

N.E.B. COPY

PARAMOUNT et al LIARD
F-36
CHINKEH / 1145 - 1155 M
DST # 1



Delta-P Test Corp.

WELL TESTING AND EVALUATIONS

**BAKER OIL TOOLS
DELTA-P TEST CORP
WELL TESTING AND DST EVALUATIONS**

**PARAMOUNT et al LIARD
F-36
CHINKEH / 1145 – 1155 M
DST # 1**

**NATIONAL ENERGY BOARD
ENGINEERING BRANCH
MAR 19 1998**

Sun, Mar 15, 1998

PARAMOUNT ET AL LIARD
F-36
CHINKEH/1145-1155
DST # 1

CLOSED CHAMBER REPORT SUMMARY

FLOW TIMES (minutes)

FLOW # 1 = 10 SHUT IN # 1 = 60
FLOW # 2 = 60 SHUT IN # 2 = 0

FLOW RATES (m3/D)

	GAS	LIQUID
	---	-----
FLOW # 1 initial	0	0
final	0	0
FLOW # 2 initial	2.6	0
final	0	0

RECOVERY

LENGTH (m)	VOLUME (m3)	DESCRIPTION
-----	-----	-----
.5	.001	DRILLING MUD
-----	-----	-----
.5	.001	TOTAL RECOVERY

COMMENTS

Surface pressures and flow rates were monitored on a minute by minute basis throughout both flow periods and the results, in graphical and tabular form, are contained in the following pages.

A good mechanical INFLATE STRADDLE DST using the WTD REAL TIME PRESSURE GAUGE and CLOSED CHAMBER was conducted on the CHINKEH formation across the interval 1145 - 1155 m.

Analysis for liquid produced during this test was done using pressures from the fluid recovery recorder, closed chamber surface data and the reported recovery. Calculations indicate a gradient of 10.8 kPa/m which is reasonable for this type of recovery and the reported recovery is varified.

Calculations indicate that 0.5 m of mud entered the test string during this test.

LIQUID AND GAS FLOW RATES

DELTA P TEST CORP., #3 Pumpmeadow Cr. S.W., T2V 5C8, CALGARY, ALTA.

PARAMOUNT ET AL LIARD

F-36

Sun, Mar 15, 1998

CHINKEH/1145-1155

DST # 1

Testtime (24 Hr.)	Flowtime (min)	Surface Dp/Dt (KPa/mn)	Surface Pressure (KPabs)	Recovery Dp/Dt (KPa/mn)	Recovery Pressure (KPabs)	Liquidrate (m3/D)	Gasrate (m3/D)
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START OF FLOW #1

11:48:45	0.00	0.00	86.49	0.0	86.5		
11:49:00	0.25	0.72	86.67	1.0	86.7	0.0	66.6
11:49:15	0.50	-0.03	86.66	1.0	87.0	0.0	0.0
11:49:30	0.75	-0.03	86.66	1.0	87.2	0.0	0.0
11:49:45	1.00	-0.02	86.65	1.0	87.5	0.0	0.0
11:51:45	3.00	-0.02	86.61	0.4	88.2	0.0	0.0
11:53:45	5.00	-0.01	86.58	0.1	88.4	0.0	0.0
11:55:45	7.00	-0.00	86.58	0.1	88.6	0.0	0.0
11:57:45	9.00	0.00	86.58	0.0	88.7	0.0	0.0
11:59:00	10.25	-0.01	86.57	0.1	88.8	0.0	0.0

START OF SHUT IN #1

						(Apparent Rates)	
11:59:00	0.00	0.00	86.57	0.0	88.8		
12:00:00	1.00	0.00	86.57	-0.2	88.6	0.0	0.0
12:01:00	2.00	-0.01	86.56	-0.1	88.5	0.0	0.0
12:02:00	3.00	-0.02	86.55	-0.0	88.5	0.0	0.0
12:03:00	4.00	0.00	86.55	-0.1	88.4	0.0	0.0
12:04:00	5.00	0.00	86.55	0.0	88.4	0.0	0.0
12:19:00	20.00	0.00	86.57	-0.0	88.1	0.0	0.1
12:34:00	35.00	-0.01	86.45	-0.0	87.8	0.0	0.0
12:49:00	50.00	-0.01	86.35	-0.0	87.6	0.0	0.0
12:58:30	59.50	-0.00	86.32	-0.0	87.6	0.0	0.0

START OF FLOW #2

12:58:30	0.00	0.00	86.32	0.0	87.6		
12:58:45	0.25	0.03	86.32	-0.3	87.5	0.0	2.6
12:59:00	0.50	0.00	86.32	-0.3	87.4	0.0	0.0
12:59:15	0.75	0.00	86.32	-0.1	87.4	0.0	0.0
12:59:30	1.00	0.03	86.33	1.7	87.8	0.0	2.6
13:09:30	11.00	-0.00	86.29	0.4	91.3	0.0	0.0
13:19:30	21.00	-0.01	86.23	0.0	91.5	0.0	0.0
13:29:30	31.00	-0.00	86.19	0.0	91.7	0.0	0.0
13:39:30	41.00	-0.01	86.14	0.1	92.6	0.0	0.0
13:49:30	51.00	-0.01	86.08	0.0	92.8	0.0	0.0
13:54:45	56.25	-0.02	85.98	0.1	93.3	0.0	0.0

LIQUID AND GAS FLOW RATES

DELTA P TEST CORP., #3 Pumpmeadow Cr. S.W., T2V 5C8, CALGARY, ALTA.

PARAMOUNT ET AL LIARD

F-36

Sun, Mar 15, 1998

CHINKEH/1145-1155

DST # 1

Testtime (24 Hr.)	Flowtime (min)	Surface Dp/Dt (KPa/mn)	Surface Pressure (KPabs)	Recovery Dp/Dt (KPa/mn)	Recovery Pressure (KPabs)	Liquidrate (m3/D)	Gasrate (m3/D)
START OF SHUT IN #2						(Apparent Rates)	
13:54:45	0.00	0.00	85.98	0.0	93.3		
13:55:45	1.00	0.01	86.00	-0.1	93.1	0.0	1.4
13:56:45	2.00	0.02	86.02	0.0	93.2	0.0	1.9
13:57:45	3.00	0.01	86.03	0.8	93.9	0.0	0.7
13:58:45	4.00	-0.02	86.00	0.1	94.0	0.0	0.0
13:59:45	5.00	0.78	86.78	0.0	94.1	0.0	71.3
14:00:00	5.25	0.00	86.78	-0.1	94.0	0.0	0.0

END OF RECORDED SURFACE PRESSURE DATA

SUMMARY OF CHAMBER FLOW PROPERTIES

DELTA P TEST CORP., #3 Pumpmeadow Cr. S.W., T2V 5C8, CALGARY, ALTA.

PARAMOUNT ET AL LIARD

F-36

Sun, Mar 15, 1998

CHINKEH/1145-1155

DST # 1

	VOLUMES (m3)	LENGTHS (m)	PRESSURES (KPa abs)	
START FLOW # 1				
AIR/N2	6.193	1127.92	surface	86.5
			average	92.4
			bottom	98.6
GAS	0.000	0.00	surface	98.6
			average	98.6
			bottom	98.6
RECOVERY	0.000	0.00		
TOTAL	6.193	1127.92	rec/gauge	86.5
END FLOW # 1				
AIR/N2	6.188	1125.92	surface	86.6
			average	92.5
			bottom	98.7
GAS	0.006	2.00	surface	98.7
			average	98.7
			bottom	98.7
RECOVERY	0.000	0.00		
TOTAL	6.193	1127.92	rec/gauge	88.8
** SHUT IN # 1				
AIR/N2	6.193	1127.92	surface	86.3
			average	92.2
			bottom	98.4
GAS	0.000	0.00	surface	98.4
			average	98.4
			bottom	98.4
RECOVERY	0.000	0.00		
TOTAL	6.193	1127.92	rec/gauge	87.6

**Point before 59.75 min into shut in, first surface dp/dt < -0.5

SUMMARY OF CHAMBER FLOW PROPERTIES

DELTA P TEST CORP., #3 Pumpmeadow Cr. S.W., T2V 5C8, CALGARY, ALTA.

PARAMOUNT ET AL LIARD

F-36

Sun, Mar 15, 1998

CHINKEH/1145-1155

DST # 1

	VOLUMES (m3)	LENGTHS (m)	PRESSURES (KPa abs)	
START FLOW # 2				
AIR/N2	6.193	1127.92	surface	86.3
			average	92.2
			bottom	98.4
GAS	0.000	0.00	surface	98.4
			average	98.4
			bottom	98.4
RECOVERY	0.000	0.00		
	-----	-----		
TOTAL	6.193	1127.92	rec/gauge	87.6
END FLOW # 2				
AIR/N2	6.193	1127.92	surface	86.0
			average	91.9
			bottom	98.0
GAS	0.000	0.00	surface	98.0
			average	98.0
			bottom	98.0
RECOVERY	0.000	0.00		
	-----	-----		
TOTAL	6.193	1127.92	rec/gauge	93.3
** SHUT IN # 2				
AIR/N2	6.137	1108.08	surface	86.8
			average	92.6
			bottom	98.7
GAS	0.056	19.84	surface	98.7
			average	98.8
			bottom	98.9
RECOVERY	0.000	0.00		
	-----	-----		
TOTAL	6.193	1127.92	rec/gauge	94.0

**Point before 5.25 min into shut in, first surface dp/dt < -0.5

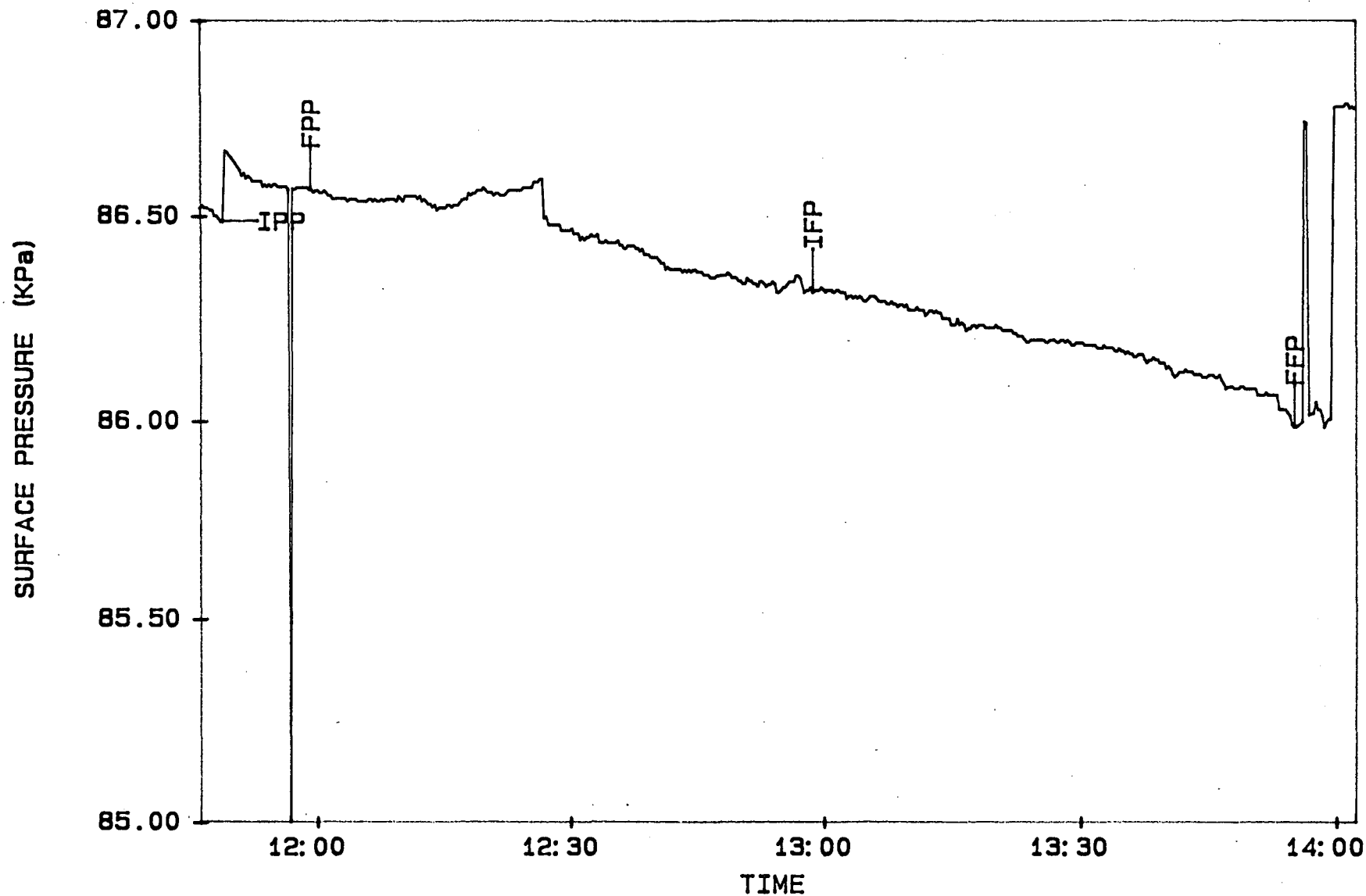
DELTA-P TEST CORP.

REFERENCE FILENAME : P1602

TEST DATE : Sun, Mar 15, 1998

WELL NAME : PARAMOUNT ET AL LIARD

WELL LOCATION : F-36



Sun, Mar 15, 1998

PARAMOUNT ET AL LIARD

F-36

CHINKEH/1145-1155

DST # 1

PRETEST CALCULATIONS

FILENAME	P1602.DST	
GAS GRAVITY	.65	
FORMATION DEPTH	1150.00 MKB	
FORMATION PRESSURE	11707.00 KPAg	
FORMATION TEMPERATURE	38.01 DEG C	
AVE CHAMBER TEMP	21.25 DEG C	
INITIAL CHM SURFACE PRESSURE	86.50 KPAA	
INITIAL GAS/N2 HEAD PRESSURE	94.36 KPAA	
INITIAL TOTAL CUSH. PRESSURE	94.36 KPAA	
INITIAL CUSHION LENGTH	.00 m	
LIQUID CUSHION GRADIENT	.00 kPA/m	
DOWN HOLE CHOKE DIAMETER	12.70 mm	
CHOKE COEFFICIENT	18.02 m3/D/KPA	
DRILL COLLAR LENGTH	72.76 m	
DRILL COLLAR I.D.	60.00 mm	
DRILL COLLAR CAPACITY	.002827 m3/m	
DRILL COLLAR VOLUME	.206 m3	
LOWER DRILL PIPE LENGTH	1055.16 m	
LOWER DRILL PIPE I.D.	85.00 mm	
LOWER DRILL PIPE CAPACITY	.005674 m3/m	
LOWER DRILL PIPE VOLUME	5.988 m3	
UPPER DRILL PIPE LENGTH	.00 m	
UPPER DRILL PIPE I.D.	.00 mm	
UPPER DRILL PIPE CAPACITY	.000000 m3/m	
UPPER DRILL PIPE VOLUME	.000 m3	
TOTAL CHAMBER VOLUME	6.19 m3	
LIQUID CUSHION VOLUME	.00 m3	
NET CHAMBER VOLUME	6.19 m3	
MAX. RATE MAX. SURFACE DP/DT		
GAS	285738.7 m3/D	3167.5 KPA/min
GAS SATURATED H2O	824.5 m3/D	28.5 KPA/min
PURE LIQUID INFLUX	824.5 m3/D	8.4 KPA/min
INITIAL CONVERSION FACTORS		
GAS	90.2 m3/D/KPA/min	
GAS SATURATED H2O	28.9 m3/D/KPA/min	
PURE LIQUID INFLUX	98.7 m3/D/KPA/min	

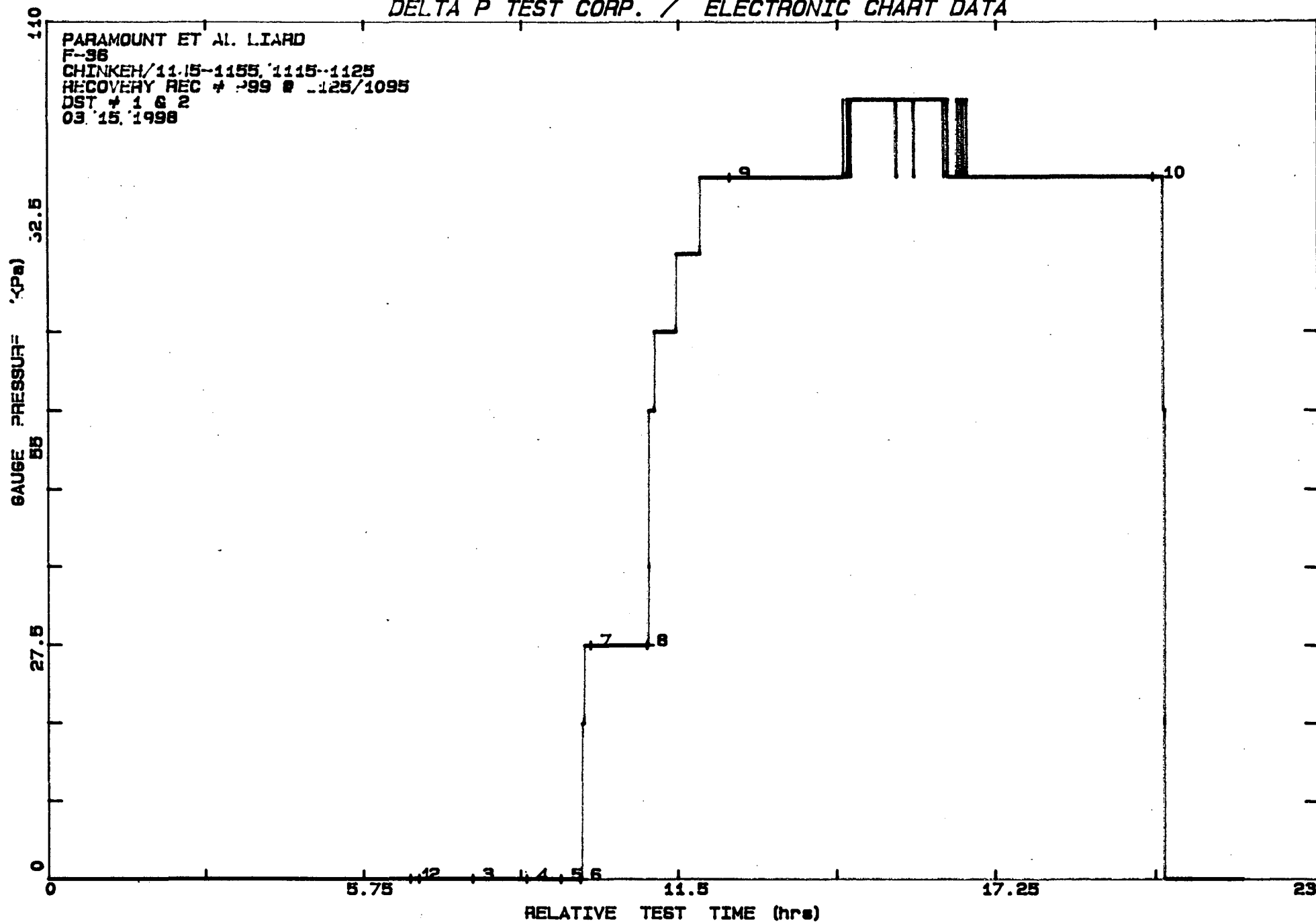
ELECTRONIC DOWNHOLE RECORDER DATA
DELTA P TEST CORP.

PARAMOUNT ET AL LIARD
F-36
CHINKEH/1145-1155/1115-1125
RECOVERY REC # P99 @ 1125/1095
DST # 1 & 2
03/15/1998

CHART SUMMARY OF LABELS AND PRESSURES

LABEL#	LABEL	TEST (min)	TIME (hours)	PRESSURE (KPa)
1	IPP1	395.5	6.59	0.0
2	FPP1	405.5	6.76	2.4
3	IFP1	464.5	7.74	1.1
4	FFP1	524.0	8.73	6.8
5	FHP1	562.0	9.37	6.7
6	IPP2	583.0	9.72	6.1
7	FPP2	593.5	9.89	38.8
8	IFP2	655.0	10.92	39.5
9	FFP2	745.5	12.42	99.2
10	FHP2	1203.5	20.06	92.2

DELTA P TEST CORP. / ELECTRONIC CHART DATA



ELECTRONIC DOWNHOLE RECORDER DATA
DELTA P TEST CORP.

PARAMOUNT ET AL LIARD
 F-36
 CHINKEH/1145-1155/1115-1125
 RECOVERY REC # P99 @ 1125/1095
 DST # 1 & 2
 03/15/1998

CHART FLOW TIMES AND PRESSURES

LABEL	TEST TIME (min)	TIME (hours)	PRESSURE (KPa)
	1.0	0.02	0.0
	2.5	0.04	0.0
	242.5	4.04	0.0
IPP1	395.5	6.59	0.0
	397.5	6.62	1.4
	399.5	6.66	1.8
	401.5	6.69	2.0
	403.5	6.72	2.2
FPP1	405.5	6.76	2.4
	420.5	7.01	1.6
	435.5	7.26	1.4
	450.5	7.51	1.1
IFP1	464.5	7.74	1.1
	474.5	7.91	4.8
	484.5	8.07	5.0
	494.5	8.24	5.1
	504.5	8.41	5.6
	514.5	8.57	6.5
FPP1	524.0	8.73	6.8
	544.0	9.07	7.4
FHP1	562.0	9.37	6.7
IPP2	583.0	9.72	6.1
	585.0	9.75	24.5
	587.0	9.78	30.6
	589.0	9.82	34.2
	591.0	9.85	36.6
	593.0	9.88	38.3
FPP2	593.5	9.89	38.8
	613.5	10.22	39.2
	633.5	10.56	39.1
	653.5	10.89	39.0
IFP2	655.0	10.92	39.5
	670.0	11.17	73.3
	685.0	11.42	79.3
	700.0	11.67	85.2
	715.0	11.92	90.8
	730.0	12.17	94.8
	745.0	12.42	98.6
FPP2	745.5	12.42	99.2
	864.5	14.41	99.9
	983.5	16.39	99.9
	1102.5	18.38	95.4
FHP2	1203.5	20.06	92.2

ELECTRONIC DOWNHOLE RECORDER DATA
DELTA P TEST CORP.

PARAMOUNT ET AL LIARD

F-36

CHINKEH/1145-1155/1115-1125

RECOVERY REC # P99 @ 1125/1095

DST # 1 & 2

03/15/1998

CHART FLOW TIMES AND PRESSURES

<u>LABEL</u>	<u>TEST TIME</u> <u>(min)</u>	<u>(hours)</u>	<u>PRESSURE</u> <u>(KPa)</u>
	1264.0	21.07	0.0

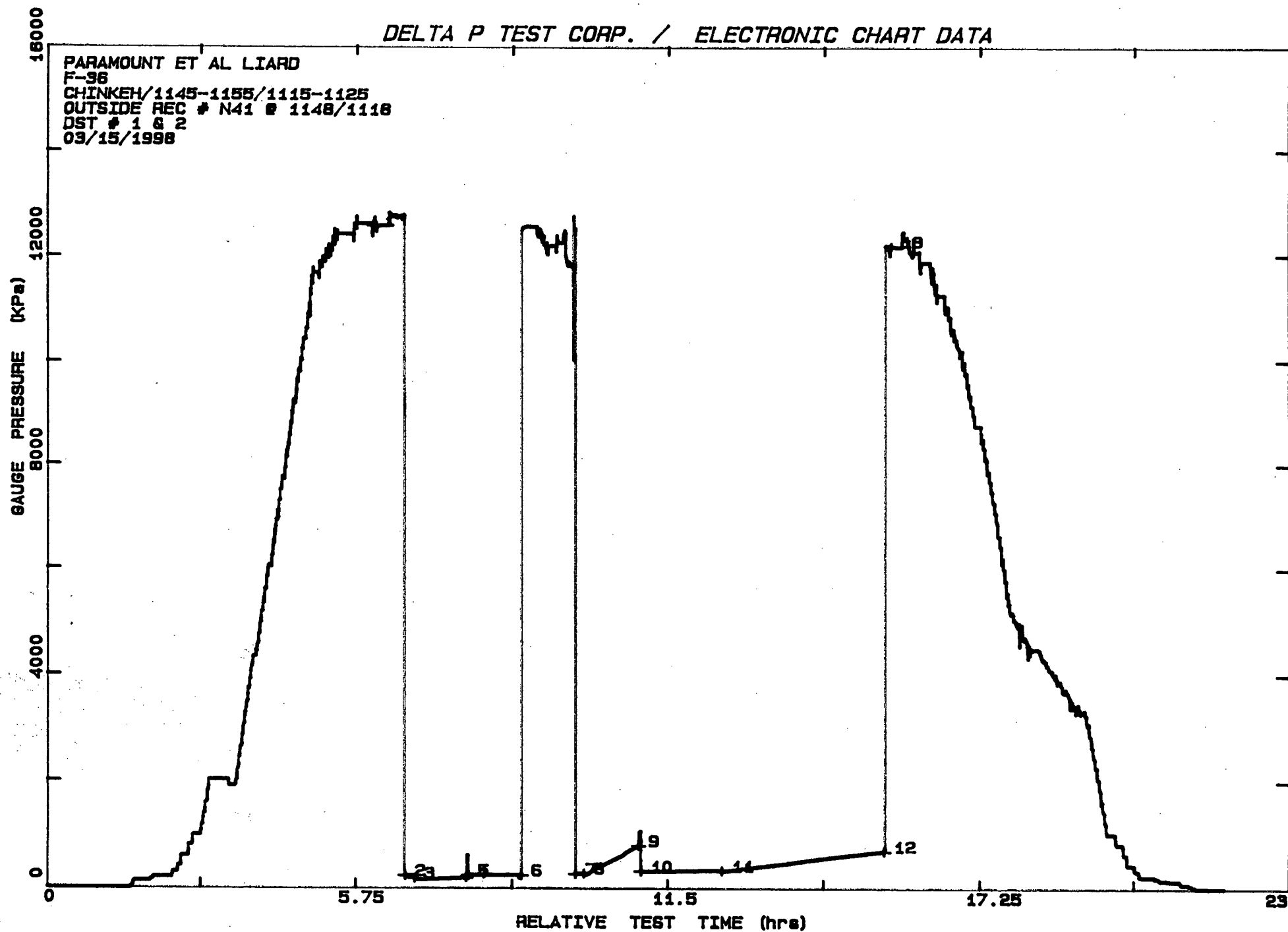
ELECTRONIC DOWNHOLE RECORDER DATA
DELTA P TEST CORP.

PARAMOUNT ET AL LIARD
 F-36
 CHINKEH/1145-1155/1115-1125
 OUTSIDE REC # N41 @ 1148/1118
 DST # 1 & 2
 03/15/1998

CHART FLOW TIMES AND PRESSURES

<u>LABEL</u>	<u>TEST TIME</u> <u>(min)</u>	<u>(hours)</u>	<u>PRESSURE</u> <u>(KPa)</u>
	1.0	0.02	0.0
	2.5	0.04	0.0
	123.0	2.05	216.6
	242.0	4.03	5203.4
	361.0	6.02	12622.5
IHP	365.0	6.08	12581.9
IPP1	399.5	6.66	237.7
	404.5	6.74	238.6
FPP1	409.5	6.82	184.5
	424.5	7.08	171.3
	439.5	7.32	182.5
	454.5	7.58	194.9
ISI1	466.5	7.77	203.9
IFP1	469.0	7.82	243.3
	484.0	8.07	243.2
	499.0	8.32	243.9
	514.0	8.57	245.3
FPP1	527.5	8.79	245.4
	587.0	9.78	12539.3
IPP2	587.5	9.79	272.3
	592.5	9.87	279.3
FPP2	596.5	9.94	282.8
	616.5	10.27	433.2
	636.5	10.61	600.3
	656.5	10.94	799.2
ISI2	657.5	10.96	807.7
IFP2	660.0	11.00	321.2
	680.0	11.33	322.8
	700.0	11.67	331.8
	720.0	12.00	338.9
	740.0	12.33	344.5
FPP2	750.0	12.50	338.0
	770.0	12.83	369.4
	790.0	13.17	413.2
	810.0	13.50	455.3
	830.0	13.83	500.9
	850.0	14.17	547.6
	870.0	14.50	590.0
	890.0	14.83	631.2
	910.0	15.17	671.3
FSI2	928.0	15.47	706.7
FHP	935.5	15.59	12195.6
	1173.5	19.56	1233.3

DELTA P TEST CORP. / ELECTRONIC CHART DATA



PARAMOUNT ET AL LIARD F-36
00/ 60.091 / 123.367 /00
DST# 1

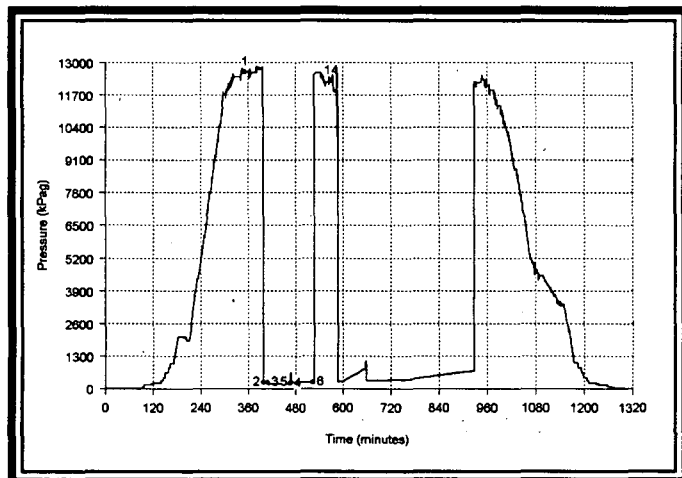
Formation: Chinkeh
Interval - from: 1,145.00 **to:** 1,155.00 meters
Recorder# N41 at 1,148.00 meters

Test Date: 1998-03-15
Test Type : Inflate Straddle

Blow Description:
 PREFLOW: Closed Chamber with Delta P.

FINAL FLOW: Closed Chamber with Delta P.

Remarks:
 This is the first of two tests run on the same trip in the hole. Mechanically successful test. Results suggest virtually no permeability within the interval tested.



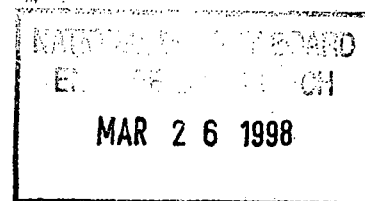
Max Btm Hole Temperature @ FSI: 45.8 C

		Pressure (kPag)	Time (min)	Extrapolated Pressure (kPag)
1	Initial Hydrostatic	12624		
2	Start of 1st Flow	238		
3	End of 1st Flow	239	9.5	
4	End of 1st Shut-in	204	57.5	
5	Start of 2nd Flow	243		
6	End of 2nd Flow	246	55.0	
7	End of 2nd Shut-in	12255	47.0	
14	Final Hydrostatic	12255		

Liquid Recovery 8.50 meters

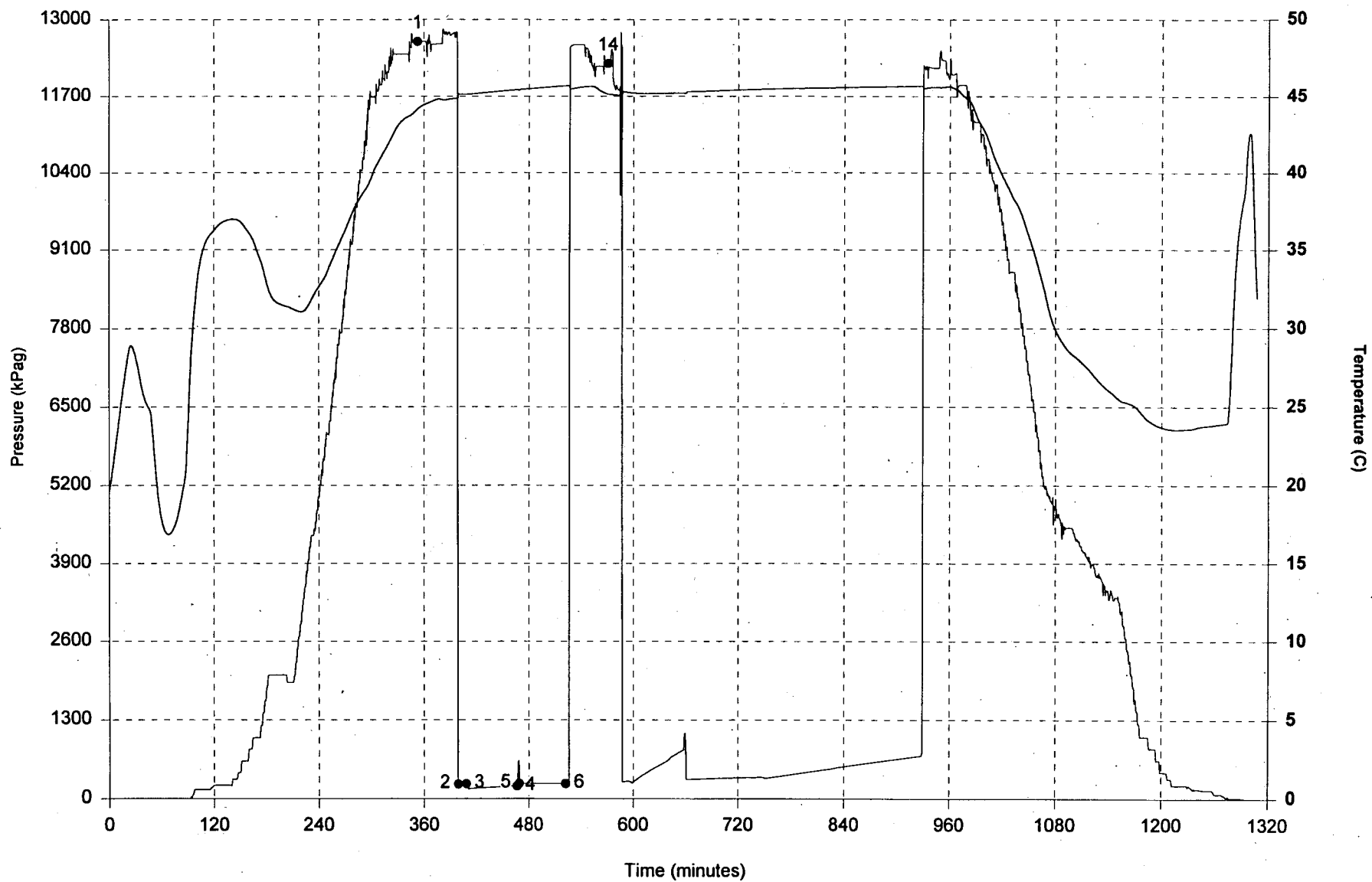
Salinity : 2 000 g/m3

Recovery	Description
8.50 m	DRILLING MUD



PARAMOUNT ET AL LIARD F-36
00/ 60.091 / 123.367 / 00
DST #: 1
Recorder: N41

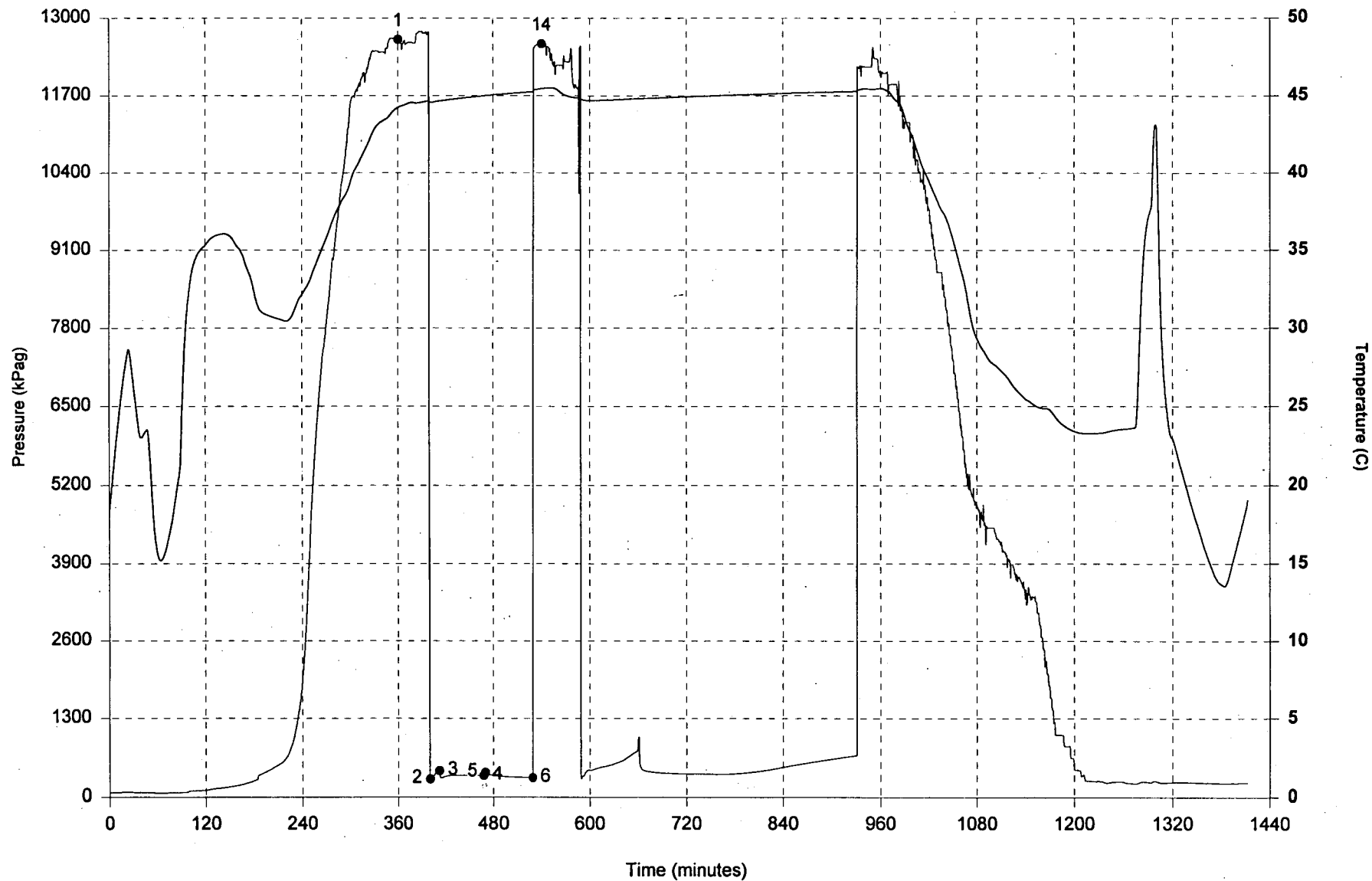
Pressure (kPag) at Critical Points:
1: 12624 4: 204 14: 12255
2: 238 5: 243
3: 239 6: 246



PARAMOUNT ET AL LIARD F-36
 00/ 60.091 / 123.367 /00
 DST #: 1
 Recorder: K20

Pressure (kPag) at Critical Points:
 1: 12636 4: 349 14: 12567
 2: 295 5: 399
 3: 428 6: 313

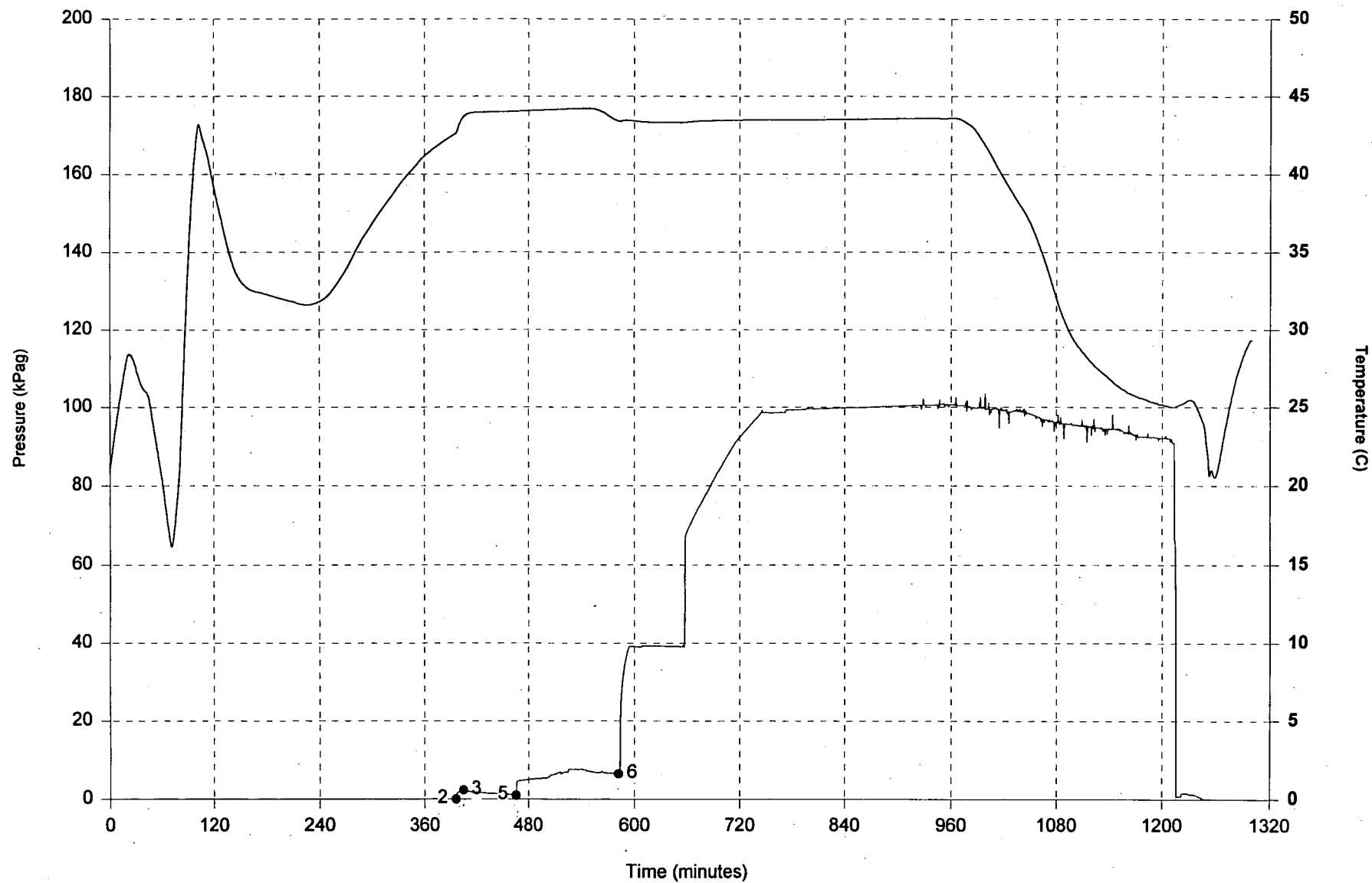
Second Electronic Gauge



PARAMOUNT ET AL LIARD F-36
 00/ 60.091 / 123.367 /00
 DST #: 1
 Recorder: P99

Pressure (kPag) at Critical Points:
 2: 0 6: 6
 3: 2
 5: 1

Recovery Recorder



PARAMOUNT ET AL LIARD F-36
00/ 60.091 / 123.367 /00
DST# 1

General Information:

Operator: Paramount Resources Ltd.
4000, 350 - 7th Ave. S.W.
Calgary Alberta T2P 3W5

Licence#: 1841

Tester: Brennan T

Ticket#: 806589

Reverse Circulated? N

KB Elevation: 469.40 meters

Ground Elevat'n: 381.00 meters

Total Depth: 1,173.60 meters

Mud Data:

Weight: 1105 kg/m3

Type: Gel Chemical

Viscosity: 62 s/l

Water Loss: 8.0 cc/s

Filter Cake: 1.5 mm

Hole Data:

Drilled Hole Size: 222 mm

Hole Condition at Test Time: Good

Conditioned prior to this test? Y

Recorder Summary:

Recorder#	Type	Location	Capacity	Units	Depth	Comments
P99	ZI	Inside	34500	kPag	1,128.00	Recovery Recorder Second Electronic Gauge
8892	K-3	Outside	21000	kPag	1,148.00	
K20	ZI	Outside	68900	kPag	1,148.00	
N41	ZI	Outside	68900	kPag	1,148.00	

Distributions:

Reports Sent To: Greg Elliott

Fluid Samples - no of: 1 Sent To: Core Labs

Bottom Hole Sampler#	Sent To
291	Core Labs

PARAMOUNT ET AL LIARD F-36
00/ 60.091 / 123.367 /00
DST# 1

Tool Sequence:

<i>Diagram</i>	<i>Description</i>	<i>Length</i>
	Pump Out Sub	0.40 m
	Pump Out Sub	0.36 m
	Cross Over Sub	0.30 m
	Recorder Carrier	1.48 m
	Choke Sub	0.31 m
	Hydraulic Tool	1.50 m
	Bottom Hole Sampler	1.03 m
	Recorder Carrier	1.48 m
	Real Time Gauge	6.39 m
	Hydraulic Jars	2.22 m
	Safety Joint	0.65 m
	Inflate Pump	2.38 m
	Screen	1.16 m
	Top Inflate Packer	1.78 m
	Packer Stick Down	0.82 m
	Port Sub	0.30 m
	Recorder Carrier	2.04 m
	Spacing	0.31 m
	Spacing	2.43 m
	Spacing	2.43 m
	Spacing	1.22 m
	Packer Stick Up	0.42 m
	Bottom Inflate Packer	1.90 m
	Perforations	0.61 m
	Belly Spring	2.00 m

Tool String Length: 35.92 m
 Drill Collar I.D.: 63 mm 72.76 m
 Drill Pipe O.D.: 101 mm 1,055.16 m
 Collar Pipe Total: 1,127.92 m
 Stick Up: 4.36 m
 Tool Above: 21.44 m
 Interval Tested: 10.00 m
 Bottom Hole Choke Size: 12.70 mm

PARAMOUNT ET AL LIARD F-36

00/ 60.091 / 123.367 /00

DST# 1

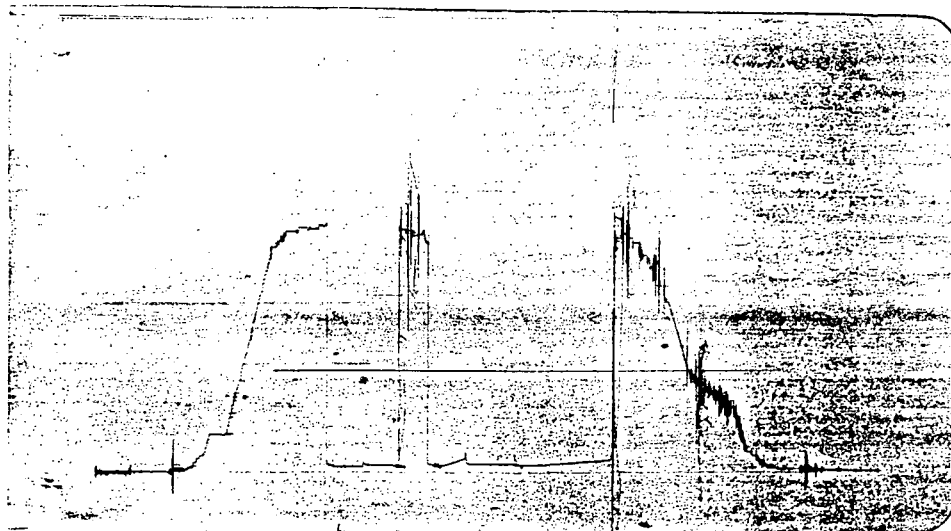
Recorder# 8892

Depth: 1,148.00 m

Location: Outside

Recorder Type: K-3

Capacity: 21,000 kPag



		Pressure (kPag)	Time (min)
1	Initial Hydrostatic	12565	
2	Start of 1st Flow	300	
3	End of 1st Flow	215	9.5
4	End of 1st Shut-in	160	57.5
5	Start of 2nd Flow	363	
6	End of 2nd Flow	219	55.0
7	End of 2nd Shut-in		47.0
14	Final Hydrostatic	12195	

Recorder# K20

Depth: 1,148.00 m

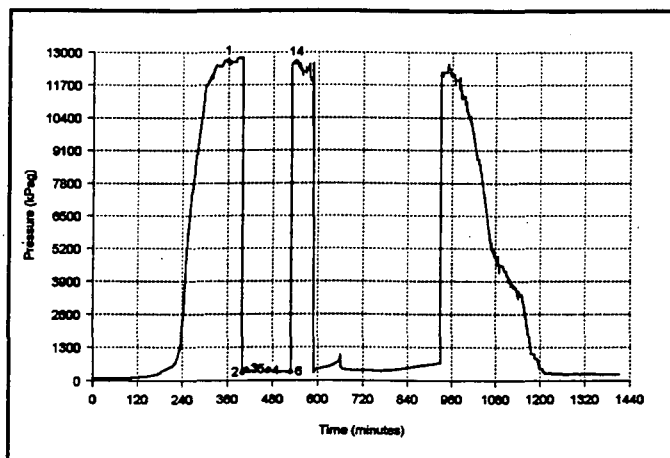
Temperature: 45.4 C

Location: Outside

Recorder Type: ZI

Capacity: 68,900 kPag

Comments: Second Electronic Gauge



		Pressure (kPag)	Time (min)
1	Initial Hydrostatic	12636	
2	Start of 1st Flow	295	
3	End of 1st Flow	428	9.5
4	End of 1st Shut-in	349	57.5
5	Start of 2nd Flow	399	
6	End of 2nd Flow	313	55.0
14	Final Hydrostatic	12567	

PARAMOUNT ET AL LIARD F-36

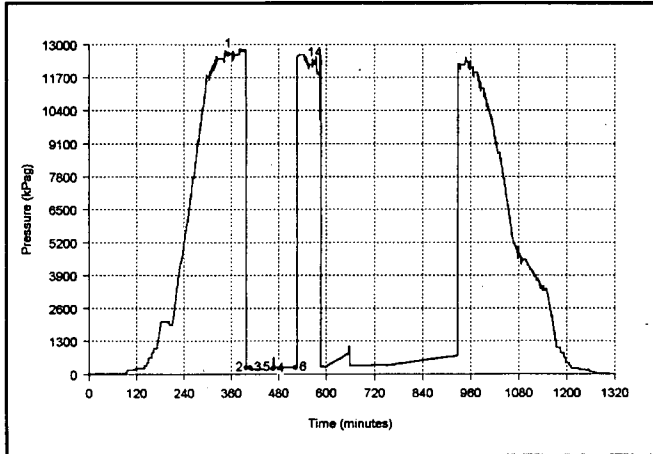
00/ 60.091 / 123.367 /00

DST# 1

Recorder# N41

Depth: 1,148.00 m
 Temperature: 45.8 C
 Location: Outside

Recorder Type: ZI
 Capacity: 68,900 kPag

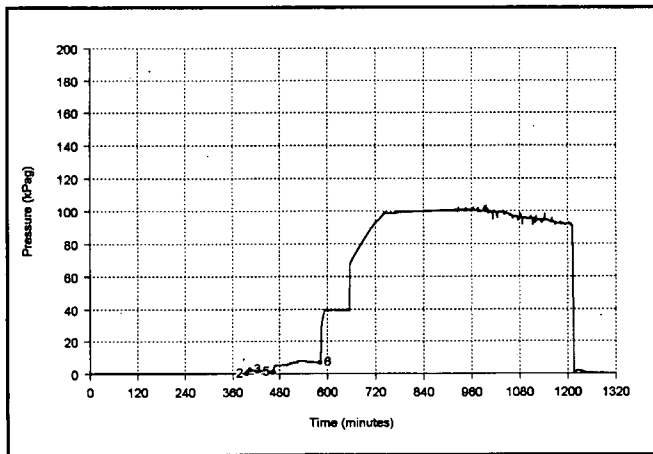


		Pressure (kPag)	Time (min)
1	Initial Hydrostatic	12624	
2	Start of 1st Flow	238	
3	End of 1st Flow	239	9.5
4	End of 1st Shut-in	204	57.5
5	Start of 2nd Flow	243	
6	End of 2nd Flow	246	55.0
7	End of 2nd Shut-in	12255	47.0
14	Final Hydrostatic	12255	

Recorder# P99

Depth: 1,128.00 m
 Temperature: 44.3 C
 Location: Inside

Recorder Type: ZI
 Capacity: 34,500 kPag
 Comments: Recovery Recorder



		Pressure (kPag)	Time (min)
2	Start of 1st Flow	0	
3	End of 1st Flow	2	9.5
5	Start of 2nd Flow	1	
6	End of 2nd Flow	6	55.0