

SOUTH AUSTRALIA
DEPARTMENT OF MINES AND ENERGY



OPEN FILE ENVELOPE NO. 2851

PPL 11

EROMANGA AND COOPER BASINS

BIG LAKE 15

TEST REPORTS

Submitted by

Delhi International Oil Corporation

1989

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ENVELOPE 2851

TENEMENT: PPL 11; Eromanga and Cooper Basins

TENEMENT HOLDER: Delhi International Oil Corporation (operator), Santos Ltd and Vamgas Ltd

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Delhi International Oil Corporation, 1977. Well test summary and results of the modified isochronal test and buildup survey of the Toolachee and Daralingie gas reservoir perforated intervals 7562-7569 and 7781-7778 feet, conducted during the period 21-25 March 1977.	2851 R 1 Pgs 3-11
Rowley, D.K., 1977. Production sample analyses for 2 gas and 1 liquid sample obtained on 23 March 1977 (Amdel report no. AN 3887/77 [Part report], dated 21 June 1977).	2851 R 2 Pgs 12-14
Rowley, D.K., 1977. Production sample analyses for 2 gas and 1 liquid sample obtained on 23 March 1977 (Amdel report no. AN 3887/77 [Report complete], dated 24 June 1977).	2851 R 3 Pgs 15-16
Delhi International Oil Corporation, 1977. Chronology (and average flow rates) of modified isochronal test conducted over the period 21-26 March 1977.	2851 R 4 Pg. 17
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Dove, K. and Buckland, P., 1986. Results of 104 hour buildup, static pressure gradient and BHP surveys of the Toolachee/Daralingie producing zone, run during the period 30 July - 3 August 1986 (Expertest Pty Ltd).	2851 R 8 Pgs 25-38
Mueller, M., 1989. Results of 96 hour buildup, static pressure gradient and BHP surveys of the Toolachee/Daralingie producing zone, run during the period 12-17 September 1989 (Expertest Pty Ltd).	2851 R 9 Pgs 39-49

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WELL TEST SUMMARY PAGE 1

Well: Big Lake 15 Lat 28°12' 02" S Location: 140 19' 43" E Date: 21st-26th Mch 1977
 Field: Big Lake Pool: Toolachee & Daralingie Tested By: GRM & A
 Casing Size: 7" Weight: 23 & 26 # Grade: J & N Prod int. 7562-7569
 Tubing Size: 3½" Weight: 9.3" Grade: J55 7781-7788
 Well Blown 96 Hours Producing Through tubing

Gas Gravity: _____ Source: _____ Mean Annual Surface Temp _____ °F
 Liquid Gravity: _____ Source: _____ B.H. Temp: _____ °F Source: _____
 INITIAL SHUT-IN PERIOD Date Shut-In: _____ Time: _____ Tot. Shut-In 120.67 hrs.

Time of Observation			Observed Pressures				Wellhead Temp. -OF	Remarks
Date	Time	Shut-In Time Hrs.	Tubing		Casing			
			psig	psia	psig	psia		
21st Mch 1977	1623	119.05	2295	2309.7				
	1800	120.67			630	644.7		

FLOW PERIOD

Run No. 1 Duration of Run 2 hrs. Orifice Size 1.500" Meter Run 3.068"
 High Pressure Separator - Operating Pressure _____ psig Temp. _____ °F
 Low Pressure Separator - Operating Pressure _____ psig Temp. _____ °F
 Flowed well on 16/64 choke

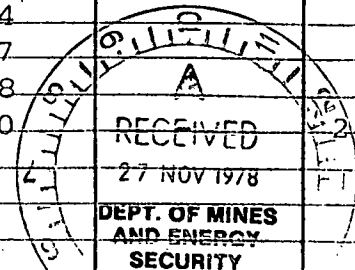
Date	Time	Flow Time Hours	Wellhead Readings			Meter or Prover Data			Condensate Prod. - Bbls	Water Prod. - Bbls
			Tubing psig	Casing psig	Temp. °F	Pf psia	Hw ins.	Temp. °F		
21st Mch 1977	1830	0.5	2137		101	494.7	111	62		
	1900	1.0	2111		104	494.7	111	74		
	1930	1.5	2094		106	494.7	110	82		
	2000	2.0	2093		108	494.7	106	91	0.2	0.

2nd. SHUT-IN PERIOD

Date	Time	Shut-In Time Hrs.	Tubing Pressure		Casing Pressure		Wellhead Temp. °F
			psig	psia	psig	psia	
21st Mch 1977	2030	0.5	2305	2319.7			99
	2100	1.0	2309	2323.7			90
	2130	1.5	2299	2313.7			84
	2200	2.0	2297	2311.7	630	694.7	81

Run No. 2 Duration of Run 2 Hrs. Orifice Size 1.750" Meter Run 3.068"
 High Pressure Separator - Operating Pressure _____ psig Temp. _____ °F
 Low Pressure Separator - Operating Pressure _____ psig Temp. _____ °F
 Flowed well on 20/64 choke

Date	Time	Flow Time Hours	Wellhead Readings			Meter or Prover Data			Condensate Prod. - Bbls	Water Prod. - Bbls
			Tubing psig	Casing psig	Temp. °F	Pf psia	Hw ins.	Temp. °F		
21st Mch 1977	2230	0.5	1978		108	529.7	107	74		
	2300	1.0	1973		110	514.7	98	87		
	2330	1.5	1969		112	529.7	102	88		
	2400	2.0	1968	700	113	529.7	102	90		



WELL TEST SUMMARY PAGE 2

For Use with Isochronal Tests

	Date	Time	Shut-In Time Hrs.	Tubing Pressure		Casing Pressure		Wellhead Temp. °F
				psig	psia	psig	psia	
22nd 1977	March	0030	0.5	224.9	2263.7			99
		0100	1.0	229.6	2310.7			92
		0130	1.5	2291	2305.7			85
		0200	2.0	2291	2305.7	670	684.7	79

Run No. 3 Duration of Run 2 hrs. Orifice Size 2.000" Meter Run: 3.068"

High Pressure Separator - Operating Pressure _____ psig Temp. _____ °F

Low Pressure Separator - Operating Pressure _____ psig Temp. _____ °F

Flowed Well on 24/64 choke

	Date	Time	Flow Time Hours	Wellhead Readings			Meter or Prover Data			Condensate Prod-Bbls	Water Prod- Bbls
				Tubing psig	Casing psig	Temp. °F	Pf psia	Hw (ins)	Temp. °F		
22nd 1977	March	0230	0.5	1815		110	519.7	94	78		
		0300	1.0	1834		115	519.7	93	87		
		0330	1.5	1836		117	519.7	93	90		
		0400	2.0	1836	730	119	519.7	93	91	-	3.5

For Use with Isochronal Type Tests

	Date	Time	Shut-In Time Hrs.	Tubing Pressure		Casing Pressure		Wellhead Temp. °F
				psig	psia	psig	psia	
22nd 1977	March	0430	0.5	2263	2277.7			99
		0500	1.0	2275	2289.7			85
		0530	1.5	2276	2290.7			78
		0600	2.0	2277	2291.7	670	684.7	74

Run No. 4 Duration of Run 2 hrs. Orifice Size 2.25" Meter Run or Prover
Size: 3.068"

High Pressure Separator - Operating Pressure _____ psig Temp. _____ °F

Low Pressure Separator - Operating Pressure _____ psig Temp. _____ °F

Flowed well on 28/64 choke setting

	Date	Time	Flow Time Hours	Wellhead Readings			Meter or Prover Data			Condensate Prod-Bbls	Water Prod- Bbls
				Tubing psig	Casing psig	Temp. °F	Pf psia	Hw (ins)	Temp. °F		
22nd 1977	March	0630	0.5	1653		119	514.7	68	79		
		0700	1.0	1651		125	509.7	68	83		
		0730	1.5	1654		131	514.7	68	87		
		0800	2.0	1655	760	133	514.7	68	89	-	5.5

For Use with Isochronal Type Tests

	Date	Time	Shut-In Time Hrs.	Tubing Pressure		Casing Pressure		Wellhead Temp. °F
				psig	psia	psig	psia	
22nd 1977	March	0830	0.5	2229	2243.7			121
		0900	1.0	2249	2263.7			111
		0930	1.5	2254	2268.7	700	714.7	106
		1000	2.0	2257	2271.7			104

Remarks :

00005

Run No. 5 Duration of Run 32.75 hrs. Orifice Size 2.25" Meter Run 3.068"
Flowed well on _____ choke _____

[illegible]

FIGURES IN BRACKETS PERIOD (IN HOURS) OVER WHICH LIQUIDS MEASUREMENTS RECORDED

FINAL BUILD-UP PERIOD

For use with Isochronal Type Tests

[illegible]

BOMB DEPTH 7557' KB

[illegible]

CALCULATION SHEET

CASE 1: FLOW THROUGH METER RUN

Run No.	HW(in wtr)	Pf (psia)	Size Orifice Plate (inches)	F _t of	b	$\frac{H_w}{P_f}$
1	106	494.7	1.500	91	0.0436	0.2143
2	102	529.7	1.750	90	0.0524	0.1926
3	93	519.7	2.000	91	0.0624	0.1789
4	68	514.7	2.250	89	0.0706	0.1321
5	75	479.7	2.250	128	0.0706	0.1563

CASE 2: FLOW THROUGH METER RUN = 3.068" I.D.
S.G. = 0.766

m No.	F _b	F _g	F _{tf}	F _{pv}	F _{pb}	F _{tb}
1	472.96	1.1426	0.9715	1.0316	1.0055	1.0000
2	663.42	1.1426	0.9723	1.0342	1.0055	1.0000
3	906.01	1.1426	0.9715	1.0333	1.0055	1.0000
4	1223.2	1.1426	0.9732	1.0335	1.0055	1.0000
5	1223.2	1.1426	0.9404	1.0235	1.0055	1.0000

FLOW THROUGH METER RUN (Continued)

Run No.	F _r	Y	C'	$\sqrt{H_w P_f}$	$\frac{Q}{\text{MCF/Hour}}$	$\frac{Q}{\text{MCFD}}$
1	1.0002	1.0012	545.334	228.994	124.878	2997.077
2	1.0002	1.0011	767.422	232.442	178.381	4281.144
3	1.0003	1.0009	1046.163	219.846	229.995	5519.874
4	1.0004	1.0005	1414.741	187.082	264.673	6352.143
5	1.0004	1.0006	1353.968	189.677	256.817	6163.597

28° 12' 02" S

Well: Big Lake 15 Location: 140° 19' 43" E Field: Big LakePool: Toolachee+Daralingie Tested by: GRMSA Calculated by: J.W.Casing Size: 7" I.D. Tubing Size: 3½" I.D. Produced Through: TubingPerforations: Refer page 1 Length of Flow String: _____

Properties of Well Effluent. Spec. Gravity _____ Pc _____ Tc _____

H₂S _____ p.p.m.A. FLOW TEST DATA

Run No.	Tubing psia	Casing psia	Calculated Sandface Press. psia	Gas Flow Rate MMCFD	Condensate Prod- Bbl/d	Total Flow Rate MMCFD	Water Prod. Bbl/d
1	2107.7	-	Measured	2.997	2.4	2.998	7.2
2	1982.7	714.7	"	4.281	-	4.281	30
3	1850.7	744.7	"	5.520	-	5.520	42
4	1669.7	774.7	"	6.352	-	6.352	66
5	1615.7	814.7	"	6.164	-	6.164	51.6

B. BOMB MEASURED PRESSURES Datum from KB 7557'

Flow Rate No.	Date	Time	Depth	Corr. Press. @ Run Depth - psia	Corr. Press. @ Datum - psia	Remarks
1	21st	1800	7495'	2552.3	2553.9	
2	March 77	2200	7495'	2407.4	2409.0	
3	22nd	0200	7495'	2270.8	2272.4	
4	March 77	0600	7495'	2101.4	2103.0	
5	23rd	1845	7557'	1995.0	1995.0	
	March 77					

C. SHUT-IN DATA

Shut-In No.	Pressure - psia		Shut-In Time-Hrs.	Shut-In No.	Pressure - psia		Shut-In Time-hrs.
	Wellhead	Sandface			Wellhead	Sandface	
1	2309.7	2742.6	120.67				
2	2311.7	2737.1	2				
3	2305.7	2671.5	2				
4	2291.7	2701.6	2				
5	2271.7	2671.5	2				

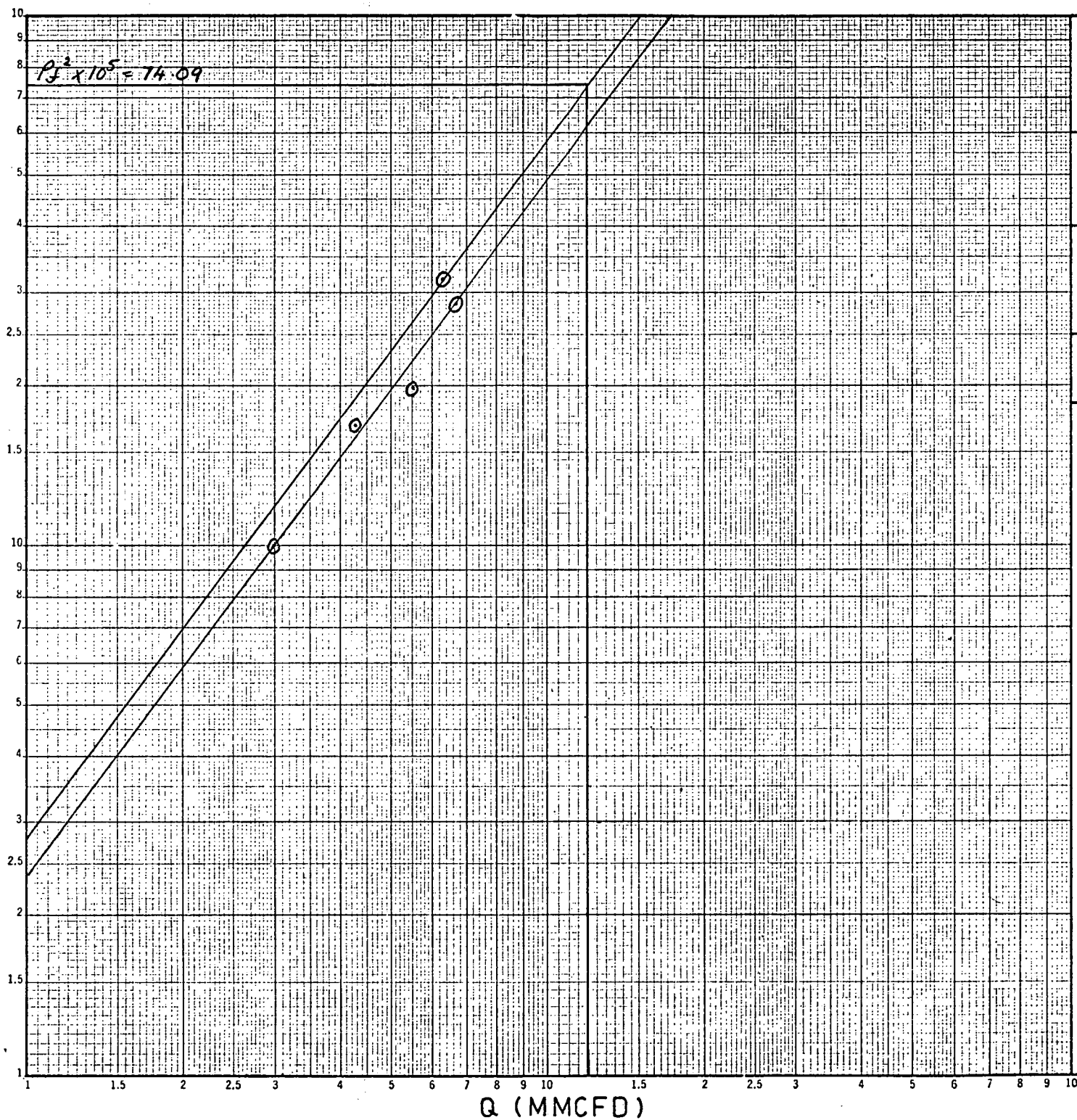
D. PLOTTING DATA

P _f	P _f ² × 10 ³	P _s	P _s ² × 10 ³	P _f ² - P _s ² × 10 ³	Q Total-MMCFD
2742.6	7521.9	2553.9	6522.4	999.5	2.998
2737.1	7491.7	2409.0	5803.3	1688.4	4.281
2671.5	7136.9	2272.4	5163.8	1973.1	5.520
2701.6	7298.6	2103.0	4422.6	2876.0	6.352
2671.5	7136.9	1995.0	3980.0	3156.9	6.164

A.O.F. 12 MMCFD, n 0.7797Total Volume of Gas Produced During Test 10.007 MMCF/CONDENSATE 0.2 Bbl.

Remarks: _____

$(P_f^2 - P_s^2) \times 10^5$



MODIFIED
ISOCHRONAL
BACK PRESSURE
TEST PLOT

WELL :-

Big Lake 15

A.O.F. = 12 MMCFD

θ = 52°

n = 0.7797

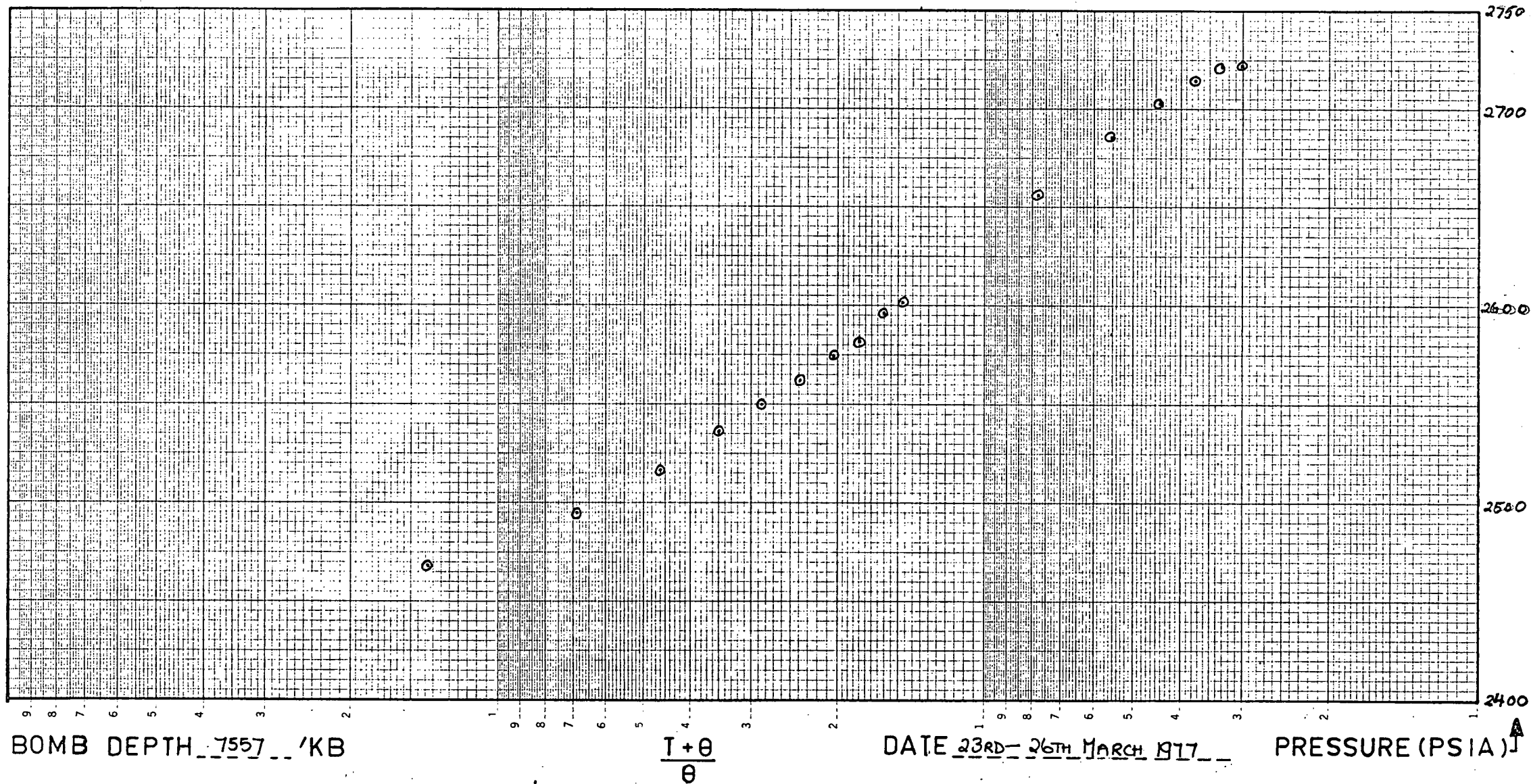
DATE :-

21st - 26th March 1977

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HORNER PLOT OF RESERVOIR PRESSURE BUILD-UP

WELL BIG LAKE 15



Contract No.

The Australian Mineral Development Laboratories

Flemington Street, Frewville, South Australia 5063
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Please address all correspondence to Frewville
In reply quote: 3/51/0-AN3887/77

Attention: Production Manager

PART REPORT

NATA CERTIFICATE

The Director,
Delhi International Oil Corporation,
33 King William St.,
ADELAIDE. 5000

21st June, 1977.

REPORT AN3887/77

YOUR REFERENCE:

Purchase Order No. A29160.

IDENTIFICATION:

As listed.

DATE RECEIVED:

6th June, 1977.

Enquiries quoting AN3887/77 to Officer in Charge please

Officer in Charge, Analytical Section:

D. K. Rowley



for Brian S. Hickman
Acting Managing Director

bs



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SCANNED

GAS CHROMATOGRAPHY ANALYSIS

JOB NO: AN3887/77
SUBMITTED BY: D.I.O.C.
Attention: Production Manager
Well tested: Big Lake 15 PD 66
Date tested: 23.3.77 1400 hrs.
Type of test:
Type of sample: Dry Gas.
Source of sample: H.P. Separation
Field sampling conditions: Press. 465 psig : temp 128°F
Reference: Purchase order A29160

RESULTS OF ANALYSIS

Oxygen plus argon	<0.01 % mol vol
Nitrogen	0.07
Hydrogen	-
Helium	-
Carbon dioxide	20.2
Methane	77.3
Ethane	1.90
Propane	0.325
i Butane	0.040
n Butane	0.055
i Pentane	0.015
n Pentane	0.017
Hexanes	0.016
Heptanes	0.027
Octanes and higher hydrocarbons	0.035
Calculated Gas Density (relative air = 1)	0.766

REMARKS:

GAS CHROMATOGRAPHY ANALYSIS

AN3887/77

2

Well tested: Big Lake 15 EX10
Date tested: 23.3.77.
Type of test:
Type of sample: Gas
Source of sample: L.P. Separation
Field sampling conditions: Press 25 spig : 115° F
Reference: Purchase order A29160

RESULTS OF ANALYSIS

Oxygen plus argon	<0.01 % mol vol
Nitrogen	<0.01
Hydrogen	-
Helium	-
Carbon dioxide	69.8
Methane	29.1
Ethane	0.78
Propane	0.17
i Butane	0.009
n Butane	0.017
i Pentane	0.009
n Pentane	0.010
Hexanes	0.025
Heptanes	0.055
Octanes and higher hydrocarbons	0.025
Calculated Gas Density (relative air = 1)	1.237

REMARKS:

00015

CMT:JCK

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Please address all correspondence to: Frewville
In reply quote: 3/51/0-AN3887/77

REPORT COMPLETENATA CERTIFICATE

Production Manager,
Delhi International Oil Corporation,
33 King William Street,
ADELAIDE. S.A. 5000

24th June, 1977.

REPORT AN3887/77

YOUR REFERENCE:

Purchase Order No. A29160.

IDENTIFICATION:

As listed.

DATE RECEIVED:

6th June, 1977.

ANALYSIS

<u>Sample</u>	%	<u>Sulphur</u> <u>S</u>
Stock tank concentrate		<u><0.01</u>

Enquiries quoting AN3887/77 to Officer in Charge please

Officer in Charge, Analytical Section:

D. K. Rowley



for Brian S. Hickman
Acting Managing Director

bs

SCANNED

CHEMICAL COMPOSITION

DERIVED AND OTHER DATA

REMARKS

MILLIGRAMS PER LITRE
MG/L

MILLIEQUIVS. PER LITRE
ME/L

CONDUCTIVITY (E.C.)
MICRO-S/CM AT 25 DEG. C 19592.

MILLIGRAMS PER LITRE
MG/L

CATIONS

TOTAL DISSOLVED SOLIDS

CALCIUM (CA) 19 .9
MAGNESIUM (MG) 1 .1
SODIUM (NA) 4360 189.7
POTASSIUM (K) 14 .4
IRON (FE)

A. BASED ON E.C.
B. CALCULATED (HCO3=CO3)
C. RESIDUE ON EVAP. AT 180 DEG. C

11109.

ANIONS

HYDROXIDE (OH)
CARBONATE (CO3)
BICARBONATE (HCO3) 268 4.4
SULPHATE (SO4) 177 3.7
CHLORIDE (CL) 6403 180.6
BROMIDE (BR)
FLUORIDE (F)
NITRATE (NO3) 4 .1
PHOSPHATE (PO4)

TOTAL HARDNESS AS CaCO3 52.
CARBONATE HARDNESS AS CaCO3 52.
NON-CARBONATE HARDNESS AS CaCO3 <1.
TOTAL ALKALINITY AS CaCO3 220.
FREE CARBON DIOXIDE (CO2)
SUSPENDED SOLIDS
SILICA (SiO2)
BORON (B)

TOTALS AND BALANCE

UNITS

CATIONS (ME/L) 191.0 DIFF = 2.3
ANIONS (ME/L) 188.7 SUM = 379.7

REACTION - PH 5.8
TURBIDITY (JACKSON)
COLOUR (HAZEN)

DIFF*100.
= .6 %

SODIUM TO TOTAL CATION RATIO (ME/L) 99.3 %

NAME- DELHI
ADDRESS-

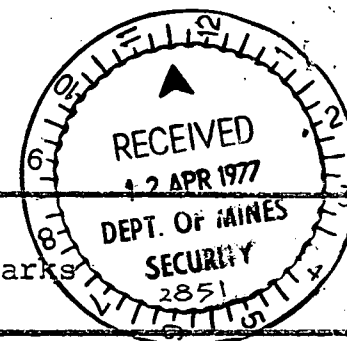
HUNDRED-
SECTION-
HOLE NO-
SUPPLY-

WATER CUT-
WATER LEVEL-
DEPTH HOLE-

DATE COLLECTED
DATE RECEIVED

SAMPLE COLLECTED BY-

DELHI INTERNATIONAL OIL CORPORATION



CHRONOLOGY OF BIG LAKE 15 MODIFIED ISOCHRONAL

Date	Time	BOPD	BWPD	MCFPD	G.O.R. Bbls/ MMCF	Salin- ity (ppm)	Choke Size (ins)	Wellhead Pressure (psig)	Separator Press. (psig)	Remarks
21st March 1977	1357							2295		RUN STATIC PRESSURE + TEMPERATURE GRADIENT SURVEYS
	1555									GRADIENT SURVEY COMPLETE
	1800									OPENED WELL FOR 1ST FLOW RATE
	2000	2.4	7.2	3030	0.7922		16/64	2093	480	WELL SHUT-IN
	2200							2297		OPENED WELL FOR 2ND FLOW RATE
	2400	NIL	30.0	4340	ZERO		20/64	1968	515	WELL SHUT-IN
22nd March 1977	0200							2291		OPENED WELL FOR 3RD FLOW RATE
	0400	NIL	42.0	5578	ZERO		24/64	1836	505	WELL SHUT-IN
	0600							2277		OPENED WELL FOR 4TH FLOW RATE
	0800	NIL	66.0	6421	ZERO		28/64	1655	500	WELL SHUT-IN
	1000							2257		WELL OPENED FOR STABILIZED FLOW RATE
23RD March 1977	1400	NIL	49.0	6228	ZERO		28/64	1601	465	END FLOW TESTING
	1845							1598		WELL SHUT-IN FOR BUILD-UP SURVEY
26TH March 1977	1541							2280		RUN STATIC PRESSURE + TEMPERATURE GRADIENT SURVEYS
	1710									TEST COMPLETE
					*ASSUMED S.G. = 0.750					

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STATIC PRESSURE

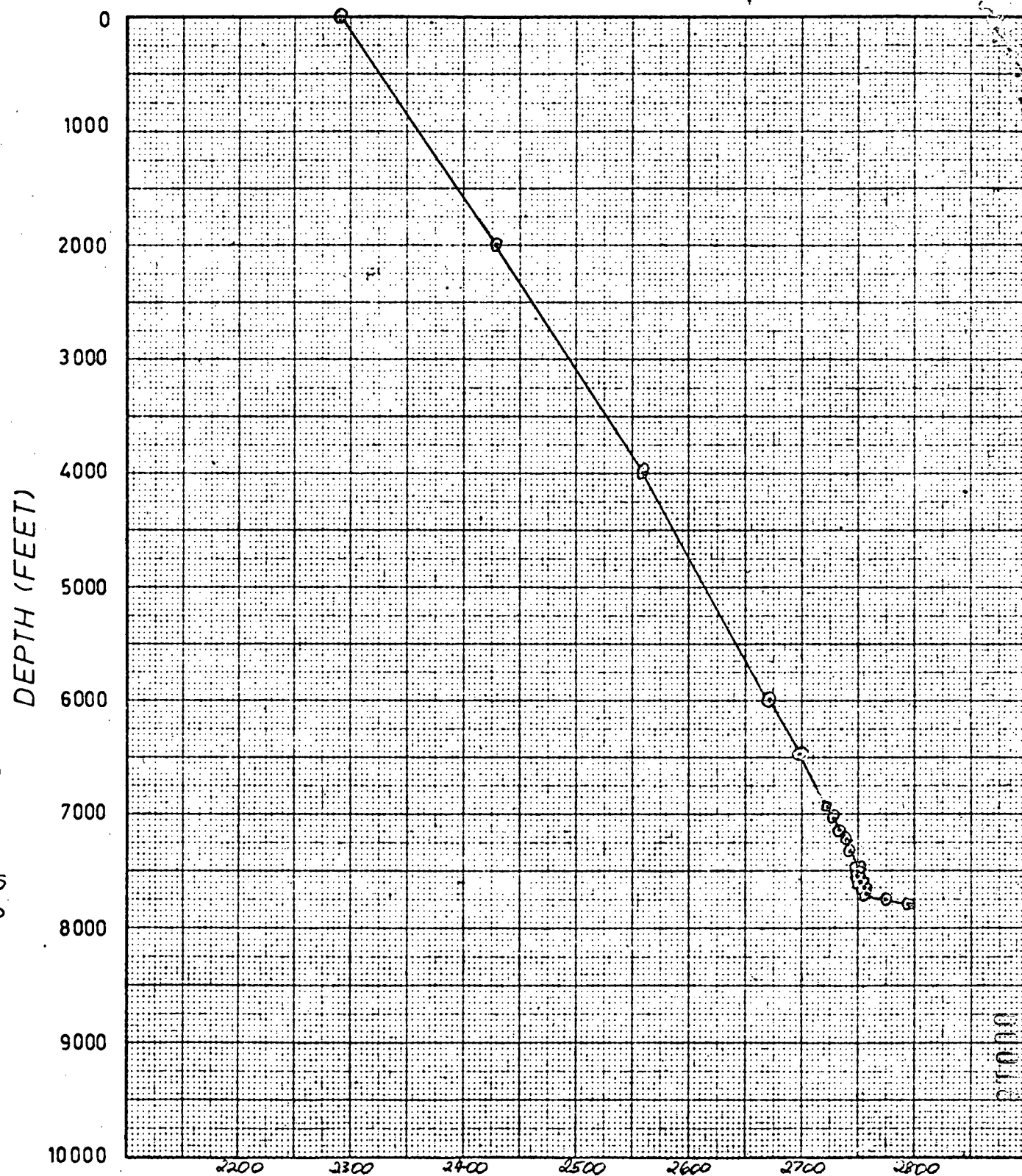
GRADIENT

WELL BIG LAKE 15

TEST DATE 22ND MARCH 1977

DEPTH (FEET)	PRESSURE (PSIG)	GRADIENT PSI/FT	DEPTH (METRES)	PRESSURE (kPa)	GRADIENT kPa/IM
LUBRICATOR	2289.2	—	LUBRICATOR	15788	—
2000	2431.1	0.0710	609.6	16766	1.6043
4000	2560.3	0.0646	1219.2	17657	1.4616
6000	2671.8	0.0558	1828.8	18426	1.2615
6674	2697.2	0.0536	1973.3	18601	1.2111
6948	2722.5	0.0534	2117.8	18776	1.2111
7048	2727.6	0.0510	2148.2	18811	1.1513
7148	2732.6	0.0500	2178.7	18846	1.1475
7248	2737.7	0.0510	2209.2	18881	1.1475
7348	2742.8	0.0510	2239.7	18916	1.1475
7448	2747.9	0.0510	2270.2	18951	1.1475
7498	2750.4	0.0500	2285.4	18968	1.1184
7548	2750.4	0.0000	2300.6	18968	0.0000
7598	2752.9	0.0500	2315.9	18986	1.1765
7648	2755.5	0.0520	2331.1	19003	1.1184
7698	2757.5	0.0400	2346.4	19017	0.9150
7748	2775.7	0.3640	2361.6	19143	8.2895
7798	2796.0	0.4060	2376.8	19283	9.2105

DEAD WEIGHT
PRESSURE = 2295 PSIG
= 15828 kPa

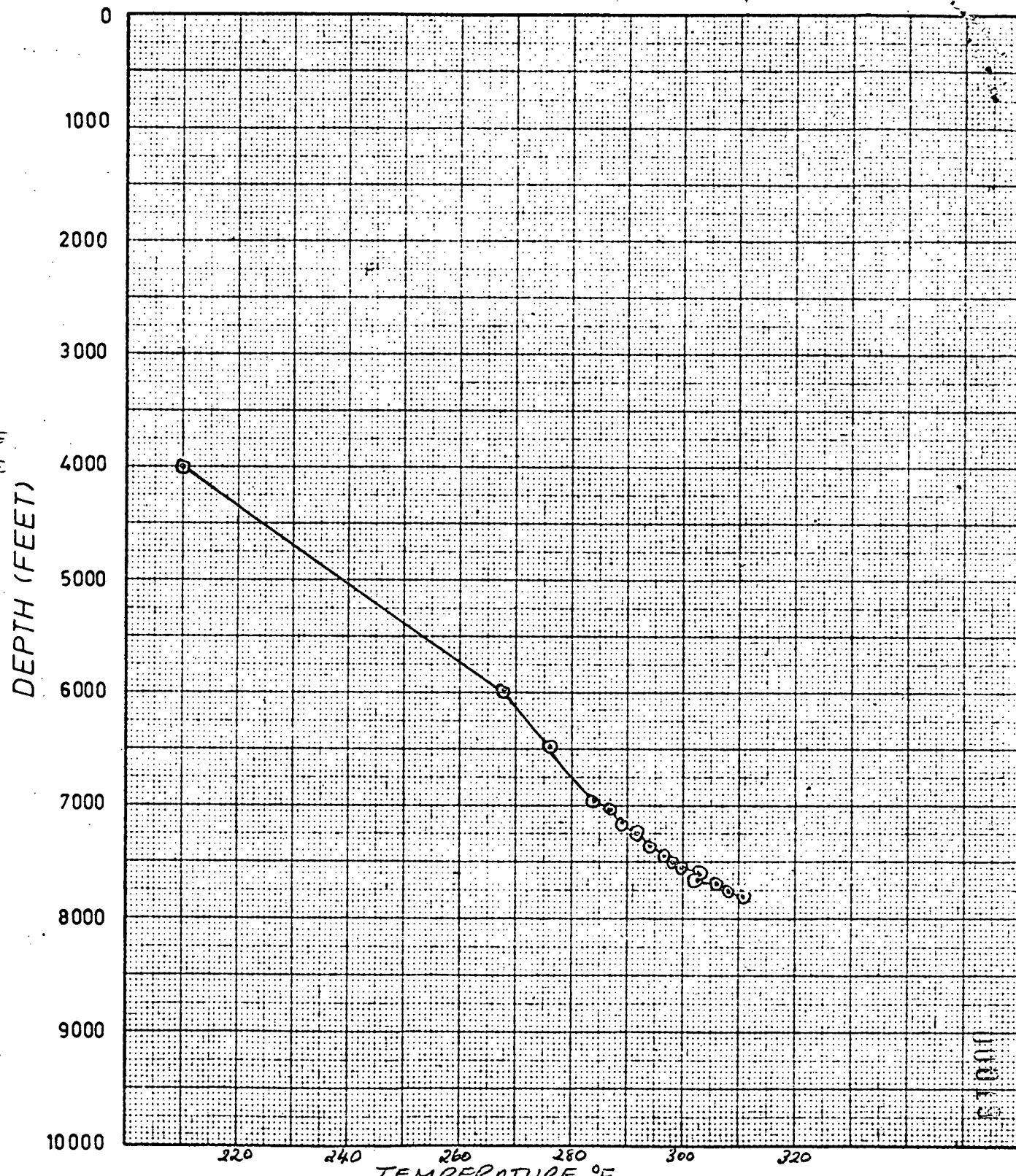


STATIC TEMPERATURE
GRADIENT

WELL BIG LAKE 15

TEST DATE 22ND MARCH 1977

DEPTH (FEET)	TEMP OF	GRADIENT /FT	DEPTH (METRES)	TEMP °C	GRADIENT /M
LUBRICATOR	BELOW	RANGE	LUBRICATOR	BELOW	RANGE
2000	BELOW	RANGE	609.6	BELOW	RANGE
4000	210.2		1219.2	99.0	
6000	268.0		1828.8	131.1	
6474	276.3		1973.3	135.7	
6948	284.3		2117.8	140.2	
7048	287.0		2148.2	141.7	
7148	289.1		2178.7	142.8	
7248	291.8		2209.2	144.3	
7348	294.2		2239.7	145.7	
7448	296.6		2270.2	147.0	
7498	298.2		2285.4	147.9	
7548	299.9		2300.6	148.8	
7598	302.7		2315.9	150.4	
7648	302.7		2331.1	150.4	
7948	305.8		2346.4	152.1	
7748	307.9		2361.6	153.3	
7798	310.5		2376.8	154.7	



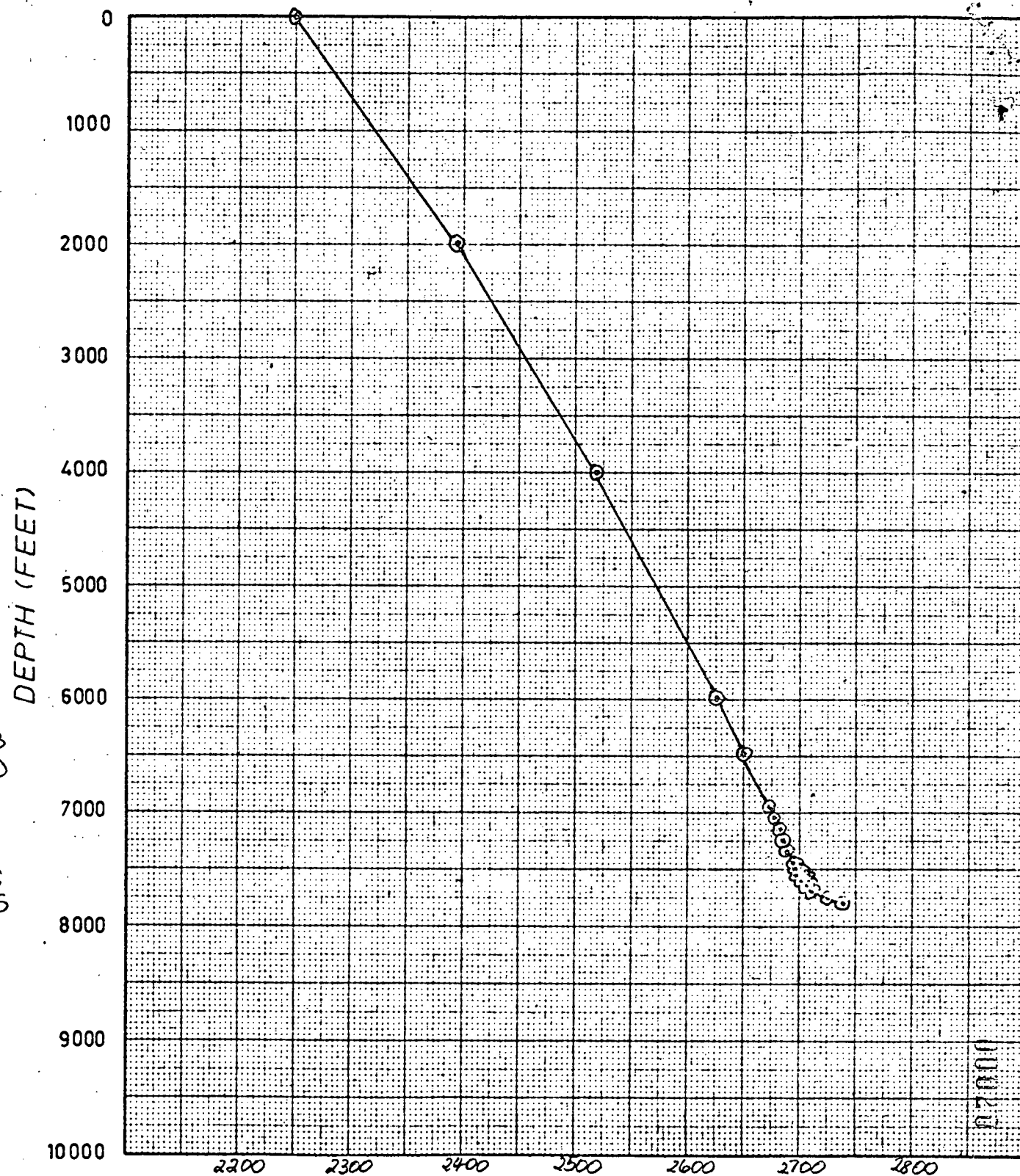
STATIC PRESSURE
GRADIENT

WELL BIG LAKE 15

TEST DATE 26TH MARCH 1977

DEPTH (FEET)	PRESSURE PSIG	GRADIENT PS/FT	DEPTH (METRES)	PRESSURE kPa	GRADIENT kPa/M
LUBRICATOR	2249.1	—	LUBRICATOR	15511	—
2000	2394.5	0.0227	609.6	16514	1.6453
4000	2517.9	0.0617	1219.2	17365	1.3960
6000	2627.4	0.0548	1828.8	18120	1.2385
6474	2649.3	0.0462	1973.3	18271	1.0450
6948	2673.2	0.0504	2117.8	18436	1.1419
7048	2677.2	0.0400	2148.2	18463	0.8882
7148	2683.2	0.0600	2178.7	18505	1.3770
7248	2685.2	0.0200	2209.2	18519	0.4590
7348	2687.2	0.0200	2239.7	18532	0.4262
7448	2695.2	0.0800	2270.2	18588	1.8361
7498	2697.2	0.0400	2285.4	18601	0.8553
7548	2697.2	0.0000	2300.6	18601	0.0000
7598	2701.1	0.0780	2315.9	18628	1.7647
7648	2705.1	0.0800	2331.1	18656	1.8421
7698	2709.1	0.0800	2346.4	18683	1.7647
7748	2725.0	0.3180	2361.6	18793	1.2368
7798	2737.0	0.2400	2376.8	18876	5.4605

DEAD WEIGHT PRESSURE
= 2280 PSIG
= 15724 kPa

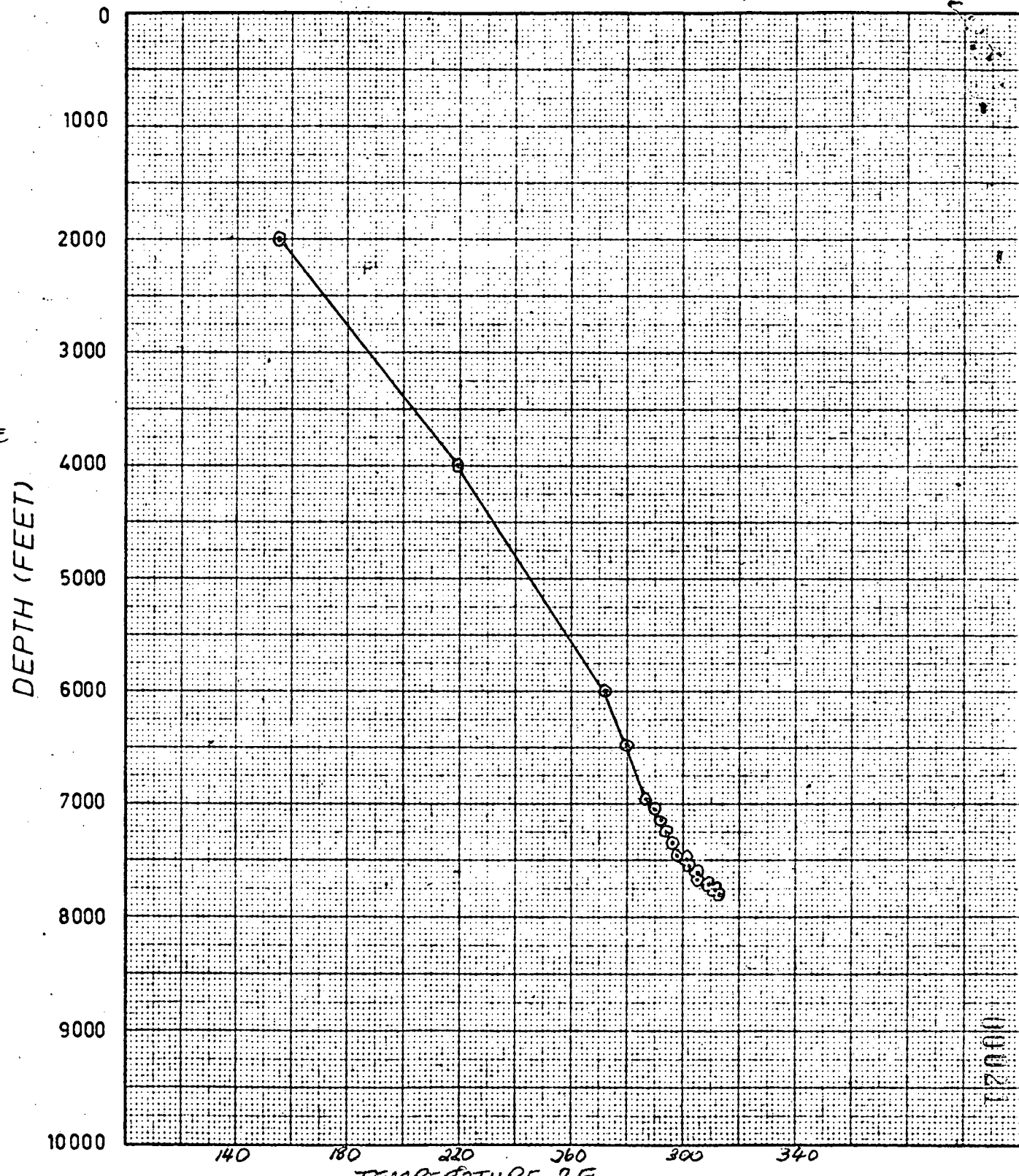


STATIC TEMPERATURE
GRADIENT

WELL BIG LAKE 15

TEST DATE 26TH MARCH 1977

DEPTH (FEET)	TEMP °F	GRADIENT /FT	DEPTH (METRES)	TEMP °C	GRADIENT /M
LUBRICATOR	BELOW	RANGE	LUBRICATOR	BELOW	RANGE
2000	156.8		609.6	69.3	
4000	218.7		1219.2	103.7	
6000	271.8		1828.8	133.2	
6474	279.5		1973.3	137.5	
6948	287.0		2117.8	141.7	
7048	289.6		2148.2	143.1	
7148	291.6		2178.7	144.2	
7248	293.8		2209.2	145.5	
7348	295.9		2239.7	146.6	
7448	298.4		2270.2	148.0	
7498	300.6		2285.4	149.2	
7548	302.1		2300.6	150.1	
7598	305.4		2315.9	151.9	
7648	305.3		2331.1	151.8	
7698	309.2		2346.4	154.0	
7748	310.7		2361.6	154.8	
7798	312.9		2376.8	156.1	



00022

PRESSURE BUILD UP SURVEYBIG LAKE #15

Date: May 2-5, 1978
 Depth Tested: 7505' KB
 Lubricator Pressure: In Amerada = 1289 psig (8888 KPA)
 Deadweight = 1288 psig (8881 KPA)
 Element #3917 x 3350

SHUT IN TIME HRS.	PSIG	KPA	REMARKS
-3.20	1607.1	11081	Flow
Ø	1607.1	11081	SWI 1415 Hrs. 2/5/78
1	2012.8	13878	
2	2048.9	14127	
3	2069.6	14270	
4	2085.2	14377	
5	2098.9	14472	
6	2112.8	14568	
7	2123.1	14639	
8	2133.5	14710	
9	2143.8	14782	
10	2150.7	14829	
12	2168.0	14948	
14	2180.1	15031	
16	2192.1	15115	
18	2200.8	15175	
20	2211.1	15245	
24	2226.7	15353	
28	2238.8	15437	
32	2249.1	15508	
36	2259.5	15579	
40	2268.2	15639	
48	2282.0	15734	
56	2294.1	15818	
64	2304.5	15890	
65.6	2304.5	15890	POH 0748 Hrs. 5/5/78 No lub. out.

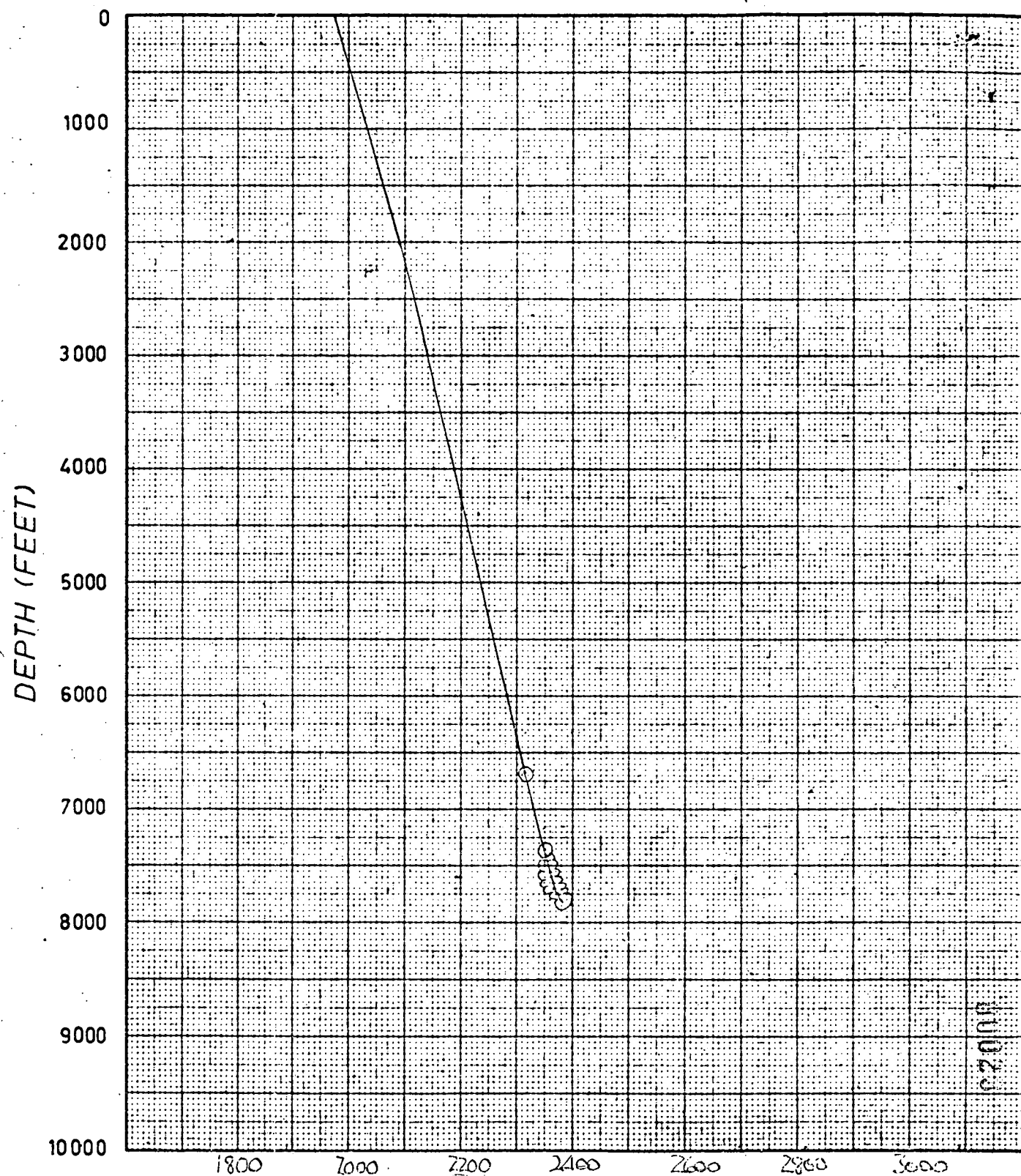
STATIC PRESSURE

GRADIENT

WELL BL 15

TEST DATE 7th MAY 78

DEPTH (FEET)	PRESSURE (PSIG)	GRADIENT PSI/FT	DEPTH (METRES)	PRESSURE (KPA)	GRADIENT KPA/M
LUBRICATOR	1978.3	—	LUBRICATOR	13640	—
2000	2092.1	0.057	6096	14425	1.289
4000	2188.7	0.048	12192	15091	1.086
6000	2285.4	0.048	18288	15758	1.086
6674	2314.8	0.044	20342	15961	0.995
7348	2349.4	0.051	22396	16199	1.154
7398	2352.9	0.070	22549	16223	1.584
7448	2354.6	0.034	22702	16235	0.769
7498	2356.3	0.046	22854	16247	1.041
7548	2359.8	0.075	23006	16271	1.697
7598	2363.3	0.090	23159	16295	2.036
7648	2366.7	0.068	23311	16318	1.538
7698	2368.5	0.036	23464	16331	0.814
7748	2375.4	0.158	23616	16378	3.574
7798	2378.8	0.068	23768	16402	1.538



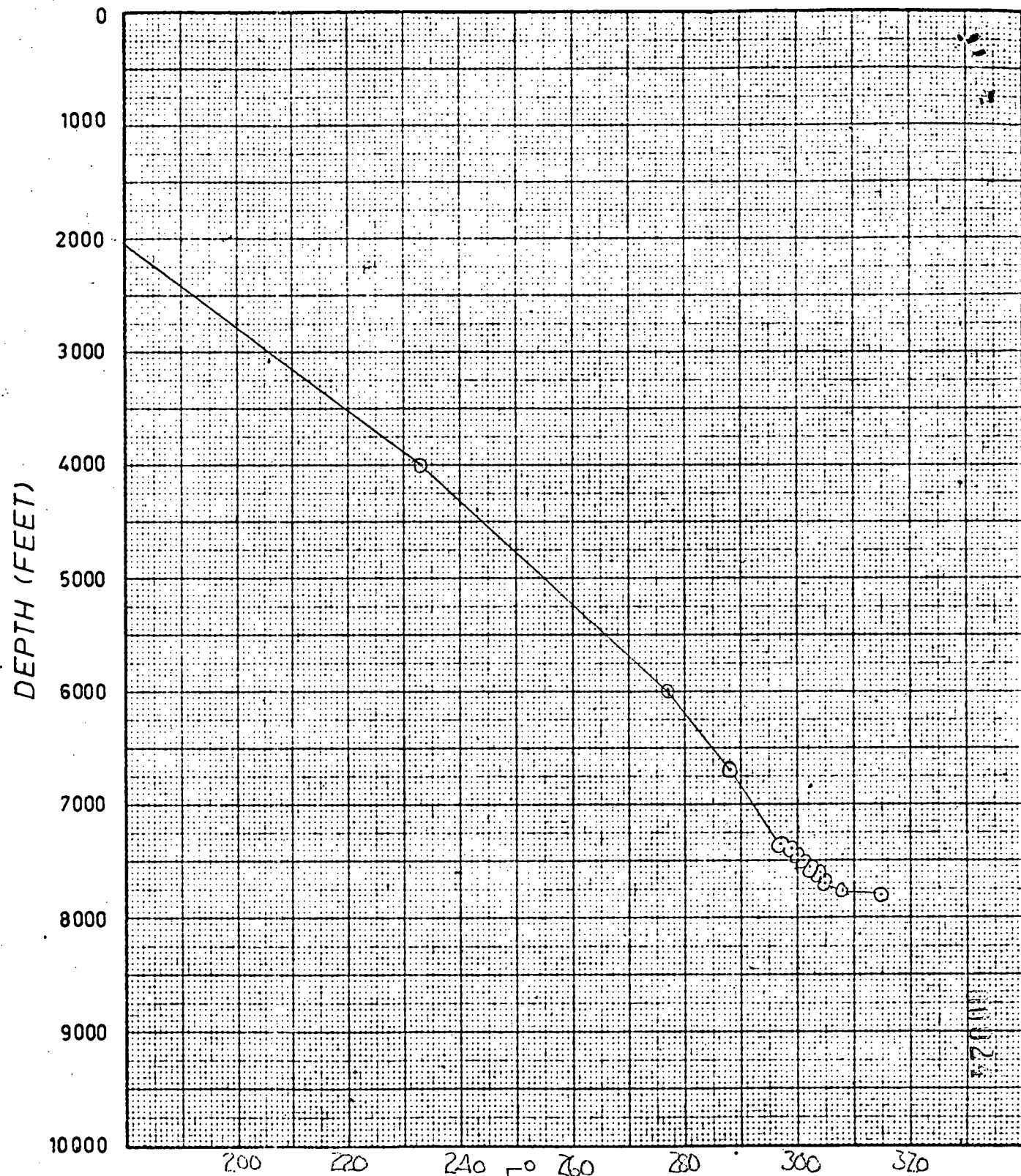
STATIC TEMPERATURE

GRADIENT

WELL BL15

TEST DATE 7/1/78

DEPTH (FEET)	TEMP (F°)	GRADIENT /FT	DEPTH (METRES)	TEMP (C°)	GRADIENT /M
LUBRICATOR					
2000	177.7		609.6	80.9	
4000	232.8		1219.2	111.5	
6000	277.1		1828.8	136.2	
6674	287.6		2034.2	142.0	
7348	296.9		2239.6	147.2	
7398	298.9		2254.9	148.3	
7448	300.4		2270.2	149.1	
7498	301.4		2285.4	149.7	
7548	302.4		2300.6	150.2	
7598	304.2		2315.9	151.2	
7648	304.2		2331.1	151.2	
4698	304.9		2346.4	151.6	
7748	308.1		2361.6	153.4	
7798	314.7		2376.8	157.1	



WELL : Big Lake #15

ORIFICE SIZE : 38.100 mm 1.500 "

LINE SIZE : 146.329 mm 5.761 "

 $P_f = 4400$ Kpa $T = 67$ °C

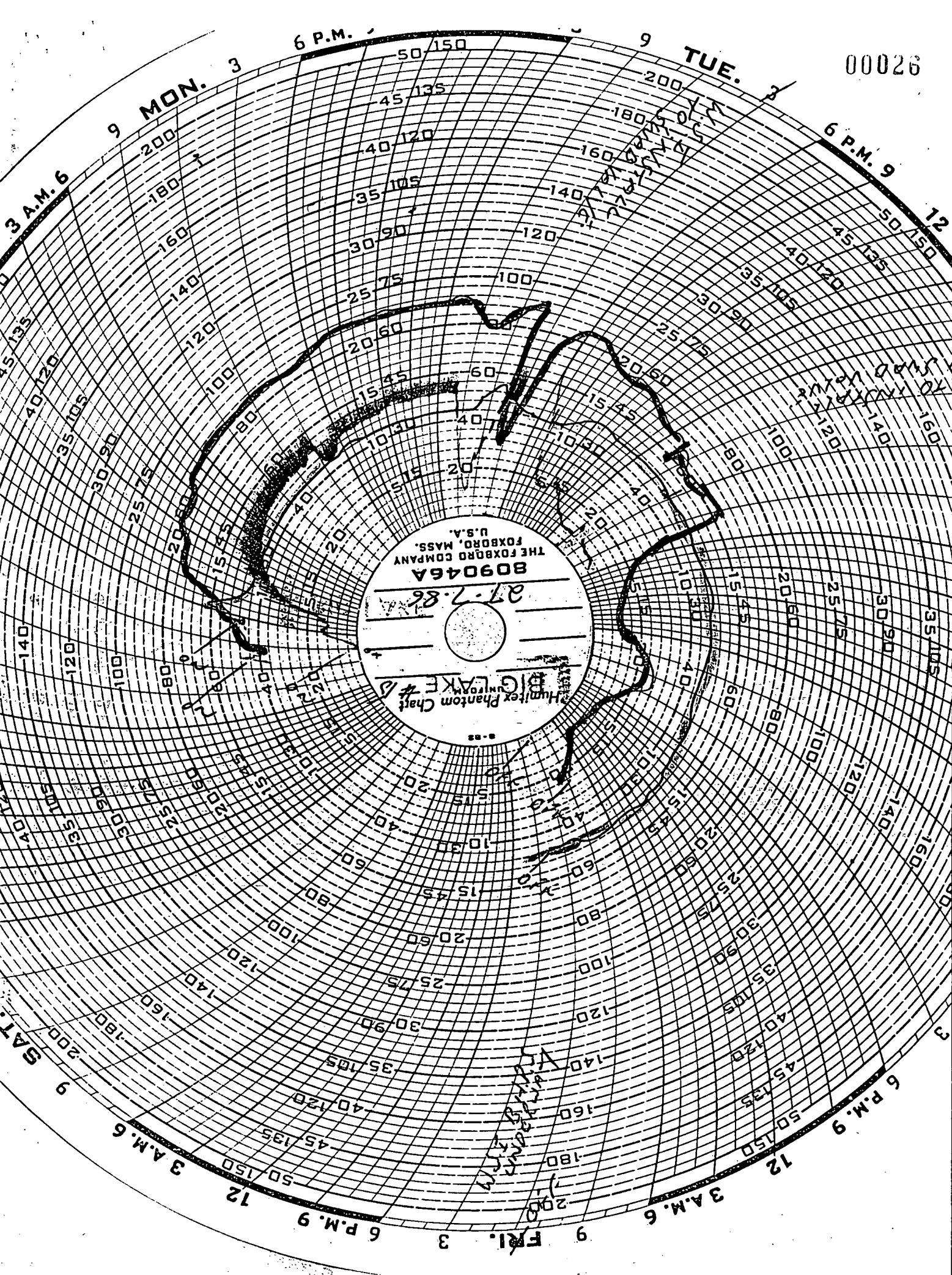
Diff = 13.6 Kpa

Cumulative Production to end of July = $257.080 \text{ m}^3 \times 10^6$

Number of hours online in July = 704

Production in July = $1.506 \text{ m}^3 \times 10^6$ $\therefore$ Average flow rate in July = $(1.506 / 704) \times 24 = 0.051 \text{ m}^3 \times 10^6 / \text{d}$ Number of hours online in July before Shut In 1735 hrs 30 / 7 / 86
= 704 hrs $\therefore$ Production upto 1735 hrs 30 / 7 / 86 = July Cumulative Production = $257.080 \text{ m}^3 \times 10^6$ $\Rightarrow$ Total cumulative Production =
= $257.080 \text{ m}^3 \times 10^6$
= 9124.798 mmscf ✓Flow Rate just prior to Shut In = $0.064 \text{ m}^3 \times 10^6 / \text{d}$
= 2.259 mmscf / d ✓

00026



SANTOS LTD
39 GRENFELL ST
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

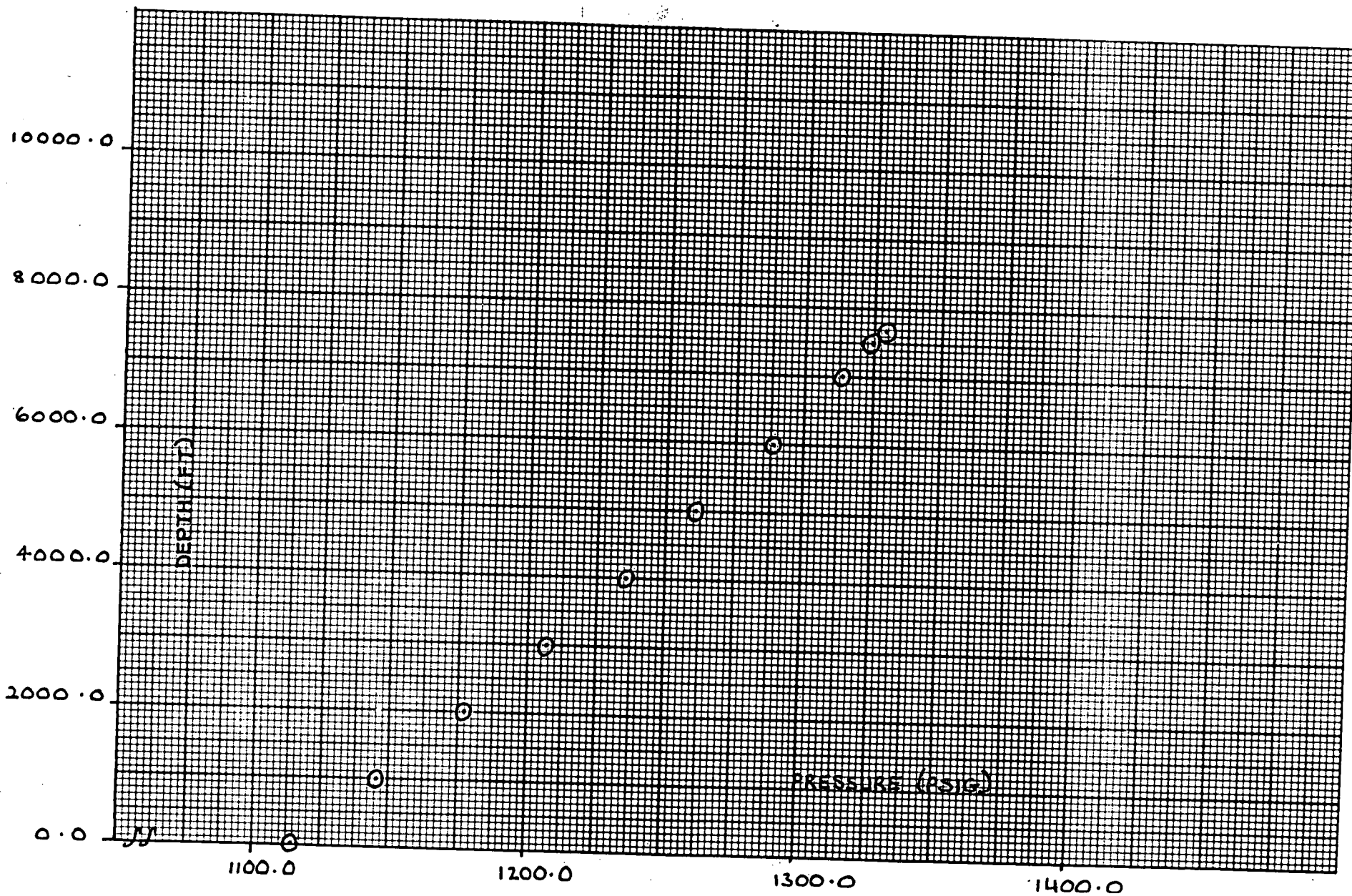
CO.		RUN 01 FIELD BIG LAKE	WELL 15
EFF DEPTH		WELL STAT	TOOL HUNG 7608'
CASING 7"	-	CASING PRESS	ON BOTTOM 1335 30/7
LINER	-	TUBING PRESS	OFF BOTTOM 0800 3/6
DATE	850730	ELEMENT RANGE 0 - 3115	ZERO POINT
ELEVATION		ZONE	SHUT-IN 1735 30/7
MAX TEMP		PICK-UP	ON-PROD
PERF	7562'-7788'	CAL SER NO. 28515	MPP 7675'
TUBING 3-1/2"	-		
UNITS	ENGLISH	PURPOSE	BUILD-UP

SURVEY DATA

CO.				RUN 01 FIELD BIG LAKE				WELL 15			
TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
17:35	1163.6	0.0	0.0	22:27	1317.4	153.8	4.9				
17:38	1192.8	29.1	.1	23:37	1305.3	141.7	6.0				
17:44	1225.3	61.7	.2	1:17	1298.3	134.7	7.7				
17:54	1252.2	88.6	.3	6:13	1295.5	131.9	12.6				
18:04	1266.8	103.2	.5	11:10	1298.1	134.5	17.6				
18:19	1277.7	114.1	.7	17:55	1302.3	138.7	24.3				
18:25	1281.3	117.7	.8	3:10	1310.6	146.9	33.6				
18:40	1284.6	121.0	1.1	12:58	1318.9	155.3	43.4				
19:05	1296.1	132.5	1.5	23:51	1325.6	161.9	54.3				
19:42	1305.5	141.9	2.1	9:34	1330.9	167.3	64.0				
20:38	1321.6	157.9	3.0	0:30	1338.0	174.4	78.9				
21:15	1328.0	164.4	3.7	8:00	1341.8	178.2	86.4				
21:49	1335.8	172.1	4.2	0:00	0.0	0.0	0.0				

LUB IN DWT = 687 PSI / OUT = 1113 PSI
LUB IN AMERADA = 690 PSI / OUT = 1129 PSI

BIG LAKE # 15 - STATIC PRESSURE GRADIENT - 3/8/86
ELEMENT # 62040 / 3000 (BOT)





**** BIG LAKE 15 ****
STATIC PRESSURE GRADIENT

TEST DATE: 3.8.86

DEPTH (FT.)	TOP PRESSURE ELEMENT 28515/3000			BOTTOM PRESSURE ELEMENT 62040/3000		
	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)
LUB	0.7215	1117.3	----	0.7125	1114.5	----
1000	0.7420	1149.1	0.0318	0.7330	1146.5	0.0319
2000	0.7610	1178.6	0.0295	0.7530	1177.6	0.0312
3000	0.7800	1208.1	0.0295	0.7720	1207.2	0.0296
4000	0.7970	1234.5	0.0264	0.7905	1236.1	0.0288
5000	0.8130	1259.4	0.0249	0.8070	1261.8	0.0257
6000	0.8300	1285.8	0.0264	0.8240	1288.3	0.0265
7000	0.8480	1313.8	0.0280	0.8400	1313.2	0.0249
7500	0.8570	1327.8	0.0280	0.8475	1324.9	0.0234
7675	0.8605	1333.2	0.0311	0.8505	1329.6	0.0267
LUB	0.7230	1119.6	----	0.7110	1112.2	----

GENERAL REMARKS:

Ran temperature element No 63256/150-400 F also.

DWT IN: 1102
 DWT OUT: 1104
 MAX BHT: N/A 302.4°F

ELEMENT 28515/3000 CALIBRATED 12-7-86
 ELEMENT 62040/3000 CALIBRATED 12-7-86

WELL NAME: BIG LAKE #15

STATIC GRADIENT SURVEY

DATE: 3-8-86

TOP BOMB No. 1 DATA

ELEMENT No. 28515 ELEMENT RANGE: 3000 PSI
 REORDER No. 13027 CLOCK DATA: 2297 X 3HR
 ENGAGE SYLUS: 1158HR DISENGAGE: 1440HR

BOTTOM BOMB No. 2 DATA

ELEMENT No. 62040 ELEMENT RANGE: 3000 PSI
 REORDER No. 14927 CLOCK DATA: 2323 X 3HR
 ENGAGE SYLUS: 1158HR DISENGAGE: 1440HR

LUBRICATOR DATA

PRESSURE WITH D.W.T.: IN: 1102 PSI OUT: 1104
 TIME PRESSURED: 1207 HR
 TIME DEPRESSURED: 1425 HR

DATE	TIME	DEPTH	DEFLECTION	PRESSURE TEMP.	GRADIENT ps/VL	DEPTH	DEFLECTION	PRESSURE TEMP.	GRADIENT ps/VL	REMARKS
3-8-86	1207	LUB	.7215	1117.3		LUB	.7125	1114.5		15 MINUTE STOP
	1225	1000	.742	1149.1	.031	1000	.733	1146.5	.031	" "
	1233	2000	.761	1178.6	.029	2000	.753	1177.6	.031	" "
	1242	3000	.780	1208.1	.029	3000	.772	1207.2	.029	" "
	1251	4000	.797	1234.5	.026	4000	.7405	1236.1	.028	" "
	1300	5000	.813	1259.4	.024	5000	.807	1261.8	.025	" "
	1309	6000	.830	1285.8	.026	6000	.824	1288.3	.026	" "
	1319	7000	.848	1313.8	.028	7000	.840	1313.2	.024	" "
	1326	7500	.857	1327.8	.028	7500	.8475	1324.9	.023	" "
	1332	7675	.860	1333.2	.031	7675	.8505	1329.6	.026	15 " "
	1409	LUB	.723	1119.6		LUB	.711	1112.2		" "
Ran Temperature Element No. 63256 X 150°F - 400°F also Pressure Elements calibrated on 12-7-86 at 290°F										
— " — END OF TEST — " —										

General Comments:

00030



WIRELINE REPORT

00031

WELL: BIG LAKE #15DATE: 3-8-86PROGRAM: BOTTOM HOLE PRESSURE SURVEYPURPOSE OF WORK: RUN PRESSURE RECORDERS

REPORT OF WORK PERFORMED: 30-7-86 Rig Up, Pressure Test Lubricator
& B.O.P's 0945 HR Run in hole with 1.75 gauge cutter and tagged
bottom at 7870 ft KB. 1307 Run in hole with 2 pressure
element and one temperature element, hung off at 7620 for
4 hr flow and 86 1/2 hr build up
3-8-86 0800 HRS pulled bombs from 7620' KB
1027 HRS Depressure Lubricator
1222 HR Run in hole with same elements for static gradient
1500 HR inspect charts OK - Rig down

END OF TESTR. Buckland

OPERATOR'S SIGNATURE

WORK PERFORMED BY: K. Dove / R. Buckland OF EXPERTEST

WELL DATA:

Tubing Size: 3 1/2" FWHP: 672 psi SIWHP: 1113 psi

Sub Surface S.V./Landing Nipple @ S.S.D. @:

"X" Nipple @ "N"/"XN" Nipple @ 7524.88' KB otherMin I.D. 2.205 " @ 7524.88' KB Packer @ 7513.30' KBPerforated Interval: 7562' - 7788' KBForward to: Petroleum Engineering — Adelaide
Production Department — Moolamba

Well: BIG LAKE #15 Date: 30.7.86
 Lubricator Data: ① 640 1129
② Unable to read! Operator K. DOVE / R. BUCKLAND
 Pressure with D.W.T. In 687 PSI Out 1113 PSI
 Time Pressured 11.07 HR Time Depressed 1027 HRS. 3/8/86
 Time Run in Hole 13.07 HR Time off Bottom 0800 HRS. 3/8/86

TOP

Bomb No. 1 Data

MIDDLE Bomb No. 2 Data

Element No. and Range	<u>28515 X 3000</u>	<u>62040 X 3000</u>
Recorder No.	<u>13027</u>	<u>14927</u>
Clock and Lead Screw Data	<u>F.15684 X 120HR</u>	<u>F.15683 X 120HRS</u>
Engage Stylus	Date: <u>30/7/86</u> Time: <u>10:57</u>	Date: <u>30/7/86</u> Time: <u>10:57</u>
Disengage	Date: <u>3/8/86</u> Time: <u>1045</u>	Date: <u>3/8/86</u> Time: <u>10:45</u>

Remarks: TEMPERATURE ELEMENT USED: ELEMENT N° 63256 X 150° TO 400°

RECORDER N°: 61275

Max. SIBH. Temperature = 300.6 °F CLOCK N°: F.15294 X 120HR.

Well-Head Data for Final Build-up

Date	Time	Hours shut-in Time	Wellhead P.S.I.G.	Casing P.S.I.G.	Wellhead Temp. F	Remarks
<u>30.7.86</u>	<u>1325</u>		<u>684</u>	<u>435</u>	<u>116</u>	<u>HANG BOMBS AT 7620 FT.</u>
	<u>1405</u>		<u>680</u>		<u>116</u>	
	<u>1435</u>		<u>675</u>		<u>118</u>	
	<u>1505</u>		<u>666</u>		<u>120</u>	
	<u>1535</u>		<u>661</u>		<u>111</u>	
	<u>1605</u>		<u>660</u>		<u>116</u>	
	<u>1635</u>		<u>663</u>		<u>109</u>	
	<u>1705</u>		<u>670</u>		<u>108</u>	
	<u>1735</u>		<u>672</u>		<u>106</u>	<u>SHUT IN WELL FOR BUILD UP.</u>
	<u>1735</u>		<u>672</u>			} 15 MINUTE READINGS.
	<u>1750</u>	<u>.25</u>	<u>777</u>			
	<u>1805</u>	<u>.5</u>	<u>812</u>			
	<u>1820</u>	<u>.75</u>	<u>825</u>			
	<u>1835</u>	<u>1.</u>	<u>844</u>			
	<u>1850</u>	<u>1.25</u>	<u>862</u>			
	<u>1905</u>	<u>1.5</u>	<u>888</u>			
	<u>1920</u>	<u>1.75</u>	<u>912</u>			
	<u>1935</u>	<u>2.</u>	<u>932</u>			
	<u>2005</u>	<u>2.5</u>	<u>975</u>			
	<u>2035</u>	<u>3</u>	<u>1016</u>			
	<u>2105</u>	<u>3.5</u>	<u>1053</u>			
	<u>2135</u>	<u>4</u>	<u>1094</u>			

Well: BIG LAKE #15

Date: 30-7-86

Lubricator Data:

Operator K. DOVE / R. BUCKLAND

Pressure with D.W.T. In 687 PSI

Out 1113 PSI 3/8/86

Time Pressured 1107 Hrs. 30/7/86

Time Depressed 1027 Hrs. 3/8/86

Time Run in Hole 1307 Hrs. 30/7/86

Time off Bottom 0800 Hrs. 3/8/86

Bomb No. 1 Data

Bomb No. 2 Data

Element No. and Range	<u>28515 x 3000 psi</u>	<u>62040 x 3000 psi</u>
Recorder No.	<u>13027</u>	<u>14927</u>
Clock and Lead Screw Data	<u>F15684 x 120 Hr. 1575.</u>	<u>F15683 x 120 Hr. 1575.</u>
Engage Stylus	Date: <u>30/7/86</u> Time: <u>1057 Hrs.</u>	Date: <u>30/7/86</u> Time: <u>1057 Hrs.</u>
Disengage	Date: <u>3/8/86</u> Time: <u>1045 Hrs.</u>	Date: <u>3/8/86</u> Time: <u>1045 Hrs.</u>

Remarks: CONTINUED

Temperature Element Data: Element: 63256 150°-400°

Recorder: 61275

Clock: F15294 x 120 Hr. 1575.

Well-Head Data for Final Build-up

Date	Time	Hours shut-in Time	Wellhead P.S.I.G.	Casing P.S.I.G.	Wellhead Temp.	Remarks
<u>30-7-86</u>	<u>2235</u>	<u>5</u>	<u>1089</u>	<u>435</u>		
	<u>2335</u>	<u>6</u>	<u>1083</u>	<u>↓</u>		
<u>31-7-86</u>	<u>0335</u>	<u>10</u>	<u>—</u>	<u>LUBRICATOR FROZEN UP - UNABLE TO CLEAR & OBTAIN READINGS</u>		
	<u>0735</u>	<u>14</u>	<u>1075</u>	<u>↓</u>		
	<u>1135</u>	<u>18</u>	<u>1077</u>	<u>↓</u>		
	<u>1535</u>	<u>22</u>	<u>1080</u>	<u>↓</u>		
	<u>1935</u>	<u>26</u>	<u>1080</u>	<u>↓</u>		
	<u>2335</u>	<u>30</u>	<u>1079</u>	<u>↓</u>		
<u>1-8-86</u>	<u>0335</u>	<u>34</u>	<u>1079</u>	<u>↓</u>		
	<u>0735</u>	<u>38</u>	<u>1088</u>	<u>↓</u>		
	<u>1135</u>	<u>42</u>	<u>1090</u>	<u>↓</u>		
	<u>1535</u>	<u>46</u>	<u>1090</u>	<u>↓</u>		
	<u>1935</u>	<u>50</u>	<u>1090</u>	<u>↓</u>		
	<u>2335</u>	<u>54</u>	<u>1090</u>	<u>↓</u>		
<u>2-8-86</u>	<u>0335</u>	<u>58</u>	<u>1089</u>	<u>↓</u>		
	<u>0735</u>	<u>62</u>	<u>1089</u>	<u>↓</u>		
	<u>1135</u>	<u>66</u>	<u>1096</u>	<u>↓</u>		
	<u>1535</u>	<u>70</u>	<u>1100</u>	<u>↓</u>		
	<u>1935</u>	<u>74</u>	<u>1100</u>	<u>↓</u>		
	<u>2335</u>	<u>78</u>	<u>1101</u>	<u>↓</u>		



Date: 3.8.86

Operator K. Dove / R. Buckland

Out 1113 psi

Time Depressured.....1027 Hrs. 3/8/86

Time off Bottom... 0800 Hrs. 3/8/86

Bomb No. 2 Data

Remarks: CONTINUED Survey Temp. Element Data: Element: 63256 150°-400°
Recorder: 61275
Clock: F15294 x 120 Hr.

[illegible]

Big Lake Bottom Hole Pressure Survey.

WELL: Big Lake #15.....

OPERATOR: K. Dove, R. Buckland



SANTOS LTD
WELL TEST DATA

METRIC SUMMARY SHEET

DATE: 30.1.78.....

PAGE No: 1.....

DATE TIME	WELLHEAD						FLUID PRODUCTION				GAS PRODUCTION			
	CASING PSI	CASING KPA	TUBING PSI	TUBING KPA	TEMP °F	TEMP °C	FLOWRATE OIL-COND BBL'S/D	FLOWRATE OIL-COND M3/D	FLOWRATE H2O BBL'S/D	FLOWRATE H2O M3/D	MMSCF/D	Mm3/D	G.O.R. Cu/FT BBL	G.O.R. M3/M3
1107	435	2999	687	4737			Recorders in lubricator							
1307	Run in hole.													
1335	435	2999	684	4716	116	47	Recorders hung at 7620'							
1405	435	2999	680	4689	116	47								
1435	435	2999	675	4654	118	48								
1505	435	2999	666	4592	120	49								
1535	435	2999	661	4558	111	44								
1605	435	2999	660	4551	116	47								
1635	435	2999	663	4571	109	43								
1705	435	2999	670	4620	108	42								
1735	435	2999	672	4633	106	41	Shut in for build-up.							

CONVERSION FACTORS:

• BBL'S. x 0.15899 = M³

• MMSCF x 28.174 = 10³ M³

• Cu/FT PER BBL x 0.1773 = M³/M³

• PSI x 6.895 = KPA

• °C x 9 ÷ 5 + 32 = °F

00035

Big Lake Bottom Hole Pressure Survey

WELL: Big Lake #15.....

OPERATOR: K. Dove R. Buckland



SANTOS LTD WELL TEST DATA METRIC SUMMARY SHEET

DATE: 30/7/86.....

PAGE No: 2.....

DATE TIME	WELLHEAD						FLUID PRODUCTION				GAS PRODUCTION			
	CASING PSI	CASING KPA	TUBING PSI	TUBING KPA	TEMP °F	TEMP °C	FLOWRATE OIL-COND BBL'S/D	FLOWRATE OIL-COND M3/D	FLOWRATE H2O BBL'S/D	FLOWRATE H2O M3/D	MMSCF/D	Mm3/D	G.O.R. Cu/FT BBL	G.O.R. M3/M3
1750	435	2999	777	5357										
1805	435	2999	812	5599										
1820	435	2999	825	5688										
1835	435	2999	844	5819										
1850	435	2999	862	5943										
1905	435	2999	888	6123										
1920	435	2999	912	6288										
1935	435	2999	932	6426										
2005	435	2999	975	6723										
2035	435	2999	1016	7005										
2105	435	2999	1053	7260										
2135	435	2999	1094	7543										

CONVERSION FACTORS:

• BBL'S. x 0.15899 = M³

• MMSCF x 28.174 = 10³ M³

• Cu/FT PER BBL x 0.1773 = M³/M³

• PSI x 6.895 = KPA

• °C x 9 ÷ 5 + 32 = °F

00036

Big Lake Bottom Hole Pressure Survey.

WELL: Big Lake #15.....

OPERATOR: K. Dove, R. Buckland.



SANTOS LTD
WELL TEST DATA

METRIC SUMMARY SHEET

DATE: 30/7/86.....

PAGE No: 3.....

DATE TIME	WELLHEAD						FLUID PRODUCTION				GAS PRODUCTION			
	CASING PSI	CASING KPA	TUBING PSI	TUBING KPA	TEMP °F	TEMP °C	FLOWRATE OIL-COND BBL'S/D	FLOWRATE OIL-COND M3/D	FLOWRATE H2O BBL'S/D	FLOWRATE H2O M3/D	MMSCF/D	Mm3/D	G.O.R. Cu/FT BBL	G.O.R. M3/M3
2235	435	2999	1089	7509										
2335	435	2999	1083	7467										
31/7/86 0335	435	2999	—	—			manifold plugged.							
0735	435	2999	1075	7412										
1135	435	2999	1077	7426										
1535	435	2999	1080	7447										
1930	435	2999	1080	7447										
2335	435	2999	1079	7440										
1/8/86 0335	435	2999	1079	7440										
0735	435	2999	1088	7502										
1135	435	2999	1090	7516										
1535	435	2999	1090	7516										

CONVERSION FACTORS:

• BBL'S x 0.15899 = M³

• MMSCF x 28.174 = 10³ M³

• Cu/FT PER BBL x 0.1773 = M³/M³

• PSI x 6.895 = KPA

• °C x 9 ÷ 5 + 32 = °F

Big Lake Bottom Hole Pressure Survey.

WELL: ..Big Lake #15.....

OPERATOR: ..Dove / R. Buckland



SANTOS LTD
WELL TEST DATA

METRIC SUMMARY SHEET

DATE: ..1/8/86.....

PAGE No: ..4.....

DATE TIME	WELLHEAD						FLUID PRODUCTION				GAS PRODUCTION			
	CASING PSI	CASING KPA	TUBING PSI	TUBING KPA	TEMP °F	TEMP °C	FLOWRATE OIL-COND BBL'S/D	FLOWRATE OIL-COND M3/D	FLOWRATE H2O BBL'S/D	FLOWRATE H2O M3/D	MMSCF/D	Mm3/D	G.O.R. Cu/FT BBL	G.O.R. M3/M3
1935	435	2999	1090	7516										
2335	435	2999	1090	7516										
218/86														
0335	435	2999	1089	7509										
0735	435	2999	1089	7509										
1135	435	2999	1096	7557										
1535	435	2999	1100	7585										
1935	435	2999	1100	7585										
2335	435	2999	1101	7591										
318/86														
0335	435	2999	1103	7605										
0735	435	2999	1105	7619			0800 Hrs pull bombs							
0827	435	2999	1106	7626			Recorders in lubricator							
1027	435	2999	1113	7674			Depressure lubricator Run Static Gradient				End Test			

CONVERSION FACTORS:

• BBL'S x 0.15899 = M³

• MMSCF x 28.174 = 10³ M³

• Cu/FT PER BBL x 0.1773 = M³/M³

• PSI x 6.895 = KPA

• °C x 9 ÷ 5 + 32 = °F

00138

ROLLING BOTTOMHOLE PRESSURE SURVEY GAS CALCULATION SHEETWELL: Big Lake #15

Pf = 5200 kPa

ORIFICE SIZE: 24.000 mm 1.000 "

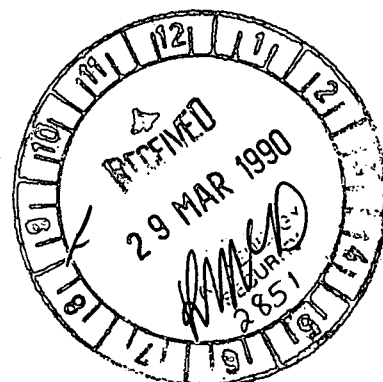
T = 35 °C

LINE SIZE: 146.329 mm 5.761 "

Diff = 12 kPa

Cumulative Production to end of August = 271.435 m³ x 10⁶ ✓

Number of hours online in August = 741 ✓

Production in August = 0.385 m³ x 10⁶ ✓.. Average flow rate in August = (0.385 / 741) x 24 = 0.012 m³ x 10⁶/d ✓Number of days online in September before Shut In 0800 hrs 13 / 9 / 89
= 12.333 days... Production up to 0800 hrs 13 / 9 / 89 = 0.012 x 12.333 = 0.148 m³ x 10⁶ ✓Total cumulative production = 271.435 + 0.148
= 271.583 m³ x 10⁶
= 9639.567 mmscf ✓Flow rate just prior to Shut In = 0.031 m³ x 10⁶
= 1.095 mmscf/d ✓

SUB-SURFACE PRESSURE SURVEY

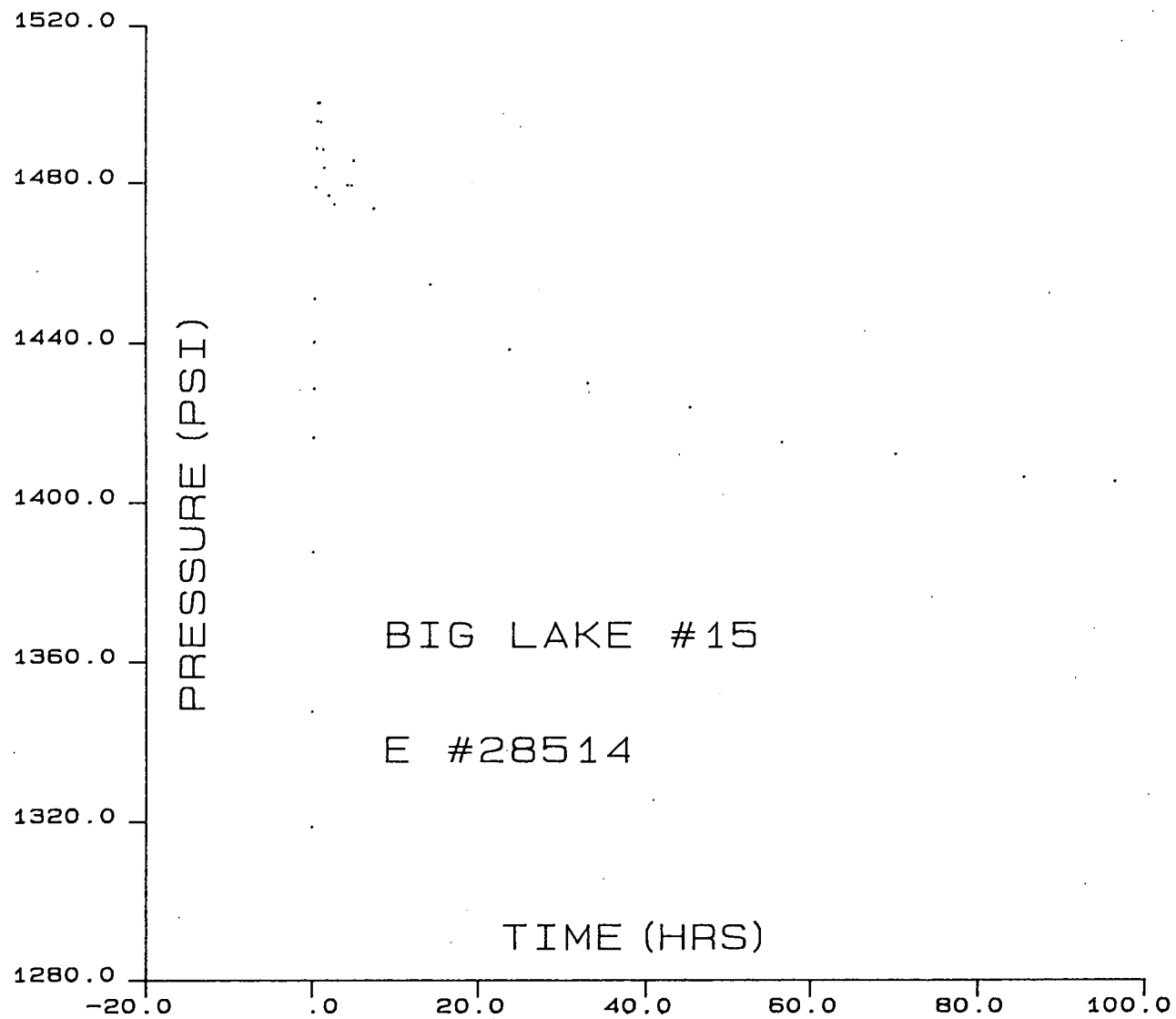
CO.		RUN 01 FIELD BIG LAKE	WELL 15
EFF DEPTH		WELL STAT	TOOL HUNG 7669'
CASING	-	CASING PRESS	ON BOTTOM 2156 12/9
LINER	-	TUBING PRESS	OFF BOTTOM 0825 17/9
DATE	890917	ELEMENT RANGE 0 - 3207	ZERO POINT
ELEVATION		ZONE	SHUT-IN 0800 13/9
MAX TEMP		PICK-UP	ON-PROD
PERF	-	CAL SER NO. 28514	MPP
TUBING	-		
UNITS	ENGLISH	PURPOSE	BUILD-UP

SURVEY DATA

CO.	RUN 01 FIELD BIG LAKE				WELL 15			
	TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
	8:00	1318.7	1318.7	.0	10:02	1476.8	1476.8	2.0
	8:02	1347.6	1347.6	.0	10:42	1474.6	1474.6	2.7
	8:07	1387.5	1387.5	.1	12:17	1479.3	1479.3	4.3
	8:10	1416.3	1416.3	.2	12:47	1479.2	1479.2	4.8
	8:13	1428.7	1428.7	.2	13:01	1485.6	1485.6	5.0
	8:14	1440.3	1440.3	.2	15:25	1473.5	1473.5	7.4
	8:18	1451.0	1451.0	.3	22:14	1454.5	1454.5	14.2
	8:26	1478.9	1478.9	.4	7:48	1438.4	1438.4	23.8
	8:33	1488.8	1488.8	.5	17:04	1430.0	1430.0	33.1
	8:39	1495.7	1495.7	.7	5:19	1423.9	1423.9	45.3
	8:43	1500.4	1500.4	.7	16:32	1415.1	1415.1	56.5
	8:55	1500.3	1500.3	.9	6:09	1412.1	1412.1	70.1
	9:04	1495.5	1495.5	1.1	21:34	1406.3	1406.3	85.6
	9:21	1488.5	1488.5	1.3	8:25	1405.2	1405.2	96.4
	9:28	1483.8	1483.8	1.5	0:00	.0	.0	.0

LUB IN DWT = 731 PSI / OUT = 1204 PSI

LUB IN AMERADA = 740 PSI / OUT = 1195 PSI



SUB-SURFACE PRESSURE SURVEY

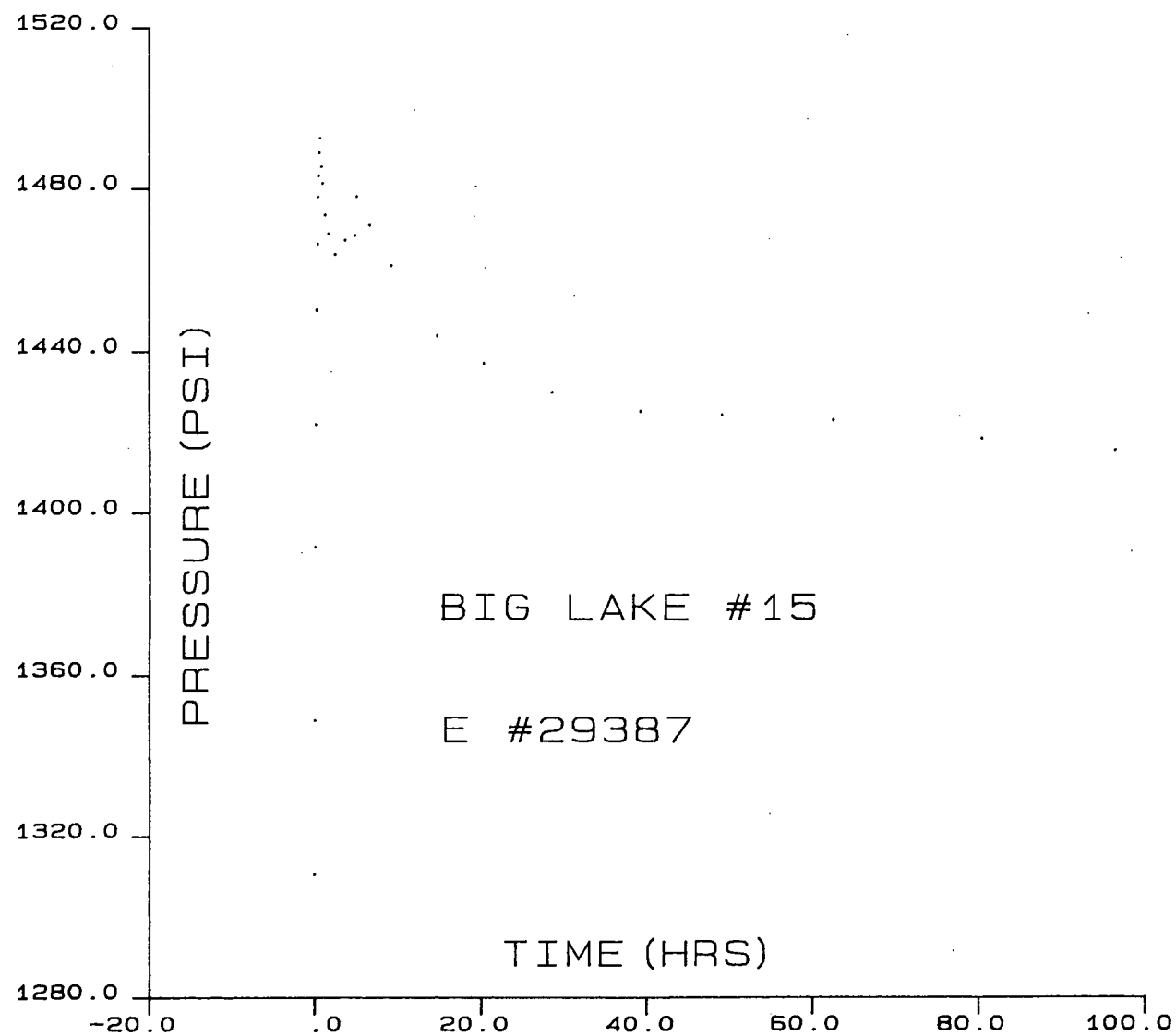
CO.		RUN 02 FIELD BIG LAKE	WELL 15
EFF DEPTH		WELL STAT	TOOL HUNG 7675'
CASING	-	CASING PRESS	ON BOTTOM 2156 12/9
LINER	-	TUBING PRESS	OFF BOTTOM 0825 17/9
DATE	890917	ELEMENT RANGE 0 - 3118	ZERO POINT
ELEVATION		ZONE	SHUT-IN 0800 13/9
MAX TEMP		PICK-UP	ON-PROD
PERF	-	CAL SER NO. 29387	MPP
TUBING	-		
UNITS	ENGLISH	PURPOSE	BUILD-UP

SURVEY DATA

CO.	TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
	8:00	1310.5	1310.5	.0	10:31	1463.9	1463.9	2.5
	8:05	1349.0	1349.0	.1	11:41	1467.4	1467.4	3.7
	8:09	1391.7	1391.7	.2	12:52	1468.7	1468.7	4.9
	8:15	1422.0	1422.0	.3	13:05	1478.1	1478.1	5.1
	8:22	1450.3	1450.3	.4	14:37	1471.1	1471.1	6.6
	8:26	1466.5	1466.5	.4	17:10	1461.3	1461.3	9.2
	8:29	1478.0	1478.0	.5	22:39	1444.1	1444.1	14.6
	8:35	1483.2	1483.2	.6	4:15	1437.1	1437.1	20.3
	8:41	1489.0	1489.0	.7	12:30	1430.0	1430.0	28.5
	8:46	1492.6	1492.6	.8	23:11	1425.3	1425.3	39.2
	8:55	1485.5	1485.5	.9	9:10	1424.3	1424.3	49.2
	9:02	1481.3	1481.3	1.0	22:29	1423.2	1423.2	62.5
	9:19	1473.6	1473.6	1.3	16:18	1418.6	1418.6	80.3
	9:44	1469.0	1469.0	1.7	8:25	1415.6	1415.6	96.4

LUB IN DWT = 731 PSI / OUT = 1204 PSI

LUB IN AMERADA = 723 PSI / OUT = 1202 PSI



**EXPERTEST** PTY LTD

WIRELINE & WELL TESTING SERVICE

PO BOX 354 DONMILLIA 5002

PH. (08) 354 0488 TELEX AA87193

FAX (08) 43 7408

132 RICHMOND ROAD MARLESTON

SOUTH AUSTRALIA 5003

Tested Sunday, 17th September 1989.

CLIENT	LOCATION	FORMATION
Santos Ltd.	BIG LAKE 15	0

STATIC PRESSURE GRADIENT REPORT

PRESSURE ELEMENT DATA			
POSITION	SERIAL NO.	RANGE	CALIBRATED
Top	28514	3000	10/ 9/89
Bottom	29387	2975	10/ 9/89

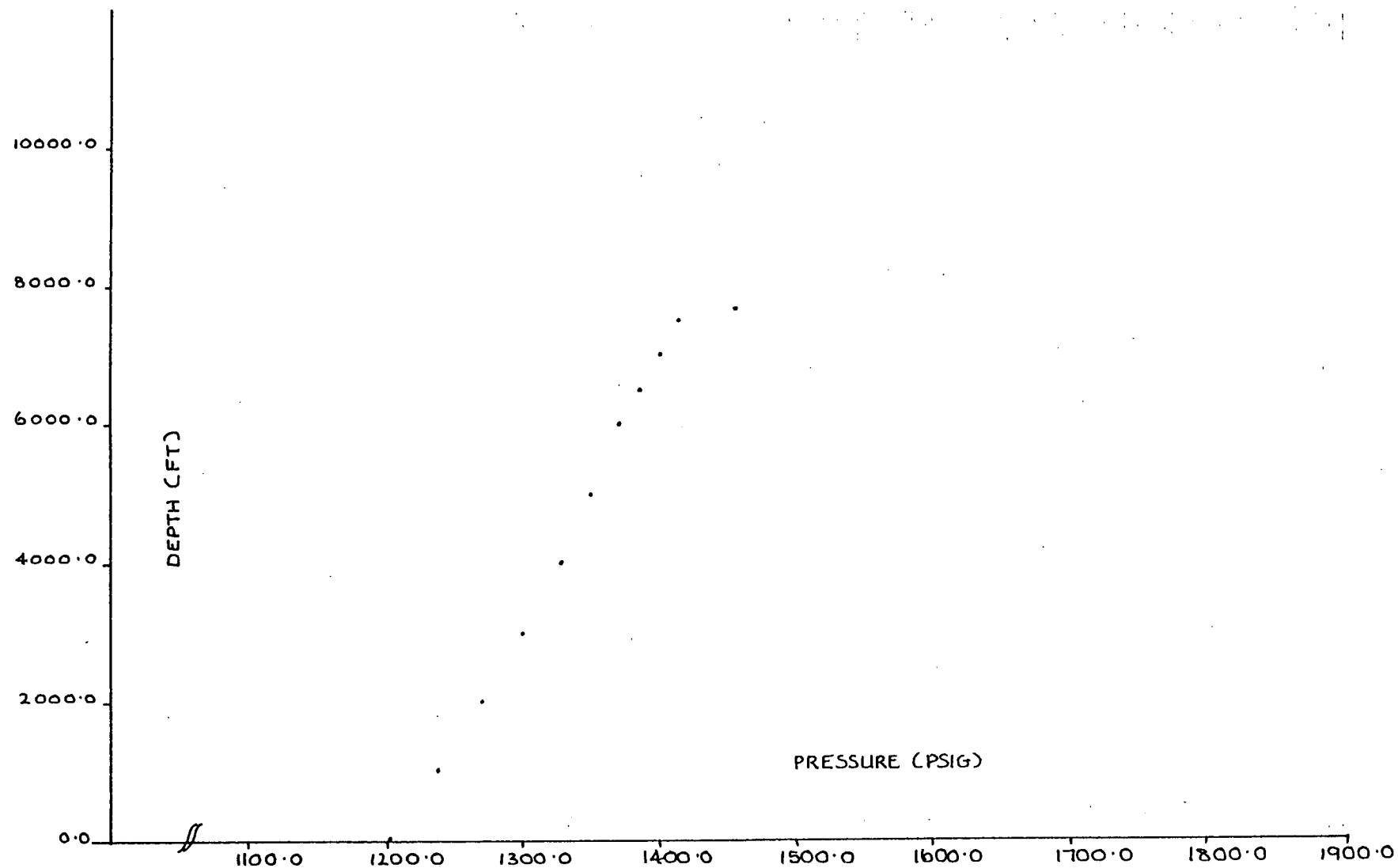
WELL DATA	
PARAMETER	VALUE
DWT In	8315 KPA
DWT Out	8329 KPA
Max BHT	160 C

DEPTH FT KB	TOP ELEMENT			BOTTOM ELEMENT		
	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT
LUB.	0.7500	1202.4	-----	0.7670	1187.9	-----
1000	0.7720	1237.5	0.035	0.7910	1225.3	0.037
2000	0.7920	1269.4	0.032	0.8130	1259.6	0.034
3000	0.8110	1299.8	0.030	0.8330	1290.8	0.031
4000	0.8280	1326.9	0.027	0.8530	1322.0	0.031
5000	0.8410	1347.7	0.021	0.8680	1345.4	0.023
6000	0.8550	1370.1	0.022	0.8850	1372.0	0.027
6500	0.8640	1384.5	0.029	0.8950	1387.6	0.031
7000	0.8730	1398.9	0.029	0.9040	1401.7	0.028
7500	0.8820	1413.3	0.029	0.9140	1417.3	0.031
7675	0.9080	1454.8	0.238	0.9450	1465.7	0.277
LUB.	0.7450	1194.4	-----	0.7760	1201.9	-----

GENERAL REMARKS

CASING 2517 KPA

BIG LAKE # 15 — STATIC PRESSURE GRADIENT — 17/9/89
ELEMENT # 28514/3000 (TOP)



Fin 5030

00045



WIRELINE REPORT

CLIENT SANTOS WELL BIG LAKE #15 DATE 12.9.89

PROGRAMME BLIND BOX RUN & B.H.P.S.

PURPOSE OF WORK

REPORT OF WORK PERFORMED

1530 : FIT SWAB VALVE & RIG IN WIRELINE UNIT.
 1614 : RUN IN HOLE WITH 1.75" BLIND BOX.
 1627 : TAG PSTD @ 7860' KB.
 1628 : PULL OUT OF HOLE.
 1641 : IN LUB.
 2140 : RUN PRESSURE ELEMENTS IN HOLE FOR B.H.P.S.
 SEE ATTACHED BUILD UP REPORT.
 0825 : PULL ELEMENTS OUT OF HOLE END BUILD UP.
 1143 : RUN STATIC GRADIENT SEE ATTACHED REPORT.
 1400 : RIG DOWN END SURVEY WELL HANDED BACK TO PRODUCTION.

M. Mueller

Operator's Signature

WORKED PERFORMED BY M. Mueller OF EXPERTEST

WELL DATA:

Tubing Size FWHP SIWHP

Subsurface S.V./Landing Nipple @ S.S.D. @

'X' Nipple @ 'N'/'XN' Nipple @ Other @

Min. I.D. @ Packer @

Perforated Interval:



CLIENT SANTOS
WELL BIG LAKE #15

STATIC GRADIENT SURVEY

OPERATOR M. MUELLER

DATE 17.9.89

BOMB No. 1 DATA						BOMB No 2 DATA				DWT IN 8315 KPA	
BOMB No. 1 DATA						BOMB No 2 DATA				DWT OUT 8329 KPA	
ELEMENT No.	28514	ELEMENT RANGE	3000 PSI	ELEMENT No.	29387	ELEMENT RANGE	2975 PSI				
RECORDER No	14631	CLOCK DATA	2489.3 HR	RECORDER No	59791	CLOCK DATA	1 x 3 HR				
ENGAGE STYLUS	1112	DISENGAGE	1405	ENGAGE STYLUS	1112	DISENGAGE	1405				
PRESSURE LUBRICATOR	1128			BLEED LUBRICATOR	1355						
DATE	TIME	DEPTH'	DEFLEC-TION	PRESSURE TEMP.	GRADIENT psi/ft	DEPTH'	DEFLEC-TION	PRESSURE TEMP.	GRADIENT psi/ft	REMARKS	
	1128	LUB									
	1143	RIH								CASING 2517 KPA	
	1149	1000									
	1157	2000								MBHT 160 °C	
	1205	3000									
	1212	4000									
	1219	5000									
	1227	6000									
	1234	6500									
	1241	7000									
	1248	7500									
	1255	7675								DWT @ BOTTOM STOP 8315 KPA	
	1310	POOH									
	1340	LUB									

GENERAL REMARKS:



Well: BIG LAKE 15 Date: 12.9.89

Lubricator Data: ① 740/1195 Operator: M. MUELLER
② 723/1202

Pressure with D.W.T. In 5040 KPA (731) Out 8302 KPA (1204)

Time Pressured 1710 12.9.89 Time Depressed 1055 17.9.89

Time Run in Hole 2140 12.9.89 Time off Bottom 0825 17.9.89

Bomb No. 1 Data

Bomb No. 2 Data

Element No. and Range	28514 x 3000 PSI	29387 x 2975 PSI
Recorder No.	14631 x 15 TLS	59791 x 15 TLS
Clock and Lead Screw Data	236 x 120 HR	1389 x 120 HR.
Engage Stylus	Date: 12.9.89 Time: 1656	Date: 12.9.89 Time: 1656
Disengage	Date: 17.9.89 Time: 1102	Date: 17.9.89 Time: 1102

Remarks: MBHT THERMOMETER RUN.

Well-Head Data for Final Build-up

Date	Time	Hours shut-in Time	Wellhead KPA	Casing KPA	Wellhead Temp.	Remarks
			WELL FLOWING ON 100% CHOKER			
	1710		6585	2551		PRESSURE LUB
	2140		5040	2579	31	RIH
	2156		5068	2579	31	HANG BOMBS @ 7675' KB
13.9.89						
	0200		5033	2579	26	
	0600		4985	2572	23	
	0800		4992	2565	26	SWI START BUILD UP
	0815		5992	2565	24	
	0830		6254	2558	23	
	0845		6564	2551	22	
	0900	1	6640	2551	21	
	0915		6730	2551	20	
	0930		6867	2551	20	
	0945		6902	2551	20	
	1000	2	7026	2551	20	
	1015		7136	2551	20	
	1030		7260	2544	20	
	1045		7378	2537	20	
	1100	3	7529	2537	20	
	1115		7681	2537	20	
	1130		7826	2537	21	
	1145		7991	2537	21	
	1200	4	8122	2530	21	



TELEPHONE (08) 354 0488 TELEEX AA87183

PAGE 3 OF 3

Well: BIG LAKE #15 Date: 16.9.89

Lubricator Data: _____ Operator M. MUELLER

Pressure with D.W.T. In Out

Time Pressured..... Time Depressed.....

Time Run in Hole..... Time off Bottom.....

Bomb No. 1 Data

Bomb No. 2 Data

Element No. and Range				
Recorder No.				
Clock and Lead Screw Data				
Engage Stylus	Date:	Time:	Date:	Time:
Disengage	Date:	Time:	Date:	Time:

Remarks:.....

Well-Head Data for Final Build-up

[illegible]