W935

BEACH PETROLEUM N.L.

(Incorporated in South Australia)

TEXT

NAJABA-1

W.C.R

PETROLEUM DIVISION

03 FEB 1987

BEACH PETROLEUM N.L.

NAJABA NO. 1A - PEP 118

WELL COMPLETION REPORT

BY:

A. BUFFIN

AUGUST 1986

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SUMMARY

Najaba No. 1A was drilled as a wildcat exploration well in PEP 118, western Otway Basin, Victoria, approximately 30 km ESE of Mount Gambier and 6.5 km NNE of the Fahley No. 1 exploration well.

The prospect was a seismically defined high with four way dip closure, located approximately 1 km south of the Tartwaup Fault, on the downthrown side of the fault (see Figure 6). Principal target horizons included the Tertiary "Intra-Pember Sands" and the Pebble Point Formation and the Upper Cretaceous top sand member (Timboon Sand Equivalent) of the Paaratte Formation. Secondary reservoir targets were the Upper Cretaceous Intra-Paaratte Sands and the Waarre Sandstone lying immediately above the major Lower Cretaceous - Upper Cretaceous unconformity.

Participants in the well were Beach Petroleum N.L. (Operator) and Gas and Fuel Exploration N.L.

Drilling commenced on the 20th April 1986 and reached a TD of 3412m on the 22nd June 1986.

Of the three primary objectives, only the Intra-Pember Sands appeared to have reasonable porosity, though this sand proved to be water saturated. Both the Pebble Point Formation and the Upper Paaratte Timboon Sand Equivalent had nil to very poor porosity caused by an abundant argillaceous matrix, these formations were therefore considered to be unsuitable as reservoirs. Secondary objectives within the Paaratte Formation appeared to have only fair porosity and lacked any suitable seals. The Waarre Sandstone appeared to be very tight with the sandstones suffering from late diagenetic processes.

A trace to 20% fluorescence was first noted within the Waarre Sandstone at 2807m and subsequently observed within most sand units to TD. However due to a lack of good visible porosity within any of the sands no drill stem testing was performed.

Three wireline logging suites were run at Najaba No. 1A. Suite #1 from 1516m to 159m prior to hole opening and running the 13-3/8" casing comprised the DLL/MSFL, LDL/CNL, SLS, SHDT logs and the CST (20 bullets). One GR was run to surface.

Suite #2 from 2952m to 1486m, prior to drilling 8½" open hole, comprised the DLL and SLS logs.

Suite #3 from 3412m (TD) to 1486m, comprised the ISF/SLS and SHDT logs, WSS and VSP seismic surveys and the CST (30 bullets).

Upon evaluation of the logs, seismic data and the sidewall cores, Najaba No. 1A was plugged and abandoned as a dry hole on the 25th June 1986. The rig was released at 1830 hours on the 26th June 1986.

1. INTRODUCTION

The Najaba No. 1A prospect was identified by interpretation of the Najaba-Maten Seismic Survey.

The structure was a seismically defined high with four way dip closure and located 1 km south of the Tartwaup Fault on the downthrown side. The structure at Intra-Pember Sandstone level appeared to be independent of faulting. Seismic suggested that the sand thickness was reduced away from the prospect in all directions, except to the north where the reservoir was in direct contact with the Tartwaup Fault. The Pebble Point Formation and the upper porous Timboon Sand levels were only marginally dependent on minor antithetic faults branching from the major Tartwaup Fault. It would appear in fact that the top 30m of the total 66m vertical closure was virtually independent of fault closure.

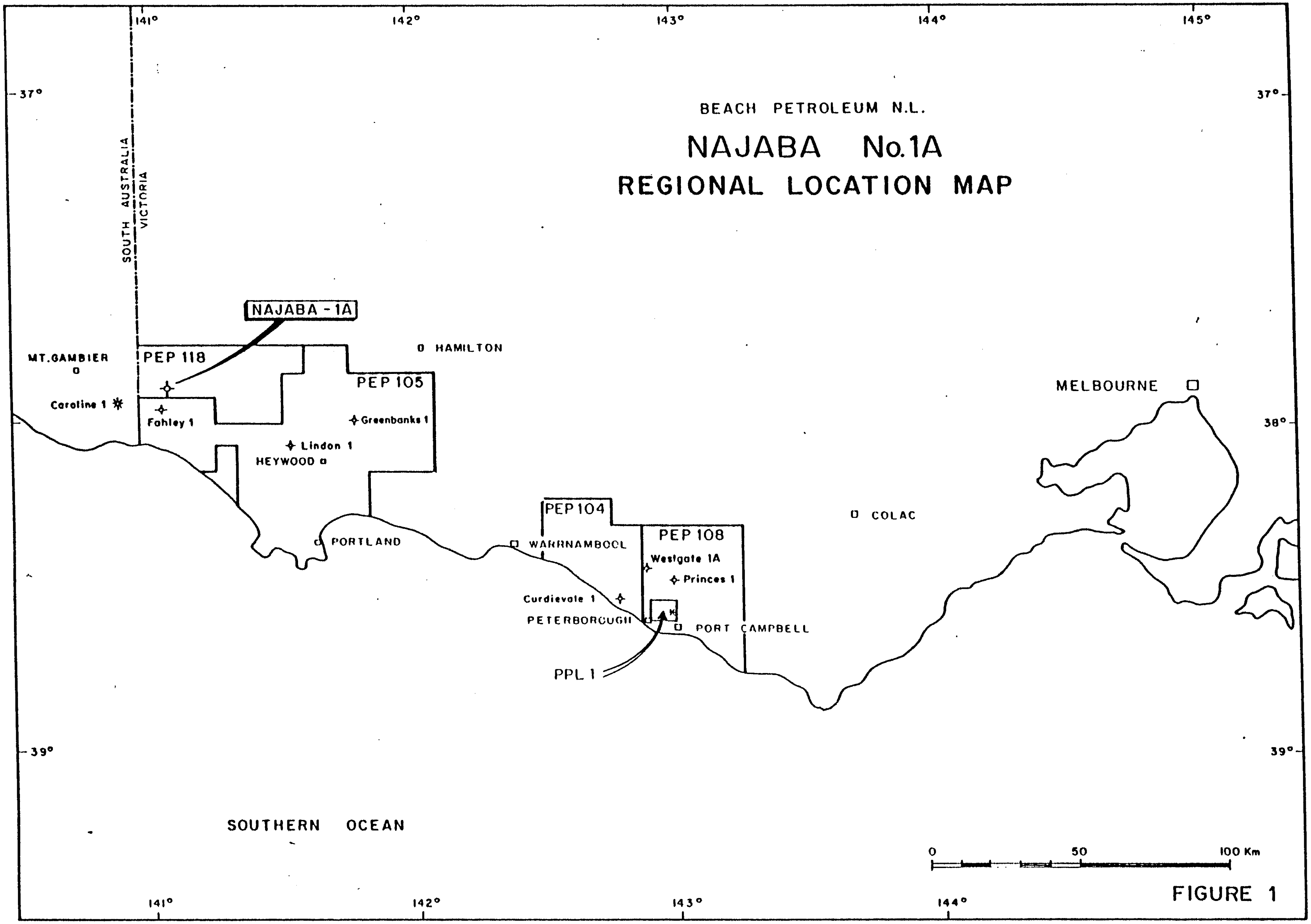
On the downthrown side of the Tartwaup Fault, hydrocarbons sourced within the Eumeralla Formation are able to migrate vertically along the fault plane into the reservoir rocks, whilst on the upthrown side of the fault the Eumeralla Formation is laterally in contact with the various reservoirs.

The Najaba prospect was well placed within PEP 118 where hydrocarbons migrating along the Tartwaup Fault (the major migratory fairway) could be trapped in the multiple reservoirs from the basal Upper Cretaceous Waarre Sandstone Formation to sandstones within the basal Dilwyn.

A cap rock for the primary reservoirs was formed by the pro-delta mudstones of the Pember Member, whilst delta front siltstone - claystone sequences within the Paaratte Formation may form seals for secondary targets, though the Belfast Member, a second, deeper, thicker pro-delta mudstone would form the seal for any potential Waarre reservoirs.

The prognosed nature of the reservoir and cap rocks was based largely on available data from Fahley #1, drilled 6.5 km to the south, and Caroline #1, drilled 14.5 km to the south west. Velocity data obtained from Wanwin #3, drilled 15 km to the south east was also used in part.

The well was designed primarily to test the hydrocarbon prospectivity of the Tertiary "Intra Pember Sands" and Pebble Point Formation. Secondary targets included porous sands within the Paaratte Formation and the basal Upper Cretaceous Waarre Formation.



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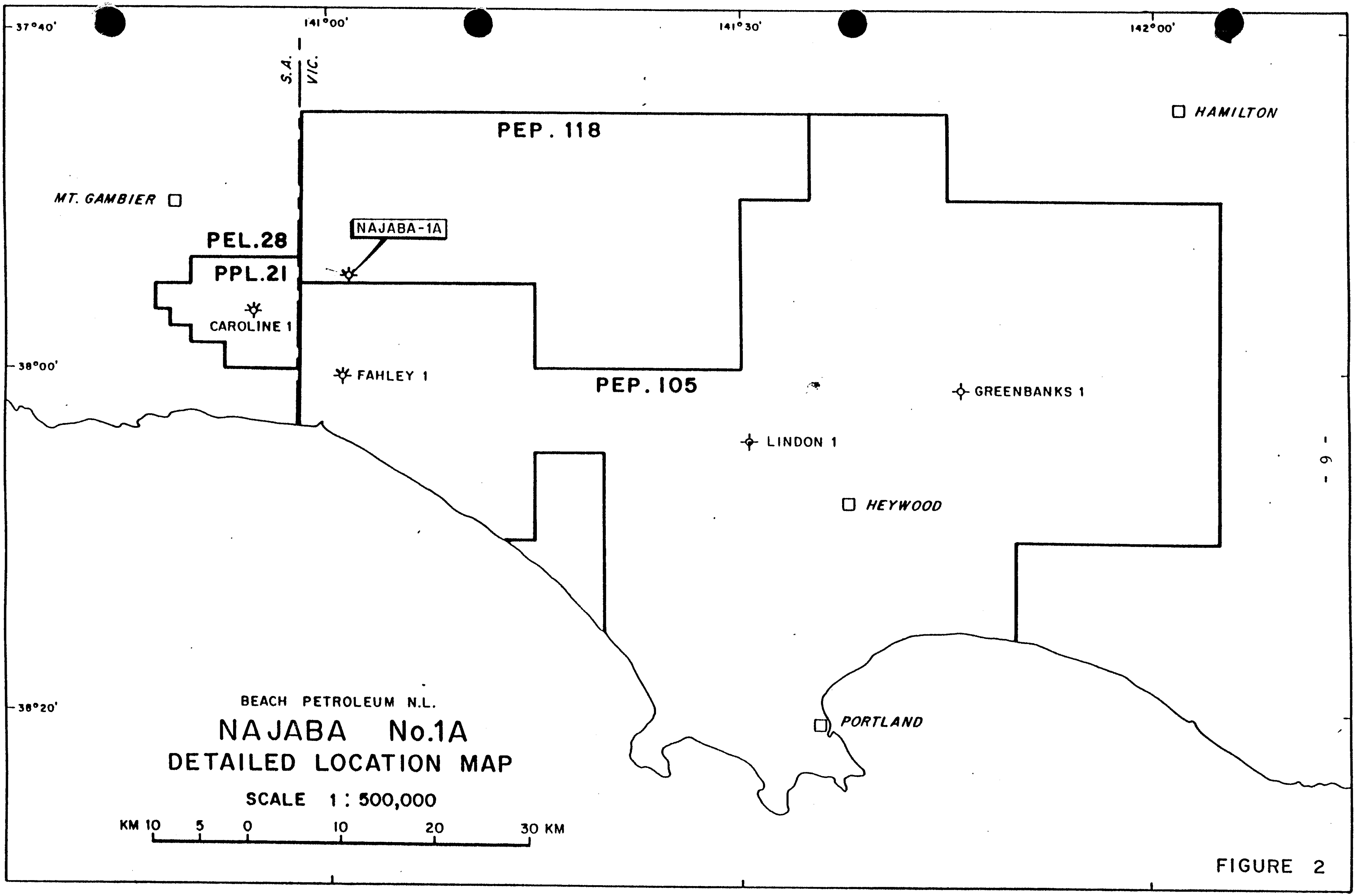
NAJABA No.1A
REGIONAL LOCATION MAP

FIGURE 1

BASE MAP. OT 3482



BEACH PETROLEUM N.L.

NAJABA No.1A

DETAILED LOCATION MAP

SCALE 1 : 500,000

FIGURE 2

OT. 3527

2. WELL HISTORY

2.1 Location (see Figure 1)

Co-ordinates:	Latitude 37° 54' 13" S Longitude 141° 03' 50" E
Geophysical Control:	Line NM85-368 Shotpoint 15m E, 159.5 (195m south of intersection with NM85-367.)
Real Property Description:	Parish of Mumbannar Shire of Portland County of Follett
Property Owner:	Dr. H.H. Johnson

2.2 General Data (see Figure 2)

Well Name and Number:	Najaba No. 1A
Tenement:	PEP 118
Operator:	Beach Petroleum N.L., 685 Burke Road, CAMBERWELL, VIC., 3124.
Participants:	Beach Petroleum N.L. Gas and Fuel Exploration N.L., 171 Flinders Street, MELBOURNE, VIC., 3000.
Elevation:	Ground Level 51.7m Kelly Bushing 57.7m (Unless otherwise stated, all depths refer to KB.)

BEACH PETROLEUM N.L.

NAJABA No.1A

SCHEMATIC WELL PLAN

(ALL DEPTHS MEASURED BELOW K.B.)

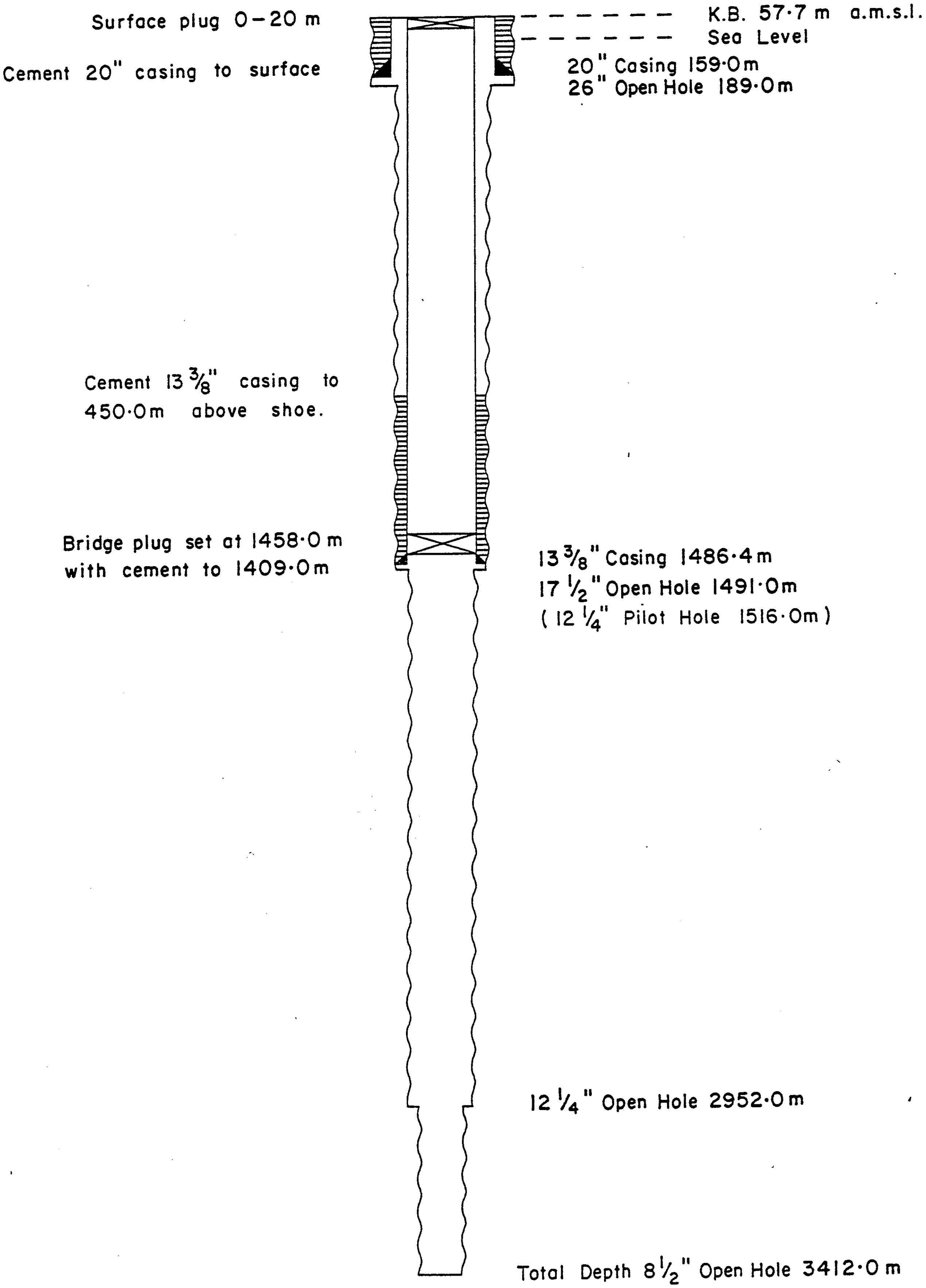


FIGURE 3

OT. 3499

Total Depth:	Driller	3412.0m
	Logger	3412.5m
Date Drilling Commenced:	20th April 1986 @ 19.45	
Date Reached Total Depth:	22nd June 1986 @ 16.15	
Date Rig Released:	26th June 1986 @ 18.30	
Drilling Time to Total Depth:	64 days	
Status:	Plugged and abandoned.	

2.3 Drilling Data (see also Appendix 1 and 2)

2.3.1 Drilling Contractor

Richter Drilling Pty. Ltd.,
14 Cribb Street,
MILTON, QLD., 4064.

2.3.2 Drilling Rig

Richter Rig No. 8, National 80B

2.3.3 Casing and Cementing Details (see Figure 3)

Conductor

A 30" conductor pipe was set at 3m.

Surface Casing

Size:	20"
Weight:	94 lb/ft

Grade:	X52
Connection:	JV
Centralizers:	None - lost when casing string run on first occasion (see Appendix 2).
Float Shoe:	None
Shoe:	159m
Cement:	Preflush: 20 bbl of fresh water. Lead: 775 sacks of Class "A" cement mixed with 234 bbls 3% Prehydrated Gel. Tail: 162 sacks of Class "A" cement - neat. Displacement: 174 bbls of water (approximately 30 bbls of cement returns to surface).
Cemented to:	Surface
Method:	Water displacement
Equipment:	Twin mounted HT400 skid mounted Halliburton Unit.

Intermediate Casing

Size:	13-3/8"
Weight:	68 lb/ft
Grade:	N80
Connection:	Buttress
Centralizers:	At 1394m, 1434m, 1479m.
Float Collar:	1474m
Shoe:	1486.4m
Cement:	Preflush: 20 bbl of fresh water. Lead: 553 sacks of Class "A" cement mixed with 1600 lbs of 2.5% prehydrated gel

	and 156 lbs of 0.3% HR-7, Slurry weight 12.8 ppg. Tail: 161.5 sacks of Class "A" cement with 45.5 lbs of 0.3% HR-7, slurry weight 15.6 ppg. Displacement: 727.5 bbls of mud.
Cemented to:	450m above the casing shoe.
Method:	Mud displacement.
Equipment:	Twin mounted HT400 skid mounted Halliburton Unit.

Cement Plugs

- Plug No. 1

Bridge Plug:	Set @ 1458m
Interval:	Cemented from Bridge plug to 1409m.
Cement:	116.9 sacks Class "A" cement - neat.
Tested:	Bridge plug pressure tested to 500 psi, cement tagged with 10,000 lbs.

- Plug No. 2

Interval:	20m - surface
Cement:	25 sacks Class "A" cement neat.
Tested:	No

2.3.4 Drilling Fluid (see Appendix 3 for details)

- 26" Hole (3m - 189m)

The well was spudded using a high viscosity spud mud. High viscosities were maintained using Gel and "Benex" (a clay extender). Prior to running 20" casing a high viscosity pill was circulated around the hole whilst a second high viscosity pill was spotted on bottom. The spud mud parameters include:

Weight:	8.6+ - 9.5 ppg
Viscosity:	39 - 45 sec/qt

12¼" Pilot Hole (189m - 1516m)

The 12¼" pilot hole was drilled using a KCl-polymer mud system. Throughout the Dilwyn Formation and Top Pember, mud properties were kept fairly constant (although initial water losses were high). Mud properties ranged between:

Weight:	8.9 - 9.1 ppg
Viscosity:	30 - 37 sec/qt
Filtrate:	Initially 14.0 ml dropping to 11.2 - 10.0m.
KCl:	2.8 - 3.3%

Tight hole problems were experienced during tripping between 1038 - 1210m. These problems were alleviated by increasing the KCl values and decreasing the water loss. Mud properties in the basal Pember, Pebble Point and Top Paaratte (Timbocn Sands) ranged between:

Weight:	9.2 - 9.3+ ppg
Viscosity:	40 - 46 sec/qt
Filtrate:	8.0 - 8.3 ml
KCl:	3.7 - 4.2%

- 17½" Hole (189m - 1491m)

The 17½" hole was drilled using a KCl-polymer mud system. Throughout the entire section mud properties were kept relatively constant and ranged between:

Weight:	9.1 - 9.2 ppg
Viscosity:	40 - 48 sec/qt
Filtrate:	7.7 - 8.7 ml
KCl:	3.9 - 4.3%

Below 1345 - 1491m, the mud weight increased due to a decreased dilution rate:

Weight:	9.3 - 9.4 ppg

- 12¼" Hole (1516m - 2952m)

The 12¼" hole was drilled using a KCl-polymer mud system. Mud properties varied slightly throughout the section, depending on the lithologies drilled. Generally the KCl values and the mud weights increased as the formations became more shaley. Initial mud properties for the Top Paaratte, to a depth of 2300m ranged between:

Weight:	9.0+ - 9.2 ppg
Viscosity:	40 - 48 sec/qt
Filtrate:	7.4 - 8.4 ml
KCl:	4.0 - 4.4%

From 2300 - 2400m, shaliness increased, necessitating a decrease in water loss and an increase in the KCl content and mud weight, typical mud properties varied between:

Weight: 9.2 - 9.3 ppg
Viscosity: 40 - 55 sec/qt
Filtrate: 6.6 - 7.2 ml
KCl: 5.0 - 5.3%

Shaliness continued to increase as the Belfast Mudstone was penetrated at 2650m. To combat the possibility of swelling or heaving shales, the KCl was further increased. Mud properties from 2440 - 2952m ranged between:

Weight: 9.3 - 9.4+ ppg
Viscosity: 40 - 44 sec/qt
Filtrate: 6.6 - 7.2 ml
KCl: 9.4 - 9.5% (at 2700m the KCl% was further increased to 10.2 - 10.6%).

- 8½" Hole (2952m - 3412m)

The 8½" hole was drilled using a KCl-polymer mud system. Lithologies throughout this section remained very similar, with mud properties ranging between:

Weight: 9.4 - 9.5+ ppg
Viscosity: 41 - 45 sec/qt
Filtrate: 6.8 - 7.4 ml
KCl: 9.7 - 10.3%

There were no major hole problems in Najaba No. 1A, though some minor difficulties were experienced. However all problems were overcome by constant wiper trips, working the pipe over any "sticky" sections and on occasions reaming the hole. To overcome potential problems within the Pember and Belfast Mudstone Members the KCl content of the mud was increased initially to 5% within the Pember Mudstone and finally to 10% in the Belfast Mudstone.

Within the Eumeralla Formation minor quantities of mud were lost to the formation eg. at 2952m, prior to logging the 12¼" open hole, 30 bbls of mud were lost to the formation in 5 hours, to alleviate the problem 6 bbl of mica was spotted on bottom. From 3000m to TD mud losses to the formation were approximately 3-4 bbl/hour.

2.3.5 Water Supply

Fresh water was transported to the wellsite by a water carrier.

2.4 Formation Sampling and Testing

2.4.1 Cuttings

Cuttings samples were collected at 10m intervals from 10m to 400m, and at 5m intervals from 400m to 3410m. Each sample was washed, oven dried, divided into four splits and stored in labelled polythene bags. Three complete sets were distributed as follows:

- one set to Beach Petroleum N.L.,
- one set to Gas and Fuel Exploration N.L., and
- one set to the Victorian Government.

One spare set was retained by Beach Petroleum N.L.

In addition, every 10m from 10m to TD, an unwashed cuttings sample was collected, stored in a labelled calico bag and allowed to air dry. This set of samples has been retained by Beach Petroleum for possible further analysis.

2.4.2 Cores

(i) No conventional coring operations were performed.

(ii) Fifty sidewall cores were attempted in two separate runs prior to plugging and abandoning the well.

Twenty cores were shot between 1496m and 1038m, all cores were recovered.

Thirty cores were shot between 3400m and 2044.5m, twenty-six cores were recovered whilst four cores were lost.

All the cores were examined under ultra-violet light however no fluorescence was observed and no hydrocarbon odours were detected.

Core recovery varied between good in the top hole to poor in the deeper sections of the well. Listed overleaf are the depths and recovery of the sidewall cores (see Appendix 4 for descriptions).

CST Run #1 (1496m - 1038m)

SWC No.	Depth (m)	Recovery (mm)
1 A	1496.0	35
2 P	1491.5	37
3 V	1485.0	48
4	1481.5	45
5	1475.5	58
6 A	1460.5	48
7	1440.0	49
8	1415.0	57
9 P	1405.0	53
10 V	1400.0	36
11 A	1382.0	38
12	1368.0	45
13	1315.0	47
14 A	1311.0	48
15 P	1295.0	35
16	1291.0	38
17 V	1217.0	40
18	1047.5	38
19	1042.0	36
20 V	1038.0	54

Note:

V - Vitrinite Reflectance Data Available
(see Appendix 7)

P - Petrological Data Available
(see Appendix 8)

A - Age Dating and Thermal Alteration Data Available
(see Appendix 6)

CST Run #2 (3400m - 2044.5m)

SWC No.	Depth (m)	Recovery (mm)
1 A	3400.0	24
2 V	3386.0	21
3	3366.0	28
4	3331.0	30
5	3288.0	28
6 V	3251.0	15
7	3201.0	11
8	3180.0	Lost
9	3169.0	Lost
10 V	3130.0	23
11	3059.5	Lost
12	3040.0	22
13	3006.0	Lost
14 VA	2997.0	31
15	2957.0	20
16 A	2887.0	14
17	2825.0	23
18 P	2809.0	17
19 A	2805.0	?
20	2773.0	10
21 V	2722.0	24
22 P	2694.0	25
23 VA	2651.0	34
24	2596.0	14
25 A	2520.0	24
26 P	2460.0	?
27 V	2425.5	21
28	2340.0	34
29 VA	2186.5	32
30 P	2044.5	31

Note:

V - Vitrinite Reflectance Data Available
(see Appendix 7)

P - Petrological Data Available
(see Appendix 8)

A - Age Dating and Thermal Alteration Data Available
(see Appendix 6)

2.4.3 Testing

No testing was performed.

2.5 Logging and Surveys (see Enclosure 1)

2.5.1 Mudlogging (see Enclosure 2).

A standard skid mounted Exlog unit was used to provide penetration rates, continuous mud gas monitoring, intermittent mud and cuttings gas analysis, the number of pump strokes and mud volume data.

2.5.2 Wireline Logging (see Enclosure 3)

Wireline logging was performed by Schlumberger Seaco Inc. using a Cyber Service Unit (CSU).

Three logging suites were performed, the details are listed below:

Suite #1

Dual Laterolog (DLL/SP/CAL/GR)	1499 - 159m
Micro-spherically focused log (MSFL)	1499 - 1285m 1100 - 985m
Sonic Log (SLS/GR)	1494 - 159m (GR run to surface)
Litho-density/Compensated Neutron Log (LDL/CNL/GR)	1497 - 1285m 1095 - 990m

Stratigraphic Dipmeter Tool (SHDT/GR)	1497.5 - 1285m 1105 - 995m

In addition the following CSU products were generated at the wellsite:

Cyberdip	1497.5 - 1285m 1105 - 995m
Cyberlook (Pass I & II)	1494 - 1285m 1100 - 985m

The SHDT data was further processed at the Schlumberger Log Interpretation Centre, Sydney, to produce a dipmeter computation.

Mean Square Dip (MSD)	1497.5 - 1285m 1100 - 985m

Suite #2

Dual Laterolog (DLL/SP/CAL/GR)	2948.5 - 1486.4m
Sonic Log (SLS/GR)	2951 - 1486.4m

Suite #3

Induction - Sonic Log (ISF/SLS/CAL/SP/GR)	3412 - 2835m (GR/CAL run to 13-3/8" casing shoe @ 1486.4m)
Stratigraphic Dipmeter Tool (SHDT/GR)	3399 - 2600m

Due to computer problems, CSU products for Suite #3 were not generated at the wellsite. However the SHDT data was further processed at the Schlumberger Log Interpretation Centre, Sydney, to produce a dipmeter computation. A Cyberlook (Pass II) was also generated in Sydney.

Cyberlook (Pass II)	2865 - 2690m
	2525 - 2450m
	2075 - 2025m
Mean Square Dip (MSD)	3399 - 2600m

2.5.3 Deviation Surveys

A Totco double recorder was used to measure hole deviation, the results of which are listed below:

Depth (m)	Deviation (°)
28	1/2
80	1/2
133	1/4
179	3/4
315	1/4
400	1/2
493	1/2
646	1/4
850	0
1020	1-1/2
1142	1/2
1180	1
1240	1-3/4

Depth (m)	Deviation (°)
1287	1-1/4
1347	3/4
1411	1
1491	1
1580	1
1630	0
1794	2-1/2
1823	2
1890	2
1976	1-1/2
2062	2
2186	3-1/4
2235	4
2281	3-1/2
2374	3-1/2
2425	4
2474	3
2560	3
2647	1-1/2
2751	1-1/2
2968	4-1/2
2996	4-3/4
3034	6
3053	5-3/4
3073	5-3/4
3091	5-7/8
3110	6
3129	6-1/4
3131	6
3150	6-1/8
3170	6-5/8
3179	7-3/8
3187	7-1/2
3196	7-1/4
3215	6-3/4
3235	6-3/4

Depth (m)	Deviation (°)
3253	6-1/4
3272	6-1/8
3292	6-3/4
3301	6-1/4
3330	6-3/8
3363	7
3378	6-3/4
3394	6-3/8

2.5.4 Velocity Survey (see Enclosure 4)

A velocity survey comprising a checkshot survey (WSS) over twenty levels, and a vertical seismic profile survey (VSP) over thirty levels were performed by Schlumberger Seaco Inc. The results of these surveys are included as Appendix 5(a) and 5(b).

3. RESULTS OF DRILLING

3.1 Stratigraphy

The following stratigraphic intervals were delineated using penetration rate, cuttings analysis, wireline log evaluation and palynological age dating. All formations were present as predicted, as was the characteristic "Intra-Pember Sand", 1294m to 1318m K.B. (1146.3m to 1260.3m Subsea) and a Nullawarre Greensand Equivalent, 2043m, to 2353m K.B. (1985.3m to 2295.3m Subsea). With good seismic control and several government bore holes in the area, tops for the Tertiary Formations and the Paaratte were prognosed with a fair amount of success, deeper sections of the well however lacked the good well control, subsequently the predicted formation tops were largely incorrect.

Group.	Formation	Depth (m) (KB)	Depth (m) (Subsea)	Thickness (m)
Heytesbury	-	Surface	+57.7	255
Nirranda	-	255	-197.3	59
Wangerrip	Dilwyn	314	-266.3	774
	Pember Mudstone	1088	-1030.3	317
	Pebble Point	1405	-1347.3	82
Sherbrook	Paaratte	1487	-1429.3	1163
	Belfast Mudstone	2650	-2592.3	157
	Waarre	2807	-2749.3	48
Otway	Eummeralla	2855	-2797.3	+557
	T.D.	3412	-3354.3	

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NAJABA No.1A

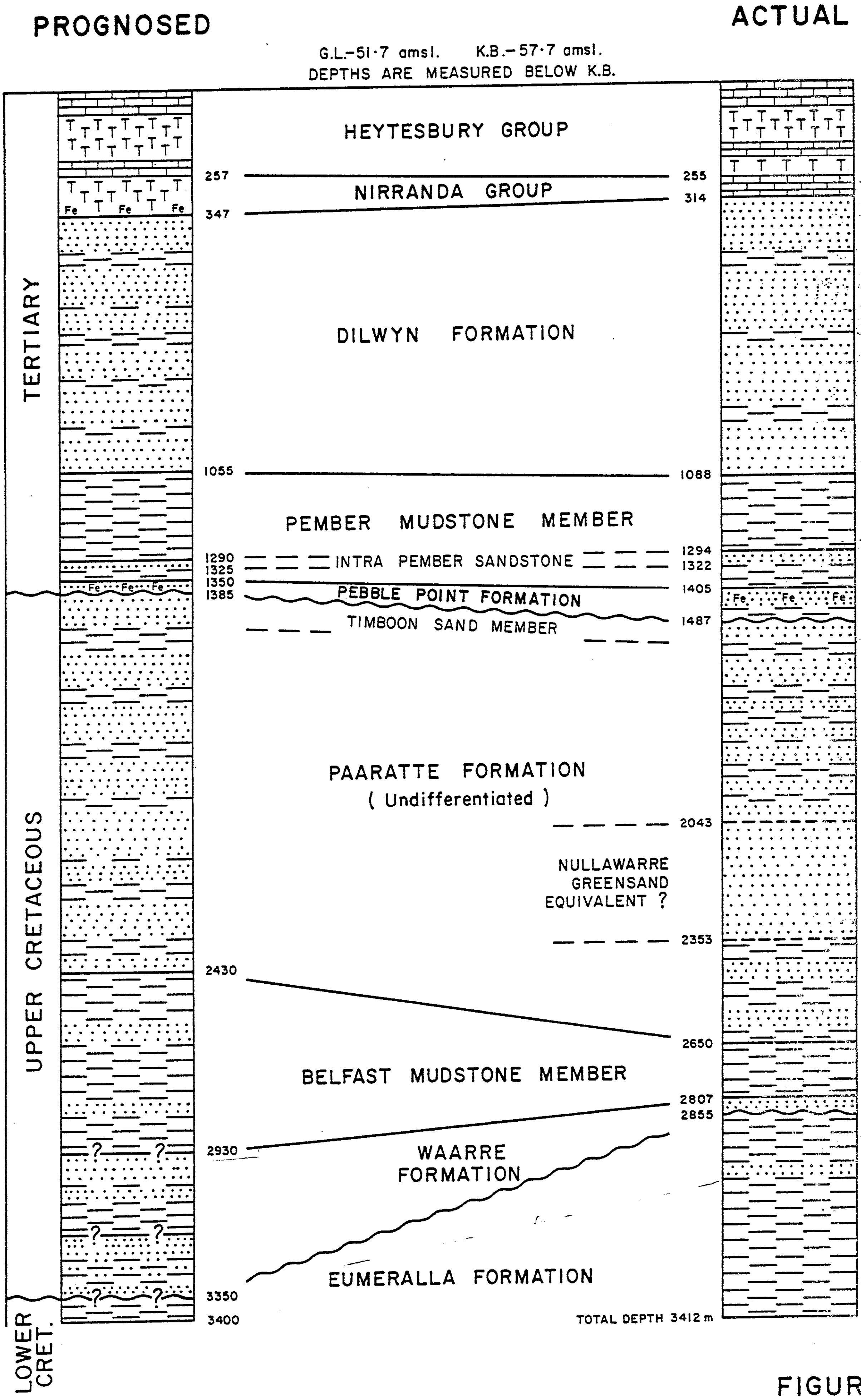
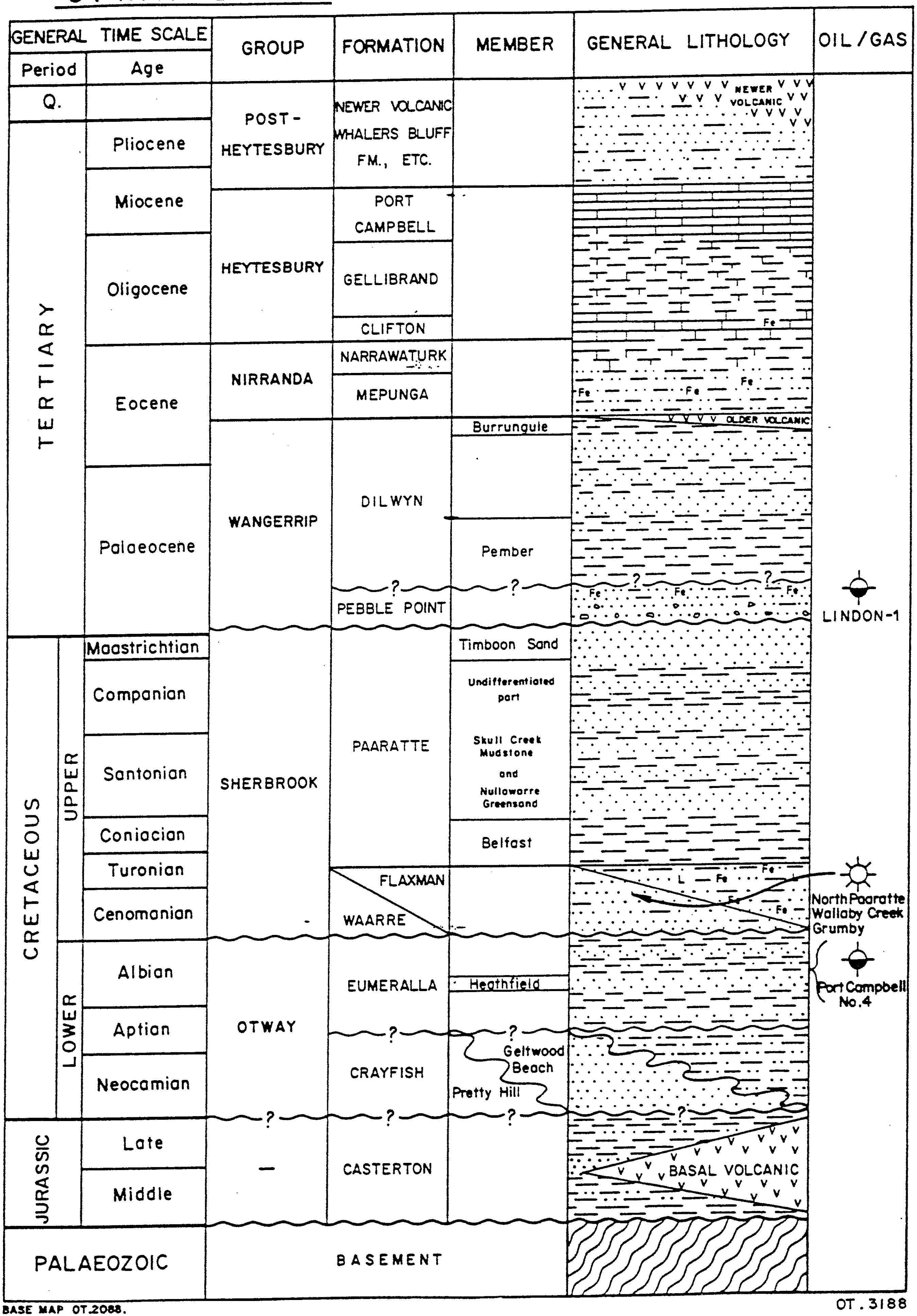


FIGURE 5

OT. 3511

BEACH PETROLEUM N.L.

OTWAY BASIN STRATIGRAPHIC TABLE



GENERAL TIME SCALE		GROUP	FORMATION	MEMBER	GENERAL LITHOLOGY	OIL/GAS
Period	Age					
Q.		POST-HEYTESBURY	NEWER VOLCANIC WHALERS BLUFF FM., ETC.		NEWER VOLCANIC	
TERTIARY	Pliocene					
	Miocene	HEYTESBURY	PORT CAMPBELL			
	Oligocene		GELLIBRAND CLIFTON		Fe	
	Eocene	NIRRANDA	NARRAWATURK MEPUNGA	Burrungule	Fe OLDER VOLCANIC	
	Palaeocene	WANGERRIP	DILWYN ? PEBBLE POINT	Pember ?	? Fe	LINDON-1
CRETACEOUS UPPER	Maastrichtian	SHERBROOK	PAARATTE	Timboon Sand		
	Companian			Undifferentiated part		
	Santonian			Skull Creek Mudstone and Nullawarre Greensand		
	Coniacian			Belfast		
	Turonian		FLAXMAN		L Fe	
	Cenomanian		WAARRE		Fe	North Paaratte Wallaby Creek Grumby
CRETACEOUS LOWER	Albian	OTWAY	EUMERALLA	Heathfield		Port Campbell No.4
	Aptian		?	?		
	Neocamian		CRAYFISH	Geltwood Beach Pretty Hill		
		?	?	?	?	
JURASSIC	Late	—	CASTERTON		BASAL VOLCANIC	
	Middle					
PALAEOZOIC		BASEMENT				

BASE MAP OT.2088.

OT.3188

FIGURE 4

3.2 Lithological Descriptions

3.2.1 HEYTESBURY GROUP (surface to 255m)

Heytesbury Group (Undifferentiated)	Surface to 255m CALCARENITE, off white to very light grey to medium yellow orange becoming light brown grey with increasing depth, friable to hard, very fine to coarse grained, dominantly fine grained. A trace quartz sand grains; with common yellow staining, coarse to very coarse grained, subangular to rounded and at shallow depths occasionally cemented in a cryptocrystalline calcareous matrix. Rare gastropods and bryzoa becoming abundant with depth, rare foraminifera and shell fragments, rare black, grey and red lithics, rare to trace pyrite, very rare fragments of chert; grey to brown, translucent, and cryptocrystalline. Trace to common interstitial glauconite with some glauconitic infilling of the fossils. At depth, trace off white to light grey, very dispersive, argillaceous matrix.

3.2.2 NIRRANDA GROUP (255m to 314m)

Nirranda Group (Undifferentiated)	255m to 314m CALCARENITE, becoming CALCILUTITE with depth, off white to very light brown grey to medium dark grey, fine to medium grained, dominantly medium grained, friable to moderately hard, abundant bryzoan fragments, trace shell fragments, trace bivalves, common glauconite increasing with depth, trace dolomite, common light to medium grey argillaceous matrix.

3.2.3 WANGERRIP GROUP (314m to 1485m)

Dilwyn Formation	314m to 1088m From 315m to 450m CLAYSTONE, medium to dark grey brown, very soft, sticky, dispersive to moderately dispersive, slightly calcareous, occasionally interbedded with SANDSTONE, medium dark brown to medium dark grey brown occasionally light brown, fine to very coarse grained, dominantly medium to coarse grained, loose to friable, subangular to rounded, dominantly subrounded,

Cont'd...

very poorly sorted, common iron oxide staining on quartz grains, trace to common medium brown lithics, abundant medium brown to dark brown argillaceous matrix, nil to poor visible porosity.

From 450m to 495m, CLAYSTONE, medium to dark brown, very soft, dispersive, massive, very silty in part, common very fine quartz grains, trace micromicaceous with occasional coarse mica flakes, trace pyrite, moderately to very carbonaceous with common COAL, very dark grey to black, earthy to occasionally subvitreous, blocky to platey, dominantly very argillaceous, common disseminated pyrite, rare medium brown to translucent amber.

From 495m to 600m, SANDSTONE, very light grey to light brown grey, loose to friable, fine to very coarse grained, dominantly medium to coarse grained, subangular to rounded, dominantly subrounded, moderate to well sorted, trace to occasionally abundant medium dark brown argillaceous matrix,

Cont'd...

very weak silica cement, common black coally detritus, trace red and yellow stained quartz grains, trace coarse muscovite flakes, rare fossil fragments, poor to very good visual porosity, dominantly fair visual porosity, occasionally interbedded with CLAYSTONE, medium to dark brown, very soft, dispersive, massive, very sticky in part, moderate to very carbonaceous.

From 600m to 660m, CLAYSTONE, medium to dark brown, soft, very dispersive, massive, very silty in part, trace micromicaceous with occasional coarse mica flakes, moderate to very carbonaceous, trace pyrite, trace quartz grains. Interlaminated and finely interbedded with COAL, black, firm, earthy to occasionally subvitreous, platey to occasionally blocky to occasionally subconchoidal fracture, occasional disseminated pyrite, occasional very fine quartz laminae. Minor interbeds of SANDSTONE, as above from 495m to 600m.

From 660m to 1088m SANDSTONE,

Cont'd...

off white to light grey to occasionally grey brown, very fine to very coarse grained becoming medium to very coarse grained with depth, dominantly medium to coarse grained, subangular to subrounded occasionally rounded, poor to moderate sorting, trace coarse mica flakes, trace coally detritus and carbonaceous material, trace pyrite, trace silica cement, common to abundant medium to dark brown occasionally grey brown, dispersive argillaceous matrix, trace to common light to medium grey lithics increasing with depth, poor to occasional good visual porosity, dominantly moderate porosity becoming dominantly poorer with depth, occasionally interbedded with CLAYSTONE, medium to dark grey brown, very soft, very dispersive, silty in part, trace pyrite, trace micromicaceous.

Pember Mudstone Member	1088m to 1405m From 1088m to 1294m, CLAYSTONE, medium brown to light grey brown, very soft, very dispersive, sticky in part, becoming silty with depth

and grading into SILTY CLAYSTONE, light to medium brown, becoming occasionally dark grey to dark grey green with depth, soft, very dispersive, sticky, massive to slightly subfissile, trace to commonly micromicaceous, trace pyrite increasing with depth, common fine black carbonaceous flecks, common DOLOMITE, medium brown, hard, cryptocrystalline, with occasional thin interlaminations of SANDSTONE, very light brown, friable to very hard, silty to very fine grained, dominantly very fine grained, subangular to subrounded, moderately sorted, strong dolomitic and siliceous cement, rare glauconite, trace dark grey and red lithics, trace pyrite, very poor visual porosity.

From 1294m to 1318m, SANDSTONE, light grey, loose to friable, very fine to fine grained occasionally medium grained, angular to subrounded, dominantly subangular, poor to medium sorting, quartz grains with occasional yellow staining, trace carbonaceous flecks, trace black and green lithics, trace micromicaceous, common white argillaceous matrix, trace pyrite, weak, silica cement, poor visual porosity.

From 1318m to 1405m, CLAYSTONE, medium to dark grey brown, very soft becoming firm with depth, very dispersive, massive, becoming slightly subfissile with depth, trace very fine quartz grains, trace pyrite, trace to common carbonaceous flecks, grading in part to SILTSTONE, light to medium dark grey, soft to moderately firm, massive, common clay matrix, common carbonaceous flecks, trace pyrite.

Pebble Point Formation

1405m to 1487m

SANDSTONE, medium to dark brown, friable, very fine to very coarse grained occasionally granular, dominantly coarse grained, subangular to subrounded, dominantly subangular, very poor sorting, quartz grains commonly stained by iron oxide, abundant medium brown argillaceous clay matrix, becoming dark green with depth, common glauconite, trace to common iron oxide pellets increasing with depth, nil to very poor visual porosity. Interbedded with CLAYSTONE, light grey to medium dark brown grey becoming dark green grey with depth, firm, massive, trace micromicaceous, moderately silty.

3.2.4 SHERBROOK GROUP (1487m to 2855m.)

Paaratte Formation	1487m to 2650m From 1487m to 1650m SANDSTONE, very pale grey to off white commonly clear, loose to occasionally friable, fine to coarse grained becoming pebbly with depth, dominantly medium grained becoming coarse grained with depth, poor to occasionally moderate sorting, trace to abundant light brown to light brown grey argillaceous matrix, trace medium grey silty lithics, trace black carbonaceous detritus, trace to good trace pyrite becoming a common cement with depth, trace to good siliceous cement, poor to fair visual porosity interbedded with SILTY CLAYSTONE, light to medium brown grey becoming medium

Cont'd...

to dark brown grey with depth, soft, very dispersive, subfissile in part, common flecks of carbonaceous material, rare to trace pyrite, becoming common with depth.

From 1650m to 1755m, SANDSTONE, light grey to white, friable to hard becoming very hard with depth, very fine grained to pebbly, dominantly coarse grained, angular to subangular, dominantly subangular, moderate to good sorting, dominantly moderate sorting, trace to good trace medium brown argillaceous matrix, trace coally detritus, trace coarse muscovite flakes, trace to common medium grey lithics, rare red and yellow staining on quartz grains, moderate to strong siliceous cement with trace to common pyrite cement, fair to occasionally good visible porosity, occasionally interbedded with thin bands of SILTY CLAYSTONE, medium grey to medium dark brown grey, firm, very dispersive, subfissile, commonly micromicaceous, common black very fine coally flecks, rare coarse muscovite flakes, trace pyrite,

Cont'd...

occasional bands of COAL, black, hard, brittle, subconchoidal fracture, subvitreous, occasionally slightly argillaceous with a platey to blocky ~~fracture~~ Texture.

From 1755m to 2043m, SANDSTONE, buff to medium light brown, friable to moderately hard occasionally loose, very fine to medium grained, occasionally coarse grained, dominantly fine to medium grained, moderate sorting, subangular to subrounded, quartz grains have trace to common yellow staining, abundant dolomitic cement, common white argillaceous matrix, strong silica cement increasing with depth, common pyrite, trace to common green lithic grains, trace multicoloured micas, trace (in part) black coally detritus, fair visible porosity becoming poor with increasing depth, dominantly interbedded with SILTY CLAYSTONE, medium to dark grey occasionally medium brown grey, soft to firm, very dispersive, massive to subfissile, very carbonaceous with common coally flecks, common mica,

Cont'd...

trace to common pyrite, in part trace to common very fine altered feldspar, very occasional fine quartz sand grains.

Nullaware Greensand Equivalent ?

From 2043m to 2353m predominantly SANDSTONE, off white to light grey grading to medium grey green, friable to moderately hard, fine to coarse grained, dominantly medium grained, subrounded to rounded occasionally subangular, dominantly rounded, well sorted to very well sorted becoming moderately sorted with depth, nil to common white to light medium brown argillaceous matrix with abundant dark grey to medium green grey argillaceous matrix in part, moderate to strong silica cement, trace to common grey lithics with trace to common green lithics increasing with depth, trace to common pyrite, trace dolomite, medium brown with occasional dolomitic cement, common green and yellow/orange staining on the quartz grains, fair to good visible porosity becoming poor with depth, occasionally interbedded with and grading to SILTY

CLAYSTONE, medium brown, becoming medium to dark grey occasionally green grey, soft to moderately firm, becoming firm, moderate to very dispersive, occasionally massive becoming dominantly subfissile, moderately carbonaceous with abundant black coally flecks, rare to trace pyrite, dominantly micromicaceous with a trace to common multi-coloured mica, very rare dolomite fragments in part.

From 2353m to 2650m, SANDSTONE, off white to very light brown grey occasionally medium brown, friable to hard, very fine to coarse grained, dominantly fine grained, subangular to subrounded, poor to moderate sorting, common white argillaceous cement, trace dolomitic cement, medium brown, strong in part, weak to moderate silica cement, trace red, grey and green lithics, trace to common black coally material, trace red, green and yellow staining on quartz grains, trace multi-coloured mica, very poor to fair visible porosity occasionally good, interbedded

	with SILTY CLAYSTONE, light grey brown to dark grey, soft to firm, moderate to very dispersive, subfissile to occasionally fissile, commonly micromicaceous, very carbonaceous with occasional thin carbonaceous laminations, occasionally very fine quartz grains, common medium to coarse multi-coloured mica, rare pyrite.
Belfast Mudstone Member	2650m to 2807m SILTY CLAYSTONE, medium dark grey, firm, moderately dispersive, subfissile to fissile, commonly micromicaceous, common very fine grained quartz grains, common partly altered feldspar grains, common carbonaceous material, rare to trace glauconite, rare pyrite. Becoming arenaceous with depth with occasional medium to coarse sand grains, very occasional trace DOLOMITE, medium brown, cryptocrystalline, occasionally interlaminated with fine beds of SANDSTONE, off white to light grey occasionally medium brown, very fine to medium grained (very occasionally coarse grained),

dominantly fine becoming very fine grained with depth, poor to moderate sorting, hard occasionally friable in part, subangular, strong silica cement, occasional dolomitic and pyritic cements, abundant white argillaceous matrix, very occasional grey lithics, rare glauconite, very poor visible porosity.

Waarre Sandstone

2807m to 2855m

SANDSTONE, very light to medium grey, very fine to fine grained, massive, firm to moderately hard friable in part, subangular to subrounded, moderate sorting, trace to good trace argillaceous matrix, trace to good trace siliceous cement, trace to good trace calcareous cement, rare carbonaceous flecks, occasional pyrite, very poor to occasionally poor visible porosity. The sandstone has a trace to 10% patchy dull to moderately bright yellow-orange fluorescence giving a weak dull yellow crush cut. Interbedded with SILTY CLAYSTONE becoming fissile with depth and grading to SHALE in part. Carbonaceous material in the silty claystone has no fluorescence but a dry sample gives a very weak milky yellow crush cut.

3.2.5 OTWAY GROUP (2855m to 3412m)

Eumeralla Formation

2885 to 3412m.

From 2855m to 3006m, SHALE, light to medium grey becoming trace medium light green grey and occasionally medium brown with depth, firm to occasionally moderate hard, subfissile to fissile, very silty to occasionally very finely arenaceous, trace black carboneceous flecks, trace altered feldspars, common micromicaceous, thinly interbedded with minor SANDSTONE, light to medium grey occasionally off white to light brown, very fine grained, well sorted, hard, subrounded, occasional strong calcareous, dolomitic and siliceous cements, common off white argillaceous matrix, abundant light grey lithics, very silty in part, no visual porosity, no fluorescence, no cut. Very occasional COAL, hard brittle, subconchoidal fracture, trace pyrite.

From 3006m to 3035m. SANDSTONE, off white to light grey, hard, very fine to fine grained, subangular, moderate sorting, abundant white argillaceous matrix in part, strong calcareous, dolomitic and siliceous cements, common grey and green lithics, rare red lithics, trace carbonaceous material, trace mica, trace pyrite, nil to very poor porosity. The sandstone has a trace patchy dull yellow-gold fluorescence giving a very weak yellow-white crush cut interbedded with SHALE, as above, from 2855m to 3006m.

From 3035m to 3260m. SHALE light to dark grey occasionally medium brown grey, dominantly medium to dark grey, firm to occasionally moderately hard, subfissile to fissile, common black coally detritus, commonly micromicaceous, trace light grey anhydrite rare to trace altered feldspars in part. The shale has no fluorescence but a dry sample gives a very weak milky yellow crush cut. Interlaminated

Cont'd...

with occasional thin SANDSTONE laminae, off white to light grey, very hard, silty to fine grained dominantly very fine grained with very rare coarse grains, subangular, moderately sorted, abundant white argillaceous matrix, strong calcareous and siliceous cements with a trace dolomitic cement, common partly altered feldspars, common grey and green lithics with rare red lithics, no visual prosity. The sandstone has trace to 10% patchy dull yellow-gold fluorescence giving a very weak yellow-white crust cut. Occasional thin seams of COAL, black, firm to hard, brittle, earthy to subvitreous, blocky to conchoidal fracture, very often argillaceous.

From 3260m to 3412m, SHALE, light to medium grey occasionally dark grey, firm to moderately hard, subfissile to fissile. Silty in part with good trace very fine quartz grains, rare black coally detritus, trace altered feldspars, occasionally calcareous, rare calcite veins, very rare foraminifera. The shale has no fluorescence,

Cont'd...

but a dry sample gives a very dull, very weak pale yellow-white crush cut fluorescence, interlaminated with thin beds of SANDSTONE, light to medium grey occasionally light brown grey, firm to very hard, silty to very fine grained becoming fine grained, subangular to subrounded, moderate to well sorted, common altered felspars, common grey, green and red lithics, trace mica, trace to common coally material, common white clay matrix, strong calcareous and siliceous cements, no visible porosity. The sandstone has a trace to 5% very dull yellow fluorescence giving a very weak milky-white crush cut. Common thin seams of COAL, black, firm to hard, brittle, earthy to subvitreous, blocky to conchoidal fracture.

3.3 Hydrocarbons

3.3.1 Mud Gas Readings

Initial gas readings were contaminated by excessive amounts of hydrogen resulting from the reaction of Aluminium (used in the 20" casing shoe) with caustic soda (used in the mud system). Hydrogen contamination was further increased by an apparent reaction of the gas detector to paraformaldehyde (used in the mud as a bacteriocide).

To a depth of 1520m, background gas readings ranged between 50-100 p.p.m. C_1. Notably no gas peaks were recorded within the primary reservoir targets the:

- Intra Pember Sands
- Pebble Point Formation
- Top Paaratte Sands (Timboon Sands)

From 1520m to 1950m no gas peaks were recorded and background gas levels ranged between 100 - 200 p.p.m. C_1.

From 1950m to 2610m, (although still no appreciable gas peaks) the background gas levels rose to 200 - 400 p.p.m. C_1.

At 2610m a moderate gas peak recorded the first C_2 reading. The gas was associated with a thin basal Paaratte sand body:

C_1 - 450 ppm

C_2 - 20 ppm

Cont'd...

From 2610m to 2807m C_1, C_2, and C_3 were associated with thin sand bodies of the basal Paaratte Formation and the Belfast Mudstone Member, e.g.

At 2626m:

C_1 - 430 ppm
C_2 - 18 ppm
C_3 - 8 ppm

At 2725m:

C_1 - 608 ppm
C_2 - 42 ppm
C_3 - 12 ppm

Gas readings varied within the Waarre Sandstone (2807m to 2855m), although two significant peaks were apparent.

1. A Gas peak associated with an upper sand body at 2807m:

C_1 - 630 ppm)
C_2 - 70 ppm) see mudlog
) for details.
C_3 - 25 ppm) (enclosure 2)
i C_4 - Nil

2. A Gas peak associated with a lower sand body at 2836m:

C_1 - 1008 ppm
C_2 - 132 ppm
C_3 - 93 ppm
i C_4 - 5 ppm)
) first C_4 appearance
n C_4 - 6 ppm)

Below the Waarre Sandstone gas levels dropped quickly, from 2855m to 3006m, background gas levels ranged between:

C_1 - 200 to 300 ppm
C_2 - 10 ppm

Occasional gas peaks associated with thin tight sand units resulted in maximum gas levels of:

C_1 - up to 500 ppm
C_2 - up to 20 ppm
C_3 - less than 5 ppm

At 3006m, a gas peak associated with a major Eumeralla sand body resulted in the following values:

C_1 - 875 ppm
C_2 - 22 ppm
C_3 - 5 ppm

From 3006m to T.D. background C_1 readings varied widely though C_2 and C_3 levels remained steady, recordings ranged between:

C_1 - 400 - 700 ppm
C_2 - 10 - 25 ppm
C_3 - 15 - 10 ppm

When peaks were associated with thin coal seams the gas levels typically rose to:

C_1 - 2000 ppm
C_2 - 200 ppm
C_3 - 85 ppm
C_4 - 20 ppm

Details of the hydrocarbon gas analysis and a continuous gas log are contained within the mudlog, (enclosure 2), this should be referred to for further information.

3.3.2 Sample Fluorescence

With the exception of one or two sand grains observed at 2230m, (within the Nullawarre Greensand Equivalent) sample fluorescence was not detected in the well until a depth of 2807m was reached, (the top Waarre Sandstone). This sand unit exhibited 10% patchy dull to moderate bright yellow to orange fluorescence, with a slow dull yellow to white crush cut fluorescence.
A full report of this show is contained within the mudlog (enclosure 2).

From 2808m to T.D. sandstone bodies constantly exhibited a trace to 20% yellow to gold fluorescence becoming bright yellow with depth, and a yellow to white crush cut fluorescence becoming milky white with increasing depth.

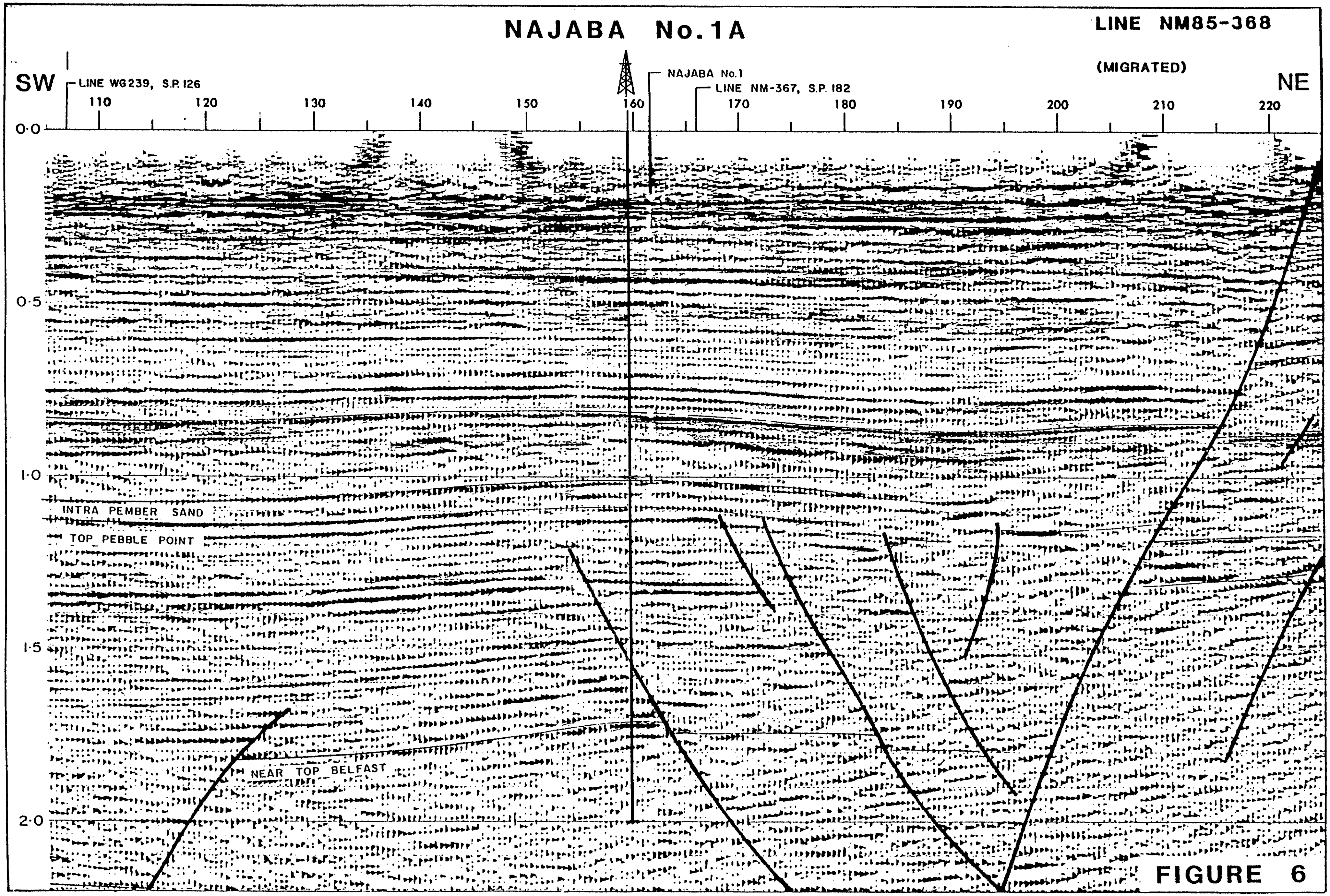
Carbonaceous material within the shales from 2855m to T.D. showed no natural fluorescence though a very weak milky yellow crush cut could be obtained from dried samples.

It is interesting to note that a fault zone at 3200m, (characterized at the wellsite by calcite veining and an ROP increase and further qualified by the dipmeter logs), was associated with bright pale yellow to white fluorescence with a moderately strong instant to slow streaming milky white cut. Such an association may reflect the possibility that the fault was (or is) used as a hydrocarbon migratory pathway.

Cont'd...

Oil staining and hydrocarbon odours were not associated with any of the fluorescent zones. Likewise, free oil was not observed in the drilling mud at any time during the drilling operations.

Several sidewall cores were shot in sandstone units that exhibited cutting fluorescence, (see Appendix 4) however, careful examination under ultra-violet light failed to detect any fluorescence or crush cut fluorescence. Obviously, the detection of minor quantities of fluorescence exhibited at Najaba #1A was only possible from 5m composite samples.



NAJABA No.1A

FIGURE 6

4. GEOLOGY

4.1 Najaba Structure

Comparison of pre- and post-drill seismic data was used to establish and refine the structural attitude of the Najaba prospect. The original Najaba structure was delineated after the regional Glenelg Seismic Survey (GL 85), and further refined by the Najaba-Maten Seismic Survey (NM 85).

The Najaba prospect was designed primarily to test the basal Tertiary "intra Pember Sands" and Pebble Point Formation. The calculated areal extent of the "intra Pember Sands" was 2.7 km^2, and a maximum vertical relief of 72m (Figures 6 and 7), the calculated areal extent of the Pebble Point was 2.0 km^2, with a maximum vertical relief of 66m (Figures 6 and 8). Secondary prospects included the Upper Cretaceous Timboon sands, intra-Paaratte sand units, and the Waarre Formation.

The Najaba structure has four way dip closure independent of faulting at Pember level. At Pebble Point level it is only marginally dependent upon minor antithetic faults. "Geogram" results inferred good reflector characters within the shallower Tertiary sections of the well and confirmed that the "intra Pember Sands" and Pebble Point seismic horizons were picked correctly. The lack of faulting at Pember level was supported by dipmeter interpretation, whilst a lack of hydrocarbons suggests that communication with the Tartwaup Fault may not have existed. With no faults reaching the isolated "intra Pember Sand" body, migration of hydrocarbons was not possible.

Correlation of the top Pember Mudstone differed from the seismic event which was picked higher than the lithological top. The implication was that the seismic horizon represented an isochronal top Pember event rather than a discrete lithological change. Seismically therefore, the top Pember will not always coincide with the apparent lithological, log picked top.

Well control within the Tertiary sequence was good with velocity data available from Fahley #1 and Wanwin # 3. Good seismic quality and accurate velocity data enabled an accurate prognosis of the Tertiary formation tops.

Structure at depth was difficult to predict with a lack of well control and poor seismic quality, indeed velocity data was poorly understood and slower velocities were assumed based on the scanty data available. The deepest horizon mapped was "Near Top" Belfast (Figures 6 and 9), at this horizon the prospect was fault dependent, (this was confirmed by dipmeter interpretation) and exhibited only minor four-way dip. "Near top" Belfast seismic correlation was good with close picks, although seismic character was poor and indistinctive. Strong seismic events were not apparent at this level.

A vertical seismic profile (VSP) (see enclosure 4) was shot within the lower section of the well in an attempt to determine the prescence of a drillable event "ahead of the bit". VSP data quality was very good allowing a determination of reflectors at depth below the current T.D. A significant seismic horizon was calculated at 3795m, 383m below the present T.D. This event however was considered beyond the contracted rated capacity of the rig, and, as no significant events were confirmed above 3795m, it was decided to plug and abandon Najaba # 1A.

BEACH PETROLEUM N.L.

NAJABA No.1A
TOP INTRA PEMBER MUDSTONE SANDSTONE

CONTOUR INTERVAL : 20 MILLISECONDS

Scale 1 : 25,000

metres 500 250 0 500 1000 metres

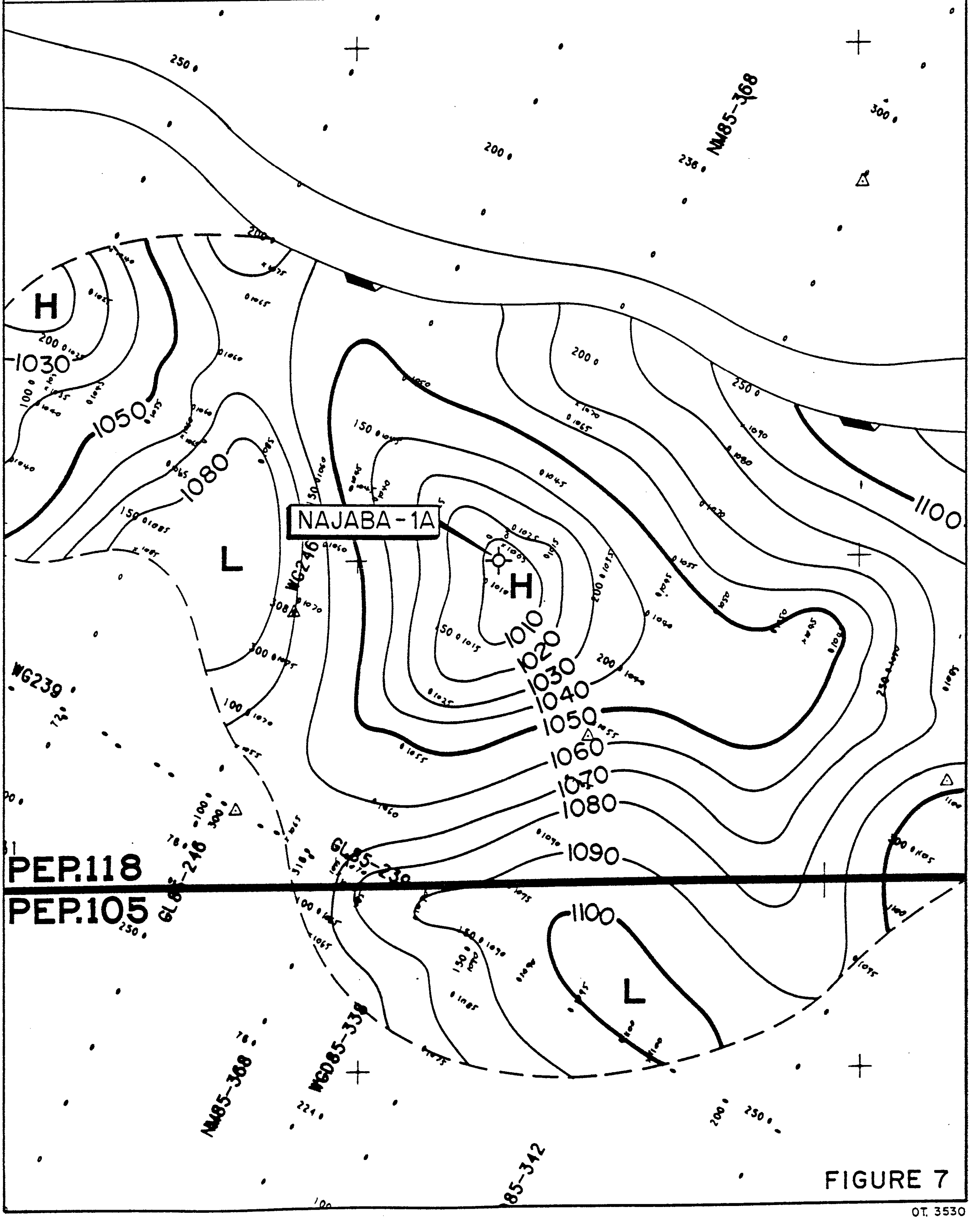


FIGURE 7

OT. 3530

BEACH PETROLEUM N.L.

NAJABA No.1A

TOP PEBBLE POINT FORMATION

CONTOUR INTERVAL : 10 MILLISECONDS

Scale 1 : 25,000

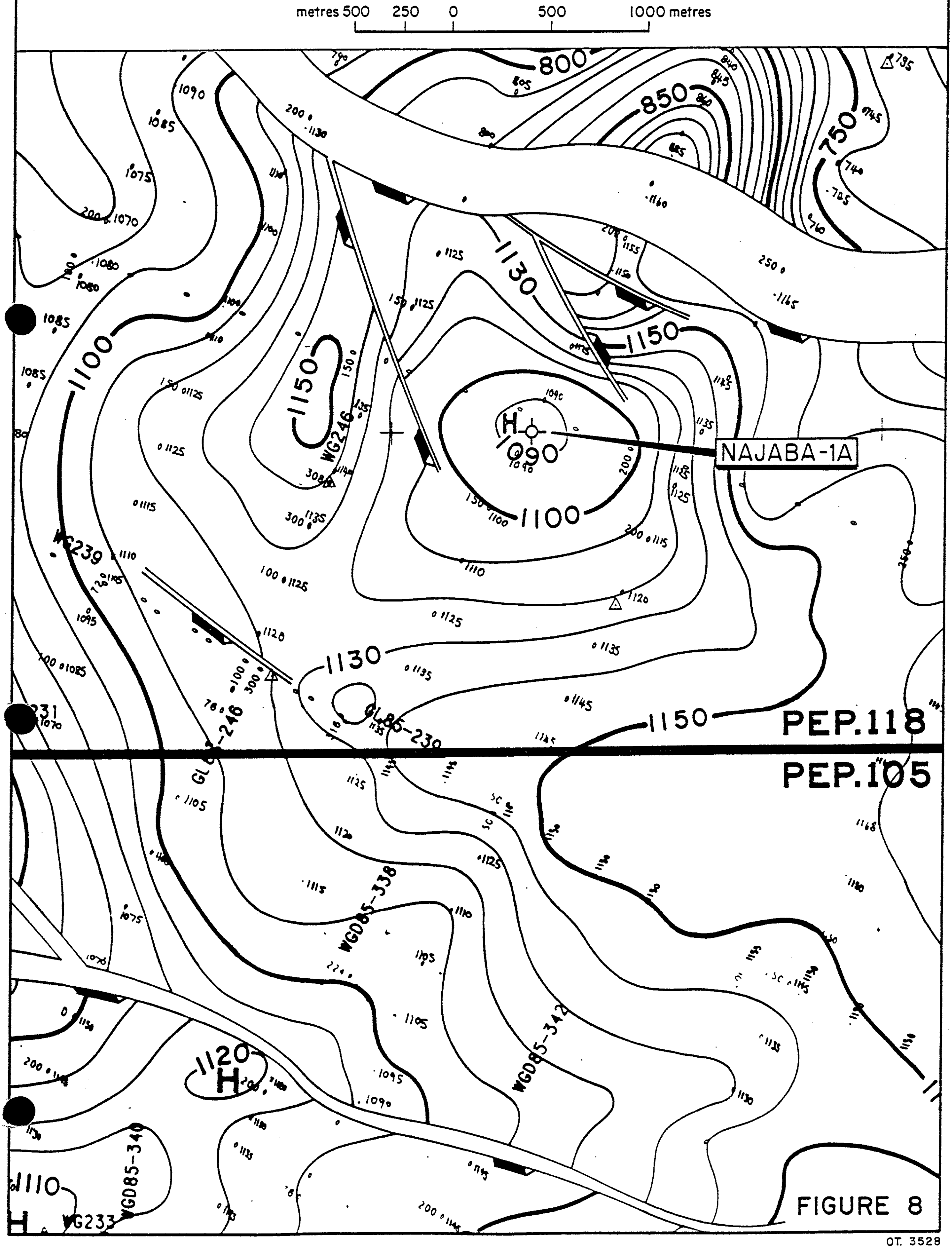


FIGURE 8

OT. 3528

BEACH PETROLEUM N.L.

NAJABA No.1A

NEAR TOP BELFAST MUDSTONE

CONTOUR INTERVAL : 20 MILLISECONDS

Scale 1 : 25,000

metres 500 250 0 500 1000 metres

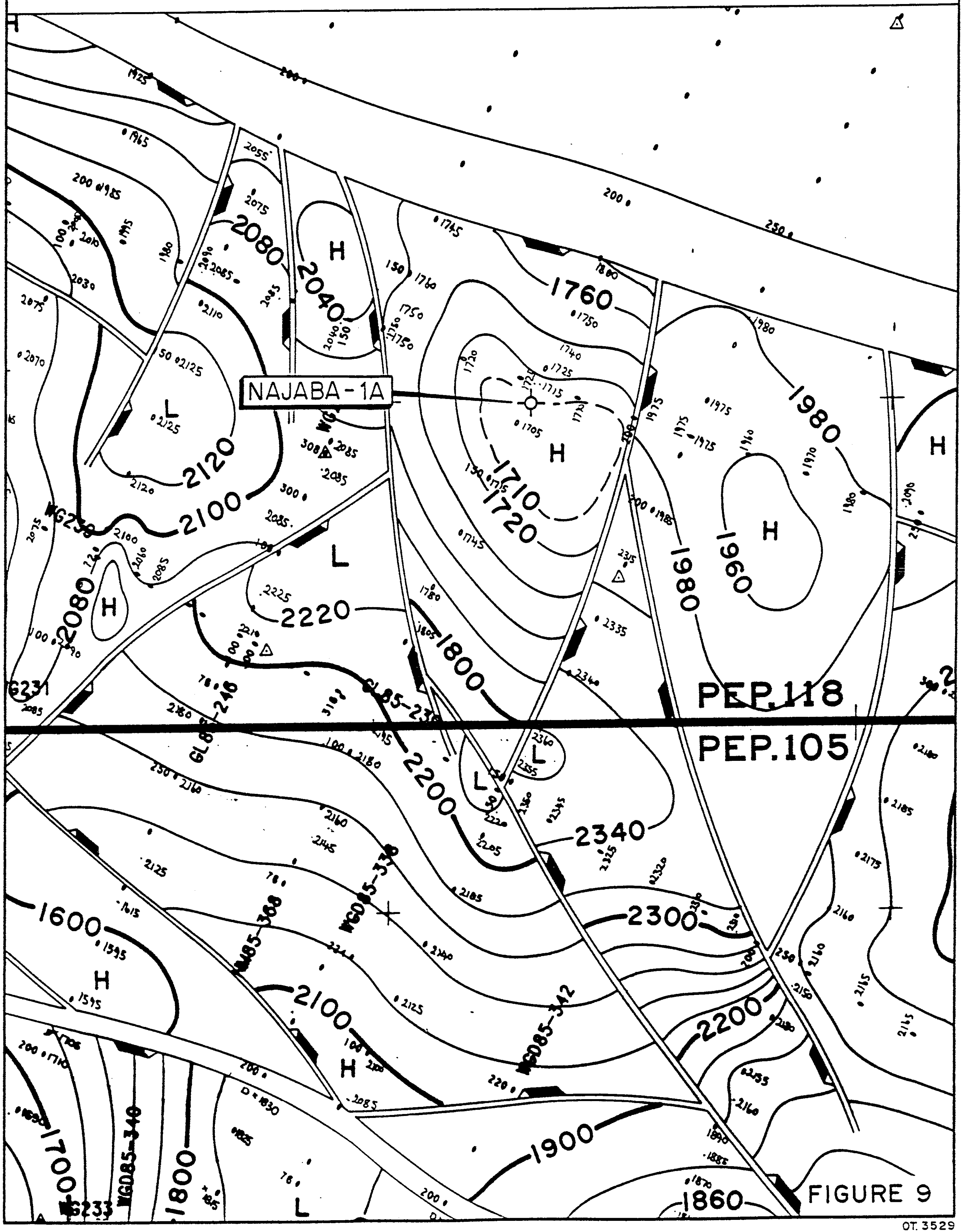


FIGURE 9

OT. 3529

4.2 Porosity and Water Saturation.

An initial Cyberlook Pass I and II over the zones, 1505m to 1285m and 1105m to 985m was generated at the wellsite. A second Cyberlook Pass II over the zones, 2865m to 2690m, 2525m to 2450m and 2075m to 2025m was generated at Sydney. Results displayed on the second Cyberlook Pass II have limited credibility, delineated by a minumum number of input parameters and a porosity determined by only the sonic tool. The attached Cyberlook logs (enclosure 3) are based on the dual water method resulting in values of R_{WB} (boundwater) and R_{WF} (free water). Further porosity values of selected sidewall cores were estimated by the Australian Mineral Development Laboratories (AMDEL). Porosity estimates made by AMDEL were lower than those made by Schlumberger, possibly due to the following factors:

1. Use of the sonic tool to establish porosity within a shaley formation can result in values that are increased by an amount proportional to the clay bulk volume, a Δt_{shale} generally exceeds Δt_{max} of the sandstone.

2. The use of a nuclear tool to establish porosity can result in all hydrogen being "seen", including the bound water associated with clays, therefore in a wildcat well, if the precise amount of shaliness is not known, porosity values determined by Schlumberger may read higher.

3. The microporosity of many rocks can be underestimated in the thin-section petrography leading to lower porosity values than those determined through the use of Schlumberger porosity tools.

BEACH PETROLEUM N.L.

NAJABA - 1A

PRIMARY SONIC POROSITY IN THE PAARATTE & INTRA BELFAST SANDS FROM NAJABA-IA (SLS-GR LOG 1516m - 2807m).

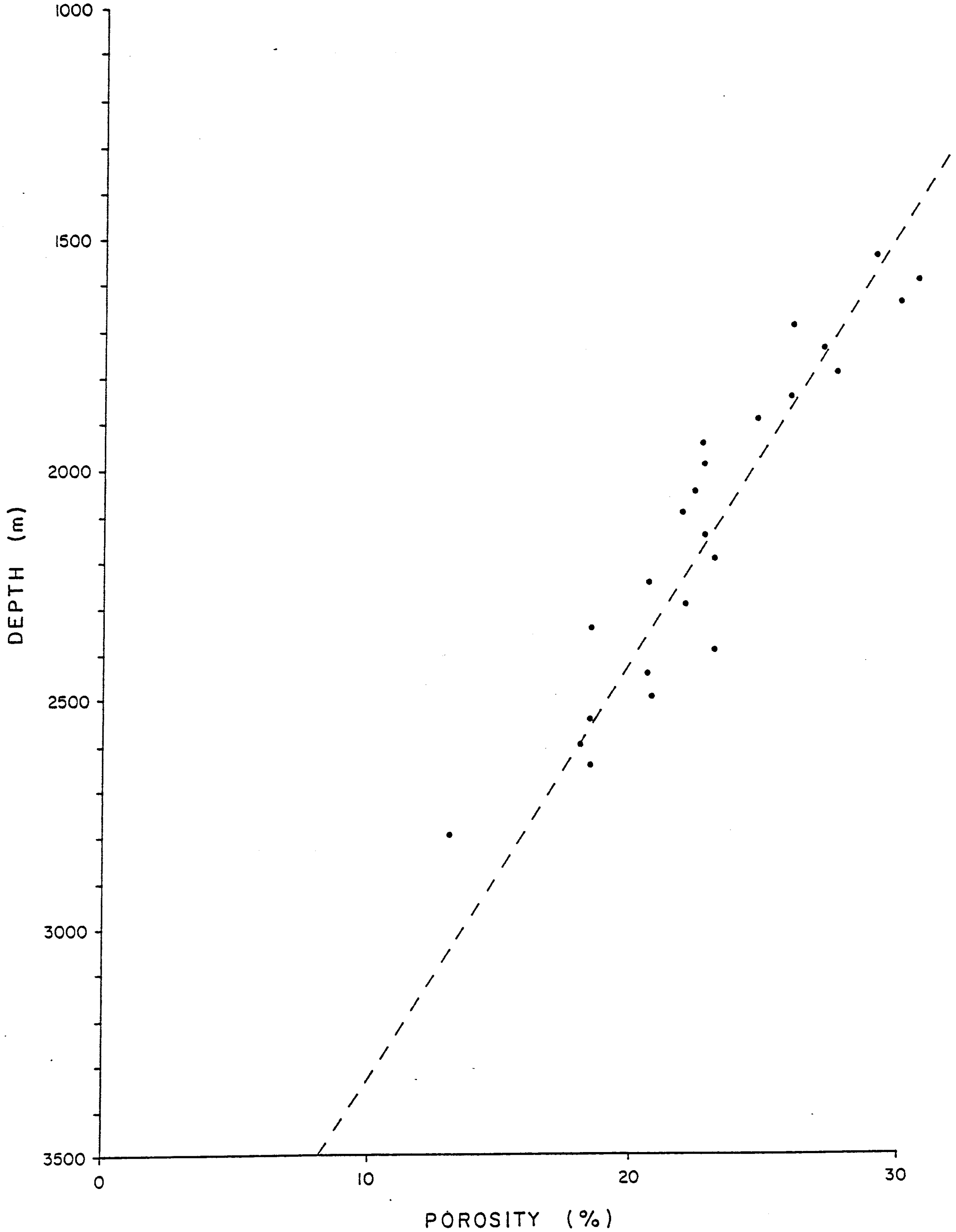


FIGURE 10

- Basal Dilwyn Formation.

The Dilwyn Formation represents an interbedded sandstone/shale, prodelta sequence. Basal sandstone units were medium to coarse grained and moderately sorted. There appears to be an abundant, medium to dark grey, dispersive argillaceous matrix resulting in a poor to moderate visual porosity. The formation was water saturated with the following parameters:

RWF : 1.3 ohm/m
RWB : 2.0 ohm/m
Temperature : 81°C
NaCl : 1700 ppm
Porosity : sonic : 35-41%
nuclear: 25-35%

- Intra Pember Sands.

The Intra Pember Sands were described as a porous quartz sandstone. A bimodal, grain size distribution was evident suggesting that the sediment was laid down in heavily laden rivers or as a grainflow deposit in the pro-delta muds. The sand was poorly sorted with angular to subangular grains that may result in poor permeability. Most primary porosity appeared to be preserved with no evidence of quartz overgrowths and only small quantities of allogenic kaolinite. The formation was again water saturated with the following parameters:

RWF : 0.1 ohm/m
RWB : 0.7 ohm/m
Temperature : 81°C
NaCl : 27000 ppm.
Porosity : sonic : 34% (top)
: 32%(base)
nuclear : 30% (top)
: 25% (base)
thin section : 15%

- Pebble Point Formation.

The Pebble Point was described as a ferruginous sandstone. Clay minerals were abundant within the formation severely reducing the primary porosity. Pore filling material, consisting of berthierine and siderite, appeared to have developed early. It is interesting to note that the berthierine, a ferruginous pelletal form of chlorite, is associated with the ocean floor environment often occurring within marine sandstones (B. Velde, 1983). In the case of the Pebble Point however, it was assumed that berthierine was present as a product of diagenesis or derived from a local source of abundant berthierine. Under high magnification there appeared to be some microporosity within the clays. The formation was water saturated with the following parameters:

RWF	:	0.155 Ohm/m		
RWB	:	0.3 ohm/m		
Temperature	:	81°C		
NaCl	:	16000 ppm		
Porosity	:	sonic	:	30%
		nuclear	:	0-10%
		thin section	:	10%

- Top Paaratte (Timboon Sand Equivalent).

The top Paaratte was described as a compact argillaceous and ferruginous sandstone with fine to coarse grains, poorly sorted with common aggregates of pyrite.

A sidewall core representing top Paaratte was badly damaged during coring, thus a detailed petrographic analysis was not possible. It appears that an abundant argillaceous matrix of allogenic clays (including kaolinite, illite and chlorite) has resulted in a trace to nil visible porosity. The upper Paaratte was water saturated with the following parameters:

RWF	:	0.155 ohm/m		
RWB	:	0.3 ohm/m		
Temperature	:	81°C		
NaCl	:	16000 ppm		
Porosity	:	sonic	:	24%
		nuclear	:	5-10%

- Nullawarre Greensand Equivalent.

The Nullawarre Greensand Equivalent (2043m to 2353m) was described as a compact quartz sandstone. The sand has moderate to good sorting and appears to be mature. The high percentage of quartz in the rock was due to extensive quartz overgrowths observed within the sample, and resulted in a minimal porosity. To a lesser degree, a carbonate cement (filling many of the intergranular spaces) also contributed, to a minor extent, to the low porosity and lack of permeability. Presence of glauconite, (probably resulting in the green colouration seen in the cuttings) was generally taken as evidence of a marine environment and suggests that the Nullawarre Greensand Equivalent was a beach sand, associated with a high energy environment.

The Nullawarre Greensand Equivalent was water saturated with the following parameters:

RWF : 0.05 ohm/m
RWB : 0.2 ohm/m
Temperature : 102°C
NaCl : 50,000 ppm
Porosity : sonic : 17%
: thin section: 5%

- Basal Paaratte.

The Basal Paaratte was described as a well sorted, compact, fine grained sandstone. The fine quartz grains were originally subangular to subrounded though later modified by extreme pressure solution. Porosity was minimal due to extensive quartz overgrowths and the relatively abundant clays appear to be authigenic rather than allogenic. The Basal Paaratte was water saturated with the following parameters:

RWF : 0.1 ohm/m
RWB : 0.2 ohm/m
Temperature : 102°C
NaCl : 22,000 ppm
Porosity : sonic : 15%
thin section : 2%

- Waarre Sandstone.

The Waarre Sandstone was described as a compact dolomitic sandstone and a fine-grained argillaceous sandstone. Original grains were rounded, though now, due to quartz overgrowths, have become angular to subangular. Porosity was virtually zero due to the pressure solution effects, though minimal interstitial porosity occurred.

The interstitial pores were often lined with fine authigenic quartz, carbonates or clays causing a choking and closing of the pores. The Waarre Sandstone was water saturated with the following parameters:

RWF : 0.1 ohm/m
RWB : 0.2 ohm/m
Temperature : 102°C
NaCl : 22,000 ppm
Porosity : sonic at 2810m : 9%
2845m : 11%

- Summary

Diagenesis is the major control on the porosity and permeability of reservoirs, accordingly it is possible to divide the stratigraphic section of a well into three major depth zones each corresponding to differing stages of diagenesis (Trevena and Clark, 1986):

1. Shallow Zone.
    a) Small amounts of quartz and kaolinite cement.
    b) Abundant intergranular porosity.
    c) Good interconnections between pores.
2. Intermediate Zone.
    a) Well developed quartz overgrowths.

b) Substantial amounts of authigenic kaolinite.

c) Some secondary porosity developed from the leaching of detrital feldspars.

d) Some intergranular pores with reduced diameters.

3. Deep Zone.

a) Large amounts of quartz and clay cements.

b) Quartz overgrowths form interlocking mozaics.

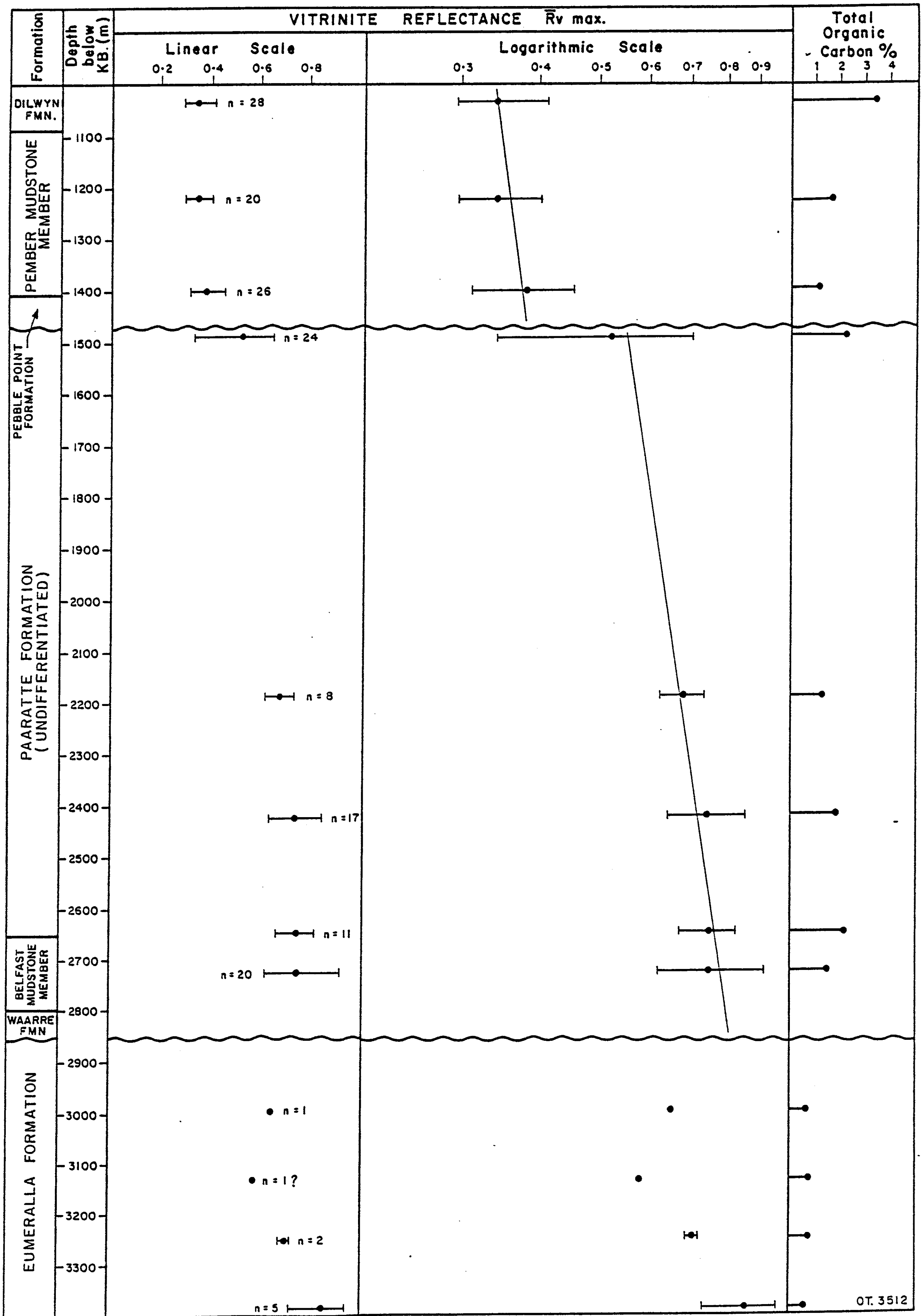
c) Secondary pores are small and filled by authigenic kaolinite and illite.

d) Deep zone reservoirs are generally overpressured.

At Najaba #1A the Tertiary reservoirs, and Upper Paaratte (Timboon Equivalent) Sands fall within the shallow zone. Quartz overgrowths are not present and whilst porosities are low, due to a high clay content, these clays are allogenic rather than authigenic, forming a matrix rather than a cement. Deeper reservoirs within the Basal Paaratte and Waarre fall within the intermediate - deep zone. Substantial quartz overgrowths with authigenic kaolinite and carbonate cements reduced porosity to practically zero. At Najaba #1A feldspar dissolution does not appear to contribute to any secondary porosity. The only secondary porosity appears to result from the development of an interstitial porosity that was observed at some grain boundaries. Although overpressure is generally a characteristic of this diagenetic zone, no overpressuring was indicated on the "D" exponent (corrected) plot at Najaba #1A. (See enclosure 2).

NAJABA No.1A

VITRINITE REFLECTANCE AND TOTAL ORGANIC CARBON PROFILE



⊢●⊣ n = 20 :- R̄v average and range. n = number of vitrinite particles. Samples were all sidewall cores.

FIGURE II

4.3 Maturation and Source Rock Analysis.

Vitrinite reflectance estimates R_V and a total organic carbon analyses (T.O.C.) were carried out on twelve sidewall cores and one cuttings sample. Results of the study are contained in Appendix 7 and summarized in figure 11.

It can be seen immediately from figure 11 that there are three zones for discussion, with each zone conveniently separated by a major unconformity.

a) The basal Tertiary samples of the Lower Dilwyn Formation and the Pember Mudstone Member.

b) The Upper Cretaceous samples of the Paaratte Formation and the Belfast Mudstone Member.

c) The Lower Cretaceous samples of the Eumeralla Formation.

Basal Tertiary

Sediments within the Tertiary have R_V values between 0.29% to 0.45%, suggesting that the basal section of the Tertiary was immature and unable to generate any hydrocarbons at this depth. The total organic content (T.O.C.) and the kerogen type, however, suggested that this zone would have a fair to good oil and gas generating capacity. The basal Dilwyn is a particularly attractive source rock unit with high T.O.C. values (greater than 3%) and good quantities of vitrinite and exinite. It was interesting to note that the Tertiary sediments were characterized by the rare quantities of inertinite.

Upper Cretaceous

The Upper Cretaceous was characterized by a sharp unconformity, dramatic increases of the R_V values and an increased quantity of inertinite, whilst vitrinite and exinite macerals became sparse to rare.

Cont'd...

The Upper Paaratte was marginally mature, whilst full maturity was reached at 2400m within the basal Paaratte and Belfast Mudstone Formations. However, low quantities of vitrinite and exinite suggested that these formations could only be regarded as poor gas prone source rocks.

The break in the R_V slope at the Tertiary-Upper Cretaceous disconformity suggests that approximately 1450m of sediment was removed.

Lower Cretaceous

An unconformity was defined at 2855m (using dip meter data), separating the Upper Cretaceous Sherbrook Group from the Lower Cretaceous Otway Group. Obvious characteristics observed within the Eumeralla Formation were:

a) Sparse amounts of dispersed organic matter (DOM).

b) Low TOC. values (0.37% - 0.6%).

With sparse DOM. and the low TOC. values the Eumeralla could be regarded at best, as a poor gas prone source rock, however, vitrinite fluorescence and rare "green oil droplets with green interstial oil" were present in a sample from 3386m possibly suggesting some hydrocarbon generation within deeper Eumeralla sediments.

A cuttings sample was analysed from 3405m and whilst it too gave an overall sparse DOM, hand-picked grains of carbonaceous siltstone and claystone had abundant DOM. Both macerals inertinite and exinite were present in abundance, whilst vitrinite was found to be common within these thin carbonaceous units. Therefore, whilst discrete selective sidewall cores may not represent the entire formation, with the presence of green oil droplets and the thin carbonaceous horizons, the initial paucity of TOC within the Eumeralla may be significantly upgraded to a fair oil prone source rock.

In summary, the basal Dilwyn Formation represented the most favourable source rock although sadly it lacks maturity.

The Paaratte Formation and Belfast Mudstone Member appear to be mature though kerogen types suggest that these sequences have only a poor gas prone potential.

Finally, the Eumeralla Formation, although appearing to have a poor gas prone potential, may be upgraded by thin oil prone carbonaceous bands of siltstone and claystone to become a fair oil prone source rock.

4.4 Relevance to Occurrence of Hydrocarbons

Najaba #1A was plugged and abandoned as a dry hole. The primary targets, the basal Tertiary intra Pember sands and the Pebble Point and the Upper Cretaceous top Paaratte (Timboon Equivalent) sands were all present, though both the Pebble Point and top Paaratte sand units were choked with clay. The intra Pebble Point appeared relatively clean and exhibited good porosity. All potential reservoirs were water saturated with no significant hydrocarbon indications.

Listed below are some considerations relevant to future hydrocarbon exploration in the area.

1. The intra Pember sand exhibited excellent reservoir characteristics with good porosities, moderate permeability and a low clay content, wire-line log interpretation however indicated that the sand unit was water saturated. A lack of hydrocarbons suggests that the sand body was an isolated unit, and the original proposal that hydrocarbons charged the sand body via the Tartwaup Fault must be regarded as erroneous.

2. The Pebble Point was a poor reservoir with limited porosity due to a high percentage of clay, particularly berthierine. Berthierine, a clay mineral uniquely characteristic to the Pebble Point in Najaba #1A, is a pelletal, ferruginous type of chlorite associated with an ocean floor environment. The exact origin of berthierine in the Pebble Point is not known, however the unpredictable nature of the Pebble Point as a reservoir was further highlighted at Najaba #1A.

3. The top Paaratte (Timboon Equivalent) sands, like the Pebble Point, exhibited poor reservoir characteristics with little or no porosity due to an abundance of clay, particularly allogenic kaolinite, illite and chlorite. The precise nature of the clays is not known and an increased understanding of their association with the top Paaratte sands may help to establish the clay content of the sands throughout the entire area.

4. The Paaratte Formation consisted of an upper and lower undifferentiated sandstone/shale sequence separated by a thick sand body; the Nullawarre Greensand Equivalent. The lower Paaratte sequence may represent top Belfast, as suggested by age dating, although lithologically it resembles "typical" Paaratte. Log characteristics in the upper and lower Paaratte sequences were similar, suggesting deposition in similar environments both above and below the Nullawarre Greensand Equivalent. Potential reservoirs throughout the entire Paaratte Formation were downgraded by a lack of good seals and a diagenetic reduction of the porosity with increasing depth.

5. The Belfast was characterised by a typical dark brown lithology as described in the sidewall cores #19, #20, #21 and #23. (see appendix 4). This typical lithology however, was not observed in the cuttings due to the dispersive nature of the clay and its similarity in colour to the drilling mud. This fact resulted in a misinterpretation of the Belfast Mudstone/Eumeralla Formation. The possibility of a top arenaceous Belfast lying beneath a Nullawarre Greensand Equivalent was discussed previously (see

#4 above). Age dating suggests a 430m thick Belfast underlying the Nullawarre Greensand Equivalent and exhibiting an arenaceous "Paaratte-style" top. Alternatively, a typical litho-characteristic top Belfast implies a 150m thick silty shale underlying a basal Paaratte of typical Belfast age.

6. The Waarre Formation was an ill-defined poorly developed sandstone. Primary porosity was poor due to the development of abundant quartz overgrowths and authigenic clays. Minor quantities of hydrocarbons were present with up to 10% fluorescence recorded. The presence of hydrocarbons may suggest a limited secondary porosity or the development of some interstitial porosity. The depth to which the Waarre was buried at Najaba #1A indicates that diagenetic processes will inhibit the development of good reservoir qualities.

7. The Eumeralla Formation was difficult to determine at the well site and, without the luxury of hindsight, showed many similarities to the Belfast Mustone (see Mudlog litho-descriptions - enclosure 2). A subtle increase in fissility may be representative of the Eumeralla, however this was a difficult feature to monitor objectively. A further differentiation between the Eumeralla Formation and the Belfast Mudstone was the abundance of thin coal seams, characterized by discrete gas peaks, that were typical to the lower Eumeralla sediments. The major distinction between the Belfast Mudstone and the Eumeralla Formation was the rate of penetration (ROP) styles, (see enclosure 2). Belfast Mudstone ROP's show a "ratty" character with widely varying rates. ROP's within the Eumeralla Formation however, exhibited a constant slow ROP with very little variance. The typical ROP styles may represent a crude well site "tool" enabling a differentiation

to be made between the Belfast Mudstone and the Eumeralla Formation.

8. The Upper Cretaceous - Tertiary disconformity was not well defined on the dipmeter. The disconformity was clearly shown on the vitrinite reflectance profile (figure 11) and vitrinite data suggests that approximately 1450m of sediments were missing. The disconformity was supported by age dating analysis.

9. The Upper Cretaceous - Lower Cretaceous unconformity was clearly discernable, using dipmeter data, as a major angular feature (see enclosure 3), showing an abrupt change of dip magnitude and direction from an average 5° NW to 32° SSW. The unconformity was confirmed by age dating that established a good Lower Cretaceous Albian assemblage at 2887m (SWC #16) and an Upper Cretaceous Turonian assemblage at 2805m (SWC #19) (see appendix 6).

10. Previously the Belfast Mudstone was prone to overpressuring, subsequently this led to a number of drilling and engineering problems, e.g., Fahley #1 and Breaksea Reef #1A. At Najaba #1A the mud system was conditioned prior to drilling the Belfast Mudstone by increasing the KCl content from 4% at approximately 2300m to 10% at approximately 2500m. Although minor difficulties were encountered the relatively high quantities of KCl appeared to alleviate the over-pressure problems formally associated with the Belfast Mudstone.

11. Source rock analysis and vitrinite studies revealed three major divisions within the stratigraphic sequence.

    (a) Tertiary lithologies, from basal Dilwyn to Pebble Point, were immature for hydrocarbon generation though exhibited good oil prone source rocks.

    (b) Upper Cretaceous sediments were marginally mature to mature for hydrocarbon generation, though appeared to have only fair to good gas prone source potential.

    (c) The Lower Cretaceous Eumeralla Formation, although mature for hydrocarbon generation, had very poor source potential. Age determination indicates that the sequence drilled was very young and deposited quickly, most likely as part of a rift valley lake system. Fresh water algae lends credence to this theory.

12. At shallow depths primary porosity was reduced by an abundant allogenic clay content. Porosity throughout the well decreased with depth as a result of diagenetic processes, notably extensive quartz overgrowths and a presence of authigenic clays. Secondary porosity does not appear to have occurred at Najaba #1A (e.g. feldspar dissolution) and only the possibility of minor interstitial porosity has enabled trace hydrocarbons to occur. At depth throughout the Najaba area a loss of primary porosity within deep reservoirs negates the need to drill for deep Waarre plays.

13. Fluorescence was observed in composite samples from 2807m to T.D. Fluorescence was minor and associated with sand bodies of the Upper Cretaceous Waarre Formation and the Lower Cretaceous Eumeralla Formation.

As already stated, due to very low visible porosities the sands were not tested. Sidewall cores within these sand units did not exhibit any fluorescence, this suggests that the presence of hydrocarbons were determined only through the analysis of full composite samples.

14. It was assumed that the migratory pathways throughout the area were the numerous faults. A fault zone at 3200m, determined by the abundant calcite and slickensiding observed within the cuttings and further supported by dipmeter interpretation, presented direct evidence to suggest that faults were indeed used as migratory pathways. Analysis of the cuttings revealed that the fault zone contained associated hydrocarbon fluorescence.

15. The seismic character at Najaba #1A was good within the Tertiary and topmost Upper Cretaceous. Post and pre-drill picks were generally close with good velocity data available. Seismic character within the lower section of the well, at Belfast and Waarre levels, was poor and velocity data largely unavailable. As only the Tertiary and top Upper Cretaceous sediments could exhibit potentially good reservoir qualities it is not necessary to enhance seismic data at the Belfast- Waarre levels where reservoir character is very poor.

16. Due to difficulties determining the bottom hole formation a vertical seismic profile (VSP) was shot in an attempt to "look ahead of the bit". Prior to post-drill analysis it was assumed that:

(a) The Eumeralla was the Belfast Mudstone Member.

(b) The Waarre Sandstone was an intra Belfast sand.

With these pre-conceived ideas in mind, the VSP was applied in an attempt to resolve reflective horizons that possibly suggested a Waarre Sandstone below the well P.T.D. On-site computer processing of the VSP data indicated a strong reflector approximately 400m below T.D., however, due to the limited rig capabilities and economic parameters it was decided that the well should be plugged and abandoned.

SUMMARY

Najaba #1A was dry due to poor reservoir qualities, or, in the case of the intra Pember sand, inadequate migratory pathways. With the exception of the intra Pember sands, all the reservoirs present lacked good primary porosity, although good seals, migratory fairways and source rocks were present. The intra Pember sand, though displaying good reservoir qualities appeared isolated and fault-free, therefore lacking the necessary migratory pathways. Further drilling within the area must:

(a) Attempt to determine the variable reservoir qualities of the Pebble Point and top Paaratte.

(b) Delineate any intra Pember sand bodies and attempt to define their precise association with the fault zones that enable potential hydrocarbon migration.

(c) T.D. within the Upper Paaratte Formation.

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APPENDIX 1

DETAILS OF THE DRILLING PLANT

RICHTER DRILLING PTY. LTD.

NATIONAL 80B - RIG NO. 8

DRAWWORKS	National 80B, 1-1/4" Drill Line. National type 81 Catheads, Parmac Hydromatic brake, driven off compound.
POWER	3 each Superior PTDS6, each rated at 600 HP at 900 RPM.
COMPOUND	National B24, 3 Section.
MUD PUMPS	2 each National 9-P-100 Triplex 1000 HP 6-3/4" X 9-1/4" equipped with 6-1/4" liners and pistons with hydril K20-5000 pulsation dampeners. Both with independent drive - CAT D399TA industrial engines.
MAST	Lee C. Moore, 142 ft. 860000 lbs. capacity. 1 x 60" - 5 x 48" sheaves in crown.
SUBSTRUCTURE	Main substructure 10' 6" high, plus pony substructure 11 ft. high for total height of 20'6". Motor substructure, total height 12' high composed of three subs, 5' plus 4'9".
MATTING	1 set sectionilized hardwood matting.
ROTARY TABLE	National C275, 27-1/2"
HOOK BLOCK	National Type G, 350 ton.
SWIVEL	Ideal RB3
KELLY DRIVE	Baash Ross, Type 2 RCH 6.
MUD AGITATORS	2 "Lightnin" Mixers. 2 Brandt MA 7.5

MUD TANKS	Shaker 37' x 8' x 4'6" Intermediate tank 34' x 8' x 5' Suction tank 37' x 8' x 5' 750 BBL capacity
SHALE SHAKER	Brandt Dual Tandem
DEGASSER	Drilco Standard Pit
DESANDER	Demco 4 cone, with BJ 5" x 6" pump
DESILTER	Pioneer-12 x 4" Cones, with pump
GENERATING PLANT	2 Cat D3408 Generator sets
CHOKE MANIFOLD	3" x 5000 psi wt 2" H2 chokes
BOP'S & ACCUMULATOR	. Annular, Stamco 13-5/8" 5000 psi . 2 - Cameron 13-5/8 x 5000 psi U Type . Accumulator, koomey 35120-35, 12 bottles . Hydril 10000 psi Upper Kelly Cock . Gray inside BOP, 4-1/2" XH . Hydril Lower Kelly Cock
DRILLING RECORDER	. Martin Decker 6 pen . Pit Volume/Automatic Driller/Flo Sho/Stroke Counter/Rotary RPM/Rotary Torque
RIG LIGHTING	Hutchinson system of 48" double tube fixtures
COMPRESSORS	. 1 x Atlas Copco BT4 (on compound) . Sullair Rotary Compressor (elec driven)
WELDING AND CUTTING	. Lincoln model 400AS electric welding machine . Oxy and acetylene cutting equipment
MUD LAB	Baroid model 821
DEVIATION SURVEY	Totco unit No. 6, 8° double recorder
KELLY	5-1/4" Hex, 4-1/2" IF Pin, 40 ft long, 37 ft working space.

DRILL PIPE	10000 ft 4-1/2" OD, 20 lb/ft, Grade E, Range 2 15 joints heavy wate drill pipe 42 lb/ft
PUP JOINTS	1 x 5' - 1 x 10' - 1 x 20' Gr "G" 4-1/2" OD
DRILL COLLARS	12 x 8" OD, 6-5/8" API Reg 24 x 6-1/4" OD, 4-1/2" XH
HANDLING TOOLS	. Power tongs, Farr 13-3/8 Jaws for 7", 9-5/8" and 13-3/8" . Varco SSW10 Spinning Wrench
TONGS	BJ type B with lug jaws, 3-1/2" to 13-3/8" BJ type SDD with jaws for 8-1/2" to 12" BJ/Wilson for 20" casing
ELEVATORS	BJ type BB 275 ton for 4-1/2 DP Elevators and single joint elevators for: 5-1/2" casing 7" casing 9-5/8" casing 13-3/8" casing 20" casing Varco type HS spider for 20" casing
SLIPS	. Varco SDML slips for 3-1/2" & 4-1/2" Drill Pipe . Drill collar slips, DCS-R . Casing slips, CMXL
FISHING TOOLS	Bowen model 150 overshots . 11-3/4" OD, FS . 9-5/8" OD, FS . 8-1/8" OD, FS Bowen type Z hydraulic jars, 6-1/4" OD Bowen reverse circ junk basket, 8-1/8" OD 1 Junk Sub for 8-1/2" hole 1 Junk Sub for 12-1/4" hole 1 Bowen magnet 7" OD #32300
GENERATOR HOUSE	40' x 10' x 9'

MECHANICS WORKSHOP	36' x 8'6" x 9'
FUEL TANK	6000 gallons, skid mounted
WATER TANK	400 barrel
WATER PUMP	Southern Cross 2 x 1-1/2" powered by Petters diesel
JUNK BOX	21' x 7' x 6'4"
TOOL HOUSE	27' x 9' x 9'
DOGHOUSE	26' x 9' x 9'
TRANSPORT	1 Oilfield rig truck 1 Toyota Landcruiser Utility 4WD 1 Toyota Landcruiser Wagon - 4WD (11 seater) 1 Clark 504 Forklift
CAMP	3 - 40' x 10' 10 man air-conditioned accommodation units 1 - 40' x 10' kitchen unit with freezer and cold unit 1 - 40' x 10' diner unit 1 - 40' x 10' ablution unit 1 - 40' x 10' canteen unit All skid mounted

APPENDIX 2

SUMMARY OF DRILLING OPERATIONS

BEACH PETROLEUM N.L.

NAJABA No. 1A

ACTUAL PENETRATION PROFILE

SPUDDED : 19·45 hrs 20-4-86

TOTAL DEPTH : 16·15 hrs 22-6-86

RIG RELEASED : 18·30 hrs 26-6-86

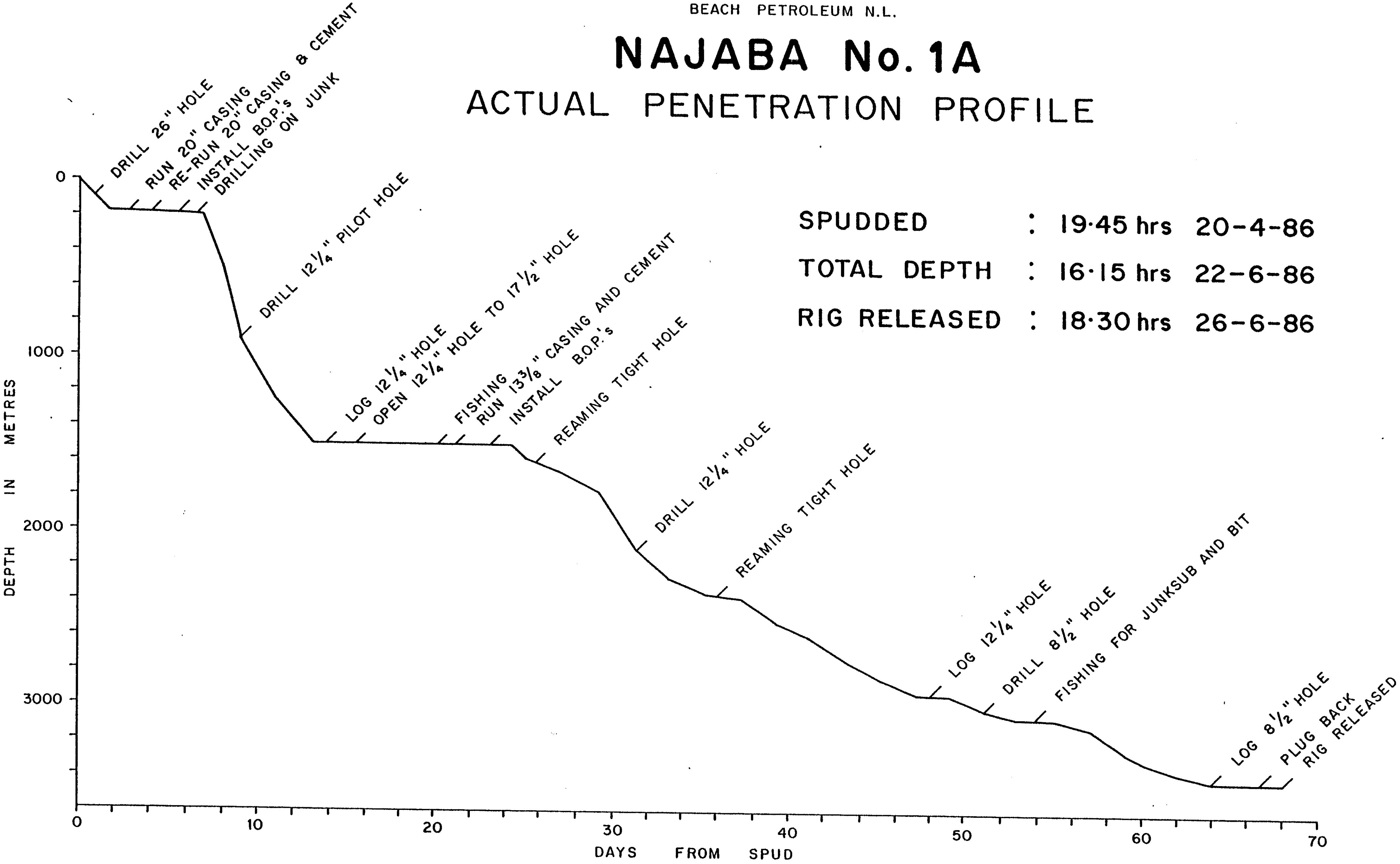

FIGURE 12

OT. 3500

SUMMARY OF DRILLING OPERATIONS

- The Najaba No. 1A drilling site was prepared by the earthmoving contractor, Gambier Earthmovers.
- Richter Rig No. 8 was rigged up and Najaba No. 1A spudded at 1945 hours, 20th April 1986.
- A 26" hole was drilled to 189m.
- The hole was circulated clean and conditioned prior to running in the 20" casing string.
- An initial attempt to set the 20" casing was unsuccessful, the entire casing string was POCH.
- The hole was reamed from 107m to TD, circulated clean and reconditioned prior to rerunning the 20" casing and cementing at 159m.
- The BOP's were installed and successfully function tested to 500 psi.
- The cement plug, float shoe and an amount of junk was unsuccessfully drilled using a 17½" bit. This operation was eventually accomplished using a 12¼" bit.
- Casing was circulated clean and redrilled using the initial 17½" bit.
- A 12¼" pilot hole was drilled to 1516m with some tight hole experienced throughout the Pember Mudstone (1088-1405m).

Cont'd.

- Bit changes were made at 875m and 1231m, whilst a round trip at 888m was made to change a washed out 6½" drill collar.
- The intermediate logging depth of 1516m (top Paaratte) was reached at 0300 hours, 3rd April 1986.
- The well was circulated clean and conditioned, prior to intermediate logging, Suite #1.
- The following logs were run:
    - DLL/MSFL/SP/CAL/GR
    - LDL/CNL/GR
    - SLS/GR
    - SHDT/GR
    - CST
- The 12¼" hole was opened to 17½" and a TD of 1491m, some tight hole was experienced.
- At 1483m successful fishing operations retrieved approximately 50m of BHA.
- The hole was circulated clean and conditioned before the 13-3/8" casing was run in and cemented at 1486.4m.
- The 20" BOP stack was removed.
- The 13-3/8" BOP stack was installed and successfully tested to 2000 psi.
- Drilling resumed with a 12¼" hole to 1517m.
- A leak-off test was performed and established a formation integrity of 15.04 EMW.

Cont'd.

- The 12¼" hole continued to a TD depth of 2952m, reached at 1230 hours, 5th June 1986.

- Bit changes were made at 1606m, 1642m, 1743m, 1803m, 2294m, 2378m, 2651m.

- Some tight hole was experienced which occasionally required reaming. The tight hole was often caused by introducing full gauged 12¼" stabilizers into an undergauged hole.

- The hole was circulated clean and conditioned prior to a second intermediate logging, Suite #2.

- The following wireline logs were run:
    - DLL/CAL/SP/GR
    - SLS/GR

- Drilling resumed with an 8½" hole to a TD of 3412m reached at 1615 hours, 22nd June 1986.

- Bit changes were made at 3037m, 3094m, 3131m, 3182m, 3238m, 3301m, 3363m.

- A second fishing operation was required at 3131m to retrieve a fish comprising the bit and junk-sub.

- The hole was circulated clean and conditioned prior to TD logging, Suite #3.

- The following wireline logs and seismic surveys were run prior to abandonment:
    - ISF/SLS/GR/SP/CAL
    - SHDT/GR
    - CST
    - WSS
    - VSP

Cont'd.

- A bridge plug was placed at 1458m and a cement plug set from 1455.4-1405.4m.
- A second cement plug was set from 20m to surface.
- The rig was released at 1830 hours, 26th June 1986.

APPENDIX 3

DRILLING FLUID RECAP

Geofluids

DRILLING FLUIDS REPORT

FOR

BEACH PETROLEUM N.L.

NAJABA #1 AND #1A

OTWAY BASIN

PREPARED BY :

A. SKUJINS
G. WILLIAMS
J. DANIELS

DATE :

JUNE 1986

Geofluids Pty Ltd Drilling Fluids Milchem
A joint venture company with Milchem in Australia

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CONTENTS

1. SUMMARY OF OPERATIONS

Najaba #1 was spudded on April 12, using Richter Rig #8 and was abandoned on April 15, 1986 after failure of the surface casing.

26" hole was initially drilled with water to 11 m where the conductor pipe washed out. High viscosity mud was mixed (Milgel-Benex) but later watered back as drilling continued. At 212 m a 40 bbl high viscosity pill was circulated and a wiper trip was made. On running in the hole, 5 m of fill was encountered. A 100 bbl pill was then circulated. Prior to pulling out, a 40 bbl pill was spotted on bottom.

20" casing was then run, circulated and cemented. The casing parted, and it was decided to abandon the hole and skid the rig.

Najaba #1A was subsequently spudded on April 21, and reached a total depth of 3412 m on June 22, 1986.

26" hole was drilled to 187 m with high viscosity spud mud. A wiper trip was made and encountered no fill. A high viscosity pill was then circulated, and a high viscosity pill was spotted on bottom.

20" casing was then run, and, due to tight hole, was circulated at 115 m. After running further in the hole, another attempt was made to circulate the casing, but circulation could not be broken. The casing was pulled out of the hole and a bit made up and run back in. A bridge was encountered at 107 m, and the hole was reamed to bottom. A 3 stand wiper trip was made, and the hole circulated clean prior to pulling out.

20" casing was again run, but was unable to pass 158 m. The casing was circulated and then cemented at this depth.

While the blow out preventers were being installed, the mud tanks were dumped and cleaned. They were then filled with water, and the water was pretreated with a biocide (Paraformaldehyde) and Soda Bicarb.

A 12-1/4" bit was run in the hole and the plug was drilled out. Due to the nature of the plug, junk had to be continually retrieved from the hole. The hole was then drilled to 190 m where the 12-1/4" bit was pulled and a 17-1/2" but was run to clean out the cement. A leak-off test was conducted and drilling continued with a 12-1/4" bit.

A trip for a new bit was made at 875 m. A further trip at 1231 m encountered tight hole from 1202 m to 1171 m. While running back in, a bridge was reamed from 1148 m to 1193 m. Drilling continued to 1337 m where a 12 stand wiper trip was made. The hole was tight from 1210 m to 1038 m, and bridges were reamed at 1239 m and 1324 m.

1. SUMMARY OF OPERATIONS (Cont'd)

Drilling continued to 1516 m where a wiper trip to the shoe was made. The hole was tight from 1041 m to 935 m, and 752 m to 735 m. When running back in, tight hole was reamed from 1479 m to bottom. A high viscosity pill was pumped around the hole, and the pipe was pulled out of the hole. A suite of electric logs was then run, encountering no problems.

A 17-1/2" hole opener was then run in the hole. A trip at 727 m encountered no problems. At 1128 m a 14 stand wiper trip reamed 8 m of tight hole to bottom. Drilling continued to 1344 m where the bit was tripped. On running in, 16 m of fill was encountered. A further trip at 1459 m encountered a bridge at 1325 m while running in the hole. The hole was reamed to 1375 m and a further bridge was reamed from 1411 m to bottom.

Drilling continued to 1481 m, where tight hole was back reamed, on a connection, to 1475 m. At 1483 m, a twist-off occurred at the 8" collars. The pipe was pulled, and an overshot was run in and latched on to the fish. Tight hole was worked from 1400 m to 1397 m, 1351 m to 1347 m, 1233 m to 1232 m and 1212 m to 1210 m. The fish was recovered, and a 17-1/2" bit run back in the hole. Tight hole was reamed from 1438 m to 1483 m.

Drilling continued to 1492 m, where a high viscosity pill was circulated. A 20 stand wiper trip was made (tight at 1399 m) and when back on bottom another high viscosity pill was circulated. The pipe was pulled and 13-3/8" casing was run in, circulated and cemented.

While nippling up the blow out preventers, the mud in the surface tanks was pretreated with Soda Bicarb.

A 12-1/4" assembly was run in, tagged cement at 1472 m, and drilled to 1517 m were a leak off test was run. A trip was made at 1606 m for a new bit. Undergauge hole was reamed from 1516 m to 1606 m with the new bit. A BHA change was made at 1642 m and another bit change made at 1743 m, where a junk basket was run. Drilling continued to 1803 m where the bit and BHA were changed again. Reaming was required from 1776 m to bottom on the trip back in. Evidence of siltstone and limestone cavings was noticed when drilling resumed. A 10 stand wiper trip was made at 2074 m and reaming was required over the section from 1791 m to 1799 m. Drilling continued to 2294 m where the bit was pulled. While tripping out, the pipe became stuck at 1754 m but was jarred free. The section from 1770 m to 1724 m was reamed before resuming the trip. While tripping in, reaming was required from 1768 m to 1798 m and 2273 m to 2294 m. Drilling continued to 2377 m where the bit was pulled. Jarring was required at 2088 m when the pipe became stuck on the trip into the hole. The pipe was worked from 2096 m to 2093 m to establish rotation and the hole was back reamed to 2087 m.

1. SUMMARY OF OPERATIONS (Cont'd)

Reaming was requiired from 2082 m to 2377 m due to a full gauge stabilizer replacing an undergauge one when the BHA was changed.

Drilling proceeded to 2524 m where a 28 stand wiper trip was made. The bit was pulled at 2651 m, and when running back to bottom, obstructions were reamed at 2501 m to 2513 m and 2551 m to 2572 m.

A sample was circulated at 2757 m and a 20 stand wiper trip was made. The pipe had to be worked using the kelly at 2707 m to 2703 m and 2661 m to 2636 m. The bit was run back to bottom without problems.

Drilling continued with a wiper trip at 2879 m and again tight spots were worked on the way out but were not detected on the trip in. Drilling continued to 2952 m where a 20 stand wiper trip was made with some tight spots pulling out but no problems running back in. Prior to pulling out to log an 18 bbl pill containing fine Mica was spotted on bottom. Tight hole was experienced from 2870 m to 2777 m while pulling out.

Electric logs were run and no hole problems were experienced. The BHA was changed out and drilling continued with an 8-1/2" bit. Mud losses were experienced while logging and while drilling ahead. Trips were made for new bits at 3037 m and 3094 m without any hole problems. At 3131 m a trip was made after a twist-off in the junk sub. The fish was caught on the second attempt after modifying the overshot. Drilling continued to 3412 m total depth, with trips for bits at 3182 m, 3238 m, 3301 m and 3363 m. None of the trips experienced hole problems. At 3412 m a 17 stand wiper trip was made and 4 m of fill was found on bottom. Electric logs, downhole seismic survey and side wall cores were run.

Hole conditions were good while logging and no wiper trips were required during the logging duration of almost 3 days. On the completion of logging a bridge plug was set at 1458 m, on top of which was set a cement plug. The top of the cement plug was tagged at 1409 m.

2. RECOMMENDATIONS FOR FUTURE WELLS

The 26" hole was drilled on Najaba #1 with a low viscosity Milgel- Benex spud mud. No hole cleaning problems were experienced, but the hole was badly washed out. No problems were experienced in running the 20" casing, but there were no cement returns on the cement job.

The 26" hole on Najaba #1A was drilled with a higher viscosity Milgel-Benex spud mud (viscosity approximately 40 - 45 sec/qt). The hole was much less washed out but this may have contributed to the problems experienced in getting the 20" casing to bottom. Good cement returns were gained on the cement job. The differences between the two holes is difficult to explain and may have been due to very localised formation differences.

The 12-1/4" - 17-1/2" hole was drilled relatively troublefree. Tight hole problems were experienced, mainly in the Pember Mudstone, but also in the sands above and below it. The KCl concentration was lower than Fahley #1, and this may have been a contributing factor. However, problems were also experienced on Fahley with a washed out Pember Mudstone and hole problems. (Compounded in that case by a severe dog leg.) It may be necessary to use a polyacrylamide fluid to gain better hole stability in this formation.

The 12-1/4" hole was drilled relatively troublefree, however persistent tight hole was experienced during trips and on several occasions while drilling. The problem was exacerbated by the bottom hole assemblies required to control deviation and replacement of stabilisers worn undergauge, by full gauge stabilisers. Nearly all the bits used in this section were pulled undergauge. Most of this section down until the Belfast was sand, in some cases coarse and fairly abrasive. The logs indicated this section to be near to gauge and stable. The problems in this section were caused largely by a tight fit in a near gauge hole. In spite of the solids content being low and the filter cake being very thin and firm some filter cake would be expected to develop on the sands. In the near gauge hole conditions any scraped-off filter cake would contribute to tight hole problems. After the change of hole size to 8-1/2" there was virtually no filter cake circulated up after trips whereas before this there was always some filter cake circulated up. From the caliper log run at total depth there appeared to have been about an average 1/4" decrease in hole diameter in this section compared with the previous log. This was probably due to filter cake build up, representing an average 1/8" increase in cake thickness over about 18 days.

After changing to an 8-1/2" bit there was no further tight hole and hole conditions remained very good to total depth and during the final logging.

2. RECOMMENDATIONS FOR FUTURE WELLS (Cont'd)

Examination of the caliper log showed hole washout to begin around 2650 m. The hole washout in the 8-1/2" hole was worse than in the 12-1/4" hole. Also, the washout in the 12-1/4" hole below 2650 m had increased from about 1/2" overgauge on the first log to 3 - 4 " on the second log. In the 8-1/2" hole there was a general increase in hole size from bottom to 2952 m. The 8-1/2" hole varied from an average of 5 - 6" overgauge from 2952 m to 3060 m and 4 - 5" overgauge to 3125 m. Both these sections showed fairly smooth hole with little character on the log. From 3125 m the hole was not so smooth and varied from 4 - 5" overgauge to 3175 m, 4 - 2" to 3200 m, and 3 - 1/2" to 3380 m. Below 3380 m the caliper appears to have been closed. In summary below about 2650 m the rocks experienced a time dependent washout. The amount of washout compared to hole size appears to have depended on the annular velocity. (The amount of washout increased with the change in hole size and annular velocity.) As previously observed, in spite of the washout, hole instability was not a problem in this section. Due to the slow drilling rates hole cleaning was good. In comparison hole instability in the Fahley #1 well in this seciton was severe. It is difficult to pinpoint the reasons for the differences. Both wells were drilled with fluids of similar chemistry. The deeper casing on Najaba #1A obviously played some part. However, it would appear that there was less rock stress in Najaba #1A. To improve hole gauge and hole stability in future wells a fluid containing polyacrylamide polymers may be beneficial. The clays in the rocks in this section appear to be largely non bentonitic. There was very little change in the MBT values through this section.

Solids control throughout the well was good, in spite of the large volumes of rocks drilled. The solids content of the mud (undissolved) was kept at 5% or below throughout. This was largely due to the centrifuge, which was kept running continuously for most of the well. The very low solids content in turn aided in maintaining a very stable, easily-treated fluid.

Mud losses were experienced in the latter part of the well. It is difficult to ascertain to what degree these losses were filtrate/seepage losses to the sands or if there were also losses to fractures. A close monitoring of losses was made and the breakdown from 3008 m is appended. Losses while drilling and tripping appear to have been around 3 bbls per hour. however, during the final logging the hole appeared to be taking a little less than 1 bbl per hour. It would appear that either the losses were pressure sensitive or else not all sources of mud losses had been adequately accounted for. A small amount of very fine Mica was added but no significant change in losses was observed.

2. RECOMMENDATIONS FOR FUTURE WELLS (Cont'd)

The mud cost for this well was higher than had been estimated; this was caused by several factors. The main difference was for the 8-1/2" hole section. The estimate was for drilling 8-1/2" hole from 2900 m - 3400 m with casing run to 2900 m. It was assumed that lost circulation would not be present after running the casing. The cost of this section was estimated to be $11,477.15 compared with the actual cost to drill from 2952 m - 3412 m of $29,455.14. The difference was due to persistent lost circulation of around 3 bbl/hour over the 18 days on this section. The 12-1/4" section was also underestimated by $11,276.59. This was mainly due to the longer than estimated time to drill this section. The 12-1/4" / 17-1/2" section was drilled for $10,499.92 less than estimated. Other factors to increase the mud cost above that estimated were having to drill the surface hole twice ($3,226.09), corrosion control chemicals ($1,707.06), chemicals used in cement jobs ($349.32), chemicals used by Seismic Drillers ($539.36), Barytes ($209.30) and lost circulation material ($1,354.08). If these costs are backed out the mud cost was underestimated by 13%. This compares favourably with the amount of time on the well compared with the estimated time of 47 days.

2. RECOMMENDATIONS FOR FUTURE WELLS (Cont'd)

SCHEDULE OF MUD LOSSES

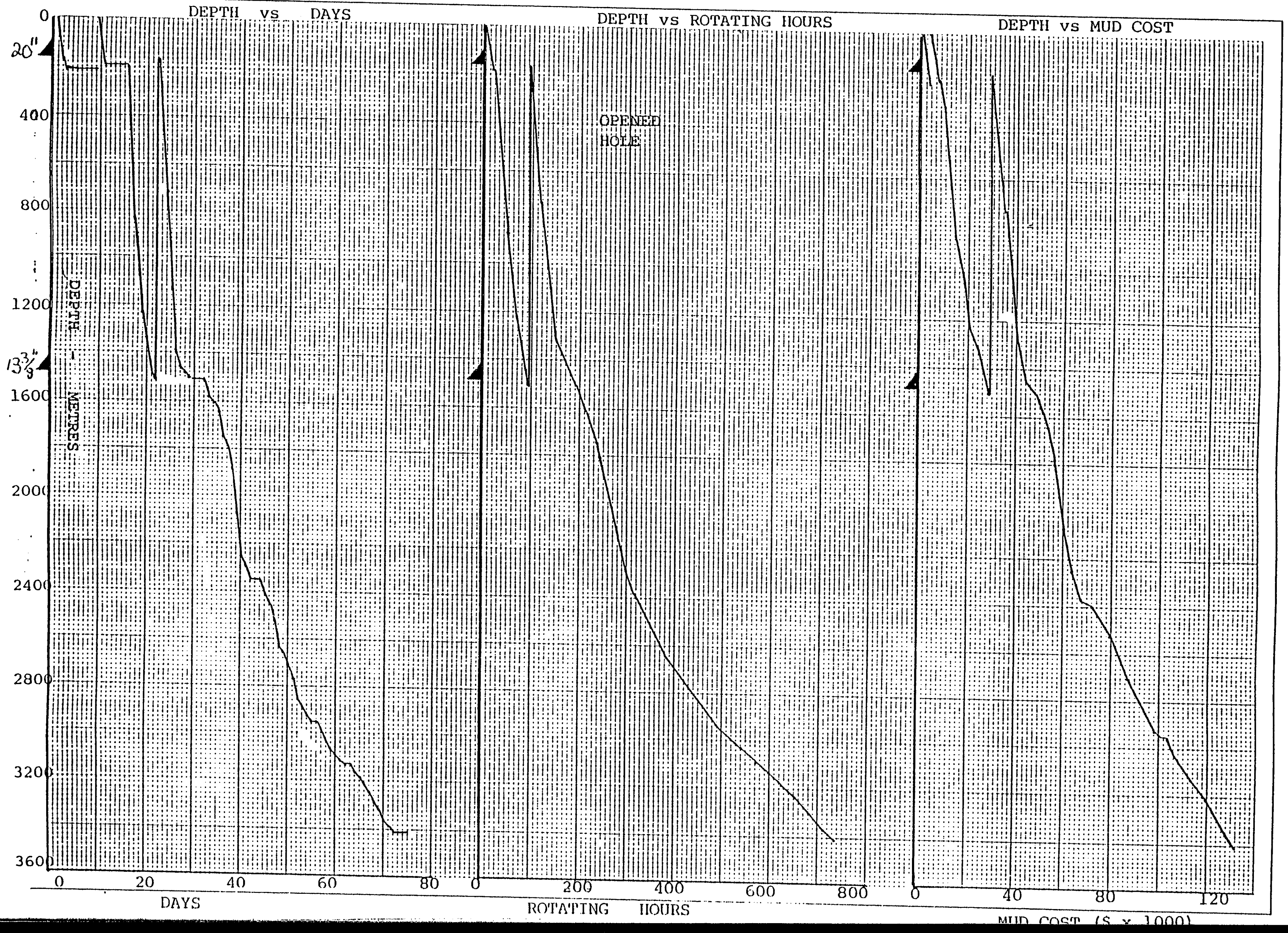
Volume change with time

DATE	TIME	DEPTH	VOLUME ADDED bbl	VOLUME CHANGE bbl	DESANDER bbl/(bbl/hr)	DESILTER bbl/(bbl/hr)	HOLE bbl	MISC LOSSES bbl/(bbl/hr)	NETT LOSS bbl/hr	COMMENTS
8/6	0800	3008			(0.8)				3.4	Turned on desilter
	1200	3016	120	+ 100	3.2/ (0.8)	(0.6)	1.8	2 / (0.5)	3.1	1200 hrs. Lost 2 bbls due to leaking valve.
	1800	3030	40	+ 5	4.8/ (0.8)	6.0/ (1.0)	3.2		3.5	Added 10 Mica.
	2400	3036	0	- 30	4.8/ (0.8)	4.2/ (0.7)	1.4		3.3	Added 10 Mica.
9/6	1100	3037	0	- 52			0		4.5	Trip @ 0100 hrs. Drilling commenced 1100 hrs.
	1730	3050	80	+ 50	3.3/ (0.5)	5.2/ (0.8)	3		2.8	
	2230	3060	40	+ 3	3.0/ (0.6)	3.0/ (0.6)	2.3		5.7	Mixed 10 Mica.
10/6	0800	3078	80	+ 25	7.6/ (0.8)	5.7/ (0.6)	4.1		3.9	Mixed 10 Mica.
	1830	3089	40	- 10	8.4/ (0.8)	8.4/ (0.8)	2.5		3.9	Mixed 10 Mica.
11/6	0700	3097	80	+ 15	3.0	3.0	1.8		4.6	Tripped 2100 hrs. Drilling commenced 0600 hrs.
	1730	3111	40	+ 5	6.3/ (0.6)	9.5/ (0.9)	3.2		1.5	Mixed 10 Mica.
12/6	0800	3129	120	+ 30	10.1/ (0.7)	11.6/ (0.8)	4.1		4.4	
14/6	1530	3147	160	- 10	10.0	5.0	4.1	20	2.4	Lost approx 5 bbls wet pipe. POOH 1130. 2nd trip lost +/- 15 bbls.
15/6	1130	3182	120	+ 40	14.0/ (0.7)	14.0/ (0.7)	8.0		2.2	Trip at 1200.
16/6	0700	3190	40	- 50	5.6/ (0.8)	5.6/ (0.8)	1.8		3.9	Circ 2330 after trip.
	1930	3208	80	+ 20	7.5/ (0.6)	7.5/ (0.6)	4.1		3.3	
17/6	0730	3230	50	- 40	7.2/ (0.6)	8.4/ (0.7)	5.1	?	5.8	Lost some mud over shakers?
18/6	0700	3257	160	+ 50	8.1/ (0.6)	8.1/ (0.6)	6.2		3.7	
	2330	3293	40	- 25	9.9/ (0.6)	6.6/ (0.4)	8.3		2.4	
19/6	2100	3311	100	+ 10	5.8/ (0.5)	4.6/ (0.4)	4.1		3.5	
20/6	1100	3340	80	+ 5	7.0/ (0.5)	4.2/ (0.3)	6.7		4.1	
	2130	3361	80	+ 35	5.3/ (0.5)	4.2/ (0.4)	4.8		2.9	Trip at 2400. On bottom 1100. Desilter shutdown 1300.
	1630	3371	40	- 50	4.8/ (0.6)	2.0/ (0.5)			4.3	
21/6	2000	3411	160	+ 15	16.5/ (0.6)		9.2	40	2.9	Bearing. Dumped 40 bbl of sand out of sand traps. Trip out 2000.

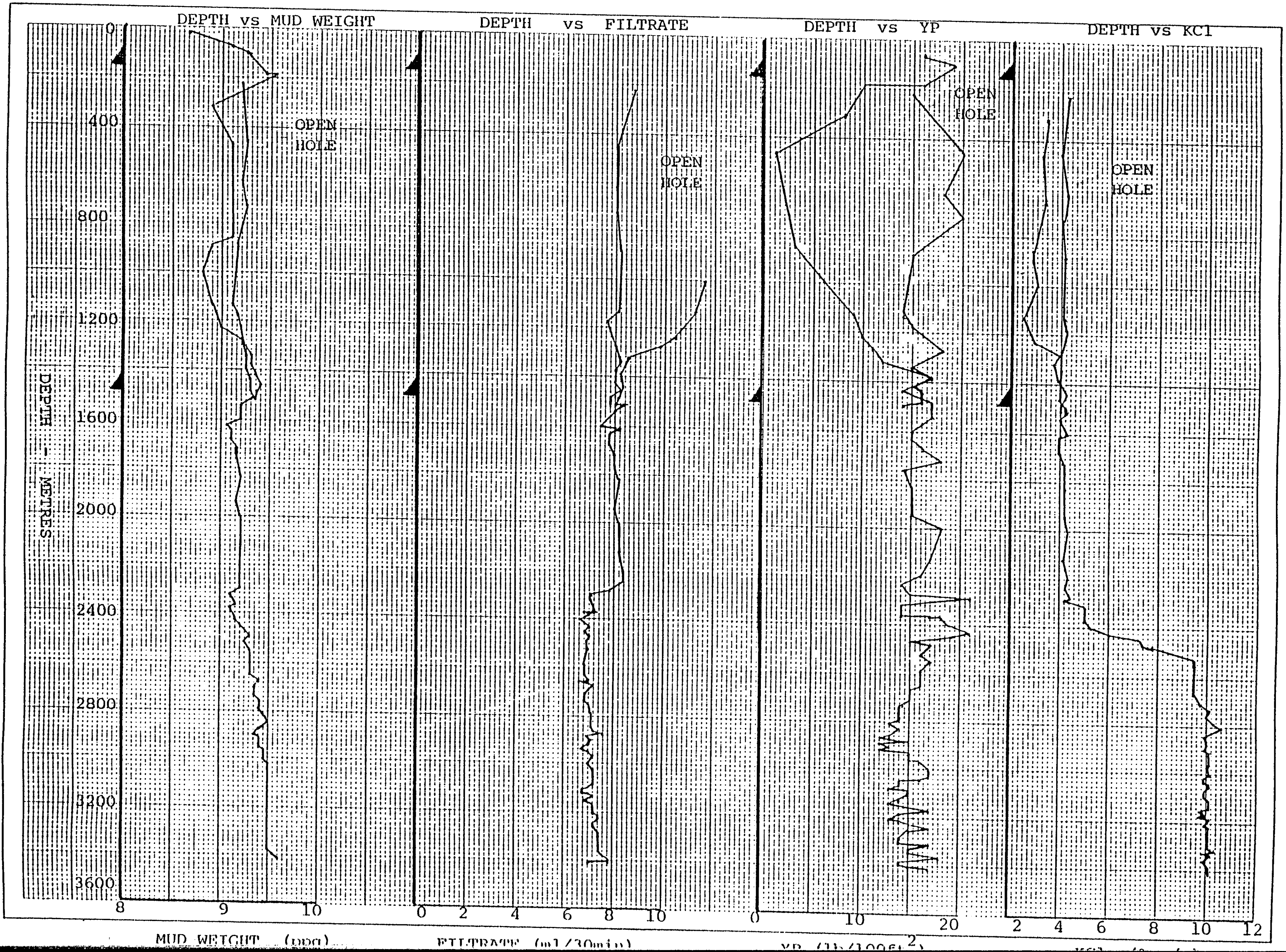
3. COST ANALYSIS

			26" (NAJABA #1)		26"(NAJABA #1A)		17-1/2"		12-1/4"		8-1/2"		TOTAL		
			0 TO 212 m		0 TO 187 m		187 m TO 1516 m		1516 m - 2952 m		2952 m - 3412 m		NAJABA #1 & #1A		
PRODUCT	UNIT	UNIT COST	UNITS	COST	UNITS	COST	UNITS	COST	UNITS	COST	UNITS	COST	UNITS	COST	%
Ami-Tec	208 lt	447.06									1	447.06	1	447.06	0.3
Barytes	50 kg	8.05					9	72.45	17	136.85			26	209.30	0.2
Benex	2 lb	13.23	29	383.67	31	410.13							60	793.80	0.6
Calcium Chloride	25 kg	12.50	10	125.00									10-	125.00	0.1
Caustic Soda	25 kg	22.37							5	111.85	16	357.92	21	469.77	0.4
KCl	50 kg	15.84					789	12497.76	997	15792.48	544	8616.96	2330	36907.20	28.0
KOH	25 kg	32.29					67	2163.43	46	1485.34	32	1033.28	145	4682.05	3.6
Mica	25 kg	16.12							17	274.04	67	1080.44	84	1354.08	1.0
Milgel	100 lb	14.02	188	2635.76	219	3070.38	25	350.50	12	168.24			444	6224.88	4.7
Milpac	25 kg	86.27					252	21740.04	204	17599.08	144	12422.88	600	51762.00	39.3
Milzan	25 kg	244.94					17	4163.98	64	15676.16	20	4898.80	101	24738.94	18.8
Noxygen L	32 kg	45.00					2	90.00	16	720.00	10	450.00	28	1260.00	1.0
Paraformaldehyde	25 kg	37.05					25	926.25	21	778.05	4	148.20	50	1852.50	1.4
Soda Ash	40 kg	17.42	2	34.84	3	52.26							5	87.10	0.1
Soda Bicarb	40 kg	23.41	2	46.82			12	280.92	15	351.15			29	678.89	0.5
TOTAL INTERVAL COSTS				$3,226.09		$3,532.77		$42,285.33		$53,093.24		$29.455.14		$131,592.57	100.0
INTERVAL COST PER METRE				$15.22		$18.89		$31.80		36.98		$64.03		$36.31	

4 (i)


DEPTH vs DAYS
DEPTH vs ROTATING HOURS
DEPTH vs MUD COST
0
20"
400
800
1200
13 3/8"
1600
2000
2400
2800
3200
3600
DEPTH - METRES
OPENED HOLE
0
20
40
60
80
DAYS
0
200
400
600
800
ROTATING HOURS
0
40
80
120
MUD COST ($ x 1000)

4 (ii)


DEPTH vs MUD WEIGHT
DEPTH vs FILTRATE
DEPTH vs YP
DEPTH vs KCl
DEPTH - METRES
0
400
800
1200
1600
2000
2400
2800
3200
3600
OPEN HOLE
OPEN HOLE
OPEN HOLE
OPEN HOLE
8
9
10
MUD WEIGHT (ppg)
0
2
4
6
8
10
FILTRATE (ml/30min)
0
10
20
YP (lb/100ft2)
2
4
6
8
10
12

5. FLUID PROPERTIES SUMMARY

5. FLUID PROPERTIES SUMMARY (Cont'd)

MUD TYPE : SPUD MUD
KCl-POLYMER

INTERVAL : 0 - 212/187 m
187 - 3412 m

DATE 1986	DEPTH METRES	M.W. ppg	ECD ppg	VIS sec	PV cp	YP lb/100ft	GELS lb/100ft	pH	W.L. ml	CAKE (mm)	FLT (°C)	Pf	Mf	Cl- ppm	Ca/Mg ppm	SAND %	SOL %	KCl % w/v	OIL %	WATER %	MBC lb/bbl
NAJABA #1																					
13/4	42	8.8	0.0	40	10	10	4/25	8.5	18.0	2	0	0.15	0.45	1000	TR	TR	3.0	0.0	0	97.0	
13/4	54	8.9	0.0	31	4	4	2/90	8.0	0.0	0	0	TR	0.10	650	TR	TR	4.0	0.0	0	96.0	
13/4	165	9.3	0.0	32	5	5	3/12	8.5	0.0	0	0	TR	0.08	400	TR	TR	7.0	0.0	0	93.0	
14/4	212	9.3+	0.0	31	5	4	4/15	8.5	0.0	0	0	TR	0.08	400	TR	TR	8.0	0.0	0	92.0	
14/4	212	9.4	0.0	34	6	7	6/20	0.0	0.0	0	0	0.00	0.00	0	0	TR	8.0	0.0	0	92.0	
NAJABA #1A																					
21/4	20	8.0+	0.0	39	0	0	0/00	0.0	0.0	0	0	0.00	0.00	0	0	TR	2.0	0.0	0	98.0	
21/4	76	9.1	0.0	41	8	16	10/22	0.0	0.0	0	0	0.00	0.00	0	0	TR	5.5	0.0	0	94.5	
21/4	98	9.2+	0.0	45	10	19	16/27	0.0	0.0	0	0	0.00	0.00	0	0	TR	6.5	0.0	0	93.5	
22/4	187	9.4+	0.0	43	9	16	14/25	0.0	0.0	0	0	0.00	0.00	0	0	TR	8.5	0.0	0	91.5	
22/4	circ csg	9.5	0.0	36	6	13	8/14	0.0	0.0	0	0	0.00	0.00	0	0	0.25	9.0	0.0	0	91.0	
23/4	187	9.5+	0.0	36	9	10	7/17	0.0	0.0	0	0	0.00	0.00	0	0	1.00	9.5	0.0	0	90.5	
Nipple up BOP's																					
27/4	317	8.9	0.0	32	3	8	4/4	11.5	0.0	0	0	0.90	1.00	23500	520	TR	2.5	3.4	0	97.5	
28/4	463	9.1	0.0	30	3	1	0/0	10.0	0.0	0	0	0.20	0.50	22500	240	TR	3.5	3.2	0	96.5	
28/4	654	9.1	0.0	30	0	0	0/0	0.0	0.0	0	0	TR	0.15	19500	360	TR	3.5	3.3	0	96.5	
28/4	856	9.1	0.0	31	0	0	0/0	0.0	14.0	2	0	0.00	0.10	17000	340	TR	3.5	2.8	0	96.5	
29/4	887	8.9	0.0	31	4	3	1/1	8.0	14.4	2	0	0.00	0.10	15000	340	TR	3.0	2.8	0	97.0	
29/4	998	8.8	0.0	34	7	6	1/2	8.0	11.6	2	0	0.00	0.08	17500	340	0.25	2.5	3.0	0	97.5	
30/4	1128	8.9	8.9+	37	9	9	2/3	9.0	11.2	2	32	TR	0.22	14000	320	TR	3.0	2.4	0	97.0	7.5
30/4	1036	8.8+	8.9	36	9	9	1/3	8.5	11.0	1	0	TR	0.18	15000	260	TR	2.5	2.3	0	97.5	5.0
01/5	1231	9.0	9.0+	37	9	10	1/3	9.0	10.4	1	36	TR	0.28	17500	160	TR	3.5	2.9	0	96.5	7.5
01/5	1278	9.2	9.2+	39	10	11	2/3	10.0	9.8	1	0	0.18	0.45	24000	100	TR	4.5	3.9	0	95.5	7.5
01/5	1325	9.2	9.3	40	12	12	2/4	9.5	8.5	1	0	0.10	0.35	22000	120	TR	5.0	3.7	0	95.0	
02/5	1392	9.2+	9.3	45	13	17	2/5	9.0	8.2	1	41	0.08	0.30	23000	120	TR	5.0	3.9	0	95.0	7.5
02/5	1441	9.3	9.3+	43	14	14	2/9	10.0	8.3	1	0	0.20	0.46	24500	80	TR	5.0	4.2	0	95.0	10.0
02/5	1441	9.3	9.3+	45	15	17	3/12	9.5	8.1	1	0	0.15	0.40	23000	100	TR	5.0	4.0	0	95.0	
03/5	1516	9.3+	9.4	46	14	17	3/11	9.5	8.0	1	44	0.16	0.45	23500	80	TR	5.5	4.0	0	94.5	10.0
03/5	1516	9.2+	9.3	43	13	15	2/8	9.5	8.4	1	44	0.12	0.38	25000	120	TR	4.5	4.2	0	95.5	
04/5	222	9.2	9.2+	45	14	15	2/10	8.5	8.7	1	0	TR	0.30	25000	100	TR	4.5	4.3	0	95.5	
05/5	457	9.2+	9.3	48	16	20	3/10	9.0	8.0	1	35	0.12	0.48	23000	80	TR	4.5	4.0	0	95.5	7.5
05/5	618	9.2	9.2+	43	14	18	2/7	9.0	8.0	1	0	0.12	0.38	24000	100	0.25	4.5	4.2	0	95.5	7.5
05/5	724	9.2+	9.3	45	15	20	3/10	9.5	8.0	1	0	0.18	0.54	23500	80	0.50	5.0	4.0	0	95.0	
06/5	884	9.1+	9.2	42	13	15	2/7	9.0	8.2	1	37	0.15	0.50	24500	80	0L25	4.0	4.1	0	96.0	7.5
06/5	1128	9.1	9.1+	41	13	14	2/7	8.5	8.1	1	0	TR	0.32	24000	100	0.25	4.0	4.1	0	96.0	
06/5	1176	9.1+	9.2	40	13	15	2/6	9.0	7.7	1	0	0.15	0.52	25000	80	0.25	4.0	4.2	0	96.0	7.5

5. FLUID PROPERTIES SUMMARY (Cont'd)

MUD TYPE : SPUD MUD
KCl - POLYMER

INTERVAL : 0 - 212/187 m
187 - 3412 m

DATE 1986	DEPTH METRES	M.W. ppg	ECD ppg	VIS sec	PV cp	YP	GELS lb/100ft	pH	W.L. ml	CAKE (mm)	FLT (°C)	Pf	Mf	Cl- ppm	Ca/Mg ppm	SAND %	SOL %	KCl % w/v	OIL %	WATER %	MBC lb/bbl
07/5	1272	9.2	9.2+	43	13	18	2/7	9.0	8.0	1	42	0.13	0.50	24500	80	0.25	4.5	4.0	0	95.5	7.5
07/5	1344	9.3	9.3+	40	13	15	2/7	9.5	8.2	1	0	0.22	0.62	24000	80	0.25	5.0	4.0	0	95.0	
07/5	1377	9.3	9.3+	42	13	17	2/9	9.0	8.0	1	0	0.20	0.55	23500	80	TR	5.0	3.9	0	95.0	7.5
08/5	1423	9.3+	9.4	41	12	15	2/8	9.0	8.0	1	48	0.18	0.58	24000	80	0.25	5.5	4.1	0	94.5	
08/5	1459	9.4	9.4+	41	13	16	3/8	9.0	8.2	1	0	0.15	0.55	25500	80	0.25	5.5	4.0	0	94.5	5.0
09/5	1459	9.3+	9.4	42	12	16	3/11	9.0	7.9	1	46	0.18	0.62	25000	80	TR	5.5	4.0	0	94.5	
09/5	1483	9.3	9.3+	42	13	16	3/10	9.5	7.8	1	0	0.22	0.72	26000	80	TR	5.0	4.2	0	95.0	
10/5	1492	9.3	9.3+	42	12	14	2/7	9.0	7.8	1	0	0.16	0.58	26000	80	TR	5.0	4.2	0	95.0	
12/5	cpl csg	9.2+	0.0	40	13	13	2/6	8.5	8.2	1	0	0.12	0.50	25500	100	0.25	4.5	4.2	0	95.5	5.0
14/5	1540	9.2	9.3	48	16	17	2/5	10.0	8.0	1	0	0.30	1.40	22000	40	TR	5.0	4.0	0	95.0	7.0
15/5	1600	9.2	9.3	44	16	15	2/4	9.5	7.4	1	0	0.30	1.10	22000	40	TR	5.0	4.0	0	95.0	7.0
15/5	1606	9.2	9.3	44	15	15	2/4	9.5	7.6	1	0	0.25	1.00	23000	40	TR	5.0	4.3	0	95.0	7.0
16/5	1606	9.0+	9.1	43	15	13	2/4	9.5	8.0	1	0	0.20	0.95	22000	40	0.00	4.0	4.0	0	96.0	5.0
16/5	1606	9.0+	9.1	44	15	14	2/4	9.5	8.2	1	0	0.18	0.95	23000	40	TR	4.0	4.1	0	96.0	5.0
16/5	1635	9.1	9.2	45	15	15	2/4	8.5	7.8	1	0	0.10	0.90	23000	60	TR	4.0	4.0	0	96.0	5.0
17/5	1680	9.1	9.2	46	16	17	2/5	9.0	7.8	1	46	0.10	0.85	22500	60	TR	4.0	4.0	0	96.0	5.0
17/5	1724	9.1+	9.2	45	16	18	2/5	8.5	8.0	1	46	0.14	0.95	23500	60	TR	4.0	4.1	0	96.0	5.0
18/5	1762	9.1+	9.2	44	16	14	2/4	8.5	8.0	1	46	0.10	0.90	23000	80	TR	4.0	4.2	0	96.0	5.0
19/5	1836	9.2	9.3	44	16	15	2/4	8.5	8.2	1	48	0.15	0.90	23000	80	TR	4.0	4.2	0	96.0	5.0
20/5	1942	9.1+	9.2	44	16	15	2/4	8.5	8.0	1	0	0.10	0.85	23500	100	TR	4.0	4.2	0	96.0	5.0
20/5	2000	9.2	9.2	45	17	18	2/4	8.5	8.2	1	50	0.10	0.80	24000	120	TR	5.0	4.3	0	95.0	6.0
21/5	2122	9.2	9.3	46	17	17	2/4	8.5	8.2	1	0	0.05	0.90	23000	120	TR	5.0	4.1	0	95.0	7.0
21/5	2200	9.2	9.3	42	15	16	2/4	9.0	8.4	1	0	0.10	0.80	24000	40	TR	5.0	4.3	0	95.0	6.0
21/5	2240	9.2	9.3	42	16	14	2/4	8.5	8.4	1	0	0.05	0.80	24000	60	TR	5.0	4.2	0	95.0	7.0
22/5	2283	9.2	9.3	42	17	15	2/4	9.0	7.8	1	0	0.10	0.80	25000	60	TR	5.0	4.4	0	95.0	7.0
23/5	2294	9.2	9.3	46	18	21	2/4	9.0	7.0	1	0	0.10	0.85	25000	80	TR	5.0	4.2	0	95.0	8.0
23/5	2322	9.1	9.2	43	16	14	2/4	8.8	7.0	1	0	0.10	0.85	24000	80	TR	4.0	5.0	0	96.0	5.0
23/5	2369	9.1+	9.2	43	16	14	2/3	9.0	7.2	1	0	0.10	0.90	24000	90	TR	4.0	5.0	0	96.0	5.0
24/5	2377	9.1+	9.2	44	19	17	2/4	9.1	7.1	1	0	0.10	0.85	24000	80	TR	4.0	5.0	0	96.0	5.0
24/5	2377	9.1+	9.2	44	18	18	2/4	9.0	6.8	1	0	0.10	0.80	25000	80	TR	4.0	5.3	0	96.0	6.0
25/5	2377	9.1	9.2	43	15	17	2/4	9.1	7.0	1	0	0.10	0.85	24000	100	TR	4.0	5.0	0	96.0	6.0
25/5	2377	9.1	9.2	43	17	14	2/3	9.0	7.2	1	0	0.10	0.80	24000	90	TR	4.0	5.0	0	96.0	6.0
25/5	2377	9.1	9.2	43	19	17	2/4	9.1	7.0	1	0	0.10	0.80	24000	80	TR	4.0	5.0	0	96.0	6.0
26/5	2377	9.1	9.2	45	19	18	2/4	9.0	6.8	1	0	0.00	0.00	24000	80	TR	4.0	5.0	0	96.0	6.0
26/5	2377	9.1	9.2	45	19	16	2/4	9.1	6.8	1	0	0.10	0.90	25000	80	TR	4.0	5.0	0	96.0	6.0
26/5	2377	9.1	9.2	42	18	17	2/3	9.0	7.0	1	0	0.10	0.90	25000	80	TR	4.0	5.0	0	96.0	6.0
27/5	2404	9.1	9.2	46	20	19	2/4	8.9	6.6	1	0	0.10	1.00	26000	100	TR	4.0	5.3	0	96.0	6.0
27/5	2437	9.1+	9.3	47	20	21	2/4	8.9	7.0	1	0	0.15	1.00	30000	80	TR	3.0	6.0	0	97.0	6.0
27/5	2450	9.2	9.3	45	21	19	2/4	8.8	6.8	1	0	0.15	0.90	36000	100	TR	3.5	7.3	0	97.5	6.0
28/5	2472	9.2	9.3	45	18	15	0/0	8.8	7.0	1	0	0.10	0.80	37000	100	TR	3.5	7.4	0	97.5	0.0
28/5	2489	9.3	9.4	45	20	17	2/4	9.1	6.9	1	0	0.15	1.00	38000	60	TR	4.0	7.8	0	96.0	5.0
28/5	2524	9.2+	9.4	43	18	16	2/4	8.8	6.9	1	0	0.10	0.90	46000	80	TR	3.6	9.4	0	97.4	5.0

5. **FLUID PROPERTIES SUMMARY** (Cont'd)

MUD TYPE : SPUD MUD
KCl - POLYMER

INTERVAL : 0 - 212/187 m
187 - 3412 m

DATE 1986	DEPTH METRES	M.W. ppg	ECD ppg	VIS sec	PV cp	YP	GELS lb/100ft	pH	W.L. ml	CAKE (mm)	FLT (°C)	Pf	Mf	Cl- ppm	Ca/Mg ppm	SAND %	SOL %	KCl w/v	OIL %	WATER %	MBC lb/bbl
29/5	2552	9.3	9.4	43	18	17	2/4	8.9	6.9	1	0	0.10	0.90	46000	80	TR	3.4	9.4	0	96.6	5.0
29/5	2585	9.3	9.4	44	18	16	2/4	9.0	6.8	1	0	0.10	0.90	47000	100	TR	3.4	9.5	0	96.6	5.0
29/5	2620	9.3	9.4	43	17	15	2/4	9.0	6.8	1	0	0.10	0.90	47000	90	TR	3.4	9.5	0	96.6	5.0
30/5	2642	9.3	9.4	44	17	16	0/0	8.8	7.0	1	0	0.10	0.90	47000	100	TR	3.4	9.5	0	96.6	6.0
30/5	2651	9.3	9.4	44	17	16	2/4	9.0	7.0	1	0	0.10	0.90	47000	100		3.4	9.5		96.6	6.0
31/05	2651	9.3	9.4	47	19	16	2/4	9.1	6.6	1	0	0.15	0.90	47000	80		3.4	9.5		96.6	6.0
31/05	2664	9.4	9.5	41	17	15	2/5	8.6	7.2	1	0	0.10	0.80	47000	120		4.0	9.5		96.0	6.0
31/05	2701	9.3+	9.4	41	17	15	2/4	8.9	6.8	1	0	0.10	0.80	48000	100		3.3	9.7		96.7	6.0
01/06	2730	9.3+	9.4	40	16	14	2/4	8.9	6.8	1	0	0.10	0.80	49000	100		3.2	10.1		96.8	6.0
01/06	2757	9.4	9.5	41	16	14	2/6	8.9	7.0	1	0	0.10	0.90	49000	120		3.9	10.0		96.1	6.0
01/06	2758	9.3+	9.4	44	17	16	2/5	9.0	6.8	1	0	0.10	0.85	49000	80		3.3	10.0		96.7	6.0
02/06	2785	9.4	9.5	41	16	14	2/5	8.9	7.1	1	0	0.10	0.90	50000	90		3.9	10.3		96.1	6.0
02/06	2807	9.4+	9.5	41	15	13	2/5	8.7	7.1	1	0	0.10	0.90	52000	140		3.8	10.6		96.2	7.0
02/06	2842	9.5	9.6	40	17	14	3/6	8.8	7.1	1	0	0.15	0.90	50000	100	.25	4.5	9.9		95.5	7.0
03/06	2863	9.4+	9.5	40	15	13	2/6	8.9	7.2	1	0	0.10	0.10	50000	90	TR	3.9	10.0		96.1	7.0
03/06	2877	9.4	9.5	39	13	12	2/5	8.7	7.6	1	0	0.10	0.90	51000	120		3.8	10.0		96.2	7.0
03/06	2884	9.4	9.5	41	15	15	3/7	9.1	6.9	1	0	0.15	0.90	50000	80		3.9	9.9		96.1	7.0
04/06	2899	9.3+	9.4	40	14	12	2/6	8.8	7.1	1	0	0.15	1.00	50000	100		3.1	9.9		96.9	7.0
04/06	2912	9.4	9.5	40	14	13	2/6	8.8	7.0	1	0	0.10	1.00	51000	100		3.8	10.1		96.2	7.0
04/06	2926	9.4	9.5	40	14	12	2/6	9.0	6.8	1	0	0.15	0.90	50000	80		3.9	10.1		96.1	7.0
05/06	2942	9.4	9.5	42	15	15	4/7	9.1	6.7	1	0	0.20	1.00	51000	80		3.8	10.1		95.6	7.5
06/06	2952	9.4	9.5	41	17	15	4/8	9.1	7.0	1	0	0.15	1.00	50000	80		3.9	10.1		96.0	7.0
07/06	2959	9.4+	9.5	42	16	15	3/7	9.4	7.0	1	0	0.18	1.00	51000	80		4.0	10.1		96.0	7.0
07/06	2969	9.4+	9.5	42	16	16	3/5	9.3	7.2	1	0	0.15	1.00	50000	80		4.0	10.0		96.0	8.0
08/06	3003	9.4+	9.5	44	16	17	4/9	9.1	7.0	1	0	0.10	0.90	52000	120		4.0	10.1		96.0	8.0
08/06	3019	9.5	9.6	43	15	17	3/6	8.9	7.0	1	0	0.08	0.90	51000	140		4.5	9.9		95.5	8.0
08/06	3038	9.5	9.6	44	16	17	4/8	9.2	7.2	1	0	0.10	0.90	51000	120		4.5	9.9		95.5	8.0
09/06	3037	9.5	9.6	44	16	16	3/8	9.0	7.2	1	0	0.10	0.95	51000	140		4.5	10.1		95.5	8.0
09/06	3057	9.5	9.6	41	15	14	3/7	9.1	7.2	1	0	0.10	1.00	51000	100		4.5	10.1		95.5	8.0
10/06	3075	9.5	9.6	41	14	14	3/7	9.0	7.2	1	0	0.10	1.00	51000	100		4.5	9.9		95.5	8.0
10/06	3087	9.5	9.6	41	14	13	2/6	8.9	7.2	1	0	0.08	0.95	51000	140		4.5	9.9		95.5	8.0
11/06	3094	9.5	9.6	43	17	15	2/8	9.2	7.2	1	0	0.13	1.00	51000	80		4.5	9.9		95.5	8.0
11/06	3113	9.5	9.6	42	16	15	2/6	9.3	6.8	1	0	0.15	1.05	52000	80		4.5	10.1		95.5	8.0
12/06	3128	9.5	9.6	42	15	14	2/5	9.0	6.8	1	0	0.10	0.90	52000	80		4.5	10.1		95.5	8.0
13/06	3131	9.5	9.6	44	16	14	2/6	9.0	7.2	1	0	10.0	1.00	50000	100		4.5	9.7		95.5	8.0
14/06	3161	9.5	9.6	41	15	13	2/4	9.1	6.8	1	0	0.10	1.00	51000	60		4.5	9.9		95.5	8.0
15/06	3176	9.5	9.6	44	17	17	3/6	9.4	7.2	1	0	0.18	1.15	50000	60		4.5	9.7		95.5	8.0
16/06	3189	9.5	9.6	41	15	14	2/6	9.1	7.2	1	0	0.10	1.05	53000	60		4.5	10.1		95.5	8.0
16/06	3207	9.5	9.6	41	15	13	2/6	9.2	7.2	1	0	0.12	1.00	54000	60		4.5	9.9		95.5	8.0
16/06	3215	9.5	9.6	41	15	14	2/6	9.3	7.4	1	0	0.15	1.10	54000	60		4.5	10.1		95.5	8.0
17/06	3228	9.5	9.6	43	16	15	3/8	9.0	7.4	1	0	0.10	0.90	54000	60		4.5	10.1		95.5	8.0
17/06	3246	9.5	9.6	44	17	17	3/10	9.0	7.2	1	0	0.12	0.95	54000	60		4.5	10.1		95.5	8.0
18/06	3256	9.5	9.6	43	17	15	3/6	8.9	7.2	1	0	0.10	0.90	54000	60		4.5	10.1		95.5	8.0
18/06	3287	9.5	9.6	42	16	14	2/4	9.1	7.4	1	0	0.12	0.95	54000	60		4.5	10.1		95.5	8.0
19/06	3301	9.5	9.6	42	16	14	2/5	8.9	7.4	1	0	0.10	0.90	53000	80		4.5	10.1		95.5	8.0

5. FLUID PROPERTIES SUMMARY (Cont'd)

MUD TYPE : SPUD MUD
KCl - POLYMER

INTERVAL : 0 - 212/187 m
187 - 3412 m

DATE	DEPTH	M.W.	ECD	VIS	PV	YP	GELS	pH	W.L.	CAKE	FLT	Pf	Mf	Cl-	Ca/Mg	SAND	SOL	KCl	OIL	WATER	MBC
1986	METRES	ppg	ppg	sec	cp	lb/100ft			ml	(mm)	(°C)			ppm	ppm	%	%	% w/v	%	%	lb/bbl
19/06	3311	9.5	9.6	44	17	17	3/9	8.8	7.4	1	0	0.08	0.90	54000	100	TR	4.5	10.3	0	95.5	8.0
20/06	3333	9.5	9.6	43	16	15	3/7	9.0	7.4	1	0	0.10	0.90	54000	100	TR	4.5	10.1	0	95.5	8.0
20/06	3344	9.5	9.6	43	17	15	3/6	9.0	7.4	1	0	0.10	0.95	53000	80	TR	4.5	9.9	0	95.5	8.0
20/06	3361	9.5	9.6	45	17	18	3/10	9.1	7.4	1	0	0.10	0.95	53000	80	TR	4.5	10.1	0	95.5	8.0
21/06	3382	9.5	9.6	41	15	14	2/5	9.2	7.6	1	0	0.12	1.10	54000	60	TR	4.5	9.9	0	95.5	8.0
22/06	3395	9.5+	9.6+	41	15	14	2/5	9.3	7.8	1	0	0.10	0.95	54000	40	TR	4.5	10.1	0	95.5	8.0
22/06	3406	9.5+	9.6+	44	16	15	3/9	9.0	7.8	1	0	0.12	1.00	56000	60	TR	4.5	10.1	0	95.5	8.0
22/06	3412	9.6	9.7	46	17	17	3/10	9.1	7.0	1	0	-	-	55000	60	TR	5.0	10.1	0	95.5	8.0

6. BIT RECORD

Bit Record

Geofluids

Operator BEACH PETROLEUM
Well No. NAJABA 1/A
Location OTWAY BASIN
Supervisors J. HANSON / I. HOFMEIER / V. SANTOSTEFANO
Contractor RICHTER DRILLING
Rig No. 8
Mud Pumps NAT 9-P-100
Drill Pipe 4½"
Drill Collars 9"/8"/6¼"
Spud Date 21 APRIL 86
TD Date 22 JUNE 86
Surface Csg 20" @ 158m
Inter Csg 13⅜" @ 1480m
Prod Csg —
Mud Type GEL BENEX / KCl-POLYMER

Run No.	Bit No.	Size	Make	Type	Jets 32nds	Depth Out	Depth Drilled	Hours Drilling	Cumulative Rotating Hours	W.T.	RPM	Vert. Dev.	Pump Press.	Bbl/M	Ann. Vel.	Mud Weight	Visc.	W.L.	Dull Cond				Formation
																			T	B	G	Other	
1	1	26	SEC	S33J	3x22	212	212			10-15	140		500	12.3	19	9.4	34	N/C					NAJABA #1
	RESPUDDED WELL AFTER SURFACE CASING FAILURE																						
1	RR1	26	SEC	S33J	3x22	189	189	15¾	15¾	10-15	100/140		500	13.2	20	9.4+	43	N/C	2	3	I		NAJABA #1A
2	2	17½	SEC	S33S	3x22	190	1	3¾	19½	5-10	100		500	12.3	97	8.9	32	N/C	1	1	I		
3	3	12¼	SEC	S33S	3x15	875	685	26¼	45¾	10-20	100/120		1250	12.3	97	9.1	31	14.0	6	4	⅛		
4	4	12¼	SEC	S33S	3x15	1231	356	23	68¾	10-35	80/120		1500	12.5	100	8.9	37	11.2	6	5	⅛		
5	5	12¼	SEC	S44GF	3x15	1516	285	24	92¾	30-45	70/100		1650	12.5	100	9.3	45	8.1	7	3	⅛		
6	6	12¼	HTC	OWCJ	3x15	727	568	24	116¾	5-20	110		1350	26.3	95	9.2	45	8.7	1	8	I	2 CONES LOCKED	
7	7	12¼	HTC	OWVJ	15.18.18	1315	588	30½	147¼	5-20	70/100		2100	24.6	87	9.2	43	8.0	1	2	I	PLUGGED JET	
8	8	12¼	HTC	OWVJ	3x28	1459	144	46¼	193½	5-20	80/100		2350	21.9	78	9.3	42	8.0	2	4	1/16		
9	RR3	12¼	SEC	S33S	3x22	1491	32	2½	196	5-20	120		2300	21.0	76	9.3	42	7.8	2	I	1/16	TWIST OFF IN COLLARS.	
10	9	12¼	SEC	S44GF	3x15	1606	90	15¼	211¼	35	60/120		1600	12.5	100	9.2	44	7.6	7	SQ	⅛		
11	10	12¼	SEC	S82F	3x14	1642	36	5¾	217	0-20	40/80		1800	12.3	97	9.1	45	7.8	1	SE	1/16		
12	RR10	12¼	SEC	S82F	3x14	1743	101	15½	232½	5-15	80		1850	12.3	97	9.1	45	8.0	2	SE	1/16		
13	11	12¼	HTC	OWVJ	15.15.18	1803	60	9¾	242¼	35-40	80		2300	14.8	117	9.1+	44	8.0	4	7	3/16		
14	12	12¼	SEC	S84F	15.15.18	2294	491	56¾	299	15-40	60/90		2300	14.5	115	9.2	44	8.2	4	SE	3/16		
15	13	12¼	SEC	S44GF	15.15.18	2378	84	15¾	314¾	15-20	90/100		2300	13.5	107	9.1	43	7.0	5	SE	⅛		
16	14	12¼	SEC	S84F	15.15.18	2651	274	70¼	385	15-25	70		2300	12.5	100	9.1	43	7.0	6	SE	3/16		
17	15	12¼	SEC	S84F	15.15.18	2952	301	110½	495½	25-35	110		2000	12.3	97	9.4	41	7.1	4	8	I		
18	16	8½	SEC	S84F	3x15	3037	85	46¼	541¾	25-35	65/88		2350	11.0	217	9.5	44	7.2	2	4	I		
19	17	8½	SEC	S84F	3x15	3094	57	31	572¾	15-20	110		2350	11.0	217	9.5	41	7.2	5	7	I		

Remarks BIT RUNS 6, 7, 8 and 9 opened hole to 17½"
8½" HOLE DRILLED FROM 2952m WITHOUT RUNNING CASING

Bit Record

Operator
Well No.
Location
Supervisors
Contractor
Rig No.
Mud Pumps
Drill Pipe
Drill Collars
Spud Date
TD Date
Surface Csg
Inter Csg
Prod Csg
Mud Type

Run No.	Bit No.	Size	Make	Type	Jets 32nds	Depth Out	Depth Drilled	Hours Drilling	Cumulative Rotating Hours	W.T.	RPM	Vert. Dev.	Pump Press.	Bbl/M Gal/M	Ann. Vel.	Mud Weight	Visc.	W.L.	Dull Cond				Formation
																			T	B	G	Other	
20	18	8½	SEC	S44G	3x15	3131	37	26¼	599	15	110		2350	11.0	217	9.5	41	7.2	5	6	I		
21	19	8½	SMITH	FDGH	3x16	3182	51	22	621	15-25	110		2000	11.0	217	9.5	41	6.8	2	3	I		
22	20	8½	SEC	S44G	3x18	3238	56	31	652	15-30	110		2000	11.0	217	9.5	41	7.4	4	8	I		
23	21	8½	SEC	S44G	3x18	3301	63	28½	680.5	20-25	110		2000	11.0	217	9.5	42	7.4	5	7	I		
24	22	8½	SEC	S44G	3x18	3363	62	29	709.5	15-25	110		2050	11.0	217	9.5	43	7.4	5	7	I		
25	23	8½	SEC	S44G	3x18	3412	49	26½	736	15-25	110		2150	11.0	217	9.6	46	7.0	5	6	1/32		

Remarks

APPENDIX 4

SIDEWALL CORE STUDIES

APPENDIX 4

NAJABA NO. 1A

SIDEWALL CORE DESCRIPTIONS

CST - Run No. 1

SWC	Depth (m)	Rec (mm)	Description
1	1496.0	35	CLAYSTONE/SANDY CLAYSTONE, dark grey, firm, massive, commonly micromicaceous, 30% quartz grains, (very fine to medium grained, clear to light grey, subangular). Minor disseminated pyrite, non calcareous, very carbonaceous. No fluorescence, no odour.
2	1491.5	37	SANDY CLAYSTONE, medium to dark grey, firm, massive, commonly micromicaceous, 40% quartz grains, (very fine to coarse grained as above), minor amounts pyrite, non calcareous, very carbonaceous. No fluorescence, no odour.
3	1485.0	48	CLAYSTONE, dark grey, firm, massive, 30% silt, 10% quartz grains (very fine to occasionally medium grained, subround, light grey), common disseminated pyrite, non calcareous, very carbonaceous. No fluorescence, no odour.
4	1481.5	45	SANDY CLAYSTONE, medium to dark grey, firm, massive, trace micromicaceous, moderately carbonaceous, 0-50% quartz grains (very fine to coarse grained, dominantly very fine grained, subangular to subround, light grey), common disseminated pyrite, 0-40% silt. No fluorescence, no odour.
5	1475.5	58	SANDSTONE, medium green to grey, friable, very fine to very coarse grained, dominantly fine grained, angular to subangular, very poor sorting, quartz grains commonly stained yellow, orange and green, 10-40% medium to dark green-grey argillaceous matrix, occasional off white to very light grey argillaceous matrix, rare medium brown claystone lithics, very poor visible porosity, non calcareous. No fluorescence, no odour.

Cont'd.

SWC	Depth (m)	Rec (mm)	Description
6	1460.5	48	CLAYSTONE, dark green - grey, firm, massive, trace micromicaceous, moderately carbonaceous, 15% quartz grains (medium brown, subround, very fine - very coarse grained dominantly fine grained), slightly calcareous. No fluorescence, no odour.
7	1440.0	49	CLAYSTONE, dark brown, massive, firm, trace micromicaceous, 10% silty material, 10% quartz grains (very fine to fine grained subangular to subround, dominant brown staining or grains), 10% dark brown ellipsoidal iron oxide pellets, non calcareous, occasional orange to red, fine grained carbonate sand grains. No fluorescence, no odour.
8	1415.0	57	CLAYSTONE, dark green - grey, firm, massive, trace micromicaceous, 10% quartz grains, very fine grained to granule, very poor sorting, grains commonly stained orange to dark green, trace pyrite, 5% silty material, non calcareous. No fluorescence, no odour.
9	1405.0	53	SANDSTONE, dark green, brown, grey, friable, very fine to very coarse grained, dominantly fine grained, subangular to subround, very poor sorting, quartz grains commonly stained light brown to light green, 50% medium dark green to medium dark brown matrix, very silty in part, very poor visible porosity, non calcareous. No fluorescence, no odour.
10	1400.0	36	CLAYSTONE, medium dark grey, firm, massive, trace micromicaceous, trace carbonaceous laminae, trace silty laminae, non calcareous. No fluorescence, no odour.
11	1382.0	38	CLAYSTONE, medium brown, firm, massive, sub-fissil, trace micromicaceous, 20% quartz and silty material, rare very fine carbonaceous material, nil to slightly calcareous. No fluorescence, no odour.
12	1370.0	-	Not bought.
13	1368.0	45	CLAYSTONE, medium brown, firm, massive, trace micromicaceous, trace black argillaceous coally detrital material, 20% quartz and silty material, rare very fine grained quartz, very slightly calcareous. No fluorescence, no odour.

Cont'd.

SWC	Depth (m)	Rec (mm)	Description
14	1315.0	47	SANDSTONE, light grey, very fine to fine grained, loose to friable, subangular to subround, moderate sorting, occasional yellow staining on quartz grains, trace grey, green and brown lithics, trace black carbonaceous flecks, 15% very light grey quartz and silty material, very weak silica cement, estimated 10% visible porosity, non calcareous. No fluorescence, no odour.
15	1311.0	48	INTERLAMINATED SILTSTONE/CLAYSTONE CLAYSTONE as 1368m SILTSTONE, light brown, grey, firm, massive, commonly micromicaceous 30% argillaceous material, trace carbonaceous flecks, trace green and brown lithics, rare pyrite, non calcareous. No fluorescence, no odour.
16	1295.0	35	SANDSTONE, light grey, friable, very fine - fine grained, dominantly fine grained subangular, moderate sorting, trace green and black lithics, trace silty material, very weak silica cement, 10-20% visible porosity, trace carbonaceous detrital, non calcareous. No fluorescence, no odour.
17	1291.0	38	CLAYSTONE, medium brown, firm, massive, trace carbonaceous laminae, 30% blocky granular dolomite (medium brown, hard, cryptocrystalline), occasional very fine to medium green lithics. No fluorescence, no odour.
18	1217.0	40	CLAYSTONE, medium brown, firm, massive, trace micromicaceous, trace pyrite, slightly to moderately calcareous, with minor siltstone laminations, firm, massive commonly micromicaceous, 0-20% argillaceous material, abundant pyrite in part. No fluorescence, no odour.
19	1047.5	38	SANDSTONE, light brown, very fine to medium grained, loose to weakly friable, subangular to subround, trace medium brown argillaceous matrix, very weak silica cement, 20% visible porosity, non calcareous. No fluorescence, no odour.

Cont'd.

SWC	Depth (m)	Rec (mm)	Description
20	1042.0	36	SANDSTONE, light brown, loose to weakly friable, very fine to medium grained, dominantly fine grained, subangular to subround, trace pyrite, trace dark grey lithics, trace fine, green argillaceous grains, slightly calcareous. No fluorescence, no odour.
21	1038.0	54	CLAYSTONE, medium to dark brown, firm to medium hard, massive, commonly micromicaceous, 30% quartz and silty material, slightly to moderately carbonaceous, slightly calcareous. No fluorescence, no odour.
CST - Run No. 2			
1	3400.0	24	CLAYSTONE, light to medium grey, occasionally dark brown grey, firm to moderately hard, subfissil, trace to moderately silty, very rare carbonaceous flecks, rare very fine grained quartz. No fluorescence, no odour.
2	3386.0	21	CLAYSTONE, as above. No fluorescence, no odour.
3	3366.0	28	CLAYSTONE, light to medium grey, firm to moderately hard, silty in part, subfissil, trace carbonaceous flecks. No fluorescence, no odour.
4	3331.0	30	CLAYSTONE, as above with occasional feldspars. No fluorescence, no odour.
5	3288.0	28	CLAYSTONE, as above. No fluorescence, no odour.
6	3251.0	15	CLAYSTONE, medium grey, firm to occasionally hard, trace silty, very rare carbonaceous material, trace very fine grained quartz, subfissil. No fluorescence, no odour.
7	3201.0	11	SANDSTONE, light to medium grey, firm to moderately hard, very fine grained, good silty matrix, trace to occasionally common silica cement, rare feldspar, rare carbonaceous flecks, subround to round, moderately sorted, nil to very poor visible porosity. Grading in part to SILTSTONE. No fluorescence, no odour.

Cont'd.

SWC	Depth (m)	Rec (mm)	Description
8	3180m	-	Lost
9	3169.0	-	Lost
10	3130.0	23	SILTSTONE, medium to medium dark grey, firm to moderately hard, blocky to occasionally subfissil, common to abundant very fine grained quartz, trace to good clay matrix, trace altered feldspars, rare carbonaceous flecks. No fluorescence, no odour.
11	3059.5	-	Lost
12	3040.0	22	SANDSTONE, very light grey, firm, massive, very fine grained, moderately well sorted, subangular to subround, common to abundnat white clay matrix, common silica cement, trace feldspar, trace carbonaceous flecks, nil to very poor visible porosity. No fluorescence, no odour.
13	3006.0	-	Lost
14	2997.0	31	CLAYSTONE, as Core #6. No fluorescence, no odour.
15	2957.0	20	SANDSTONE, light to medium grey, firm to moderately hard, very fine to occasionally fine grained, moderate sorting, subangular to subround, trace to common argillaceous matrix, trace silica cement, trace partly altered feldspar, trace carbonaceous material, rare dark grey lithics, very poor visible porosity. No fluorescence, no odour.
16	2887.0	14	SILTSTONE, light to medium grey, firm to occasionally moderately hard, blocky to subfissil, common to abundant clay matrix, rare carbonaceous flecks. No fluorescence, no odour.
17	2825.0	23	SANDSTONE, light to medium grey, very fine to occasionally fine grained, massive, firm to moderately hard, subangular to subround, moderate sorting, good trace to common argillaceous matrix, good trace silica cement, trace to occasional calcareous cement, rare carbonaceous flecks, occasional pyrite veins, trace to very poor visible porosity. No fluorescence, no odour, no cut fluorescence.

Cont'd.

SWC	Depth (m)	Rec (mm)	Description
18	2809m	17	SANDSTONE, very light grey, firm to friable in parts, very fine to fine grained, subangular to subround, moderate sorting, trace to good trace silica cement, nil to occasionally good trace calcareous cement, trace to good trace argillaceous matrix, good trace pyrite, rare dark grey lithic grains, rare carbonaceous flecks, very poor to occasionally poor visible porosity. No fluorescence, no odour, no cut fluorescence.
19	2805m	?	CLAYSTONE, medium to dark brown, firm to moderately hard, blocky to subfissil, common silty material, good trace very fine quartz grains. No fluorescence, no odour.
20	2773.0	10	SILTY CLAYSTONE, medium to dark brown - grey, very fine grained, firm to moderately hard, massive, moderate sorting, subangular to subround, common to abundant brown argillaceous matrix, trace silica cement, trace feldspars, trace mica, rare carbonaceous flecks, nil to very poor visible porosity. No fluorescence, no odour.
21	2722.0	24	SILTSTONE, medium brown to grey, firm, blockly to occasionally subfissile, trace carbonaceous flecks, rare very fine quartz grains. No fluorescence, no odour.
22	2694.0	25	SANDSTONE, off white to very light grey, firm to moderately hard, massive, very fine to fine grained, occasionally medium grained, common white clay matrix, trace silica cement, very rare carbonaceous flecks, poor sorting, angular to subround, trace to very poor visible porosity. No fluorescence, no odour.
23	2651.0	34	CLAYSTONE, medium brown - grey, firm, blocky to occasionally subfissil, trace carbonaceous flecks, rare very fine quartz grains. No fluorescence, no odour.
24	2596.0	14	SANDSTONE, light to medium grey, firm to occasionally moderately hard, massive, very fine to fine grained, common clay matrix, trace silica cement, angular to subround, moderate sorting very rare carbonaceous flecks, rare red lithics, rare mica, occasional siltstone laminae (as in SWC #21), very poor to poor visible porosity. No fluorescence, no odour.

Cont'd.

SWC	Depth (m)	Rec (mm)	Description
25	2520.0	24	SILTSTONE, medium grey brown, firm to occasionally moderately hard, massive, good trace to common very fine grained quartz, very rare to trace glauconite, very slightly calcareous in part. No fluorescence, no odour.
26	2460.0	?	SANDSTONE, light to medium grey, friable to occasionally moderately hard, massive, very fine grained to occasionally fine grained, moderate sorting, subangular to subround, good trace clay matrix, trace silica cement, trace pyrite nodules, rare mica, rare light red lithics, very poor visible porosity. No fluorescence, no odour.
27	2425.5	21	SANDSTONE, light to medium grey, friable to moderately hard, very fine grained, trace to good trace to occasionally common white clay matrix, trace silica cement, common ccally/carbonaceous laminae, subangular to subround, moderately sorted, trace to very poor visible porosity. No fluorescence, no odour.
28	2340.0	34	SANDSTONE, very light grey to off white, massive, firm to moderately hard, fine to occasionally medium grained, moderate sorting, subangular to subround, trace to common silica cement, trace argillaceous matrix, nil to occasionally common pyrite cement, trace light green lithics, rare pyrite crystals, very pocr to pocr porosity. No fluorescence, no odour.
29	2186.5	32	SILTSTONE, medium grey brown, firm to moderately hard, common to abundant very fine grained quartz, common clay matrix, trace very fine carbonaceous flecks, rare glauconite, trace pyrite. No fluorescence, no odour.
30	2044.5	31	SANDSTONE, very light green to light green to grey, firm to medium hard, massive, very pocr sorting, subangular to round, very fine to occasionally coarse grained, good trace white clay matrix, trace silica cement, good trace light green glauconite, trace yellow and red lithics, trace to occasional pocr visible porosity. No fluorescence, no odour.

APPENDIX 5

VELOCITY SURVEY

Schlumberger

BEACH PETROLEUM N.L.

VSP/GEOGRAM PROCESSING REPORT

NAJABA - 1A

FIELD : WILDCAT
PERMIT : PEP - 118
STATE : VICTORIA
COUNTRY : AUSTRALIA
LOCATION : OTWAY BASIN
COORDINATES : 037° 54' 13" S
141° 03' 50" E
DATE OF SURVEY : 24-JUNE-1986
REFERENCE NO. : 560706/560707

CONTENTS

1.0 INTRODUCTION

A Vertical Seismic Profile was shot in the Najaba - 1A well on 24th June 1986. A total of 46 levels were acquired between 57.7 and 3412 metres below KB. The levels between 2220 and 3100 metres have been used in VSP processing, the additional levels above were included for the sonic log calibration. The VSP was shot using a dynamite source and SAT downhole tool. All shot times have been corrected to the vertical and to the datum at mean sea level.

VSP Objectives :

- to obtain a high resolution time-depth curve. As the levels are separated by an average of *7milliseconds*, accurate velocity analysis can be made.
- to obtain a better tie between the VSP and Seismic. The lateral depth of investigation of a VSP is intermediate between surface seismic and logs (radius 20*metres*).
- to determine the multiple content of the area by analysis of the downgoing wavetrains.

In addition to the above the VSP has other applications:

- Further analysis of the downgoing wavetrain provides information on the earth filtering of the seismic wave versus depth.
- The VSP has the properties of being Vertical, therefore minimising the effects of moveout. This simplifies greatly the analysis of highly dipping reflectors, and also the interpretation of data recorded in faulted areas.
- One of the most important applications of VSP's is the analysis of reflected signals below the sensor.
- As the VSP can be considered the optimum seismic expression at the wellbore it may be used as the input for further studies such as:-
  - Inversion
  - Trace Attributes
  - Power Spectra
  - Attenuation

2.0 DATA ACQUISITION

Table 1 Field Equipment and Survey Parameters

Elevation SRD	0.0 metres AMSL
Elevation KB	57.7 metres AMSL
Elevation DF	57.4 metres AMSL
Elevation GL	51.7 metres AMSL
No. of Levels	46
Well Deviation	Nil
Total Depth	3412 metres below KB
Energy Source	Dynamite
Source Offset	132 metres (average)
Source Depth	2.0 metres below GL
Reference Sensor	Geophone
Sensor Offset	119.4 metres
Sensor Depth	0.0 metres below GL
Downhole Geophone	3 Sensor SM4 (one/axis) High Temp. ($330^\circ F$) Natural Freq. 8-12 hertz Sensitivity 0.83 V/cm/sec per axis Maximum tilt angle 20°

Recording was made on the Schlumberger Cyber Service Unit (CSU) using LIS format.

2.1 Survey Details

The survey was shot using a dynamite source and geophone as the surface sensor. No major problems were noted during the survey.

3.0 VSP SHOT DATA

A total of 46 check levels were shot during the survey. 30 levels from 2200 to 3100 metres were selected for the VSP. An additional 13 levels were used in the sonic calibration.

Table 2 VSP levels

Level Depth (m below KB)	Stacked Shots	Rejected Shots	Quality	Comments
57.7	1	0	Poor	Seismic reference datum
170	-	-	-	Imposed shot - top sonic
318	2	0	Poor	Level rejected
580	3	0	Poor	Level rejected
770	1	0	Good	
985	1	0	Good	
1088	1	0	Good	
1150	1	0	Good	Level rejected
1293	1	0	Good	
1405	1	1	Good	
1517	1	3	Good	
1687	1	0	Good	
1806	1	1	Good	
1946	1	0	Good	
2030	1	0	Good	
2177	1	0	Good	
2220	3	0	Good	First VSP level
2250	3	0	Good	
2280	3	0	Good	
2310	3	0	Good	
2339	3	0	Good	
2370	3	0	Good	
2400	3	0	Good	
2430	3	0	Good	

Level Depth (m below KB)	Stacked Shots	Rejected Shots	Quality	Comments
2460	3	0	Good	
2490	3	0	Good	
2520	3	0	Good	
2550	3	0	Good	
2580	3	0	Good	
2610	3	0	Good	
2640	3	0	Good	
2670	3	0	Good	
2700	3	0	Good	
2730	3	0	Good	
2760	3	1	Good	
2790	3	0	Good	
2820	3	0	Good	
2850	3	0	Good	
2882	3	0	Good	
2913	3	0	Good	
2945	3	0	Good	
2976	3	0	Good	
3007	3	0	Good	
3038	3	0	Good	
3068	3	0	Good	
3100	3	2	Good	
3412	3	1	Good	Not used in VSP

4.0 VSP PROCESSING

4.1 STACKING

All the shots at each level, excluding those with a high level of noise are stacked using a mean stacking method.

The stacked data is displayed in 22 inch format on Plot 1. Depths are referenced to measured depth below KB.

4.2 STATIC CORRECTION

Static corrections are applied at each level to correct for source offset and source depth below MSL. The static corrections vary from -34 millisec at 3100 metres to -35.5 millisec at 2200 metres.

4.3 BPF, TAR, and NORMALISATION

A Band Pass Filter is applied to increase the signal to noise ratio and conform to alias constraints.

True Amplitude Recovery is a time variant gain function to compensate for spherical divergance. The amplitude at time T is multiplied by $(\frac{T}{T_0})^\alpha$ where T_0 is the first break time and α is the TAR factor.

Normalization has been applied to equalize the maximum energy in a window from the first break, thus correcting for differences in acoustic coupling and attenuation of the downgoing signal with depth.

Band Pass Filter : 10-50 hertz
TAR Factor : 1.0
Normalisation Window : 750 msec

Data after this stage of processing is displayed in Plot 2.

4.4 VELOCITY FILTER

A 7 level least squares velocity filter is used to seperate the upgoing and downgoing components of the total wavefield. Data from this stage is displayed in two way time in Plot 3.

4.5 WAVESHAPE DECONVOLUTION

Waveshape deconvolution has been applied to shape the downgoing wavelet to a desired form. This deconvolution operator is computed at each level and applied to the upgoing data.

The Waveshape Deconvolution parameters used:

Window : 2.0 seconds
Wavelet : Zero phase
Freq range : 10-50 hertz

The zero phase deconvolution is displayed in Plot 4.

All plots to this stage have been plotted at a time scale of 7.5 in/sec, trace density of 10 traces/in and 150% trace overlap.

4.6 CORRIDOR STACKING

Corridor stacks are computed by summing the waveforms in a 100 millisec corridor from the first break.

4.7 COMPOSITE PLOT - GEOGRAM AND VSP

The composite plots (see Plot 5) include the upgoing events after waveshape deconvolution, 100 msec corridor stack, corridor stack after AGC, GEOGRAM primaries, primaries &multiples, multiples only, gamma ray, sonic and reflection coefficients.

The 10-50 hertz wavelet is used on the GEOGRAM display.

Only normal polarity data has been displayed at a trace overlap of 250 %. The plot time scale is 7.5 in/sec.

5.0 VSP INVERSION

The basic principle of the inversion computation is to find an acoustic impedance profile which will generate a synthetic seismogram that matches as close as possible to the actual seismogram under certain contraints. The computation is based on a simple model of plane waves propagating through a horizontally stratified media, without any dispersion.

The inversion was computed on a stack of levels 15 and 16 from 2.085 to 2.3 seconds. An acoustic impedance of 35000 FSGC was selected at 2.085 seconds. This was obtained from the product of the interval velocity and density log at TD. No low frequency information below 10 hertz is available in the seismic data, so additional impedance constraints of 35000 ± 10000 FSGC have been imposed at 2.20 and 2.29 seconds.

The interval velocity curve below TD was calculated by dividing the acoustic impedance by the expected formation density below TD. A constant value of 2.66 gm/cc was requested by Beach Petroleum.

The inversion results are displayed in Plot 6.

INVERSION PARAMETERS:

Start Time	2.085 sec
End Time	2.300 sec
Wavelet Length	0.300 sec
Number of Reflections	70
Number of Constraints	2
Updating Step Limit	0.002 sec
Wavelet Type	Symmetrical

Table 3
INVERSION RESULTS

TIME	REFLECTION	IMPEDANCE	TIME	REFLECTION	IMPEDANCE
2.087	0.051	36530	2.193	0.015	37340
2.089	0.001	36570	2.199	0.009	38030
2.091	-0.025	34780	2.201	-0.022	36430
2.093	-0.020	33420	2.203	-0.019	35060
2.099	0.011	34160	2.209	-0.005	34710
2.101	0.012	34960	2.211	0.010	35410
2.103	-0.005	34630	2.215	0.024	37170
2.105	-0.014	33650	2.217	0.006	37640
2.107	-0.023	32140	2.219	-0.020	36160
2.109	-0.039	29740	2.221	-0.016	35020
2.111	0.062	33690	2.227	-0.007	34510
2.115	0.002	33830	2.229	0.015	35560
2.117	0.015	34850	2.233	0.003	35800
2.119	0.017	36030	2.235	0.000	35800
2.123	-0.009	35360	2.237	-0.018	34510
2.125	-0.032	33190	2.239	-0.023	32940
2.127	-0.019	31970	2.241	0.037	35500
2.133	-0.019	30780	2.245	0.010	36190
2.135	0.004	31010	2.247	0.024	37940
2.137	0.029	32870	2.255	-0.036	35330
2.139	0.033	35090	2.257	-0.021	33900
2.141	0.001	35160	2.263	-0.021	32480
2.143	-0.007	34700	2.265	-0.007	32000
2.145	-0.012	33860	2.267	0.094	38640
2.151	-0.010	33170	2.271	0.019	40180
2.153	0.031	35260	2.273	0.008	40790
2.155	0.021	36790	2.275	-0.049	36990
2.163	-0.005	36450	2.281	-0.016	35790
2.165	-0.006	36040	2.283	-0.015	34700
2.171	-0.011	35260	2.287	0.005	35040
2.173	0.007	35760	2.289	0.011	35830
2.181	-0.008	35190	2.291	0.017	37080
2.183	0.030	37350	2.293	0.003	37320
2.185	-0.015	36280	2.297	-0.008	36730
2.191	-0.001	36220			

6.0 SONIC CALIBRATION

A 'drift' curve is obtained using the sonic log and the vertical check level times. The term 'drift' is defined as the seismic time (from check shots) minus the sonic time (from integration of edited sonic). Commonly the word 'drift' is used to identify the above difference, or to identify the gradient of drift verses increasing depth, or to identify a difference of drift between two levels.

The gradient of drift, that is the slope of the drift curve, can be negative or positive.

For a negative drift $\frac{\Delta drift}{\Delta depth} < 0$, the sonic time is greater than the seismic time over a certain section of the log.

For a positive drift $\frac{\Delta drift}{\Delta depth} > 0$, the sonic time is less than the seismic time over a certain section of the log.

The drift curve, between two levels, is then an indication of the error on the integrated sonic or an indication of the amount of correction required on the sonic to have the TTI of the corrected sonic match the check shot times.

Two methods of correction to the sonic log are used.

1. **Uniform or block shift** This method applies a uniform correction to all the sonic values over the interval. This uniform correction is applied in the case of positive drift and is the average correction represented by the drift curve gradient expressed in μsec/ft.
2. **ΔT Minimum** In the case of negative drift a second method is used, called Δt minimum. This applies a differential correction to the sonic log, where it is assumed that the greatest amount of transit time error is caused by the lower velocity sections of the log. Over a given interval the method will correct only Δt values which are higher than a threshold, the Δt_{min}. Values of Δt which are lower than the threshold are not corrected. The correction is a reduction of the excess of Δt over Δt_{min}, Δt - Δt_{min}.

   $\Delta t - \Delta t_{min}$ is reduced through multiplication by a reduction coefficient which remains constant over the interval. This reduction coefficient, named G, can be be defined as:

   $$G = 1 + \frac{drift}{\int(\Delta t - \Delta t_{min})dZ}$$

   Where drift is the drift over the interval to be corrected and the value $\int(\Delta t - \Delta t_{min})dZ$ is the time difference between the integrals of the two curves Δt and Δt_{min}, only over the intervals where $\Delta t > \Delta t_{min}$.

   Hence the corrected sonic: $\Delta t = G(\Delta t - \Delta t_{min}) + \Delta t_{min}$.

7.0 SONIC CALIBRATION PROCESSING

7.1 Open Hole Logs

The sonic log has been edited prior to input into the Well Seismic Calibration processing chain. The overall log quality is good and only minor zones of cycle skipping have been patched.

Density data was available from 1505 to 1285 metres and from 1115 to 985 metres below KB. The density log was not used in the calculation of the acoustic impedance due to the short interval available and the poor quality of the log in zones of borehole washout. A constant density of 2.35 gm/cc has been used over the entire logged interval.

Density log interval : not used
Sonic log interval : 170 to 3412 metres below KB

7.2 Correction to Datum and Velocity Modelling

Seismic reference datum (SRD) is at mean sea level. The dynamite source was at 2.0 metres below GL. Individual shots were in a 1.25×1.25 metre square matrix at an average distance of 132 metres from the wellhead. The reference geophone was at an offset of 119.4 metres at the same azimuth as the shot matrix. All transit times have been corrected for source offset.

The shot at datum (57.7 metres below KB) was used to calculate the time shift required to reference the seismic calibration processing to datum. This indicated an average near surface velocity of 1500 metres/sec.

7.3 Sonic Calibration Results

The top of the sonic log (170 metres below KB) is chosen as the origin for the calibration drift curve. The drift curve indicates a number of corrections to be made to the sonic log. A list of shifts used on the sonic data is given below.

Table 4 Sonic Drift

Depth Interval (m below KB)	Block Shift μsec/ft	Δt_{min} μsec/ft	Equiv Block Shift μsec/ft
170-711	1.13	-	1.13
711-1045	-	106.38	-2.28
1045-1420	0.00	-	0.00
1420-1688	0.57	-	0.57
1688-2028	-	72.30	-5.38
2028-2300	0.00	-	0.00
2300-2870	-	65.85	-1.87
2870-3058	0.00	-	0.00
3058-3412	2.58	-	2.58

The adjusted sonic curve is considered to be the best result using the available data.

8.0 GEOGRAM PROCESSING

GEOGRAM plots were generated using 10-50 and 10-60 hertz butterworth wavelets. The presentations include both normal and reverse polarity on a time scale of 7.5 in/sec.

GEOGRAM processing produces synthetic seismic traces based on reflection coefficients generated from sonic and density measurements in the well-bore. The steps in the processing chain are the following:

Depth to time conversion

Reflection coefficients

Attenuation coefficients

Convolution

Output.

8.1 Depth to Time Conversion

Open hole logs are recorded from bottom to top with a depth index. This data is converted to a two-way time index and flipped to read from the top to bottom in order to match the seismic section.

8.2 Primary Reflection Coefficients

Sonic and density data are averaged over chosen time intervals (normally 2 or 4 millisecs). Reflection coefficients are then computed using:

$$R = \frac{\rho_2 . \nu_2 - \rho_1 . \nu_1}{\rho_2 . \nu_2 + \rho_1 . \nu_1}$$

where

ρ_1 = density of the layer above the reflection interface

ρ_2 = density of the layer below the reflection interface

ν_1 = compressional wave velocity of the layer above the reflection interface

ν_2 = compressional wave velocity of the layer below the reflection interface

This computation is done for each time interval to generate a set of primary reflection coefficients without transmission losses.

8.3 Primaries with Transmission Loss

Transmission loss on two-way attenuation coefficients are computed using:

$$A_n = (1 - R_1^2).(1 - R_2^2).(1 - R_3^2)...(1 - R_n^2)$$

A set of primary reflection coefficients with transmission loss is generated using:

$$Primary_n = R_n.A_{n-1}$$

8.4 Primaries plus Multiples

Multiples are computed from these input reflection coefficients using the transform technique from the top of the well to obtain the impulse response of the earth. The transform outputs primaries plus multiples.

8.5 Multiples Only

By subtracting previously calculated primaries from the above result we obtain multiples only.

8.6 Wavelet

A theoretical wavelet is chosen to use for convolution with the reflection coefficients previously generated. Choices available include:

Klauder wavelet
Ricker zero phase wavelet
Ricker minimum phase wavelet
Butterworth wavelet
User defined wavelet.

Time variant butterworth filtering can be applied after convolution. Polarity conventions are shown in Figure 1. These GEOGRAMS were generated using butterworth wavelets.

8.7 Convolution

Standard procedure of convolution of wavelet with reflection coefficients. The output is the synthetic seismogram.

9.0 SUMMARY OF GEOPHYSICAL LISTINGS

Six geophysical data listings are appended to this report. Following is a brief description of the format of each listing.

9.1 Geophysical Airgun Report

1. Level number : the level number starting from the top level (includes any imposed shots).
2. Vertical depth from KB : *dkb*, the depth in metres from kelly bushing .
3. Vertical depth from SRD : *dsrd*, the depth in metres from seismic reference datum.
4. Vertical depth from GL : *dgl*, the depth in metres from ground level.
5. Observed travel time HYD to GEO : *tim*0, the transit time picked from the stacked data by subtracting the surface sensor first break time from the downhole sensor first break time.
6. Vertical travel time SRC to GEO : *timv*, is corrected for source to hydrophone distance and for source offset.
7. Vertical travel time SRD to GEO : *shtm*, is *timv* corrected for the vertical distance between source and datum.
8. Average velocity SRD to GEO : the average seismic velocity from datum to the corresponding checkshot level, $\frac{dsrd}{shtm}$.
9. Delta depth between shots : $\Delta depth$, the vertical distance between each level.
10. Delta time between shots : $\Delta time$, the difference in vertical travel time (*shtm*) between each level.
11. Interval velocity between shots : the average seismic velocity between each level, $\frac{\Delta depth}{\Delta time}$.

9.2 Drift Computation Report

1. Level number : the level number starting from the top level (includes any imposed shots).
2. Vertical depth from KB : the depth in metres from kelly bushing .
3. Vertical depth from SRD : the depth in metres from seismic reference datum.
4. Vertical depth from GL : the depth in metres from ground level.
5. Vertical travel time SRD to GEO : the calculated vertical travel time from datum to downhole geophone (see column 7, Geophysical Airgun Report).
6. Integrated raw sonic time : the raw sonic log is integrated from top to bottom and listed at each level. An initial value at the top of the sonic log is set equal to the checkshot time at that level. This may be an imposed shot if a shot was not taken at the top of the sonic.
7. Computed drift at level : the checkshot time minus the integrated raw sonic time.
8. Computed blk-shft correction : the drift gradient between any two checkshot levels ($\frac{\Delta drift}{\Delta depth}$).

9.3 Sonic Adjustment Parameter Report

1. Knee number : the knee number starting from the highest knee. (The first knees listed will generally be at SRD and the top of sonic. The drift imposed at these knees will normally be zero.)
2. Vertical depth from KB : the depth in metres from kelly bushing .
3. Vertical depth from SRD : the depth in metres from seismic reference datum.
4. Vertical depth from GL : the depth in metres from ground level.
5. Drift at knee : the value of drift imposed at each knee.
6. Blockshift used : the change in drift divided by the change in depth between any two levels.
7. Delta-T minimum used : see section 4 of report for an explanation of Δt_{min}.
8. Reduction factor : see section 4 of report.
9. Equivalent blockshift : the gradient of the imposed drift curve.

9.4 Velocity Report

1. Level number : the level number starting from the top level (includes any imposed shots).
2. Vertical depth from KB : the depth in metres from kelly bushing .
3. Vertical depth from SRD : the depth in metres from seismic reference datum
4. Vertical depth from GL : the depth in metres from ground level
5. Vertical travel time SRD to GEOPH : the vertical travel time from SRD to downhole geophone (see column 7, Geophysical Airgun Report)
6. Integrated adjusted sonic time : the adjusted sonic log is integrated from top to bottom. An initial value at the the top of the sonic is set equal the checkshot time at that level. (The adjusted sonic log is the drift corrected sonic log.)
7. Drift=shot time-raw son : the check shot time minus the raw integrated sonic time.
8. Residual=shot time-adj son : the check shot time minus the adjusted integrated sonic time. This is the difference between calculated drift and the imposed drift.
9. Adjusted interval velocity : the interval velocity calculated from the integrated adjusted sonic time at each level.

9.5 Time Converted Velocity Report

The data in this listing has been resampled in time.

1. Two way travel time from SRD : This is the index for the data in this listing. The first value is at SRD (0 millisecs) and the sampling rate is 2 millisecs.
2. Measured depth from KB : the depth from KB at each corresponding value of two way time.
3. Vertical depth from SRD : the vertical depth from SRD at each corresponding value of two way time.
4. Average velocity SRD to GEO : the vertical depth from SRD divided by half the two way time.
5. RMS velocity : the root mean square velocity from datum to the corresponding value of two way time.

   $$v_{rms} = \sqrt{\Sigma_1^n v_i^2 t_i / \Sigma_1^n t_i}$$

   where v_i is the velocity between each 2 millisecs interval.
6. First normal moveout : the correction time in millisecs to be applied to the two way travel time for a specified moveout distance (default = 3000 feet).

   $$\Delta t = \sqrt{t^2 + \left(\frac{X}{v_{rms}}\right)^2} - t$$

   where
   Δt = normal moveout (secs)
   X = moveout distance (metres)
   t = two way time (secs)
   v_{rms} = rms velocity (metres /sec)
7. Second normal moveout : the correction time in millisecs to be applied to the two way travel time for a specified moveout distance (default = 4500 feet).
8. Third normal moveout : the correction time in millisecs to be applied to the two way travel time for a specified moveout distance (default = 6000 feet).
9. Interval velocity : the velocity between each sampled depth. Typically, the sampling rate is 2 millisecs two way time, (1 millisec one way time) therefore the interval velocity will be equal to the depth increment divided by 0.001. It is equivalent to column 9 from the the Velocity Report.

9.6 SYNTHETIC SEISMOGRAM TABLE

1. Two way travel time from SRD : This is the index for the data in this listing. The first value is at the top of the sonic. The default sampling rate is 2 millisecs.
2. Vertical depth from SRD : the vertical depth from SRD at each corresponding value of two way time.
3. Interval velocity : the velocity between each sampled depth. Typically, the sampling rate is 2 millisecs two way time, (1 millisec one way time) therefore the interval velocity will be equal to the depth increment divided by 0.001. It is equivalent to column 9 from the the Velocity Report.

4. Interval density : the average density between two successive values of two way time.
5. Reflect. coeff. : the difference in acoustic impedance divided by the sum of the acoustic impedance between any two levels. The acoustic impedance is the product of the interval density and the interval velocity.
6. Two way atten. coeff. : is computed from the series

$$A_n = (1 - R_1^2).(1 - R_2^2).(1 - R_3^2)...(1 - R_n^2)$$

7. Sythetic seismo. primary : the product of the reflection coefficient at each depth and the two way attenuation coefficient up to that depth.

$$Primary_n = R_n.A_{n-1}$$

8. Primary + multiple : a transform technique is used to calculate multiples from the input reflection coefficients.
9. Multiples only : (Primary + multiple) - (Synthetic seismo. primary)

SCHLUMBERGER (SEG-1976) WAVELET POLARITY CONVENTION

Figure 1

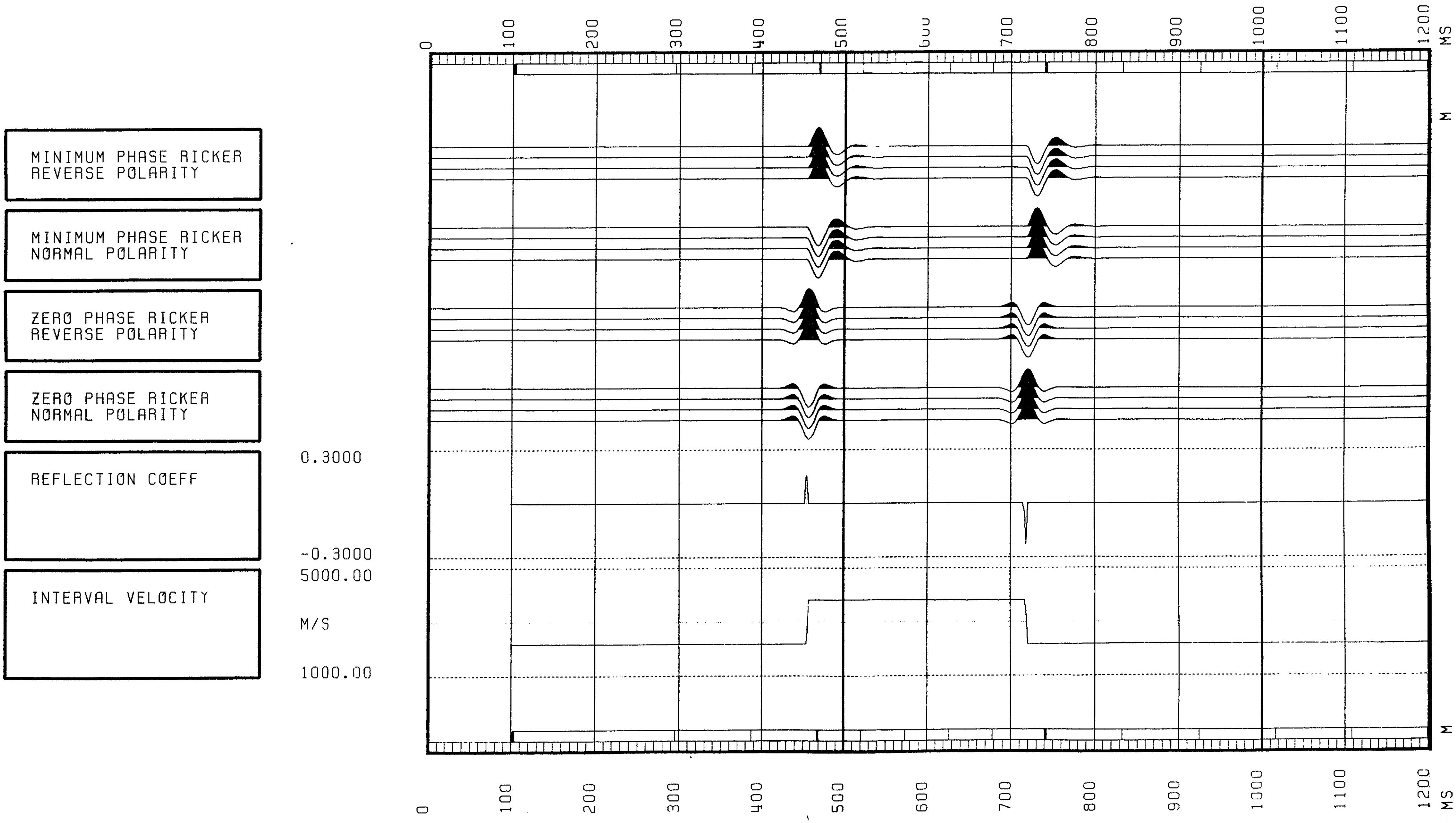


FIGURE 2

Schlumberger

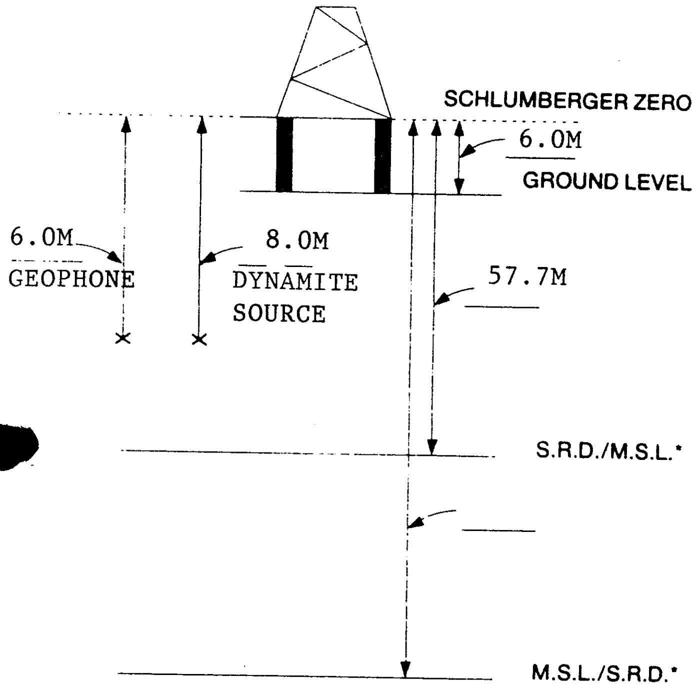
GUN GEOMETRY SKETCH

CLIENT: BEACH PETROLEUM

WELL: NAJABA - 1A

DATE: 24.6.86

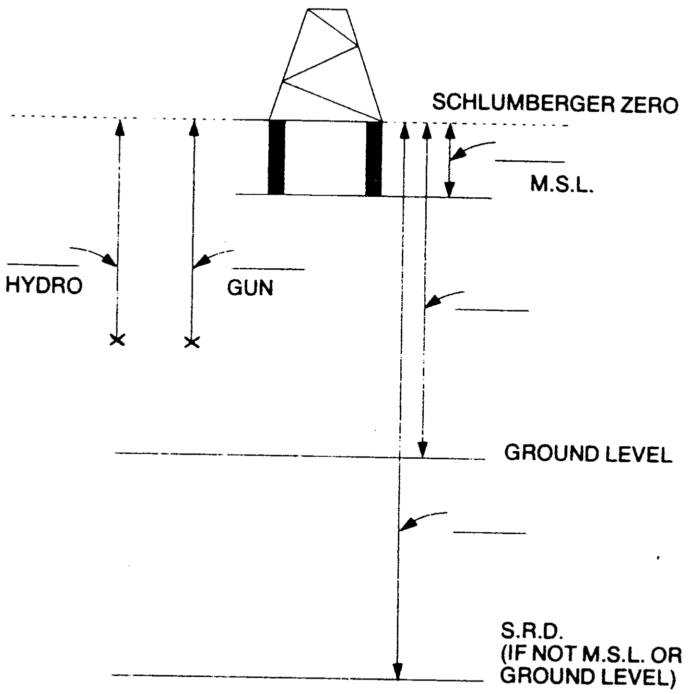
LAND ☒



INDICATE ALL DISTANCES RELATIVE TO SCHLUMBERGER ZERO

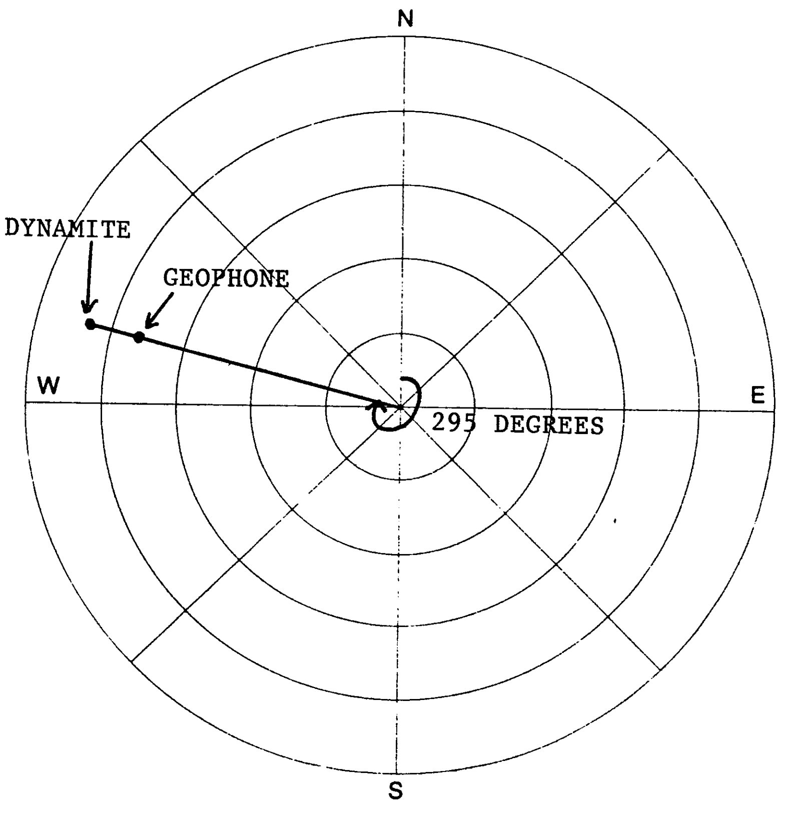
* DELETE AS APPLICABLE

OFFSHORE ☐



INDICATE ALL DISTANCES RELATIVE TO SCHLUMBERGER ZERO

SHOT POS'N	SOURCE OFFSET	GEOPHONE OFFSET	SOURCE DEPTH	GEOPHONE DEPTH
1	132	119.4	2.0	0.0
2				
3				
4				
5				
6				
7				



INDICATE GUN/VIBRO AND HYDROPHONE OFFSET AND AZIMUTH RELATIVE TO NORTH

istribution: White = Client; White = computing centre; Green = District; Pink = location

SHOTS

```
ANALYST: M. SANDERS          10-JUL-86 11:14:49    PROGRAM: GSHOT  007.E07




                       ********************
                       *                  *
                       *                  *
                       *                  *
                       ********************
                       *                  *
                       *   SCHLUMBERGER   *
                       *                  *
                       ********************


                    GEOPHYSICAL AIRGUN REPORT

               COMPANY  : BEACH PETROLEUM N.L.
               WELL     : NAJABA - 1A
               FIELD    : WILDCAT
               STATE    : VICTORIA
               COUNTRY  : AUSTRALIA
               REFERENCE: 560706
```

```
        LONG DEFINITIONS

           GLOBAL
KB      - ELEVATION OF THE KELLY-BUSHING ABOVE MSL OR MWL
SRD     - ELEVATION OF THE SEISMIC REFERENCE DATUM ABOVE MSL OR MWL
EKB     - ELEVATION OF KELLY BUSHING
GL      - ELEVATION OF USER'S REFERENCE (GENERALLY GROUND LEVEL) ABOVE SRD
VELHYD  - VELOCITY OF THE MEDIUM BETWEEN THE SOURCE AND THE HYDROPHONE
VELSUR  - VELOCITY OF THE MEDIUM BETWEEN THE SOURCE AND THE SRD

           MATRIX
GUNELZ  - SOURCE ELEVATION ABOVE SRD (ONE FOR THE WHOLE JOB; OR ONE PER SHOT)
GUNEWZ  - SOURCE DISTANCE FROM THE BOREHOLE AXIS IN EW DIRECTION (CF. GUNELZ)
GUNNSZ  - SOURCE DISTANCE FROM THE BOREHOLE AXIS IN NS DIRECTION (CF. GUNELZ)
HYDELZ  - HYDROPHONE ELEVATION ABOVE SRD (CF. GUNELZ)
HYDEWZ  - HYDROPHONE DISTANCE FROM THE BOREH AXIS IN EW DIRECTION (CF GUNELZ)
HYDNSZ  - HYDROPHONE DISTANCE FROM THE BOREH AXIS IN NS DIRECTION (CF GUNELZ)
TRTHYD  - TRAVEL TIME FROM THE HYDROPHONE TO THE SOURCE
TRTSRD  - TRAVEL TIME FROM THE SOURCE TO THE SRD
DEVWEL  - DEVIATED WELL DATA PER SHOT : MEAS. DEPTH, VERT. DEPTH, EW, NS

           SAMPLED
SHOT.GSH    - SHOT NUMBER
DKB.GSH     - MEASURED DEPTH FROM KELLY-BUSHING
DSRD.GSH    - DEPTH FROM  SRD
DGL.GSH     - VERTICAL DEPTH RELATIVE TO GROUND LEVEL (USER'S REFERENCE)
TIMO.GSH    - MEASURED TRAVEL TIME FROM HYDROPHONE TO GEOPHONE
TIMV.GSH    - VERTICAL TRAVEL TIME FROM THE SOURCE TO THE GEOPHONE
SHTM.GSH    - SHOT TIME (WST)
AVGV.GSH    - AVERAGE SEISMIC VELOCITY
DELZ.GSH    - DEPTH INTERVAL BETWEEN SUCCESSIVE SHOTS
DELT.GSH    - TRAVEL TIME INTERVAL BETWEEN SUCCESSIVE SHOTS
INTV.GSH    - INTERNAL VELOCITY, AVERAGE

  (GLOBAL PARAMETERS)                     (VALUE)

ELEV OF KB AB. MSL (WST)  KB        :   57.7000  M
ELEV OF SRD AB. MSL(WST)  SRD       :         0  M
ELEVATION OF KELLY BUSHI  EKB       :   57.7000  M
ELEV OF GL AB. SRD(WST)   GL        :   51.7000  M
VEL SOURCE-HYDRO(WST)     VELHYD    :   1496.00  M/S
VEL SOURCE-SRD (WST)      VELSUR    :   1495.92  M/S

  (MATRIX PARAMETERS)
```

```
     SOURCE ELV     SOURCE EW     SOURCE NS    HYDRO ELEV     HYDRO EW      HYDRO NS
          M             M             M            M             M             M

 1      49.70        -34.29       -127.99        49.70        -34.29       -127.99


     TRT HYD-SC         TRT SC-SRD
         MS                 MS

 1          0             -33.22


       MD @ KB      VD @ KB     VD @ SRD   E-W COORD   N-S COORD
          M            M            M          M           M

 1       57.70        57.70           0           0           0
 2      170.00       170.00      112.30           0           0
 3      770.00       770.00      712.30           0           0
 4      985.00       985.00      927.30           0           0
 5     1088.00      1088.00     1030.30           0           0
 6     1293.00      1293.00     1235.30           0           0
 7     1405.00      1405.00     1347.30           0           0
 8     1517.00      1517.00     1459.30           0           0
 9     1687.00      1687.00     1629.30           0           0
10     1806.00      1806.00     1748.30           0           0
11     1946.00      1946.00     1888.30           0           0
12     2030.00      2030.00     1972.30           0           0
13     2177.00      2177.00     2119.30           0           0
14     2220.00      2220.00     2162.30           0           0
15     2250.00      2250.00     2192.30           0           0
16     2280.00      2280.00     2222.30           0           0
17     2310.00      2310.00     2252.30           0           0
18     2339.00      2339.00     2281.30           0           0
19     2370.00      2370.00     2312.30           0           0
20     2400.00      2400.00     2342.30           0           0
21     2430.00      2430.00     2372.30           0           0
22     2460.00      2460.00     2402.30           0           0
23     2490.00      2490.00     2432.30           0           0
24     2520.00      2520.00     2462.30           0           0
25     2550.00      2550.00     2492.30           0           0
26     2580.00      2580.00     2522.30           0           0
27     2610.00      2610.00     2552.30           0           0
28     2640.00      2640.00     2582.30           0           0
29     2670.00      2670.00     2612.30           0           0
30     2700.00      2700.00     2642.30           0           0
31     2730.00      2730.00     2672.30           0           0
32     2760.00      2760.00     2702.30           0           0
33     2790.00      2790.00     2732.30           0           0
```

```
  34    2820.00    2820.00    2762.30        0        0
  35    2850.00    2850.00    2792.30        0        0
  36    2882.00    2882.00    2824.30        0        0
  37    2913.00    2913.00    2855.30        0        0
  38    2945.00    2945.00    2887.30        0        0
  39    2976.00    2976.00    2918.30        0        0
  40    3007.00    3007.00    2949.30        0        0
  41    3038.00    3038.00    2980.30        0        0
  42    3068.00    3068.00    3010.30        0        0
  43    3100.00    3100.00    3042.30        0        0
  44    3412.00    3412.00    3354.30        0        0
```

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

LEVEL NUMBER	MEASUR DEPTH FROM KB M	VERTIC DEPTH FROM SRD M	VERTIC DEPTH FROM GL M	OBSERV TRAVEL TIME HYD/GEO MS	VERTIC TRAVEL TIME SRC/GEO MS	VERTIC TRAVEL TIME SRD/GEO MS	AVERAGE VELOC SRD/GEO M/S	DELTA DEPTH BETWEEN SHOTS M	DELTA TIME BETWEEN SHOTS MS	INTERV VELOC BETWEEN SHOTS M/S
1	57.70	0	51.70	94.60	33.22	0				
2	170.00	112.30	164.00	105.00	81.28	48.05	2337	112.30	48.05	2337
3	770.00	712.30	764.00	357.00	351.72	318.50	2236	600.00	270.45	2219
4	985.00	927.30	979.00	435.00	431.05	397.83	2331	215.00	79.33	2710
5	1088.00	1030.30	1082.00	469.00	465.51	432.29	2383	103.00	34.46	2989
6	1293.00	1235.30	1287.00	541.00	538.15	504.92	2447	205.00	72.64	2822
7	1405.00	1347.30	1399.00	576.00	573.43	540.20	2494	112.00	35.28	3175
8	1517.00	1459.30	1511.00	610.00	607.66	574.44	2540	112.00	34.24	3271
9	1687.00	1629.30	1681.00	660.00	657.95	624.73	2608	170.00	50.29	3380
10	1806.00	1748.30	1800.00	692.00	690.13	656.90	2661	119.00	32.17	3699
11	1946.00	1888.30	1940.00	727.00	725.31	692.08	2728	140.00	35.18	3980
12	2030.00	1972.30	2024.00	749.00	747.40	714.17	2762	84.00	22.09	3803
13	2177.00	2119.30	2171.00	787.00	785.54	752.31	2817	147.00	38.14	3854
14	2220.00	2162.30	2214.00	800.00	798.57	765.35	2825	43.00	13.03	3299
15	2250.00	2192.30	2244.00	807.00	805.59	772.37	2838	30.00	7.03	4270
16	2280.00	2222.30	2274.00	814.00	812.62	779.40	2851	30.00	7.02	4271
17	2310.00	2252.30	2304.00	823.00	821.64	788.42	2857	30.00	9.02	3326
18	2339.00	2281.30	2333.00	832.00	830.66	797.44	2861	29.00	9.02	3215
19	2370.00	2312.30	2364.00	839.00	837.68	804.46	2874	31.00	7.02	4414
20	2400.00	2342.30	2394.00	846.00	844.71	811.48	2886	30.00	7.02	4272
21	2430.00	2372.30	2424.00	852.00	850.73	817.50	2902	30.00	6.02	4981
22	2460.00	2402.30	2454.00	859.00	857.75	824.53	2914	30.00	7.02	4273
23	2490.00	2432.30	2484.00	868.00	866.77	833.54	2918	30.00	9.02	3327
24	2520.00	2462.30	2514.00	875.00	873.79	840.56	2929	30.00	7.02	4274

```
 LEVEL    MEASUR    VERTIC    VERTIC     OBSERV    VERTIC    VERTIC   AVERAGE    DELTA     DELTA    INTERV
NUMBER     DEPTH     DEPTH     DEPTH     TRAVEL    TRAVEL    TRAVEL    VELOC     DEPTH      TIME     VELOC
           FROM      FROM      FROM       TIME      TIME      TIME    SRD/GEO   BETWEEN   BETWEEN   BETWEEN
            KB        SRD       GL      HYD/GEO   SRC/GEO   SRD/GEO              SHOTS     SHOTS     SHOTS
             M         M         M         MS        MS        MS      M/S         M        MS       M/S

                                                                                30.00      7.02      4274
      25  2550.00   2492.30   2544.00    882.00    880.80    847.58     2940
                                                                                30.00      7.02      4274
      26  2580.00   2522.30   2574.00    889.00    887.82    854.60     2951
                                                                                30.00      7.02      4275
      27  2610.00   2552.30   2604.00    896.00    894.84    861.62     2962
                                                                                30.00      7.02      4275
      28  2640.00   2582.30   2634.00    903.00    901.86    868.63     2973
                                                                                30.00      7.02      4275
      29  2670.00   2612.30   2664.00    910.00    908.87    875.65     2983
                                                                                30.00      7.02      4276
      30  2700.00   2642.30   2694.00    917.00    915.89    882.67     2994
                                                                                30.00      9.01      3328
      31  2730.00   2672.30   2724.00    926.00    924.90    891.68     2997
                                                                                30.00      8.01      3743
      32  2760.00   2702.30   2754.00    934.00    932.92    899.70     3004
                                                                                30.00      6.02      4986
      33  2790.00   2732.30   2784.00    940.00    938.94    905.71     3017
                                                                                30.00      6.02      4987
      34  2820.00   2762.30   2814.00    946.00    944.95    911.73     3030
                                                                                30.00      6.02      4987
      35  2850.00   2792.30   2844.00    952.00    950.97    917.74     3043
                                                                                32.00      7.02      4561
      36  2882.00   2824.30   2876.00    959.00    957.98    924.76     3054
                                                                                31.00      7.01      4420
      37  2913.00   2855.30   2907.00    966.00    965.00    931.77     3064
                                                                                32.00      7.01      4562
      38  2945.00   2887.30   2939.00    973.00    972.01    938.79     3076
                                                                                31.00      7.01      4420
      39  2976.00   2918.30   2970.00    980.00    979.02    945.80     3086
                                                                                31.00      7.01      4420
      40  3007.00   2949.30   3001.00    987.00    986.04    952.81     3095
                                                                                31.00      7.01      4420
      41  3038.00   2980.30   3032.00    994.00    993.05    959.83     3105
                                                                                30.00      7.01      4278
      42  3068.00   3010.30   3062.00   1001.00   1000.06    966.84     3114
                                                                                32.00      8.01      3994
      43  3100.00   3042.30   3094.00   1009.00   1008.07    974.85     3121
                                                                               312.00     72.11      4327
      44  3412.00   3354.30   3406.00   1081.00   1080.18   1046.96     3204
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DRIFT

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ANALYST: M. SANDERS            10-JUL-86 11:23:20    PROGRAM: GDRIFT 007.E09




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                                        *   SCHLUMBERGER   *
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                                      DRIFT COMPUTATION REPORT


                              COMPANY  : BEACH PETROLEUM N.L.
                              WELL     : NAJABA - 1A
                              FIELD    : WILDCAT
                              STATE    : VICTORIA
                              COUNTRY  : AUSTRALIA
                              REFERENCE: 560706
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        LONG DEFINITIONS

           GLOBAL
KB      - ELEVATION OF THE KELLY-BUSHING ABOVE MSL OR MWL
SRD     - ELEVATION OF THE SEISMIC REFERENCE DATUM ABOVE MSL OR MWL
EKB     - ELEVATION OF KELLY BUSHING
GL      - ELEVATION OF USER'S REFERENCE (GENERALLY GROUND LEVEL) ABOVE SRD
XSTART  - TOP OF ZONE PROCESSED BY WST
XSTOP   - BOTTOM OF ZONE PROCESSED BY WST
GAD001  - RAW SONIC CHANNEL NAME USED FOR WST SONIC ADJUSTMENT
UNFDEN  - UNIFORM DENSITY VALUE

           ZONE
LOFDEN  - LAYER OPTION FLAG FOR DENSITY : -1=NONE; 0=UNIFORM; 1=UNIFORM+LAYER
LAYDEN  - USER SUPPLIED DENSITY DATA

           SAMPLED
SHOT    - SHOT NUMBER
DKB     - MEASURED DEPTH FROM KELLY-BUSHING
DSRD    - DEPTH FROM  SRD
DGL     - VERTICAL DEPTH RELATIVE TO GROUND LEVEL (USER'S REFERENCE)
SHTM    - SHOT TIME (WST)
RAWS    - RAW SONIC (WST)
SHDR    - DRIFT AT SHOT OR KNEE
BLSH    - BLOCK SHIFT BETWEEN SHOTS OR KNEE

  (GLOBAL PARAMETERS)                    (VALUE)

ELEV OF KB AB. MSL (WST)  KB          :  57.7000  M
ELEV OF SRD AB. MSL(WST)  SRD         :        0  M
ELEVATION OF KELLY BUSHI  EKB         :  57.7000  M
ELEV OF GL AB. SRD(WST)   GL          :  51.7000  M
TOP OF ZONE PROCD (WST)   XSTART      :        0  M
BOT OF ZONE PROCD (WST)   XSTOP       :        0  M
RAW SONIC CH NAME (WST)   GAD001      : DT.WST.004.FLP.IPA.*
UNIFORM DENSITY VALUE     UNFDEN      :  2.30000  G/C3

  (ZONED PARAMETERS)                     (VALUE)            (LIMITS)

LAYER OPTION FLAG DENS    LOFDEN      : 1.000000        30479.7  -       0
USER SUPPLIED DENSITY DA LAYDEN       :-999.2500  G/C3  30479.7  -       0
```

LEVEL NUMBER	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	VERTICAL DEPTH FROM GL M	VERTICAL TRAVEL TIME SRD/GEO MS	INTEGRATED RAW SONIC TIME MS	COMPUTED DRIFT AT LEVEL MS	COMPUTED BLK-SHFT CORRECTION US/F
1	57.70	0	51.70	0	0	0	0
2	170.00	112.30	164.00	48.05	48.05	0	0
3	770.00	712.30	764.00	318.50	315.50	3.00	1.52
4	985.00	927.30	979.00	397.83	397.57	.26	-3.88
5	1088.00	1030.30	1082.00	432.29	433.33	-1.05	-3.87
6	1293.00	1235.30	1287.00	504.92	504.52	.40	2.15
7	1405.00	1347.30	1399.00	540.20	541.36	-1.15	-4.22
8	1517.00	1459.30	1511.00	574.44	573.11	1.32	6.74
9	1687.00	1629.30	1681.00	624.73	624.37	.36	-1.73
10	1806.00	1748.30	1800.00	656.90	657.99	-1.09	-3.70
11	1946.00	1888.30	1940.00	692.08	697.62	-5.54	-9.69
12	2030.00	1972.30	2024.00	714.17	720.24	-6.07	-1.92
13	2177.00	2119.30	2171.00	752.31	759.86	-7.55	-3.07
14	2220.00	2162.30	2214.00	765.35	771.09	-5.75	12.75
15	2250.00	2192.30	2244.00	772.37	778.83	-6.46	-7.26
16	2280.00	2222.30	2274.00	779.40	786.60	-7.21	-7.58
17	2310.00	2252.30	2304.00	788.42	794.64	-6.23	9.98
18	2339.00	2281.30	2333.00	797.44	802.00	-4.56	17.51
19	2370.00	2312.30	2364.00	804.46	809.97	-5.51	-9.30
20	2400.00	2342.30	2394.00	811.48	817.71	-6.23	-7.33
21	2430.00	2372.30	2424.00	817.50	825.51	-8.00	-18.03
22	2460.00	2402.30	2454.00	824.53	833.22	-8.69	-7.01
23	2490.00	2432.30	2484.00	833.54	840.71	-7.17	15.45
24	2520.00	2462.30	2514.00	840.56	848.37	-7.81	-6.45

LEVEL NUMBER	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	VERTICAL DEPTH FROM GL M	VERTICAL TRAVEL TIME SRD/GEO MS	INTEGRATED RAW SONIC TIME MS	COMPUTED DRIFT AT LEVEL MS	COMPUTED BLK-SHFT CORRECTION US/F
25	2550.00	2492.30	2544.00	847.58	855.79	-8.20	-4.04
26	2580.00	2522.30	2574.00	854.60	863.15	-8.55	-3.55
27	2610.00	2552.30	2604.00	861.62	870.60	-8.98	-4.32
28	2640.00	2582.30	2634.00	868.63	878.12	-9.49	-5.17
29	2670.00	2612.30	2664.00	875.65	885.33	-9.67	-1.89
30	2700.00	2642.30	2694.00	882.67	892.65	-9.98	-3.10
31	2730.00	2672.30	2724.00	891.68	899.91	-8.23	17.81
32	2760.00	2702.30	2754.00	899.70	907.03	-7.33	9.10
33	2790.00	2732.30	2784.00	905.71	914.13	-8.42	-11.07
34	2820.00	2762.30	2814.00	911.73	921.18	-9.45	-10.51
35	2850.00	2792.30	2844.00	917.74	928.22	-10.48	-10.41
36	2882.00	2824.30	2876.00	924.76	935.33	-10.58	-.91
37	2913.00	2855.30	2907.00	931.77	942.14	-10.37	2.01
38	2945.00	2887.30	2939.00	938.79	949.13	-10.34	.27
39	2976.00	2918.30	2970.00	945.80	956.15	-10.34	-.03
40	3007.00	2949.30	3001.00	952.81	963.30	-10.48	-1.34
41	3038.00	2980.30	3032.00	959.83	970.31	-10.48	-.02
42	3068.00	3010.30	3062.00	966.84	977.36	-10.52	-.40
43	3100.00	3042.30	3094.00	974.85	984.39	-9.54	9.40
44	3412.00	3354.30	3406.00	1046.96	1053.29	-6.33	3.13

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ANALYST: M. SANDERS              10-JUL-86 11:43:16    PROGRAM: GADJST 008.E07



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                                        *   SCHLUMBERGER   *
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                                           VELOCITY REPORT

                              COMPANY  : BEACH PETROLEUM N.L.
                              WELL     : NAJABA - 1A
                              FIELD    : WILDCAT
                              STATE    : VICTORIA
                              COUNTRY  : AUSTRALIA
                              REFERENCE: 560706
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         LONG DEFINITIONS

            GLOBAL
KB      - ELEVATION OF THE KELLY-BUSHING ABOVE MSL OR MWL
SRD     - ELEVATION OF THE SEISMIC REFERENCE DATUM ABOVE MSL OR MWL
EKB     - ELEVATION OF KELLY BUSHING
GL      - ELEVATION OF USER'S REFERENCE (GENERALLY GROUND LEVEL) ABOVE SRD
UNERTH  - UNIFORM EARTH VELOCITY  (GTRFRM)

            ZONE
LOFVEL  - LAYER OPTION FLAG FOR VELOCITY: -1=NONE; O=UNIFORM; 1=UNIFORM+LAYER
LAYVEL  - USER SUPPLIED VELOCITY DATA

            SAMPLED
SHOT    - SHOT NUMBER
DKB     - MEASURED DEPTH FROM KELLY-BUSHING
DSRD    - DEPTH FROM  SRD
DGL     - VERTICAL DEPTH RELATIVE TO GROUND LEVEL (USER'S REFERENCE)
SHTM    - SHOT TIME (WST)
ADJS    - ADJUSTED SONIC TRAVEL TIME
SHDR    - DRIFT AT SHOT OR KNEE
REST    - RESIDUAL TRAVEL TIME AT KNEE
INTV    - INTERNAL VELOCITY, AVERAGE


   (GLOBAL PARAMETERS)                    (VALUE)

ELEV OF KB AB. MSL (WST)  KB          :  57.7000  M
ELEV OF SRD AB. MSL(WST)  SRD         :        0  M
ELEVATION OF KELLY BUSHI  EKB         :  57.7000  M
ELEV OF GL AB. SRD(WST)   GL          :  51.7000  M
UNIFORM EARTH VELOCITY    UNERTH      :  2133.60  M/S

   (ZONED PARAMETERS)                     (VALUE)              (LIMITS)

LAYER OPTION FLAG VELOC   LOFVEL      : 1.000000         30479.7  -        0
USER VFLOC (WST)          LAYVEL      : 2337.000  M/S    170.000  - 55.7000
                                        1497.000         55.7000           0
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LEVEL NUMBER	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	VERTICAL DEPTH FROM GL M	VERTICAL TRAVEL TIME SRD/GEOPH MS	INTEGRATED ADJUSTED SONIC TIME MS	DRIFT = SHOT TIME - RAW SON MS	RESIDUAL = SHOT TIME - ADJ SON MS	ADJUSTED INTERVAL VELOCITY M/S
1	57.70	0	51.70	0	0	0	0	2337
2	170.00	112.30	164.00	48.05	48.06	0	0	2233
3	770.00	712.30	764.00	318.50	316.70	3.00	1.80	2671
4	985.00	927.30	979.00	397.83	397.19	.26	.64	2890
5	1088.00	1030.30	1082.00	432.29	432.83	-1.05	-.55	2880
6	1293.00	1235.30	1287.00	504.92	504.02	.40	.90	3041
7	1405.00	1347.30	1399.00	540.20	540.86	-1.15	-.65	3507
8	1517.00	1459.30	1511.00	574.44	572.79	1.32	1.64	3296
9	1687.00	1629.30	1681.00	624.73	624.37	.36	.36	3793
10	1806.00	1748.30	1800.00	656.90	655.74	-1.09	1.16	3787
11	1946.00	1888.30	1940.00	692.08	692.71	-5.54	-.63	3902
12	2030.00	1972.30	2024.00	714.17	714.24	-6.07	-.06	3710
13	2177.00	2119.30	2171.00	752.31	753.86	-7.55	-1.55	3828
14	2220.00	2162.30	2214.00	765.35	765.09	-5.75	.25	3876
15	2250.00	2192.30	2244.00	772.37	772.83	-6.46	-.46	3860
16	2280.00	2222.30	2274.00	779.40	780.60	-7.21	-1.21	3768
17	2310.00	2252.30	2304.00	788.42	788.56	-6.23	-.15	4064
18	2339.00	2281.30	2333.00	797.44	795.70	-4.56	1.74	4017
19	2370.00	2312.30	2364.00	804.46	803.42	-5.51	1.04	4005
20	2400.00	2342.30	2394.00	811.48	810.91	-6.23	.57	3982
21	2430.00	2372.30	2424.00	817.50	818.44	-8.00	-.94	4018
22	2460.00	2402.30	2454.00	824.53	825.91	-8.69	-1.38	4113
23	2490.00	2432.30	2484.00	833.54	833.20	-7.17	.34	4043
24	2520.00	2462.30	2514.00	840.56	840.62	-7.81	-.06	

LEVEL NUMBER	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	VERTICAL DEPTH FROM GL M	VERTICAL TRAVEL TIME SRD/GEOPH MS	INTEGRATED ADJUSTED SONIC TIME MS	DRIFT = SHOT TIME - RAW SON MS	RESIDUAL = SHOT TIME - ADJ SON MS	ADJUSTED INTERVAL VELOCITY M/S
25	2550.00	2492.30	2544.00	847.58	847.85	-8.20	-.27	4149
26	2580.00	2522.30	2574.00	854.60	855.04	-8.55	-.44	4172
27	2610.00	2552.30	2604.00	861.62	862.30	-8.98	-.68	4137
28	2640.00	2582.30	2634.00	868.63	869.61	-9.49	-.98	4100
29	2670.00	2612.30	2664.00	875.65	876.67	-9.67	-1.02	4250
30	2700.00	2642.30	2694.00	882.67	883.83	-9.98	-1.16	4194
31	2730.00	2672.30	2724.00	891.68	890.93	-8.23	.75	4222
32	2760.00	2702.30	2754.00	899.70	897.92	-7.33	1.77	4291
33	2790.00	2732.30	2784.00	905.71	904.90	-8.42	.81	4297
34	2820.00	2762.30	2814.00	911.73	911.84	-9.45	-.11	4327
35	2850.00	2792.30	2844.00	917.74	918.77	-10.48	-1.02	4330
36	2882.00	2824.30	2876.00	924.76	925.83	-10.58	-1.07	4531
37	2913.00	2855.30	2907.00	931.77	932.64	-10.37	-.87	4552
38	2945.00	2887.30	2939.00	938.79	939.63	-10.34	-.84	4580
39	2976.00	2918.30	2970.00	945.80	946.64	-10.34	-.84	4418
40	3007.00	2949.30	3001.00	952.81	953.79	-10.48	-.98	4336
41	3038.00	2980.30	3032.00	959.83	960.81	-10.48	-.98	4419
42	3068.00	3010.30	3062.00	966.84	967.94	-10.52	-1.10	4205
43	3100.00	3042.30	3094.00	974.85	975.24	-9.54	-.39	4387
44	3412.00	3354.30	3406.00	1046.96	1046.77	-6.33	.19	4362

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                    *   SCHLUMBERGER   *
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              SONIC ADJUSTMENT PARAMETER REPORT

          COMPANY  : BEACH PETROLEUM N.L.
          WELL     : NAJABA - 1A
          FIELD    : WILDCAT
          STATE    : VICTORIA
          COUNTRY  : AUSTRALIA
          REFERENCE: 560706
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        LONG DEFINITIONS

           GLOBAL
SRCDRF - ORIGIN OF ADJUSTMENT DATA
CONADJ - CONSTANT ADJUSTMENT TO AUTOMATIC DELTA-T MINIMUM = 7.5 US/F
UNERTH - UNIFORM EARTH VELOCITY  (GTRFRM)

           ZONE
ZDRIFT - USER DRIFT AT BOTTOM OF THE ZONE
ADJOPZ - TYPE OF ADJUSTMNENT IN THE DRIFT ZONE : 0=DELTA-T MIN, 1=BLOCKSHIFT
ADJUSZ - DELTA-T MINIMUM USED FOR ADJUSTMENT IN THE DRIFT ZONE
LOFVEL - LAYER OPTION FLAG FOR VELOCITY: -1=NONE; 0=UNIFORM; 1=UNIFORM+LAYER
LAYVEL - USER SUPPLIED VELOCITY DATA

           SAMPLED
SHOT   - SHOT NUMBER
VDKB   - VERTICAL DEPTH RELATIVE TO KB
DSRD   - DEPTH FROM  SRD
DGL    - VERTICAL DEPTH RELATIVE TO GROUND LEVEL (USER'S REFERENCE)
KNEE   - KNEE
BLSH   - BLOCK SHIFT BETWEEN SHOTS OR KNEE
DTMI   - VALUE OF DELTA-T MINIMUM USED
COEF   - DELTA-T MIN COEFFICIENT USED IN THE DRIFT ZONE
DRGR   - GRADIENT OF DRIFT CURVE

  (GLOBAL PARAMETERS)                      (VALUE)

ORIG OF ADJ DATA (WST)    SRCDRF      :  2.00000
CONS SONIC ADJST (WST)    CONADJ      :  7.50000  US/F
UNIFORM EARTH VELOCITY    UNERTH      :  2133.60  M/S

  (ZONED PARAMETERS)                       (VALUE)          (LIMITS)

USER DRIFT ZONE (WST)     ZDRIFT      :-6.500000  MS    3412.00  - 3058.00
                                       -9.500000        3058.00    2870.00
                                       -9.500000        2870.00    2300.00
                                       -6.000000        2300.00    2028.00
                                       -6.000000        2028.00    1688.00
                                               0        1688.00    1420.00
                                       -.5000000        1420.00    1045.00
                                       -.5000000        1045.00    711.000
                                        2.000000        711.000    170.000
                                               0        170.000          0
ADJUSMNT MODE (WST)       ADJOPZ      :-999.2500        30479.7  -       0
USER DELTA-T MIN (WST)    ADJUSZ      :-999.2500  US/F  30479.7  -       0
LAYER OPTION FLAG VELOC   LOFVEL      : 1.000000        30479.7  -       0
USER VELOC (WST)          LAYVEL      : 2337.000  M/S   170.000  - 55.7000
                                        1497.000        55.7000          0
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COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

KNEE NUMBER	VERTICAL DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	VERTICAL DEPTH FROM GL M	DRIFT AT KNEE MS	BLOCKSHIFT USED US/F	DELTA-T MINIMUM USED US/F	REDUCTION FACTOR G	EQUIVALENT BLOCKSHIFT US/F
					0			0
2	170.00	112.30	164.00	0				
					1.13			1.13
3	711.00	653.30	705.00	2.00				
						106.38	.78	-2.28
4	1045.00	987.30	1039.00	-.50				
					0			0
5	1420.00	1362.30	1414.00	-.50				
					.57			.57
6	1688.00	1630.30	1682.00	0				
						72.30	.59	-5.38
7	2028.00	1970.30	2022.00	-6.00				
					0			0
8	2300.00	2242.30	2294.00	-6.00				
						65.85	.80	-1.87
9	2870.00	2812.30	2864.00	-9.50				
					0			0
10	3058.00	3000.30	3052.00	-9.50				
					2.58			2.58
11	3412.00	3354.30	3406.00	-6.50				

TIME/DEPTH

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ANALYST: M. SANDERS                10-JUL-86 11:49:28    PROGRAM: GTRFRM 007.E08



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                                       *   SCHLUMBERGER   *
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                                  TIME CONVERTED VELOCITY REPORT

                            COMPANY   : BEACH PETROLEUM N.L.
                            WELL      : NAJABA - 1A
                            FIELD     : WILDCAT
                            STATE     : VICTORIA
                            COUNTRY   : AUSTRALIA
                            REFERENCE: 560706
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        LONG DEFINITIONS

           GLOBAL
KB      - ELEVATION OF THE KELLY-BUSHING ABOVE MSL OR MWL
SRD     - ELEVATION OF THE SEISMIC REFERENCE DATUM ABOVE MSL OR MWL
GL      - ELEVATION OF USER'S REFERENCE (GENERALLY GROUND LEVEL) ABOVE SRD
UNERTH  - UNIFORM EARTH VELOCITY  (GTRFRM)
UNFDEN  - UNIFORM DENSITY VALUE

           MATRIX
MVODIS  - MOVE-OUT DISTANCE FROM BOREHOLE

           ZONE
LOFVEL  - LAYER OPTION FLAG FOR VELOCITY: -1=NONE; 0=UNIFORM; 1=UNIFORM+LAYER
LAYVEL  - USER SUPPLIED VELOCITY DATA
LOFDEN  - LAYER OPTION FLAG FOR DENSITY : -1=NONE; 0=UNIFORM; 1=UNIFORM+LAYER
LAYDEN  - USER SUPPLIED DENSITY DATA

           SAMPLED
TWOT    - TWO WAY TRAVEL TIME (RELATIVE TO THE SEISMIC REFERENCE
DKB     - MEASURED DEPTH FROM KELLY-BUSHING
DSRD    - DEPTH FROM  SRD
AVGV    - AVERAGE SEISMIC VELOCITY
RMSV    - ROOT MEAN SQUARE VELOCITY (SEISMIC)
MVOT    - NORMAL MOVE-OUT
MVOT    - NORMAL MOVE-OUT
MVOT    - NORMAL MOVE-OUT
INTV    - INTERNAL VELOCITY, AVERAGE

  (GLOBAL PARAMETERS)                          (VALUE)

ELEV OF KB AB. MSL (WST)  KB          :  57.7000  M
ELEV OF SRD AB. MSL(WST)  SRD         :        0  M
ELEV OF GL AB. SRD(WST)   GL          :  51.7000  M
UNIFORM EARTH VELOCITY    UNERTH      :  2133.60  M/S
UNIFORM DENSITY VALUE     UNFDEN      :  2.30000  G/C3

  (MATRIX PARAMETERS)




      MVOUT DIST
          M

   1      1000.0
   2      1500.0
   3      2000.0
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COMPANY  : BEACH PETROLEUM N.L.              WELL     : NAJABA - 1A                          PAGE   2

  (ZONED PARAMETERS)                         (VALUE)            (LIMITS)

LAYER OPTION FLAG VELOC  LOFVEL       : 1.000000        30479.7  -       0
USER VELOC (WST)         LAYVEL       : 2337.000   M/S  170.000  - 55.7000
                                        1497.000        55.7000          0
LAYER OPTION FLAG DENS   LOFDEN       :-1.000000        30479.7  -       0
USER SUPPLIED DENSITY DA LAYDEN       :-999.2500   G/C3 30479.7  -       0
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TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								1497
0	56.93	-.77						
								3104
2.00	60.04	2.34	2337	3104	320.18	481.27	642.36	
								2337
4.00	62.37	4.67	2337	2747	360.01	542.00	723.99	
								2337
6.00	64.71	7.01	2337	2618	376.06	567.05	758.05	
								2337
8.00	67.05	9.35	2337	2550	384.17	580.19	776.22	
								2337
10.00	69.38	11.68	2337	2509	388.66	587.88	787.13	
								2337
12.00	71.72	14.02	2337	2481	391.19	592.63	794.11	
								2337
14.00	74.06	16.36	2337	2461	392.54	595.61	798.72	
								2337
16.00	76.40	18.70	2337	2446	393.14	597.44	801.80	
								2337
18.00	78.73	21.03	2337	2434	393.21	598.49	803.83	
								2337
20.00	81.07	23.37	2337	2425	392.92	598.97	805.11	
								2337
22.00	83.41	25.71	2337	2417	392.36	599.05	805.84	
								2337
24.00	85.74	28.04	2337	2410	391.59	598.81	806.14	
								2337
26.00	88.08	30.38	2337	2405	390.67	598.32	806.11	
								2337
28.00	90.42	32.72	2337	2400	389.62	597.65	805.83	
								2337
30.00	92.75	35.05	2337	2396	388.48	596.82	805.34	
								2337
32.00	95.09	37.39	2337	2392	387.26	595.87	804.68	
								2337
34.00	97.43	39.73	2337	2389	385.98	594.81	803.88	
								2337
36.00	99.77	42.07	2337	2386	384.64	593.68	802.97	
								2337
38.00	102.10	44.40	2337	2384	383.26	592.47	801.95	
								2337
40.00	104.44	46.74	2337	2381	381.85	591.20	800.86	
								2337
42.00	106.78	49.08	2337	2379	380.41	589.88	799.69	
								2337
44.00	109.11	51.41	2337	2377	378.95	588.52	798.46	
								2337
4[illegible]00	111.45	53.75	2[illegible]7	2375	377.47	587.[illegible]	797.19	

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
48.00	113.79	56.09	2337	2374	375.97	585.69	795.86	2337
50.00	116.12	58.42	2337	2372	374.46	584.23	794.50	2337
52.00	118.46	60.76	2337	2371	372.94	582.76	793.10	2337
54.00	120.80	63.10	2337	2370	371.41	581.26	791.67	2337
56.00	123.14	65.44	2337	2369	369.88	579.74	790.21	2337
58.00	125.47	67.77	2337	2368	368.34	578.21	788.73	2337
60.00	127.81	70.11	2337	2367	366.79	576.66	787.23	2337
62.00	130.15	72.45	2337	2366	365.24	575.11	785.71	2337
64.00	132.48	74.78	2337	2365	363.70	573.54	784.18	2337
66.00	134.82	77.12	2337	2364	362.15	571.97	782.63	2337
68.00	137.16	79.46	2337	2363	360.60	570.39	781.07	2337
70.00	139.49	81.79	2337	2362	359.05	568.80	779.50	2337
72.00	141.83	84.13	2337	2362	357.51	567.21	777.91	2337
74.00	144.17	86.47	2337	2361	355.96	565.62	776.32	2337
76.00	146.51	88.81	2337	2360	354.42	564.02	774.72	2337
78.00	148.84	91.14	2337	2360	352.89	562.42	773.12	2337
80.00	151.18	93.48	2337	2359	351.35	560.82	771.51	2337
82.00	153.52	95.82	2337	2359	349.82	559.22	769.89	2337
84.00	155.85	98.15	2337	2358	348.30	557.61	768.27	2337
86.00	158.19	100.49	2337	2358	346.78	556.01	766.64	2337
88.00	160.53	102.83	2337	2357	345.26	554.40	765.02	2337
90.00	162.86	105.16	2337	2357	343.75	552.80	763.38	2337
92.00	165.20	107.50	2337	2356	342.25	551.20	761.75	2337
94.00	167.54	109.84	2337	2356	340.75	549.60	760.11	2337

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
96.00	169.88	112.18	2337	2356	339.25	548.00	758.48	2337
98.00	172.03	114.33	2333	2352	338.40	547.36	758.13	2152
100.00	174.19	116.49	2330	2348	337.49	546.63	757.66	2165
102.00	176.41	118.71	2328	2346	336.38	545.60	756.77	2220
104.00	178.61	120.91	2325	2343	335.34	544.67	756.02	2196
106.00	180.75	123.05	2322	2339	334.47	543.98	755.59	2140
108.00	182.86	125.16	2318	2335	333.66	543.39	755.28	2114
110.00	184.92	127.22	2313	2330	332.98	543.00	755.24	2062
112.00	187.08	129.38	2310	2327	332.03	542.16	754.61	2153
114.00	189.34	131.64	2309	2326	330.75	540.84	753.31	2258
116.00	191.58	133.88	2308	2325	329.51	539.56	752.07	2245
118.00	193.76	136.06	2306	2322	328.47	538.58	751.23	2178
120.00	195.97	138.27	2305	2321	327.31	537.42	750.15	2215
122.00	198.10	140.40	2302	2318	326.39	536.61	749.53	2129
124.00	200.28	142.58	2300	2315	325.34	535.60	748.64	2174
126.00	202.53	144.83	2299	2314	324.08	534.25	747.30	2251
128.00	204.62	146.92	2296	2311	323.24	533.57	746.83	2088
130.00	206.89	149.19	2295	2310	321.92	532.12	745.35	2272
132.00	209.16	151.46	2295	2310	320.60	530.67	743.86	2273
134.00	211.32	153.62	2293	2308	319.58	529.67	742.96	2161
136.00	213.59	155.89	2292	2307	318.28	528.24	741.50	2265
138.00	215.99	158.29	2294	2308	316.64	526.28	739.31	2398
140.00	218.19	160.49	2293	2307	315.52	525.11	738.18	2202
14[illegible]00	220.30	162.60	2[illegible]0	2304	314.61	524.[illegible]	737.47	2114

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								2185
144.00	222.49	164.79	2289	2303	313.52	523.13	736.39	
								2174
146.00	224.66	166.96	2287	2301	312.46	522.04	735.36	
								2280
148.00	226.94	169.24	2287	2301	311.15	520.55	733.80	
								2080
150.00	229.02	171.32	2284	2298	310.30	519.78	733.18	
								2068
152.00	231.09	173.39	2281	2295	309.47	519.02	732.60	
								2065
154.00	233.15	175.45	2279	2292	308.64	518.27	732.01	
								2300
156.00	235.45	177.75	2279	2292	307.29	516.70	730.32	
								2287
158.00	237.74	180.04	2279	2292	305.98	515.18	728.70	
								2261
160.00	240.00	182.30	2279	2292	304.74	513.77	727.20	
								2088
162.00	242.09	184.39	2276	2289	303.86	512.91	726.47	
								2115
164.00	244.20	186.50	2274	2287	302.93	511.96	725.61	
								2049
166.00	246.25	188.55	2272	2285	302.12	511.21	725.00	
								2193
168.00	248.45	190.75	2271	2284	301.02	510.00	723.78	
								2197
170.00	250.64	192.94	2270	2283	299.92	508.78	722.53	
								2170
172.00	252.81	195.11	2269	2281	298.88	507.64	721.40	
								2249
174.00	255.06	197.36	2269	2281	297.68	506.25	719.92	
								2192
176.00	257.25	199.55	2268	2280	296.60	505.04	718.69	
								2328
178.00	259.58	201.88	2268	2281	295.25	503.41	716.88	
								2515
180.00	262.10	204.40	2271	2283	293.52	501.17	714.24	
								2394
182.00	264.49	206.79	2272	2284	292.06	499.36	712.18	
								2261
184.00	266.75	209.05	2272	2284	290.88	497.96	710.69	
								2329
186.00	269.08	211.38	2273	2285	289.57	496.37	708.92	
								2371
188.00	271.45	213.75	2274	2286	288.19	494.66	706.99	
								2100
190.00	273.55	215.85	2272	2284	287.31	493.73	706.11	

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								2535
192.00	276.09	218.39	2275	2287	285.63	491.53	703.50	
								2486
194.00	278.57	220.87	2277	2289	284.06	489.51	701.14	
								2443
196.00	281.02	223.32	2279	2290	282.59	487.63	698.97	
								2035
198.00	283.05	225.35	2276	2288	281.84	486.87	698.31	
								2204
200.00	285.26	227.56	2276	2287	280.81	485.68	697.06	
								2205
202.00	287.46	229.76	2275	2286	279.79	484.48	695.81	
								2337
204.00	289.80	232.10	2275	2287	278.54	482.94	694.07	
								2390
206.00	292.19	234.49	2277	2288	277.21	481.25	692.15	
								2468
208.00	294.66	236.96	2278	2290	275.76	479.36	689.94	
								2545
210.00	297.20	239.50	2281	2292	274.18	477.27	687.45	
								2458
212.00	299.66	241.96	2283	2294	272.77	475.45	685.33	
								2530
214.00	302.19	244.49	2285	2296	271.26	473.44	682.94	
								2234
216.00	304.42	246.72	2284	2296	270.24	472.22	681.63	
								2338
218.00	306.76	249.06	2285	2296	269.06	470.74	679.97	
								2372
220.00	309.13	251.43	2286	2297	267.84	469.19	678.20	
								2530
222.00	311.66	253.96	2288	2299	266.37	467.23	675.88	
								2415
224.00	314.08	256.38	2289	2300	265.11	465.59	673.99	
								1943
226.00	316.02	258.32	2286	2297	264.52	465.03	673.56	
								2076
228.00	318.10	260.40	2284	2295	263.75	464.18	672.74	
								2042
230.00	320.14	262.44	2282	2293	263.03	463.40	672.01	
								1967
232.00	322.11	264.41	2279	2290	262.41	462.77	671.48	
								1903
234.00	324.01	266.31	2276	2287	261.86	462.26	671.12	
								2003
236.00	326.01	268.31	2274	2285	261.19	461.54	670.47	
								1973
2[illegible]00	327.99	270.29	2[illegible]1	2283	260.55	460.[illegible]	669.90	

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
240.00	329.99	272.29	2269	2281	259.88	460.16	669.24	2002
242.00	332.03	274.33	2267	2279	259.15	459.35	668.45	2045
244.00	334.13	276.43	2266	2277	258.37	458.44	667.53	2092
246.00	336.24	278.54	2265	2276	257.56	457.48	666.54	2116
248.00	338.33	280.63	2263	2274	256.78	456.57	665.62	2090
250.00	340.32	282.62	2261	2272	256.12	455.86	664.95	1992
252.00	342.29	284.59	2259	2270	255.50	455.19	664.35	1965
254.00	344.25	286.55	2256	2268	254.87	454.51	663.74	1965
256.00	346.27	288.57	2254	2266	254.19	453.74	662.99	2013
258.00	348.27	290.57	2252	2264	253.52	452.99	662.28	1999
260.00	350.24	292.54	2250	2262	252.88	452.28	661.62	1978
262.00	352.13	294.43	2248	2259	252.34	451.74	661.17	1886
264.00	354.20	296.50	2246	2258	251.59	450.84	660.25	2073
266.00	356.23	298.53	2245	2256	250.89	450.03	659.44	2028
268.00	358.22	300.52	2243	2254	250.24	449.30	658.73	1985
270.00	360.19	302.49	2241	2252	249.61	448.59	658.06	1970
272.00	362.18	304.48	2239	2251	248.96	447.84	657.33	1990
274.00	364.13	306.43	2237	2249	248.35	447.15	656.67	1956
276.00	366.12	308.42	2235	2247	247.70	446.40	655.94	1988
278.00	368.16	310.46	2234	2245	246.99	445.55	655.07	2041
280.00	370.19	312.49	2232	2244	246.30	444.72	654.21	2032
282.00	372.18	314.48	2230	2242	245.66	443.98	653.48	1981
284.00	374.20	316.50	2229	2241	244.98	443.16	652.64	2024
286.00	376.25	318.55	2228	2239	244.27	442.30	651.74	2046

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  TWO-WAY   MEASURED   VERTICAL   AVERAGE     RMS      FIRST     SECOND     THIRD    INTERVAL
  TRAVEL     DEPTH      DEPTH    VELOCITY  VELOCITY   NORMAL     NORMAL    NORMAL    VELOCITY
   TIME      FROM       FROM     SRD/GEO              MOVEOUT    MOVEOUT   MOVEOUT
 FROM SRD     KB         SRD
    MS         M          M         M/S       M/S       MS         MS        MS         M/S
                                                                                      2076
   288.00    378.32     320.62      2227      2238     243.53     441.39    650.77
                                                                                      2101
   290.00    380.42     322.72      2226      2237     242.77     440.43    649.73
                                                                                      2101
   292.00    382.52     324.82      2225      2237     242.02     439.48    648.69
                                                                                      2130
   294.00    384.65     326.95      2224      2236     241.23     438.48    647.59
                                                                                      2241
   296.00    386.90     329.20      2224      2236     240.33     437.27    646.20
                                                                                      2194
   298.00    389.09     331.39      2224      2236     239.48     436.16    644.94
                                                                                      2061
   300.00    391.15     333.45      2223      2234     238.78     435.28    644.00
                                                                                      1983
   302.00    393.13     335.43      2221      2233     238.16     434.53    643.23
                                                                                      1924
   304.00    395.06     337.36      2219      2231     237.59     433.87    642.59
                                                                                      2048
   306.00    397.10     339.40      2218      2230     236.91     433.01    641.67
                                                                                      2091
   308.00    399.20     341.50      2218      2229     236.18     432.08    640.65
                                                                                      2096
   310.00    401.29     343.59      2217      2228     235.45     431.15    639.62
                                                                                      2069
   312.00    403.36     345.66      2216      2227     234.76     430.25    638.65
                                                                                      2055
   314.00    405.42     347.72      2215      2226     234.07     429.39    637.71
                                                                                      2021
   316.00    407.44     349.74      2214      2225     233.43     428.57    636.85
                                                                                      1939
   318.00    409.38     351.68      2212      2223     232.86     427.88    636.15
                                                                                      1985
   320.00    411.36     353.66      2210      2222     232.25     427.13    635.36
                                                                                      2047
   322.00    413.41     355.71      2209      2221     231.58     426.27    634.43
                                                                                      2043
   324.00    415.45     357.75      2208      2220     230.92     425.42    633.51
                                                                                      2075
   326.00    417.53     359.83      2208      2219     230.23     424.53    632.51
                                                                                      2129
   328.00    419.65     361.95      2207      2218     229.49     423.54    631.40
                                                                                      2153
   330.00    421.81     364.11      2207      2218     228.74     422.53    630.23
                                                                                      2196
   332.00    424.00     366.30      2207      2218     227.94     421.44    628.97
                                                                                      2196
   33[illegible]00    426.20     368.50      2[illegible]7      2218     227.15     420.[illegible]    627.72
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COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								2193
336.00	428.39	370.69	2206	2218	226.37	419.29	626.47	
								2228
338.00	430.62	372.92	2207	2218	225.56	418.17	625.15	
								2214
340.00	432.83	375.13	2207	2218	224.76	417.07	623.86	
								2190
342.00	435.02	377.32	2207	2217	223.99	416.01	622.63	
								2186
344.00	437.21	379.51	2206	2217	223.23	414.96	621.41	
								2204
346.00	439.41	381.71	2206	2217	222.46	413.89	620.15	
								2188
348.00	441.60	383.90	2206	2217	221.71	412.85	618.93	
								2220
350.00	443.82	386.12	2206	2217	220.93	411.76	617.64	
								2202
352.00	446.02	388.32	2206	2217	220.17	410.71	616.40	
								2211
354.00	448.23	390.53	2206	2217	219.41	409.64	615.14	
								2180
356.00	450.41	392.71	2206	2217	218.68	408.63	613.95	
								2164
358.00	452.58	394.88	2206	2216	217.97	407.64	612.80	
								2115
360.00	454.69	396.99	2206	2216	217.30	406.72	611.75	
								2092
362.00	456.79	399.09	2205	2215	216.65	405.84	610.74	
								2062
364.00	458.85	401.15	2204	2214	216.03	405.01	609.79	
								2051
366.00	460.90	403.20	2203	2213	215.43	404.19	608.87	
								2126
368.00	463.02	405.32	2203	2213	214.76	403.26	607.80	
								2141
370.00	465.17	407.47	2203	2213	214.09	402.32	606.70	
								2139
372.00	467.30	409.60	2202	2212	213.42	401.39	605.60	
								2268
374.00	469.57	411.87	2203	2213	212.64	400.27	604.25	
								1999
376.00	471.57	413.87	2201	2211	212.09	399.53	603.43	
								2086
378.00	473.66	415.96	2201	2211	211.47	398.67	602.44	
								1888
380.00	475.55	417.85	2199	2209	211.01	398.07	601.81	
								2034
382.00	477.58	419.88	2198	2208	210.43	397.29	600.92	

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
384.00	479.75	422.05	2198	2208	209.76	396.33	599.78	2166
386.00	481.97	424.27	2198	2208	209.04	395.29	598.53	2223
388.00	484.06	426.36	2198	2208	208.43	394.43	597.53	2095
390.00	485.94	428.24	2196	2206	207.97	393.85	596.91	1878
392.00	487.86	430.16	2195	2205	207.49	393.21	596.22	1918
394.00	489.82	432.12	2193	2204	206.99	392.53	595.46	1958
396.00	491.85	434.15	2193	2203	206.43	391.75	594.57	2034
398.00	494.03	436.33	2193	2203	205.77	390.80	593.43	2174
400.00	496.18	438.48	2192	2202	205.13	389.87	592.33	2151
402.00	498.38	440.68	2192	2202	204.45	388.89	591.13	2204
404.00	500.61	442.91	2193	2202	203.76	387.87	589.90	2228
406.00	502.84	445.14	2193	2203	203.07	386.86	588.67	2226
408.00	505.06	447.36	2193	2203	202.39	385.85	587.44	2229
410.00	507.28	449.58	2193	2203	201.71	384.86	586.23	2218
412.00	509.49	451.79	2193	2203	201.05	383.89	585.04	2208
414.00	511.63	453.93	2193	2202	200.44	383.01	583.98	2141
416.00	513.88	456.18	2193	2203	199.76	381.98	582.72	2251
418.00	516.08	458.38	2193	2203	199.11	381.03	581.56	2201
420.00	518.33	460.63	2193	2203	198.44	380.03	580.33	2244
422.00	520.53	462.83	2193	2203	197.80	379.08	579.18	2198
424.00	522.69	464.99	2193	2203	197.19	378.18	578.08	2168
426.00	524.85	467.15	2193	2203	196.59	377.30	577.01	2158
428.00	527.02	469.32	2193	2202	195.98	376.40	575.91	2171
43[illegible]00	529.22	471.52	2[illegible]3	2202	195.35	375.[illegible]	574.77	2200

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								2306
432.00	531.53	473.83	2194	2203	194.66	374.41	573.45	
								2374
434.00	533.90	476.20	2194	2204	193.92	373.27	572.00	
								2284
436.00	536.19	478.49	2195	2204	193.24	372.25	570.73	
								2182
438.00	538.37	480.67	2195	2204	192.65	371.35	569.63	
								2186
440.00	540.55	482.85	2195	2204	192.05	370.46	568.53	
								2286
442.00	542.84	485.14	2195	2204	191.39	369.45	567.27	
								2241
444.00	545.08	487.38	2195	2204	190.76	368.50	566.08	
								2268
446.00	547.35	489.65	2196	2205	190.12	367.51	564.86	
								2263
448.00	549.61	491.91	2196	2205	189.48	366.55	563.64	
								2207
450.00	551.82	494.12	2196	2205	188.89	365.64	562.53	
								2176
452.00	554.00	496.30	2196	2205	188.32	364.78	561.47	
								2221
454.00	556.22	498.52	2196	2205	187.72	363.87	560.33	
								2220
456.00	558.44	500.74	2196	2205	187.13	362.97	559.21	
								2287
458.00	560.72	503.02	2197	2205	186.49	361.99	557.97	
								2241
460.00	562.96	505.26	2197	2206	185.89	361.07	556.82	
								2272
462.00	565.24	507.54	2197	2206	185.28	360.12	555.62	
								2259
464.00	567.49	509.79	2197	2206	184.67	359.18	554.44	
								2277
466.00	569.77	512.07	2198	2206	184.06	358.23	553.24	
								2314
468.00	572.09	514.39	2198	2207	183.43	357.25	551.99	
								2372
470.00	574.46	516.76	2199	2208	182.76	356.20	550.64	
								2372
472.00	576.83	519.13	2200	2208	182.10	355.15	549.30	
								2359
474.00	579.19	521.49	2200	2209	181.45	354.13	547.99	
								2355
476.00	581.54	523.84	2201	2210	180.81	353.12	546.68	
								2393
478.00	583.94	526.24	2202	2210	180.15	352.07	545.33	

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								2396
480.00	586.33	528.63	2203	2211	179.49	351.02	543.97	
								2345
482.00	588.68	530.98	2203	2212	178.87	350.03	542.70	
								2271
484.00	590.95	533.25	2204	2212	178.29	349.13	541.56	
								2282
486.00	593.23	535.53	2204	2212	177.72	348.22	540.40	
								2248
488.00	595.48	537.78	2204	2212	177.16	347.35	539.29	
								2275
490.00	597.75	540.05	2204	2213	176.60	346.46	538.15	
								2456
492.00	600.21	542.51	2205	2214	175.92	345.37	536.73	
								2461
494.00	602.67	544.97	2206	2215	175.25	344.29	535.31	
								2141
496.00	604.81	547.11	2206	2214	174.77	343.54	534.38	
								2119
498.00	606.93	549.23	2206	2214	174.30	342.82	533.48	
								2120
500.00	609.05	551.35	2205	2214	173.83	342.09	532.58	
								2329
502.00	611.38	553.68	2206	2214	173.26	341.17	531.38	
								2410
504.00	613.79	556.09	2207	2215	172.63	340.16	530.06	
								2298
506.00	616.09	558.39	2207	2215	172.08	339.27	528.92	
								2036
508.00	618.12	560.42	2206	2215	171.66	338.64	528.14	
								2203
510.00	620.33	562.63	2206	2215	171.17	337.85	527.14	
								2321
512.00	622.65	564.95	2207	2215	170.61	336.95	525.97	
								2329
514.00	624.98	567.28	2207	2216	170.05	336.05	524.80	
								2304
516.00	627.28	569.58	2208	2216	169.51	335.17	523.66	
								2319
518.00	629.60	571.90	2208	2216	168.96	334.29	522.52	
								2279
520.00	631.88	574.18	2208	2217	168.43	333.45	521.43	
								2287
522.00	634.17	576.47	2209	2217	167.91	332.60	520.33	
								2291
524.00	636.46	578.76	2209	2217	167.39	331.75	519.23	
								2263
52[illegible].00	638.72	581.02	2[illegible]9	2217	166.88	330.[illegible]	518.18	

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								2371
528.00	641.09	583.39	2210	2218	166.32	330.02	516.97	
								2309
530.00	643.40	585.70	2210	2218	165.80	329.17	515.86	
								2384
532.00	645.78	588.08	2211	2219	165.24	328.25	514.65	
								2353
534.00	648.14	590.44	2211	2219	164.70	327.36	513.49	
								2232
536.00	650.37	592.67	2211	2219	164.22	326.59	512.49	
								2285
538.00	652.65	594.95	2212	2220	163.72	325.78	511.43	
								2379
540.00	655.03	597.33	2212	2220	163.17	324.88	510.24	
								2399
542.00	657.43	599.73	2213	2221	162.62	323.97	509.04	
								2494
544.00	659.93	602.23	2214	2222	162.02	322.97	507.70	
								2453
546.00	662.38	604.68	2215	2223	161.45	322.02	506.43	
								2404
548.00	664.78	607.08	2216	2224	160.91	321.11	505.23	
								2409
550.00	667.19	609.49	2216	2224	160.37	320.21	504.03	
								2388
552.00	669.58	611.88	2217	2225	159.84	319.33	502.86	
								2259
554.00	671.84	614.14	2217	2225	159.37	318.57	501.87	
								2296
556.00	674.13	616.43	2217	2225	158.89	317.78	500.83	
								2353
558.00	676.49	618.79	2218	2226	158.39	316.95	499.72	
								2388
560.00	678.88	621.18	2218	2226	157.87	316.08	498.57	
								2360
562.00	681.24	623.54	2219	2227	157.37	315.25	497.46	
								2510
564.00	683.75	626.05	2220	2228	156.80	314.28	496.16	
								2404
566.00	686.15	628.45	2221	2229	156.29	313.42	495.01	
								2413
568.00	688.56	630.86	2221	2229	155.77	312.55	493.84	
								2419
570.00	690.98	633.28	2222	2230	155.26	311.68	492.68	
								2445
572.00	693.43	635.73	2223	2231	154.73	310.80	491.49	
								2448
574.00	695.88	638.18	2224	2232	154.21	309.91	490.29	

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
576.00	698.30	640.60	2224	2232	153.70	309.05	489.14	2426
578.00	700.68	642.98	2225	2233	153.22	308.24	488.05	2376
580.00	703.04	645.34	2225	2233	152.74	307.44	486.98	2362
582.00	705.47	647.77	2226	2234	152.24	306.59	485.83	2429
584.00	707.90	650.20	2227	2235	151.74	305.74	484.68	2435
586.00	710.28	652.58	2227	2235	151.27	304.94	483.61	2377
588.00	712.52	654.82	2227	2235	150.86	304.25	482.70	2236
590.00	714.96	657.26	2228	2236	150.36	303.40	481.55	2445
592.00	717.34	659.64	2229	2236	149.90	302.62	480.49	2375
594.00	719.82	662.12	2229	2237	149.39	301.74	479.30	2485
596.00	722.32	664.62	2230	2238	148.88	300.87	478.11	2495
598.00	724.73	667.03	2231	2239	148.40	300.06	477.01	2416
600.00	727.17	669.47	2232	2239	147.92	299.24	475.90	2440
602.00	729.67	671.97	2232	2240	147.42	298.37	474.71	2498
604.00	732.23	674.53	2234	2242	146.90	297.46	473.46	2556
606.00	734.75	677.05	2234	2243	146.39	296.58	472.26	2523
608.00	737.34	679.64	2236	2244	145.86	295.66	470.99	2585
610.00	739.87	682.17	2237	2245	145.35	294.78	469.78	2538
612.00	742.44	684.74	2238	2246	144.84	293.88	468.54	2567
614.00	744.96	687.26	2239	2247	144.35	293.03	467.37	2515
616.00	747.51	689.81	2240	2248	143.84	292.15	466.16	2552
618.00	750.14	692.44	2241	2249	143.31	291.22	464.86	2636
620.00	752.69	694.99	2242	2250	142.82	290.36	463.67	2545
62[illegible]00	755.34	697.64	2[illegible]3	2252	142.28	289.4[illegible]	462.37	2652

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
624.00	758.00	700.30	2245	2253	141.75	288.47	461.05	2659
626.00	760.62	702.92	2246	2254	141.23	287.57	459.80	2620
628.00	763.21	705.51	2247	2255	140.74	286.70	458.59	2588
630.00	765.75	708.05	2248	2256	140.26	285.87	457.44	2539
632.00	768.26	710.56	2249	2257	139.80	285.06	456.32	2518
634.00	770.75	713.05	2249	2258	139.35	284.28	455.24	2486
636.00	773.25	715.55	2250	2259	138.91	283.49	454.15	2500
638.00	775.74	718.04	2251	2260	138.46	282.71	453.07	2492
640.00	778.27	720.57	2252	2261	138.01	281.91	451.96	2529
642.00	780.82	723.12	2253	2261	137.55	281.09	450.83	2549
644.00	783.37	725.67	2254	2262	137.09	280.29	449.70	2552
646.00	785.97	728.27	2255	2264	136.62	279.45	448.53	2595
648.00	788.50	730.80	2256	2264	136.17	278.66	447.44	2531
650.00	791.01	733.31	2256	2265	135.74	277.89	446.37	2516
652.00	793.55	735.85	2257	2266	135.29	277.11	445.28	2538
654.00	796.12	738.42	2258	2267	134.84	276.31	444.16	2568
656.00	798.59	740.89	2259	2268	134.43	275.58	443.15	2471
658.00	801.22	743.52	2260	2269	133.97	274.75	441.98	2625
660.00	803.79	746.09	2261	2270	133.52	273.96	440.87	2575
662.00	806.36	748.66	2262	2271	133.08	273.18	439.77	2565
664.00	808.97	751.27	2263	2272	132.63	272.37	438.63	2612
666.00	811.54	753.84	2264	2273	132.20	271.59	437.54	2574
668.00	814.09	756.39	2265	2274	131.78	270.84	436.49	2542
670.00	816.65	758.95	2266	2275	131.35	270.07	435.41	2565

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								2670
672.00	819.32	761.62	2267	2276	130.89	269.24	434.23	
								2591
674.00	821.91	764.21	2268	2277	130.46	268.47	433.14	
								2557
676.00	824.47	766.77	2269	2278	130.04	267.72	432.09	
								2584
678.00	827.05	769.35	2269	2279	129.62	266.96	431.02	
								2585
680.00	829.64	771.94	2270	2280	129.20	266.20	429.95	
								2630
682.00	832.27	774.57	2271	2281	128.76	265.42	428.84	
								2692
684.00	834.96	777.26	2273	2282	128.31	264.60	427.68	
								2690
686.00	837.65	779.95	2274	2284	127.86	263.78	426.52	
								2697
688.00	840.35	782.65	2275	2285	127.41	262.97	425.36	
								2715
690.00	843.06	785.36	2276	2286	126.96	262.15	424.18	
								2727
692.00	845.79	788.09	2278	2288	126.51	261.32	423.00	
								2701
694.00	848.49	790.79	2279	2289	126.07	260.52	421.86	
								2727
696.00	851.22	793.52	2280	2290	125.62	259.70	420.69	
								2731
698.00	853.95	796.25	2282	2292	125.18	258.89	419.53	
								2711
700.00	856.66	798.96	2283	2293	124.74	258.10	418.39	
								2703
702.00	859.36	801.66	2284	2294	124.31	257.31	417.27	
								2609
704.00	861.97	804.27	2285	2295	123.92	256.59	416.24	
								2616
706.00	864.58	806.88	2286	2296	123.52	255.87	415.21	
								2665
708.00	867.25	809.55	2287	2297	123.11	255.12	414.14	
								2692
710.00	869.94	812.24	2288	2298	122.70	254.36	413.05	
								2667
712.00	872.61	814.91	2289	2300	122.29	253.62	411.99	
								2763
714.00	875.37	817.67	2290	2301	121.86	252.82	410.84	
								2886
716.00	878.26	820.56	2292	2303	121.39	251.95	409.57	
								2772
718[illegible]	881.03	823.33	22[illegible]	2304	120.96	251.16	408.43	

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
720.00	883.58	825.88	2294	2305	120.60	250.50	407.50	2550
722.00	886.12	828.42	2295	2306	120.25	249.86	406.57	2544
724.00	888.62	830.92	2295	2306	119.91	249.24	405.69	2498
726.00	891.12	833.42	2296	2307	119.57	248.63	404.82	2495
728.00	893.73	836.03	2297	2308	119.21	247.95	403.85	2614
730.00	896.40	838.70	2298	2309	118.82	247.24	402.83	2672
732.00	899.03	841.33	2299	2310	118.45	246.56	401.85	2632
734.00	901.68	843.98	2300	2311	118.08	245.87	400.86	2648
736.00	904.38	846.68	2301	2312	117.69	245.16	399.82	2702
738.00	907.13	849.43	2302	2313	117.30	244.42	398.75	2749
740.00	909.87	852.17	2303	2314	116.90	243.69	397.69	2742
742.00	912.62	854.92	2304	2316	116.51	242.96	396.63	2746
744.00	915.41	857.71	2306	2317	116.11	242.21	395.54	2794
746.00	918.20	860.50	2307	2319	115.71	241.46	394.45	2789
748.00	920.98	863.28	2308	2320	115.32	240.73	393.38	2774
750.00	923.71	866.01	2309	2321	114.94	240.02	392.36	2735
752.00	926.46	868.76	2311	2322	114.56	239.31	391.33	2748
754.00	929.20	871.50	2312	2324	114.18	238.61	390.30	2747
756.00	932.00	874.30	2313	2325	113.80	237.88	389.24	2795
758.00	934.78	877.08	2314	2326	113.41	237.17	388.19	2784
760.00	937.57	879.87	2315	2328	113.03	236.45	387.15	2784
762.00	940.36	882.66	2317	2329	112.65	235.74	386.10	2793
764.00	943.16	885.46	2318	2330	112.27	235.03	385.06	2801
766.00	945.96	888.26	2319	2332	111.90	234.32	384.02	2796

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
768.00	948.78	891.08	2321	2333	111.52	233.60	382.97	2822
770.00	951.56	893.86	2322	2334	111.15	232.91	381.96	2775
772.00	954.34	896.64	2323	2336	110.78	232.22	380.94	2788
774.00	957.12	899.42	2324	2337	110.42	231.54	379.94	2781
776.00	959.91	902.21	2325	2338	110.06	230.86	378.94	2785
778.00	962.66	904.96	2326	2339	109.71	230.20	377.97	2752
780.00	965.43	907.73	2328	2340	109.36	229.53	376.99	2770
782.00	968.15	910.45	2329	2341	109.02	228.90	376.06	2718
784.00	970.87	913.17	2330	2343	108.69	228.27	375.14	2719
786.00	973.65	915.95	2331	2344	108.34	227.60	374.16	2786
788.00	976.36	918.66	2332	2345	108.01	226.98	373.25	2710
790.00	979.04	921.34	2333	2346	107.69	226.38	372.36	2679
792.00	981.79	924.09	2334	2347	107.36	225.75	371.43	2742
794.00	984.48	926.78	2334	2348	107.04	225.15	370.54	2697
796.00	987.37	929.67	2336	2349	106.67	224.45	369.51	2887
798.00	990.29	932.59	2337	2351	106.30	223.74	368.45	2920
800.00	993.11	935.41	2339	2352	105.95	223.08	367.48	2821
802.00	996.03	938.33	2340	2354	105.59	222.38	366.43	2921
804.00	998.92	941.22	2341	2355	105.23	221.69	365.42	2892
806.00	1001.70	944.00	2342	2356	104.90	221.07	364.50	2775
808.00	1004.55	946.85	2344	2358	104.56	220.42	363.52	2849
810.00	1007.54	949.84	2345	2359	104.18	219.69	362.44	2998
812.00	1010.40	952.70	2347	2361	103.84	219.04	361.47	2855
814[illegible]0	1013.32	955.62	23[illegible]	2362	103.49	218.36	360.45	2925

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
816.00	1016.34	958.64	2350	2364	103.11	217.64	359.37	3019
818.00	1019.45	961.75	2351	2366	102.71	216.87	358.22	3108
820.00	1022.43	964.73	2353	2368	102.35	216.18	357.18	2978
822.00	1025.21	967.51	2354	2369	102.04	215.58	356.29	2779
824.00	1028.07	970.37	2355	2370	101.72	214.95	355.35	2865
826.00	1030.98	973.28	2357	2372	101.38	214.30	354.38	2909
828.00	1034.01	976.31	2358	2374	101.02	213.60	353.33	3025
830.00	1036.71	979.01	2359	2374	100.73	213.05	352.51	2703
832.00	1039.25	981.55	2359	2375	100.48	212.58	351.82	2538
834.00	1041.92	984.22	2360	2376	100.21	212.05	351.03	2669
836.00	1044.74	987.04	2361	2377	99.90	211.46	350.15	2821
838.00	1047.67	989.97	2363	2378	99.57	210.82	349.19	2928
840.00	1050.52	992.82	2364	2380	99.26	210.23	348.30	2847
842.00	1053.36	995.66	2365	2381	98.95	209.63	347.41	2849
844.00	1056.21	998.51	2366	2382	98.65	209.04	346.52	2848
846.00	1059.07	1001.37	2367	2383	98.34	208.45	345.63	2861
848.00	1061.99	1004.29	2369	2385	98.02	207.83	344.70	2921
850.00	1064.81	1007.11	2370	2386	97.73	207.27	343.85	2817
852.00	1067.70	1010.00	2371	2387	97.42	206.67	342.95	2889
854.00	1070.61	1012.91	2372	2388	97.11	206.07	342.05	2911
856.00	1073.54	1015.84	2373	2390	96.80	205.46	341.13	2925
858.00	1076.42	1018.72	2375	2391	96.50	204.88	340.25	2884
860.00	1079.41	1021.71	2376	2393	96.18	204.25	339.30	2993
862.00	1082.48	1024.78	2378	2394	95.84	203.59	338.30	3069

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								2998
864.00	1085.48	1027.78	2379	2396	95.52	202.97	337.36	
								3007
866.00	1088.49	1030.79	2381	2398	95.21	202.35	336.41	
								2780
868.00	1091.27	1033.57	2381	2399	94.94	201.83	335.63	
								2764
870.00	1094.03	1036.33	2382	2399	94.67	201.31	334.85	
								2760
872.00	1096.79	1039.09	2383	2400	94.41	200.80	334.08	
								2749
874.00	1099.54	1041.84	2384	2401	94.15	200.30	333.33	
								2774
876.00	1102.32	1044.62	2385	2402	93.89	199.79	332.55	
								2746
878.00	1105.06	1047.36	2386	2403	93.63	199.29	331.81	
								2654
880.00	1107.72	1050.02	2386	2404	93.40	198.83	331.11	
								2614
882.00	1110.33	1052.63	2387	2404	93.17	198.39	330.45	
								2663
884.00	1112.99	1055.29	2388	2405	92.93	197.93	329.76	
								2651
886.00	1115.64	1057.94	2388	2405	92.70	197.48	329.08	
								2705
888.00	1118.35	1060.65	2389	2406	92.46	197.01	328.37	
								2779
890.00	1121.13	1063.43	2390	2407	92.20	196.51	327.62	
								2845
892.00	1123.97	1066.27	2391	2408	91.94	195.99	326.83	
								2658
894.00	1126.63	1068.93	2391	2409	91.71	195.54	326.15	
								2663
896.00	1129.29	1071.59	2392	2409	91.48	195.10	325.48	
								2731
898.00	1132.02	1074.32	2393	2410	91.24	194.63	324.77	
								2699
900.00	1134.72	1077.02	2393	2411	91.01	194.17	324.08	
								2646
902.00	1137.37	1079.67	2394	2411	90.78	193.74	323.42	
								2645
904.00	1140.01	1082.31	2395	2412	90.56	193.30	322.77	
								2739
906.00	1142.75	1085.05	2395	2412	90.32	192.84	322.07	
								2766
908.00	1145.52	1087.82	2396	2413	90.08	192.37	321.35	
								2685
910[illegible]0	1148.20	1090.50	23[illegible]	2414	89.86	191.93	320.68	

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
912.00	1150.90	1093.20	2397	2415	89.63	191.48	320.01	2700
914.00	1153.67	1095.97	2398	2415	89.40	191.02	319.30	2764
916.00	1156.48	1098.78	2399	2416	89.15	190.54	318.57	2812
918.00	1159.32	1101.62	2400	2417	88.90	190.05	317.82	2842
920.00	1162.16	1104.46	2401	2418	88.66	189.56	317.08	2839
922.00	1165.08	1107.38	2402	2420	88.40	189.05	316.29	2918
924.00	1168.06	1110.36	2403	2421	88.13	188.52	315.47	2984
926.00	1171.07	1113.37	2405	2422	87.86	187.98	314.64	3007
928.00	1174.08	1116.38	2406	2424	87.59	187.44	313.81	3009
930.00	1177.04	1119.34	2407	2425	87.32	186.92	313.02	2966
932.00	1180.07	1122.37	2409	2426	87.05	186.38	312.19	3022
934.00	1183.10	1125.40	2410	2428	86.78	185.84	311.36	3033
936.00	1186.20	1128.50	2411	2430	86.50	185.28	310.50	3098
938.00	1189.24	1131.54	2413	2431	86.23	184.75	309.67	3043
940.00	1192.29	1134.59	2414	2432	85.96	184.21	308.84	3050
942.00	1195.32	1137.62	2415	2434	85.70	183.69	308.03	3030
944.00	1198.33	1140.63	2417	2435	85.44	183.18	307.24	3006
946.00	1201.32	1143.62	2418	2437	85.19	182.67	306.46	2989
948.00	1204.30	1146.60	2419	2438	84.94	182.17	305.69	2981
950.00	1207.26	1149.56	2420	2439	84.70	181.69	304.94	2958
952.00	1210.16	1152.46	2421	2440	84.46	181.22	304.22	2901
954.00	1213.07	1155.37	2422	2441	84.23	180.75	303.50	2916
956.00	1215.95	1158.25	2423	2442	84.00	180.30	302.80	2881
958.00	1218.86	1161.16	2424	2443	83.77	179.83	302.08	2910

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
960.00	1221.79	1164.09	2425	2444	83.53	179.37	301.36	2928
962.00	1224.68	1166.98	2426	2445	83.31	178.92	300.67	2891
964.00	1227.60	1169.90	2427	2446	83.08	178.46	299.96	2919
966.00	1230.53	1172.83	2428	2448	82.85	178.00	299.25	2931
968.00	1233.46	1175.76	2429	2449	82.62	177.54	298.54	2923
970.00	1236.40	1178.70	2430	2450	82.39	177.08	297.83	2946
972.00	1239.31	1181.61	2431	2451	82.17	176.64	297.14	2905
974.00	1242.21	1184.51	2432	2452	81.95	176.20	296.46	2900
976.00	1245.14	1187.44	2433	2453	81.72	175.75	295.76	2933
978.00	1248.05	1190.35	2434	2454	81.50	175.31	295.08	2909
980.00	1250.94	1193.24	2435	2455	81.29	174.88	294.41	2892
982.00	1253.83	1196.13	2436	2456	81.07	174.45	293.75	2886
984.00	1256.71	1199.01	2437	2457	80.86	174.03	293.09	2882
986.00	1259.64	1201.94	2438	2458	80.64	173.59	292.41	2934
988.00	1262.59	1204.88	2439	2459	80.42	173.15	291.72	2941
990.00	1265.60	1207.90	2440	2460	80.20	172.69	291.01	3011
992.00	1268.76	1211.06	2442	2462	79.95	172.18	290.22	3164
994.00	1271.80	1214.10	2443	2463	79.72	171.72	289.49	3037
996.00	1274.85	1217.15	2444	2464	79.48	171.25	288.77	3055
998.00	1277.83	1220.12	2445	2466	79.27	170.82	288.08	2973
1000.00	1280.79	1223.09	2446	2467	79.05	170.38	287.41	2969
1002.00	1283.75	1226.05	2447	2468	78.84	169.96	286.74	2953
1004.00	1286.79	1229.09	2448	2469	78.62	169.50	286.03	3045
1006[illegible]	1289.83	1232.13	24[illegible]	2470	78.39	169.06	285.33	3033

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								3102
1008.00	1292.93	1235.23	2451	2472	78.16	168.59	284.60	
								3079
1010.00	1296.01	1238.31	2452	2473	77.94	168.13	283.88	
								2991
1012.00	1299.00	1241.30	2453	2474	77.73	167.70	283.22	
								3067
1014.00	1302.06	1244.36	2454	2475	77.50	167.26	282.51	
								3106
1016.00	1305.17	1247.47	2456	2477	77.28	166.80	281.79	
								3069
1018.00	1308.24	1250.54	2457	2478	77.06	166.35	281.10	
								3052
1020.00	1311.29	1253.59	2458	2479	76.84	165.92	280.41	
								3097
1022.00	1314.39	1256.69	2459	2481	76.62	165.47	279.71	
								3106
1024.00	1317.49	1259.79	2461	2482	76.40	165.02	279.00	
								3183
1026.00	1320.68	1262.98	2462	2484	76.17	164.55	278.26	
								3127
1028.00	1323.80	1266.10	2463	2485	75.95	164.10	277.55	
								3060
1030.00	1326.87	1269.16	2464	2486	75.74	163.67	276.88	
								3080
1032.00	1329.94	1272.24	2466	2488	75.53	163.24	276.20	
								3008
1034.00	1332.95	1275.25	2467	2489	75.33	162.83	275.56	
								3069
1036.00	1336.02	1278.32	2468	2490	75.12	162.41	274.89	
								3074
1038.00	1339.10	1281.40	2469	2491	74.91	161.99	274.22	
								3066
1040.00	1342.16	1284.46	2470	2493	74.70	161.57	273.56	
								3090
1042.00	1345.25	1287.55	2471	2494	74.49	161.14	272.90	
								3157
1044.00	1348.41	1290.71	2473	2495	74.28	160.70	272.20	
								3109
1046.00	1351.52	1293.82	2474	2497	74.07	160.28	271.53	
								3113
1048.00	1354.63	1296.93	2475	2498	73.86	159.86	270.86	
								3081
1050.00	1357.71	1300.01	2476	2499	73.66	159.44	270.21	
								3079
1052.00	1360.79	1303.09	2477	2500	73.46	159.03	269.56	
								3088
1054.00	1363.88	1306.18	2479	2502	73.26	158.62	268.91	

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
1056.00	1366.96	1309.26	2480	2503	73.06	158.22	268.27	3081
1058.00	1369.95	1312.25	2481	2504	72.87	157.84	267.67	2987
1060.00	1372.91	1315.21	2482	2505	72.69	157.47	267.09	2966
1062.00	1375.89	1318.19	2482	2506	72.51	157.10	266.50	2977
1064.00	1378.87	1321.17	2483	2507	72.33	156.72	265.91	2981
1066.00	1381.84	1324.14	2484	2508	72.15	156.36	265.33	2965
1068.00	1384.78	1327.08	2485	2509	71.97	156.00	264.77	2947
1070.00	1387.73	1330.03	2486	2509	71.80	155.64	264.20	2951
1072.00	1390.69	1332.99	2487	2510	71.62	155.28	263.63	2956
1074.00	1393.63	1335.93	2488	2511	71.45	154.93	263.07	2938
1076.00	1396.59	1338.89	2489	2512	71.27	154.57	262.51	2968
1078.00	1399.53	1341.83	2489	2513	71.10	154.22	261.95	2937
1080.00	1402.49	1344.79	2490	2514	70.93	153.87	261.40	2958
1082.00	1405.38	1347.68	2491	2515	70.76	153.53	260.86	2894
1084.00	1408.50	1350.80	2492	2516	70.57	153.14	260.25	3114
1086.00	1411.56	1353.86	2493	2517	70.39	152.77	259.65	3065
1088.00	1414.70	1356.99	2494	2518	70.20	152.38	259.03	3133
1090.00	1417.73	1360.03	2495	2519	70.02	152.01	258.45	3034
1092.00	1420.81	1363.11	2497	2520	69.84	151.64	257.85	3085
1094.00	1424.53	1366.83	2499	2523	69.58	151.09	256.98	3711
1096.00	1428.48	1370.78	2501	2527	69.28	150.47	255.98	3955
1098.00	1432.30	1374.60	2504	2529	69.00	149.90	255.06	3820
1100.00	1435.90	1378.20	2506	2532	68.76	149.40	254.26	3597
1102[illegible]	1439.34	1381.64	25[illegible]	2534	68.54	148.95	253.53	3443

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
1104.00	1442.65	1384.95	2509	2535	68.34	148.53	252.86	3314
1106.00	1446.68	1388.98	2512	2539	68.04	147.91	251.86	4027
1108.00	1450.60	1392.90	2514	2542	67.76	147.33	250.92	3921
1110.00	1454.45	1396.75	2517	2545	67.49	146.77	250.02	3844
1112.00	1458.06	1400.36	2519	2547	67.26	146.29	249.24	3613
1114.00	1461.36	1403.65	2520	2549	67.07	145.89	248.60	3296
1116.00	1465.28	1407.58	2523	2552	66.79	145.32	247.68	3926
1118.00	1469.18	1411.48	2525	2555	66.53	144.77	246.79	3899
1120.00	1472.95	1415.25	2527	2558	66.28	144.25	245.96	3768
1122.00	1476.67	1418.97	2529	2560	66.04	143.75	245.15	3723
1124.00	1480.28	1422.58	2531	2563	65.82	143.29	244.40	3604
1126.00	1483.59	1425.89	2533	2564	65.63	142.90	243.78	3313
1128.00	1486.90	1429.20	2534	2566	65.44	142.52	243.16	3312
1130.00	1490.44	1432.74	2536	2568	65.23	142.08	242.46	3536
1132.00	1494.25	1436.55	2538	2570	64.99	141.57	241.64	3813
1134.00	1497.83	1440.13	2540	2572	64.78	141.13	240.92	3579
1136.00	1501.26	1443.56	2541	2574	64.58	140.73	240.27	3432
1138.00	1504.63	1446.93	2543	2576	64.40	140.34	239.65	3373
1140.00	1507.93	1450.23	2544	2577	64.22	139.97	239.05	3297
1142.00	1511.26	1453.56	2546	2579	64.04	139.60	238.45	3327
1144.00	1514.52	1456.82	2547	2580	63.87	139.25	237.88	3259
1146.00	1517.68	1459.98	2548	2581	63.71	138.91	237.34	3168
1148.00	1521.08	1463.38	2549	2583	63.53	138.53	236.73	3395
1150.00	1524.49	1466.79	2551	2585	63.34	138.15	236.11	3409

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								3416
1152.00	1527.90	1470.20	2552	2586	63.16	137.76	235.49	
								3362
1154.00	1531.27	1473.57	2554	2588	62.98	137.39	234.89	
								3355
1156.00	1534.62	1476.92	2555	2589	62.81	137.03	234.30	
								3222
1158.00	1537.84	1480.14	2556	2591	62.64	136.69	233.76	
								3225
1160.00	1541.07	1483.37	2558	2592	62.48	136.36	233.22	
								3247
1162.00	1544.32	1486.62	2559	2593	62.32	136.02	232.68	
								3256
1164.00	1547.57	1489.87	2560	2594	62.16	135.69	232.14	
								3330
1166.00	1550.90	1493.20	2561	2596	61.99	135.34	231.57	
								3280
1168.00	1554.18	1496.48	2562	2597	61.83	135.00	231.02	
								3374
1170.00	1557.55	1499.85	2564	2599	61.66	134.64	230.44	
								3292
1172.00	1560.85	1503.15	2565	2600	61.50	134.30	229.90	
								3265
1174.00	1564.11	1506.41	2566	2601	61.34	133.97	229.36	
								3212
1176.00	1567.32	1509.62	2567	2602	61.19	133.66	228.85	
								3200
1178.00	1570.52	1512.82	2568	2604	61.04	133.34	228.34	
								3213
1180.00	1573.74	1516.04	2570	2605	60.89	133.03	227.83	
								3308
1182.00	1577.05	1519.35	2571	2606	60.73	132.69	227.29	
								3269
1184.00	1580.31	1522.61	2572	2607	60.57	132.37	226.77	
								3226
1186.00	1583.54	1525.84	2573	2608	60.42	132.06	226.26	
								3330
1188.00	1586.87	1529.17	2574	2610	60.26	131.72	225.72	
								3355
1190.00	1590.23	1532.53	2576	2611	60.10	131.39	225.17	
								3270
1192.00	1593.50	1535.80	2577	2613	59.95	131.07	224.66	
								3234
1194.00	1596.73	1539.03	2578	2614	59.80	130.76	224.16	
								3223
1196.00	1599.95	1542.25	2579	2615	59.66	130.46	223.66	
								3295
1198[illegible]0	1603.25	1545.55	25[illegible]	2616	59.50	130.14	223.14	

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								3309
1200.00	1606.56	1548.86	2581	2617	59.35	129.82	222.63	
								3310
1202.00	1609.87	1552.17	2583	2619	59.20	129.50	222.11	
								3373
1204.00	1613.24	1555.54	2584	2620	59.04	129.17	221.57	
								3329
1206.00	1616.57	1558.87	2585	2622	58.89	128.86	221.05	
								3232
1208.00	1619.80	1562.10	2586	2623	58.75	128.56	220.57	
								3253
1210.00	1623.05	1565.35	2587	2624	58.60	128.26	220.08	
								3210
1212.00	1626.26	1568.56	2588	2625	58.47	127.97	219.61	
								3360
1214.00	1629.62	1571.92	2590	2626	58.31	127.65	219.09	
								3415
1216.00	1633.04	1575.34	2591	2628	58.16	127.32	218.55	
								3292
1218.00	1636.33	1578.63	2592	2629	58.01	127.02	218.06	
								3303
1220.00	1639.63	1581.93	2593	2630	57.87	126.71	217.57	
								3327
1222.00	1642.96	1585.26	2595	2632	57.72	126.41	217.07	
								3213
1224.00	1646.17	1588.47	2596	2633	57.59	126.12	216.61	
								3252
1226.00	1649.43	1591.73	2597	2634	57.45	125.83	216.13	
								3256
1228.00	1652.68	1594.98	2598	2635	57.31	125.55	215.66	
								3249
1230.00	1655.93	1598.23	2599	2636	57.18	125.26	215.20	
								3282
1232.00	1659.21	1601.51	2600	2637	57.04	124.97	214.72	
								3386
1234.00	1662.60	1604.90	2601	2639	56.89	124.66	214.22	
								3252
1236.00	1665.85	1608.15	2602	2640	56.76	124.38	213.75	
								3298
1238.00	1669.15	1611.45	2603	2641	56.62	124.09	213.28	
								3328
1240.00	1672.48	1614.78	2604	2642	56.48	123.79	212.80	
								3309
1242.00	1675.79	1618.09	2606	2643	56.34	123.50	212.33	
								3250
1244.00	1679.04	1621.34	2607	2644	56.21	123.22	211.87	
								3312
1246.00	1682.35	1624.65	2608	2646	56.07	122.94	211.40	

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								3428
1248.00	1685.78	1628.08	2609	2647	55.93	122.63	210.90	
								3444
1250.00	1689.22	1631.52	2610	2648	55.78	122.32	210.40	
								3895
1252.00	1693.11	1635.41	2612	2651	55.59	121.93	209.75	
								3846
1254.00	1696.96	1639.26	2614	2653	55.41	121.55	209.12	
								3908
1256.00	1700.87	1643.17	2617	2656	55.23	121.15	208.47	
								3774
1258.00	1704.64	1646.94	2618	2658	55.06	120.79	207.87	
								3574
1260.00	1708.22	1650.52	2620	2660	54.90	120.47	207.34	
								3644
1262.00	1711.86	1654.16	2621	2661	54.75	120.13	206.79	
								3738
1264.00	1715.60	1657.90	2623	2663	54.58	119.78	206.22	
								3922
1266.00	1719.52	1661.82	2625	2666	54.40	119.40	205.59	
								3775
1268.00	1723.30	1665.60	2627	2668	54.23	119.05	205.00	
								3730
1270.00	1727.03	1669.33	2629	2670	54.07	118.71	204.44	
								3740
1272.00	1730.77	1673.07	2631	2672	53.91	118.36	203.88	
								3653
1274.00	1734.42	1676.72	2632	2674	53.76	118.04	203.34	
								3686
1276.00	1738.11	1680.41	2634	2676	53.60	117.71	202.80	
								3876
1278.00	1741.98	1684.28	2636	2678	53.43	117.35	202.20	
								3808
1280.00	1745.79	1688.09	2638	2680	53.27	117.00	201.63	
								4031
1282.00	1749.82	1692.12	2640	2683	53.09	116.61	200.99	
								3807
1284.00	1753.63	1695.93	2642	2685	52.93	116.27	200.42	
								3711
1286.00	1757.34	1699.64	2643	2687	52.77	115.95	199.89	
								3933
1288.00	1761.27	1703.57	2645	2689	52.60	115.59	199.29	
								3703
1290.00	1764.97	1707.27	2647	2691	52.45	115.27	198.77	
								3614
1292.00	1768.59	1710.89	2648	2693	52.31	114.97	198.27	
								3621
129[illegible]00	1772.21	1714.51	2[illegible]0	2694	52.17	114.[illegible]	197.77	

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
1296.00	1775.87	1718.17	2652	2696	52.03	114.36	197.27	3665
1298.00	1779.56	1721.86	2653	2698	51.88	114.05	196.75	3691
1300.00	1783.41	1725.71	2655	2700	51.72	113.72	196.20	3842
1302.00	1787.25	1729.55	2657	2702	51.57	113.39	195.65	3848
1304.00	1791.01	1733.31	2658	2704	51.42	113.07	195.13	3758
1306.00	1794.88	1737.18	2660	2706	51.26	112.74	194.58	3865
1308.00	1798.64	1740.94	2662	2708	51.11	112.42	194.06	3767
1310.00	1802.71	1745.01	2664	2711	50.94	112.06	193.45	4067
1312.00	1806.98	1749.28	2667	2714	50.76	111.66	192.79	4266
1314.00	1810.70	1753.00	2668	2716	50.62	111.36	192.29	3727
1316.00	1814.45	1756.75	2670	2718	50.47	111.06	191.79	3743
1318.00	1818.18	1760.48	2671	2720	50.33	110.76	191.30	3737
1320.00	1821.87	1764.17	2673	2721	50.20	110.47	190.82	3684
1322.00	1825.56	1767.86	2675	2723	50.06	110.18	190.34	3694
1324.00	1829.26	1771.56	2676	2725	49.93	109.89	189.86	3695
1326.00	1832.95	1775.25	2678	2726	49.79	109.61	189.38	3697
1328.00	1836.64	1778.94	2679	2728	49.66	109.32	188.91	3682
1330.00	1840.34	1782.64	2681	2730	49.53	109.04	188.44	3702
1332.00	1844.29	1786.59	2683	2732	49.37	108.71	187.90	3951
1334.00	1848.18	1790.48	2684	2734	49.23	108.40	187.39	3888
1336.00	1851.89	1794.19	2686	2736	49.10	108.12	186.92	3717
1338.00	1855.69	1797.99	2688	2738	48.96	107.83	186.43	3796
1340.00	1859.51	1801.81	2689	2740	48.82	107.53	185.94	3822
1342.00	1863.34	1805.64	2691	2742	48.68	107.24	185.45	3831

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								3777
1344.00	1867.12	1809.42	2693	2744	48.55	106.95	184.97	
								3755
1346.00	1870.88	1813.18	2694	2745	48.42	106.67	184.51	
								3742
1348.00	1874.62	1816.92	2696	2747	48.29	106.39	184.05	
								3844
1350.00	1878.46	1820.76	2697	2749	48.15	106.10	183.56	
								3706
1352.00	1882.17	1824.47	2699	2751	48.03	105.83	183.11	
								3768
1354.00	1885.94	1828.24	2700	2752	47.90	105.56	182.65	
								3825
1356.00	1889.76	1832.06	2702	2754	47.76	105.27	182.18	
								3756
1358.00	1893.52	1835.82	2704	2756	47.64	105.00	181.73	
								3734
1360.00	1897.25	1839.55	2705	2758	47.51	104.73	181.28	
								3774
1362.00	1901.02	1843.32	2707	2760	47.38	104.46	180.83	
								3755
1364.00	1904.78	1847.08	2708	2761	47.26	104.19	180.38	
								3846
1366.00	1908.63	1850.93	2710	2763	47.13	103.91	179.92	
								3806
1368.00	1912.43	1854.73	2712	2765	47.00	103.64	179.46	
								3827
1370.00	1916.26	1858.56	2713	2767	46.87	103.37	179.00	
								3795
1372.00	1920.05	1862.35	2715	2769	46.75	103.10	178.56	
								3787
1374.00	1923.84	1866.14	2716	2770	46.62	102.83	178.11	
								3778
1376.00	1927.62	1869.92	2718	2772	46.50	102.57	177.68	
								3871
1378.00	1931.49	1873.79	2720	2774	46.37	102.30	177.22	
								3892
1380.00	1935.38	1877.68	2721	2776	46.24	102.02	176.75	
								3883
1382.00	1939.27	1881.57	2723	2778	46.12	101.75	176.30	
								3974
1384.00	1943.24	1885.54	2725	2780	45.98	101.46	175.82	
								3915
1386.00	1947.15	1889.45	2726	2782	45.86	101.19	175.36	
								4083
1388.00	1951.24	1893.54	2728	2784	45.72	100.89	174.86	
								4027
139[illegible]00	1955.26	1897.56	2[illegible]0	2786	45.58	100.[illegible]	174.38	

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 TWO-WAY   MEASURED  VERTICAL   AVERAGE     RMS      FIRST    SECOND    THIRD   INTERVAL
 TRAVEL     DEPTH     DEPTH    VELOCITY  VELOCITY   NORMAL    NORMAL    NORMAL  VELOCITY
  TIME      FROM      FROM     SRD/GEO             MOVEOUT   MOVEOUT   MOVEOUT
FROM SRD     KB        SRD
   MS        M          M        M/S       M/S        MS        MS        MS       M/S
                                                                                   3980
 1392.00   1959.24   1901.54     2732      2789      45.45    100.32    173.91
                                                                                   4063
 1394.00   1963.31   1905.61     2734      2791      45.32    100.03    173.43
                                                                                   3868
 1396.00   1967.17   1909.47     2736      2793      45.20     99.77    172.99
                                                                                   4020
 1398.00   1971.20   1913.50     2737      2795      45.06     99.49    172.52
                                                                                   3970
 1400.00   1975.17   1917.47     2739      2797      44.94     99.22    172.06
                                                                                   3978
 1402.00   1979.14   1921.44     2741      2799      44.81     98.95    171.61
                                                                                   3942
 1404.00   1983.09   1925.39     2743      2801      44.69     98.68    171.16
                                                                                   3929
 1406.00   1987.01   1929.31     2744      2803      44.57     98.42    170.72
                                                                                   3926
 1408.00   1990.94   1933.24     2746      2805      44.44     98.16    170.29
                                                                                   3940
 1410.00   1994.88   1937.18     2748      2807      44.32     97.90    169.85
                                                                                   3772
 1412.00   1998.65   1940.95     2749      2808      44.21     97.66    169.45
                                                                                   3799
 1414.00   2002.45   1944.75     2751      2810      44.10     97.42    169.05
                                                                                   3914
 1416.00   2006.36   1948.66     2752      2812      43.98     97.17    168.62
                                                                                   3820
 1418.00   2010.18   1952.48     2754      2813      43.87     96.93    168.22
                                                                                   3829
 1420.00   2014.01   1956.31     2755      2815      43.76     96.68    167.82
                                                                                   3903
 1422.00   2017.92   1960.22     2757      2817      43.64     96.44    167.40
                                                                                   3729
 1424.00   2021.65   1963.95     2758      2818      43.54     96.21    167.02
                                                                                   3716
 1426.00   2025.36   1967.66     2760      2820      43.44     95.99    166.65
                                                                                   3740
 1428.00   2029.10   1971.40     2761      2821      43.33     95.76    166.27
                                                                                   3841
 1430.00   2032.94   1975.24     2763      2823      43.22     95.53    165.88
                                                                                   3888
 1432.00   2036.83   1979.13     2764      2825      43.11     95.29    165.47
                                                                                   3865
 1434.00   2040.70   1983.00     2766      2826      43.00     95.05    165.08
                                                                                   3834
 1436.00   2044.53   1986.83     2767      2828      42.89     94.82    164.69
                                                                                   3945
 1438.00   2048.48   1990.78     2769      2830      42.78     94.57    164.28
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TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
1440.00	2052.37	1994.67	2770	2832	42.67	94.34	163.88	3897
1442.00	2056.18	1998.48	2772	2833	42.56	94.11	163.50	3806
1444.00	2059.95	2002.25	2773	2835	42.46	93.89	163.13	3776
1446.00	2063.83	2006.13	2775	2837	42.36	93.66	162.74	3873
1448.00	2067.64	2009.94	2776	2838	42.25	93.44	162.37	3816
1450.00	2071.65	2013.95	2778	2840	42.14	93.19	161.96	4009
1452.00	2075.46	2017.76	2779	2842	42.04	92.97	161.59	3813
1454.00	2079.07	2021.37	2780	2843	41.94	92.78	161.26	3605
1456.00	2082.57	2024.87	2781	2844	41.86	92.59	160.95	3502
1458.00	2086.25	2028.55	2783	2845	41.77	92.39	160.61	3675
1460.00	2089.74	2032.04	2784	2846	41.68	92.21	160.31	3492
1462.00	2093.41	2035.71	2785	2847	41.59	92.01	159.97	3669
1464.00	2097.24	2039.54	2786	2849	41.49	91.80	159.61	3829
1466.00	2100.99	2043.29	2788	2850	41.39	91.59	159.26	3750
1468.00	2104.78	2047.08	2789	2852	41.30	91.38	158.91	3789
1470.00	2108.60	2050.90	2790	2853	41.20	91.16	158.55	3829
1472.00	2112.39	2054.69	2792	2855	41.10	90.96	158.20	3786
1474.00	2116.08	2058.38	2793	2856	41.01	90.76	157.87	3686
1476.00	2119.78	2062.08	2794	2858	40.92	90.56	157.53	3705
1478.00	2123.49	2065.79	2795	2859	40.83	90.37	157.20	3711
1480.00	2127.01	2069.31	2796	2860	40.74	90.19	156.91	3522
1482.00	2130.69	2072.99	2798	2861	40.66	90.00	156.58	3671
1484.00	2134.17	2076.47	2798	2862	40.58	89.83	156.30	3483
148[illegible].00	2137.62	2079.92	2[illegible]9	2863	40.50	89.[illegible]	156.02	3447

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
1488.00	2141.35	2083.65	2801	2864	40.41	89.46	155.69	3738
1490.00	2144.98	2087.28	2802	2865	40.32	89.28	155.38	3630
1492.00	2148.63	2090.93	2803	2867	40.24	89.10	155.07	3643
1494.00	2152.35	2094.65	2804	2868	40.15	88.90	154.74	3721
1496.00	2155.95	2098.25	28C5	2869	40.07	88.73	154.44	3600
1498.00	2159.52	2101.82	2806	2870	39.99	88.55	154.15	3577
1500.00	2163.15	2105.45	2807	2871	39.90	88.37	153.84	3629
1502.00	2166.70	2109.00	2808	2872	39.82	88.20	153.55	3549
1504.00	2170.33	2112.62	2809	2873	39.74	88.02	153.25	3622
1506.00	2173.91	2116.21	2810	2874	39.66	87.85	152.96	3586
1508.00	2177.54	2119.84	2811	2876	39.58	87.67	152.66	3625
1510.00	2181.29	2123.59	2813	2877	39.49	87.48	152.34	3751
1512.00	2185.09	2127.39	2814	2878	39.40	87.29	152.02	3799
1514.00	2189.06	2131.36	2816	2880	39.30	87.08	151.66	3975
1516.00	2192.88	2135.18	2817	2881	39.22	86.89	151.34	3814
1518.00	2196.64	2138.94	2818	2883	39.13	86.70	151.02	3765
1520.00	2200.60	2142.90	2820	2885	39.03	86.49	150.67	3957
1522.00	2204.62	2146.92	2821	2886	38.94	86.28	150.31	4018
1524.00	2208.42	2150.72	2822	2888	38.85	86.09	150.00	3802
1526.00	2212.01	2154.31	2823	2889	38.77	85.93	149.72	3587
1528.00	2215.81	2158.11	2825	2890	38.69	85.74	149.40	3801
1530.00	2219.66	2161.96	2826	2892	38.60	85.55	149.08	3856
1532.00	2223.40	2165.70	2827	2893	38.52	85.37	148.78	3738
1534.00	2227.09	2169.39	2828	2894	38.44	85.20	148.48	3691

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								4022
1536.00	2231.11	2173.41	2830	2896	38.34	84.99	148.13	
								3900
1538.00	2235.01	2177.31	2831	2897	38.25	84.80	147.81	
								3791
1540.00	2238.80	2181.10	2833	2899	38.17	84.62	147.50	
								3900
1542.00	2242.70	2185.00	2834	2900	38.08	84.43	147.18	
								3956
1544.00	2246.66	2188.96	2835	2902	37.99	84.23	146.85	
								4064
1546.00	2250.72	2193.02	2837	2904	37.90	84.03	146.50	
								3901
1548.00	2254.63	2196.92	2838	2905	37.81	83.84	146.18	
								3945
1550.00	2258.57	2200.87	2840	2907	37.72	83.65	145.86	
								3805
1552.00	2262.38	2204.67	2841	2908	37.64	83.47	145.56	
								3916
1554.00	2266.29	2208.59	2842	2910	37.55	83.29	145.24	
								3956
1556.00	2270.25	2212.55	2844	2911	37.47	83.10	144.92	
								3833
1558.00	2274.08	2216.38	2845	2912	37.38	82.92	144.62	
								3691
1560.00	2277.77	2220.07	2846	2914	37.31	82.75	144.34	
								3661
1562.00	2281.43	2223.73	2847	2915	37.24	82.59	144.07	
								3653
1564.00	2285.09	2227.39	2848	2916	37.16	82.44	143.80	
								3699
1566.00	2288.79	2231.09	2849	2917	37.09	82.27	143.53	
								3740
1568.00	2292.53	2234.83	2851	2918	37.01	82.11	143.25	
								3547
1570.00	2296.07	2238.37	2851	2919	36.94	81.96	143.00	
								3560
1572.00	2299.63	2241.93	2852	2920	36.87	81.81	142.74	
								3979
1574.00	2303.61	2245.91	2854	2921	36.79	81.63	142.43	
								4059
1576.00	2307.67	2249.97	2855	2923	36.70	81.43	142.10	
								4097
1578.00	2311.77	2254.07	2857	2925	36.61	81.24	141.77	
								4079
1580.00	2315.85	2258.15	2858	2927	36.52	81.05	141.45	
								4057
158[illegible]00	2319.90	2262.20	2[illegible]0	2928	36.43	80.[illegible]	141.12	

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								4106
1584.00	2324.01	2266.31	2861	2930	36.35	80.66	140.80	
								3901
1586.00	2327.91	2270.21	2863	2932	36.27	80.49	140.50	
								4102
1588.00	2332.01	2274.31	2864	2933	36.18	80.30	140.18	
								4100
1590.00	2336.11	2278.41	2866	2935	36.09	80.11	139.85	
								4123
1592.00	2340.23	2282.53	2868	2937	36.00	79.92	139.53	
								4095
1594.00	2344.33	2286.63	2869	2939	35.92	79.73	139.21	
								4090
1596.00	2348.42	2290.72	2871	2940	35.83	79.54	138.89	
								4164
1598.00	2352.58	2294.88	2872	2942	35.74	79.35	138.56	
								4027
1600.00	2356.61	2298.91	2874	2944	35.66	79.17	138.26	
								3926
1602.00	2360.54	2302.83	2875	2945	35.58	79.00	137.97	
								3996
1604.00	2364.53	2306.83	2876	2947	35.50	78.83	137.68	
								3893
1606.00	2368.42	2310.72	2878	2948	35.43	78.66	137.39	
								3825
1608.00	2372.25	2314.55	2879	2949	35.35	78.51	137.13	
								3845
1610.00	2376.09	2318.39	2880	2951	35.28	78.35	136.85	
								4124
1612.00	2380.22	2322.52	2882	2953	35.20	78.16	136.54	
								4086
1614.00	2384.30	2326.60	2883	2954	35.12	77.98	136.24	
								4043
1616.00	2388.35	2330.65	2884	2956	35.04	77.81	135.94	
								4075
1618.00	2392.42	2334.72	2886	2957	34.95	77.63	135.64	
								3985
1620.00	2396.41	2338.71	2887	2959	34.88	77.47	135.36	
								3957
1622.00	2400.36	2342.66	2889	2960	34.80	77.30	135.08	
								4089
1624.00	2404.45	2346.75	2890	2962	34.72	77.13	134.78	
								3947
1626.00	2408.40	2350.70	2891	2963	34.65	76.96	134.50	
								3851
1628.00	2412.25	2354.55	2893	2965	34.58	76.81	134.24	
								3885
1630.00	2416.14	2358.44	2894	2966	34.50	76.65	133.97	

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
1632.00	2419.94	2362.24	2895	2967	34.44	76.51	133.72	3802
1634.00	2423.93	2366.23	2896	2969	34.36	76.34	133.44	3987
1636.00	2428.14	2370.44	2898	2970	34.28	76.16	133.13	4216
1638.00	2432.13	2374.43	2899	2972	34.20	76.00	132.86	3994
1640.00	2436.22	2378.52	2901	2974	34.13	75.83	132.57	4088
1642.00	2440.35	2382.65	2902	2975	34.05	75.66	132.27	4125
1644.00	2444.44	2386.74	2904	2977	33.97	75.49	131.99	4091
1646.00	2448.43	2390.73	2905	2978	33.90	75.33	131.72	3986
1648.00	2452.35	2394.65	2906	2980	33.83	75.18	131.45	3927
1650.00	2456.36	2398.66	2907	2981	33.75	75.02	131.18	4005
1652.00	2460.36	2402.66	2909	2982	33.68	74.86	130.91	4007
1654.00	2464.50	2406.80	2910	2984	33.60	74.69	130.63	4140
1656.00	2468.57	2410.87	2912	2986	33.53	74.53	130.35	4070
1658.00	2472.62	2414.92	2913	2987	33.46	74.37	130.08	4046
1660.00	2476.80	2419.10	2915	2989	33.38	74.20	129.79	4179
1662.00	2481.03	2423.33	2916	2991	33.30	74.03	129.49	4231
1664.00	2485.00	2427.30	2917	2992	33.23	73.88	129.23	3968
1666.00	2489.15	2431.45	2919	2994	33.16	73.71	128.95	4157
1668.00	2493.33	2435.63	2920	2995	33.08	73.54	128.67	4179
1670.00	2497.22	2439.52	2922	2997	33.01	73.40	128.42	3891
1672.00	2501.14	2443.44	2923	2998	32.95	73.26	128.17	3914
1674.00	2505.09	2447.39	2924	2999	32.88	73.11	127.92	3952
1676.00	2509.02	2451.32	2925	3001	32.81	72.96	127.68	3932
167[illegible]00	2513.12	2455.42	2[illegible]7	3002	32.74	72.[illegible]	127.41	4100

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

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  TWO-WAY    MEASURED    VERTICAL    AVERAGE       RMS       FIRST      SECOND      THIRD    INTERVAL
  TRAVEL      DEPTH       DEPTH     VELOCITY    VELOCITY     NORMAL     NORMAL      NORMAL   VELOCITY
   TIME        FROM        FROM      SRD/GEO               MOVEOUT    MOVEOUT    MOVEOUT
 FROM SRD       KB         SRD
    MS          M           M          M/S         M/S         MS         MS         MS        M/S
                                                                                               4190
  1680.00    2517.31    2459.61       2928        3004       32.67      72.64     127.13
                                                                                               4267
  1682.00    2521.58    2463.88       2930        3006       32.59      72.48     126.84
                                                                                               4191
  1684.00    2525.77    2468.07       2931        3007       32.52      72.31     126.56
                                                                                               4177
  1686.00    2529.95    2472.25       2933        3009       32.44      72.15     126.29
                                                                                               3954
  1688.00    2533.90    2476.20       2934        3010       32.38      72.01     126.04
                                                                                               4181
  1690.00    2538.08    2480.38       2935        3012       32.30      71.85     125.77
                                                                                               4193
  1692.00    2542.27    2484.57       2937        3014       32.23      71.69     125.50
                                                                                               4138
  1694.00    2546.41    2488.71       2938        3015       32.16      71.54     125.23
                                                                                               4218
  1696.00    2550.63    2492.93       2940        3017       32.09      71.38     124.96
                                                                                               4230
  1698.00    2554.86    2497.16       2941        3019       32.01      71.22     124.69
                                                                                               4212
  1700.00    2559.07    2501.37       2943        3020       31.94      71.06     124.42
                                                                                               4401
  1702.00    2563.47    2505.77       2945        3022       31.86      70.89     124.12
                                                                                               4164
  1704.00    2567.64    2509.94       2946        3024       31.79      70.74     123.86
                                                                                               4028
  1706.00    2571.66    2513.96       2947        3025       31.73      70.59     123.62
                                                                                               3988
  1708.00    2575.65    2517.95       2948        3027       31.67      70.45     123.38
                                                                                               4166
  1710.00    2579.82    2522.12       2950        3028       31.60      70.30     123.12
                                                                                               4138
  1712.00    2583.96    2526.26       2951        3030       31.53      70.15     122.86
                                                                                               4134
  1714.00    2588.09    2530.39       2953        3031       31.46      70.01     122.61
                                                                                               4099
  1716.00    2592.19    2534.49       2954        3033       31.39      69.86     122.36
                                                                                               4263
  1718.00    2596.45    2538.75       2955        3034       31.32      69.71     122.10
                                                                                               4164
  1720.00    2600.62    2542.92       2957        3036       31.26      69.56     121.84
                                                                                               4070
  1722.00    2604.69    2546.99       2958        3037       31.19      69.42     121.60
                                                                                               4135
  1724.00    2608.82    2551.12       2960        3039       31.13      69.27     121.35
                                                                                               3986
  1726.00    2612.81    2555.11       2961        3040       31.06      69.14     121.12
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TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
1728.00	2616.93	2559.23	2962	3042	31.00	69.00	120.88	4122
1730.00	2621.19	2563.49	2964	3043	30.93	68.84	120.62	4262
1732.00	2625.24	2567.54	2965	3045	30.87	68.71	120.39	4047
1734.00	2629.31	2571.61	2966	3046	30.80	68.57	120.15	4067
1736.00	2633.39	2575.69	2967	3047	30.74	68.43	119.92	4084
1738.00	2637.50	2579.80	2969	3049	30.68	68.29	119.68	4107
1740.00	2641.60	2583.90	2970	3050	30.62	68.16	119.44	4097
1742.00	2645.83	2588.13	2971	3052	30.55	68.01	119.19	4237
1744.00	2650.19	2592.49	2973	3054	30.48	67.86	118.93	4354
1746.00	2654.35	2596.65	2974	3055	30.41	67.72	118.68	4164
1748.00	2658.68	2600.98	2976	3057	30.35	67.56	118.43	4331
1750.00	2662.93	2605.23	2977	3059	30.28	67.42	118.18	4248
1752.00	2667.27	2609.57	2979	3060	30.21	67.27	117.92	4341
1754.00	2671.35	2613.65	2980	3062	30.15	67.14	117.69	4084
1756.00	2675.52	2617.82	2982	3063	30.09	67.00	117.45	4167
1758.00	2679.73	2622.03	2983	3065	30.02	66.86	117.21	4211
1760.00	2683.98	2626.28	2984	3066	29.96	66.72	116.97	4251
1762.00	2688.12	2630.42	2986	3068	29.90	66.58	116.74	4142
1764.00	2692.28	2634.58	2987	3069	29.84	66.45	116.51	4159
1766.00	2696.44	2638.74	2988	3071	29.78	66.31	116.28	4155
1768.00	2700.75	2643.05	2990	3072	29.71	66.17	116.03	4312
1770.00	2705.01	2647.31	2991	3074	29.65	66.03	115.79	4257
1772.00	2709.23	2651.53	2993	3076	29.58	65.89	115.56	4223
177[illegible]00	2713.46	2655.76	2[illegible]4	3077	29.52	65.7[illegible]	115.32	4230

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
1776.00	2717.67	2659.96	2995	3079	29.46	65.62	115.09	4204
1778.00	2721.89	2664.19	2997	3080	29.40	65.49	114.86	4225
1780.00	2726.02	2668.32	2998	3081	29.34	65.36	114.64	4127
1782.00	2730.30	2672.60	3000	3083	29.28	65.22	114.40	4285
1784.00	2734.59	2676.89	3001	3085	29.22	65.09	114.16	4288
1786.00	2738.88	2681.18	3002	3086	29.15	64.95	113.93	4287
1788.00	2743.13	2685.43	3004	3088	29.09	64.81	113.70	4249
1790.00	2747.48	2689.78	3005	3090	29.03	64.67	113.46	4355
1792.00	2751.81	2694.11	3007	3091	28.97	64.54	113.22	4327
1794.00	2756.06	2698.36	3008	3093	28.91	64.40	112.99	4250
1796.00	2760.36	2702.66	3010	3094	28.84	64.27	112.76	4302
1798.00	2764.78	2707.08	3011	3096	28.78	64.13	112.52	4416
1800.00	2769.15	2711.45	3013	3098	28.72	63.99	112.28	4372
1802.00	2773.35	2715.65	3014	3099	28.66	63.86	112.06	4202
1804.00	2777.70	2720.00	3016	3101	28.60	63.73	111.83	4351
1806.00	2781.90	2724.20	3017	3102	28.54	63.60	111.61	4196
1808.00	2786.14	2728.44	3018	3104	28.48	63.47	111.39	4240
1810.00	2790.41	2732.71	3020	3105	28.42	63.34	111.17	4273
1812.00	2794.64	2736.94	3021	3107	28.36	63.22	110.95	4229
1814.00	2798.95	2741.25	3022	3108	28.31	63.09	110.73	4307
1816.00	2803.30	2745.60	3024	3110	28.24	62.95	110.50	4354
1818.00	2807.48	2749.78	3025	3111	28.19	62.83	110.29	4183
1820.00	2811.97	2754.27	3027	3113	28.13	62.69	110.05	4483
1822.00	2816.32	2758.62	3028	3115	28.07	62.56	109.82	4355

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
1824.00	2820.73	2763.03	3030	3117	28.01	62.43	109.59	4408
1826.00	2825.09	2767.39	3031	3118	27.95	62.30	109.37	4362
1828.00	2829.44	2771.74	3033	3120	27.89	62.17	109.14	4353
1830.00	2833.79	2776.09	3034	3122	27.83	62.04	108.92	4345
1832.00	2837.99	2780.29	3035	3123	27.77	61.92	108.71	4206
1834.00	2842.33	2784.63	3037	3124	27.72	61.79	108.50	4341
1836.00	2846.73	2789.03	3038	3126	27.66	61.66	108.27	4390
1838.00	2851.01	2793.31	3040	3128	27.60	61.54	108.06	4282
1840.00	2855.36	2797.66	3041	3129	27.54	61.41	107.84	4357
1842.00	2859.83	2802.13	3042	3131	27.48	61.28	107.61	4470
1844.00	2864.32	2806.62	3044	3133	27.42	61.15	107.38	4486
1846.00	2868.78	2811.08	3046	3135	27.36	61.02	107.16	4460
1848.00	2873.44	2815.74	3047	3137	27.30	60.87	106.91	4665
1850.00	2878.11	2820.41	3049	3139	27.23	60.73	106.67	4670
1852.00	2882.78	2825.08	3051	3141	27.17	60.59	106.42	4664
1854.00	2887.35	2829.65	3052	3143	27.11	60.46	106.19	4573
1856.00	2892.16	2834.46	3054	3145	27.04	60.31	105.93	4811
1858.00	2896.87	2839.17	3056	3147	26.98	60.17	105.69	4704
1860.00	2901.30	2843.60	3058	3149	26.92	60.04	105.47	4429
1862.00	2905.69	2847.99	3059	3150	26.86	59.92	105.26	4399
1864.00	2910.16	2852.46	3061	3152	26.81	59.79	105.04	4468
1866.00	2914.58	2856.88	3062	3154	26.75	59.67	104.83	4422
1868.00	2919.13	2861.43	3064	3155	26.69	59.54	104.60	4547
187[illegible]00	2923.79	2866.09	3[illegible]5	3157	26.63	59.[illegible]	104.37	4655

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								4713
1872.00	2928.50	2870.80	3067	3159	26.57	59.27	104.13	
								4433
1874.00	2932.93	2875.23	3069	3161	26.51	59.14	103.92	
								4549
1876.00	2937.48	2879.78	3070	3163	26.46	59.02	103.70	
								4697
1878.00	2942.18	2884.48	3072	3165	26.39	58.88	103.47	
								4506
1880.00	2946.69	2888.99	3073	3167	26.34	58.76	103.25	
								4466
1882.00	2951.15	2893.45	3075	3168	26.28	58.64	103.04	
								4587
1884.00	2955.74	2898.04	3076	3170	26.22	58.51	102.82	
								4278
1886.00	2960.02	2902.32	3078	3172	26.17	58.40	102.63	
								4471
1888.00	2964.49	2906.79	3079	3173	26.12	58.28	102.43	
								4436
1890.00	2968.92	2911.22	3081	3175	26.07	58.16	102.22	
								4278
1892.00	2973.20	2915.50	3082	3176	26.02	58.05	102.03	
								4322
1894.00	2977.52	2919.82	3083	3178	25.97	57.94	101.84	
								4299
1896.00	2981.82	2924.12	3085	3179	25.92	57.83	101.65	
								4458
1898.00	2986.28	2928.58	3086	3181	25.86	57.71	101.45	
								4356
1900.00	2990.64	2932.94	3087	3182	25.81	57.60	101.26	
								4337
1902.00	2994.97	2937.27	3089	3184	25.76	57.49	101.07	
								4263
1904.00	2999.24	2941.54	3090	3185	25.72	57.39	100.89	
								4216
1906.00	3003.45	2945.75	3091	3186	25.67	57.28	100.71	
								4458
1908.00	3007.91	2950.21	3092	3188	25.62	57.17	100.51	
								4392
1910.00	3012.30	2954.60	3094	3189	25.57	57.06	100.32	
								4486
1912.00	3016.79	2959.09	3095	3191	25.51	56.94	100.12	
								4440
1914.00	3021.23	2963.53	3097	3192	25.46	56.83	99.92	
								4460
1916.00	3025.69	2967.99	3098	3194	25.41	56.72	99.73	
								4587
1918.00	3030.28	2972.58	3100	3196	25.36	56.60	99.52	

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
1920.00	3034.51	2976.81	3101	3197	25.31	56.50	99.35	4238
1922.00	3038.79	2981.09	3102	3198	25.27	56.39	99.17	4276
1924.00	3043.08	2985.38	3103	3200	25.22	56.29	98.99	4287
1926.00	3047.43	2989.73	3105	3201	25.17	56.19	98.81	4349
1928.00	3051.66	2993.96	3106	3202	25.13	56.09	98.64	4238
1930.00	3055.63	2997.93	3107	3203	25.09	56.00	98.49	3962
1932.00	3059.87	3002.17	3108	3204	25.04	55.90	98.31	4245
1934.00	3064.16	3006.46	3109	3206	25.00	55.80	98.14	4291
1936.00	3068.25	3010.55	3110	3207	24.95	55.71	97.98	4088
1938.00	3072.81	3015.11	3112	3208	24.90	55.59	97.78	4558
1940.00	3077.37	3019.67	3113	3210	24.85	55.48	97.59	4559
1942.00	3081.80	3024.10	3114	3212	24.80	55.37	97.40	4429
1944.00	3086.19	3028.49	3116	3213	24.76	55.27	97.22	4394
1946.00	3090.44	3032.74	3117	3214	24.71	55.17	97.05	4251
1948.00	3094.54	3036.84	3118	3215	24.67	55.08	96.90	4101
1950.00	3098.85	3041.15	3119	3217	24.63	54.98	96.73	4302
1952.00	3103.48	3045.78	3121	3218	24.57	54.87	96.53	4637
1954.00	3107.82	3050.12	3122	3220	24.53	54.77	96.36	4334
1956.00	3112.21	3054.51	3123	3221	24.48	54.67	96.18	4395
1958.00	3116.38	3058.68	3124	3222	24.44	54.58	96.02	4163
1960.00	3120.62	3062.92	3125	3224	24.40	54.48	95.86	4246
1962.00	3124.98	3067.28	3127	3225	24.35	54.38	95.69	4355
1964.00	3129.21	3071.51	3128	3226	24.31	54.29	95.52	4231
196[illegible]00	3133.37	3075.67	3[illegible]9	3227	24.27	54.[illegible]	95.37	4161

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 TWO-WAY   MEASURED   VERTICAL    AVERAGE     RMS       FIRST     SECOND     THIRD    INTERVAL
 TRAVEL     DEPTH      DEPTH     VELOCITY  VELOCITY    NORMAL     NORMAL     NORMAL   VELOCITY
  TIME      FROM       FROM      SRD/GEO              MOVEOUT    MOVEOUT    MOVEOUT
FROM SRD     KB         SRD
   MS        M          M          M/S       M/S         MS         MS         MS        M/S

                                                                                        4168
 1968.00   3137.54    3079.84      3130      3228      24.23      54.11      95.21
                                                                                        4256
 1970.00   3141.79    3084.09      3131      3229      24.19      54.02      95.05
                                                                                        4511
 1972.00   3146.30    3088.60      3132      3231      24.14      53.91      94.87
                                                                                        4467
 1974.00   3150.77    3093.07      3134      3232      24.09      53.81      94.69
                                                                                        4463
 1976.00   3155.23    3097.53      3135      3234      24.05      53.71      94.52
                                                                                        4444
 1978.00   3159.68    3101.98      3136      3235      24.00      53.61      94.34
                                                                                        4121
 1980.00   3163.80    3106.10      3137      3236      23.96      53.52      94.19
                                                                                        4212
 1982.00   3168.01    3110.31      3139      3238      23.92      53.43      94.04
                                                                                        4441
 1984.00   3172.45    3114.75      3140      3239      23.88      53.33      93.87
                                                                                        4396
 1986.00   3176.85    3119.15      3141      3240      23.83      53.23      93.70
                                                                                        4679
 1988.00   3181.53    3123.83      3143      3242      23.78      53.13      93.51
                                                                                        4344
 1990.00   3185.87    3128.17      3144      3243      23.74      53.03      93.35
                                                                                        4245
 1992.00   3190.12    3132.42      3145      3245      23.70      52.94      93.19
                                                                                        4051
 1994.00   3194.17    3136.47      3146      3246      23.66      52.86      93.05
                                                                                        4027
 1996.00   3198.20    3140.50      3147      3246      23.63      52.78      92.91
                                                                                        4377
 1998.00   3202.57    3144.87      3148      3248      23.59      52.69      92.75
                                                                                        4270
 2000.00   3206.84    3149.14      3149      3249      23.55      52.60      92.59
                                                                                        4157
 2002.00   3211.00    3153.30      3150      3250      23.51      52.51      92.45
                                                                                        4341
 2004.00   3215.34    3157.64      3151      3251      23.47      52.42      92.29
                                                                                        4202
 2006.00   3219.54    3161.84      3152      3252      23.43      52.34      92.14
                                                                                        4328
 2008.00   3223.87    3166.17      3154      3254      23.39      52.25      91.98
                                                                                        4388
 2010.00   3228.26    3170.56      3155      3255      23.34      52.15      91.82
                                                                                        4341
 2012.00   3232.60    3174.90      3156      3256      23.30      52.06      91.67
                                                                                        4481
 2014.00   3237.08    3179.38      3157      3258      23.26      51.97      91.50
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TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								4453
2016.00	3241.53	3183.83	3159	3259	23.22	51.87	91.34	
								4608
2018.00	3246.14	3188.44	3160	3261	23.17	51.77	91.16	
								4265
2020.00	3250.41	3192.71	3161	3262	23.13	51.69	91.01	
								4389
2022.00	3254.80	3197.10	3162	3263	23.09	51.60	90.86	
								4331
2024.00	3259.13	3201.43	3163	3264	23.05	51.51	90.70	
								4518
2026.00	3263.64	3205.94	3165	3266	23.01	51.41	90.54	
								4551
2028.00	3268.19	3210.49	3166	3267	22.97	51.32	90.37	
								4468
2030.00	3272.66	3214.96	3167	3269	22.92	51.22	90.21	
								4354
2032.00	3277.02	3219.32	3169	3270	22.88	51.14	90.06	
								4274
2034.00	3281.29	3223.59	3170	3271	22.85	51.05	89.91	
								4340
2036.00	3285.63	3227.93	3171	3272	22.81	50.97	89.76	
								4329
2038.00	3289.96	3232.26	3172	3273	22.77	50.88	89.61	
								4415
2040.00	3294.37	3236.67	3173	3275	22.73	50.79	89.46	
								4423
2042.00	3298.80	3241.10	3174	3276	22.69	50.70	89.30	
								4339
2044.00	3303.14	3245.44	3176	3277	22.65	50.62	89.15	
								4411
2046.00	3307.55	3249.85	3177	3279	22.61	50.53	89.00	
								4375
2048.00	3311.92	3254.22	3178	3280	22.57	50.44	88.85	
								4387
2050.00	3316.31	3258.61	3179	3281	22.53	50.36	88.70	
								4375
2052.00	3320.68	3262.98	3180	3282	22.49	50.27	88.55	
								4432
2054.00	3325.12	3267.42	3182	3284	22.45	50.18	88.40	
								4245
2056.00	3329.36	3271.66	3183	3285	22.42	50.10	88.26	
								4417
2058.00	3333.78	3276.08	3184	3286	22.38	50.02	88.11	
								4439
2060.00	3338.22	3280.52	3185	3287	22.34	49.93	87.96	
								4230
206[illegible].00	3342.45	3284.75	3[illegible]6	3288	22.30	49.[illegible]	87.82	

TWO-WAY TRAVEL TIME FROM SRD MS	MEASURED DEPTH FROM KB M	VERTICAL DEPTH FROM SRD M	AVERAGE VELOCITY SRD/GEO M/S	RMS VELOCITY M/S	FIRST NORMAL MOVEOUT MS	SECOND NORMAL MOVEOUT MS	THIRD NORMAL MOVEOUT MS	INTERVAL VELOCITY M/S
								4284
2064.00	3346.73	3289.03	3187	3290	22.27	49.77	87.69	
								4399
2066.00	3351.13	3293.43	3188	3291	22.23	49.69	87.54	
								4470
2068.00	3355.60	3297.90	3189	3292	22.19	49.60	87.39	
								4400
2070.00	3360.00	3302.30	3191	3293	22.15	49.51	87.24	
								4252
2072.00	3364.25	3306.55	3192	3294	22.12	49.44	87.11	
								3991
2074.00	3368.24	3310.54	3192	3295	22.08	49.37	86.99	
								4148
2076.00	3372.39	3314.69	3193	3296	22.05	49.29	86.86	
								4338
2078.00	3376.73	3319.03	3194	3297	22.02	49.21	86.72	
								4522
2080.00	3381.25	3323.55	3196	3299	21.98	49.13	86.57	
								4473
2082.00	3385.72	3328.02	3197	3300	21.94	49.04	86.42	
								4618
2084.00	3390.34	3332.64	3198	3302	21.90	48.95	86.26	
								4548
2086.00	3394.89	3337.19	3200	3303	21.86	48.86	86.11	
								4582
2088.00	3399.47	3341.77	3201	3304	21.82	48.77	85.95	
								4476
2090.00	3403.95	3346.25	3202	3306	21.78	48.69	85.81	
								4474
2092.00	3408.42	3350.72	3203	3307	21.74	48.61	85.66	

SYNTHETIC

```
ANALYST: M. SANDERS              10-JUL-86 14:48:28    PROGRAM: GTRFRM 007.E08



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                                 *                  *
                                 *                  *
                                 *                  *
                                 ********************
                                 *                  *
                                 *   SCHLUMBERGER   *
                                 *                  *
                                 ********************


                              SYNTHETIC SEISMOGRAM TABLE

                        COMPANY  : BEACH PETROLEUM N.L.
                        WELL     : NAJABA - 1A
                        FIELD    : WILDCAT
                        STATE    : VICTORIA
                        COUNTRY  : AUSTRALIA
                        REFERENCE: 560706
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ANALYST: M. SANDERS              10-JUL-86 14:48:28    PROGRAM: GTRFRM 007.E08




                                           ********************
                                           *                  *
                                           *                  *
                                           *                  *
                                           ********************
                                           *                  *
                                           *   SCHLUMBERGER   *
                                           *                  *
                                           ********************


                                        SYNTHETIC SEISMOGRAM TABLE

                                COMPANY  : BEACH PETROLEUM N.L.
                                WELL     : NAJABA - 1A
                                FIELD    : WILDCAT
                                STATE    : VICTORIA
                                COUNTRY  : AUSTRALIA
                                REFERENCE: 560706
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THE HEADINGS AND FLAGS SHOWN IN THE DATA LIST ARE DEFINED
AS FOLLOWS:



IGEOFL- FLAG INDICATING  MODE OF PROCESSING
        IGEOFL = 0    WST DATA AVAILABLE AND PROCESSED
        IGEOFL = 1    WST DATA NOT AVAILABLE

LOG INPUT DATA :
GRF001- CHANNEL NAME FOR INPUT DENSITY LOG DATA
GTR001- CHANNEL NAME FOR INPUT SONIC LOG DATA
GCURVE- CORRELATION LOG NAMES

USER DEFINED MODELING

LOFVEL- LAYER OPTION FLAG FOR VELOCITY
LOFDEN- LAYER OPTION FLAG FOR DENSITY
LAYVEL- LAYERED VELOCITY VALUES FOR USER SUPPLIED ZONE LIMIT
        WITH RESPECT TO SONIC LOG DATA
LAYDEN- LAYERED DENSITY VALUES FOR USER SUPPLIED ZONE LIMITS
        WITH RESPECT TO SONIC LOG DATA
UNERTH- UNIFORM EARTH VELOCITY
UNFDEN- UNIFORM EARTH DENSITY
SRATE   SAMPLING RATE IN MS
INIDEP  START DEPTH FOR COMPUTING SYNTHETIC SEISMOGRAM
        WITH RESPECT TO SONIC LOG DATA
IGESTP  STOP DEPTH FOR COMPUTING SYNTHETIC SEISMOGRAM
        WITH RESPECT TO SONIC LOG DATA
INITAU  TWO WAY TRAVEL TIME FROM TOP SONIC TO SRD
EKB     ELEVATION OF KELLY BUSHING WITH RESPECT TO
        MEAN SEA LEVEL
SRDGEO  SEISMIC REFERENCE DEPTH WITH RESPECT TO
        MEAN SEA LEVEL
ICDP    FLAG FOR COMPUTING RESIDUAL MULTIPLES
CDPTIM  TWO WAY TIME INTERVAL FOR COMPUTATION OF
        RESIDUAL MULTIPLES
SCRTIM  SURFACE REFLECTOR TWO WAY TIME ABOVE INITAU
SCREFL  SURFACE REFLECTION COEFFICIENT
RCMAX   REFLECTION COEFFICIENTS THAT ARE EQUAL TO OR
        GREATER  THAN THIS VALUE SHALL BE FLAGGED

*NOTE*  IN CASE OF MODELING A SYNTHETIC SEISMOGRAM WITHOUT
        SONIC LOG DATA ,THE DEPTH REFERENCES SHALL BE USER
        DEFINED


OUTPUT DATA

RMSVWE  ROOT MEAN SQUARE VELOCITY FOUND FOR THE WELL
SRDTIM  TWO WAY TRANSIT TIME BETWEEN INIDEP AND SRDGEO

CHANNNEL NAMES
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TWOT- TWO WAY TRAVEL TIME
DSRD- DEPTH OF COMPUTED DATA WITH RESPECT TO SRD
INTV- INTERVAL VELOCITY ON A TIME SCALE
RHOT- INTERVAL DENSITY  ON A TIME SCALE
REFL- REFLECTION COEFFICIENT AT GIVEN TWO WAY TRAVEL TIMES
ATTE- ATTENUATION COEFFICIENT AT GIVEN TWO WAY TRAVEL TIMES
PRIM- SYNTHETIC SEISMOGRAM  - PRIMARIES
MULT- SYNTHETIC SEISMOGRAM  - PRIMARIES + MULTIPLES
MUON- MULTIPLES ONLY



              CHANNEL NAMES

CHAN    1 - TWOT.GMU.002.*
CHAN    2 - DSRD.GRF.006.*
CHAN    3 - INTV.GRF.007.*
CHAN    4 - RHOT.GRF.001.*
CHAN    5 - REFL.GRF.001.*
CHAN    6 - ATTE.GRF.001.*
CHAN    7 - PRIM.GRF.001.*
CHAN    8 - MULT.GMU.001.*
CHAN    9 - MUON.GMU.001.*

  (GLOBAL PARAMETERS)                          (VALUE)

MODE OF PROC (GEOGRAM)     IGEOFL     :         0
INITIALIZE CDP LOGIC       ICDP       :         0
CDP TIME                   CDPTIM     :   .200000  S
TIME SAMPLING (WST)        SRATE      :   2.00000  MS
TOP DEPTH OF PROCESSING    INIDEP     :   112.300  M
BOTTOM DEPTH OF PROCESSI   IGESTP     :   3354.00  M
INITIAL TWO WAY TRAVEL T   INITAU     :   .096100  S
SRD FOR GEOGRAM            SRDGEO     :  -30479.7  M
ELEVATION OF KELLY BUSHI   EKB        :         0  M
SRD TIME                   SRDTIM     :         0  MS
SURFACE COEFFICIENT OF R   SCRTIM     :         0  MS
SURFACE COEFFICIENT OF R   SCREFL     :  -1.00000
REFLECTION COEFF MAXIMUM   RCMAX      :   .300000
RMS VELOCITY IN WELL       RMSVWE     :   3348.26  M/S
UNIFORM EARTH VELOCITY     UNERTH     :   2133.60  M/S
UNIFORM DENSITY VALUE      UNFDEN     :   2.30000  G/C3
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  (MATRIX PARAMETERS)



    1 GR*
    2 CALI*

  (ZONED PARAMETERS)                          (VALUE)            (LIMITS)

LAYER OPTION FLAG DENS    LOFDEN      :-1.000000          30479.7  -         0
LAYER OPTION FLAG VELOC   LOFVEL      : 1.000000          30479.7  -         0
USER SUPPLIED DENSITY DA  LAYDEN      :-999.2500   G/C3   30479.7  -         0
USER VELOC (WST)          LAYVEL      : 2337.000   M/S    170.000  -   55.7000
                                        1497.000          55.7000            0
```

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
		2158	2.350					
98.1	114.46			0	1.00000	-.00050	-.00050	0
		2156	2.350					
100.1	116.61			.015	.99978	.01475	.01475	0
		2220	2.350					
102.1	118.83			-.005	.99976	-.00456	-.00454	.00001
		2200	2.350					
104.1	121.03			-.015	.99955	-.01452	-.01474	-.00022
		2137	2.350					
106.1	123.17			-.006	.99952	-.00575	-.00563	.00012
		2113	2.350					
108.1	125.28			-.012	.99937	-.01210	-.01169	.00040
		2062	2.350					
110.1	127.35			.022	.99888	.02218	.02220	.00002
		2156	2.350					
112.1	129.50			.023	.99834	.02309	.02320	.00010
		2258	2.350					
114.1	131.76			-.002	.99834	-.00215	-.00306	-.00091
		2248	2.350					
116.1	134.01			-.016	.99808	-.01603	-.01688	-.00084
		2177	2.350					
118.1	136.19			.008	.99802	.00788	.00870	.00082
		2212	2.350					
120.1	138.40			-.019	.99766	-.01885	-.01760	.00124
		2130	2.350					
122.1	140.53			.011	.99754	.01106	.01134	.00029
		2177	2.350					
124.1	142.70			.015	.99731	.01522	.01536	.00013
		2245	2.350					
126.1	144.95			-.035	.99606	-.03532	-.03683	-.00151
		2091	2.350					
128.1	147.04			.043	.99425	.04249	.04087	-.00162
		2278	2.350					
130.1	149.32			-.002	.99424	-.00245	.00003	.00248
		2267	2.350					
132.1	151.59			-.025	.99364	-.02444	-.02539	-.00095
		2158	2.350					
134.1	153.74			.026	.99295	.02617	.02606	-.00011
		2275	2.350					
136.1	156.02			.025	.99233	.02478	.02702	.00224
		2391	2.350					
138.1	158.41			-.041	.99068	-.04046	-.04260	-.00214
		2204	2.350					
140.1	160.61			-.021	.99024	-.02085	-.02132	-.00046
		2113	2.350					
142.1	162.72			.016	.98998	.01630	.01852	.00222
		2184	2.350					
144.1	164.91			-.001	.98997	-.00082	-.00180	-.00098
		2180	2.350					

```
  TWO WAY      DEPTH     INTERVAL  INTERVAL   REFLECT.   TWO WAY   SYNTHETIC   PRIMARY   MULTIPLES
  TRAVEL     FROM SRD    VELOCITY  DENSITY     COEFF.    ATTEN.     SEISMO.       +        ONLY
   TIME     (OR TOP)                                     COEFF.     PRIMARY   MULTIPLES
    MS          M          M/S       G/C3

   146.1     167.09                               .022    .98949     .02190     .02107    -.00083
                           2278      2.350
   148.1     169.37                              -.047    .98729    -.04668    -.04462     .00207
                           2073      2.350
   150.1     171.44                                  0    .98729    -.00018    -.00629    -.00612
                           2072      2.350
   152.1     173.51                              -.002    .98729    -.00158     .00108     .00266
                           2066      2.350
   154.1     175.58                               .055    .98427     .05452     .05984     .00532
                           2307      2.350
   156.1     177.89                              -.006    .98424    -.00574    -.00938    -.00364
                           2281      2.350
   158.1     180.17                              -.004    .98422    -.00442    -.00421     .00020
                           2260      2.350
   160.1     182.43                              -.040    .98266    -.03923    -.04113    -.00190
                           2087      2.350
   162.1     184.51                               .005    .98263     .00486     .00367    -.00119
                           2108      2.350
   164.1     186.62                              -.012    .98248    -.01215    -.00580     .00635
                           2056      2.350
   166.1     188.68                               .033    .98144     .03196     .03515     .00320
                           2194      2.350
   168.1     190.87                                  0    .98144    -.00030    -.01102    -.01072
                           2193      2.350
   170.1     193.06                              -.004    .98143    -.00408    -.00335     .00072
                           2175      2.350
   172.1     195.24                               .016    .98117     .01593     .01776     .00183
                           2247      2.350
   174.1     197.49                              -.011    .98105    -.01087    -.01061     .00026
                           2198      2.350
   176.1     199.68                               .029    .98025     .02802     .03120     .00318
                           2327      2.350
   178.1     202.01                               .039    .97879     .03779     .04012     .00233
                           2513      2.350
   180.1     204.52                              -.023    .97825    -.02295    -.02473    -.00179
                           2398      2.350
   182.1     206.92                              -.030    .97737    -.02944    -.03341    -.00397
                           2258      2.350
   184.1     209.18                               .016    .97711     .01573     .01827     .00254
                           2332      2.350
   186.1     211.51                               .007    .97707     .00681     .00637     .00006
                           2365      2.350
   188.1     213.88                              -.059    .97363    -.05797    -.05489     .00308
                           2100      2.350
   190.1     215.98                               .094    .96495     .09189     .08896    -.00293
                           2537      2.350
   192.1     218.51                              -.010    .96486    -.00944    -.01183    -.00240
                           2488      2.350
   194.1     221.00                              -.011    .96475    -.01026    -.01751    -.00725
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TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
		2436	2.350					
196.1	223.44	2034	2.350	-.090	.95696	-.08673	-.07698	.00974
198.1	225.47	2208	2.350	.041	.95535	.03921	.04287	.00366
200.1	227.68	2208	2.350	0	.95535	-.00004	-.00204	-.00200
202.1	229.89	2345	2.350	.030	.95447	.02890	.02943	.00053
204.1	232.23	2385	2.350	.008	.95441	.00794	-.00206	-.00999
206.1	234.62	2466	2.350	.017	.95414	.01603	.01790	.00187
208.1	237.08	2552	2.350	.017	.95386	.01625	.02150	.00525
210.1	239.64	2448	2.350	-.021	.95346	-.01970	-.01307	.00663
212.1	242.09	2532	2.350	.017	.95318	.01608	.00474	-.01134
214.1	244.62	2229	2.350	-.064	.94931	-.06076	-.04921	.01155
216.1	246.85	2343	2.350	.025	.94872	.02373	.00984	-.01389
218.1	249.19	2374	2.350	.007	.94868	.00617	.01102	.00485
220.1	251.56	2535	2.350	.033	.94765	.03116	.04387	.01271
222.1	254.10	2397	2.350	-.028	.94691	-.02654	-.03252	-.00598
224.1	256.50	1953	2.350	-.102	.93704	-.09668	-.11035	-.01367
226.1	258.45	2070	2.350	.029	.93624	.02734	.02791	.00057
228.1	260.52	2041	2.350	-.007	.93620	-.00661	.01091	.01753
230.1	262.56	1967	2.350	-.019	.93587	-.01743	-.03014	-.01271
232.1	264.53	1904	2.350	-.016	.93562	-.01525	-.01092	.00434
234.1	266.43	2003	2.350	.026	.93501	.02388	.01514	-.00873
236.1	268.43	1973	2.350	-.008	.93496	-.00705	-.00673	.00033
238.1	270.41	2002	2.350	.007	.93491	.00688	.00731	.00044
240.1	272.41	2046	2.350	.011	.93480	.01011	.01009	-.00001
242.1	274.46	2093	2.350	.011	.93468	.01045	.02189	.01144

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
244.1	276.55			.006	.93465	.00519	-.00184	-.00703
		2116	2.350					
246.1	278.66			-.007	.93461	-.00639	.00708	.01347
		2087	2.350					
248.1	280.75			-.023	.93411	-.02166	-.05058	-.02892
		1993	2.350					
250.1	282.74			-.007	.93406	-.00670	.00892	.01562
		1964	2.350					
252.1	284.71			.001	.93406	.00102	-.00318	-.00419
		1968	2.350					
254.1	286.68			.011	.93395	.00998	.02298	.01300
		2011	2.350					
256.1	288.69			-.003	.93394	-.00276	-.00834	-.00558
		1999	2.350					
258.1	290.69			-.006	.93391	-.00565	-.00633	-.00068
		1975	2.350					
260.1	292.66			-.022	.93347	-.02033	-.03945	-.01912
		1891	2.350					
262.1	294.55			.045	.93154	.04246	.06221	.01975
		2071	2.350					
264.1	296.62			-.011	.93143	-.00979	.00265	.01245
		2028	2.350					
266.1	298.65			-.011	.93133	-.00982	-.03422	-.02440
		1986	2.350					
268.1	300.64			-.004	.93131	-.00396	.00006	.00401
		1969	2.350					
270.1	302.61			.005	.93129	.00503	.01071	.00568
		1990	2.350					
272.1	304.60			-.009	.93122	-.00814	-.00519	.00295
		1956	2.350					
274.1	306.55			.008	.93115	.00755	.00220	-.00535
		1988	2.350					
276.1	308.54			.014	.93097	.01299	.01627	.00327
		2044	2.350					
278.1	310.58			-.003	.93096	-.00302	-.01425	-.01123
		2031	2.350					
280.1	312.61			-.012	.93082	-.01153	-.01106	.00047
		1981	2.350					
282.1	314.60			.011	.93071	.01012	.02471	.01460
		2025	2.350					
284.1	316.62			.005	.93068	.00511	-.00303	-.00813
		2047	2.350					
286.1	318.67			.007	.93063	.00680	.00927	.00247
		2077	2.350					
288.1	320.74			.006	.93060	.00520	-.00733	-.01253
		2101	2.350					
290.1	322.85			0	.93060	.00034	.01570	.01535
		2102	2.350					
292.1	324.95			.007	.93056	.00639	.00027	-.00611

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  TWO WAY      DEPTH     INTERVAL  INTERVAL    REFLECT.   TWO WAY   SYNTHETIC   PRIMARY    MULTIPLES
  TRAVEL     FROM SRD    VELOCITY   DENSITY     COEFF.     ATTEN.    SEISMO.       +         ONLY
   TIME      (OR TOP)                                      COEFF.    PRIMARY   MULTIPLES
    MS          M          M/S       G/C3
                           2131      2.350
   294.1      327.08                              .026     .92995     .02380     .03385     .01006
                           2243      2.350
   296.1      329.32                             -.012     .92981    -.01130    -.02496    -.01367
                           2189      2.350
   298.1      331.51                             -.031     .92892    -.02877    -.01808     .01070
                           2058      2.350
   300.1      333.57                             -.018     .92861    -.01696    -.02657    -.00961
                           1984      2.350
   302.1      335.55                             -.015     .92840    -.01415    -.02040    -.00625
                           1924      2.350
   304.1      337.48                              .032     .92748     .02927     .04655     .01729
                           2050      2.350
   306.1      339.53                              .010     .92739     .00900     .02389     .01489
                           2090      2.350
   308.1      341.62                              .002     .92739     .00146    -.00568    -.00714
                           2096      2.350
   310.1      343.71                             -.007     .92734    -.00629    -.01958    -.01329
                           2068      2.350
   312.1      345.78                             -.003     .92733    -.00280     .00415     .00694
                           2056      2.350
   314.1      347.84                             -.009     .92725    -.00880    -.02099    -.01219
                           2017      2.350
   316.1      349.85                             -.019     .92690    -.01793    -.01843    -.00050
                           1941      2.350
   318.1      351.79                              .012     .92678     .01092     .03530     .02438
                           1987      2.350
   320.1      353.78                              .015     .92657     .01389     .00530    -.00858
                           2047      2.350
   322.1      355.83                             -.001     .92657    -.00097    -.01893    -.01797
                           2043      2.350
   324.1      357.87                              .008     .92651     .00722     .00106    -.00616
                           2075      2.350
   326.1      359.95                              .013     .92636     .01184     .02994     .01810
                           2129      2.350
   328.1      362.08                              .005     .92633     .00499     .00360    -.00139
                           2152      2.350
   330.1      364.23                              .011     .92621     .01047     .01956     .00909
                           2201      2.350
   332.1      366.43                             -.002     .92621    -.00162    -.01390    -.01227
                           2193      2.350
   334.1      368.62                                0      .92621    -.00014     .00984     .00999
                           2193      2.350
   336.1      370.81                              .009     .92614     .00794     .01187     .00393
                           2231      2.350
   338.1      373.04                             -.004     .92613    -.00390     .00135     .00525
                           2212      2.350
   340.1      375.26                             -.005     .92610    -.00473    -.00914    -.00441
                           2189      2.350
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TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
342.1	377.45	2188	2.350	0	.92610	-.00037	-.00265	-.00229
344.1	379.63	2204	2.350	.004	.92609	.00334	-.00823	-.01158
346.1	381.84	2186	2.350	-.004	.92608	-.00362	.00804	.01165
348.1	384.02	2223	2.350	.008	.92601	.00761	.01095	.00334
350.1	386.25	2200	2.350	-.005	.92599	-.00467	-.01379	-.00912
352.1	388.45	2212	2.350	.003	.92598	.00248	-.01989	-.02236
354.1	390.66	2179	2.350	-.007	.92593	-.00692	.02036	.02729
356.1	392.84	2163	2.350	-.004	.92592	-.00352	-.01033	-.00682
358.1	395.00	2114	2.350	-.011	.92580	-.01051	-.01906	-.00855
360.1	397.12	2091	2.350	-.006	.92577	-.00513	.00024	.00537
362.1	399.21	2062	2.350	-.007	.92573	-.00638	-.00111	.00526
364.1	401.27	2051	2.350	-.003	.92572	-.00256	-.01770	-.01514
366.1	403.32	2128	2.350	.018	.92540	.01709	.01049	-.00660
368.1	405.45	2141	2.350	.003	.92540	.00271	.01298	.01027
370.1	407.59	2139	2.350	0	.92540	-.00032	.00102	.00134
372.1	409.73	2264	2.350	.028	.92466	.02617	.03842	.01226
374.1	411.99	2002	2.350	-.061	.92118	-.05672	-.06006	-.00335
376.1	413.99	2085	2.350	.020	.92080	.01867	.00654	-.01213
378.1	416.08	1884	2.350	-.051	.91844	-.04655	-.04029	.00627
380.1	417.96	2039	2.350	.039	.91702	.03618	.03650	.00032
382.1	420.00	2168	2.350	.031	.91615	.02827	.03751	.00924
384.1	422.17	2223	2.350	.012	.91601	.01135	-.00209	-.01344
386.1	424.39	2090	2.350	-.031	.91514	-.02813	-.03370	-.00557
388.1	426.48	1876	2.350	-.054	.91246	-.04952	-.05928	-.00975
390.1	428.36			.012	.91234	.01073	.03895	.02821

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  TWO WAY      DEPTH     INTERVAL  INTERVAL   REFLECT.   TWO WAY   SYNTHETIC   PRIMARY    MULTIPLES
  TRAVEL     FROM SRD    VELOCITY  DENSITY     COEFF.     ATTEN.    SEISMO.       +          ONLY
   TIME      (OR TOP)                                     COEFF.    PRIMARY   MULTIPLES
    MS          M          M/S       G/C3

                           1920      2.350
   392.1     430.28                             .011     .91223     .00975     .01158     .00183
                           1962      2.350
   394.1     432.24                             .019     .91191     .01726     .00716    -.01010
                           2038      2.350
   396.1     434.28                             .032     .91099     .02884     .03525     .00641
                           2171      2.350
   398.1     436.45                            -.004     .91098    -.00374    -.01740    -.01367
                           2153      2.350
   400.1     438.60                             .012     .91085     .01066     .00089    -.00977
                           2204      2.350
   402.1     440.81                             .005     .91083     .00496     .01547     .01051
                           2228      2.350
   404.1     443.03                                0     .91083    -.00030     .01234     .01264
                           2226      2.350
   406.1     445.26                             .001     .91083     .00048    -.00066    -.00114
                           2229      2.350
   408.1     447.49                            -.002     .91082    -.00207    -.01162    -.00955
                           2219      2.350
   410.1     449.71                            -.003     .91082    -.00243     .00698     .00941
                           2207      2.350
   412.1     451.91                            -.015     .91062    -.01337    -.01878    -.00541
                           2143      2.350
   414.1     454.06                             .025     .91007     .02242     .02344     .00103
                           2251      2.350
   416.1     456.31                            -.012     .90994    -.01066    -.01678    -.00612
                           2199      2.350
   418.1     458.51                             .010     .90985     .00916     .01214     .00297
                           2244      2.350
   420.1     460.75                            -.011     .90975    -.00960    -.00709     .00251
                           2197      2.350
   422.1     462.95                            -.007     .90971    -.00607     .00280     .00887
                           2168      2.350
   424.1     465.12                            -.002     .90970    -.00222    -.00248    -.00026
                           2157      2.350
   426.1     467.27                             .004     .90969     .00339     .00722     .00383
                           2173      2.350
   428.1     469.45                             .006     .90966     .00538    -.00910    -.01449
                           2199      2.350
   430.1     471.65                             .025     .90910     .02257     .00768    -.01489
                           2311      2.350
   432.1     473.96                             .013     .90895     .01166     .02622     .01457
                           2371      2.350
   434.1     476.33                            -.020     .90860    -.01789    -.01086     .00703
                           2280      2.350
   436.1     478.61                            -.021     .90819    -.01930    -.01656     .00274
                           2185      2.350
   438.1     480.79                                0     .90819     .00020    -.00257    -.00277
                           2186      2.350
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TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
440.1	482.98	2286	2.350	.022	.90773	.02034	.01582	-.00452
442.1	485.27	2239	2.350	-.010	.90763	-.00946	-.02668	-.01722
444.1	487.50	2273	2.350	.008	.90758	.00690	.02140	.01449
446.1	489.78	2259	2.350	-.003	.90757	-.00279	.01146	.01425
448.1	492.04	2205	2.350	-.012	.90744	-.01102	-.01228	-.00126
450.1	494.24	2176	2.350	-.007	.90740	-.00608	-.01883	-.01275
452.1	496.42	2223	2.350	.011	.90729	.00981	.00577	-.00405
454.1	498.64	2219	2.350	-.001	.90729	-.00089	.00614	.00704
456.1	500.86	2288	2.350	.015	.90708	.01385	.02079	.00694
458.1	503.15	2241	2.350	-.010	.90698	-.00936	-.00286	.00650
460.1	505.39	2274	2.350	.007	.90693	.00655	-.00121	-.00776
462.1	507.66	2258	2.350	-.004	.90692	-.00318	-.00393	-.00076
464.1	509.92	2277	2.350	.004	.90691	.00391	.00785	.00394
466.1	512.20	2317	2.350	.009	.90684	.00784	.00610	-.00174
468.1	514.51	2372	2.350	.012	.90672	.01058	.02791	.01733
470.1	516.89	2372	2.350	0	.90672	.00011	-.00829	-.00841
472.1	519.26	2358	2.350	-.003	.90671	-.00266	-.00469	-.00203
474.1	521.62	2355	2.350	-.001	.90671	-.00056	-.00948	-.00892
476.1	523.97	2394	2.350	.008	.90665	.00738	.00924	.00187
478.1	526.37	2395	2.350	0	.90665	.00016	-.01470	-.01486
480.1	528.76	2344	2.350	-.011	.90654	-.00975	-.00003	.00972
482.1	531.11	2270	2.350	-.016	.90631	-.01465	.00848	.02312
484.1	533.38	2282	2.350	.003	.90630	.00245	-.01224	-.01469
486.1	535.66	2248	2.350	-.008	.90625	-.00686	-.01466	-.00780
488.1	537.90			.007	.90621	.00617	-.00091	-.00708

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COMPANY   : BEACH PETROLEUM N.L.              WELL      : NAJABA - 1A                             PAGE   12

 TWO WAY      DEPTH     INTERVAL   INTERVAL    REFLECT.    TWO WAY    SYNTHETIC    PRIMARY    MULTIPLES
  TRAVEL    FROM SRD    VELOCITY    DENSITY     COEFF.      ATTEN.     SEISMO.        +          ONLY
   TIME     (OR TOP)                                        COEFF.     PRIMARY    MULTIPLES
    MS          M          M/S        G/C3

                           2278       2.350
   490.1      540.18                              .038      .90491      .03423      .03733      .00310
                           2457       2.350
   492.1      542.64                                 0      .90491      .00005     -.00591     -.00597
                           2457       2.350
   494.1      545.10                             -.070      .90053     -.06295     -.05127      .01168
                           2138       2.350
   496.1      547.24                             -.005      .90051     -.00452     -.00191      .00261
                           2116       2.350
   498.1      549.35                              .002      .90050      .00215      .00980      .00764
                           2127       2.350
   500.1      551.48                              .046      .89862      .04116      .04584      .00468
                           2330       2.350
   502.1      553.81                              .017      .89838      .01487     -.00601     -.02088
                           2409       2.350
   504.1      556.22                             -.024      .89784     -.02198     -.02754     -.00556
                           2294       2.350
   506.1      558.51                             -.061      .89449     -.05480     -.06323     -.00843
                           2030       2.350
   508.1      560.54                              .044      .89279      .03910      .05475      .01565
                           2215       2.350
   510.1      562.76                              .023      .89232      .02045      .03693      .01648
                           2319       2.350
   512.1      565.08                              .002      .89231      .00195     -.00929     -.01124
                           2329       2.350
   514.1      567.40                             -.006      .89228     -.00494     -.01692     -.01198
                           2304       2.350
   516.1      569.71                              .003      .89228      .00297     -.00971     -.01268
                           2319       2.350
   518.1      572.03                             -.009      .89221     -.00782      .00931      .01713
                           2279       2.350
   520.1      574.31                              .002      .89220      .00138      .00773      .00635
                           2286       2.350
   522.1      576.59                              .001      .89220      .00101     -.00157     -.00258
                           2291       2.350
   524.1      578.88                             -.006      .89218     -.00494     -.00085      .00409
                           2266       2.350
   526.1      581.15                              .022      .89173      .02006      .00477     -.01529
                           2370       2.350
   528.1      583.52                             -.014      .89156     -.01215     -.00535      .00680
                           2306       2.350
   530.1      585.82                              .017      .89129      .01560      .02360      .00800
                           2388       2.350
   532.1      588.21                             -.008      .89123     -.00726      .01417      .02143
                           2350       2.350
   534.1      590.56                             -.026      .89065     -.02278     -.03898     -.01620
                           2233       2.350
   536.1      592.80                              .012      .89051      .01079      .00826     -.00253
                           2287       2.350
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TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
538.1	595.08	2378	2.350	.020	.89018	.01738	.00911	-.00828
540.1	597.46	2399	2.350	.004	.89016	.00385	.00086	-.00299
542.1	599.86	2496	2.350	.020	.88981	.01761	.02276	.00515
544.1	602.36	2450	2.350	-.009	.88973	-.00830	.00867	.01697
546.1	604.81	2405	2.350	-.009	.88966	-.00829	-.01769	-.00940
548.1	607.21	2410	2.350	.001	.88965	.00092	-.01438	-.01530
550.1	609.62	2387	2.350	-.005	.88964	-.00416	-.00616	-.00200
552.1	612.01	2252	2.350	-.029	.88888	-.02588	-.00845	.01743
554.1	614.26	2301	2.350	.011	.88878	.00959	.01910	.00951
556.1	616.56	2356	2.350	.012	.88866	.01037	.00859	-.00178
558.1	618.92	2387	2.350	.007	.88862	.00585	-.01737	-.02322
560.1	621.30	2361	2.350	-.005	.88859	-.00479	.00513	.00993
562.1	623.66	2510	2.350	.030	.88777	.02707	.02317	-.00390
564.1	626.17	2404	2.350	-.021	.88736	-.01902	-.00933	.00970
566.1	628.58	2414	2.350	.002	.88736	.00176	.00399	.00224
568.1	630.99	2419	2.350	.001	.88736	.00092	.00694	.00602
570.1	633.41	2446	2.350	.006	.88733	.00502	-.01578	-.02080
572.1	635.86	2447	2.350	0	.88733	.00001	.01176	.01175
574.1	638.30	2424	2.350	-.005	.88731	-.00406	.00490	.00896
576.1	640.73	2376	2.350	-.010	.88722	-.00896	-.01722	-.00826
578.1	643.10	2363	2.350	-.003	.88721	-.00232	-.01092	-.00860
580.1	645.47	2430	2.350	.014	.88704	.01225	.00279	-.00946
582.1	647.90	2434	2.350	.001	.88704	.00085	.01553	.01468
584.1	650.33	2378	2.350	-.012	.88692	-.01036	-.00565	.00471
586.1	652.71			-.031	.88605	-.02785	-.02043	.00743

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
		2233	2.350					
588.1	654.94			.047	.88413	.04124	.03831	-.00293
		2451	2.350					
590.1	657.39			-.016	.88389	-.01443	-.01947	-.00504
		2372	2.350					
592.1	659.77			.023	.88341	.02062	.01730	-.00332
		2486	2.350					
594.1	662.25			.002	.88341	.00162	-.00717	-.00879
		2495	2.350					
596.1	664.75			-.016	.88318	-.01433	-.00166	.01266
		2415	2.350					
598.1	667.16			.005	.88316	.00438	.00109	-.00328
		2439	2.350					
600.1	669.60			.012	.88302	.01098	.03161	.02063
		2501	2.350					
602.1	672.10			.011	.88291	.00975	.00116	-.00859
		2557	2.350					
604.1	674.66			-.007	.88287	-.00593	-.00913	-.00320
		2523	2.350					
606.1	677.18			.012	.88274	.01084	-.00870	-.01954
		2585	2.350					
608.1	679.77			-.009	.88266	-.00816	.01686	.02502
		2538	2.350					
610.1	682.31			.006	.88264	.00492	.00614	.00122
		2566	2.350					
612.1	684.87			-.010	.88254	-.00894	-.02138	-.01243
		2515	2.350					
614.1	687.39			.008	.88249	.00693	.00305	-.00388
		2555	2.350					
616.1	689.94			.015	.88228	.01363	.02307	.00944
		2635	2.350					
618.1	692.58			-.017	.88201	-.01542	-.00101	.01441
		2544	2.350					
620.1	695.12			.021	.88161	.01868	-.00383	-.02252
		2654	2.350					
622.1	697.77			.001	.88161	.00050	-.00128	-.00178
		2657	2.350					
624.1	700.43			-.007	.88157	-.00614	-.01361	-.00747
		2621	2.350					
626.1	703.05			-.007	.88153	-.00588	.00702	.01290
		2586	2.350					
628.1	705.64			-.009	.88146	-.00819	.00383	.01202
		2538	2.350					
630.1	708.18			-.004	.88144	-.00372	-.00741	-.00368
		2517	2.350					
632.1	710.69			-.006	.88141	-.00546	-.02155	-.01609
		2486	2.350					
634.1	713.18			.003	.88140	.00252	-.00669	-.00921
		2500	2.350					

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
636.1	715.68			-.001	.88140	-.00127	.01455	.01582
638.1	718.17	2493	2.350	.007	.88135	.00622	-.00395	-.01018
640.1	720.70	2529	2.350	.004	.88134	.00381	.00995	.00615
642.1	723.25	2550	2.350	0	.88134	.00016	-.00493	-.00509
644.1	725.80	2551	2.350	.009	.88127	.00755	.02250	.01496
646.1	728.40	2595	2.350	-.013	.88113	-.01130	-.01289	-.00159
648.1	730.93	2530	2.350	-.002	.88112	-.00213	-.01117	-.00904
650.1	733.45	2518	2.350	.004	.88111	.00327	-.00084	-.00412
652.1	735.98	2536	2.350	.007	.88107	.00604	.00833	.00229
654.1	738.55	2571	2.350	-.020	.88073	-.01729	-.01288	.00441
656.1	741.03	2472	2.350	.030	.87996	.02601	.01431	-.01170
658.1	743.65	2623	2.350	-.009	.87989	-.00818	.00063	.00881
660.1	746.22	2575	2.350	-.002	.87988	-.00149	.01230	.01379
662.1	748.79	2566	2.350	.009	.87981	.00780	.00847	.00067
664.1	751.40	2612	2.350	-.008	.87976	-.00661	-.00612	.00049
666.1	753.97	2573	2.350	-.006	.87973	-.00529	-.01883	-.01353
668.1	756.52	2542	2.350	.005	.87971	.00429	.00176	-.00253
670.1	759.08	2567	2.350	.020	.87936	.01749	.01701	-.00048
672.1	761.75	2671	2.350	-.016	.87915	-.01363	.00746	.02109
674.1	764.34	2589	2.350	-.006	.87912	-.00559	-.00490	.00070
676.1	766.90	2557	2.350	.005	.87909	.00479	-.01317	-.01796
678.1	769.48	2585	2.350	0	.87909	.00009	-.00449	-.00458
680.1	772.07	2585	2.350	.009	.87902	.00799	.01518	.00719
682.1	774.70	2633	2.350	.011	.87891	.00961	.00634	-.00327
684.1	777.39	2691	2.350	0	.87891	-.00022	.00641	.00662

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COMPANY  : BEACH PETROLEUM N.L.              WELL      : NAJABA - 1A                     PAGE   16

  TWO WAY      DEPTH     INTERVAL  INTERVAL    REFLECT.   TWO WAY   SYNTHETIC    PRIMARY    MULTIPLES
  TRAVEL     FROM SRD    VELOCITY  DENSITY      COEFF.    ATTEN.     SEISMO.        +         ONLY
   TIME      (OR TOP)                                     COEFF.     PRIMARY    MULTIPLES
    MS           M          M/S      G/C3
                           2689     2.350
   686.1      780.08                              .002     .87891     .00139    -.00432    -.00571
                           2698     2.350
   688.1      782.78                              .003     .87890     .00277     .01292     .01014
                           2715     2.350
   690.1      785.50                              .002     .87890     .00184    -.00499    -.00683
                           2726     2.350
   692.1      788.22                             -.005     .87888    -.00407     .01262     .01669
                           2701     2.350
   694.1      790.92                              .005     .87886     .00417    -.00370    -.00787
                           2727     2.350
   696.1      793.65                              .001     .87886     .00065    -.00007    -.00072
                           2731     2.350
   698.1      796.38                             -.004     .87885    -.00331    -.01840    -.01509
                           2711     2.350
   700.1      799.09                             -.002     .87884    -.00141     .00745     .00887
                           2702     2.350
   702.1      801.79                             -.018     .87856    -.01570    -.01605    -.00035
                           2607     2.350
   704.1      804.40                              .002     .87856     .00167    -.00330    -.00498
                           2617     2.350
   706.1      807.02                              .009     .87849     .00810     .01275     .00465
                           2666     2.350
   708.1      809.68                              .005     .87846     .00446    -.00117    -.00563
                           2693     2.350
   710.1      812.38                             -.005     .87844    -.00450    -.00415     .00035
                           2665     2.350
   712.1      815.04                              .018     .87817     .01542     .01538    -.00004
                           2761     2.350
   714.1      817.80                              .023     .87769     .02053     .02617     .00564
                           2893     2.350
   716.1      820.70                             -.023     .87724    -.01987    -.01504     .00483
                           2765     2.350
   718.1      823.46                             -.040     .87581    -.03538    -.03997    -.00459
                           2550     2.350
   720.1      826.01                             -.001     .87581    -.00116    -.00288    -.00172
                           2544     2.350
   722.1      828.55                             -.010     .87573    -.00865    -.00192     .00673
                           2494     2.350
   724.1      831.05                              .001     .87572     .00068    -.00453    -.00520
                           2498     2.350
   726.1      833.55                              .023     .87526     .02011     .01939    -.00072
                           2615     2.350
   728.1      836.16                              .011     .87516     .00947     .00752    -.00195
                           2672     2.350
   730.1      838.83                             -.008     .87511    -.00659    -.00567     .00092
                           2632     2.350
   732.1      841.47                              .003     .87510     .00260     .00187    -.00074
                           2648     2.350
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TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
734.1	844.11			.010	.87502	.00875	.02258	.01383
		2702	2.350					
736.1	846.82			.009	.87494	.00789	.01627	.00838
		2751	2.350					
738.1	849.57			-.002	.87494	-.00178	-.01796	-.01618
		2740	2.350					
740.1	852.31			.002	.87494	.00161	-.00747	-.00908
		2750	2.350					
742.1	855.06			.008	.87489	.00674	.01467	.00793
		2792	2.350					
744.1	857.85			0	.87489	-.00026	.01819	.01845
		2791	2.350					
746.1	860.64			-.003	.87488	-.00303	-.01113	-.00810
		2771	2.350					
748.1	863.41			-.006	.87484	-.00565	-.00582	-.00018
		2736	2.350					
750.1	866.15			.002	.87483	.00184	-.00617	-.00801
		2747	2.350					
752.1	868.89			0	.87483	.00004	-.00160	-.00163
		2748	2.350					
754.1	871.64			.009	.87477	.00744	.00193	-.00551
		2795	2.350					
756.1	874.44			-.002	.87477	-.00170	.01262	.01433
		2784	2.350					
758.1	877.22			0	.87477	.00007	.00054	.00047
		2784	2.350					
760.1	880.00			.001	.87477	.00129	-.00666	-.00795
		2793	2.350					
762.1	882.80			.002	.87476	.00136	.00042	-.00094
		2801	2.350					
764.1	885.60			-.001	.87476	-.00059	-.00434	-.00375
		2798	2.350					
766.1	888.40			.004	.87475	.00375	-.00422	-.00797
		2822	2.350					
768.1	891.22			-.008	.87468	-.00742	.00129	.00871
		2774	2.350					
770.1	893.99			.003	.87468	.00236	.00270	.00034
		2789	2.350					
772.1	896.78			-.002	.87468	-.00150	-.00269	-.00119
		2780	2.350					
774.1	899.56			.001	.87467	.00095	-.00352	-.00447
		2786	2.350					
776.1	902.35			-.006	.87464	-.00559	-.01081	-.00522
		2750	2.350					
778.1	905.10			.004	.87463	.00316	.01543	.01227
		2770	2.350					
780.1	907.87			-.010	.87454	-.00861	.00270	.01132
		2716	2.350					
782.1	910.58			.001	.87454	.00080	-.00244	-.00324

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
		2721	2.350					
784.1	913.30			.012	.87442	.01042	-.00126	-.01168
		2787	2.350					
786.1	916.09			-.015	.87423	-.01269	-.02123	-.00854
		2707	2.350					
788.1	918.80			-.005	.87421	-.00420	-.00153	.00266
		2681	2.350					
790.1	921.48			.011	.87411	.00973	.01796	.00823
		2742	2.350					
792.1	924.22			-.008	.87405	-.00706	.00600	.01306
		2698	2.350					
794.1	926.92			.034	.87302	.02997	.02012	-.00985
		2889	2.350					
796.1	929.81			.005	.87300	.00447	-.00460	-.00907
		2919	2.350					
798.1	932.73			-.017	.87275	-.01479	-.00969	.00510
		2822	2.350					
800.1	935.55			.017	.87249	.01492	.02132	.00639
		2920	2.350					
802.1	938.47			-.005	.87247	-.00434	-.00906	-.00472
		2891	2.350					
804.1	941.36			-.020	.87211	-.01767	-.00901	.00866
		2776	2.350					
806.1	944.14			.014	.87194	.01210	.01205	-.00006
		2854	2.350					
808.1	946.99			.024	.87143	.02110	.01781	-.00329
		2996	2.350					
810.1	949.99			-.025	.87091	-.02146	-.02662	-.00516
		2852	2.350					
812.1	952.84			.014	.87075	.01177	.02072	.00895
		2930	2.350					
814.1	955.77			.015	.87055	.01318	.01806	.00487
		3020	2.350					
816.1	958.79			.014	.87037	.01225	.00288	-.00937
		3106	2.350					
818.1	961.89			-.022	.86997	-.01881	-.02219	-.00338
		2975	2.350					
820.1	964.87			-.035	.86893	-.03006	-.01789	.01217
		2776	2.350					
822.1	967.64			.016	.86870	.01403	.00753	-.00650
		2867	2.350					
824.1	970.51			.009	.86863	.00788	.01319	.00531
		2920	2.350					
826.1	973.43			.016	.86841	.01389	.00590	-.00799
		3015	2.350					
828.1	976.45			-.056	.86573	-.04822	-.04684	.00139
		2697	2.350					
830.1	979.14			-.031	.86492	-.02655	-.03542	-.00887
		2537	2.[illegible]0					

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

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  TWO WAY      DEPTH    INTERVAL  INTERVAL   REFLECT.   TWO WAY   SYNTHETIC    PRIMARY    MULTIPLES
  TRAVEL     FROM SRD   VELOCITY  DENSITY     COEFF.    ATTEN.     SEISMO.        +         ONLY
   TIME      (OR TOP)                                   COEFF.     PRIMARY    MULTIPLES
    MS           M         M/S      G/C3

   832.1      981.68                             .027    .86430     .02303      .02862      .00559
                          2676     2.350
   834.1      984.36                             .027    .86368     .02317      .02358      .00041
                          2823     2.350
   836.1      987.18                             .018    .86339     .01588      .00870     -.00718
                          2929     2.350
   838.1      990.11                            -.014    .86322    -.01227     -.01743     -.00516
                          2847     2.350
   840.1      992.95                                0    .86322     .00033      .00543      .00510
                          2849     2.350
   842.1      995.80                                0    .86322    -.00018      .01606      .01624
                          2848     2.350
   844.1      998.65                             .003    .86321     .00237     -.00237     -.00474
                          2863     2.350
   846.1     1001.51                             .010    .86313     .00832      .00176     -.00656
                          2919     2.350
   848.1     1004.43                            -.018    .86286    -.01524     -.01995     -.00471
                          2818     2.350
   850.1     1007.25                             .013    .86272     .01100      .00623     -.00477
                          2890     2.350
   852.1     1010.14                             .003    .86271     .00281      .00372      .00092
                          2909     2.350
   854.1     1013.05                             .003    .86271     .00232      .00784      .00552
                          2925     2.350
   856.1     1015.98                            -.007    .86266    -.00603     -.00104      .00499
                          2884     2.350
   858.1     1018.86                             .019    .86235     .01645      .01404     -.00241
                          2997     2.350
   860.1     1021.86                             .012    .86223     .01009      .01498      .00488
                          3068     2.350
   862.1     1024.92                            -.011    .86212    -.00990      .00096      .01086
                          2998     2.350
   864.1     1027.92                             .001    .86212     .00081     -.00347     -.00428
                          3004     2.350
   866.1     1030.93                            -.039    .86080    -.03364     -.02948      .00417
                          2778     2.350
   868.1     1033.70                            -.003    .86080    -.00221     -.00781     -.00560
                          2764     2.350
   370.1     1036.47                                0    .86080    -.00010      .00883      .00893
                          2763     2.350
   872.1     1039.23                            -.003    .86079    -.00252     -.02768     -.02516
                          2747     2.350
   874.1     1041.98                             .006    .86076     .00474     -.00136     -.00610
                          2777     2.350
   876.1     1044.75                            -.006    .86073    -.00558      .00387      .00945
                          2742     2.350
   878.1     1047.50                            -.016    .86051    -.01372     -.00858      .00514
                          2655     2.350
   880.1     1050.15                            -.008    .86045    -.00723     -.00798     -.00075
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COMPANY   : BEACH PETROLEUM N.L.              WELL      : NAJABA - 1A                         PAGE   20

 TWO WAY      DEPTH    INTERVAL   INTERVAL    REFLECT.   TWO WAY   SYNTHETIC    PRIMARY    MULTIPLES
  TRAVEL    FROM SRD   VELOCITY   DENSITY      COEFF.    ATTEN.     SEISMO.        +         ONLY
   TIME     (OR TOP)                                     COEFF.     PRIMARY    MULTIPLES
    MS          M         M/S       G/C3
                          2611      2.350
   882.1     1052.76                              .010    .86036     .00850     .00455     -.00395
                          2663      2.350
   884.1     1055.43                             -.002    .86036    -.00178     .00194      .00372
                          2652      2.350
   886.1     1058.08                              .010    .86027     .00881     .00784     -.00096
                          2707      2.350
   888.1     1060.79                              .013    .86012     .01144     .01426      .00282
                          2780      2.350
   890.1     1063.57                              .011    .86001     .00954     .00698     -.00255
                          2843      2.350
   892.1     1066.41                             -.034    .85903    -.02907    -.03458     -.00551
                          2657      2.350
   894.1     1069.07                              .001    .85903     .00107     .00149      .00042
                          2663      2.350
   896.1     1071.73                              .013    .85889     .01084     .01024     -.00059
                          2731      2.350
   898.1     1074.46                             -.006    .85886    -.00520     .00697      .01217
                          2698      2.350
   900.1     1077.16                             -.010    .85877    -.00867    -.00228      .00639
                          2644      2.350
   902.1     1079.80                              .001    .85877     .00054    -.02385     -.02439
                          2648      2.350
   904.1     1082.45                              .017    .85853     .01457     .00780     -.00677
                          2739      2.350
   906.1     1085.19                              .005    .85851     .00404     .01411      .01007
                          2765      2.350
   908.1     1087.95                             -.015    .85831    -.01293     .00153      .01446
                          2683      2.350
   910.1     1090.64                              .004    .85830     .00335    -.00202     -.00537
                          2704      2.350
   912.1     1093.34                              .011    .85820     .00931     .01702      .00771
                          2763      2.350
   914.1     1096.10                              .009    .85813     .00783    -.00343     -.01126
                          2814      2.350
   916.1     1098.92                              .005    .85811     .00428    -.00218     -.00646
                          2842      2.350
   918.1     1101.76                             -.001    .85810    -.00069     .01204      .01273
                          2838      2.350
   920.1     1104.60                              .014    .85793     .01225     .00025     -.01200
                          2920      2.350
   922.1     1107.52                              .011    .85783     .00938     .00939           0
                          2985      2.350
   924.1     1110.50                              .004    .85781     .00331     .00806      .00474
                          3008      2.350
   926.1     1113.51                                 0    .85781     .00008     .00541      .00533
                          3008      2.350
   928.1     1116.52                             -.007    .85777    -.00598    -.00732     -.00134
                          2967      2.[illegible]0
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COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
930.1	1119.49			.010	.85769	.00823	.00921	.00099
		3024	2.350					
932.1	1122.51			.002	.85769	.00134	.00069	-.00065
		3034	2.350					
934.1	1125.54			.010	.85760	.00865	.01519	.00654
		3095	2.350					
936.1	1128.64			-.008	.85755	-.00706	-.00838	-.00132
		3045	2.350					
938.1	1131.68			0	.85755	.00031	-.00727	-.00758
		3047	2.350					
940.1	1134.73			-.002	.85754	-.00198	.01024	.01222
		3033	2.350					
942.1	1137.76			-.005	.85752	-.00400	.00606	.01006
		3005	2.350					
944.1	1140.77			-.003	.85752	-.00230	-.02361	-.02131
		2989	2.350					
946.1	1143.76			-.001	.85752	-.00113	-.00087	.00027
		2981	2.350					
948.1	1146.74			-.004	.85750	-.00354	-.00168	.00186
		2956	2.350					
950.1	1149.70			-.010	.85742	-.00823	.00268	.01091
		2900	2.350					
952.1	1152.60			.003	.85741	.00242	.00552	.00310
		2917	2.350					
954.1	1155.51			-.006	.85738	-.00527	-.00428	.00099
		2881	2.350					
956.1	1158.39			.005	.85736	.00440	-.02086	-.02526
		2911	2.350					
958.1	1161.30			.003	.85735	.00241	.00469	.00228
		2927	2.350					
960.1	1164.23			-.006	.85732	-.00534	.01114	.01648
		2891	2.350					
962.1	1167.12			.005	.85730	.00436	-.00101	-.00536
		2920	2.350					
964.1	1170.04			.002	.85730	.00150	.00242	.00092
		2931	2.350					
966.1	1172.97			-.001	.85729	-.00093	-.01301	-.01208
		2924	2.350					
968.1	1175.90			.003	.85728	.00292	.00887	.00595
		2944	2.350					
970.1	1178.84			-.007	.85725	-.00572	-.00433	.00139
		2905	2.350					
972.1	1181.75			-.001	.85725	-.00067	.00315	.00381
		2901	2.350					
974.1	1184.65			.005	.85722	.00465	.00234	-.00231
		2932	2.350					
976.1	1187.58			-.004	.85721	-.00349	.00044	.00393
		2909	2.350					
978.1	1190.49			-.003	.85720	-.00245	.00255	.00500

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
		2892	2.350					
980.1	1193.38			-.001	.85720	-.00083	-.01190	-.01107
		2886	2.350					
982.1	1196.27			-.001	.85720	-.00051	-.00311	-.00260
		2883	2.350					
984.1	1199.15			.009	.85713	.00739	.03211	-.00528
		2933	2.350					
986.1	1202.08			.002	.85713	.00149	.01668	.01519
		2943	2.350					
988.1	1205.03			.011	.85702	.00973	.01239	.00267
		3011	2.350					
990.1	1208.04			.025	.85648	.02145	.02259	.00115
		3165	2.350					
992.1	1211.20			-.020	.85613	-.01752	-.03206	-.01454
		3039	2.350					
994.1	1214.24			.002	.85612	.00189	.00325	.00136
		3052	2.350					
996.1	1217.29			-.013	.85597	-.01140	-.00628	.00512
		2972	2.350					
998.1	1220.27			0	.85597	-.00034	.00739	.00773
		2970	2.350					
1000.1	1223.24			-.002	.85597	-.00208	-.02222	-.02014
		2955	2.350					
1002.1	1226.19			.015	.85578	.01274	.01386	.00112
		3044	2.350					
1004.1	1229.23			-.002	.85577	-.00168	.00334	.00502
		3033	2.350					
1006.1	1232.27			.011	.85566	.00983	.00379	-.00604
		3103	2.350					
1008.1	1235.37			-.004	.85564	-.00351	-.00070	.00281
		3078	2.350					
1010.1	1238.45			-.014	.85548	-.01205	-.00779	.00426
		2992	2.350					
1012.1	1241.44			.013	.85533	.01119	.00753	-.00366
		3072	2.350					
1014.1	1244.51			.005	.85531	.00410	.00633	.00223
		3101	2.350					
1016.1	1247.61			-.005	.85529	-.00433	.00133	.00566
		3070	2.350					
1018.1	1250.68			-.003	.85528	-.00231	.00175	.00406
		3053	2.350					
1020.1	1253.74			.007	.85524	.00608	-.00091	-.00700
		3097	2.350					
1022.1	1256.83			.001	.85524	.00096	-.00103	-.00199
		3104	2.350					
1024.1	1259.94			.015	.85504	.01299	.01490	.00191
		3200	2.350					
1026.1	1263.14			-.014	.85487	-.01194	.00156	.01349
		3112	2.[illegible]0					

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
1028.1	1266.25			-.008	.85481	-.00726	-.01864	-.01138
		3059	2.350					
1030.1	1269.31			.003	.85480	.00262	-.00837	-.01099
		3078	2.350					
1032.1	1272.39			-.011	.85469	-.00979	-.00581	.00399
		3008	2.350					
1034.1	1275.39			.010	.85460	.00879	.00173	-.00705
		3071	2.350					
1036.1	1278.47			0	.85460	.00034	.00212	.00179
		3073	2.350					
1038.1	1281.54			-.001	.85460	-.00100	.00749	.00848
		3066	2.350					
1040.1	1284.60			.004	.85459	.00347	.00370	.00023
		3091	2.350					
1042.1	1287.70			.010	.85449	.00893	.00697	-.00195
		3156	2.350					
1044.1	1290.85			-.008	.85444	-.00649	-.00965	-.00316
		3109	2.350					
1046.1	1293.96			.001	.85444	.00058	.00130	.00072
		3113	2.350					
1048.1	1297.07			-.005	.85442	-.00442	-.01004	-.00562
		3081	2.350					
1050.1	1300.15			0	.85442	-.00031	.00701	.00731
		3079	2.350					
1052.1	1303.23			.002	.85442	.00144	.00418	.00275
		3089	2.350					
1054.1	1306.32			-.002	.85441	-.00141	.00410	.00550
		3079	2.350					
1056.1	1309.40			-.015	.85422	-.01296	-.02092	-.00796
		2987	2.350					
1058.1	1312.39			-.003	.85421	-.00285	.00927	.01212
		2967	2.350					
1060.1	1315.35			.001	.85421	.00119	.00421	.00301
		2975	2.350					
1062.1	1318.33			.001	.85421	.00079	-.00234	-.00313
		2981	2.350					
1064.1	1321.31			-.003	.85420	-.00226	-.01213	-.00987
		2965	2.350					
1066.1	1324.28			-.003	.85419	-.00268	.00040	.00308
		2947	2.350					
1068.1	1327.22			.001	.85419	.00066	.00559	.00492
		2951	2.350					
1070.1	1330.17			.001	.85419	.00065	-.00687	-.00752
		2956	2.350					
1072.1	1333.13			-.003	.85418	-.00262	.00067	.00330
		2938	2.350					
1074.1	1336.07			.006	.85416	.00471	.00303	-.00168
		2970	2.350					
1076.1	1339.04			-.006	.85413	-.00503	-.00277	.00226

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
		2935	2.350					
1078.1	1341.97			.004	.85411	.00336	.00573	.00236
		2959	2.350					
1080.1	1344.93			-.012	.85399	-.01034	-.01670	-.00636
		2888	2.350					
1082.1	1347.82			.039	.85269	.03335	.03582	.00248
		3122	2.350					
1084.1	1350.94			-.009	.85262	-.00740	-.02211	-.01471
		3069	2.350					
1086.1	1354.01			.009	.85255	.00765	.01877	.01111
		3124	2.350					
1088.1	1357.13			-.013	.85240	-.01147	-.00701	.00447
		3041	2.350					
1090.1	1360.18			.008	.85235	.00667	.02164	.01497
		3089	2.350					
1092.1	1363.26			.093	.84501	.07909	.06287	-.01622
		3721	2.350					
1094.1	1366.99			.030	.84423	.02570	.03259	.00689
		3955	2.350					
1096.1	1370.94			-.017	.84398	-.01446	-.01991	-.00545
		3821	2.350					
1098.1	1374.76			-.031	.84318	-.02593	-.01847	.00747
		3594	2.350					
1100.1	1378.36			-.023	.84274	-.01929	-.02689	-.00760
		3433	2.350					
1102.1	1381.79			-.016	.84252	-.01377	-.00744	.00632
		3323	2.350					
1104.1	1385.11			.097	.83457	.08181	.09175	.00994
		4037	2.350					
1106.1	1389.15			-.015	.83438	-.01277	-.01615	-.00338
		3916	2.350					
1108.1	1393.06			-.009	.83431	-.00736	-.02289	-.01553
		3847	2.350					
1110.1	1396.91			-.034	.83333	-.02864	-.02977	-.00113
		3592	2.350					
1112.1	1400.50			-.040	.83199	-.03340	-.02735	.00605
		3315	2.350					
1114.1	1403.82			.084	.82607	.07020	.07538	.00518
		3926	2.350					
1116.1	1407.74			-.004	.82606	-.00306	.00824	.01129
		3897	2.350					
1118.1	1411.64			-.017	.82582	-.01406	-.03009	-.01603
		3767	2.350					
1120.1	1415.41			-.006	.82578	-.00518	-.01236	-.00718
		3720	2.350					
1122.1	1419.13			-.016	.82558	-.01288	-.00868	.00420
		3605	2.350					
1124.1	1422.73			-.044	.82401	-.03598	-.01516	.02082
		3304	2.[illegible]0					

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
1126.1	1426.04			.002	.82401	.00129	-.01338	-.01467
		3315	2.350					
1128.1	1429.35			.033	.82310	.02746	.01787	-.00960
		3543	2.350					
1130.1	1432.89			.037	.82199	.03024	.02409	-.00615
		3813	2.350					
1132.1	1436.71			-.032	.82114	-.02641	-.03166	-.00525
		3576	2.350					
1134.1	1440.28			-.021	.82076	-.01750	.01110	.02860
		3427	2.350					
1136.1	1443.71			-.008	.82071	-.00675	-.01099	-.00424
		3371	2.350					
1138.1	1447.08			-.011	.82062	-.00874	.00424	.01298
		3300	2.350					
1140.1	1450.38			.004	.82060	.00304	-.01234	-.01538
		3324	2.350					
1142.1	1453.70			-.010	.82052	-.00812	-.00873	-.00061
		3259	2.350					
1144.1	1456.96			-.014	.82036	-.01147	-.01921	-.00774
		3169	2.350					
1146.1	1460.13			.035	.81938	.02836	.04171	.01335
		3396	2.350					
1148.1	1463.53			.002	.81938	.00162	-.00955	-.01117
		3410	2.350					
1150.1	1466.94			.001	.81938	.00053	.00271	.00218
		3414	2.350					
1152.1	1470.35			-.007	.81934	-.00607	.00218	.00826
		3364	2.350					
1154.1	1473.72			-.002	.81933	-.00164	-.01403	-.01239
		3351	2.350					
1156.1	1477.07			-.020	.81901	-.01624	-.01222	.00401
		3220	2.350					
1158.1	1480.29			.001	.81901	.00071	.00626	.00555
		3226	2.350					
1160.1	1483.51			.004	.81900	.00310	-.00082	-.00393
		3250	2.350					
1162.1	1486.76			.001	.81900	.00069	-.02254	-.02323
		3256	2.350					
1164.1	1490.02			.011	.81889	.00935	.01010	.00075
		3331	2.350					
1166.1	1493.35			-.008	.81884	-.00648	.00721	.01369
		3279	2.350					
1168.1	1496.63			.015	.81867	.01189	.01416	.00227
		3375	2.350					
1170.1	1500.01			-.013	.81853	-.01056	-.01159	-.00103
		3289	2.350					
1172.1	1503.30			-.004	.81852	-.00328	-.01234	-.00906
		3263	2.350					
1174.1	1506.56			-.008	.81847	-.00619	-.01402	-.00783

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  TWO WAY      DEPTH     INTERVAL   INTERVAL     REFLECT.    TWO WAY    SYNTHETIC    PRIMARY    MULTIPLES
  TRAVEL     FROM SRD    VELOCITY    DENSITY      COEFF.     ATTEN.      SEISMO.        +          ONLY
   TIME      (OR TOP)                                        COEFF.      PRIMARY    MULTIPLES
    MS          M          M/S        G/C3
                           3214       2.350
  1176.1     1509.77                               -.003      .81846     -.00233     -.00227      .00007
                           3196       2.350
  1178.1     1512.97                                .003      .81846      .00247      .02302      .02055
                           3215       2.350
  1180.1     1516.18                                .014      .81829      .01178     -.00046     -.01224
                           3309       2.350
  1182.1     1519.49                               -.006      .81826     -.00503      .01209      .01712
                           3269       2.350
  1184.1     1522.76                               -.006      .81822     -.00517     -.02868     -.02351
                           3228       2.350
  1186.1     1525.99                                .016      .81802      .01287     -.00062     -.01349
                           3331       2.350
  1188.1     1529.32                                .004      .81801      .00297      .00971      .00674
                           3355       2.350
  1190.1     1532.68                               -.014      .81786     -.01114      .01160      .02274
                           3265       2.350
  1192.1     1535.94                               -.004      .81784     -.00333      .00741      .01074
                           3238       2.350
  1194.1     1539.18                               -.003      .81784     -.00228     -.00299     -.00071
                           3220       2.350
  1196.1     1542.40                                .012      .81772      .00973     -.00453     -.01426
                           3298       2.350
  1198.1     1545.70                                .001      .81772      .00109     -.01843     -.01952
                           3307       2.350
  1200.1     1549.00                                .001      .81772      .00051      .01111      .01060
                           3311       2.350
  1202.1     1552.32                                .009      .81765      .00768      .00822      .00054
                           3374       2.350
  1204.1     1555.69                               -.007      .81761     -.00543      .00917      .01460
                           3329       2.350
  1206.1     1559.02                               -.015      .81743     -.01233     -.01138      .00095
                           3230       2.350
  1208.1     1562.25                                .004      .81742      .00297     -.01470     -.01767
                           3254       2.350
  1210.1     1565.50                               -.007      .81738     -.00557     -.00112      .00445
                           3210       2.350
  1212.1     1568.71                                .023      .81695      .01878      .01703     -.00175
                           3361       2.350
  1214.1     1572.07                                .008      .81689      .00656      .02526      .01870
                           3415       2.350
  1216.1     1575.49                               -.019      .81661     -.01518     -.02425     -.00907
                           3291       2.350
  1218.1     1578.78                                .002      .81661      .00161     -.00524     -.00685
                           3304       2.350
  1220.1     1582.08                                .003      .81660      .00244      .01185      .00941
                           3323       2.350
  1222.1     1585.41                               -.016      .81638     -.0[illegible]336      .01040      .02376
                           3216       2.[illegible]0
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COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
1224.1	1588.62			.005	.81636	.00416	-.01082	-.01498
		3249	2.350					
1226.1	1591.87			.001	.81636	.00108	-.00612	-.00720
		3258	2.350					
1228.1	1595.13			-.001	.81636	-.00117	-.01641	-.01524
		3249	2.350					
1230.1	1598.38			.005	.81634	.00415	.01003	.00587
		3282	2.350					
1232.1	1601.66			.015	.81615	.01250	.04673	.03423
		3384	2.350					
1234.1	1605.04			-.020	.81583	-.01597	-.01577	.00020
		3254	2.350					
1236.1	1608.30			.007	.81579	.00566	-.02167	-.02733
		3300	2.350					
1238.1	1611.60			.004	.81578	.00314	-.00282	-.00596
		3325	2.350					
1240.1	1614.92			-.003	.81578	-.00214	-.01813	-.01599
		3308	2.350					
1242.1	1618.23			-.008	.81572	-.00678	.02898	.03576
		3253	2.350					
1244.1	1621.48			.009	.81565	.00741	.01491	.00750
		3313	2.350					
1246.1	1624.80			.017	.81542	.01389	.01185	-.00204
		3428	2.350					
1248.1	1628.22			.004	.81540	.00358	-.01083	-.01442
		3458	2.350					
1250.1	1631.68			.059	.81254	.04833	.05654	.00821
		3894	2.350					
1252.1	1635.58			-.006	.81250	-.00506	-.00637	-.00131
		3845	2.350					
1254.1	1639.42			.008	.81245	.00643	.00044	-.00599
		3907	2.350					
1256.1	1643.33			-.018	.81219	-.01462	.01393	.02855
		3769	2.350					
1258.1	1647.10			-.027	.81162	-.02157	-.04269	-.02112
		3574	2.350					
1260.1	1650.67			.010	.81154	.00814	-.00648	-.01462
		3646	2.350					
1262.1	1654.32			.013	.81139	.01079	.01420	.00341
		3744	2.350					
1264.1	1658.06			.023	.81098	.01839	.02868	.01029
		3918	2.350					
1266.1	1661.98			-.019	.81069	-.01524	-.00970	.00554
		3774	2.350					
1268.1	1665.75			-.006	.81066	-.00460	.00342	.00802
		3731	2.350					
1270.1	1669.48			.001	.81066	.00091	-.01656	-.01747
		3739	2.350					
1272.1	1673.22			-.012	.81055	-.00968	-.01818	-.00850

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
		3651	2.350					
1274.1	1676.87			.005	.81052	.00426	.01108	.00682
		3690	2.350					
1276.1	1680.56			.025	.81002	.02022	.01153	-.00868
		3879	2.350					
1278.1	1684.44			-.009	.80995	-.00739	.00235	.00974
		3808	2.350					
1280.1	1688.25			.028	.80930	.02292	.03184	.00892
		4030	2.350					
1282.1	1692.28			-.029	.80862	-.02347	-.03498	-.01151
		3803	2.350					
1284.1	1696.08			-.012	.80850	-.00987	-.00995	-.00008
		3711	2.350					
1286.1	1699.79			.029	.80782	.02354	.02816	.00462
		3934	2.350					
1288.1	1703.73			-.030	.80707	-.02461	-.03348	-.00887
		3701	2.350					
1290.1	1707.43			-.012	.80695	-.00989	-.02542	-.01553
		3612	2.350					
1292.1	1711.04			.001	.80694	.00101	.01173	.01071
		3621	2.350					
1294.1	1714.66			.006	.80691	.00512	.00607	.00095
		3667	2.350					
1296.1	1718.33			.003	.80690	.00279	.01679	.01401
		3692	2.350					
1298.1	1722.02			.020	.80657	.01647	.02364	.00717
		3846	2.350					
1300.1	1725.87			0	.80657	-.00034	-.01943	-.01909
		3843	2.350					
1302.1	1729.71			-.011	.80647	-.00896	-.01758	-.00861
		3759	2.350					
1304.1	1733.47			.014	.80631	.01130	.02237	.01107
		3865	2.350					
1306.1	1737.34			-.013	.80618	-.01031	.00833	.01864
		3768	2.350					
1308.1	1741.10			.038	.80502	.03053	.01207	-.01846
		4064	2.350					
1310.1	1745.17			.024	.80456	.01934	.03253	.01319
		4265	2.350					
1312.1	1749.43			-.067	.80090	-.05424	-.07599	-.02175
		3726	2.350					
1314.1	1753.16			.003	.80089	.00208	.02250	.02042
		3745	2.350					
1316.1	1756.90			-.001	.80089	-.00103	.00934	.01037
		3736	2.350					
1318.1	1760.64			-.007	.80085	-.00556	-.01485	-.00930
		3684	2.350					
1320.1	1764.32			.001	.80085	.00117	-.01144	-.01262
		3695	2.[illegible]0					

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  TWO WAY     DEPTH     INTERVAL  INTERVAL    REFLECT.   TWO WAY   SYNTHETIC   PRIMARY   MULTIPLES
  TRAVEL    FROM SRD    VELOCITY  DENSITY     COEFF.     ATTEN.    SEISMO.       +         ONLY
   TIME     (OR TOP)                                     COEFF.    PRIMARY    MULTIPLES
    MS         M          M/S      G/C3
  1322.1    1768.02                                0     .80085    -.00002     .00153     .00155
                          3695     2.350
  1324.1    1771.71                                0     .80085     .00010    -.00857    -.00867
                          3696     2.350
  1326.1    1775.41                            -.002     .80085    -.00127    -.02457    -.02330
                          3684     2.350
  1328.1    1779.09                             .003     .80085     .00210     .01807     .01597
                          3703     2.350
  1330.1    1782.80                             .033     .79999     .02612     .02978     .00366
                          3953     2.350
  1332.1    1786.75                            -.008     .79994    -.00662     .00488     .01150
                          3888     2.350
  1334.1    1790.64                            -.023     .79952    -.01840    -.01618     .00222
                          3713     2.350
  1336.1    1794.35                             .011     .79942     .00855     .00305    -.00550
                          3794     2.350
  1338.1    1798.15                             .004     .79941     .00348    -.00963    -.01311
                          3827     2.350
  1340.1    1801.97                                0     .79941     .00027     .01593     .01567
                          3829     2.350
  1342.1    1805.80                            -.007     .79937    -.00553    -.00942    -.00389
                          3777     2.350
  1344.1    1809.58                            -.003     .79936    -.00223    -.02204    -.01980
                          3756     2.350
  1346.1    1813.33                            -.002     .79936    -.00138     .00445     .00583
                          3743     2.350
  1348.1    1817.08                             .013     .79922     .01066     .02209     .01143
                          3844     2.350
  1350.1    1820.92                            -.019     .79894    -.01508     .00754     .02262
                          3702     2.350
  1352.1    1824.62                             .009     .79886     .00750     .00369    -.00381
                          3772     2.350
  1354.1    1828.39                             .007     .79882     .00576    -.01108    -.01684
                          3826     2.350
  1356.1    1832.22                            -.010     .79875    -.00779    -.02057    -.01278
                          3753     2.350
  1358.1    1835.97                            -.002     .79874    -.00195    -.00468    -.00274
                          3734     2.350
  1360.1    1839.71                             .006     .79872     .00440     .02497     .02057
                          3776     2.350
  1362.1    1843.48                            -.003     .79871    -.00226    -.01707    -.01481
                          3754     2.350
  1364.1    1847.24                             .012     .79859     .00972     .02244     .01272
                          3847     2.350
  1366.1    1851.09                            -.005     .79857    -.00407    -.00865    -.00458
                          3808     2.350
  1368.1    1854.89                             .002     .79857     .00172    -.00263    -.00435
                          3824     2.350
  1370.1    1858.72                            -.004     .79856    -.00304     .01330     .01634
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COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
		3795	2.350					
1372.1	1862.51			-.001	.79856	-.00095	.01241	.01336
		3786	2.350					
1374.1	1866.30			-.001	.79856	-.00074	-.01243	-.01168
		3779	2.350					
1376.1	1870.08			.012	.79844	.00970	.00291	-.00679
		3872	2.350					
1378.1	1873.95			.003	.79843	.00203	.01059	.00856
		3892	2.350					
1380.1	1877.84			-.001	.79843	-.00081	-.02363	-.02283
		3884	2.350					
1382.1	1881.73			.011	.79833	.00909	.04240	.03330
		3974	2.350					
1384.1	1885.70			-.007	.79829	-.00529	.01351	.01880
		3921	2.350					
1386.1	1889.62			.020	.79798	.01575	.00137	-.01438
		4079	2.350					
1388.1	1893.70			-.006	.79795	-.00508	-.02273	-.01765
		4028	2.350					
1390.1	1897.73			-.006	.79792	-.00514	-.02300	-.01786
		3976	2.350					
1392.1	1901.71			.010	.79783	.00826	.01092	.00266
		4059	2.350					
1394.1	1905.76			-.024	.79738	-.01904	.00247	.02150
		3870	2.350					
1396.1	1909.63			.019	.79708	.01546	.03901	.02356
		4023	2.350					
1398.1	1913.66			-.006	.79705	-.00487	-.02300	-.01812
		3974	2.350					
1400.1	1917.63			0	.79705	.00019	-.01873	-.01892
		3976	2.350					
1402.1	1921.61			-.005	.79703	-.00368	-.00364	.00004
		3939	2.350					
1404.1	1925.55			-.001	.79703	-.00087	-.00812	-.00724
		3931	2.350					
1406.1	1929.48			-.001	.79703	-.00080	.02824	.02904
		3923	2.350					
1408.1	1933.40			.002	.79703	.00166	.00396	.00231
		3939	2.350					
1410.1	1937.34			-.022	.79664	-.01754	-.04664	-.02910
		3770	2.350					
1412.1	1941.11			.004	.79662	.00348	.00811	.00462
		3803	2.350					
1414.1	1944.91			.014	.79647	.01123	.01788	.00666
		3911	2.350					
1416.1	1948.82			-.012	.79636	-.00921	-.01183	-.00262
		3822	2.350					
1418.1	1952.65			.001	.79636	.00110	-.01844	-.01954
		3832	2.[illegible]0					

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
1420.1	1956.48			.008	.79630	.00663	.02544	.01881
		3897	2.350					
1422.1	1960.37			-.022	.79592	-.01754	-.01382	.00371
		3729	2.350					
1424.1	1964.10			-.002	.79591	-.00164	-.00405	-.00241
		3714	2.350					
1426.1	1967.82			.004	.79590	.00317	-.00751	-.01068
		3743	2.350					
1428.1	1971.56			.013	.79576	.01048	.01445	.00397
		3843	2.350					
1430.1	1975.40			.006	.79573	.00472	-.00797	-.01269
		3889	2.350					
1432.1	1979.29			-.003	.79573	-.00265	.01954	.02219
		3863	2.350					
1434.1	1983.16			-.004	.79571	-.00296	-.00018	.00278
		3835	2.350					
1436.1	1986.99			.014	.79555	.01150	.01041	-.00110
		3947	2.350					
1438.1	1990.94			-.006	.79552	-.00509	.00200	.00709
		3897	2.350					
1440.1	1994.83			-.012	.79540	-.00971	-.03583	-.02612
		3803	2.350					
1442.1	1998.64			-.003	.79539	-.00259	-.00447	-.00188
		3778	2.350					
1444.1	2002.41			.012	.79527	.00975	.02160	.01184
		3872	2.350					
1446.1	2006.29			-.007	.79523	-.00570	-.00863	-.00293
		3817	2.350					
1448.1	2010.10			.024	.79477	.01907	.01629	-.00278
		4004	2.350					
1450.1	2014.11			-.024	.79430	-.01928	-.01029	.00899
		3815	2.350					
1452.1	2017.92			-.029	.79363	-.02310	-.03983	-.01673
		3599	2.350					
1454.1	2021.52			-.013	.79349	-.01058	-.02972	-.01914
		3504	2.350					
1456.1	2025.03			.023	.79306	.01857	.04314	.02457
		3672	2.350					
1458.1	2028.70			-.025	.79255	-.01993	-.01511	.00483
		3492	2.350					
1460.1	2032.19			.025	.79205	.02008	.01776	-.00233
		3674	2.350					
1462.1	2035.87			.021	.79170	.01646	.00696	-.00949
		3830	2.350					
1464.1	2039.70			-.011	.79161	-.00842	-.01507	-.00665
		3749	2.350					
1466.1	2043.44			.006	.79159	.00450	.01203	.00753
		3792	2.350					
1468.1	2047.24			.005	.79157	.00358	.03209	.02851

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
		3827	2.350					
1470.1	2051.06			-.005	.79155	-.00428	-.00711	-.00283
		3785	2.350					
1472.1	2054.85			-.014	.79139	-.01108	-.03074	-.01966
		3681	2.350					
1474.1	2058.53			.004	.79138	.00305	.00410	.00105
		3709	2.350					
1476.1	2062.24			0	.79138	-.00023	-.01432	-.01409
		3707	2.350					
1478.1	2065.95			-.026	.79085	-.02056	-.01537	.00519
		3519	2.350					
1480.1	2069.47			.022	.79046	.01742	.03129	.01387
		3678	2.350					
1482.1	2073.14			-.028	.78983	-.02232	-.01670	.00562
		3476	2.350					
1484.1	2076.62			-.003	.78982	-.00268	-.01045	-.00777
		3452	2.350					
1486.1	2080.07			.040	.78854	.03190	.02167	-.01023
		3743	2.350					
1488.1	2083.82			-.016	.78833	-.01278	-.02055	-.00777
		3624	2.350					
1490.1	2087.44			.003	.78832	.00270	.00515	.00245
		3649	2.350					
1492.1	2091.09			.009	.78825	.00715	.04148	.03432
		3715	2.350					
1494.1	2094.80			-.016	.78806	-.01236	-.04193	-.02957
		3601	2.350					
1496.1	2098.40			-.003	.78805	-.00254	-.00246	.00008
		3578	2.350					
1498.1	2101.98			.007	.78801	.00558	-.00135	-.00693
		3629	2.350					
1500.1	2105.61			-.011	.78791	-.00883	.00145	.01028
		3548	2.350					
1502.1	2109.16			.010	.78783	.00809	.01028	.00219
		3622	2.350					
1504.1	2112.78			-.005	.78781	-.00404	.01288	.01692
		3585	2.350					
1506.1	2116.36			.006	.78778	.00499	-.01142	-.01641
		3631	2.350					
1508.1	2119.99			.017	.78755	.01329	-.01628	-.02957
		3755	2.350					
1510.1	2123.75			.006	.78753	.00456	.02854	.02399
		3799	2.350					
1512.1	2127.55			.022	.78714	.01747	.04322	.02575
		3971	2.350					
1514.1	2131.52			-.020	.78682	-.01582	-.00261	.01320
		3815	2.350					
1516.1	2135.33			-.006	.78679	-.0[illegible]495	-.01495	-.01001
		3767	2.[illegible]0					

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
1518.1	2139.10			.025	.78630	.01962	-.01344	-.03305
		3960	2.350					
1520.1	2143.06			.007	.78626	.00578	.01379	.00801
		4018	2.350					
1522.1	2147.08			-.029	.78560	-.02287	-.01649	.00638
		3791	2.350					
1524.1	2150.87			-.027	.78502	-.02117	-.00411	.01706
		3592	2.350					
1526.1	2154.46			.029	.78437	.02267	-.00002	-.02269
		3806	2.350					
1528.1	2158.27			.006	.78434	.00455	.01441	.00986
		3850	2.350					
1530.1	2162.12			-.015	.78417	-.01182	-.01590	-.00408
		3736	2.350					
1532.1	2165.86			-.005	.78414	-.00410	.00149	.00558
		3697	2.350					
1534.1	2169.55			.042	.78277	.03287	.03991	.00705
		4021	2.350					
1536.1	2173.57			-.016	.78258	-.01215	-.01828	-.00612
		3898	2.350					
1538.1	2177.47			-.013	.78244	-.01045	-.02909	-.01864
		3795	2.350					
1540.1	2181.26			.014	.78228	.01118	.02099	.00981
		3905	2.350					
1542.1	2185.17			.007	.78225	.00513	.01916	.01403
		3956	2.350					
1544.1	2189.13			.014	.78209	.01098	-.00133	-.01230
		4069	2.350					
1546.1	2193.20			-.022	.78171	-.01726	-.00665	.01062
		3893	2.350					
1548.1	2197.09			.006	.78168	.00466	.01416	.00950
		3940	2.350					
1550.1	2201.03			-.017	.78146	-.01317	-.05634	-.04317
		3809	2.350					
1552.1	2204.84			.014	.78131	.01072	.01916	.00844
		3915	2.350					
1554.1	2208.75			.005	.78129	.00407	.01425	.01018
		3956	2.350					
1556.1	2212.71			-.016	.78108	-.01286	-.00210	.01075
		3828	2.350					
1558.1	2216.54			-.018	.78082	-.01413	-.01783	-.00370
		3692	2.350					
1560.1	2220.23			-.005	.78081	-.00353	-.00393	-.00040
		3659	2.350					
1562.1	2223.89			-.001	.78081	-.00056	-.02320	-.02264
		3654	2.350					
1564.1	2227.54			.006	.78078	.00501	.01237	.00735
		3701	2.350					
1566.1	2231.24			.004	.78076	.00332	.02012	.01680

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  TWO WAY       DEPTH     INTERVAL  INTERVAL    REFLECT.    TWO WAY    SYNTHETIC    PRIMARY    MULTIPLES
  TRAVEL      FROM SRD    VELOCITY  DENSITY      COEFF.      ATTEN.     SEISMO.        +          ONLY
   TIME       (OR TOP)                                       COEFF.     PRIMARY    MULTIPLES
    MS           M          M/S       G/C3
                            3733      2.350
  1568.1      2234.98                             -.026      .78025     -.02000     -.02975     -.00975
                            3546      2.350
  1570.1      2238.52                              .002      .78025      .00193      .00016     -.00177
                            3564      2.350
  1572.1      2242.09                              .056      .77776      .04407      .04757      .00350
                            3990      2.350
  1574.1      2246.08                              .008      .77770      .00646     -.00805     -.01452
                            4057      2.350
  1576.1      2250.13                              .005      .77768      .00382      .02343      .01961
                            4097      2.350
  1578.1      2254.23                             -.003      .77768     -.00208      .00870      .01077
                            4075      2.350
  1580.1      2258.31                             -.002      .77768     -.00144     -.03447     -.03302
                            4060      2.350
  1582.1      2262.37                              .005      .77765      .00418      .01102      .00685
                            4104      2.350
  1584.1      2266.47                             -.025      .77715     -.01976     -.00333      .01643
                            3901      2.350
  1586.1      2270.37                              .025      .77665      .01981      .00258     -.01723
                            4105      2.350
  1588.1      2274.48                             -.001      .77665     -.00040      .01949      .01989
                            4101      2.350
  1590.1      2278.58                              .003      .77664      .00201      .00008     -.00193
                            4122      2.350
  1592.1      2282.70                             -.004      .77663     -.00274     -.00052      .00222
                            4093      2.350
  1594.1      2286.79                                 0      .77663      .00004     -.01585     -.01589
                            4093      2.350
  1596.1      2290.89                              .008      .77658      .00644      .02516      .01872
                            4162      2.350
  1598.1      2295.05                             -.017      .77635     -.01331     -.02387     -.01056
                            4022      2.350
  1600.1      2299.07                             -.012      .77624     -.00930     -.02103     -.01173
                            3926      2.350
  1602.1      2303.00                              .009      .77618      .00693      .02158      .01466
                            3997      2.350
  1604.1      2306.99                             -.013      .77603     -.01048     -.01771     -.00723
                            3891      2.350
  1606.1      2310.88                             -.008      .77598     -.00644     -.02724     -.02080
                            3827      2.350
  1608.1      2314.71                              .003      .77597      .00230      .00845      .00615
                            3849      2.350
  1610.1      2318.56                              .034      .77505      .02672      .02052     -.00620
                            4124      2.350
  1612.1      2322.68                             -.005      .77504     -.00349      .00629      .00979
                            4087      2.350
  1614.1      2326.77                             -.005      .77502     -.00391     -.00856     -.00465
                            4046      2.[illegible]0
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TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
1616.1	2330.82			.004	.77501	.00302	-.00132	-.00434
		4077	2.350					
1618.1	2334.89			-.012	.77489	-.00954	.00153	.01108
		3978	2.350					
1620.1	2338.87			-.003	.77488	-.00216	.01741	.01957
		3956	2.350					
1622.1	2342.83			.017	.77467	.01299	-.01611	-.02910
		4091	2.350					
1624.1	2346.92			-.019	.77439	-.01458	-.01984	-.00525
		3940	2.350					
1626.1	2350.86			-.011	.77430	-.00820	-.00157	.00663
		3857	2.350					
1628.1	2354.71			.003	.77430	.00219	.00417	.00198
		3879	2.350					
1630.1	2358.59			-.010	.77423	-.00748	.00425	.01173
		3805	2.350					
1632.1	2362.40			.024	.77378	.01861	.02579	.00718
		3992	2.350					
1634.1	2366.39			.028	.77318	.02158	.00352	-.01807
		4221	2.350					
1636.1	2370.61			-.029	.77253	-.02245	-.03203	-.00958
		3983	2.350					
1638.1	2374.60			.014	.77238	.01063	.03526	.02463
		4094	2.350					
1640.1	2378.69			.004	.77237	.00280	.02473	.02194
		4124	2.350					
1642.1	2382.81			-.004	.77236	-.00316	-.01538	-.01221
		4090	2.350					
1644.1	2386.90			-.014	.77221	-.01072	-.01073	-.00001
		3978	2.350					
1646.1	2390.88			-.006	.77218	-.00433	-.00522	-.00089
		3934	2.350					
1648.1	2394.82			.009	.77212	.00669	.01166	.00497
		4003	2.350					
1650.1	2398.82			.001	.77212	.00059	-.00674	-.00733
		4009	2.350					
1652.1	2402.83			.016	.77193	.01238	.00692	-.00546
		4140	2.350					
1654.1	2406.97			-.009	.77187	-.00678	-.01612	-.00934
		4068	2.350					
1656.1	2411.04			-.003	.77186	-.00194	.00780	.00974
		4047	2.350					
1658.1	2415.08			.017	.77165	.01292	-.00621	-.01913
		4185	2.350					
1660.1	2419.27			.005	.77163	.00380	.01567	.01187
		4226	2.350					
1662.1	2423.49			-.031	.77086	-.02429	.00243	.02673
		3968	2.350					
1664.1	2427.46			.023	.77045	.01784	.01778	-.00006

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
		4156	2.350					
1666.1	2431.62			.003	.77044	.00231	-.02573	-.02804
		4181	2.350					
1668.1	2435.80			-.036	.76942	-.02806	-.02669	.00137
		3887	2.350					
1670.1	2439.69			.003	.76941	.00256	.00413	.00157
		3913	2.350					
1672.1	2443.60			.004	.76940	.00333	.00235	-.00098
		3947	2.350					
1674.1	2447.55			-.001	.76940	-.00068	.01241	.01309
		3940	2.350					
1676.1	2451.49			.020	.76910	.01519	.01315	-.00205
		4099	2.350					
1678.1	2455.59			.011	.76899	.00884	-.01382	-.02266
		4195	2.350					
1680.1	2459.78			.008	.76894	.00628	.00889	.00261
		4264	2.350					
1682.1	2464.05			-.009	.76889	-.00655	.00505	.01161
		4192	2.350					
1684.1	2468.24			-.002	.76888	-.00189	-.00568	-.00379
		4171	2.350					
1686.1	2472.41			-.026	.76835	-.02032	-.01664	.00368
		3956	2.350					
1688.1	2476.37			.028	.76773	.02171	.01944	-.00227
		4186	2.350					
1690.1	2480.55			0	.76773	.00020	-.01142	-.01161
		4188	2.350					
1692.1	2484.74			-.006	.76770	-.00476	-.00595	-.00119
		4137	2.350					
1694.1	2488.88			.010	.76762	.00798	.02792	.01995
		4224	2.350					
1696.1	2493.10			0	.76762	.00010	-.00875	-.00885
		4225	2.350					
1698.1	2497.33			-.001	.76762	-.00055	-.01127	-.01072
		4219	2.350					
1700.1	2501.54			.021	.76728	.01608	.02538	.00931
		4399	2.350					
1702.1	2505.94			-.029	.76666	-.02192	-.01807	.00385
		4155	2.350					
1704.1	2510.10			-.016	.76647	-.01198	-.00206	.00991
		4027	2.350					
1706.1	2514.13			-.004	.76646	-.00304	.00767	.01072
		3995	2.350					
1708.1	2518.12			.021	.76613	.01589	.00418	-.01171
		4164	2.350					
1710.1	2522.29			-.004	.76612	-.00270	-.02184	-.01914
		4135	2.350					
1712.1	2526.42			0	.76612	-.00003	.01239	.01242
		4135	2.[illegible]0					

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
1714.1	2530.56			-.004	.76611	-.00282	.00187	.00469
		4104	2.350					
1716.1	2534.66			.019	.76584	.01440	.03054	.01614
		4262	2.350					
1718.1	2538.92			-.012	.76572	-.00939	-.00511	.00428
		4158	2.350					
1720.1	2543.08			-.010	.76564	-.00797	-.03007	-.02210
		4073	2.350					
1722.1	2547.15			.008	.76559	.00605	-.01780	-.02385
		4138	2.350					
1724.1	2551.29			-.019	.76532	-.01454	.01038	.02491
		3983	2.350					
1726.1	2555.27			.018	.76508	.01350	.01584	.00234
		4126	2.350					
1728.1	2559.40			.016	.76487	.01249	.01230	-.00019
		4263	2.350					
1730.1	2563.66			-.026	.76434	-.02025	-.01200	.00826
		4043	2.350					
1732.1	2567.71			.003	.76433	.00205	-.02648	-.02852
		4065	2.350					
1734.1	2571.77			.003	.76433	.00192	-.00469	-.00661
		4086	2.350					
1736.1	2575.86			.002	.76432	.00172	.01941	.01768
		4104	2.350					
1738.1	2579.96			0	.76432	-.00020	.00853	.00874
		4102	2.350					
1740.1	2584.06			.016	.76412	.01246	.00730	-.00516
		4238	2.350					
1742.1	2588.30			.013	.76398	.01017	-.00862	-.01879
		4352	2.350					
1744.1	2592.65			-.021	.76364	-.01634	-.02514	-.00880
		4170	2.350					
1746.1	2596.82			.018	.76337	.01412	.02498	.01085
		4327	2.350					
1748.1	2601.15			-.009	.76331	-.00722	.02169	.02891
		4246	2.350					
1750.1	2605.40			.012	.76320	.00892	-.00466	-.01358
		4346	2.350					
1752.1	2609.74			-.032	.76243	-.02424	-.03968	-.01544
		4079	2.350					
1754.1	2613.82			.011	.76234	.00817	-.00132	-.00949
		4167	2.350					
1756.1	2617.99			.005	.76233	.00373	.01033	.00660
		4208	2.350					
1758.1	2622.20			.006	.76230	.00439	.01969	.01530
		4257	2.350					
1760.1	2626.45			-.014	.76214	-.01096	-.00410	.00685
		4136	2.350					
1762.1	2630.59			.003	.76214	.00232	-.00807	-.01039

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
		4161	2.350					
1764.1	2634.75			-.001	.76214	-.00050	-.01054	-.01004
		4156	2.350					
1766.1	2638.91			.018	.76188	.01396	.01823	.00427
		4311	2.350					
1768.1	2643.22			-.006	.76185	-.00441	-.00233	.00208
		4261	2.350					
1770.1	2647.48			-.005	.76184	-.00357	-.00228	.00129
		4222	2.350					
1772.1	2651.70			.001	.76184	.00073	.00409	.00336
		4230	2.350					
1774.1	2655.93			-.003	.76183	-.00210	-.00019	.00191
		4206	2.350					
1776.1	2660.14			.002	.76183	.00137	-.00677	-.00814
		4222	2.350					
1778.1	2664.36			-.011	.76173	-.00875	-.00335	.00540
		4126	2.350					
1780.1	2668.48			.020	.76144	.01490	.02372	.00882
		4290	2.350					
1782.1	2672.77			0	.76144	-.00027	-.00025	.00002
		4287	2.350					
1784.1	2677.06			0	.76144	-.00023	.00559	.00582
		4285	2.350					
1786.1	2681.35			-.004	.76143	-.00295	-.00967	-.00672
		4252	2.350					
1788.1	2685.60			.012	.76132	.00906	.00303	-.00602
		4354	2.350					
1790.1	2689.95			-.003	.76131	-.00221	-.00142	.00079
		4329	2.350					
1792.1	2694.28			-.010	.76124	-.00747	.01730	.02477
		4245	2.350					
1794.1	2698.53			.008	.76119	.00578	.00544	-.00035
		4310	2.350					
1796.1	2702.84			.012	.76108	.00911	-.00561	-.01472
		4414	2.350					
1798.1	2707.25			-.006	.76106	-.00441	-.01507	-.01066
		4363	2.350					
1800.1	2711.61			-.018	.76081	-.01381	-.01176	.00204
		4208	2.350					
1802.1	2715.82			.016	.76060	.01247	.01035	-.00212
		4348	2.350					
1804.1	2720.17			-.017	.76037	-.01326	-.01111	.00215
		4199	2.350					
1806.1	2724.37			.005	.76036	.00354	-.00250	-.00604
		4238	2.350					
1808.1	2728.61			.004	.76034	.00306	.00684	.00378
		4273	2.350					
1810.1	2732.88			-.005	.76033	-.00378	-.00712	-.00334
		4230	2.[illegible]0					

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
1812.1	2737.11			.009	.76026	.00692	-.00220	-.00912
		4308	2.350					
1814.1	2741.42			.005	.76024	.00370	.01436	.01066
		4350	2.350					
1816.1	2745.77			-.018	.75999	-.01403	-.00523	.00880
		4193	2.350					
1818.1	2749.96			.033	.75917	.02489	.02462	-.00027
		4477	2.350					
1820.1	2754.44			-.013	.75903	-.01021	-.02631	-.01610
		4358	2.350					
1822.1	2758.79			.006	.75901	.00429	.01626	.01197
		4407	2.350					
1824.1	2763.20			-.005	.75899	-.00401	-.00899	-.00498
		4361	2.350					
1826.1	2767.56			-.001	.75899	-.00064	.01375	.01439
		4354	2.350					
1828.1	2771.92			-.002	.75898	-.00128	-.01049	-.00921
		4339	2.350					
1830.1	2776.26			-.015	.75881	-.01150	-.01909	-.00759
		4209	2.350					
1832.1	2780.46			.016	.75863	.01180	.00825	-.00354
		4342	2.350					
1834.1	2784.81			.006	.75860	.00447	.00961	.00514
		4394	2.350					
1836.1	2789.20			-.014	.75846	-.01043	.00365	.01408
		4275	2.350					
1838.1	2793.48			.010	.75838	.00777	.01507	.00730
		4363	2.350					
1840.1	2797.84			.012	.75827	.00891	-.00919	-.01811
		4467	2.350					
1842.1	2802.31			.003	.75827	.00207	-.00650	-.00857
		4491	2.350					
1844.1	2806.80			-.004	.75826	-.00295	.00416	.00711
		4457	2.350					
1846.1	2811.25			.024	.75783	.01795	.02501	.00706
		4673	2.350					
1848.1	2815.93			-.001	.75783	-.00042	.00160	.00202
		4668	2.350					
1850.1	2820.59			-.001	.75783	-.00073	-.01954	-.01882
		4659	2.350					
1852.1	2825.25			-.009	.75777	-.00686	-.00506	.00180
		4575	2.350					
1854.1	2829.83			.025	.75729	.01911	.03676	.01766
		4812	2.350					
1856.1	2834.64			-.012	.75718	-.00877	-.01038	-.00161
		4702	2.350					
1858.1	2839.34			-.030	.75651	-.02255	-.02275	-.00020
		4430	2.350					
1860.1	2843.77			-.004	.75650	-.00333	-.01186	-.00853

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
		4391	2.350					
1862.1	2848.16			.009	.75643	.00697	.00414	-.00282
		4472	2.350					
1864.1	2852.63			-.006	.75641	-.00441	.01183	.01623
		4421	2.350					
1866.1	2857.05			.015	.75624	.01129	.01320	.00191
		4555	2.350					
1868.1	2861.61			.011	.75615	.00811	.00259	-.00553
		4653	2.350					
1870.1	2866.26			.007	.75612	.00530	.00444	-.00086
		4719	2.350					
1872.1	2870.98			-.033	.75531	-.02471	-.02684	-.00213
		4420	2.350					
1874.1	2875.40			.016	.75512	.01181	.01571	.00390
		4561	2.350					
1876.1	2879.96			.015	.75496	.01110	.02030	.00920
		4697	2.350					
1878.1	2884.66			-.021	.75462	-.01615	-.02524	-.00909
		4500	2.350					
1880.1	2889.16			-.004	.75460	-.00282	-.00568	-.00286
		4467	2.350					
1882.1	2893.63			.014	.75446	.01028	.00326	-.00702
		4590	2.350					
1884.1	2898.22			-.036	.75349	-.02716	-.01430	.01286
		4271	2.350					
1886.1	2902.49			.023	.75308	.01756	.01316	-.00440
		4475	2.350					
1888.1	2906.96			-.005	.75306	-.00367	-.00412	-.00046
		4431	2.350					
1890.1	2911.39			-.017	.75284	-.01274	-.02167	-.00893
		4284	2.350					
1892.1	2915.68			.004	.75283	.00297	-.00501	-.00798
		4318	2.350					
1894.1	2919.99			-.002	.75283	-.00185	.00556	.00741
		4297	2.350					
1896.1	2924.29			.019	.75256	.01409	.00555	-.00854
		4461	2.350					
1898.1	2928.75			-.012	.75245	-.00927	.00385	.01312
		4352	2.350					
1900.1	2933.10			-.001	.75245	-.00041	.01289	.01329
		4347	2.350					
1902.1	2937.45			-.011	.75236	-.00821	-.00993	-.00172
		4254	2.350					
1904.1	2941.70			-.004	.75235	-.00297	-.02446	-.02149
		4220	2.350					
1906.1	2945.93			.027	.75179	.02043	.02145	.00102
		4456	2.350					
1908.1	2950.38			-.007	.75176	-.00537	-.01471	-.00935
		4393	2.[illegible]0					

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
1910.1	2954.77			.011	.75166	.00832	.02992	.02161
		4491	2.350					
1912.1	2959.27			-.006	.75163	-.00472	-.00922	-.00451
		4435	2.350					
1914.1	2963.70			.003	.75163	.00230	-.01480	-.01710
		4462	2.350					
1916.1	2968.16			.014	.75148	.01063	.01226	.00163
		4590	2.350					
1918.1	2972.75			-.041	.75022	-.03075	.00274	.03349
		4229	2.350					
1920.1	2976.98			.006	.75019	.00425	-.01306	-.01732
		4278	2.350					
1922.1	2981.26			.001	.75019	.00108	-.00259	-.00367
		4290	2.350					
1924.1	2985.55			.007	.75016	.00491	-.00459	-.00950
		4346	2.350					
1926.1	2989.90			-.013	.75003	-.00985	-.01195	-.00210
		4234	2.350					
1928.1	2994.13			-.033	.74919	-.02505	-.03115	-.00609
		3960	2.350					
1930.1	2998.09			.036	.74821	.02715	.04667	.01952
		4258	2.350					
1932.1	3002.35			.003	.74820	.00216	-.01816	-.02032
		4283	2.350					
1934.1	3006.63			-.023	.74782	-.01699	-.02684	-.00985
		4092	2.350					
1936.1	3010.72			.054	.74564	.04036	.05570	.01534
		4559	2.350					
1938.1	3015.28			0	.74564	-.00012	-.00184	-.00173
		4558	2.350					
1940.1	3019.84			-.015	.74548	-.01091	-.00448	.00644
		4426	2.350					
1942.1	3024.27			-.004	.74547	-.00286	.01013	.01299
		4393	2.350					
1944.1	3028.66			-.017	.74526	-.01261	-.01940	-.00678
		4246	2.350					
1946.1	3032.91			-.018	.74502	-.01317	-.02086	-.00769
		4099	2.350					
1948.1	3037.00			.027	.74450	.01980	-.00377	-.02357
		4323	2.350					
1950.1	3041.33			.035	.74359	.02601	.04612	.02012
		4636	2.350					
1952.1	3045.96			-.035	.74268	-.02605	-.02334	.00272
		4322	2.350					
1954.1	3050.28			.008	.74263	.00603	.02132	.01528
		4393	2.350					
1956.1	3054.68			-.026	.74212	-.01931	-.02989	-.01058
		4170	2.350					
1958.1	3058.85			.009	.74206	.00684	-.01053	-.01737

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
		4248	2.350					
1960.1	3063.09			.011	.74197	.00825	.01670	.00845
		4343	2.350					
1962.1	3067.44			-.012	.74185	-.00927	-.00064	.00863
		4236	2.350					
1964.1	3071.67			-.009	.74180	-.00646	-.01097	-.00451
		4163	2.350					
1966.1	3075.84			0	.74180	.00031	.01553	.01522
		4166	2.350					
1968.1	3080.00			.011	.74170	.00845	-.01230	-.02075
		4262	2.350					
1970.1	3084.26			.029	.74109	.02132	.02580	.00448
		4514	2.350					
1972.1	3088.78			-.006	.74107	-.00417	.01456	.01872
		4464	2.350					
1974.1	3093.24			.001	.74107	.00046	.01122	.01077
		4469	2.350					
1976.1	3097.71			-.004	.74105	-.00293	-.02386	-.02094
		4434	2.350					
1978.1	3102.15			-.037	.74003	-.02758	-.02279	.00479
		4116	2.350					
1980.1	3106.26			.013	.73991	.00932	.00062	-.00869
		4221	2.350					
1982.1	3110.48			.025	.73945	.01855	.03074	.01219
		4438	2.350					
1984.1	3114.92			-.004	.73943	-.00310	-.00374	-.00065
		4401	2.350					
1986.1	3119.32			.031	.73872	.02292	.01318	-.00974
		4683	2.350					
1988.1	3124.01			-.038	.73763	-.02834	-.02612	.00222
		4337	2.350					
1990.1	3128.34			-.011	.73754	-.00826	-.00258	.00568
		4241	2.350					
1992.1	3132.58			-.023	.73715	-.01692	-.02442	-.00750
		4050	2.350					
1994.1	3136.63			-.003	.73715	-.00240	.00077	.00317
		4024	2.350					
1996.1	3140.66			.044	.73574	.03216	.03110	-.00106
		4391	2.350					
1998.1	3145.05			-.016	.73556	-.01158	-.01850	-.00692
		4255	2.350					
2000.1	3149.30			-.011	.73547	-.00832	-.01074	-.00242
		4160	2.350					
2002.1	3153.46			.022	.73512	.01596	.03886	.02290
		4345	2.350					
2004.1	3157.81			-.017	.73491	-.01230	-.01595	-.00365
		4202	2.350					
2006.1	3162.01			.017	.73471	.01233	.00028	-.01205
		4345	2.350					

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2008.1	3166.36	4371	2.350	.003	.73470	.00219	-.00330	-.00549
2010.1	3170.73	4346	2.350	-.003	.73469	-.00211	.00996	.01207
2012.1	3175.07	4482	2.350	.015	.73452	.01135	-.01452	-.02587
2014.1	3179.55	4456	2.350	-.003	.73451	-.00212	.00566	.00778
2016.1	3184.01	4605	2.350	.016	.73431	.01207	.02121	.00914
2018.1	3188.62	4260	2.350	-.039	.73320	-.02862	-.02875	-.00013
2020.1	3192.88	4391	2.350	.015	.73303	.01113	-.00134	-.01247
2022.1	3197.27	4330	2.350	-.007	.73299	-.00517	-.00633	-.00116
2024.1	3201.60	4525	2.350	.022	.73264	.01620	.01474	-.00145
2026.1	3206.12	4554	2.350	.003	.73263	.00227	.01123	.00895
2028.1	3210.68	4465	2.350	-.010	.73256	-.00721	.01864	.02585
2030.1	3215.14	4350	2.350	-.013	.73243	-.00953	-.02381	-.01428
2032.1	3219.49	4269	2.350	-.009	.73237	-.00692	-.01735	-.01044
2034.1	3223.76	4345	2.350	.009	.73231	.00652	.00667	.00015
2036.1	3228.10	4321	2.350	-.003	.73230	-.00209	-.00299	-.00090
2038.1	3232.43	4433	2.350	.013	.73218	.00943	.03632	.02688
2040.1	3236.86	4409	2.350	-.003	.73218	-.00205	-.00898	-.00693
2042.1	3241.27	4340	2.350	-.008	.73213	-.00576	-.02158	-.01582
2044.1	3245.61	4415	2.350	.009	.73208	.00628	-.00830	-.01458
2046.1	3250.02	4366	2.350	-.006	.73206	-.00404	.00176	.00580
2048.1	3254.39	4393	2.350	.003	.73205	.00218	.01138	.00920
2050.1	3258.78	4373	2.350	-.002	.73205	-.00161	.02860	.03021
2052.1	3263.15	4434	2.350	.007	.73201	.00504	-.02644	-.03149
2054.1	3267.59	4251	2.350	-.021	.73169	-.01543	-.01194	.00349
2056.1	3271.84			.018	.73145	.01319	.00384	-.00935

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  TWO WAY      DEPTH     INTERVAL  INTERVAL     REFLECT.    TWO WAY   SYNTHETIC    PRIMARY    MULTIPLES
  TRAVEL     FROM SRD    VELOCITY  DENSITY       COEFF.     ATTEN.    SEISMO.         +          ONLY
   TIME      (OR TOP)                                       COEFF.    PRIMARY    MULTIPLES
    MS          M          M/S      G/C3
                            4407     2.350
  2058.1     3276.25                              .004      .73144     .00294     .02387     .02093
                            4443     2.350
  2060.1     3280.69                             -.024      .73100    -.01788    -.03754    -.01966
                            4231     2.350
  2062.1     3284.92                              .006      .73097     .00450     .01119     .00670
                            4283     2.350
  2064.1     3289.20                              .013      .73084     .00972     .00502    -.00470
                            4398     2.350
  2066.1     3293.60                              .008      .73079     .00590     .01168     .00578
                            4470     2.350
  2068.1     3298.07                             -.008      .73075    -.00555     .00164     .00719
                            4403     2.350
  2070.1     3302.47                             -.018      .73051    -.01323    -.00113     .01210
                            4246     2.350
  2072.1     3306.72                             -.031      .72979    -.02300    -.02854    -.00554
                            3987     2.350
  2074.1     3310.71                              .021      .72947     .01533     .00506    -.01027
                            4158     2.350
  2076.1     3314.86                              .021      .72915     .01527    -.00091    -.01618
                            4336     2.350
  2078.1     3319.20                              .021      .72882     .01549     .00854    -.00695
                            4524     2.350
  2080.1     3323.72                             -.006      .72879    -.00419    -.00375     .00044
                            4472     2.350
  2082.1     3328.20                              .017      .72857     .01263     .02930     .01667
                            4630     2.350
  2084.1     3332.83                             -.010      .72850    -.00751    -.01926    -.01175
                            4535     2.350
  2086.1     3337.36                              .005      .72848     .00386     .01415     .01028
                            4584     2.350
  2088.1     3341.94                             -.012      .72838    -.00852    -.00179     .00673
                            4478     2.350
  2090.1     3346.42                                 0      .72838    -.00032    -.02266    -.02234
                            4474     2.350
  2092.1     3350.90                              .001      .72838     .00102    -.00051    -.00153
                            4486     2.350
  2094.1     3355.38                                 0           0          0    -.00453    -.00453
  2096.1                                                                         -.00279    -.00279
  2098.1                                                                          .01769     .01769
  2100.1                                                                         -.00003    -.00003
  2102.1                                                                         -.00625    -.00625
  2104.1                                                                         -.00368    -.00368
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TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2106.1							.00267	.00267
2108.1							.00243	.00243
2110.1							.00903	.00903
2112.1							-.00047	-.00047
2114.1							.00240	.00240
2116.1							-.00199	-.00199
2118.1							.00413	.00413
2120.1							.00589	.00589
2122.1							-.01815	-.01815
2124.1							.00862	.00862
2126.1							-.01112	-.01112
2128.1							.01162	.01162
2130.1							.00971	.00971
2132.1							-.02202	-.02202
2134.1							.02584	.02584
2136.1							-.00679	-.00679
2138.1							.00730	.00730
2140.1							-.01372	-.01372
2142.1							.00388	.00388
2144.1							-.00583	-.00583
2146.1							-.00356	-.00356
2148.1							-.00556	-.00556
2150.1							.01341	.01341
2152.1							-.00509	-.00509
2154.1							.01100	.01100

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2156.1							.00753	.00753
2158.1							-.00769	-.00769
2160.1							-.01768	-.01768
2162.1							.00170	.00170
2164.1							.00615	.00615
2166.1							.01599	.01599
2168.1							-.00667	-.00667
2170.1							-.01249	-.01249
2172.1							-.00225	-.00225
2174.1							.00274	.00274
2176.1							.00254	.00254
2178.1							.01292	.01292
2180.1							-.00903	-.00903
2182.1							-.00970	-.00970
2184.1							.00627	.00627
2186.1							-.00580	-.00580
2188.1							-.00163	-.00163
2190.1							.00029	.00029
2192.1							.00236	.00236
2194.1							.00669	.00669
2196.1							-.00456	-.00456
2198.1							.00373	.00373
2200.1							-.00838	-.00838
2202.1							.00972	.00972

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2204.1							-.00242	-.00242
2206.1							-.01121	-.01121
2208.1							.00296	.00296
2210.1							-.00685	-.00685
2212.1							-.00625	-.00625
2214.1							.01514	.01514
2216.1							.01439	.01439
2218.1							.00192	.00192
2220.1							-.01443	-.01443
2222.1							-.01437	-.01437
2224.1							-.00594	-.00594
2226.1							.01190	.01190
2228.1							.01511	.01511
2230.1							-.01449	-.01449
2232.1							-.00064	-.00064
2234.1							.01366	.01366
2236.1							-.00636	-.00636
2238.1							.00166	.00166
2240.1							-.00593	-.00593
2242.1							.00268	.00268
2244.1							.00628	.00628
2246.1							-.00896	-.00896
2248.1							-.01399	-.01399
2250.1							.00081	.00081
2252.1							.01837	.01837

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2254.1							-.01325	-.01325
2256.1							.00304	.00304
2258.1							-.01061	-.01061
2260.1							-.00707	-.00707
2262.1							.02808	.02808
2264.1							.00505	.00505
2266.1							.00020	.00020
2268.1							-.00583	-.00583
2270.1							-.01077	-.01077
2272.1							-.02021	-.02021
2274.1							.00863	.00863
2276.1							.00734	.00734
2278.1							.01770	.01770
2280.1							-.00791	-.00791
2282.1							-.01013	-.01013
2284.1							-.00128	-.00128
2286.1							.01815	.01815
2288.1							-.00974	-.00974
2290.1							-.00240	-.00240
2292.1							.00630	.00630
2294.1							-.00848	-.00848
2296.1							-.00259	-.00259
2298.1							.01695	.01695
2300.1							-.02311	-.02311

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2302.1							.01437	.01437
2304.1							.00121	.00121
2306.1							.00015	.00015
2308.1							.01583	.01583
2310.1							-.01922	-.01922
2312.1							-.00128	-.00128
2314.1							.00102	.00102
2316.1							.01421	.01421
2318.1							-.00806	-.00806
2320.1							.00590	.00590
2322.1							-.00486	-.00486
2324.1							.00649	.00649
2326.1							-.00772	-.00772
2328.1							.00195	.00195
2330.1							.00658	.00658
2332.1							-.01519	-.01519
2334.1							.00089	.00089
2336.1							.00155	.00155
2338.1							-.01129	-.01129
2340.1							.00959	.00959
2342.1							-.00084	-.00084
2344.1							.00195	.00195
2346.1							.00068	.00068
2348.1							.00047	.00047
2350.1							-.00859	-.00859

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2352.1							.01338	.01338
2354.1							-.00508	-.00508
2356.1							-.00201	-.00201
2358.1							-.00934	-.00934
2360.1							.00978	.00978
2362.1							-.00350	-.00350
2364.1							.00654	.00654
2366.1							.00217	.00217
2368.1							.00044	.00044
2370.1							.01161	.01161
2372.1							-.01846	-.01846
2374.1							-.00612	-.00612
2376.1							.00528	.00528
2378.1							.00121	.00121
2380.1							-.00214	-.00214
2382.1							-.00792	-.00792
2384.1							.00152	.00152
2386.1							-.00123	-.00123
2388.1							.00519	.00519
2390.1							.00573	.00573
2392.1							.00375	.00375
2394.1							-.00337	-.00337
2396.1							-.00139	-.00139
2398.1							.00606	.00606

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2400.1							-.02267	-.02267
2402.1							-.00092	-.00092
2404.1							.00386	.00386
2406.1							.01113	.01113
2408.1							.01242	.01242
2410.1							-.02251	-.02251
2412.1							.01895	.01895
2414.1							-.01154	-.01154
2416.1							-.00314	-.00314
2418.1							-.00032	-.00032
2420.1							.00324	.00324
2422.1							.00775	.00775
2424.1							.00606	.00606
2426.1							-.00682	-.00682
2428.1							-.01920	-.01920
2430.1							.00850	.00850
2432.1							.00116	.00116
2434.1							.00576	.00576
2436.1							.00481	.00481
2438.1							-.00349	-.00349
2440.1							-.00195	-.00195
2442.1							-.00576	-.00576
2444.1							.00938	.00938
2446.1							-.01110	-.01110
2448.1							.02808	.02808

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2450.1							-.00197	-.00197
2452.1							-.01205	-.01205
2454.1							-.01394	-.01394
2456.1							-.00205	-.00205
2458.1							.00682	.00682
2460.1							.01392	.01392
2462.1							-.01246	-.01246
2464.1							-.01151	-.01151
2466.1							.00764	.00764
2468.1							.00432	.00432
2470.1							.00453	.00453
2472.1							.00894	.00894
2474.1							-.00291	-.00291
2476.1							.00524	.00524
2478.1							-.01588	-.01588
2480.1							.00399	.00399
2482.1							-.00653	-.00653
2484.1							.00500	.00500
2486.1							-.00093	-.00093
2488.1							-.01134	-.01134
2490.1							.00981	.00981
2492.1							.00965	.00965
2494.1							-.00702	-.00702
2496.1							.02301	.02301

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  TWO WAY      DEPTH     INTERVAL   INTERVAL    REFLECT.   TWO WAY   SYNTHETIC    PRIMARY    MULTIPLES
  TRAVEL     FROM SRD    VELOCITY   DENSITY     COEFF.     ATTEN.    SEISMO.        +          ONLY
   TIME      (OR TOP)                                      COEFF.    PRIMARY    MULTIPLES
    MS          M          M/S        G/C3

   2498.1                                                                        -.02255     -.02255
   2500.1                                                                        -.02226     -.02226
   2502.1                                                                         .01396      .01396
   2504.1                                                                        -.00063     -.00063
   2506.1                                                                         .00427      .00427
   2508.1                                                                         .00882      .00882
   2510.1                                                                        -.02268     -.02268
   2512.1                                                                         .00727      .00727
   2514.1                                                                        -.00097     -.00097
   2516.1                                                                        -.00107     -.00107
   2518.1                                                                         .01120      .01120
   2520.1                                                                        -.00693     -.00693
   2522.1                                                                         .00168      .00168
   2524.1                                                                         .00179      .00179
   2526.1                                                                         .00465      .00465
   2528.1                                                                        -.01539     -.01539
   2530.1                                                                        -.00634     -.00634
   2532.1                                                                         .00512      .00512
   2534.1                                                                         .00200      .00200
   2536.1                                                                        -.00339     -.00339
   2538.1                                                                         .00502      .00502
   2540.1                                                                         .00836      .00836
   2542.1                                                                        -.01148     -.01148
   2544.1                                                                         .00583      .00583
   2546.1                                                                         .00409      .00409
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COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A PAGE 54

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2548.1							.00738	.00738
2550.1							-.01719	-.01719
2552.1							-.00117	-.00117
2554.1							-.00408	-.00408
2556.1							.02172	.02172
2558.1							.00768	.00768
2560.1							-.00512	-.00512
2562.1							-.01453	-.01453
2564.1							.00945	.00945
2566.1							-.00439	-.00439
2568.1							-.00020	-.00020
2570.1							.00808	.00808
2572.1							-.01266	-.01266
2574.1							-.00771	-.00771
2576.1							.02655	.02655
2578.1							-.00605	-.00605
2580.1							-.00841	-.00841
2582.1							-.00457	-.00457
2584.1							-.00857	-.00857
2586.1							-.00097	-.00097
2588.1							.01264	.01264
2590.1							-.00910	-.00910
2592.1							.00496	.00496
25[illegible].1							.01651	.01651

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2596.1							-.00935	-.00935
2598.1							-.00522	-.00522
2600.1							.00805	.00805
2602.1							.00409	.00409
2604.1							-.01087	-.01087
2606.1							.00086	.00086
2608.1							.01429	.01429
2610.1							-.01597	-.01597
2612.1							.00905	.00905
2614.1							-.00091	-.00091
2616.1							-.01164	-.01164
2618.1							.01549	.01549
2620.1							-.00939	-.00939
2622.1							.00321	.00321
2624.1							.01785	.01785
2626.1							-.00872	-.00872
2628.1							-.01945	-.01945
2630.1							.01006	.01006
2632.1							.01059	.01059
2634.1							-.01980	-.01980
2636.1							.00917	.00917
2638.1							.00903	.00903
2640.1							-.00996	-.00996
2642.1							-.00366	-.00366
2644.1							.01625	.01625

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2646.1							-.01935	-.01935
2648.1							.00591	.00591
2650.1							.00342	.00342
2652.1							.00003	.00003
2654.1							.00491	.00491
2656.1							-.00823	-.00823
2658.1							-.00924	-.00924
2660.1							.00648	.00648
2662.1							.00876	.00876
2664.1							-.00623	-.00623
2666.1							.00231	.00231
2668.1							-.00410	-.00410
2670.1							-.01890	-.01890
2672.1							.00828	.00828
2674.1							-.00038	-.00038
2676.1							.01071	.01071
2678.1							-.00086	-.00086
2680.1							-.00399	-.00399
2682.1							-.00817	-.00817
2684.1							.00978	.00978
2686.1							.00543	.00543
2688.1							-.00725	-.00725
2690.1							.00186	.00186
26[illegible].1							.00711	.00711

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2694.1							-.01344	-.01344
2696.1							.00465	.00465
2698.1							-.00742	-.00742
2700.1							-.00242	-.00242
2702.1							.00751	.00751
2704.1							.01284	.01284
2706.1							.00383	.00383
2708.1							-.00477	-.00477
2710.1							-.00550	-.00550
2712.1							-.00839	-.00839
2714.1							.00320	.00320
2716.1							.01522	.01522
2718.1							.00323	.00323
2720.1							-.01136	-.01136
2722.1							.00332	.00332
2724.1							-.01971	-.01971
2726.1							.00137	.00137
2728.1							.02144	.02144
2730.1							.00151	.00151
2732.1							-.02026	-.02026
2734.1							.00558	.00558
2736.1							-.00281	-.00281
2738.1							.00123	.00123
2740.1							.02315	.02315
2742.1							-.00931	-.00931

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2744.1							-.01285	-.01285
2746.1							-.00732	-.00732
2748.1							0	0
2750.1							.01792	.01792
2752.1							.00813	.00813
2754.1							-.00891	-.00891
2756.1							-.01315	-.01315
2758.1							.01768	.01768
2760.1							-.00779	-.00779
2762.1							-.00088	-.00088
2764.1							.01154	.01154
2766.1							-.01517	-.01517
2768.1							-.00555	-.00555
2770.1							.00734	.00734
2772.1							.01287	.01287
2774.1							-.01654	-.01654
2776.1							.00161	.00161
2778.1							.00512	.00512
2780.1							-.00964	-.00964
2782.1							.00853	.00853
2784.1							-.00360	-.00360
2786.1							-.00088	-.00088
2788.1							-.00412	-.00412
2790.1							-.00041	-.00041

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2792.1							-.00717	-.00717
2794.1							.00646	.00646
2796.1							.00735	.00735
2798.1							-.00874	-.00874
2800.1							-.00150	-.00150
2802.1							.00729	.00729
2804.1							-.00620	-.00620
2806.1							.00786	.00786
2808.1							.00466	.00466
2810.1							-.00490	-.00490
2812.1							-.00573	-.00573
2814.1							.00344	.00344
2816.1							-.00388	-.00388
2818.1							.00856	.00856
2820.1							.01004	.01004
2822.1							-.00648	-.00648
2824.1							-.00644	-.00644
2826.1							.00048	.00048
2828.1							-.00301	-.00301
2830.1							-.00599	-.00599
2832.1							.00603	.00603
2834.1							.00197	.00197
2836.1							-.00380	-.00380
2838.1							.01036	.01036
2840.1							-.00485	-.00485

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2842.1							-.00548	-.00548
2844.1							-.00846	-.00846
2846.1							-.00018	-.00018
2848.1							.00967	.00967
2850.1							.00417	.00417
2852.1							-.02064	-.02064
2854.1							.01416	.01416
2856.1							.00769	.00769
2858.1							.00502	.00502
2860.1							-.01093	-.01093
2862.1							-.00706	-.00706
2864.1							-.00765	-.00765
2866.1							.00124	.00124
2868.1							.01970	.01970
2870.1							.01209	.01209
2872.1							-.02008	-.02008
2874.1							-.00443	-.00443
2876.1							.00785	.00785
2878.1							-.00663	-.00663
2880.1							.01394	.01394
2882.1							-.00742	-.00742
2884.1							-.00405	-.00405
2886.1							.02034	.02034
2888.1							-.01171	-.01171

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2890.1							.00439	.00439
2892.1							.00280	.00280
2894.1							-.00655	-.00655
2896.1							-.00749	-.00749
2898.1							.01227	.01227
2900.1							-.00156	-.00156
2902.1							.00110	.00110
2904.1							.00222	.00222
2906.1							-.00230	-.00230
2908.1							-.01291	-.01291
2910.1							.01651	.01651
2912.1							-.00734	-.00734
2914.1							-.00702	-.00702
2916.1							.00678	.00678
2918.1							-.00725	-.00725
2920.1							.00353	.00353
2922.1							.01265	.01265
2924.1							.00055	.00055
2926.1							-.01512	-.01512
2928.1							.00035	.00035
2930.1							.00189	.00189
2932.1							.00082	.00082
2934.1							.00274	.00274
2936.1							.00189	.00189
2938.1							-.00822	-.00822

COMPANY : BEACH PETROLEUM N.L. WELL : NAJABA - 1A

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2940.1							.00587	.00587
2942.1							.00721	.00721
2944.1							-.01699	-.01699
2946.1							.01207	.01207
2948.1							-.01386	-.01386
2950.1							-.00955	-.00955
2952.1							.01909	.01909
2954.1							.01271	.01271
2956.1							-.01555	-.01555
2958.1							.00251	.00251
2960.1							-.00443	-.00443
2962.1							-.00477	-.00477
2964.1							.00965	.00965
2966.1							.00738	.00738
2968.1							-.01844	-.01844
2970.1							.00649	.00649
2972.1							-.00860	-.00860
2974.1							.01468	.01468
2976.1							.00563	.00563
2978.1							-.00369	-.00369
2980.1							-.01624	-.01624
2982.1							-.00295	-.00295
2984.1							.01603	.01603
[illegible].1							.00545	.00545

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
2988.1							-.00383	-.00383
2990.1							-.00486	-.00486
2992.1							-.01980	-.01980
2994.1							.01032	.01032
2996.1							.02015	.02015
2998.1							-.00250	-.00250
3000.1							-.00904	-.00904
3002.1							-.00334	-.00334
3004.1							-.01303	-.01303
3006.1							.00347	.00347
3008.1							.01555	.01555
3010.1							.00066	.00066
3012.1							-.00270	-.00270
3014.1							.00060	.00060
3016.1							-.00263	-.00263
3018.1							.00994	.00994
3020.1							-.00355	-.00355
3022.1							-.00968	-.00968
3024.1							-.01373	-.01373
3026.1							.01061	.01061
3028.1							-.00024	-.00024
3030.1							.01347	.01347
3032.1							.00151	.00151
3034.1							-.01739	-.01739
3036.1							-.00774	-.00774

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
3038.1							.03474	.03474
3040.1							-.00362	-.00362
3042.1							.00368	.00368
3044.1							-.00541	-.00541
3046.1							-.01458	-.01458
3048.1							-.00707	-.00707
3050.1							.01963	.01963
3052.1							-.00559	-.00559
3054.1							-.00653	-.00653
3056.1							.00187	.00187
3058.1							-.00259	-.00259
3060.1							.00214	.00214
3062.1							.01186	.01186
3064.1							-.00139	-.00139
3066.1							-.02433	-.02433
3068.1							.01037	.01037
3070.1							.01571	.01571
3072.1							-.01246	-.01246
3074.1							.01285	.01285
3076.1							-.00994	-.00994
3078.1							-.01407	-.01407
3080.1							.01313	.01313
3082.1							.00894	.00894
3084.1							-.00885	-.00885

TWO WAY TRAVEL TIME MS	DEPTH FROM SRD (OR TOP) M	INTERVAL VELOCITY M/S	INTERVAL DENSITY G/C3	REFLECT. COEFF.	TWO WAY ATTEN. COEFF.	SYNTHETIC SEISMO. PRIMARY	PRIMARY + MULTIPLES	MULTIPLES ONLY
3086.1							.00695	.00695
3088.1							-.00271	-.00271
3090.1							-.01660	-.01660
3092.1							.02406	.02406

APPENDIX 6

PALYNOLOGICAL STUDIES

PALYNOLOGY REPORT

BIOSTRATIGRAPHY, PALAEOENVIRONMENTS, AND HYDROCARBON SOURCE POTENTIAL OF NAJABA NO.1, 1311m - 3400m (EARLY CRETACEOUS - EARLY TERTIARY) OTWAY BASIN

by

MARY E. DETTMANN

Prepared for
BEACH PETROLEUM N.L.

August, 1986.

SAMPLE			SOURCE POTENTIAL				OIL SOURCE POTENTIAL				MATURATION					BIOSTRAT.	AGE	DEPOSITIONAL ENVIRONMENT			
type	depth	lithol.	low	mod.	high	v.high	poor	ltd.	fair	good	IM	EM	M	LM	OM			terr.	par.	m.mar.	mar.
swc	1311	cly			*			*			*					M. diversus	Pal./Eoc.			*	
swc	1382	cly			*			*			*					M. diversus	Pal./Eoc.			*	
swc	1460.5	cly			*		*				*					L. balmei	Pal.			*	
swc	1496	cly/sand		*			*				*					T. longus	Maastr.			*	
swc	2186.5	cly	*				*					*				T. pachyexinus	Santon.			*	
swc	2520	cly/sand	*				*					*				C. triplex	Tur.			*	
swc	2651	cly/st		*			*					*				C. triplex	Tur.		*		
swc	2805	slst.			*		*						*			C. triplex	Tur.			*	
swc	2887	slst.	*				*						*			C. paradoxa	m. Albian	*			
swc	2997	slst.	*				*						*			no. C. striatus	n.o. Albian	*			
swc	3400	slst.	*				*							*		no. C. striatus	n.o. Albian	*			
			0.8 1.2 2.4 (ml OM/10gm) KEROGEN YIELD				20 60 80 % H-RICH KEROGEN				GY Y A Br Bl 1.8 2.2 2.5 3.0 SPORE COLOUR/ TAI VALUE										

TABLE 1. Summary of palynological results showing inferred hydrocarbon source potential, oil source potential, maturation, age, and palaeoenvironments of sediments between 1311m and 3400m in Najaba No.1

SUMMARY

Palynomorphs extracted from Najaba No.1 between 1331m and 3400m indicate that the section ranges in age from Albian to late Paleocene or early Eocene. An hiatus, spanning the late Albian to Cenomanian is located within the sequence between 2805m and 2887m. The Late Cretaceous - Early Tertiary sediments examined were deposited in close-to-land, marginal marine to paralic situations. Deposition of the underlying Early Cretaceous (Albian) sequence occurred in terrestrial environments. The organic component of the sediments is predominantly of land plant origin and is dominated by hydrogen-lean macerals that are gas prone when mature. High yields of organic matter from sediments between 1311m - 1496m and 2651m - 2805m indicate good potential for hydrocarbon generation. Spore colour suggests that the section is mature at and below 2805m.

INTRODUCTION

Eleven sidewall cores and a cutting sample from between 1311m and 3400m in Najaba No.1, Otway Basin have been palynologically examined to ascertain the age and biostratigraphic relationships of the sediments, the palaeoenvironments at and around the depositional site, and the hydrocarbon source potential and maturation levels of the enclosed organic matter. Table 1 summarises these results. Species distributions are shown on Table 2 and source rock/maturation data, as determined palynologically, are incorporated in Table 3.

Sample processing and analyses follows procedures outlined in a previous report (Dettmann 1986).

BIOSTRATIGRAPHY AND AGE

All samples proved to be palynologically productive and the contained assemblages indicate an age range of Early Cretaceous to Early Tertiary. The separate spore-pollen and dinoflagellate constituents of the assemblages enable biostratigraphic zonation of the sediments in terms of the palyno-zones established for southern Australian Cretaceous and Tertiary sequences by Dettmann and Playford (1969), Harris (1965) Stover & Evans (1973), Stover & Partridge (1973), Partridge (1976) and Helby _et al_. (in press).

1. _1311m - 1382m_ ; _M_. _diversus_ Zone, late Paleocene - early Eocene.

The presence of common _Malvacipollis diversus_ in association with _Spinozonocolpites prominatus_, _Cupanieidites orthoteichus_, and _Proteacidites grandis_ indicate attribution to the _M_. _diversus_ Zone of Stover & Evans (1973) and the _C_. _orthoteichus_ Zone of Harris (1965). The latter was delineated with the Dilwyn Formation in the Princetown region of western Victoria.

The taxonomically restricted dinoflagellate associations contained in the samples provide general support for a late Paleocene - early Eocene age, but lack indices of Partridge's (1976) Early Tertiary Zones.

2. 1460.5m ; L. balmei/E. crassitabulata Zones, Paleocene.
The spore-pollen assemblage contains Gambierina edwardsii and Lygistepollenites balmei and is comparable to those of the L. balmei Zone of Stover & Evans (1973) and equivalent G. edwardsii Zone of Harris (1965). The Paleocene age thus indicated is supported by the dinoflagellates.
The latter indicate reference to the E. crassitabulata Zone of mid Paleocene age (Partridge 1976).

3. 1496m ; T. longus/M. druggii Zones, Maastrichtian.
The diverse spore-pollen assemblage contains common Gambierina, diverse proteaceous pollen together with Tricolpites longus and is referable to the T. longus Zone. The dinocyst microflora indicates reference to the M. druggii Zone of Maastrichtian age (Partridge 1976, Helby et al., in press).

4. 2186.5m ; T. pachyexinus/C. porifera Zones; Santonian.
The sample provided a moderately diverse assemblage dominated by saccate pollen. The association of Tricolpites pachyexinus, Phyllocladidites mawsonii and Ornamentifera sentosa confirms attribution to the T. pachyexinus Zone of Dettmann & Playford (1969). Associated dinocysts include Chatangiella tripartita and Odontochitina porifera, the combined occurrence of which defines the O. porifera Zone (Helby et al. in press). The sediments are thus of Santonian age.

5. 2520m - 2805m ; C. triplex Zone, Turonian.
Samples examined contain Phyllocladidites mawsonii, Clavifera triplex and Triorites minor in saccate dominated assemblages. They are referred to the C. triplex Zone of Turonian age.

Dinoflagellates occur in all samples and the assemblages are comparable to those of early Late Cretaceous age reported from the Flaxmans Formation and basal Belfast Mudstone in the Otway Basin. However, they are insufficiently diagnostic for precise zonal attribution.

6. 2887m ; C. paradoxa, middle Albian.

The moderately diverse, but poorly preserved palynomorph assemblage contains Coptospora paradoxa, Balmeisporites spp. and Pilosisporites grandis. The presence of this association and absence of Phimopollenites pannosus indicates attribution to the C. paradoxa Zone (Dettmann & Playford 1969).

7. 2997m - 3400m ; n.o. C. striatus Subzone, n.o. early Albian.

Sidewall cores from 2997m and 3400m provided low yields of poorly preserved palynomorphs. The assemblages are clearly of Early Cretaceous age and the presence of Crybelosporites striatus in the lower sample indicates an age no older than the early Albian C. striatus Subzone of Dettmann & Playford 1969. Cuttings from 3023m were also investigated; from these were picked dark shaly and green-grey silty to sandy lithotopes that were separately prepared for palynological examination. The sandstone/siltstone fragments were found to be devoid of palynomorphs. The shale cuttings yielded a moderately well preserved spore pollen - dinoflagellate assemblage comparable to those of the C. triplex Zone. In view of results obtained from the sidewall cores, it is concluded that the productive (shaly) cuttings include substantial down-hole contamination from the early Late Cretaceous sequence identified at higher levels (2520m - 2805m) in the well.

PALAEOENVIRONMENTS

Organic matter extracted from the samples is dominantly of land plant derivation, with minor contributions of algal and fungal material. Additionally, recycled palynomorphs occur in several of the samples.

Late Cretaceous and Early Tertiary sediments between 1311m and 2805m are interpreted to have accumulated in close-to-land situations subjected to marine influence. The Albian sequence was deposited in terrestrial environments. Further discussion of the palaeoenvironments is given below.

1. 1311m - 1496m ; Maastrichtian - late Paleocene/early Eocene.

All samples provided high volumes of organic matter mostly derived from terrestrial sources. The presence of dinoflagellates are suggestive of brackish to marine environments. Deposition occurred in a close-to-land marginal marine situation and source sediments were derived, in part, from erosion products of Permian and Early-mid Cretaceous sequences.

2. 2186.5m ; Santonian.

A close-to-land depositional situation subjected to marine influence is indicated for the sample from its content of land-plant and algal detritus. The latter includes chlorphycean microfossils of fresh to brackish habitats as well as dinoflagellates that are indicative of marine influence. As in the overlying samples recycled Permian and Early Cretaceous palynomorphs indicate that the sediment source included Permian and Early Cretaceous sequences.

3. 2520m - 2887m ; Turonian.

Low to high volumes of organic matter extracted from the samples is dominated by land-plant material derived from a rainforest vegetation. This was deposited in close-to-land situations subjected to marine influence. All three samples contain recycled Permian palynomorphs. Additionally, Early Cretaceous forms are represented in that from 2520m, and profuse representation of the Late Devonian - Early Carboniferous Granulatisporites frustulensis (Playford 1985) was recorded from the sample at 2651m. Thus the palynological evidence indicates that the sediment source of the Turonian section in Najaba No.1 included Late Devonion - Early Carboniferous, Permian, and Early Cretaceous sequences.

4. 2887m - 3400m ; Albian.

Low volumes of organic matter were recovered from the sample. This is dominantly of land plant origin derived from a flood plain vegetation that included dry-zone and mesic elements. Algal microfossils, which occur rarely, appear to be affiliated with fresh water forms. Deposition in terrestrial environments (paludal/fluvial) is indicated. Source sediments were, in part, derived from Triassic and Permian sequences.

SOURCE ROCK POTENTIAL AND MATURATION

Source rock and maturation assessments are based on methods outlined in a previous report (Dettmann 1986).

The majority of samples from the Late Cretaceous - Early Tertiary section (1311m - 2805m) provided high yields of organic matter and have potential to support significant hydrocarbon generation when mature (Table 1, 3). Organic matter is chiefly of opaque land plant detritus and is gas prone. However, samples at 1311m and 1382m have sufficiently high proportions of hydrogen-rich macerals (spores, cuticles etc.) to support limited liquid generation. These and underlying sediments to a depth of 1496m are immature. Below 2186.5m, the Late Cretaceous section is early mature to mature.

Samples studied from the Early Cretaceous sequence (2887m - 3400m) yielded low volumes of organic matter and thus have limited hydrocarbon source potential (Tables 1, 3). Organic matter is gas prone and is mature to late mature with respect to the main oil generation zone.

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TABLE 2 PALYNOMORPH DISTRIBUTION

COMPANY: BEACH PETROLEUM N.L. Sheet 1 of 5

WELL: NAJABA No.1 BASIN: OTWAY

Sample type	S	S	S	S	S	S	S	S	S	S	S			D		
Palynomorph / Depth (m)	3400	2997	2887	2805	2651	2520	2186.5	1496	1460.5	1382	1311			3023		
CRYPTOGAM SPORES:																
Aequitriradites spinulosus	+	+														
Klukisporites scaberis	+			+												
Foraminisporis dailyi	+		+				+									
Pilosisporites notensis	+															
Velosporites triquetrus	+															
Foraminisporis asymmetricus	+	+	+													
Triporoletes reticulatus	+		+													
Cicatricosisporites australiensis	+	+	+	+												
Crybelosporites striatus	+															
Ceratosporites equalis	+	+		+	+	+	+									
Neoraistrickia truncata	+	+														
Cyathidites australis/minor	+		+	+	+	+	+	+	+	+						
Cyathidites punctatus	+		+				+									
Baculatisporites comaumensis	+	+		+	+	+	+		+					+		
Retitriletes austroclavatidites	+	+	+			+	+		+	+						
Stereisporites antiquasporites	+	+	+	+	+	+	+	+	+	+	+			+		
Foraminisporis wonthaggiensis		+	+													
Antulsporites clavus		+														
Stereisporites pocockii		+	+			+										
Retitriletes circolumenus		+														
Pilosisporites grandis			+													
Coptospora paradoxa			+													
Retitriletes nodosus			+													
Reticulatisporites pudens			+		+											
Cyathidites asper			+													
Gleidheniidites circinidites			+	+	+	+	+	+	+	+	+			+		
Balmeisporites holodictyus			+													
Arcellites reticulata			+													
Triporoletes simplex			+													
Laevigatosporites ovatus			+			+	+	+	+	+				+		
Leptolepidites verrucatus			+													
Cicatricosisporites cuneiformis				+												
Clavifera triplex				+	+	+	+		+					+		
Dictyophyllidites crenatus				+												

Sample type: S = Sidewall core; C = Conventional core;
D = Cuttings.

TABLE 2

PALYNOMORPH DISTRIBUTION

COMPANY: BEACH PETROLEUM N.L. Sheet 2 Of 5

WELL: NAJABA No.1 BASIN: OTWAY

Sample type	S	S	S	S	S	S	S	S	S	S	S			D		
Depth (m) Palynomorph	3400	2997	2887	2805	2651	2520	2186.5	1496	1460.5	1382	1311			3023		
Trilobosporites trioreticulosus				+												
Lycopodiacidites cf. asperus					+	+	+									
Cicatricosisporites sp.					+											
Perotriletes oepikii					+	+								+		
Ornamentifera sp.					+									+		
Balmeisporites glenelgensis					+											
Cicatricosisporites hughesii						+										
Rugulatisporites cf. mallatus						+	+									
Perotrilites jubatus						+	+									
Microfoveolatosporis canaliculatus						+										
Biretisporites sp.						+				+	+					
Foveogleicheniidites confossus							+									
Ornamentifera sentosa							+	+	+							
Punctatosporites sp.							+									
Camarazonosporites ohaiensis									+		+					
Laevigatosporites major								+	+	+						
Triporoletes sp.								+		+	+					
Camarazonosporites bullatus									+							
Latrobosporites crassus									+							
Camarazonosporites amplus									+	+	+					
Cyathidites splendens										+						
Polypodiaceoisporites tumulatus										+	+					
Osmundacidites wellmanii											+					
GYMNOSPERMOUS POLLEN:																
Alisporites grandis	+	+	+		+											
Araucariacites australis	+	+	+	+	+	+	+				+			+		
Podocarpidites ellipticus	+	+	+	+	+	+	+	+	+	+	+			+		
Classopollis chateaunovii	+	+	+													
Cycadopites nitidus	+	+	+				+									
Microcachryidites antarcticus	+		+	+	+	+	+	+	+	+	+			+		
Alisporites similis		+														
Trisaccites microsaccatus			+	+	+	+	+	+	+	+				+		
Phyllocladidites mawsonii				+	+	+	+	+	+	+	+			+		
Inaperturopollenites sp.					+											
Lygistepollenites florinii								+	+	+	+					

Sample type: S = Sidewall core; C = Conventional core;
D = Cuttings.

TABLE 2 PALYNOMORPH DISTRIBUTION

COMPANY: BEACH PETROLEUM N.L. Sheet 3 of 5

WELL: NAJABA No.1 BASIN: OTWAY

Sample type	S	S	S	S	S	S	S	S	S	S	S			D		
Palynomorph / Depth (m)	3400	2997	2887	2805	2651	2520	2186.5	1496	1460.5	1382	1311			3023		
Lygistepollenites balmei								+	+							
Dilwynites granulatus										+	+					
Dilwynites tuberculatus										+	+					
ANGIOSPERMOUS POLLEN:																
Rousea sp.				+												
Nyssapollenites cf. lanosus				+												
Triorites minor				+	+	+	+							+		
Cupuliferoidopollenites sp.						+										
cf Proteacidites sp.						+										
Tricolpites sp.						+								+		
Liliacidites cf. intermedius						+		+								
Phimopollenites pannosus						+										
Tricolporites sp.							+									
Australopollis obscurus							+	+	+	+	+					
Tricolpites gillii							+	+	+							
Tricolpites pachyexinus							+									
Asteropollis asteroides							+									
Tricolpites longus								+								
Triporopollenites sectilis								+								
Nothofagidites endurus								+	+							
Gambierina rudata								+								
Gambierina edwardsii								+	+							
Cranwellipollis subpalisadus								+								
Gephyrapollenites wahooensis								+								
'Proteacidites latrobensis								+								
Nothofagidites senectus								+								
Tricolporites microreticulatus								+								
Proteacidites amolosexinous								+								
Ericipites scabratus								+	+	+						
Periporopollenites polyoratus								+		+	+					
Tricolpites sabulosus								+								
Propylipollis angulatus								+								
Tricolpites confessus								+	+	+						
Proteacidites cf. crassipora									+							
Tricolporites lilliei								+								

Sample type: S = Sidewall core; C = Conventional core;
D = Cuttings.

TABLE 2 PALYNOMORPH DISTRIBUTION

Sheet 4 of 5

COMPANY: BEACH PETROLEUM N.L.

WELL: NAJABA No.1 BASIN: OTWAY

Sample type	S	S	S	S	S	S	S	S	S	S	S			D		
Palynomorph / Depth (m)	3400	2997	2887	2805	2651	2520	2186.5	1496	1460.5	1382	1311			3023		
Proteacidites subscabratus									+		+					
Proteacidites parvus									+	+						
Proteacidites adenanthoides									+		+					
Haloragicidites harrisii									+	+	+					
Triporopollenites cf ambiguus									+							
Tetracolporites verrucosus									+							
Tricolpites waiparaensis									+							
Tricolporites prolata									+	+	+					
Malvacipollis diversus										+	+					
Proteacidites pachypolus										+	+					
Proteacidites grandis										+	+					
Myrtaceidites eugenioides										+	+					
Proteacidites reticuloscabratus										+	+					
Spinozonocolpites prominatus										+	+					
Tricolporites scabratus										+						
Cupanieidites orthoteichus										+	+					
Anacolosidites luteoides										+						
Proteacidites scaboratus											+					
Tiliaepollenites notabilis											+					
Proteacidites stiplatus											+					
Proteacidites crassus											+					
ALGAL MICROFOSSILS:																
Sigmopollis spp.	+	+	+			+										
Schizosporis reticulatus	+															
Amosopollis cruciformis				+	+	+	+							+		
Oligosphaeridium complex				+	+		+							+		
Heterosphaeridium heteracanthum				+		+	+							+		
Cyclonephelium distinctum				+												
Palaeohystrichophora infusorioides				+			+									
Palaeoperidinium sp.						+										
Oligosphaeridium pulcherinum						+										
Spiniferites sp						+										
Cribroperidinium edwardsii						+										
Botryococcus sp.							+	+	+	+						
Pallambages sp.							+									

Sample type: S = Sidewall core; C = Conventional core;
D = Cuttings.

TABLE 2 PALYNOMORPH DISTRIBUTION

COMPANY: BEACH PETROLEUM N.L. Sheet 5 of 5

WELL: NAJABA No.1 BASIN: OTWAY

Sample type	S	S	S	S	S	S	S	S	S	S	S			D		
Palynomorph / Depth (m)	3400	2997	2887	2805	2651	2520	2186.5	1496	1460.5	1382	1311			3023		
Chatangiella tripartita							+									
Odontochitina porifera							+									
Manumiella druggii								+								
Isabelidinium bakeri								+	+							
Cymatiosphaera sp.								+								
Pterospermella sp.								+								
Ceratiopsis dartmoria									+							
Eisenackia crassitabulata									+							
Cordosphaeridium inodes									+							
Fibrocysta bipolare									+	+	+					
Ceratiopsis obliquipes										+	+					
Deflandrea pachyceras											+					
RECYCLED PALYNOMORPHS:																
Playfordiaspora crenulata	+															
Lundbladispora denmeadii		+														
Aratrisporites spp.		+														
Striatoabieites sp.			+													
Plicatipollenites spp.				+		+	+	+	+							
Granulatisporites frustulensis					+											
Cyclosporites hughesii						+			+	+	+					
Cicatricosisporites ludbrookiae							+									
Didecitriletes ericianus								+								
Pseudoreticulatispora pseudoretic.								+								
Classopollis chateaunovii											+					
Contignisporites spp.											+					
Pilosisporites notensis											+					
Dictyotosporites complex											+					

Sample type: S = Sidewall core; C = Conventional core;
D = Cuttings.

SAMPLE	DEPTH (m)	LITHOLOGY	ORGANIC MATTER																
			AMOUNT (ml/ 10gm)	TYPE (% composition)													MATURITY		
				Alginite			Sporin./Cutin.				Woody tissue	Humic		Vitr.		Inertinite	Spore Colour	T.A.I. (after Staplin 1982)	Interpreted Maturity Level
				Dispersed	Dense	Algal cysts	Fine (<10µm)	Spores	Leaf tissue	Other		<20µm	> 20µm	<20µm	> 20µm				
SWC 15	1311	Claystone, dk. grey	1.7	5	-	+	-	5	+	25	-	15	30	5	15	+	greenish yellow	1.4	immature
SWC 11	1382	Claystone, dk. grey	1.6	5	-	+	-	5	5	15	+	15	35	5	15	-	greenish yellow	1.4	immature
SWC 6	1460.5	Claystone, dk. grey - brown	2.1	+	5	+	-	+	+	+	-	25	40	5	25	-	greenish yellow	1.4	immature
SWC 1	1496	Sandstone, f.gr.& clay dk. grey-brown	1.1	-	-	+	-	5	-	-	-	5	10	30	50	+	greenish yellow	1.6	immature
SWC 29	2186.5	Claystone, dk.grey-brown white lam.	0.6	+	-	+	-	5	+	5	-	10	10	20	50	+	greenish yellow	1.8	immature - early mature

TABLE 3. Organic matter Najaba No.1, sidewall cores 1311m - 3400m

SAMPLE	DEPTH (m)	LITHOLOGY	ORGANIC MATTER																
			AMOUNT (ml/ 10gm)	TYPE (% composition)													MATURITY		
				Alginite			Sporin./Cutin.				Woody tissue	Humic		Vitr.		Inertinite	Spore Colour	T.A.I. (after Staplin 1982)	Interpreted Maturity Level
				Dispersed	Dense	Algal cysts	Fine (<10µm)	Spores	Leaf tissue	Other		<20µm	> 20µm	<20µm	> 20µm				
SWC 25	2520	Claystone & sand, f.gr.dk. grey-brown	0.5	+	-	+	-	+	+	10	-	10	30	20	30	-	yellow	2.0	early mature
SWC 23	2651	Claystone & f.gr.sand, dk.grey-brown	1.2	+	-	+	5	+	-	10	+	10	15	20	40	+	yellowish amber	2.2	early mature
SWC 19	2805	Siltstone, grey-brown	2.0	-	-	+	-	+	+	15	+	5	10	30	40	+	amber	2.3	mature
SWC 16	2887	Siltstone med.grey	0.5	-	-	-	-	5	-	5	-	20	10	20	40	+	amber-brown	2.5	mature
SWC14	2997	Siltstone dk.grey	0.6	-	-	-	-	+	-	10	-	25	5	20	40	+	amber-brown	2.5	mature
SWC 1	3400	Siltstone grey-green	0.4	-	-	-	-	5	-	15	-	15	5	20	40	+	brown	2.5+	mature-late mature

TABLE 3 (contd.) Organic matter Najaba No.1, sidewall cores 1311m - 3400m

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APPENDIX 7

SOURCE ROCK STUDIES

NAJABA-1A

K.K. No.	Depth (m)	$\bar{R}_v$max	Range	N	Description including Exinite Fluorescence
					Dilwyn Formation 314m
x5418	1038 SWC 21	0.34	0.29-0.41	28	Sparse liptodetrinite, greenish yellow to orange, sparse resinite, bright yellow to orange, rare to sparse cutinite, yellow to orange, rare sporinite, bright yellow to yellow orange. (Siltstone. Dom common to abundant, V>E>I. Vitrinite common, exinite sparse, inertinite rare. Iron oxides abundant. Pyrite common.)
					Pember Mudstone Member 1088m
x5419	1217 SWC 18	0.34	0.29-0.40	20	Sparse liptodetrinite, bright yellow to orange, rare cutinite and sporinite, yellow to orange. (Siltstone>>sandstone. Dom common, V>E>I. Vitrinite and exinite sparse, inertinite rare. Carbonate sparse. Iron oxides abundant. Pyrite common.)
					Intra-Pember Sandstone 1294m
x5420	1400 SWC 10	0.38	0.31-0.45	26	Sparse liptodetrinite and sporinite, greenish yellow to yellow orange, rare resinite and sporinite, yellow. (Siltstone>>sandstone. Dom common, V>E>I. Vitrinite and exinite sparse, inertinite rare. Sparse ?bitumen as lenses, yellow. Iron oxides abundant. Pyrite common.)
					Pebble Point Formation 1405m
x5421	1485 SWC 3 $\bar{R}_I$	0.52 1.16	0.33-0.70 0.74-1.74	24 14	Sparse cutinite, yellow, yellow orange to orange, rare sporinite, yellow orange to orange, rare resinite, yellow to yellow orange, rare fluorinite, green, rare ?phytoplankton, yellow. (Sandstone>silty sandstone>siltstone. Dom abundant, I>V>E. Inertinite abundant, vitrinite and exinite sparse. Pyrite abundant to major, pyritized wood being present. The reflectance range of the vitrinite is unusually large and some may be reworked but a definitive cut-off from normal vitrinite could not be recognized.)
					Paaratte Formation 1487m
					Nullawarre Equivalent 2040m
x5532	2186.5 SWC 29	0.68	0.62-0.73	8	Sparse liptodetrinite and rare to sparse sporinite, yellow to orange, rare cutinite, yellow to orange. (Sandstone>siltstone>>carbonate. Dom abundant, I>E>V. Inertinite abundant, exinite sparse, vitrinite rare. Pyrite abundant.)
					Basal Paaratte (Undiff) 2377m
x5533	2425.5 SWC 27 $\bar{R}_I$	0.74 1.43	0.64-0.85 1.02-1.96	17 15	Sparse sporinite and rare liptodetrinite, yellow to orange, rare cutinite, orange to dull orange, rare resinite, yellow. (Sandstone>carbonate>siltstone. Dom abundant, I>E>V. Inertinite common, exinite and vitrinite sparse. Iron oxides sparse. Pyrite abundant.)

NAJABA-1A

K.K. No.	Depth (m)	$\bar{R}_v$max	Range	N	Description including Exinite Fluorescence
					Belfast Mudstone 2650m
x5534	2651 SWC 23	0.75	0.67-0.82	11	Sparse sporinite, yellow to orange, rare to sparse liptodetrinite, yellow to orange, rare cutinite, yellow orange. (Siltstone>calcareous sandstone>carbonate. Dom abundant, I>E>V. Inertinite abundant, exinite sparse, vitrinite rare to sparse. Iron oxides sparse. Pyrite abundant.)
	$\bar{R}_I$	1.45	1.04-1.96	15	
x5535	2722 SWC 21	0.75	0.62-0.91	20	Sparse liptodetrinite and rare sporinite, yellow to orange, rare cutinite, orange. (Sandy siltstone>sandstone>carbonate. Dom abundant, I>V>or=E. Inertinite abundant, vitrinite and exinite sparse. Iron oxides common. Pyrite abundant.)
	$\bar{R}_I$	1.44	0.98-1.86	15	
x5536	2997 SWC 14	0.65	-	1	Sparse liptodetrinite, yellow, rare sporinite, yellow orange, rare cutinite, orange. (Claystone>siltstone. Dom sparse to common, I>E>V. Inertinite and exinite sparse, vitrinite rare. Pyrite rare.)
	$\bar{R}_I$	1.24	0.92-1.90	17	
x5537	3130 SWC 10	?0.58	-	? 1	Rare liptodetrinite and sporinite, yellow to orange. (Carbonate>claystone>siltstone. Dom common, I>E>V. Inertinite common, exinite and vitrinite rare. Pyrite rare.)
	$\bar{R}_I$	1.35	1.06-1.64	32	
x5538	3251 SWC 6	0.71	0.69-0.72	2	Sparse sporinite, orange yellow to orange, rare cutinite, yellow orange. (Claystone>siltstone. Dom sparse to common, E>I>V. Exinite and inertinite sparse, vitrinite rare. Pyrite rare.)
	$\bar{R}_I$	1.28	1.06-1.46	11	
x5539	3386 SWC 2	0.85	0.73-0.95	5	Rare ?liptodetrinite, yellow to orange, rare ?sporinite and ?cutinite, yellow to dull orange. (Silty sandstone>sandy siltstone. Dom sparse I>V>?E. Inertinite sparse, vitrinite and ?exinite rare. Vitrinite shows dull orange to brown fluorescence. Rare green oil droplets and specks present. Green interstitial oil present. Iron oxides sparse. Carbonate and siderite sparse. Pyrite sparse.)
x5503	3405 Unwashed Ctgs	0.80	0.69-0.90	27	Rare sporinite, yellow orange. (Sandstone>>carbonate>sandy siltstone>claystone>coal. Coal sparse, vitrite. Overall dom sparse, I>V>E. Inertinite sparse, vitrinite and exinite rare. Vitrinite shows weak brown fluorescence. Green fluorescing interstitial ?oil sparse in clastics. Green fluorescing oil droplets rare in clastics. Weak oil cut from cracks in vitrinite in coal. Dom abundant in hand-picked grains of carbonaceous siltstone and claystone, I>E>V. Inertinite and exinite abundant, vitrinite common. Iron oxides sparse. Pyrite common.)

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NAJABA-1A

KK No.	Depth (m)	TOC
x5418	1038	3.28
x5419	1217	1.47
x5420	1400	1.10
x5421	1485	2.11
x5532	2186.5	1.14
x5533	2425.5	1.70
x5534	2651	2.05
x5535	2722	1.25
x5536	2997	0.38
x5537	3130	0.60
x5538	3251	0.55
x5539	3386	0.37

APPENDIX 8

PETROGRAPHY & X-RAY DIFFRACTION ANALYSIS

amdel

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Mineral Development
Laboratories

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hone Adelaide (08) 79 1662
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In reply quote:

25 July 1986

F 3/944/0
F 6494/87

Beach Petroleum N.L.
4th Floor
685 Burke Road
CAMBERWELL VIC 3124

Attention: Mr D. Langton

<u>REPORT F 6494/87</u>

YOUR REFERENCE: Letter of 3 July 1986

LOCALITY: Najaba-1A

WORK REQUIRED: Petrography, XRD, SEM

Investigation and Report by: Dr Brian G. Steveson
Dr Roger N. Brown and
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1. PETROGRAPHY

TSC47424; Location: Najaba; Core 16, 1295 m

Rock Name:
Porous quartz sandstone

Thin Section:
An optical estimate of the constituents gives the following:

Constituent	%
Quartz	80
Pores	15
Feldspar	2
Clay	2
Mica	1
Lithic fragments	1
Chlorite	<1
Heavy minerals	Trace

The quartz grains show a bimodal grain size distribution with the majority of the grains in a size range up to about 0.15 mm but a small to moderate proportion of grains in the size range of 0.3 to approximately 0.5 mm. Most of the grains are equant but subangular to angular in shape and they have touching, tangential contacts. There is no evidence of pressure solution or the development of quartz overgrowths. The quartz is of the common or plutonic variety and occurs with small amounts of (mainly potassic) feldspar and a variety of rare lithic fragments which are mainly metasedimentary in origin. There are also some grains of opaques and tourmaline.

The intergranular material is mainly void but there is a small amount of rather indeterminate clay and some patches of a green, weakly birefringent mineral which is assumed to be chlorite. The clay generally shows weak to moderate birefringence and is probably a rather sparse argillaceous matrix which infilled some of the spaces between the grains during deposition or shortly after deposition of the bulk of the quartz. It is possible that some of the material may have been recrystallised in the diagenetic environment and there are one or two instances in the thin section where it is difficult to distinguish this argillaceous matrix from what may well be altered lithic material. Chlorite is present both as detrital flakes but, more commonly as indeterminate fine-grained aggregates which may well be derived from the recrystallisation of original lithic fragments or possibly precipitation from circulating pore waters. Pores are widespread and are generally not more than about 0.05 to 0.1 mm in size. Most appear to be of primary origin and there is a good chance that the pores are well interconnected in three dimensions.

The commonly held view is that sandstones such as these with a bimodal grain size distribution are deposited from heavily laden river systems. Such systems are generally mature but the angular nature of many of the quartz grains does not entirely agree with this hypothesis.

TSC47423; Location: Najaba; Core 9, 1405 m

Rock Name:

Ferruginous sandstone

Thin Section:

An optical estimate of the constituents gives the following:

Constituent	%
Quartz	65
Brown matrix (berthierine and siderite)	30
Pores	<10
Feldspar	<1
Mica	Trace

The rock shows a framework of ill sorted quartz grains within which is a contiguous network of material which in thin section is brown to virtually opaque. Under intense illumination it can be seen to consist of a rather indeterminate homogeneous brown matrix scattered within which are large numbers of small anhedral siderite crystals.

The quartz grains have an ill defined bimodal grain size distribution and the rock gives the impression of being somewhat poorly sorted. Grains commonly range from approximately 0.1 mm in size to as much as 2 mm. Grains more than 0.6 mm in size probably comprise at least 60% of the solid volume of the rock. Many of the larger grains are fairly well rounded but there is a range to angular grains. Smaller grains tend to be somewhat more angular than the larger grains. As well as quartz there are one or two large grains of feldspar (perthite, suggesting a granitic or high grade metamorphic provenance) and traces of muscovite.

There is no evidence of pressure solution effects on the detrital quartz grains and this probably results from the relatively early development of the pore-filling material which inhibited the circulation of pore waters. This material clearly consists (from the X-ray diffraction results) of berthierine and siderite probably with small amounts of disseminated pyrite. The berthierine forms the bulk of the material and is a brown very weakly birefringent homogeneous aggregate. Within this siderite crystals are commonly less than 0.05 mm in diameter. They are invariably equant and anhedral and their proportion appears to vary somewhat and range up to 50% of the brown material. Berthierine is a ferruginous type of chlorite which appears to be associated (according to the literature) with an ocean floor environment and to form pelletal aggregates. In this example it seems more likely that the berthierine is of diagenetic origin although it may have been derived from local neoformation of abundant berthierine detrital pellets. Siderite is clearly of authigenic origin and appears to have partly replaced the phyllosilicate.

Pores are not abundant and tend to be irregularly distributed in the thin section. It appears likely to the author that a considerable proportion of the pores are in fact derived from the thin sectioning process and it seems likely that the original porosity of the sample was distinctly low and occurred only as micro pores widely distributed throughout the matrix berthierine and siderite.

TSC47422; Location: Najaba; Core 2, 1491.5 m

Rock Name:

Compact argillaceous and ferruginous sandstone

Thin Section:

Unlike the two samples described above, this rock has been extensively damaged by the sidewall coring bullet and it is not thought worthwhile to give a detailed mineralogy. The sample consists of about 50% of large quartz grains but the material between these appears to have been comminuted and now consists of angular broken chips of fine and very fine-grained quartz-rich material.

The large grains are not well sorted and range in size from approximately 0.3 mm to 2.5 mm. Undamaged large grains appear to be equant and well rounded and do not show overgrowths. Some of the grains are polycrystalline but most are common or plutonic quartz. Finer grained material between these large grains is apparently mainly quartz but it shows an extremely wide size range from less than 0.1 mm down to submicroscopic. There is weakly bierfringent material associated with this fragmented quartz but it is not clear to what extent this is an original argillaceous matrix (presumably mainly kaolinitic) or it may even be drilling mud.

In some places in the thin section, however, intergranular material consists of what appears to be fine-grained opaques. From the X-ray diffraction results it seems likely that this is pyrite and the extremely intergrown interface between this material and quartz suggests that the latter has been replaced by the pyrite. Aggregates of pyrite are commonly of the order of 2 to 3 mm in size and have a patchy distribution in the thin section.

The bulk of the sample shows little or no porosity but there are some areas with large open spaces; these are thought to result from damage to the sample caused during collection of the sidewall core and preparation of the thin section.

Location: Najaba 1A; Core 30, 2044.5 m

Rock Name:

Compact quartz sandstone

Thin Section:

An optical estimate of the constituents gives the following:

Constituent	%
Quartz	90
Carbonate	3
Clays	2
Glauconite	1
Opaques	Trace
Pores	<5

The quartz grains have been considerably shattered but the overall textural features of the rock can still be seen; however, the estimate of the porosity given above is a guess, only. The thin section in fact contains a much higher porosity but it is thought that a lot of this is due to fracturing.

The quartz grains are moderately to well sorted and appear to range in size commonly from about 0.2 mm to as much as 1.5 mm. Many smaller fragments have been disregarded since these are thought to be broken remnants of original grains. The quartz grains are of the common or plutonic variety and tend to form equant grains showing some rather angular outlines as a result of pressure solution effects. The rock is, in many fields of view, characterised by the abundance of long and curved contacts between the grains and it is thought that the authigenesis of quartz which has resulted in this texture has been the most significant feature in reducing the porosity of the original sand. It is this process which has resulted in the very high volume percentage of quartz in the rock also.

Minor detrital components are small amounts of lithic fragments shown as 'clays' in the list above. Most have been extensively deformed and now occur as rather rare patches between the quartz grains. Some very fine grained patches may represent original chert fragments.

Intergranular material has only a very patchy distribution in the rock and both carbonate and glauconite show concentrations in some areas of the thin section and are absent from others. The carbonate tends to form small equant crystals commonly less than 0.05 mm in size which occur in little patches but the glauconite forms monomineralic aggregates sometimes as much as 0.3 mm in size. The carbonate has clearly partly replaced quartz in some areas of the rock and is a distinctly authigenic phase whereas the glauconite may well have been derived from original glauconite fragments deposited with the quartz and these have been subsequently recrystallised and deformed. The minerals both tend to fill intergranular spaces where they occur but, as noted above, they have a distinctly irregular distribution in the thin section and their development probably contributed only to a minor extent to the occlusion of the original porosity and choking of permeability of the sand.

The presence of glauconite is generally taken as evidence of a marine environment and the quartzitic nature of the detrital material in the rock suggests a mature sand; taken overall, therefore, it seem most likely that this is some kind of beach or littoral deposit probably associated with a high energy environment.

Location: Najaba 1-A; Core 26, 2460 m

Rock Name:
Compact fine-grained sandstone

Thin Section:
An optical estimate of the constituents gives the following:

Constituent	%
Quartz	90
Clays	5
Glauconite	1
Heavy minerals	1
Pores	<2

The average grain size of this rock is approximately 0.1 to 0.15 mm and the quartz grains are generally distinctly well sorted. It seems likely that the original grains were subangular to subround in outline but they have been modified by extreme pressure solution effects and now occur in a granular, tight aggregate. The authigenesis of the quartz during compaction and lithification has been by far the most significant factor in reducing the porosity of the rock. In many places the quartz grains occur in an almost monomineralic mosaic with only a thin film of clay material between the grains and rare patches of clays and crystals of heavy minerals.

Minor constituents of the rock are widely distributed heterogeneous clays and fine-grained constituents almost certainly derived from original lithic clasts rather than an argillaceous matrix. The material is distinctly variable and commonly ranges from mosaics of fine-grained oriented micaceous material to rather heterogeneous fine-grained rocks some of which may well be rather altered acid volcanics. Other aggregates of clay are clearly glauconite and there are thin films of clay on the grain margins which cannot be specifically identified.

The sample contains an unusually large proportion of heavy minerals some of which are opaque and semi-opaque varieties probably including rutile, ilmenite and iron oxide and sulphide minerals. There are small amounts of tourmaline and zircon also.

There are one or two very small aggregates of highly birefringent material which may well be traces of authigenic carbonate.

The description refers to several fragments in the thin section which are essentially impervious. There are some patches of blue dye but these are thought to represent artefacts of thin sectioning process. In some parts of the thin section there are also aggregates of fine-grained brown material which probably represents a shaly horizon or large clasts incorporated within the sandstone. This material is invariably fine-grained and it, too, is impervious and impermeable.

Location: Najaba 1-A; Core 22, 2694 m

Rock Name:
Compact dolomitic sandstone

Thin Section:
An optical estimate of the constituents gives the following:

Constituent	%
Quartz	85-90
Carbonate	3-10
Clays	1
Authigenic kaolinite	Trace-1
Heavy minerals	Trace
Pores	<5

Part of the sample consists of an impervious and impermeable shale horizon but most is a quartz-rich sandstone and the description is concentrated on this material. The extent of damage of the sandstone varies considerably in the thin section but there are some fields of view which are relatively well preserved. For the most part these contain an extremely abundant quartz which forms a granular mosaic as a result of pressure solution effects on the original grains. Where grain outlines can be seen they appear to be at least fairly well rounded and it seems likely that the sample was originally deposited as a well sorted, mature quartz sand. The average grain size is probably of the order of 0.1 to 0.2 mm and there are few grains more than 0.3 mm in size. Apart from quartz the original sand must have contained a small proportion of stable heavy minerals and possibly traces (only) of more labile lithic fragments. As in the two fragments described above, feldspar appears to be totally absent.

During compaction and lithification there was extensive pressure solution of the quartz and the development of long and curved contacts between the grains and this is probably the most important process in reducing the porosity of the original sand. The rock does, however, contain two authigenic phases; an unstained carbonate (assumed to be dolomite) and small pools of well crystallised kaolinite.

The dolomite forms as much as 10% of the volume of the rock in some places and has a poikilitic texture with respect to the quartz. Dolomite grains are generally 0.2 to 0.6 mm in size and there is some evidence of the dolomite having replaced quartz at the margins between the two minerals. Kaolinite has a distinctly more patchy distribution but there are isolated pools of monomineralic aggregates which are as much as 0.1 mm in size. It seems most likely the the authigenic kaolinite crystallised from circulating pore waters rather than having developed from, for example, original feldspar grains. Less easily identified clay aggregates are probably derived from original metasedimentary or sedimentary rock fragments.

The sandstone is a distinctly mature, well sorted sandstone which probably contains no clay matrix material. As well as abundant evidence of the authigenesis of quartz, the sample has undergone what was probably a late phase of authigenesis of dolomite and authigenic kaolinite.

Location: Najaba 1-A; Core 18, 2809 m

Rock Name:

Compact dolomitic sandstone and fine-grained argillaceous sandstone

Thin Section:

The thin section consists of a series of fragments most of which are of sandstone. In addition, most of these fragments are of an extremely crushed and broken sandstone which appears to be similar in many respects to that described immediately above. Elsewhere there is a better preserved sandstone which is finer-grained and more argillaceous.

The fragments of quartz-rich, dolomitic sandstone have an average grain size of about 0.2 mm (ignoring abundant crushed material). The grains commonly fit tightly together and hence have angular to subangular outlines. Where original grain outlines can be seen there is considerable evidence that these probably are relatively well rounded. Clays are rare in this part of the thin section but there are traces of detrital muscovite and of heavy minerals. It seems likely that this was a well sorted mature sandstone consisting very largely of extremely stable detrital components. The material has virtually no visible porosity in the thin section and this is a result very largely of the development of pressure solution effects on the original grains of quartz. This sandstone contains approximately 3 to 7% of an unstained carbonate which generally forms fairly clear crystals as much as 0.25 mm in size. There are also, in addition, aggregates of finer grained dolomite. The carbonate does fill intergranular spaces where it occurs and has a tendency towards a poikilitic habit but it is thought that the (probably late) development of the dolomite will have had only a minor effect on occluding the porosity of the sandstone.

One or two areas of the thin section contain a somewhat different sandstone lithology characterised by a much smaller average grain size and the presence of approximately 30% of fine-grained phyllosilicate material. The average grain size of this rock is about 0.1 mm and the clays and micas form aggregrates which are similar in size. The variety of these constituents strongly indicates that they were derived from original lithic fragments deposited with the grains of quartz. The abundance of clay has resulted in the choking and closing of original pores during compaction and although there is considerable blue staining in this part of the rock it is thought likely that this sandstone at this depth probably has little porosity *in situ* (<5%).

There are small amounts of fine-grained authigenic carbonate in this part of the thin section and some aggregates of opaque and semi-opaque secondary ferruginous material. Some irregular lenses of completely opaque material may consist of compressed plant debris. Finally, this fine-grained sandstone does contain some glauconitic patches probably derived from original compact detrital clasts.

2. X-RAY DIFFRACTION RESULTS

2.1 PROCEDURE

The samples were air-dried at room temperature. Portion of each was powdered finely and used to prepare an X-ray diffractometer trace which was interpreted by standard procedures.

Weighed subsamples were taken and dispersed in water with the aid of deflocculants and an electric blender, and allowed to sediment to produce −2 µm e.s.d. size fractions by the pipette method. The resulting dispersions were examined by plummet balance to determine their solids contents, and were than used to produce oriented clay preparations on ceramic plates. Two plates were prepared per sample, both being saturated with Mg^{++} ions, and one in addition being treated with glycerol. When air-dry, these were examined in the X-ray diffractometer. Various additional diagnostic examinations were carried out as required, including examination of the glycerol-free plate hot (~130°C) and after heating for one hour at 550°C.

2.2 RESULTS

The results are given in Table 1, which lists the following:

(a) The mineralogy of the total sample, as derived from examination of the bulk material, with supporting evidence as available. The minerals found are listed in approximate order of decreasing abundance, using the semiquantitative abbreviations given. Coverage of clays may be incomplete, and for full clay mineralogy Section (c) should be consulted. This section (a) is for information on non-clay minerals and to give a general idea of the makeup and proportion.

(b) The proportion of the sample found to separate into the −2 µm size fraction, as determined by the plummet balance. The figure obtained applies only to the pre-treatment and dispersions conditions used.

(c) The mineralogy of the −2 µm fraction, given as in Section (a).

TABLE 1: BULK AND CLAY FRACTION MINERALOGY

Sample:	1295 m		1405 m		1491.5 m	
Bulk mineralogy:	Q	D	Q	D	Q	D
	M	Tr	Sid	A	K	Tr-A
	K	Tr	Be	A	M	Tr-A
			Py	Tr-A	Py	Tr-A
			M	Tr	F'	Tr
-2 µm fract. %:	3		9		7	
Mineralogy:	K	D	Be	D	K	D
	Q	A-SD	M	Tr	M	A-SD
	M	A	Q	Tr	Q	A
					C	A

-2 µm fract. %: 4	2460 m	
	K	D
	C	SD
	Q	A
	M	A

Mineral Key

Be	Berthierine
C	Chlorite
F	K feldspar
K	Kaolinite
M	Mica/illite
Py	Pyrite
Q	Quartz
Sid	Siderite

SEMIQUANTITATIVE ABBREVIATIONS:

D = Dominant. Used for the component apparently most abundant regardless of its probable percentage level.

SD = Sub-dominant. The next most abundant component(s) providing its percentage level is judged above about 20.

A = Accessory. Components judged to be present between the levels of roughly 5 and 20%.

Tr = Trace. Components judged to be below about 5%.

There was insufficient material to carry out X-ray diffraction analysis on samples from 2044.5 m, 2694 m and 2809 m and on the bulk of that from 2460 m.

FIGURES

All fields have a longer dimension of approximately 2 mm.

NAJABA-1A

KK No.	Depth (m)	TOC
x5418	1038	3.28
x5419	1217	1.47
x5420	1400	1.10
x5421	1485	2.11
x5532	2186.5	1.14
x5533	2425.5	1.70
x5534	2651	2.05
x5535	2722	1.25
x5536	2997	0.38
x5537	3130	0.60
x5538	3251	0.55
x5539	3386	0.37

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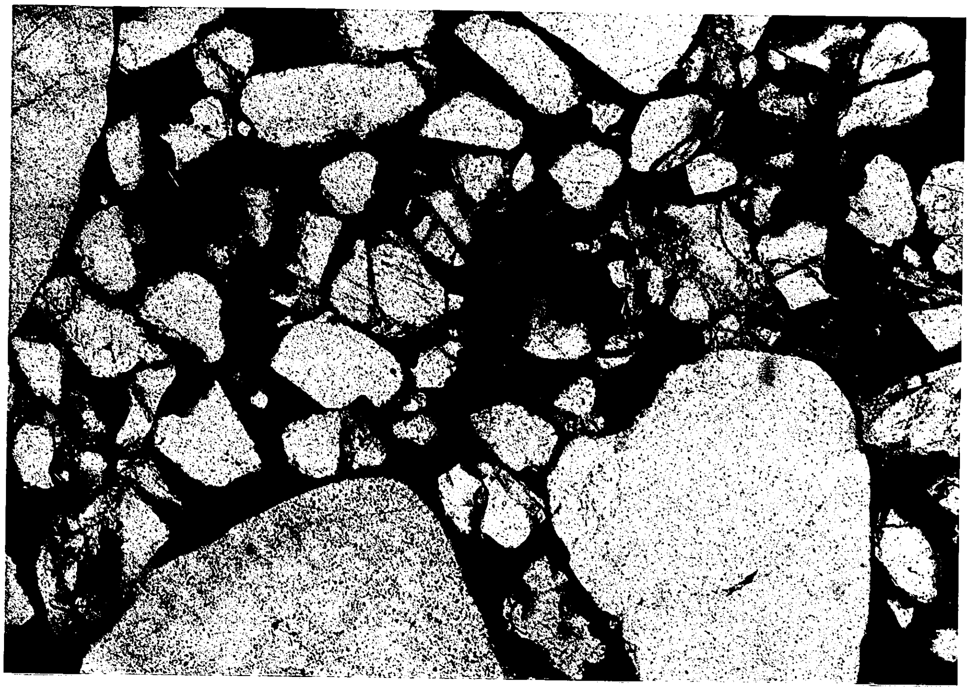

2(a)

2(b)

FIGURE 2: (1405 m)
Bimodal grain-size distribution with rounded grains. Brown matrix of berthierine and siderite.

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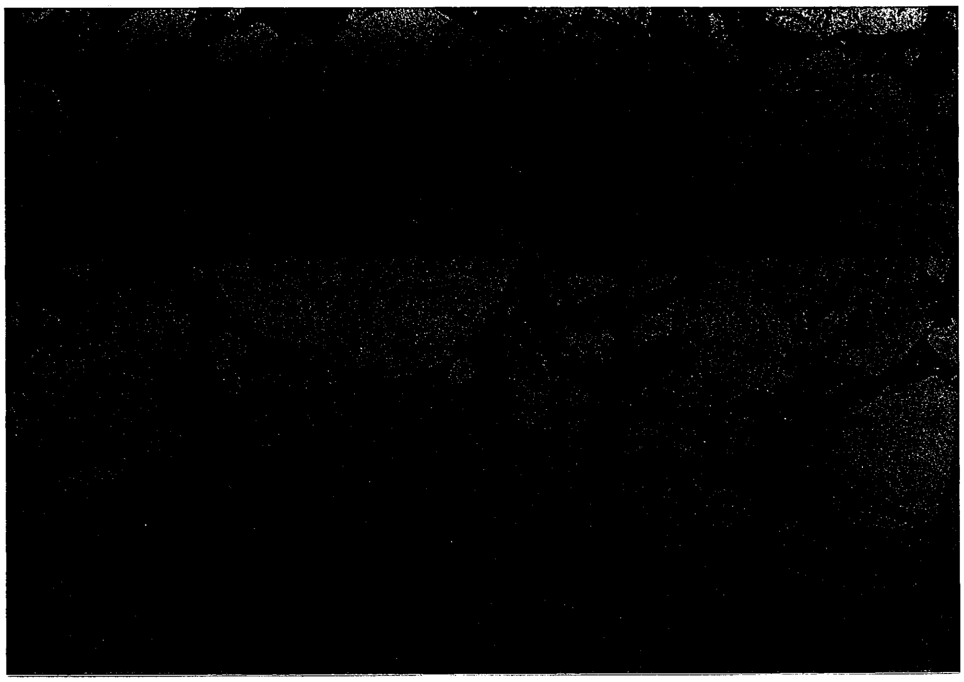
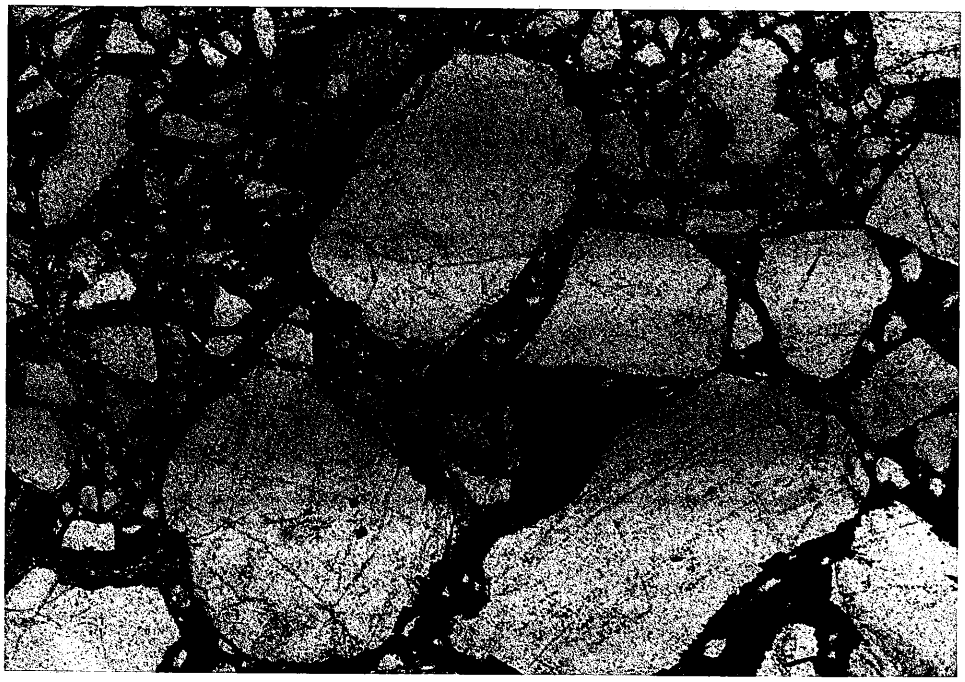


3(a)



3(b)

FIGURE 3: (1491.5 m)
Fractured sample, but probably bimodal. Brown intergranular material is probably an integral part of the rock.

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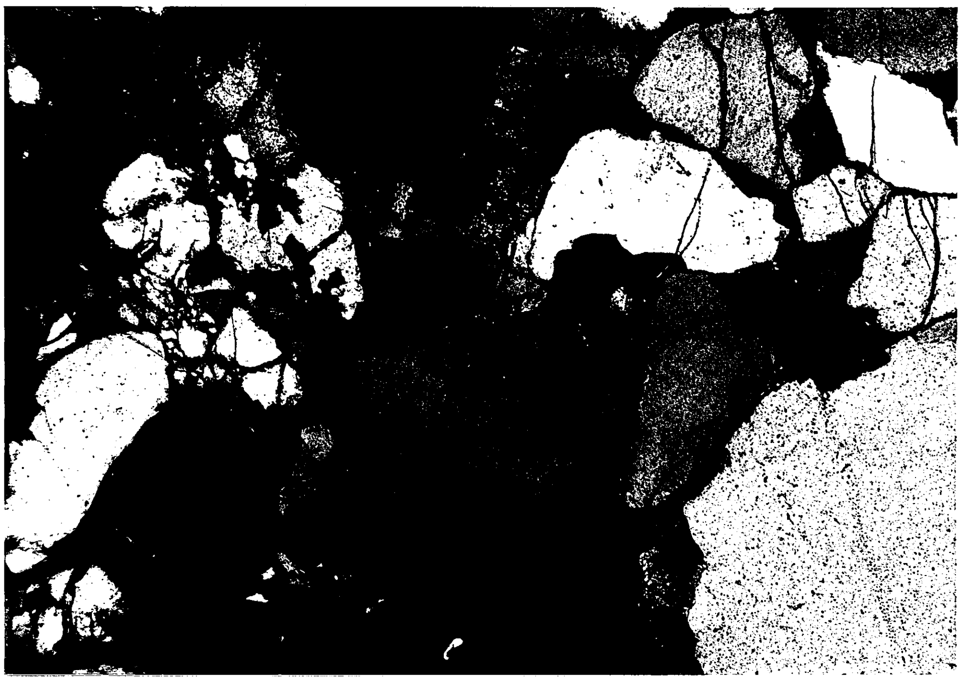

FIGURE 4: 2044 m (crossed Nicols)
Buff-coloured authigenic carbonate in intergranular spaces.

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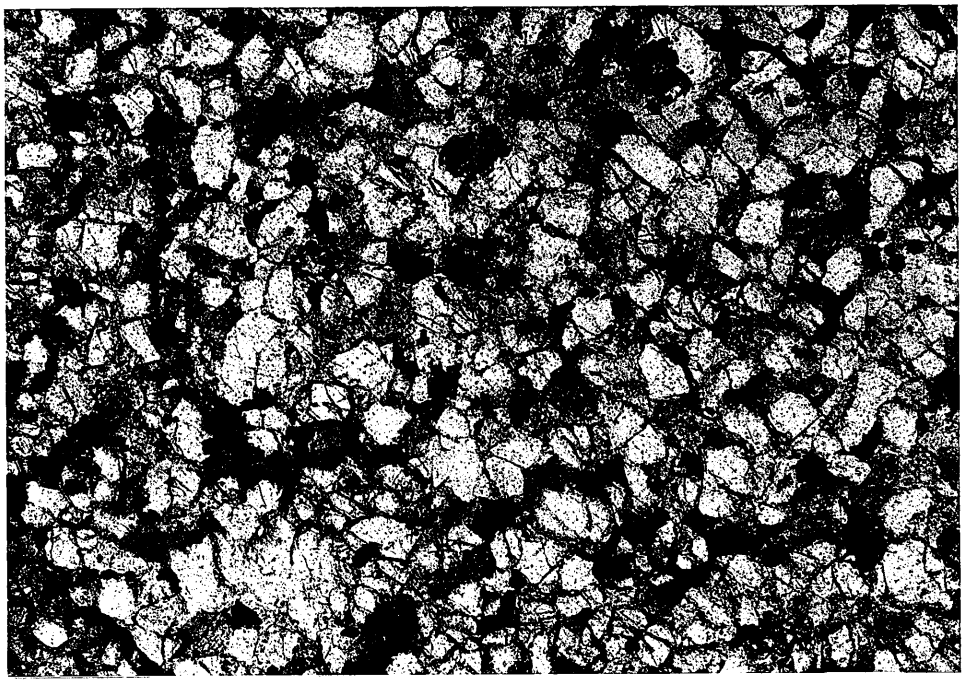
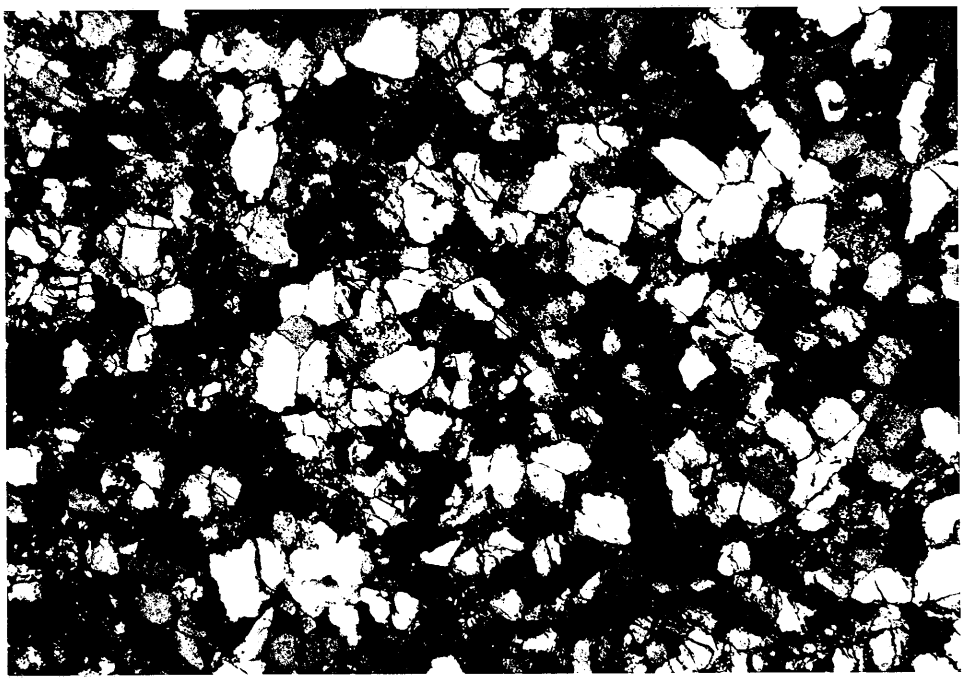


5(a)



5(b)

FIGURE 5: 2460 m (plane polarised light and crossed Nicols)
Compact fine-grained sandstone. Heterogeneous fine-grained clay is from lithic clasts. Blue void space (upper view) is largely a fragment of the sample treatment. One aggregate of pale green ?glauconite can be seen.

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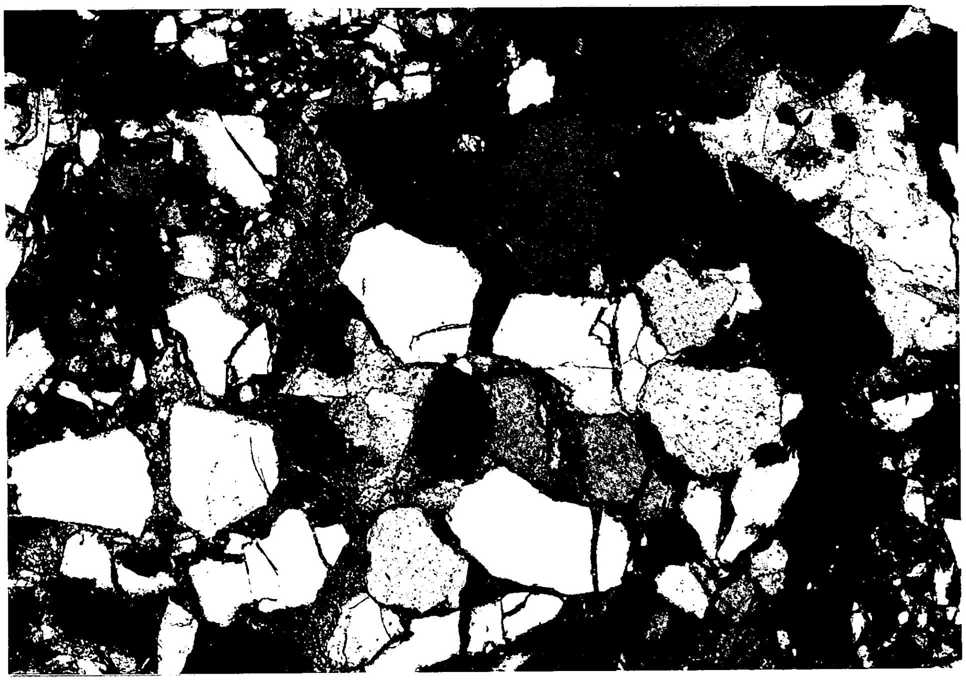
6(a)



6(b)

FIGURE 6: 2694 m (crossed Nicols)
Both fields are relatively dolomitic areas. Dark, fine-grained material in the upper centre of the lower field is probably authigenic kaolinite.

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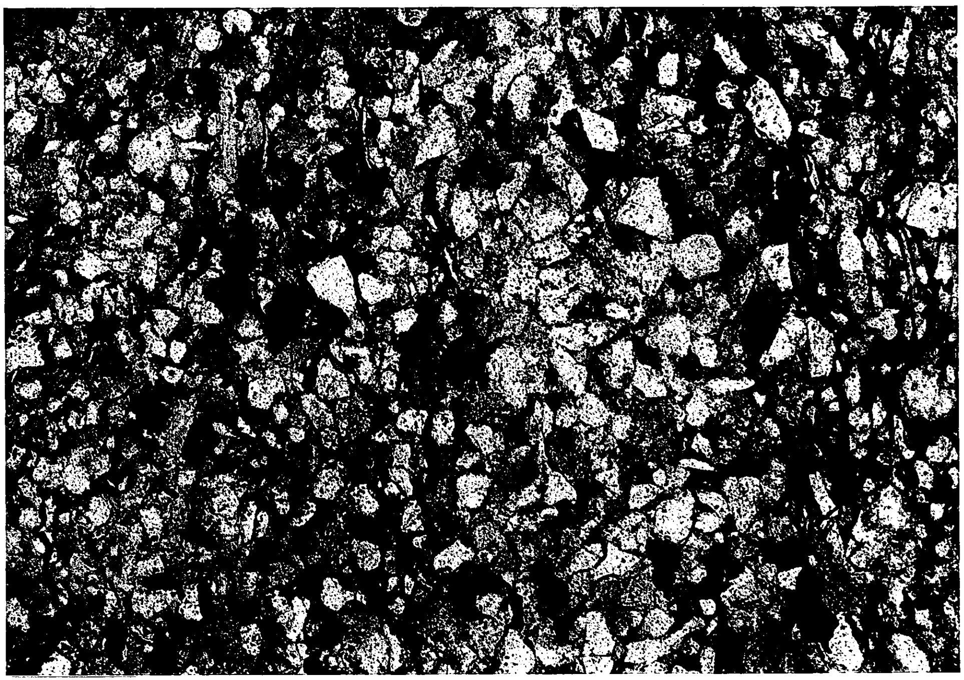

FIGURE 7(a): 2809 m (plane polarised light)
Tight, fine-grained sandstone with abundant dark material. Some of the latter is probably plant debris; more compact, smaller patches are ferruginous heavy-mineral grains.

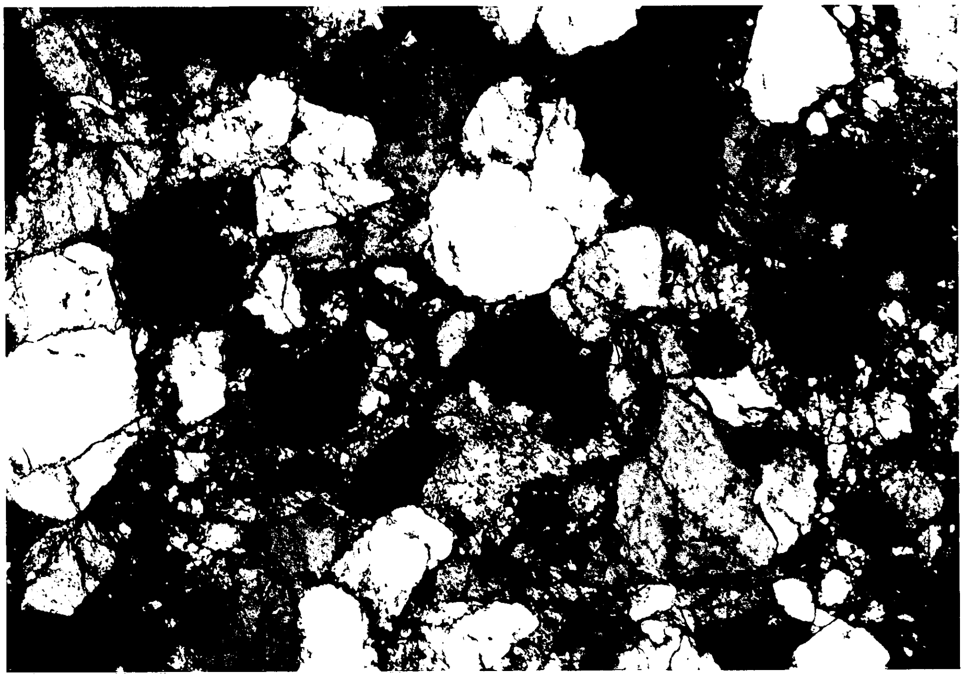

FIGURE 7(b): 2809 m (crossed Nicols)
Rather damaged material but the curved contacts between the quartz grains are well shown. Patches of carbonate occur and are probably relatively late.

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WELL_NAME = NAJABA-1A
CONTRACTOR =
CLIENT_OP_CO = BEACH PETROLEUM NL.

(Inserted by DNRE - Vic Govt Mines Dept)

PE905848

This is an enclosure indicator page.
The enclosure PE905848 is enclosed within the container PE902230 at this location in this document.

The enclosure PE905848 has the following characteristics:

ITEM_BARCODE = PE905848
CONTAINER_BARCODE = PE902230
NAME = Scanning Electron Microscope Photograph (plate 8)
BASIN = OTWAY BASIN
PERMIT = PEP/118
TYPE = WELL
SUBTYPE = PHOTOMICROGRAPH
DESCRIPTION = Scanning Electron Microscope Photograph, plate 8, (from appendix 8--Petrography and X-Ray Diffraction Analysis--of WCR) for Najaba-1A
REMARKS =
DATE_CREATED =
DATE_RECEIVED =
W_NO = W935
WELL_NAME = NAJABA-1A
CONTRACTOR =
CLIENT_OP_CO = BEACH PETROLEUM NL.

(Inserted by DNRE - Vic Govt Mines Dept)

PE905849

This is an enclosure indicator page.
The enclosure PE905849 is enclosed within the container PE902230 at this location in this document.

The enclosure PE905849 has the following characteristics:

ITEM_BARCODE = PE905849
CONTAINER_BARCODE = PE902230
NAME = Scanning Electron Microscope Photograph (plate 9)
BASIN = OTWAY BASIN
PERMIT = PEP/118
TYPE = WELL
SUBTYPE = PHOTOMICROGRAPH
DESCRIPTION = Scanning Electron Microscope Photograph, plate 9, (from appendix 8--Petrography and X-Ray Diffraction Analysis--of WCR) for Najaba-1A
REMARKS =
DATE_CREATED =
DATE_RECEIVED =
W_NO = W935
WELL_NAME = NAJABA-1A
CONTRACTOR =
CLIENT_OP_CO = BEACH PETROLEUM NL.

(Inserted by DNRE - Vic Govt Mines Dept)

PE905850

This is an enclosure indicator page.
The enclosure PE905850 is enclosed within the container PE902230 at this location in this document.

The enclosure PE905850 has the following characteristics:

ITEM_BARCODE = PE905850
CONTAINER_BARCODE = PE902230
NAME = Scanning Electron Microscope Photograph (plate 10)
BASIN = OTWAY BASIN
PERMIT = PEP/118
TYPE = WELL
SUBTYPE = PHOTOMICROGRAPH
DESCRIPTION = Scanning Electron Microscope Photograph, plate 10, (from appendix 8--Petrography and X-Ray Diffraction Analysis--of WCR) for Najaba-1A
REMARKS =
DATE_CREATED =
DATE_RECEIVED =
W_NO = W935
WELL_NAME = NAJABA-1A
CONTRACTOR =
CLIENT_OP_CO = BEACH PETROLEUM NL.

(Inserted by DNRE - Vic Govt Mines Dept)

PE905851

This is an enclosure indicator page.
The enclosure PE905851 is enclosed within the container PE902230 at this location in this document.

The enclosure PE905851 has the following characteristics:

ITEM_BARCODE = PE905851
CONTAINER_BARCODE = PE902230
NAME = Scanning Electron Microscope Photograph (plate 11)
BASIN = OTWAY BASIN
PERMIT = PEP/118
TYPE = WELL
SUBTYPE = PHOTOMICROGRAPH
DESCRIPTION = Scanning Electron Microscope Photograph, plate 11, (from appendix 8--Petrography and X-Ray Diffraction Analysis--of WCR) for Najaba-1A
REMARKS =
DATE_CREATED =
DATE_RECEIVED =
W_NO = W935
WELL_NAME = NAJABA-1A
CONTRACTOR =
CLIENT_OP_CO = BEACH PETROLEUM NL.

(Inserted by DNRE - Vic Govt Mines Dept)

PE905852

This is an enclosure indicator page.
The enclosure PE905852 is enclosed within the container PE902230 at this location in this document.

The enclosure PE905852 has the following characteristics:

ITEM_BARCODE = PE905852
CONTAINER_BARCODE = PE902230
NAME = Scanning Electron Microscope Photograph (plate 12)
BASIN = OTWAY BASIN
PERMIT = PEP/118
TYPE = WELL
SUBTYPE = PHOTOMICROGRAPH
DESCRIPTION = Scanning Electron Microscope Photograph, plate 12, (from appendix 8--Petrography and X-Ray Diffraction Analysis--of WCR) for Najaba-1A
REMARKS =
DATE_CREATED =
DATE_RECEIVED =
W_NO = W935
WELL_NAME = NAJABA-1A
CONTRACTOR =
CLIENT_OP_CO = BEACH PETROLEUM NL.

(Inserted by DNRE - Vic Govt Mines Dept)

PE905853

This is an enclosure indicator page.
The enclosure PE905853 is enclosed within the container PE902230 at this location in this document.

The enclosure PE905853 has the following characteristics:
ITEM_BARCODE = PE905853
CONTAINER_BARCODE = PE902230
NAME = Scanning Electron Microscope Photograph (plate 13)
BASIN = OTWAY BASIN
PERMIT = PEP/118
TYPE = WELL
SUBTYPE = PHOTOMICROGRAPH
DESCRIPTION = Scanning Electron Microscope Photograph, plate 13, (from appendix 8--Petrography and X-Ray Diffraction Analysis--of WCR) for Najaba-1A
REMARKS =
DATE_CREATED =
DATE_RECEIVED =
W_NO = W935
WELL_NAME = NAJABA-1A
CONTRACTOR =
CLIENT_OP_CO = BEACH PETROLEUM NL.

(Inserted by DNRE - Vic Govt Mines Dept)

PE905854

This is an enclosure indicator page.
The enclosure PE905854 is enclosed within the container PE902230 at this location in this document.

The enclosure PE905854 has the following characteristics:

ITEM_BARCODE = PE905854
CONTAINER_BARCODE = PE902230
NAME = Scanning Electron Microscope Photograph (plate 14)
BASIN = OTWAY BASIN
PERMIT = PEP/118
TYPE = WELL
SUBTYPE = PHOTOMICROGRAPH
DESCRIPTION = Scanning Electron Microscope Photograph, plate 14, (from appendix 8--Petrography and X-Ray Diffraction Analysis--of WCR) for Najaba-1A
REMARKS =
DATE_CREATED =
DATE_RECEIVED =
W_NO = W935
WELL_NAME = NAJABA-1A
CONTRACTOR =
CLIENT_OP_CO = BEACH PETROLEUM NL.

(Inserted by DNRE - Vic Govt Mines Dept)

GAS AND FUEL CORPORATION OF VICTORIA
SCIENTIFIC SERVICES DEPARTMENT

SPECIAL TEST REPORT No. 86/1585

Requested by Dr. Ray Pearson, G.F.C. Exploration.

Origin of Sample Mr. Ian Buckingham - Beach Petroleum.

Query Density.

Material Drill core - Otway Basin.

REPORT

NAJABA No. 1A Core No. 4 - 3366 m

Density 2.66 ± 0.02 g/cm^3

It was not possible to obtain the bulk density as the sample supplied was too friable.

The density of the sample was determined by measuring the displacement of water by the sample in a pycnometer at 20 °C. All air was displaced from the sample and the figure given is thus the density of the mineral particles themselves and not the overall density of the stratum.

Distribution: Dr. R. Pearson, GFC Exploration
Mr. I. Buckingham, Beach Petroleum

Chemist M. Baulch
Checked K. Tebbutt
Date 23/9/86
Laboratory Report No. 86/842/CM

APPENDIX 9

NAJABA No 1

NAJABA NO. 1

INTRODUCTION

Najaba No. 1 was spudded at 1950 hours, 12th April 1986, and reached a TD of 212m at 0400 hours, 13th April 1986. Due to a failure of the 20" surface casing, Najaba No. 1 was plugged and abandoned, the rig was released at 0600 hours, 16th April 1986, and skidded 15m east to commence drilling Najaba No. 1A.

DRILLING OPERATIONS

After setting a 30" conductor pipe at 8.3m, Najaba No. 1 drilled to a TD of 212m with the following drilling parameters:

Bit	
. Number:	#1
. Size:	26"
. Type:	S35J
. Jets:	3 x 22
. T/B/G:	2/3/I
WOB:	10 - 15,000 lbs
RPM:	120 - 140
Total Drilling Hours:	26-3/4 hrs

Two Totco deviation surveys were recorded:

Depth (m)	Deviation (°)
77	0
121	3/4

Cont'd.

Najaba No. 1 was spudded with a high viscosity spud mud. High viscosities were maintained using gel and Benex - a clay extender. Mud parameters throughout the 26" section were as follows:

Weight:	8.8 - 9.3+ ppg
Viscosity:	32 sec/qt

CASING

Size:	20"
Weight:	94 lb/ft
Grade:	H-40
Connection:	BTC
Float Collar:	195.2m
Float Shoe:	208.1m

CEMENT

Preflush:	20 bbls of water.
Lead:	823 sacks of class A cement mixed with 3% prehydrated gel.
Tail:	162 sacks of class A cement - neat.
Displacement:	228 bbls water.

GEOLOGY

Heytesbury Group:	Surface to 212m (TD)
Lithology:	CALCARENITE, off white to medium yellow to orange, friable to hard, very fine to fine grained (occasionally medium to coarse grained), 40% calcilutite grains with 5-30% very fine, clear

Cont'd.

quartz sand grains, rare gastropods and bryzoan becoming abundant at 35m with up to 70% bryzoan fragments. Lithology changing with depth to CALCARENITE, light brown to grey, friable to hard, very fine to medium grained (dominantly fine grained), decreasing abundance of bryzoan fragments, trace to common interstial glauconite, trace off white to light grey argillaceous matrix.

ABANDONMENT

Upon bumping the cement plug, 1000 psi pressure and 40,000 lb weight were lost, the casing string was immediately picked up and found to be free (eight joints of casing were subsequently retreived).

Two joints of drill pipe were run in and Plug No. 1 set from 6m to surface (150 sacks Class A cement - neat).

The rig was released at 0600 hours, 16th April 1986, and skidded 15m east to commence drilling Najaba No. 1A.