3	23	3	34
6	20	6	38	6	25	6	35
9	21	9	50	9	25	9	40
12	23	12	67	12	27	12	44
15	23	15	95	15	27	15	51
18	25	18	125	18	29	18	60
21	26	21	159	21	30	21	68
24	26	24	195	24	30	24	80
27	26	27	238	27	32	27	93
30	26	30	286	30	33	30	103
		33	338			33	120
		36	404			36	135
		39	476			39	148
		42	541			42	163
		45	575			45	178
						48	193

EQUIPMENT DATA
TOOL SEQUENCE REPORT

DST Number: 9

TEST TICKET NO. 4345

WELL NAME: Boys #1

WELL LOCATION: 8-6S-21W

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	2674.00	3.826	4.50
3	Weight Pipe	727.00	2.760	4.50
4	Drill Collar - 6"	265.00	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
11	A.P. Carrier	5.00	3.060	5.00
14	Packer	5.35	1.530	6.75
6	Anchor	6.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
	Total Depth	3697.40		

CALCULATED RECOVERY ANALYSIS

DST Number: 9

TEST TICKET NO. 4345

Sample #	Total Feet	***** Gas %	***** Feet	***** Oil %	***** Feet	***** Mud %	***** Feet
1	20	0.00	0.00	10.00	2.00	90.00	18.00
TOTAL	<u>20</u>	0.00	<u>0.00</u>	10.00	<u>2.00</u>	90.00	<u>18.00</u>

Sample #	***** Water %	*** Feet	Chlorides (PPM)	Resistivity (Ohms)	Temperature (Deg)
1	0.00	0.00			
TOTAL	0.00	<u>0.00</u>			

CRUDE OIL TESTING, INC.

DATE 6/8/84

TEST TICKET NO. 4346

Company: A. Scott Ritchie
 Company Address: 125 N. Market Suite 950 Wichita KS 67202
 Location: Sec. 8 Twp. 6S Range 21W Co. Graham State KS
 Well Name & Number: Boys #1 Code E16

ENGINEERING DATA	Elevation	2194 KB	Drill Pipe Length	2639	ID 3.8 "
	Mud Viscosity	48	Weight Pipe Length	696	ID 2.76"
	Mud Weight	10	Drill Collar Length		
	Water Loss	5.6	Top Packer Depth	3352	
	Type of Mud	Drispac	Bottom Packer Depth	3369	
	Anchor Length	17	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	Yes	
	Bottom Choke	3/4	Recorder #	13251	
	Extra Equipment		Circ. sub		

REMARKS DST #10

FORMATION	Topeka	Zone Oread	Test Type Straddle
	Interval 3352	To 3369	Total Depth 3369
	Open 15	Shut In 30	Open 15 Shut In 30
	Packer(s) Set	06:30PM	Started Off Bottom 08:00PM
	Blow 1st Opening Strong blow off bottom of bucket in 45 sec. 2nd Opening Strong blow off bottom when opened.		

RECOVERY Total Feet 1764
 Recovered 558 feet of Gas in pipe
 Recovered 316 feet of Oil cut mud
 Recovered 890 feet of Reversed to truck (no sample)

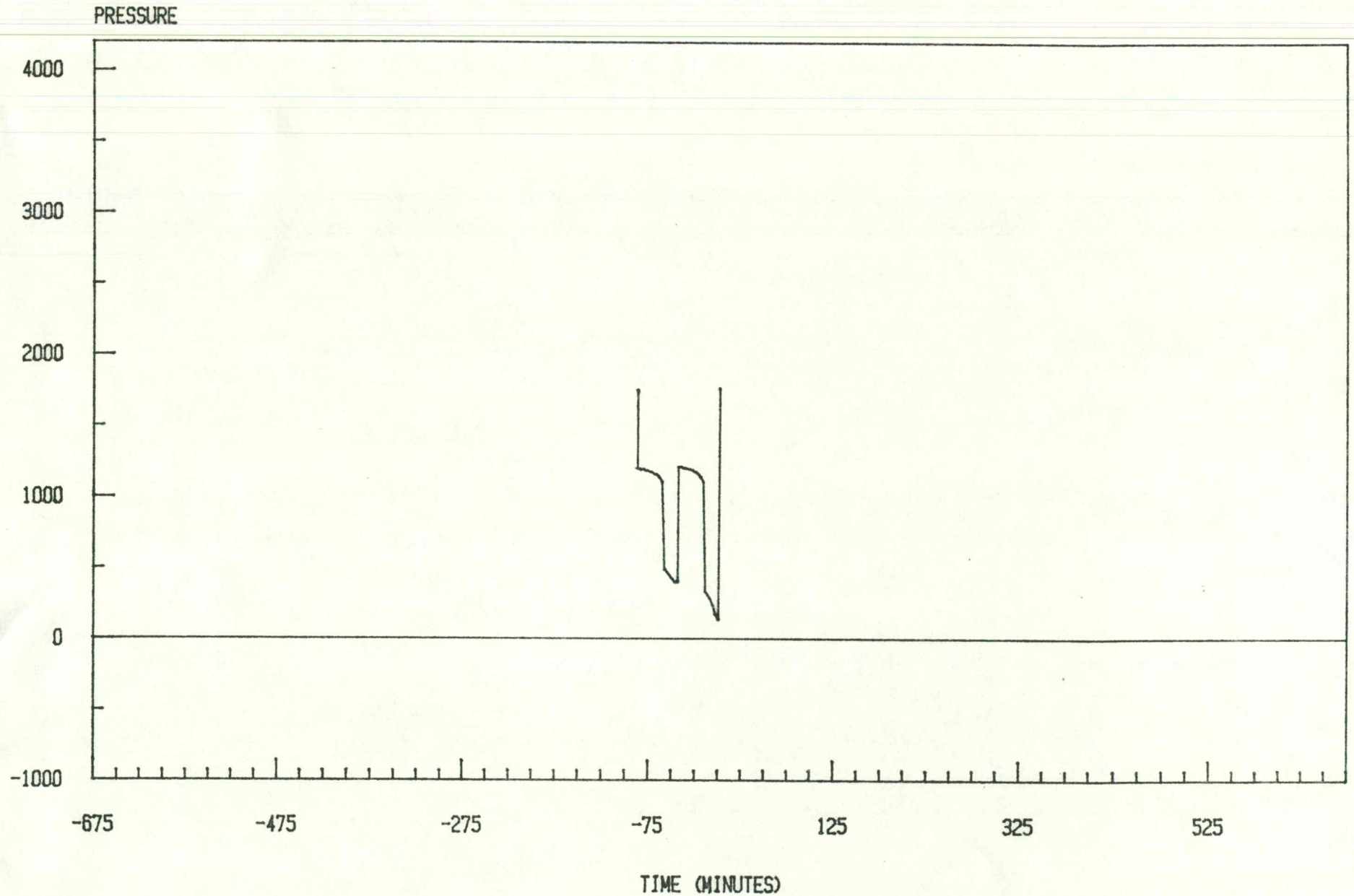
CALCULATED RECOVERY	Gas	31	Oil	136.4	Water	Mud	142.4
	Gravity (Oil)	35	Test Water Chlorides		PPM		
	Test Area Temperature		110F	Mud System Chlorides		3,000 PPM	

	FIELD READING	OFFICE READING	
PRESSURE	(A) Initial Hydrostatic Mud	1773	1766 PSI
	(B) First Initial Flow Pressure	138	137 PSI
	(C) First Final Flow Pressure	334	332 PSI
	(D) Initial Closed-In Pressure	1215	1214 PSI
	(E) Second Initial Flow Pressure	403	400 PSI
	(F) Second Final Flow Pressure	495	489 PSI
	(G) Final Closed-In Pressure	1203	1200 PSI
	(H) Final Hydrostatic Mud	1750	1746 PSI

CRUDE OIL TESTING INC Test 4346 DST 10

FOR: A. Scott Ritchie

06/08/84



PRESSURE BREAKDOWN

TEST TICKET NO. 4346

DST Number:10

Recorder Number: 13251

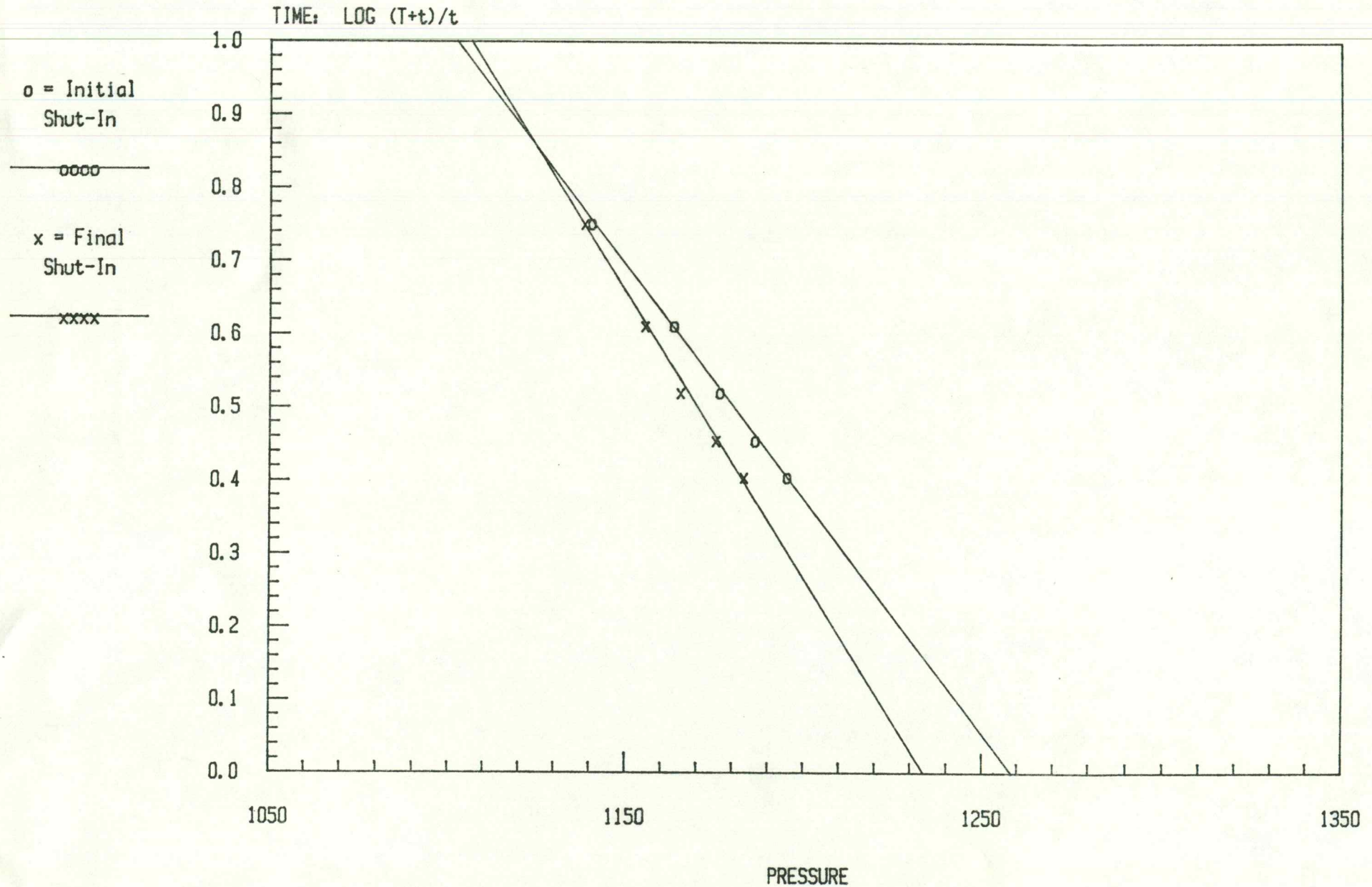
Clock Number: 23935

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Mins. Press.		Mins. Press.		Mins. Press.		Mins. Press.	
0	137	0	331	0	399	0	489
3	171	3	1109	3	401	3	1106
6	241	6	1140	6	426	6	1138
9	285	9	1163	9	452	9	1155
12	314	12	1176	12	479	12	1165
14	331	15	1186	14	489	15	1175
		18	1195			18	1183
		21	1201			21	1187
		24	1207			24	1193
		27	1211			27	1196
		30	1213			30	1200

CRUDE OIL TESTING INC TEST 4346^{4.2} DST 10

FOR: A. Scott Ritchie

6/8/84



ZONE EVALUATION - Page 1

DST NUMBER 10

TEST TICKET NO. 4346

Company: A. Scott Ritchie

Date: 6/8/84

Drill Collar Feet	ID	Weight Pipe Feet	Pipe ID	Drill Pipe Feet	ID	Average ID	Gals/ Foot
0	0.000	136	2.760	0	3.800	2.7600	0.311

Bbls Recovered/Test = 2.1629 Est Bbls/Day = 111.2346 T = 28

Initial Shut-In

PRESS.	TIME	T/t	(T+t)/t	LOG T/t	LOG (T+t)/t
1195	18	1.556	2.556	0.19189	0.40749
1186	15	1.867	2.867	0.27107	0.45738
1176	12	2.333	3.333	0.36798	0.52288
1163	9	3.111	4.111	0.49292	0.61396
1140	6	4.667	5.667	0.66901	0.75333

Final Shut-In

Press.	Time	T/t	(T+t)/t	Log T/t	Log (T+t)/t
1183	18	1.556	2.556	0.19189	0.40749
1175	15	1.867	2.867	0.27107	0.45738
1165	12	2.333	3.333	0.36798	0.52288
1155	9	3.111	4.111	0.49292	0.61396
1138	6	4.667	5.667	0.66901	0.75333

Time Option is Log (T+t)/t

IP(0)	IP(1)	FP(0)	FP(1)	M	Kh/B	DR	Q1	Pts
1262.1	1097.4	1246.6	1090.6	156.0	115.949	1.761	195.927	1,3
1261.6	1097.5	1246.4	1090.6	155.8	116.075	1.762	196.019	1-3
1256.9	1103.2	1237.4	1101.8	135.6	133.386	1.876	208.663	1-4
1258.4	1101.6	1233.8	1105.7	128.1	141.227	1.927	214.390	1-5

Graph Data For Points

Initial Time	Pressure	Final Time	Pressure
0.4074	1195	0.4074	1183
0.4573	1186	0.4573	1175
0.5228	1176	0.5228	1165
0.6139	1163	0.6139	1155
0.7533	1140	0.7533	1138

Graph Data For Lines

0	1258.37	0	1233.77
1	1101.62	1	1105.70

ZONE EVALUATION - Page 2

DST Number 10

TEST TICKET NO. 4346

Company: A. Scott Ritchie

Date: 6/8/84

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

$$M = G_0 - G_1 \quad 128.07$$

Damage Ratio:

$$DR = .183 \frac{P_s - P_f}{M} \quad 1.93$$

Effective Pay:

$$\frac{K_h}{B} = \frac{162.6 Q}{M} \quad 141.23 \text{ Md. Ft.}$$

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

$$Q_1 = Q DR \quad 214.39 \text{ Bbls/Day}$$

Production:

2.16 Bbls/Hour

$$Q = \frac{1440 R}{T} \quad 111.23 \text{ Bbls/Day}$$

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: 10

TEST TICKET NO. 4346

WELL NAME: Boys #1

WELL LOCATION: 8-6S-21W

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	2639.00	3.826	4.50
3	Weight Pipe	696.00	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
6	Anchor	10.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
7	Changeover Sub	2.00	3.000	5.00
14	Packer	5.35	1.530	6.75
6	Anchor	330.00	2.750	5.00
16	Bull Plug	2.00		5.00
	Total Depth	3702.75		

CALCULATED RECOVERY ANALYSIS

DST Number: 10

TEST TICKET NO. 4346

Sample #	Total Feet	***** Gas %	***** Feet	***** Oil %	***** Feet	***** Mud %	***** Feet
1	62	15.00	9.30	60.00	37.20	25.00	15.50
2	62	5.00	3.10	55.00	34.10	40.00	24.80
3	62	15.00	9.30	70.00	43.40	15.00	9.30
4	62	5.00	3.10	25.00	15.50	70.00	43.40
5	62	10.00	6.20	10.00	6.20	80.00	49.60
TOTAL	<u>310</u>	10.00	<u>31.00</u>	44.00	<u>136.40</u>	46.00	<u>142.60</u>

Sample #	***** Water %	*** Feet	Chlorides (PPM)	Resistivity (Ohms)	Temperature (Deg)
1	0.00	0.00			
2	0.00	0.00			
3	0.00	0.00			
4	0.00	0.00			
5	0.00	0.00			
TOTAL	0.00	<u>0.00</u>			