Open File Envelope

NUMBER 7349/2

PEL 5 AND PEL 6, MERRIMELIA-INNAMINCKA BLOCK

EROMANGA AND COOPER BASINS

COOBA 1

TEST REPORTS

Submitted by

Santos Ltd
1993

MINES AND ENERGY
SOUTH AUSTRALIA

Enquiries: Information Services Branch
Mines and Energy South Australia
191 Greenhill Road, Parkside 5063
Telephone: (08) 274 7687
Facsimile: (08) 272 7597

ENVELOPE 7349/2

TENEMENT: PEL 5 and PEL 6, Merrimelia-Innamincka Block; Eromanga and Cooper Basins

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

CONTENTS

END OF CONTENTS

SANTOS LIMITED
A.C.N. 007 550 923
PETROLEUM DEVELOPMENT

COOBA 1 RFT INTERPRETATION

Report No.: RE: 027/91
Author: Kym Serafini
Date: April 1991

7870N(1)

CONTENTS

1.0 SUMMARY

An RFT survey was conducted in Cooba 1 (KB = 128') to determine reservoir pressures and field limits for the Cooba structure. The recommended limits for Proved and Probable Gas-in-Place for the Patchawarra sands in which RFT data were obtained are listed below.

Cooba Field Proved and Probable Gas-in-Place

Recommended Limits

Formation	Sand	2P Limit 'SS	Type	Remarks % Fill	Remarks LKG 'SS	Remarks LCC 'SS
Patchawarra	88-5	8774	RFT	50%	8741	8820
	92-3	9195	RFT	100%	9116	9195
	93-4	9256	RFT	50%	9230	9300

These limits are recommended on the basis of a water line established with regard to Narie 1 RFT data and LKG and HKW data from Narie Field and regional data. An 80% fill factor is recommended for determining Proved and Probable OGIP in the remaining Patchawarra sands.

The recommended field limits for Possible gas in the Cooba Patchawarra sands (other than the 92-3 sand) should be their respective LCC's.

2.0 BACKGROUND

Cooba 1, a Block exploration well, was drilled in the Merrimelia-Innaminkcka Block in March 1991. The Cooba Field is situated approximately 5.5 km east of Kanowana Field (Figure 1).

The well was drilled primarily to assess the Patchawarra Formation (gas-condensate) and the Tirrawarra Sandstone (gas-condensate or oil). An RFT survey was conducted to aid in the determination of reservoir pressures and field limits. A total of 38 points were attempted using the strain gauge (Table 1). The Hutton, Poolowanna, Nappamerri, Toolachee, Epsilon and Patchawarra Formations were tested. There were 20 successful tests (7 good tests, 11 normal tests and 2 low K tests), six dry tests and 12 seal failures due to poor hole conditions.

3.0 DISCUSSION

3.1 General

All pressure points in this RFT survey were obtained using a strain gauge. Despite poor hole conditions which resulted in 12 seal failures, the hydrostatic pressure due to the mud column, before and after each RFT point, showed minimal variation indicating reliable data (Table 2).

Four RFT points were taken in Jurassic sands. One was a dry test and the remainder exhibited good permeability.

34 RFT points were attempted in the Permo-Triassic section. There were 5 dry tests, 12 seal failures and 17 normal tests (6 possibly supercharged).

3.2 Hydrocarbons Encountered

Cooba 1 encountered gas in the Patchawarra Formation (Figure 1) ie - DST 2 flowed 8.8 MMscfd over the 92-3, 92-6, 93-0, 93-4 and 93-7 sands (Figure 3). RFT data has been used to define % fill for these sands. A valid RFT data point from the 89-7 sand was also plotted but the sand has not been included as pay since it tested RTSTM (DST 4A).

3.3 RFT Interpretation

The use of RFT data to infer field limits requires a water line be established on a plot of the RFT measured pressures versus depth (Figure 2). Points above the water line are assumed gas filled and may be extrapolated to a theoretical gas water contact. The assumed gas gradient determined from the reservoir fluid properties was 0.08 psi/ft.

3.4 Water Line

No water bearing Patchawarra sands were encountered in Cooba 1. By assuming that the Patchawarra reservoir pressures (gas and water) in the Cooba and Narie structures correspond to the same potentiometric surface, it was possible to apply Patchawarra water data from Narie to Cooba. We believe this is a reasonable assumption given that Narie is only some 6 km from Cooba. Narie 1 RFT data and LKG and HKW data from Narie Field were used to define two water lines for Cooba Field Patchawarra Formation. Cooba 1 data, when superimposed on these lines, indicated a reasonable 'pseudo' water line for defining Probable limits (Figure 4).

In the Narie Field, an LKG (8189'SS from Narie 1) and an HKW (8301'SS from Narie 2) exists for the 83-0 sand. By extrapolating a gas gradient through the Narie 1 RFT point in the 83-0 sand, an intersection with the LKG (3649 psig, 8189'SS) and an intersection with the HKW (3659 psig, 8301'SS) were defined. Plotting these two points on the Cooba RFT plot and applying a water gradient (0.410 psi/ft based on Cooba reservoir temperature and salinity) through both these points defines a 'window' of possible water lines; the uppermost or most conservative line being defined by the LKG and the lower or most optimistic line being defined by the HKW.

Cooba 1 RFT data from the 88-5, 92-3 and 93-4 sands were added to the plot. (Note that Figure 2 has all the RFT data whilst Figure 4 has valid pressure data). Relevant LKG's and LCC's were also plotted and the assumed gas gradient of 0.08 psi/ft was extrapolated through the RFT data to the water lines.

The Cooba data was then examined to see if it (1) was consistent with the Narie data and (2) could further limit the window of water lines for defining Probable limits in Cooba.

Firstly, considering the uppermost line, it was found that the Cooba and Narie data were consistent but that the Cooba data was unable to further limit the position of the line.

Consistency was indicated by the fact that the intersections of gas gradients drawn through the Cooba RFT data to the Cooba LKG's were above the uppermost line. The closeness of these to the line for the 88-5 and 93-4 sands indicates that the water line defined by the Narie LKG should be regarded as a <u>conservative</u> upper limit for the position of a water line. It is <u>conservative</u> because Cooper Basin experience indicates the water line shifts towards the right with increasing depth.

Secondly, considering the lower most line, it was also found that the Cooba and Narie data were consistent (as expected) and confirmed that the Probable limit was likely to be defined by a water line between the two Narie lines.

This was because the intersections of the gas gradients from the 88-5, 92-3 and 93-4 sands RFT points and their respective LCC's lie between the two Narie lines. Current mapping and Coopers Creek 1 results indicated that water is likely to exist outside closure. It is therefore considered reasonable that a water line be established at the most conservative intersection (i.e. at 4049 psig, 9195'SS for the 92-3 sand) with a slope of 0.410 psi/ft to define the Probable limits in the remaining Patchawarra sands with RFT data (i.e. 88-5 and 93-4).

3.5 **Results (Table 3)**

For all sands the Proved limits should be the respective LKG's.

For those sands in which RFT data existed, the Probable limits should be defined by the intersection of the 'pseudo' water line with gas gradients drawn from the RFT pressure points. The Probable limits for the 88-5 and 93-4 sands are 8774' SS and 9256'SS and correspond to 50% and 50% fill respectively. The 92-3 sand would be 100% fill.

For the 92-6, 93-0 and 93-7 sands which had no RFT data, it is recommended that the Probable limits be based on 80% fill. This is consistent with regional data and on average with the data obtained in other sands in Cooba 1.

Possibles for all sands (other than the 92-3) should be defined by the respective LCC's.

TABLES

TABLE 1

Raw Data

COOBA 1 RFT

Formation	Sand	Depth, 'KB	RFT Pressure psig	Comments	Super-charged (Y/N)
Hutton	-	7368	-	Dry Test	-
	-	7378	3221.3	Good Test	N
	-	7428	3242.3	Good Test	N
Poolowanna	-	7592	3310.9	Good Test	N
Nappamerri	-	7805	-	Dry Test	-
	-	7810	-	Seal Failure	-
	-	8230	3756.7	Low K	Y
	-	8232	-	Dry Test	-
	-	8268	3727.5	Low K	Y
	-	8318	3664.0	Normal Test	Y
	-	8324	-	Dry Test	-
	-	8330	3662.1	Normal Test	Y
Toolachee	-	8378	-	Dry Test	-
Epsilon	-	8658	3793.0	Good Test	N
Patchawarra	88-5	8860	3879.4	Normal Test	Y
		8866	3874.6	Good Test	N
	89-7	8972	3942.1	Normal Test	N
		8983	4140.1	Normal Test	Y
		9000	3951.9	Normal Test	Y
		9007	4442.3	Normal Test	Y
		9016	-	Dry Test	-
		9018	-	Seal Failure	-
		9026	-	Seal Failure	-
		9032	4473.7	Normal Test	Y
		9038	4225.6	Normal Test	Y
		9045	-	Seal Failure	-
	91-7	9178	-	Seal Failure	-
		9179	-	Seal Failure	-
		9186	-	Seal Failure	-
	92-3	9236	4042.5	Normal Test	N
		9240	4042.6	Normal Test	N
		9241	-	Seal Failure	-
	92-6	9260	-	Seal Failure	-
	93-0	9309	-	Seal Failure	-
		9314	-	Seal Failure	-
	93-4	9342	4071.6	Good Test	N
		9350	4073.1	Good Test	N
	93-7	9369	-	Seal Failure	-

Type	#
SF	12
Dry	6
Successful (good, normal, low k)	20
	38
Valid pressures for field limits (i.e. - not supercharged)	10

TABLE 2

Client: SANTOS
Field:
Well: COOBA 1
Run date: 26TH MAR 1991

Tool Type: 00011 RFT-B
Probe Type: Conventional probe
Gauge: Strain gauge (SGP)
Gauge Resolution: 0.100 psi

Test number File number Test Type	8 8 Dry Test	9 11 Dry Test	10 12 Limited draw-down	11 13 Limited draw-down	12 14 Normal Test
Depth, FT True Vertical Depth, FT	7804.99	8232.02	8230.04	8268.06	8318.00
Mud Pressure before, PSIG Mud Pressure after, PSIG Last read build-up Pressure, PSIG Formation Pressure, PSIG	3929.93 3932.99 5.90	4138.03 4138.64 9.81	4140.14 4136.57 3756.68 3756.68	4147.95 4137.14 3727.62 3727.62	4169.36 4174.81 3663.82 3663.82
Pretest 1 duration, SEC Pretest 1 flow-rate, CC/SEC Pretest 2 duration, SEC Pretest 2 flow-rate, CC/SEC			68.1 0.15	66.3 0.15	20.7 0.48 11.1 0.90
Draw-down mobility, MD/CP Draw-down permeability, MD Viscosity, CP			0.365	0.409	1.078
Spherical extrapolated pressure, PSIG Spherical mobility, MD/CP Porosity Total compressibility, 1/PSI Depth of investigation, FT					
Radial extrapolated Pressure, PSIG Horizontal mobility-thickness, MD.FT/CP					

Client: SANTOS
Field:
Well: COOBA 1
Run date: 26TH MAR 1991

Tool Type: RFT-B
Probe Type: Conventional probe
Gauge: Strain gauge (SGP)
Gauge Resolution: 0.100 psi

Test number File number Test Type	3 3 Dry Test	4 4 Normal Test	5 5 Normal Test	6 6 Normal Test	7 7 Lost Seal
Depth, FT True Vertical Depth, FT	7368.00	7378.02	7428.04	7592.04	7810.06
Mud Pressure before, PSIG Mud Pressure after, PSIG Last read build-up Pressure, PSIG Formation Pressure, PSIG	3718.91 3715.82 28.53	3723.08 3721.60 3221.27 3221.27	3751.20 3750.57 3242.28 3242.28	3830.21 3829.50 3310.95 3310.95	3934.15 3934.95 3935.81
Pretest 1 duration, SEC Pretest 1 flow-rate, CC/SEC Pretest 2 duration, SEC Pretest 2 flow-rate, CC/SEC		18.9 0.53 5.7 1.75	19.5 0.51 5.7 1.75	19.5 0.51 5.7 1.75	
Draw-down mobility, MD/CP Draw-down permeability, MD Viscosity, CP		282.629	140.020	983.541	
Spherical extrapolated pressure, PSIG Spherical mobility, MD/CP Porosity Total compressibility, 1/PSI Depth of investigation, FT					
Radial extrapolated Pressure, PSIG Horizontal mobility-thickness, MD.FT/CP					

Client: SANTOS
Field:
Well: COOBA 1
Run date: 26TH MAR 1991

Tool Type: RFT-B
Probe Type: Conventional probe
Gauge: Strain gauge (SGP)
Gauge Resolution: 0.100 psi

Table 2 cont.

00012

Test number / File number / Test Type	18 / 21 / Normal Test	19 / 22 / Normal Test	20 / 23 / Limited draw-down	21 / 24 / Limited draw-down	22 / 25 / Limited draw-down
Depth, FT / True Vertical Depth, FT	8866.08	8972.10	8983.08	9000.08	9007.08
Mud Pressure before, PSIG	4442.81	4487.27	4495.20	4481.34	4494.63
Mud Pressure after, PSIG	4431.16	4476.24	4476.91	4496.23	4504.91
Last read build-up Pressure, PSIG	3874.59	3942.01	4140.07	3951.91	4440.99
Formation Pressure, PSIG	3874.59	3942.01	4140.07	3951.91	4440.99
Pretest 1 duration, SEC	20.4	17.7	81.3	47.4	191.7
Pretest 1 flow-rate, CC/SEC	0.49	0.56	0.12	0.21	0.05
Pretest 2 duration, SEC	6.0	2.7			
Pretest 2 flow-rate, CC/SEC	1.67	3.70			
Draw-down mobility, MD/CP	56.903	0.991	0.303	0.573	0.114
Draw-down permeability, MD					
Viscosity, CP					
Spherical extrapolated pressure, PSIG					
Spherical mobility, MD/CP					
Porosity					
Total compressibility, 1/PSI					
Depth of investigation, FT					
Radial extrapolated Pressure, PSIG					
Horizontal mobility-thickness, MD.FT/CP					

Client: SANTOS
Field:
Well: COOBA 1
Run date: 26TH MAR 1991

Tool Type: RFT-B
Probe Type: Conventional probe
Gauge: Strain gauge (SGP)
Gauge Resolution: 0.100 psi

Test number / File number / Test Type	13 / 15 / Dry Test	14 / 16 / Limited draw-down	15 / 17 / Dry Test	16 / 18 / Normal Test	17 / 20 / Limited draw-down
Depth, FT / True Vertical Depth, FT	8324.04	8330.03	8370.03	8658.03	8860.11
Mud Pressure before, PSIG	4170.74	4173.56	4183.24	4336.81	4441.98
Mud Pressure after, PSIG	4159.80	4175.57	4195.88	4330.80	4425.03
Last read build-up Pressure, PSIG	5.61	3661.99	7.19	3793.01	3879.45
Formation Pressure, PSIG		3661.99		3793.01	3879.45
Pretest 1 duration, SEC		45.3		20.7	33.3
Pretest 1 flow-rate, CC/SEC		0.22		0.48	0.30
Pretest 2 duration, SEC				6.3	
Pretest 2 flow-rate, CC/SEC				1.59	
Draw-down mobility, MD/CP		0.636		3.118	0.830
Draw-down permeability, MD					
Viscosity, CP					
Spherical extrapolated pressure, PSIG					
Spherical mobility, MD/CP					
Porosity					
Total compressibility, 1/PSI					
Depth of investigation, FT					
Radial extrapolated Pressure, PSIG					
Horizontal mobility-thickness, MD.FT/CP					

Table 2 cont.

Client: SANTOS
Field:
Well: COOBA 1
Run date: 26TH MAR 1991

Tool Type: RFT-B
Probe Type: Conventional probe
Gauge: Strain gauge (SGP)
Gauge Resolution: 0.100 psi

Test number File number Test Type	28 31 Dry Test	29 32 Normal Test	30 33 Lost Seal	31 34 Lost Seal	32 35 Normal Test
Depth, FT True Vertical Depth, FT	9016.09	9179.08	9178.12	9186.14	9236.08
Mud Pressure before, PSIG Mud Pressure after, PSIG Last read build-up Pressure, PSIG Formation Pressure, PSIG	4505.10 4489.17 11.71	4594.10 4584.39 4587.80 4587.80	4589.18 4591.50 4637.07	4592.44 4583.27 4591.80	4616.37 4612.44 4042.52 4042.52
Pretest 1 duration, SEC Pretest 1 flow-rate, CC/SEC Pretest 2 duration, SEC Pretest 2 flow-rate, CC/SEC		6.9 1.45 4.2 2.38			22.5 0.44 6.6 1.52
Draw-down mobility, MD/CP Draw-down permeability, MD Viscosity, CP		4.824			1.883
Spherical extrapolated pressure, PSIG Spherical mobility, MD/CP Porosity Total compressibility, 1/PSI Depth of investigation, FT					
Radial extrapolated Pressure, PSIG Horizontal mobility-thickness, MD.FT/CP					

Client: SANTOS
Field:
Well: COOBA 1
Run date: 26TH MAR 1991

Tool Type: RFT-B
Probe Type: Conventional probe
Gauge: Strain gauge (SGP)
Gauge Resolution: 0.100 psi

Test number File number Test Type	23 26 Lost Seal	24 27 Lost Seal	25 28 Normal Test	26 29 Lost Seal	27 30 Limited draw-down
Depth, FT True Vertical Depth, FT	9018.07	9026.06	9038.13	9045.10	9032.22
Mud Pressure before, PSIG Mud Pressure after, PSIG Last read build-up Pressure, PSIG Formation Pressure, PSIG	4496.56 4508.44 4505.42	4500.53 4510.91 4493.87	4507.98 4511.56 4225.60 4225.60	4498.70 4515.67 4531.09	4503.50 4508.98 4473.68 4473.68
Pretest 1 duration, SEC Pretest 1 flow-rate, CC/SEC Pretest 2 duration, SEC Pretest 2 flow-rate, CC/SEC			22.5 0.44 11.7 0.85		104.7 0.10
Draw-down mobility, MD/CP Draw-down permeability, MD Viscosity, CP			0.864		0.222
Spherical extrapolated pressure, PSIG Spherical mobility, MD/CP Porosity Total compressibility, 1/PSI Depth of investigation, FT					
Radial extrapolated Pressure, PSIG Horizontal mobility-thickness, MD.FT/CP					

Client: SANTOS
Field:
Well: COOBA 1
Run date: 26TH MAR 1991

Tool Type: RFT-B
Probe Type: Conventional probe
Gauge: Strain gauge (SGP)
Gauge Resolution: 0.100 psi

Table 2 cont.

00014

Test number File number Test Type	38 41 Normal Test	39 42 Normal Test	40 43 Lost Seal
Depth, FT True Vertical Depth, FT	9342.08	9350.08	9369.12
Mud Pressure before, PSIG Mud Pressure after, PSIG Last read build-up Pressure, PSIG Formation Pressure, PSIG	4664.70 4654.68 4071.57 4071.57	4665.66 4073.08 4073.08	4668.67 4666.61
Pretest 1 duration, SEC Pretest 1 flow-rate, CC/SEC Pretest 2 duration, SEC Pretest 2 flow-rate, CC/SEC	21.3 0.47 6.9 1.45	22.2 0.45 6.3 1.59	
Draw-down mobility, MD/CP Draw-down permeability, MD Viscosity, CP	29.583	19.909	
Spherical extrapolated pressure, PSIG Spherical mobility, MD/CP Porosity Total compressibility, 1/PSI Depth of investigation, FT			
Radial extrapolated Pressure, PSIG Horizontal mobility-thickness, MD.FT/CP			

Client: SANTOS
Field:
Well: COOBA 1
Run date: 26TH MAR 1991

Tool Type: RFT-B
Probe Type: Conventional probe
Gauge: Strain gauge (SGP)
Gauge Resolution: 0.100 psi

Test number File number Test Type	33 36 Lost Seal	34 37 Limited draw-down	35 38 Lost Seal	36 39 Lost Seal	37 40 Lost Seal
Depth, FT True Vertical Depth, FT	9241.08	9240.09	9260.13	9309.08	9314.08
Mud Pressure before, PSIG Mud Pressure after, PSIG Last read build-up Pressure, PSIG Formation Pressure, PSIG	4611.01 4616.95 4614.28	4609.27 4615.32 4042.60 4042.60	4617.94 4627.31 4619.02	4649.97 4640.46 4642.50	4645.76 4651.45 4646.13
Pretest 1 duration, SEC Pretest 1 flow-rate, CC/SEC Pretest 2 duration, SEC Pretest 2 flow-rate, CC/SEC		63.0 0.16			
Draw-down mobility, MD/CP Draw-down permeability, MD Viscosity, CP		0.403			
Spherical extrapolated pressure, PSIG Spherical mobility, MD/CP Porosity Total compressibility, 1/PSI Depth of investigation, FT					
Radial extrapolated Pressure, PSIG Horizontal mobility-thickness, MD.FT/CP					

TABLE 3

Recommended Field Limits and % Fill Data

Formation	Sand	Limits ('SS) Proved LKG	Probable RFT	Possibles LCC	% Fill 1.	% Fill 2.	% Fill 3.	% Fill 4.
Patchawarra	88–5	8741	8774	8820	14.1	14.1	> 100	50.0
	92–3	9116	9195	9195	13.2	73.0	> 100	100
	93–4	9230	9256	9300	21.4	21.4	> 100	50.0

1. % Fill to LKG
2. % Fill to water line based on Narie LKG
3. % Fill to water line based on Narie GKW
4. % Fill to water line based on 92–3 sand LCC

$$\% = \frac{X - \text{top porosity of sand}}{LCC - \text{Top porosity of sand}}$$

Where X = depth to LKG, depth to water line based on the Narie LKG, depth to water line based on Narie HKW or depth to LCC.

7870N(8)

FIGURES

FIGURE 1

00017

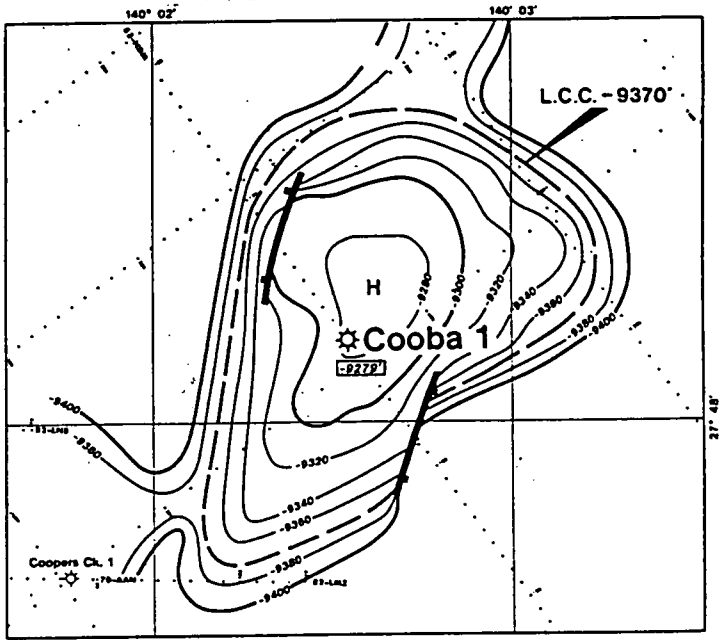
WELL SUMMARY

COOBA 1

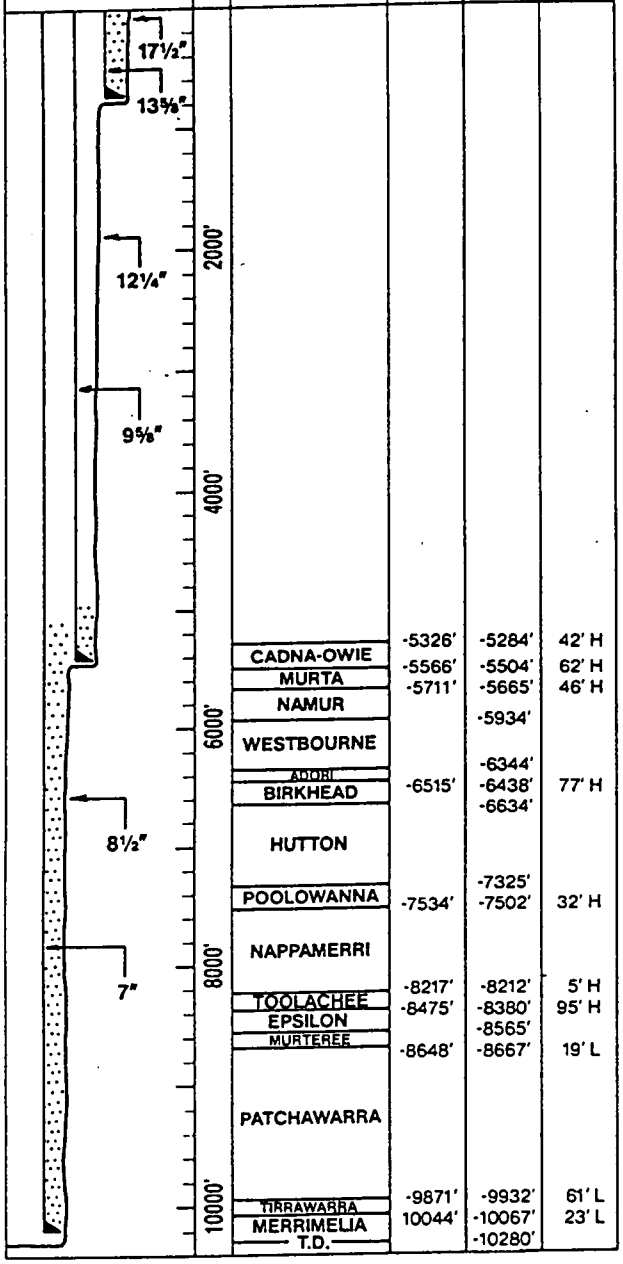
LATITUDE 27° 47' 47·738" S LONGITUDE 140° 02' 32·279" E

S.P. 141 LINE 83-NDM K.B. 128'

SPUDDED 28/2/1991
RIG RELEASE 10/4/1991
STATUS Cased and Suspended Gas Well
BLOCK Merrimelia/Innamincka
TYPE Exploration - New Field Discovery
AUTHOR M. Giuliano



TOP PATCHAWARRA COAL DEPTH STRUCTURE CONTOUR MAP



STRATIGRAPHY			
FORMATION	PROGNOSED TOP	ACTUAL TOP	DIFFERENCE
CADNA-OWIE	-5326'	-5284'	42' H
MURTA	-5566'	-5504'	62' H
NAMUR	-5711'	-5665'	46' H
		-5934'	
WESTBOURNE			
		-6344'	
ADORI			
BIRKHEAD	-6515'	-6438'	77' H
		-6634'	
HUTTON			
		-7325'	
POOLOWANNA	-7534'	-7502'	32' H
NAPPAMERRI			
	-8217'	-8212'	5' H
TOOLACHEE	-8475'	-8380'	95' H
EPSILON		-8565'	
MURTEREE	-8648'	-8667'	19' L
PATCHAWARRA			
TIRRAWARRA	-9871'	-9932'	61' L
MERRIMELIA	10044'	-10067'	23' L
T.D.		-10280'	

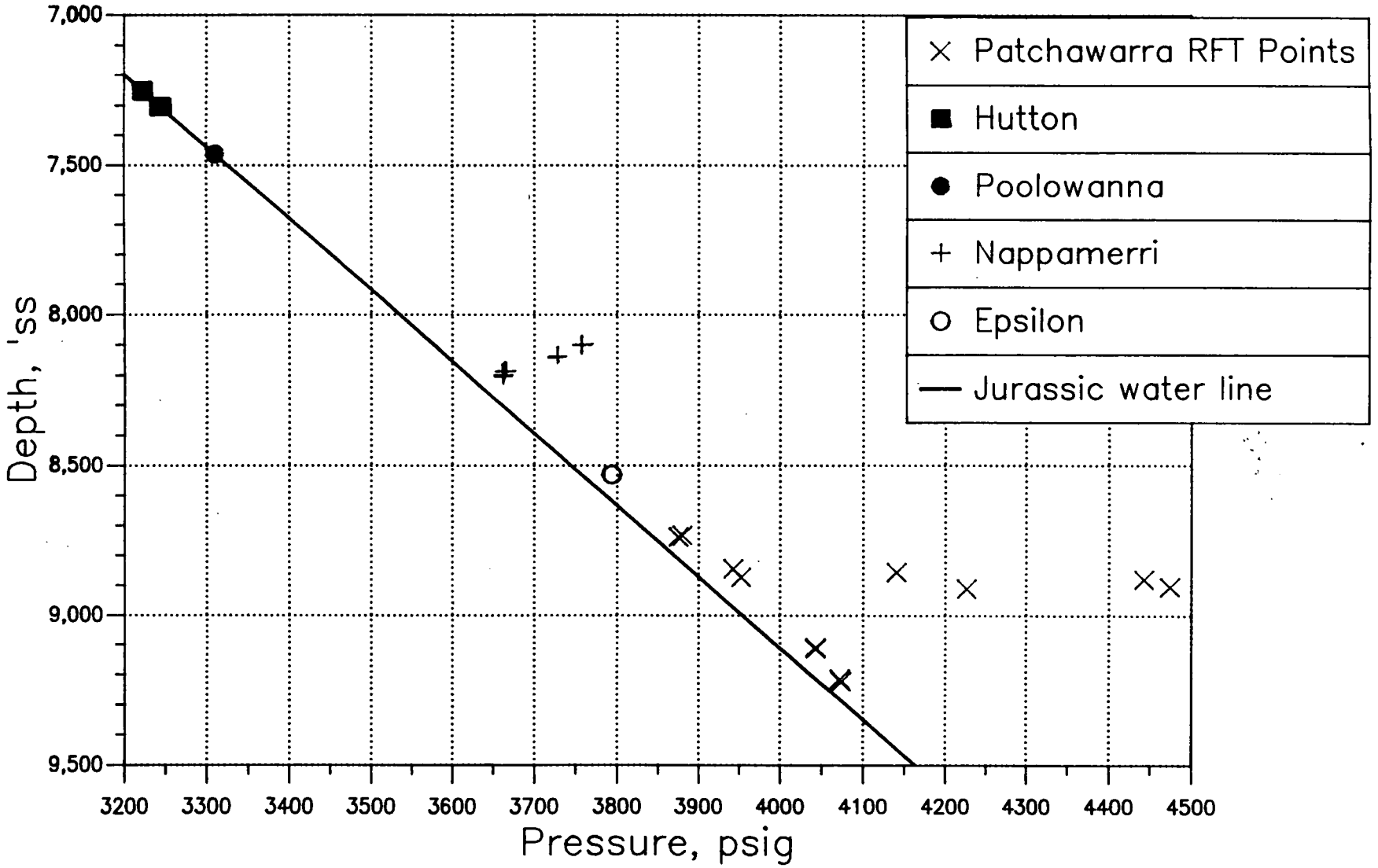
NET PAY SUMMARY		
Sand	Actual	Prognosed
PATCHAWARRA	46'	90'
TIRRAWARRA	0'	50'

D.S.T.	INTERVAL	RESULTS
1	9130' - 9215' (D)	NFTS. Recovery Lost
2	9196' - 9370' (D)	GTS in 12 mins @ 8-8 MMCFD
3	9920' - 10123' (D)	NFTS. Rec: 23 bbl SGCMWCush + 3.2 bbl GCM
4A	8943' - 9063' (L)	GTS in 62 mins @ RTSTM. Recovery Lost
4B	8872' - 8752' (L)	Misrun

CORE	INTERVAL	RESULTS
		No Cores Were Cut.

REMARKS

COOBA 1 RFT PLOT



00018

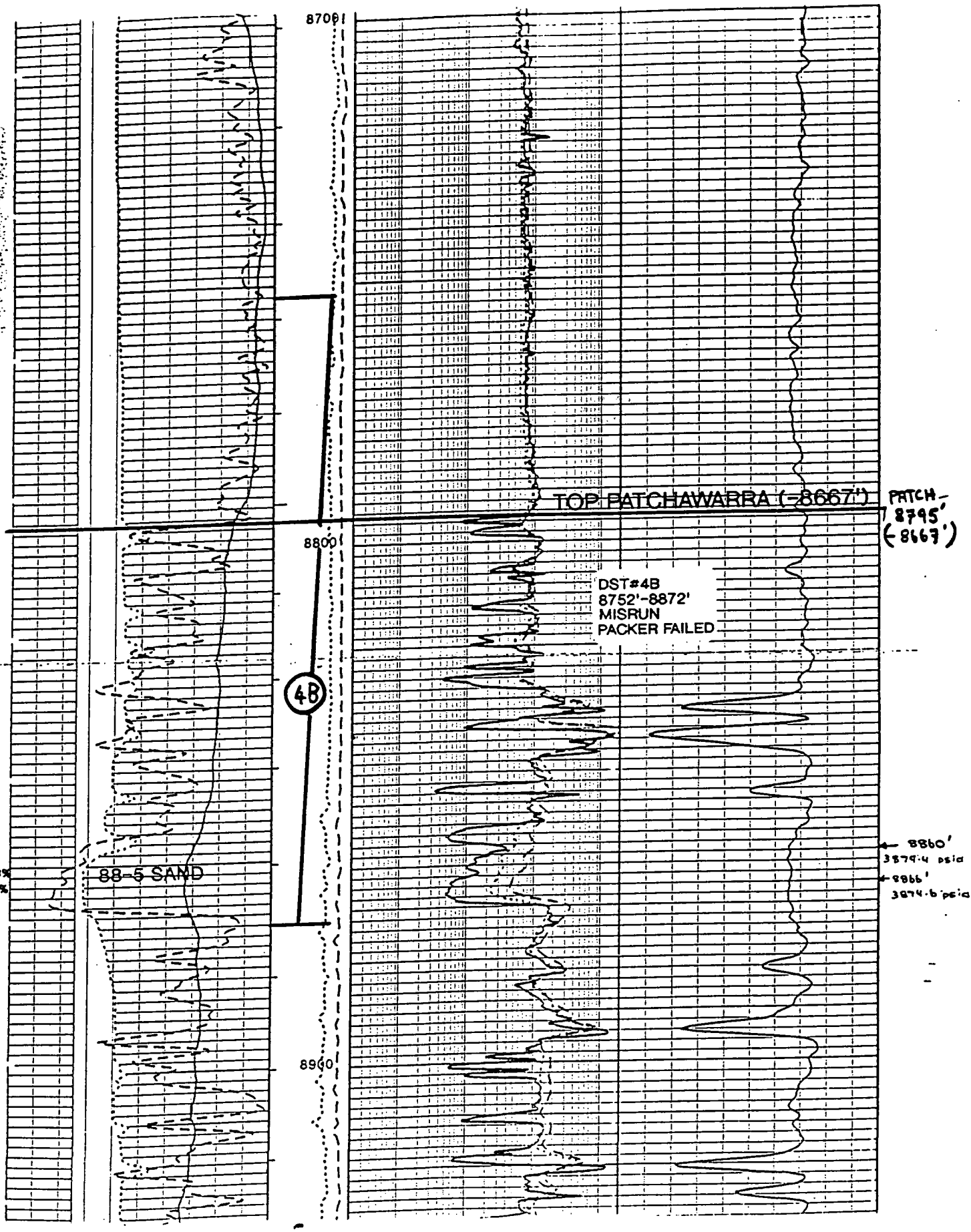
FIGURE

COOBA #1
PATCHAWARRA FM.
GR-MSFL-DLL-SDT

00019

FIGURE 3

KB 128'

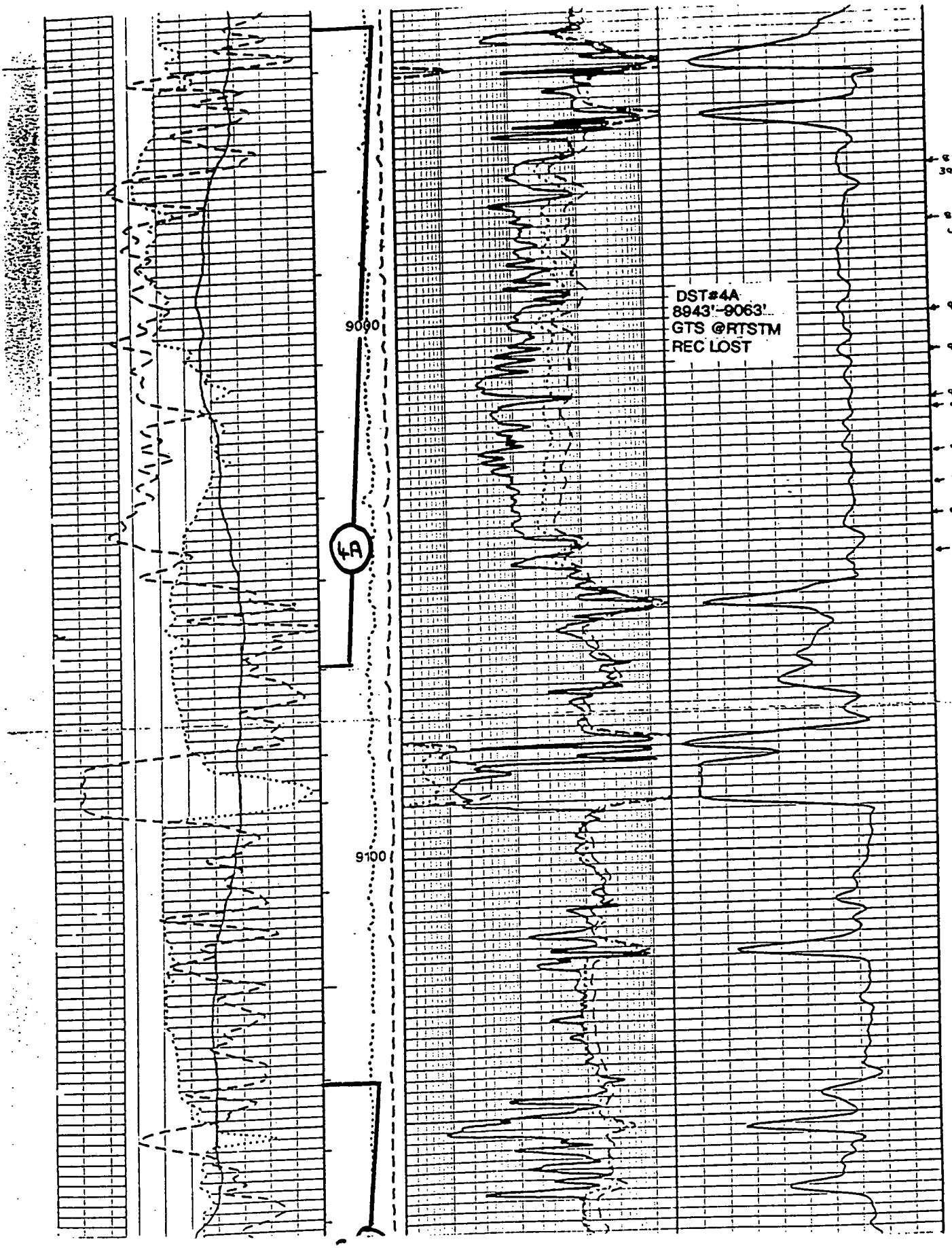


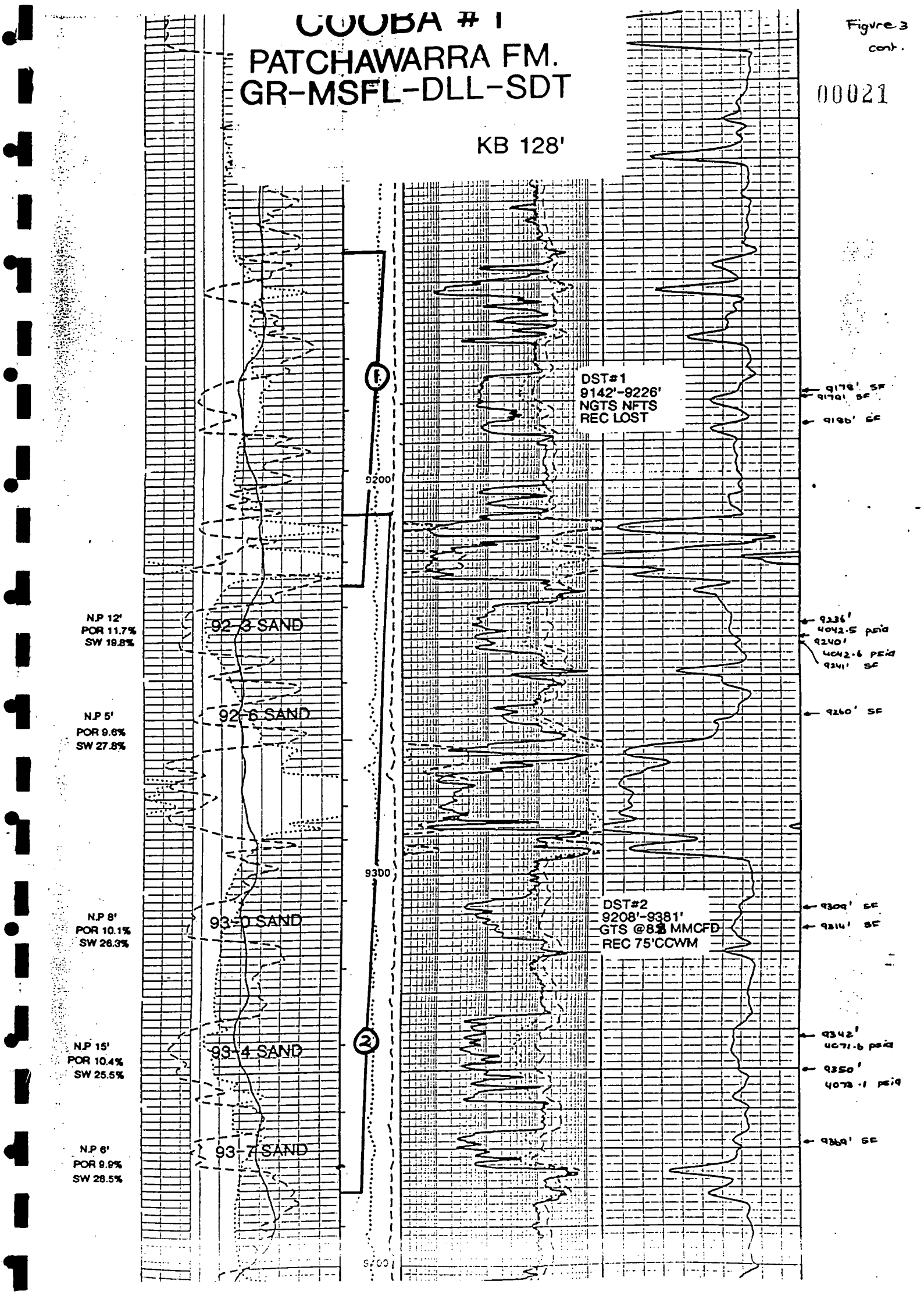
COOBA #1
PATCHAWARRA FM.
GR-MSFL-DLL-SDT

00020

Figure 3 cont.

KB 128'



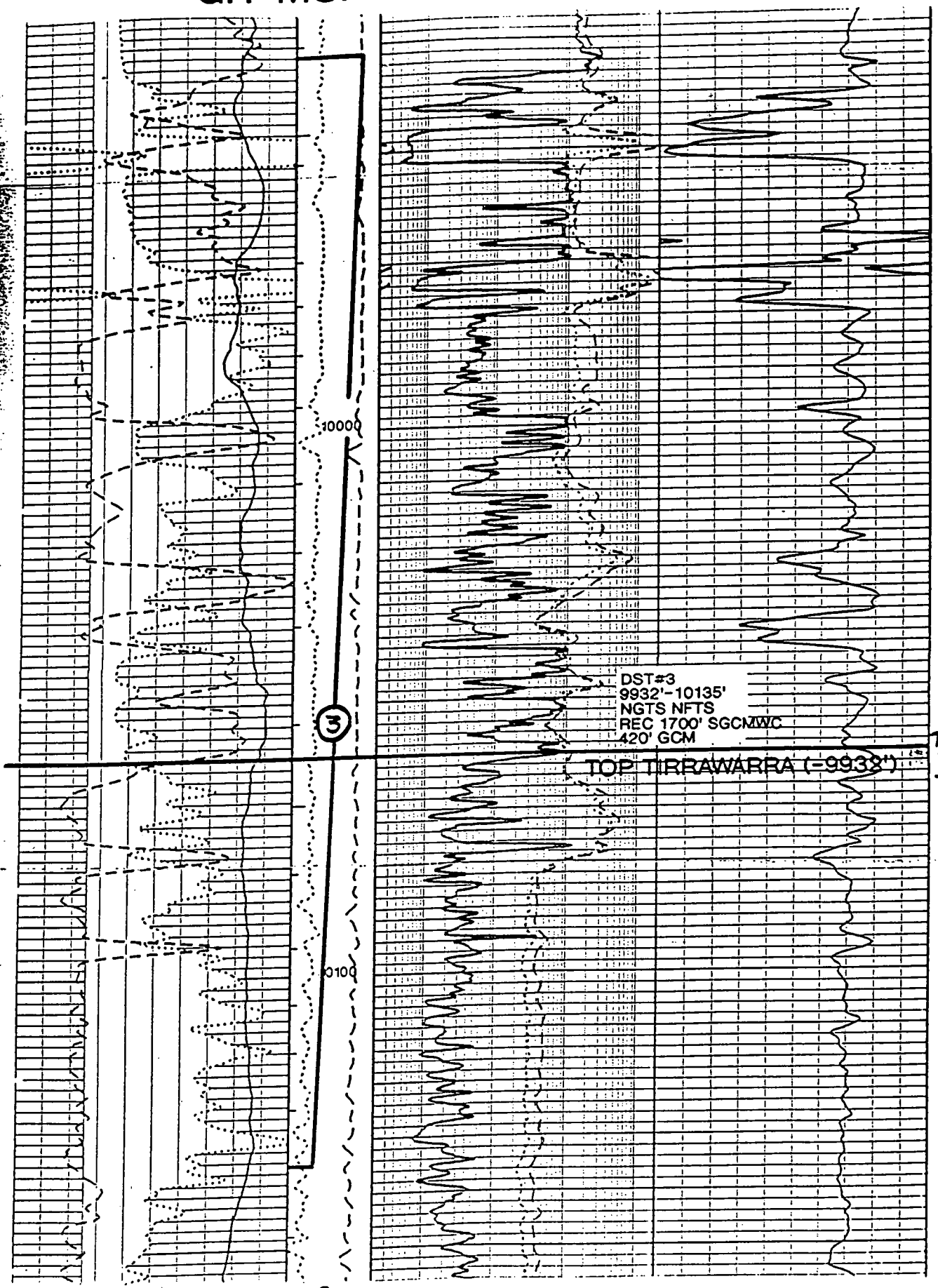

COOBA #1
PATCHAWARRA FM.
GR-MSFL-DLL-SDT
KB 128'
Figure 3 cont.
00021
DST#1
9142'-9226'
NGTS NFTS
REC LOST
9178' SF
9179' SF
9186' SF
9200
N.P 12'
POR 11.7%
SW 19.8%
92-3 SAND
9236'
4042.5 psia
9240'
4042.6 psia
9241' SF
N.P 5'
POR 9.6%
SW 27.8%
92-6 SAND
9260' SF
9300
DST#2
9208'-9381'
GTS @8[illegible] MMCFD
REC 75'CCWM
N.P 8'
POR 10.1%
SW 26.3%
93-0 SAND
9309' SF
9314' SF
N.P 15'
POR 10.4%
SW 25.5%
93-4 SAND
9342'
4071.6 psia
9350'
4078.1 psia
N.P 6'
POR 9.9%
SW 28.5%
93-7 SAND
9369' SF
9400

COOBA #1
PATCHAWARRA/TIRRAWARRA
GR-MSFL-DLL-SDT

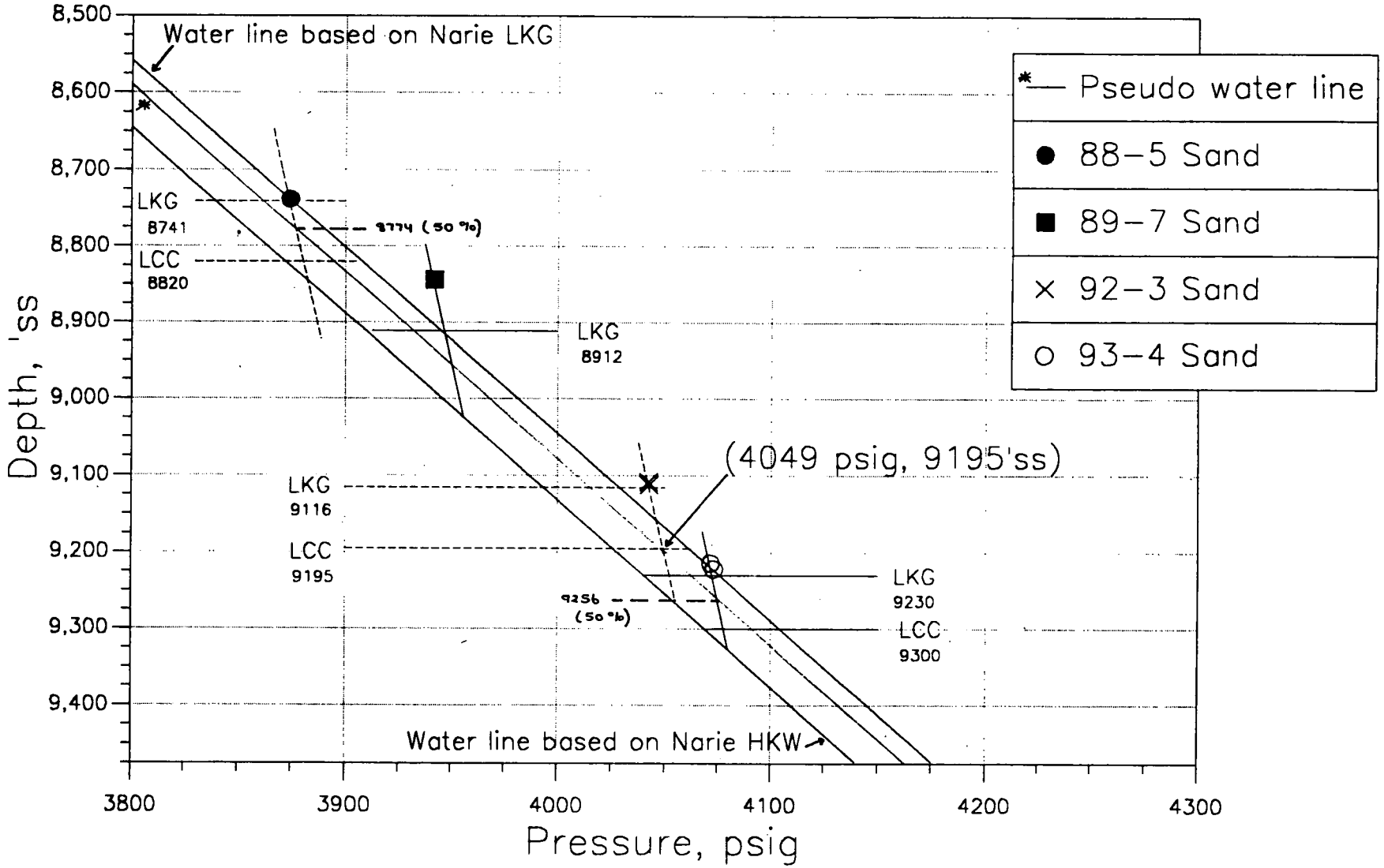
00022

Figure cont.

KB 128'



COOBA 1 RFT PLOT



00023

FIGURE 4

SANTOS LIMITED
PETROLEUM DEVELOPMENT DEPARTMENT
A.C.N. NO. 007 550 923

COOBA FIELD
RESERVOIR MANAGEMENT PLAN

REPORT NO: RE:030/91
AUTHOR: K.M. Serafini
DATE: April 1991

CONTENTS

TABLES

FIGURES

1. INTRODUCTION

The Cooba Field is situated approximately 5.5 km east of Kanowana in the Merrimelia Innamincka Block. The structure is a faulted anticline with 4 way dip closure (Figure 1). There are six pay sands in the Patchawarra Formation, as shown in Figure 2. Porosities and water saturations are also included in Figure 2. OGIP has been mapped below LKG to 80% fill for the 92-6, 93-0 and 93-7, 50% fill for the 93-4 and 88-5 and 100% fill for the 92-3 sand based on RFT data and regional evidence from nearby fields. Current OGIP, recoverable reserves and other reservoir data are shown in Table 1.

Reservoir quality is moderate with a permeability of 11.6 md having been determined for the 92-3, 92-6, 93-0, 93-4 and 93-7 sands which flowed 8.7 MMscf/d at 1970 psig FTHP on DST 2.

2. CURRENT DEVELOPMENT

Cooba 1 is cased and suspended. No production facilities have been installed at the surface.

3. DISCUSSION AND FUTURE PLAN

It is economically advantageous to connect Cooba 1 as soon as possible because the gas is likely to be liquids rich, deliverability is moderate and connection costs are relatively low. Consequently, it is proposed to complete and connect Cooba 1 and commence production in June 1991. Pre-production well testing and sampling will be carried out in accordance with the regulations. The composition is expected to be similar to Kanowana Patchawarra composition (as assumed in Table 1) and thus be retrograde. PVT studies may be undertaken. Pressure maintenance is not viable because of the small reserves and multilayered nature of the reservoir. LET's will be conducted in accordance with the regulations. However, since the field has small reserves and liquid loading in the tubing may be significant, bottomhole pressure surveys shall be conducted until the recoverable reserves estimates is confidently predicted after which time no more pressure build up surveys shall be conducted.

4. BIBLIOGRAPHY

SERAFINI, Kym - Cooba 1 RFT Interpretation RE:027/91.

ATTACHMENTS

RESERVOIR DATA

FIELD: COOBA
FORMATION: PATCHAWARRA
BLOCK/STATE: M/I/ SA

REF DATE: 31/12/89

OGIP (2P):	TO LKG/GWC	3.1	BCF
	SUB LKG	12.0	BCF
	Total	15.1	BCF
Init. Rec. Raw Gas:		7.1	BCF
Cum. Prod. Raw Gas:		0.0	BCF
REMAINING RAW GAS:		7.1	BCF
Basis for estimation:		Volumetrics	

RECOVERY FACTOR	
RAW GAS:	0.4702
SALES GAS:	0.4702
ETHANE:	0.4702
LPG:	0.4333
C5+:	0.3920
YIELD FACTORS	
SALES GAS SHRINKAGE	0.4743
C2	38.19 (BBL/MMSCF)
LPG	28.54 (BBL/MMSCF)
C5+	39.02 (BBL/MMSCF)

FORMATION VOLUME FACTOR (1/Bg) 227.40 SCF/RCF

NUMBER OF PRODUCIBLE COMPLETIONS

Current Daily Production Rate: 0.0 MMCFD at 31/05/90
(Based on PRS)

COMPOSITIONAL DATA

	FWS (mole %)	LIQUIDS	SALES	COMPONENT BBL/MMCF	RAW BBL/MMCF
N2+	0.20		0.20		NIL
CO2	40.10		1.19		NIL
C1	43.88		43.88		NIL
C2	8.05	6.04	2.01	632.6	38.19
C3	3.00	2.85	0.15	651.3	18.56
iC4	0.49	0.49		774.0	3.79
nC4	0.83	0.83		745.8	6.19
iC5	0.31	0.31		866.0	2.68
nC5	0.36	0.36		857.4	3.09
C6	0.66	0.66		973.2	6.42
C7	0.71	0.71		1092.0	7.75
C8+	1.41	1.41		1352.8	19.07
	100.00	13.66	47.43		105.76

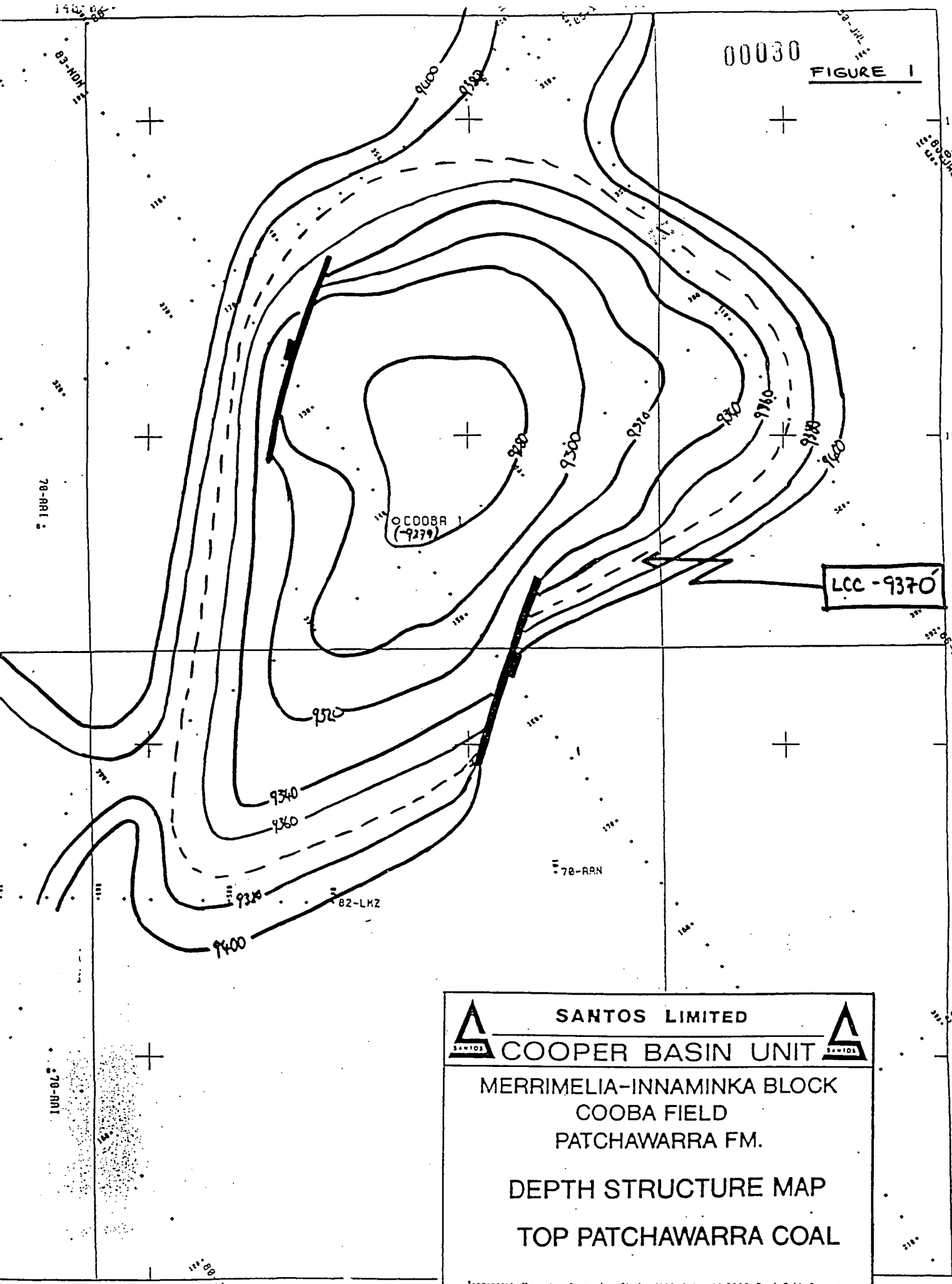
Original Reservoir Pres 4084 (psia)
Reservoir Temperature 730 (R)
MW C8+ = 138.20
SG C8+ = 0.7660
SG FWS = 1.1380

TABLE 1

00029

00030

FIGURE 1



SANTOS LIMITED

COOPER BASIN UNIT

MERRIMELIA-INNAMINKA BLOCK
COOBA FIELD
PATCHAWARRA FM.

DEPTH STRUCTURE MAP

TOP PATCHAWARRA COAL

Transverse Mercator Projection, Clarke 1858 Spheroid, 2000 Yard Grid, Zone 6

Original Scale : 1:10000		Author :	ENCL.
Contour Interval : As Shown		Drafted :	
Datum :	Date :	File No. :	

STATUTE MILES 0 .1 .2 .3 .4 .5 STATUTE MILES

KILOMETERS 0 .2 .4 .6 .8 1.0 KILOMETERS

COOBA #1

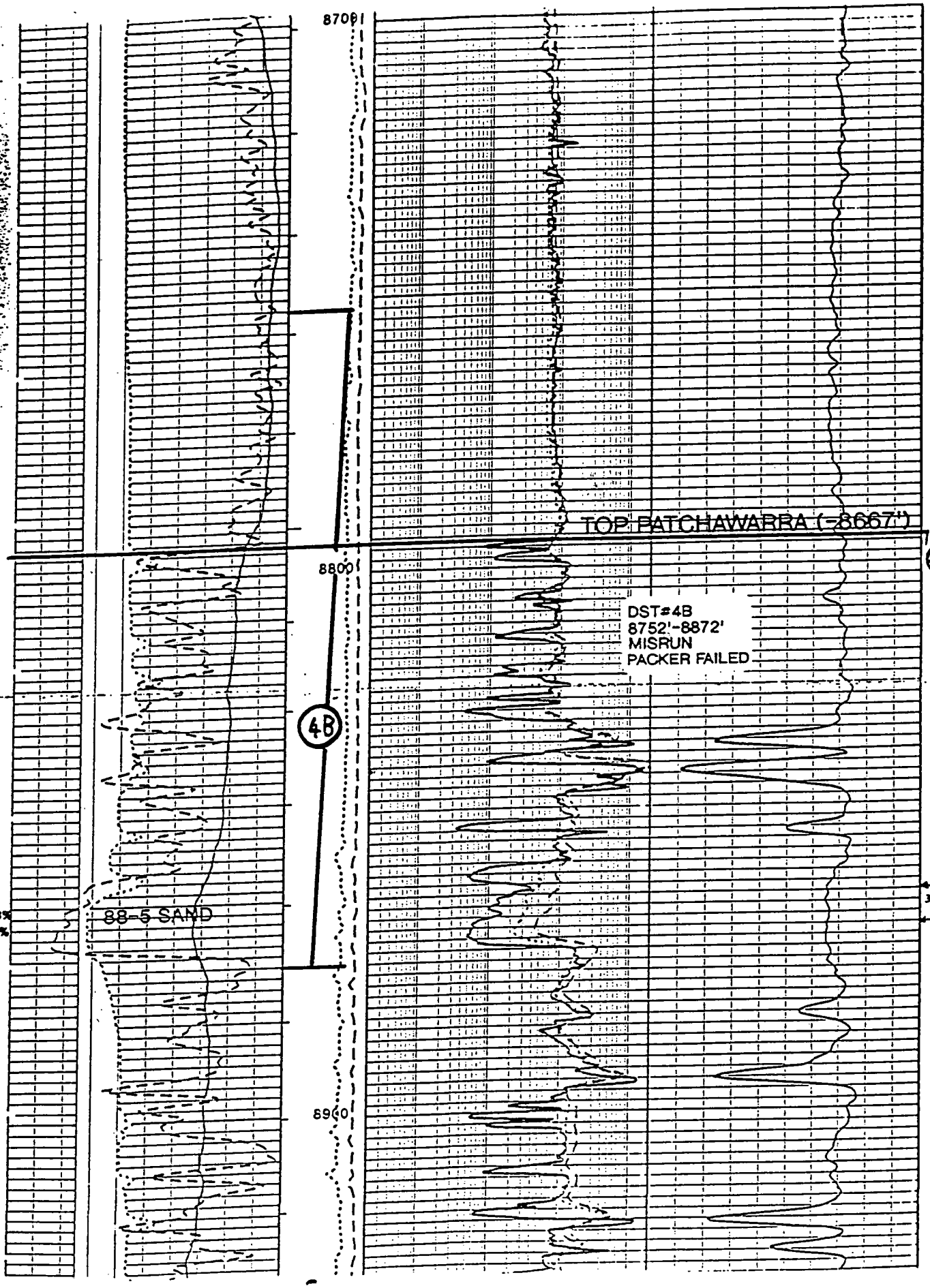
PATCHAWARRA FM.

GR-MSFL-DLL-SDT

00031

FIGURE 2

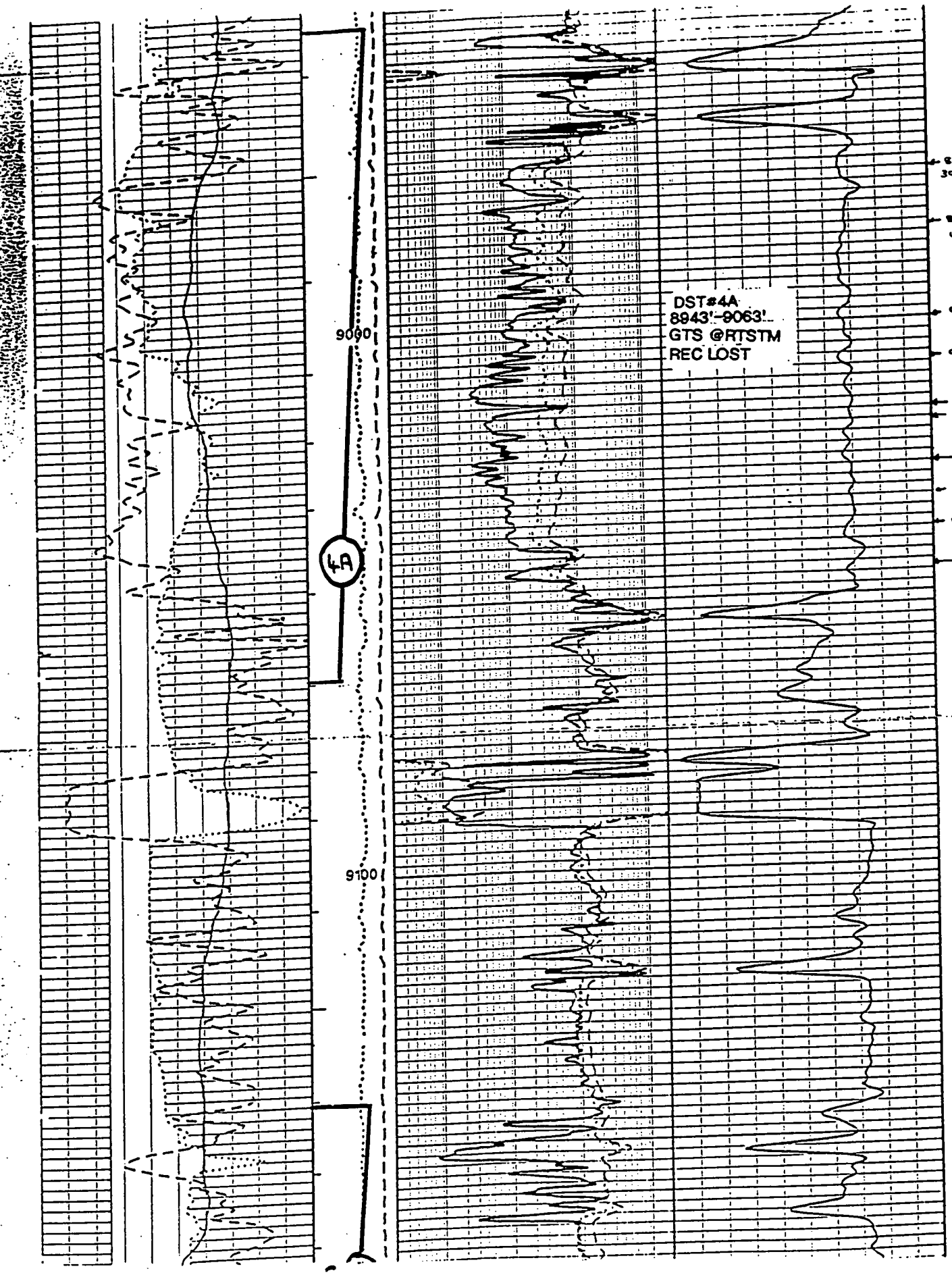
KB 128'



PATCHAWARRA FM.
GR-MSFL-DLL-SDT

00032

KB 128'



COOBA #1
PATCHAWARRA FM.
GR-MSFL-DLL-SDT

KB 128'

DST#1
9142'-9226'
NGTS NFTS
REC LOST

DST#2
9208'-9381'
GTS @8.7 MMCFD
REC 75'CCWM

9200

9300

92-3 SAND

92-6 SAND

93-0 SAND

93-4 SAND

93-7 SAND

N.P 12'
POR 11.7%
SW 19.8%

N.P 5'
POR 9.6%
SW 27.8%

N.P 8'
POR 10.1%
SW 26.3%

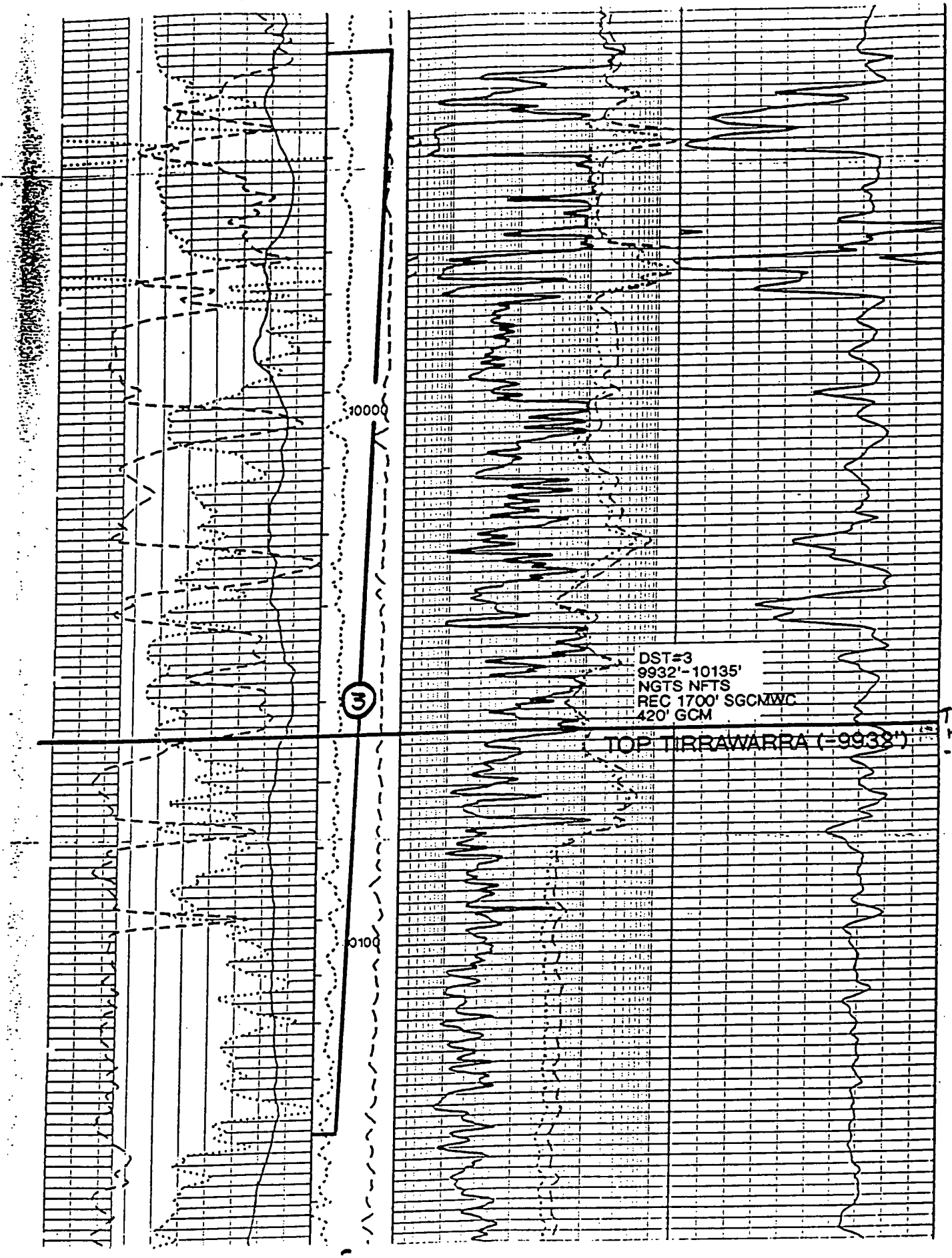
N.P 15'
POR 10.4%
SW 25.5%

N.P 6'
POR 8.9%
SW 28.5%

9178' SF
9179' SF
9186' SF
9236' 4042.5 psia
9240' 4042.6 psia
9241' SF
9260' SF
9309' SF
9314' SF
9342' 4071.6 psia
9350' 4078.1 psia
9369' SF

PATCHAWARRA/TIRRAWARRA
GR-MSFL-DLL-SDT

00034 KB 128'



MINES DEPT. APPROVED
DATE 12/7/91

SAONE

Brief Well History:

Cooba #1 was drilled in February 1991 as a gas exploration well with primary targets in the Patchawarra and Tirrawarra sandstones.

DST #1 : Patchawarra (9140'-9225' KB) had no fluid to surface and the recovery was lost. Charts indicated approx 900' water in the drill string.

DST #2 : Patchawarra (9206'-9382' KB) flowed 245 E3 m^3/d gas (8.7 MMscf/d) through a 1/2" choke with 13630 kPa FTHP. Traces of condensate were recovered in the drill string.

DST #3 : Patchawarra/Tirrawarra (9932'-10135' KB) had no fluid to surface and recovered 1700' water in the drill string.

DST #4A: Patchawarra (8943'-9063' KB) flowed gas at a FTSTM with 7 kPa FTHP.

DST #4B: Patchawarra (8754'-8874' KB) was misrun and total recovery from DST #4 was lost.

FAXED 12/7/91
PET. ENG. SUPT.
MOOMBA

All DST depths were logger depths. Log analysis indicated a total of 5 Patchawarra gas sands with 46' of net pay and a possible 13' of net pay in an untested Patchawarra gas sand, plus a further 3 Patchawarra gas sands with minor potential.

During cementing of the 7" production casing the cement set inside the casing and was drilled out. The production casing was recemented. A cement bond log was run on 23/5/91 and it appeared that the cement bond was poor in places from 5300' KB to 7800' KB. Cement bond varied from fair to very good from 7800' KB to 8562' KB and was very good from 8562' KB to PBTD at 10005' KB. Analysis of the mV readings indicated there was sufficient cement over the interval 5300' to 7800' KB for isolation of the aquifer sands.

Current Status of Well: Cased and suspended.

Purpose of Programme: Complete the well as a single Patchawarra gas producer with provision for fracture stimulation and perforate underbalanced through tubing the Patchawarra 93-0, 93-4 and 93-7 sands for evaluation of fracture stimulation potential. The remaining sands will be perforated in stages at a later date.

Location: Latitude : 27° 47' 47.74" S
Longitude: 140° 02' 32.28 E

Elevation: Ground Level : 108' ASL
Kelly Bushing: 128' ASL
KB to top of tubing spool: 18.3'

Casing Details: Surface

Ran 13-3/8" casing to 854.5' KB as follows:

Description	Length (ft)	From (ft)	To (ft)
KB to top of Bradenhead	22.0	0.0	22.0
Bradenhead	1.3	22.0	23.3
20 jts 48# H40 ST&C	790.3	23.3	813.6
Float collar	1.4	813.6	814.9
1 jt 48# H40 ST&C	38.7	814.9	853.6
Guide shoe	0.8	853.6	854.5

Cemented with 770 sx Class 'A' cement with 10.5% Spherelite plus 1.5% Wyoming Bentonite plus 1% Calcium Chloride. Cement returns to surface.

Intermediate

Ran 9-5/8" casing to 5548.8' KB as follows:

Description	Length (ft)	From (ft)	To (ft)
KB to top of casing spool	20.1	0.0	20.1
Casing spool	1.9	20.1	22.0
1 jt (cut) 36# K55 LT&C	14.6	22.0	36.6
141 jts 36# K55 LT&C	5470.1	36.6	5506.8
Float collar	1.6	5506.8	5508.3
1 jt 36# K55 LT&C	38.7	5508.3	5547.0
Float shoe	1.8	5547.0	5548.8

Cemented with 270 sx Class 'G' cement with 0.2% HR-4.

Production

Ran 7" casing to 10313.2' KB as follows:

Description	Length (ft)	From (ft)	To (ft)
KB to top of casing spool	20.1	0.0	20.1
81 jts 29# L80 BTC Range 3	3177.9	20.1	3198.0
1 jt 29# N80 BTC x NK3SB	38.6	3198.0	3236.6
178 jts 29# N80 NK3SB	6995.1	3236.6	10231.7
1 jt 29# N80 NK3SB x LT&C	39.0	10231.7	10270.7
Float collar	1.6	10270.7	10272.3
1 jt 26# N80 LT&C	39.1	10272.3	10311.4
Float shoe	1.8	10311.4	10313.2

Cemented with 330sx Class 'G' cement plus 4% Wyoming Bentonite plus 0.5% HR-12 tailed by 900 sx Hi-Temp Blend cement plus 0.5% CFR-3 and 0.7% HR-12.

Perforations: Not yet perforated.

PBTD: 10005' KB

TD: 10313' KB

Reservoir Temperature: 270°F

Reservoir Pressure: 4048 psig @ 9368' KB (DST #4A Cooba #1)

Wellhead & Downhole Diagram: Not yet completed

Cost Code: 652/W417/813/XXX

CONTENTS

ATTACHMENTS

1. WORKOVER OUTLINE

1. Move in and rig up.

2. Install 11" 3000# x 7-1/16" 5000# tubing spool, energise X-bushing, nipple up BOP's and pressure test.

3. RIH bit and scraper on 3-1/2" drillpipe.

4. Circulate well to 1070 kg/m^3 (8.92 ppg) 2% KCl brine and POH.

5. Rig in Schlumberger and make up 5" HSD casing guns, 5 spf, 37 gm, RDX charges. Perforate the following Patchawarra sand intervals:

   93-0 9306' - 9316' KB
   93-4 9336' - 9358' KB
   93-7 9366' - 9373' KB

6. RIH with DB packer and tailpipe on wireline and set packer at 8750' KB.

7. RIH with E22 anchor seal assembly on 2-7/8" 6.5#/ft L80 NK3SB tubing and latch into packer.

8. Unlatch, reverse circulate annulus to 1070 kg/m^3 (8.92 ppg) 2% KCl inhibited brine, latch back into packer and land tubing with 5000 lbs slackoff.

9. Pressure test annulus to 13.8 MPa.

10. Make 2.34" gauge ring drift run on slickline and tag X-nipple at approximately 8770' KB. Make a 2.19" dummy run to 9900' KB.

11. Nipple down BOP's, nipple up wellhead and pressure test to 34.5 MPa.

12. Swab well to obtain a steady rate.

13. Rig down and move to next location.

14. Flow well to flare on cleanup.

2. KILL FLUID WEIGHT CALCULATIONS

Patchawarra

Reservoir Pressure: = 4048 psi at 9368' KB

Reservoir Temperature: = 270° F

Fluid Kill Weight: = $\frac{4048 + 150}{9368 \times 0.052}$

(based on 150 psi overpressure)

= 8.62 ppg

Temperature Correction

Average Downhole Temperature: = $\frac{270 + 70}{2}$

= 170° F

Density Correction: = 0.003 (170 - 70)

= 0.30 ppg

Required Density at 70° F = 8.62 + 0.30

= 8.92 ppg

Use 1070kg/m^3 (8.92 ppg) 2% KCl filtered brine

3. PROCEDURE

NOTE: Refer to the following SANPE procedures where necessary:

- 1-2 - Releasing Latch Seal Assemblies
- 1-4 - Running and Pulling BPV and 2-Way Check Valves
- 1-7 - Wellsite Inspection for Downhole and Surface Completion Equipment
- 1-8 - Tubing Landing
- 3-1 - Perforating and Setting Bridge Plug and Packers on Electric Line

A. Casing Preparation

1. Move in service rig and associated equipment.

2. Mix 64 m^3 (400 bbls) of 1070 kg/m3 (8.92 ppg) filtered 2% KCl brine.

3. Remove existing CIW type 'F' tubing spool. Clean and dress stub. Install a CIW type 'F' 11" 3000# x 7-1/16" 5000# tubing spool complete with X-bushing. Energise X-bushing and pressure test to 20.7 MPa (3000 psi) for 5 minutes.

4. Nipple up 7-1/16" BOP's. Install 3-1/2" pipe rams. Pressure test pipe rams, blind rams to 20.7 MPa (3000 psi) and hydril to 10.3 MPa (1500 psi).

5. Clean and tally 3-1/2" 13.3#/ft IF drillpipe.

6. Make up 6-1/8" bit and 7" casing scraper and RIH on 3-1/2" drillpipe. Work scraper across proposed packer setting depth of 8750' KB $\pm$ 60'. RIH to PBTD at approximately 10005' KB. Circulate well to 1070 kg/m^3 (8.92 ppg) clean and filtered 2% KCl brine.

7. POH laying down 3-1/2" drillpipe. Top up well with 1070 kg/m^3 (8.92 ppg) 2% KCl brine.

B. Run Completion

1. Rig in Schlumberger and make up 5" HSD casing guns with 5 spf, 37 gm, RDX charges. RIH and perforate the following intervals (Attachment #1).

Patchawarra	Interval (ft-KB)	Length of Perfs (ft)
93-0	9306 - 9316	10
93-4	9336 - 9358	22
93-7	9366 - 9373	7

NOTE: a) Measure the distance from the CCL to the top and bottom shots.

b) Correlation Logs - CBL/VDL/GR/CCL of 23/4/91
- SDT/DLL/MSFL/GR/SP of 26/3/91

2. Clean and tally 2-7/8" 6.5#/ft L80 NK3SB tubing.

3. Make up packer and tailpipe assembly on wireline as per Attachment #2B.

4. RIH and set packer at approximately 8750' KB. Log up to avoid collars if necessary. POH. Rig down Schlumberger.

5. Make up Baker E22 anchor/seal assembly size 80-32 onto 2-7/8" 6.5#/ft L80 NK3SB tubing as given in Attachment #2B.

6. RIH and latch into packer. Pull 10,000 lbs overpull to check latch. Space out to land with 5000 lbs slack off.

NOTE: a) Monitor torque make-up of all connections. A load cell must be installed in the power tongs.

b) Torque requirements for 2-7/8" 6.5#/ft NK3SB tubing are:

Grade	Optimum Torque	Maximum Torque
L80	2000 ft lbs	2200 ft lbs

c) Use National Oilwell API Modified 1 pipe dope.

d) Provide a report to Adelaide on the running of the tubing with details of any problems encountered.

e) Apply Baker seal grease to seal assemblies.

7. Unlatch from packer. Make up crossover, pup joints, 2-7/8" 6.5#/ft L80 ABIJ3SS tubing joint and FBB-EN tubing hanger c/w nipple. Reverse circulate one annulus volume of 1070 kg/m^3 (8.92 ppg) filtered 2% KCl brine including one drum of Applied 2100 inhibitor.

   NOTE: Pup joints should be run one full ABIJ3SS joint below hanger and nipple.

8. Latch into packer. Pull 10,000 lbs overpull to check the latch. Land the FBB-EN hanger in the tubing spool. Run in lock down screws.

9. Pressure test the annulus and packer seat to 13.8 MPa (2000 psi) for 20 minutes. Record test on chart recorder.

C. Drift Run and Wellhead Installation

1. Rig in Expertest. Make up 2.34" gauge ring and RIH on wireline. Tag X-nipple at approximately 8770' KB. POH.

2. Make up 2.19" gauge ring and RIH on wireline to 9900' KB. POH. Rig down Expertest.

3. Install back pressure valve. Nipple down BOP's and install 7-1/16" x 2-9/16" 5000# adaptor seal flange and 2-9/16" 5000# Trim 1 Xmas tree. Pull back pressure valve and install two-way check valve.

   NOTE: Contact Moomba Construction or Todd Alexander on Moomba 4628 for correct wellhead orientation.

4. Pressure test wellhead to 34.5 MPa (5000 psi). Remove two-way check valve.

D. Swab Well and Move Out

1. Rig to swab. Ensure swabbing equipment is in good condition prior to swabbing. Rig to flare the well through a choke. Ensure that the flareline is securely staked down. Swab well to obtain a steady rate. Monitor FTHP and annulus pressure.

2. Rig down and move out to next location. Flare the well to clean up on 1/2" choke and report results daily. Choke may be opened further if well does not lift liquids. Estimate flow rate.

NOTE: Please ensure all pin and box end protectors are returned to stores.

PRA:037/91
WP:4434g:15

ATTACHMENT #1

PERFORATION RECOMMENDATION APPROVAL

WELL: Cooba #1 DATE: 24/05/91

FORMATION: Patchawarra AUTHOR: M.F. Giuliano

DEPTH REFERENCE LOG: GR-DLL-MSFL LOG DATE: 26/03/91

RECOMMENDED PERFORATIONS:

Sand	Pay Interval (KB)	Proposed Perforation Interval (KB)	Pay Thickness	Ave Ø (%)	Ave SH (%)	% Fill	Min. Height above sub-LKG % Fill
93-0	9308'-9316'	9306'-9316'	8'	10.1	73.7	80%	64'
93-4	9339'-9358'	9336'-9358'	15'	10.4	74.5	50%	26'
93-7	9366'-9373'	9366'-9373'	6'	9.9	71.5	80%	67'
96-0	9600'-9618'	9600'-9618'	8'*	9.4	78.8	-	-
97-2	9706'-9731'	9706'-9731'	9'*	9.1	74.8	-	-
98-5	9847'-9868'	9847'-9868'	9'*	9.0	71.6	-	-
92-3	9231'-9246'	9231'-9244'	12'	11.7	80.2	100%	79'
92-6	9257'-9262'	9257'-9262'	5'	9.6	71.2	80%	68'
88-5	8854'-8870'	8854'-8870'	13'	10.8	67.8	50%	30'

* Possibles

REASONS FOR PERFORATIONS:

Cooba #1 flowed gas to surface at a rate of 8.7 MMCFD from DST #2 over a package of 5 Patchawarra sands (92-3, 92-6, 93-0, 93-4, 93-7). A total of 46' net gas pay is interpreted in these 5 sands while an additional 13' is interpreted in the 88-5 sand (DST #4B misrun). All sands are currently mapped to sub-LKG limits based upon RFT data and regional trends. A total of 15.1 BCF proved and probable OGIP is mapped within the six reservoir sands, with a further 12.1 BCF mapped as possible.

Cooba #1 is an addition to the 1991 Firm Budget because it has high deliverability and is liquids rich. A before tax payout of 6 months has been calculated on liquids alone.

DISCUSSION:

Interpretation of DST #2 indicates that the majority of production came from the 92-3 sand. It is proposed to initially perforate the 93-0, 93-4 and 93-7 sands and evaluate these for fracture stimulation prior to perforating the 92-3.

The proposed testing strategy of Cooba #1 is as follows:

1) *Perforate 93-0, 93-4 and 93-7 sands. Evaluate flow rate and permeability.*

2) *Evaluate fracture stimulation potential of these sands. Carry out if viable.*

3) Perforate 96-0, 97-2 and 98-5 sands (possibles only) and measure incremental flow.

4) Perforate 92-3 and 92-6 sand.

5) Perforate 88-5 sand at a later stage.

CURRENT WELL STATUS:

Cooba #1 is currently cased and suspended pending completion as a Patchawarra gas producer.

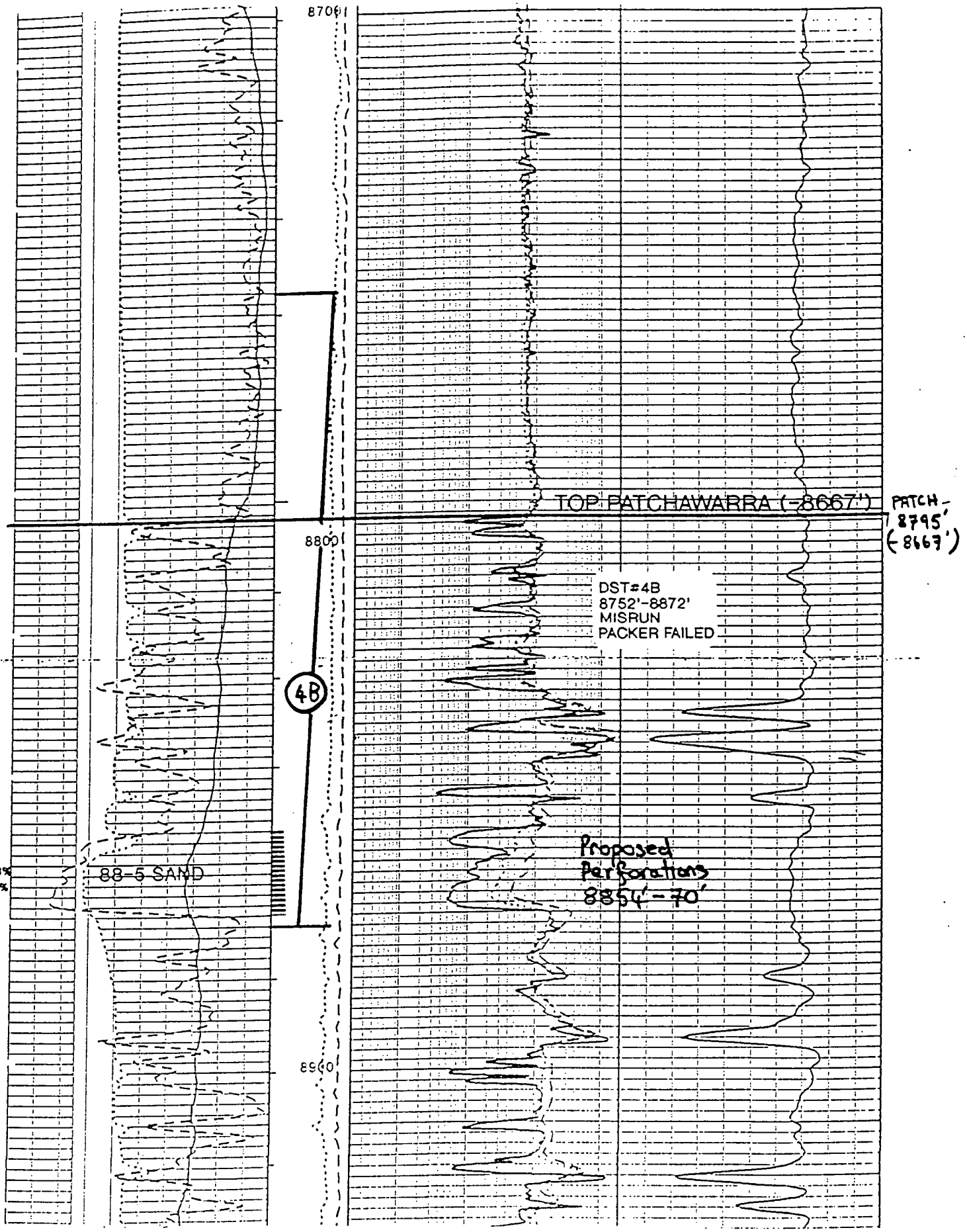
PREPARED BY:	Development Geologist		4/6/91
	Reservoir Engineer		4/6/91
RECOMMENDED BY: (FOR)	Team Leader Development Geology		4/6/91
	Team Leader Reservoir Engineering		4/6/91
APPROVED BY:	Group Leader Development Geology		6/6/91.
	Group Leader Reservoir Engineering		5/6/91.
	Manager, Petroleum Development		10/6/91
	Manager, Petroleum Engineering		11/6/91

RETURN TO DEVELOPMENT GEOLOGY WHEN SIGNED

COOBA #1
PATCHAWARRA FM.
GR-MSFL-DLL-SDT

00048

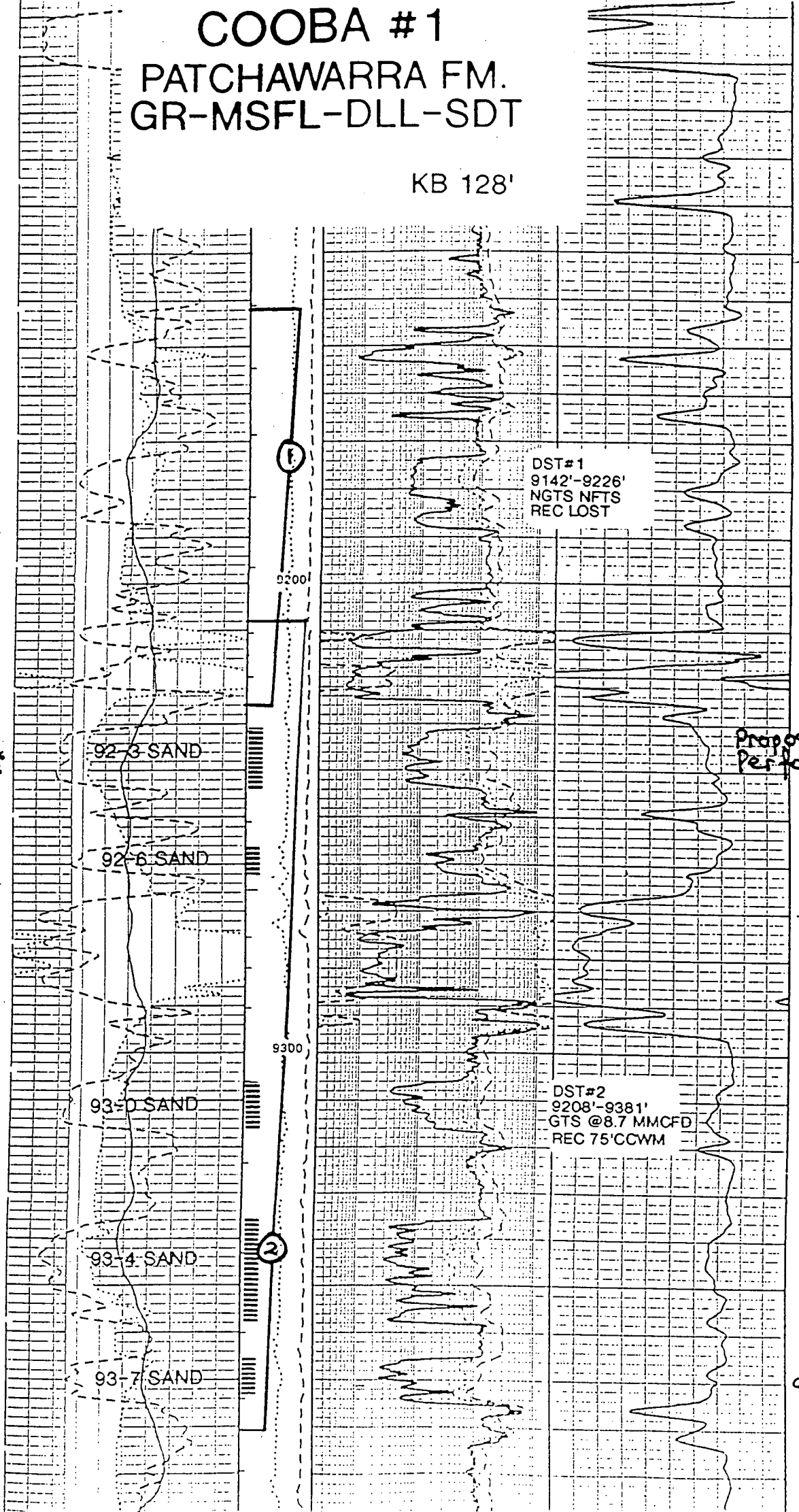
KB 128'

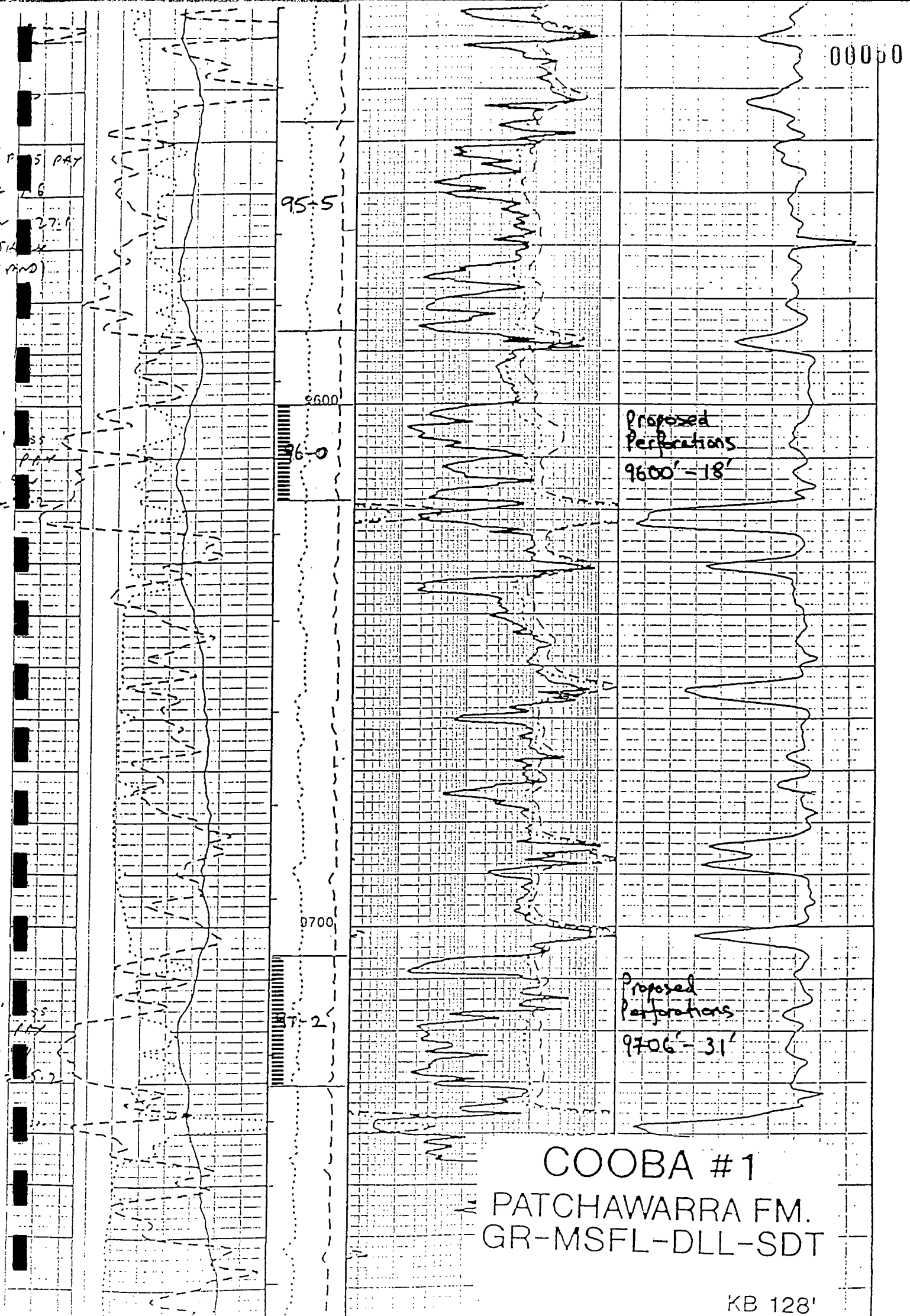


COOBA #1
PATCHAWARRA FM.
GR-MSFL-DLL-SDT

KB 128'

00049




00050
95-5
9600
96-0
9700
97-2
Proposed
Perforations
9600'-18'
Proposed
Perforations
9706'-31'
COOBA #1
PATCHAWARRA FM.
GR-MSFL-DLL-SDT
KB 128'

COOBA #1

PATCHAWARRA FM.

GR-MSFL-DLL-SDT

KB 128'

97-2

9800

98-0

98-5

9900

99-01

' poss pay
ϕ = 9.1
Sw = 25.9

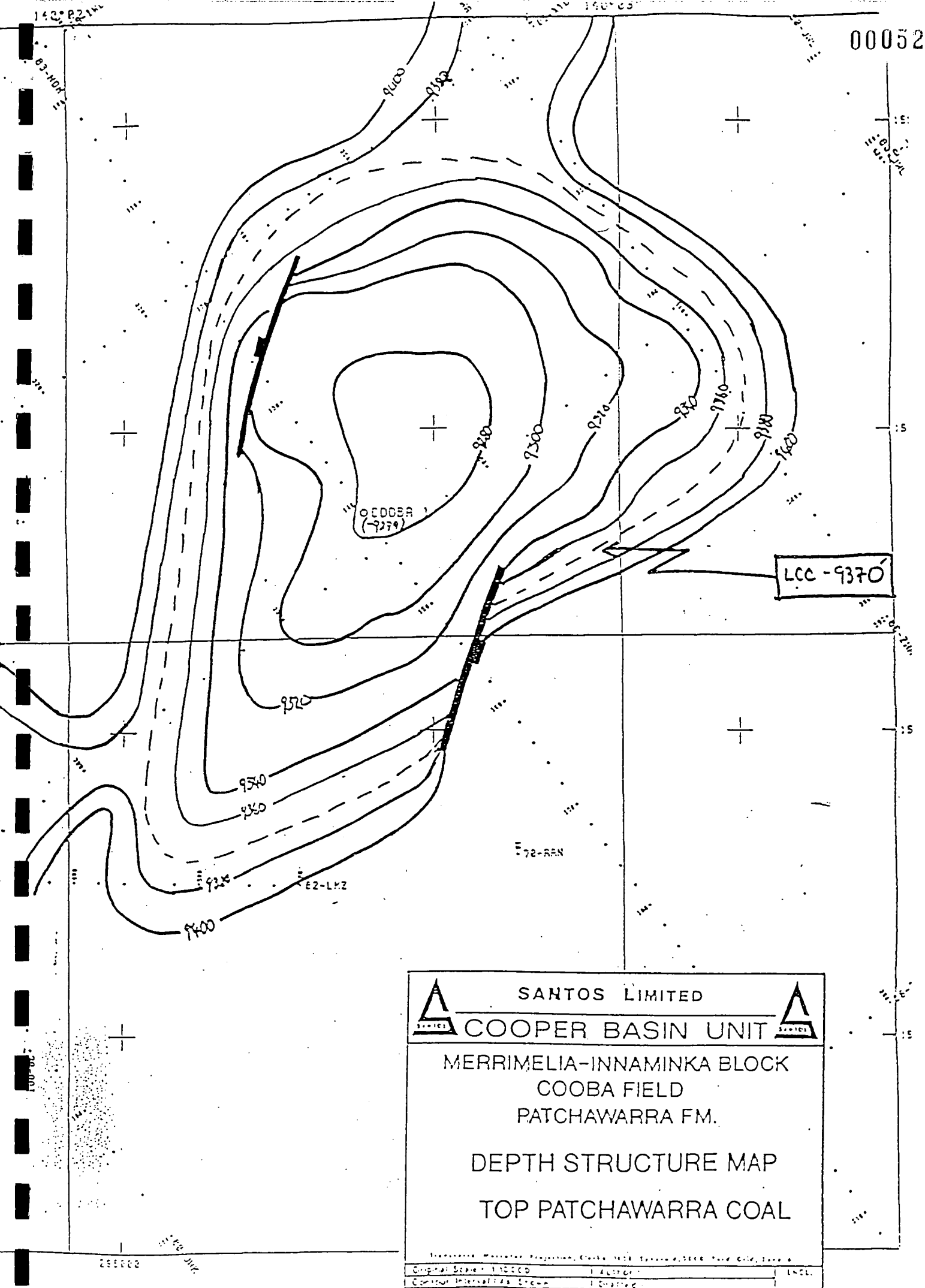
3' poss pay
ϕ = 9.1
Sw = 27.0

9' poss pay
ϕ = 9.0
Sw = 28.4

2' poss pay
ϕ = 8.3
Sw = 38.5

Proposed
Perforations
9847' - 68'

00052



SANTOS LIMITED

COOPER BASIN UNIT

MERRIMELIA-INNAMINKA BLOCK
COOBA FIELD
PATCHAWARRA FM.

DEPTH STRUCTURE MAP

TOP PATCHAWARRA COAL

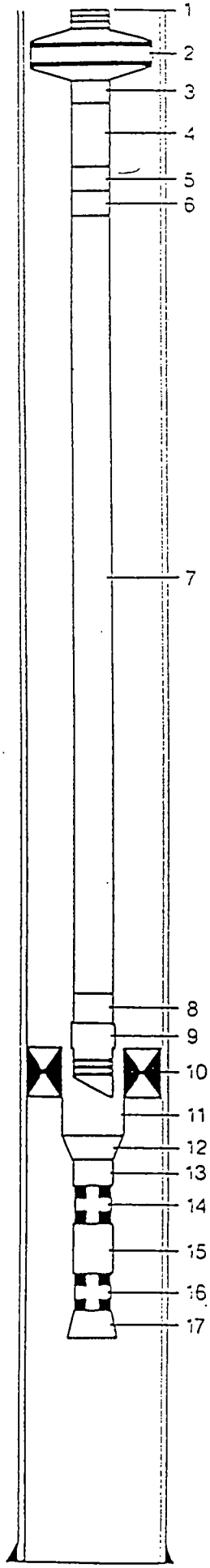
STATUTE MILES 0 .1 .2 .3 .4 .5 STATUTE MILES

PETROLEUM ENGINEERING DEPARTMENT

ATTACHMENT #2A

00053

DOWNHOLE INSTALLATION COOBA #1



P.B.T.D. 10005'KB

ITEM NO.	2⅞" FRAC STRING - 7" CSG	LENGTH (ft)	DEPTH K.B. (ft)	MIN. I.D. (in)
1	K.B. to top of tubinghead spool		0.00	
2	C.I.W. FBB-EN 7 1/16" x 2⅞" AB x 2⅞" CS Hydril			
3	Nipple 2⅞" L80 AB-IJ3SS pin x pin			
4	1 joint 2⅞" 6.5# L80 AB-IJ3SS			
5	Pup joints 2⅞" 6.5# L80 AB-IJ3SS			
6	X-over 2⅞" AB-IJ3SS box x NK3SB pin L80			
7	joints 2⅞" 6.5# L80 NK3SB			
8	X-over 2⅞" NK3SB box x AB-IJ3SS pin L80			
9	Baker model E-22 anchor seal assembly			2.406
	size 80-32, 2⅞" AB-IJ3SS box			
	Permanent Downhole Equipment			
10	7" Baker DB packer size 84-32 4½" AB-IJ3SS			
11	Millout extension 4½" AB-IJ3SS pin x pin			
12	Swage 4½" box x 2⅞" pin J55 AB-IJ3SS			
13	Pup joint 10' x 2⅞" 6.5# J55 AB-IJ3SS			
14	Otis 2⅞" nipple 711X23103 AB-IJ3SS b x p			2.313
15	2 pup joints 10' x 2⅞" 6.5# J55 AB-IJ3SS			
16	Otis 2⅞" nipple 711XN23117 AB-IJ3SS b x p			2.205
17	Re-entry guide 2⅞" AB-IJ3SS box x 3½" J55			

PERFORATED INTERVALS:

FORMATION	INTERVAL	GUN: SIZE	GUN: TYPE	CHARGES: S.P.F.	CHARGES: TYPE	CHARGES: WT(g)
PATCHAWARRA	93-0					
	93-4					
	93-7					

REMARKS:

ANNULUS FLUID :

INDICATED STRING WEIGHT :

CALCULATED STRING WEIGHT :

SLACK-OFF WEIGHT :

TENSION :

NOT TO SCALE		WELLSITE SUPERVISOR		
PROPOSED	✓	DATE OF INSTALLATION		
RE-COMPLETION		DRAFTED		DATE
COMPLETION		REVISED		DATE

DH.F

ATTACHMENT #2B

PROPOSED DOWNHOLE ASSEMBLY

	Description
	Packer and Tailpipe Assembly
17.	Re-entry guide 2-7/8" ABIJ3SS box x 3-1/2" blank J55
16.	Landing nipple Otis 711XN23117 2-7/8" ABIJ3SS box x pin
15.	2 Pup joints 10' x 2-7/8" 6.5# J55 ABIJ3SS
14.	Landing nipple Otis 711X23103 2-7/8" ABIJ3SS box x pin
13.	Pup joint 10' x 2-7/8" 6.5# J55 ABIJ3SS
12.	Swage 4-1/2" box x 2-7/8" pin J55 ABIJ3SS
11.	Millout extension 4-1/2" ABIJ3SS pin x pin
10.	Packer, 7" Baker DB size 84-32 4-1/2" ABIJ3SS
	Completion
9.	Anchor seal assembly Baker E22 size 80-32 2-7/8" ABIJ3SS box
8.	X-over 2-7/8" NK3SB box x 2-7/8" ABIJ3SS pin L80
7.	2-7/8" 6.5# L80 NK3SB tubing
6.	X-over 2-7/8" ABIJ3SS box x 2-7/8" NK3SB pin L80
5.	Pup joints 2-7/8" 6.5# L80 ABIJ3SS
4.	1 Joint 2-7/8" 6.5# L80 ABIJ3SS tubing
3.	Nipple 2-7/8" L80 ABIJ3SS pin x pin
2.	Tubing hanger FBB-EN 7-1/16" x 2-7/8" ABIJ3SS box x 2-7/8" CS Hydril box up

SANTOS LTD. - BUDGET AMENDMENT

PROJECT NAME: Cooba #1 - Single Completion
PROJECT NO: 883/W417/813/XXX

1991 BUDGET ESTIMATES ($000's)

813 PETROLEUM ENGINEERING OPERATIONS

03L	Labour & Materials - Other	1.0
034	Transportation - Materials	10.0
036	Other Contract Services	6.0
043	Fuel	-
054	Rented Equipment	3.0
090	Insurance	2.0
302	Rig Rental - Workover	40.0
303	Rig Rental - Standby	-
304	Rig Rental - Moving	10.0
305	Camp Expenses	1.0
306	Bits	-
307	Muds	-
308	Chemicals	5.2
309	Cement	-
310	Cementing Services	-
314	Completion Logging	25.5
317	In Pipe Testing	-
320	Perforating	25.8
321	Frac Services	-
322	Frac Materials	-
323	Acidizing Services	-
324	Acidizing Materials	-
325	Pumping Services	-
327	Well Evaluation	25.0
328	Downhole Expendable Equipment	-
330	Water Hauling	4.5
331	Access and Lease Preparation	2.5
332	Lease Cleanup	1.0
334	Wireline Services	10.7
337	Filters	3.0
341	Tubing	81.5
349	Downhole Production Equipment	24.5
350	Wellheads	21.3
449	Stabilized Crude Pumps	-
450	Pumps & Drivers	-
501	Pipes	-
503	Valves	-
505	Fittings	-
	SUB TOTAL	303.5
992	SUPPLY DEPT. ALLOCATION	16.5
	TOTAL	320.0

Prepared by: _____ Date: 12/7/91
Petroleum Engineer

_____ Date: 12/7/91
Supv. Senior Petroleum Engineer

Approved by: _____ Date: 12/7/91
Supv. Chief Petroleum Engineer

_____ Date: 16/7/91
Manager, Petroleum Engineering Operations

Distribution:

Well File	Original	
PEO Dept - Adel	(2)	Att: Supv. Senior Pet. Eng./Supv. Chief Pet. Eng.
PEO Dept - Mba	(2)	
P.E. Supt - Mba	(1)	
Production Supt - Mba	(2)	
Dept. of Mines	(1)	
Esso Australia Ltd.	(1)	Att: B. McKay
Bridge Oil	(1)	Att: A. Young
SAGASCO Resources Ltd.	(1)	Att: M. Clegg

PJA/ih
10/7/91

Cooba #1
Summary Of Pre Frac Single Rate Test & Buildup Survey
19th July - 7th August 1991

Flow Test
19th July - 3rd August

19/07/91: Opened well to flare @ 0915 hrs on 13/64" choke
22/07/91: Choke opened to 15/64" @ 1150 hrs
Choke opened to 17/64" @ 1735 hrs
Tested well on 17/64" choke for 278.42 hrs (11.6 days)
The F.T.H.P. and gas rate were steadily dropping over this long flow period, therefore, please note, initial, final and average figures have been calculated below.

		Initial		Final		Average	
F.T.H.P. (Final)	=	13859	kPa	7777	kPa	10281	kPa
Separator Pressure	=	4158	kPa	3034	kPa	3772	kPa
Separator Temperature	=	31	°C	54	°C	44	°C
Gas Flow Rate	=	93.224	E3 m^3/d	45.172	E3 m^3/d	66.565	E3 m^3/d
Condensate Flow Rate	=	2.399	m^3/d	1.066	m^3/d	2.314	m^3/d
Water Flow Rate	=	0.800	m^3/d	NIL	m^3/d	1.369	m^3/d

03/08/91: Shut well in @ 0800 hrs

Flowing Bottomhole Pressures
Mid Point of Perforations @ 9340' KB

24/07/91: Ran flowing pressure gradient
Element #1889 @ MPP = 18221 kPa
Element #1589 @ MPP = 18200 kPa
Flowing bottomhole temperature = 272°F = 133°C

25/07/91: Ran bombs on bottom to measure flowing bottomhole pressure
-28/07/91 Element #1889 @ 9264' KB @ 1205 hrs 28/7/91 = 14817 kPa
Element #1589 @ 9270' KB @ 1205 hrs 28/7/91 = 14659 kPa
Flowing bottomhole temperature = 275°F = 135°C

28/07/91: Ran bombs on bottom to measure flowing bottomhole pressure
-31/07/91 Element #1889 @ 9264' KB @ 1000 hrs 31/7/91 = 13147 kPa
Element #1589 @ 9270' KB @ 1000 hrs 31/7/91 = 13081 kPa
Flowing bottomhole temperature = 275°F = 135°C

31/07/91: Ran flowing pressure gradient
Element #1889 @ MPP = 13065 kPa
Element #1589 failed
Flowing bottomhole temperature = 274°F = 134°C

31/07/91: Ran bombs on bottom to measure flowing bottomhole pressure
-02/08/91 Element #1889 @ 9264' KB @ 1600 hrs 2/8/91 = 12215 kPa
Element #1589 @ 9270' KB @ 1600 hrs 2/8/91 = 12145 kPa
Flowing bottomhole temperature = 272°F = 133°C

03/08/91: Shut well in @ 0800 hrs
Element #1889 @ 9264' KB @ 0800 hrs = 11983 kPa
Element #1589 @ 9270' KB @ 0800 hrs = 11992 kPa

Buildup Survey
3rd - 7th August

03/08/91: Shut well in @ 0800 hrs for 97 hours buildup
Element #1889 @ 9264' KB after 26.7 hrs buildup = 14362 kPa
Element #1589 @ 9270' KB after 97 hrs buildup = 16140 kPa
Maximum bottomhole temperature = 274°F = 134°C

07/08/91: POOH @ 0900 hrs

Static Pressure Gradient
Mid Point of Perforations = 9340' KB

07/08/91: Ran static pressure gradient survey
Element #1889 @ MPP = 16380 kPa
Element #1589 failed
Shut in bottomhole temperature = 274°F = 134°C

LGA/ih - 27/8/91
WP6901G(57-58)

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 Wednesday, 24th July 1991.

CLIENT	LOCATION	FORMATION
Santos Ltd.	COOBA # 1	PATCHAWARRA

FLOWING PRESSURE GRADIENT REPORT

PRESSURE ELEMENT DATA

POSITION	SERIAL NO.	RANGE	CALIBRATED
Top	1889	5150	7/ 5/91
Bottom	1589	5075	7/ 5/91

WELL DATA

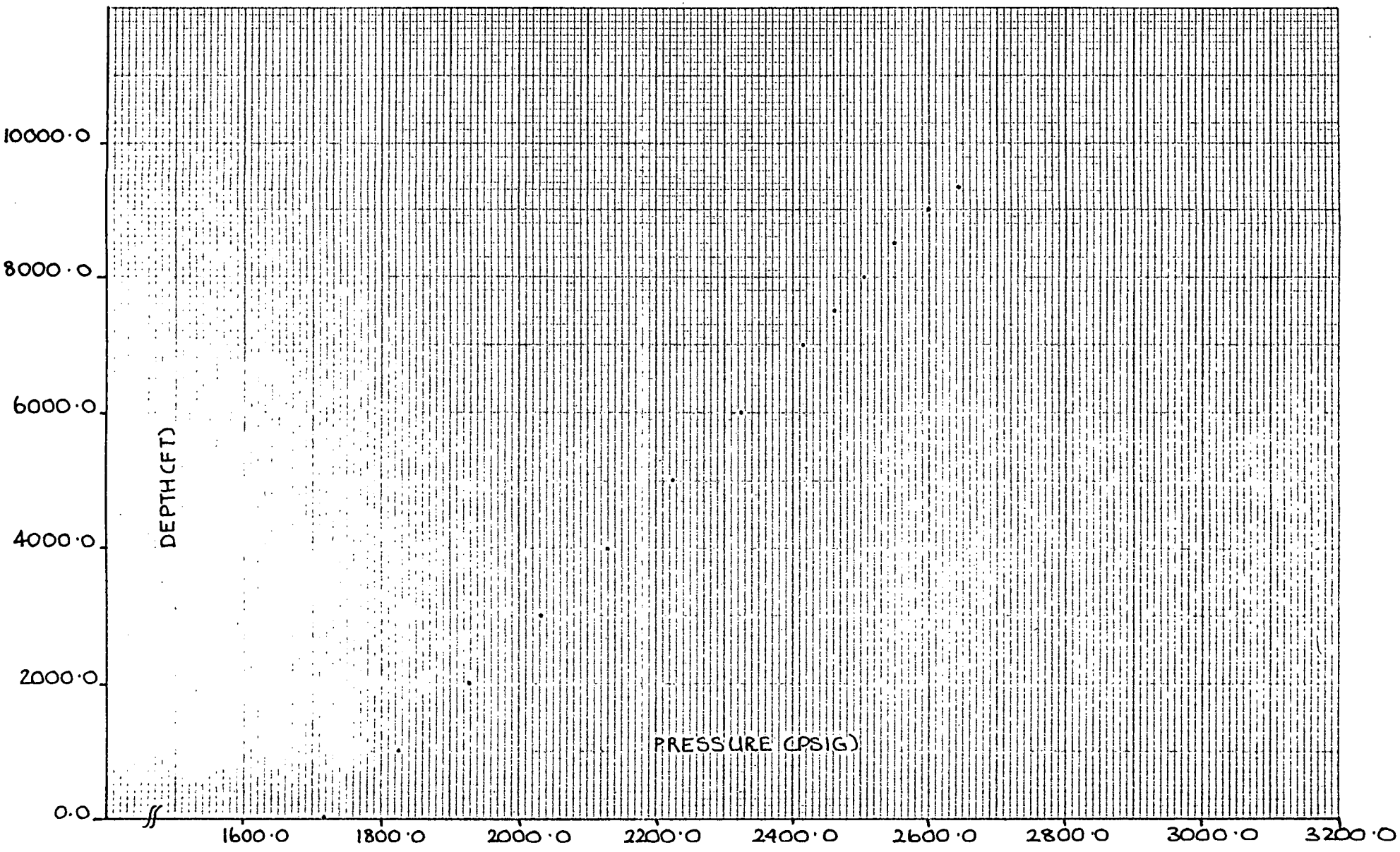
PARAMETER	VALUE
DWT In	1710 PSIG
DWT Out	1726 PSIG
Max BHT	272 F

	TOP ELEMENT			BOTTOM ELEMENT		
DEPTH FT KB	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT
LUB.	0.6650	1717.1	----	0.6770	1722.0	----
1000	0.7070	1825.3	0.108	0.7180	1826.6	0.105
2000	0.7470	1928.5	0.103	0.7580	1928.7	0.102
3000	0.7870	2031.7	0.103	0.7970	2028.3	0.100
4000	0.8250	2129.9	0.098	0.8360	2128.0	0.100
5000	0.8620	2225.5	0.096	0.8730	2222.5	0.095
6000	0.9000	2323.9	0.098	0.9110	2319.7	0.097
7000	0.9350	2414.5	0.091	0.9480	2414.3	0.095
7500	0.9530	2461.1	0.093	0.9650	2457.8	0.087
8000	0.9700	2505.2	0.088	0.9820	2501.3	0.087
8500	0.9870	2549.3	0.088	0.9990	2544.8	0.087
9000	1.0060	2598.6	0.099	1.0190	2596.0	0.102
9340	1.0230	2642.7	0.130	1.0360	2639.6	0.128
LUB.	0.6710	1732.6	-----	0.6780	1724.5	-----

GENERAL REMARKS

COOBA # 1 — FLOWING PRESSURE GRADIENT — 24/7/91

ELEMENT # 1889 / 5150 (TOP)



09000

Fm 5030

FLOWING GRADIENT SURVEY

EXPERTEST PTY. LTD.

BHP/BHT GAUGE RUN DATA

CUSTOMER : SANTOS LTD.		PERFORATIONS: 9306'- 9373' KB.	PAGE: 1 OF 1
WELL NAME: COOBA #1		FORMATION : Patchawarra.	DATE: 24.07.91
TEST TYPE : Flowing Gradient Survey.			OPR : I. KURASIAK.

GAUGE DATA	UPPER PRESSURE GAUGE	LOWER PRESSURE GAUGE	TEMPERATURE GAUGE
ELEMENT SERIAL NO.	K 1889	K 1589	
ELEMENT RANGE	5150 PSI	5075	
RECORDING SECTION SERIAL NO.	K 1314	K 1313	
DATE OF CALIBRATION:	7.05.91	7.05.91	
CLOCK SERIAL NO.	2518	2489	
CLOCK RANGE	3 HRS	3 HRS	
LEAD SCREW TYPE	15 TLS	15 TLS	
ENGAGE STYLUS DATE 24.07.91 TIME	1422 HRS	1422 HRS	
DISENGAGE STYLUS DATE 24.07.91 TIME	1703 HRS	1703 HRS	

RUN DATA	TIME (HOURS)	TUBING PRESSURE (KPA)	ANNULUS PRESSURE (KPA)
DATE : 24.07.91			
PRESSURE LUBRICATOR :	1431	9032	4427
RUN IN HOLE :	1446	11859	4413
ON DEPTH AT : 9340'KB ~~FT/M~~	1602		
DATE :			
PULL OUT OF HOLE :	1616	11839	4399
AT SURFACE :	1644	11956	4406
DEPRESSURE LUBRICATOR :	1659	11901	4413
MAXIMUM BHT AT 9340'KB ~~FT/M~~ = 272 °F/~~C~~			
N.B. ALL DEPTHS ARE MEASURED FROM K.B.			

DATE	TIME	REMARKS
24.07.91	1431	Pressure up lub.
	1441	Depressure lub.
	1446	Pressure up and run in hole.
	1644	Arrive @ surface and depressure lubricator
	1649	Pressure up lub.
	1659	Depressure lub.

00061

ET 108

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 Wednesday, 31st July 1991.

CLIENT	LOCATION	FORMATION
Santos Ltd.	COOBA #1	PATCHAWARRA

FLOWING PRESSURE GRADIENT REPORT

PRESSURE ELEMENT DATA

POSITION	SERIAL NO.	RANGE	CALIBRATED
Top	1889	5150	7/ 5/91
Bottom	1589	5075	7/ 5/91

WELL DATA

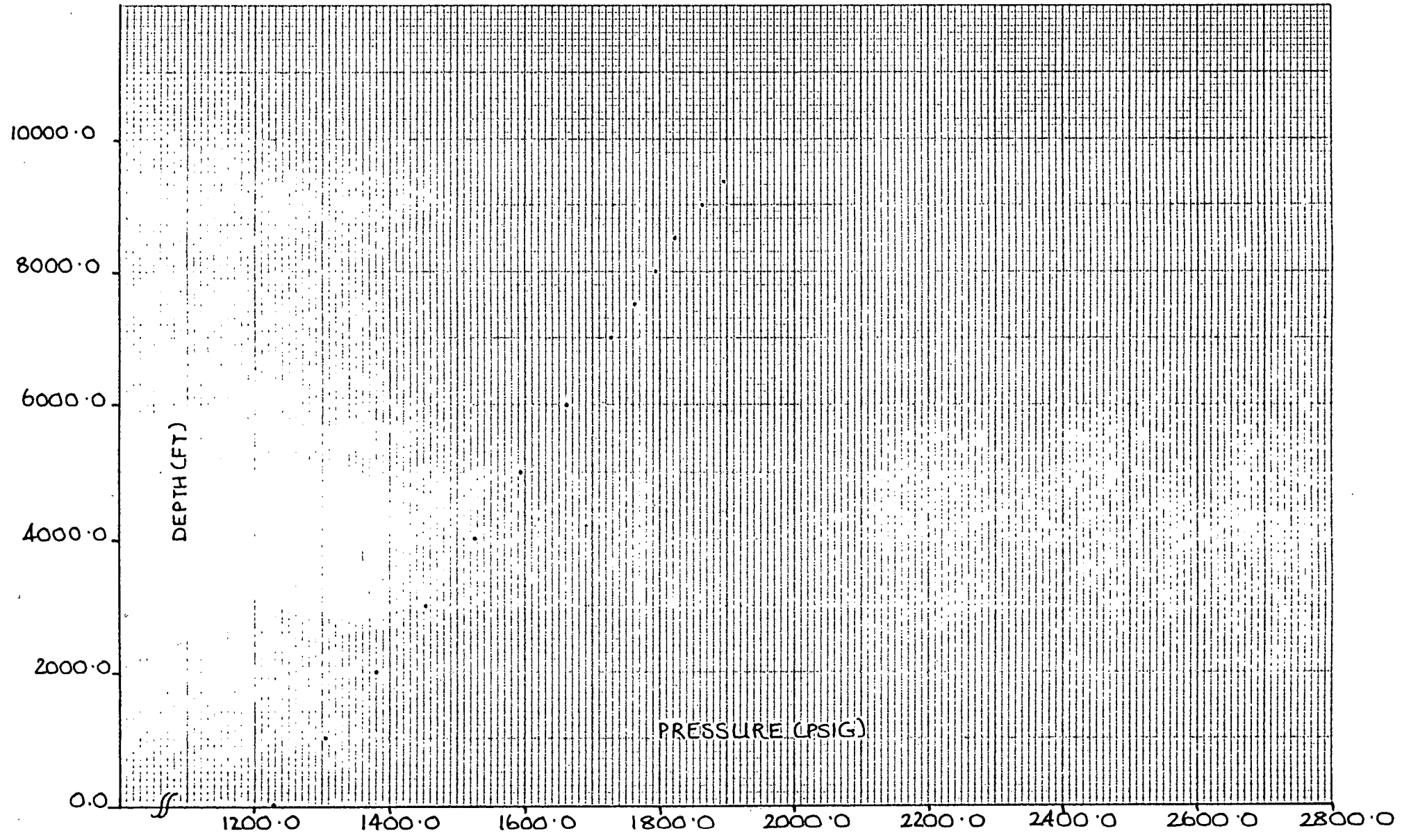
PARAMETER	VALUE
DWT In	1237 PSIG
DWT Out	1234 PSIG
Max BHT	274

	TOP ELEMENT			BOTTOM ELEMENT		
DEPTH FT KB	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT
LUB.	0.4750	1228.4	-----			
1000	0.5050	1305.5	0.077			
2000	0.5340	1380.0	0.075			
3000	0.5620	1452.0	0.072			
4000	0.5910	1526.6	0.075			
5000	0.6170	1593.5	0.067			
6000	0.6430	1660.4	0.067			
7000	0.6690	1727.4	0.067			
7500	0.6830	1763.5	0.072			
8000	0.6950	1794.4	0.062			
8500	0.7060	1822.7	0.057			
9000	0.7220	1864.0	0.083			
9340	0.7340	1894.9	0.091			
LUB.	0.4820	1246.4	-----			

GENERAL REMARKS

BOTTOM BOMB FAILURE

COOBA # 1 — FLOWING PRESSURE GRADIENT — 31/7/91
ELEMENT # 1889/5150 (TOP)



00063

Fm 5030

EXPERTEST PTY. LTD.

BHP/BHT GAUGE RUN DATA

CUSTOMER : SANTOS LTD.
WELL NAME: COOBA #1
TEST TYPE : S.R.T. & B.H.P.'s

PERFORATIONS: 9306' — 9378' KB
FORMATION : Patchawarra
Flowing Gradient Survey

PAGE: 1 OF 1
DATE: 31.07.91
OPR : I. KURASIAK

GAUGE DATA	UPPER PRESSURE GAUGE	LOWER PRESSURE GAUGE	TEMPERATURE GAUGE
ELEMENT SERIAL NO.	K-1889	K-1589	NOT RUN
ELEMENT RANGE	5150 PSI	5075 PSI	
RECORDING SECTION SERIAL NO.	K-1314	K-1313	
DATE OF CALIBRATION:	7.05.91	7.05.91	
CLOCK SERIAL NO.	2489	2518	
CLOCK RANGE	3 HRS.	3 HRS	
LEAD SCREW TYPE	15 T.L.S.	15T.LS.	
ENGAGE STYLUS DATE 31-07-91 TIME	1247 HRS	1247 HRS	
DISENGAGE STYLUS DATE 31-07-91 TIME	1519 HRS.	1519 HRS	

RUN DATA	TIME (HOURS)	TUBING PRESSURE (KPA)	ANNULUS PRESSURE (KPA)
DATE : 31.07.91			
PRESSURE LUBRICATOR :	1253	8529	1689
RUN IN HOLE :	1310	8529	1689
ON DEPTH AT : 9340 FTAM	1421	8536	1689
DATE : 31.07.91			
PULL OUT OF HOLE :	1431	8536	1675
AT SURFACE :	1457		
DEPRESSURE LUBRICATOR :	1512	8508	1682

MAXIMUM BHT AT 9340 FTAM = 274 °FIC

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

DATE	TIME	REMARKS
31-07-91	12 53	Pressure up Lubricator for 10 mins.
31-07-91	13 03	Depressure Lubricator for 5 mins.
31-07-91	13 10	Run in hole.
31-07-91	14 31	Pull out of hole.
31-07-91	14 57	Arrive @ surface and depressure lubricator for 5 mins.
31-07-91	15 02	Pressure up lubricator for 10 mins.
31-07-91	15 12	Depressure lubricator
		Well flowing on 17/64 choke setting.

00096

ET 108

EXPERTEST Pty 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 Wednesday, 7th August 1991.

CLIENT	LOCATION	FORMATION
Santos Ltd.	COOBA # 1	PATCHAWARRA

STATIC PRESSURE GRADIENT REPORT

PRESSURE ELEMENT DATA

POSITION	SERIAL NO.	RANGE	CALIBRATED
Top	1889	5150	7/ 5/91
Bottom	1589	5075	7/ 5/91

WELL DATA

PARAMETER	VALUE
DWT In	1553 PSIG
DWT Out	1557 PSIG
Max BHT	274 F

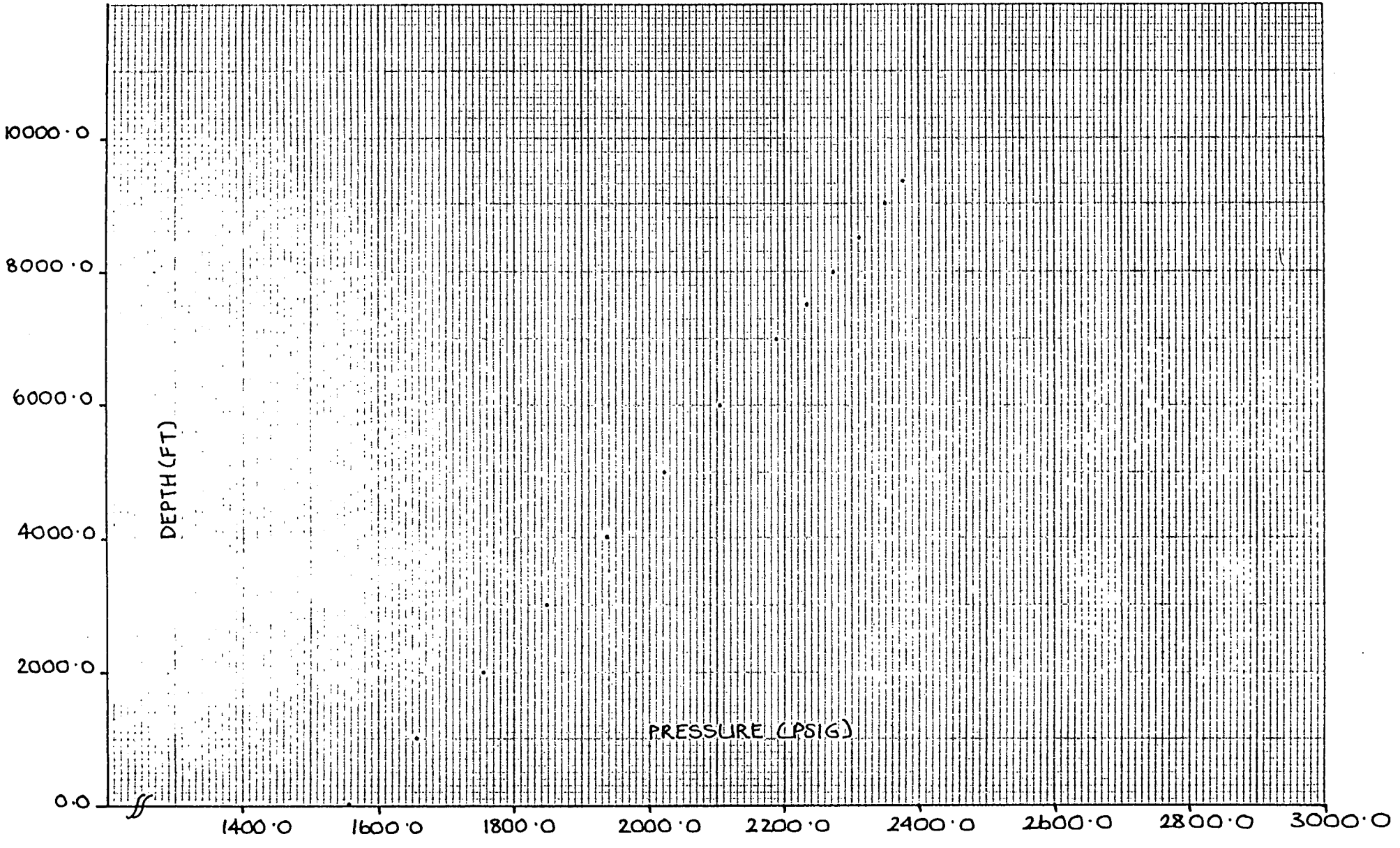
	TOP ELEMENT			BOTTOM ELEMENT		
DEPTH FT KB	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT
LUB.	0.6030	1557.5	-----			
1000	0.6420	1657.9	0.100			
2000	0.6800	1755.7	0.098			
3000	0.7160	1848.5	0.093			
4000	0.7510	1938.8	0.090			
5000	0.7830	2021.4	0.083			
6000	0.8160	2106.6	0.085			
7000	0.8470	2186.7	0.080			
7500	0.8650	2233.3	0.093			
8000	0.8800	2272.1	0.078			
8500	0.8950	2310.9	0.078			
9000	0.9100	2349.7	0.078			
9340	0.9200	2375.6	0.076			
LUB.	0.6040	1560.1	-----			

GENERAL REMARKS

BOTTOM ELEMENT PRESSURE UP.

COOBA # 1 — STATIC PRESSURE GRADIENT — 7/8/91

ELEMENT # 1889 / 5150 (TOP)



00068

Fm 5030

EXPERTEST PTY. LTD.

BHP/BHT GAUGE RUN DATA

CUSTOMER : Santos.	PERFORATIONS: 9306' – 9373' KB	PAGE: 1 OF 1
WELL NAME: Cooba #1	FORMATION : Patchawarra.	DATE: 7/8/91
TEST TYPE : Static Gradient.		OPR :

GAUGE DATA	UPPER PRESSURE GAUGE	LOWER PRESSURE GAUGE	TEMPERATURE GAUGE
ELEMENT SERIAL NO.	K1889	K1589	MBHT.
ELEMENT RANGE PSI	5150	5075	
RECORDING SECTION SERIAL NO.	K1314	K1313	
DATE OF CALIBRATION: C			
CLOCK SERIAL NO.	2530	2518	
CLOCK RANGE	3HR	3HR.	
LEAD SCREW TYPE	1STCS	1STCS.	
ENGAGE STYLUS DATE 7/8/91 TIME	1147	1147	
DISENGAGE STYLUS DATE 7/8/91 TIME	1425	1425	

RUN DATA	TIME (HOURS)	TUBING PRESSURE (KPA)	ANNULUS PRESSURE (KPA)
DATE : 7/8/91			
PRESSURE LUBRICATOR :	1153	10708	Ø
RUN IN HOLE :	1208	10708	Ø
ON DEPTH AT MPP : 9340 FT/M	1328	10722	Ø
DATE : 7/8/91.			
PULL OUT OF HOLE :	1338	10742	Ø
AT SURFACE :	1400	10708	Ø
DEPRESSURE LUBRICATOR :	1417	10736	Ø
MAXIMUM BHT AT 9340 FT/M = 274° °F/C			
N.B. ALL DEPTHS ARE MEASURED FROM K.B.			

DATE	TIME	REMARKS
7/8/91	1153	Pressure Lub
	1203	Depressure Lub
	1208	Pressure Lub & R.I.H
	1400	Depressure Lub
	1407	Pressure Lub
	1417	Depressure Lub

00007

ET 108

SUB-SURFACE PRESSURE SURVEY

CO.		RUN 01	FIELD COOBA	WELL 01	
EFF DEPTH		WELL STAT		TOOL HUNG	9264'
CASING	-	CASING PRESS		ON BOTTOM	1357 25/7
LINER	-	TUBING PRESS		OFF BOTTOM	1205 28/7
DATE	910728	ELEMENT RANGE	0 - 5192	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	
MAX TEMP	275 F	PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	1889	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	FLOW		

SURVEY DATA

CO. RUN 01 FIELD COOBA WELL 01

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
13:57	2491.3	2491.3	.0	12:09	2363.3	2363.3	22.2
15:38	2480.5	2480.5	1.7	21:30	2320.8	2320.8	31.5
17:21	2475.7	2475.7	3.4	6:22	2273.6	2273.6	40.4
20:08	2457.8	2457.8	6.2	17:17	2224.4	2224.4	51.3
23:51	2433.0	2433.0	9.9	5:38	2170.9	2170.9	63.7
4:42	2405.3	2405.3	14.8	12:05	2149.0	2149.0	70.1

LUB IN DWT = 1628 PSI / OUT = 1384 PSI
LUB IN AMERADA = 1618 PSI / OUT = 1381 PSI

SUB-SURFACE PRESSURE SURVEY

CO.		RUN 02	FIELD COOBA	WELL	01
EFF DEPTH		WELL STAT		TOOL HUNG	9270'
CASING	-	CASING PRESS		ON BOTTOM	1357 25/7
LINER	-	TUBING PRESS		OFF BOTTOM	1205 28/7
DATE	910728	ELEMENT RANGE	0 - 5105	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	
MAX TEMP	275 F	PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	1589	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	FLOW		

SURVEY DATA

CO. RUN 02 FIELD COOBA WELL 01

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
13:57	2490.3	2490.3	.0	21:36	2301.9	2301.9	31.6
16:24	2476.8	2476.8	2.4	6:32	2258.0	2258.0	40.6
20:31	2451.2	2451.2	6.6	17:33	2204.4	2204.4	51.6
3:32	2405.1	2405.1	13.6	4:55	2158.8	2158.8	63.0
12:43	2354.7	2354.7	22.8	12:05	2126.1	2126.1	70.1

LUB IN DWT = 1628 PSI / OUT = 1384 PSI
LUB IN AMERADA = 1638 PSI / OUT = 1374 PSI

EXPERTEST PTY. LTD.

BHP/BHT GAUGE RUN DATA

CUSTOMER :	SANTOS LTD.	PERFORATIONS:	9306' - 9373' KB.
WELL NAME:	COOBA #1	FORMATION :	Patchawarra
TEST TYPE :	BHPS		

PAGE: 1 OF 1
DATE: 25.07.91
OPR : I. Kurasiak

GAUGE DATA	UPPER PRESSURE GAUGE	LOWER PRESSURE GAUGE	TEMPERATURE GAUGE
ELEMENT SERIAL NO.	K 1889	K 1589	
ELEMENT RANGE	5150 PSI	5015 PSI	
RECORDING SECTION SERIAL NO.	K 1314	K 1313	
DATE OF CALIBRATION:	7.05.91	7.05.91	
CLOCK SERIAL NO.	F-15691	F-15683	
CLOCK RANGE	120 HRS	120 HRS	
LEAD SCREW TYPE	15 TLS	15 TLS	
ENGAGE STYLUS DATE 25.07.91 TIME	1024 HRS	1024 HRS	
DISENGAGE STYLUS DATE 28.07.91 TIME			

RUN DATA	TIME (HOURS)	TUBING PRESSURE KPA	ANNULUS PRESSURE KPA
DATE : 25.07.91			
PRESSURE LUBRICATOR :	1130	11225 (1628)	4006
RUN IN HOLE :	1330	11204	3965
ON DEPTH AT : 9270' KB ~~PTM~~	1357	11191	3930
DATE : 28.07.91			
PULL OUT OF HOLE :	1205	9598	2655
AT SURFACE :	1230	9653	2675
DEPRESSURE LUBRICATOR :	1430	9543	2655
MAXIMUM BHT AT 9270' KB ~~PTM~~ = 275 °F/C		1384	
N.B. ALL DEPTHS ARE MEASURED FROM K.B.			

DATE	TIME	REMARKS
25.07.91	1030	2 (two) pressure recording gauges in lubricator.
	1130	Pressure up lubricator
	1230	Depressure lubricator
	1330	Pressure up lubricator and run in hole
28.07.91	1205	Pull out of hole
	1230	In lubricator Depressure lubricator.
	1330	Pressure up lubricator
	1430	Depressure lubricator.

	IN / OUT	RUN
Top	1618 / 1381	01
Bot	1638 / 1374	02

ET 108

SUB-SURFACE PRESSURE SURVEY

CO.		RUN 03 FIELD COOBA		WELL 01	
EFF DEPTH		WELL STAT		TOOL HUNG	9264'
CASING	-	CASING PRESS		ON BOTTOM	1730 28/7
LINER	-	TUBING PRESS		OFF BOTTOM	1000 31/7
DATE	910731	ELEMENT RANGE	0 - 5192	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	
MAX TEMP	275 F	PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	1889	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	FLOW		

SURVEY DATA

CO. RUN 03 FIELD COOBA WELL 01

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
17:30	2125.0	2125.0	.0	1:30	2006.1	2006.1	32.0
20:12	2110.9	2110.9	2.7	9:48	1979.3	1979.3	40.3
0:39	2095.1	2095.1	7.2	18:28	1949.4	1949.4	49.0
6:52	2069.7	2069.7	13.4	3:35	1926.0	1926.0	58.1
13:00	2045.0	2045.0	19.5	10:00	1906.8	1906.8	64.5
19:37	2025.4	2025.4	26.1	0:00	.0	.0	.0

LUB IN DWT = 1386 PSI / OUT = 1240 PSI
LUB IN AMERADA = 1381 PSI / OUT = 1240 PSI

SUB-SURFACE PRESSURE SURVEY

CO.		RUN 04	FIELD COOBA	WELL 01	
EFF DEPTH		WELL STAT		TOOL HUNG	9270'
CASING	-	CASING PRESS		ON BOTTOM	1730 28/7
LINER	-	TUBING PRESS		OFF BOTTOM	1000 31/7
DATE	910731	ELEMENT RANGE	0 - 5105	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	
MAX TEMP	275 F	PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	1589	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	FLOW		

SURVEY DATA

CO. RUN 04 FIELD COOBA WELL 01

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
17:30	2123.7	2123.7	.0	23:50	2006.5	2006.5	30.3
21:26	2108.1	2108.1	3.9	8:33	1981.8	1981.8	39.1
5:44	2073.8	2073.8	12.2	18:26	1944.9	1944.9	48.9
9:23	2072.5	2072.5	15.9	4:18	1914.7	1914.7	58.8
15:17	2038.1	2038.1	21.8	10:00	1897.1	1897.1	64.5

LUB IN DWT = 1386 PSI / OUT = 1240 PSI
LUB IN AMERADA = 1384 PSI / OUT = 1227 PSI

EXPERTEST PTY. LTD.

BHP/BHT GAUGE RUN DATA

CUSTOMER : SANTOS LTD.
WELL NAME: COOBA #1
TEST TYPE : S.R.T. + B.H.P.S.
PERFORATIONS: 9306'- 9373'KB.
FORMATION : Patchawarra.
PAGE: 1 OF 1
DATE: 28.07.91
OPR : I. KURASIAK.

GAUGE DATA	UPPER PRESSURE GAUGE	LOWER PRESSURE GAUGE	TEMPERATURE GAUGE
ELEMENT SERIAL NO.	K-1889	K-1589	
ELEMENT RANGE	5150 PSI	5075 PSI	
RECORDING SECTION SERIAL NO.	K-1314	K-1313	
DATE OF CALIBRATION:	7.05.91	7.05.91	
CLOCK SERIAL NO.	F-15308	F-15683	
CLOCK RANGE	120 HRS	120 HRS	
LEAD SCREW TYPE	15TLS	15TLS	
ENGAGE STYLUS DATE 28.07.91 TIME	1450HRS	1450 HRS	
DISENGAGE STYLUS DATE 31.07.91 TIME	1239HRS	1239 HRS.	

RUN DATA	TIME (HOURS)	TUBING PRESSURE (PSI/~~KPa~~)	ANNULUS PRESSURE (PSI/~~KPa~~)
		kPa	kPa
DATE : 28.07.91			
PRESSURE LUBRICATOR :	1500	9556 (1386)	2641
RUN IN HOLE :	1700	9522	2599
ON DEPTH AT : 9270'KB ~~ETHM~~	1730	9563	2593
DATE : 31.07.91			
PULL OUT OF HOLE :	1000	8570	1710
AT SURFACE :	1030	8564	1717
DEPRESSURE LUBRICATOR :	1230	8549	1696
MAXIMUM BHT AT 9270'KB ~~ETHM~~ = 275 °F/~~C~~		1240	
N.B. ALL DEPTHS ARE MEASURED FROM K.B.			

DATE	TIME	REMARKS
28.07.91	1500	Pressure up lubricator.
	1600	Depressure lubricator.
	1700	Pressure up and run in hole.
	1730	On depth of 9270'KB.
31.07.91	1000	Pull out of hole.
	1030	Arrive in lubricator and depressure lubricator
	1130	Pressure up lubricator
	1230	Depressure lubricator.

IN / OUT RUN
Top 1381 / 1240 03
Bot 1384 / 1227 04

ET 108

SUB-SURFACE PRESSURE SURVEY

CO.		RUN 05 FIELD COOBA		WELL 01	
EFF DEPTH		WELL STAT		TOOL HUNG	9264'
CASING	-	CASING PRESS		ON BOTTOM	1800 31/7
LINER	-	TUBING PRESS		OFF BOTTOM	1600 2/8
DATE	910802	ELEMENT RANGE	0 - 5192	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	
MAX TEMP	272 F	PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	1889	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	FLOW		

SURVEY DATA

CO. RUN 05 FIELD COOBA WELL 01

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
18:00	1882.8	1882.8	.0	18:31	1817.9	1817.9	24.5
21:42	1870.6	1870.6	3.7	5:59	1789.7	1789.7	36.0
8:30	1842.8	1842.8	14.5	16:00	1771.6	1771.6	46.0

LUB IN DWT =1237 PSI / OUT = 1149 PSI
LUB IN AMERADA = 1232 PSI / OUT = 1146 PSI

SUB-SURFACE PRESSURE SURVEY

CO.		RUN 06	FIELD COOBA	WELL 01	
EFF DEPTH		WELL STAT		TOOL HUNG	9270'
CASING	-	CASING PRESS		ON BOTTOM	1800 31/7
LINER	-	TUBING PRESS		OFF BOTTOM	1600 2/8
DATE	910802	ELEMENT RANGE	0 - 5105	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	
MAX TEMP	272 F	PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	1589	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	FLOW		

SURVEY DATA

CO. RUN 06 FIELD COOBA WELL 01

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
18:00	1882.4	1882.4	.0	15:50	1819.9	1819.9	21.8
20:06	1876.2	1876.2	2.1	22:45	1801.2	1801.2	28.8
1:54	1858.2	1858.2	7.9	8:34	1778.4	1778.4	38.6
9:04	1839.1	1839.1	15.1	16:00	1761.4	1761.4	46.0

LUB IN DWT = 1237 PSI / OUT = 1149 PSI
LUB IN AMERADA = 1230 PSI / OUT = 1130 PSI

EXPERTEST PTY. LTD.

BHP/BHT GAUGE RUN DATA

CUSTOMER : SANTOS LTD.
WELL NAME: COOBA #1
TEST TYPE : S.R.T. + B.H.P.S.

PERFORATIONS: 9306'-9373'KB.
FORMATION : Patchawarra.

PAGE: 1 OF 1
DATE: 31.07.91
OPR : I. Kurasiak

GAUGE DATA	UPPER PRESSURE GAUGE	LOWER PRESSURE GAUGE	TEMPERATURE GAUGE
ELEMENT SERIAL NO.	K 1889	K 1589	
ELEMENT RANGE	5150 PSI	5076 PSI	
RECORDING SECTION SERIAL NO.	K 1314	K 1313	
DATE OF CALIBRATION:	7.05.91	7.05.91	
CLOCK SERIAL NO.	F-15683	F15308	
CLOCK RANGE	120 HRS	120 HRS	
LEAD SCREW TYPE	15 TCS	15 TCS	
ENGAGE STYLUS DATE 31.07.91 TIME	1528 HRS	1528 HRS	
DISENGAGE STYLUS DATE 2.08.91 TIME	1802 HRS	1802 HRS	

RUN DATA	TIME (HOURS)	TUBING PRESSURE (PSI/KPa)	ANNULUS PRESSURE (PSI/KPa)
		kPa	kPa
DATE : 31.07.91		1237	
PRESSURE LUBRICATOR :	1535	8529	1669
RUN IN HOLE :	1735	8488	1593
ON DEPTH AT : 9270 'KB ~~FT/M~~	1800	8508	1627
DATE : 2.08.91			
PULL OUT OF HOLE :	1600	7936	999
AT SURFACE :	1626	7922 (149)	1014
DEPRESSURE LUBRICATOR :	1800	7922	972
		449	

MAXIMUM BHT AT 9270 FT/M = 272 °F/~~M~~

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

DATE	TIME	REMARKS
31.07.91	1535	Pressure up lubricator
	1635	Depressure lubricator Tub: 1234 PSI Cas. 241 PSI
	1735	Pressure up lubricator and Run in hole.
	1800	On bottom @ 9270'KB.
2.08.91	1600	Pull out of bottom
	1626	Arrive in lubricator
	1630	Depressure lubricator
	1700	Pressure up lubricator
	1800	Depressure lubricator

	IN / OUT	RUN
Top	1232 / 1146	05
Bot	1230 / 1130	06

07000

SUB-SURFACE PRESSURE SURVEY

CO.		RUN 07 FIELD COOBA		WELL 01	
EFF DEPTH		WELL STAT		TOOL HUNG	9264'KB
CASING	-	CASING PRESS		ON BOTTOM	2030 2/8
LINER	-	TUBING PRESS		OFF BOTTOM	0900 7/8
DATE	910807	ELEMENT RANGE	0 - 5192	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	0800 3/8
MAX TEMP	274 F	PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	1889	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	BUILD-UP		

SURVEY DATA

CO. RUN 07 FIELD COOBA WELL 01

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
8:00	1737.9	1737.9	.0	13:37	1965.8	1965.8	5.6
8:00	1774.9	1774.9	.0	13:47	1960.5	1960.5	5.8
8:02	1794.4	1794.4	.0	13:57	1956.0	1956.0	5.9
8:05	1810.3	1810.3	.1	14:21	1953.5	1953.5	6.4
8:07	1814.2	1814.2	.1	14:50	1953.4	1953.4	6.8
8:12	1815.7	1815.7	.2	15:39	1960.7	1960.7	7.6
8:17	1817.5	1817.5	.3	16:51	1968.4	1968.4	8.9
8:33	1826.8	1826.8	.5	18:05	1977.7	1977.7	10.1
8:49	1838.5	1838.5	.8	19:19	1988.3	1988.3	11.3
9:12	1853.2	1853.2	1.2	21:14	2004.2	2004.2	13.2
9:42	1868.7	1868.7	1.7	23:45	2018.9	2018.9	15.7
10:12	1883.2	1883.2	2.2	2:18	2034.6	2034.6	18.3
10:49	1901.3	1901.3	2.8	5:08	2052.0	2052.0	21.1
11:41	1922.2	1922.2	3.7	8:22	2070.1	2070.1	24.4
12:15	1933.0	1933.0	4.3	9:37	2078.9	2078.9	25.6
12:45	1945.7	1945.7	4.8	10:40	2083.0	2083.0	26.7
13:19	1958.8	1958.8	5.3	0:00	.0	.0	.0

LUB IN DWT = 1149 PSI / OUT = 1550 PSI
LUB IN AMERADA = 1145 PSI / OUT = 1561 PSI
NOTE ; CLOCK STOPPED APPROXIMATELY 70 HOURS BEFORE P.O.O.H.

SUB-SURFACE PRESSURE SURVEY

CO.		RUN 08 FIELD COOBA		WELL 01	
EFF DEPTH		WELL STAT		TOOL HUNG	9270'
CASING	-	CASING PRESS		ON BOTTOM	2030 2/8
LINER	-	TUBING PRESS		OFF BOTTOM	0900 7/8
DATE	910807	ELEMENT RANGE	0 - 5105	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	0800 3/8
MAX TEMP	274 F	PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	1589	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	BUILD-UP & FLOW		

SURVEY DATA

CO. RUN 08 FIELD COOBA WELL 01

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
8:00	1739.3	1739.3	.0	16:31	1960.8	1960.8	8.5
8:00	1755.3	1755.3	.0	18:09	1971.7	1971.7	10.1
8:02	1783.4	1783.4	.0	20:30	1988.3	1988.3	12.5
8:03	1796.9	1796.9	.1	23:10	2007.7	2007.7	15.2
8:04	1808.1	1808.1	.1	1:21	2018.0	2018.0	17.4
8:06	1813.4	1813.4	.1	3:39	2033.1	2033.1	19.7
8:09	1818.8	1818.8	.1	7:59	2057.2	2057.2	24.0
8:16	1820.8	1820.8	.3	13:15	2081.8	2081.8	29.3
8:22	1823.4	1823.4	.4	18:39	2106.6	2106.6	34.6
8:35	1831.0	1831.0	.6	0:53	2134.9	2134.9	40.9
8:55	1842.4	1842.4	.9	8:13	2167.3	2167.3	48.2
9:36	1864.1	1864.1	1.6	16:44	2196.9	2196.9	56.7
10:14	1886.4	1886.4	2.2	1:02	2229.5	2229.5	65.0
10:45	1900.4	1900.4	2.7	9:48	2265.8	2265.8	73.8
11:25	1913.8	1913.8	3.4	17:35	2292.5	2292.5	81.6
12:15	1934.9	1934.9	4.3	2:14	2318.4	2318.4	90.2
13:01	1951.4	1951.4	5.0	9:00	2340.8	2340.8	97.0
13:33	1962.6	1962.6	5.6	- 3:48	1768.0	1768.0	-11.8
13:39	1962.6	1962.6	5.6	- 2:30	1763.8	1763.8	-10.5
13:45	1959.8	1959.8	5.8	0:11	1760.8	1760.8	-7.8
13:54	1956.2	1956.2	5.9	4:07	1748.0	1748.0	-3.9
14:16	1950.3	1950.3	6.3	6:51	1742.2	1742.2	-1.2
14:36	1946.2	1946.2	6.6	8:00	1741.1	1741.1	.0
15:21	1954.8	1954.8	7.3	0:00	.0	.0	.0

LUB IN DWT = 1149 PSI / OUT = 1550 PSI
LUB IN AMERADA = 1147 PSI / OUT = 1547 PSI

EXPERTEST PTY. LTD.

BHP/BHT GAUGE RUN DATA

CUSTOMER :	SANTOS LTD.	PERFORATIONS:	9306'- 9373'KB.
WELL NAME:	COOBA #1	FORMATION :	Patchawarra.
TEST TYPE :	S.R.T. + B.H.P.S.		

PAGE: 1 OF 1

DATE: 2.08.91

OPR : J. Kurasiak.

GAUGE DATA	UPPER PRESSURE GAUGE	LOWER PRESSURE GAUGE	TEMPERATURE GAUGE
ELEMENT SERIAL NO.	K 1889	K 1589	
ELEMENT RANGE	5150 PSI	5075 PSI	
RECORDING SECTION SERIAL NO.	K 1314	K 1313	
DATE OF CALIBRATION:	7.05.91	7.05.91	
CLOCK SERIAL NO.	F-15294	F-15295	
CLOCK RANGE	120 HRS	120 HRS	
LEAD SCREW TYPE	15 TCS	15 TCS	
ENGAGE STYLUS DATE 2.08.91 TIME	1814 HRS	1814 HRS	
DISENGAGE STYLUS DATE 7.08.91 TIME	1130 HRS	1130 HRS	

RUN DATA	TIME (HOURS)	TUBING PRESSURE (kPa)	ANNULUS PRESSURE (kPa)
DATE : 2.08.91		1149	
PRESSURE LUBRICATOR :	1830	7922	986
RUN IN HOLE :	2000	7909	958
ON DEPTH AT : 9270'KB FT/M	2030	7881	945
DATE : 7.08.91			
PULL OUT OF HOLE :	0900	10653	0
AT SURFACE :	0924	10667	0
DEPRESSURE LUBRICATOR :	1124	10687	0
MAXIMUM BHT AT 9270 FT/M = 274 °F/C		1550	
N.B. ALL DEPTHS ARE MEASURED FROM K.B.			

DATE	TIME	REMARKS	IN / OUT	RUN
02.08.91	1830	Pressure up lubricator		
	1930	Depressure lubricator		
	2000	Pressure up lubricator and run in hole	Clock stopped. Top 1145/1561	07
	2030	On hang depth @ 9270'KB.	Bot 1147/1547	08
03.08.91	0800	SHUT WELL IN. for build up.		
7.08.91	0924	Depressure lubricator		
	1024	Pressure up lubricator		
	1124	Depressure lubricator, remove amerados.		

0078

ET 108

EXPERTEST PTY. LTD.

TEST RESULTS

CUSTOMER : SANTOS LTD
WELL NAME: COOBA #1
TEST TYPE : S.R.T. + B.H.P.S.

PERFORATIONS: 9306 - 9373
FORMATION : PATCHAWARRA.

PAGE: 1 OF 15
DATE: 18.7.91
OPR : M. WRIGHT

TIME		WELLHEAD DATA						FLOW RATES			CUMULATIVE PRODUCTION				
DATE / TIME	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE (KPa)	ANNULUS PRESSURE (KPa)	WELLHEAD TEMP (°C)	CHOKE SIZE 64THS	PRESSURE (KPa)	TEMP (°C)	GAS $m^3 10^3/D$	OIL m^3/D	WATER m^3/D	GAS $m^3 10^3$	OIL m^3	WATER m^3		G.O.R. $M^3/10^3 M^3$
THURSDAY		18.7.91													
1040	0	17720	0		13/64	OPEN WELL TO FLARE									
1055		16203	7												
1110		15817		30											
1205		16203		33											
1625		15879		34											
2230						S.W.I. UNABLE TO KEEP FLARE ALIGHT.									
FRIDAY		19.7.91													
0915		17099	0		13/64	OPEN WELL TO FLARE + RIG UP WIRELINE EQUIPMENT.									
1030		15672	9			R.I.H. WITH 1.75 B/BOX FOR DUMMY RUN.									
1107						TAG SOFT FILL @ 10023' KB + P.O.O.H.									
1131		15720	51	29		AT SURFACE									
1300		15896	48	32		LEAVE LOCATION + RETURN TO MOOMBA.									
1605						A.O.L. WITH VAN. WELL HAD S/I DUE TO HYDRATES									
1630						+ BLOWN OPEN. LEAVE LOCATION + S.W.I OVERNIGHT									
2330		17017													
SATURDAY		20.7.91													
0230		17037	0												
0630		17099				INSPECT CHOKE FOR TEST - ALL OK.									
0800		17120			13/64	OPEN WELL TO FLARE ON 13/64									

ET 104

EXPERTEST PTY. LTD.

TEST RESULTS

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9306 - 9373 'KB.	PAGE: 2 OF 15
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 20.7.91
TEST TYPE : S.R.T. & B.H.P.S.		OPR : M. WRIGHT.

TIME		WELLHEAD DATA						FLOW RATES			CUMULATIVE PRODUCTION			
DATE / TIME	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE (/KPa)	ANNULUS PRESSURE (/KPa)	WELLHEAD TEMP (/°C)	CHOKE SIZE 64THS	PRESSURE (/KPa)	TEMP (/°C)	GAS $m^3 10^3/D$	OIL m^3/D	WATER m^3/D	GAS $m^3 10^3$	OIL m^3	WATER m^3	
SATURDAY	20.7.91													
0820						S.W.I. CHICKSAN BLOWS SEAL - RIG UP FLARE LINE IN PREPARATION								
						FOR TEST RIG IN.								
1230						SPOT FRAC TANK & GO TO ANDREE FOR SEPARATOR.								
1345						A.O.L. & SPOT SEPARATOR - COMMENCE RIG UP & PRESSURE TEST								
						FLOW LINES & SEPARATOR. O.K.								
1600		16941	Ø	N/A.	13/64	BY PASS SEP' & OPEN WELL TO FLARE - CHICKSAN BLOWS UP & S.W.I.								DUE TO HYDRATES
1624						" "		" " "			"	"	"	
						" "		" " "			"	"	O/RING.	
1510						COMMENCE TRIMMING SEPARATOR								
1830					S.W.I	UNABLE TO HOLD STABLE PRESSURE IN SEPARATOR DUE TO HYDRATES								
						AT BACK PRESSURE VALVE - S.W.I. & CONTACT NOOMBA - HEATER REQUIRED								
2200					17099	Ø								
2300					16992									
SUNDAY	21.7.91													
0200					16872	Ø								
0600					16892	Ø								
1000					16899									
1330						SPOT HEATER & COMMENCE RIG IN - FIRE HEATER AND AWAIT								
						SUITABLE TEMPERATURE TO COMMENCE TEST.								

000081

ET 104

EXPERTEST PTY. LTD.

TEST RESULTS

CUSTOMER : SANTOS LTD. | PERFORATIONS: 9306 - 9373' KB. | PAGE: 3 OF 15

WELL NAME: COOBA #1 | FORMATION : PATCHAWARRA. | DATE: 21.7.91

TEST TYPE : S.R.T. & B.H.P.S. | OPR : M. WRIGHT

TIME		WELLHEAD DATA						FLOW RATES			CUMULATIVE PRODUCTION				
DATE / TIME	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE (KPa)	ANNULUS PRESSURE (KPa)	WELLHEAD TEMP (°C)	CHOKE SIZE 64THS	PRESSURE (KPa)	TEMP (°C)	GAS $m^3 10^3/D$	OIL m^3/D	WATER m^3/D	GAS $m^3 10^3$	OIL m^3	WATER m^3		G.O.R. m^3/m^3
SUNDAY		21.7.91													
1600		16948	0	20	13/64	OPEN WELL TO FLARE & TRIM SEPARATOR.									
1730	0	15982	0	27		4551	27	67.484	ø	ø					
1830		15927	7	27		4861	22	71.357	ø	11.184					156.733
1845						SHUT WELL IN AND MODIFY FLARE-WNF.									
1915						W.B.O.H.									
1930	2	15865	14	25		4757	25	72.671	4.776	3.192					109.644
2030		15727	41	28		4895	26	73.340	2.376	1.584					53995
2130	4	15638	76	28		4861	25	73.056	3.984	ø					54.533
2230		15686	96	28		4930	25	67.841	5.592	ø					82.428
2330	6	15645	117	29		4916	25	66.472	3.984	1.584					83.764
MONDAY		22.7.91													
0030		15548	131	31		4861	29	65.247	3.192	1.584					73.198
0130	9	15493	145	31		4964	29	64.660	1.584	3.192					73.863
0230		15438	165	31		5723	28	63.159	2.376	2.376					75.238
0330	10	15355	193	30		5757	27	69.767	3.984	0.792					68.456
0430		15327	200	31		5585	27	67.742	6.384	1.584					117.622
0530	12	15314	200	31		5481	27	66.309	ø	1.584	31.327	1.593	1.194		88.964
				TEST CUMULATIVES FOR LAST 12 LRS -							31.327	1.593	1.194		88.964

ET 104

EXPERTEST PTY. LTD.

TEST RESULTS

CUSTOMER : SANTOS LTD
WELL NAME: COOBA #1
TEST TYPE : S.R.T. & B.H.P.S.

PERFORATIONS: 9306 - 9373'KB.
FORMATION : PATCHAWARRA

PAGE: 4 OF 15
DATE: 22.7.91
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 $m^3 10^3/D$	OIL m^3/D	WATER m^3/D	GAS $m^3 10^3$	OIL m^3	WATER m^3		G.O.R $m^3/10^6 m^3$
MONDAY		22.7.91													
0630		15189	193	32	13/64	6171	28	70.464	.792	2.376					44.959
0730	14	15189	213	33		5998	30	67.885	.792	.792					23.233
0830		15155	200	34		5930	30	67.342	4.776	1.584					94.443
0930	16	15134	193	33		4551	28	65.022	7.176	.792					122.543
1030		15038	179	33		4378	26	66.477	3.192	.792					59.930
1130	18	14990	193	34		4275	26	65.881	5.592	2.376					120.945
1132						S.W.I & CHANGE OUT CHICKSAN SEAL.									
1150					15/64	W.B.O.L & OPEN CHOKE TO 15/64 - O/PLATE TO 1.5"									
1230		14562	255	35		4309	29	84.378	3.192	.792					47.216
1330	20	14507	965	35		4220	26	83.170	1.584	5.592					86.281
1430		14465	1344	35		4240	26	82.955	5.592	.792					76.957
1530	22	14424	1689	35		4330	29	82.248	5.592	1.584					87.248
1630		14390	1889	35		4309	30	80.753	.792	3.984					59.143
1730	24	14348	2034	36		4344	30	81.163	5.592	ø					68.898
1735					17/64	OPEN CHOKE TO 17/64 & O/PLATE TO 2.0"									
1830		13859	2634	38		4157	31	93.697	4.776	3.192					85.040
1930	26	13838	3020	38		4137	31	93.404	2.376	.792					33.917
2030		13817	3247	38		4206	31	94.381	3.192	4.776					84.424
2130	28	13721	3516	38		4171	30	94.201	6.384	3.192					101.656

ET 104

EXPERTEST PTY. LTD.

TEST RESULTS

CUSTOMER : SANTOS LTD
WELL NAME: COOBA #1
TEST TYPE : S.R.T. & B.H.P.S.

PERFORATIONS: 9306 - 9373
FORMATION : PATCHAWARRA

PAGE: 5 OF 15
DATE: 22.7.91
OPR : M. WRIGHT

TIME		WELLHEAD DATA						FLOW RATES			CUMULATIVE PRODUCTION				
DATE / TIME	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE (KPa)	ANNULUS PRESSURE (KPa)	WELLHEAD TEMP (°C)	CHOKE SIZE	PRESSURE (KPa)	TEMP (°C)	GAS $m^3 10^3/D$	OIL m^3/D	WATER m^3/D	GAS $m^3 10^3$	OIL m^3	WATER m^3		G.O.R $m^3/10^6 m^3$
MONDAY		22.7.91													
2230		13645	3675	39	17/64	4206	30	94.692	.792	4.776					58.801
2330	30	13604	>799	38		4344	32	94.446	0	1.584					16.771
TUESDAY		23.2.91													
0030		13535	3916	38		4240	32	93.019	7.992	3.192					120.233
0130	32	13479	3999	38		4309	33	92.088	.792	1.584					35.801
0230		13431	4102	38		4343	33	92.553	3.192	3.192					68.976
0330	34	13376	4185	38		4378	34	91.099	1.584	2.376					43.469
0430		13328	4240	37		4378	34	91.099	2.376	3.984					69.814
0530	36	13273	4268	37		4378	34	89.457	3.192	.792	115.155	5.201	4.537		44.535
					TEST CUMULATIVES FOR LAST 24hrs →						83.828	3.608	3.343		82.919
0630		13252	4316	38		4447	35	90.051	2.376	3.984					70.268
0730	38	13204	4344	41		4450	37	91.372	12.792	1.584					157.335
0830		13148	4378	41		4309	37	89.336	4.776	3.192					89.191
0930	40	13080	4406	38		4240	34	89.285	4.776	2.376					80.103
1030		12997	4461	37		4157	34	88.195	3.984	1.584					63.134
1130	42	12914	4488	38		4151	35	86.241	3.984	1.584					64.563
1230		12859	4537	41		4137	38	86.835	4.776	2.376					82.363
1330	44	12845	4557	43		4171	37	87.55	5.592	1.584					81.964
1430		12845	4571	42		4206	35	86.953	3.984	1.584					64.034

ET 104

EXPERTEST PTY. LTD.

TEST RESULTS

CUSTOMER : SANTOS LTD.
WELL NAME: COOBA #1
TEST TYPE : S.R.T + B.H.P.S

PERFORATIONS: 9306 - 9378' KB.
FORMATION : Patchawarra.

DATE: 23.7.91
OPR : M. WRIGHT.

TIME		WELLHEAD DATA				Separator		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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	Total Liquid Rate. $m^3/d.$	LGR $m^3/10^6 m^3$
Tuesday		23.7.91													
1530	46	12741	4571	41	17/64	4137	37	85.531	5.592	1.584					83.899
1630		12762	4578	41		4309	36	86.357	3.984	3.192					83.096
1730	48	12735	4585	43		4275	37	85.656	1.584	2.376					46.231
1930		12631	4578	43		4206	36	85.059	4.392	2.388					79.709
2130	52	12556	4585	39		4171	35	84.891	3.588	3.588					84.532
Wednesday		24.07.91													
0130		12382	4585	34		4275	30	82.403	3.0	1.596					55.774
0530	60	12197	4530	38		4275	33	81.594	4.596	1.794	201.861	9.557	6.728		78.314
					TEST CUMULATIVES FOR LAST 24 hrs.						86.706	4.356	2.191		75.508
0630	61	12156	4523	37		4275	33	81.594	1.584	2.376					48.533
0730	62	12142	4509	36		4240	34	80.919	5.592	1.584					88.681
0830	63	12038	4488	37		4206	34	80.506	4.776	.784					69.162
0930	64	11997	4468	37		4171	36	79.592	.792	2.376					39.803
1030	65	12019	4461	37		4137	37	78.940	3.192	1.584					60.501
1130	66	11976	4440	38		4102	37	80.222	4.776	1.584					79.280
1230	67	11928	4447	42		4137	36	79.184	3.192	3.192	328.915	10.553	7.290		80.622
1430	69	11790	4427	43	17/64	4137	38	83.547	3.999	1.600	335.877	10.886	7.423	5.599	67.016
1446		Run in hole two pressure elements for Flowing gradient Survey.													
1616		Pull out of hole													
1630	71	11928	4399	42	17/64	4034	37	81.420	2.399	3.199	342.662	11.086	7.690	5.599	68.767
1644		Arrive in lubricator.													

EXPERTEST PTY. LTD.

TEST RESULTS

CUSTOMER : SANTOS LTD.
WELL NAME: COOBA #1
TEST TYPE : S.R.T. + B.H.P.S.

PERFORATIONS: 9306' – 9373' KB
FORMATION : Patchawarra.

DATE: 24.07.91
OPR : I. Kurasiak.

TIME		WELLHEAD DATA				Separator		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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	Total Liquid Rate m^3/d	GOR $m^3/10^3 m^3$
24 of July 1991															
1830	73	11846	4413	41	17/64	4240	33	83.713	4.799	.800	349.638	11.486	7.757	5.599	66.883
2030	75	11721	4344	41	17/64	4240	33	81.703	3.999	1.600	356.446	11.819	7.890	5.599	68.529
2230	77	11604	4268	40	17/64	4240	33	81.703	4.799	.800	363.254	12.219	7.957	5.599	68.529
25 of July 1991															
0230	81	11446	4199	42	17/64	4206	33	81.136	3.199	1.999	376.776	12.752	8.290	5.198	64.065
0630	85	11349	4130	42	17/64	4137	32	81.485	4.398	1.199	390.356	13.485	8.489	5.597	68.687
0830	87	11273	4068	42	17/64	4123	34	78.361	2.399	2.399	396.886	13.684	8.688	4.798	61.229
1030	89	11825	4033	40	17/64	3999	38	75.902	1.599	3.199	403.211	13.817	8.954	4.798	63.213
1230	91	11177	3992	42	17/64	4033	43	74.664	2.399	3.199	409.433	14.016	9.221	5.598	74.976
1330		Run in hole with two pressure elements													
1357		ON DEPTH @ 9270' KB													
1430	93	11032	3916	43	17/64	3930	43	73.275	3.999	1.599	415.539	14.349	9.354	5.598	76.397
1630	95	11038	3868	43	17/64	4033	42	74.050	3.199	1.599	421.709	14.615	9.487	4.798	64.794
1830	97	10997	3806	42	17/64	3930	39	71.718	3.999	.800	427.685	14.948	9.554	4.798	66.900
2030	99	10922	3758	42	17/64	3930	39	72.681	1.600	2.399	433.742	15.081	9.754	3.999	55.021
2230	101	10859	3675	40	17/64	3944	37	71.593	3.999	1.600	439.708	15.414	9.887	5.599	78.205
26 of July 1991															
0230	105	10729	3620	41	17/64	4068	38	72.952	1.999	1.600	451.866	15.747	10.153	3.599	49.333
0630	109	10687	3558	41	17/64	3999	37	72.355	1.999	2.399	463.925	15.946	10.552	3.599	49.755
0830	111	10632	3523	41	17/64	4137	38	71.824	3.199	3.199	469.910	16.213	10.819	6.398	89.079
1030	113	10611	3489	37	17/64	4033	40	71.794	4.799	.800	475.893	16.613	10.886	5.599	77.987

EXPERTEST PTY. LTD.

TEST RESULTS

CUSTOMER : SANTOS LTD.
WELL NAME: COOBA #1
TEST TYPE : S.R.T. + B.H.P.S.

PERFORATIONS: 9306'- 9373'KB.
FORMATION : Patchawarra.

DATE: 26.07.91
OPR : I. KURASIAK

TIME		WELLHEAD DATA				Separator		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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	Total Liquid Rate m^3/d	LGR $m^3/10^3m^3$
26 of July 1991															
1230	115	10494	3475	39	17/64	3999	42	70.699	3.199	.800	481.784	16.880	10.953	3.999	56.564
1430	117	10494	3427	42	17/64	3944	42	69.987	3.199	1.600	487.616	17.146	11.086	4.799	68.569
1630	119	10480	3378	41	17/64	3944	45	67.164	1.599	2.399	493.213	17.279	11.286	3.998	59.526
1830	121	10398	3344	41	17/64	3930	42	68.833	2.399	1.600	498.949	17.479	11.419	3.999	58.097
2030	123	10336	3303	41	17/64	3896	41	67.702	2.399	.800	504.591	17.679	11.486	3.199	47.251
2230	125	10322	3241	40	17/64	3896	40	69.970	2.399	2.399	510.421	17.879	11.686	4.798	68.572
27 of July 1991															
0230	129	10225	3172	41	17/64	3827	41	66.837	2.799	.800	521560	18.345	11.819	3.599	53.847
0630	133	10142	3144	39.5	17/64	3792	39	66.973	2.799	1.199	532.722	18.811	12.018	3.998	59.695
0830	135	10067	3123	38	17/64	3965	40	66.824	3.199	.800	538.291	19.078	12.085	3.999	59.844
1030	137	10011	3082	31	17/64	3930	40	66.395	.800	3.199	543.824	19.144	12.3816	3.999	60.230
1230	139	9998	3068	35	17/64	3930	40	66.395	.800	3.199	549.357	19.212	12.618	3.999	60.230
1430	141	9984	3034	39	17/64	3930	43	65.537	3.199	0	554.818	19.478	12.618	3.199	48.812
1630	143	9970	3006	39	17/64	3930	45	64.997	3.999	0	560.234	19.811	12.618	3.999	61.526
1830	145	9894	2981	41	17/64	3930	44	65.264	3.199	0	565.672	20.078	12.618	3.199	49.030
2030	147	9839	2923	41	17/64	3930	44	65.264	2.399	.800	571.111	20.278	12.685	3.199	49.030
2230	149	9805	2861	41	17/64	3896	44	64.857	3.199	.800	576.516	20.544	12.752	3.999	61.659
28 of July 1991															
0230	153	9777	2779	41	17/64	3861	45	64.194	2.399	.800	587.215	20.944	12.885	3.199	49.833
0630	157	9701	2751	40	17/64	3827	43	63.292	3.199	.800	597.764	21.477	13.0186	3.999	63.183
0830	159	9680	2730	41	17/64	3861	44	63.436	1.599	1.599	603.050	21.610	13.162	3.198	50.413

EXPERTEST PTY. LTD.

TEST RESULTS

CUSTOMER : SANTOS LTD.
WELL NAME: COOBA # 1
TEST TYPE : S.R.T. + B.H.P.S.

PERFORATIONS: 9306' - 9373' KB
FORMATION : Patchawarra.

DATE: 28.07.91
OPR : I. Kurasiak.

TIME		WELLHEAD DATA				Separator		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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER BPD m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	Total Liquid Rate m^3/d	LGR $m^3/10^3 m^3$
28 of July 1991															
1030	161	9591	2661	40	17/64	3792	48	60.687	.800	.800	608.107	21.676	13.218	1.600	26.365
1205	Pull out of hole pressure elements.														
1230	163	9653	2675	41	17/64	3827	51	60.397	0	3.999	613.140	21.676	13.551	3.999	66.211
1230	Arrive in lubricator														
1430	165	9543	2655	40	17/64	3827	52	61.184	2.399	1.599	618.239	21.876	13.684	3.999	65.360
1430	Depressure lubricator.														
1630	167	9543	2620	39	17/64	3792	50	60.247	3.199	0	623.259	22.142	13.684	3.199	53.098
1700	Run in hole two pressure elements														
1730	Arrive @ hang depth of 9270'KB.														
1830	169	9474	2586	39	17/64	3723	46.5	60.270	3.199	0	628.281	22.409	13.684	3.199	53.078
2030	171	9460	2544	38	17/64	3723	45	60.633	1.599	1.599	633.333	22.542	13.817	3.199	52.760
2230	173	9460	2537	37	17/64	3723	43	60.564	2.399	1.599	638.380	22.742	13.950	3.998	66.013
29 of July 1991															
0230	177	9336	2461	38	17/64	3689	44	59.944	.800	1.599	648.370	22.875	14.217	2.399	40.021
0630	181	9322	2386	39	17/64	3654	44	59.561	2.799	.800	658.297	23.342	14.350	3.599	60.425
0830	183	9246	2399	39	17/64	3620	44	58.647	0	1.599	663.184	23.342	14.483	1.599	27.264
1030	185	9239	2351	37	17/64	3620	46	57.684	2.399	2.399	667.991	23.541	14.682	4.798	83.177
1230	187	9322	2372	38	17/64	3689	50	58.647	2.399	.800	672.878	23.741	14.749	3.199	54.547
1430	189	9136	2365	39	17/64	3516	53	54.757	2.399	1.599	677.442	23.939	14.882	3.998	73.013
1630	191	9219	2289	39	17/64	3709	51.5	58.034	1.599	1.599	682.278	24.0723	15.015	3.198	55.106
1830	193	9115	2241	39	17/64	3620	50	57.403	1.599	1.599	687.061	24.205	15.148	3.198	55.711

EXPERTEST PTY. LTD.

TEST RESULTS

00089

CUSTOMER : SANTOS LTD.
WELL NAME: COOBA #1
TEST TYPE : S.R.T. + B.H.P.S.

PERFORATIONS: 9306'- 9373' KB.
FORMATION : Patchawarra.

DATE: 29.07.91
OPR : I. Kurasiak

TIME		WELLHEAD DATA				Separator.		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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	Total Liquid Rate m^3/d	LGR $m^3/10^6 m^3$
29 of July 1991															
2030	195	9129	2206	39	17/64	3585	55	57.239	.800	1.599	691.831	24.272	15.281	2.399	41.912
2230	197	9067	2172	38	17/64	3551	54	56.168	1.599	.800	696.512	24.405	15.348	2.399	42.711
30 of July 1991															
0230	201	8991	2103	38	17/64	3654	52	56.760	1.599	1.199	705.972	24.6716	15.548	2.798	49.295
0630	205	8957	2068	39	17/64	3723	50	56.155	1.599	1.199	715.311	24.9382	15.7478	2.798	49.826
0830	207	8901	2041	38	17/64	4206	43	56.438	.800	1.600	720.014	25.005	15.881	2.400	42.524
1030	209	8881	2020	38	17/64	4137	43	56.239	1.600	1.600	724.700	25.138	16.014	3.200	56.900
1230	211	8853	1999	37	17/64	3413	53	54.968	.800	.800	729.281	25.205	16.014	1.600	29.108
1430	213	8839	1979	35	17/64	3413	53	54.419	2.399	.800	733.816	25.405	16.084	3.199	58.785
1630	215	8791	1961	36	17/64	3447	52	54.617	2.399	0	738.367	25.605	16.084	2.399	43.924
1830	217	8770	1917	37	17/64	3447	50	54.075	2.399	.798	742.873	25.805	16.148	3.197	59.122
2030	219	8729	1875	38	17/64	3447	53	53.559	.800	.798	747.336	25.875	16.215	1.599	29.855
2230	221	8701	1848	38	17/64	3310	52	53.361	.800	1.600	751.783	25.942	16.348	2.400	44.977
31 of July 1991															
0230	225	8653	1793	37	17/64	3172	49	52.925	1.199	1.599	760.604	26.142	16.615	2.798	52.867
0630	229	8618	1751	39	17/64	3103	51.5	52.292	1.199	1.199	769.319	26.342	16.948	2.398	45.858
0830	231	8570	1724	39	17/64	3034	49	52.420	.800	.800	773.687	26.409	17.015	1.600	30.523
1000		Pull out of hole													
1026		Arrive in lubricator.													
1030	233	8564	1717	35	17/64	3344	50	52.339	.800	.800	778.049	26.475	17.082	1.600	30.570
1230		Depressure lubricator.													

ET 104

EXPERTEST PTY. LTD.

TEST RESULTS

00090

CUSTOMER : SANTOS LTD.
WELL NAME: COOBA #1
TEST TYPE : S.R.T. + B.H.P.S.

PERFORATIONS: 9306' - 9573' KB.
FORMATION : Patchawarra.

PAGE: 11 OF 15
DATE: 31.07.91
OPR : I. Kurasiak.

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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	Total Liquid Rate m^3/d	L.G.R. $m^3/10^6 m^3$
31 of July 1991															
1230	235	8550	1696	38	17/64	3530	47	52.027	2.399	.800	782.385	26.675	17.149	3.199	61.468
1310	Run in hole with 2 (two) pressure elements for Flowing gradient Survey.														
1421	On bottom @ 9340'KB														
1430	237	8536	1675	37	17/64	3530	47	52.199	0	1.599	786.735	26.675	17.282	1.599	30.633
1431	Pull out of hole														
1457	Arrive in Lubricator.														
1630	239	8501	1662	37	17/64	3413	48	51.957	1.599	1.599	791.065	26.808	17.415	3.198	61.551
1735	Run in hole two pressure elements with 120 Hrs. clocks.														
1800	On bottom @ 9270'KB.														
1830	241	8481	1627	36	17/64	3413	47	52.131	.800	.800	795.409	26.875	17.482	1.600	30.692
2030	243	8453	1606	37	17/64	3413	48.5	51.871	2.399	.800	799.732	27.075	17.549	3.198	61.672
2230	245	8418	1572	37	17/64	3378	49	51.450	0	1.599	804.019	27.075	17.682	1.599	31.078
1 of August 1991															
0230	249	8364	1503	36	17/64	3206	49	50.801	1.599	.800	812.486	27.341	17.815	2.399	47.223
0630	253	8308	1441	37	17/64	3068	50	50.264	1.599	.800	820.863	27.608	17.949	2.399	47.728
0830	255	8288	1420	39	17/64	3034	51	49.773	1.599	0	825.011	27.741	17.949	1.599	32.126
1030	257	8267	1393	36	17/64	3310	54	49.478	1.599	1.599	829.134	27.874	18.082	3.198	64.635
1230	259	8239	1365	39	17/64	3585	60	49.705	1.599	1.599	833.276	28.008	18.215	3.198	64.339
1430	261	8226	1317	39	17/64	3103	63	48.344	.800	.800	837.305	28.075	18.282	1.600	33.096
1630	263	8205	1303	38	17/64	3103	59	49.336	.800	1.599	841.416	28.142	18.415	2.399	48.626
1830	265	8191	1248	38	17/64	3068	57	48.798	0	2.399	845.482	28.142	18.615	2.399	49.162

ET-104

EXPERTEST PTY. LTD.

TEST RESULTS

00091

CUSTOMER : SANTOS LTD.
WELL NAME: COOBA #1
TEST TYPE : S.R.T. + B.H.P.S.
PERFORATIONS: 9306'-9373'KB.
FORMATION : Patchawarra.
PAGE: 12 OF 15
DATE: 1.08.91
OPR : I. KURASIAK

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 / $m^3 10^3/D$	OIL BPD / m^3/D	WATER BPD / m^3/D	GAS MMSCF / $m^3 10^3$	OIL BBLS / m^3	WATER BBLS / m^3	Total Liquid Rate. m^3/d	L.G.R. $m^3/10^6 m^3$
1 of August 1991															
2030	267	8150	1234	38	17/64	3034	56	48.602	.800	.800	849.532	28.209	18.682	1.600	32.920
2230	269	8129	1200	38	17/64	2896	56	48.642	0	1.599	853.585	28.209	18.815	1.599	32.872
2 of August 1991															
0230	273	8088	1138	37	17/64	2965	56	47.940	.800	.800	861.575	28.342	18.948	1.600	33.375
0630	277	8039	1110	37	17/64	2896	54	47.530	1.600	.800	869.497	28.609	19.081	2.400	50.494
0830	279	8012	1082	35	17/64	2827	50	47.833	1.600	0	873.483	28.742	19.081	1.600	33.450
1030	281	7984	1076	35	17/64	3068	55	48.095	1.600	0	877.491	28.875	19.081	1.600	33.267
1230	283	7964	1041	35	17/64	3206	58	47.194	2.399	0	881.424	29.075	19.081	2.399	50.833
1430	285	7950	1034	37	17/64	3103	59	47.398	2.399	0	885.374	29.275	19.081	2.399	50.614
1600		Pull out of hole - pressure elements.													
1626		Arrive in lubricator.													
1630	287	7922	1013	37	17/64	3103	59	47.398	1.599	0	889.324	29.408	19.081	1.599	33.736
1800		Depressure lubricator.													
1830	289	7922	986	37	17/64	3172	59	47.014	1.599	0	893.242	29.541	19.081	1.599	34.011
1830		Pressure up lubricator with two pressure elements. and 120 HRS clocks.													
2000		Run in hole													
2030		Arrive on hang depth of 9220'KB.													
2030	291	7881	945	37	17/64	3206	57	46.804	1.599	0	897.142	29.674	19.081	1.599	34.164
2230	293	7895	910	36	17/64	3206	58	46.539	1.599	0	901.020	29.807	19.081	1.599	34.358
2230		Start collecting samples.													
2330	294	7846	896	35	17/64	3137	57	46.451	1.599	0	902.955	29.874	19.081	1.599	34.423

ET 104

EXPERTEST PTY. LTD.

TEST RESULTS

00092

CUSTOMER : SANTOS. LTD.	PERFORATIONS: 9306'-9373'KB.	PAGE: 13 OF 15
WELL NAME: COOBA #1	FORMATION : Patchawarra	DATE: 3 08. 91
TEST TYPE : S.R.T. + B.H.P.S.		OPR : I. KURASIAK

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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	Total Liquid Rate m^3/d	L.G.R. $m^3/10^6 m^3$
3 of August.															
0030	295	7812	896	35	17/64	3103	58	45.501	1.599	0	904.851	29.941	19.081	1.599	35.142
0055		Finished sampling.													
0230	297	7826	876	34	17/64	3102	55	45.881	1.599	0	908.674	30.074	19.081	1.599	34.851
0430	299	7805	855	33	17/64	3103	54	46.011	1.599	0	912.508	30.207	19.081	1.599	34.753
0630	301	7764	855	33	17/64	3103	54	45.749	1.599	0	916.320	30.340	19.081	1.599	34.952
0800	302.5	7777	841	34	17/64	3034	54	45.390	1.066	0	919.157	30.407	19.081	1.066	23.485
0800		Shut well in for build up.									2.837	1.066	0		
				See nex page for build up reading.											

ET 104

EXPERTEST PTY. LTD.

TEST RESULTS

00093

CUSTOMER : SANTOS LTD.
PERFORATIONS: 9306'-9373'KB.
PAGE: 14 OF 15

WELL NAME: COOBA #1
FORMATION : Patchawarra.
DATE: 3.08.91

TEST TYPE : S.R.T. + B.H.P.S.
Build up.
OPR : I. Kurosiak

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 $m^3 10^3/D$	OIL BPD m^3/D	WATER BPD m^3/D	GAS MMSCF $m^3 10^3$	OIL BBLS m^3	WATER BBLS m^3		
3 of August 1991															
0800		7777	841	34	17/64	Shut well in.									
0805		8467	724	33	0										
0810		8564	586	32	0										
0815		8584	427	30	0										
0830	.5	8639	55	27	0										
0845		8688	0	25	0										
0900	1	8729	0	24	0										
0915		8770	0	24	0										
0930	1.5	8805	0	24	0										
0945		8846	0	24	0										
1000	2	8881	0	24	0										
1015		8908	0	24	0										
1030	2.5	8929	0	24	0										
1045		8950	0	25	0										
1100	3	8970	0	25	0										
1115		8998	0	25	0										
1130	3.5	9025	0	26	0										
1145		9053	0	26	0										
1200	4	9081	0	27	0										
1300	5	9163	0	28	0										
1630	8.5	9198	0	N/A	0										

ET 104

EXPERTEST PTY. LTD.

TEST RESULTS

00094

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9306'-9373'KB.	PAGE: 15 OF 15
WELL NAME: COOBA #1	FORMATION : Patchawarra.	DATE: 5.08.91
TEST TYPE : S.R.T. + B.H.P.S.		OPR : I. Kwasiak

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 $m^3 10^3/D$	OIL BPD m^3/D	WATER BPD m^3/D	GAS MMSCF $m^3 10^3$	OIL BBLS m^3	WATER BBLS m^3	
3 of August 1991														
2130	13.5	9322	0	N/A	0									
4 of August 1991														
0230	18.5	9439	0	N/A	0									
0630	22.5	9522	0	N/A	0									
0800		Rig in SPIDER in to wellhead and move out of location for next job.												
7 of August 1991														
0900		10652	0	N/A	0	Pull out of hole build up gauges.								
0924		10666	0	N/A	0	Arrive in lubricator.								
1124		10687	0	N/A	0	Depressure lubricator.								
1208		10708	0	N/A	0	Run in hole for static gradient survey.								
1328		10722	0	N/A	0	On bottom stop @ 9340' KB.								
1338		10708	0	N/A	0	Pull out of hole								
1400		10708	0	N/A	0	Arrive @ surface.								
1417		10735	0	N/A	0	Depressure lubricator								
			Rig out wireline unit and move out of location.											
					END OF TEST.									

ET 104

Cooba #1

Summary of Pre-Frac Single Rate Test & Buildup Survey 3-11/11/91.

Flow Test 3-7 November 1991.

4/11/91 - Flowed well through separator @ 2030 hours
- Changing choke settings attempting to establish stable rate.

5/11/91 - Open well to 35/64" choke @ 0600 hours and flowed at this setting until 0800 hours 6/11/91. Rate dropped from 86.5 $10^3 m^3/d$ to 70.5 $10^3 m^3/d$.

6/11/91 - Changed to 31/64" choke @ 1445 hours and flowed until 0800 7/11/91. This will be used as the stable flow period for rates calculations.

F.T.H.P. (Final) = 3275 kPa
Separator Pressure = 1172 kPa
Separator Temperature = 21.5 °C
Gas Flow Rate = 58.895 $10^3 m^3/d$
Oil Flow Rate = 2.610 m^3/d
Water Flow Rate = 2.085 m^3/d
F.B.H.P. @ 0800 hrs 7/11/91 = 883 psig (6088 kPa)

7/11/91 - Shut well in @ 0800 hours until 0800 hours 11/11/91 for a buildup time of 96.0 hours
Element # 55994 @ 9258' KB, SIBHP = 1650 psig (11377 kPa)
Element # 55993 @ 9264' KB, SIBHP = 1681 psig (11590 kPa)
Element # 59548 @ 9270' KB, SIBHT = 265.2 °F (129.6 °C)

DALEBOSS

0/File

SUB-SURFACE PRESSURE SURVEY

CO. SANTOS		RUN 01 FIELD COOBA		WELL 01	
EFF DEPTH		WELL STAT		TOOL HUNG	9258 FT KB
CASING	-	CASING PRESS		ON BOTTOM	0800 911107
LINER	-	TUBING PRESS		OFF BOTTOM	0800 911111
DATE	911107	ELEMENT RANGE	0 - 5138	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	
MAX TEMP		PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	55994	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	BUILD-UP		

SURVEY DATA

CO. SANTOS RUN 01 FIELD COOBA WELL 01

TIME	P-T	DP-DT	DTIME		TIME	P-T	DP-DT	DTIME	
8:00	882.9	882.9	F.B.H.P. .0		6:04	1419.8	1419.8	22.1	
8:03	923.8	923.8	.1		10:05	1439.4	1439.4	26.1	
8:04	966.4	966.4	.1		13:57	1458.3	1458.3	29.9	
8:05	1001.3	1001.3	.1		17:40	1473.0	1473.0	33.7	
8:07	1045.2	1045.2	.1		22:19	1491.5	1491.5	38.3	
8:09	1098.6	1098.6	.1		2:01	1501.9	1501.9	42.0	
8:11	1127.6	1127.6	.2		4:53	1514.5	1514.5	44.9	
8:16	1145.1	1145.1	.3		10:49	1529.9	1529.9	50.8	
8:20	1159.2	1159.2	.3		16:35	1548.6	1548.6	56.6	
8:26	1169.9	1169.9	.4		20:52	1560.4	1560.4	60.9	
8:40	1190.1	1190.1	.7		1:19	1574.6	1574.6	65.3	
8:54	1205.6	1205.6	.9		6:35	1589.8	1589.8	70.6	
9:20	1228.9	1228.9	1.3		11:12	1599.5	1599.5	75.2	
9:42	1249.8	1249.8	1.7		17:07	1614.7	1614.7	81.1	
9:59	1263.0	1263.0	2.0		22:11	1626.9	1626.9	86.2	
10:13	1266.4	1266.4	2.2		2:19	1636.5	1636.5	90.3	
10:36	1266.1	1266.1	2.6		7:09	1650.7	1650.7	95.1	
10:50	1265.9	1265.9	2.8		7:44	1650.3	1650.3	95.7	
11:08	1270.4	1270.4	3.1		8:00	1650.1	1650.1	96.0	SIBHP
11:34	1274.7	1274.7	3.6	-	7:41	932.9	932.9	-15.7	
11:57	1280.1	1280.1	4.0	-	5:47	927.1	927.1	-13.8	
12:48	1290.5	1290.5	4.8	-	3:39	919.2	919.2	-11.6	
14:01	1304.1	1304.1	6.0	-	2:35	918.4	918.4	-10.6	
15:21	1316.7	1316.7	7.3	-	1:17	917.4	917.4	-9.3	
16:51	1332.4	1332.4	8.9		0:41	911.6	911.6	-7.3	
18:20	1345.2	1345.2	10.3		2:10	905.6	905.6	-5.8	
20:34	1361.8	1361.8	12.6		4:13	900.5	900.5	-3.8	
22:26	1375.6	1375.6	14.4		5:55	894.2	894.2	-2.1	
1:26	1393.8	1393.8	17.4		7:12	888.1	888.1	-.8	
3:31	1405.9	1405.9	19.5		7:48	886.1	886.1	-.2	

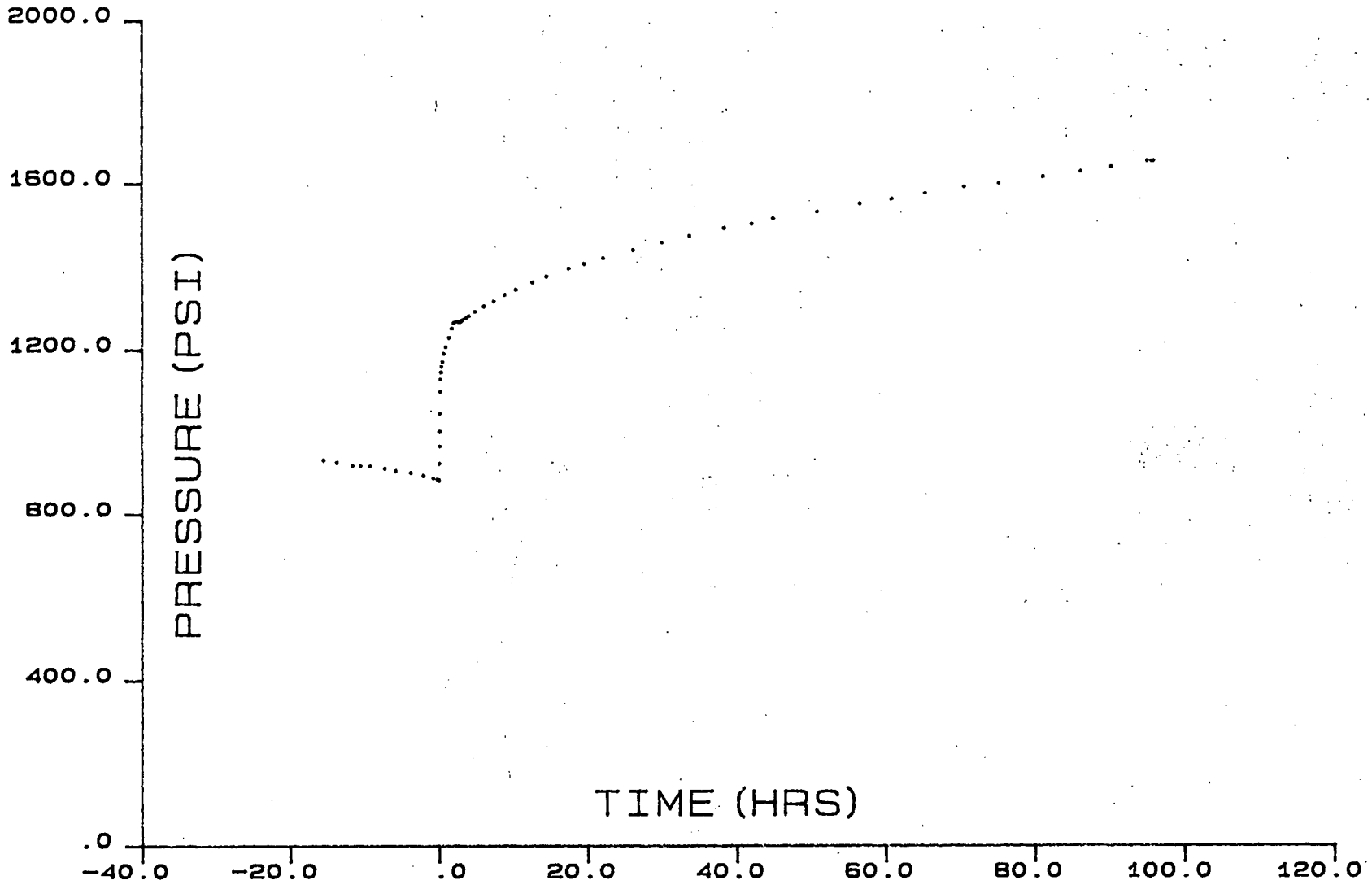
SURVEY DATA

CO. SANTOS RUN 01 FIELD COOBA WELL 01

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
7:56	885.0	885.0	-.1	0:00	.0	.0	.0

LUB IN DWT = 520 PSI / OUT = 1134 PSI
LUB IN AMERADA = 487 PSI / OUT = 1116 PSI

COOBA #1 PRE-FRAC SINGLE RATE FLOW AND BUILD-UP NOVEMBER 1991
ELEMENT #55994 (TOP) @ 9258 FT KB



SUB-SURFACE PRESSURE SURVEY

CO. SANTOS		RUN 02	FIELD COOBA	WELL 01	
EFF DEPTH		WELL STAT		TOOL HUNG	9264 FT KB
CASING	-	CASING PRESS		ON BOTTOM	0800 911107
LINER	-	TUBING PRESS		OFF BOTTOM	0800 911111
DATE	911107	ELEMENT RANGE	0 - 5174	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	
MAX TEMP		PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	55993	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	BUILD-UP		

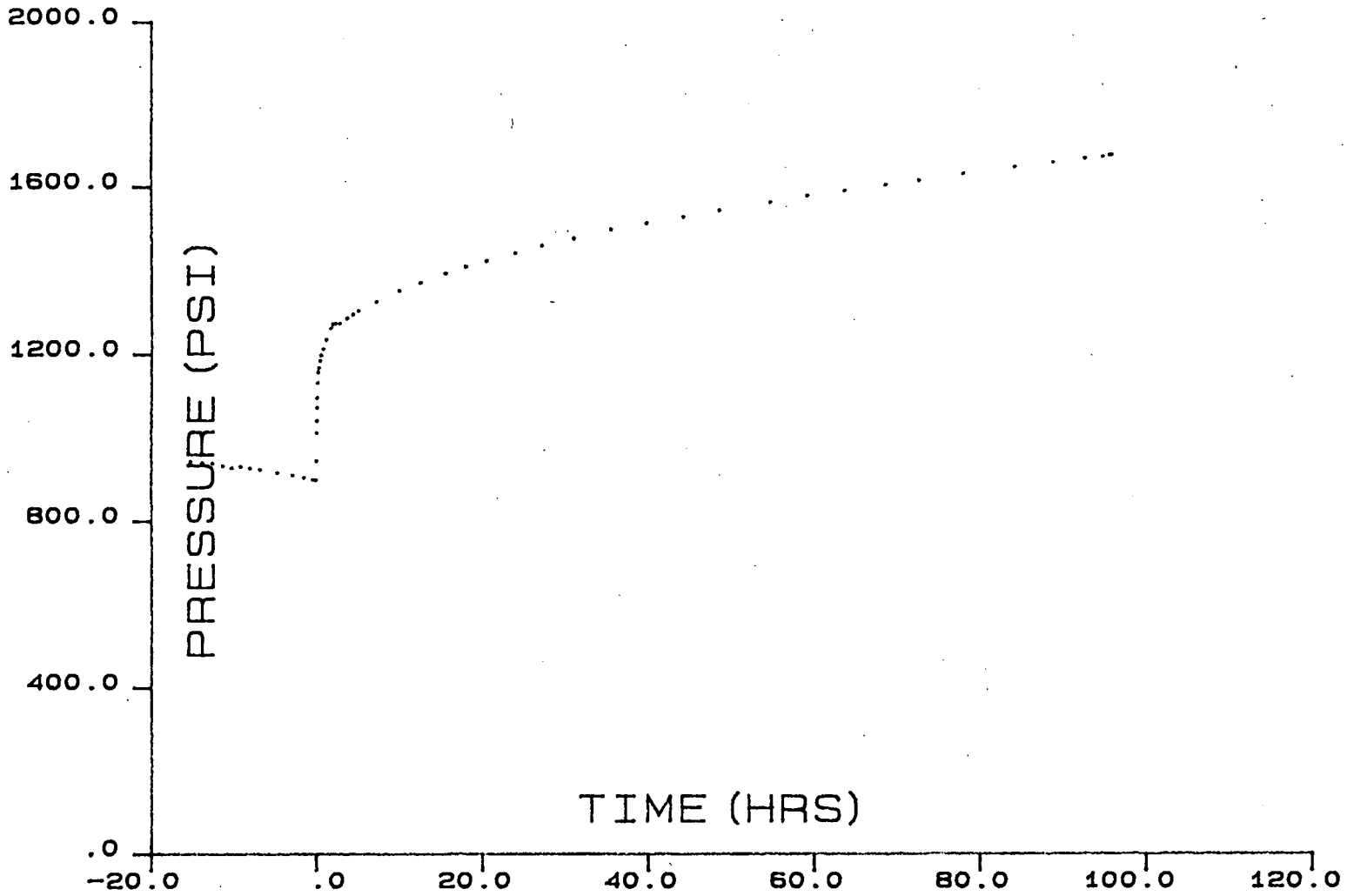
SURVEY DATA

CO. SANTOS RUN 02 FIELD COOBA WELL 01

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
8:00	898.4	898.4	.0	19:38	1499.4	1499.4	35.6
8:01	945.0	945.0	.0	23:52	1514.4	1514.4	39.9
8:06	1012.1	1012.1	.1	4:21	1530.2	1530.2	44.3
8:06	1041.0	1041.0	.1	8:39	1545.9	1545.9	48.7
8:07	1072.6	1072.6	.1	14:49	1563.6	1563.6	54.8
8:09	1096.3	1096.3	.2	19:16	1579.9	1579.9	59.3
8:11	1132.3	1132.3	.2	23:46	1592.1	1592.1	63.8
8:16	1157.1	1157.1	.3	4:45	1605.7	1605.7	68.8
8:19	1167.6	1167.6	.3	8:47	1616.4	1616.4	72.8
8:29	1185.4	1185.4	.5	14:09	1632.8	1632.8	78.2
8:37	1197.8	1197.8	.6	20:20	1649.7	1649.7	84.3
8:53	1213.0	1213.0	.9	0:57	1660.9	1660.9	88.9
9:16	1235.1	1235.1	1.3	4:46	1672.1	1672.1	92.8
9:46	1263.1	1263.1	1.8	6:55	1676.7	1676.7	94.9
10:00	1273.0	1273.0	2.0	7:47	1680.7	1680.7	95.8
10:20	1275.2	1275.2	2.3	8:00	1680.7	1680.7	96.0
10:51	1275.3	1275.3	2.8	- 7:18	943.5	943.5	-15.3
11:44	1287.5	1287.5	3.7	- 5:50	939.6	939.6	-13.8
12:26	1296.5	1296.5	4.4	- 4:34	938.5	938.5	-12.6
13:07	1305.0	1305.0	5.1	- 3:19	932.3	932.3	-11.3
15:16	1326.7	1326.7	7.3	- 2:15	927.1	927.1	-10.2
18:02	1353.5	1353.5	10.0	- 1:08	931.4	931.4	-9.1
20:34	1372.7	1372.7	12.6	- 0:00	926.2	926.2	-8.0
23:36	1395.0	1395.0	15.6	1:14	922.8	922.8	-6.8
2:02	1411.7	1411.7	18.0	3:20	915.4	915.4	-4.7
4:33	1425.2	1425.2	20.6	5:13	908.7	908.7	-2.8
8:02	1443.5	1443.5	24.0	6:34	903.5	903.5	-1.4
11:14	1461.0	1461.0	27.2	7:36	898.3	898.3	-.4
15:06	1477.9	1477.9	31.1	7:54	898.4	898.4	-.1

LUB IN DWT = 520 PSI / OUT = 1134 PSI
LUB IN AMERADA = 508 PSI / OUT = 1139 PSI

COOBA #1 PRE-FRAC SINGLE RATE FLOW AND BUILD-UP NOVEMBER 1991
ELEMENT #55993 (MID) @ 9264 FT KB



SUB-SURFACE PRESSURE SURVEY

CO. SANTOS		RUN 04 FIELD COOBA		WELL 01	
EFF DEPTH		WELL STAT		TOOL HUNG	9340 FT KB
CASING	-	CASING PRESS		ON BOTTOM	1003 911111
LINER	-	TUBING PRESS		OFF BOTTOM	1103 911111
DATE	911111	ELEMENT RANGE	0 - 5138	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	
MAX TEMP		PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	55994	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	STATIC GRADIENT		

SURVEY DATA

CO. SANTOS — RUN 04 FIELD COOBA — WELL 01

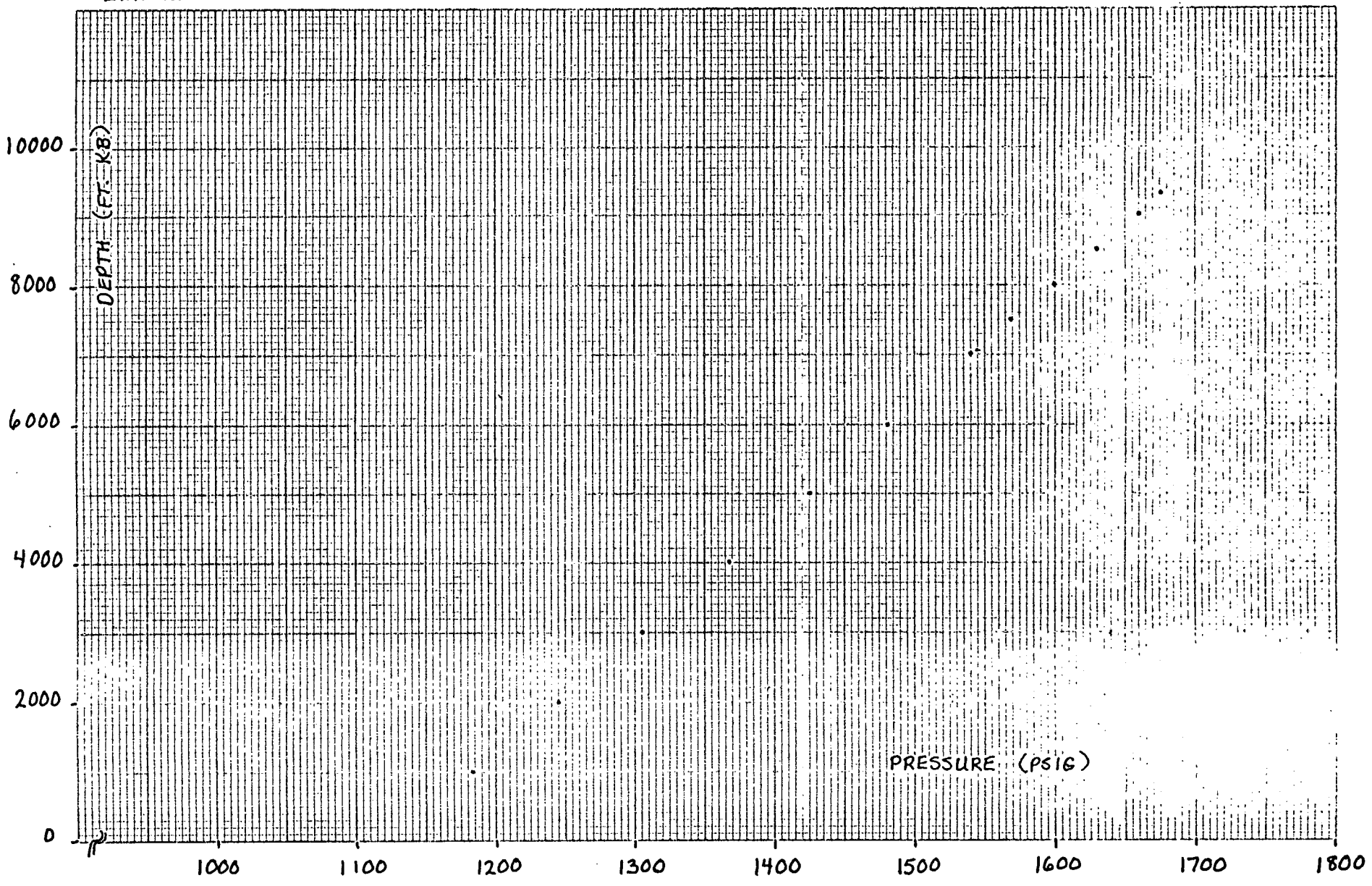
TIME	P-T	DP-DT		DTIME	TIME	P-T	DP-DT		DTIME
10:34	1182.9	1182.9	1000	.5	12:45	1568.8	1568.8	7500	2.7
10:03	1116.6	1116.6	LUB	.0	12:55	1597.9	1597.9	8000	2.9
10:54	1245.3	1245.3	2000	.8	* ~~13:08~~	~~1604.1~~	~~1604.1~~		~~3.1~~
11:14	1306.0	1306.0	3000	1.2	13:22	1627.7	1627.7	8500	3.3
11:32	1366.9	1366.9	4000	1.5	13:44	1658.0	1658.0	9000	3.7
11:53	1424.5	1424.5	5000	1.8	14:07	1676.1 ←	1676.1	9340	4.1
12:12	1481.5	1481.5	6000	2.1	16:31	1124.0	1124.0	LUB	6.5
12:32	1540.5	1540.5	7000	2.5	0:00	.0	.0		.0

* POINT DIGITIZED IN ERROR.

datum

COOBA #1 - STATIC PRESSURE GRADIENT - 11/11/91.

ELEMENT # 55994 (TOP)



PETROLEUM ENGINEERING : TEST RESULTS

CONTRACTOR: OILSERV	PERFORATIONS: 9306 - 9373' KB.	PAGE: 1 OF 7
WELL NAME: COOBA #1.	FORMATION: PATCHAWARRA.	DATE: 3-11-91.
TEST TYPE: PRE FRAC SINGLE RATE		OPR: DOWLING

TIME		WELLHEAD DATA				SEPARATOR 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 $m^3 10^3/D$	OIL BPD m^3/D	WATER BPD m^3/D	GAS MMSCF $m^3 10^3$	OIL BBLS m^3	WATER BBLS m^3	L.G.R. BBLS/MMSCF $m^3/10^6 m^3$	
3-11-91.															
0600					RIG DOWN AT GIDGEALPA #35.										
1200					OPERATOR ON SITE TO PUT WELL BACK ON LINE										
1430					TRUCK ARRIVES ON SITE TO MOVE EQUIPMENT.										
1600					ARRIVE AT COOBA #1. SPOTTED ACCOMODATION VAN.										
1700					TRUCK ARRIVES WITH EQUIPMENT. SPOTTED EQUIPMENT.										
4-11-91.															
0700					OPERATOR ON SITE TO SHUT IN WELL										
					PRESSURE TESTED SWAB VALVE.										
					OPERATOR OPENED WELL TO WING VALVE										
0730					RIG UP LUB.										
0930.					R.I.H. WITH WEIGHT BAR, SPANG JARS, 1.75" GAUGE CUTTER.										
1045					TAGGED PBTD 10,046' KB., NO OBSTRUCTIONS.										
					P.O.O.H.										
1205					IN LUB.										
1230					CONTINUE RIG UP.										
1700.					PRESSURE TEST LINES TO SEPARATOR.										
1710					TRIM FLOW THROUGH SEPARATOR ON 10/64" CHOKE										
1720					OPEN CHOKE TO 20/64"										
1730					WELL HEAD PRESSURE DROPS TO 5000 KPa. S/IN WELL.										
1915					WELL HEAD PRESSURE RISING TO NORMAL.										
1930					OPEN WELL ON BY-PASS ON 10/64" CHOKE										
2030	01-00				TRIM FLOW THROUGH SEPARATOR										

PETROLEUM ENGINEERING : TEST RESULTS

SANTOS

CONTRACTOR: OILSERV		PERFORATIONS: 9306 - 9373' KB	PAGE: 2 OF 7
WELL NAME: COOBA #1.		FORMATION: PATCHAWARRA.	DATE: 4-11-91
TEST TYPE: PRE FRAC SINGLE RATE			OPR: DOWLING

TIME		WELLHEAD DATA				SEPARATOR 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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	L.G.R. ~~BBLS/MMSCF~~ $m^3/10^6 m^3$
2045						ENGAGE 0.75" O.P.								
2100	01.30.	3199.	ø	26.5	10/64"	965	24	4.84	0	0	0.30	0	0	0
2200	02.30	4509	ø	27	10/64"	1138	20.5	6.97	9.84	0	0.59	0.41	0	1.412
2300	03.30	4964	ø	26	10/64"	1207	18	8.82.	8.40	0	0.96	0.76	0	0.952.
2300						OPEN CHOKE TO 13/64"								
2400	04.30	4358	ø	27	13/64"	1241.	14	7.80	14.16	0	1.29	1.35	0	1.815.
5-11-53														
0005						ENGAGE 1.25" O.P.								
						OPEN WELL TO 16/64" CHOKE								
0010						ENGAGE 1.00" O.P.								
0100.	05.30	4944	ø	29	16/64	1344	17	15.81	24.72	0	1.94	2.38	0	1.564
0105						OPEN WELL TO 19/64" CHOKE								
0200	06.30	5723	ø	30	19/64	1172	15	27.15	27.36	0	3.07	3.52	0	1.008
0210						OPEN WELL TO 30/64" CHOKE								
0215						ENGAGE 2.00" O.P.								
0300	07.30	4406	ø	30	30/64"	1379	14	56.70	22.32.	ø	5.44	4.45	ø	0.394
0305						OPEN WELL TO 34/64" CHOKE								
0400	08.30	3875	ø	30	34/64"	1448	15	83.16	10.80	ø	8.90	4.90	ø	0.130.
0500	09.30	3944	ø	30	34/64"	1448	15	84.13.	9.36.	ø	12.41.	5.29.	ø	0.111
0500						OPEN WELL TO 35/64" CHOKE.								
0600	10.30	3930	ø	31.	35/64"	1517	16	86.52		ø	16.01	5.65	ø	0.100
0800	12.30	3916	0	33	35/64"	1241	17.5	86.27	8.52	0	23.20	6.36	0	0.099
0800						CHANGE FROM TANK #1 TO TANK #2.								

0178a-15/3/91

0010

PETROLEUM ENGINEERING : TEST RESULTS

SANTOS

CONTRACTOR: OILSERV AUST LTD.	PERFORATIONS: 9306' - 9373' KB.	PAGE: 3 OF 7
WELL NAME: COOBA #1.	FORMATION: PATCHAWARRA.	DATE: 05-11-91
TEST TYPE: PRE FRAC SINGLE RATE		OPR: DOWLING.

TIME		WELLHEAD DATA				SEPARATOR 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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	L.G.R. ~~BBLS/MMSCF~~ $m^3/10^6 m^3$
1000	14·30	3896	ø	34	35/64"	1241	21	83.99	6·00	3·60	30·20	6·86	0·30	0·114
1200	16·80	3944	ø	35·5	35/64"	1241	23	84·39	4·44	3·00	37·23	7·23	0·55	0·088
				CO_2 = 24%		H_2S = 0%		API =	51·7.					
1400	18·30	3875	1100	36	35/64"	1138	25	83·35	3·84	3·24	44·18	7·55	0·82	0·085
1600	20·30	3799	1400	36·5	35/64"	1103	25	81.36	3·84	3·24	50·96	7·87	1·09	0·087
1800	22·30	3750	1600	37	35/64"	1103	24	80·82	3·60	3·00	57·69	8·17	1·34	0·082
2000	24·30	3702	1900	37	35/64"	1172	23	78·86	4·32	2·52	64·27	8·53	1·55	0·087
2200	26·30	3620	2000	37	35/64"	1379.	24	78·34.	3·72	2.40	70·80	8·84	1·75	0·078
2400	28·30	3551.	2100	37	35/64"	1482	24.	77·39.	3·48	2.52.	77·24	9·13	1·96.	0·078
6-11-91.														
0200	30·30	3378	2200	37	35/64"	1516	24	74·63	3·78	2·76	83·46	9·44	2·19	0·088
0400	32·30	3378	2250	37	35/64"	1137	24	73·51	2·94	2·28	89·59	9·69	2·38	0·071
0600	34·30	3378	2300	37	35/64"	1082	24	73·80	2·88	2·64	95·70	9·93	2·60	0·075
0800	36·30	3275	2400	37·5	35/64"	1034	24	70·50	3·66	2·70	101·57	10·25	2·70	0·040
0800						CHOKE WELL BACK TO				34/64"	CHOKE			
0845						CHOKE WELL BACK TO				33/64"	CHOKE.			
1000	38·30	3523	2450	38	33/64"	931	25·5	72·78	3·48	1·80	107·64	10·52	2·97	0·073.
1200	40·30	3503	2450	39	33/64"	931.	28	68·23.	2·58	2·70	113·32.	10·74	3·20	0·077
1242						AMERADAS IN LUB.								
1342						PRESSURE UP LUB.								
1400	42·30	3379	2450	38	33/64"	896	27.	67·15	2·64	2·52	118·92	10·96	3·41	0·077.
1442		3310	2450.			DEPRESSURE LUB.								
1445						CHOKE WELL BACK TO 31/64"								

0178a-15/3/91

00105

PETROLEUM ENGINEERING : TEST RESULTS

SANTOS

CONTRACTOR: OILSERV AUST LTD.		PERFORATIONS: 9306'-9373' KB.	PAGE: 4 OF 7
WELL NAME: COOBA #1.		FORMATION: PATCHAWARRA.	DATE: 06-11-91.
TEST TYPE: PRE FRAC SINGLE RATE			OPR: DOWLING

TIME		WELLHEAD DATA				SEPARATOR 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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	L.G.R. ~~BBLS/MMSCF~~ $m^3/10^6 m^3$	
1542		3585	2450			PRESSURE UP LUB		R.I.H.							
1600	44.30	3599	2450	38.5	31/64"	931.	26	61.71.	2.40	2.64	124.06	11.16	3.63	0.082.	
1630					AT HANG DEPTH OF 9270' KB.										
1800	46.30	3620.	2450	38.5	31/64"	931	26	63.67	2.88	1.56	129.37	11.40	3.76	0.070	
2000	48.30	3558	2450	38	31/64"	931	24	60.35	2.16	2.76	134.40	11.58	3.99	0.082	
2200	50.30	3427	2450	37.5	31/64"	1034	23.5	59.13	2.52	1.92	139.33	11.79	4.15	0.075	
2400	52.30	3427	2450	37	31/64"	1138	23	57.31.	2.40	1.92	144.10	11.99.	4.31.	0.075.	
07.11.91.															
0030					BLEED	OFF ANNULUS		PRESSURE							
0100	53.30	3434	ø	37	31/64"	1138	22.5	59.15	2.40	2.64	146.57	12.09	4.42	0.085	
0100					COLLECT	1ST SET OF SAMPLES GAS #		PDE 139		CONDENSATE # SPE 114.					
0200	54.30	3358	ø	36.5	31/64"	1138	22	58.70	1.92	3.12	149.01	12.17	4.55	0.086	
0200					COLLECT	2ND SET OF SAMPLES GAS #		PDE 112		CONDENSATE # SPE 065					
					4 x	500 ML	H_2O.								
0300	55.30	3358	ø	36.5.	31/64"	1138	21.5.	58.25	1.92	2.40	151.44.	12.25	4.65	0.074	
0400	56.30	3323	ø	36	31/64"	1138	22	57.66	3.84	0.96	153.84	12.41	4.69	0.083	
0500	57.30	3323	ø	36	31/64"	1172	21.5	58.06	2.64	3.36	156.26	12.52	4.83	0.103.	
0600	58.30	3288	ø	36	31/64"	1172	21	57.59	3.36	1.68	158.66	12.66	4.90	0.088	
0700	59.30	3275	ø	36	31/64"	1172	21	57.04	2.88	2.40	161.04	12.78	5.00	0.093	
0800	60.30	3275	ø	36	31/64"	1172.	21.5.	56.97	2.88	0.48	164.05	12.90	5.02	0.059.	
0800						SHUT IN WELL FOR BUILD UP SURVEY.									
0815	00.15	5606	ø		S/IN										
0830	00.30	5723	ø		"										

0178a-15/3/91

0106

PETROLEUM ENGINEERING : TEST RESULTS

SANTOS

CONTRACTOR: OILSERV AUST LTD.		PERFORATIONS: 9306' - 9373' KB.	PAGE: 5 OF 7
WELL NAME: COOBA #1.		FORMATION: PATCHAWARRA	DATE: 08-11-91
TEST TYPE: PRE FRAC SINGLE RATE			OPR: DOWLING

TIME		WELLHEAD DATA				SEPARATOR 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 $m^3 10^3/D$	OIL BPD m^3/D	WATER BPD m^3/D	GAS MMSCF $m^3 10^3$	OIL BBLS m^3	WATER BBLS m^3	L.G.R. BBLS/MMSCF $m^3/10^6 m^3$	
0845	00·45	5806	ø		5/IN										
0900	01·00	5902	ø		"										
0915	01·15	5992	ø		"										
0930	01·30	6054	ø		"										
0945	01·45	6123	ø		"										
1000	02·00	6171	ø		"										
1100	03·00	6185	ø		"										
1200	04·00	6233	ø		"										
1300	05·00	6274	ø		"										
1400	06·00	6336.	ø		"										
1800	10·00	6481	ø		"										
2200	14·00	6612	ø		"										
08/11/91.															
0200	18·00	6730	ø		"										
0600	22·00	6819	ø												
1000	26·00	6888	ø		"										
14000	30·00	7005	ø		"										
1800	34·00	7047	ø		"										
2200	38·00	7109	ø		"										
09/11/91															
0200	42·00	7178	ø		"										
0600	46·00	7226	ø		"										
1000	50·00	7283	ø		"										

PETROLEUM ENGINEERING : TEST RESULTS

SANTOS

CONTRACTOR: OILSERV AUST LTD.	PERFORATIONS: 9306' - 9373' KB.	PAGE: 6 OF 7
WELL NAME: COOBA #1.	FORMATION: PATCHAWARRA	DATE: 09/11/91
TEST TYPE: PRE FRAC SINGLE RATE		OPR: DOWLING

TIME		WELLHEAD DATA				SEPARATOR 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 $m^3 10^3/D$	OIL BPD m^3/D	WATER BPD m^3/D	GAS MMSCF $m^3 10^3$	OIL BBLS m^3	WATER BBLS m^3	L.G.R. BBLS/MMSCF $m^3/10^6 m^3$	
1400	54.00	7322	ø		S/IN.										
1800	58.00	7385	ø		"										
2200	62.00	7433	ø		"										
10/11/91															
0200	66.00	7488	ø		"										
0600	70.00	7529	ø		"										
1000	74.00	7571	ø		"										
1400	78.00	7626	ø		"										
1800	82.00	7653	ø		"										
2200	86.00	7702	ø		"										
11/11/91															
0200	90.00	7736	ø		"										
0600	94.00	7784	ø		"										
0800	96.00					P.O.O.H.									
0900	97.00	7819	ø		"	IN LUB									
0903.					"	DEPRESSURE LUB.									
1003					"	PRESSURE UP LUB.									
1103		7833	ø		"	DEPRESSURE LUB.									
1203					"	RIG OUT AMERADAS.									
1210					"	PREPARE AMERADAS FOR STATIC GRADIENT SURVEY.									
1310					"	IN LUB.									
1315		7860	ø		"	PRESSURE LUB.									
1325.						DEPRESSURE LUB.									

0178a-15/3/91

00108

PETROLEUM ENGINEERING : TEST RESULTS

SANTOS

CONTRACTOR: OILSERV AUST LTD.		PERFORATIONS: 9306'-9373' KB.	PAGE: 7 OF 7
WELL NAME: COOBA #1.		FORMATION: PATCHAWARRA.	DATE: 11/11/91.
TEST TYPE: PRE FRAC SINGLE RATE.			OPR: DOWLING

TIME		WELLHEAD DATA				SEPARATOR 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 $m^3 10^3/D$	OIL BPD m^3/D	WATER BPD m^3/D	GAS MMSCF $m^3 10^3$	OIL BBLS m^3	WATER BBLS m^3	L.G.R. BBLS/MMSCF $m^3/10^6 m^3$	
1332.	101·30				5/in	PRESSURE LUB. +		R.I.H.							
1535	103·30.					P.O.O.H.									
1652.	105-					RIG OUT AMERADAS. + RIG DOWN EQUIPMENT									
						END OF TEST.									

0178a-15/3/91

00109

PETROLEUM ENGINEERING : GAS FLOW CALCULATIONS

SANTOS

CONTRACTOR: OILSERV	PERFORATIONS: 9306 - 9373' KB.	PAGE: 1. OF 4
WELL NAME: COOBA # 1.	FORMATION: PATCHWARRA.	DATE: 4-11-91
TEST TYPE: PRE FRAC SINGLE RATE		OPR: DOWLING

ORIFICE METER TYPE: DANIELS	STATIC PRESSURE RANGE: 0 - 1500 PSIG	GAS SPECIFIC GRAVITY (SG) = 1.054
METER RUN SIZE: 3.826	DIFFERENTIAL PRESS. RANGE: 0-200 IN WC	FG = $\sqrt{(1/SG)}$ = 0.9740
SEPARATOR NO.:	STANDARD CONDITIONS: 14.73 PSI @ 60°F	C_2 = (FU X FG) =

DATE / TIME	FLOW TIME (HOURS)	CHOKE SIZE	STATIC PRESS P_F (PSIA)	DIFF PRESS H_W (IN WC)	GAS FLOW TEMP. (°C)	ORIF. PLATE SIZE (IN)	$\sqrt{(P_F \times H_W)}$	$C_1 = F_B \times F_{TF} \times F_{PV} \times Y_2$				CUMULATIVE GAS PRODUCTION $M^3 10^3$	C ($C = C_1 \times C_2$)	GAS FLOW RATE $Q = \sqrt{(P_F \times H_W)} \times C$	
								F_B	F_{TF}	F_{PV}	Y_2			(MMSCFD)	($m^3 10^3/D$)
1930							OPEN WELL ON 19/64" CHOKE ON BY-PASS.								
2030.	01.00						TRIM FLOW THROUGH SEPARATOR.								
2045							ENGAGE 0.75" O.P.								
2100	01.30	10/64"	155.	26	24	0.75"	63.4270.	113.1523	0.9857	1.0381.	1.0011.	0.3026	112.9018	0.1719	4.8421
2200	02.30	10/64"	180	45.	20.5	0.75"	89.9325	113.1523	0.9915	1.0471	1.0017	0.5930	114.6177	0.2474	6.9699
2300	03.30	10/64"	190	67	18	0.75"	112.7471	113.1523	0.9958	1.0517	1.0024	0.9605	115.6977	0.3131	8.8204
2300							OPEN WELL TO 13/64" CHOKE.								
2400	04.30	13/64	195	50	14	0.75	98.6737	113.1523	1.0027	1.0561	1.0017	1.2855	116.9166	0.2769	7.8008
5-11-91															
0005							ENGAGE 1.250" O.P.								
							OPEN WELL TO 16/34" CHOKE								
0010							ENGAGE 1.00" O.P.								
0100	05.30	16/64	210	60	17	1.00	112.1775	202.2018	0.9975	1.0589	1.0019	1.9443	208.4363	0.5612	15.8103
0105							OPEN WELL TO 19/64" CHOKE								
0200	06.30	19/64	185	200	15	1.00	192.2134	202.2018	1.0010	1.0521	1.0072	3.0756	208.9069	0.9637	27.1516
0210							OPEN WELL TO 30/64" CHOKE								
0215							ENGAGE 2.00" O.P.								
0300	07.30	30/64"	215	42	14	2.00"	94.9666	849.4091	1.0027	1.0631	1.0012	5.4381	882.9710	2.0125	56.6992
0305							OPEN WELL TO 34/64" CHOKE								
0400	08.30	34/64"	225	86	15	2.00"	139.0208	849.4091	1.0010	1.0658	1.0023	8.9031	884.6563	2.9517	83.1599
0500	09.30	34/64"	225	88	15	2.00"	140.6280	849.4091	1.0010	1.0658	1.0023	12.4083	884.7033.	2.9857	84.1258

00110

PETROLEUM ENGINEERING : GAS FLOW CALCULATIONS

SANTOS

CONTRACTOR: OILSERV	PERFORATIONS: 9306 - 9373' KB	PAGE: 2 OF 4
WELL NAME: COOBA #1.	FORMATION: PATCHAWARRA.	DATE: 5-11-91.
TEST TYPE: PRE FRAC SINGLE RATE		OPR: DOWLING

ORIFICE METER TYPE: DANIEL	STATIC PRESSURE RANGE: 0 - 1500 PSIG	GAS SPECIFIC GRAVITY (SG) = 1.054
METER RUN SIZE: 3.826	DIFFERENTIAL PRESS. RANGE: 0-200 IN WC	FG = $\sqrt{(1/SG)}$ = 0.9740
SEPARATOR NO.:	STANDARD CONDITIONS: 14.73 PSI @ 60°F	C_2 = (FU X FG) =

DATE / TIME	FLOW TIME (HOURS)	CHOKE SIZE	STATIC PRESS P_f (PSIA)	DIFF PRESS H_w (IN WC)	GAS FLOW TEMP. (°C)	ORIF. PLATE SIZE (IN)	$\sqrt{(P_f \times H_w)}$	$C_1 = F_B \times F_{TF} \times F_{PV} \times Y_2$				CUMULATIVE GAS PRODUCTION $M^3 10^3$	C ($C = C_1 \times C_2$)	GAS FLOW RATE $Q = \sqrt{(P_f \times H_w)} \times C$	
								F_B	F_{TF}	F_{PV}	Y_2			(MMSCFD)	($m^3 10^3/D$)
0500								OPEN WELL ON 35/64" CHOKE							
0600	10.30	35/64"	235	89	16	2.00	144.5371.	849.4091	0.9992	1.0685	1.0023	16.0135	885.3174	3.0711	86.5243
0800	12.30	35/64"	195	110	17.5	2.00	146.3568	849.4091	0.9966	1.0536	1.0034	23.2027	871.7496	3.0621	86.2709
1000	14.30	35/64	195	106	21	2.00	143.6711	849.4091	0.9907	1.0513	1.0032	30.2015	864.5219	2.981	83.9857
1200	16.30	35/64	195	108	23	2.00	145.0201	849.4091	0.9874	1.0500	1.0033	37.2341	860.6121	2.9953	84.3909
					CO_2 = 24%		H_2S = 0%		API = 51.7.						
1400	18.30	35/64"	180	116	25	2.00"	144.3907	849.4091	0.9840	1.0445	1.0039	44.1799.	853.6931	2.9584	83.3491
1600	20.30	35/64"	175	114	25	2.00"	141.1355	849.4091	0.9840	1.0431	1.0039	50.9602	852.5829	2.8879	81.3640
1800	22.30	35/64"	175	112	24	2.00"	139.8920	849.4091	0.9857	1.0437	1.0038	57.6950	854.8867	2.8685	80.8178
2000	24.30	35/64"	185	100	23	2.00"	135.9154	849.4091	0.9874	1.0471	1.0032	64.2670	858.1290	2.7992	78.8644
2200	26.30	35/64"	215	84	24	2.00"	134.3031	849.4091	0.9857	1.0554	1.0023	70.7956	862.6923	2.7807	78.3433
2400	28.30	35/64"	230	76	24	2.00"	132.1343	849.4091	0.9857	1.0600	1.0020	77.2445	866.1494	2.7468	77.3870
6-11-91.															
0200	30.30	35/64"	235	69	24	2.00"	127.2650	849.4091	0.9857	1.0615	1.0018	83.4636	867.2378	2.6489	74.6289
0400	32.30	35/64"	180	90	24	2.00"	127.1837	849.4091	0.9857	1.0451	1.0030	89.5898	854.8338	2.6093	73.5145
0600	34.30	35/64"	172	94	24	2.00"	127.0536	849.4091	0.9857	1.0428	1.0033	95.6982	853.2149	2.6017	73.3002
0800	36.30	35/64	165	91	24	2.00"	122.4354	849.4091	0.9857	1.0408	1.0033	101.5736	851.6353	2.5025	70.5051
0800					CHOKE	WELL	BACK TO	34/64"							
0845					CHOKE	WELL	BACK TO	33/64"							
1000	38.30	33/64"	150	108	25.5	2.00"	127.1646	849.4091	0.9832	1.0361	1.0043	107.6388	846.4539	2.5833	72.7828
1200	40.30	33/64	150	96	28	2.00"	119.8920	849.4091	0.9791	1.0350	1.0038	113.3250	841.6863	2.4219	68.2339

00111

PETROLEUM ENGINEERING : GAS FLOW CALCULATIONS

SANTOS

CONTRACTOR: OILSERV AUST LTD	PERFORATIONS: 9306 - 9373' KB	PAGE: 3 OF 4
WELL NAME: COOBA #1	FORMATION: PATCHAWARRA.	DATE: 06 - 11 - 91
TEST TYPE: PRE FRAC SINGLE RATE		OPR: DOWLING

ORIFICE METER TYPE: DANIELS	STATIC PRESSURE RANGE: 0 - 1500 PSIG	GAS SPECIFIC GRAVITY (SG) = 1.054
METER RUN SIZE: 3.826	DIFFERENTIAL PRESS. RANGE: 0 - 200 IN WC	FG = $\sqrt{(1/SG)}$ = 0.9740
SEPARATOR NO.: SP #6.	STANDARD CONDITIONS: 14.73 PSI @ 60°F	C_2 = (FU X FG) =

DATE / TIME	FLOW TIME (HOURS)	CHOKE SIZE	STATIC PRESS P_F (PSIA)	DIFF PRESS H_W (IN WC)	GAS FLOW TEMP. (C	ORIF. PLATE SIZE (IN)	$\sqrt{(P_F \times H_W)}$	$C_1 = F_B \times F_{TF} \times F_{PV} \times Y_2$				CUMULATIVE GAS PRODUCTION $M^3 10^3$	C ($C = C_1 \times C_2$)	GAS FLOW RATE $Q = \sqrt{(P_F \times H_W)} \times C$	
								F_B	F_{TF}	F_{PV}	Y_2			(MMSCFD)	($m^3 10^3$/D)
1242.							IN LUB.								
1342.							PRESSURE UP LUB.								
1400	42.30	33/64"	145	96	27	2.00"	117.8732	849.4091	0.9808	1.0341	1.0040	118.9206	842.4704	2.3833	67.1474
1442							DEPRESSURE LUB.								
1445.							CHOKE WELL BACK TO 31/64"								
1542							PRESSURE UP LUB.	R.I.H.							
1600	44.30	31/64"	150	78	26	2.00"	108.0691	849.4091	0.9824	1.0359	1.0031	124.0635	844.5606	2.1905	61.7152
1800	46.30	31/64"	150	83	26	2.00"	111.4791	849.4091	0.9824	1.0359	1.0033	129.3698	844.7292	2.2601	63.6753
2000	48.30	31/64"	150	74	24	2.00"	105.2617	849.4091	0.9857	1.0367	1.0029	134.3993	847.9601	2.1422	60.3539
2200	50.30	31/64"	165	64	23.5	2.00"	102.6777	849.4091	0.9865	1.0411	1.0023	139.3271	851.7198	2.0989	59.1334
2400	52.30	31/64"	165.	60	23	2.00"	99.4173	849.4091	0.9874	1.0413	1.0022	144.1029	852.5180	2.0341	57.3093
07-11-91															
0100	53.30	31/64"	180	58	22.5	2.00"	102.0997	849.4091	0.9882	1.0459	1.0019	146.5675	856.7723	2.0994	59.1493
0100							COLLECT 1ST SET OF SAMPLES:			GAS # PDE 139		CONDENSATE # SPE 114.			
0200	54.30	31/64"	180	57	22	2.00"	101.2157	849.4091	0.9890	1.0462	1.0019	149.0134	857.7012	2.0835	58.7007
0200							COLLECT 2ND SET OF SAMPLES!			GAS # PDE 112		CONDENSATE # SPE 065			
								4 x 500ML. H_2O.							
0300	55.30	31/64"	180	56	21.5	2.00"	100.3239	849.4091	0.9899	1.0465	1.0019	151.4404	858.6344	2.0674	58.2468
0400	56.30	31/64"	180	55	22	2.00"	99.4241	849.4091	0.9890	1.0462	1.0018	153.8428	857.6443	2.0465	57.6579
0500	57.30	31/64"	185	54	21.5	2.00"	99.8770	849.4091	0.9899	1.0480	1.0017	156.2621	859.7552	2.0609	58.0631

00112

PETROLEUM ENGINEERING : GAS FLOW CALCULATIONS

SANTOS

CONTRACTOR: OILSERV AUST LTD.	PERFORATIONS: 9306' - 9373' KB.	PAGE: 4 OF 4.
WELL NAME: COOBA #1.	FORMATION: PATCHAWARRA.	DATE: 07 - 11 - 91.
TEST TYPE: PRE FRAC SINGLE RATE		OPR: DOWLING

ORIFICE METER TYPE: DANIELS	STATIC PRESSURE RANGE: 0 - 1500 PSIG	GAS SPECIFIC GRAVITY (SG) = 1.054
METER RUN SIZE: 3.826	DIFFERENTIAL PRESS. RANGE: 0 - 200 IN WC	FG = $\sqrt{(1/SG)}$ = 0.9740.
SEPARATOR NO.: SP-6	STANDARD CONDITIONS: 14.73 PSI @ 60°F	C_2 = (FU X FG) =

DATE / TIME	FLOW TIME (HOURS)	CHOKE SIZE	STATIC PRESS P_F (PSIA)	DIFF PRESS H_w (IN WC)	GAS FLOW TEMP. (°C)	ORIF. PLATE SIZE (IN)	$\sqrt{(P_F \times H_w)}$	$C_1 = F_B \times F_{TF} \times F_{PV} \times Y_2$				CUMULATIVE GAS PRODUCTION $M^3 10^3$.	C ($C = C_1 \times C_2$)	GAS FLOW RATE $Q = \sqrt{(P_F \times H_w)} \times C$	
								F_B	F_{TF}	F_{PV}	Y_2			(MMSCFD)	($m^3 10^3$/D)
0600	58.30	31/64"	185	53	21	2.00"	98.9479	849.4091	0.9907	1.0483	1.0017	158.6615	860.7032	2.0440	57.5864
0700	59.30	31/64"	185	52	21	2.00"	98.0100	849.4091	0.9907	1.0483	1.0017	161.0381	860.6754	2.0245	57.0387
0800	60.30	31/64"	185	52	21.5	2.00"	98.0100	849.4091	0.9899	1.0480	1.0017	164.0493	859.6997	2.0222	56.9740
0800								SHUT IN WELL FOR BUILD UP.							
													$Q_{g\,tot}$ = 2.090	= 58.893	

00113

PETROLEUM ENGINEERING : LIQUID PRODUCTION

SANTOS

CONTRACTOR: OILSERV	PERFORATIONS: 9306 - 9373' KB	PAGE: 1. OF 3
WELL NAME: COOBA #1.	FORMATION: PATCHAWARRA.	DATE: 4-11-91
TEST TYPE: PRE FRAC SINGLE RATE		OPR: DOWLING

TANK NUMBER	#1 =	TANK CAPACITY	#1 = bbls/m³	TANK SCALE	#1 = CALIBRATED LITRES bbls/in-m³/cm	OIL API GRAVITY = @ 60°F
	#2 =		#2 = bbls/m³		#2 = CALIBRATED LITRES bbls/in-m³/cm	

DATE / TIME	FLOW TIME (HOURS)	TANK USED (NUMBER)	TOTAL TANK DIP LITRES	OIL/CONDENSATE PRODUCTION				WATER PRODUCTION			
				TANK DIP LITRES	TANK PRODUCTION (~~BBLS~~/m³)	FLOW RATE (~~BPD~~) (m³/D)	CUMULATIVE PRODUCTION (~~BBLS~~/m³)	TOTAL TANK DIP LITRES	TANK PRODUCTION (~~BBLS~~/m³)	FLOW RATE (~~BPD~~) (m³/D)	CUMULATIVE PRODUCTION (~~BBLS~~/m³)
2100	01·30	#1.	0	0	0	0	0	0	0	0	0
2200	02·30	#1	410	410	0·410	9·84	0·410	0	0	0	0
2300	03·30	#1.	760	760	0·350	8·40	0·760	0	0	0	0
2300					OPEN WELL TO 13/64" CHOKE						
2400	04·30	#1.	1350	1350	0·590	14·160	1·350	0	0	0	0
5-11-91.											
0005				ENGAGE 1·250" O.P.							
				OPEN WELL TO 16/34" CHOKE							
0010				ENGAGE 1·00" O.P.							
0100	05·30	#1	2380	2380	1·080	24·720	2·380	0	0	0	0
0105				OPEN WELL TO 11/64 CHOKE.							
0200	06·30	#1	3520	3520	1·140	27·360	3·520	0	0	0	0
0210				OPEN WELL TO 30/64 CHOKE.							
0215				ENGAGE 2·00" O.P							
0300	07·30	#1.	4450	4450	0·930	22·320	4·450	0	0	0	0
0305				OPEN WELL TO 34/64' CHOKE							
0400	08·30	#1.	4900	4900	0·450	10·800	4·900	0	0	0	0
0500	09.30	#1.	5290	5290	0·390	9·360	5·290	0	0	0	0.
0500				OPEN WELL TO 35/64" CHOKE.							
0600	10·30	#1.	5650	5650	0·360	8·640	5.650	0	0	0	0
0800	12·30	#1	6360	6360	0·710	8:520	6·360	0	0	0	0
0800		#2	Ø	CHANGE	FROM	TK #1	TO TK	#2 Ø	0	0	0

0178-15/3/91

PETROLEUM ENGINEERING : LIQUID PRODUCTION

SANTOS

CONTRACTOR: OILSERV AUST LTD	PERFORATIONS: 9306'- 9373' KB.	PAGE: 2. OF 3
WELL NAME: COOBA #1.	FORMATION: PATCHAWARRA	DATE: 5-11-91
TEST TYPE: PRE FRAC SINGLE RATE		OPR: DOWLING

TANK NUMBER	#1 =	TANK CAPACITY	#1 = bbls/m³	TANK SCALE	#1 = CALIBRATED LITRES bbls/in-m³/cm	OIL API GRAVITY = @ 60°F
	#2 =		#2 = bbls/m³		#2 = CALIBRATED LITRES. bbls/in-m³/cm	

DATE / TIME	FLOW TIME (HOURS)	TANK USED (NUMBER)	TOTAL TANK DIP LITRES	OIL/CONDENSATE PRODUCTION				WATER PRODUCTION			
				TANK DIP LITRES	TANK PRODUCTION (~~BBLS~~/m³)	FLOW RATE (~~BPD~~) (m³/D)	CUMULATIVE PRODUCTION (~~BBLS~~/m³)	TOTAL TANK DIP LITRES	TANK PRODUCTION (~~BBLS~~/m³)	FLOW RATE (~~BPD~~) (m³/D)	CUMULATIVE PRODUCTION (~~BBLS~~/m³)
1000	14.30	#2.	800	500	0.500	6.00	6.860	300	0.300	3.60	0.300
1200	16.30	#2.	1420	870	0.370	4.44	7.230	550	0.250	3.00	0.550
				CO_2 = 24% H_2S = 0%			API = 51.7				
1400	18.30	#2.	2010	1190	0.320	3.84	7.55	820	0.270	3.24	0.820
1600	20.30	#2.	2600	1510	0.320	3.84	7.87	1090	0.270	3.24	1.090
1800	22.30	#2.	3150	1810	0.300	3.60	8.17	1340	0.250	3.00	1.340
2000	24.30	#2.	3720	2170	0.360	4.32	8.53	1550	0.210	2.52	1.550
2200	26.30	#2.	4230	2480	0.310	3.72	8.84	1750	0.200	2.40	1.750
2400	28.30	#2.	4730	2770	0.290	3.48	9.13	1960	0.210	2.52	1.960
6-11-91.											
0200	30.30	#2	5275	3085	0.315	3.78	9.44	2190	0.230	2.76	2.190
0400	32.30	#2	5710	3330	0.245	2.94	9.69	2380	0.190	2.28	2.380
0600	34.30	#2.	6170	3570	0.240	2.88	9.93	2600	0.220	2.64	2.600
			30	CHANGE FLOW TO TANK #1				Ø			
0800	36.30	#1	560	335	0.305	3.66	10.235	225	0.225	2.70	2.825.
0800			CHOKE BACK TO 34/64TH CHOKE								
0845			CHOKE BACK TO 33/64" CHOKE								
1000	38.30	#1	1,000	625	0.290	3.48	10.525	375	0.150	1.80	2.975
1200	40.30	#1	1,440	840	0.215	2.58	10.740	600	0.225	2.70	3.200.
1400	42.30	#1.	1870	1060	0.220	2.64	10.960	810	0.210	2.52	3.410
1445			CHOKE BACK TO 31/64" CHOKE.								
1600	44.30	#1.	2290	1260	0.200	2.40	11.160	1030	0.220	2.64	3.630.

0178-15/3/91

00113.

PETROLEUM ENGINEERING : LIQUID PRODUCTION

SANTOS

CONTRACTOR: OILSERV AUST. LTD.
WELL NAME: COOBA #1
TEST TYPE: PRE FRAC SINGLE RATE

PERFORATIONS: 9306' – 9373' KB
FORMATION: PATCHAWARRA

PAGE: 3 OF 3
DATE: 6-11-91
OPR: DOWLING.
OIL API GRAVITY = @ 60°F

TANK NUMBER: #1 = / #2 =
TANK CAPACITY: #1 = bbls/m³ / #2 = bbls/m³
TANK SCALE: #1 = CALIBRATED LITRES bbls/in-m³/cm / #2 = CALIBRATED LITRES bbls/in-m³/cm

DATE / TIME	FLOW TIME (HOURS)	TANK USED (NUMBER)	TOTAL TANK DIP LITRES	OIL/CONDENSATE PRODUCTION				WATER PRODUCTION			
				TANK DIP LITRES	TANK PRODUCTION (~~BBLS~~/m³)	FLOW RATE (~~BPD~~) (m³/D)	CUMULATIVE PRODUCTION (~~BBLS~~/m³)	TOTAL TANK DIP LITRES	TANK PRODUCTION (~~BBLS~~/m³)	FLOW RATE (~~BPD~~) (m³/D)	CUMULATIVE PRODUCTION (~~BBLS~~/m³)
1800	46.30	#1	2660	1500	0.240	2.880	11.400	1160	0.130	1.560	3.760
2000	48.30	#1	3070	1680	0.180	2.160	11.580	1390	0.230	2.760	3.990
2200	50.30	#1	3440	1890	0.210	2.520	11.790	1550	0.160	1.920	4.150
2400	52.30	#1.	3800	2090	0.200	2.400	11.990	1710	0.160	1.920	4.310
07-11-91.											
0100	53.30	#1.	4010	2190	0.100	2.400	12.090	1820	0.110	2.640	4.420
0100				COLLECT 1ST SET OF SAMPLES GAS # PDE 139 CONDENSATE # SPE 114.							
0200	54.30	#1.	4220	2270	0.080	1.920	12.170	1950	0.130	3.120	4.580
0200				COLLECT 2ND SET OF SAMPLES GAS # PDE 112 CONDENSATE # SPE 065.							
					4 x 500ML	H_2O.					
0300	55.30	#1.	4400	2350.	0.080	1.920	12.250	2050	0.100	2.400	4.650
0400	56.30	#1.	4600	2510	0.160	3.840	12.410	2090	0.040	0.960	4.690
0500	57.30	#1.	4850	2620.	0.110	2.640	12.520	2230.	0.140	3.360	4.830.
0600	58.30	#1.	5060	2760	0.140	3.360	12.660	2300	0.070	1.680	4.900
0700	59.30	#1.	5280	2880	0.120	2.880	12.780	2400	0.100	2.400	5.000
0800	60.30	#1.	5420	3000.	0.120	2.880	12.900	2420	0.020	0.480	5.020
0800				SHUT IN WELL FOR BUILD UP.							
						$Q_{o\,ave}$ = 2.610 m³/d				$Q_{w\,ave}$ = 2.085 m³/d	

4

0178-15/3/91

00116

OILSERV
AUSTRALIA LIMITED
(INCORPORATED IN W.A.)

COMPANY SANTOS WELL NO.
FIELD INTERVAL TESTED
COUNTRY TECHNICIAN
CALIBRATION NO. 1 DATE OF LAST CALIBRATION: 02/11/91
DATE: 02/11/91

Subsurface Pressure Gauge Calibration Report

CALIBRATION STEPS

p (PRESSURE) DWT	D (1)	Y (4)	ΔY (5)	Y'	Y p'	Pc = XY + a	NON LINEARITY CORRECTION = p - Pc	C'
500	0·1921					501·08	-1·07706	1·16006
1000	0·3855					1000·04	-0·03507	0·00123
1500	0·5790					1499·25	0·74893	0·56089
2000	0·7728					1999·24	0·75895	0·57600
2500	0·9665					2498·97	1·02696	1·05465
3000	1·1601					2998·45	1·55297	2·41171
3500	1·3553					3502·05	-2·04891	4·19804
4000	1·5488					4001·26	-1·26491	1·60000
4500	1·7431					4502·54	-2·54486	6·47629
5000	1·9348					4997·12	2·88301	8·31176
Σ 27500		10·63800		14·41540	37248·9	Σ + = 6·97082 Σ - = 6·97081		26·35064

LEAST SQUARES CALCULATIONS

$A = \frac{\Sigma p}{n} =$ = 2750

$B = \frac{\Sigma Y}{n} =$ = 1·06380

$C = \frac{\Sigma (Y)^2}{\Sigma Y} =$ = 1·35509

$D = \frac{\Sigma (YP)}{\Sigma Y} =$ = 3501·49464

$K = \frac{D - A}{C - B} =$ = 2579·92766

a = A - BK = = 5·47296

a = D - CK = =

$\sigma = \frac{\Sigma C'^2}{n} =$ = 2·63506

CALIBRATION RESULTS

K = 2579·92766

a + p = 5·96796

$D_R - D_O = Y_R =$ $P_R =$

REMARKS

RANDOM 2400 PSI = 0·9282
= 2400·16181

OWNER OF GAUGE OILSERV TYPE OF ELEMENT: RPG-3
PRESSURE ELEMENT NO. 55993 RANGE: 0-5000 PSI RECORDING SECTION NO. 57293
DEADWEIGHT TESTER TYPE AND RANGE: CHANDLER 55-1 SERIAL NO. 18731
BASE LINE DRAWN AT ATMOSPHERIC PRESSURE READING D_O = TEMPERATURE =
REFERENCE LINE READING D_R = REFERENCE PRESSURE P_R = TEMPERATURE =
MAXIMUM TEMPERATURE EXPECTED = 270°F CALIBRATION TEMPERATURE = 270°F
DRAWING ALL CALIBRATION STEPS ☐ WITH A CLOCK ☒ WITH A CRANK CRANK
EQUIVALENT PRESSURE p OF LEVEL DIFFERENCE BETWEEN DWT AND THE BELLOWS
LEVEL DIFFERENCE H = 1·5
SPECIFIC GRAVITY OF OIL D = 0·33
p = 0·495 ☐ PLUS IN CASE OF DWT ABOVE THE BELLOWS ☐ MINUS IN CASE OF DWT BENEATH THE BELLOWS

(1) D = READING ON THE CHART SCANNER FOR THE PRESSURE p
(2) D_O = READING FOR BASE LINE
(3) D_R = READING FOR REFERENCE LINE
(4) Y = DEFLECTION ☐ D - D_O IF NO REFERENCE LINE ☐ D - D_R IF REFERENCE LINE DRAWN
(5) Δ Y = FOR CHECKING
(6) n = NUMBER OF CALIBRATION STEPS
(7) Σ = SUM
(8) σ = STANDARD DEVIATION

OILSERV
AUSTRALIA LIMITED

COMPANY SANTOS WELL NO. COOBA #1

FIELD PATCHAWARRA INTERVAL TESTED 9306' - 9373'

COUNTRY AUSTRALIA TECHNICIAN S. LAWTON

DATE: 5-11-91 CALIBRATION NO. DATE OF LAST CALIBRATION:

Subsurface Pressure Gauge Calibration Report

PAGE OF

CALIBRATION STEPS

P (PRESSURE) DWT	D (1)	Y (4)	ΔY (5)	Y²	Y P	Pc = KY + a	NON LINEARITY CORRECTION e = P - Pc	C²
500		0·1982				498·93	1·0733	1·1519
1000		0·3929				999·69	0·3147	0·0990
1500		0·5876				1500·44	-0·4440	0·1971
2000		0·7812				1998·37	1·6266	2·6458
2500		0·9768				2501·45	-1·4468	2·0932
3000		1·1710				3000·92	-0·9194	0·8453
3500		1·3657				3501·68	-1·6780	2·8158
4000		1·5600				4001·41	-1·4079	1·9821
4500		1·7539				4500·11	-0·1089	0·0119
5000		1·9471				4997·01	2·9904	8·9425
Σ 27500	[redacted]	10·7344	[redacted]	14·6407	37538·8	Σ + = 6·005 Σ - = 6·005		20·7845

LEAST SQUARES CALCULATIONS

$A = \frac{\Sigma P}{n} =$ = 2750

$B = \frac{\Sigma Y}{n} =$ = 1·0734

$C = \frac{\Sigma (Y)^2}{\Sigma Y} =$ = 1·3639

$D = \frac{\Sigma (YP)}{\Sigma Y} =$ = 3497·0562

$K = \frac{D - A}{C - B} =$ = 2571·9497

a = A - BK = = -10·8337

a = D - CK = =

$o = \frac{\Sigma C^2}{n} =$ = 2·07845

OWNER OF GAUGE: OILSERV TYPE OF ELEMENT: RPG 3

PRESSURE ELEMENT NO. 55994 RANGE: 0-5000 PSI RECORDING SECTION NO. 12068

DEADWEIGHT TESTER TYPE AND RANGE: CHANDLER 55-1 SERIAL NO. 18731

BASE LINE DRAWN AT ATMOSPHERIC PRESSURE READING D_O = TEMPERATURE =

REFERENCE LINE READING D_R = REFERENCE PRESSURE P_R = TEMPERATURE =

MAXIMUM TEMPERATURE EXPECTED = 270°F CALIBRATION TEMPERATURE = 270°F

DRAWING ALL CALIBRATION STEPS ☐ WITH A CLOCK ☑ WITH A CRANK

EQUIVALENT PRESSURE p OF LEVEL DIFFERENCE BETWEEN DWT AND THE BELLOWS

LEVEL DIFFERENCE H = 1.5' SPECIFIC GRAVITY OF OIL D = 0.33 } p = 0.495 { ☑ PLUS IN CASE OF DWT ABOVE THE BELLOWS ☐ MINUS IN CASE OF DWT BENEATH THE BELLOWS

CALIBRATION RESULTS

K = 2571·9497

a + p = -10·3387

$D_R - D_O = Y_R =$ $P_R =$

REMARKS

(1) D = READING ON THE CHART SCANNER FOR THE PRESSURE p
(2) Do = READING FOR BASE LINE
(3) Dr = READING FOR REFERENCE LINE
(4) y = DEFLECTION { ☐ D - Do IF NO REFERENCE LINE ☐ D - DR IF REFERENCE LINE DRAWN
(5) Δ Y = FOR CHECKING
(6) n = NUMBER OF CALIBRATION STEPS
(7) Σ = SUM
(8) Q = STANDARD DEVIATION

00118

SANTOS LTD.
WELL TEST SUMMARY

WELL: COOBA # 1
LOCATION: Lat.: 27° 47' 47.74" S
Long: 140° 02' 32.28" E
DATE: 5-16/6/92.
FORMATION: PATCHAWARRA
TESTED BY: OILSERV
PERFORATIONS: ft
PRODUCING THROUGH:
CASING SIZE: 7 ins
WEIGHT: 29 lb/ft
GRADE: N80 NK3SB
TUBING SIZE: 2 7/8 ins
WEIGHT: 6.5 lb/ft
GRADE: L80 NK3SB

DESCRIPTION OF TEST

INITIAL SHUT IN PERIOD

Time of Observations			Observed Pressures			REMARKS
Date	Time	Shut In Time (Hours)	Tubing kPa	Casing kPa	Temp. °C	
14/6/92	0015	0				Shut well in following choke determinations.
	0030	0.25	7536	1151		
	0045	0.5	7722	1103		
	0100	0.75	7743	1048		
	0200	1.75	7778	717		
	0600	5.75	7784	503		
	0800	7.75	7791	483		

Flow Period

Run No.: 1 Duration of Run: 6 Hours. Orifice Size: 1.875 ins
Flow Well On: 20/64" Choke. Meter Run: 3.826 ins

Date	Time	Flow Time (Hours)	Wellhead Readings Tubing kPa	Casing kPa	Temp. °C	Meter or Prover Data Pf kPa	Hw kPa	Temp. °C	Condensate Production m3/d	Water Production m3/d
14/6/92	0800	0	7791	483						--
	0900	1.0	6468	593	36	690	15.9	13.5	2.400	1.200
	1000	2.0	6419	690	37	690	15.9	16	1.680	2.160
	1100	3.0	6426	793	38	724	16.2	20	2.640	1.200
	1200	4.0	6426	882	38.5	724	16.9	20.5	2.640	1.440
	1300	5.0	6412	931	39	724	16.9	21	2.760	1.440
	1400	6.0	6412	1007	39	724	16.9	22	2.760	1.680

SANTOS LTD.
WELL TEST SUMMARY

2nd SHUT IN PERIOD

Time of Observations			Observed Pressures			REMARKS
Date	Time	Shut In Time (Hours)	Tubing kPa	Casing kPa	Temp. °C	
14/6/92	1400	0	6412	1007	39	Shut well in. End of Rate #1.
	1500	1.0	7819	752		
	1600	2.0	7819	662		
	1700	3.0	7798	607		
	1800	4.0	7798	572		
	1900	5.0	7805	524		
	2000	6.0	7805	503		Open well on Rate #2.

Flow Period

Run No.: 2 Duration of Run: 6 Hours. Orifice Size: 2.250 ins
Flow Well On: 29/64" Choke. Meter Run: 3.826 ins

Date	Time	Flow Time (Hours)	Wellhead Readings			Meter or Prover Data			Condensate Production	Water Production
			Tubing kPa	Casing kPa	Temp. °C	Pf kPa	Hw kPa	Temp. °C	m³/d	m³/d
14/6/92	2000	0	7805	503						
	2100	1.0	4964	724	37	814	17.9	16	5.520	1.680
	2200	2.0	4958	945	38	814	17.9	18	4.080	1.920
	2300	3.0	4958	1165	39	814	17.7	19	4.320	1.680
	2400	4.0	4854	1317	39	814	16.9	20	4.080	1.920
15/6/92	0100	5.0	4840	1482	39	814	16.4	21	4.800	1.920
	0200	6.0	4833	1641	40	814	15.9	21.5	3.600	1.680

3RD SHUT IN PERIOD

Time of Observations			Observed Pressures			REMARKS
Date	Time	Shut In Time (Hours)	Tubing kPa	Casing kPa	Temp. °C	
15/6/92	0200	0	4833	1641	40	Shut well in. End of Rate #2.
	0300	1.0	7791	1110		
	0400	2.0	7840	945		
	0500	3.0	7860	751		
	0600	4.0	7819	669		
	0700	5.0	7812	627		
	0800	6.0	7798	600		Open well on Rate #3.

Flow Period

Run No.: 3 Duration of Run: 6 Hours. Orifice Size: 2.50 ins
Flow Well On: 40/64" Choke. Meter Run: 3.826 ins

Date	Time	Flow Time (Hours)	Wellhead Readings			Meter or Prover Data			Condensate Production	Water Production
			Tubing kPa	Casing kPa	Temp. °C	Pf kPa	Hw kPa	Temp. °C	m³/d	m³/d
15/6/92	0800	0	7798	600						
	0900	1.0	3489	896	37.5	621	18.9	26	4.320	1.680
	1000	2.0	3434	1200	38.5	655	18.9	29	3.600	3.600
	1100	3.0	3427	1455	39.5	655	18.9	29	5.040	1.680
	1200	4.0	3420	1689	40	655	18.9	29.5	4.320	2.160
	1300	5.0	3413	1924	40.5	655	18.9	29.5	3.600	2.640
	1400	6.0	3399	2117	41	690	18.9	28	4.560	2.400

SANTOS LTD.
WELL TEST SUMMARY

4TH SHUT IN PERIOD

Time of Observations			Observed Pressures			REMARKS
Date	Time	Shut In Time (Hours)	Tubing kPa	Casing kPa	Temp. °C	
15/6/92	1400	0	3399	2117	41	Shut well in. End of 3rd. Rate.
	1500	1.0	7764	1427		
	1600	2.0	7833	1103		
	1700	3.0	7853	903		
	1800	4.0	7860	793		
	1900	5.0	7819	717		
	2000	6.0	7812	641		Open well on Rate #4.

Flow Period

Run No.: 4 Duration of Run: 6 Hours. Orifice Size: 2.50 ins
Flow Well On: 60/64" Choke. Meter Run: 3.826 ins

Date	Time	Flow Time (Hours)	Wellhead Readings			Meter or Prover Data			Condensate Production	Water Production
			Tubing kPa	Casing kPa	Temp. °C	Pf kPa	Hw kPa	Temp. °C	m^3/d	m^3/d
15/6/92	2000	0	7812	641						
	2100	1.0	2434	952	36.5	690	21.4	25	2.880	1.920
	2200	2.0	2413	1310	37	676	21.2	25	4.320	2.880
	2300	3.0	2406	1613	38	655	20.9	25	3.840	2.880
	2400	4.0	2406	1882	39	655	20.9	25.5	4.800	2.160
16/6/92	0100	5.0	2406	2151	39	621	20.6	27	5.040	2.160
	0200	6.0	2406	2310	39.5	634	20.4	27	5.280	1.920
	SHUT	IN WELL.								

WP 2548G

SANTOS LTD.

WELL TEST SUMMARY

PRE MOD. 150. STABILIZATION FLOW PERIOD

Flow Period

Run No.: 5 Duration of Run: 57.5 Hours. Orifice Size: 1.875 ins

Flow Well On: 27/64" Choke. Meter Run: 3.826 ins

Date	Time	Flow Time (Hours)	Wellhead Readings Tubing kPa	Casing kPa	Temp. °C	Meter or Prover Data Pf kPa	Hw kPa	Temp. °C	Condensate Production m³/d	Water Production m³/d
5/6/92	1500	1.5	4013	3599	48	690	23.6	23		
	1600	2.5	4054	3847	48	655	23.9	23.5		
	1700	3.5	4068	3861	48.5	690	24.1	23.5	3.600	0.480
	1800	4.5	4130	3841	48.5	690	23.4	23.5	2.160	1.920
	1900	5.5	4143	3827	48.5	690	22.6	24	1.680	3.360
	2100	7.5	4054	2399	48	690	22.6	23	3.600	0.000
	2300	9.5	4054	3716	47.5	690	21.9	22	2.160	1.680
6/6/92	0100	11.5	4068	3689	48	655	21.9	22	2.640	1.440
	0300	13.5	4082	3647	47.5	655	21.9	22	2.640	1.680
	0500	15.5	4103	3634	47	655	21.9	20.5	4.080	0.720
	0700	17.5	4116	3613	47	655	22.4	28	1.440	2.400
	0900	19.5	4109	3606	47	655	22.4	22	2.880	1.440
	1100	21.5	4116	3592	47	690	22.9	22	1.680	2.400
	1300	23.5	4144	3592	47	620	26.4	27.5	2.640	0.720
	1500	25.5	4165	3585	46.5	655	24.9	26	4.800	0.240
	1700	27.5	4144	3572	47	655	23.9	27	2.400	0.720
	1900	29.5	4137	3537	47	655	24.4	26.5	1.440	2.160
	2100	31.5	4123	3530	46	621	23.9	23.5	1.680	1.680
	2300	33.5	4123	3516	46	621	22.9	23.5	2.880	1.200
7/6/92	0100	35.5	4116	3489	46	621	22.6	23.5	2.040	2.040
	0300	37.5	4116	3489	45.5	621	22.4	23.5	2.040	2.160
	0500	39.5	4123	3468	45.5	655	21.9	23	2.040	1.800
*	0700	41.5	4123	3448	45	690	21.9	23	2.040	1.560
	0900	43.5	4116	3427	45	621	24.9	23	1.680	1.200
	1100	45.5	4123	3420	46	621	24.6	24.5	1.200	2.640
	1300	47.5	4137	3413	46	621	25.4	26.5	1.920	1.920
	1500	49.5	4137	3392	46	621	26.4	26	1.920	1.680
**	1700	51.5	4130	3372	46	690	23.6	22	2.400	1.440
	1900	53.5	4130	3344	46	690	23.6	24.5	2.880	1.200
	2100	55.5	4109	3330	45.5	690	22.9	24	1.920	2.400
	2300	57.5	4103	3316	45.5	655	22.6	23.5	3.000	0.600
	SHUT IN WELL FOR BUILDUP.									

WP 2548G * Ran in hole with HP Gauge & Amerada.

** Collect 1st & 2nd set of samples.

SANTOS LTD.
WELL TEST SUMMARY
PRE MOD-ISO. BUILD-UP PERIOD

Date	Time	Shut in Period (Hours)	Tubing Pressure kPa	Casing Pressure kPa	Wellhead Temp. °C	REMARKS
7/6/92	2300	0	4103	3316	45.5	Shut well in.
	2315	0.25	6447	3165		
	2330	0.5	6723	2792		
	2345	0.75	6778	2524		
	2400	1.0	6819	2275		
8/6/92	0015	1.25	6854	2082		
	0030	1.50	6874	1917		
	0045	1.75	6819	1751		
	0100	2.0	6792	1655		
	0200	3.0	6764	1365		
	0300	4.0	6757	1186		
	0600	7.0	6792	972		
	1000	11.0	6860	807		
	1400	15.0	6916	731		
	2200	23.0	6998	621		
9/6/92	0600	31.0	7081	572		
	1400	39.0	7157	545		
	2200	47.0	7212	490		
10/6/92	0600	55.0	7267	476		
	1400	63.0	7343	462		
	2200	71.0	7391	441		
11/6/92	0600	79.0	7440	434		
	1400	87.0	7495	434		
	2200	95.0	7557	414		
* 12/6/92	0600	103.0	7598	400		
	1400	111.0	7660	414		
	2200	119.0	7702	393		
13/6/92	0600	127.0				
**	1400	135.0	7791	393		
	1915	140.25	7812	372		
	* P.O.O.H.	with electric tool & amerada.				

WP 2548G ** Ran in hole with ameradas.

00124

SANTOS LTD.

WELL TEST SUMMARY

FINAL BUILD-UP, SUBSURFACE PRESSURES

ELEMENT NO. BOMB DEPTH 'KB DWT
LUB.

Date	Time	Shut In Time (Hours)	PRESSURE psig	PRESSURE $psia^2 \times 10^3$	$\frac{T + \theta}{\theta}$	REMARKS
						DATA ON DISK.

SANTOS LTD.
WELL TEST SUMMARY
CALCULATION SHEET

GAS RATES THROUGH SEPARATOR

Run No.	Hw		Pf		Size Orifice Plate		Ft	
	(kPa)	("w.g.)	(kPa)	(psig)	(mm)	(inches)	(°C)	(°F)
1	16.5	66	724	105	47.6	1.875	18.8	65.8
2	17.1	69	814	118	57.2	2.25	19.2	66.6
3	18.9	76	655	95	63.5	2.50	28.5	83.3
4	20.9	84	655	95	63.5	2.50	25.8	78.4
PRE MOD. ISO. 5	23.4	94	655	95	47.6	1.875	23.9	75.0

Separator Gas Properties

Specific Gravity = 1.104
TC = 471.4 °R
PC = 852.9 psia
CO2 CONTENT = 46.50 mole %

Meter Run = 3.826 "

GAS RATES THROUGH SEPARATOR

Run No.	Q	
	E3m³/d	mmscf/d
1	42.393	1.505
2	68.317	2.425
3	81.599	2.896
4	86.107	3.056
PRE MOD. ISO. 5	47.710	1.693

WP 2548G

00126

SANTOS LTD.

GAS WELL DELIVERABILITY TEST CALCULATIONS
(Base Conditions = 14.65 psia and 60°F)

WELL NAME: COOBA #1 DATE: 5-16/6/92 ELEMENT NO: 55993 DEPTH TESTED: 9200 FT. KB.
DWT IN: 1132 psi OUT: NOT AVAILABLE
LUB IN: 1139 psi OUT: 1146 psi.

SIMPLIFIED ANALYSIS

	Duration (hours)	Sandface Pressure (psia)	Cal.	Meas.	Δp^2 ($\times 10^6$ psia^2)	Flow Rate $E3m^3/d$	H/Carbon Prod. m^3/d	Water Prod. m^3/d	REMARKS
Initial Shut In	7.75	1686		✓	—	—	—	—	$q = C(\bar{p}_R^2 - p_{wf}^2)^n$
Flow 1	6	1449		✓		42.393	2.480	1.520	slope n =
Shut In	6	1690		✓	—	—	—	—	$\bar{p}_R$ = psia
Flow 2	6	1247		✓		68.317	4.400	1.800	$C = \frac{q}{(\bar{p}_R^2 - p_{wf}^2)^n}$
Shut In	6	1688		✓	—	—	—	—	
Flow 3	6	1094		✓		81.599	4.240	2.360	=
Shut In	6	1684		✓	—	—	—	—	AOF (MMscfd)
Flow 4	6	1007		✓		86.107	4.360	2.320	=
Extended Flow	57.5	1040		✓		47.710	2.314	1.413	
Final Shut In	140.25	1606		✓	—	—	—	—	

WP 2548G

SANTOS LTD.

GAS WELL DELIVERABILITY TEST CALCULATIONS
(Base Conditions = 14.65 psia and 60°F)

LIT (ψ) ANALYSIS

	Duration (hours)	Sandface Pressure (psia)	ψ ($\times 10^6$ psia^2/cp)	$\Delta\psi$ ($\times 10^6$ psia^2/cp)	Flow Rate (q) (MMscfd)	$\Delta\psi/q$	q^2	$\Delta\psi - bq^2$
Initial Shut In	7.75	1686			—			
Flow 1	6	1449			1.505			
Shut In	6	1690			—			
Flow 2	6	1247			2.425			
Shut In	6	1688			—			
Flow 3	6	1094			2.896			
Shut In	6	1684			—			
Flow 4	6	1007			3.056			
Total=					—			
Extended Flow	57.5	1040			1.693			
Final Shut In	140.25	1606			—			

WP 2548G

SANTOS LTD.

GAS WELL DELIVERABILITY TEST CALCULATIONS

L.I.T. (Ψ) ANALYSIS

DISCARDED POINT _____

N = _____ $\bar{\Psi}_R$ = _____ MMpsia²/cp

$$a, a_t = \frac{\Sigma \frac{\Delta\Psi}{q} \Sigma q^2 - \Sigma q \Sigma \Delta\Psi}{N \Sigma q^2 - \Sigma q \Sigma q} = \_\_\_\_\_$$

$$b = \frac{N\Sigma \Delta\Psi - \Sigma q \Sigma \frac{\Delta\Psi}{q}}{N \Sigma q^2 - \Sigma q \Sigma q} = \_\_\_\_\_$$

(EXTENDED FLOW)

$\Delta\Psi$ = _____ q = _____ b = _____

$$a = \frac{\Delta\Psi - bq^2}{q} = \_\_\_\_\_$$

A.O.F. = _____ MMSCFD n = _____

Total Volume of Gas Produced During Test = _____ MMSCF

Condensate = _____ Bbls

Water = _____ Bbls

RESULTS

TRANSIENT FLOW: $\bar{\Psi}_R - \Psi_{wf} = a_t q + bq^2$

i.e. _____ - Ψ_{wf} = _____ q + _____ q²

STABLIZED FLOW: $\bar{\Psi}_R - \Psi_{wf} = aq + bq^2$

i.e. _____ - Ψ_{wf} = _____ q + _____ q²

DELIVERABILITY:

$$q = \frac{1}{2b} \left[-a + \sqrt{a^2 + 4b \left(\bar{\Psi}_R - \Psi_{wf}\right)}\right]$$

FOR $\Psi_{wf} = 0$, q = AOF = _____ MMscfd

REMARKS

Interpreted by: Date:

WP 2548G

00123

SUB-SURFACE PRESSURE SURVEY

CO. SANTOS		RUN 06 FIELD COOBA		WELL 01	
EFF DEPTH		WELL STAT		TOOL HUNG	9200 FT KB
CASING	-	CASING PRESS		ON BOTTOM	1805 920613
LINER	-	TUBING PRESS		OFF BOTTOM	0807 920616
DATE	920613	ELEMENT RANGE	0 - 5174	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	
MAX TEMP		PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	55993	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	MODIFIED ISOCHRONAL		

SURVEY DATA

CO. SANTOS — RUN 06 FIELD COOBA — WELL 01

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME	
18:05	1587.7	1587.7	.0	8:52	1448.7	1448.7	14.8	
19:17	1591.1	1591.1	1.2	10:04	1439.2	1439.2	16.0	
19:18	1524.9	1524.9	1.2	11:32	1437.9	1437.9	17.5	
19:23	1494.9	1494.9	1.3	13:24	1436.4	1436.4	19.3	
20:08	1476.5	1476.5	2.0	13:54	1433.9	1433.9	19.8	END RATE 1.
20:36	1289.9	1289.9	2.5	13:57	1509.1	1509.1	19.9	
21:25	1270.9	1270.9	3.3	13:57	1586.8	1586.8	19.9	
21:28	1257.7	1257.7	3.4	13:59	1643.2	1643.2	19.9	
21:38	1253.9	1253.9	3.6	14:13	1648.4	1648.4	20.1	
21:44	1156.0	1156.0	3.7	14:15	1664.1	1664.1	20.2	
21:55	1149.4	1149.4	3.8	14:28	1664.7	1664.7	20.4	
21:59	1127.6	1127.6	3.9	14:43	1672.2	1672.2	20.6	
22:39	1116.9	1116.9	4.6	15:29	1678.2	1678.2	21.4	
22:51	1043.4	1043.4	4.8	16:35	1672.2	1672.2	22.5	
0:00	1030.4	1030.4	5.9	18:07	1675.2	1675.2	24.0	
0:04	1304.0	1304.0	6.0	19:18	1676.3	1676.3	25.2	END SHUT-IN
0:07	1589.8	1589.8	6.0	20:00	1675.7	1675.7	25.9	
0:19	1594.0	1594.0	6.2	20:01	1538.9	1538.9	25.9	
0:21	1611.3	1611.3	6.3	20:01	1385.6	1385.6	25.9	
0:23	1635.4	1635.4	6.3	20:00	1308.7	1308.7	25.9	
0:34	1640.4	1640.4	6.5	20:10	1308.6	1308.6	26.1	
0:39	1648.6	1648.6	6.6	20:13	1254.3	1254.3	26.1	
2:00	1657.5	1657.5	7.9	20:24	1250.0	1250.0	26.3	
5:07	1664.6	1664.6	11.0	20:27	1241.7	1241.7	26.4	
6:55	1669.0	1669.0	12.8	20:54	1233.8	1233.8	26.8	
7:54	1671.5	1671.5	13.8	22:15	1230.1	1230.1	28.2	
7:57	1573.4	1573.4	13.9	23:09	1229.3	1229.3	29.1	
7:56	1491.8	1491.8	13.9	23:54	1237.0	1237.0	29.8	
8:06	1489.0	1489.0	14.0	0:59	1232.9	1232.9	30.9	
8:08	1460.4	1460.4	14.1	1:53	1232.2	1232.2	31.8	END RATE 2.

END BUILDUP.

END INITIAL SHUT-IN.

SURVEY DATA

CO. SANTOS RUN 06 FIELD COOBA WELL 01

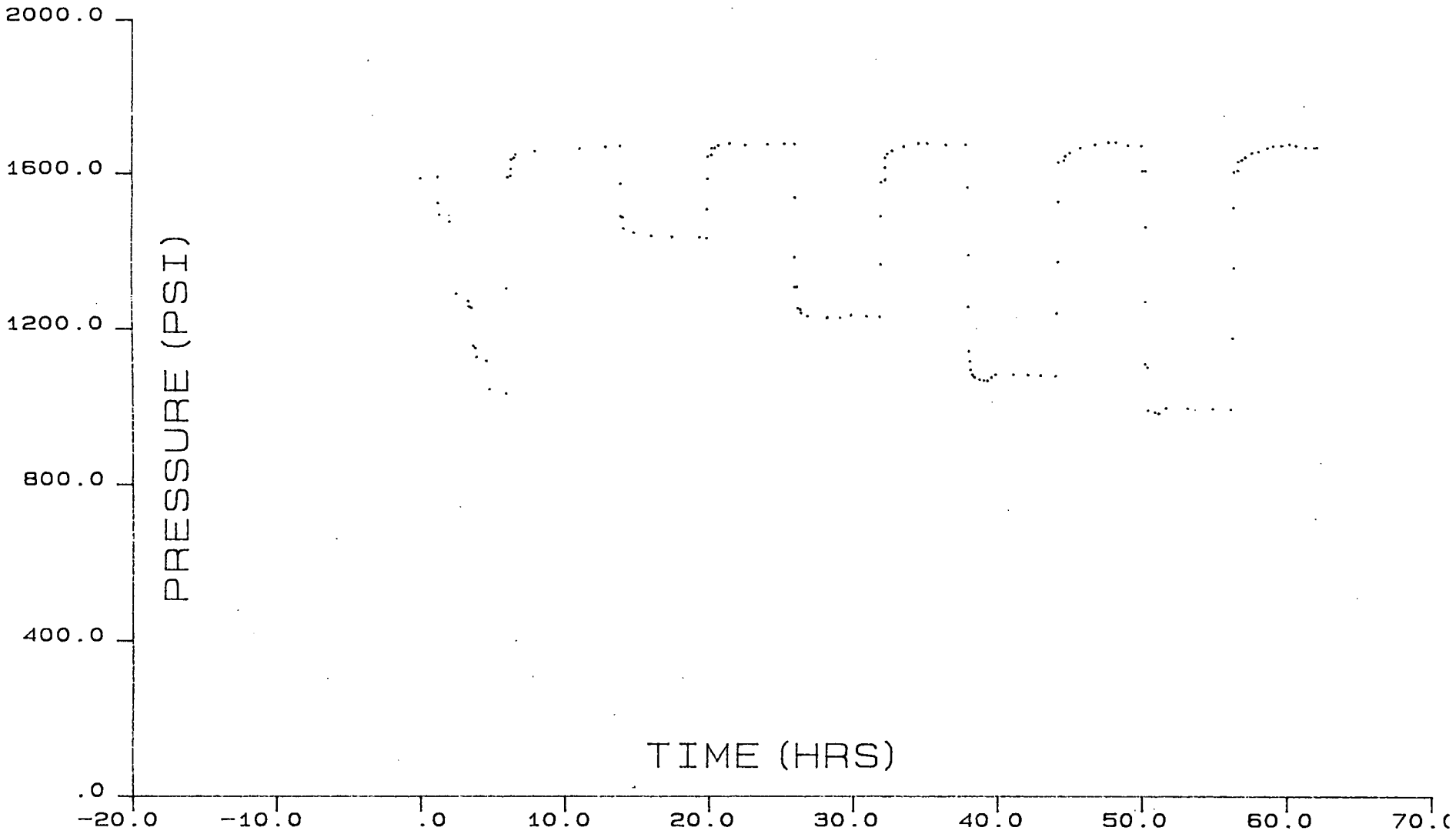
TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME	
1:58	1367.9	1367.9	31.9	15:47	1665.9	1665.9	45.7	
1:58	1492.4	1492.4	31.9	16:48	1673.7	1673.7	46.7	
1:59	1577.4	1577.4	31.9	17:44	1679.9	1679.9	47.7	
2:16	1585.2	1585.2	32.2	18:15	1679.5	1679.5	48.2	
2:16	1615.8	1615.8	32.2	19:05	1670.3	1670.3	49.0	
2:16	1640.3	1640.3	32.2	20:00	1669.5	1669.5	49.9	END SHUT IN
2:25	1649.9	1649.9	32.3	20:05	1606.8	1606.8	50.0	
2:44	1658.4	1658.4	32.7	20:17	1606.7	1606.7	50.2	
3:33	1669.5	1669.5	33.5	20:17	1463.7	1463.7	50.2	
4:35	1677.9	1677.9	34.5	20:16	1271.0	1271.0	50.2	
5:11	1677.4	1677.4	35.1	20:15	1109.6	1109.6	50.2	
6:27	1672.2	1672.2	36.4	20:25	1101.7	1101.7	50.3	
7:51	1673.4	1673.4	37.8	20:27	990.1	990.1	50.4	
7:58	1565.1	1565.1	37.9	20:58	983.7	983.7	50.9	
8:01	1391.2	1391.2	37.9	21:12	981.4	981.4	51.1	
8:00	1258.7	1258.7	37.9	21:42	996.3	996.3	51.6	
8:03	1143.1	1143.1	38.0	23:13	995.0	995.0	53.1	
8:07	1117.6	1117.6	38.0	0:56	993.5	993.5	54.8	
8:11	1096.1	1096.1	38.1	2:11	992.4	992.4	56.1	END RATE 4
8:18	1082.7	1082.7	38.2	2:16	1178.3	1178.3	56.2	
8:27	1075.4	1075.4	38.4	2:22	1359.0	1359.0	56.3	
8:48	1070.1	1070.1	38.7	2:23	1514.2	1514.2	56.3	
9:06	1067.3	1067.3	39.0	2:25	1604.8	1604.8	56.3	
9:21	1067.1	1067.1	39.3	2:39	1608.2	1608.2	56.6	
9:37	1076.7	1076.7	39.5	2:42	1630.1	1630.1	56.6	
9:55	1083.7	1083.7	39.8	2:56	1635.0	1635.0	56.8	
11:09	1082.6	1082.6	41.1	3:11	1641.8	1641.8	57.1	
12:08	1081.8	1081.8	42.1	3:38	1652.7	1652.7	57.5	
13:01	1081.1	1081.1	42.9	4:06	1656.7	1656.7	58.0	
14:05	1079.4	1079.4	44.0	4:41	1665.2	1665.2	58.6	
14:07	1241.6	1241.6	44.0	5:06	1670.0	1670.0	59.0	
14:12	1374.6	1374.6	44.1	5:41	1671.1	1671.1	59.6	
14:14	1528.6	1528.6	44.1	6:15	1674.9	1674.9	60.2	
14:14	1628.6	1628.6	44.2	6:41	1669.9	1669.9	60.6	
14:39	1633.9	1633.9	44.6	7:20	1665.3	1665.3	61.2	
14:43	1644.4	1644.4	44.6	7:55	1664.8	1664.8	61.8	
15:03	1653.6	1653.6	45.0	8:07	1666.7	1666.7	62.0	

END SHUT-IN

END RATE 3

LUB IN DWT = 1132 PSI / OUT = NOT AVAILABLE
LUB IN AMERADA = 1139 PSI / OUT = 1146 PSI

COOBA 1 MODIFIED ISOCHRONAL - RUN 6
13 - 16 JUNE 1992
ELEMENT #55993 @ 9200 FT KB



SUB-SURFACE PRESSURE SURVEY

CO. SANTOS		RUN 05 FIELD COOBA		WELL 01	
EFF DEPTH		WELL STAT		TOOL HUNG	9200 FT KB
CASING	-	CASING PRESS		ON BOTTOM	0840 920607
LINER	-	TUBING PRESS		OFF BOTTOM	0800 920611
DATE	920606	ELEMENT RANGE	0 - 5174	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	2300 920607
MAX TEMP		PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	55993	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	MODIFIED ISOCHRONAL		

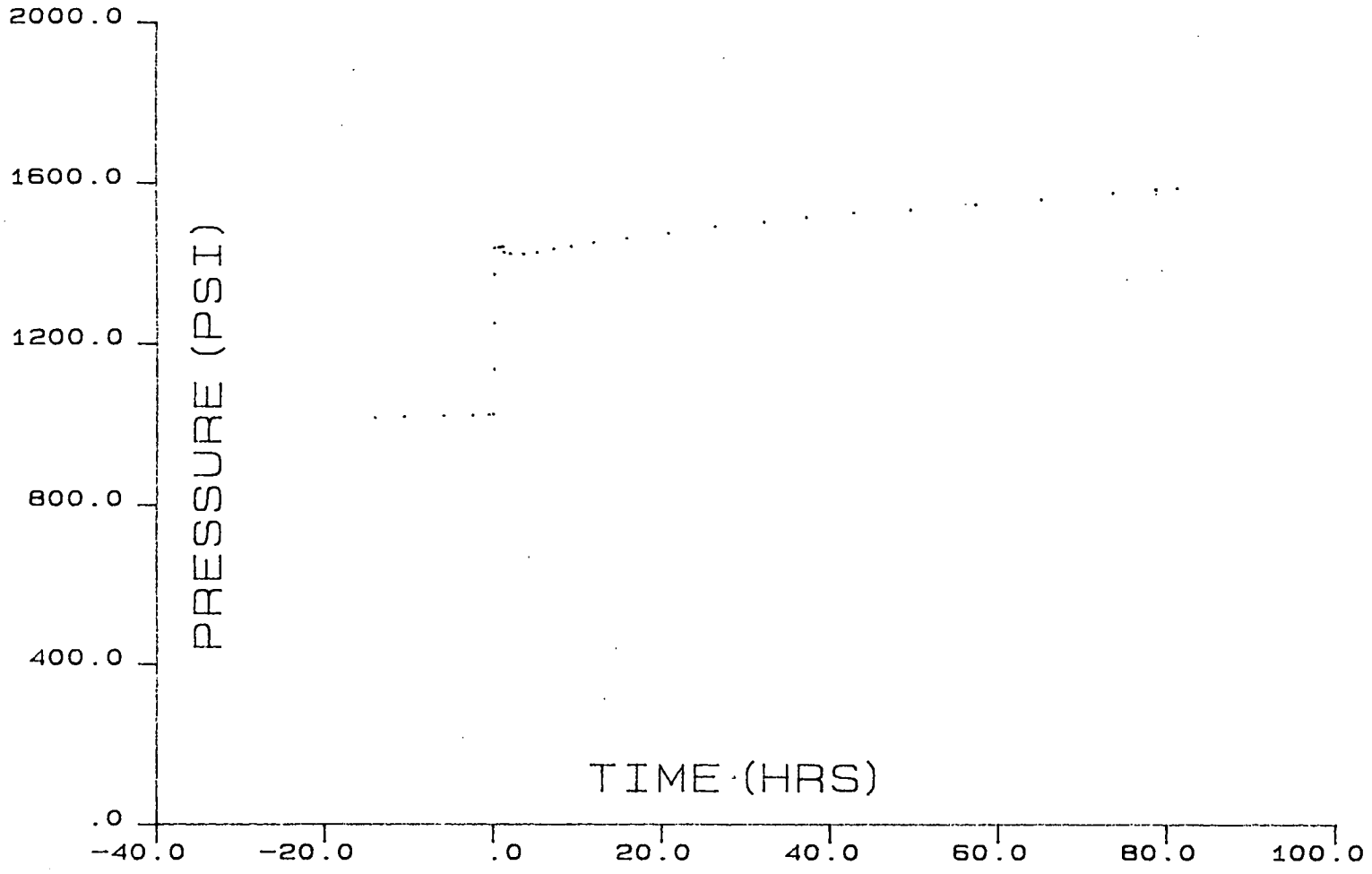
SURVEY DATA

CO. SANTOS — RUN 05 FIELD COOBA — WELL 01

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
END. 23:00	1025.6	1025.6	.0	19:45	1475.9	1475.9	20.7
EXT. FLOW 23:07	1137.8	1137.8	.1	1:18	1492.5	1492.5	26.3
23:07	1251.6	1251.6	.1	7:04	1504.1	1504.1	32.1
23:08	1372.2	1372.2	.1	12:08	1515.5	1515.5	37.1
23:09	1436.6	1436.6	.1	17:42	1527.9	1527.9	42.7
23:39	1438.7	1438.7	.6	0:27	1535.6	1535.6	49.5
23:58	1439.8	1439.8	1.0	8:13	1548.9	1548.9	57.2
0:09	1439.7	1439.7	1.2	15:59	1562.7	1562.7	65.0
0:16	1426.5	1426.5	1.3	0:24	1578.2	1578.2	73.4
1:01	1422.2	1422.2	2.0	5:30	1587.0	1587.0	78.5
2:36	1421.3	1421.3	3.6	8:00	1589.5	1589.5	81.0
4:10	1427.2	1427.2	5.2	8:53	1015.4	1015.4	-14.1
6:08	1434.9	1434.9	7.1	12:27	1019.7	1019.7	-10.6
8:13	1442.5	1442.5	9.2	17:08	1021.8	1021.8	-5.9
10:57	1452.4	1452.4	11.9	20:35	1023.3	1023.3	-2.4
14:51	1462.4	1462.4	15.9	22:30	1025.1	1025.1	-.5

LUB IN DWT = 599 PSI / OUT = NOT AVAILABLE
LUB IN AMERADA = 600 PSI / OUT = 1099 PSI

COOBA 1 MODIFIED ISOCHRONAL - RUN 5
EXTENDED FLOW AND BUILDUP
7 - 11 JUNE 1992
ELEMENT #55993 @ 9200 FT KB



AMDEL CORE SERVICES GAS ANALYSIS

Method GL-01-01
ASTM D 1945-81 (modified)
Report # HH/1816

Client: SANTOS Ltd.

Sample: COOBA 1
Separator: 690kPa, 22°C
7/6/92, cylinder SPE238

GAS	MOL %
Nitrogen	0.24
Carbon Dioxide	46.50
Methane	41.30
Ethane	7.28
Propane	2.68
I-Butane	0.38
N-Butane	0.66
I-Pentane	0.19
N-Pentane	0.22
Hexanes	0.20
Heptanes	0.22
Octanes and higher h'c	0.13
Total	100.00

(0.00 = less than 0.01%)

P_c = 852.9 psia
T_c = 471.4 °R

Calculated Gas Density
(Air = 1) : 1.104

Calorific Value (15.0 deg C, 101.325 kPa)

Gross:	695 BTU/CU Ft	25.88 MJ/CU.M
Nett:	631 BTU/CU Ft	23.49 MJ/CU.M

Gross calorific value of water-saturated gas 25.41 MJ/CU.M
Average Molecular Weight = 31.968

All results are calculated on the basis that only the measured constituents are present.
This report relates specifically to the sample submitted for analysis.

Approved Signatory _____
Robyn L Tamke

Registration No: 2013

Date 30-Jun-92

PETROLEUM ENGINEERING : TEST RESULTS

CONTRACTOR: OILSERV AUST LTD.	PERFORATIONS: 9231'-9868' KB.	PAGE: 1. OF 13
WELL NAME: COOBA #1.	FORMATION: PATCHAWARRA.	DATE: 4-6-92
TEST TYPE: MODIFIED ISOCHRONAL.		OPR: DOWLING

TIME		WELLHEAD DATA				SEPARATOR 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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	L.G.R. ~~BBLS/MMSCF~~ $m^3/10^6 m^3$	
0630					RIG DOWN WIRELINE										
1045					TRUCKS ARRIVE ON SITE TO MOVE TO COOBA #1.										
1430.					TRUCKS ON SITE AT COOBA #1.										
					SPOT ACCOMODATION + EQUIPMENT.										
					BEGIN RIG UP.										
1800					CEASE OPERATIONS FOR THE DAY.										
5/6/92.															
0630					CONTINUE RIG UP OF SEPARATOR + W/LINE										
1245					OPERATOR ON SITE TO SHUT IN WELL.										
1300					RIG UP SWAB VALVE.										
1310					TEST LINES TO SIWHP										
1330					OPEN WELL ON 12/64" CHOKE BY PASS SEPARATOR.										
1335					OPEN WELL TO 20/64" CHOKE										
1345					OPEN WELL TO 24/64" CHOKE										
1355					OPEN WELL TO 26/64" CHOKE										
1405					OPEN WELL TO 28/64" CHOKE										
1430	1.00				SHUT WELL TO 27/64" CHOKE										
→ 1430					TRIM FLOW THROUGH SEPARATOR.										
1445					ENGAGE 1.875" O.P.										
1450					PRESSURE UP LUB.										
1451.					R.I.H. WITH 5' WEIGHT BAR, SPANG JARS, 1.750" GAUGE RING										
1500	1.30.	4013	3599	48	27/64"	690	23	50.7841	Ø	Ø	2.1160	Ø	Ø	Ø	
1600	2.30	4054	3847	48	27/64"	655	23.5	49.8187	Ø	Ø	4.1918	Ø	Ø	Ø	

15/3/9

001136

PETROLEUM ENGINEERING : TEST RESULTS

CONTRACTOR: OILSERV AUST LTD		PERFORATIONS: 9231' - 9868' KB.	PAGE: 2 OF 13
WELL NAME: COOBA #1		FORMATION: PATCHAWARRA.	DATE: 5-6-92
TEST TYPE: MODIFIED ISOCHRONAL.			OPR: DOWLING

TIME		WELLHEAD DATA				SEPARATOR 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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	L.G.R. ~~BBLS/MMSCF~~ $m^3/10^6 m^3$
1609					TAGGED	9500' KB. NO OBSTRUCTIONS								
1700					IN LUB	+ DEPRESSURE								
1700	3·30	4068	3861	48·5	27/64"	690	23·5	51·2692	3·600	0·480	6·3280	0·150	0·020	0·080
1800	4·30	4130	3841	48·5	27/64"	690	23·5	50·4620	2·160	1·920	8·4306	0·240	0·100	0·081
1900	5·30	4143	3827	48·5	27/64"	690	24	49·5919	1·689	3·360	10·4969	0·310	0·240	0·102
2000	6·30	4096	3813	48	27/64"	690	23·5	49·6422	1·920	1·440	12·5653	0·390	0·300	0·068
2100	7·30	4054	2399	48	27/64"	690	23	49·6928	3·600	0·000	14·6358	0·540	0·300	0·072
2200	8·30	4027	3751	48	27/64"	690	22	48·9589	0·720	2·880	16·6758	0·570	0·420	0·074
2300	9·30	4054	3716	47·5	27/64"	690	22	48·9589	2·160	1·680	18·7158	0·660	0·490	0·078
2400	10·30	4103	3703	47·5	27/64"	655	23	47·7245	2·640	1·440	20·7043	0·770	0·550	0·085
6/6/92														
0100	11·30	4068	3689	48	27/64"	655	22	47·8212	2·640	1·440	22·6969	0·880	0·610	0·085
0200	12·30	4082	3668	48	27/64"	655	21·5	47·8699	2·160	1·680	24·6915	0·970	0·680	0·080
0300	13·30	4082	3647	47·5	27/64"	655	22	47·8212	2·640	1·680	26·6841	1·080	0·750	0·090
0400	14·30	4089	3647	47·5	27/64"	655	21·5	47·8699	2·400	1·680	28·6787	1·180	0·820	0·085
0500	15·30	4103	3634	47	27/64"	655	20·5	47·9678	4·080	0·720	30·6774	1·360	0·850	0·100
0600	16·30	4103	3627	46·5	27/64"	655	25	47·8050	2·640	1·200	32·6693	1·460	0·900	0·082
0700	17·30	4116	3613	47	27/64"	655	28	47·7904	1·440	2·400	34·6605	1·520	1·000	0·080
0800	18·30	4109	3613	46·5	27/64"	655	23·5	48·2205	2·640	0·960	36·6697	1·630	1·040	0·075
0900	19·30	4109	3606	47	27/64"	655	22	48·3670	2·880	1·440	38·6850	1·750	1·100	0·089
1000	20·30	4109	3606	46·5	27/64"	655	23	48·5393	3·120	0·240	40·7075	1·880	1·110	0·069
1100	21·30	4116	3592	47	27/64"	690	22	50·0700	1·680	2·400	42·7937	1·950	1·210	0·081
1200	22·30	4130	3585	47	27/64	655	25	51·2148	1·680	2·160	44·9278	2·020	1·300	0·075

PETROLEUM ENGINEERING : TEST RESULTS

SANTOS

CONTRACTOR: OILSERV AUSTRALIA LTD.
WELL NAME: COOBA # 1.
TEST TYPE: MODIFIED ISOCHORONAL.
PERFORATIONS: 9231' - 9868' KB.
FORMATION: PATCHAWARRA.
PAGE: 3 OF 13
DATE: 6.6.92.
OPR: DOWLING.

TIME		WELLHEAD DATA				SEPARATOR 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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER BBLS m^3	L.G.R. ~~BBLS/MMSCF~~ $m^3/10^6 m^3$
1300	23.30	4144	3592	47	27/64"	620	27.5	50.7111	2.640	0.720	47.0408	2.130	1.330	0.066
1400	24.30	4151	3592	47	27/64"	620	27	50.7608	1.680	1.680	49.1558	2.200	1.400	0.066
1500	25.30	4165	3585	46.5	27/64"	655	26	50.6035	4.800	0.240	51.2643	2.400	1.410	0.100
1600	26.30	4165	3579	47	27/64"	655	26.5	50.2971	1.440	2.160	53.3600	2.460	1.500	0.072
1622		4130			PRESSURE UP LUBRICATOR									
1700	27.30	4144	3572	47	27/64"	655	27	49.4718	2.400	0.720	55.4213	2.560	1.530	0.063
1800	28.30	4137	3558	47	27/64"	655	26.5	50.0396	2.160	1.680	57.5063	2.650	1.600	0.077
1900	29.30	4137	3537	47	27/64"	655	26.5	50.0396	1.440	2.160	59.5913	2.710	1.690	0.072
2000	30.30	4123	3537	46	27/64"	621	24.5	49.9797	2.880	1.440	61.6738	2.830	1.750	0.086
2100	31.30	4123	3530	46	27/64"	621	23.5	48.6143	1.680	1.680	63.6994	2.900	1.820	0.069
2200	32.30	4123	3509	46	27/64"	621	23.5	48.0996	2.400	1.440	65.7035	3.000	1.880	0.080
2300	33.30	4123	3516	46	27/64"	621	23.5	47.5795	2.880	1.200	67.6860	3.120	1.930	0.086
2400	34.30	4123	3503	46	27/64	621	23.5	47.5795	2.400	1.440	69.6685	3.220	1.990	0.081
7.6.92														
0100	35.30	4116	3489	46	27/64	621	23.5	47.3174	2.040	2.040	71.6401	3.305	2.075	0.086
0200	36.30	4116	3489	45.5	27/64	621	23.5	47.0540	3.120	0.360	73.6007	3.435	2.090	0.074
0300	37.30	4116	3489	45.5	27/64	621	23.5	47.0540	2.040	2.160	75.5613	3.520	2.180	0.089
0400	38.30	4123	3475	45.5	27/64	621	23.5	46.7891	2.760	1.080	77.5108	3.635	2.225	0.082
0500	39.30	4123	3468	45.5	27/64	655	23	47.7245	2.040	1.800	79.4993	3.720	2.300	0.080
0600	40.30	4116	3454	46	27/64	655	23.5	47.6763	2.520	1.800	81.4858	3.825	2.375	0.091
0640				R.I.H. WITH CCL, HP GAUGE, WEIGHT BAR, AMERADA.										
0700	41.30	4123	3448	45	27/64"	690	23	48.8590	2.040	1.560	83.5216	3.910	2.440	0.074
0800	42.30	4158	3434	45	27/64"	655	23.5	49.8187	3.360	1.200	85.5974	4.050	2.490	0.092

0178a-15/3/91

001133

PETROLEUM ENGINEERING : TEST RESULTS

SANTOS

CONTRACTOR: OILSERV AUST. LTD.		PERFORATIONS: 9231' - 9868' K.B.	PAGE: 4 OF 13
WELL NAME: COOBA #1		FORMATION: PATCHAWARRA	DATE: 7/6/92
TEST TYPE: MODIFIED ISOCHRONAL			OPR: DOWLING

TIME		WELLHEAD DATA				SEPARATOR 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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	L.G.R. ~~BBLS/MMSCF~~ $m^3/10^6 m^3$	
0825					CCL CORRELATION										
0840					AT HANG DEPTH 9200' KB.										
0900	43.30	4116	3427	45	27/64"	621	23	49.6781	1.680	1.200	87.6673	4.120	2.540	0.058.	
1000	44.30	4123	3427	45.5	27/64"	621	22.5	49.4751	3.600	0.240	89.7288	4.270	2.550	0.078.	
			CO_2 = 28%, H_2S = 0ppm, S.G = 1.104, API = 52.1.												
1100	45.30	4123	3420	46	27/64"	621	24.5	49.2785	1.200	2.640	91.7821	4.320	2.660	0.078	
1200	46.30	4137	3406	46	27/64"	621	26	49.3828	3.360	0.960	93.8397	4.460	2.700	0.087	
1300	47.30	4137	3413	46	27/64"	621	26.5	49.8310	1.920	1.920	95.9160	4.540	2.780	0.077	
1400	48.30	4144	3385	46	27/64"	621	27	50.2737	2.880	1.440	98.0107	4.660	2.840	0.086.	
1500	49.30	4137	3392	46	27/64"	621	26	50.8607	1.920	1.680	100.1299	4.740	2.910	0.071	
1600	50.30	4130	3365	46	27/64"	621	22.5	50.2286	2.640	1.440	102.2228	4.850	2.970	0.081.	
1600			COLLECT 1ST SET OF SAMPLES: CONDENSATE SPE #072, GAS PDE #169, H_2O x 500 cc #1.												
1700	51.30	4130	3372	46	27/64"	690	22	50.8880	2.400	1.440	104.3431	4.950	3.030	0.075	
1700			COLLECT 2ND SET OF SAMPLES: CONDENSATE: SPE #604, GAS SPE #238, H_2O x 500 cc #2.												
1800	52.30	4130	3351.	46	27/64"	690	24.	50.6810	2.640	1.440	106.4548	5.060	3.090	0.081.	
1900	53.30	4130	3344	46	27/64	690	24.5	50.6297	2.880	1.200	108.5644	5.180	3.140	0.081.	
2000	54.30	4130	3344	46	27/64	690	24.5	50.3598	1.920	0.960	110.6627	5.260	3.180	0.057	
2100	55.30	4109	3330	45.5	27/64	690	24	49.8663	1.920	2.400	112.7405	5.340	3.280	0.087	
2200	56.30	4096	3310	45.0	27/64	690	23.5	49.9169	1.920	1920	114.8204	5.420	3.360	0.077	
2300	57.30	4103	3316	45.5	27/64	655	23.5	48.4903	3.000	0.600	116.8408	5.545	3.385	0.074	
2300	0.00		SHUT IN WELL FOR PRESSURE BUILD UP.												
2315		6447	3165												
2330	0.30	6723	2792												

0178a-15/3/91

00139

PETROLEUM ENGINEERING : TEST RESULTS

SANTOS

CONTRACTOR: OILSERV AUST. LTD.
WELL NAME: COOBA #1.
TEST TYPE: MODIFIED ISOCHRONAL

PERFORATIONS: 9231' - 9868' K.B.
FORMATION: PATCHAWARRA

PAGE: 5 OF 13
DATE: 7/6/92
OPR: DOWLING

TIME		WELLHEAD DATA				SEPARATOR 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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	L.G.R. ~~BBLS/MMSCF~~ $m^3/10^6 m^3$
2345		6778	2524											
2400	1·00	6819	2275											
8/6/92														
0015		6854	2082											
0030		6874	1917											
0045		6819	1751											
0100	2·00	6792	1655											
0115		6778	1579											
0130		6771	1496											
0145		6764	1448											
0200	3·00	6764	1365											
0215		6757	1345											
0230		6757	1324											
0245		6757	1255											
0300	4·00	6757	1186											
0600	7·00	6792	972.											
1000	11·00	6860	807											
1400	15·00	6916	731											
1800	19·00	6957	669.											
2200	23·00	6998	621											
9/6/92														
0200	27·00	7040	593											
0600	31·00	7081	572											

00140

PETROLEUM ENGINEERING : TEST RESULTS

SANTOS

CONTRACTOR: OILSERV AUST LTD.		PERFORATIONS: 9231' - 9868' IKB.	PAGE: 6 OF 13
WELL NAME: COOBA #1.		FORMATION: PATCHAWARRA.	DATE: 9-6-92
TEST TYPE: MODIFIED ISOCHRONAL.			OPR: DOWLING

TIME		WELLHEAD DATA				SEPARATOR 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 $m^3 10^3/D$	OIL BPD m^3/D	WATER BPD m^3/D	GAS MMSCF $m^3 10^3$	OIL BBLS m^3	WATER BBLS m^3	L.G.R. BBLS/MMSCF $m^3/10^6 m^3$	
1000	35.00	7109	552		S/IN										
1400	39.00	7157	545		"										
1800	43.00	7185	510		"										
2200	47.00	7212	490.		"										
10/6/92	-														
0200	51.00	7247	469		"										
0600	55.00	7267	476		"										
1000	59.00	7309	476		"										
1400	63.00	7343	462		"										
1800	67.00	7364	448		"										
2200	71.00	7391	441		"										
11/6/92															
0200	75.00	7419	441		"										
0600	79.00	7440	434		"										
0800					SI	P.O.O.H WITH ELECTRIC LINE.									
0926					SI	GAUGESTRING IN LUBRICATOR.									
0930					SI	BLEED OFF LUBRICATOR.									
1000	83.00	7467	434.		SI										
1233					SI	PRESSURE UP LUBRICATOR TO S.I.W.H.P.									
1234						R.IH WITH ELECTRIC LINE.									
1315															

001141

PETROLEUM ENGINEERING : TEST RESULTS

CONTRACTOR: OILSERV AUSTRALIA LTD.	PERFORATIONS: 9231' – 9868' KB.	PAGE: 7 OF 13
WELL NAME: COOBA # 1	FORMATION: PATCHAWARRA.	DATE: 11.6.92
TEST TYPE: MODIFIED ISOCHORONAL.		OPR: S. KAPPLER

TIME		WELLHEAD DATA				SEPARATOR DATA		FLOW RATES			CUMULATIVE PRODUCTION				
DATE / TIME	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE (/KPa)	ANNULUS PRESSURE (/KPa)	WELLHEAD TEMP (/°C)	CHOKE SIZE	PRESSURE (/KPa)	TEMP (/°C)	GAS [redacted] $m^3 10^3/D$	OIL [redacted] m^3/D	WATER [redacted] m^3/D	GAS [redacted] $m^3 10^3$	OIL [redacted] m^3	WATER [redacted] m^3	L.G.R. [redacted] $m^3/10^6 m^3$	
1400	87.00	7495	434		SI										
1800	91.00	7529	414												
2200	95.00	7557	414												
12/6/92															
0200	99.00	7578	400												
0600	103.00	7598	400												
0940						POOH WITH ELECTRIC LINE & AMERADA									
1000	107.00	7626	393												
1140						IN LUB									
1142		7647	427			DEPRESSURE LUB									
1145						RIG DOWN ELECTRIC LINE FOR DRIFT RUN									
1330						RIG UP FOR DRIFT RUN									
1358		7660	414			PRESSURE UP LUB									
1400	111.00	7660	414												
1402						RIH WITH WEIGHT BAR, SPANG JARS & 1.75" GAUGE CUTTER TO 2400' – NO OBSTRUCTIONS									
1436						POOH									
1503						IN LUB									
1504		7660	414												
1800	115.00	7681	393												
2200	119.00	7702	393												
13/6/92															
0200	123.00														
0600	127.00														

PETROLEUM ENGINEERING : TEST RESULTS

SANTOS

CONTRACTOR: OILSERV AUST LTD		PERFORATIONS: 9231'- 9868' K.B.	PAGE: 8 OF 13
WELL NAME: COOBA-1		FORMATION: PATCHAWARRA	DATE: 13/6/92
TEST TYPE: MODIFIED ISOCHRONAL			OPR: S. KAPPLER

TIME		WELLHEAD DATA				SEPARATOR 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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	L.G.R. ~~BBLS/MMSCF~~ $m^3/10^6 m^3$	
13/6/92															
0800						DEMOBILISE ELECTRIC LINE UNIT									
0930						START RIGGING UP SLICKLINE UNIT									
1000	131·00	7771	393												
1400	135·00	7791	393												
1549		7798	379			PRESSURE UP LUB									
1650		7805	379			RIH WITH AMERADAS									
1800	139·00	7805	379												
1805						ON HANG DEPTH 9200' K.B.									
1915	140·15 57:50	7812	372			OPEN WELL ON 12/64" CHOKE - BY PASS SEPARATOR - START SETTING RATES									
1923						OPEN WELL TO 16/64" CHOKE									
1928						OPEN WELL TO 18/64" CHOKE									
1938						OPEN WELL TO 20/64" CHOKE									
1956						TRIM FLOW THROUGH SEPARATOR									
2002						ENGAGE 1·875" O/P									
2032		6571	476	35·5	20/64"	621	9	46·1053			117·8013	1ST RATE			
2035						OPEN WELL TO 24/64" CHOKE									
2044						OPEN WELL TO 26/64" CHOKE									
2050						OPEN WELL TO 28/64" CHOKE									
2100						OPEN WELL TO 29/64" CHOKE									
2121						ENGAGE 2·25" O/P									
2151		5109	683	37	29/64"	690	15·5	79·3297			119·4540	2ND RATE			
2153						OPEN WELL TO 36/64" CHOKE									

PETROLEUM ENGINEERING : TEST RESULTS

CONTRACTOR: OILSERV AUST LTD	PERFORATIONS: 9231'- 9868' K.B	PAGE: 9 OF 13
WELL NAME: COOBA # 1	FORMATION: PATCHAWARRA	DATE: 13/6/92
TEST TYPE: MODIFIED ISOCHRONAL		OPR: S. KAPPLER

TIME		WELLHEAD DATA				SEPARATOR 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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	L.G.R. ~~BBLS/MMSCF~~ $m^3/10^6 m^3$
13/6/92														
2202						OPEN WELL TO		38/64" CHOKE						
2211						OPEN WELL TO		40/64" CHOKE						
2227						ENGAGE 2.50" O/P								
2257		3661	938	37	40/64"	724	24	92.3573			121.3781	3RD	RATE	
2301						OPEN WELL TO		48/64" CHOKE						
2309						OPEN WELL TO		50/64" CHOKE						
2315						OPEN WELL TO		56/64" CHOKE						
2321						OPEN WELL TO		58/64" CHOKE						
2329						OPEN WELL TO		60/64" CHOKE						
2341						ENGAGE 2.50" O/P								
14/6/92														
0011		2586	1193	36	60/64"	724	31	96.5069			123.3887	4TH	RATE	
0015	62.50 140.15					SHUT WELL IN								
0030		7536	1151											
0045		7722	1103											
0100	141.00	7743	1048											
0200	142.00	7778	717											
0600	146.00	7784	503											
0800	00.00	7791	483			OPEN WELL ON		12/64" CHOKE - START 1ST RATE						
0802						OPEN WELL TO		20/64" CHOKE						
0810						ENGAGE 1.875" O/P								
0900	01.00	6468	593	36	20/64"	690	13.5	42.5466	2.400	1.200	125.1615	5.645	3.435	0.085

0178a-15/3/91

00144

PETROLEUM ENGINEERING : TEST RESULTS

SANTOS

CONTRACTOR: OILSERV AUST LTD		PERFORATIONS: 9231' - 9868' K.B.	PAGE: 10 OF 13
WELL NAME: COOBA #1		FORMATION: PATCHAWARRA	DATE: 14/6/92
TEST TYPE: MODIFIED ISOCHRONAL			OPR: S. KAPPLER

TIME		WELLHEAD DATA				SEPARATOR 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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	L.G.R. ~~BBLS/MMSCF~~ $m^3/10^6 m^3$	
14/6/92															
1000	02:00	6419	690	37	20/64"	690	16	42·3204	1·680	2·160	126·9249	5·715	3·525	0·091	
1100	03:00	6426	793	38	20/64"	724	20	43·2660	2·640	1·200	128·7276	5·825	3·575	0·089	
1200	04:00	6426	882	38·5	20/64"	724	20·5	44·2139	2·640	1·440	130·5698	5·935	3·635	0·092	
1300	05:00	6412	931	39	20/64"	724	21	44·1680	2·760	1·440	132·4101	6·050	3695	0·095	
1400	06:00	6412	1007	39	20/64"	724	22	44·0767	2·760	1·680	134·2466	6·165	3·765	0·101	
1400	00:00					SHUT WELL IN - END OF 1ST RATE									
1430		7757	862												
1500	01:00	7819	752												
1530		7840	717												
1600	02:00	7819	662												
1630		7812	627												
1700	03:00	7798	607												
1730		7798	579												
1800	04:00	7798	572												
1830		7805	545												
1900	05:00	7805	524												
1930		7805	510												
2000	06:00	7805	503		29/64"	OPEN WELL TO		29/64" CHOKE, START 2ND RATE.							
2010						ENGAGE	2·250"	ORIFICE PLATE.							
2100	01:00	4964	724	37	29/64"	814	16	72·5736	5·520	1·680	137·2705	6·395	3·835	0·099	
2200	02:00	4958	945	38	29/64"	814	18	72·2582	4·080	1·920	140·2813	6·565	3·915	0·083	
2300	03:00	4958	1165	39	29/64"	814	19	71·5971	4·320	1·680	143·2645	6·83	3·985	0·084	

0178a-15/3/91

PETROLEUM ENGINEERING : TEST RESULTS

SANTOS

CONTRACTOR: OILSERV AUST LTD		PERFORATIONS: 9231' → 9868' KB.	PAGE: 11 OF 13
WELL NAME: COOBA * 1		FORMATION: PATCHAWARRA	DATE: 14 - 6 - 92
TEST TYPE: MODIFIED ISO-CHRONAL			OPR: S. KAPPLER.

TIME		WELLHEAD DATA				SEPARATOR 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 $m^3 10^3/D$	OIL BPD m^3/D	WATER BPD m^3/D	GAS MMSCF $m^3 10^3$	OIL BBLS m^3	WATER BBLS m^3	L.G.R. BBLS/MMSCF $m^3/10^6 m^3$	
2400	04:00	4854	1317	39	29/64"	814	20	69.9093	4.080	1.920	146.1774	7.005	4.065	0.086	
15-6-92															
0100	05:00	4840	1482	39	29/64"	814	21	68.7212	4.800	1.920	149.0408	7.205	4.145	0.098	
0200	06:00	4833	1641	40	29/64"	814	21.5	67.5946	3.600	1.680	151.8572	7.355	4.215	0.078	
0200	00:00					SHUT IN	WELL.	END OF 2ND RATE.							
0230	00:30	7722	1331												
0300	01:00	7791	1110												
0330	01:30	7826	965												
0400	02:00	7840	945												
0430	02:30	7853	793												
0500	03:00	7860	751												
0530	03:30	7833	717												
0600	04:00	7819	669												
0630	04:30	7819	648												
0700	05:00	7812	627												
0730	05:30	7812.	600												
0800	06:00	7798	600												
0800	00:00					OPEN WELL TO 40/64" CHOKE - START 3RD RATE					Orifice calculations sheet.		2.50" shown on gas flow		
0900	01:00	3489	896	37.5	40/64"	621	26	82.4697	4.320	1.680	155.2934	7.535	4.285	0.073	
1000	02:00	3434	1200	38.5	40/64"	655	29	84.0197	3.600	3.600	158.7941	7.685	4.435	0.086	
1100	03:00	3427	1455	39.5	40/64"	655	29	84.0197	5.040	1.680	162.2948	7.895	4.505	0.080	
1200	04:00	3420	1689	40	40/64"	655	29.5	83.9360	4.320	2.160	165.7921	8.075	4.595	0.077	
1300	05:00	3413	1924	40.5	40/64"	655	29.5	83.9360	3.600	2.640	169.2894	8.225	4.705	0.074	

00146

PETROLEUM ENGINEERING : TEST RESULTS

SANTOS

CONTRACTOR: OILSERV AUST LTD		PERFORATIONS: 9231'- ~~9868'~~ K.B.	PAGE: 12 OF 13
WELL NAME: COOBA #1		FORMATION: PATCHAWARRA	DATE: 15/6/92
TEST TYPE: MODIFIED ISOCHRONAL			OPR: S. KAPPLER

TIME		WELLHEAD DATA				SEPARATOR 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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	L.G.R. ~~BBLS/MMSCF~~ $m^3/10^6 m^3$
15/6/92														
1400	06·00	3399	2117	41	40/64"	690	28	86·1803	4·560	2·400	172·8802	8·415	4·805	0·081
1400	00·00					SHUT WELL IN - END OF 3RD RATE								
1430		7674	1779											
1500	01·00	7764	1427											
1530		7819	1158											
1600	02·00	7833	1103											
1630		7840	986											
1700	03·00	7853	903											
1730		7860	814											
1800	04·00	7860	793											
1830		7860	758											
1900	05·00	7849	717											
1930		7812	676											
2000	06·00	7812	641											
2000	00·00	7812	641		60/64"	OPEN WELL TO 60/64TH CHOKE - START 4TH RATE.								
2010	00·17				60/64"	ENGAGE	2·5"	ORIFICE	PLATE.					
2100	01·00	2434	952	36·5	60/64"	690	25	92·2652	2·880	1·920	176·7246	8·535	4·885	0·052
2200	02·00	2413	1310	37	60/64"	676	25	90·8761	4·320	2·880	180·5111	8·715	5·005	0·079
2300	03·00	2406	1613	38	60/64"	655	25	89·0615	3·840	2·880	184·2220	8·875	5·125	0·075
2400	04·00	2406	1882	39	60/64"	655	25·5	88·9729	4·800	2·160	187·9292	9·075	5·215	0·078
16-6-92														
0100	05·00	2406	2151	39	60/64"	621	27	86·0437	5·040	2·160	191·5144	9·285	5·305	0·084

0178a-15/3/91

00147

PETROLEUM ENGINEERING : TEST RESULTS

SANTOS

CONTRACTOR: OILSERV AUST LTD	PERFORATIONS: 9231' → 9868' K.B.	PAGE: 13 OF 13
WELL NAME: COOBA #1	FORMATION: PATCHAWARRA	DATE: 16-6-92
TEST TYPE: MODIFIED ISOCHRONAL		OPR: S. KAPPLER.

TIME		WELLHEAD DATA				SEPARATOR 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~~ $m^3 10^3/D$	OIL ~~BPD~~ m^3/D	WATER ~~BPD~~ m^3/D	GAS ~~MMSCF~~ $m^3 10^3$	OIL ~~BBLS~~ m^3	WATER ~~BBLS~~ m^3	L.G.R. ~~BBLS/MMSCF~~ $m^3/10^6 m^3$	
16.6.92															
0200	06.00	2406	2310	39.5	60/64"	634	27	86.3720	5.280	1.920	195.1132	9.505	5.385	0.083	
0200	00.00					SHUT IN WELL - END OF 4TH RATE.									
0230		7653	1937												
0300	01.00	7757	1531												
0330		7784	1310												
0400	02.00	7812	1158												
0430		7826	1027												
0500	03.00	7847	945												
0530		7840	876												
0600	04.00	7853	827												
0630		7826	786												
0700	05.00	7798	752												
0730		7798	710												
0800	06.00	7798	676												
0807						POOH									
0903		7812	669			IN LUB									
1100	09.00	7826	607			DEPRESSURE LUB, END OF TEST									

0178a-15/3/91

00148

S E C T I O N N O 2

LIQUID PRODUCTION

By: OILSERV AUSTRALIA LTD
23 GROVE AVENUE
MARLESTON. SA. 5033.

TELEPHONE: (08) 371 2755
FACSIMILE: (08) 371 2734

PETROLEUM ENGINEERING : LIQUID PRODUCTION

SANTOS

CONTRACTOR: OILSERV AUST LTD.		PERFORATIONS: 9231' - 9868' KB	PAGE: 1. OF
WELL NAME: COOBA #1.		FORMATION: PATCHAWARRA.	DATE: 5-6-92
TEST TYPE: MODIFIED ISOCHRONAL.			OPR: DOWLING
TANK NUMBER #1 = / #2 =	TANK CAPACITY #1 = bbls/m³ / #2 = bbls/m³	TANK SCALE #1 = CALIBRATED LITRES bbls/in-m³/cm / #2 = CALIBRATED LITRES bbls/in-m³/cm	OIL API GRAVITY = @ 60°F: 52.1.

DATE / TIME	FLOW TIME (HOURS)	TANK USED (NUMBER)	TOTAL TANK DIP (LITRES	OIL/CONDENSATE PRODUCTION				WATER PRODUCTION			
				TANK DIP LITRES	TANK PRODUCTION (~~BBLS~~/m³)	FLOW RATE (~~BPD~~) (m³/D)	CUMULATIVE PRODUCTION (~~BBLS~~/m³)	TOTAL TANK DIP LITRES	TANK PRODUCTION (~~BBLS~~/m³)	FLOW RATE (~~BPD~~) (m³/D)	CUMULATIVE PRODUCTION (~~BBLS~~/m³)
1300				RIG UP SWAB VALVE							
1310				TEST LINES TO SIWHP.							
1330				OPEN WELL ON 12/64" CHOKE TO BY PASS SEPARATOR.							
1335				OPEN WELL TO 20/64" CHOKE							
1345				OPEN WELL TO 24/64" CHOKE							
1355				OPEN WELL TO 26/64" CHOKE							
1405				OPEN WELL TO 28/64" CHOKE							
1430	1.00			CLOSE WELL TO 27/64" CHOKE							
1430				TRIM FLOW THROUGH SEPARATOR.							
1445				ENGAGE 1.875" O.P							
1500	1.30	#2	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø
1600	2.30	#2	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø
1700	3.30	#2.	170	150	0.150	3.600	0.150	20	0.020	0.480	0.020
1800	4.30	#2.	340	240	0.090	2.160	0240	100	0.080	1.920	0.100
1900	5.30	#2	550	310	0.070	1.680	0.310	240	0.140	3.360	0.240
2000	6.30	#2	690	390	0.080	1.920	0.390	300	0.060	1.440	0300
2100	7.30	#2	840	540	0.150	3.600	0.540	300	0.000	0.000	0.300
2200	8.30	#2	990	570	0.030	0.720	0.570	420	0.120	2.880	0.420
2300	9.30	#2.	1150	660	0.090	2.160	0.660	490	0.070	1.680	0.490
2400	10.30	#2.	1320	770	0.110	2.640	0.770	550	0.060	1.440	0.550
6/6/92											
0100	11.30	#2.	1490	880	0.110	2.640	0.880	610	0.060	1.440	0.610

00130

15/3/9

PETROLEUM ENGINEERING : LIQUID PRODUCTION

SANTOS

CONTRACTOR: OILSERV AUST. LTD.	PERFORATIONS: 9231' - 9868' K.B.	PAGE: 2 OF
WELL NAME: COOBA # 1.	FORMATION: PATCHAWARRA	DATE: 6-6-92
TEST TYPE: MODIFIED ISOCHRONAL		OPR: DOWLING

TANK NUMBER	#1 =	TANK CAPACITY	#1 = bbls/m³	TANK SCALE	#1 = CALIBRATED LITRES bbls/in-m³/cm	OIL API GRAVITY = @ 60°F
	#2 =		#2 = bbls/m³		#2 = CALIBRATED LITRES bbls/in-m³/cm	52.1

DATE / TIME	FLOW TIME (HOURS)	TANK USED (NUMBER)	TOTAL TANK DIP (IN/CM)	OIL/CONDENSATE PRODUCTION				WATER PRODUCTION			
				TANK DIP (IN/CM)	TANK PRODUCTION (BBLS/m³)	FLOW RATE (BPD) (m³/D)	CUMULATIVE PRODUCTION (BBLS/m³)	TOTAL TANK DIP (IN/CM)	TANK PRODUCTION (BBLS/m³)	FLOW RATE (BPD) (m³/D)	CUMULATIVE PRODUCTION (BBLS/m³)
0200	12.30	#2.	1650	970	0.090	2.160	0.970	680	0070	1.680	0.680
0300	13.30	#2.	1830	1080	0.110	2.640	0.080	750	0.070	1.680	0.750
0400	14.30	#2.	2000	1180	0.100	2.400	1.180	820	0.070	1.680	0.820
0500	15.30	#2.	2200	1350	0.170	4.080	1.350	850	0.030	0.720	0.850
0600	16.30	#2.	2360	1460	0.110	2.640	1.460	900	0.050	1.200	0.900
0700	17.30	#2.	2520	1520	0.060	1.440	1.520	1000	0.100	2.400	1.000
0800	18.30	#2.	2670	1630	0.110	2.640	1.630	1040	0.040	0.960	1.040
0900	19.30	#2	2850	1750	0.120	2.880	1.750	1100	0.060	1.440	1.100
1000	20.30	#2.	2990	1880	0.130	3.120	1.880	1110	0.010	0.240	1.110
1100	21.30	#2.	3160	1950	0.070	1.680	1.950	1210	0.100	2.400	1.210
1200	22.30	#2.	3320	2020	0.070	1.680	2.020	1300	0.090	2.160	1.300
1300	23.30	#2	3460	2130	0.110	2.640	2.130	1330	0.030	0.720	1.330
1400	24.30	#2.	3600	2200	0.070	1.680	2.200	1400	0.070	1.680	1.400
1500	25.30	#2.	3810	2400	0.200	4.800	2.400	1410	0.010	0.240	1.410
1600	26.30	#2.	3960	2460	0.060	1.440	2.460	1500	0.090	2.160	1.500
1700	27.30	#2.	4090	2560	0.100	2.400	2.560	1530	0.030	0.720	1.530
1800	28.30	#2.	4250	2650	0.090	2.160	2.650	1600	0.070	1.680	1.600
1900	29.30	#2.	4400	2710	0.060	1.440	2.710	1690	0.090	2.160	1.690
2000	30.30	#2.	4580	2830	0.120	2.880	2.830	1750	0.060	1.440	1.750
2100	31.30	#2.	4720	2900	0.070	1.680	2.900	1820	0.070	1.680	1.820
2200	32.30	#2.	4880	3000	0.100	2.400	3.000	1880	0.060	1.440	1.880
2300	33.30	#2	5050	3120	0.120	2.880	3.120	1930	0.050	1.200	1.930

PETROLEUM ENGINEERING : LIQUID PRODUCTION

SANTOS

CONTRACTOR: OILSERV AUST LTD.	PERFORATIONS: 9231' - 9868' KB.	PAGE: 3 OF	
WELL NAME: COOBA #1.	FORMATION: PATCHAWARRA.	DATE: 6·6·92.	
TEST TYPE: MODIFIED ISOCHORONAL.		OPR: DOWLING.	
TANK NUMBER #1 = / #2 =	TANK CAPACITY #1 = bbls/m³ / #2 = bbls/m³	TANK SCALE #1 = CALIBRATED LITRES bbls/in-m³/cm / #2 = CALIBRATED LITRES bbls/in-m³/cm	OIL API GRAVITY = @ 60°F 52·1.

DATE / TIME	FLOW TIME (HOURS)	TANK USED (NUMBER)	OIL/CONDENSATE PRODUCTION: TOTAL TANK DIP (LITRES)	OIL/CONDENSATE PRODUCTION: TANK DIP (LITRES)	OIL/CONDENSATE PRODUCTION: TANK PRODUCTION (~~BBLS~~/m³)	OIL/CONDENSATE PRODUCTION: FLOW RATE (~~BPD~~) (m³/D)	OIL/CONDENSATE PRODUCTION: CUMULATIVE PRODUCTION (~~BBLS~~/m³)	WATER PRODUCTION: TOTAL TANK DIP (LITRES)	WATER PRODUCTION: TANK PRODUCTION (~~BBLS~~/m³)	WATER PRODUCTION: FLOW RATE (~~BPD~~) (m³/D)	WATER PRODUCTION: CUMULATIVE PRODUCTION (~~BBLS~~/m³)
0000	34·30	#2	5210	3220	0·100	2·400	3·220	1990	0·060	1·440	1·990
7·6·92.											
0100	35·30	#2	5380	3305	0·085	2·040	3·305	2075	0·085	2·040	2·075
0200	36·30	#2	5525	3435	0·130	3·120	3·435	2090	0·015	0·360	2·090
0300	37·30	#2	5700	3520	0·085	2·040	3·520	2180	0·090	2·160	2·180
0400	38·30	#2	5860	3635	0·115	2·760	3·635	2225	0·045	1·080	2·225
0500	39·30	#2	6020	3720	0·085	2·040	3·720	2300	0·075	1·800	2·300
0600	40·30	#2	6200	3825.	0·105	2·520	3·825	2375	0·075	1·800	2·375
0640			R.I.H WITH GAUGES.								
0700	41·30	#2	6350	3910	0·085	2·040	3·910	2440	0·065	1·560	2·440
0800	42·30	#2	6540	4050	0·140	3·360	4·050	2490	0·050	1·200	2·490
0825			CCL CORRELATION								
0840			AT HANG DEPTH 9200' KB								
0900	43·30	#2.	6660	4120.	0·070	1·680	4·120	2540	0·050	1·200	2·540.
1000	44·30	#2.	6820	4270	0·150	3·600	4·270	2550	0·010	0·240	2·550
			CO_2 = 28%, H_2S = 0 ppm, S.G = 1·104, API = 52·1.								
1100	45·30	#2.	6980	4320	0·050	1·200	4·320	2660	0·110	2·640	2·660
1200	46·30	#1	0/180	140	0·140	3·360	4·460	0/40	0·040	0·960	2·700
1300	47·30	#1	340	220	0·080	1·920	4·540	120	0·080	1·920	2·780
1400	48·30	#1	520	340	0·120	2·880	4·660	180	0·060	1·440	2·840
1500	49·30	#1	670	420	0·080	1·920	4·740	250	0·070	1·680	2·910
1600	50·30	#1	840	530	0·110	2·640	4·850	310	0·060	1·440	2·970

PETROLEUM ENGINEERING : LIQUID PRODUCTION

SANTOS

CONTRACTOR: OILSERV AUST LTD.		PERFORATIONS: 9231' — 9868' KB.	PAGE: 4 OF
WELL NAME: COOBA #1.		FORMATION: PATCHAWARRA.	DATE: 7-6-92
TEST TYPE: MODIFIED ISOCHRONAL.			OPR: DOWLING
TANK NUMBER: #1 = / #2 =	TANK CAPACITY: #1 = bbls/m³ / #2 = bbls/m³	TANK SCALE: #1 = CALIBRATED LITRES bbls/in-m³/cm / #2 = CALIBRATED LITRES bbls/in-m³/cm	OIL API GRAVITY = @ 60°F: 52.1.

DATE / TIME	FLOW TIME (HOURS)	TANK USED (NUMBER)	TOTAL TANK DIP LITRES	OIL/CONDENSATE PRODUCTION: TANK DIP LITRES	OIL/CONDENSATE PRODUCTION: TANK PRODUCTION (~~BBLS~~/m³)	OIL/CONDENSATE PRODUCTION: FLOW RATE (~~BPD~~) (m³/D)	OIL/CONDENSATE PRODUCTION: CUMULATIVE PRODUCTION (~~BBLS~~/m³)	WATER PRODUCTION: TOTAL TANK DIP LITRES	WATER PRODUCTION: TANK PRODUCTION (~~BBLS~~/m³)	WATER PRODUCTION: FLOW RATE (~~BPD~~) (m³/D)	WATER PRODUCTION: CUMULATIVE PRODUCTION (~~BBLS~~/m³)
1600		COLLECT 1ST SET OF SAMPLES: CONDENSATE: SPE #072, GAS PDE #169, H_2O x 500cc #1.									
1700	51.30	#1	1000	630	0.100	2.400	4.950	370	0.060	1.440	3.030
1700		COLLECT 2ND SET OF SAMPLES: CONDENSATE: SPE #604, GAS SPE #238, H_2O x 500cc #2.									
1800	52.30	#1.	1170	740	0.110	2.640	5.060	430	0.060	1.440	3.090
1900	53.30	#1	1340	860	0.120	2.880	5.180	480	0.050	1.200	3.140
2000	54.30	#1	1460	940	0.080	1.920	5.260	520	0.040	0.960	3.180
2100	55.30	#1	1640	1020	0.080	1.920	5.340	620	0.100	2.400	3.280
2200	56.30	#1	1800	1100	0.080	1.920	5.420	700	0.080	1.920	3.360
2300	57.30	#1	1950	1225	0.125	3.000	5.545	725	0.025	0.600	3.385
2300			SHUT IN WELL FOR PRESSURE BUILD UP.								
14/6/92											
0800	00.00	#1	OPEN WELL ON 12/64" CHOKE - START 1ST RATE								
0802			OPEN WELL TO 20/64" CHOKE								
0900	01.00	#1	2460/2610	1960/2060	0.100	2.400	5.645	500/550	0.050	1.200	3.435
1000	02.00	#1	2770	2130	0.070	1.680	5.715	640	0.090	2.160	3.525
1100	03.00	#1	2930	2240	0.110	2.640	5.825	690	0.050	1.200	3.575
1200	04.00	#1	3100	2350	0.110	2.640	5.935	750	0.060	1.440	3.635
1300	05.00	#1	3275	2465	0.115	2.760	6.050	810	0.060	1.440	3.695
1400	06.00	#1	3460	2580	0.115	2.760	6.165	880	0.070	1.680	3.765
1400			SHUT WELL IN - END OF 1ST RATE								

00153

15/3/9

SANTOS
A.C.N. 007 550 923

PETROLEUM ENGINEERING : LIQUID PRODUCTION

CONTRACTOR: OILSERV AUSTRALIA LTD
WELL NAME: COOBA #1
TEST TYPE: MODIFIED ISO-CHRONAL
PERFORATIONS: 9231' → 9868' KB
FORMATION: PATCHAWARRA
PAGE: 5 OF
DATE: 14-6-92
OPR: S. KAPPLER.
OIL API GRAVITY = @ 60°F 52.1

TANK NUMBER	#1 =	TANK CAPACITY	#1 = bbls/m³	TANK SCALE	#1 = CALIBRATED LITRES bbls/in-m³/cm
	#2 =		#2 = bbls/m³		#2 = CALIBRATED LITRES bbls/in-m³/cm

DATE / TIME	FLOW TIME (HOURS)	TANK USED (NUMBER)	TOTAL TANK DIP LITRES	OIL/CONDENSATE PRODUCTION				WATER PRODUCTION			
				TANK DIP LITRES	TANK PRODUCTION (~~BBLS~~/m³)	FLOW RATE (~~BPD~~) (m³/D)	CUMULATIVE PRODUCTION (~~BBLS~~/m³)	TOTAL TANK DIP LITRES	TANK PRODUCTION (~~BBLS~~/m³)	FLOW RATE (~~BPD~~) (m³/D)	CUMULATIVE PRODUCTION (~~BBLS~~/m³)
14-6-92		* From previous page?	3460	2580			6165	880			3.765
2000	00:00	#1	3450	2600 OPEN WELL ON 29/64TH CHOKE START 2ND RATE				850			
2100	01:00	#1	3750	2830	0.230	5.520	6.395	920	0.070	1.680	3.835
2200	02:00	#1	4000	3000	0.170	4.080	6.565	1000	0.080	1.920	3.915
2300	03:00	#1	4250	3180	0.180	4.320	6.835	1070	0.070	1.680	3.985
2400	04:00	#1	4500	3350	0.170	4.080	7.005	1150	0.080	1.920	4.065
15-6-92											
0100	05:00	#1	4780	3550	0.200	4.800	7.205	1230	0.080	1.920	4.145
0200	06:00	#1	5000	3700	0.150	3.600	7.355	1300	0.070	1.680	4.215
0200				SHUT WELL IN - END OF 2ND RATE							
0800	00.00			OPEN WELL TO 40/64" - START 3RD RATE							
0900	01 00	#1	5000/5250	3710/3890	0.180	4.320	7.535	1290/1360	0.070	1.680	4.285
1000	02:00	#1	5550	4040	0.150	3.600	7.685	1510	0.150	3.600	4.435
1100	03:00	#1	5830	4250	0.210	5.040	7.895	1580	0.070	1.680	4.505
1200	04:00	#1	6100	4430	0.180	4.320	8.075	1670	0.090	2.160	4.595
1300	05:00	#1	6360	4580	0.150	3.600	8.225	1780	0.110	2.640	4.705
1400	06:00	#1	6650	4770	0.190	4.560	8.415	1880	0.100	2.400	4.805
1400				SHUT WELL IN - END OF 3RD RATE							
2000	00.00			OPEN WELL TO 60/64THS CHOKE - START 4TH RATE.							
2100	01.00	#2	50/250	50/170	0.120	2.880	8.535	0/80	0.080	1.920	4.885
2200	02.00	#2	550	350	0.180	4.320	8.715	200	0.120	2.880	5.005
2300	03.00	#2	830	510	0.160	3.840	8.875	320	0.120	2.880	5.125

0013

PETROLEUM ENGINEERING : LIQUID PRODUCTION

SANTOS
A.C.N. 007 550 923

CONTRACTOR: OILSERV AUST LTD	PERFORATIONS: 9231' → 9868' KB	PAGE: 6 OF 6
WELL NAME: COOBA # 1	FORMATION: PATCHAWARRA	DATE: 15-6-92
TEST TYPE: MODIFIED ISO-CHRONAL		OPR: S. KAPPLER

TANK NUMBER	#1 =	TANK CAPACITY	#1 = bbls/m³	TANK SCALE	#1 = CALIBRATED LITRES bbls/in-m³/cm	OIL API GRAVITY = @ 60°F
	#2 =		#2 = bbls/m³		#2 = CALIBRATED LITRES bbls/in-m³/cm	52.1

DATE / TIME	FLOW TIME (HOURS)	TANK USED (NUMBER)	TOTAL TANK DIP LITRES	OIL/CONDENSATE PRODUCTION				WATER PRODUCTION			
				TANK DIP LITRES	TANK PRODUCTION (~~BBLS~~/m³)	FLOW RATE (~~BPD~~) (m³/D)	CUMULATIVE PRODUCTION (~~BBLS~~/m³)	TOTAL TANK DIP LITRES	TANK PRODUCTION (~~BBLS~~/m³)	FLOW RATE (~~BPD~~) (m³/D)	CUMULATIVE PRODUCTION (~~BBLS~~/m³)
15-6-92											
2400	04.00	# 2	830/1120	510/710	0.200	4.800	9.075	320/410	0.090	2.160	5.215
16-6-92											
0100	05.00	# 2	1420	920	0.210	5.040	9.285	500	0.090	2.160	5.305
0200	06.00	# 2	1720	1140	0.220	5.280	9.505	580	0.080	1.920	5.385
0200				SHUT WELL IN - END OF 4TH RATE							
					END OF TEST						

001135

0178-15/3/91

S E C T I O N N O 3

GAS FLOW CALCULATIONS

By: OILSERV AUSTRALIA LTD
23 GROVE AVENUE
MARLESTON. SA. 5033

TELEPHONE: (08) 371 2755
FACSIMILE: (08) 371 2734

PETROLEUM ENGINEERING : GAS FLOW CALCULATIONS

CONTRACTOR: OILSERV AUST LTD.	PERFORATIONS: 9231' – 9868' KB.	PAGE: 1 OF 7
WELL NAME: COOBA #1.	FORMATION: PATCHAWARRA.	DATE: 5-6-92
TEST TYPE: MODIFIED ISOCHRONAL.		OPR: DOWLING

ORIFICE METER TYPE: DANIEL	STATIC PRESSURE RANGE: 0-1500 PSIG	GAS SPECIFIC GRAVITY (SG) = 1.104
METER RUN SIZE: 3.826	DIFFERENTIAL PRESS. RANGE: 0-200 IN WC	FG = $\sqrt{(1/SG)}$ = 0.9517
SEPARATOR NO.: S-06	STANDARD CONDITIONS: 14.73 PSI @ 60°F	C_2 = (FU X FG) =

DATE / TIME	FLOW TIME (HOURS)	CHOKE SIZE	STATIC PRESS P_F (PSIA)	DIFF PRESS H_W (IN WC)	GAS FLOW TEMP. (°C)	ORIF. PLATE SIZE (IN)	$\sqrt{(P_F \times H_W)}$	$C_1 = F_B \times F_{TF} \times F_{PV} \times Y_2$				CUMULATIVE GAS PRODUCTION $10^3 M^3/D.$	C (C = $C_1 \times C_2$)	GAS FLOW RATE $Q = \sqrt{(P_F \times H_W)} \times C$	
								F_B	F_{TF}	F_{PV}	Y_2			(MMSCFD)	($m^3 10^3/D$)
1300	1						RIG UP SWAB VALVE								
1310							TEST LINES TO S.I.W.H.P.								
1330							OPEN WELL ON 12/64" CHOKE TO BY-PASS SEPARATOR.								
1335							OPEN WELL TO 20/64" CHOKE								
1345							OPEN WELL TO 24/64" CHOKE								
1355							OPEN WELL TO 26/64" CHOKE								
1405							OPEN WELL TO 28/64" CHOKE								
1430							CLOSE WELL TO 27/64" CHOKE								
1430	1.00						TRIM FLOW THROUGH SEPARATOR.								
1445							ENGAGE 1.875" O.P.								
1500	1.30	27/64"	115	95	23	1.875"	104.4000	738.7533	0.9874	1.0310	1.0051	2.1160	719.3954	1.8025	50.7841
1600	2.30	27/64"	110	96	23.5	1.875"	102.6357	738.7533	0.9865	1.0294	1.0054	4.1918	717.8503	1.7682	49.8187
1700	3.30	27/64"	115	97	23.5	1.875"	105.4932	738.7533	0.9865	1.0309	1.0052	6.3280	718.7407	1.8197	51.2692
1800	4.30	27/64"	115	94	23.5	1.875"	103.8490	738.7533	0.9865	1.0309	1.0050	8.4306	718.6250	1.7911	50.4620
1900	5.30	27/64"	115	91	24	1.875"	102.1784	738.7533	0.9857	1.0307	1.0049	10.4969	717.7805	1.7602	49.5919
2000	6.30	27/64"	115	91	23.5	1.875"	102.1784	738.7533	0.9865	1.0309	1.0049	12.5653	718.5094	1.7620	49.6422
2100	7.30	27/64"	115	91	23	1.875"	102.1784	738.7533	0.9874	1.0310	1.0049	14.6358	719.2411	1.7638	49.6928
2200	8.30	27/64"	115	88	22	1.875"	100.4800	738.7533	0.9890	1.0314	1.0047	16.6758	720.5969	1.7377	48.9589
2300	9.30	27/64"	115	88	22	1.875"	100.4800	738.7533	0.9890	1.0314	1.0047	18.7158	720.5969	1.7377	48.9589
2400	10.30	27/64"	110	88	23	1.875"	98.2662	738.7533	0.9874	1.0296	1.0049	20.7043	718.2526	1.6939	47.7245

PETROLEUM ENGINEERING : GAS FLOW CALCULATIONS

CONTRACTOR: OILSERV AUST. LTD.	PERFORATIONS: 9231' - 9868' K.B.	PAGE: 2 OF 7
WELL NAME: COOBA #1.	FORMATION: PATCHAWARRA	DATE: 6-6-92
TEST TYPE: MODIFIED ISOCHRONAL		OPR: DOWLING

ORIFICE METER TYPE: DANIEL	STATIC PRESSURE RANGE: 0-1500 PSIG	GAS SPECIFIC GRAVITY (SG) = 1.104
METER RUN SIZE: 3.826	DIFFERENTIAL PRESS. RANGE: 0-200 IN WC	FG = $\sqrt{(1/SG)}$ = 0.9517
SEPARATOR NO.: S-06	STANDARD CONDITIONS: 14.73 PSI @ 60°F	C_2 = (FU X FG) =

DATE / TIME	FLOW TIME (HOURS)	CHOKE SIZE	STATIC PRESS P_f (PSIA)	DIFF PRESS H_w (IN WC)	GAS FLOW TEMP. (°C)	ORIF. PLATE SIZE (IN)	$\sqrt{(P_f \times H_w)}$	$C_1 = F_B \times F_{TF} \times F_{PV} \times Y_2$				CUMULATIVE GAS PRODUCTION $10^3 M^3/D$	C ($C = C_1 \times C_2$)	GAS FLOW RATE $Q = \sqrt{(P_f \times H_w)} \times C$	
								F_B	F_{TF}	F_{PV}	Y_2			(MMSCFD)	($m^3 10^3/D$)
0100	11.30	27/64"	110	88	22	1.875"	98.2662	738.7533	0.9890	1.0299	1.0049	22.6969	719.7092	1.6974	47.8212
0200	12.30	27/64"	110	88	21.5	1.875"	98.2662	738.7533	0.9899	1.0301	1.0049	24.6915	720.4417	1.6991	47.8699
0300	13.30	27/64"	110	88	22	1.875"	98.2662	738.7533	0.9890	1.0299	1.0049	26.6841	719.7092	1.6974	47.8212
0400	14.30	27/64"	110	88	21.5	1.875"	98.2662	738.7533	0.9899	1.0301	1.0049	28.6787	720.4417	1.6991	47.8699
0500	15.30	27/64"	110	88	20.5	1.875"	98.2662	738.7533	0.9915	1.0304	1.0049	30.6774	721.9150	1.7026	47.9678
0600	16.30	27/64"	110	89	25	1.875"	98.8229	738.7533	0.9840	1.0289	1.0050	32.6693	715.4117	1.6968	47.8050
0700	17.30	27/64	110	90	28	1.875"	99.3766	738.7533	0.9791	1.0279	1.0050	34.6606	711.2085	1.6963	47.7904
0800	18.30	27/64	110	90	23.5	1.875"	99.3766	738.7533	0.9865	1.0294	1.0050	36.6698	717.6088	1.7115	48.2205
0900	19.30	27/64	110	90	22	1.875"	99.3766	738.7533	0.9890	1.0299	1.0050	38.6851	719.7900	1.7167	48.3670
1000	20.30	27/64	110	91	23	1.875"	99.9271	738.7533	0.9874	1.0296	1.0051	40.7076	718.3734	1.7228	48.5393
1100	21.30	27/64	115	92	22	1.875"	102.7383	738.7533	0.9890	1.0314	1.0049	42.7939	720.7514	1.7772	50.0900
1200	22.30	27/64	110	102	25	1.875"	105.7944	738.7533	0.9840	1.0289	1.0057	44.9278	715.9337	1.8178	51.2148
1300	23.30	27/64	105	106	27.5	1.875"	105.3631	738.7533	0.9799	1.0267	1.0062	47.0408	711.7945	1.7999	50.7111
1400	24.30	27/64	105	106	27	1.875"	105.3631	738.7533	0.9808	1.0268	1.0062	49.1558	712.4919	1.8017	50.7608
1500	25.30	27/64	110	100	26	1.875"	104.7521	738.7533	0.9824	1.0286	1.0056	51.2643	714.4278	1.7961	50.6035
1600	26.30	27/64	110	99	26.5	1.875"	104.2270	738.7533	0.9816	1.0284	1.0055	53.3600	713.6789	1.7852	50.2971
1700	27.30	27/64	110	96	27	1.875"	102.6357	738.7533	0.9808	1.0282	1.0054	55.4213	712.8526	1.7559	49.4718
1800	28.30	27/64	110	98	26.5	1.875"	103.6993	738.7533	0.9816	1.0284	1.0055	57.5063	713.6388	1.7761	50.0396
1900	29.30	27/64	110	98	26.5	1.875"	103.6993	738.7533	0.9816	1.0284	1.0055	59.5913	713.6388	1.7761	50.0396
2000	30.30	27/64	110	97	24.5	1.875"	103.1688	738.7533	0.9849	1.0291	1.0054	61.6738	716.4494	1.7740	49.9797
2100	31.30	27/64	105	96	23.5	1.875"	100.2700	738.7533	0.9865	1.0279	1.0056	63.6994	717.0227	1.7255	48.6143

PETROLEUM ENGINEERING : GAS FLOW CALCULATIONS

SANTOS

CONTRACTOR: OILSERV AUST. LTD.	PERFORATIONS: 9231' - 9868' K.B.	PAGE: 3 OF 7
WELL NAME: COOBA #1.	FORMATION: PATCHAWARRA	DATE: 6/6/92
TEST TYPE: MODIFIED ISOCHRONAL		OPR: DOWLING

ORIFICE METER TYPE: DANIEL	STATIC PRESSURE RANGE: 0 - 1500 PSIG	GAS SPECIFIC GRAVITY (SG) = 1.104
METER RUN SIZE: 3.826	DIFFERENTIAL PRESS. RANGE: 0 - 200 IN WC	FG = $\sqrt{(1/SG)}$ = 0.9517
SEPARATOR NO.: S-06	STANDARD CONDITIONS: 14.73 PSI @ 60°F	C_2 = (FU X FG) =

DATE / TIME	FLOW TIME (HOURS)	CHOKE SIZE	STATIC PRESS P_f (PSIA)	DIFF PRESS H_w (IN WC)	GAS FLOW TEMP. (°C)	ORIF. PLATE SIZE (IN)	$\sqrt{(P_f \times H_w)}$	$C_1 = F_B \times F_{TF} \times F_{PV} \times Y_2$				CUMULATIVE GAS PRODUCTION $10^3M^3/D$.	C ($C = C_1 \times C_2$)	GAS FLOW RATE $Q = \sqrt{(P_f \times H_w)} \times C$	
								F_B	F_{TF}	F_{PV}	Y_2			(MMSCFD)	($m^3 10^3/D$)
2200	32.30	27/64	105	94	23.5	1.875	99.2201	738.7533	0.9865	1.0279	1.0055	65.7035	716.9384	1.7072	48.0996
2300	33.30	27/64	105	92	23.5	1.875	98.1589	738.7533	0.9865	1.0279	1.0054	67.6860	716.8541	1.6888	47.5795
2400	34.30	27/64	105	92	23.5	1.875	98.1589	738.7533	0.9865	1.0279	1.0054	69.6685	716.8541	1.6888	47.5795
7.6.92															
0100	35.30	27/64	105	91	23.5	1.875	97.6239	738.7533	0.9865	1.0279	1.0053	71.6401	716.8120	1.6795	47.3174
0200	36.30	27/64	105	90	23.5	1.875	97.0860	738.7533	0.9865	1.0279	1.0053	73.6007	716.7698	1.6701	47.0540
0300	37.30	27/64	105	90	23.5	1.875	97.0860	738.7533	0.9865	1.0279	1.0053	75.5613	716.7698	1.6701	47.0540
0400	38.30	27/64	105	89	23.5	1.875	96.5452	738.7533	0.9865	1.0279	1.0052	77.5108	716.7277	1.6607	46.7891
0500	39.30	27/64	110	88	23	1.875	98.2662	738.7533	0.9874	1.0296	1.0049	79.4993	718.2526	1.6939	47.7245
0600	40.30	27/64	110	88	23.5	1.875	98.2662	738.7533	0.9865	1.0294	1.0049	81.4858	717.5283	1.6922	47.6763
0640							R.I.H. WITH 5' WEIGHT BAR, CCL, HP GAUGE, AMERADA								
0700	41.30	27/64"	115	88	23	1.875	100.4800	738.7533	0.9874	1.0310	1.0047	83.5216	719.1254	1.7342	48.8590
0800	42.30	27/64"	110	96	23.5	1.875	102.6357	738.7533	0.9865	1.0294	1.0054	85.5974	717.8508	1.7682	49.8187
0825							CCL CORRELATION								
0840							AT HANG DEPTH 9200' K.B.								
0900	43.30	27/64"	105	100	23	1.875.	102.3377	738.7533	0.9874	1.0281	1.0059	87.6673	717.9091.	1.7633	49.6781
1000	44.30	27/64"	105	99	22.5	1.875"	101.8247	738.7533	0.9882	1.0283	1.0058	89.7288	718.5871	1.7561	49.4757
					CO_2 = 28%, H_2S = 0 ppm, SG. = 1.104, API = 52.1.										
1100	45.30	27/64"	105	99	24.5	1.875"	101.8247	738.7533	0.9849	1.0276	1.0058	91.7821	715.7219	1.7491	49.2785
1200	46.30	27/64"	105	100	26.0	1.875"	102.3377	738.7533	0.9824	1.0272	1.0059	93.8397	713.6423	1.7528	49.3828
1300	47.30	27/64"	105	102	26.5	1.875	103.3560	738.7533	0.9816	1.0270	1.0060	95.9160	713.0240	1.7687	49.8310

PETROLEUM ENGINEERING : GAS FLOW CALCULATIONS

SANTOS

CONTRACTOR: OILSERV AUST LTD	PERFORATIONS: 9231' - 9868' IKB.	PAGE: 4 OF 7
WELL NAME: COOBA #1.	FORMATION: PATCHAWARRA.	DATE: 7-6-92
TEST TYPE: MODIFIED ISOCHRONAL		OPR: DOWLING

ORIFICE METER TYPE: DANIEL	STATIC PRESSURE RANGE: 0 - 1500 PSIG	GAS SPECIFIC GRAVITY (SG) = 1·104
METER RUN SIZE: 3·826	DIFFERENTIAL PRESS. RANGE: 0 - 200 IN WC	FG = $\sqrt{(1/SG)}$ = 0·9517
SEPARATOR NO.: S-06	STANDARD CONDITIONS: 14.73 PSI @ 60°F	C_2 = (FU X FG) =

DATE / TIME	FLOW TIME (HOURS)	CHOKE SIZE	STATIC PRESS P_F (PSIA)	DIFF PRESS H_w (IN WC)	GAS FLOW TEMP. (°C	ORIF. PLATE SIZE (IN)	$\sqrt{(P_F \times H_w)}$	$C_1 = F_B \times F_{TF} \times F_{PV} \times Y_2$				CUMULATIVE GAS PRODUCTION $10^3 M^3/D$	C ($C = C_1 \times C_2$)	GAS FLOW RATE $Q = \sqrt{(P_F \times H_w)} \times C$	
								F_B	F_{TF}	F_{PV}	Y_2			(MMSCFD)	($m^3 10^3/D$)
1400	48·30	27/64"	105	104	27	1·875	104·3644	738·7533	0·9808	1·0268	1·0061	98·0107	712·4081.	1·7844	50·2737
1500	49·30	27/64"	105	106	26	1·875	105·3631	738·7533	0·9824	1·0272	1·0062	100·1299	713·8943	1·8052	50·8607
1600	50·30	27/64"	105	102	22·5	1·875	103·3560	738·7533	0·9882	1·0283	1·0060	102·2228	718·7139	1·7828	50·2286
1600		COLLECT 1ST SET OF SAMPLES: CONDENSATE SPE #072, GAS PDE #169 H_2O x 500 cc #1.													
1700	51·30	27/64"	115	95	22	1·875	104·4000	738·7533	0·9890	1·0314	1·0051	104·3431	720·8674	1·8062	50·8880
1700		COLLECT 2ND SET OF SAMPLES: CONDENSATE SPE #604, GAS SPE #238 H_2O x 500 cc #2.													
1800	52·30	27/64"	115	95	24	1·875	104·4000	738·7533	0·9857	1·0307	1·0051	106·4548	717·9346	1·7989	50·6810
1900	53·30	27/64	115	95	24·5	1·875	104·4000	738·7533	0·9849	1·0305	1·0051	108·5644	717·2083	1·7970	50·6297
2000	54·30	27/64	115	94	24·5	1·875	103·8490	738·7533	0·9849	1·0305	1·0050	110·6627	717·1698	1·7875	50·3598
2100	55·30	27/64	115	92	24	1·875.	102·7383	738·7533	0·9857	1·0307	1·0049	112·7405	717·8190	1·7699	49·8663
2200	56·30	27/64	115	92	23·5	1·875	102·7383	738·7533	0·9865	1·0309	1·0049	114·8204	718·5480	1·7717	49·9169
2300	57·30	27/64	110	91	23·5	1·875	99·9271	738·7533	0·9865	1·0294	1·0051	116·8408	717·6490	1·7211	48·4908
2300		S/I					SHUT IN WELL FOR P.B.U.								
13/6/92															
1915							OPEN WELL ON 12/64" CHOKE - BY PASS SEPARATOR - START SETTING RATES								
1923							OPEN WELL TO 16/64" CHOKE								
1928							OPEN WELL TO 18/64" CHOKE								
1938							OPEN WELL TO 20/64" CHOKE								
1956							TRIM FLOW THROUGH SEPARATOR								
2002							ENGAGE 1·875" O/P								
2032		20/64"	105	81	9	1·875	92·1039	738·7533	1·0115	1·0327	1·0048	117·8013	740·3095	1·6364	46·1053

00160

PETROLEUM ENGINEERING : GAS FLOW CALCULATIONS

CONTRACTOR: OILSERV AUST LTD	PERFORATIONS: 9231' – 9868' K.B.	PAGE: 5 OF 7
WELL NAME: COOBA #1	FORMATION: PATCHAWARRA	DATE: 13/6/92
TEST TYPE: MODIFIED ISOCHRONAL		OPR: S. KAPPLER

ORIFICE METER TYPE: DANIEL	STATIC PRESSURE RANGE: 0-1500 PSIG	GAS SPECIFIC GRAVITY (SG) = 1·097
METER RUN SIZE: 3·826"	DIFFERENTIAL PRESS. RANGE: 0-200 IN WC	FG = $\sqrt{(1/SG)}$ = 0·9548
SEPARATOR NO.: S-06	STANDARD CONDITIONS: 14.73 PSI @ 60°F	C_2 = (FU X FG) =

DATE / TIME	FLOW TIME (HOURS)	CHOKE SIZE	STATIC PRESS P_F (PSIA)	DIFF PRESS H_w (IN WC)	GAS FLOW TEMP. (°C)	ORIF. PLATE SIZE (IN)	$\sqrt{(P_F \times H_w)}$	$C_1 = F_B \times F_{TF} \times F_{PV} \times Y_2$				CUMULATIVE GAS PRODUCTION $M^3 10^3$	C ($C = C_1 \times C_2$)	GAS FLOW RATE $Q = \sqrt{(P_F \times H_w)} \times C$	
								F_B	F_{TF}	F_{PV}	Y_2			(MMSCFD)	($m^3 10^3$/D)
13/6/92															
2035							OPEN WELL TO 24/64" CHOKE								
2044							OPEN WELL TO 26/64" CHOKE								
2050							OPEN WELL TO 28/64" CHOKE								
2100							OPEN WELL TO 29/64" CHOKE								
2121							ENGAGE 2·25" O/P								
2151		29/64"	115	100	15·5	2·25"	107·1121	1104·6734	1·0001	1·0334	1·0048	119·4540	1095·3109	2·8157	79·3297
							2ND RATE								
2153							OPEN WELL TO 36/64" CHOKE								
2202							OPEN WELL TO 38/64" CHOKE								
2211							OPEN WELL TO 40/64" CHOKE								
2227							ENGAGE 2·50" O/P								
2257		40/64"	120	82	24	2·50"	99·0851	1415·0298	0·9857	1·0316	1·0034	121·3781	1378·4883	3·2781	92·3573
							3RD RATE								
2301							OPEN WELL TO 48/64" CHOKE								
2309							OPEN WELL TO 50/64" CHOKE								
2315							OPEN WELL TO 56/64" CHOKE								
2321							OPEN WELL TO 58/64" CHOKE								
2329							OPEN WELL TO 60/64" CHOKE								
14/6/92															
0011		60/64"	120	92	31	2·50"	104·9531	1415·0298	0·9743	1·0292	1·0038	123·3887	1359·8880	3·4254	96·5069

PETROLEUM ENGINEERING : GAS FLOW CALCULATIONS

CONTRACTOR: OILSERV AUST LTD	PERFORATIONS: 9231' - 9868' K.B.	PAGE: 6 OF 7
WELL NAME: COOBA #1	FORMATION: PATCHAWARRA	DATE: 14/6/92
TEST TYPE: MODIFIED ISOCHRONAL		OPR: S. KAPPLER

ORIFICE METER TYPE: DANIEL	STATIC PRESSURE RANGE: 0-1500 PSIG	GAS SPECIFIC GRAVITY (SG) = 1.098
METER RUN SIZE: 3.826"	DIFFERENTIAL PRESS. RANGE: 0-200 IN WC	FG = $\sqrt{(1/SG)}$ = 0.9543
SEPARATOR NO.: S-06	STANDARD CONDITIONS: 14.73 PSI @ 60°F	C_2 = (FU X FG) =

DATE / TIME	FLOW TIME (HOURS)	CHOKE SIZE	STATIC PRESS P_f (PSIA)	DIFF PRESS H_w (IN WC)	GAS FLOW TEMP. (°C)	ORIF. PLATE SIZE (IN)	$\sqrt{(P_f \times H_w)}$	$C_1 = F_B \times F_{TF} \times F_{PV} \times Y_2$				CUMULATIVE GAS PRODUCTION $M^3 10^3$	C ($C = C_1 \times C_2$)	GAS FLOW RATE $Q = \sqrt{(P_f \times H_w)} \times C$	
								F_B	F_{TF}	F_{PV}	Y_2			(MMSCFD)	($m^3 10^3$/D)
14/6/92															
0015							SHUT WELL IN BEFORE STARTING ISOCHRONAL								
0800	00:00	12/64"					OPEN WELL ON 12/64" CHOKE - START 1ST RATE								
0802							OPEN WELL TO 20/64" CHOKE								
0810							ENGAGE 1.875" O/P								
0900	01:00	20/64"	115	64	13.5	1.875"	85.6897	738.7533	1.0036	1.0343	1.0034	125.1615	734.3055	1.5101	42.5466
1000	02:00	20/64"	115	64	16	1.875"	85.6897	738.7533	0.9992	1.0333	1.0034	126.9249	730.4019	1.5021	42.3204
1100	03:00	20/64"	120	65	20	1.875"	88.2182	738.7533	0.9924	1.0332	1.0033	128.7276	725.3179	1.5357	43.2660
1200	04:00	20/64"	120	68	20.5	1.875"	90.2310	738.7533	0.9915	1.0330	1.0035	130.5698	724.6741	1.5693	44.2139
1300	05:00	20/64"	120	68	21	1.875"	90.2310	738.7533	0.9907	1.0329	1.0035	132.4101	723.9216	1.5677	44.1680
1400	06:00	20/64"	120	68	22	1.875"	90.2310	738.7533	0.9890	1.0325	1.0035	134.2466	722.4255	1.5644	44.0767
1400	00:00						SHUT WELL IN - END OF 1ST RATE								
2000	00:00	29/64"					OPEN WELL ON 29/64" CHOKE - START 2ND RATE.								
2010	00:10	29/64"					ENGAGE 2.250" O/P.								
2100	01:00	29/64"	133	72	16	2.250"	97.7577	1104.6734	0.9992	1.0391	1.0030	137.2705	1097.9135	2.5759	72.5736
2200	02:00	29/64"	133	72	18	2.250"	97.7577	1104.6734	0.9958	1.0382	1.0030	140.2813	1093.1423	2.5647	72.2582
2300	03:00	29/64"	133	71	19	2.250"	97.0764	1104.6734	0.9941	1.0377	1.0030	143.2645	1090.7411	2.5412	71.5971
2400	04:00	29/64"	133	68	20	2.250"	95.0034	1104.6734	0.9924	1.0373	1.0028	146.1774	1088.2687	2.4813	69.9093
15-6-92															
0100	05:00	29/64"	133	66	21	2.250"	93.5958	1104.6734	0.9907	1.0368	1.0028	149.0408	1085.8614	2.4392	68.7212
0200	06:00	29/64"	133	64	21.5	2.250"	92.1668	1104.6734	0.9899	1.0366	1.0027	151.8572	1084.6198	2.3992	67.5946

PETROLEUM ENGINEERING : GAS FLOW CALCULATIONS

SANTOS

CONTRACTOR: OILSERV AUST LTD	PERFORATIONS: 9231' → 9868' KB	PAGE: 7 OF 7
WELL NAME: GOOBA # 1	FORMATION: PATCHAWARRA.	DATE: 15-6-92
TEST TYPE: MODIFIED ISO-CHRONAL		OPR: S. KAPPLER

ORIFICE METER TYPE: DANIEL	STATIC PRESSURE RANGE: 0 — 1500 PSIG	GAS SPECIFIC GRAVITY (SG) = 1.098
METER RUN SIZE: 3.826	DIFFERENTIAL PRESS. RANGE: 0 — 200 IN WC	FG = $\sqrt{(1/SG)}$ = 0.9543
SEPARATOR NO.: S-06	STANDARD CONDITIONS: 14.73 PSI @ 60°F	C_2 = (FU X FG) =

DATE / TIME	FLOW TIME (HOURS)	CHOKE SIZE	STATIC PRESS P_F (PSIA)	DIFF PRESS H_W (IN WC)	GAS FLOW TEMP. (C)	ORIF. PLATE SIZE (IN)	$\sqrt{(P_F \times H_W)}$	$C_1 = F_B \times F_{TF} \times F_{PV} \times Y_2$				CUMULATIVE GAS PRODUCTION $M^3 10^3$	C ($C = C_1 \times C_2$)	GAS FLOW RATE $Q = \sqrt{(P_F \times H_W)} \times C$	
								F_B	F_{TF}	F_{PV}	Y_2			(MMSCFD)	($m^3 10^3/D$)
15-6-92															
0200							SHUT IN WELL, END OF 2ND RATE.								
0800	00:00	40/64"					OPEN WELL TO 40/64" CHOKE - START 3RD RATE								
0900	01:00	40/64"	105	76	26	2.50"	89.2159	1415.0298	0.9824	1.0268	1.0036	155.2934	1367.0744	2.9272	82.4697
1000	02:00	40/64"	110	76	29	2.50"	91.3208	1415.0298	0.9775	1.0272	1.0034	158.7941	1360.6376	2.9821	84.0179
1100	03:00	40/64"	110	76	29	2.50"	91.3208	1415.0298	0.9775	1.0272	1.0034	162.2948	1360.6376	2.9821	84.0179
1200	04:00	40/64"	110	76	29.5	2.50"	91.3208	1415.0298	0.9767	1.0271	1.0034	165.7921	1359.3115	2.9792	83.9360
1300	05:00	40/64"	110	76	29.5	2.50"	91.3208	1415.0298	0.9767	1.0271	1.0034	169.2894	1359.3115	2.9792	83.9360
1400	06:00	40/64"	115	76	28	2.50"	93.3782	1415.0298	0.9791	1.0289	1.0033	172.8802	1364.9068	3.0589	86.1803
1400							SHUT IN WELL, END OF 3RD RATE.								
2000	00:00	60/64"					OPEN WELL TO 60/64" CHOKE - START 4TH RATE.								
2100	01:00	60/64"	115	86	25	2.50"	99.3317	1415.0298	0.9840	1.0299	1.0037	176.7246	1373.6955	3.2748	92.2652
2200	02:00	60/64"	113	85	25	2.50"	97.8879	1415.0298	0.9840	1.0294	1.0037	180.5111	1372.9691	3.2255	90.8761
2300	03:00	60/64"	110	84	25	2.50"	96.0069	1415.0298	0.9840	1.0285	1.0038	184.2220	1371.9172	3.1611	89.0615
2400	04:00	60/64"	110	84	25.5	2.50"	96.0069	1415.0298	0.9832	1.0283	1.0038	187.9292	1370.5518	3.1580	88.9729
16-6-92															
0100	05:00	60/64"	105	83	27	2.50"	93.2341	1415.0298	0.9808	1.0265	1.0039	191.5144	1364.8491	3.0540	86.0437
0200	06:00	60/64"	107	82	27	2.50"	93.5514	1415.0298	0.9808	1.0270	1.0038	195.1132	1365.4107	3.0657	86.3720
0200							SHUT IN WELL, END OF 4TH RATE								
							END OF TEST.								

001163

15/3/91

S E C T I O N N O 4

SUBSURFACE PRESSURE GAUGE CALIBRATION

By: OILSERV AUSTRALIA LTD
23 GROVE AVENUE
MARLESTON. SA. 5033.

TELEPHONE: (08) 371 2755
FACSIMILE: (08) 371 2734

OSA PRODUCTION SERVICES

COMPANY SANTOS WELL NO. COOBA #1

FIELD PATCHAWARRA INTERVAL TESTED 9231' - 9868' KB

COUNTRY AUSTRALIA TECHNICIAN M. CORNELIUS

DATE: 24/5/93 CALIBRATION NO. 1 DATE OF LAST CALIBRATION: 9-3-92

Subsurface Pressure Gauge Calibration Report

CALIBRATION STEPS

P (PRESSURE) DWT	D (1)	Y (4)	ΔY (5)	Y'	Y P	Pc = KY + a	NON LINEARITY CORRECTION ε = P - Pc	C'
500		0·1933				500·02	-0·01919	0·00037
1000		0·3873				1000·50	-0·50222	0·25233
1500		0·5807				1499·44	0·56263	0·31655
2000		0·7752				2001·21	-1·21031	1·46485
2500		0·9682				2499·11	0·88647	0·78583
3000		1·1623				2999·85	0·14546	0·02116
3500		1·3559				3499·31	0·69435	0·48212
4000		1·5499				3999·79	0·21131	0·04465
4500		1·7438				4500·01	-0·01374	0·00019
5000		1·9379				5000·75	-0·75475	0·56965
Σ 27500		10·65450		14·45082	37294·650	Σ + = 2·500215 Σ - = 2·500215		3·93759

LEAST SQUARES CALCULATIONS

$A = \frac{\Sigma P}{n} =$ _____ = 2750·000

$B = \frac{\Sigma Y}{n} =$ _____ = 1·06545

$C = \frac{\Sigma (Y)'}{\Sigma Y} =$ _____ = 1·35631

$D = \frac{\Sigma (YP)}{\Sigma Y} =$ _____ = 3500·36604

$K = \frac{D - A}{C - B} =$ _____ = 2579·80945

a = A - BK = _____ = 1·34203

a = D - CK = _____ = _____

$o = \frac{\Sigma C'}{n} =$ _____ = 0·39376

OWNER OF GAUGE: OILSERV TYPE OF ELEMENT: RPG 3

PRESSURE ELEMENT NO. 55994 RANGE: 0-5000 PSI RECORDING SECTION NO. 55663

DEADWEIGHT TESTER TYPE AND RANGE: CHANDLER 55-1 SERIAL NO. 18731

BASE LINE DRAWN AT ATMOSPHERIC PRESSURE READING D_0 = _____ TEMPERATURE = _____

REFERENCE LINE READING D_R = _____ REFERENCE PRESSURE P_R = _____ TEMPERATURE = _____

MAXIMUM TEMPERATURE EXPECTED = 380°F CALIBRATION TEMPERATURE = 280°F

DRAWING ALL CALIBRATION STEPS ☐ WITH A CLOCK ☑ WITH A CRANK CRANK

EQUIVALENT PRESSURE p OF LEVEL DIFFERENCE BETWEEN DWT AND THE BELLOWS

LEVEL DIFFERENCE H = 1·5

SPECIFIC GRAVITY OF OIL D = 0·33 } p = 0·495 { ☑ PLUS IN CASE OF DWT ABOVE THE BELLOWS ☐ MINUS IN CASE OF DWT BENEATH THE BELLOWS

(1) D = READING ON THE CHART SCANNER FOR THE PRESSURE p

(2) D_0 = READING FOR BASE LINE

(3) D_R = READING FOR REFERENCE LINE

(4) Y = DEFLECTION { ☐ D - D_0 IF NO REFERENCE LINE ☐ D - D_R IF REFERENCE LINE DRAWN

(5) ΔY = FOR CHECKING

(6) n = NUMBER OF CALIBRATION STEPS

(7) Σ = SUM

(8) o = STANDARD DEVIATION

CALIBRATION RESULTS

K = 2579·80945

a + p = 1·83703

$D_R - D_0 = Y_R =$ _____ $P_R =$ _____

REMARKS

RANDOM 2250 = 0·8712

= 2249·367023

OILSERV AUSTRALIA LIMITED (INCORPORATED IN W.A.)

COMPANY SANTOS. WELL NO. COOBA #1

FIELD COOBA INTERVAL TESTED 9231' - 9968' K.B PATCHAWARRA

COUNTRY AUSTRALIA. TECHNICIAN M. CORNELIUS

DATE: 8/6/92 CALIBRATION NO. 1 DATE OF LAST CALIBRATION: 16/5/92

Subsurface Pressure Gauge Calibration Report

CALIBRATION STEPS

P (PRESSURE) DWT	D (1)	Y (4)	ΔY (5)	Y'	Y P	Pc = KY + a	NON LINEARITY CORRECTION c = P - Pc	c'
500	0.1907					502.37	-2.36987	5.61629
1000	0.3836					1000.81	-0.80966	0.65555
1500	0.5763					1498.73	1.26733	1.60613
2000	0.7701					1999.50	0.50201	0.25201
2500	0.9633					2498.71	1.28704	1.65647
3000	1.1567					2998.44	1.55528	2.41891
3500	1.3504					3498.95	1.04835	1.09904
4000	1.5442					3999.72	0.28302	0.08010
4500	1.7380					4500.48	-0.48230	0.23262
5000.	1.9322.					5002.28	-2.28120	5.20387
	10.6055							
Σ 27500				14.33677	37147.15	Σ + = Σ - =		18.82099

LEAST SQUARES CALCULATIONS

$A = \frac{\Sigma P}{n} =$ = 2750

$B = \frac{\Sigma Y}{n} =$ = 1.06005

$C = \frac{\Sigma (Y)^2}{\Sigma Y} =$ = 1.35182

$D = \frac{\Sigma (YP)}{\Sigma Y} =$ = 3502.63071

$K = \frac{D - A}{C - B} =$ = 2583.92841

$a = A - BK =$ = 9.61472

$a = D - CK =$ =

$Q = \frac{\Sigma C^2}{n} =$ = 1.88210.

OWNER OF GAUGE: OILSERV AUST TYPE OF ELEMENT: RPG-3

PRESSURE ELEMENT NO. 55993 RANGE: 0-5000 RECORDING SECTION NO. 55387

DEADWEIGHT TESTER TYPE AND RANGE: CHANDLER 55-1 SERIAL NO. 18731

BASE LINE DRAWN AT ATMOSPHERIC PRESSURE READING D_0 = TEMPERATURE =

REFERENCE LINE READING D_R = REFERENCE PRESSURE P_R = TEMPERATURE =

MAXIMUM TEMPERATURE EXPECTED = 280°F CALIBRATION TEMPERATURE = 280° F

DRAWING ALL CALIBRATION STEPS ☐ WITH A CLOCK ☒ WITH A CRANK

EQUIVALENT PRESSURE p OF LEVEL DIFFERENCE BETWEEN DWT AND THE BELLOWS

LEVEL DIFFERENCE H = 1.5

SPECIFIC GRAVITY OF OIL D = 0.33 } p = 0.495 { ☑ PLUS IN CASE OF DWT ABOVE THE BELLOWS ☐ MINUS IN CASE OF DWT BENEATH THE BELLOWS

CALIBRATION RESULTS

K =

a + p =

$D_R - D_0 = Y_R$ = P_R =

REMARKS

RANDOM 2850 = 1.0962

= 2843.47

(1) D = READING ON THE CHART SCANNER FOR THE PRESSURE p
(2) Do = READING FOR BASE LINE
(3) Dr = READING FOR REFERENCE LINE
(4) Y = DEFLECTION ☐ D - Do IF NO REFERENCE LINE ☐ D - D[illegible] REFE[illegible]CE LI[illegible] RAW
(5) Δ Y = FOR CHECKING
(6) n = NUMBER OF CALIBRATION STEPS
(7) Σ = SUM
(8) Q = STANDARD DEVIATION

0066

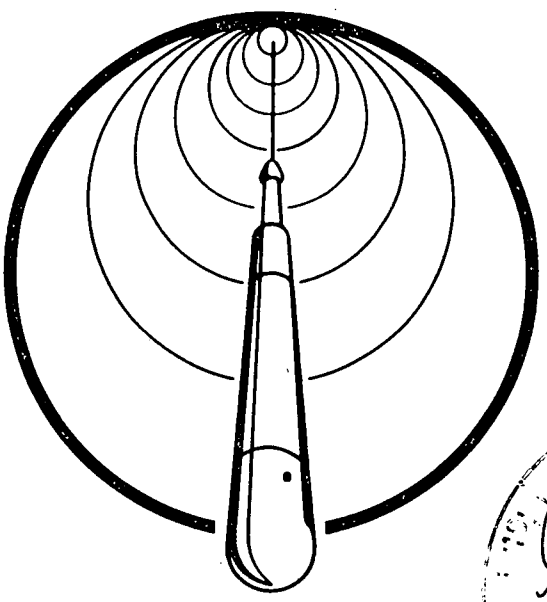
00167

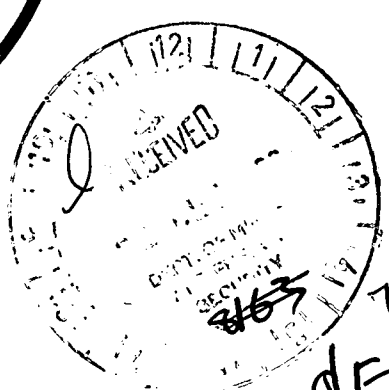
COPY

11 AUG 1993

EXPERTEST PTY LTD

ELECTRIC WIRELINE SERVICE





7349/2

Customer:	SANTOS LTD
Well:	COOBA #1
Formation:	PATCHAWARRA
Test Type:	L.E.T./B.H.P.S.
Date:	18/07/93

EXPERTEST PTY. LTD.	SEQUENCE OF EVENTS		
CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 1 OF 3
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 18/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

DATE/TIME	DESCRIPTION OF EVENTS
	This report has been generated by CARS Version 1.00.
	For further information, please call Dave Hawkes on (08) 354-0488.
18/07/93	
08:40	ARRIVE ON THE LOCATION - WELL FLOWING INLINE ON 100% CHOKE
08:45	SHUT IN THE WELL TO FIT SWAB VALVE
09:12	PRESSURE TEST THE SWAB VALVE - RETURN WELL TO PRODUCTION
09:30	POSITION AND RIG UP WIRE LINE UNIT
10:10	RUN IN THE HOLE WITH 1.75" BLIND BOX FOR PROGRAMMED DRIFT RUN
10:50	TAG P.B.T.D. AT 9975'KB - PULL OUT OF THE HOLE
11:18	ARRIVE BACK AT SURFACE - SECURE THE WELL
12:45	POSITION TEST EQUIPMENT AS IT ARRIVES ON LOCATION
14:45	SHUT IN THE WELL TO FIT TEST FLANGES
15:10	WELL BACK ON LINE ON 100% CHOKE PRESSURE TEST FLOW LINES
15:30	DIVERT FLOW THROUGH FLOW LINES BYPASSING TEST SEPARATOR
16:00	DIVERT FLOW THROUGH TEST SEPERATOR - START TEST
18:00	BYPASS SEPERATOR TO REPAIR LEAKING VALVE ON FRAC TANK
21:00	DIVERT FLOW BACK THROUGH SEPARATOR - RESTART SURVEY
20/07/93	
13:40	PREPARE TO RUN B.H.PRESSURE RECORDERS
14:00	PRESSURE UP THE LUBRICATOR - START B.H.P.RECORDERS SURFACE STOP
15:00	DEPRESSURE THE LUBRICATOR
16:00	PRESSURE UP THE LUBRICATOR - RUN IN THE HOLE WITH B.H.P.RECORDERS
16:34	ARRIVE AT SURVEY HANG DEPTH OF 9550'KB
16:50	TAKE FIRST SET OF HIGH PRESSURE SAMPLES

EXPERTEST PTY. LTD.	SEQUENCE OF EVENTS		
CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 2 OF 3
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 20/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

DATE/TIME	DESCRIPTION OF EVENTS
20/07/93	
17:50	TAKE SECOND SET OF HIGH PRESSURE SAMPLES
21/07/93	
08:00	SHUT IN THE WELL FOR PROGRAMMED 96 HOUR BUILD UP
22/07/93	
10:00	RIG DOWN TEST SEPARATOR AND ASSOCIATED EQUIPMENT
14:00	MOVE OFF LOCATION
18:00	REMAINDER OF BUILD UP READINGS TAKEN FROM WELL HEAD CHART BY P.BLACK
25/07/93	
08:00	OFF BOTTOM - PULL OUT OF THE HOLE WITH B.H.P.RECORDERS 1.1380
08:22	ARRIVE AT SURFACE AND DEPRESSURE THE LUBRICATOR
09:22	PRESSURE UP THE LUBRICATOR - SURFACE STOP
10:22	DEPRESSURE THE LUBRICATOR - END OF BUILD UP
10:30	SERVICE B.H.P.RECORDERS - BOTH CHARTS GOOD
10:45	PREPARE TO RUN PROGRAMMED STATIC GRADIENT
10:56	PRESSURE UP THE LUBRICATOR - SURFACE STOP
11:11	DEPRESSURE THE LUBRICATOR
11:16	PRESSURE UP THE LUBRICATOR - RUN IN THE HOLE WITH B.H.P.RECORDERS
	CONDUCT PROGRAMMED STATIC GRADIENT TO THE MAXIMUM DEPTH OF 9550'K.B.
12:42	ARRIVE AT FINAL GRADIENT DEPTH
12:57	PULL OUT OF HOLE
13:18	ARRIVE AT SURFACE - DEPRESSURE THE LUBRICATOR
13:23	PRESSURE UP THE LUBRICATOR - FINAL SURFACE STOP
13:38	DEPRESSURE THE LUBRICATOR

EXPERTEST PTY. LTD.

SEQUENCE OF EVENTS

CUSTOMER :	SANTOS LTD.	PERFORATIONS:	9231'-9868'KB	PAGE:	3 OF 3
WELL NAME:	COOBA #1	FORMATION :	PATCHAWARRA	DATE:	25/07/93
TEST TYPE :	L.E.T./B.H.P.S.			OPR :	S.TAYLOR

DATE/TIME	DESCRIPTION OF EVENTS
25/07/93	
13:40	SERVICE B.H.P.RECORDERS - BOTH CHARTS GOOD
14:00	RIG DOWN WIRE LINE UNIT AND ALL REMAINING TEST EQUIPMENT
14:15	HAND WELL BACK TO PRODUCTION - DEPART LOCATION
	END OF SURVEY

CHOKE : 100 %
FTHP : 2312 kPa
Q_g : 34.507 E6 m^3/d
Q_c : 1.656 m^3/d
Q_w : 1.602 m^3/d

ET 102

EXPERTEST PTY. LTD.

FIELD READINGS

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 1 OF 6
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 18/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

TIME		WELLHEAD DATA					SEPARATOR DATA				LIQUID PRODUCTION				
DATE / TIME	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE (PSI/[redacted])	ANNULUS PRESSURE (PSI/[redacted])	WELLHEAD TEMP ([redacted]°C)	CHOKE SIZE (%)	BS&W (%)	ORIFICE PLATE SIZE (IN)	STATIC PRESS. (PSIG)	DIFF PRESS. (IN WC)	GAS TEMP (°F)	TOTAL LIQUID (IN/[redacted])	OIL (IN/[redacted])	OIL API GRAVITY @ 60°F	WATER (IN/[redacted])	
		This report has been generated by CARS Version 1.00.													
		For further information, please call Dave Hawkes on (08) 354-0488.													
18/07/93															
08:40		ARRIVE ON THE LOCATION - WELL FLOWING INLINE ON 100% CHOKE													
08:45		SHUT IN THE WELL TO FIT SWAB VALVE													
09:12		PRESSURE TEST THE SWAB VALVE - RETURN WELL TO PRODUCTION													
10:10		RUN IN THE HOLE WITH 1.75" BLIND BOX FOR PROGRAMMED DRIFT RUN													
10:50		TAG P.B.T.D. AT 9975'KB - PULL OUT OF THE HOLE													
11:18		ARRIVE BACK AT SURFACE - SECURE THE WELL													
12:45		POSITION TEST EQUIPMENT AS IT ARRIVES ON LOCATION													
14:45		SHUT IN THE WELL TO FIT TEST FLANGES													
15:10		WELL BACK ON LINE ON 100% CHOKE PRESSURE TEST FLOW LINES													
15:30		DIVERT FLOW THROUGH FLOW LINES BYPASSING TEST SEPARATOR													
16:00	0.00	340		40	100						3.50	2.00		1.50	
16:00	0.00	DIVERT FLOW THROUGH TEST SEPERATOR - START TEST													
18:00	2.00	336		37	100		1.250	317	80	94	4.00	2.50		1.50	
18:00	2.00	BYPASS SEPERATOR TO REPAIR LEAKING VALVE ON FRAC TANK													
21:00	0.00	DIVERT FLOW BACK THROUGH SEPARATOR - RESTART SURVEY													
21:00	0.00	338									4.00	2.50		1.50	
22:00	1.00	338		36	100		1.250	321	73	88	4.25	2.75		1.50	
19/07/93															
06:00	9.00	338		35	100		1.250	320	74	83	9.50	6.00		3.50	

ET 103

001171

EXPERTEST PTY. LTD.

FIELD READINGS

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 2 OF 6
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 19/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

TIME		WELLHEAD DATA					SEPARATOR DATA				LIQUID PRODUCTION				
DATE / TIME	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE (PSI/[redacted])	ANNULUS PRESSURE (PSI/[redacted])	WELLHEAD TEMP ([redacted]°C)	CHOKE SIZE (%)	BS&W (%)	ORIFICE PLATE SIZE (IN)	STATIC PRESS. (PSIG)	DIFF PRESS. (IN WC)	GAS TEMP (°F)	TOTAL LIQUID (IN/[redacted])	OIL (IN/[redacted])	OIL API GRAVITY @ 60°F	WATER (IN/[redacted])	
19/07/93															
08:00	11.00	337		36	100		1.250	320	74	90	9.75	6.00		3.75	
10:00	13.00	335		38	100		1.250	315	76	92	10.50	6.00		4.50	
12:00	15.00	335		39	100		1.250	317	76	91	11.50	6.50		5.00	
14:00	17.00	338		39	100		1.250	320	76	92	12.50	7.00		5.50	
16:00	19.00	333		38	100		1.250	320	75	92	13.00	7.00		6.00	
18:00	21.00	338		36	100		1.250	320	74	88	14.00	7.50		6.50	
22:00	25.00	337		36	100		1.250	315	74	88					
20/07/93															
02:00	29.00	337		36	100		1.250	320	74	88					
06:00	33.00	337		36	100		1.250	320	74	88	20.75	10.75		10.00	
08:00	35.00	335		35	100		1.250	320	74	86	21.50	11.25		10.25	
10:00	37.00	335		37	100		1.250	320	74	86	22.50	11.75		10.75	
12:00	39.00	338		39	100		1.250	320	74	92	23.50	12.25		11.25	
14:00	41.00	335		40	100		1.250	320	74	94	24.50	12.75		11.75	
14:00	41.00	PRESSURE UP THE LUBRICATOR - START B.H.P.RECORDERS SURFACE STOP													
16:00	43.00	335		38	100		1.250	320	74	92	25.50	13.25		12.25	
16:00	43.00	PRESSURE UP THE LUBRICATOR - RUN IN THE HOLE WITH B.H.P.RECORDERS													
16:34	43.57	ARRIVE AT SURVEY HANG DEPTH OF 9550'KB													
16:34	43.57	336		38											
16:50	43.83	TAKE FIRST SET OF HIGH PRESSURE SAMPLES													
17:00	44.00	315		37	100		1.250	315	75	90	26.00	13.50		12.50	

ET 103

00172

EXPERTEST PTY. LTD.

FIELD READINGS

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 3 OF 6
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 20/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

TIME		WELLHEAD DATA					SEPARATOR DATA				LIQUID PRODUCTION				
DATE / TIME	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE (PSI/[redacted])	ANNULUS PRESSURE (PSI/[redacted])	WELLHEAD TEMP ([redacted]°C)	CHOKE SIZE (%)	BS&W (%)	ORIFICE PLATE SIZE (IN)	STATIC PRESS. (PSIG)	DIFF PRESS. (IN WC)	GAS TEMP (°F)	TOTAL LIQUID (IN/[redacted])	OIL (IN/[redacted])	OIL API GRAVITY @ 60°F	WATER (IN/[redacted])	
20/07/93															
17:50	44.83	TAKE SECOND SET OF HIGH PRESSURE SAMPLES													
18:00	45.00	337		36	100		1.250	315	74	90	26.50	13.75		12.75	
22:00	49.00	335		35	100		1.250	315	73	86					
21/07/93															
02:00	53.00	335			100		1.250	315	72	86					
06:00	57.00	336		35	100		1.250	315	72	86	32.75	17.00		15.75	
08:00	59.00	335		35	100		1.250	320	72	88	34.00	17.75		16.25	
08:00	0.00	SHUT IN THE WELL FOR PROGRAMMED 96 HOUR BUILD UP													
08:05	0.08	480													
08:10	0.16	511													
08:15	0.25	525													
08:30	0.50	537													
08:45	0.75	539													
09:00	1.00	542													
09:15	1.25	543													
09:30	1.50	546													
09:45	1.75	547													
10:00	2.00	549													
10:15	2.25	549													
10:30	2.50	550													
10:45	2.75	551													

00173

ET 103

EXPERTEST PTY. LTD.

FIELD READINGS

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 4 OF 6
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 21/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

TIME		WELLHEAD DATA					SEPARATOR DATA				LIQUID PRODUCTION				
DATE / TIME	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE (PSI/[redacted])	ANNULUS PRESSURE (PSI/[redacted])	WELLHEAD TEMP ([redacted]°C)	CHOKE SIZE (%)	BS&W (%)	ORIFICE PLATE SIZE (IN)	STATIC PRESS. (PSIG)	DIFF PRESS. (IN WC)	GAS TEMP (°F)	TOTAL LIQUID (IN/[redacted])	OIL (IN/[redacted])	OIL API GRAVITY @ 60°F	WATER (IN/[redacted])	
21/07/93															
11:00	3.00	551													
11:15	3.25	552													
11:30	3.50	553													
11:45	3.75	554													
12:00	4.00	555													
16:00	8.00	558													
18:00	10.00	570													
22:00	14.00	580													
22/07/93															
02:00	18.00	584													
06:00	22.00	589													
10:00	26.00	590													
14:00	30.00	594													
18:00	34.00	596													
22:00	38.00	600													
23/07/93															
02:00	42.00	608													
06:00	46.00	618													
10:00	50.00	621													
14:00	54.00	625													
18:00	58.00	628													

ET 103

EXPERTEST PTY. LTD.

FIELD READINGS

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 5 OF 6
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 23/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

TIME		WELLHEAD DATA					SEPARATOR DATA				LIQUID PRODUCTION				
DATE / TIME	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE (PSI/[redacted])	ANNULUS PRESSURE (PSI/[redacted])	WELLHEAD TEMP ([redacted]°C)	CHOKE SIZE (%)	BS&W (%)	ORIFICE PLATE SIZE (IN)	STATIC PRESS. (PSIG)	DIFF PRESS. (IN WC)	GAS TEMP (°F)	TOTAL LIQUID (IN/[redacted])	OIL (IN/[redacted])	OIL API GRAVITY @ 60°F	WATER (IN/[redacted])	
23/07/93															
22:00	62.00	630													
24/07/93															
02:00	66.00	634													
06:00	70.00	639													
10:00	74.00	640													
14:00	78.00	641													
18:00	82.00	643													
22:00	86.00	643													
25/07/93															
02:00	90.00	645													
06:00	94.00	645													
08:00	96.00	OFF BOTTOM - PULL OUT OF THE HOLE WITH B.H.P.RECORDERS					1.1380								
08:00	96.00	658													
08:22	96.37	ARRIVE AT SURFACE AND DEPRESSURE THE LUBRICATOR													
08:22	96.37	658													
09:22	97.37	PRESSURE UP THE LUBRICATOR - SURFACE STOP													
09:22	97.37	658													
10:22	98.37	DEPRESSURE THE LUBRICATOR - END OF BUILD UP													
10:22	98.37	658													
10:45		PREPARE TO RUN PROGRAMMED STATIC GRADIENT													
10:56		PRESSURE UP THE LUBRICATOR - SURFACE STOP													

ET 103

00175

EXPERTEST PTY. LTD.

FIELD READINGS

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 6 OF 6
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 25/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

TIME		WELLHEAD DATA					SEPARATOR DATA				LIQUID PRODUCTION				
DATE / TIME	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE (PSI/[redacted])	ANNULUS PRESSURE (PSI/[redacted])	WELLHEAD TEMP ([redacted]°C)	CHOKE SIZE (%)	BS&W (%)	ORIFICE PLATE SIZE (IN)	STATIC PRESS. (PSIG)	DIFF PRESS. (IN WC)	GAS TEMP (°F)	TOTAL LIQUID (IN/[redacted])	OIL (IN/[redacted])	OIL API GRAVITY @ 60°F	WATER (IN/[redacted])	
10:56		658													
11:11		DEPRESSURE THE LUBRICATOR													
11:11		658													
11:16		PRESSURE UP THE LUBRICATOR - RUN IN THE HOLE WITH B.H.P.RECORDERS													
11:16		658													
12:42		ARRIVE AT FINAL GRADIENT DEPTH													
12:42		661													
12:57		PULL OUT OF HOLE													
12:57		661													
13:18		ARRIVE AT SURFACE - DEPRESSURE THE LUBRICATOR													
13:18		663													
13:23		PRESSURE UP THE LUBRICATOR - FINAL SURFACE STOP													
13:23		664													
13:38		DEPRESSURE THE LUBRICATOR													
13:38		664													
14:00		RIG DOWN WIRE LINE UNIT AND ALL REMAINING TEST EQUIPMENT													
14:15		HAND WELL BACK TO PRODUCTION - DEPART LOCATION													
14:15		END OF SURVEY													

ET 103

EXPERTEST PTY. LTD.

TEST RESULTS

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 1 OF 6
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 18/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

TIME		WELLHEAD DATA				SEPARATOR		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 m³10³/D	OIL m³/D	WATER m³/D	GAS m³10³	OIL m³	WATER m³	LGR m³/10⁶m³
		This report has been generated by CARS Version 1.00.												
		For further information, please call Dave Hawkes on (08) 354-0488.												
18/07/93														
08:40		ARRIVE ON THE LOCATION - WELL FLOWING INLINE ON 100% CHOKE												
08:45		SHUT IN THE WELL TO FIT SWAB VALVE												
09:12		PRESSURE TEST THE SWAB VALVE - RETURN WELL TO PRODUCTION												
10:10		RUN IN THE HOLE WITH 1.75" BLIND BOX FOR PROGRAMMED DRIFT RUN												
10:50		TAG P.B.T.D. AT 9975'KB - PULL OUT OF THE HOLE												
11:18		ARRIVE BACK AT SURFACE - SECURE THE WELL												
12:45		POSITION TEST EQUIPMENT AS IT ARRIVES ON LOCATION												
14:45		SHUT IN THE WELL TO FIT TEST FLANGES												
15:10		WELL BACK ON LINE ON 100% CHOKE PRESSURE TEST FLOW LINES												
15:30		DIVERT FLOW THROUGH FLOW LINES BYPASSING TEST SEPARATOR												
16:00	0.00	2344		40	100				0.00	0.00		0.00	0.00	
16:00	0.00	DIVERT FLOW THROUGH TEST SEPERATOR - START TEST												
18:00	2.00	2317		37	100	2186	34	35.67	1.60	0.00	2.97	0.13	0.00	44.92
18:00	2.00	BYPASS SEPERATOR TO REPAIR LEAKING VALVE ON FRAC TANK												
21:00	0.00	DIVERT FLOW BACK THROUGH SEPARATOR - RESTART SURVEY												
21:00	0.00	2330							0.00	0.00		0.00	0.00	
22:00	1.00	2330		36	100	2213	31	34.66	1.60	0.00	1.44	0.07	0.00	46.22

EXPERTEST PTY. LTD.

TEST RESULTS

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 2 OF 6
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 19/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

TIME		WELLHEAD DATA				SEPARATOR		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 $m^3 10^3/D$	OIL m^3/D	WATER m^3/D	GAS $m^3 10^3$	OIL m^3	WATER m^3	LGR $m^3/10^6 m^3$
19/07/93														
06:00	9.00	2330		35	100	2206	28	35.14	2.60	1.60	13.16	0.93	0.53	119.68
08:00	11.00	2324		36	100	2206	32	34.72	0.00	0.80	16.05	0.93	0.60	23.07
10:00	13.00	2310		38	100	2172	33	34.74	0.00	2.40	18.94	0.93	0.80	69.16
12:00	15.00	2310		39	100	2186	33	34.93	1.60	1.60	21.86	1.07	0.93	91.72
14:00	17.00	2330		39	100	2206	33	35.07	1.60	1.60	24.78	1.20	1.07	91.36
16:00	19.00	2296		38	100	2206	33	34.84	0.00	1.60	27.68	1.20	1.20	45.98
18:00	21.00	2330		36	100	2206	31	34.84	1.60	1.60	30.58	1.33	1.33	91.97
22:00	25.00	2324		36	100	2172	31	34.51			36.34			
20/07/93														
02:00	29.00	2324		36	100	2206	31	34.84			42.14			
06:00	33.00	2324		36	100	2206	31	34.84	1.74	1.87	47.95	2.20	2.27	103.47
08:00	35.00	2310		35	100	2206	30	34.95	1.60	0.80	50.86	2.34	2.34	68.75
10:00	37.00	2310		37	100	2206	30	34.95	1.60	1.60	53.77	2.47	2.47	91.66
12:00	39.00	2330		39	100	2206	33	34.60	1.60	1.60	56.66	2.60	2.60	92.59
14:00	41.00	2310		40	100	2206	34	34.49	1.60	1.60	59.53	2.74	2.74	92.89
14:00	41.00	PRESSURE UP THE LUBRICATOR - START B.H.P.RECORDERS SURFACE STOP												
16:00	43.00	2310		38	100	2206	33	34.60	1.60	1.60	62.42	2.87	2.87	92.59
16:00	43.00	PRESSURE UP THE LUBRICATOR - RUN IN THE HOLE WITH B.H.P.RECORDERS												
16:34	43.57	ARRIVE AT SURVEY HANG DEPTH OF 9550'KB												
16:34	43.57	2317		38										
16:50	43.83	TAKE FIRST SET OF HIGH PRESSURE SAMPLES												

EXPERTEST PTY. LTD.

TEST RESULTS

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 3 OF 6
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 20/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

TIME		WELLHEAD DATA				SEPARATOR		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 $m^3 10^3/D$	OIL m^3/D	WATER m^3/D	GAS $m^3 10^3$	OIL m^3	WATER m^3	LGR $m^3/10^6 m^3$	
17:00	44.00	2172		37	100	2172	32	34.63	1.60	1.60	63.86	2.94	2.94	92.53	
17:50	44.83	TAKE	SECOND	SET OF	HIGH PRESSURE		SAMPLES								
18:00	45.00	2324		36	100	2172	32	34.39	1.60	1.60	65.29	3.00	3.00	93.15	
22:00	49.00	2310		35	100	2172	30	34.39			71.02				
21/07/93															
02:00	53.00	2310			100	2172	30	34.15			76.71				
06:00	57.00	2317		35	100	2172	30	34.15	1.74	1.60	82.41	3.87	3.80	97.72	
08:00	59.00	2310		35	100	2206	31	34.36	2.40	1.60	85.27	4.07	3.94	116.56	
08:00	0.00	SHUT	IN THE	WELL FOR	PROGRAMMED	96	HOUR	BUILD UP							
08:05	0.08	3310													
08:10	0.16	3523													
08:15	0.25	3620													
08:30	0.50	3703													
08:45	0.75	3716													
09:00	1.00	3737													
09:15	1.25	3744													
09:30	1.50	3765													
09:45	1.75	3771													
10:00	2.00	3785													
10:15	2.25	3785													
10:30	2.50	3792													
10:45	2.75	3799													

ET 104

EXPERTEST PTY. LTD.

TEST RESULTS

CUSTOMER : SANTOS LTD.
WELL NAME: COOBA #1
TEST TYPE : L.E.T./B.H.P.S.
PERFORATIONS: 9231'-9868'KB
FORMATION : PATCHAWARRA
PAGE: 4 OF 6
DATE: 21/07/93
OPR : S.TAYLOR

TIME		WELLHEAD DATA				SEPARATOR		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 [redacted] $m^3 10^3/D$	OIL [redacted] m^3/D	WATER [redacted] m^3/D	GAS [redacted] $m^3 10^3$	OIL [redacted] m^3	WATER [redacted] m^3	LGR $m^3/10^6 m^3$	
11:00	3.00	3799													
11:15	3.25	3806													
11:30	3.50	3813													
11:45	3.75	3820													
12:00	4.00	3827													
16:00	8.00	3847													
18:00	10.00	3930													
22:00	14.00	3999													
22/07/93															
02:00	18.00	4027													
06:00	22.00	4061													
22:00	38.00	4137													
23/07/93															
02:00	42.00	4192													
06:00	46.00	4261													
10:00	50.00	4282													
14:00	54.00	4309													
18:00	58.00	4330													
22:00	62.00	4344													
24/07/93															
02:00	66.00	4371													
06:00	70.00	4406													

00180

ET 104

EXPERTEST PTY. LTD.

TEST RESULTS

CUSTOMER : SANTOS LTD.		PERFORATIONS: 9231'-9868'KB	PAGE: 5 OF 6
WELL NAME: COOBA #1		FORMATION : PATCHAWARRA	DATE: 24/07/93
TEST TYPE : L.E.T./B.H.P.S.			OPR : S.TAYLOR

TIME		WELLHEAD DATA				SEPARATOR		FLOW RATES			CUMULATIVE PRODUCTION				
DATE / TIME	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE [redacted]/KPa)	ANNULUS PRESSURE [redacted]/KPa)	WELLHEAD TEMP [redacted]°C)	CHOKE SIZE (%)	PRESSURE [redacted]/KPa)	TEMP [redacted]°C)	GAS [redacted] $m^3 10^3/D$	OIL [redacted] m^3/D	WATER [redacted] m^3/D	GAS [redacted] $m^3 10^3$	OIL [redacted] m^3	WATER [redacted] m^3	LGR $m^3/10^6 m^3$	
10:00	74.00	4413													
14:00	78.00	4420													
18:00	82.00	4433													
22:00	86.00	4433													
25/07/93															
02:00	90.00	4447													
06:00	94.00	4447													
08:00	96.00	OFF BOTTOM - PULL OUT OF THE HOLE WITH B.H.P.RECORDERS 1.1380													
08:00	96.00	4537													
08:22	96.37	ARRIVE AT SURFACE AND DEPRESSURE THE LUBRICATOR													
08:22	96.37	4537													
09:22	97.37	PRESSURE UP THE LUBRICATOR - SURFACE STOP													
09:22	97.37	4537													
10:22	98.37	DEPRESSURE THE LUBRICATOR - END OF BUILD UP													
10:22	98.37	4537													
10:45		PREPARE TO RUN PROGRAMMED STATIC GRADIENT													
10:56		PRESSURE UP THE LUBRICATOR - SURFACE STOP													
10:56		4537													
11:11		DEPRESSURE THE LUBRICATOR													
11:11		4537													
11:16		PRESSURE UP THE LUBRICATOR - RUN IN THE HOLE WITH B.H.P.RECORDERS													
11:16		4537													

EXPERTEST PTY. LTD.

TEST RESULTS

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 6 OF 6
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 25/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

TIME		WELLHEAD DATA				SEPARATOR		FLOW RATES			CUMULATIVE PRODUCTION				
DATE / TIME	FLOW OR SHUT IN TIME (HOURS)	TUBING PRESSURE [redacted]/KPa)	ANNULUS PRESSURE [redacted]/KPa)	WELLHEAD TEMP [redacted]°F/°C)	CHOKE SIZE (%)	PRESSURE [redacted]/KPa)	TEMP [redacted]°F/°C)	GAS [redacted] $m^3 10^3/D$	OIL [redacted] m^3/D	WATER [redacted] m^3/D	GAS [redacted] $m^3 10^3$	OIL [redacted] m^3	WATER [redacted] m^3	LGR $m^3/10^6 m^3$	
12:42		ARRIVE AT FINAL GRADIENT DEPTH													
12:42		4557													
12:57		PULL OUT OF HOLE													
12:57		4557													
13:18		ARRIVE AT SURFACE - DEPRESSURE THE LUBRICATOR													
13:18		4571													
13:23		PRESSURE UP THE LUBRICATOR - FINAL SURFACE STOP													
13:23		4578													
13:38		DEPRESSURE THE LUBRICATOR													
13:38		4578													
14:00		RIG DOWN WIRE LINE UNIT AND ALL REMAINING TEST EQUIPMENT													
14:15		HAND WELL BACK TO PRODUCTION - DEPART LOCATION													
14:15		END OF SURVEY													

00182

ET 104

EXPERTEST PTY. LTD.

GAS FLOW CALCULATIONS

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 1 OF 2
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 18/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

ORIFICE METER TYPE: DANIEL SNR.	STATIC PRESSURE RANGE : 1500 PSIG	GAS SPECIFIC GRAVITY (SG) =	1.1380
METER RUN SIZE : 3.068 Inches	DIFFERENTIAL PRESS. RANGE: 200 IN WC	FG $\sqrt{(1/SG)}$ =	0.9374
SEPARATOR NO : 459	STANDARD CONDITIONS : 14.73 PSI @ 60°F	C_2 (FU × FG) =	22.4978

DATE / TIME	FLOW TIME (HOURS)	CHOKE SIZE (%)	STATIC PRESS P_F (PSIA)	DIFF PRESS H_W (IN WC)	GAS FLOW TEMP (°F)	ORIF. PLATE SIZE (IN)	$\sqrt{(P_F \times H_W)}$	$C_1 = F_B \times F_{TF} \times F_{PV} \times Y_2$				C_1	C ($C = C_1 \times C_2$)	GAS FLOW RATE $Q = \sqrt{(P_F \times H_W)} \times C$	
								F_B	F_{TF}	F_{PV}	Y_2			(MMSCFD)	($m^3 10^3/D$)
				This report has been generated by CARS Version 1.00.											
				For further information, please call Dave Hawkes on (08) 354-0488.											
18/07/93															
18:00	2.00	100	332	80	94	1.250	162.91	322.03	0.9688	1.1001	1.0015	343.75	7733.69	1.260	35.667
22:00	1.00	100	336	73	88	1.250	156.55	322.03	0.9741	1.1067	1.0014	347.65	7821.28	1.224	34.664
19/07/93															
06:00	9.00	100	335	74	83	1.250	157.38	322.03	0.9786	1.1107	1.0014	350.52	7885.86	1.241	35.136
08:00	11.00	100	335	74	90	1.250	157.38	322.03	0.9723	1.1046	1.0014	346.36	7792.25	1.226	34.719
10:00	13.00	100	330	76	92	1.250	158.30	322.03	0.9706	1.1009	1.0015	344.59	7752.61	1.227	34.744
12:00	15.00	100	332	76	91	1.250	158.78	322.03	0.9715	1.1025	1.0015	345.41	7770.99	1.234	34.931
14:00	17.00	100	335	76	92	1.250	159.50	322.03	0.9706	1.1029	1.0015	345.22	7766.78	1.239	35.070
16:00	19.00	100	335	75	92	1.250	158.44	322.03	0.9706	1.1029	1.0014	345.22	7766.63	1.231	34.838
18:00	21.00	100	335	74	88	1.250	157.38	322.03	0.9741	1.1063	1.0014	347.52	7818.44	1.231	34.836
22:00	25.00	100	330	74	88	1.250	156.21	322.03	0.9741	1.1041	1.0014	346.86	7803.59	1.219	34.509
20/07/93															
02:00	29.00	100	335	74	88	1.250	157.38	322.03	0.9741	1.1063	1.0014	347.52	7818.44	1.231	34.836
06:00	33.00	100	335	74	88	1.250	157.38	322.03	0.9741	1.1063	1.0014	347.52	7818.44	1.231	34.836
08:00	35.00	100	335	74	86	1.250	157.38	322.03	0.9759	1.1080	1.0014	348.70	7845.07	1.235	34.954
10:00	37.00	100	335	74	86	1.250	157.38	322.03	0.9759	1.1080	1.0014	348.70	7845.07	1.235	34.954
12:00	39.00	100	335	74	92	1.250	157.38	322.03	0.9706	1.1029	1.0014	345.21	7766.48	1.222	34.604

EXPERTEST PTY. LTD.

GAS FLOW CALCULATIONS

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 2 OF 2
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 20/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

ORIFICE METER TYPE: DANIEL SNR.	STATIC PRESSURE RANGE : 1500 PSIG	GAS SPECIFIC GRAVITY (SG) =	1.1380
METER RUN SIZE : 3.068 Inches	DIFFERENTIAL PRESS. RANGE: 200 IN WC	FG $\sqrt{(1/SG)}$ =	0.9374
SEPARATOR NO : 459	STANDARD CONDITIONS : 14.73 PSI @ 60°F	C_2 (FU × FG) =	22.4978

DATE / TIME	FLOW TIME (HOURS)	CHOKE SIZE (%)	STATIC PRESS P_F (PSIA)	DIFF PRESS H_W (IN WC)	GAS FLOW TEMP (°F)	ORIF. PLATE SIZE (IN)	$\sqrt{(P_F \times H_W)}$	$C_1 = F_B \times F_{TF} \times F_{PV} \times Y_2$				C_1	C ($C = C_1 \times C_2$)	GAS FLOW RATE $Q = \sqrt{(P_F \times H_W)} \times C$	
								F_B	F_{TF}	F_{PV}	Y_2			(MMSCFD)	($m^3 10^3$/D)
14:00	41.00	100	335	74	94	1.250	157.38	322.03	0.9688	1.1013	1.0014	344.08	7741.12	1.218	34.491
16:00	43.00	100	335	74	92	1.250	157.38	322.03	0.9706	1.1029	1.0014	345.21	7766.48	1.222	34.604
17:00	44.00	100	330	75	90	1.250	157.26	322.03	0.9723	1.1025	1.0015	345.72	7777.90	1.223	34.627
18:00	45.00	100	330	74	90	1.250	156.21	322.03	0.9723	1.1025	1.0014	345.71	7777.75	1.215	34.394
22:00	49.00	100	330	73	86	1.250	155.15	322.03	0.9759	1.1058	1.0014	348.02	7829.70	1.215	34.390
21/07/93															
02:00	53.00	100	330	72	86	1.250	154.08	322.03	0.9759	1.1058	1.0014	348.01	7829.55	1.206	34.152
06:00	57.00	100	330	72	86	1.250	154.08	322.03	0.9759	1.1058	1.0014	348.01	7829.55	1.206	34.152
08:00	59.00	100	335	72	88	1.250	155.24	322.03	0.9741	1.1063	1.0014	347.51	7818.14	1.214	34.360

EXPERTEST PTY. LTD.

LIQUID PRODUCTION

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 1 OF 2
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 18/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

TANK NUMBER	#1 = 60	TANK CAPACITY	#1 = 56.6 [redacted]/m³	TANK SCALE	#1 = .267 Cu. m/in [redacted]	OIL API GRAVITY = 0.0 @ 60°F
	#2 =		#2 = bbls/m³		#2 = bbls/in - m³/cm	

DATE / TIME	FLOW TIME (HOURS)	TANK USED (NUMBER)	TOTAL TANK DIP (IN/[redacted]	OIL/CONDENSATE PRODUCTION				WATER PRODUCTION			
				TANK DIP (IN/[redacted]	TANK PRODUCTION ([redacted]m³)	FLOW RATE ([redacted]m³D)	CUMULATIVE PRODUCTION ([redacted]m³)	TANK DIP (IN[redacted]	TANK PRODUCTION ([redacted]m³)	FLOW RATE ([redacted]m³D)	CUMULATIVE PRODUCTION ([redacted]m³)
		This report has been generated by CARS Version 1.00.									
		For further information, please call Dave Hawkes on (08) 354-0488.									
18/07/93											
16:00	0.00	1	3.50	2.00	0.000	0.000	0.000	1.50	0.000	0.000	0.000
18:00	2.00	1	4.00	2.50	0.133	1.602	0.133	1.50	0.000	0.000	0.000
21:00	0.00	1	4.00	2.50	0.000	0.000	0.000	1.50	0.000	0.000	0.000
22:00	1.00	1	4.25	2.75	0.067	1.602	0.067	1.50	0.000	0.000	0.000
19/07/93											
06:00	9.00	1	9.50	6.00	0.868	2.603	0.935	3.50	0.534	1.602	0.534
08:00	11.00	1	9.75	6.00	0.000	0.000	0.935	3.75	0.067	0.801	0.601
10:00	13.00	1	10.50	6.00	0.000	0.000	0.935	4.50	0.200	2.403	0.801
12:00	15.00	1	11.50	6.50	0.133	1.602	1.068	5.00	0.133	1.602	0.934
14:00	17.00	1	12.50	7.00	0.133	1.602	1.202	5.50	0.133	1.602	1.068
16:00	19.00	1	13.00	7.00	0.000	0.000	1.202	6.00	0.134	1.602	1.201
18:00	21.00	1	14.00	7.50	0.133	1.602	1.335	6.50	0.133	1.602	1.335
20/07/93											
06:00	33.00	1	20.75	10.75	0.868	1.736	2.203	10.00	0.934	1.869	2.269
08:00	35.00	1	21.50	11.25	0.133	1.602	2.336	10.25	0.067	0.801	2.336
10:00	37.00	1	22.50	11.75	0.134	1.602	2.470	10.75	0.134	1.602	2.470
12:00	39.00	1	23.50	12.25	0.133	1.602	2.603	11.25	0.133	1.602	2.603
14:00	41.00	1	24.50	12.75	0.134	1.602	2.737	11.75	0.134	1.602	2.737

EXPERTEST PTY. LTD.

LIQUID PRODUCTION

CUSTOMER : SANTOS LTD.	PERFORATIONS: 9231'-9868'KB	PAGE: 2 OF 2
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 20/07/93
TEST TYPE : L.E.T./B.H.P.S.		OPR : S.TAYLOR

TANK NUMBER	TANK CAPACITY	TANK SCALE	OIL API GRAVITY = 0.0 @ 60°F
#1 = 60	#1 = 56.6 [redacted]/m³	#1 = .267 Cu. m/in [redacted]	
#2 =	#2 = bbls/m³	#2 = bbls/in - m³/cm	

DATE / TIME	FLOW TIME (HOURS)	TANK USED (NUMBER)	TOTAL TANK DIP (IN[redacted])	OIL/CONDENSATE PRODUCTION				WATER PRODUCTION			
				TANK DIP (IN/[redacted])	TANK PRODUCTION ([redacted]m³)	FLOW RATE [redacted]m³D)	CUMULATIVE PRODUCTION ([redacted]m³)	TANK DIP (IN[redacted])	TANK PRODUCTION ([redacted]m³)	FLOW RATE [redacted]m³D)	CUMULATIVE PRODUCTION ([redacted]m³)
16:00	43.00	1	25.50	13.25	0.133	1.602	2.870	12.25	0.133	1.602	2.870
17:00	44.00	1	26.00	13.50	0.067	1.602	2.937	12.50	0.067	1.602	2.937
18:00	45.00	1	26.50	13.75	0.067	1.602	3.004	12.75	0.067	1.602	3.004
21/07/93											
06:00	57.00	1	32.75	17.00	0.868	1.736	3.872	15.75	0.801	1.602	3.805
08:00	59.00	1	34.00	17.75	0.200	2.403	4.072	16.25	0.134	1.602	3.938

00186

ET 105

EXPERTEST PTY. LTD.

SAMPLING DATA

CUSTOMER : SANTOS LTD	PERFORATIONS: 9244' - 9868'KB	PAGE: 1 OF 2
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 20/07/93
TEST TYPE : L.E.T./B/H/P/		OPR : S TAYLOR

SAMPLE #

TIME SAMPLE COLLECTED	CYLINDER SERIAL NO.	CYLINDER VOLUME (CC)	SAMPLE TYPE	SAMPLING DURATION (MINS)	CYLINDER INITIALLY FILLED WITH	OUTAGE (CC)	VOLUME OF FILL REMAINING WITH SAMPLE (CC)	SAMPLE POINT	SAMPLE PRESS KPa)	SAMPLE TEMP °C)	AMBIENT PRESS KPa)	AMBIENT TEMP °C)
16:50	PDE175	500	GAS	20	EVACUATED	0	0	GAS METER RUN	2275	32	14.73	15

WELLHEAD DATA				SEPARATOR DATA			GRAVITIES		FLOW RATES			RATIOS	BOTTOM HOLE	
TUBING PRESS KPa)	WELLHEAD TEMP °C)	CHOKE SIZE	BS&W (%)	SEPARATOR PRESS KPa)	SEPARATOR TEMP °C)	FPV	GAS SPECIFIC GRAVITY	OIL API GRAV @60°F	GAS $m^3 10^3/D$	OIL m^3/D	WATER m^3/D	L.G.R. M3/106M3	PRESSURE (PSI/KPa)	TEMPERATURE (°F/°C)
2172	37	100		2275	32	1.1026	1.1380		34.64	1.608	1.608	93		

REMARKS:

SAMPLE #

TIME SAMPLE COLLECTED	CYLINDER SERIAL NO.	CYLINDER VOLUME (CC)	SAMPLE TYPE	SAMPLING DURATION (MINS)	CYLINDER INITIALLY FILLED WITH	OUTAGE (CC)	VOLUME OF FILL REMAINING WITH SAMPLE (CC)	SAMPLE POINT	SAMPLE PRESS KPa)	SAMPLE TEMP °C)	AMBIENT PRESS KPa)	AMBIENT TEMP C)
16:50	PDE109	500	OIL	20	BRINE	475	25	SEP. SIGHT GLASS	2275	32	14.73	15

WELLHEAD DATA				SEPARATOR DATA			GRAVITIES		FLOW RATES			RATIOS	BOTTOM HOLE	
TUBING PRESS KPa)	WELLHEAD TEMP °C)	CHOKE SIZE	BS&W (%)	SEPARATOR PRESS KPa)	SEPARATOR TEMP °C)	FPV	GAS SPECIFIC GRAVITY	OIL API GRAV @60°F	GAS $m^3 10^3/D$	OIL m^3/D	WATER m^3/D	L.G.R. M3/106M3	PRESSURE (PSI/KPa)	TEMPERATURE (°F/°C)
2172	37	100		2275	32	1.1026	1.1380		34.64	1.608	1.608	93		

REMARKS:

SAMPLE #

TIME SAMPLE COLLECTED	CYLINDER SERIAL NO.	CYLINDER VOLUME (CC)	SAMPLE TYPE	SAMPLING DURATION (MINS)	CYLINDER INITIALLY FILLED WITH	OUTAGE (CC)	VOLUME OF FILL REMAINING WITH SAMPLE (CC)	SAMPLE POINT	SAMPLE PRESS KPa)	SAMPLE TEMP °C)	AMBIENT PRESS (PSI/KPa)	AMBIENT TEMP °C)
17:50	SPE604	500	GAS	20	EVACUATED	0	0	GAS METER RUN	2172	74	14.73	13

WELLHEAD DATA				SEPARATOR DATA			GRAVITIES		FLOW RATES			RATIOS	BOTTOM HOLE	
TUBING PRESS KPa)	WELLHEAD TEMP °C)	CHOKE SIZE	BS&W (%)	SEPARATOR PRESS KPa)	SEPARATOR TEMP °C)	FPV	GAS SPECIFIC GRAVITY	OIL API GRAV @60°F	GAS $m^3 10^3/D$	OIL m^3/D	WATER m^3/D	L.G.R. M3/106M3	PRESSURE (PSI/KPa)	TEMPERATURE (°F/°C)
2324	36	100		2172	74	1.1026	1.1380		1.22	1.608	1.608	93		

REMARKS:

EXPERTEST PTY. LTD.

SAMPLING DATA

CUSTOMER : SANTOS LTD	PERFORATIONS: 9244' - 9868'KB	PAGE: 2 OF 2
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 20/07/93
TEST TYPE : L.E.T./B/H/P/		OPR : S TAYLOR

SAMPLE #

TIME SAMPLE COLLECTED	CYLINDER SERIAL NO.	CYLINDER VOLUME (CC)	SAMPLE TYPE	SAMPLING DURATION (MINS)	CYLINDER INITIALLY FILLED WITH	OUTAGE (CC)	VOLUME OF FILL REMAINING WITH SAMPLE (CC)	SAMPLE POINT	SAMPLE PRESS KPa)	SAMPLE TEMP °C)	AMBIENT PRESS KPa)	AMBIENT TEMP °C)
17:50	PDE117	500	OIL	20	BRINE	475	25	SEP. SIGHT GLASS	2172	74	14.73	13

WELLHEAD DATA				SEPARATOR DATA			GRAVITIES		FLOW RATES			RATIOS	BOTTOM HOLE	
TUBING PRESS KPa)	WELLHEAD TEMP °C)	CHOKE SIZE	BS&W (%)	SEPARATOR PRESS KPa)	SEPARATOR TEMP °C)	FPV	GAS SPECIFIC GRAVITY	OIL API GRAV @60°F	GAS $m^3 10^3/D$	OIL m^3/D	WATER m^3/D	L.G.R. M3/106M3	PRESSURE (PSI/KPa)	TEMPERATURE (°F/°C)
2324	36	100		2172	74	1.1026	1.1380		1.22	1.608	1.608	93		

REMARKS:

SAMPLE #

TIME SAMPLE COLLECTED	CYLINDER SERIAL NO.	CYLINDER VOLUME (CC)	SAMPLE TYPE	SAMPLING DURATION (MINS)	CYLINDER INITIALLY FILLED WITH	OUTAGE (CC)	VOLUME OF FILL REMAINING WITH SAMPLE (CC)	SAMPLE POINT	SAMPLE PRESS KPa)	SAMPLE TEMP °C)	AMBIENT PRESS KPa)	AMBIENT TEMP C)

WELLHEAD DATA				SEPARATOR DATA			GRAVITIES		FLOW RATES			RATIOS	BOTTOM HOLE	
TUBING PRESS KPa)	WELLHEAD TEMP °C)	CHOKE SIZE	BS&W (%)	SEPARATOR PRESS KPa)	SEPARATOR TEMP °C)	FPV	GAS SPECIFIC GRAVITY	OIL API GRAV @60°F	GAS $m^3 10^3/D$	OIL m^3/D	WATER m^3/D		PRESSURE (PSI/KPa)	TEMPERATURE (°F/°C)

REMARKS:

SAMPLE #

TIME SAMPLE COLLECTED	CYLINDER SERIAL NO.	CYLINDER VOLUME (CC)	SAMPLE TYPE	SAMPLING DURATION (MINS)	CYLINDER INITIALLY FILLED WITH	OUTAGE (CC)	VOLUME OF FILL REMAINING WITH SAMPLE (CC)	SAMPLE POINT	SAMPLE PRESS KPa)	SAMPLE TEMP °C)	AMBIENT PRESS (PSI/KPa)	AMBIENT TEMP °C)

WELLHEAD DATA				SEPARATOR DATA			GRAVITIES		FLOW RATES			RATIOS	BOTTOM HOLE	
TUBING PRESS KPa)	WELLHEAD TEMP °C)	CHOKE SIZE	BS&W (%)	SEPARATOR PRESS KPa)	SEPARATOR TEMP °C)	FPV	GAS SPECIFIC GRAVITY	OIL API GRAV @60°F	GAS $m^3 10^3/D$	OIL m^3/D	WATER m^3/D		PRESSURE (PSI/KPa)	TEMPERATU (°F/°C)

REMARKS:

00188

EXPERTEST PTY LTD. — BHP GAUGE RUN DATA

CUSTOMER :	SANTOS LTD	PERFORATIONS: 9231' - 9868'KB	PAGE: 1 OF 2
WELL NAME:	COOMBA #1	FORMATION : PATCHAWARRA	DATE: 20/07/93
TEST TYPE :	L.E.T.B.H.P.		OPR : S TAYLOR

GAUGE DATA	UPPER PRESSURE GAUGE	LOWER PRESSURE GAUGE	TEMPERATURE GAUGE
ELEMENT SERIAL NO.	29387	57414	
ELEMENT RANGE	2975	3000	
RECORDING SECTION SERIAL NO.	12959	59791	
DATE OF CALIBRATION: AT 290°F	12/7/93	12/7/93	
CLOCK/BATTERY SERIAL NO.	F15295	F15309	
CLOCK/BATTERY RANGE	120	120	
LEAD SCREW/BATTERY TYPE	15	15	
ENGAGE STYLUS/BATTERY DATE 20/7/93 TIME	13:56	13:56	
DISENGAGE STYLUS/BATTERY DATE 25/7/93 TIME	10:37	10:37	

RUN DATA		TIME (HOURS)	TUBING PRESSURE KPa)	ANNULUS PRESSURE KPa)
DATE	: 20/07/93			
PRESSURE LUBRICATOR	:	14:00	2310	0
RUN IN HOLE	:	16:00	2324	
ON DEPTH AT	: 9550 FT/M	16:34	2316	
DATE	: 25/07/93			
PULL OUT OF HOLE	:	08:00	4540	
AT SURFACE	:	08:22	4540	
DEPRESSURE LUBRICATOR	:	10:22	4540	

MAXIMUM BHT AT 9550 FT = 272 °F

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

DATE	TIME	REMARKS
21/07/93		WELL FLOWING ON 100% CHOKE.
		NO TEMPERATURE ELEMENT RUN.

ET 108

00189

SUB-SURFACE PRESSURE SURVEY

CO. SANTOS		RUN 01 FIELD COOBA		WELL 1	
EFF DEPTH		WELL STAT		TOOL HUNG	9544'KB
CASING	-	CASING PRESS		ON BOTTOM	1634 20/7
LINER	-	TUBING PRESS		OFF BOTTOM	0800 25/7
DATE	930721	ELEMENT RANGE	0 - 3120	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	0800 21/7
MAX TEMP	272	PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	29387	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	LET/BHP		

SURVEY DATA

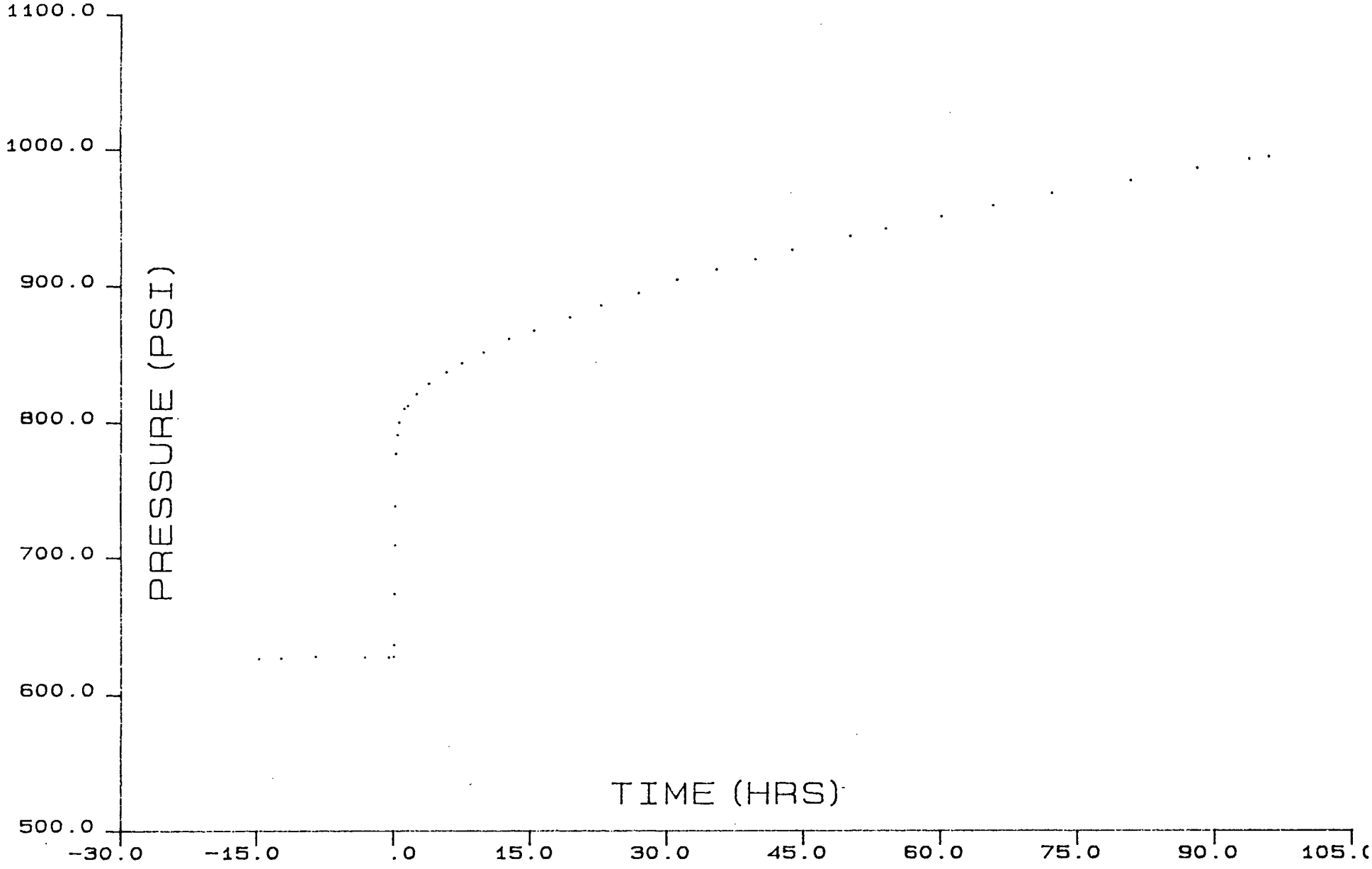
CO. SANTOS RUN 01 FIELD COOBA WELL 1

	TIME	P-T	DP-DT	DTIME		TIME	P-T	DP-DT	DTIME
SHUT IN	8:00	628.0	628.0	.0		10:54	894.8	894.8	26.9
	8:02	636.6	636.6	.0		15:08	904.7	904.7	31.1
	8:05	673.7	673.7	.1		19:27	912.0	912.0	35.5
	8:08	709.4	709.4	.1		23:44	919.1	919.1	39.7
	8:09	738.3	738.3	.2		3:48	925.9	925.9	43.8
	8:16	776.9	776.9	.3		10:09	936.0	936.0	50.2
	8:25	790.8	790.8	.4		14:02	941.6	941.6	54.0
	8:37	800.2	800.2	.6		20:09	950.7	950.7	60.2
	9:12	810.2	810.2	1.2		1:49	958.5	958.5	65.8
	9:35	812.5	812.5	1.6		8:16	967.3	967.3	72.3
	10:33	821.1	821.1	2.5		16:54	976.9	976.9	80.9
	11:52	828.8	828.8	3.9		0:10	985.7	985.7	88.2
	13:49	837.0	837.0	5.8		5:51	992.3	992.3	93.9
	15:30	843.8	843.8	7.5	END BUILD UP	8:00	994.0	994.0	96.0
	17:53	851.8	851.8	9.9	-	6:53	626.4	626.4	-14.9
	20:40	861.8	861.8	12.7	-	4:24	627.1	627.1	-12.4
	23:26	867.9	867.9	15.4	-	0:36	628.2	628.2	-8.6
	3:22	877.7	877.7	19.4		4:49	627.2	627.2	-3.2
	6:47	886.2	886.2	22.8		7:27	627.1	627.1	-.5

LUBRICATOR DWT; IN: 335 psi / OUT: 658 psi
LUBRICATOR AMERADA; IN: 325 psi / OUT: 662 psi
ELEMENT #57414 WAS ALSO RUN

COOBA #1 LET/BHP JULY 1993

ELEMENT #29387 @ 9544'KB



00191

EXPERTEST PTY. LTD.

BHP/BHT GAUGE RUN DATA

CUSTOMER : SANTOS LTD	PERFORATIONS: 9231' - 9868'KB	PAGE: 2 OF 2
WELL NAME: COOBA #1	FORMATION : PATCHAWARRA	DATE: 25/07/93
TEST TYPE : S.G.S.		OPR : P BLACK

GAUGE DATA	UPPER PRESSURE GAUGE	LOWER PRESSURE GAUGE	TEMPERATURE GAUGE
ELEMENT SERIAL NO.	29387	57414	
ELEMENT RANGE	2975	3000	
RECORDING SECTION SERIAL NO.	12959	59791	
DATE OF CALIBRATION: AT 290°F	12/7/93	12/7/93	
CLOCK/BATTERY SERIAL NO.	2431	2297	
CLOCK/BATTERY RANGE	3	3	
LEAD SCREW/BATTERY TYPE	15	15	
ENGAGE STYLUS/BATTERY DATE 25/7/93 TIME	10:49	10:49	
DISENGAGE STYLUS/BATTERY DATE 25/7/93 TIME	13:45	13:45	

RUN DATA	TIME (HOURS)	TUBING PRESSURE KPa)	ANNULUS PRESSURE KPa)
DATE : 25/07/93			
PRESSURE LUBRICATOR :	10:56	4540	0
RUN IN HOLE :	11:16	4540	
ON DEPTH AT : 9550' FT/M	12:42	4560	
DATE : 25/07/93			
PULL OUT OF HOLE :	12:57	4560	
AT SURFACE :	13:18	4570	
DEPRESSURE LUBRICATOR :	13:38	4580	

MAXIMUM BHT AT 9550 FT = 272 °F

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

DATE	TIME	REMARKS
		STATIC GRADIENT CONDUCTED AT THE COMPLETION OF A PBU SURVEY.

00192

ET 108

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 Sunday, 25th July 1993.

STATIC PRESSURE GRADIENT REPORT

CLIENT	LOCATION	FORMATION
SANTOS LTD.	COOBA # 1	PATCHAWARRA

PRESSURE ELEMENT DATA

POSITION	SERIAL NO.	RANGE	CALIBRATED
Top	29387	2975	12/ 7/93
Bottom	57414	3000	12/ 7/93

WELL DATA

PARAMETER	VALUE
DWT In	658 PSIG
DWT Out	664 PSIG
Max BHT	272 F

	TOP ELEMENT			BOTTOM ELEMENT		
DEPTH FT KB	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT
LUB.	0.4290	657.5	-	0.4200	644.8	-
1000	0.4480	686.9	0.029	0.4400	675.9	0.031
2000	0.4685	718.7	0.032	0.4610	708.6	0.033
3000	0.4880	749.0	0.030	0.4810	739.7	0.031
4000	0.5070	778.4	0.030	0.5010	770.7	0.031
5000	0.5270	809.5	0.031	0.5210	801.8	0.031
6000	0.5460	839.0	0.030	0.5400	831.4	0.030
7000	0.5650	868.5	0.030	0.5610	864.0	0.033
7500	0.5740	882.5	0.028	0.5710	879.5	0.031
8000	0.5835	897.3	0.030	0.5810	895.1	0.031
8500	0.5930	912.0	0.030	0.5910	910.6	0.031
9000	0.6020	926.0	0.028	0.6015	926.9	0.033
9550	0.6495	1000.0	0.134	0.6500	1002.2	0.137
LUB.	0.4280	655.9	-	0.4290	658.8	-

GENERAL REMARKS

EXPERTEST PTY. LTD.

STATIC PRESSURE GRADIENT SURVEY

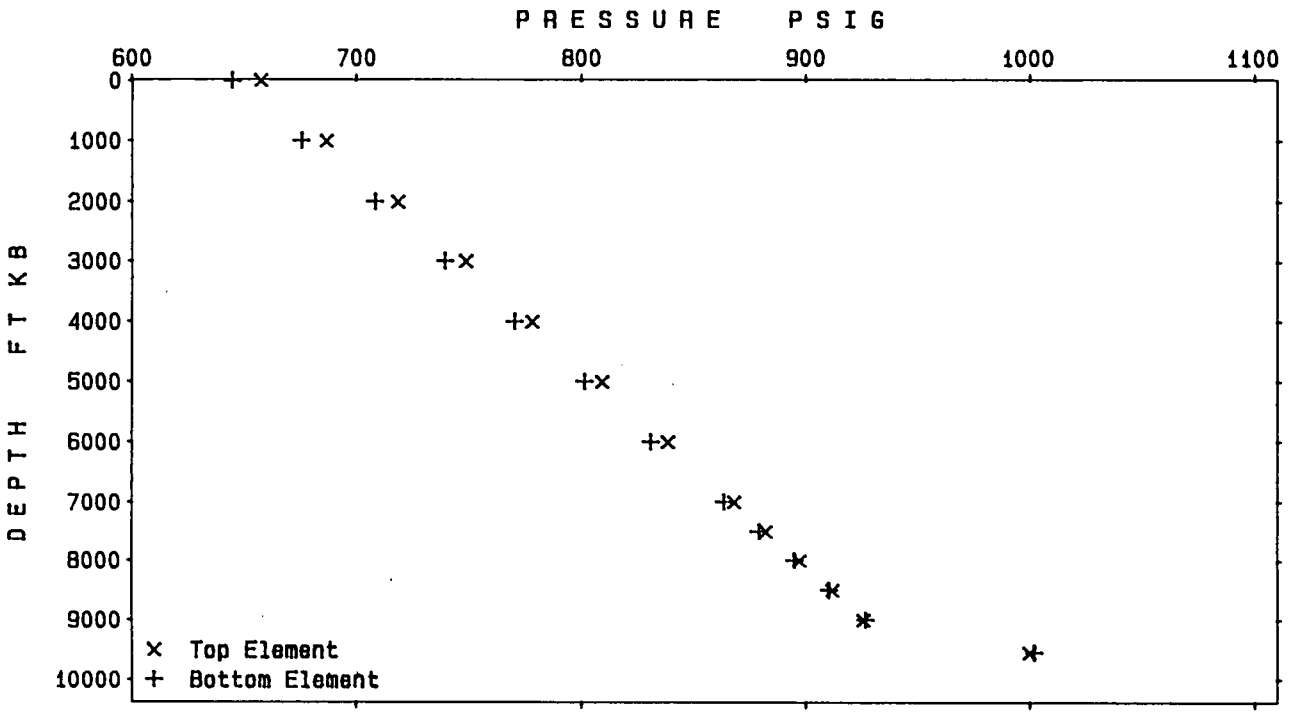
Location: COOBA # 1	Tested: 25th July 1993.
Formation: PATCHAWARRA	Client: SANTOS LTD.

PRESSURE ELEMENT DATA

Position	Serial No	Range	Calibrated
Top	29387	2975	12/ 7/93
Bottom	57414	3000	12/ 7/93

WELL DATA

DWT In	658 PSIG
DWT Out	664 PSIG
Max BHT	272 F



Depth FT KB	TOP ELEMENT Deflection Inches	TOP ELEMENT Pressure PSIG	TOP ELEMENT Gradient PSI/FT	BOTTOM ELEMENT Deflection Inches	BOTTOM ELEMENT Pressure PSIG	BOTTOM ELEMENT Gradient PSI/FT
LUB.	0.4290	657.5	-	0.4200	644.8	-
1000	0.4480	686.9	0.029	0.4400	675.9	0.031
2000	0.4685	718.7	0.032	0.4610	708.6	0.033
3000	0.4880	749.0	0.030	0.4810	739.7	0.031
4000	0.5070	778.4	0.030	0.5010	770.7	0.031
5000	0.5270	809.5	0.031	0.5210	801.8	0.031
6000	0.5460	839.0	0.030	0.5400	831.4	0.030
7000	0.5650	868.5	0.030	0.5610	864.0	0.033
7500	0.5740	882.5	0.028	0.5710	879.5	0.031
8000	0.5835	897.3	0.030	0.5810	895.1	0.031
8500	0.5930	912.0	0.030	0.5910	910.6	0.031
9000	0.6020	926.0	0.028	0.6015	926.9	0.033
9550	0.6495	1000.0	0.134	0.6500	1002.2	0.137
LUB.	0.4280	655.9	-	0.4290	658.8	-

GENERAL REMARKS