

Open File Envelope

OPEN FILE ENVELOPE NO. 5623

PPL 13

EROMANGA AND COOPER BASINS

BRUMBY 3

TEST REPORTS

Submitted by

Delhi Petroleum Pty Ltd

1985

© South Australian Department of Mines and Energy: 7/2/94

MINES AND ENERGY
SOUTH AUSTRALIA



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ENVELOPE 5623

TENEMENT: PPL 13; Eromanga and Cooper Basins

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

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SEPARATELY HELD DATA

TRANSPARENCIES: (Held in Document Storage Centre)

Plans marked with +T on contents page are also held as transparencies in Cylinder 6001/1.

SADME

00003

REPORT N°

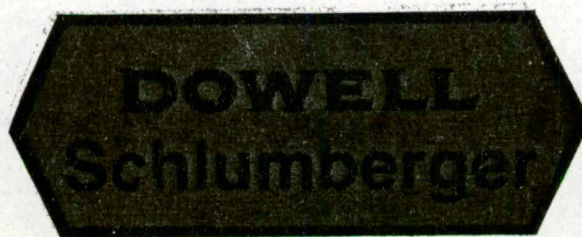
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JOB N°

INVOICE/SIR.

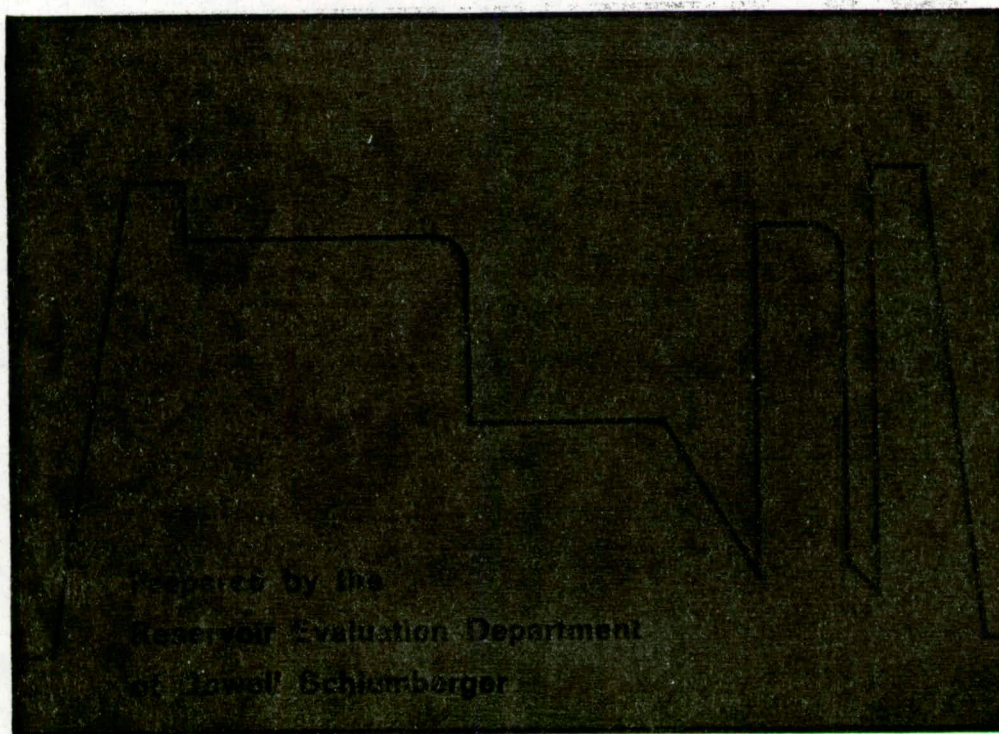
DATE

28/9/84



TECHNICAL REPORT

COMPANY DELHI PETROLEUM WELL BRUMBY NO. 3 FIELD BRUMBY
TEST N° 1 COUNTRY AUSTRALIA



Prepared by the
Reservoir Evaluation Department
of Dowell Schlumberger



CONFIRMATION OF REPORT DISTRIBUTION

TO DELHI PETROLEUMWELL BRUMBY NO. 3 FIELD BRUMBY TEST N° 1COUNTRY AUSTRALIA DATE 28/9/84

Dowell Schlumberger has been requested to furnish the following companies with Technical Reports. This distribution of Technical Reports will be used for :

☐ All tests on this well,☐ This one test only,

unless otherwise notified.

 TECHNICAL REPORT (S)

_____ TECHNICAL REPORT (S)

_____ TECHNICAL REPORT (S)

_____ TECHNICAL REPORT (S)

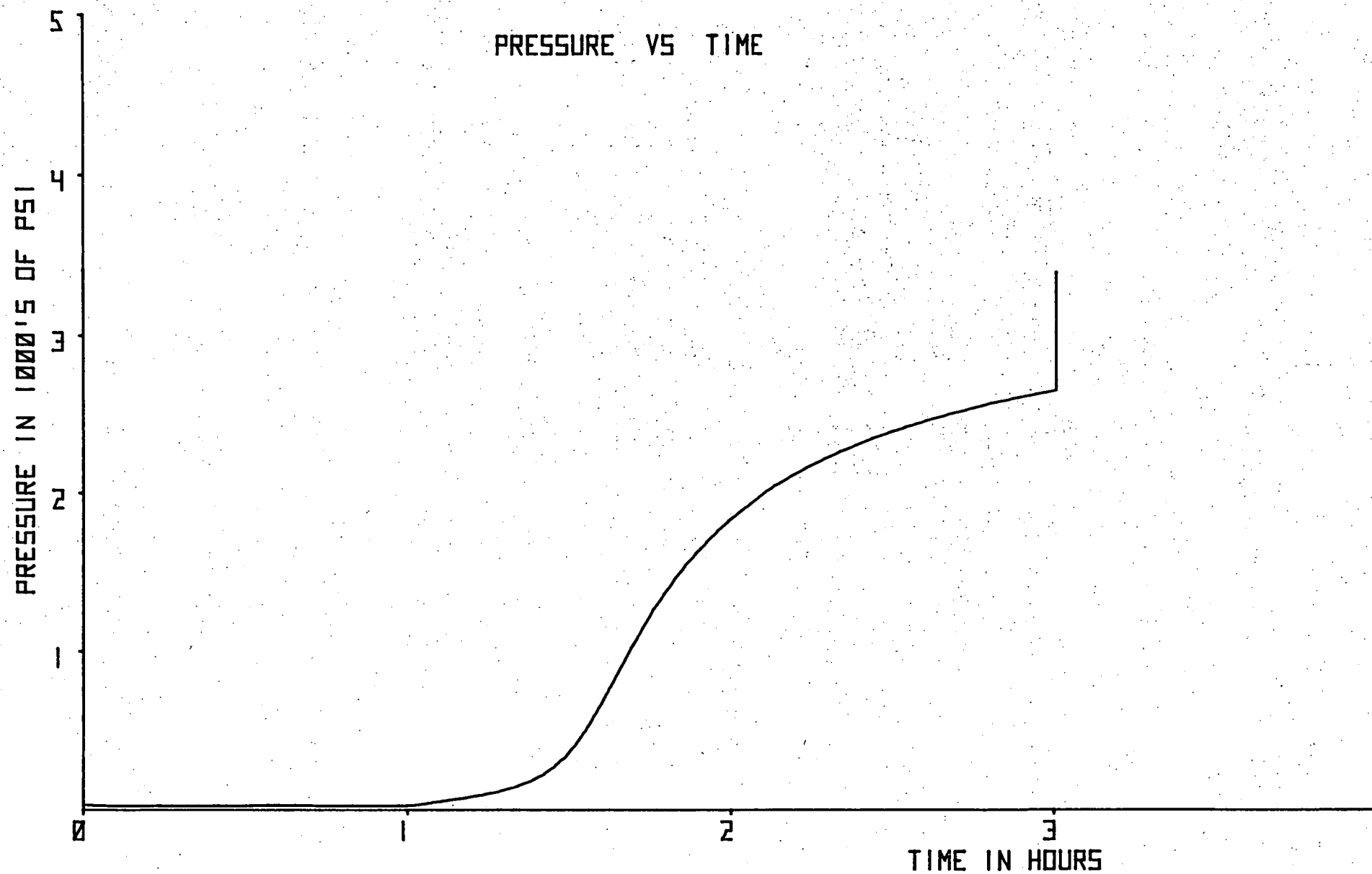
_____ TECHNICAL REPORT (S)

_____ TECHNICAL REPORT (S)

WELL: BRUMBY 3
TEST #1

DOWELL SCHLUMBERGER

GAUGE: J2006 6400PSI
GAUGE DEPTH (FT) 7003.70FT



00005

WELL: BRUMBY 3
TEST #1

DOWELL SCHLUMBERGER

GAUGE: J2006 6400PSI
GAUGE DEPTH (FT) 7003.70FT

HORNER PLOT FOR SHUT-IN # 1

LOG[(T+DELTA T)/DELTA T]

0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32
PRESSURE IN 100'S OF PSI

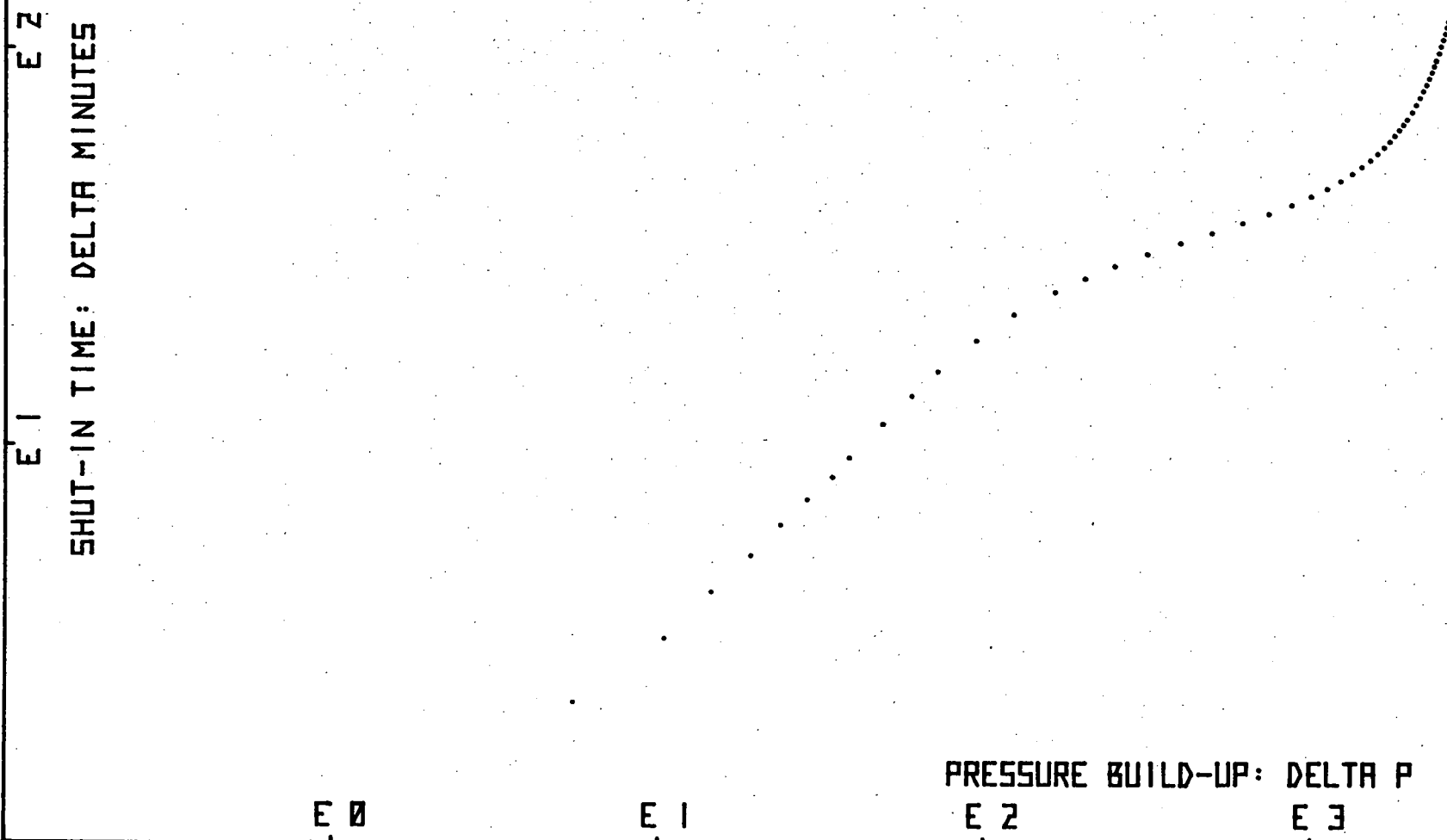
9000h

WELL: BRUMBY 3
TEST #1

DOWELL SCHLUMBERGER

GAUGE: J2006 6400PSI
GAUGE DEPTH (FT) 7003.70FT

MCKINLEY PLOT FOR SHUT-IN # 1



00007

RECORDER NO : J2006

CAPACITY : 6400 psi

DEPTH : 7003.70 ft

OPENING : Inside

TEMPERATURES : 232°F

CLOCK NO : 9-1437 - 48 hrs

CLOCK TRAVEL : 0.0208 in/min

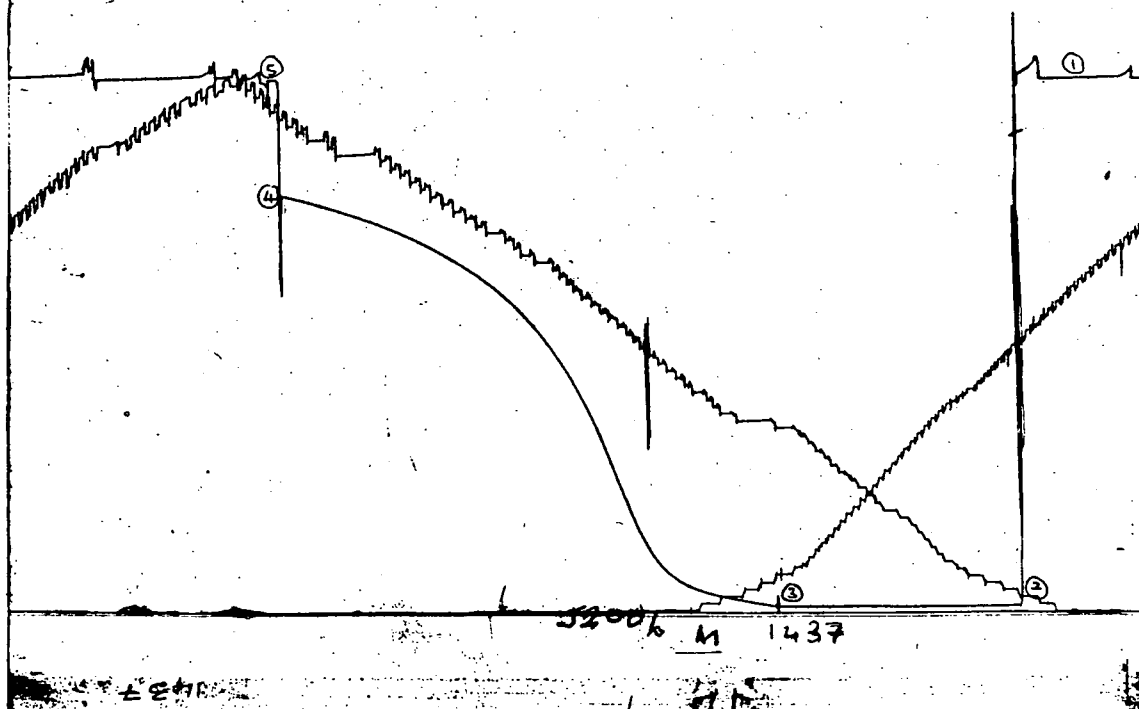
CALIBRATION DATA AT

M = 1241.1671 psi/1 inch deflection

A = - 9.0385

 $\text{PRESSURE (PSI)} = \text{DEFLECTION (INS)} \times M \pm A$ PRESSURE DATA FROM THIS CHART IS PRESENTED ON THE NEXT PAGE.

inside
below
J2006
9-1437
Brumby 3.
4 Sept 84.
DST 1



PRESSURE DATA FOR RECORDER : J2006 psi

DESCRIPTION	LABEL POINT	PRESSURE (PSI)	TIME GIVEN (min)	TIME COMPUTED (min)
INITIAL HYDROSTATIC	1	3411	-	-
INITIAL FLOW (1)	2	30	0.0	0.0
INITIAL FLOW (2)	3	27	60.0	59.2
INITIAL SHUT-IN	4	2644	120.0	121.2
SECOND FLOW (1)				
SECOND FLOW (2)				
SECOND SHUT-IN				
THIRD FLOW (1)				
THIRD FLOW (2)				
THIRD SHUT-IN				
FINAL FLOW (1)				
FINAL FLOW (2)				
FINAL SHUT-IN				
FINAL HYDROSTATIC	5	3392	-	-

REMARK :

WELL: BRUMBY-3

GAUGE: J2006 6400PSI

TEST# 1

GAUGE DEPTH: 7003.70FT

P R E S S U R E A N A L Y S I S

ELAPSED MINUTES	DELTA T MIN	PRESSURE (PSIG)	$[(T+dt) - T] / dt$	$100[(T+dt) - T] / dt$	DELTA P (PSIG)	COMMENT
0.0	0.0	3410.5				INITIAL HYDROSTATIC
0.0	0.0	30.4				BEGIN FIRST FLOW
1.0	1.0	29.2				
2.0	2.0	28.3				
3.0	3.0	28.3				
5.0	5.0	26.2				
7.0	7.0	26.2				
9.0	9.0	26.2				
14.0	14.0	26.2				
19.0	19.0	25.7				
24.0	24.0	26.5				
29.0	29.0	26.2				
34.0	34.0	28.9				
39.0	39.0	29.1				
44.0	44.0	26.2				
49.0	49.0	26.2				
59.2	59.2	26.7				END FIRST FLOW
59.2	0.0	26.7				BEGIN FIRST SHUT-IN
60.2	1.0	27.6	60.17	1.7794	0.9	
60.4	1.3	27.7	48.34	1.6843	1.0	
61.4	2.3	32.2	27.30	1.4361	5.5	
62.4	3.3	37.1	19.21	1.2835	10.4	
63.4	4.3	41.2	14.92	1.1739	14.5	
64.4	5.3	45.9	12.27	1.0889	19.2	
65.4	6.3	50.4	10.47	1.0199	23.7	
66.4	7.3	55.3	9.16	0.9620	28.5	
67.4	8.3	60.7	8.17	0.9124	34.0	
68.4	9.3	65.2	7.40	0.8691	38.5	
70.4	11.3	75.4	6.26	0.7966	48.7	
72.4	13.3	86.8	5.47	0.7377	60.1	
74.4	15.3	98.9	4.88	0.6884	72.2	
77.4	18.3	121.7	4.24	0.6276	94.9	
80.4	21.3	150.3	3.78	0.5780	123.6	
83.4	24.3	192.4	3.44	0.5366	165.7	
85.4	26.3	230.8	3.25	0.5124	204.0	
87.4	28.3	279.9	3.09	0.4906	253.2	
89.4	30.3	344.6	2.96	0.4707	317.9	
91.4	32.3	430.8	2.83	0.4525	404.1	
93.4	34.3	528.3	2.73	0.4358	501.6	

WELL: BRUMBY 3

GAUGE: J2006 6400PSI

TEST# 1

GAUGE DEPTH: 7003.70FT

P R E S S U R E A N A L Y S I S

ELAPSED MINUTES	DELTA T MIN	PRESSURE (PSIG)	$\ln(T+dt)$ /dt	$\ln(T+dt)$ /dt	DELTA P (PSIG)	COMMENT
95.4	36.3	646.7	2.63	0.4203	620.0	
97.4	38.3	770.9	2.55	0.4060	744.2	
99.4	40.3	898.1	2.47	0.3927	871.4	
101.4	42.3	1024.4	2.40	0.3803	997.7	
103.4	44.3	1143.9	2.34	0.3687	1117.2	
105.4	46.3	1257.2	2.28	0.3578	1230.5	
107.4	48.2	1355.4	2.23	0.3476	1328.7	
109.4	50.3	1451.2	2.18	0.3380	1424.5	
111.4	52.3	1537.3	2.13	0.3289	1510.6	
113.4	54.3	1614.8	2.09	0.3203	1588.1	
115.4	56.3	1687.0	2.05	0.3122	1660.3	
117.4	58.3	1754.4	2.02	0.3045	1727.7	
119.4	60.2	1816.7	1.98	0.2971	1790.0	
121.4	62.3	1873.3	1.95	0.2902	1846.6	
123.4	64.3	1926.1	1.92	0.2835	1899.4	
125.4	66.3	1975.6	1.89	0.2772	1948.9	
128.4	69.2	2042.9	1.85	0.2682	2016.2	
131.4	72.3	2102.1	1.82	0.2598	2075.4	
134.4	75.3	2157.7	1.79	0.2520	2131.0	
137.4	78.3	2209.1	1.76	0.2446	2182.3	
140.4	81.3	2255.6	1.73	0.2376	2228.9	
143.4	84.3	2298.7	1.70	0.2310	2272.0	
146.4	87.3	2339.4	1.68	0.2248	2312.7	
149.4	90.3	2376.2	1.66	0.2190	2349.5	
152.4	93.3	2411.1	1.63	0.2134	2384.4	
156.4	97.3	2454.6	1.61	0.2064	2427.9	
160.4	101.3	2493.2	1.58	0.1999	2466.5	
164.4	105.3	2528.4	1.56	0.1937	2501.7	
168.4	109.3	2561.9	1.54	0.1880	2535.2	
172.4	113.3	2591.5	1.52	0.1826	2564.8	
176.4	117.3	2618.8	1.50	0.1774	2592.1	
180.4	121.2	2644.0	1.49	0.1727	2617.3	END-FIRST SHUT-IN
180.4	121.2	3391.5				FINAL HYDROSTATIC

00012

REPORT NO F84051

RECORDER NO : J2163

CAPACITY : 6400 psi

DEPTH : 7060.27 ft

OPENING : Outside

TEMPERATURES : 246° F

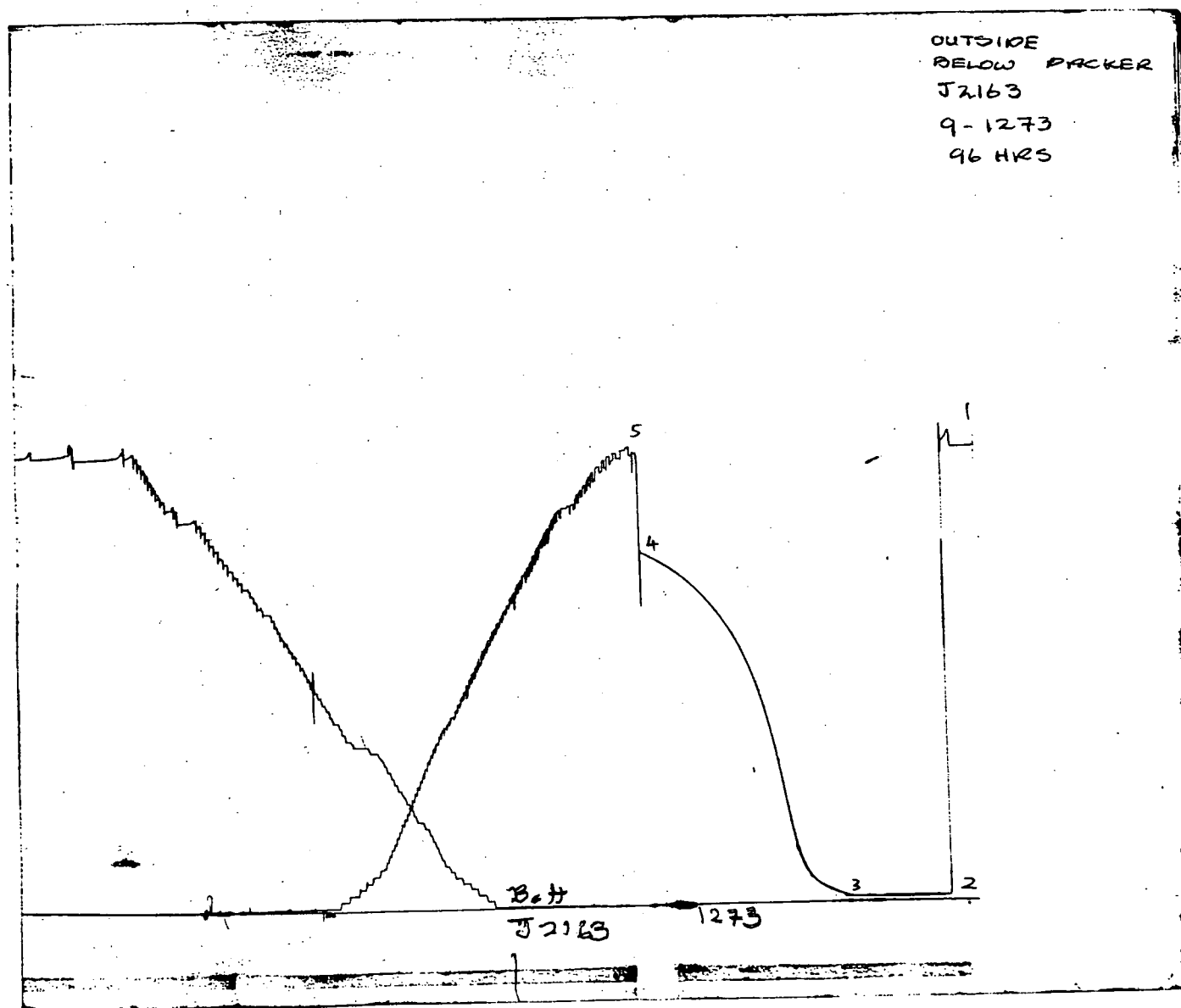
CLOCK NO : 9-1273 - 96 hrs

CLOCK TRAVEL : -

CALIBRATION DATA AT

M = -

A = -

 $\text{PRESSURE (PSI)} = \text{DEFLECTION (INS)} \times M \pm A$ PRESSURE DATA FROM THIS CHART IS PRESENTED ON THE NEXT PAGE.

RECORDER NO : J2005

CAPACITY : 6400 psi

DEPTH : 6985.68 ft

OPENING : Inside

TEMPERATURES : 228° F

CLOCK NO : 9-4110 96 hrs

CLOCK TRAVEL : -

CALIBRATION DATA AT

M = -

A = -

PRESSURE (PSI) = DEFLECTION (INS) X M ± A

PRESSURE DATA FROM THIS CHART IS PRESENTED ON THE NEXT PAGE.

J2005

Inside above MFE

9-4110

Brumby 3

DST 1

4 Sept 84

9-4110

J2005 T

Report No. F84051

WELL IDENTIFICATION

Company : DELHI PETROLEUM Well No : 3 Test No. : 1
Field : BRUMBY Location : MOOMBA Country : AUSTRALIA
Tested Interval : From 7067 Ft. to 7035 Ft.
Co-ordinates : _____
Type Test : Open Hole ☒ Casing : ☐ Conventional ☒ Straddle : ☐ Land rig ☒ Jack-up ☐ Floater ☐
Valve : MFE ☒ PCT ☐ SPRO ☐ Other : _____ with Packer ☒ Retainer ☐

HOLE DATA

Geologic Level : EPSILON Description : _____
 Net Productive Interval : _____ ft. Estimated Porosity : _____ %
 Total Depth : 7067 ft. Depths measured from : RKB Elevation : _____ ft.
 Open Hole Size : 8-1/2 in. Rat Hole Size : - in., from - ft.
 Casing Size : _____ in. lbs/ft. Liner Size : _____ in., _____ lbs/ft. from _____ ft.
 Before test : Caliper Yes ☐ No ☒ Scraper Yes ☐ No ☐ Circulation Yes ☒ for _____ hrs; No ☐

MUD DATA

Mud Type : _____ Weight : 9.4
Viscosity : _____ Water Loss _____ cc Mud Resistivity _____ at _____ °F
Filtrate Resistivity : _____ at _____ °F ; Chloride ppm : _____

INSTRUMENT AND CHART DATA

Recorder No.	J2163	J2006	J2005	
Capacity (psig)	6400	6400	6400	
Depth	7060.27	7003.70	6985.68	
Inside/Outside	OUTSIDE	INSIDE	INSIDE	
Above/Below valve	BELOW	BELOW	ABOVE	
Clock No.	9-1273	9-1437	9-4110	
Capacity (hrs.)	96	48	96	
Temperature	246 F	232 F	228 F	
Initial Hydrostatic Pressure	3433	3408	0	
Pre-flow	(1) Start Pressure	62	40	1287
	(2) Finish Pressure	62	40	28
Initial Shut-in Pressure	62	40	28	
Second Flow	(1) Start Pressure			
	(2) Finish Pressure			
Second Shut-in Pressure				
Final Flow	(1) Start Pressure			
	(2) Finish Pressure			
Final Shut-in Pressure	2677	2650	28	
Final Hydrostatic Pressure	3433	3408	28	

OPERATIONS SUMMARY

Left Station at 14 : 00 on 3/9/1984 On Location at 16 : 00 on 3/9/84
 Started Operations at 00 : 00 on 4/9/84 Finished Operations at _____ : _____ on _____
 Off Location at _____ : _____ on _____ Return Station at _____ : _____ on _____ Mileage _____

Comments :

Station : PAS MOOMBA SIR No. : _____ Date : 4/9/84
Customer _____ Tester C. DANIELS Customer B.H. DAVIS

Customer : DELHI PETROLEUM

Well No : BRUMBY 3

Test No. 1

TEST SEQUENCE AND FLOW RATE DATA

[illegible]

RECOVERY DATA

	Recovery Description	Feet	Bbls	% Oil	% Water	% Other
1	30 FT. SLIGHTLY GAS CUT MUD					
2						
3						
4						
5						
6						

	Oil-API Gravity	Gas Gravity	G.O.R.	Resistivity	Chlorides
1	° at °F			at °F	ppm
2	° at °F			at °F	ppm
3	° at °F			at °F	ppm
4	° at °F			at °F	ppm
5	° at °F			at °F	ppm
6	° at °F			at °F	ppm

Comments :

Customer : DELHI PETROLEUM

Well No.: BRUMBY NO. 3

Test No. : 1

SAMPLE CHAMBER RECOVERY DATA

SAMPLE CHAMBER RECOVERY DATA				
Sampler Drained On Location ☒ Elsewhere ☐ Name : _____ Address : _____	Recovery		Resistivity	Chlorides (ppm)
	Gas	_____ cu ft.	Water	_____ at _____ °F
	Oil	_____ c.c.	Mud	_____ at _____ °F
	Water	_____ c.c.	Mud Filtrate	_____ at _____ °F
	Mud	1540 c.c.	Pit Mud	_____ at _____ °F
	_____ °API	_____ °F	Pit Mud Filtrate	_____ at _____ °F
Gas/Oil Ratio	cu ft./bbl	Sample Chamber Pressure	40	psi.

EQUIPMENT SEQUENCE

[illegible]

Comments :

To be completed by Customer Representative

Report No. F84051

Customer : DELHI PETROLEUM Well No. : BRUMBY NO. 3 Test No. : 1

Tested Interval	Sand-stone	Lime-stone	Chalk	Clay	Shale	Other (please specify)
Major Mineral Species						
Minor Mineral Species						
Stringers or Lenses						

Open Hole : ☒ I.D. 8-1/2 in.

Is the tested interval :

In Casing : ☐ O.D. ☐ in. Wt : ☐ lb. ft. I.D. ☐ in.

Open Hole Interval : (Total Depth) 7067 ft (Foot of Casing)

Perforated Intervals : _____

In the tested interval how many productive zones do logs show : No logs
1 ☐ 2 ☐ 3 ☐ more ☐

What is the average porosity of the interval ? ☐ %

Is the interval homogeneous ? Yes ☐ No ☐

Is formation consolidation : Good ☐ Mod ☐ Low ☐

What is the clay content : % or High ☐ Mod ☐ Low ☐

Is the formation fractured Heavily ☐ Mod ☐ Little ☐

In this interval, is there expected near the wellbore :

Geological fault ? Yes ☐ No ☐

Interval thickness change ? Yes ☐ No ☐

Fluid phase contact ? Yes ☐ No ☐

—If yes :— Oil-Water ☐ Gas-Water ☐ Oil-Gas ☐

During drilling of the interval, was there :

Lost circulation ? Yes ☐ No ☐

Sand production ? Yes ☐ No ☐

Other (please specify) _____

Before testing was there a :

Scraper run ? Yes ☐ No ☐

Caliper run ? Yes ☐ No ☐

Mud circulation to bottom ? Yes ☒ No ☐

—If yes :— for how long 12 HRS If no, how long since ☐

Additional Comments : _____

Customer Representative : B.H. DAVIS

SYMBOLS USED

ΔT - INCREMENT OF TIME (MINUTES)

$\frac{T + \Delta T}{\Delta T}$ - DIMENSIONLESS TIME CONSTANT USED FOR THE HORNER PLOT

ΔT IS THE INCREMENT OF SHUT-IN TIME (MINUTES)

T IS TOTAL FLOW TIME PRECEDING SHUT-IN (MINUTES)

LOG - LOGARITHM TO BASE 10 OF $\frac{T + \Delta T}{\Delta T}$

$P_w - P_f$ - PRESSURE BUILD-UP ABOVE FINAL FLOWING PRESSURE PRECEDING THE BUILD UP WHICH IS USED FOR THE MCKINLEY PLOT.

507

00019



TICKET NO. 32936300

09-JAN-85

MOOMBA

FORMATION TESTING SERVICE REPORT

LEGAL LOCATION SEC. - TYP. - RNG.	WELL NO.	TEST NO.	TESTED INTERVAL	LEASE OWNER/COMPANY NAME
BRUNBY	3	2	7546.1 - 7568.1	DELHI/SANTOS
SEE REMARKS	FIELD AREA	COOPER BRSTN	COUNTRY	STATE
			SOUTH AUSTRALIA	AUSTRALIA OR

500 #

B

C

D

329363-80.14

GAUGE NO: 8014 DEPTH: 7509.0 BLANKED OFF: NO HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC					
B	INITIAL FIRST FLOW		16.0			
C	FINAL FIRST FLOW		70.0	120.0	121.0	F
C	INITIAL FIRST CLOSED-IN		70.0			
D	FINAL FIRST CLOSED-IN	74	70.0	240.0	239.0	C
E	FINAL HYDROSTATIC					

60021

609

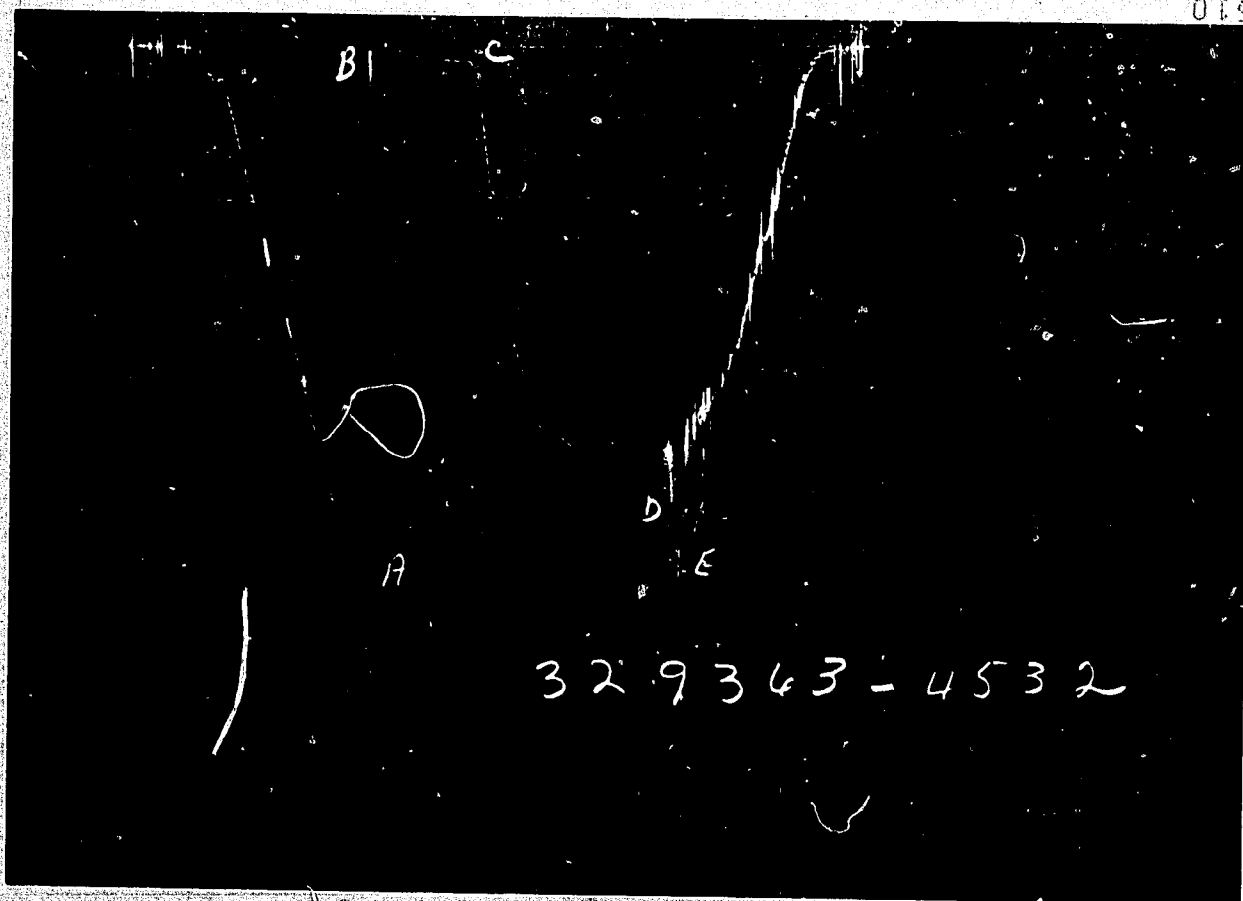
329363-4531

GAUGE NO: 4531 DEPTH: 7530.0 BLANKED OFF: NO HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	3460	3439.7			
B	INITIAL FIRST FLOW	83	82.1			
C	FINAL FIRST FLOW	89	89.2	120.0	121.0	F
C	INITIAL FIRST CLOSED-IN	89	89.2			
D	FINAL FIRST CLOSED-IN	2966	2946.5	240.0	239.0	C
E	FINAL HYDROSTATIC	3417	3420.3			

00022

019



GAUGE NO: 4532 DEPTH: 7564.0 BLANKED OFF: YES HOUR OF CLOCK: 24

ID	DESCRIPTION	PRESSURE		TIME		TYPE
		REPORTED	CALCULATED	REPORTED	CALCULATED	
A	INITIAL HYDROSTATIC	3473	3451.4			
B	INITIAL FIRST FLOW	49	55.3			
C	FINAL FIRST FLOW	98	99.2	120.0	121.0	F
C	INITIAL FIRST CLOSED-IN	98	99.2			
D	FINAL FIRST CLOSED-IN	2954	2933.5	240.0	239.0	
E	FINAL HYDROSTATIC	3434	3429.0			

TTS
00023

EQUIPMENT & HOLE DATA

FORMATION TESTED: PATCHAWARRA
NET PAY (ft): _____
GROSS TESTED FOOTAGE: 22.0
ALL DEPTHS MEASURED FROM: KELLY BUSHING
CASING PERFS. (ft): _____
HOLE OR CASING SIZE (in): 8.500
ELEVATION (ft): 290
TOTAL DEPTH (ft): 8171.0
PACKER DEPTH(S) (ft): 7546, 7568
FINAL SURFACE CHOKE (in): 0.500
BOTTOM HOLE CHOKE (in): 0.750
MUD WEIGHT (lb/gal): 9.10
MUD VISCOSITY (sec): 38
ESTIMATED HOLE TEMP. (°F): _____
ACTUAL HOLE TEMP. (°F): 260 @ 8167.0 ft

TICKET NUMBER: 32936300DATE: 9-12-84 TEST NO: 2TYPE DST: OFF BT. STRADDLEHALLIBURTON CAMP:
MOOMBATESTER: D. BURT

WITNESS: _____

DRILLING CONTRACTOR:
S & T #14FLUID PROPERTIES FOR
RECOVERED MUD & WATER

SOURCE

RESISTIVITY

CHLORIDES

_____	_____ @ _____ °F	_____ ppm
_____	_____ @ _____ °F	_____ ppm
_____	_____ @ _____ °F	_____ ppm
_____	_____ @ _____ °F	_____ ppm
_____	_____ @ _____ °F	_____ ppm
_____	_____ @ _____ °F	_____ ppm

SAMPLER DATA

Pstg AT SURFACE: _____

cu.ft. OF GAS: _____

cc OF OIL: _____

cc OF WATER: _____

cc OF MUD: _____

TOTAL LIQUID cc: _____

HYDROCARBON PROPERTIES

OIL GRAVITY (°API): _____ @ _____ °F
GAS/OIL RATIO (cu.ft. per bbl): _____
GAS GRAVITY: _____

CUSHION DATA

TYPE AMOUNT WEIGHT

_____	_____	_____
_____	_____	_____

RECOVERED:

144' OF MUD CUT WATER

MEASURED FROM
TESTER VALVE

REMARKS:

LEGAL LOCATION: LAT. 28 DEGREES 25' 14.0"S, LONG. 140 DEGREES 58' 20.4"E.

HYDROSTATICS INDICATE 8.8#/GALLONS OF MUD IN WELL.

512

UUU24

[illegible]

815
00025

TICKET NO: 32936300
CLOCK NO: 6596 HOUR: 24



GAUGE NO: 8014
DEPTH: 7509.0

REF	MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
FIRST FLOW					
B 1	0.0	16.0			
2	20.0	27.8	11.8		
3	40.0	35.9	8.1		
4	60.0	44.9	9.1		
5	80.0	52.2	7.2		
6	100.0	58.1	5.9		
C 7	121.0	70.0	12.0		
FIRST CLOSED-IN					
C 1	0.0	70.0			
D 2	239.0	70.0	0.0	80.3	0.178

REF	MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$

REMARKS:

4TS
00026

TICKET NO: 32936300
CLOCK NO: 7023 HOUR: 24



GAUGE NO: 4531
DEPTH: 7530.0

REF	MINUTES	PRESSURE	ΔP	$\frac{1 \times \Delta t}{1 + \Delta t}$	$\log \frac{1 + \Delta t}{\Delta t}$
FIRST FLOW					
B 1	0.0	33.1			
2	20.0	43.7	10.6		
3	40.0	54.8	11.1		
4	60.0	64.8	10.0		
5	80.0	73.6	8.8		
6	100.0	80.0	6.4		
C 7	121.0	89.2	9.2		
FIRST CLOSED-IN					
C 1	0.0	89.2			
2	15.0	552.4	463.2	13.3	0.958
3	30.0	1351.7	1262.5	24.0	0.702
4	45.0	1866.9	1777.7	32.8	0.567
5	60.0	2163.1	2073.9	40.1	0.480
6	75.0	2348.0	2258.8	46.3	0.417
7	90.0	2484.6	2395.4	51.6	0.370
8	105.0	2585.1	2495.9	56.2	0.333
9	120.0	2665.2	2576.0	60.3	0.303
10	135.0	2722.4	2633.2	63.8	0.278
11	150.0	2774.5	2685.3	67.0	0.257
12	165.0	2813.7	2724.5	69.3	0.239
13	180.0	2851.0	2761.8	72.4	0.223
14	195.0	2881.8	2792.6	74.7	0.210
15	210.0	2910.6	2821.4	76.8	0.198
16	225.0	2931.3	2842.1	78.7	0.187
D 17	239.0	2948.5	2859.3	80.3	0.178

REF	MINUTES	PRESSURE	ΔP	$\frac{1 \times \Delta t}{1 + \Delta t}$	$\log \frac{1 + \Delta t}{\Delta t}$

REMARKS:

STG
00027

TICKET NO: 32936300
CLOCK NO: 16139 HOUR: 24



GAUGE NO: 4532
DEPTH: 7564.0

REF	MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$	REF	MINUTES	PRESSURE	ΔP	$\frac{t \times \Delta t}{t + \Delta t}$	$\log \frac{t + \Delta t}{\Delta t}$
FIRST FLOW											
B	1	0.0	55.3								
	2	20.0	54.1	-1.1							
	3	40.0	68.4	14.3							
	4	60.0	77.3	8.9							
	5	80.0	85.4	8.1							
	6	100.0	91.9	6.5							
C	7	121.0	99.2	7.3							
FIRST CLOSED-IN											
C	1	0.0	99.2								
	2	15.0	497.9	398.7	13.3	0.958					
	3	30.0	1311.9	1212.8	24.0	0.702					
	4	45.0	1824.4	1725.2	32.8	0.567					
	5	60.0	2135.1	2035.9	40.1	0.480					
	6	75.0	2338.0	2238.8	46.3	0.417					
	7	90.0	2478.3	2379.1	51.6	0.370					
	8	105.0	2582.9	2483.7	56.2	0.333					
	9	120.0	2664.9	2565.7	60.3	0.303					
	10	135.0	2728.2	2629.0	63.8	0.278					
	11	150.0	2781.2	2682.1	67.0	0.257					
	12	165.0	2824.0	2724.8	69.8	0.239					
	13	180.0	2859.7	2760.5	72.4	0.223					
	14	195.0	2891.4	2792.2	74.7	0.210					
	15	210.0	2920.4	2821.2	76.8	0.198					
	16	225.0	2945.5	2846.3	78.7	0.187					
D	17	239.0	2963.5	2864.3	80.3	0.178					

REMARKS:

919

TICKET NO. 329363000028

		O.D.	I.D.	LENGTH	DEPTH	
1		DRILL PIPE.....	4.500	3.826	7134.1	
3		DRILL COLLARS.....	6.250	2.875	340.7	
50		IMPACT REVERSING SUB.....	6.000	3.000	1.0	7475.3
3		DRILL COLLARS.....	6.250	2.875	30.8	
5		CROSSOVER.....	5.750		1.0	
80		AP RUNNING CASE.....	5.000	2.250	4.1	7509.0
5		CROSSOVER.....	5.000	2.200	1.0	
12		DUAL CIP VALVE.....	5.000	0.870	4.9	
63		DRAIN VALVE.....	5.000	2.200	5.7	
60		HYDROSPRING TESTER.....	5.000	0.750	5.3	7528.7
80		AP RUNNING CASE.....	5.000	2.250	4.1	7530.0
15		JAR.....	5.000	1.750	5.0	
16		VR SAFETY JOINT.....	5.000	1.000	2.8	
17		PRESSURE EQUALIZING CROSSOVER...	5.000	3.000	1.0	
70		OPEN HOLE PACKER.....	6.000	1.530	5.8	7546.0
20		FLUSH JOINT ANCHOR.....	5.000	2.370	14.0	
5		CROSSOVER.....	4.625	2.750	1.0	
81		BLANKED-OFF RUNNING CASE.....	5.000		4.1	7564.0
70		OPEN HOLE PACKER.....	6.000	1.530	5.8	7568.0
5		CROSSOVER.....	4.500	1.625	0.9	
14		ANCHOR PIPE SAFETY JOINT.....	5.000	1.500	4.3	
5		CROSSOVER.....	5.750	2.250	1.0	
4		FLEX WEIGHT.....	4.500	2.875	277.2	
3		DRILL COLLARS.....	6.250	2.875	276.3	
5		CROSSOVER.....	5.750	2.250	1.0	
20		FLUSH JOINT ANCHOR.....	5.000	2.370	34.0	
81		BLANKED-OFF RUNNING CASE.....	5.000		4.1	8167.0
TOTAL DEPTH					8171.0	
EQUIPMENT DATA						

DELHI PETROLEUM PTY. LTD.

VELOCITY SURVEY - TIME/DEPTH CALIBRATION

BRUMBY 3

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by T.D. Hewitson
Geophysicist

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00031

A.T.P. 259P.

NORTHERN
TERRITORYQUEENSLAND
SOUTH AUSTRALIA

BIRDSVILLE TRACK RIDGE

PEDIRKA

P.E.L. 586

PATCHAWARRA EAST

PATCHAWARRA CENT.

PATCHAWARRA S.W.

MOOMBA

BRUMBY 3

TOOLACHEE

MURTA

TINGA-TINGANA

ARROWIE SECTOR

QUEENSLAND
NEW SOUTH
WALES

MARREE

L. GREGORY

MULKA

LAKE
EYRE

L. EYRE

SECTOR
SECTORPEDIRKA
COOPERCOOPER
CREEKKALLAKOPAN
CREEKTHE
WARBURTON

EYRE CREEK

DIAMANTINA
RIVERBROLGA
FLY LAKE

TIRRAMARRA

ANDREE
KANOWANA

JACK LAKE

GIDGEALPA

MOOMBA

MUDERA

BIG LAKE

YAPENI

DARALINGIE

STONYPOLY LIQUIDS LINE

ADELAIDE GAS LINE

STRZELECKI CK

STRZELECKI

NAPPA-MURT

MCKINLAY

TOOLACHEE

MUNKARIE

BRUMBY

KIDMAN

NARABOOKA

DELLA

WILPINNIE

DULLINGARI

BURKE

KILCHEE

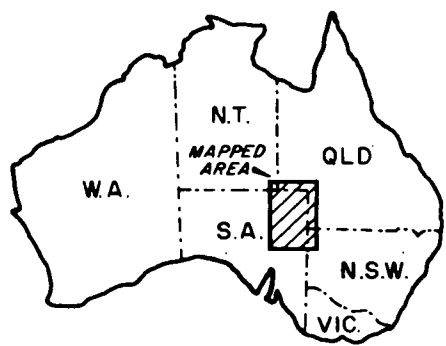
KERNA

MUNKARIE

BRUMBY

MUNKARIE

BRUMBY



DELHI PETROLEUM PTY. LTD.

LOCATION MAP

BRUMBY 3

P.E.L. 586 SOUTH AUSTRALIA

SCALE 1 2000000
KILOMETRES 20 0 20 40 60 80 100 120 KILOMETRES

Author B. JENSEN-SCHMIDT

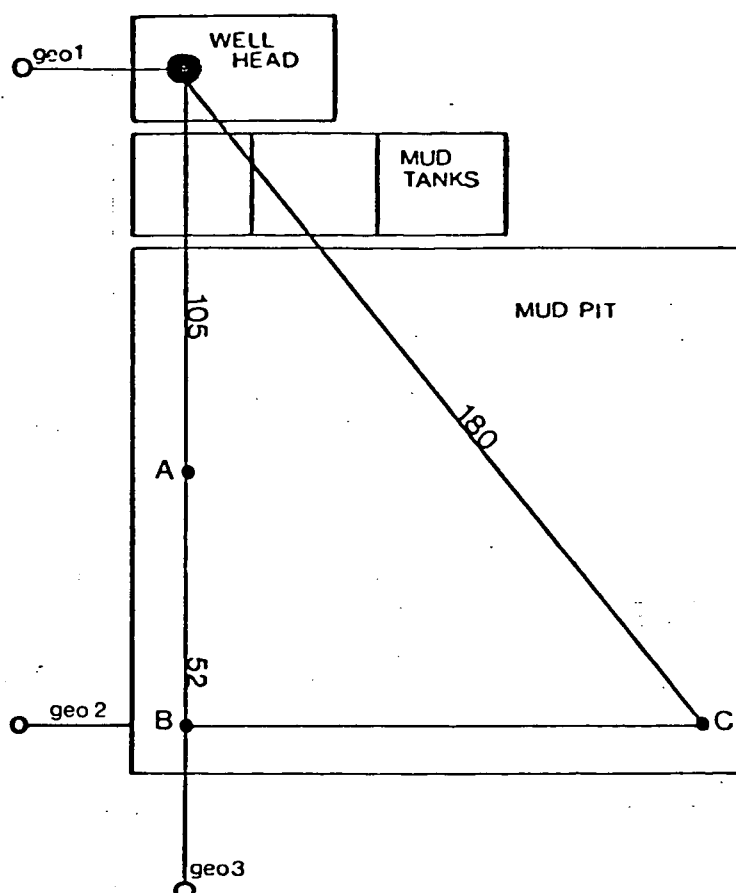
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Date : 16 AUG 84

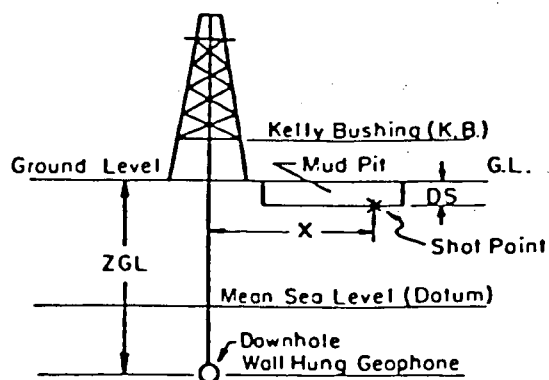
Drafted : D.R.OWEN

File : SF-30

Fig. I



- SHOT POINT
- REFERENCE GEOPHONE



$$T = T_0 \cos \left[\tan^{-1} \left(\frac{X}{ZGL - DS} \right) \right]$$

T_0 = Time from Shot Point to downhole geophone. (record time)

T = Time for vertical ray path from shot point level at well-head to downhole geophone level.

SHOT POINT	A	B	C	D
Depth Relative to G.L. at K.B.	6	6	6	
Horizontal Distance from K.B.	105	157	180	

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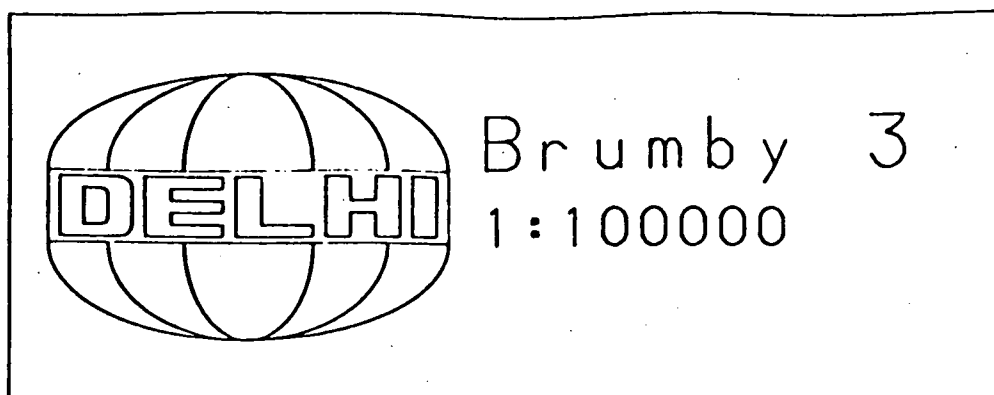
LOCATION DIAGRAM BRUMBY 3 WELL VELOCITY SURVEY

DATE: 17 0185

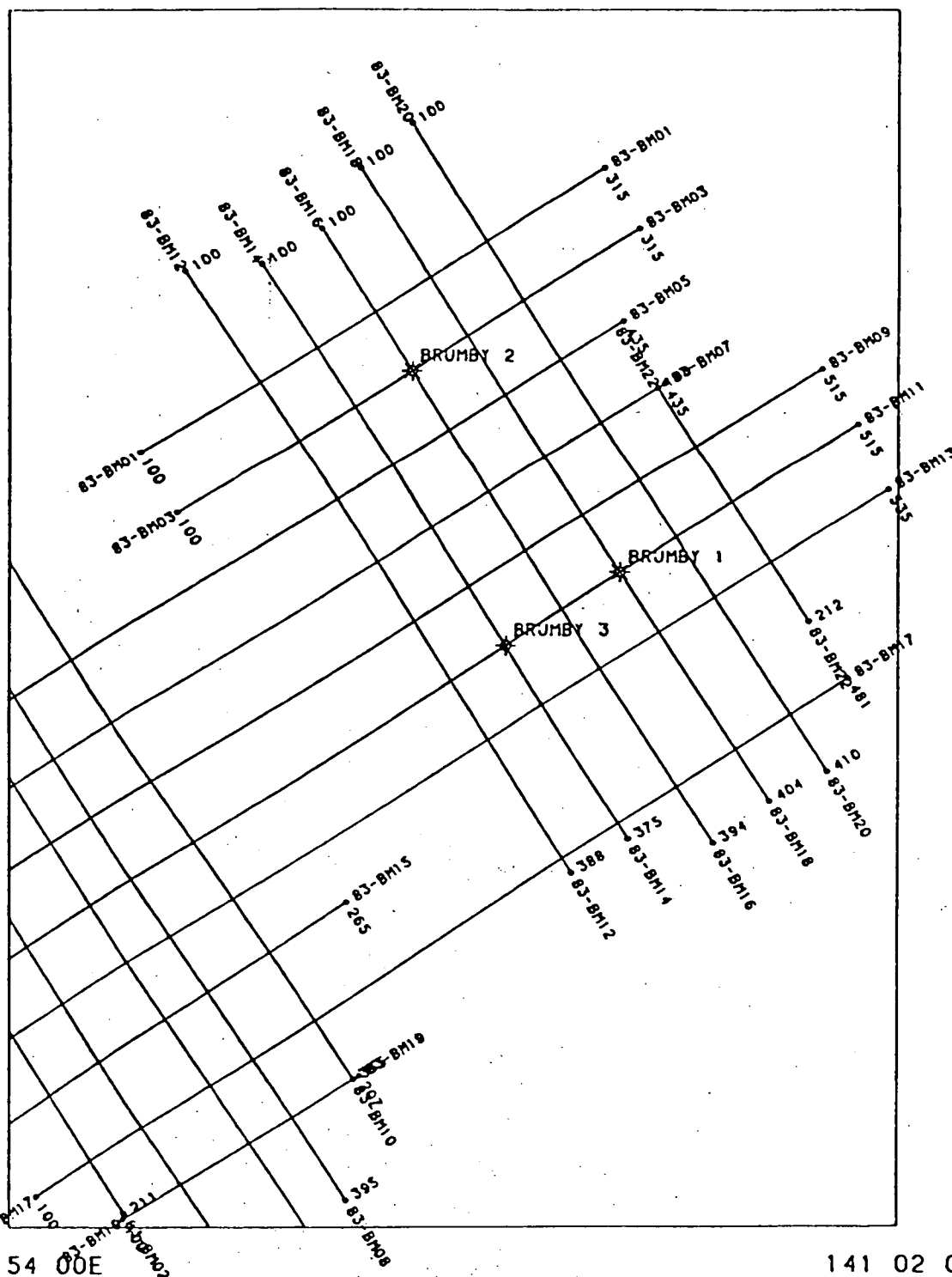
DRAFTED: TDH

DWG No.

FIGURE 2



28 20 00S



28 30 00S

140 54 00E

141 02 00E

Figure 3

VELOCITY SURVEY-TIME/DEPTH CALIBRATIONBRUMBY 31.0 INTRODUCTION

A well velocity survey was conducted by Delhi Petroleum Pty. Ltd. at the Brumby 3 wellsite on Monday 10th September, 1984.

Velocity Data Pty. Ltd., of Brisbane were the recording contractors, providing the recording equipment and down-hole tool used in the survey.

Twenty nine good quality records were obtained at twenty five different levels using ANZOMEX boosters detonated in the mud pit as the energy source. The down-hole tool was a wall-locking vertical motion geophone device.

Check shots at datum (290 ft*) were taken to confirm the static correction used in the processing of the line 83-BM11.

A Time/Depth curve was computed by fitting the integrated sonic time curve to the check-shot data by the least squares method.

* Note: all depths are below K.B. unless otherwise specified.

2.0 BRUMBY 3 DEPTH PROGNOSSES

Prognoses of formation tops at Brumby 3 were based on an interpretation of seismic data recorded in the Brumby area.

Stratigraphic control was obtained from the nearby Brumby No. 1 and 2 wells.

TABLE 1

COMPARISON OF WELLTOP AND PROGNOSSED DEPTHS

DEPTH (feet below M.S.L.)

Horizon	C	P	V	Z
Prognosis	4010	5720	6975	7375
Well top	4050	5755	7034	7786
Difference	-40	-35	-59	-411

3.0 DATUM STATIC DETERMINATION

Four shots at datum were taken at three different shot locations (Figure 2) with the down-hole tool locked in casing at mean sea level, 290 ft below KB. Ground level was surveyed at 270 ft above mean sea level. The last datum shot was recorded at the end of the survey.

The mean vertical one-way time after geometrical offset correction was 61 ms (Enclosure 1). A shot depth correction of 3 msec was added due to the shots being 6 ft below the seismic elevation of 270 ft. A LVL velocity of 2000 ft/sec was used in the correction calculation.

TABLE 2
DATUM STATIC DETERMINATION

SHOT No	SHOT LOC	SHOT DEPTH (ft)	SHOT OFFSET (ft)	ARRIVAL TIME (ms)	SHOT DATUM (ms)	SURFACE - DATUM (ms)
1	A	6	105	66	60	63
2	B	6	157	71	61	64
31	B	7	157	73	60	63
3	C	6	180	74	61	64
average					61	64

3.0

DATUM STATIC DETERMINATION (Cont.)

The seismic static and velocity survey static are compared below.

TABLE 3

COMPARISON OF SEISMIC AND VELOCITY SURVEY STATIC

	SEISMIC LINE 83-BM 11 Stn. 350	VELOCITY SURVEY	DIFFERENCE
GROUND AND SHOT ELEVATION (ft)	270	270	0
DATUM STATIC (ms)	68	64	4
INTERVAL VELOCITY GROUND LEVEL TO DATUM (ft/sec)	3970	4220	250

4.0. WELLSHOOT OPERATIONS

Shots were taken at 25 levels down the hole. Fourteen levels were chosen to coincide with formation tops picked from electric logs by the well site geologist. Several intermediate shots were taken to ensure that subsurface sampling did not exceed 500 feet.

The hole condition was generally good, allowing the tool to couple satisfactorily thus keeping noise levels to a minimum. Record quality was good to excellent.

The explosive type used was ANZOMEX boosters. Various charge sizes (A, D & Q) were used according to the depth below the surface. These provided adequate energy returns.

The digital sonic (SLS) was integrated, summed and plotted against depth to produce an uncalibrated sonic T/Z curve.

The checkshot times were corrected for geometric offset and shot-to-datum static. The uncalibrated sonic T/Z curve was initially tied to the C horizon checkshot to allow drift-curve calculation. The sonic T/Z curve was then bulk shifted in time so as to provide the least-square error between the checkshots and the sonic values below the C horizon. Inclusion of checkshots above the C horizon leads to a bias in the least-squares error due to the large negative drift which occur above this level.

Drift corrections were then calculated by fitting two linear functions to the check-sonic drift values. The two linear functions were calculated by the least-squares method.

The calibrated sonic T/Z curve was corrected for drift with the values derived from the drift curve.

Table 4 lists the travel time and drift values at the successive stages of the process as well as the final rms errors in time of the T/Z curve. An rms error in equivalent depth is calculated using the interval velocities shown in Enclosure 1. A "worst case" error in depth interpretation from the T/Z curve was computed.

TABLE 4

CHECK SHOT - SONIC TIME DIFFERENCES

DEPTH (ft)		TRAVEL-TIME to DATUM (ms)			CHECK - SONIC		
Below K.B. (ft)	Below M.S.L. (ft)	Check- Shot (ms)	Tied Sonic (ms)	Drift Corr. Sonic (ms)	Tied Sonic (ms)	Drift Corr. Sonic (ms)	Depth Diff. (ft)
1250	960	152	165	154	-13	-2	-13
1745	1455	221	233	221	-12	0	0
2170	1880	279	290	278	-11	1	9
2522	2232	322	332	321	-10	1	8
3000	2710	383	388	384	-5	-1	-8
3450	3160	437	441	437	-4	0	0
4000	3710	501	502	502	-1	-1	-7
4340	4050	538	538	538	0	0	0
4568	4278	564	560	568	4	-4	-36
4781	4491	581	578	583	3	-2	-18
5000	4710	603	596	608	7	-5	-51
5468	5178	638	633	640	5	-2	-28
5563	5273	645	640	646	5	-1	-14
5765	5475	662	656	664	6	-2	-28
6028	5738	681	676	681	5	0	0
6579	6289	730	722	732	8	-2	-28
6662	6372	735	729	735	6	0	0
6950	6660	757	750	757	7	0	0
7142	6852	775	764	778	11	-3	-43
7347	7057	786	779	784	7	2	28
7900	7610	831	822	829	9	2	28
8060	7770	842	831	841	9	1	14
8128	7838	846	836	845	10	1	14
rms values					7.6	1.9	21.8

* NOTE - All figures derived using the C Horizon as the tie point.

TABLE 5
SURVEY RESULTS

DEPTH (feet below M.S.L.)

Line 81-BM 11 Stn. 350

Horizon	C	P	V	Z
Prognosis	4010	5720	6975	7375
Well top	4050	5755	7034	7786
Difference	-40	-35	-59	-411

TWO-WAY TIME* (msecs)

Horizon	C	P	V	Z
Prognosis	1065	1343	1560	1655
Well top	1082	1406	1606	1725
Difference	-17	-63	-46	-70

AVERAGE VELOCITY (ft/sec)

Horizon	C	P	V	Z
Prognosis	7530	8520	8940	8912
Well top	7485	8185	8760	9027
Difference	45	335	180	-115

6.0

RESULTS

After calibration, the T/Z curve had a rms depth error of 21 ft and a rms time error of 1.9 ms. Table 5 indicates the results against prognoses. The prognoses were derived from the interpretation of seismic data in the Brumby area with well control obtained from the nearby Brumby 1 & 2 wells.

The datum static indicates a OWT difference of 4 ms.

Depths to formation tops picked from well log data varied from those prognosed by 45 ft deeper at the C to 411 ft deeper at the Z level. The 8 ms TWT static difference contributed to the prognoses errors causing the transition to be prognosed 30 ft shallow.

The P, V and Z horizons were originally mapped a leg high. The choice of average velocities for the P and V levels has partly compensated for the timing discrepancy.

The low choice of average velocity to the Z level combined with the timing difference caused this level to be intersected 411 ft deeper than prognosis.

TABLE 6

SURVEY DATA

Personnel Present

Observer - Well shoot
Shooter

T. Pooley Velocity Data Pty. Ltd.
I. McKay Velocity Data Pty. Ltd.

Recording Parameters

Energy Source
Shot Offset and Depth
(B.G.L.)

Explosive - BOOSTERS ANZOMEX
Location A : 105 feet, 7 feet
Location B : 157 feet, 7 feet
Location C : 180 feet, 7 feet

Production Shooting:
Datum Shooting :

Location B
Location A, B, C

Equipment

Recorder
Reference Geophone
Downhole Geophone

E.I.E. RS 44W
Hall Sears HS 1
Geospace WLS-100 Wall-locking type

Elements

6 HS 1 4.5 Hz 215 ohm
high temperature elements
series parallel connection
Frequency response: 8-300 Hz within 3db

Pre-amplifier - 48 db fixed gain
Frequency response: 5-200 Hz within 3db

Monitor Traces

- 1 Instrument time break
- 2-4 Analogue down-hole geophone signal - low, medium and high gain
- 5 Digital down-hole geophone signal IFP gain
- 6 Confirmation time break geophone signal

BRUMBY 3

10-09-84

5623-1

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SHOT RECORD TABLE

DATUM SHOTS (DATUM-MSL)

Z (KB) = 290 FT

Z (CL) = 270 FT

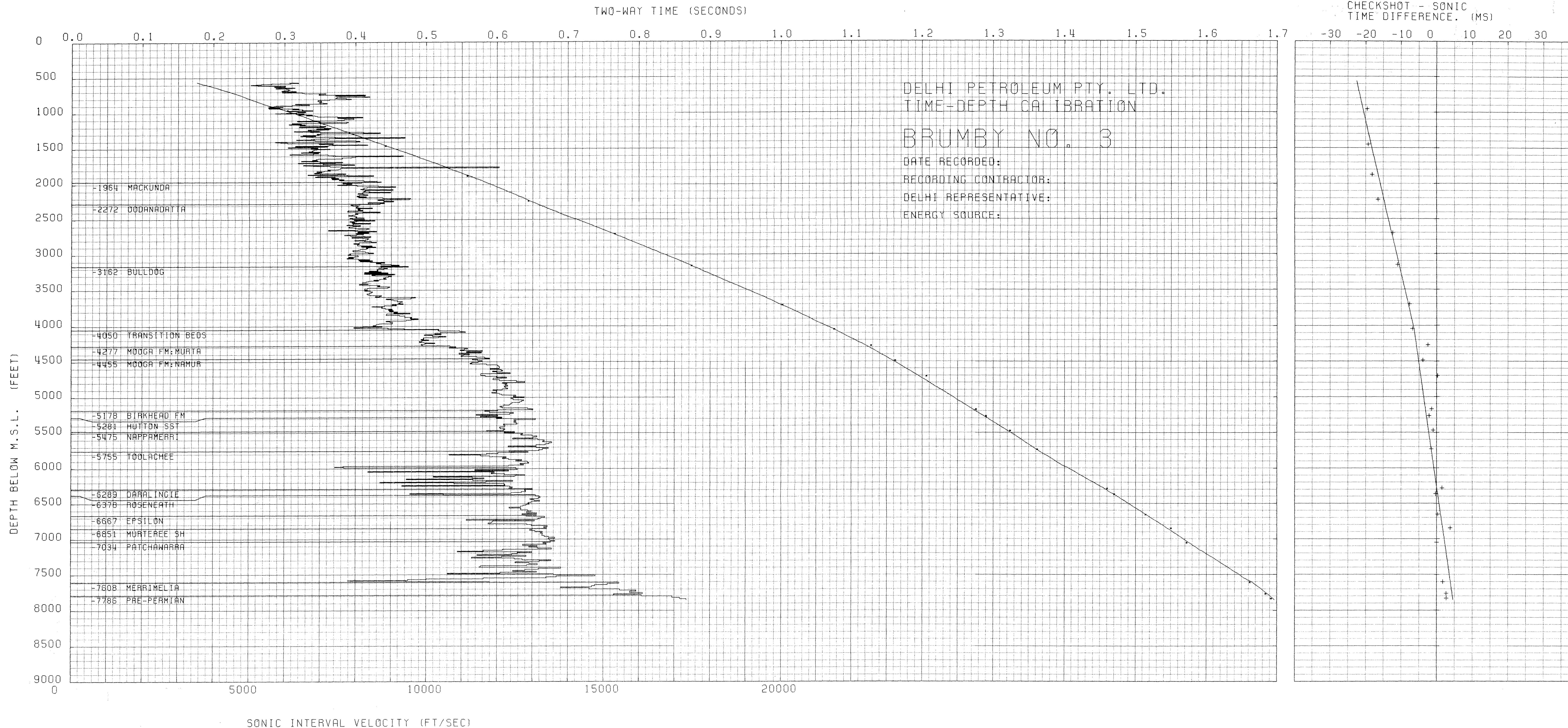
SHOT NUMBER	LOCAL TIME	SHOT LOCATION	AMP. GAIN	CHARGE SIZE	CHARGE DEPTH	OFFSET (ft)	ARRIVAL TIME ms	CORR. TIME ms	REMARKS
1	00.05	A	20	1XA	6	105	65	60	
2	00.10	B	20	1XA	6	157	71	61	
3	00.15	C	20	1XA	6	180	73	60	
31	03.25	B	20	1XA	7	157	72	62	

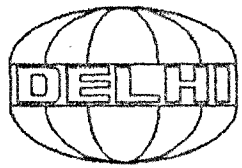
The shot to datum static used is 0 msec

SURVEY SHOTS

SHOT NUMBER	LOCAL TIME	CHARGE SIZE	AMP. GAIN	OFFSET (ft)	CHARGE DEPTH	KB DEPTH	RECORD TIME	MSL DEPTH	CORR. TIME	INTERVAL VELOCITY	RMS VELOCITY	REMARKS
30	03.15	1XD	40	157	7	750	141	460	77	5974	5974	
29	03.10	1XD	40	157	7	1250	215	960	152	6067	6325	* NOTE - () refer to true
28	03.05	1XD	35	157	7	1745	283	1455	221	7174	6602	KB depths
27	03.00	1XD	35	157	7	2170	341	1880	279	7328	6759	
26	02.55	1XD	35	157	7	2522	384	2232	322	8186	6967	
25	02.50	1XD	35	157	7	3000	445	2710	383	7836	7112	
24	02.45	1XD	30	157	7	3450	499	3160	437	8333	7274	Building Shale (3452)
23	02.40	1XD	30	157	7	4000	562	3710	501	8594	7450	
22	02.35	1XD	35	157	7	4340	602	4050	541	8831	7562	Transition Beds
4	00.40	1XD	35	157	6	4340	599	4050	538	8831	7562	
21	02.30	1XD	35	157	7	4568	625	4278	564	9300	7646	Mooga Fm. Murta (4567)
20	02.25	1XD	30	157	7	4568	---	4278	---	---	---	Misfire
19	02.20	1XD	30	157	7	4781	643	4491	582	11833	7810	
18	02.10	1XD	35	157	7	5000	664	4710	603	10429	7915	
17	02.05	1XD	35	157	7	5468	700	5178	639	13000	8285	Birkhead Fm
16	02.00	1XD	35	157	7	5563	706	5273	645	15833	8387	Hutton Sat (5571)
15	01.55	1XD	35	157	7	5765	723	5475	662	11882	8494	Nappanacri
14	01.50	1XD	40	157	7	6028	742	5738	681	13842	8688	Teelance (6045)
13	01.45	1XD	30	157	7	6579	791	6289	730	11245	8883	Doralingie
12	01.40	1XD	40	157	7	6662	796	6372	735	10600	8958	Reconearn (6608)
11	01.35	1XD	40	157	7	6950	818	6600	757	13091	9105	Eption (6957)
10	01.30	1XD	40	157	6	7142	835	6852	774	11294	9158	Murteen Shale (7141)
9	01.25	1XD	40	157	6	7347	847	7057	786	17083	9330	Patchawarra (7324)
8	01.20	1XD	45	157	6	7900	892	7610	831	12289	9514	Merrimilla (7898)
7	01.15	1XD	45	157	6	8060	903	7770	842	14545	9597	Pre-Permian (8076)
6	01.10	1XD	45	157	6	8060	---	7770	---	---	---	Misfire
5	01.05	1XD	45	157	6	8128	907	7838	846	17000	9645	

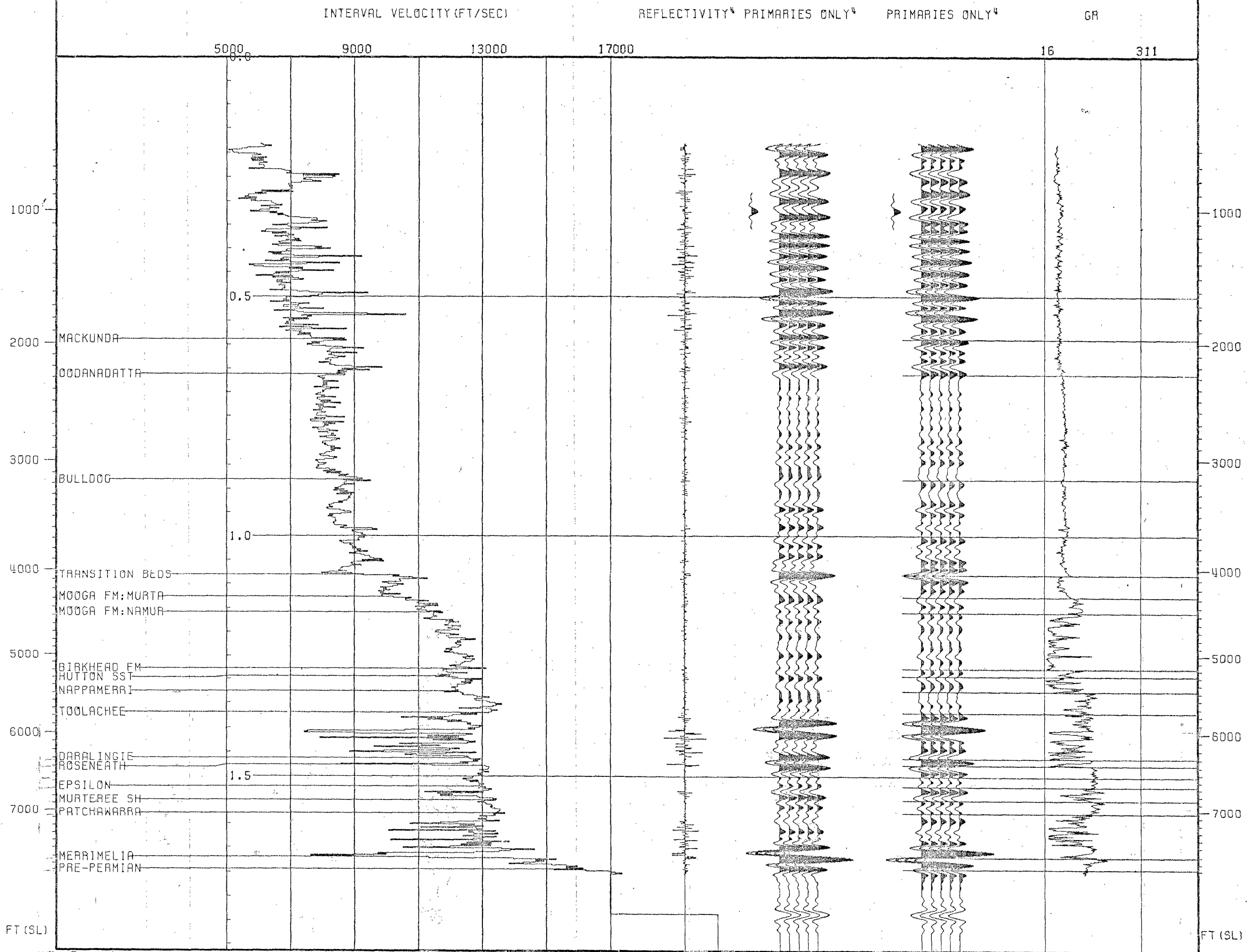
ENCLOSURE 1





BRUMBY NO. 3
SYNTHETIC SEISMOGRAM

Enclosure 3



REFLECTIVITY COMPUTED USING :

1. VELOCITY
2. VELOCITY AND DENSITY
3. VELOCITY AND CORRECTED DENSITY
4. SAME AS (1) WITH DRIFT APPLIED
5. SAME AS (2) WITH DRIFT APPLIED
6. SAME AS (3) WITH DRIFT APPLIED

BANDPASS WAVELET

NO. OF FILTER POINTS 39
LOW CUT FREQUENCY 10
HIGH CUT FREQUENCY 55
PHASE SHIFT 0
ZERO PHASE
NORMAL POLARITY

FORMATION TOP KB (FT) = 290	DEPTH (SL)	TIME	VEL (INT)	VEL (AV)	VEL (RMS)
MACKUNDA	1964	568	8438	6680	6680
OODANADATTA	2272	661	8128	6874	6896
BULLDOG	3162	880	8792	7186	7223
TRANSITION BEDS	4050	1082	10318	7486	7540
MOOGA FM: MURTA	4277	1126	11125	7597	7668
MOOGA FM: NAMUR	4455	1158	12151	7694	7784
BIRKHEAD FM	5178	1277	11444	8110	8209
HUTTON SST	5281	1295	12516	8156	8341
NAPPAMERRI	5475	1326	13023	8258	8462
TOOLACHEE	5755	1369	11484	8408	8642
DARALINGIE	6289	1462	11867	8603	8850
ROSENEATH	6378	1477	13136	8636	8886
EPSILON	6667	1521	12690	8767	9037
MURTEREE SH	6851	1550	13071	8840	9119
PATCHAWARRA	7034	1578	12344	8915	9204
MERRIMELIA	7608	1671	15478	9106	9406
PRE-PERMIAN	7786	1694		9192	9514