CRUDE OIL TESTING, INC.

DATE 12/3/88 TEST TICKET NO. 5973

Company: Ritchie Exploration, Inc.
Company Address: 125 N. Market, #1000, Wichita, KS 67202
Location: Sec. 11 Twp. 6S Range 22W Co. Graham State KS
Well Name & Number: #1 H. Pakkerbier Code E6

ENGINEERING DATA

Elevation	2302 KB	Drill Pipe Length	3526 ID 3.8 "
Mud Viscosity	40	Weight Pipe Length	
Mud Weight	9.5	Drill Collar Length	
Water Loss	10	Top Packer Depth	3543
Type of Mud	Chemical	Bottom Packer Depth	
Anchor Length	23	Tool Joint Size	4.5 XH
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 #	13248

REMARKS

DST # 1
Tool was plugging during the first opening.

FORMATION

Lansing Zone Top Test Type Conventional
Interval 3543 To 3566 Total Depth 3566
Open 30 Shut In 30 Open 30 Shut In 30
Packer(s) Set 12:00AM Started Off Bottom 02:00AM
Blow 1st Opening Weak died in 6 min.
2nd Opening No blow - Flushed tool

RECOVERY

Total Feet 3
Recovered 3 feet of Drilling mud (few oil spots on top)

CALCULATED RECOVERY

Gas Oil Water Mud 3
Gravity (Oil) Test Water Chlorides PPM
Test Area Temperature 106F Mud System Chlorides 5,000 PPM

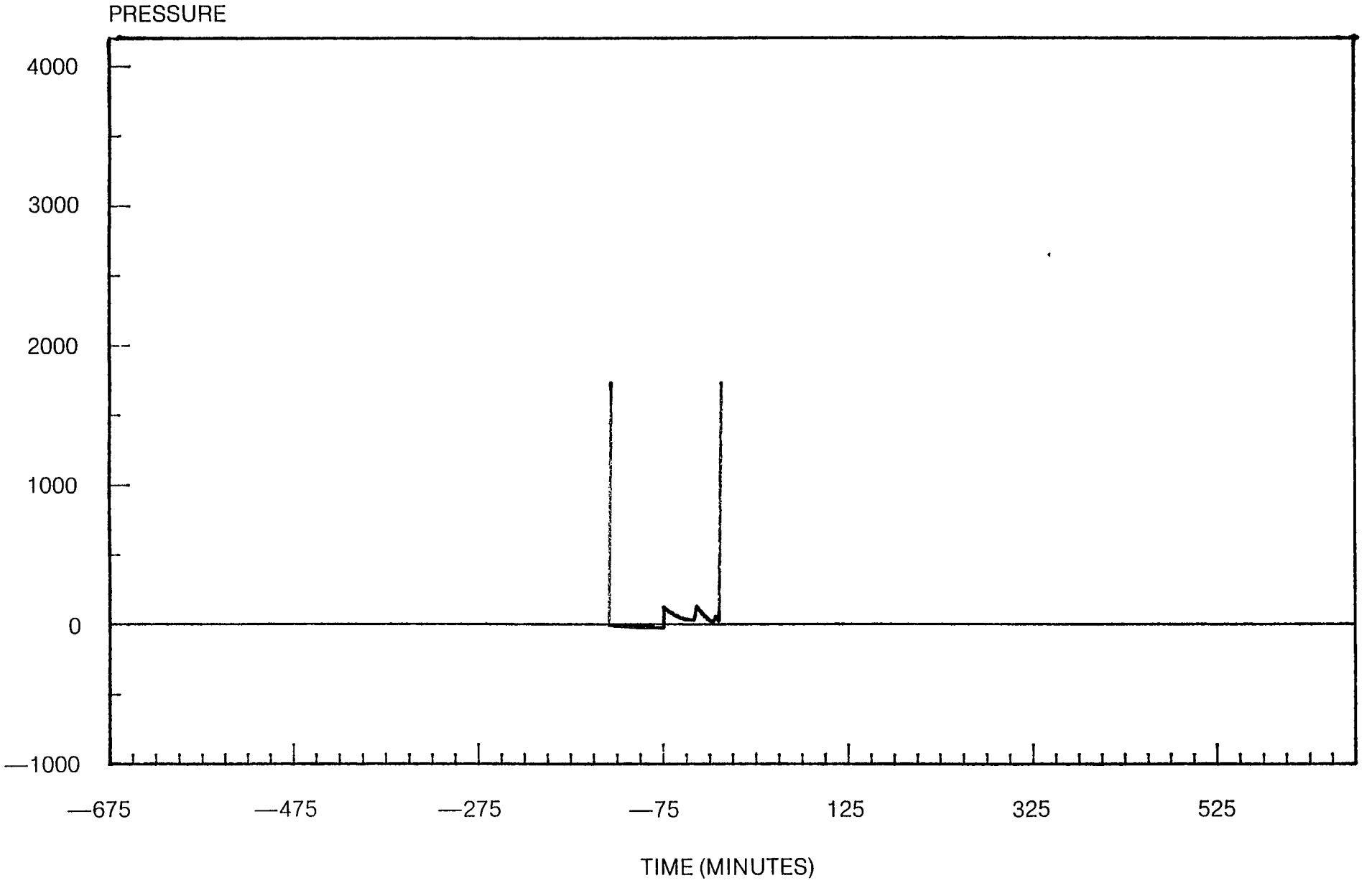
PRESSURE

	FIELD READING	OFFICE READING	
(A) Initial Hydrostatic Mud	1796	1786	PSI
(B) First Initial Flow Pressure	63	76	PSI
(C) First Final Flow Pressure	63	83	PSI
(D) Initial Closed-In Pressure	159	171	PSI
(E) Second Initial Flow Pressure	32	26	PSI
(F) Second Final Flow Pressure	32	28	PSI
(G) Final Closed-In Pressure	53	42	PSI
(H) Final Hydrostatic Mud	1786	1776	PS

CRUDE OIL TESTING INC.

FOR: RITCHIE EXPLORATION, INC. TEST 5973

DST #1 12/03/88



PRESSURE BREAKDOWN

TEST TICKET NO. 5973

DST Number: 1 Recorder Number: 13248 Clock Number: 25113

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Mins.	Press.	Mins.	Press.	Mins.	Press.	Mins.	Press.
0	76	0	82	0	25	0	27
3	106	3	83	3	25	3	28
6	69	6	85	6	25	6	29
9	74	9	89	9	26	9	31
12	91	12	96	12	26	12	32
15	110	15	107	15	26	15	33
18	129	18	116	18	26	18	34
21	152	21	129	21	26	21	35
24	175	24	140	24	26	24	37
27	81	27	154	27	27	27	39
30	82	30	170	30	27	30	41

EQUIPMENT DATA

TOOL SEQUENCE REPORT

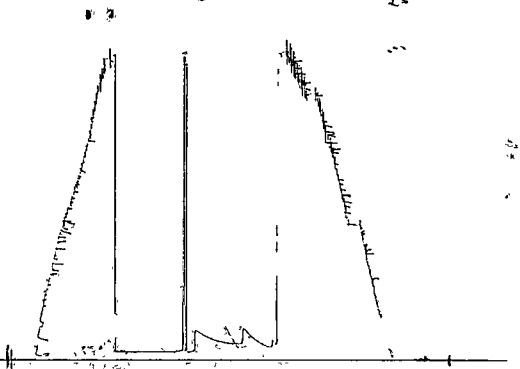
DST Number: 1 TEST TICKET NO. 5973

WELL NAME: # 1 H. Pakkebier WELL LOCATION: 11-6s-22w

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	3526.00	3.826	4.50
8	Circulating Sub	1.00	3.000	5.00
7	Changeover Sub	2.00	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	19.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
	Total Depth	3567.40		

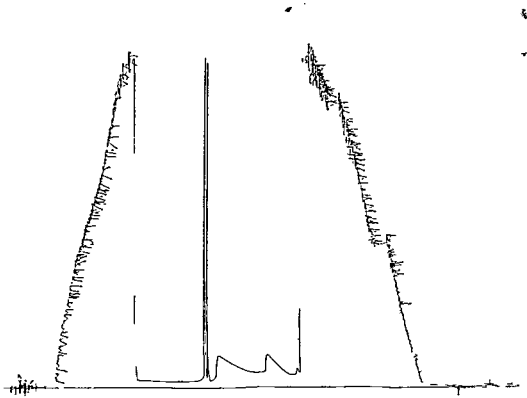
Bottom 13252

DST #1 5973



Top 13248

DST# 1 5973



CRUDE OIL TESTING, INC.

DATE 12/3/88 TEST TICKET NO. 5974

Company: Ritchie Exploration, Inc.
Company Address: Wichita, KS
Location: Sec. 11 Twp. 6S Range 22W Co. Graham State KS
Well Name & Number: #1 H. Pakkebier Code E6

ENGINEERING DATA				
Elevation	2302 KB	Drill Pipe Length	3544	ID 3.8 "
Mud Viscosity	44	Weight Pipe Length		
Mud Weight	9.6	Drill Collar Length		
Water Loss	9.6	Top Packer Depth	3562	
Type of Mud	Chemical	Bottom Packer Depth	3567	
Anchor Length	41	Tool Joint Size	4.5 XH	
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 #	13248	

REMARKS
DST # 2
No blow on shut-ins

FORMATION
Lansing Zone 35 - 50 Test Type Conventional
Interval 3567 To 3608 Total Depth 3608
Open 45 Shut In 45 Open 45 Shut In 45
Packer(s) Set 02:00PM Started Off Bottom 05:00PM
Blow 1st Opening Good blow building to 11 inches in 45 min.
2nd Opening Fair blow building to 5 inches in 45 min.

RECOVERY
Total Feet 180
Recovered 180 feet of Muddy water (free oil on top)

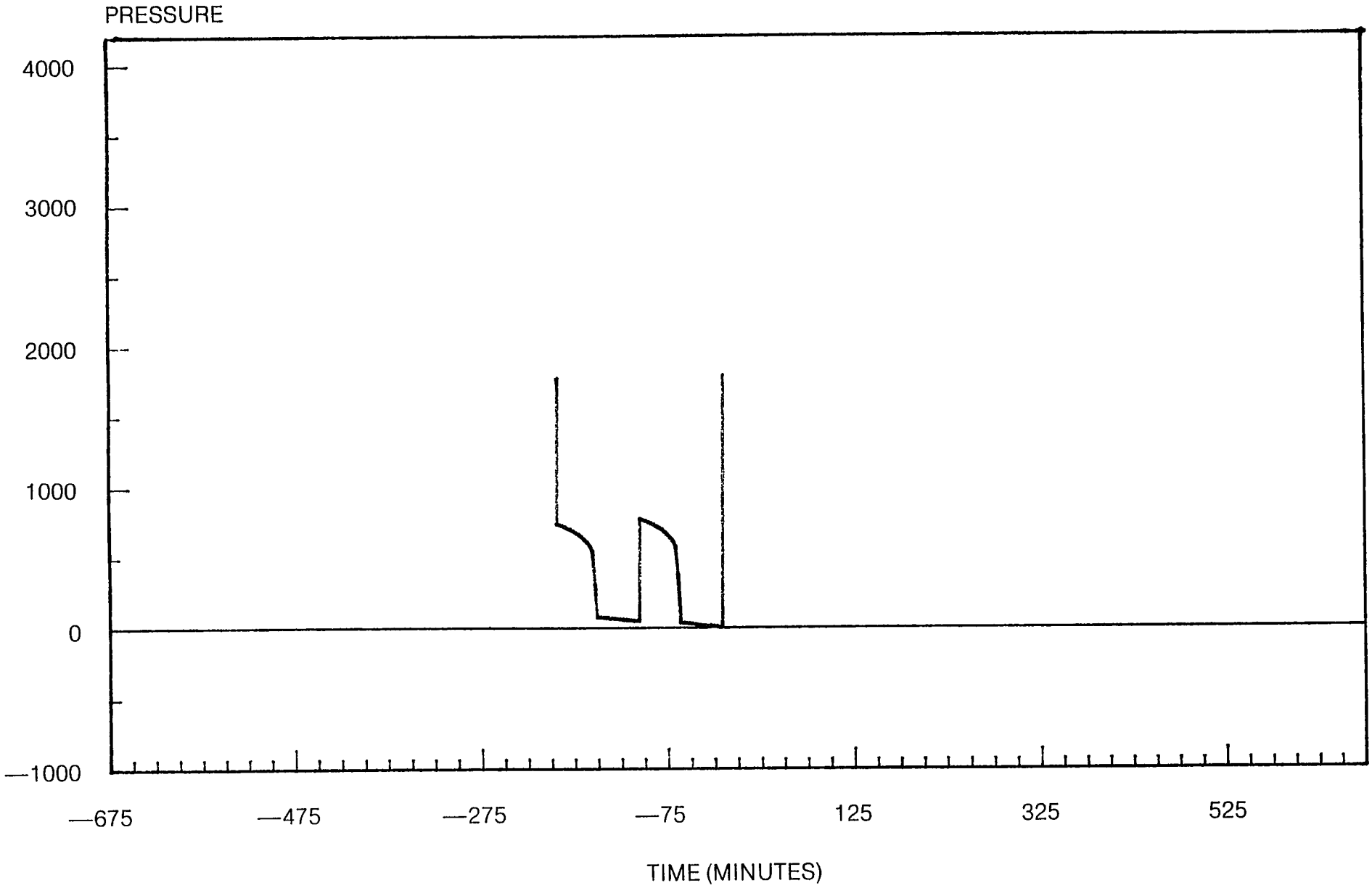
CALCULATED RECOVERY
Gas Oil Water 80 Mud 100
Gravity (Oil) Test Water Chlorides 42,000 PPM
Test Area Temperature 108F Mud System Chlorides 3,000 PPM

PRESSURE		FIELD READING	OFFICE READING	
(A)	Initial Hydrostatic Mud	1838	1847	PSI
(B)	First Initial Flow Pressure	42	54	PSI
(C)	First Final Flow Pressure	74	85	PSI
(D)	Initial Closed-In Pressure	815	821	PSI
(E)	Second Initial Flow Pressure	85	97	PSI
(F)	Second Final Flow Pressure	117	122	PSI
(G)	Final Closed-In Pressure	783	784	PSI
(H)	Final Hydrostatic Mud	1817	1820	PSI

CRUDE OIL TESTING INC.

FOR: RITCHIE EXPLORATION, INC. TEST 5974

DST #2 12/03/88



PRESSURE BREAKDOWN

TEST TICKET NO. 5974

DST Number: 2 Recorder Number: 13248 Clock Number: 25113

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Mins.	Press.	Mins.	Press.	Mins.	Press.	Mins.	Press.
0	54	0	84	0	96	0	121
3	55	3	426	3	97	3	353
6	56	6	630	6	98	6	593
9	56	9	667	9	99	9	629
12	58	12	691	12	100	12	655
15	59	15	712	15	102	15	675
18	61	18	730	18	105	18	694
21	63	21	747	21	107	21	710
24	66	24	759	24	109	24	721
27	70	27	770	27	111	27	733
30	73	30	782	30	113	30	744
33	76	33	792	33	116	33	753
36	78	36	800	36	117	36	762
39	80	39	808	39	118	39	770
42	82	42	815	42	120	42	777
45	84	45	821	45	121	45	784

EQUIPMENT DATA

TOOL SEQUENCE REPORT

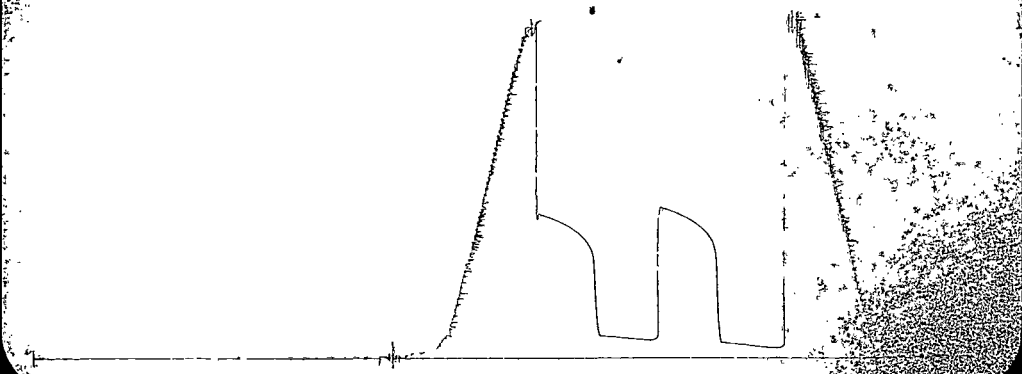
DST Number: 2 TEST TICKET NO. 5974

WELL NAME: #1 H. Pakkebier WELL LOCATION: 11-6s-22w

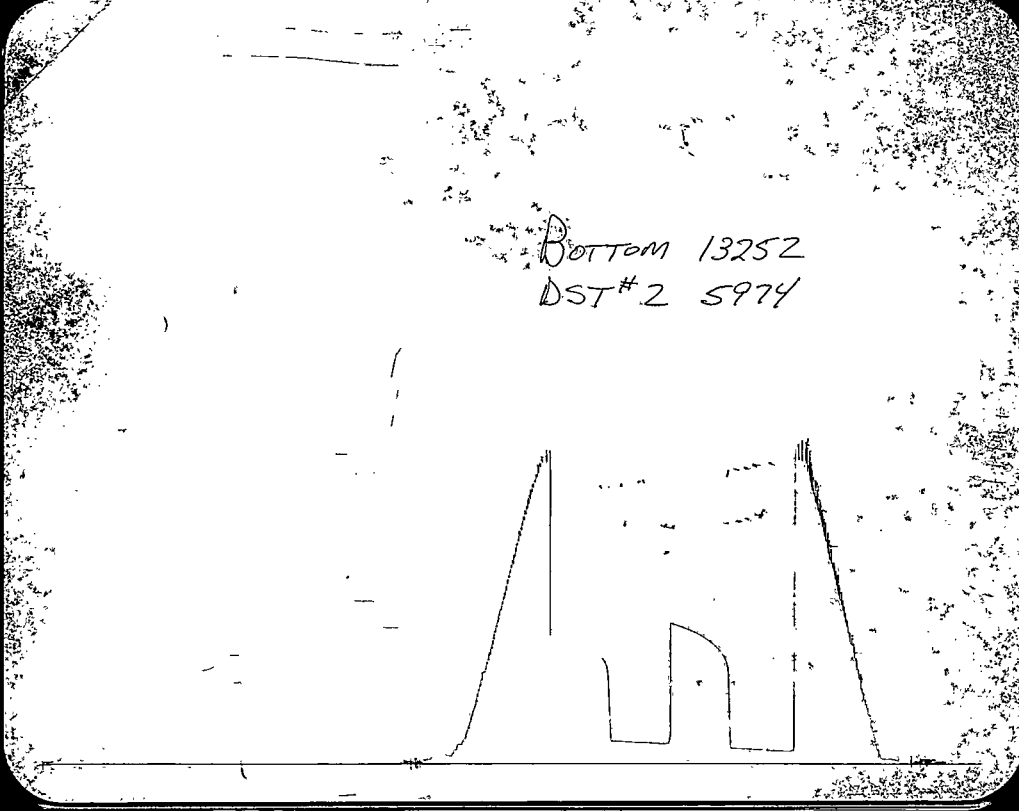
Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	3544.00	3.826	4.50
8	Circulating Sub	1.00	3.000	5.00
7	Changeover Sub	2.00	3.000	5.00
9	Shut-In Tool	5.45	0.870	5.00
10	Hydraulic Tool	5.60	1.000	5.00
14	Packer	5.35	1.530	6.75
14	Packer	5.35	1.530	6.75
6	Anchor	37.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
	Total Depth	3608.75		

Top 13248

DST #2 5974



Bottom 13252
DST #2 5974



CRUDE OIL TESTING, INC.

DATE 12/4/88 TEST TICKET NO. 5975

Company: Ritchie Exploration, Inc.
Company Address: Wichita KS
Location: Sec. 11 Twp. 6S Range 22W Co. Graham State KS
Well Name & Number: # 1 H. Pakkebier Code E6

ENGINEERING DATA				
Elevation	2302 KB	Drill Pipe Length	3587	ID 3.8 "
Mud Viscosity	44	Weight Pipe Length	3605	ID 2.76"
Mud Weight	9.6	Drill Collar Length		
Water Loss	9.6	Top Packer Depth	3605	
Type of Mud	Chemical	Bottom Packer Depth		
Anchor Length	15	Tool Joint Size	4.5 XH	
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 #	13248	

REMARKS
DST # 3
No blow on the shut-ins

FORMATION
Lans. K/C Zone 70 - 90 Test Type Conventional
Interval 3605 To 3620 Total Depth 3620
Open 30 Shut In 30 Open 30 Shut In 30
Packer(s) Set 02:45AM Started Off Bottom 04:45AM
Blow 1st Opening Strong blow in 12 min.
2nd Opening Strong blow in 16 min.

RECOVERY
Total Feet 480
Recovered 480 feet of Muddy water

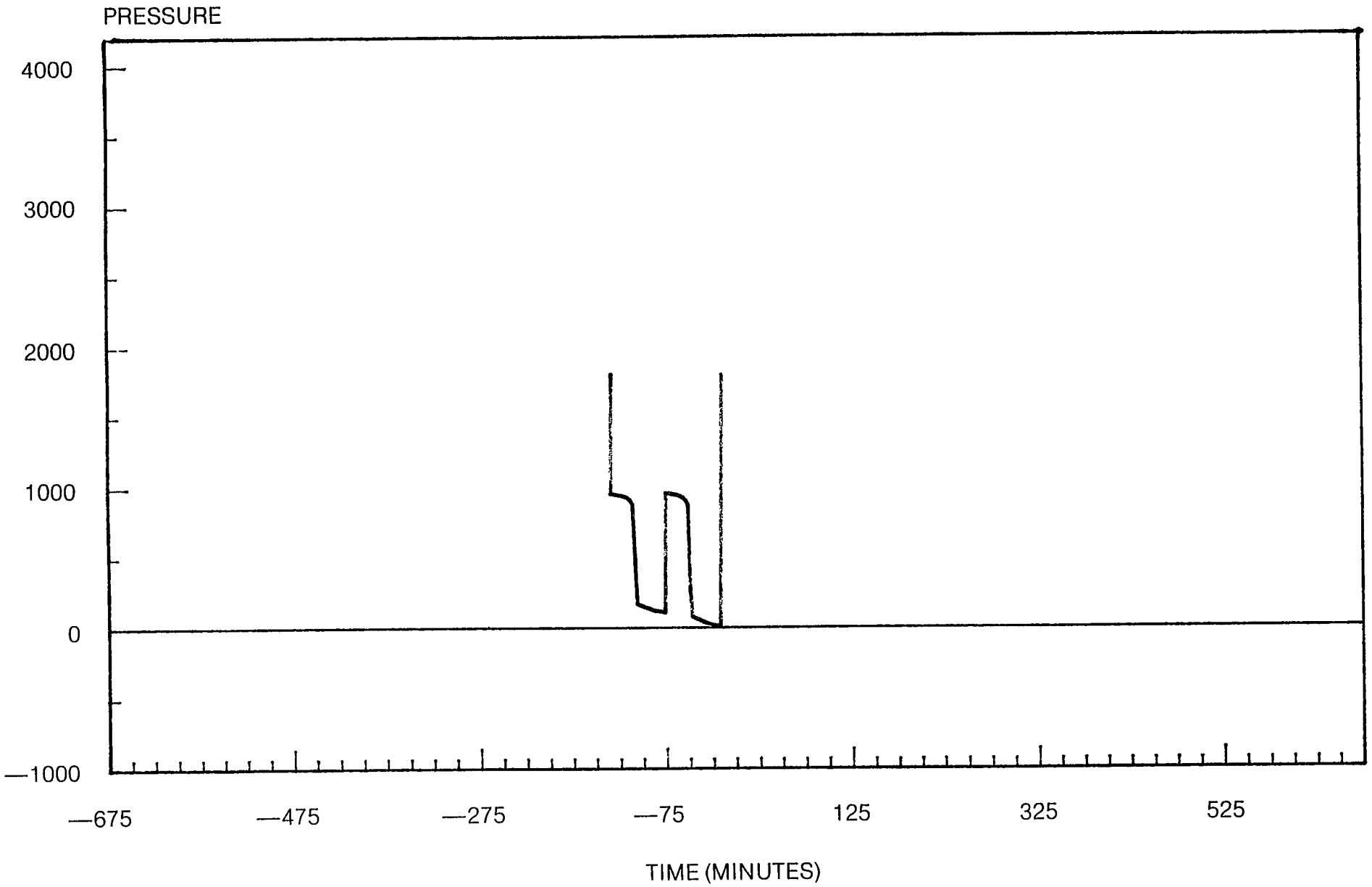
CALCULATED RECOVERY
Gas Oil Water 400 Mud 80
Gravity (Oil) Test Water Chlorides 49,000 PPM
Test Area Temperature 116F Mud System Chlorides 3,000 PPM

PRESSURE		FIELD READING	OFFICE READING	
(A)	Initial Hydrostatic Mud	1838	1855	PSI
(B)	First Initial Flow Pressure	53	62	PSI
(C)	First Final Flow Pressure	117	126	PSI
(D)	Initial Closed-In Pressure	993	1005	PSI
(E)	Second Initial Flow Pressure	149	158	PSI
(F)	Second Final Flow Pressure	202	214	PSI
(G)	Final Closed-In Pressure	983	996	PSI
(H)	Final Hydrostatic Mud	1817	1845	PSI

CRUDE OIL TESTING INC.

FOR: RITCHIE EXPLORATION, INC. TEST 5975

DST #3 12/04/88



PRESSURE BREAKDOWN

TEST TICKET NO. 5975

DST Number: 3 Recorder Number: 13248 Clock Number: 25113

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Mins.	Press.	Mins.	Press.	Mins.	Press.	Mins.	Press.
0	61	0	126	0	157	0	213
3	62	3	333	3	160	3	538
6	64	6	925	6	162	6	923
9	69	9	957	9	164	9	954
12	75	12	974	12	169	12	970
15	81	15	985	15	176	15	978
18	90	18	993	18	185	18	983
21	99	21	997	21	190	21	987
24	108	24	1000	24	198	24	991
27	116	27	1002	27	205	27	994
30	126	30	1004	30	213	30	996

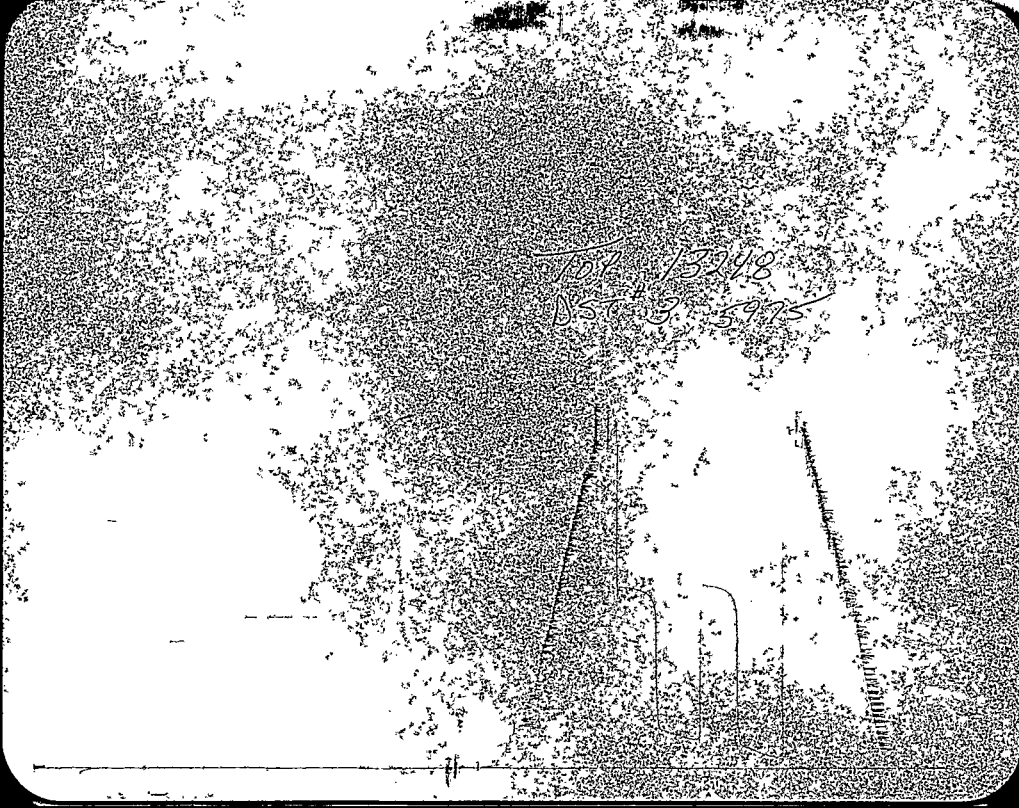
EQUIPMENT DATA

TOOL SEQUENCE REPORT

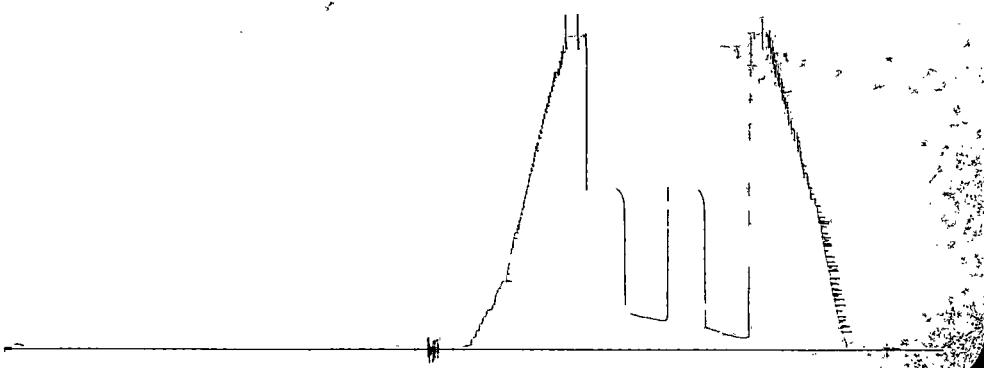
DST Number: 3 TEST TICKET NO. 5975

WELL NAME: # 1 H. Pakkebier WELL LOCATION: 11-6s-22w

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	3587.00	3.826	4.50
8	Circulating Sub	1.00	3.000	5.00
7	Changeover Sub	2.00	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	11.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
	Total Depth	3620.40		


Lot 13248
DST #3 5975

Bottom 13252'
DST#3 5975



CRUDE OIL TESTING, INC.

DATE 12/4/88 TEST TICKET NO. 5976

Company: Ritchie Exploration, Inc.
Company Address: Wichita, KS
Location: Sec. 11 Twp. 6S Range 22W Co. Graham State KS
Well Name & Number: # 1 H. Pakkebier Code E6

ENGINEERING DATA

Elevation	2302 KB	Drill Pipe Length	3629 ID 3.8 "
Mud Viscosity	42	Weight Pipe Length	
Mud Weight	9.7	Drill Collar Length	
Water Loss	10.2	Top Packer Depth	3647
Type of Mud	Chemical	Bottom Packer Depth	3652
Anchor Length	65	Tool Joint Size	4.5 XH
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 #	13248

REMARKS

DST # 4
No blow on the shut-ins

FORMATION

Lans K/C Zone 140 - 180 Test Type Conventional
Interval 3652 To 3717 Total Depth 3717
Open 45 Shut In 45 Open 45 Shut In 45
Packer(s) Set 09:15PM Started Off Bottom 12:15AM
Blow 1st Opening Strong blow in 11 min.
2nd Opening Strong blow in 25 min.

RECOVERY

Total Feet 150
Recovered 20 feet of Clean oil
Recovered 130 feet of Muddy oil
Recovered 120 feet of Gas in pipe

CALCULATED RECOVERY

Gas 6.5 Oil 64.85 Water Mud 78.65
Gravity (Oil) 41 Test Water Chlorides PPM
Test Area Temperature 116F Mud System Chlorides 3,000 PPM

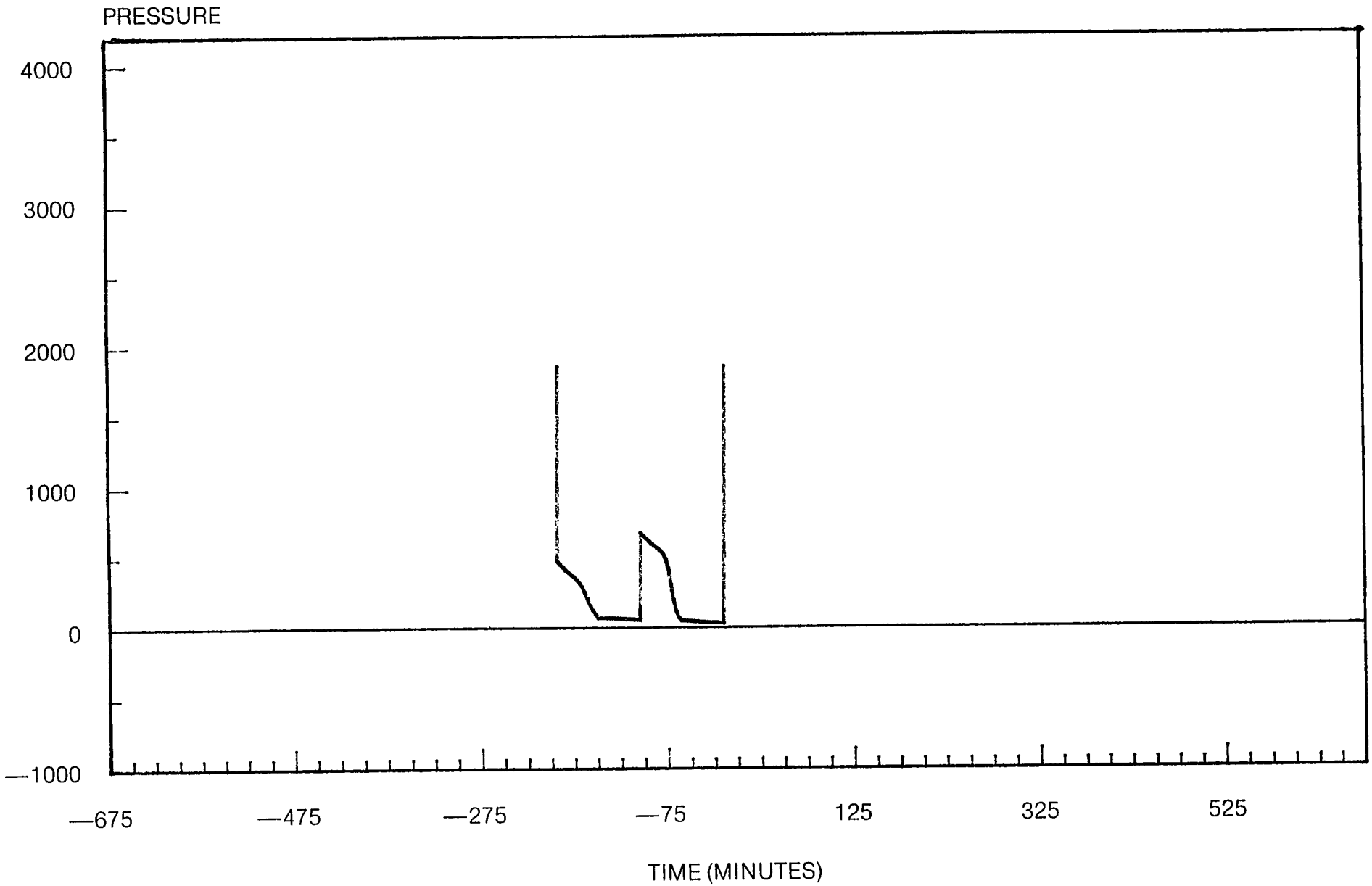
PRESSURE

	FIELD READING	OFFICE READING	
(A) Initial Hydrostatic Mud	1902	1907	PSI
(B) First Initial Flow Pressure	63	79	PSI
(C) First Final Flow Pressure	85	98	PSI
(D) Initial Closed-In Pressure	710	720	PSI
(E) Second Initial Flow Pressure	95	101	PSI
(F) Second Final Flow Pressure	106	115	PSI
(G) Final Closed-In Pressure	500	518	PSI
(H) Final Hydrostatic Mud	1891	1900	PSI

CRUDE OIL TESTING INC.

FOR: RITCHIE EXPLORATION, INC. TEST 5976

DST #4 12/04/88



PRESSURE BREAKDOWN

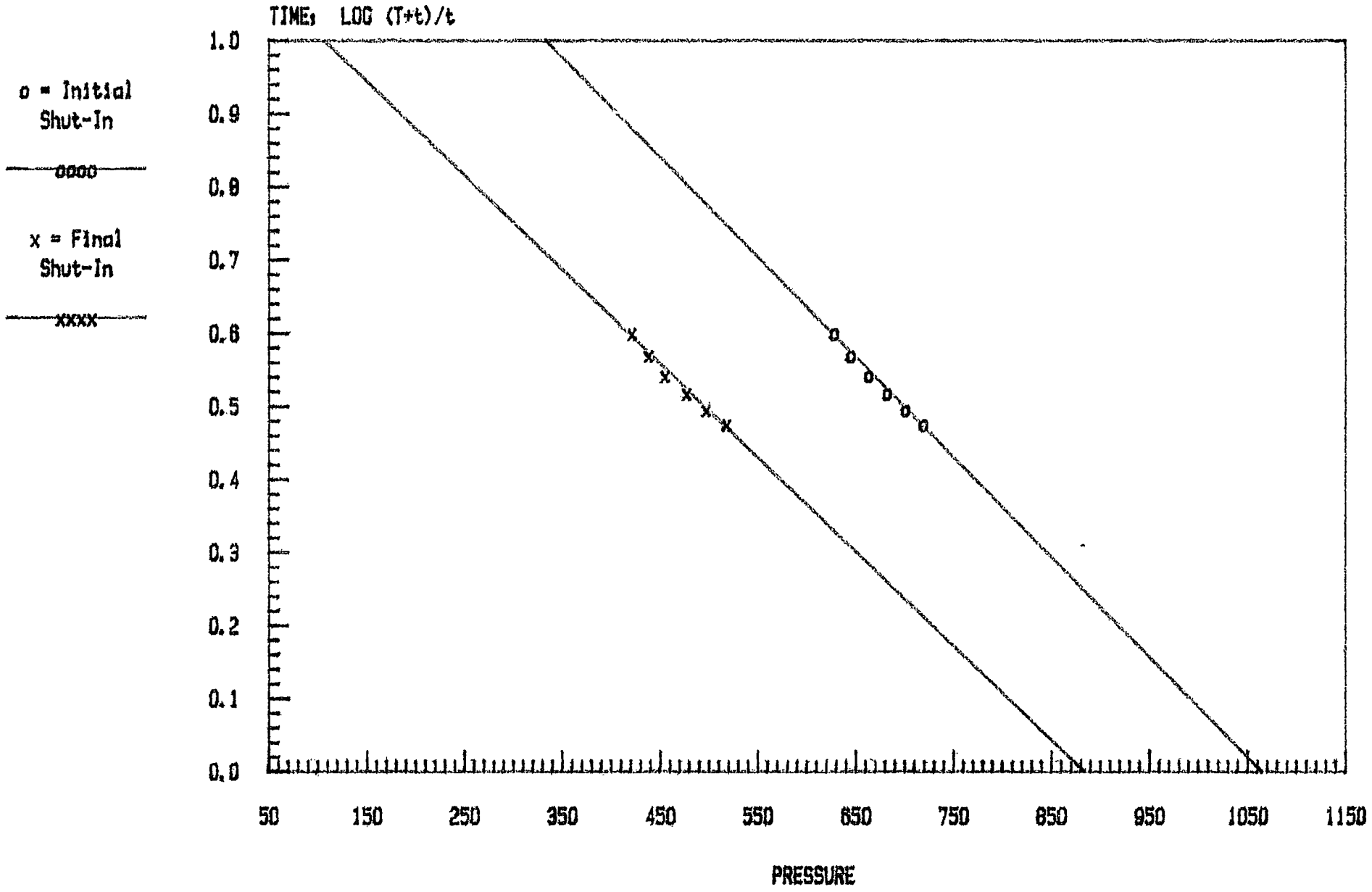
TEST TICKET NO. 5976

DST Number: 4 Recorder Number: 13248 Clock Number: 25113

First Flow Pressure		Initial Shut-In		Second Flow Pressure		Final Shut-In	
Mins.	Press.	Mins.	Press.	Mins.	Press.	Mins.	Press.
0	78	0	97	0	100	0	114
3	78	3	117	3	101	3	142
6	79	6	165	6	102	6	168
9	80	9	247	9	103	9	205
12	81	12	359	12	105	12	250
15	82	15	473	15	106	15	296
18	83	18	538	18	107	18	336
21	84	21	573	21	108	21	365
24	85	24	596	24	109	24	387
27	88	27	614	27	110	27	405
30	89	30	628	30	111	30	421
33	91	33	645	33	112	33	438
36	92	36	663	36	112	36	455
39	94	39	682	39	113	39	477
42	95	42	701	42	114	42	497
45	97	45	719	45	114	45	518

CRUDE OIL TESTING INC TEST 5976 DST 4

FOR: Ritchie Exploration, Inc. 12/4/88



ZONE EVALUATION - Page 1

DST NUMBER 4 TEST TICKET NO. 5976

Company: Ritchie Exploration, Inc. Date: 12/4/88

Drill Collar Feet	Drill Collar ID	Weight Pipe Feet	Weight Pipe ID	Drill Pipe Feet	Drill Pipe ID	Average ID	Gals/ Foot
0	0.000	0	0.000	65	3.800	3.8000	0.589

Bbls Recovered/Test = 0.6065 Est Bbls/Day = 9.7032 T = 90

Initial Shut-In

PRESS.	TIME	T/t	(T+t)/t	LOG T/t	LOG (T+t)/t
719	45	2.000	3.000	0.30103	0.47712
701	42	2.143	3.143	0.33099	0.49732
682	39	2.308	3.308	0.36318	0.51953
663	36	2.500	3.500	0.39794	0.54407
645	33	2.727	3.727	0.43573	0.57139
628	30	3.000	4.000	0.47712	0.60206

Final Shut-In

Press.	Time	T/t	(T+t)/t	Log T/t	Log (T+t)/t
518	45	2.000	3.000	0.30103	0.47712
497	42	2.143	3.143	0.33099	0.49732
477	39	2.308	3.308	0.36318	0.51953
455	36	2.500	3.500	0.39794	0.54407
438	33	2.727	3.727	0.43573	0.57139
421	30	3.000	4.000	0.47712	0.60206

Time Option is Log (T+t)/t

IP(0)	IP(1)	FP(0)	FP(1)	M	Kh/B	DR	Q1	Pts
1135.3	262.8	979.3	12.4	966.9	1.632	1.058	10.267	1,3
1135.1	262.8	978.3	12.5	965.8	1.634	1.058	10.268	1-3
1117.8	280.6	963.5	27.8	935.7	1.686	1.060	10.286	1-4
1093.1	305.4	922.8	68.6	854.2	1.847	1.066	10.341	1-5
1064.6	333.0	883.9	106.2	777.7	2.029	1.072	10.404	1-6

Graph Data For Points

Initial Time	Initial Pressure	Final Time	Final Pressure
0.4771	719	0.4771	518
0.4973	701	0.4973	497
0.5195	682	0.5195	477
0.5440	663	0.5440	455
0.5713	645	0.5713	438
0.6020	628	0.6020	421

Graph Data For Lines

0	1064.62	0	883.95
1	332.96	1	106.21

ZONE EVALUATION - Page 2

DST Number 4 TEST TICKET NO. 5976

Company: Ritchie Exploration, Inc. Date: 12/4/88

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

$M = G_0 - G_1$ 777.74

Damage Ratio:

$DR = .183 \frac{Ps - Pf}{M}$ 1.07

Effective Pay:

$\frac{Kh}{B} = \frac{162.6\ Q}{M}$ 2.03 Md. Ft.

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

$Q_1 = Q\ DR$ 10.40 Bbls/Day

Production: 0.61 Bbls/Hour

$Q = \frac{1440\ R}{T}$ 9.70 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.

CALCULATED RECOVERY ANALYSIS

DST Number: 4 TEST TICKET NO. 5976

Sample #	Total Feet	***** Gas %	**** Feet	***** Oil %	**** Feet	***** Mud %	**** Feet
1	20	0.00	0.00	100.00	20.00	0.00	0.00
2	65	0.00	0.00	37.00	24.05	63.00	40.95
3	65	10.00	6.50	32.00	20.80	58.00	37.70
TOTAL	150	4.33	6.50	43.23	64.85	52.43	78.65

Sample #	**** Water %	*** Feet	Chlorides (PPM)	Resistivity (Ohms)	Temperature (Deg)
1	0.00	0.00			
2	0.00	0.00			
3	0.00	0.00			
TOTAL	0.00	0.00			

EQUIPMENT DATA

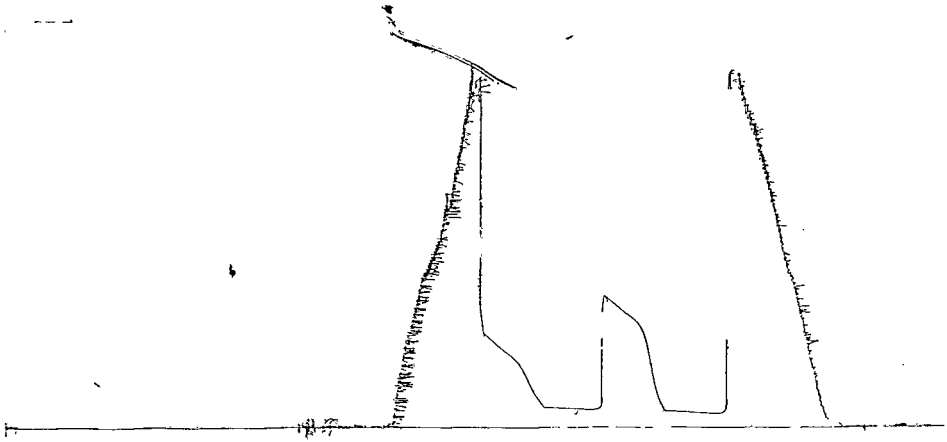
TOOL SEQUENCE REPORT

DST Number: 4 TEST TICKET NO. 5976

WELL NAME: # 1 H. Pakkebier WELL LOCATION: 11-6s-22w

Tool #	Tool	Length	I.D.	O.D.
1	Drill Pipe - 4.5"	3629.00	3.826	4.50
8	Circulating Sub	1.00	3.000	5.00
7	Changeover Sub	2.00	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	61.00	2.750	5.00
15	Recorder Carrier	1.00		5.00
16	Bull Plug	2.00		5.00
	Total Depth	3717.75		

Top 13248
DST # 4 5976



Bottom 13252

DST #4 5976

