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NUMBER 5139

PEL 5 AND PEL 6, MOOMBA BLOCK

EROMANGA BASIN AND COOPER BASIN

MOOMBA SOUTH 1

TEST REPORTS

Submitted by

Delhi Petroleum Pty Ltd and Santos Ltd
1993

© 4/9/96

MINES AND ENERGY
SOUTH AUSTRALIA



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Telephone: (08) 274 7687
Facsimile: (08) 272 7597

ENVELOPE 5139

TENEMENT: PEL 5 and PEL 6, Moomba Block; Eromanga and Cooper Basins

TENEMENT HOLDER: Santos Ltd (operator), Delhi Petroleum Pty Ltd, Vamgas Ltd and South Australian Oil and Gas Corp. Pty Ltd

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REPORTS:	
Challenger Geological Services, 1983. Album of photographs of slabbed core, full hole cores 1 and 2 (November 1983).	5139 R 1 Pgs 3-10
Reeder, S. and Knox, L., 1986. Field maintenance contractor's results of the liquids evaluation test plus flowing bottomhole pressure, 64 hour reservoir pressure buildup and static wellbore pressure gradient surveys of the Toolachee Formation gas reservoir producing interval 7810-7910 feet depth KB, conducted over the period 10-15/8/86 (Expertest Pty Ltd).	5139 R 2 Pgs 11-33
Tickle, B., 1987. Field maintenance contractor's results of the flowing bottomhole pressure, 110 hour reservoir pressure buildup and static wellbore pressure gradient surveys of the above Toolachee producing zone, conducted over the period 13-19/8/87 (Expertest Pty Ltd).	5139 R 3 Pgs 34-44
Santos Ltd, 1987. Field operator's production flow water sample analysis results for samples taken during the LET (liquids evaluation test) on 17/11/87, and during a repeated LET over the period 10-11/12/87.	5139 R 4 Pgs 45-50
Micheltmore, R., Poole, P. and Smith, A., 1989. Field maintenance contractor's results of the flowing bottomhole pressure, 100 hour reservoir pressure buildup and static wellbore pressure gradient surveys of the Toolachee producing zone, conducted over the period 2-7/5/89 (Expertest Pty Ltd).	5139 R 5 Pgs 51-62
Wright, M., 1991. Field maintenance contractor's results of the flowing bottomhole pressure, 60 hour reservoir pressure buildup and static wellbore pressure gradient surveys of the Toolachee producing zone, conducted over the period 5-11/2/91 (Expertest Pty Ltd).	5139 R 6 Pgs 63-79
Hay, N., 1993. Field maintenance contractor's results of the static wellbore pressure gradient survey of the Toolachee producing zone, conducted on 7/1/93 (Expertest Pty Ltd).	5139 R 7 Pgs 80-83
Kirksey, W. and Tahtouh, M., 1993. Caliper survey report [for corrosion control monitoring of downhole production tubing] (Kinley Corp., Houston, Texas, contractors' report no. 23493 for Santos, 3/11/93).	5139 R 8 Pgs 84-105

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A68

0003

16.



DELHI PETROLEUM PTY. LTD.

(INCORPORATED IN THE STATE OF SOUTH AUSTRALIA)

33 KING WILLIAM STREET, ADELAIDE

SOUTH AUSTRALIA 5000

8th November, 1983

REF:EXPL: 520/19

The Director-General
Department of Mines & Energy
P.O. Box 151
EASTWOOD, S.A. 5063

Dear Sir,

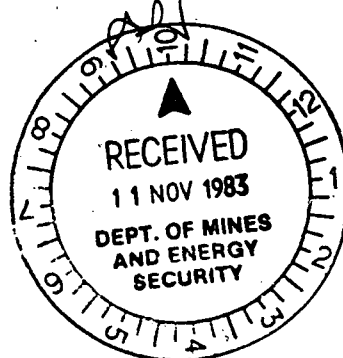
Please find enclosed a core photography report on Moomba South No. 1,
cores 1-2.

Yours very truly,
DELHI PETROLEUM PTY. LTD.

R.J.S. Hollingsworth
Exploration Manager

5139

PSM/RJSH:jo
(enc.)



0004

DELHI. MOOMBA SOUTH #1 . 9808^{TO} 9820^{FT.}

CORE 1

9810

9809

9808

9813

9812

9811

9816

9815

9814

9819

9818

9817



0005

DELHI. MOOMBA SOUTH #1.

9858 TO 9876^{FT.}

CORE 2

9860

9859

9858

9863

9862

9861

9866

9865

9864

9869

9868

9867

9872

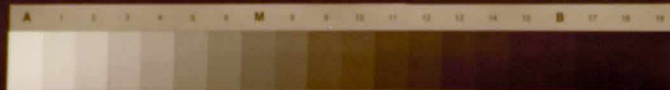
9871

9870

0006

DELHI. MOOMBA SOUTH 1.

9858 TO 9876^{FT.}



CORE 2

9875

9874

9873



TOP

Blue Cyan Green Yellow Red Magenta White Brown Black

MOOMBA SOUTH No 1 CORE 1.
9810'5"--9811'

BOTTOM

00007

TOP



MOOMBA SOUTH No 1 CORE 1.
9818'8"---9819'5"

BOTTOM

0008

TOP



MOCKBA SOUTH No 1 CORE 2.
9861'--9861'10"

BOTTOM

0009

TOP



MOOMBA SOUTH No 1 CORE 2.
9869'--9869'9"

BOTTOM

0010

MOOMBA SOUTH #1SUMMARY OF L.E.T. AND BOTTOMHOLE PRESSURE SURVEY10TH - 15TH AUGUST 1986L.E.T. Survey

10th - 12th August

10/8/86: Opened well on 100% choke @ 1300 hrs
Trimmed through separator @ 1800 hrs
Flowed well on 100% choke for 52 hrs

F.T.H.P. = 802 psig
Separator Pressure = 697 psig
Separator Temperature = 159° F
Gas flow rate = 6.510 mmscfd
Condensate Production = 6.966 BPD
Water Production = 20.124 BPD

Element # 22308 @ 7854'KB = 1392.9 psig
Element # 22418 @ 7860'KB = 1392.1 psig

12/8/86: Shut well in @ 2200 hrs

Build-up Survey

12th - 15th August

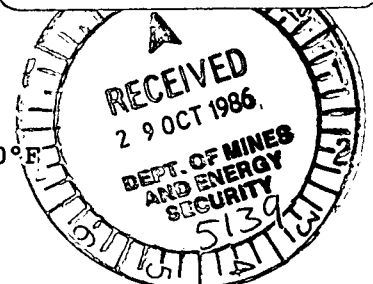
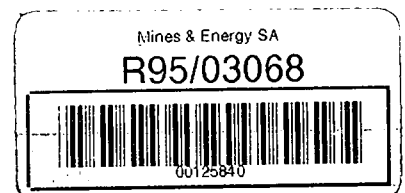
12/8/86: Shut well in @ 2200 hrs for 64 hrs
Element # 22308 @ 7854'KB after 64 hrs build-up = 2247.8 psig
Element # 22418 @ 7860'KB after 64 hrs build-up = 2245.2 psig
Maximum shut in bottomhole temperature = 268° F

Static Reservoir Pressure

Mid Point of Perforations = 7860'KB

15/8/86: Ran Static Pressure Gradient
Element # 22308 @ 7860'KB = 2248.8 psig
Element # 22418 @ 7860'KB = 2257.6 psig
Maximum shut in bottomhole temperature = 270° F

LGA/arw
6/10/86
WP2472G(81)



0012

DATE: 10TH - 12TH AUGUST 1986

METER RUN: 3.826"

[illegible]

0013

DATE: 12TH - 13TH AUGUST 1986

METER RUN: 3.826"

[illegible]

0014

DATE: 13TH - 15TH AUGUST 1986

METER RUN: 3.826"

[illegible]

SANTOS LTD
39 GRENELL ST
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

CO. SANTOS	RUN 01 FIELD MS	WELL 01
EFF DEPTH	WELL STAT	TOOL HUNG 7854'
CASING 7"	CASING PRESS	ON BOTTOM 1804 12/8
LINER	TUBING PRESS	OFF BOTTOM 1400 15/8
DATE 860815	ELEMENT RANGE 0 - 4162	ZERO POINT
ELEVATION	ZONE	SHUT-IN 2200 12/8
MAX TEMP 268	PICK-UP	ON-PROD
PERF 7810' - 7910'	CAL SER NO. 22308	MPP 7860'
TUBING 2-7/8"		
UNITS ENGLISH	PURPOSE BUILD-UP	

SURVEY DATA

CO. SANTOS				RUN 01 FIELD MS				WELL 01			
TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
22:00	1392.9	0.0	0.0	2:01	2171.5	778.6	4.0				
22:15	2072.8	679.9	.3	6:00	2184.5	791.6	8.0				
22:30	2106.3	713.4	.5	10:00	2194.1	801.1	12.0				
22:45	2118.8	725.9	.8	14:00	2201.3	808.4	16.0				
23:00	2126.8	733.9	1.0	18:00	2207.9	815.0	20.0				
23:15	2132.7	739.7	1.2	22:00	2212.2	819.3	24.0				
23:30	2140.8	747.9	1.5	2:01	2217.0	824.0	28.0				
23:45	2147.6	754.6	1.7	6:00	2221.1	828.2	32.0				
0:00	2153.2	760.3	2.0	10:01	2224.4	831.5	36.0				
0:15	2159.5	766.6	2.2	14:00	2228.5	835.6	40.0				
0:30	2161.5	768.6	2.5	18:00	2231.4	838.5	44.0				
0:45	2164.2	771.3	2.7	22:00	2234.7	841.7	48.0				
1:00	2166.4	773.5	3.0	2:00	2239.8	846.9	52.0				
1:15	2167.9	775.0	3.2	6:00	2243.3	850.4	56.0				
1:29	2168.6	775.7	3.5	9:59	2245.4	852.5	60.0				
1:45	2170.0	777.0	3.7	14:00	2247.8	854.9	64.0				

LUB IN DWT = 800 PSI / OUT = 1852 PSI

LUB IN AMERADA = 802 PSI / OUT = 1866 PSI

0016

PAGE 1

SANTOS LTD
39 GRENFELL ST
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

CO. SANTOS	RUN 02 FIELD MS	WELL 01
EFF DEPTH	WELL STAT	TOOL HUNG 7860'
CASING 7"	CASING PRESS	ON BOTTOM 1804 12/8
LINER	TUBING PRESS	OFF BOTTOM 1400 15/8
DATE 860815	ELEMENT RANGE 10 - 4029	ZERO POINT
ELEVATION	ZONE	SHUT-IN 2200 12/8
MAX TEMP 268	PICK-UP	ON-PROD
PERF 7810' - 7910'	CAL SER NO. 22418	MPP 7860'
TUBING 2-7/8"		
UNITS ENGLISH	PURPOSE BUILD-UP	

SURVEY DATA

CO. SANTOS				RUN 02 FIELD MS				WELL 01			
TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
22:00	1392.1	0.0	0.0	2:00	2168.6	776.5	4.0				
22:15	2079.5	687.4	.3	6:01	2182.4	790.3	8.0				
22:30	2107.3	715.2	.5	10:00	2191.3	799.2	12.0				
22:45	2118.1	726.0	.8	14:00	2197.5	805.4	16.0				
23:00	2124.3	732.2	1.0	18:01	2203.1	811.0	20.0				
23:15	2130.2	738.2	1.2	22:00	2207.6	815.5	24.0				
23:30	2138.2	746.1	1.5	2:00	2210.8	818.7	28.0				
23:45	2144.4	752.3	1.7	6:00	2214.3	822.2	32.0				
0:00	2150.3	758.3	2.0	10:00	2218.5	826.4	36.0				
0:15	2155.1	763.0	2.2	14:00	2222.2	830.2	40.0				
0:30	2158.6	766.5	2.5	18:00	2225.8	833.7	44.0				
0:45	2161.3	769.2	2.7	22:01	2229.6	837.5	48.0				
0:59	2162.0	769.9	3.0	2:00	2234.5	842.4	52.0				
1:15	2165.1	773.0	3.2	6:00	2238.3	846.2	56.0				
1:31	2164.7	772.7	3.5	10:00	2242.0	850.0	60.0				
1:45	2167.5	775.4	3.7	14:00	2245.2	853.1	64.0				

LUB IN DWT = 800 PSI / OUT = 1852 PSI

LUB IN AMERADA = 788 PSI / OUT = 1850 PSI

0017



** MOOMBA SOUTH #1 **

STATIC PRESSURE GRADIENT

TEST DATE: 15/8/86

TOP PRESSURE ELEMENT 22308/4100				BOTTOM PRESSURE ELEMENT 22418/4000		
DEPTH (FT.)	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)
LUB	0.8900	1856.2	----	0.9340	1856.6	----
1000	0.9160	1910.2	0.0540	0.9630	1914.9	0.0584
2000	0.9000	1877.0	-0.0332	0.9900	1969.3	0.0544
3000	0.9690	2020.3	0.1433	1.0150	2019.7	0.0504
4000	0.9920	2068.1	0.0478	1.0400	2070.0	0.0504
5000	1.0160	2117.9	0.0498	1.0600	2110.3	0.0403
6000	1.0380	2163.6	0.0457	1.0900	2170.8	0.0605
7000	1.0600	2209.3	0.0457	1.1030	2197.1	0.0262
7400	1.0690	2228.0	0.0467	1.1220	2235.4	0.0958
7860	1.0790	2248.8	0.0451	1.1330	2257.6	0.0483
LUB	0.8930	1862.4	----	0.9340	1856.6	----

GENERAL REMARKS:

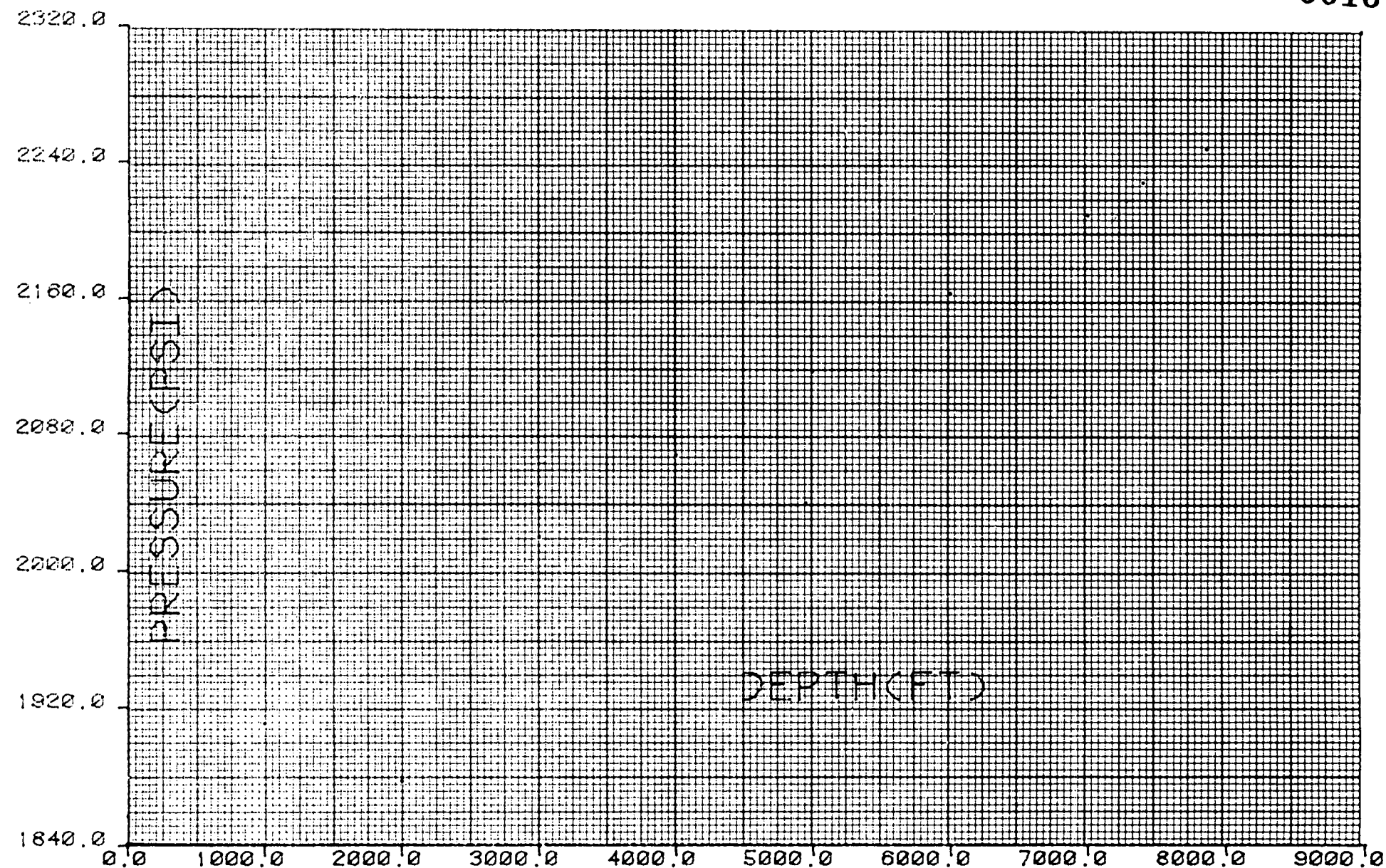
O/K

DWT IN: 1853
 DWT OUT: 1853
 MAX BHT: 270

ELEMENT 22308/4100 CALIBRATED 18-6-86
 ELEMENT 22418/4000 CALIBRATED 18-6-86

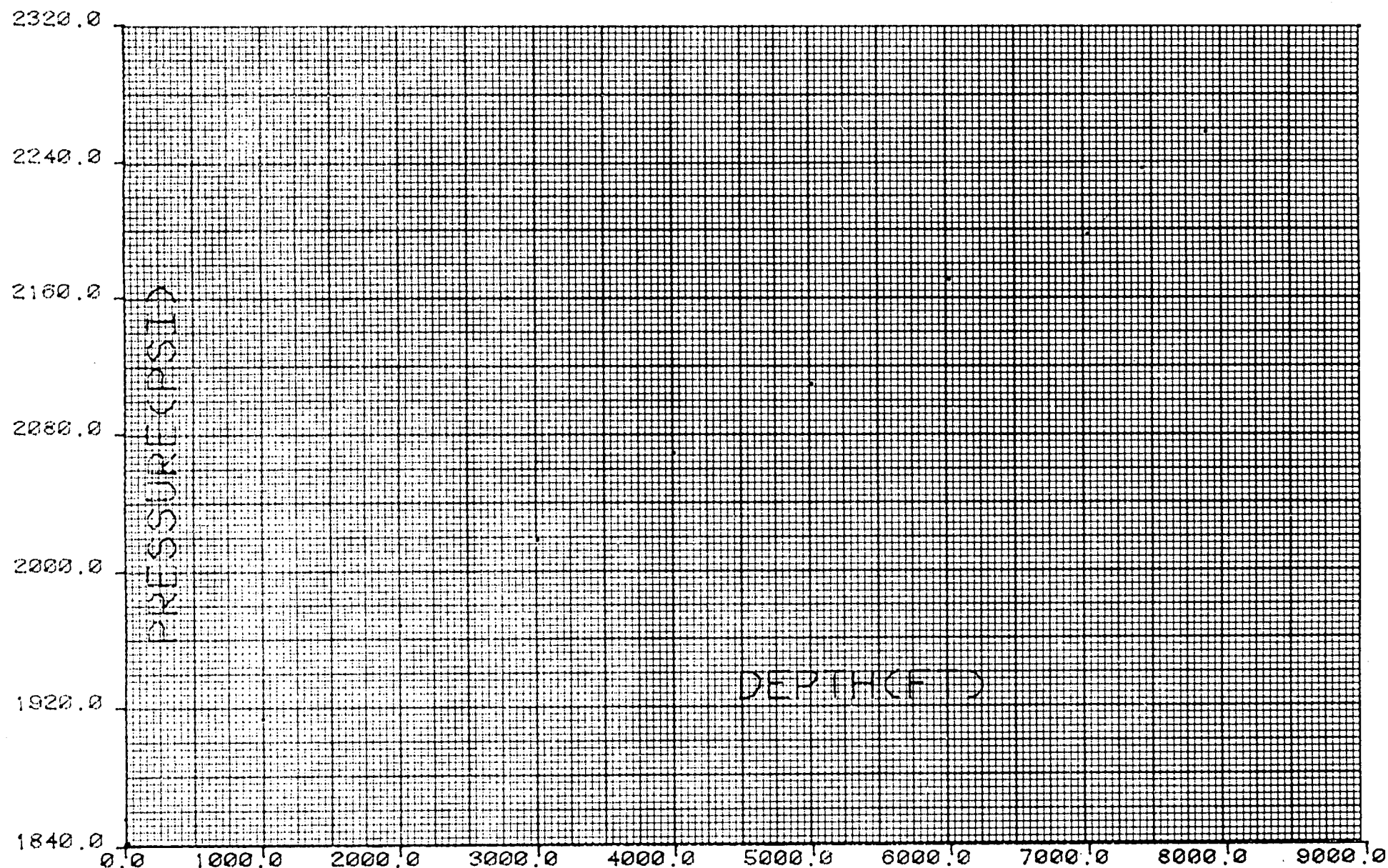
MOOMBA SOUTH #1 - STATIC PRESSURE GRADIENT - 15/8/8
ELEMENT #22308/4100 (TOP)

0018



0019

MOOMBA SOUTH #1 - STATIC PRESSURE GRADIENT - 15/8/8
ELEMENT #22418/4000 (BOT)



WELL NAME:

STATIC GRADIENT SURVEY

DATE:

BOMB No. 1 DATA

ELEMENT No. 22308 ELEMENT RANGE: 4100 psi.
 RECORDER No. 5H652 CLOCK DATA: 2533x 3Ls.
 ENGAGE STYLUS: 1539 DISENGAGE: 17.58

BOMB No. 2 DATA

ELEMENT No. 22418... ELEMENT RANGE: 4000psi
RECORDER No. 14.926... CLOCK DATA: 2509.365.
ENGAGE STYLUS: 15.39... DISENGAGE: 17.58.....

LUBRICATOR DATA

PRESSURE WITH D.W.T.: 1853 psi
TIME PRESSURED: 15:50
TIME DEPRESSURED: 17:53

[illegible]

General Comments:

0020

Shut In Time in minutes

Shut In 2200 hrs 12/8/86 0

15

30

45

60

75

90

105

120

135

150

165

180

195

210

225

240

480

720

960

1200

1440

1680

1920

2160

2400

2640

2880

3120

3360

3600

3840 P.O.O.H. 1400 hrs 15/8/86



WIRELINE REPORT

0022

WELL: Moomba Stn. #1DATE: 10/08/86PROGRAM: L.E.T. & B.H.P. Survey

PURPOSE OF WORK:

REPORT OF WORK PERFORMED:

10/8/86 1000 Hrs. Rig Up W/L Unit #44
1100 Hrs. Pressure Test Swab Valve & B.O.P.'s
1110 Hrs. R.I.H. With 1.75" Blind Box
1130 Hrs. Tag P.B.T.D. @ 8212' K.B. P.O.H.
1200 Hrs. Tool String @ Surface, Shut Swab Valve
& Standby For Field Op. To Re-open
Well For L.E.T. Portion Of Test
12/8/86 - 1628 Hrs. - Pressure Lub. With 4000psi Ameradas
1728 Hrs. - Start To R.I.H.
Hrs. - Ameradas @ 7860' K.B.
2200 Hrs. - S.I. Well For Buildup

OPERATOR'S SIGNATURE

WORK PERFORMED BY: L. Knox OF Expertest

WELL DATA:

Tubing Size: 2 7/8" FWHP: SIWHP: 1800 psi

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

"X" Nipple @ "N"/"XN" Nipple @ 7715' K.B. otherMin I.D. 2.205" @ 7715' K.B. Packer @ 7697' K.B.Perforated Interval: 7810' To 7910' K.B.Forward to: Petroleum Engineering — Adelaide
Production Department — Moomba

[illegible]

0024

WELL: <u>Maanka South #1</u>						SANTOS LTD.										DATE: <u>9/8/86</u>				
TYPE OF TEST: <u>LET and BHP</u>						WELL TEST DATA SHEET										PAGE No: <u>1</u>				
DATE TIME	WELLHEAD					GAS FLOW DATA				OIL/CONDENSATE PRODUCTION			WATER PRODUCTION		WELL TEST RESULTS					
	CASING PSI	TUBING PSI	TEMP. °F	CHOKE SIZE INS.	B.S.W. %	PI PSI	HW INS. H ₂ O	TEMP. °F	ORIFICE SIZE INS.	TANK DIP INS.	TANK PROD BBLs	API GRAVITY @ 60 °F	TANK DIP INS.	TANK PROD BBLs	GAS FLOW RATE MMSCFD	OIL FLOW RATE BBLs/ DAY	WATER FLOW RATE BBLs/ DAY	TOTAL LIQUID FLOW RATE BBLs/ DAY	WGR BBLs / mscf	
						LET and BHP survey programme														
9/8/86						Move equipment to location, begin rig up, fitters not available.														
10/8/86																				
0900						Shut well in, fitters on location to swing blind and hook up test flanges.														
						Complete rig in our Test unit and wireline unit.														
1030	218	1760				Ran 1.750 blind box to 8212' KB														
1115	218	1800				Out. of hole tools ok														
1230						Pressure test all lines and separator to pipeline pressure														
1300	218	1800				Put well back on line 100% choke by passing separator														
1800	218	910	149	64/64						5.0	Ø	—	2.0	Ø	—	—	—	—	opening gauge	
1800	218	810	153	64/64	N/A	Trim through separator 1.875 plate														
2400	218	805	151	64/64	N/A	700	152	156	1.875	5.0	Ø	—	5.0	5.031	6.510	Ø	20.124	20.124	3.09	
11/8/86																				
0600	218	808	156	64/64	N/A	700	152	156	1.875	5.0	Ø	—	9.5	7.547	6.510	Ø	30.188	30.188	4.64	
1200	218	799	154	64/64	N/A	700	156	160	1.875	5.5	.839	N/A	11.0	2.516	6.566	3.356	10.064	13.430		
1800	218	802	165	64/64	N/A	700	155	160	1.875	7.5	3.354	N/A	15.0	6.708	6.544	13.416	26.832	40.248		
2400	218	803	169	64/64	N/A	695	155	160	1.875	8.0	.839	N/A	18.0	5.031	6.519	3.356	20.124	23.480		
12/8/86																				
0600	218	803	167	64/64	N/A	695	156	156	1.875	12.5	7.547		18.5	.839	6.570	30.188	3.356	33.544	2.2	

OPERATOR: S. Reeder

0025

WELL: <u>Maamba South #1</u>						 SANTOS LTD. WELL TEST DATA SHEET										DATE: <u>12/8/86</u>										
TYPE OF TEST: <u>LET & BHP</u>						PAGE No: <u>2</u>																				
DATE TIME	WELLHEAD					GAS FLOW DATA				OIL/CONDENSATE PRODUCTION			WATER PRODUCTION		WELL TEST RESULTS											
	CASING PSI	TUBING PSI	TEMP. °F	CHOKE SIZE INS.	B.S.W. %	PI PSI	HW INS. H ₂ O	TEMP. °F	ORIFICE SIZE INS.	TANK DIP INS.	TANK PROD BBLs	API GRAVITY @ 60 °F	TANK DIP INS.	TANK PROD BBLs	GAS FLOW RATE MMSCFD	OIL FLOW RATE BBLs/ DAY	WATER FLOW RATE BBLs/ DAY	TOTAL LIQUID FLOW RATE BBLs/ DAY	G.O.R. SCF/BBL							
						LET and BHP survey programme																				
1200	254	797	164	64/64	N/A	700	158	160	1.875	12.5	Ø	—	22.5	6.708	6.608	Ø	26.832	26.832								
1828	232	800		64/64		Recorders in lubricator																				
1700	232	800	169	64/64		700	158	160	1.875	Samples obtained				Gas * 0.23, 0.12 Oil * 0.56, 1.72 - 4 Stock Tank												
1728	Run in hole with recorders.																									
1800	232	802	169	64/64	N/A	690	156	160°	1.875	14.0	2.516	—	25.0	4.193	6.515	10.044	16.772	26.836								
1804	232	802	169	64/64		Recorders hung at 7860' KB																				
2200	232	801	162	64/64	N/A	690	153	160°	1.875	14.0	Ø	—	28.0	5.031	6.452	Ø	20.124	20.124	drain separator							
	Shut in for build-up.																									
	Total gas production														14.155 MMcf											
2215	232	1745															Total oil production					15.095 BBLs.				
2230	218	1758															Total H ₂ O production					43.604 BBLs.				
2245	218	1763																								
2300	218	1770																								
2315	218	1773																								
2330	218	1778																								
2345	218	1784																								
2400	218	1789																								
13/8/86																										
0015	218	1793																								
0030	218	1795																								

0026

WELL: <u>Moonba South #1</u>						 SANTOS LTD. WELL TEST DATA SHEET										DATE: <u>13/8/86</u>				
TYPE OF TEST: <u>LET & BHP</u>																PAGE No: <u>3</u>				
DATE TIME	WELLHEAD					GAS FLOW DATA				OIL/CONDENSATE PRODUCTION			WATER PRODUCTION		WELL TEST RESULTS					
	CASING PSI	TUBING PSI	TEMP. °F	CHOKE SIZE INS.	B.S.W. %	PI PSI	HW INS. H ₂ O	TEMP. °F	ORIFICE SIZE INS.	TANK DIP INS.	TANK PROD BBLs	API GRAVITY @ 60 °F	TANK DIP INS.	TANK PROD BBLs	GAS FLOW RATE MMSCFD	OIL FLOW RATE BBLs/ DAY	WATER FLOW RATE BBLs/ DAY	TOTAL LIQUID FLOW RATE BBLs/ DAY	G.O.R. SCF/BBL	
						LET and BHP survey programme														
0045	218	1797																		
0100	218	1797																		
0115	218	1799																		
0130	218	1800																		
0145	218	1800																		
0200	218	1800																		
0600	218	1808																		
1000	218	1815																		
1400	218	1820																		
1800	218	1822																		
2200	218	1825																		
14/8/86																				
0200	218	1827																		
0600	218	1830																		
1000	218	1833																		
1400	218	1834																		
1800	218	1837																		
2200	218	1839																		
15/8/86																				

OPERATOR.....

TYPE OF TEST: A.R.T. & B.P.



WELL TEST DATA SHEET

[illegible]

WELL Moomba South *1

TANK:- CAPACITY 356 BBLs.
SCALE 1.677 BBLs / inch.



SANTOS LTD

FLUID PRODUCTION SHEET

0028

DATE 10/8/86

PAGE No.1

OPERATOR S. Reeder / L. Knox

[illegible]

6-11-1964

E11

0030

WELL: Moombs..South #1.....

OPERATOR: S.Reeder / L.Knox....



SANTOS LTD
WELL TEST DATA
METRIC SUMMARY SHEET

DATE: 10/8/86.....

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
						LET.	and BHP survey programme							
1800	218	1500	810	5585	153	67	Trim well through separator.							
2400	218	1500	805	5550	151	66	Trace	—	20.124	3.20	6.510	183.413		
11/8/86														
0600	218	1500	808	5571	156	69	Trace	—	30.188	4.80	6.510	183.413		
1200	218	1500	799	5509	154	68	3.356	.534	10.064	1.60	6.566	184.990		
1800	218	1500	802	5530	165	74	13.416	2.133	26.832	4.266	6.544	184.371		
2400	218	1500	803	5537	169	76	3.356	.534	20.124	3.20	6.519	183.666		
12/8/86														
0600	218	1500	803	5537	167	75	30.188	4.80	3.356	.534	6.570	185.103		
1200	254	1750	797	5495	164	73	∅	∅	26.832	4.266	6.608	186.174		
1800	232	1600	802	5530	169	76	10.064	1.600	16.772	2.667	6.515	183.554		
2200	232	1600	801	5523	162	72	∅	∅	20.124	3.20	6.452	181.779		
	Shut in for build-up survey.													

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

LET and BHP survey programme

WELL: Moomba South #1.....

OPERATOR: S. Reeder / L. Knox...



SANTOS LTD
WELL TEST DATA
METRIC SUMMARY SHEET

DATE: 12/8/86.....

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
2215	232	1600	1745	12032										
2230	218	1500	1758	12121										
2245	218	1500	1763	12156										
2300	218	1500	1770	12204										
2315	218	1500	1773	12225										
2330	218	1500	1778	12259										
2345	218	1500	1784	12301										
2400	218	1500	1789	12335										
13/8/86 0015	218	1500	1793	12363										
0030	218	1500	1795	12377										
0045	218	1500	1797	12390										
0100	218	1500	1797	12390										

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

LET and BHP survey programme

WELL: Moonba... South *1.....

OPERATOR: S. Reader. L. L. Knox..


SANTOS LTD
WELL TEST DATA
METRIC SUMMARY SHEET

DATE: 13/8/86.....

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 M ³ /D	FLOWRATE H ₂ O BBL'S/D	FLOWRATE H ₂ O M ³ /D	MMSCF/D	Mm ³ /D	G.O.R. Cu/FT BBL	G.O.R. M ³ /M ³
0115	218	1500	1799	12404										
0130	218	1500	1800	12411										
0145	218	1500	1800	12411										
0200	218	1500	1800	12411										
0600	218	1500	1808	12466										
1000	218	1500	1815	12514										
1400	218	1500	1820	12519										
1800	218	1500	1822	12563										
2200	218	1500	1825	12583										
14-8-86														
0200	218	1500	1827	12597										
0600	218	1500	1830	12618										

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

WELL: *Norona South*OPERATOR: *R. Yates*

SANTOS LTD
WELL TEST DATA
METRIC SUMMARY SHEET

DATE: *14.5.86*PAGE No: *A*

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 M ³ /D	FLOWRATE H ₂ O BBL'S/D	FLOWRATE H ₂ O M ³ /D	MMSCF/D	Mm ³ /D	G.O.R. Cu/FT BBL	G.O.R. M ³ /M ³
1000	218	1500	1833	12639										
1400	218	1500	1834	12645										
1800	218	1500	1837	12666										
2200	218	1500	1839	12680										
15.5.86														
0200	218	1500	1841	12694										
0600	200	1379	1845	12721										
1000	200	1379	1849	12749										
1400	200	1379	1852	12770										

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

ROLLING BOTTOMHOLE PRESSURE SURVEY GAS CALCULATION SHEET

WELL: Moomba South # 1 Pf = 5400 kPa ✓
 ORIFICE SIZE: 53.975 mm 2.125 " ✓ T = 79 °C ✓
 LINE SIZE: 97.180 mm 3.826 " ✓ Diff = 25 kPa ✓

Cumulative Production to end of July = 59.692 m³ x 10⁶ ✓

Number of hours online in July = 631 ✓

Production in July = 4.934 m³ x 10⁶ ✓

.. Average flow rate in July = (4.934/631) x 24 = 0.188 m³ x 10⁶/d ✓

Number of days online in August before Shut In 1900 hrs 14 / 8 / 87 ✓
 = 13.792 ✓

.. Production up to 1900 hrs 14 / 8 / 87 = 13.792 x 0.188 = 2.593 m³ x 10⁶

Total cumulative production = 2.593 + 59.692
 = 62.285 m³ x 10⁶
 = 2210.738 mmscf ✓

Flow rate just prior to Shut In = 0.199 m³ x 10⁶ ✓
 = 7.068 mmscf/d ✓

SANTOS LTD
39 GRENFELL ST
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

CO. SANTOS		RUN 01 FIELD MSOUTH		WELL 01
EFF DEPTH		WELL STAT		TOOL HUNG 7768'
CASING 7"	-	CASING PRESS		ON BOTTOM 1527 14/8
LINER	-	TUBING PRESS		OFF BOTTOM 0945 19/8
DATE 870819		ELEMENT RANGE 0 - 3133		ZERO POINT
ELEVATION		ZONE		SHUT-IN 1900 14/8
MAX TEMP		PICK-UP		ON-PROD
PERF 7810'-7871'		CAL SER NO. 56428		MPP 7871'
TUBING 2-7/8"	-			
UNITS ENGLISH		PURPOSE BUILD-UP		

SURVEY DATA

CO. SANTOS			RUN 01 FIELD MSOUTH		WELL 01		
TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
19:00	1588.3	0.0	0.0	20:37	1887.5	299.2	1.6
19:01	1630.4	42.1	.0	20:55	1889.6	301.3	1.9
19:02	1721.1	132.7	.0	21:20	1891.6	303.3	2.3
19:04	1808.0	219.7	.1	22:10	1894.4	306.1	3.2
19:06	1840.9	252.6	.1	23:46	1898.7	310.4	4.8
19:08	1849.0	260.7	.1	1:34	1901.1	312.8	6.6
19:11	1855.2	266.9	.2	4:27	1904.2	315.8	9.4
19:14	1859.7	271.4	.2	10:17	1907.5	319.2	15.3
19:19	1863.5	275.2	.3	21:11	1912.1	323.8	26.2
19:25	1865.9	277.6	.4	8:35	1915.0	326.7	37.6
19:32	1870.4	282.1	.5	22:01	1918.6	330.2	51.0
19:38	1873.8	285.5	.6	12:48	1921.0	332.7	65.8
19:45	1877.5	289.2	.8	4:38	1924.5	336.2	81.6
19:54	1879.8	291.5	.9	22:50	1926.5	338.2	99.8
20:08	1883.5	295.2	1.1	9:45	1927.7	339.4	110.7
20:22	1886.5	298.2	1.4	0:00	0.0	0.0	0.0

LUB IN DWT = 946 PSI / OUT = 1605 PSI
LUB IN AMERADA = 934 PSI / OUT = 1612 PSI

SANTOS LTD
39 GRENFELL ST
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

CO. SANTOS		RUN 02 FIELD MSOUTH	WELL 01
EFF DEPTH		WELL STAT	TOOL HUNG 7774'
CASING 7"	-	CASING PRESS	ON BOTTOM 1527 14/8
LINER	-	TUBING PRESS	OFF BOTTOM 0945 19/8
DATE 870819		ELEMENT RANGE 0 - 3125	ZERO POINT
ELEVATION		ZONE	SHUT-IN 1900 14/8
MAX TEMP		PICK-UP	ON-PROD
PERF 7810' - 7871'		CAL SER NO. 56431	MPP 7871'
TUBING 2-7/8"	-		
UNITS ENGLISH		PURPOSE BUILD-UP	

SURVEY DATA

CO. SANTOS			RUN 02 FIELD MSOUTH		WELL 01		
TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
19:00	1593.8	0.0	0.0	21:09	1898.2	304.4	2.2
19:01	1647.9	54.1	.0	22:20	1902.9	309.1	3.3
19:02	1757.2	163.3	.0	0:02	1906.8	313.0	5.0
19:05	1847.7	253.9	.1	2:18	1910.3	316.5	7.3
19:07	1857.0	263.2	.1	5:35	1913.6	319.8	10.6
19:08	1861.2	267.4	.1	8:54	1916.2	322.3	13.9
19:12	1865.7	271.9	.2	13:02	1918.4	324.6	18.0
19:17	1870.2	276.4	.3	19:12	1920.9	327.1	24.2
19:22	1874.1	280.3	.4	0:08	1921.6	327.8	29.1
19:25	1877.4	283.6	.4	7:38	1922.9	329.1	36.6
19:29	1880.5	286.7	.5	16:57	1924.7	330.9	46.0
19:36	1883.2	289.4	.6	3:16	1926.9	333.1	56.3
19:43	1886.8	293.0	.7	15:53	1929.1	335.3	68.9
19:55	1889.8	296.0	.9	5:58	1931.9	338.1	83.0
20:11	1892.3	298.5	1.2	19:01	1932.6	338.8	96.0
20:30	1894.8	301.0	1.5	9:45	1934.2	340.4	110.7

LUB IN DWT = 946 PSI / OUT = 1605 PSI
LUB IN AMERADA = 940 PSI / OUT = 1614 PSI

0037

ISO - CHRONAL AND BUILD-UP SURVEY

Well: MOON BA STD #1 Date: 14-8-87

Lubricator Data: ① 934 1612
② 940 1614

Pressure with D.W.T. IN 946 psi OUT 1605 psi

Time Pressured: 13:54 Time Depressed: 11:00

Time Run in Hole: 15:00 19/8/87 Time off Bottom: 09:45 19/8/87

Bomb No. 1 Data

Bomb No. 2 Data

Element No. and Range	<u>56428 X 3000 psi</u>	<u>56431 X 3000 psi</u>
Recorder No.	<u>14620 X 15 TLS</u>	<u>14929 X 15 TLS</u>
Clock and Lead Screw Data	<u>F-15694 X 120 hr</u>	<u>F-15695 X 120 hr</u>
Engage Stylus	Date: <u>14-8-87</u> Time: <u>13:47</u>	Date: <u>14-8-87</u> Time: <u>13:47</u>
Disengage	Date: <u>19-8-87</u> Time: <u>11:06</u>	Date: <u>19-8-87</u> Time: <u>11:06</u>

Remarks: TEMP. ELB 22945 X 184° - 439°F
REB 14621 X 15 TLS
CLB F-15695 X 120 hr Max. SIBH Temp = 301.3°F

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>14-8-87</u>	<u>10:30</u>		<u>1588</u>	<u>232</u>		<u>OPEN WELL ON 37/64</u>
	<u>11:00</u>		<u>960</u>	<u>261</u>	<u>100</u>	
	<u>11:30</u>		<u>960</u>	<u>276</u>	<u>109</u>	
	<u>13:30</u>		<u>951</u>	<u>290</u>	<u>N/A</u>	
	<u>14:00</u>		<u>950</u>	<u>290</u>	<u>N/A</u>	
	<u>14:30</u>		<u>946</u>	<u>290</u>	<u>156</u>	
	<u>15:00</u>		<u>946</u>	<u>290</u>	<u>158</u>	<u>R.I.H.</u>
	<u>15:27</u>		<u>946</u>	<u>290</u>	<u>158</u>	<u>HANG @ 7780' MB</u>
	<u>15:30</u>		<u>946</u>	<u>290</u>	<u>158</u>	
	<u>16:00</u>		<u>945</u>	<u>290</u>	<u>158</u>	
	<u>16:30</u>		<u>947</u>	<u>290</u>	<u>160</u>	
	<u>17:00</u>		<u>946</u>	<u>290</u>	<u>160</u>	
	<u>17:30</u>		<u>946</u>	<u>290</u>	<u>160</u>	
	<u>18:00</u>		<u>946</u>	<u>290</u>	<u>162</u>	
	<u>18:30</u>		<u>946</u>	<u>290</u>	<u>162</u>	
	<u>19:00</u>		<u>945</u>	<u>290</u>	<u>162</u>	<u>S.I.W.</u>
	<u>19:15</u>		<u>1590</u>	<u>290</u>	<u>138</u>	
	<u>19:30</u>		<u>1574</u>	<u>290</u>	<u>124</u>	
	<u>19:45</u>		<u>1579</u>	<u>290</u>	<u>109</u>	
	<u>20:00</u>	<u>1</u>	<u>1581</u>	<u>290</u>	<u>100</u>	
	<u>20:15</u>		<u>1582</u>	<u>290</u>	<u>91</u>	
	<u>20:30</u>		<u>1582</u>	<u>290</u>	<u>88</u>	
	<u>20:45</u>		<u>1583</u>	<u>290</u>	<u>81</u>	

ISO - CHRONAL AND BUILD-UP SURVEY

Well: MOOMBA # 5TH #1

Date: 14-8-87

Lubricator Data:

Pressure with D.W.T. 1N 946psi

OUT 1605 PSI

Time Pressured 13:54

Time Depressed 11:00

Time Run in Hole 15:00

Time off Bottom 09:45

Bomb No. 1 Data

Bomb No. 2 Data

Element No. and Range	56428 X 3000	56431 X 3000
Recorder No.	14620 X 15TLS	14929 X 15TLS
Clock and Lead Screw Data	F-15694 X 120hV	F-15695 X 120hV
Engage Stylus	Date: 14-8-87 Time: 13:47	Date: 14-8-87 Time: 13:47
Disengage	Date: 19-8-87 Time: 11:06	Date: 19-8-87 Time: 11:06

Remarks:

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
	21:00	2	1584	290		
	21:15		1584	290		
	21:30		1586	290		
	21:45		1585	290		
	22:00	3	1585	290		
	22:15		1585	290		
	22:30		1585	290		
	22:45		1586	290		
	23:00	4	1586	290		
15-8-87	03:00	8	1588	290		
	07:00	12	1590	290		
	11:00	16	1593	276		
	15:00	20	1595	276		
	19:00	24	1595	276		
	23:00	28	1595	247		
16-8-87	03:00	32	1595	247		
	07:00	36	1595	247		
	11:00	40	1597	247		
	15:00	44	1596	247		
	19:00	48	1596	232		
	23:00	52	1595	232		
17-8-87	03:00	56	N/A	N/A		
	07:10	60.2	1595	232		

Date: 17-8-87

Pressure with D.W.T. IN 946 psi OUT 1605 psi

Time Pressured.....13:54..... Time Depressed.....11:00.....

Time Run in Hole.....15:00.....Time off Bottom.....09:45.....

Bomb No. 2 Data

Element No. and Range	56428 X 3000 PSI	56431 X 3000 PSI
Recorder No.	14620 X 15TLS	14929 X 15TLS
Clock and Lead Screw Data	F-15694 X 120hr	F-15695 X 120hr
Engage Stylus	Date: 14-8-87 Time: 13:47	Date: 14-8-87 Time: 13:47
Disengage	Date: 19-8-87 Time: 11:06	Date: 19-8-87 Time: 11:06

Remarks:.....

Well-Head Data for Final Build-up

[illegible]



0040

WIRELINE REPORT

WELL: MOOMBA ST #1 TOOLACHEE

DATE: 13-8-87

PROGRAM: DUMMY RUN & BUILD-UP SURVEY

PURPOSE OF WORK: CHECK TUBING CLEAR & MONITOR B.H.P.

REPORT OF WORK PERFORMED:

14:00 ARRIVE ON LOCATION & RIG UP UNIT

14:50 SANTOS FIELD-OP. S.I. WELL

16:30 R.I.H. WITH 1.75" BLIND BOX

15:55 TAG P.B.T.D. @ 8195' KB & P.O.O.H

17:15 ARRIVE LUB

SHUT DOWN FOR NIGHT

10:30 OPEN WELL ON 3/4 CHOME

15:00 R.I.H. WITH TANDEM PRESSURE & I. TEMP. BOMB

15:27 HANG @ 7780' KB

MONITOR FLOW CONDITIONS

Bony Jull
OPERATOR'S SIGNATURE

WORK PERFORMED BY: B. TICHE OF EXPERTEST

WELL DATA:

Tubing Size: 2 3/8" FWHP: 945 psi SIWHP: 1607 psi

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

"X" Nipple @ "N"/"XN" Nipple @ 7715' KB other

Min I.D. 2.205" @ 7715' KB Packer @ 7697' KB

Perforated Interval: 7810' - 7910' KB

Forward to: Petroleum Engineering — Adelaide
Production Department — Moomba



0041

WIRELINE REPORT

WELL: MOOMBA STD #1

DATE: 14-8-87

PROGRAM: B.H.P. SURVEY

PURPOSE OF WORK: MONITOR B.H. SHUT IN PRESSURE

REPORT OF WORK PERFORMED:

19:00

SHUT IN WELL

MONITOR 110 HV BUILD-UP

19/8/87

09:45

OFF BOTTOM

10:00

ARRIVE LUB.

11:00

DEPRESSURE LUB CHARTS O.K.

11:40

R.I.H. FOR STAT. GRAB.

12:41

ON 7871' HB

12:56

P.O.D.H. CHARTS O.K.

RIG DOWN & MOVE TO MOOMBA 53

BARRY JILL
OPERATOR'S SIGNATURE

WORK PERFORMED BY: B. TICKLE OF EXPERTEST

WELL DATA:

Tubing Size: 2 3/8" FWHP: 945 psi SIWHP: 1607 psi

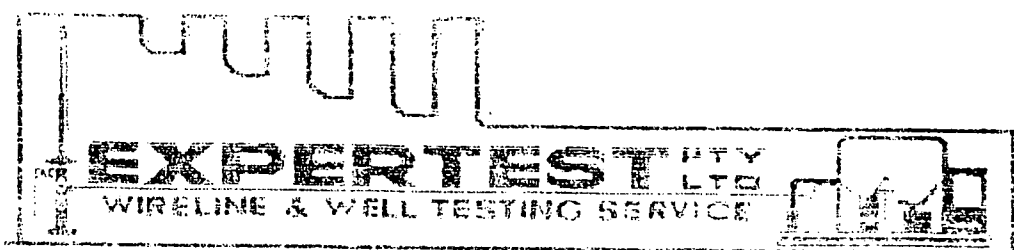
Sub Surface S.V./Landing Nipple @ S.S.D. @:

"X" Nipple @ "N"/"XN" Nipple @ 7715' HB other

Min I.D. 2.205" @ 7715' HB Packer @ 7697' HB

Perforated Interval: 7810' - 7910' HB

Forward to: Petroleum Engineering — Adelaide
Production Department — Moomba



*** MOOMBA SOUTH #1 ***

STATIC PRESSURE GRADIENT

TEST DATE: 19/8/87

TOP PRESSURE ELEMENT 56428/3000				BOTTOM PRESSURE ELEMENT 56431/3000		
DEPTH (FT.)	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)
LUB	1.0268	1604.3	----	1.0303	1606.9	----
1000	1.0573	1652.2	0.0479	1.0615	1655.9	0.0490
2000	1.0857	1696.8	0.0446	1.0892	1699.4	0.0435
3000	1.1128	1739.3	0.0425	1.1168	1742.8	0.0433
4000	1.1395	1781.2	0.0419	1.1430	1783.9	0.0412
5000	1.1654	1821.8	0.0406	1.1688	1824.4	0.0405
6000	1.1905	1861.2	0.0394	1.1940	1864.0	0.0396
7000	1.2168	1902.5	0.0413	1.2198	1904.5	0.0405
7500	1.2294	1922.2	0.0395	1.2333	1925.8	0.0424
7871	1.2387	1936.8	0.0393	1.2427	1940.5	0.0398
LUB	1.0302	1609.7	----	1.0332	1611.5	----

GENERAL REMARKS:

DWT IN: 1605

DWT OUT: 1605

MAX BHT: TEMP EL No 22945 ALSO RUN 290.5°F

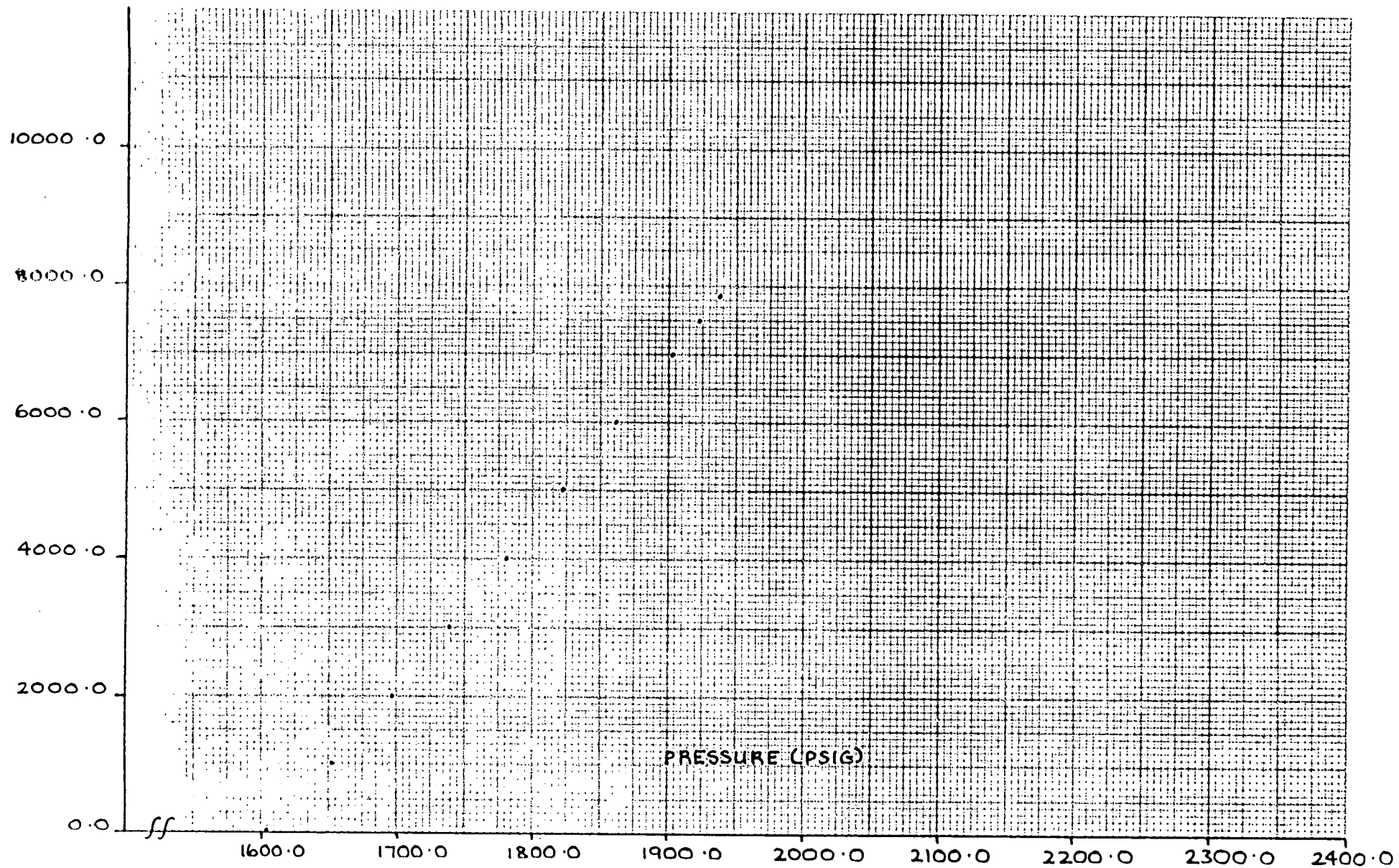
ELEMENT 56428/3000 CALIBRATED 30.7.87

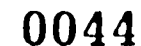
ELEMENT 56431/3000 CALIBRATED 30.7.87

0043

MOOMBA SOUTH # 1 - STATIC PRESSURE GRADIENT - 19/8/87

ELEMENT # 56428 / 3000 (TOP)





WELL NAME:

MOOMBA STA #1

TOOLACHEE

SANTOS LTD
STATIC GRADIENT SURVEY

DATE: 19-8-87

[illegible]

GENERAL REMARKS:

7810' - 7910' НБ

TEMPERATURE ELEMENT 22945 ALSO RUN.

3HR CLOCK 2279, REC 1462.1 v15 Hqs.

H003

SANTOS EXPLORATION DATA BASE

WATER ANALYSIS

WELL: MOOMBA SOUTH

1

LAB:

TEST: PROD

DATE: 11/12/1987

SAMPLE:

DEPTH:

FT (KB)

FT (SUBSEA)

FORMATION:

COMMENT: METER RUN 11/12/87

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
SODIUM	100.0	4.3	CHLORIDE	146.0	4.1
POTASSIUM	4.0	0.1	BICARBONATE	128.5	2.1
CALCIUM	0.0	0.0	CARBONATE	0.0	0.0
MAGNESIUM	0.0	0.0	SULPHATE	0.0	0.0
IRON			NITRATE		
			HYDROXIDE	0.0	0.0
TOTAL CATIONS	104.0	4.5	TOTAL ANIONS	274.5	6.2

ION BALANCE: -16.8 %

TOTAL DISSOLVED SOLIDS: 313.0 MG/L

MEASURED RESISTIVITY: 14.920 OHM-M AT TEMP 77. F 25. C

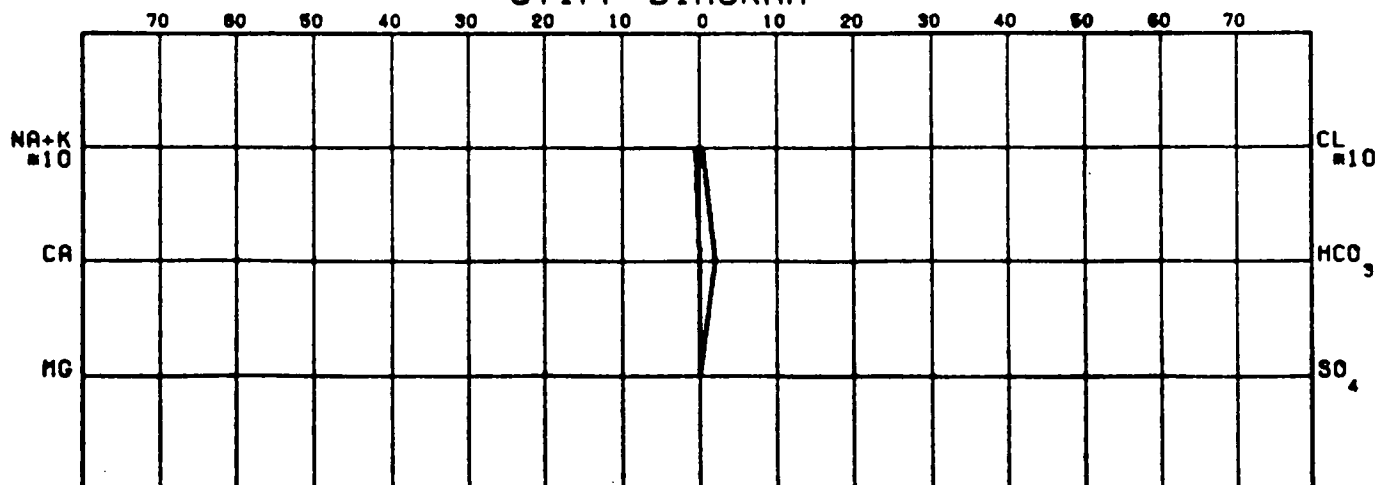
SODIUM TO TOTAL CATION RATIO: 97.7 %

PH: 6.1

SODIUM CHLORIDE EQUIVALENT: 295.

EQUIVALENT RM AT 75 F: 16.60

STIFF DIAGRAM



SANTOS EXPLORATION DATA BASE

WATER ANALYSIS

WELL: MOOMBA SOUTH

1

LAB:

TEST: PROD

DATE: 10/12/1987

SAMPLE:

DEPTH:

FT (KB)

FT (SUBSEA)

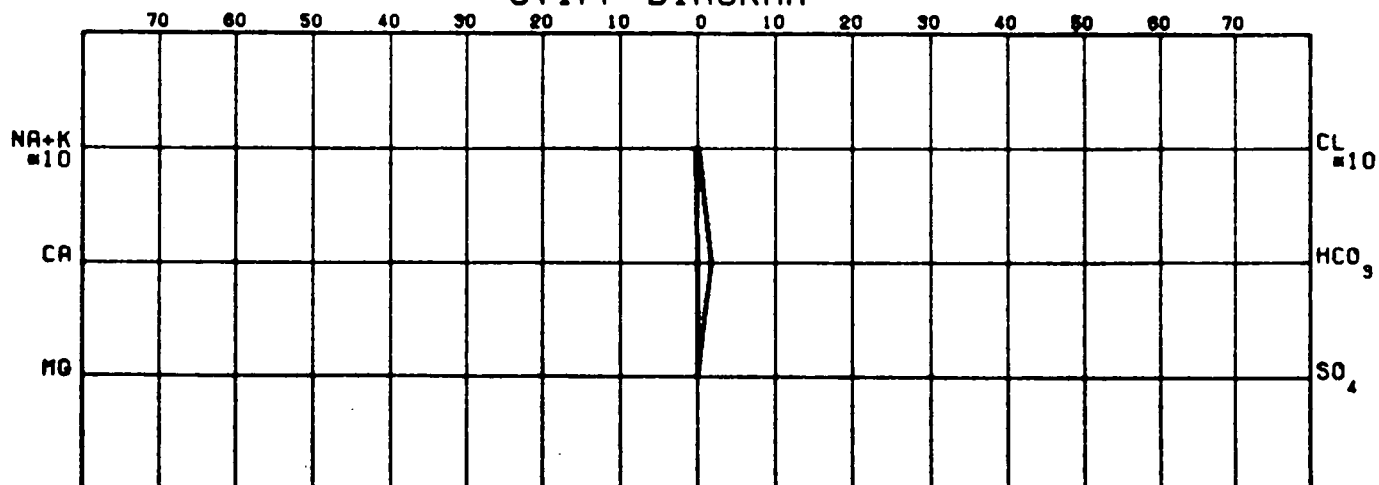
FORMATION:

COMMENT: LET 10/12/87: 4 HR

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
SODIUM	50.1	2.2	CHLORIDE	60.4	1.7
POTASSIUM	4.0	0.1	BICARBONATE	106.5	1.7
CALCIUM	0.6	0.0	CARBONATE	0.0	0.0
MAGNESIUM	0.1	0.0	SULPHATE	2.8	0.1
IRON			NITRATE		
			HYDROXIDE	0.0	0.0
TOTAL CATIONS	54.8	2.3	TOTAL ANIONS	169.7	3.5

ION BALANCE: -20.4 %
 TOTAL DISSOLVED SOLIDS: 170.0 MG/L
 MEASURED RESISTIVITY: 24.210 OHM-M AT TEMP 77. F 25. C
 SODIUM TO TOTAL CATION RATIO: 93.9 %
 PH: 5.4
 SODIUM CHLORIDE EQUIVALENT: 155.
 EQUIVALENT RW AT 75 F: 16.60

STIFF DIAGRAM



0047

SANTOS EXPLORATION DATA BASE

WATER ANALYSIS

WELL: MOOMBA SOUTH

1

LAB:

TEST: PROD

DATE: 10/12/1987

SAMPLE:

DEPTH:

FT (KB)

FT (SUBSEA)

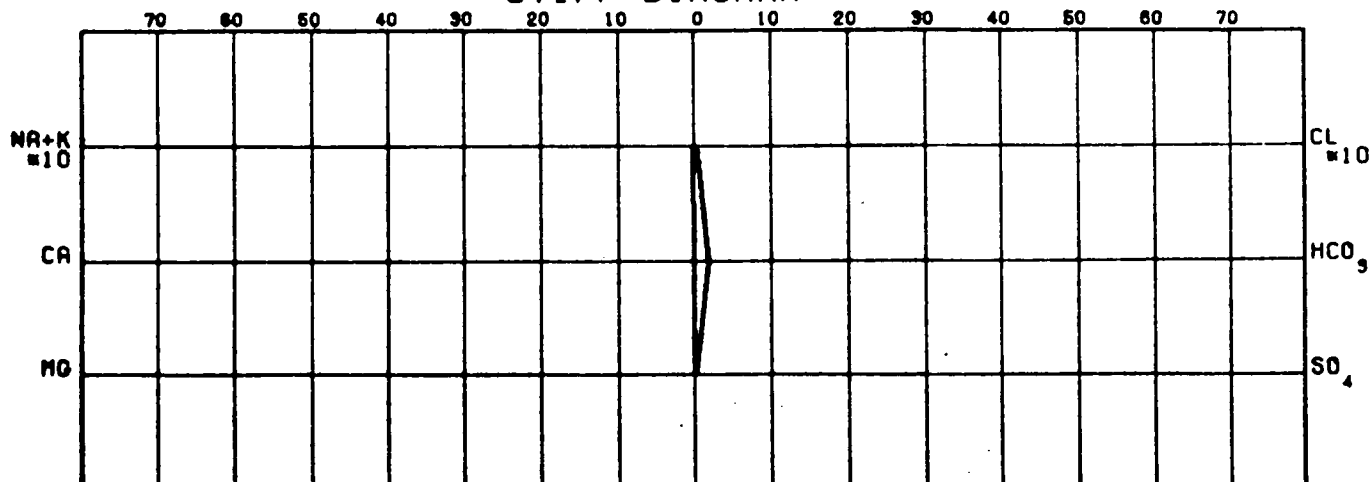
FORMATION:

COMMENT: LET 10/12/87: 12 HR

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
SODIUM	98.2	1.7	CHLORIDE	119.6	3.4
POTASSIUM	4.5	0.1	BICARBONATE	112.1	1.8
CALCIUM	0.5	0.0	CARBONATE	0.0	0.0
MAGNESIUM	0.1	0.0	SULPHATE	10.5	0.2
IRON			NITRATE		
			HYDROXIDE	0.0	0.0
TOTAL CATIONS	43.3	1.8	TOTAL ANIONS	242.2	5.4

ION BALANCE: -50.0 %
 TOTAL DISSOLVED SOLIDS: 229.0 MG/L
 MEASURED RESISTIVITY: 16.150 OHM-M AT TEMP 77. F 25. C
 SODIUM TO TOTAL CATION RATIO: 91.8 %
 PH: 5.8
 SODIUM CHLORIDE EQUIVALENT: 210.
 EQUIVALENT RW AT 75 F: 16.60

STIFF DIAGRAM



0048

SANTOS EXPLORATION DATA BASE

WATER ANALYSIS

WELL: MOOMBA SOUTH

1

LAB:

TEST: PROD

DATE: 17/11/1987

SAMPLE: .

DEPTH:

FT (KB)

FT (SUBSEA)

FORMATION:

COMMENT: METER RUN 17/11/87: ANALYSIS NOT COMPLETED AS RES>10

CATIONS MG/L MEQ/L

SODIUM
POTASSIUM
CALCIUM
MAGNESIUM
IRON

ANIONS MG/L MEQ/L

CHLORIDE
BICARBONATE
CARBONATE
SULPHATE
NITRATE
HYDROXIDE

TOTAL CATIONS

TOTAL ANIONS

ION BALANCE:

TOTAL DISSOLVED SOLIDS: 544.0 %

MEASURED RESISTIVITY: 11.600 MG/L OHM-M AT TEMP 77. F 25. C

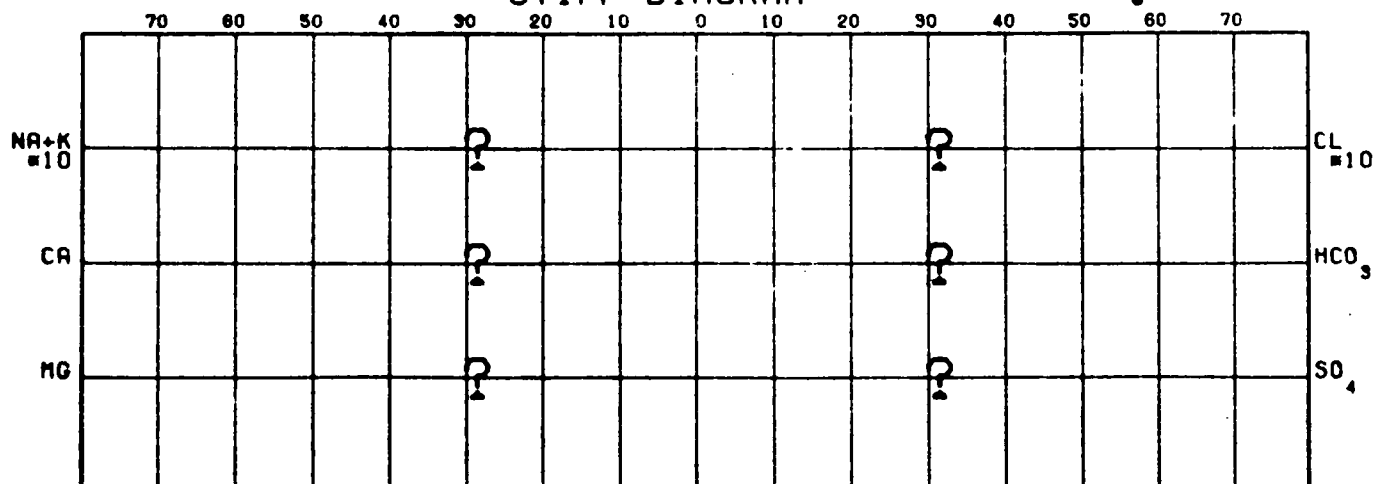
SODIUM TO TOTAL CATION RATIO: %

PH: 7.0

SODIUM CHLORIDE EQUIVALENT: 0.

EQUIVALENT RW AT 75 F:

STIFF DIAGRAM



0049

SANTOS EXPLORATION DATA BASE

WATER ANALYSIS

WELL: MOOMBA SOUTH

1

LAB:

TEST: PROD

DATE: 17/11/1987

SAMPLE:

DEPTH:

FT (KB)

FT (SUBSEA)

FORMATION:

COMMENT: LET 17/11/87: 4 HR: ANALYSIS NOT COMPLETED AS RES>10

CATIONS

MG/L

MEQ/L

SODIUM
POTASSIUM
CALCIUM
MAGNESIUM
IRON

ANIONS

MG/L

MEQ/L

CHLORIDE
BICARBONATE
CARBONATE
SULPHATE
NITRATE
HYDROXIDE

TOTAL CATIONS

TOTAL ANIONS

ION BALANCE:

%

TOTAL DISSOLVED SOLIDS: 369.0

MG/L

MEASURED RESISTIVITY: 17.060

OHM-M AT TEMP 77. F 25. C

SODIUM TO TOTAL CATION RATIO:

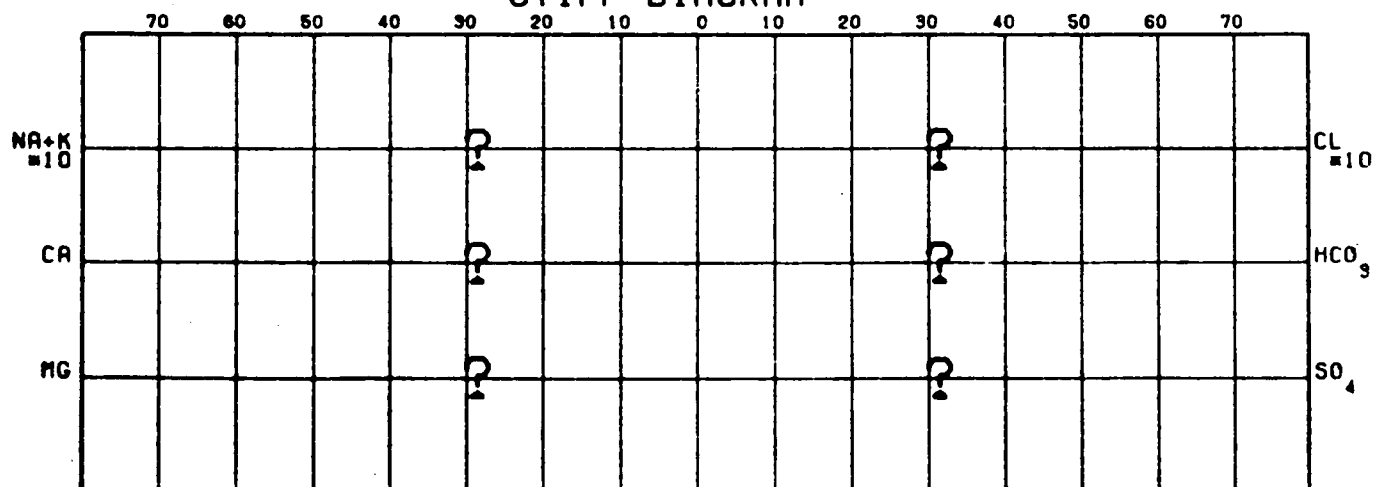
%

PH: 5.9

- SODIUM CHLORIDE EQUIVALENT: 0.

EQUIVALENT RW AT 75 F:

STIFF DIAGRAM



SANTOS EXPLORATION DATA BASE

WELL: MOOMBA SOUTH

1

LAB:

TEST: PROD

DATE: 17/11/1987

SAMPLE :

DEPTH: - FT (KB)

FT (SUBSEA)

FORMATION:

COMMENT: LET 17/11/87; 12 HR: ANALYSIS NOT COMPLETED AS RES>10

CATIONS	MG/L	MEQ/L
---------	------	-------

SODIUM
POTASSIUM
CALCIUM
MAGNESIUM
IRON

ANIONS	MG/L	MEQ/L
--------	------	-------

CHLORIDE
BICARBONATE
CARBONATE
SULPHATE
NITRATE
HYDROXIDE

TOTAL CATIONS

TOTAL ANIONS

ION BALANCE:

%

TOTAL DISSOLVED SOLIDS: 390.0

MG/L

MEASURED RESISTIVITY: 16.150 OHM-M AT TEMP 77. F 25. C

SODIUM TO TOTAL CATION RATIO:

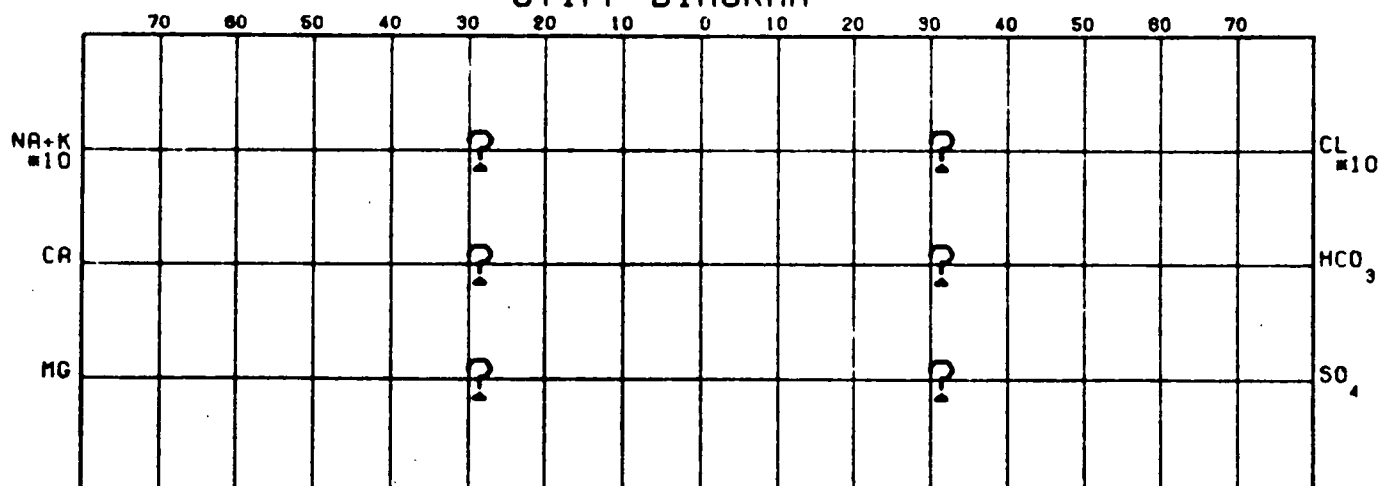
%

PH: 5.8

SODIUM CHLORIDE EQUIVALENT: 0.

EQUIVALENT RW AT 75 F:

STIFF DIAGRAM



ROLLING BOTTOMHOLE PRESSURE SURVEY GAS CALCULATION SHEETWELL: Moomba South #1

Pf = 4800 kPa

ORIFICE SIZE: 46.000 mm 1.811 "

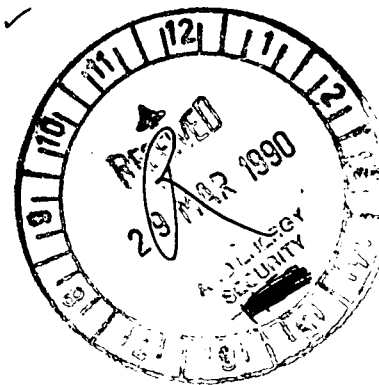
T = 65 °C

LINE SIZE: 97.180 mm 3.826 "

Diff = 21.5 kPa

Cumulative Production to end of April = 117.963 m³ x 10⁶

Number of hours online in April = 572

Production in April = 2.123 m³ x 10⁶. . Average flow rate in April = (2.123/572) x 24 = 0.089 m³ x 10⁶/dNumber of days online in May before Shut In 0700 hrs 3 / 5 / 89
= 2.292 days. . Production up to 0700hrs 3 / 5 / 89 = 2.292 x 0.089 = 0.204 m³ x 10⁶Total cumulative production = 0.204 + 117.963
= 118.167 m³ x 10⁶
= 4194.219 mmscfFlow rate just prior to Shut In = 0.126 m³ x 10⁶
= 4.470 mmscf/d

5139

SUB-SURFACE PRESSURE SURVEY

CO.		RUN 01 FIELD MSOUTH	WELL 01
EFF DEPTH		WELL STAT	TOOL HUNG 7788'
CASING	-	CASING PRESS	ON BOTTOM 1644 2/5
LINER	-	TUBING PRESS	OFF BOTTOM 1100 7/5
DATE	890502	ELEMENT RANGE 0 - 3111	ZERO POINT
ELEVATION		ZONE	SHUT-IN 0700 3/5
MAX TEMP		PICK-UP	ON-PROD
PERF	-	CAL SER NO. 57413	MPP
TUBING	-		
UNITS	ENGLISH	PURPOSE	BUILD-UP

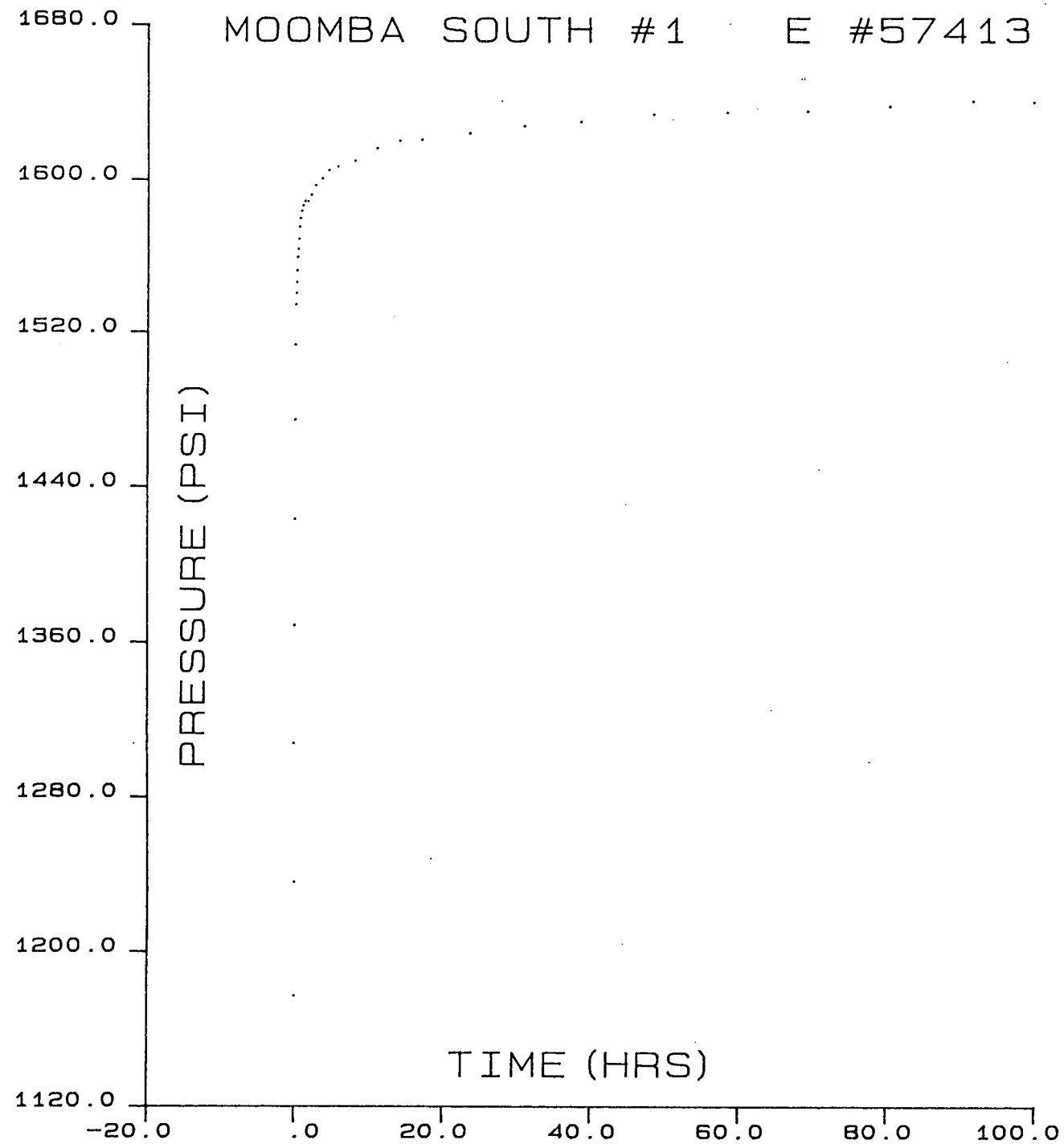
SURVEY DATA

CO.	TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
	7:00	1177.4	1177.4	.0	8:49	1588.5	1588.5	1.8
	7:01	1236.1	1236.1	.0	9:15	1591.8	1591.8	2.2
	7:01	1307.8	1307.8	.0	9:52	1596.9	1596.9	2.9
	7:01	1368.8	1368.8	.0	10:44	1600.4	1600.4	3.7
	7:04	1423.6	1423.6	.1	11:40	1604.7	1604.7	4.7
	7:05	1474.5	1474.5	.1	12:51	1606.9	1606.9	5.8
	7:06	1513.5	1513.5	.1	15:13	1610.0	1610.0	8.2
	7:11	1534.3	1534.3	.2	18:09	1616.4	1616.4	11.1
	7:15	1540.3	1540.3	.2	21:15	1620.3	1620.3	14.3
	7:18	1546.5	1546.5	.3	0:13	1620.8	1620.8	17.2
	7:22	1552.9	1552.9	.4	6:42	1624.1	1624.1	23.7
	7:27	1559.7	1559.7	.4	14:03	1627.8	1627.8	31.1
	7:31	1563.7	1563.7	.5	21:43	1630.0	1630.0	38.7
	7:36	1569.2	1569.2	.6	7:32	1634.0	1634.0	48.5
	7:43	1575.4	1575.4	.7	17:31	1634.9	1634.9	58.5
	7:47	1579.7	1579.7	.8	4:25	1635.5	1635.5	69.4
	7:58	1583.4	1583.4	1.0	15:32	1638.1	1638.1	80.5
	8:09	1586.2	1586.2	1.1	2:48	1640.8	1640.8	91.8
	8:25	1588.5	1588.5	1.4	11:00	1640.0	1640.0	100.0

LUB IN DWT = 796 PSI / OUT = 1377 PSI
 LUB IN AMERADA = 778 PSI / OUT = 1368 PSI

0053

MOOMBA SOUTH #1 E #57413



SUB-SURFACE PRESSURE SURVEY

CO. 07		RUN 02 FIELD MSOUTH	WELL 01
EFF DEPTH		WELL STAT	TOOL HUNG 7794'
CASING	-	CASING PRESS	ON BOTTOM 1644 2/5
LINER	-	TUBING PRESS	OFF BOTTOM 1100 7/5
DATE	890502	ELEMENT RANGE 0 - 3309	ZERO POINT
ELEVATION		ZONE	SHUT-IN 0700 3/5
MAX TEMP		PICK-UP	ON-PROD
PERF	-	CAL SER NO. 24708	MPP
TUBING	-		
UNITS	ENGLISH	PURPOSE	BUILD-UP

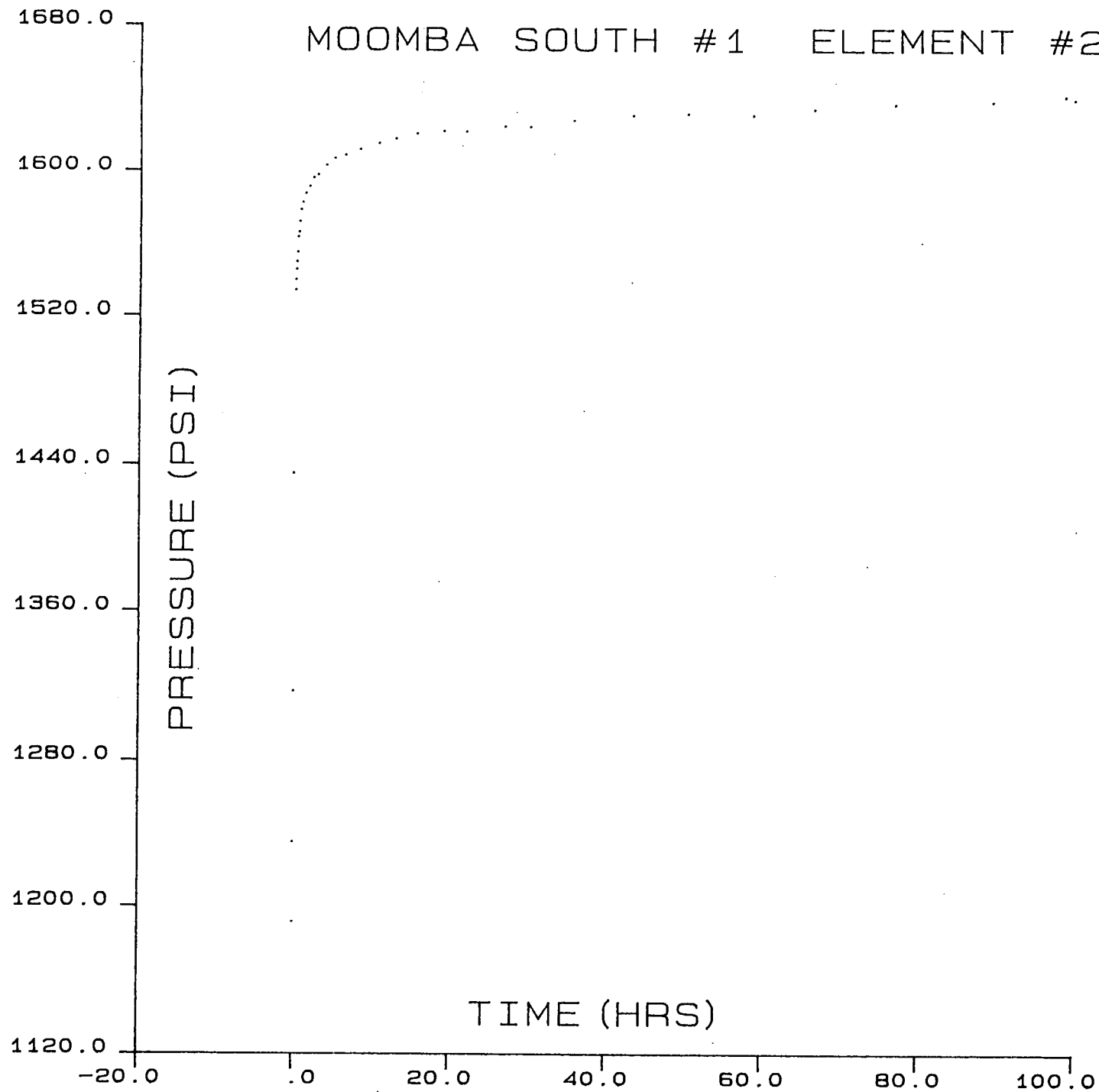
SURVEY DATA

CO. 07	RUN 02 FIELD MSOUTH			WELL 01			
TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
7:00	1191.4	1191.4	.0	12:02	1607.0	1607.0	5.0
6:59	1235.4	1235.4	.0	13:25	1608.9	1608.9	6.4
6:59	1316.8	1316.8	.0	15:17	1612.2	1612.2	8.3
6:59	1435.3	1435.3	.0	17:42	1615.5	1615.5	10.7
7:05	1533.9	1533.9	.1	19:51	1618.1	1618.1	12.9
7:07	1540.0	1540.0	.1	22:34	1620.8	1620.8	15.6
7:11	1545.9	1545.9	.2	1:58	1622.2	1622.2	19.0
7:15	1550.0	1550.0	.2	4:55	1621.9	1621.9	21.9
7:20	1555.3	1555.3	.3	9:50	1624.7	1624.7	26.8
7:26	1563.6	1563.6	.4	13:06	1624.3	1624.3	30.1
7:30	1566.2	1566.2	.5	18:42	1628.2	1628.2	35.7
7:35	1572.0	1572.0	.6	2:18	1631.0	1631.0	43.3
7:44	1578.4	1578.4	.7	9:23	1632.1	1632.1	50.4
7:58	1582.3	1582.3	1.0	17:45	1631.1	1631.1	58.7
8:20	1587.4	1587.4	1.3	1:35	1634.5	1634.5	66.6
8:50	1591.5	1591.5	1.8	11:57	1637.3	1637.3	77.0
9:20	1596.1	1596.1	2.3	0:28	1639.0	1639.0	89.5
9:54	1598.0	1598.0	2.9	9:47	1641.8	1641.8	98.8
10:58	1603.0	1603.0	4.0	11:00	1639.8	1639.8	100.0

LUB IN DWT = 796 PSI / OUT = 1377 PSI
 LUB IN AMERADA = 780 PSI / OUT = 1369 PSI

0055

MOOMBA SOUTH #1 ELEMENT #24708



0056

**EXPERTEST** PTN LTD

WIRELINE & WELL TESTING SERVICE

PO BOX 354 COWANDILLA 5033

PH. (08) 354 0488 TELEX AA87183

FAX (08) 43 7408

138 RICHMOND ROAD MARLESTON

SOUTH AUSTRALIA 5033

Tested Sunday, 7th May 1989.

CLIENT	LOCATION	FORMATION
Santos Ltd.	MOOMBA STH. #1	TOOLACHEE

STATIC PRESSURE GRADIENT REPORT

PRESSURE ELEMENT DATA			
POSITION	SERIAL NO.	RANGE	CALIBRATED
Top	57413	3000	2/ 4/89
Bottom	24708	3300	2/ 4/89

WELL DATA	
PARAMETER	VALUE
DWT In	9487
DWT Out	9508
Max BHT	SEE CHART

268°F

DEPTH FT KB	TOP ELEMENT			BOTTOM ELEMENT		
	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT
LUB.	0.8800	1362.6	-----	0.8360	1366.1	-----
1000	0.9060	1403.0	0.040	0.8600	1405.8	0.040
2000	0.9300	1440.3	0.037	0.8820	1442.2	0.036
3000	0.9550	1479.2	0.039	0.9040	1478.6	0.036
4000	0.9780	1515.0	0.036	0.9250	1513.3	0.035
5000	0.9990	1547.7	0.033	0.9480	1551.4	0.038
5500	1.0110	1566.4	0.037	0.9580	1567.9	0.033
6000	1.0200	1580.4	0.028	0.9680	1584.5	0.033
6500	1.0320	1599.1	0.037	0.9780	1601.0	0.033
7000	1.0440	1617.8	0.037	0.9870	1615.9	0.030
7500	1.0550	1634.9	0.034	0.9970	1632.5	0.033
7871	1.0630	1647.4	0.034	1.0050	1645.7	0.036
LUB.	0.8830	1367.2	-----	0.8370	1367.8	-----

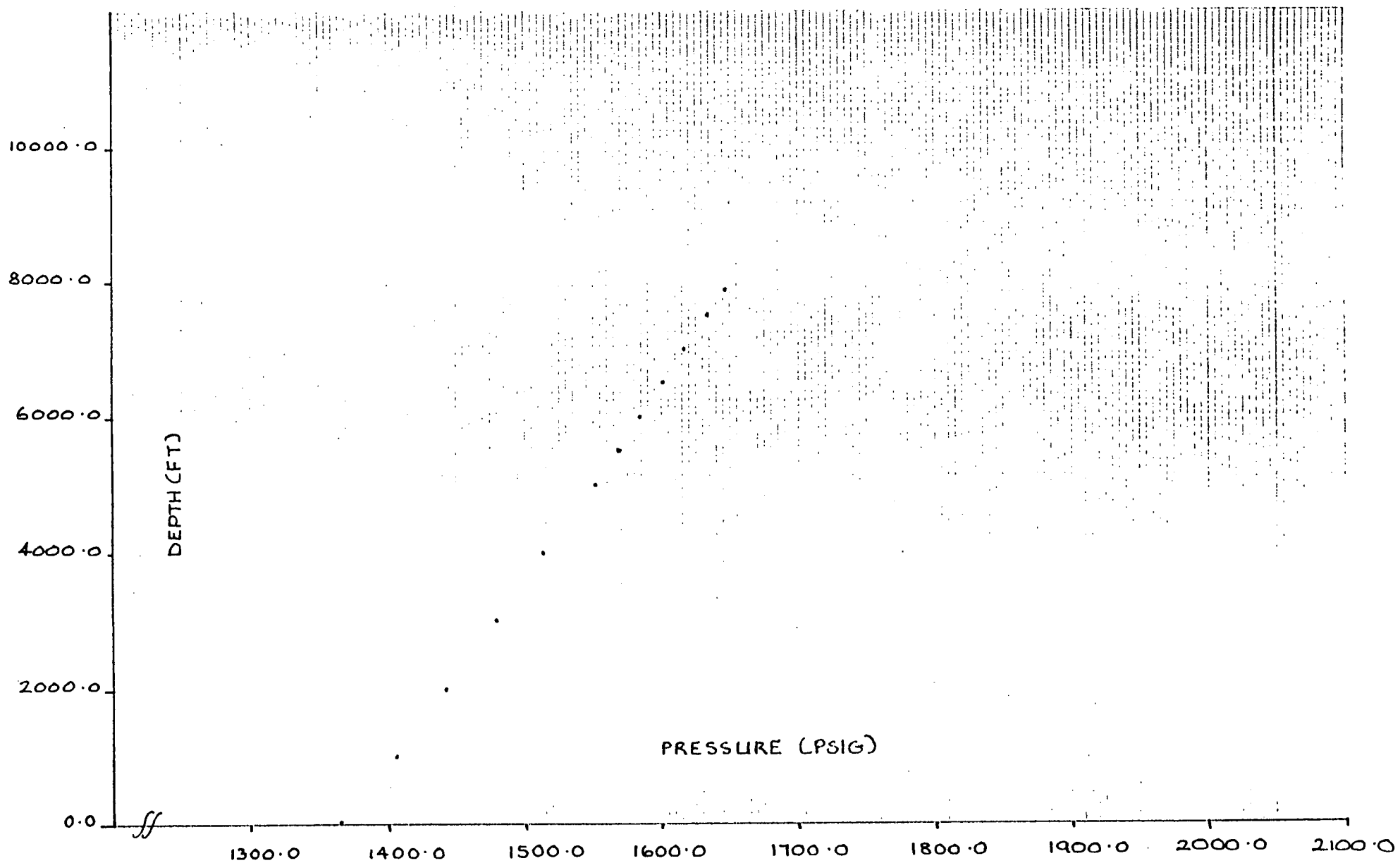
GENERAL REMARKS

TEMPERATURE ELEMENT RAN
ALL CHARTS GOOD

MOOMBA SOUTH # 1 — STATIC PRESSURE GRADIENT — 7/5/89

0057

ELEMENT # 24708 / 3300 (BOT)



0058

**WIRELINE REPORT**CLIENT SANTOS WELL MOOMBA SOUTH # 1.DATE 2.5.89.PROGRAMME PBU SURVEYPURPOSE OF WORK CARRY OUT BOTTOMHOLE PRESSURE SURVEY.REPORT OF WORK PERFORMED 2nd MAY 1989.1000: ARRIVE ON LOCATION. RIG IN WIRELINE EQUIPMENT.1040: S.I.W. INSTALL SWAB VALVE AND BOP.1100: R.I.H. WITH 1.75" BUND BOX. WELL FLOWING 100%.1117: AT MPP, 7871' KB. P.O.O.H.1126: IN LUBRICATOR. RIG OUT TOOLSTRING.1630: R.I.H. 2 PRESSURE, 1 TEMP. GAUGE FOR PBU SURVEY.1644: HANG GAUGES AT 7800' KB.3rd MAY 1989.0700: S.I.W. FOR 100 HOUR PBU SURVEY.7th MAY 19891100: SURVEY COMPLETE P.O.O.H.1129: IN LUBRICATOR.1329: DEPRESSURE LUBRICATOR, DISENGAGE STYLUS, RECOVER CHARTS (GOOD), RELOAD ELEMENTS WITH 3 HR. CLOCKS & PERFORM STATIC GRADIENT1635: STATIC GRADIENT COMPLETED, RIG DOWN WIRELINE EQUIPMENT & HAND WELL BACK TO PRODUCTION.

Operator's Signature

WORKED PERFORMED BY R. MICHELMORES OF EXPERTEST.**WELL DATA:**Tubing Size 2 7/8" FWHP 5700 Kpa. SIWHPSubsurface S.V./Landing Nipple @ 7715' KB. S.S.D. @

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

Min. I.D. @ Packer @ 7697' KB.Perforated Interval: 7810' - 7932' KB.



CLIENT SANTOS

WELL MoomBA STH. #1

STATIC GRADIENT SURVEY

OPERATOR P. Poole

DATE 7.5.89

BOMB No. 1 DATA						BOMB No 2 DATA						DWT IN 9487 DWT OUT 9508	
ELEMENT No. 57413		ELEMENT RANGE 3000 psi.				ELEMENT No. 24708		ELEMENT RANGE 3300 psi.					
RECORDER No 61127		CLOCK DATA 16086				RECORDER No 12960		CLOCK DATA 16083					
ENGAGE STYLUS 1347		DISENGAGE 1655				ENGAGE STYLUS 1347		DISENGAGE 1655					
PRESSURE LUBRICATOR 1416						BLEED LUBRICATOR 1642							
DATE	TIME	DEPTH'	DEFLEC- TION	PRESSURE TEMP.	GRADIENT psi/ft	DEPTH'	DEFLEC- TION	PRESSURE TEMP.	GRADIENT psi/ft	REMARKS			
7 th	MAY			KPA				KPA					
	1416	LUB	.880	9395		LUB.	.836	9419		PRESSURE LUBRICATOR.			
	1431	R.I.H.				R.I.H.				RUN IN HOLE			
	1435	1000	.906	9674		1000	.860	9693					
	1443	2000	.930	9931		2000	.882	9944					
	1451	3000	.955	10199		3000	.904	10195					
	1500	4000	.978	10446		4000	.925	10434					
	1509	5000	.999	10671		5000	.948	10697					
	1515	5500	1.011	10800		5500	.958	10811					
	1521	6000	1.020	10897		6000	.968	10925					
	1527	6500	1.032	11026		6500	.978	11039					
	1533	7000	1.044	11155		7000	.987	11142					
	1539	7500	1.055	11273		7500	.997	11256					
	1549	7871	1.063	11359		7871	1.005	11347		M.P.P.			
	1604	P.O.H.				P.O.H.				PULL OUT OF HOLE			
	1628	LUB.	.883	9427		LUB.	.837	9431		C LUBRICATOR.			
	1642	BLEED.				BLEED.				BLEED LUBRICATOR.			

GENERAL REMARKS: Temp. ELEMENT RAN

AL 63256 x 150° - 400° F

REC.

CL. 12047 x 3HR.



Well: MOOMBA SOUTH # 1. Date: 2.5.89.

Lubricator Data: ① 778 / 1368 Operator R. MICHELMORE
 ② 780 / 1369

Pressure with D.W.T. In 5488 Kpa (796) Out 9494 KPA (1377)

Time Pressured 1425 2.5.89. Time Depressed 1329 7.5.89

Time Run in Hole 1630 2.5.89 Time off Bottom 1100 -11

Bomb No. 1 Data

Bomb No. 2 Data

Element No. and Range	<u>57413 3000 psi</u>	<u>24708 3300 psi</u>
Recorder No.	<u>61127 15 TLS</u>	<u>12960 15 TLS</u>
Clock and Lead Screw Data	<u>F15685 120 hr.</u>	<u>F 7761 120 hour.</u>
Engage Stylus	Date: <u>2.5</u> Time: <u>14:15</u>	Date: <u>2.5.89</u> Time: <u>14:15</u>
Disengage	Date: <u>7.5.89</u> Time: <u>1347</u>	Date: <u>7.5.89</u> Time: <u>1347</u>

Remarks: TEMPERATURE ELEMENT No 63256 150°-400° F
RECORDER No 61275 15 TLS
CLOCK No 1016 120 hour.

SIBH Temp = 26.2°F

Well-Head Data for Final Build-up

Date	Time	Hours shut-in Time	Wellhead Kpa	Casing Kpa	Wellhead Temp. °C	Remarks
2nd	MAY	1989				
	1415					ENGAGE STYL
	1425		5709	1400	68	PRESSURE LUB
	1630		5488		69	R.I.H.
	1644		5647		69	HANG AT 7800' KB.;
	1900		5185		69	WELL FLOWING 100%
	2300		5447		70	
3rd	MAY	1989				
	0300		5205		70	
	0600		5185		71	
	0615		5185		71	
	0630		5212		71	
	0645		5233		71	
	0700	0	5281		71	S.I.W. FOR 100 HR. FBV
	0715		9011			
	0730	0.5	9122			
	0745		9191			
	0800	1	9225			
	0815		9246			
	0830		9253			
	0845		9266			
	0900	2	9273			
	0915		9289			
	0930		9294	1400		

Well: MOOMBIA SOUTH # 1. Date: 3.5.89.Lubricator Data: Operator A. SMITH

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: REFER TO PAGE # 1 FOR GAUGE DATA.

Well-Head Data for Final Build-up

Date	Time	Hours shut-in Time	KPA Wellhead	KPA Casing	°C Wellhead Temp.	Remarks
3rd	MAY 1989.					
	0945		9301	1400		
	1000	3	9301	↑		
	1015		9308	↓		
	1030		9315			
	1045		9322			
	1100	4	9322	1400		
	1500		9357	1300		
	1900	12	9384	1250		
	2300		9398	1200		
4TH	MAY 1989.					
	0300		9405	1200		
	0700	24.	9412	↑		
	1100		9432	↓		
	1500		9439			
	1900	36	9439	1200		
	2300		9446			
5TH	MAY 1989					
	0300		9446	1200		
	0700	48	9453	↑		
	1100		9461	↓		
	1500		9468			
	1900	60	9474	1200		
	2300		9474			



138 WEST BEACH ROAD MARLESTON SA 5033

POSTAL ADDRESS: PO BOX 354 COWANDILLA A 503

Date: 6.5.89

Operator A. SMITH

Out

Time Depressed

Time off Bottom

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: REFER TO PAGE # 1 FOR GAUGE DATA

Well-Head Data for Final Build-up

Wellhead Data for Final Build Up						
Date	Time	Hours shut-in Time	KPA Wellhead	KPA Casing	OC Wellhead Temp.	Remarks
6 TH	MAY	1989.				
	0300		9477	1200		
	0700	72	9481	1100		
	1100		9488	1000		
	1500		9488	1000		
	1900	84	9488			
	2300		9488			
7 TH	MAY	1989				
	0300		9488			
	0700	96	9488			
	1100	100	9508			P.O.O.H.
	1129		9494			LUB.
	1329		9494	1000		DEPRESS. LUB.
	1347					DISENGAGE STYLUS.
			RECOVER CHARTS (GOOD) RELOAD ELEMENTS WITH 3 HR. CLOSURE & PERFORM STATIC GRABENT.			
					</	

WELL: Moomba South #1

Pf = kPa

ORIFICE SIZE: 46.000 mm 1.811 "

T = No flow °C

LINE SIZE: 97.180 mm 3.826 "

Diff = kPa

Cumulative Production to end of January '91 = $366.7 \text{ m}^3 \times 10^6$

Number of hours online in January '91 = 31 days

Production in January '91 = No flow $\text{m}^3 \times 10^6$

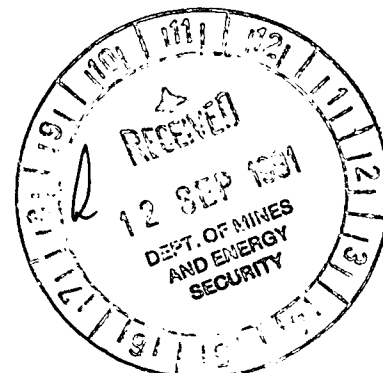
. . Average flow rate in January '91 = (- / -) x 24 = Nil $\text{m}^3 \times 10^6/\text{d}$

Number of days online in February before Shut In 1400 hrs 8 / 2 /91
= 7.58 days.

. . Production up to 1400 hrs 8 / 2 /91 = - x - = - $\text{m}^3 \times 10^6$

Total cumulative production = - + -
= 366.7 $\text{m}^3 \times 10^6$
= 13015.650 mmscf

Flow rate just prior to Shut In = No flow $\text{m}^3 \times 10^6$
= mmscf/d



SUB-SURFACE PRESSURE SURVEY

0064

CO:		RUN 10 FIELD MSOUTH	WELL 01
EFF DEPTH		WELL STAT	TOOL HUNG 7768'
CASING	-	CASING PRESS	ON BOTTOM 1000 8/2
LINER	-	TUBING PRESS	OFF BOTTOM 0640 11/2
DATE	910211	ELEMENT RANGE 0 - 3047	ZERO POINT
ELEVATION		ZONE	SHUT-IN 1400 8/2
MAX TEMP		PICK-UP	ON-PROD
PERF	-	CAL SER NO. 29388	MPP
TUBING	-		
UNITS	ENGLISH	PURPOSE	BUILD-UP

SURVEY DATA

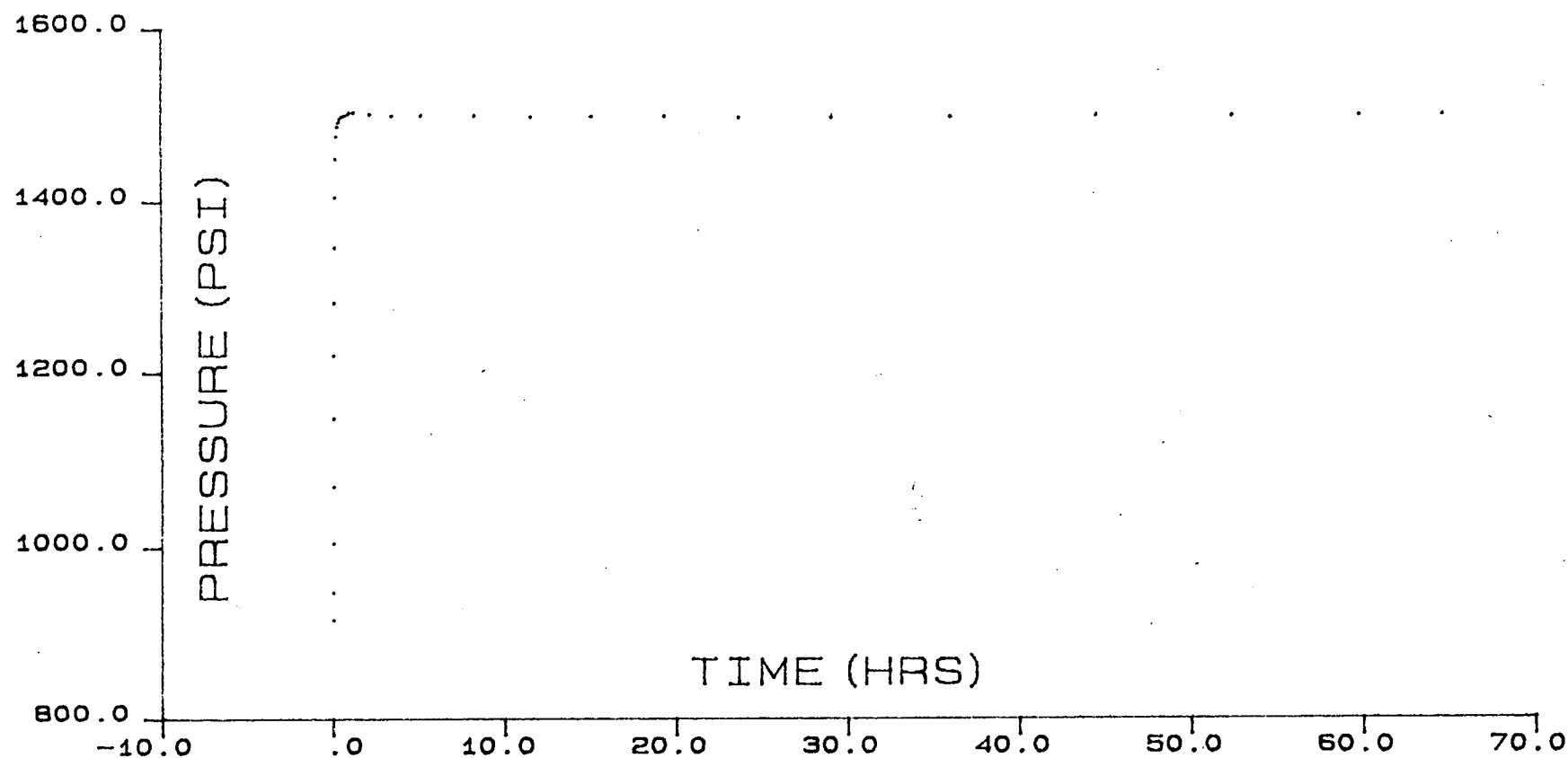
CO.	TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
	14:00	915.9	915.9	.0	15:03	1503.3	1503.3	1.0
	14:01	947.3	947.3	.0	15:16	1502.7	1502.7	1.3
	14:02	1004.5	1004.5	.0	16:12	1500.5	1500.5	2.2
	14:03	1070.4	1070.4	.0	17:29	1498.8	1498.8	3.5
	14:04	1147.9	1147.9	.1	19:11	1499.0	1499.0	5.2
	14:05	1219.9	1219.9	.1	22:18	1499.3	1499.3	8.3
	14:07	1281.4	1281.4	.1	1:35	1497.6	1497.6	11.6
	14:09	1345.6	1345.6	.2	5:07	1498.0	1498.0	15.1
	14:10	1405.0	1405.0	.2	9:23	1498.4	1498.4	19.4
	14:13	1449.7	1449.7	.2	13:42	1496.3	1496.3	23.7
	14:15	1475.7	1475.7	.2	19:07	1496.9	1496.9	29.1
	14:19	1486.7	1486.7	.3	2:02	1497.7	1497.7	36.0
	14:22	1491.9	1491.9	.4	10:31	1498.7	1498.7	44.5
	14:26	1496.2	1496.2	.4	18:26	1497.9	1497.9	52.4
	14:35	1498.5	1498.5	.6	1:50	1498.7	1498.7	59.8
	14:45	1499.9	1499.9	.7	6:40	1499.2	1499.2	64.7
	14:56	1501.6	1501.6	.9	0:00	.0	.0	.0

LUB IN DWT = 593 PSI / OUT = 1253 PSI

LUB IN AMERADA = 593 PSI / OUT = 1254 PSI

0065

MOOMBA SOUTH #1 BUILD-UP FEB 1991
ELEMENT #29388 (TOP) @ 7768'KB



0066

SUB-SURFACE PRESSURE SURVEY

CO.		RUN 20 FIELD MSOUTH	WELL 01
EFF DEPTH		WELL STAT	TOOL HUNG 7774'
CASING	-	CASING PRESS	ON BOTTOM 1000 8/2
LINER	-	TUBING PRESS	OFF BOTTOM 0640 11/2
DATE	910211	ELEMENT RANGE 0 - 3021	ZERO POINT
ELEVATION		ZONE	SHUT-IN 1400 8/2
MAX TEMP		PICK-UP	ON-PROD
PERF	-	CAL SER NO. 29386	MPP
TUBING	-		
UNITS	ENGLISH	PURPOSE	BUILD-UP

SURVEY DATA

CO.				RUN 20 FIELD MSOUTH		WELL 01		
TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME	
14:00	913.0	913.0	.0	20:18	1494.8	1494.8	6.3	
14:03	970.3	970.3	.0	22:57	1494.6	1494.6	9.0	
14:03	1035.4	1035.4	.1	1:45	1494.3	1494.3	11.7	
14:06	1131.4	1131.4	.1	4:42	1494.1	1494.1	14.7	
14:08	1236.7	1236.7	.1	7:37	1493.8	1493.8	17.6	
14:11	1324.3	1324.3	.2	10:37	1493.6	1493.6	20.6	
14:13	1389.8	1389.8	.2	13:16	1493.4	1493.4	23.3	
14:15	1433.3	1433.3	.3	16:02	1493.1	1493.1	26.0	
14:20	1463.9	1463.9	.3	18:54	1492.9	1492.9	28.9	
14:21	1477.7	1477.7	.4	22:17	1493.8	1493.8	32.3	
14:26	1487.3	1487.3	.4	1:40	1493.5	1493.5	35.7	
14:31	1492.6	1492.6	.5	5:39	1493.2	1493.2	39.7	
14:37	1493.0	1493.0	.6	10:20	1492.8	1492.8	44.3	
14:51	1496.2	1496.2	.8	15:07	1495.3	1495.3	49.1	
15:06	1499.6	1499.6	1.1	20:21	1494.8	1494.8	54.4	
15:39	1496.9	1496.9	1.6	2:08	1496.3	1496.3	60.1	
16:45	1496.8	1496.8	2.7	6:40	1495.9	1495.9	64.7	
18:27	1495.0	1495.0	4.4	0:00	.0	.0	.0	

LUB IN DWT = 593 PSI / OUT = 1253 PSI
 LUB IN AMERADA = 581 PSI / OUT = 1245 PSI

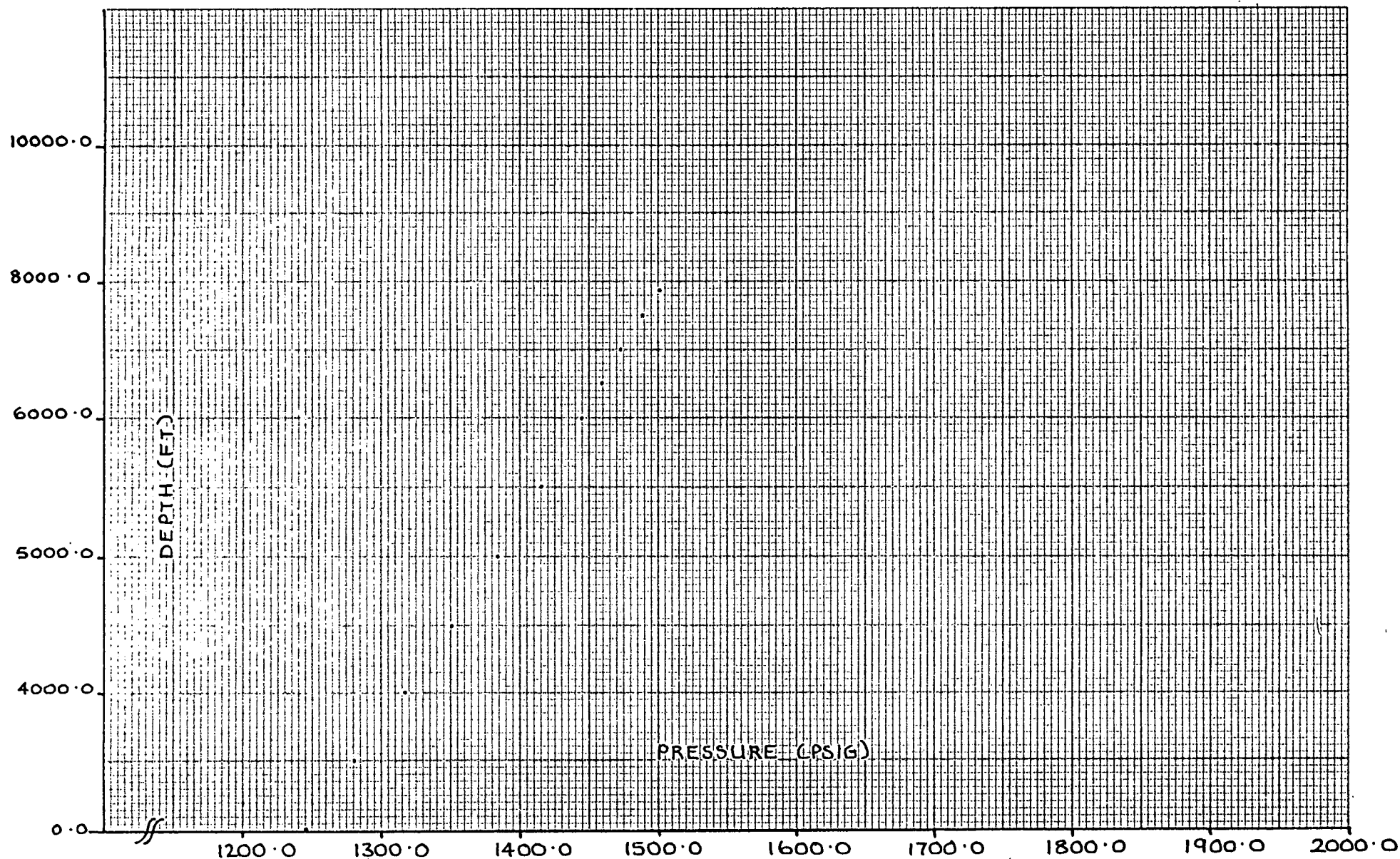
STATIC GRADIENT SURVEY

READ DATE: 14/6/9
TEST DATE: 11/2/9

GENERAL REMARKS:

0068

MOOMBA SOUTH # 1 — STATIC PRESSURE GRADIENT — 11/2/91
ELEMENT # 29388 (TOP)



EXPERTEST PTY. LTD.



BHP/BHT GAUGE RUN DATA

CUSTOMER : SANTOS LTD

PERFORATIONS: 7810-7932' KB.

PAGE: 1 OF 1

WELL NAME: HOONBA SOUTH #1

FORMATION : TOOLACHEE

DATE: 11.2.91

TEST TYPE : STATIC GRADIENT.

OPR :

GAUGE DATA

UPPER
PRESSURE
GAUGELOWER
PRESSURE
GAUGETEMPERATURE
GAUGE

RUN DATA

TIME
(HOURS)TUBING
PRESSURE
(PSI/KPa)ANNULUS
PRESSURE
(PSI/KPa)

ELEMENT SERIAL NO.

29388

29386

29216

DATE

11.2.91

ELEMENT RANGE

3000 PSI

2975 PSI

149-351C

PRESSURE LUBRICATOR

1050

8632

Ø

RECORDING SECTION SERIAL NO.

61001

61373

70545

RUN IN HOLE

1105

8639

DATE OF CALIBRATION:

ON DEPTH AT

7860 KB FT/M

1211

8646

|

CLOCK SERIAL NO.

2518

2502

NO 2

DATE

11.2.91

CLOCK RANGE

3hr

3hr

3hr

PULL OUT OF HOLE

1226

8646

Ø

LEAD SCREW TYPE

15THS

15THS

15THS.

AT SURFACE

1249

8646

|

DEPRESSURE LUBRICATOR

1305

8646

|

ENGAGE STYLUS DATE

11.2.91

TIME

1035

1035

1035

MAXIMUM BHT AT 7860 KB FT/M = °F/C

DISENGAGE STYLUS DATE

11.2.91

TIME

1319

1319

1319

N.B. ALL DEPTHS ARE MEASURED FROM K.B.

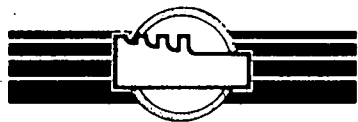
DATE

TIME

REMARKS

0069

EXPERTEST PTY. LTD.



BHP/BHT GAUGE RUN DATA

CUSTOMER : SANTOS LTD.

PERFORATIONS: 7810 - 7932' KB.

PAGE: 1 OF 1

WELL NAME: MOOMBA SOUTH #1

FORMATION : TOOMARNEE.

DATE: 8.2.91

TEST TYPE : B.H.P.S.

OPR : M. WRIGHT

GAUGE DATA

UPPER
PRESSURE
GAUGELOWER
PRESSURE
GAUGETEMPERATURE
GAUGE

RUN DATA

TIME
(HOURS)TUBING
PRESSURE
(PSI/KPa)ANNULUS
PRESSURE
(PSI/KPa)

ELEMENT SERIAL NO.

29388

29386

29216

DATE

8.2.91

ELEMENT RANGE

3000PSI

2975PSI

149°-351°

PRESSURE LUBRICATOR

0640

4089

69

RECORDING SECTION SERIAL NO.

61001

61373

70545

RUN IN HOLE

0940

4137

83

DATE OF CALIBRATION:

ON DEPTH AT

7780 KB. FT/M

1000

4109

83

CLOCK SERIAL NO.

28647

24708

24707

DATE

11.2.91

CLOCK RANGE

96hrs

96hrs

96hrs

PULL OUT OF HOLE

0640

8625

Ø

LEAD SCREW TYPE

15 TWS

15 TWS

15 TWS

AT SURFACE

0715

8625

|

DEPRESSURE LUBRICATOR

1015

8639

|

ENGAGE STYLUS

DATE

8.2.91

TIME

0630

0630

0630

MAXIMUM BHT AT

7780 KB. FT/M = 285

°F/°C

1253

DISENGAGE STYLUS

DATE

11.2.91

TIME

1025

1025

1025

N.B. ALL DEPTHS ARE MEASURED FROM K.B.

DATE

TIME

REMARKS

MSOUTH

N.B. TEMP ELEMENT WAS RUN.

IN / OUT

RUN

TOP 593 / 1254

10

BOT 581 / 1245

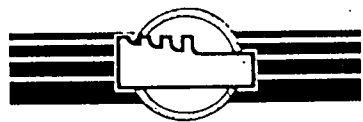
20

8/2

1400

SWI

0070



SEQUENCE OF EVENTS

CUSTOMER : SANTOS LTD.

PERFORATIONS: 7810' KB - 7932' KB.

PAGE: 1 OF 2

WELL NAME: MOOMBA SOUTH #1

FORMATION : TOOLACHEE.

DATE: 5.2.91

TEST TYPE : B.H.P.S.

OPR : M. WRIGHT

DATE/TIME	DESCRIPTION OF EVENTS
5.2.91	
1430	A.O.L. + S.W.I. + FIT SWAB VALVE - TEST O.K.
1445	W.B.O.L. + COMMENCE RIG UP OF WIRE LINE EQUIPMENT.
7.2.91	
1345	A.O.L. + S.W.I. AND RIG IN CHOKER MANIFOLD, CHICKSANS + FARE WAVE.
1530	RIG UP DUMMY RUN TOOLSTRING WITH 1.75 BOND BOX + R.I.H. S.I.H.P. 8736 KPA.
1615	TAC BRIDGE PNLG AT 8189' KB - NO OBSTRUCTIONS. + P.O.O.H.
1640	AT SURFACE + DEPRESSURE WTB. S.I.T.H.P. 8708 KPA.
1647	OPEN CHOKER TO FLOW ON 20/64
1720	" " " 28/64
1735	CHOKER BACK " 27/64
2100	OPEN CHOKER " 28/64
8.2.91	
0600	PREPARE AMERADAS + TEMP' ELEMENT FOR SURVEY.
0640	PRESSURE WTB' WITH GAUGES.
0840	DEPRESSURE WTB'
0940	PRESSURE WTB' + R.I.H.
1000	AT HANG DEPTH OF 7780' KB.
1400	S.W.I. + COMMENCE 60hrs BUILD-UP.
11.2.91	
0640	BUILD-UP COMPLETE - P.O.O.H.
0715	AT SURFACE + DEPRESSURE WTB.

0071

SEQUENCE OF EVENTS

CUSTOMER : SANTOS LTD.

PERFORATIONS: 7810 - 7932' K13.

PAGE: 2 OF 2

WELL NAME: MOOMBA STH #1

FORMATION : TOOLACHEE.

DATE: 11.2.91

TEST TYPE : B.H.P.S.

OPR : M. WRIGHT.

[illegible]

2002



CUSTOMER : SANTOS LTD

PERFORATIONS: 7810' - 7932' KB

PAGE: 1 OF 4

WELL NAME: MOONBA SOUTH *1

FORMATION : TOOLACHEE

DATE: 7.2.91

TEST TYPE : B.H.P.S.

OPR : M. WRIGHT

TIME		WELLHEAD DATA				FLOW RATES				CUMULATIVE PRODUCTION					
DATE TIME	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE (PSI/KPa)	ANNULUS PRESSURE (PSI/KPa)	WELLHEAD TEMP (°F/°C)	CHOKE SIZE INCHES	PRESSURE (PSI/KPa)	TEMP (°F/°C)	GAS MMSCFD m ³ /10 ³ D	OIL BPD m ³ /D	WATER BPD m ³ /D	GAS MMSCF m ³ /10 ³	OIL BBLS m ³	WATER BBLS m ³		
7.2.91															
1530	S.I.	8736	14	N/A		R.I.H WITH 1.75 B/BOX									
1615						TAG 8189' KB + P.O.O.H.									
1640		8708	14	N/A		AT SURFACE.									
1647	Flow	8708	14	N/A	20/64	OPEN CHOKE TO FLARE.									
1700		5854	14	N/A											
1715		5778	14	43	28/64	" " TO 28/64									
1735		3792	14	43	27/64	CHOKE BACK TO 27/64									
2000		4102	34	43											
2100		4137	34	43	28/64	CHOKE OPEN TO 28/64									
2200		3992	41	43											
2400		4026	48	43											
8.2.91															
0400		4061	55	45											
0600		4102	69	45											
0640		4089	69	45		PRESSURE LUB WITH SURVEY GAUGES.									
0840		4130	76	47		DEPRESSURE LUB									
0940		4137	83	47		PRESSURE LUB + R.I.H.									
1000	0	4109	83	48		AT HANG DEPTH OF 7780' KB.									
1130	1.5	4130	83	50											

0073

EXPERTEST PTY. LTD.



TEST RESULTS

CUSTOMER : SANTOS LTD

PERFORATIONS: 7810 - 7932' KB.

PAGE: 2 OF 4

WELL NAME: MOOMBA SOUTH #1

FORMATION : TOOWACHEE

DATE: 8.2.91

TEST TYPE : B.H.P.S.

OPR : M. WRIGHT.

TIME		WELLHEAD DATA						FLOW RATES			CUMULATIVE PRODUCTION				
DATE	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE (PSI/KPa)	ANNULUS PRESSURE (PSI/KPa)	WELLHEAD TEMP (°F/°C)	CHOKE SIZE INCHES	PRESSURE (PSI/KPa)	TEMP (°F/°C)	GAS MMSCFD m ³ 10 ³ /D	OIL BPD m ³ /D	WATER BPD m ³ /D	GAS MMSCF m ³ 10 ³	OIL BBLS m ³	WATER BBLS m ³		
8.2.91															
1230	1.5	4137	83	51	28/64										
1400	4	4137	83	52		S.W.I. + COMMENCE 60hrs BUILD-UP.									
1405	0	7839	89	49											
1410		8474	83	49											
1415		8169	76	48											
1430		8688	69	46											
1445		8688	62	49											
1500	1	8708	55	45											
1515		8701	55	44											
1530		8694	48	45											
1545		8694	48	43											
1600	2	8688	48	45											
1615		8688	41	N/A											
1630		8681	41												
1645		8681	41												
1700	3	8681	41												
1715		8681	34												
1730		8674	34												
1745		8674	34												
1800	4	8674	34												

0074



CUSTOMER : SANTOS LTD.

PERFORATIONS: 7810 - 7932'KB

PAGE: 3 OF 4

WELL NAME: MOOMBA SOUTH #1

FORMATION : TOOLACHEE

DATE: 8.2.91

TEST TYPE : B.H.P.S.

OPR : M. WRIGHT

TIME		WELLHEAD DATA						FLOW RATES			CUMULATIVE PRODUCTION				
DATE TIME	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE (PSI/KPa)	ANNULUS PRESSURE (PSI/KPa)	WELLHEAD TEMP (°F/°C)	CHOKE SIZE	PRESSURE (PSI/KPa)	TEMP (°F/°C)	GAS MMSCFD m ³ /D	OIL BPD m ³ /D	WATER BPD m ³ /D	GAS MMSCF m ³ /D	OIL BBLS m ³	WATER BBLS m ³		
8.2.91															
2200	8	8580	30	N/A.											
9.2.91															
0200	12	8580	30												
0600	16	8570	30												
1000	20	8653	14												
1400	24	8560	10												
1800	28	8646	7												
2200	32	8639	0												
10.2.91															
0200	36	8640	0												
0600	40	8632	0												
1000	44	8646	0												
1400	48	8632	0												
1800	52	8639	0												
2200	56	8612	0												
11.2.91															
0200	60	8632	0												
0600	64	8625	0												

0075

TEST RESULTS

CUSTOMER : SANTOS LTD.

PERFORATIONS: 7810 - 7932' KB.

PAGE: 4 OF 4

WELL NAME: MOOMBA SOUTH #1

FORMATION : TOOLACHEE

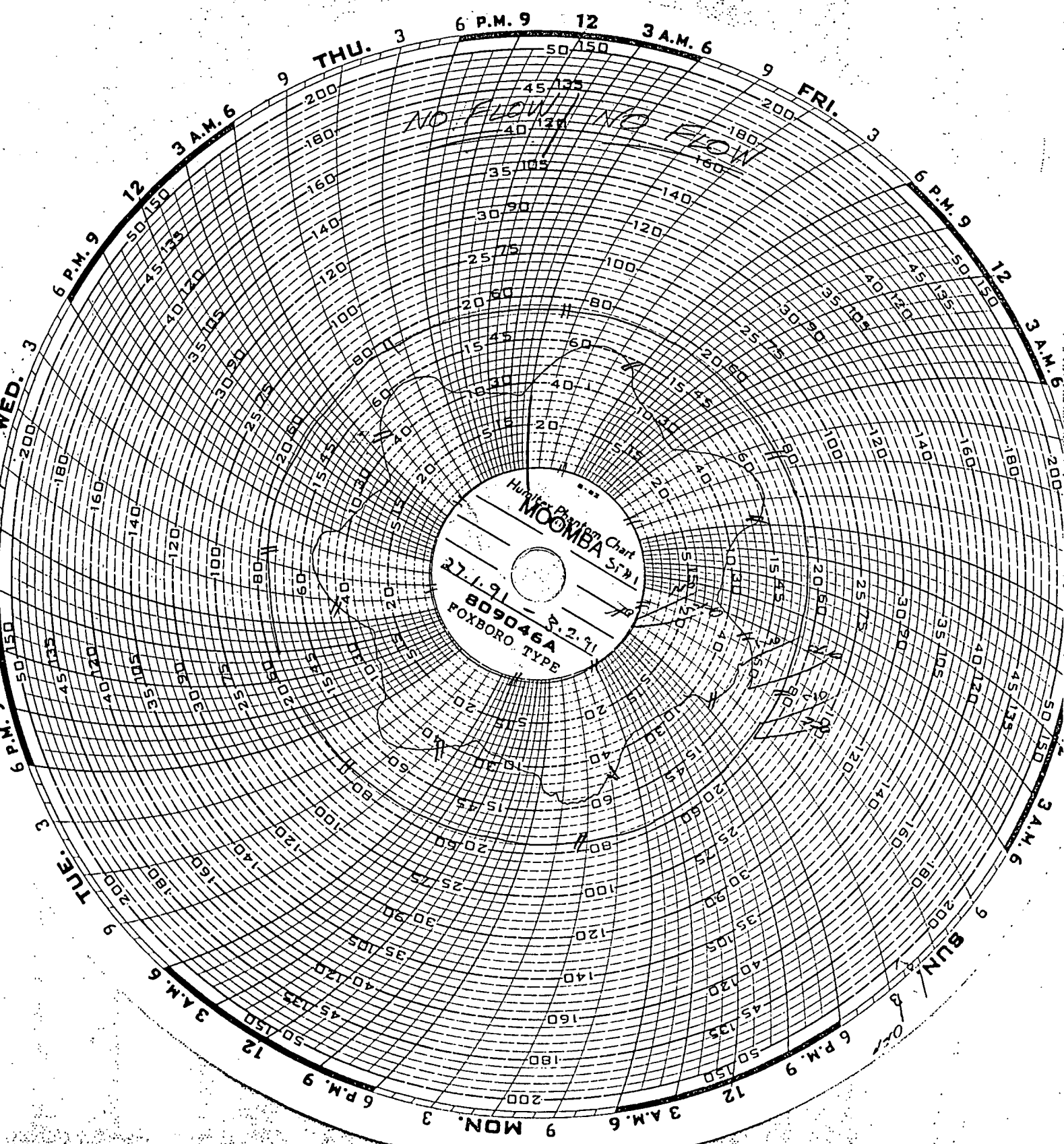
DATE: 11.2.91

TEST TYPE : B.H.P.S.

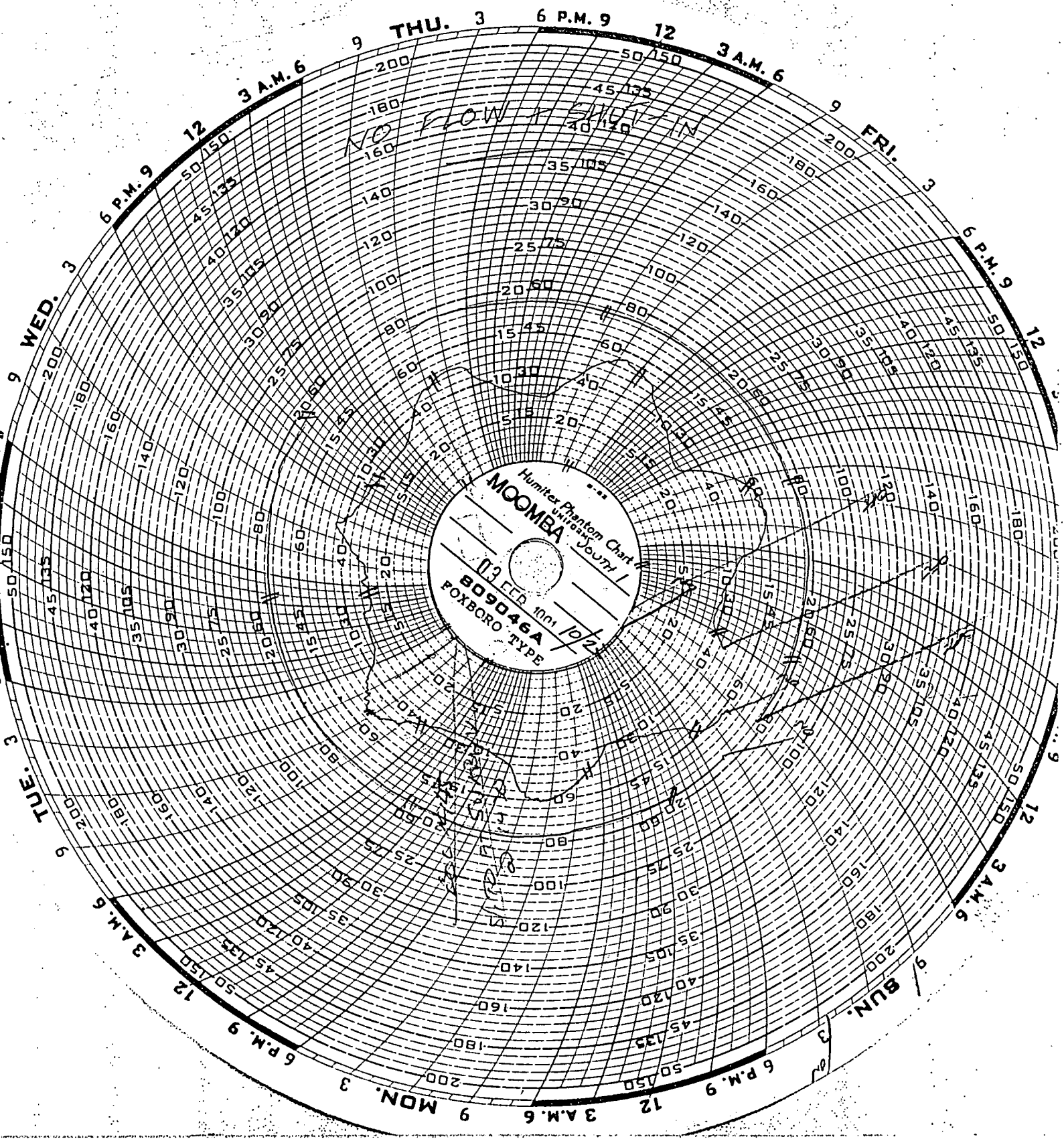
OPR : M. WRIGHT.

[illegible]

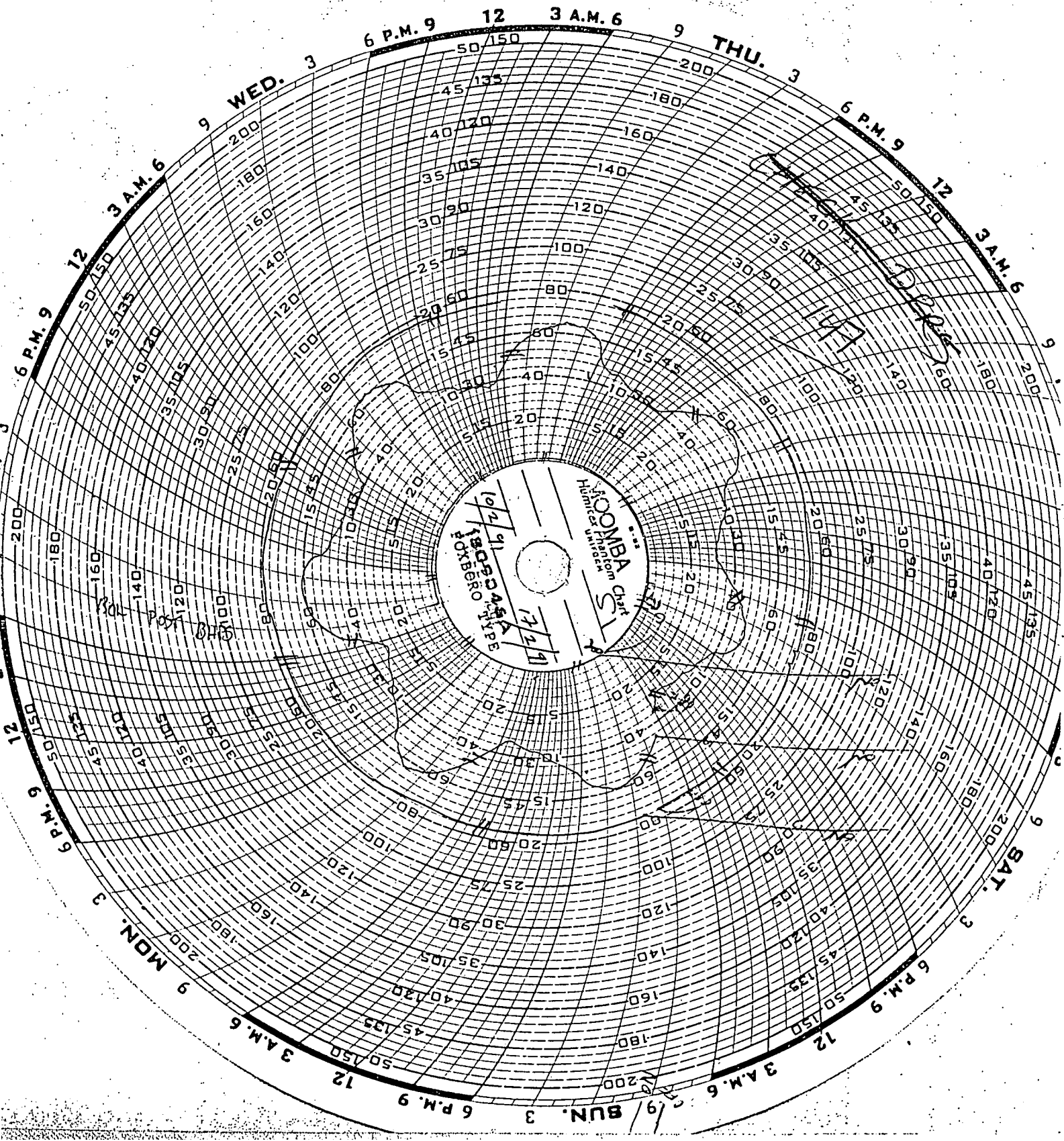
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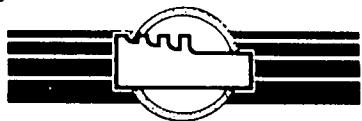
0078



0079



BHP/BHT GAUGE RUN DATA



CUSTOMER : SANTOS

PERFORATIONS: 7810' - 7932

PAGE: / OF

WELL NAME: MOOMBA STH #1

FORMATION : *TOOLACHEE*

DATE: 7-1-93

TEST TYPE : S. G. S.

OPR : *N HAY*

GAUGE DATA		UPPER PRESSURE GAUGE	LOWER PRESSURE GAUGE	TEMPERATURE GAUGE	RUN DATA	TIME (HOURS)	TUBING PRESSURE (PSI/KPa)	ANNULUS PRESSURE (PSI/KPa)
ELEMENT SERIAL NO.		56429	56432	N/A	DATE : 7-1-93			
ELEMENT RANGE	P.S.1	3000	3000		PRESSURE LUBRICATOR :	10:05	7894	Ø
RECORDING SECTION SERIAL NO.		14628	70544		RUN IN HOLE :	10:20	7908	Ø
DATE OF CALIBRATION:		6-1-93	6-1-93		ON DEPTH AT : 7860 FT/M	11:38	7922	Ø
CLOCK SERIAL NO.		2489	2180		DATE : 7-1-93			
CLOCK RANGE		3HR	3HR		PULL OUT OF HOLE :	11:48	7922	Ø
LEAD SCREW TYPE		15T65	15T65		AT SURFACE :	12:16	7908	Ø
					DEPRESSURE LUBRICATOR :	12:30	7908	Ø
ENGAGE STYLUS	DATE 7-1-93	09:55	09:55		MAXIMUM BHT AT 7860 FT/M = 268 °F/M			
DISENGAGE STYLUS	DATE 7-1-93	12:34	12:34		N.B. ALL DEPTHS ARE MEASURED FROM K.B.			

[illegible]

**EXPERTEST**

WIRELINE & WELL TESTING SERVICE

PO BOX 354 COWANDILLA 5033

PH. (08) 354 0488 TELEX AA87183

FAX (08) 43 7408

138 RICHMOND ROAD MARLESTON
SOUTH AUSTRALIA 5033

Tested Thursday, 7th January 1993.

CLIENT	LOCATION	FORMATION
SANTOS LTD.	MOOMBA STH # 1	TOOLACHEE

STATIC PRESSURE GRADIENT REPORT

PRESSURE ELEMENT DATA			
POSITION	SERIAL NO.	RANGE	CALIBRATED
Top	56429	3000	6/ 1/93
Bottom	56432	3000	6/ 1/93

WELL DATA	
PARAMETER	VALUE
DWT In	7908 ^{Kpa} PSIG
DWT Out	7908 PSIG
Max BHT	268

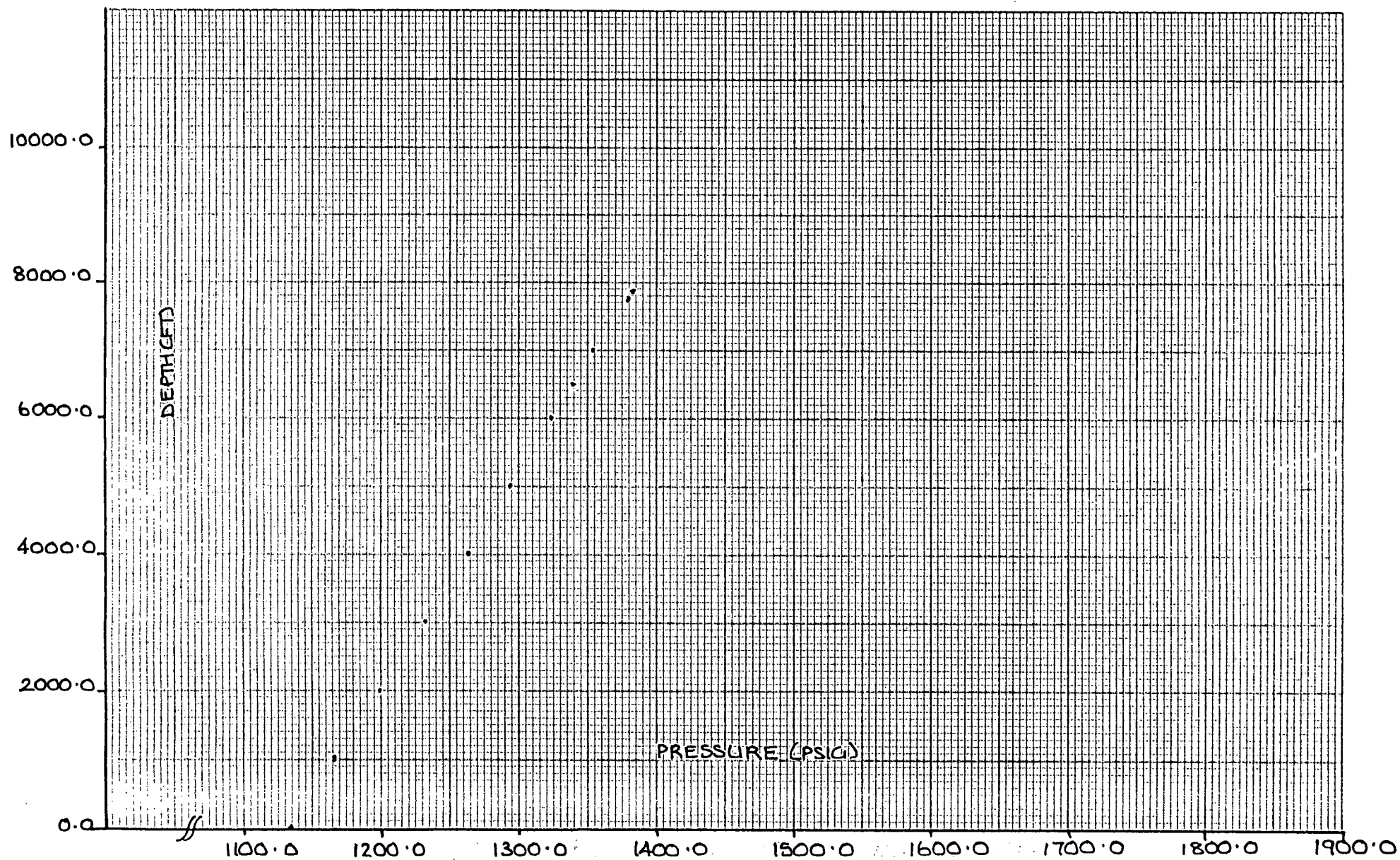
1147 psig

TOP ELEMENT				BOTTOM ELEMENT		
DEPTH F.T. KB	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT
LUB.	0.7360	1133.2	-----	0.7380	1132.4	-----
1000	0.7570	1165.7	0.032	0.7600	1166.8	0.034
2000	0.7780	1198.1	0.032	0.7810	1199.1	0.033
3000	0.8000	1232.1	0.034	0.8020	1231.7	0.033
4000	0.8200	1263.0	0.031	0.8230	1264.3	0.033
5000	0.8400	1293.8	0.031	0.8430	1295.3	0.031
6000	0.8590	1323.2	0.029	0.8620	1324.7	0.030
6500	0.8690	1338.6	0.031	0.8720	1340.2	0.031
7000	0.8790	1354.1	0.031	0.8820	1355.7	0.031
7750	0.8950	1378.8	0.033	0.8970	1379.0	0.031
7860	0.8970	1381.9	0.028	0.9000	1383.6	0.042
LUB.	0.7410	1141.0	-----	0.7400	1135.5	-----

GENERAL REMARKS

0083

MOOMBA SOUTH #1 — STATIC PRESSURE GRADIENT — 7/1/93
ELEMENT # 56429/3000 (TOP)

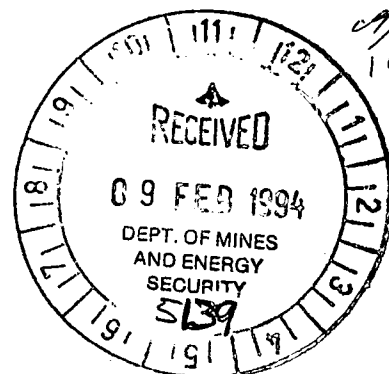
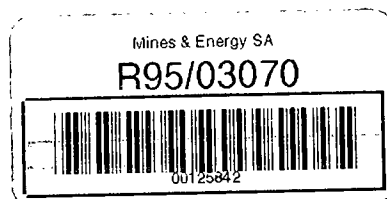


SANTOS

CALIPER Survey No. 23493

MOOMBA, AUSTRALIA
MOOMBA SOUTH #1

November 3, 1993



HOW TO READ THE SURVEY

0085

ABBREVIATIONS

LU. = Lower Upset
U.U. = Upper Upset
u.B. = upper Body
m.B. = middle Body
l.B. = lower Body

Corr. = Corrosion
Dep. = Deposits
Scatd. = Scattered
Shall. = Shallow

NUMBERS AND LETTERS ON THE SURVEY

All **JOINTS** in the tubing string are numbered, from the top down, starting with the first full joint below the Christmas tree.

PUP JOINTS are given decimal numbers. Example: 1.1 represents the first pup joint below joint #1.

SPECIAL TOOLS AND NIPPLES are identified by letters. Example: "B" is the second special tool, or nipple, down from the top. Gas Lift Mandrels are numbered from the top, as shown: GLM (1), GLM (2), GLM (3). etc.

TABULATION SYMBOLS

WHY IS THE CIRCLE OUR BASIC SYMBOL? The Kinley Caliper records the action of all its fifteen feelers simultaneously, instead of recording just the action of the one feeler that is the farthest off-center. The Kinley Caliper Survey has fifteen lines, instead of just one line. These fifteen lines of information give us a circular view of the inside surface of the tubing. A complete circle on the tabulation sheets indicates that all fifteen feelers (or at least fourteen) found tubing wall reductions at the same level in the well.

SYMBOLS showing **NUMBER OF FEELERS** indicating tubing wall reductions at the same level.



3 to 5



6 to 9



10 to 13



14 or 15

(MP) MEASUREMENT and PERCENTAGE SURVEY symbols (also (MPM) MEASUREMENT and PERCENTAGE MODIFIED symbols)

-  A PIT—A number alone represents the penetration, expressed in hundredths of an inch, of the deepest pit. (In this example, the deepest penetration, probably due to corrosion, measures .08".)
-  A RING—A groove around the pipe, probably including corrosion, found by all (or at least 14) of the 15 feelers. The number inside the circle represents the maximum penetration of the ring, expressed in hundredths of an inch. (In this example, a complete pit ring reaches a maximum penetration of .10".)
-  A PARTIAL RING—A groove, probably including corrosion, found by at least 3 feelers, but no more than 13. (In this example, 10 feelers found penetration, reaching a maximum penetration of .07".)
-  MINOR DAMAGE—Indications of "minor" corrosion not sufficiently severe to warrant measurement.
-  NO COMMENT—No indication of any damage is recorded in that Joint.

See inside back cover for characteristic survey samples.

Santos
Moomba, Australia

Moomba South #1
November 3, 1993
Survey No. 23493
Chart No. 12311

This is the first survey of this well to be made with the Kinley Microscopic Caliper. The condition of the internal surface of the 2 7/8" 6.5# EUE tubing in the well, from 0' to 7,692' (WLM), is covered in this report.

The deepest penetration recorded in the survey is an isolated pit located in the upper body at the upset of Jt. #8. This penetration measures .07" or 32% of the tubing wall thickness. A cross-sectional drawing and a picture enlargement of the recordings for Jt. #8, at the location of the penetration, are included in the report.

With the exception of Jt. #'s 8, 11, 24, 25, 26, 28, and 31, the condition of the tubing surveyed and analyzed appears good with respect to corrosive damage. However, indications of minor damage are recorded in a few of the top joints in the forms of isolated and lines of shallow pits, areas of shallow corrosion, and roughness of the tubing I.D.

CALIPER TECHNICIAN
Bill Kirksey

SURVEY ANALYST
Mina Tahtouh

mt

Distribution:

SANTOS, ATTENTION: Mr. Ian Bishop, G.P.O. Box 2319, Adelaide, South Australia 5001, Australia (4R)

EXPERTEST PTY. LTD., ATTENTION: Mr. Bill Kirksey, P. O. Box 354, Cowandilla, South Australia 5033, Australia (1R)

Chart received: 11-17-93
Report mailed: 12-16-93

KINLEY CALIPER TALLY SHEET

0087

MOOMBA SOUTH #1
Survey # 23493
November 3, 1993

2 7/8" 6.5# EUE
Body: 0.217
Upset: 0.327

								# of Jts
<u>Penetrations Over 85%</u> (Possible Hole)								0
JT. #'s								
<u>Penetrations 41 - 85%</u> (Poor)								0
JT. #'s								
<u>Penetrations 21 - 40%</u> (Fair)								7
JT. #'s	8	11	24	25	26	28	31	
<u>Penetrations 11 - 20%</u> (Good)								8
<u>Penetrations 1 - 10%</u> (Very Good)								16
No Penetrations Recorded								212

TOTAL JOINTS SURVEYED: 243

(Includes 1 Pup Joints)



KINLEY CORROSION PROFILE

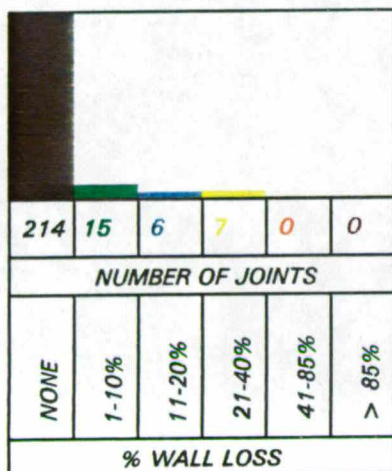
MOOMBA SOUTH #1
MOOMBA, AUSTRALIA
November 3, 1993

SURVEY # 23493
2 7/8" 6.5# EUE

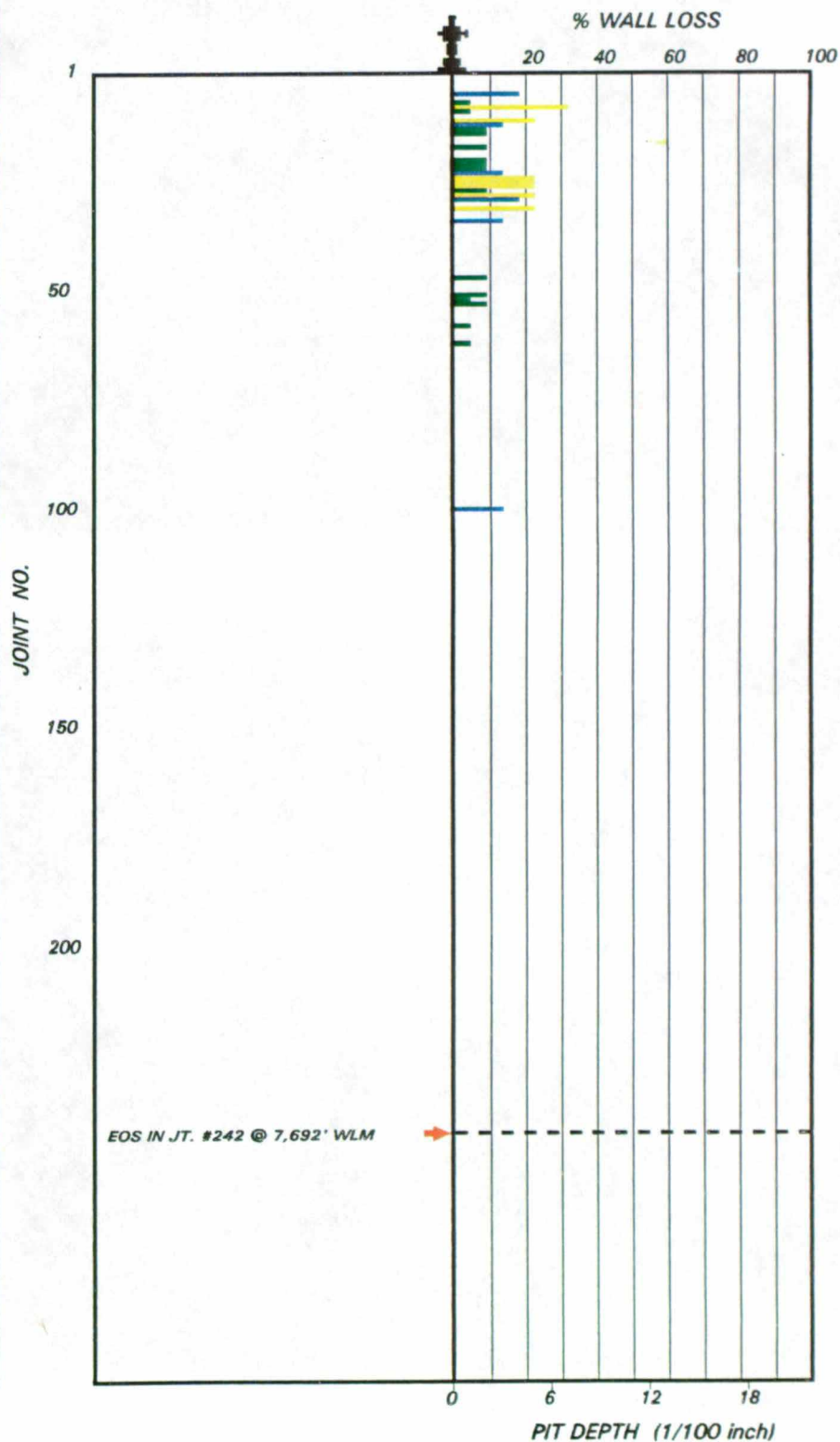
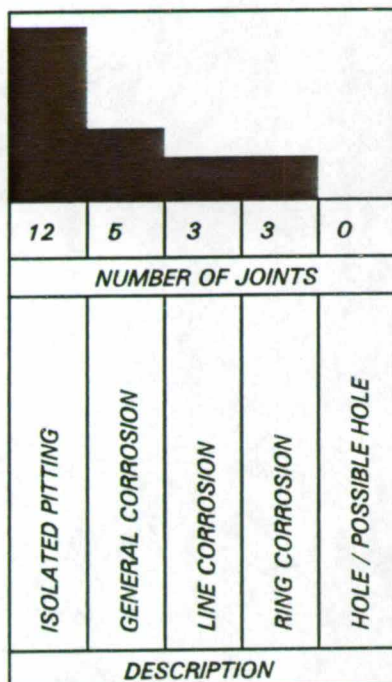
BODY PENETRATIONS

CORROSIVE DAMAGE FREQUENCY DISTRIBUTIONS

MAXIMUM PENETRATION



CONFIGURATION



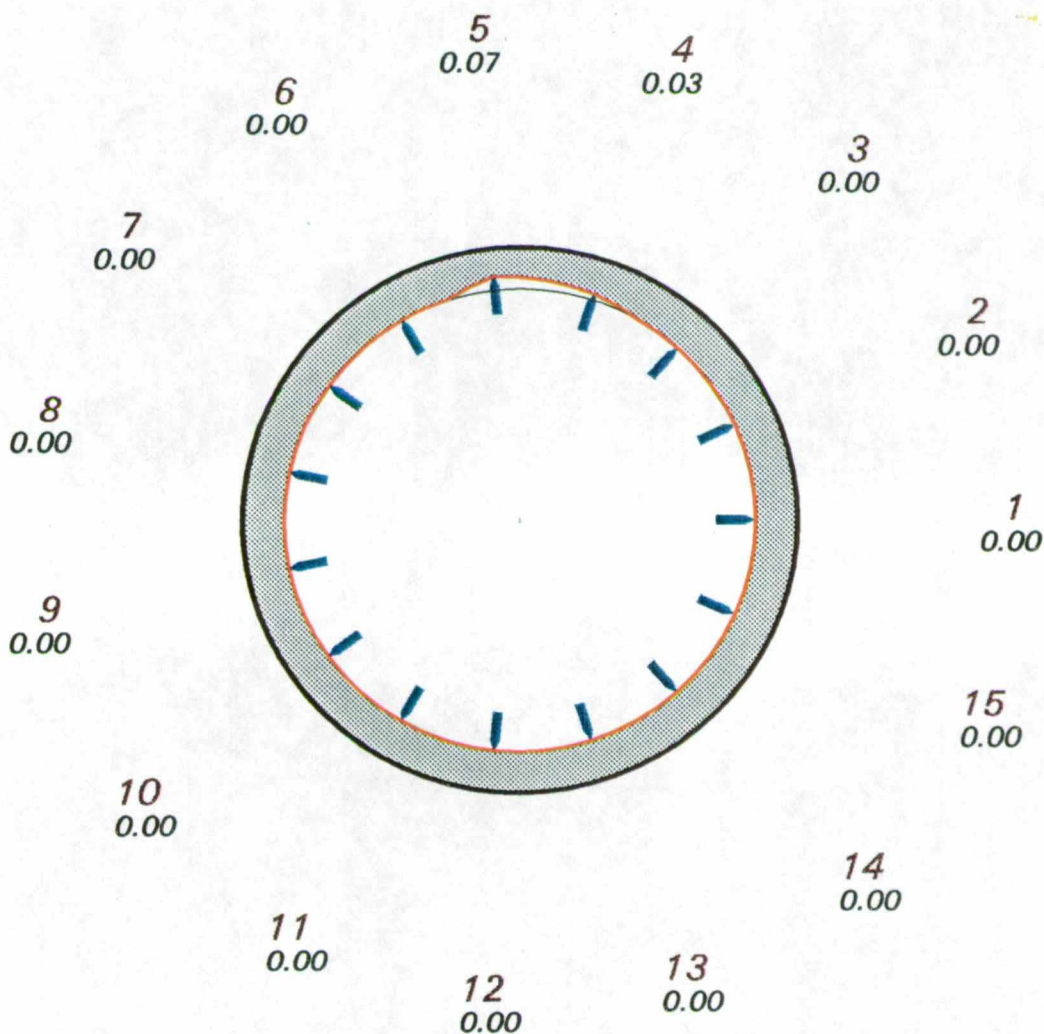


0089

KINLEY CROSS-SECTIONAL ANALYSIS

MOOMBA SOUTH #1
Survey #23493

2 7/8" 6.5# EUE
O.D. = 2.875 In.
I.D. = 2.441 In.



Description: JT. #8 PIT UPPER BODY AT UPSET .07" = 32%

Percent Area Reduction = 2.16 %

Total Area Remaining = 1.77 Sq.In.

KINLEY CALIPER JOINT TABULATION SHEET

0090

2 7/8" 6.5# EUE
Body: 0.217
Upset: 0.327
Chart # 12311
Feeler Ratio 1 : 1

MOOMBA SOUTH #1
MOOMBA, AUSTRALIA
Survey # 23493
November 3, 1993
Run # 1

JOINT NO	MAXIMUM UPSET/MAKEUP PENETRATION		MAXIMUM BODY PENETRATION		COMMENTS	DAMAGE PROFILE (% WALL)
	%	INCHES	%	INCHES		
1					1st full length Jt. below Tree	
1.1			9	0.02	Shallow pit m.B.; Pup Jt.	
2	12	0.04			Shallow pit L.U.	
3						
4						
5			18	0.04	Shallow pit u.B. @ Upset	
6						
7			5	0.01	Roughness m.B.	
8			32	0.07	Pit u.B. @ Upset	
9			5	0.01	Roughness	
10						
11			23	0.05	Pits u.B. @ Upset	
12			14	0.03	Shallow corr.	
13			9	0.02	Shallow corr.	
14			9	0.02	Shallow corr.	
15						
16						
17			9	0.02	Shallow pits m.B.	
18						
19						
20			9	0.02	Shallow corr. l.B.	
21			9	0.02	Shallow corr.	
22			9	0.02	Shallow pits l.B.	
23			14	0.03	Shallow pits u.B. & l.B.	
24			23	0.05	Part. ring & Pits u.B. @ Upset (3/15); Shallow pits m.B. & l.B. (.02")	
25			23	0.05	Pits u.B. & l.B. @ Upset	
26			23	0.05	Pits u.B. @ Upset	
27			9	0.02	Line of shallow pits u.B.	
28			23	0.05	Part. ring & Pits u.B. @ Upset (3/15)	
29	12	0.04	18	0.04	Shallow pit L.U.; Shallow pit u.B. @ Upset	
30						
31			23	0.05	Part. ring & Pits u.B. @ Upset	
32						
33						
34			14	0.03	Shallow pit l.B. @ Upset; Shallow pit l.B. (.02")	
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47			9	0.02	Line of shallow pits	
48						
49						
50						

■ - BODY
■ - UPSET

KINLEY CALIPER JOINT TABULATION SHEET

0091

2 7/8" 6.5# EUE
Body: 0.217
Upset: 0.327
Chart # 12311
Feeler Ratio 1 : 1

MOOMBA SOUTH #1
MOOMBA, AUSTRALIA
Survey # 23493
November 3, 1993
Run # 1

JOINT NO	MAXIMUM UPSET/MAKEUP PENETRATION		MAXIMUM BODY PENETRATION		COMMENTS	DAMAGE PROFILE (% WALL)
	%	INCHES	%	INCHES		
51			9	0.02	Lines of shallow pits I.B.	
52			5	0.01	Roughness	
53			9	0.02	Shallow pits I.B.	
54	15	0.05			Shallow pit U.U.	
55						
56						
57						
58			5	0.01	Roughness m.B.	
59						
60						
61						
62			5	0.01	Roughness I.B.	
63						
64						
65						
66						
67						
68						
69						
70						
71						
72						
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90						
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93						
94						
95						
96						
97						
98						
99						
100			14	0.03	Shallow pit u.B. @ Upset	

■ - BODY
■ - UPSET

KINLEY CALIPER JOINT TABULATION SHEET

0092

2 7/8" 6.5# EUE
Body: 0.217
Upset: 0.327
Chart # 12311
Feeler Ratio 1 : 1

MOOMBA SOUTH #1
MOOMBA, AUSTRALIA
Survey # 23493
November 3, 1993
Run # 1

JOINT NO	MAXIMUM UPSET/MAKEUP PENETRATION		MAXIMUM BODY PENETRATION		COMMENTS	DAMAGE PROFILE (% WALL)	
	%	INCHES	%	INCHES		0	100
101							
102							
103							
104							
105							
106							
107							
108							
109							
110							
111							
112							
113							
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140							
141							
142							
143							
144							
145							
146							
147							
148							
149							
150							

NO DAMAGE
RECORDED
IN THIS INTERVAL

KINLEY CALIPER JOINT TABULATION SHEET

0093

2 7/8" 6.5# EUE
Body: 0.217
Upset: 0.327
Chart # 12311
Feeler Ratio 1 : 1

MOOMBA SOUTH #1
MOOMBA, AUSTRALIA
Survey # 23493
November 3, 1993
Run # 1

JOINT NO	MAXIMUM UPSET/MAKEUP PENETRATION		MAXIMUM BODY PENETRATION		COMMENTS	DAMAGE PROFILE (% WALL)
	%	INCHES	%	INCHES		
151						
152						
153						
154						
155						
156						
157						
158						
159						
160						
161						
162						
163						
164						
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193						
194						
195						
196						
197						
198						
199						
200						

NO DAMAGE
RECORDED
IN THIS INTERVAL

KINLEY CALIPER JOINT TABULATION SHEET

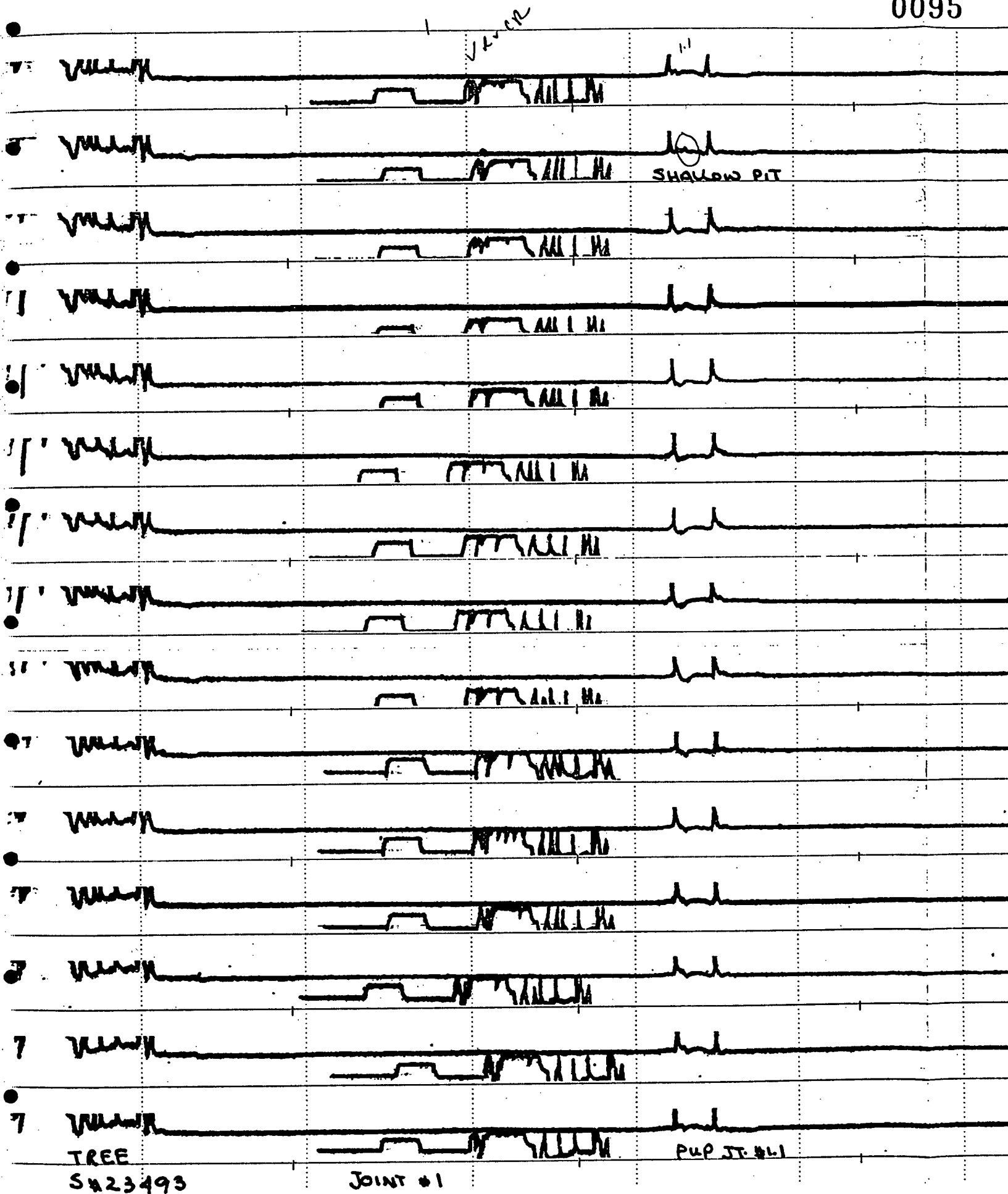
0094

2 7/8" 6.5# EUE
Body: 0.217
Upset: 0.327
Chart # 12311
Feeler Ratio 1 : 1

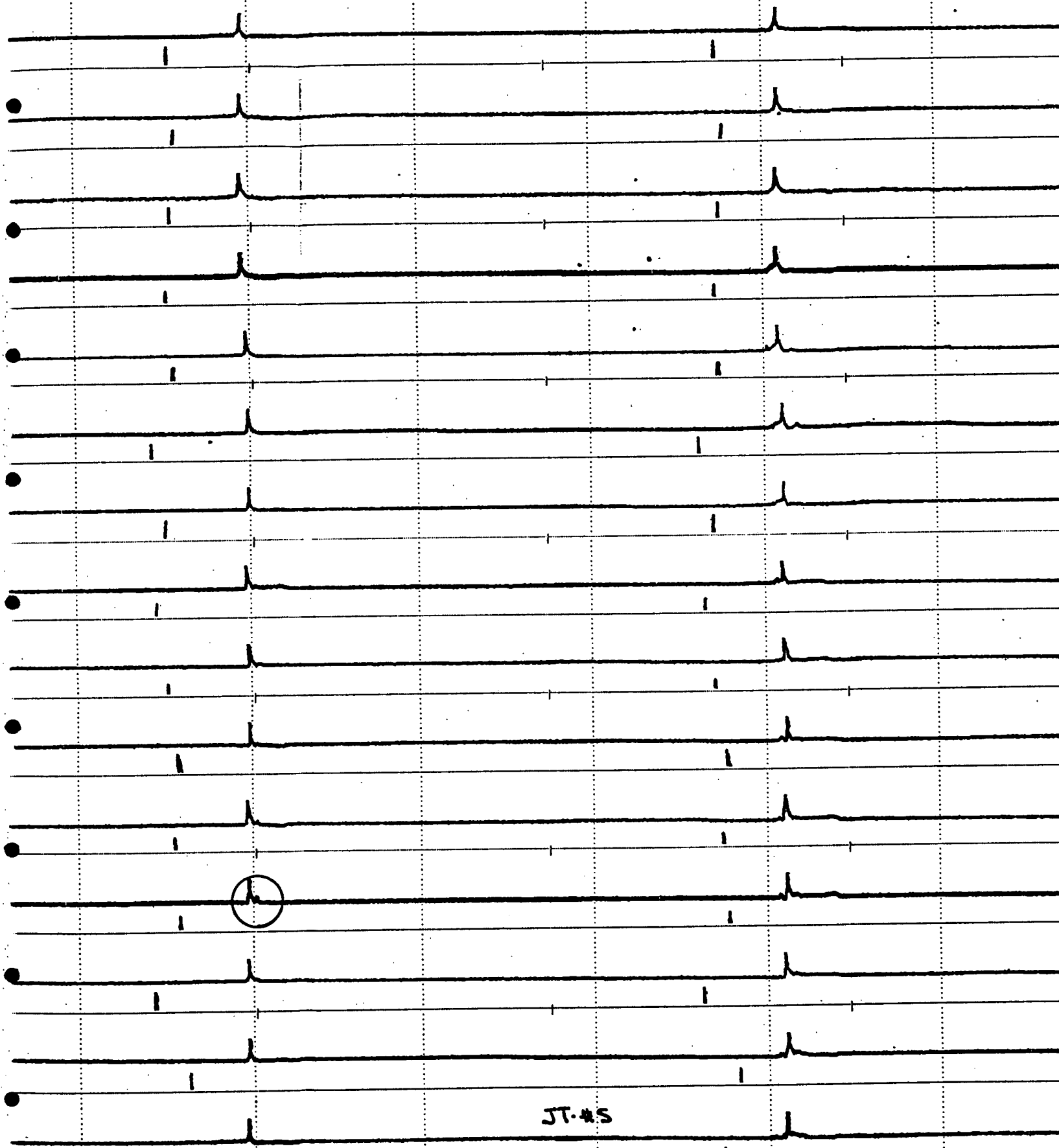
MOOMBA SOUTH #1
MOOMBA, AUSTRALIA
Survey # 23493
November 3, 1993
Run # 1

JOINT NO	MAXIMUM UPSET/MAKEUP PENETRATION		MAXIMUM BODY PENETRATION		COMMENTS	DAMAGE PROFILE (% WALL)	
	%	INCHES	%	INCHES		0	100
201							
202							
203							
204							
205							
206							
207							
208							
209							
210							
211							
212							
213							
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232							
233							
234							
235							
236							
237							
238							
239							
240							
241							
242					Survey ends in Jt. #242 @ 7,692' WLM		

NO DAMAGE
RECORDED
IN THIS INTERVAL



5



JT-45

S#23493

SHALLOW PIT
UPPER BODY AT UPSET

8

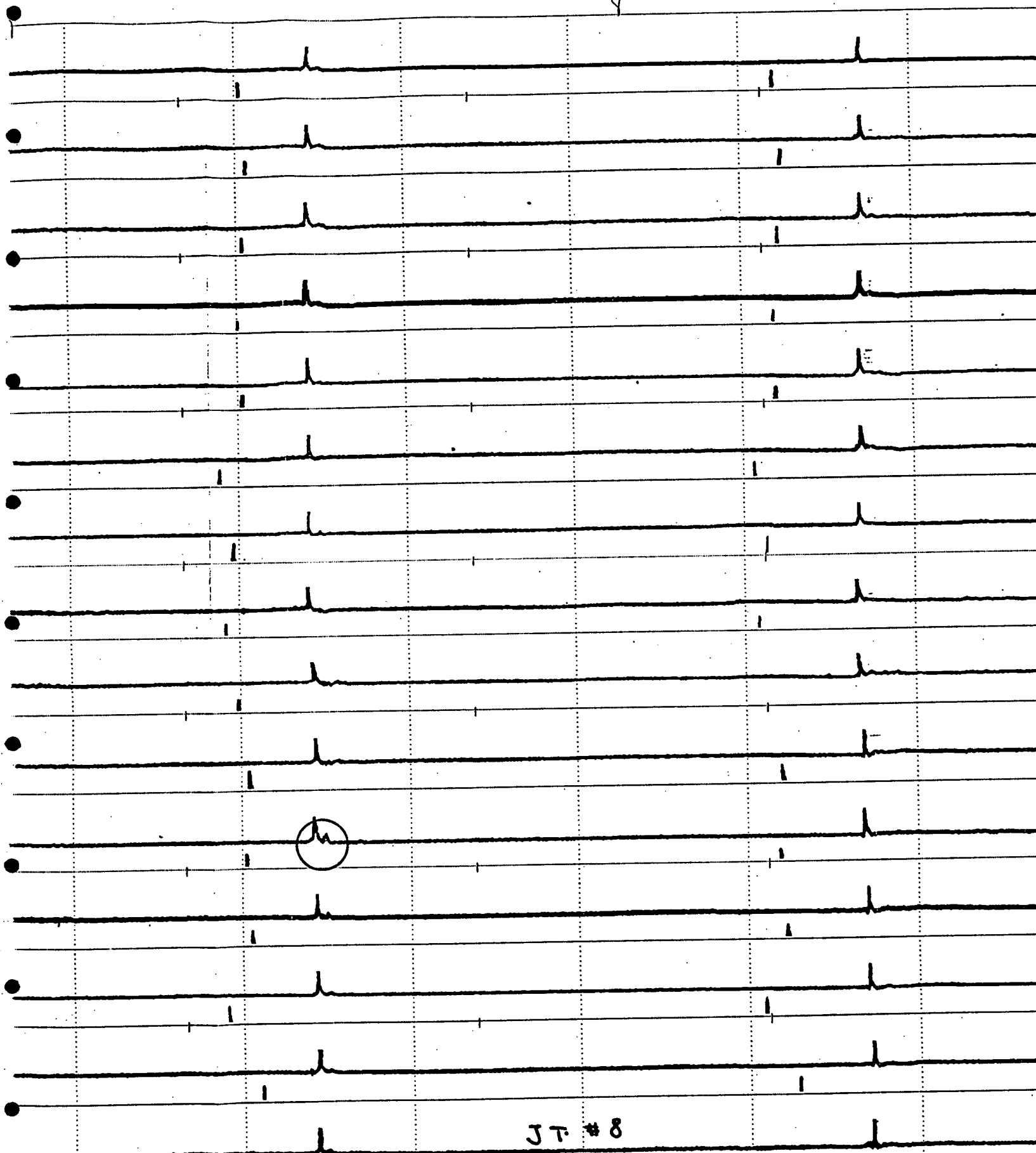
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12

12

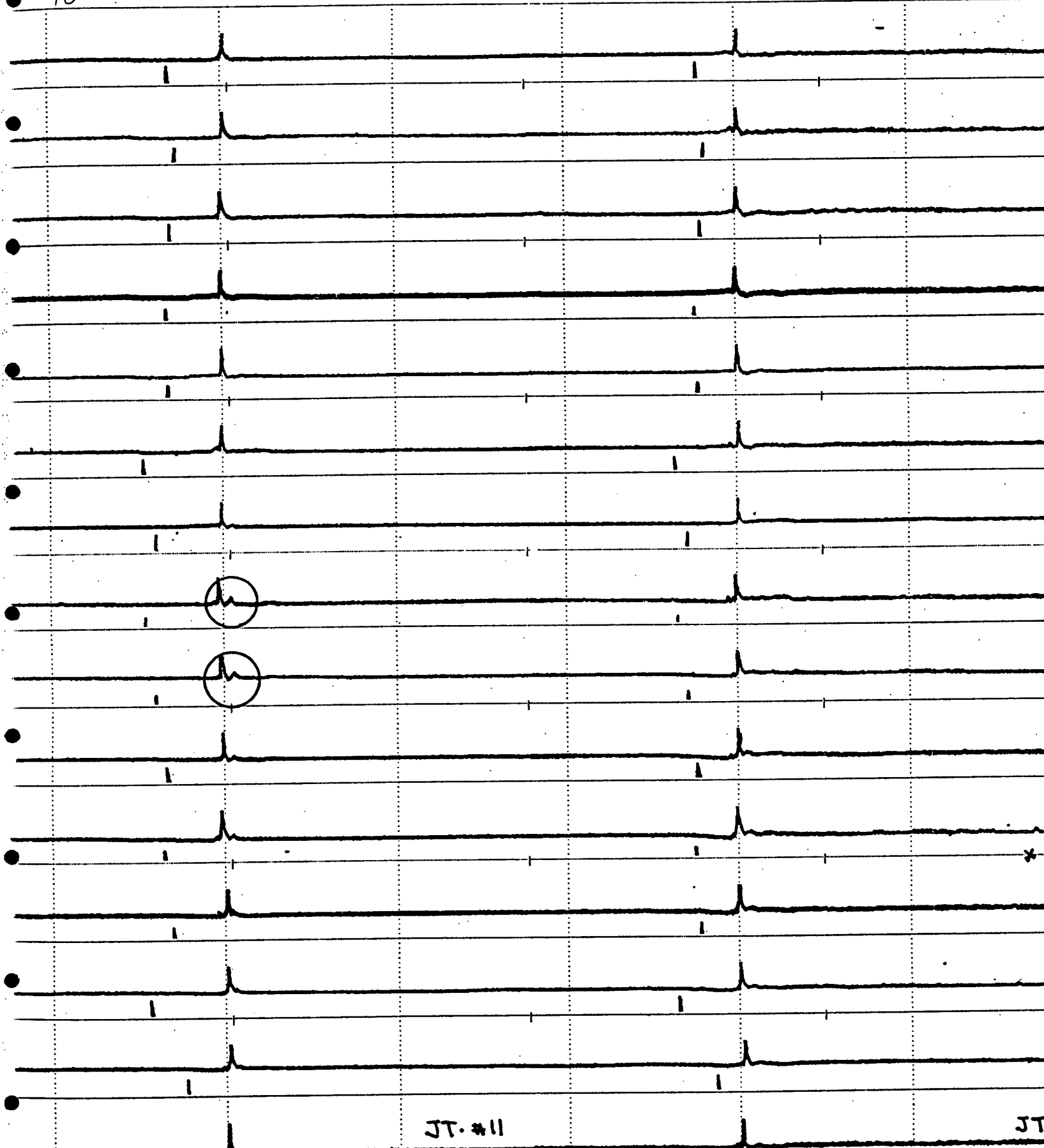
12

12



S# 23493

JT #8
PIT UPPER BODY
AT UPSET



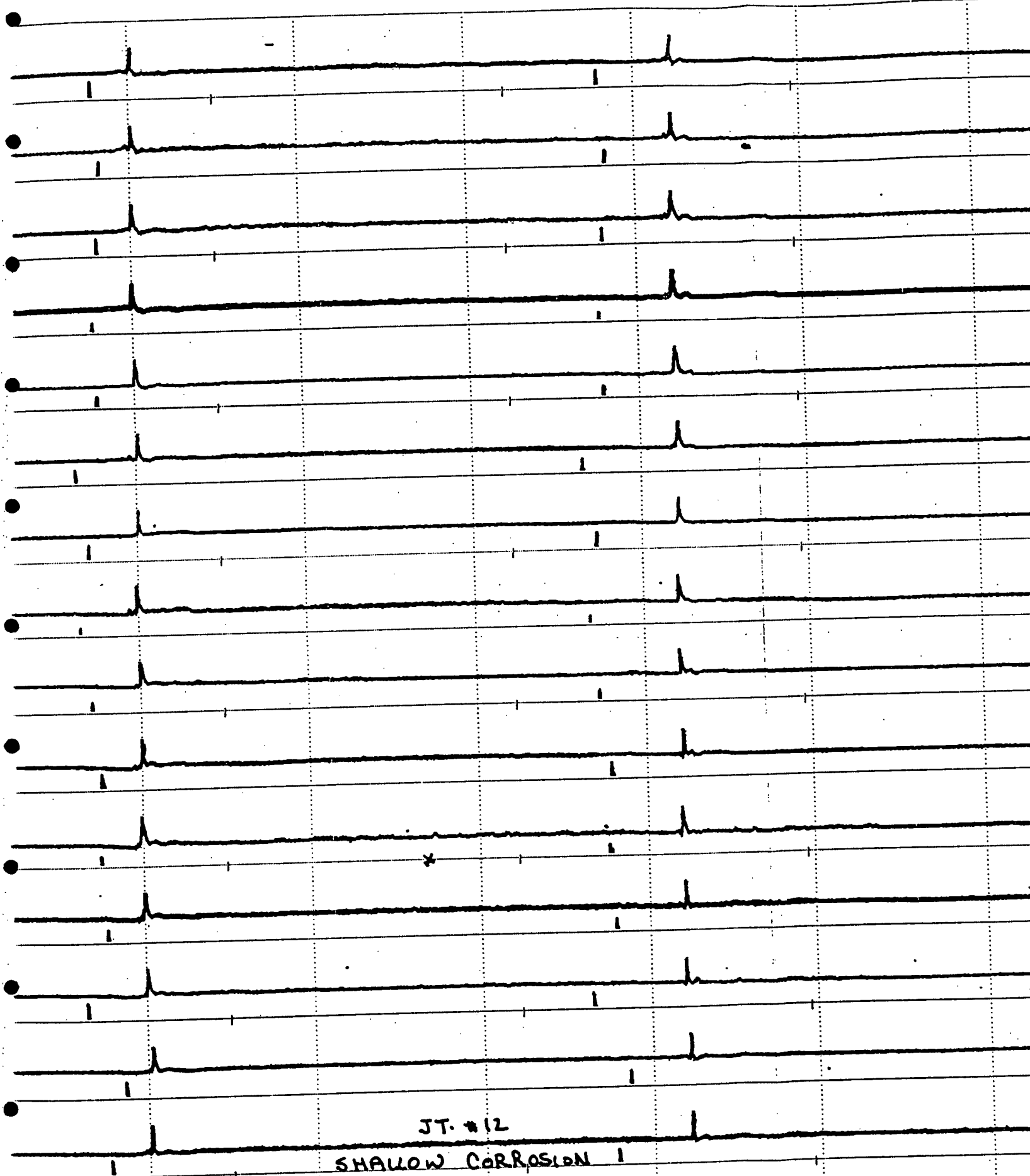
JT. #11

JT

PITS UPPER BODY
AT UPSET

SHALLOW

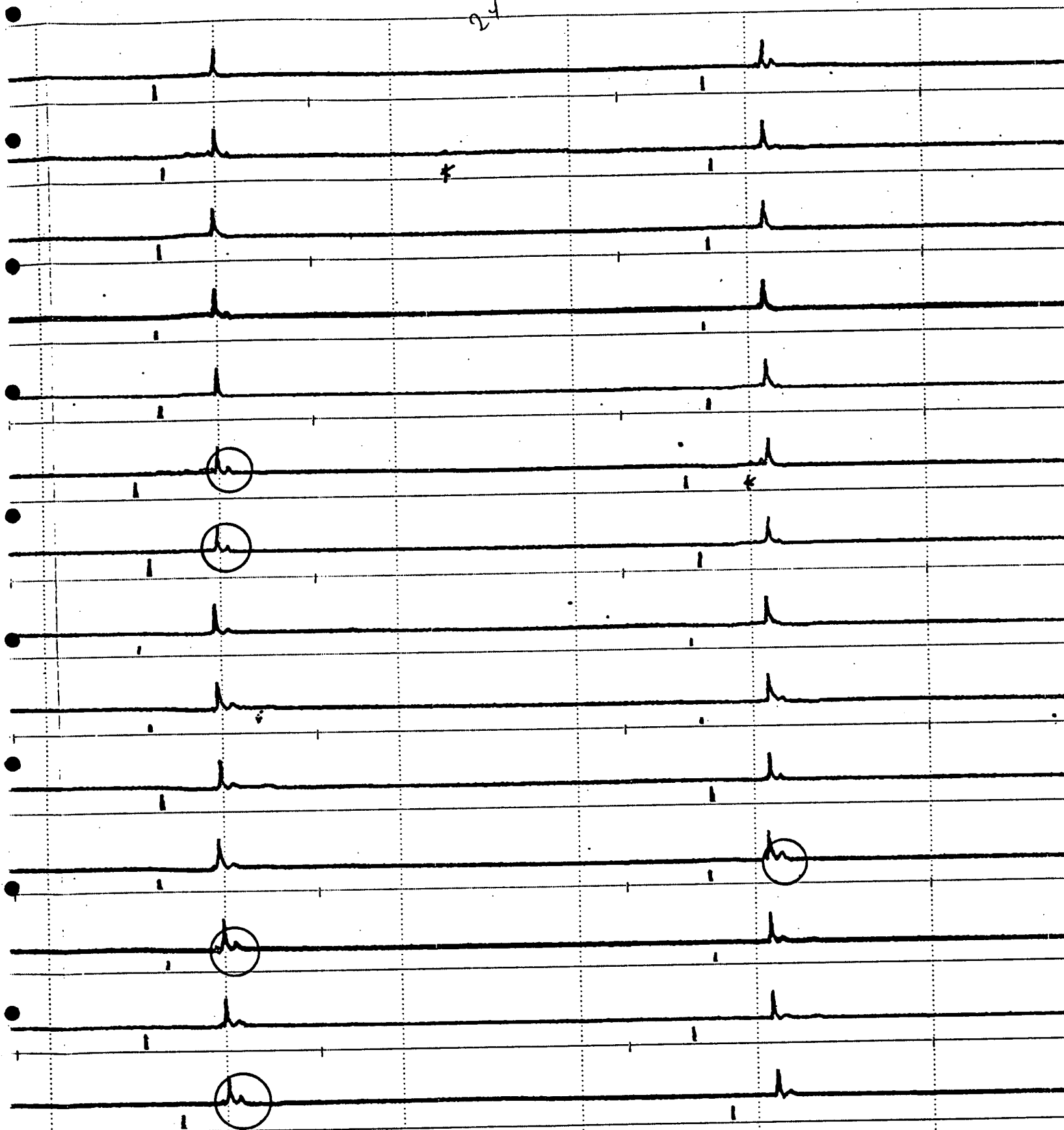
S # 23493



23493

JT. #12
SHALLOW CORROSION 1

24



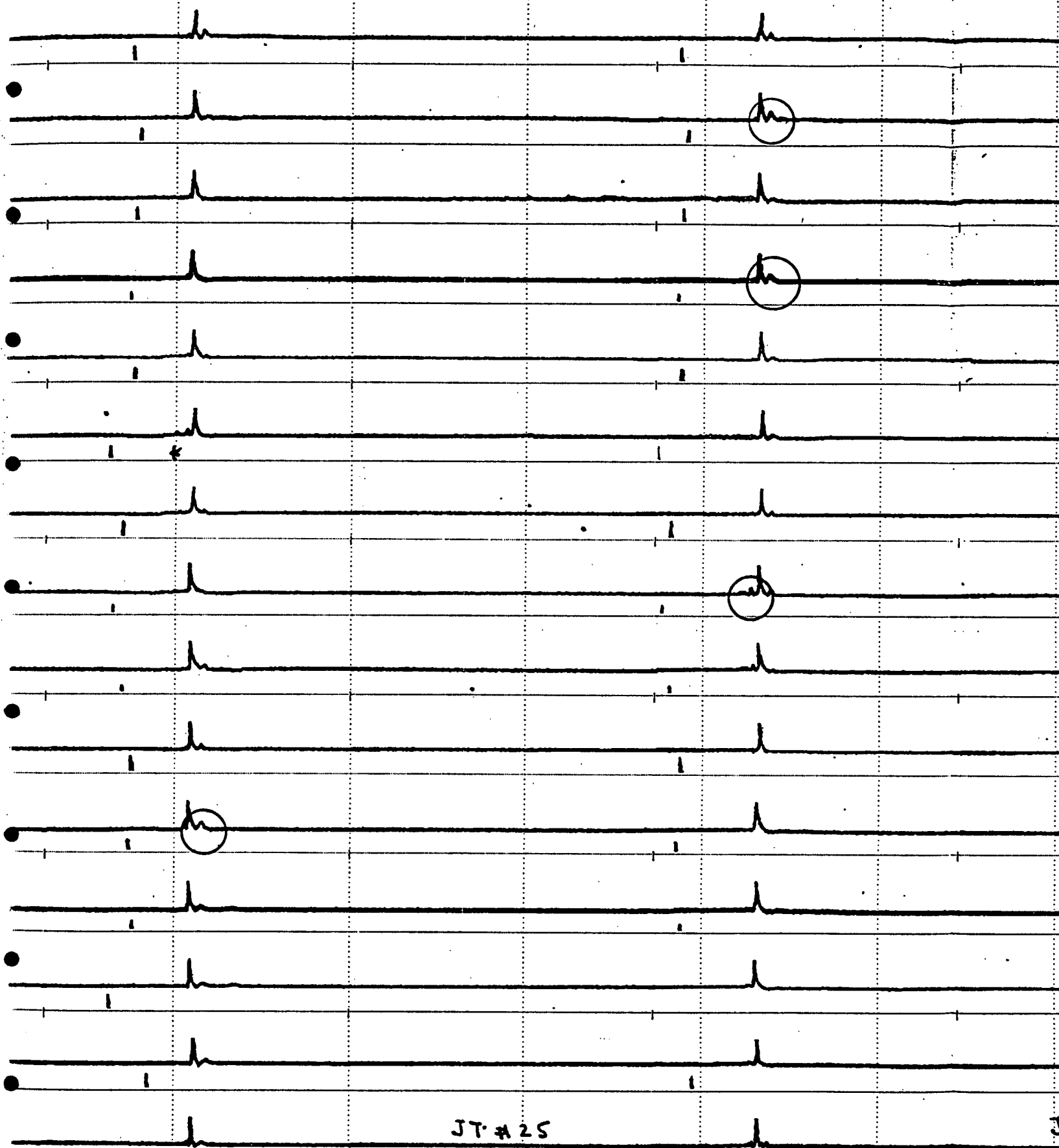
JT #24

S# 23493

PARTIAL RING AND
PITS UPPER BODY
AT UPSET

SHALLOW PITS
MIDDLE & LOWER
BODY

PITS up
LOWER BODY
UPSET

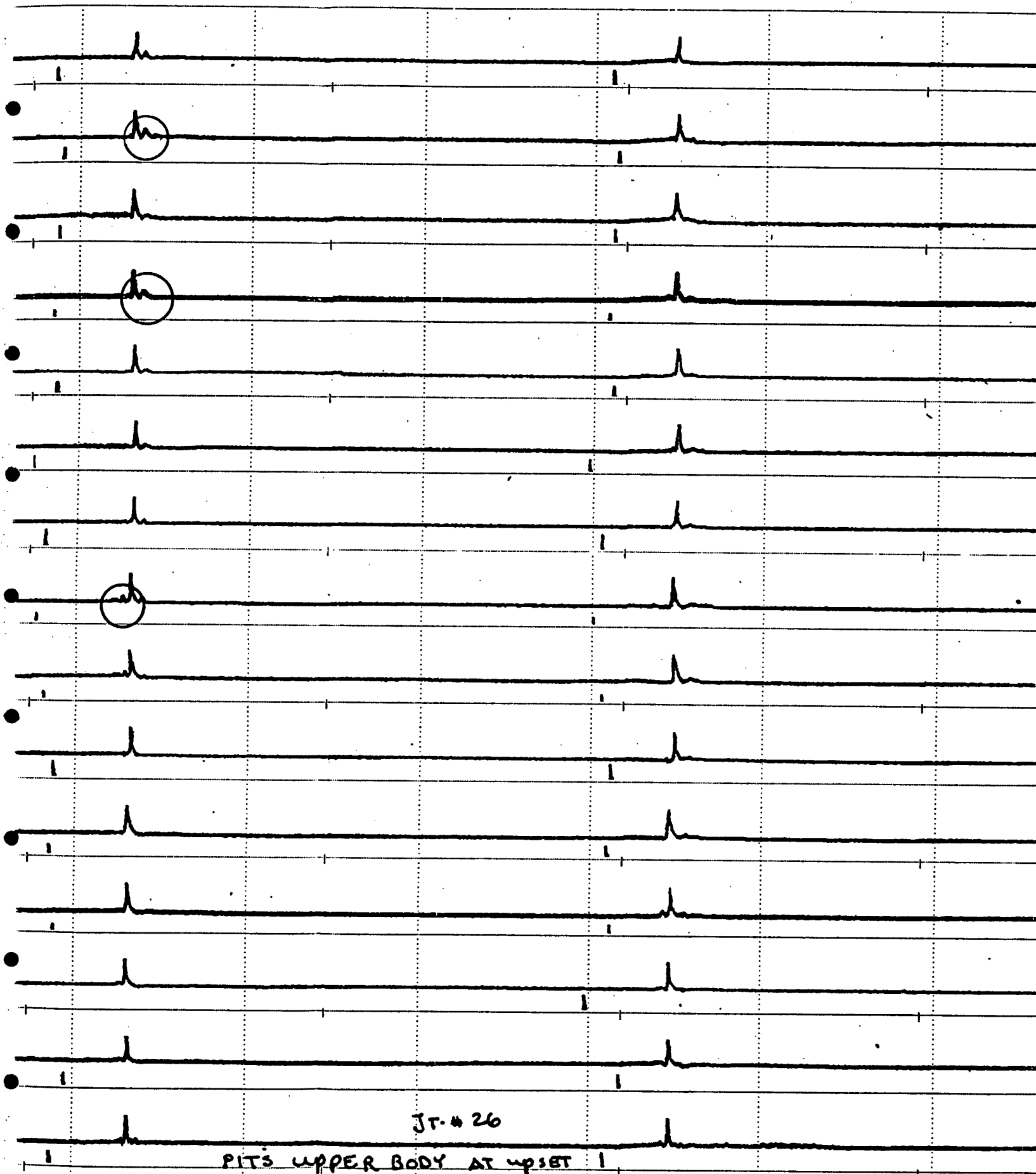


supw Pitsl
DLE & LOWER
DY

S # 23493

JT # 25
PITS UPPER AND
LOWER BODY AT
UPSET

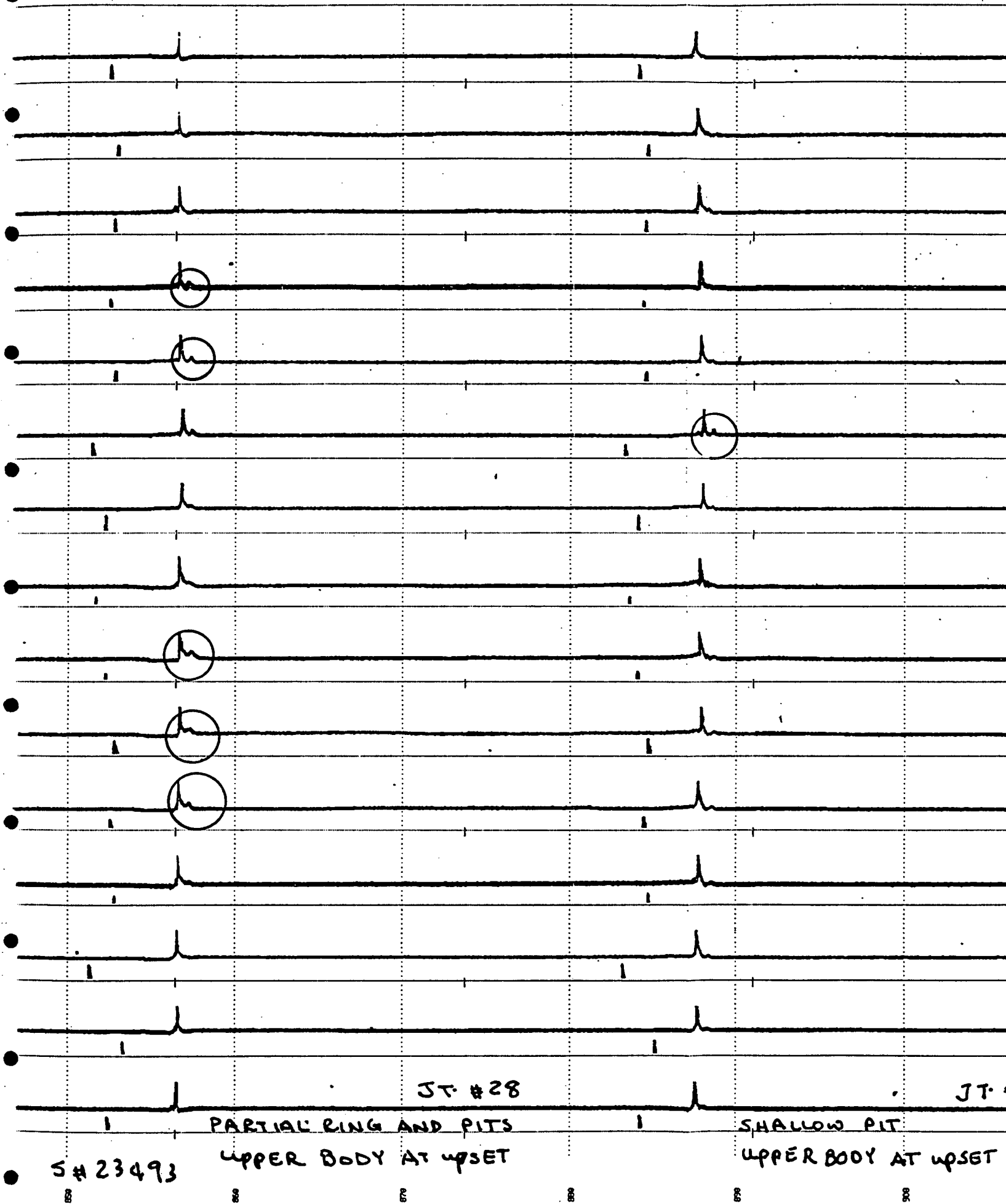
PITS UPPER BO

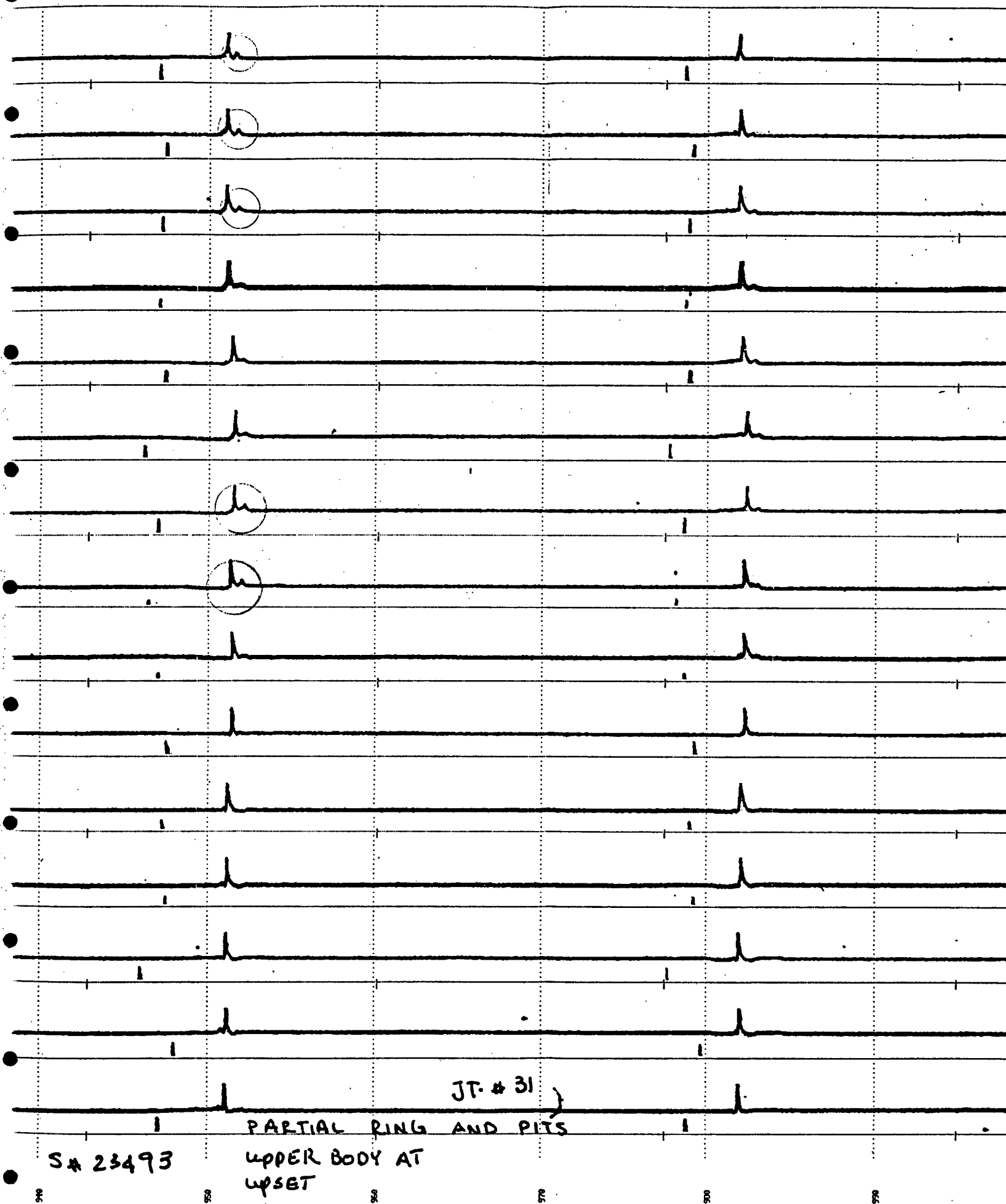


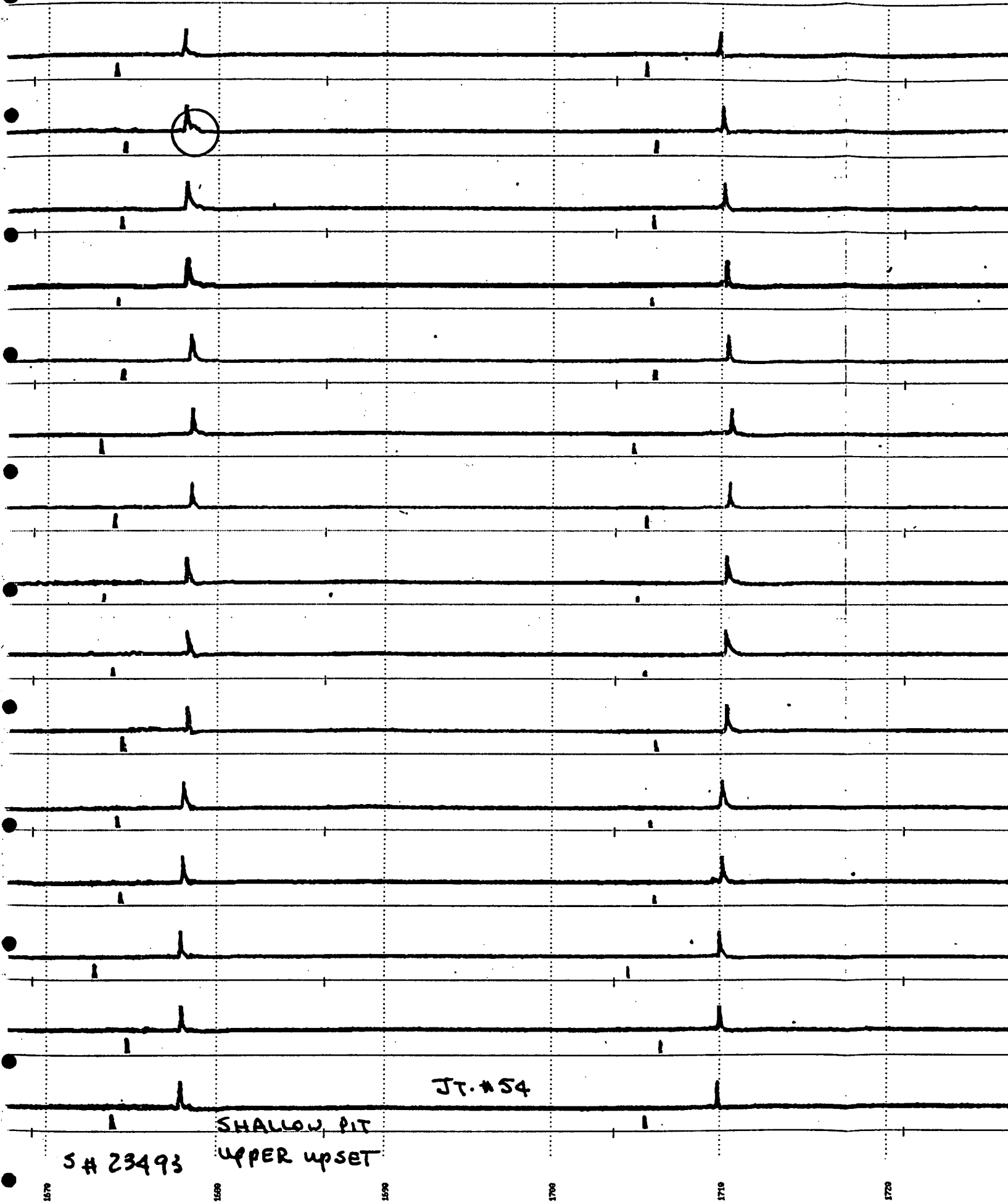
JT-# 26

PIT'S UPPER BODY AT UPSET

S# 23493







JT.#54

SHALLOW PIT
UPPER UPSET

S# 23493

1570

1580

1590

1600

1610

1620