WCR

NAMGIB-1

W1078

NAMGIB #1

WELL COMPLETION REPORT

BRIDGE OIL LIMITED (OPERATOR)

Compiled by
Bridge Oil Limited
502/3748/92/CD
May 1993
WINPEP/NAMWCR.DOC

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1.1 Well History

Namgib #1 was drilled as an exploration well within PEP-108 to establish the presence of hydrocarbon bearing reservoirs of the Waarre Sandstone within an interpreted, faulted four way dip trap, 2.2km north-northeast of the Iona #1 gas discovery.

Both the primary objective of the Late Cretaceous Waarre Sandstone and the secondary objective of the Nullawarre Greensand were encountered slightly low to prognosis. The Waarre Sandstone exhibited well developed reservoir. The overlying Flaxmans contained a well cemented sandstone which produced the only significant gas show of 32 units. Traces of fluoresence were detected in the Waarre Sandstone and the Eumeralla Formation.

Namgib #1 is situated 2.9km east of North Paaratte #3 and 1.8km south-southeast of Vogel #1, both of which encountered well developed reservoir quality sandstones.

Spudded on 23rd February, 1993, and drilled to a total driller's depth of 1387.4m, the well was plugged and abandoned.

Namgib #1 intersected a stratigraphic sequence essentially as prognosed.

Log analysis indicates that both primary and secondary objectives are water saturated.

No cores or tests were run.

Working interests in the well are as follows:

Bridge Oil Limited (operator)	50%
Gas and Fuel Corporation of Victoria	50%

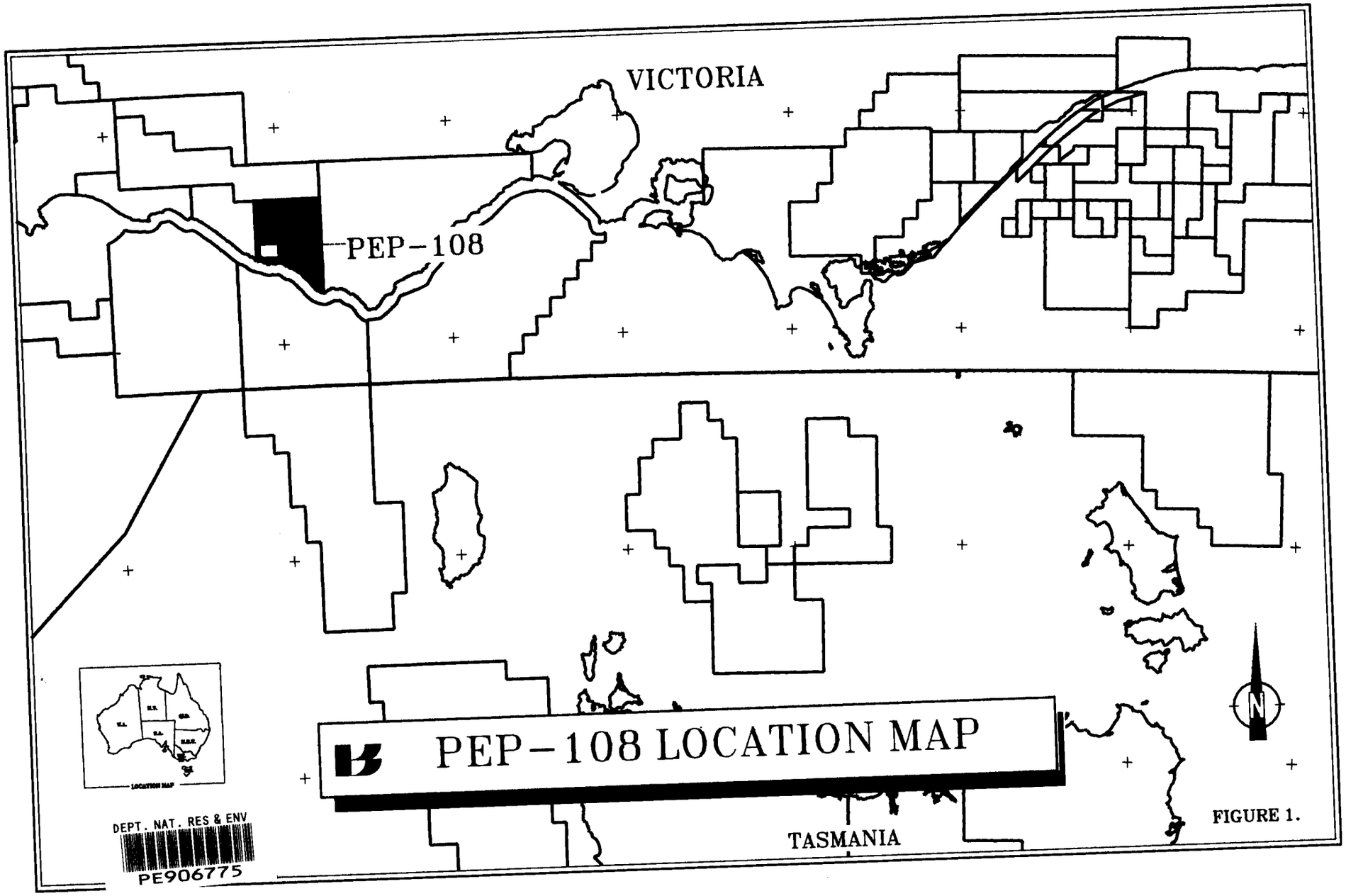
PE906775

This is an enclosure indicator page.
The enclosure PE906775 is enclosed within the container PE900970 at this location in this document.

The enclosure PE906775 has the following characteristics:

ITEM_BARCODE	= PE906775
CONTAINER_BARCODE	= PE900970
NAME	= PEP108 Location Map
BASIN	= OTWAY
PERMIT	= PEP108
TYPE	= GENERAL
SUBTYPE	= MAP
DESCRIPTION	= PEP108 Location Map
REMARKS	=
DATE_CREATED	= 31/05/93
DATE_RECEIVED	= 10/08/93
W_NO	= W1078
WELL_NAME	= NAMGIB-1
CONTRACTOR	=
CLIENT_OP_CO	= BRIDGE OIL LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)



PEP-108 LOCATION MAP

FIGURE 1.

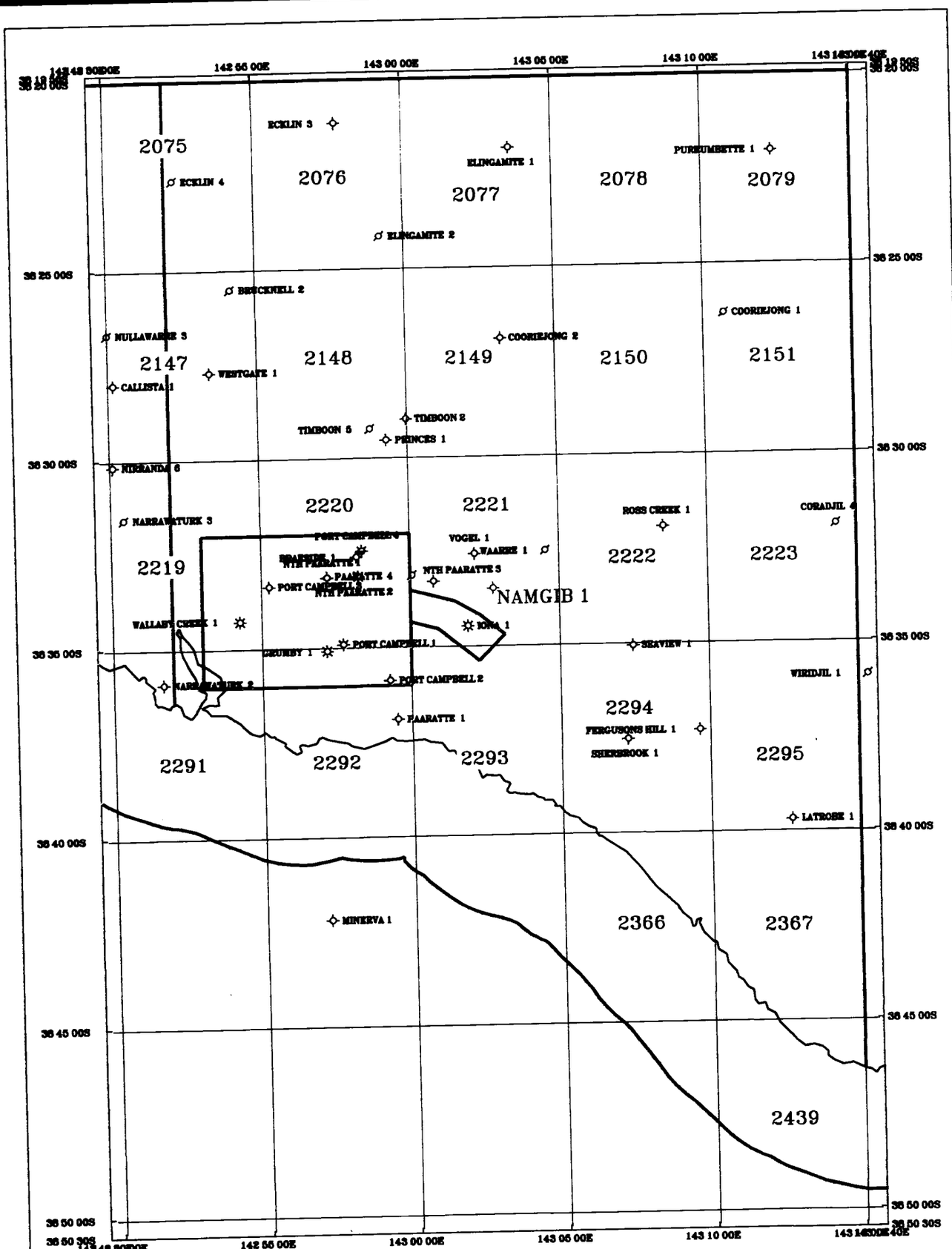
PE906776

This is an enclosure indicator page.
The enclosure PE906776 is enclosed within the container PE900970 at this location in this document.

The enclosure PE906776 has the following characteristics:

ITEM_BARCODE	= PE906776
CONTAINER_BARCODE	= PE900970
NAME	= Location Map - Namgib-1
BASIN	= OTWAY
PERMIT	= PEP108
TYPE	= GENERAL
SUBTYPE	= PROSPECT_MAP
DESCRIPTION	= Location Map - Namgib-1
REMARKS	=
DATE_CREATED	= 31/05/93
DATE_RECEIVED	= 10/08/93
W_NO	= W1078
WELL_NAME	= NAMGIB-1
CONTRACTOR	=
CLIENT_OP_CO	= BRIDGE OIL LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)



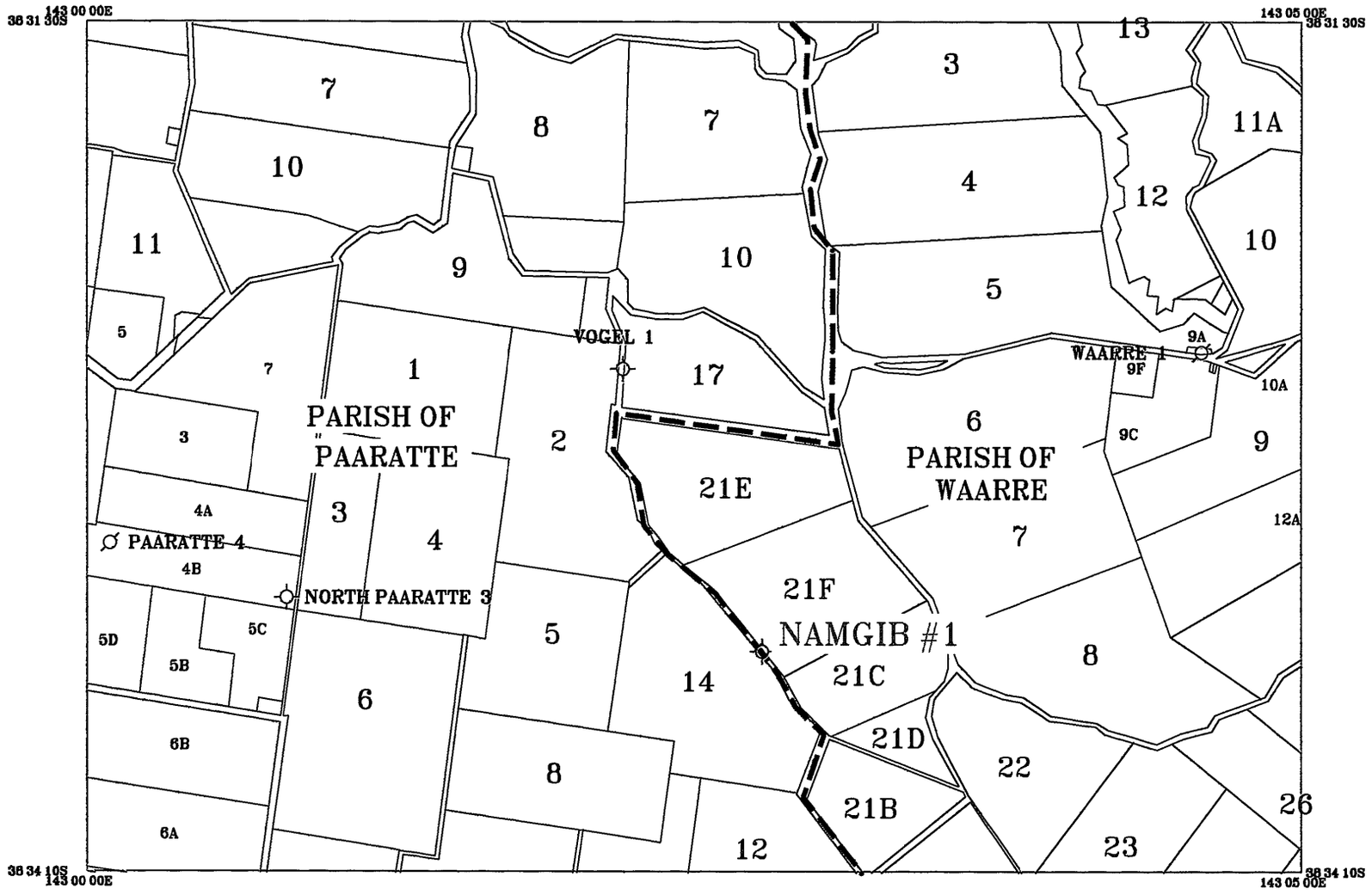
PEP–108 VICTORIA

GRATICULAR BLOCK MAP

AREA = 1152 KM2 23 BLOCKS

SCALE = 1:250000

FIGURE 2.



Plugged & Abandoned

Water Bore

SCALE = 1:37000

OTWAY BASIN–VICTORIA
PEP–108
CADASTRAL MAP

FIGURE 3.

1.2 Well Data Sheet

NAMGIB#1

Operator: BRIDGE OIL LTD

Latitude:	38deg 33' 28.45"	Easting:	678311.36
Longitude:	143deg 02' 47.18"	Northing:	5730281.34
		Zone:	54

Seismic Location:	VO88-12 VP 190
K.B.:	161.8m
G.L.:	156.1m
Programmed T.D.:	1380.0m
Driller's T.D.:	1387.4m
Logger's T.D.	1377.3m
Primary Objective:	WAARRE SST
Secondary Objective:	NULLAWARRE
Spudded:	17.00hrs 23 FEB 1993
T.D. Reached:	11.00hrs 1 MARCH 1993
Rig Released:	04.00hrs 4 MARCH 1993
Rig:	ATCO RIG 2
Rig Type:	MIDCONTINENT U-36-A
Status:	PLUGGED & ABANDONED DRY HOLE
Well Cost:	$559,165
Mud Logging:	EXPLORATION LOGGING
Wireline Logging:	HALLIBURTON LOGGING SERVICES

Wireline Logging Mud Properties

Date:	2/3/93
Type of mud:	KCL-PHPA
Density: Visc:	9.1 : 48
pH : Fluid loss:	8.8 : 7.0
Source of sample:	FLOW LINE
Rm @ MEAS TEMP:	0.28 @ 20.0
Rmf @ MEAS TEMP:	0.22 @ 20.0
Rmc @ MEAS TEMP:	0.30 @ 20.0
Rm @ BHT:	0.168 @ 47.8
Max Meas BHT (^{o}C):	47.8 (118 ^{o}F)
Extrapolated BHT (^{o}C):	50.6 (123 ^{o}F)
CIRC Time:	1 HR 15 MIN
CIRC STOPPED:	2315hrs,1/3/93

COMPLETION DETAILS: -

Casing:

Size (in)	Shoe Depth	
	Driller	Logger
20	10	-
9.625	216.3	215.8

Sampling Programme: WASHED & DRIED SAMPLES AT 10m INTERVALS FROM 218 TO 1000m, THENCE AT 3m INTERVALS TO TD

Formation Tops:

FORMATION	PROG. KB m	PROG. Subsea m	ACTUAL KB m	ACTUAL Subsea m	DIFF. m
Clifton	219	57.2	197.5	35.7	-21.5
L. Mepunga	292	130.2	266.5	104.7	-25.5
Dilwyn	369	207.2	339.8	178.0	-29.2
Pember Mdst.	545	383.2	545.0	383.2	0.0
Pebble Pt.	639	477.2	621.5	459.7	-17.5
Paaratte	661	499.2	653.7	491.9	-7.3
Skull Creek	963	801.2	972.7	810.9	9.7
Nullawarre	1091	929.2	1096.1	934.3	5.1
Belfast Mdst	1195	1033.2	1205.5	1043.7	10.5
Flaxmans	1223	1061.2	1237.5	1075.7	14.5
Waarre Sst.	1240	1078.2	1252.9	1091.1	12.9
Eumeralla	1297	1135.2	1325.0	1163.2	28.0
T.D.	1380	1218.2	1387.4	1225.6	7.4

Logging Suites:

LOG TYPES	RUN	INTERVAL (m)	REMARKS
DLL-MSFL-BCS -GR-SP-CAL	1A	218.0-1376.7	GR to surface
SLD-CNT-GR -CAL	1B	215.8-1375.7	
VSP	1C	278.2-1375.7	Velocity Data

Full Hole Cores: NO CORES TAKEN

Formation Tests: NO TESTS WERE CARRIED OUT

Shows:

INTERVAL (m)	LITH	SHOW
1238 - 1242	SST	GAS 32UNITS C1 6000, C2 115, C3 42, C4 8, ppm
1254 - 1256	SST	GAS 13UNITS C1 2400, C2 45, C3 15, C4 3, ppm
1257 - 1263	SST	TRACE bri yel/wh fluor, tr amber & tr bri org fluor, tr bitumen residue with a mod strmg bri mlky wh cut fluor
1330 - 1347	SST	TRACE v dull yel/grn fluor, ptchy, no cut to tr cut occ v slow strmg cut, tr ring to v thin ring residue SUMMARY : POOR GAS SHOWS IN FLAXMANS AND WAARRE, RESIDUAL TRACE OIL SHOWS IN WAARRE AND EUMERALLA.

Log Analysis:

INTERVAL (m)	Fm.	NET SST (m)	Av. PHI (%)	Av. Sw. (%)	Av. Vsh (%)	N/G (%)
1252.9-1325	WAARRE	23.9	20.5	95.5	15.7	33.1
1237.5-1252.9	FLAXMANS	2.7	12.7	96.9	30.4	17.7
1096.1-1205.5	NULLA -WARRE	37.9	20.4	94.7	27.3	34.6
653.7-972.7	PAARATTE	155.3	27.7	93.1	18	48.6
621.5-653.7	PEBBLE POINT	5	25.3	91	17.5	15.6

Service Company Analyses Performed: NONE

WELL SUMMARY

Namgib #1 was an exploration well programmed to test a four-way dip closure at the Late Cretaceous Waarre Sandstone horizon. Two small faults cut into the structure leaving 10 msec of TWT unfaulted four-way dip closure above 15 msec of faulted anticlinal closure (figure 5).

The well intersected a sequence much as predicted including a 32m thick seal section in the Belfast Mudstone and an excellent reservoir in the Waarre Sandstone. Porosities averaged 20.5% in the 23.9m of net potential reservoir.

A gas show of 32 units in a thin and well cemented sandstone within the Flaxmans Formation was analysed after logging and concluded to be water saturated.

Neutron and density log cross-over at the top of the clean Waarre Sandstone suggests that residual gas saturation is present between 1253 and 1254m although this is not supported by the resistivity logs. Final analysis indicates an average water saturation of 95.5% through the Waarre Sandstone.

Traces of fluorescence were detected in the Waarre and the Eumeralla which indicate that liquid hydrocarbons have once migrated through these formations and possibly been accumulated and subsequently spilled.

The failure of the Namgib structure to contain significant hydrocarbons is difficult to understand on the basis of our present knowledge of the structure: it is interpreted as a valid four-way dip closure on the basis of the current seismic grid. However recent acquisition of a seismic line across the structure by Gas and Fuel Corporation may indicate a breach of the closure to the north (Pers. com. A. Whittle April 1993). The mapped faults that intersect the structure may be more extensive and may have acted as leak points. The rather subtle structure of Namgib may have resulted in it spilling to the east during recent tectonic activity (demonstrated by continued uplift of the Otway Ranges, volcanic activity and the formation of the current surface topography) which has since subsided, reforming the trap.

The Namgib structure is only 2.2Km and directly up dip from the Iona gas discovery and from the shows appears to have been in communication with the migrating hydrocarbons. It would appear to have adequate seal above the top porous sandstone in the Flaxmans and good reservoir in the Waarre Sandstone. The gas shows may indicate a residual hydrocarbon column which was previously contained predominantly in a non-net "thief zone" in the silty Flaxmans at 1237.5 - 1252.9m.

Lastly, it may be that insufficient hydrocarbons have been generated and migrated into the Namgib structure since its formation.

1.3 Well Location Survey

Note: The surveyed co-ordinates and ground level (G.L.) reported by Paul Crowe Surveyor are the ones that have been used throughout the text. The following pages are the survey data sheets.

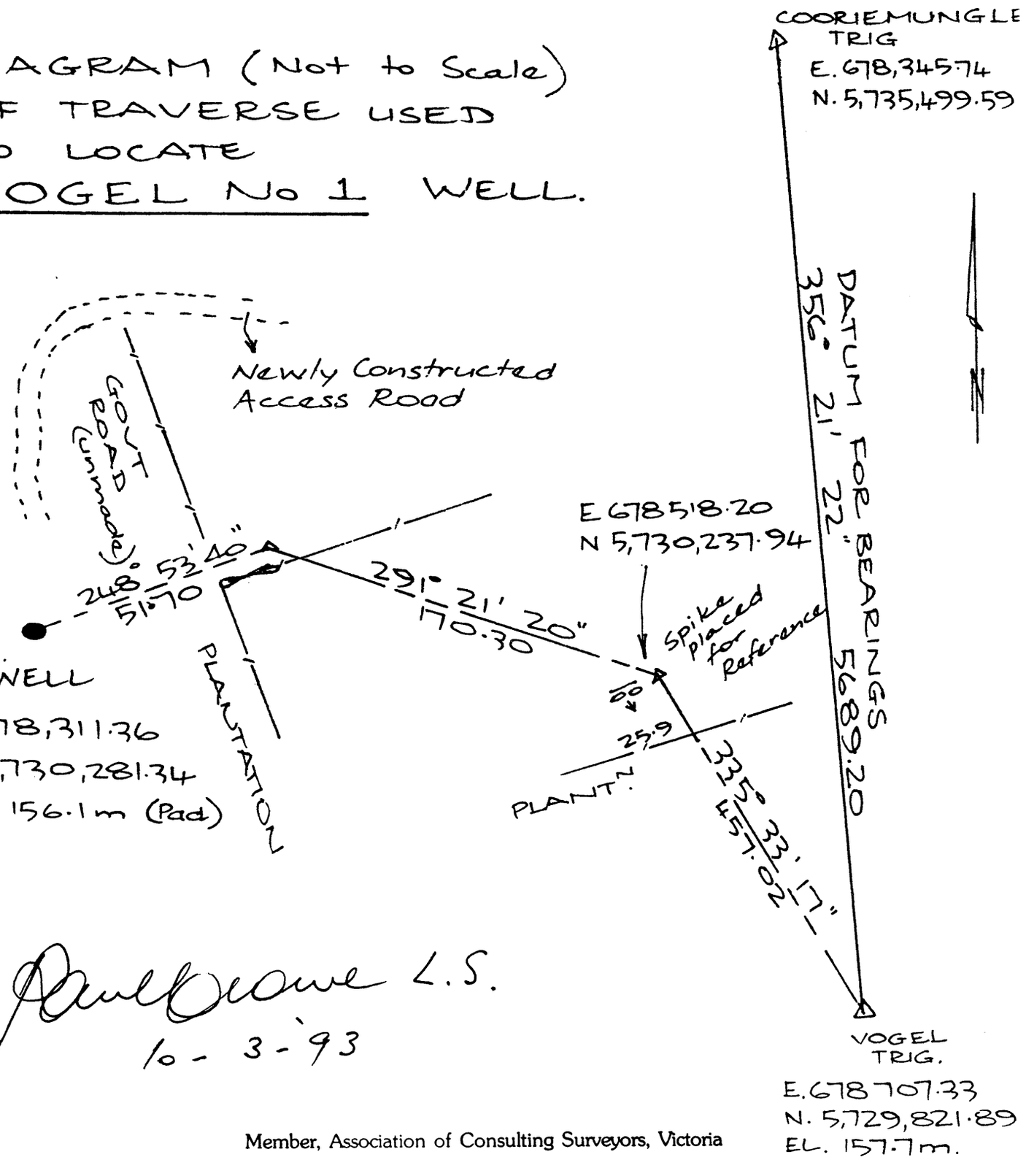
Paul Crowe Surveyor
64 Thompson Street,
Hamilton 3300.
Telephone (055) 71 1811

Paul D. Crowe, B.App. Sci. (Surv.), L.S., M.I.S.

Visited Office: 56 Kepler Street,
Warrnambool 3280.
Telephone (055) 61 1500

Reply to Hamilton..... office

DIAGRAM (Not to Scale) OF TRAVERSE USED TO LOCATE VOGEL No 1 WELL.



Paul Crowe L.S.
10 - 3 - 93

2) GEOLOGICAL DATA

2.1 Table of Formations.

2.2 Lithological Descriptions.

2.1 Table of Formations and Post-Appraisal Mapping

Location:	VP190 Line	VO88-12
	Latitude	38° 33' 28.45" S
	Longitude	143° 02' 47.18" E
	Easting	678311.36
	Northing	5730281.34
	Zone	54
Elevation:	Ground	156.1m
	Kelly Bushing	161.8m

TABLE 1 : Formation Tops

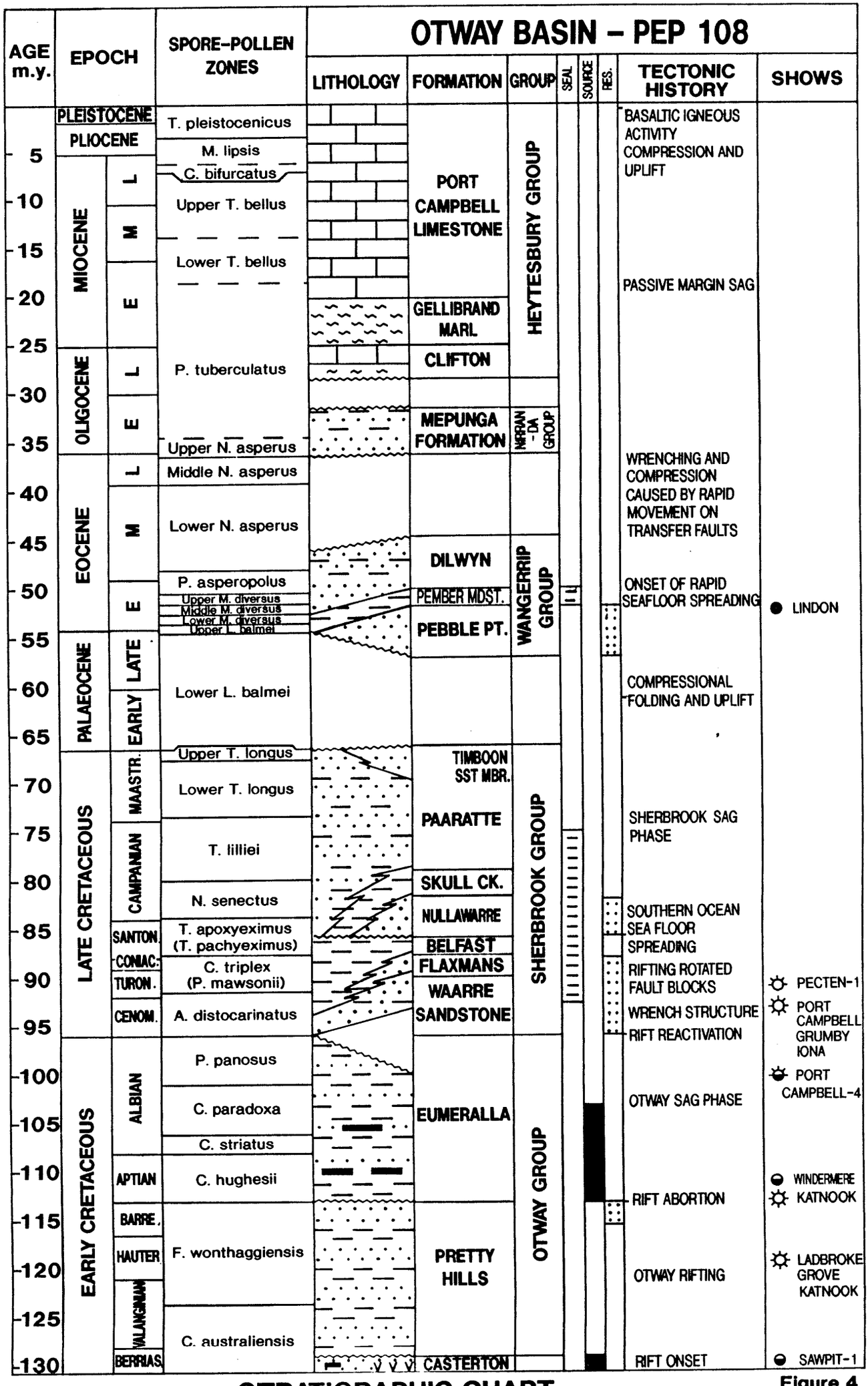
Age	Formation	Actual Depth KB (m)	Subsea (m)	Prognosed* Subsea (m)
Early Miocene	Gellibrand Marl	Surface	+156.1	Surface
Early Miocene	Clifton	197.5	- 35.7	-57.2
Early Oligocene	Lower Mepunga	266.5	-104.7	-130.2
Early Oligocene to Late Paleocene	Dilwyn	339.8	-178.0	-207.2
Early Oligocene to Late Paleocene	Pember Mdst	545.0	-383.2	-383.2
Early Paleocene	Pebble Point	621.5	-459.7	-477.2
Late Cretaceous	Paaratte	653.7	-491.9	-499.2
Late Cretaceous	Skull Creek	972.7	-810.9	-801.2
Late Cretaceous	Nullawarre	1096.1	-934.3	-929.2
Late Cretaceous	Belfast Mdst	1205.5	-1043.7	-1033.2
Late Cretaceous	Flaxmans	1237.5	-1075.7	-1061.2
Late Cretaceous	Waarre Sst	1252.9	-1091.1	-1078.2
Early Cretaceous	Eumeralla	1325.0	-1163.2	-1135.2
	T.D.	1387.4	-1225.6	-1218.2

* Prognosis as per Well Programme, revised subsea depths.

A summary of the stratigraphic sequence of the Otway Basin in PEP-108 is provided in Figure 4.

Results of Namgib #1 have not significantly altered seismic mapping. However, recent seismic acquisition by Gas and Fuel Corporation over the northern flank of the structure will be incorporated into the Namgib structure maps in the future.

The Flaxmans Time Structure map (Figure 5) remains unchanged at present.



STRATIGRAPHIC CHART

Figure 4

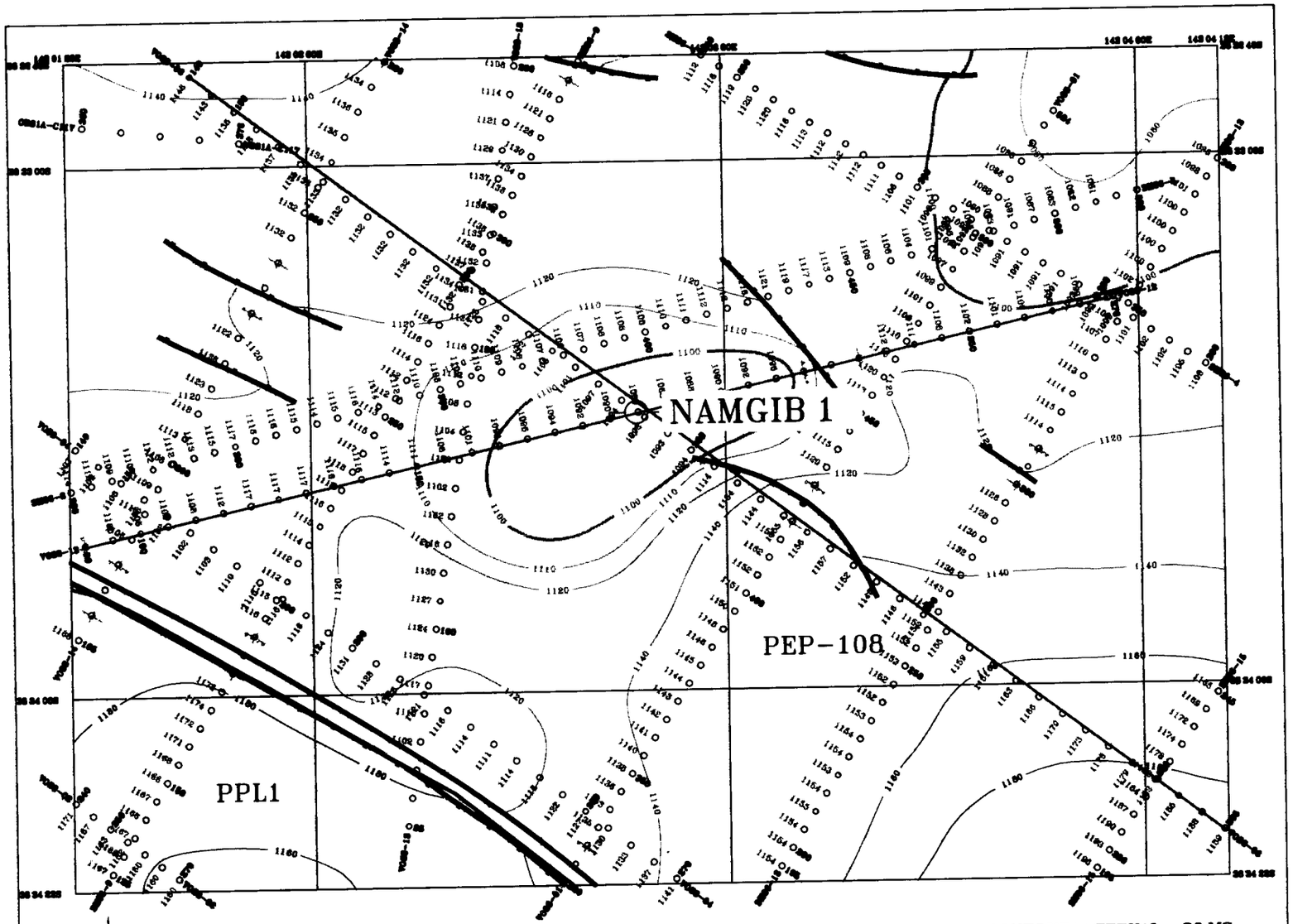
PE906777

This is an enclosure indicator page.
The enclosure PE906777 is enclosed within the container PE900970 at this location in this document.

The enclosure PE906777 has the following characteristics:

ITEM_BARCODE	= PE906777
CONTAINER_BARCODE	= PE900970
NAME	= Flaxmans Time Structure
BASIN	= OTWAY
PERMIT	= PEP108
TYPE	= SEISMIC
SUBTYPE	= HRZN_CNTR_MAP
DESCRIPTION	= Flaxmans Time Structure Map, Namgib-1
REMARKS	=
DATE_CREATED	= 31/05/93
DATE_RECEIVED	= 10/08/93
W_NO	= W1078
WELL_NAME	= NAMGIB-1
CONTRACTOR	=
CLIENT_OP_CO	= BRIDGE OIL LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

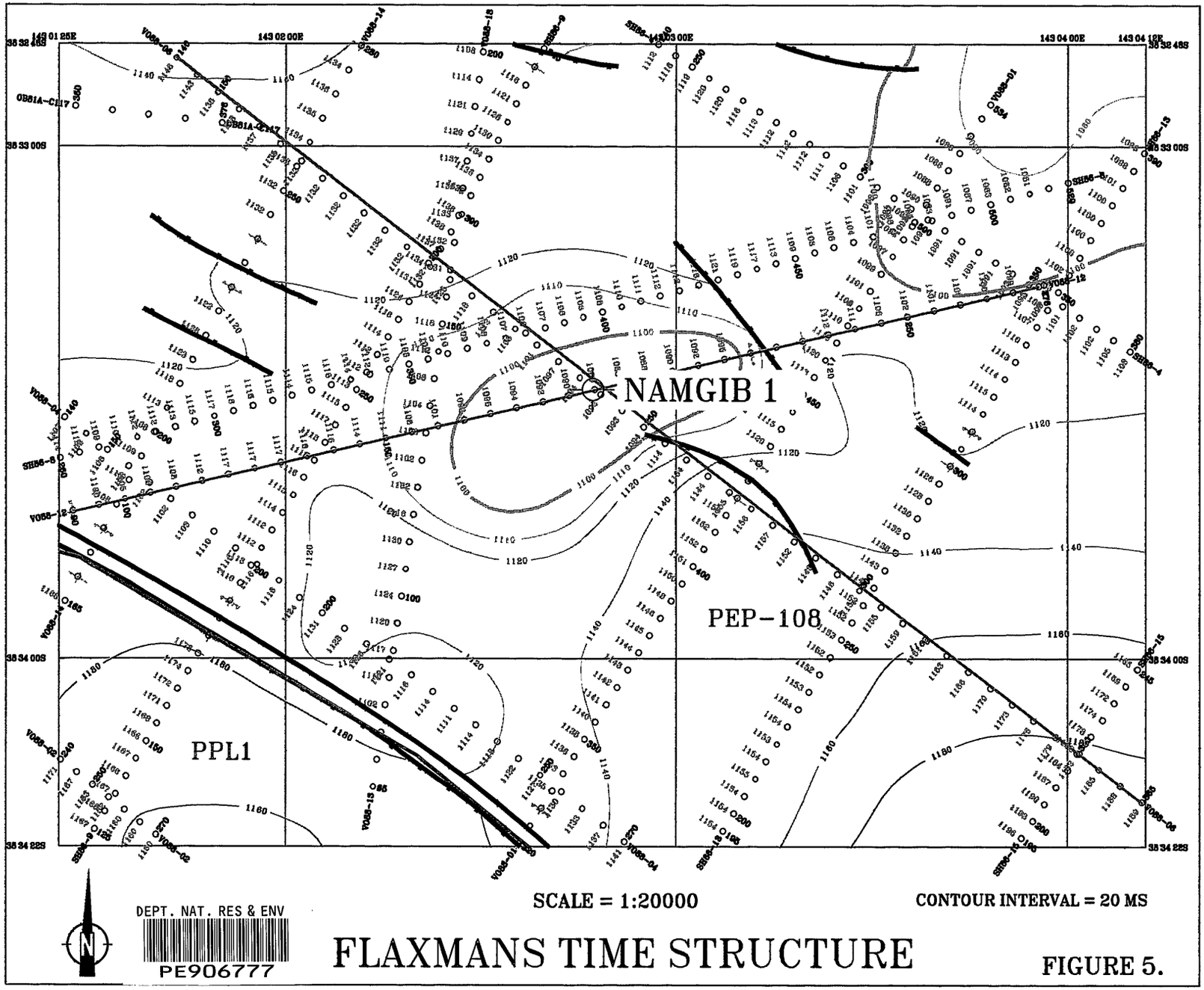


SCALE = 1:20000

CONTOUR INTERVAL = 20 MS

FLAXMANS TIME STRUCTURE

FIGURE 5.



FLAXMANS TIME STRUCTURE

FIGURE 5.

2.2 Lithological Descriptions

(see also Mudlog - Enclosure 1).

The descriptions in this section outline the general lithologies from casing shoe to Total Depth (T.D.). All depths are quoted in logger's depths measured from K.B.

Clifton Formation
197.5 - 266.5m
Thickness 69.0m
Sampled from 218m

INTERVAL (m)	R.O.P. (min/m)	LITHOLOGY
218.0-266.5	0.25-2.0 AV: 0.5	MASSIVE MARL. MARL (100%): brown black, olive black, very soft, sticky, dispersive, very calcareous, silty in part, abundant fossil fragments - gastropods (turretellids, minor globular and evolute gastropods), bryozoa, sponge spicules, abundant foraminifera (globeriginids, nummilitids), common bivalves, rare ostracods, abundant pyrite nodules, occasional increasing to common dark green well rounded glauconite grain with "mud crack" appearance, predominantly amorphous.

Lower Mepunga
266.5 - 339.8m
Thickness 73.3m

266.5-339.5	0.1-8.0 AV: 0.3	UNCONSOLIDATED SANDSTONE WITH MINOR CALCAREOUS CLAYSTONE (MARL). SANDSTONE (95%): dark yellow orange, moderate yellow brown, abundant Fe-staining, predominantly unconsolidated to friable, moderately to poorly sorted, predominantly granular loose subangular to predominantly well rounded quartz grains, occasionally very fine to medium grained angular to subangular mottled aggregates with moderate calcareous cement, rare turquoise ?chamosite/ glauconite cement, rare bivalve, gastropod and bryozoa fragments, occasional forams, predominantly very good inferred porosity when unconsolidated, trace to very poor visual porosity when consolidated, no oil show. CLAYSTONE (5%): olive grey to olive black, firm, moderately calcareous, common fossil fragments, occasional rounded glauconite grains, trace pyrite nodules, subblocky to blocky.

Dilwyn Formation
339.8 - 545.0m
Thickness 205.2m

INTERVAL (m)	R.O.P. (min/m)	LITHOLOGY
339.8-440.0	0.2-2.0 AV: 0.8	UNCONSOLIDATED SANDSTONE AND MINOR SILTSTONE SANDSTONE (70%): light grey, clear to opaque to translucent quartz, unconsolidated, occasionally very fine to predominantly very coarse grained and granular, rounded to subrounded, poorly sorted, trace pyrite cement, common pyrite nodules, olive black clay/silt matrix washing out of sample, very poor inferred porosity, no oil show. SILTSTONE (30%): olive grey, olive black, soft to firm, sticky when soft, grading to silty claystone in part, carbonaceous to very carbonaceous, common pyrite nodules, occasional pyritised worm burrows, common fossil fragments (turretellids, foraminifera, bryozoa, sponges, bivalves, occasional echinoid spines), blocky to predominantly amorphous when soft.
440-483	0.5-6.0 AV: 1.0	INTERBEDDED SANDSTONE AND SILTSTONE. SANDSTONE (80%): light grey, clear to translucent to opaque quartz, unconsolidated, fine to medium to predominantly very coarse grained to granular, subrounded to rounded, poorly sorted, abundant pyrite nodules and occasional pyrite cement, common shell fragments, clay/silt matrix washing out of sample, trace to very poor inferred porosity, occasionally fair to good inferred porosity when clean, no oil show. SILTSTONE (20%): olive black, brownish black, soft to firm to occasionally moderately hard, common clay matrix grading to silty claystone in part, arenaceous in part, common carbonaceous inclusions, common fossil fragments as above, common pyrite nodules, rare glauconite grains, occasional coaly/woody inclusion with depth.
483-545	0.2-4.0 AV: 0.9	INTERBEDDED MATRIX SUPPORTED SANDSTONE AND SILTSTONE. SANDSTONE (50%): light grey, clear to opaque quartz, unconsolidated, medium to very coarse grained to granular, subangular to subrounded to rounded, poorly sorted, no visual cement, matrix supported but clay and silt matrix washing out of sample, occasional to common glauconite, trace to very poor inferred porosity, no oil show. SILTSTONE (50%): olive grey, olive brown, soft, slightly calcareous, rare carbonaceous inclusions, occasional glauconite grains, trace pyrite nodules, trace pyritised coaly/woody inclusions, common fossil fragments, subblocky to amorphous.

Pember Mudstone
545.0 - 621.5m
Thickness 76.5m

INTERVAL (m)	R.O.P. (min/m)	LITHOLOGY
545.0-621.5	0.9-4.0 AV: 2.2	CLAYEY SILTSTONE (INCREASING WITH DEPTH) WITH MINOR SANDSTONE INTERBEDS. SILTSTONE (80%): olive grey, brown grey, predominantly soft to occasionally moderately firm, predominantly amorphous, abundant clay matrix grading to silty claystone, slightly sticky, slightly dispersive, trace glauconite, trace carbonaceous inclusions, very slightly calcareous, common fossil fragments - bryozoa, bivalves, foraminifera, turretellids, pyrite nodules decreasing with depth, trace rounded glauconite grains. SANDSTONE (20%): light grey, clear to opaque quartz, unconsolidated, medium to predominantly coarse grained to occasionally granular, rounded to subrounded, poorly sorted, nil visible cement, silty matrix washing out of sample, predominantly matrix supported, trace glauconite, very poor inferred porosity, no oil show.

Pebble Point Formation
621.5 - 653.7m
Thickness 32.2m

621.5-640.0	0.3-1.1 AV: 0.6	UPWARD FINING CYCLE OF SANDSTONE WITH INTERBEDDED SILTSTONE. SANDSTONE (60%): dark yellow orange, moderate yellow brown, clear to opaque to translucent quartz, unconsolidated, ?matrix supported, occasional fine to medium to coarse to very coarse grained, subangular to angular, silty matrix washing out of sample, very poor inferred porosity, no oil show. SILTSTONE (40%): olive grey, brown grey, predominantly soft to occasionally moderately firm, predominantly amorphous, abundant clay matrix grading to silty claystone, slightly sticky, slightly dispersive, trace glauconite, trace carbonaceous inclusions, very slightly calcareous, rare fossil fragments, trace pyrite nodules.
640.0-653.7	0.8-5.0 AV: 2.0	MASSIVE SILTSTONE WITH MINOR SANDSTONE INTERBEDS. SILTSTONE (90%): olive brown, olive grey, brown black, soft, sticky, amorphous, trace pyrite nodules, occasional medium to very coarse Fe-stained quartz grains suspended in siltstone matrix. SANDSTONE (10%): off-white, light grey, dark yellow orange, moderate yellow brown, unconsolidated, matrix supported, common clay attached to grain surfaces, very poor to trace inferred porosity, no oil show.

Paaratte Formation
653.7 - 972.7m
Thickness 319.0m

INTERVAL (m)	R.O.P. (min/m)	LITHOLOGY
653.7-779.0	0.8-12.0 AV: 2.0	SILTSTONE WITH INTERBEDDED MATRIX SUPPORTED LITHIC SANDSTONE. SANDSTONE (20%): light grey, clear to opaque quartz, unconsolidated, coarse to very coarse grained to occasionally granular, subangular to subrounded to occasionally angular, moderately sorted, common very coarse, angular, smooth textured siliceous silver grey, blue grey, light to dark grey, dark grey brown, green grey, metasedimentary/metamorphic and quartzitic clasts (occasionally schistosic when silver grey) with brick red, smooth textured rhyolitic clasts increasing with depth, trace pyritic cement in part, predominantly matrix supported with dark grey brown silty matrix washing out of sample, very poor inferred porosity, no oil show. SILTSTONE (80%): dark grey brown, dark grey, olive brown, very soft, dispersive, trace carbonaceous inclusions, common sand inclusions, amorphous.
779.0-811.0	1.5-15 AV: 5.0	MATRIX SUPPORTED SANDSTONE INTERBEDDED WITH SILTSTONE. SANDSTONE (60%): light grey, clear to opaque to translucent quartz, unconsolidated, predominantly clean, medium to coarse to very coarse grained and granular with depth, subangular to subrounded, moderately well sorted, trace pyrite cement and nodules, trace multicoloured lithic metamorphic clasts as above, rare glauconite, rare pyritised coal, poor to fair inferred porosity, no oil show. SILTSTONE (40%): grey black, brown black, olive black, soft, sticky, occasionally arenaceous and firm, predominantly amorphous to occasionally subblocky.
811.0-830.0	1.4-4.0 AV: 2.0	MATRIX SUPPORTED SANDSTONE WITH INTERBEDDED SILTSTONE. SANDSTONE (50%): light grey, clear to opaque quartz, unconsolidated to occasionally friable, medium to coarse to occasionally granular, subangular, poorly sorted, common silty matrix washing out of sample, predominantly matrix supported, trace to very poor inferred porosity, no oil show. SILTSTONE (50%): slightly mottled, light to medium dark grey, medium grey brown, soft, very sandy, grading to very silty very fine sandstone, trace to common pyrite nodules, trace micro-carbonaceous inclusions, trace pyritised coal, rare fossil fragments, subblocky.

INTERVAL (m)	R.O.P. (min/m)	LITHOLOGY
830.0-972.7	1.0-6.0 AV: 2.5	MATRIX SUPPORTED SANDSTONE WITH INTERBEDDED SILTSTONE. SANDSTONE (50%): light grey, clear to opaque quartz, unconsolidated to rarely friable, medium to coarse to occasionally granular becoming predominantly granular with depth, occasional quartz with black mafic and occasionally green vermicular mineral inclusions, occasional metamorphic/igneous dark grey strained quartz clasts, common silty matrix washing out of sample, predominantly matrix supported, common pyrite nodules and occasional cement, trace woody coal fragments - pyritised in part, trace to very poor inferred porosity, no oil show. SILTSTONE (50%): slightly mottled, light to medium to dark grey, medium grey brown, soft, very sandy, grading to very silty very fine sandstone, in part common clay grading to silty claystone, trace to common pyrite nodules, trace micro-carbonaceous inclusions, common coaly inclusions and laminae, trace pyritised coal, rare fossil fragments decreasing with depth, subblocky.

Skull Creek
972.7 - 1096.1m
Thickness 123.4m

INTERVAL (m)	R.O.P. (min/m)	LITHOLOGY
972.7-1009.0	1.0-35.0 AV: 2.0	MASSIVE SILTSTONE WITH MINOR SANDSTONE INTERBEDS. VERY FINE GRAINED CALCAREOUS SANDSTONE FROM 992m. SILTSTONE (70%): dark grey brown, olive brown, olive black, light grey, predominantly very soft and sticky to occasionally slightly firm, common clay grading to silty claystone in part, common very fine sand grains grading to very silty very fine sandstone in part especially when light grey, common black carbonaceous inclusions and coaly laminae, trace pyritised coal, rare feldspar lithics, predominantly amorphous to subblocky. SANDSTONE (30%): type 1: grey, opaque to translucent, unconsolidated, very coarse to granular, subrounded, moderately sorted, occasional mafic inclusion in quartz grains, occasional light to dark grey metamorphic/ igneous quartzitic clasts, occasional pyrite cement, matrix supported, abundant dark grey brown silty matrix washing out of sample, trace to very poor inferred porosity, no oil show. Type 2: light grey, very friable to soft, very fine grained, subangular, well sorted, abundant off-white to light grey kaolinitic and silty matrix, grading to sandy siltstone, trace black coaly inclusions, trace feldspar lithics, very poor visual porosity, no oil show.

INTERVAL (m)	R.O.P. (min/m)	LITHOLOGY
1009.0-1029.0	1.0-2.5 AV: 1.5	INTERBEDDED VERY FINE GRAINED SANDSTONE AND SILTSTONE. SANDSTONE (60%): Type 1: light grey, very fine grained, subangular to subrounded, well sorted, friable to firm, minor to moderate calcareous cement, trace to minor off-white ?kaolinitic matrix, trace glauconite, trace carbonaceous and coaly inclusions, occasional coal laminae, trace pyrite, poor to fair visual porosity, no oil show. Type 2: off-white, soft, very fine grained, subangular to subrounded, well sorted, abundant off-white kaolinitic matrix, trace calcareous matrix in part, matrix supported, trace carbonaceous inclusions, trace to nil visual porosity, no oil show. SILTSTONE (40%): medium grey brown, medium brown, olive brown, brown black in part, soft, slightly sticky, common clay grading to claystone, occasionally arenaceous grading to fine grained sandstone, common carbonaceous/coal inclusions, trace pyritised coal, trace feldspar, trace pyrite nodules, subblocky to amorphous.
1029.0-1062.0	2.0-4.5 AV: 3.0	MASSIVE SILTSTONE GRADING TO MINOR SANDTSTONE IN PART. SILTSTONE (90%): as above but predominantly grading to claystone, occasionally mottled off-white with kaolinite matrix and arenaceous grading to very fine grained sandstone, subblocky. SANDSTONE (10%): minor type 1, strong calcareous cement, very hard in part, trace to very poor visual porosity, no oil show. Predominantly type 2, grading to sandy kaolinitic siltstone, trace to very poor visual porosity, no oil show.
1062.0-1096.1	1.0-5.0 AV: 2.5	MASSIVE SILTSTONE WITH MINOR SANDSTONE INTERBEDS SILTSTONE (95%): medium to dark grey brown, olive brown, brown black, soft to slightly firm, silty, trace carbonaceous/coal fragments, rare feldspar lithics, very arenaceous in part grading to very fine grained sandstone in part, predominantly common clay matrix grading to silty claystone, amorphous to subblocky. SANDSTONE (5%): off-white very fine grained, friable, subangular, well sorted, trace calcareous cement, abundant kaolinitic matrix, trace carbonaceous inclusions, rare feldspar lithics, very poor to poor visual porosity, no oil show.

Nullawarre Greensand
1096.1 - 1205.5m
Thickness 109.4m

INTERVAL (m)	R.O.P. (min/m)	LITHOLOGY
1096.1-1149.0	1.0-5.0 Av 2.5	GLAUCONITIC, VERY SILTY, MATRIX SUPPORTED GREENSAND WITH INTERBEDDED SILTSTONE. GREENSAND (80%): predominantly type 1: dark green grey, dusky yellow green, soft, very fine to predominantly medium grained, abundant glauconite grains, subrounded, poorly sorted, matrix supported, abundant dusky yellow green and medium green grey silty glauconitic matrix, trace carbonaceous inclusions, rare feldspar lithics, trace visual porosity, no oil show. Minor type 2: green black, dark green grey, dusky yellow green, friable to firm to occasionally hard, fine to predominantly medium grained, subrounded to rounded, moderately well sorted, occasional strong siliceous cement, common to moderate dark yellow green and grey green glauconitic matrix, trace carbonaceous inclusions, very poor to occasionally poor visual porosity, no oil show. SILTSTONE (20%): medium grey brown, soft, dispersive, arenaceous, grading to very fine grained sandstone in part, common clay grading to silty claystone, amorphous to subblocky.
1149.0-1205.5	0.8-7.0 AV: 1.5	MATRIX SUPPORTED GLAUCONITIC SANDSTONE WITH MINOR INTERBEDDED SILTSTONE. GREENSAND (80%): Minor type 1: off-white pale green grey, friable to firm, subangular to angular, moderately sorted, moderate calcareous cement, common pyrite cement in nodules, moderate clay matrix, occasional to common glauconite grains, very poor visual porosity, no oil show. Predominantly type 2: medium brown grey, pale green grey, medium to dark green grey, soft, sticky, matrix supported, very fine to fine grained, subrounded, moderately sorted, minor glauconite, moderate carbonaceous inclusions, trace feldspar lithics, trace to nil inferred porosity, no oil show. Trace type 3 below 1181m: mottled, black, dark orange brown, blue grey, very hard, medium grained, rounded, well sorted, very strong blue grey cement, trace black carbonaceous inclusions, trace to nil visual porosity, no oil show. SILTSTONE (20%): medium brown, brown grey, soft to occasionally firm, carbonaceous inclusions and laminae, amorphous to occasionally subblocky.

Belfast Mudstone
1205.5 - 1237.5m
Thickness 32m

INTERVAL (m)	R.O.P. (min/m)	LITHOLOGY
1205.5-1237.5	2.0-5.5 AV: 4.0	MASSIVE SILTSTONE WITH MINOR SANDSTONE INTERBEDS. SILTSTONE (90%): olive black, moderately firm to soft, common clay grading to claystone in part, common to abundant olive green, green black rounded medium glauconite grains, subblocky. SANDSTONE (10%): pale brown, friable to hard, fine to medium grained, subrounded to angular to subangular, moderately sorted, very strong dolomitic cement, occasionally common pyritic cement, minor clay matrix, trace glauconite, trace red lithics, trace to nil visual porosity, no oil show.

Flaxmans
1237.5 - 1252.9m
Thickness 15.4m

INTERVAL (m)	R.O.P. (min/m)	LITHOLOGY
1237.5-1243.0	0.8-3.0 AV: 2.0	SANDSTONE WITH MINOR INTERBEDDED SILTSTONE. SANDSTONE (80%): type 1: off-white to pale brown grey, opaque to occasionally translucent quartz, friable to moderately hard, occasionally medium to predominantly very coarse grained, predominantly matrix supported, abundant very fine grained sandstone matrix with very strong pale brown calcareous and dolomitic cement, occasional off-white to pale brown soft silty matrix, trace glauconite, rare carbonaceous inclusions, to nil visual porosity when very coarse grains set in matrix of well cemented very fine grained sandstone, nil visual porosity when pale grey soft clay matrix present, no oil show. SILTSTONE (20%): pale brown grey, soft to moderately firm, arenaceous, slightly carbonaceous, slightly calcareous in part, grading to very silty very fine grained sandstone in part, subblocky.
1243.0-1252.9	3.5-5.0 AV: 4.0	MASSIVE SILTSTONE WITH MINOR SANDSTONE INTERBEDS. SILTSTONE (90%): pale brown, light grey brown, soft, arenaceous, grading to very fine grained sandstone, rare carbonaceous specks, subblocky. SANDSTONE (10%): pale brown, hard, very fine grained, subangular, well sorted, calcareous/dolomitic cement, trace carbonaceous inclusions, trace to nil visual porosity, no oil show.

Waarre Sandstone
1252.9 - 1325.0m
Thickness 72.1m

INTERVAL (m)	R.O.P. (min/m)	LITHOLOGY
1252.9-1275.0	0.9-3.5 AV: 1.5	SANDSTONE WITH MINOR SILTSTONE INTERBEDS. SANDSTONE (80%): light grey, opaque to translucent to clear quartz, unconsolidated, occasionally medium to very coarse grained to predominantly granular, subangular to occasionally angular, moderately sorted, no visual cement or matrix, fair to good inferred porosity, no oil show. SILTSTONE (20%): light to medium grey brown, soft, common clay matrix, rare micro-carbonaceous inclusions, amorphous.
1275.0-1281.0	0.9-25.0 AV: 2.5	INTERBEDDED SILTSTONE AND SANDSTONE. SILTSTONE (60%): medium grey brown, light grey, off-white in part, soft to firm, dispersive, trace micromicaceous, occasional pyrite, occasional micro-carbonaceous inclusions, amorphous. SANDSTONE (40%): light grey, friable, very fine to predominantly fine grained, subangular to subrounded, poorly to moderately sorted, common calcareous cement, occasional pyritic cement, common off-white calcareous clay matrix, occasionally silty matrix, trace carbonaceous specks, very poor visual porosity, no oil show.
1281.0-1298.0	2.5-6.0 AV: 4.0	SILTSTONE WITH MINOR INTERBEDDED SANDSTONE. SILTSTONE (90%): medium brown grey, medium grey, occasionally light grey and off-white, predominantly soft, occasionally firm, dispersive, predominantly very argillaceous grading to claystone, rare pyrite, amorphous. SANDSTONE (10%): predominantly as above.
1298.0-1305.0	1.0-25.0 AV: 2.0	INTERBEDDED SILTSTONE AND SANDSTONE. SILTSTONE (60%): as above. SANDSTONE (40%): very light grey to predominantly light brown, firm to friable, subangular to subrounded, predominantly subangular, poorly to moderately sorted, very calcareous cement, occasional common off-white argillaceous matrix, trace silty matrix, trace very light grey lithics, trace carbonaceous inclusions, common coal/carbonaceous inclusions, nil visual porosity, no oil show.
1305.0-1318.0	2.0-13.0 AV: 7.0	MASSIVE SILTSTONE. SILTSTONE (100%): pale brown, pale grey brown, very soft to occasionally firm, abundant clay grading to claystone, common micro-carbonaceous/coaly inclusions, arenaceous in part grading to very fine grained sandstone in part, amorphous to blocky.

INTERVAL (m)	R.O.P. (min/m)	LITHOLOGY
1318.0-1325.0	1.0-2.0 AV: 1.5	UPWARD FINING SANDSTONE. SANDSTONE (100%): opaque to translucent, unconsolidated, very coarse grained to granular, subangular, moderately to poorly sorted, matrix supported, abundant pale brown, brown grey soft amorphous silty matrix, common pyrite nodules and minor pyritic cement, slightly calcareous in part, trace carbonaceous/woody fragments, rare blue green lithics, trace to nil visual porosity, no oil show.
Eumeralla Formation 1325.0 - 1387.4m T.D. Thickness 62.4m		
1325.0-1330.0	4.0-20.0 AV: 5.0	SILTSTONE WITH MINOR INTERBEDDED LITHIC SANDSTONE. SILTSTONE (80%): light olive grey, olive grey, olive black, soft to slightly firm, common micro-carbonaceous inclusions, rare feldspar lithics, grading to claystone, subblocky to amorphous. SANDSTONE (20%): pale grey, off-white, clear to opaque quartz, friable to moderately hard, very fine to predominantly fine to medium grained, subangular, moderately sorted, moderately strong calcareous cement, moderate kaolinitic matrix, common feldspar lithics, coarse blue grey and blue green lithics, rare red brown lithics, common dark grey lithics, trace carbonaceous/coaly inclusions, trace to very poor visual porosity, no oil show.
1330.0-1340.0	1.2-18.0 AV: 4.0	LITHIC MATRIX SUPPORTED SANDSTONE WITH MINOR INTERBEDDED SILTSTONE. SANDSTONE (90%): very pale grey, light grey, light blue grey, soft, sticky, very fine to predominantly fine and medium grained, subrounded, moderately sorted, matrix supported, abundant off-white, pale grey, clay/calcareous matrix, abundant multicoloured lithics, dark grey, olive black, blue grey, occasional red brown, blue green, trace to nil visual porosity. FLUORESCENCE: trace very dull yellow green, patchy, no cut to trace cut to occasionally very slow streaming cut, trace ring to very thin ring residue. SILTSTONE (10%): olive grey, light olive grey, soft to slightly firm, common micro-carbonaceous inclusions, rare feldspar lithics, grading to claystone, subblocky to amorphous.
1340.0-1347.0	2.0-6.0 AV: 3.5	SILTSTONE WITH INTERBEDDED SANDSTONE AND MINOR CLAYSTONE INCREASING WITH DEPTH. SILTSTONE (60%): as above. SANDSTONE (20%): as above. FLUORESCENCE: trace very dull yellow green, patchy, trace to no cut, trace residue. CLAYSTONE (20%): pale grey, pale brown grey, firm, trace micro-carbonaceous inclusions, predominantly homogeneous, blocky.

INTERVAL (m)	R.O.P. (min/m)	LITHOLOGY
1347.0-1363.0	2.0-4.0 AV: 3.5	INTERBEDDED SILTSTONE AND CLAYSTONE WITH MINOR MATRIX SUPPORTED LITHIC SANDSTONE & TRACE COAL. SILTSTONE (60%): pale brown grey, soft to slightly firm, arenaceous in part, common very fine grained quartz and lithic inclusions, grading to matrix supported sandstone in part, predominantly amorphous. CLAYSTONE (30%): as above. SANDSTONE (10%): as above, with depth grading to off-white, pale grey, soft, very fine grained, subangular, well sorted, matrix supported, abundant pale grey clay matrix, abundant multicoloured (dark grey, blue grey, green grey, red brown) lithics and feldspar, slightly calcareous, trace visual porosity, no oil show. COAL (trace%): brown black, firm, lignitic, blocky.
1363.0-1387.4 T.D.	1.0-13.0 AV: 2.0	MATRIX SUPPORTED LITHIC SANDSTONE WITH MINOR INTERBEDDED SILTSTONE AND CLAYSTONE. LITHIC SANDSTONE (90%): off-white, pale grey, soft, very fine grained becoming predominantly medium grained with depth, abundant pale grey clay matrix, matrix supported, abundant multicoloured subrounded lithics and feldspar as above, common glauconite grains with depth, slightly calcareous, grading to sandy lithic siltstone in part, trace to nil visual porosity, no oil show. SILTSTONE (5%): as above. CLAYSTONE (5%): as above.

3) LOG ANALYSIS

3.1 Introduction

The Namgib #1 logging suite was run by Halliburton as follows:

	Logged Top (m)	Interval Bottom (m)	Max. Temp (^{o}F)	Time Since Circulation (hrs.)
Tool Combination 1				
DLL-MSFL-BCS--SP-GR-CAL	218.0	1376.7	114	5.5
Tool Combination 2				
SLD-CNT-GR-CAL	215.8	1375.7	118	10.5
Tool Combination 3				
WST & VSP	156.1	1370.0	NOT RECORDED	

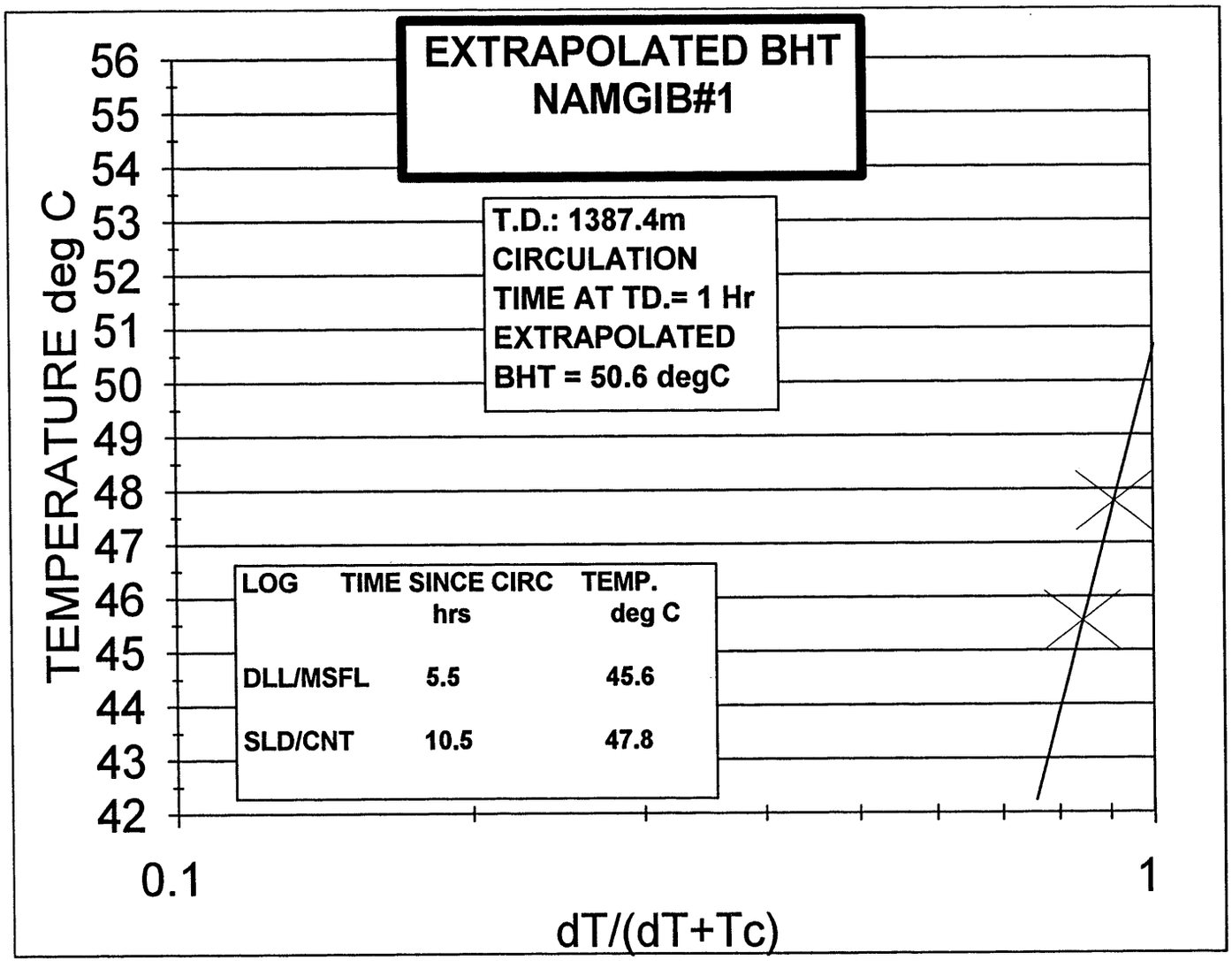
The mud properties at the time of logging were as follows:

Type : KCl - PHPA
Density : 9.1 lb/gal
Viscosity : 48 sec
pH : 8.8
Fluid Loss: 7.0cc

Rm : 0.28 @ 68^{o}F
Rmf : 0.22 @ 68^{o}F
Rmc : 0.30 @ 68^{o}F
Rm @ BHT : 0.173 @ 114^{o}F

Extrapolated B.H.T. : 123^{o}F (See Fig. 6)

Figure 6


EXTRAPOLATED BHT
NAMGIB#1
T.D.: 1387.4m
CIRCULATION
TIME AT TD.= 1 Hr
EXTRAPOLATED
BHT = 50.6 degC
LOG
TIME SINCE CIRC
hrs
TEMP.
deg C
DLL/MSFL
5.5
45.6
SLD/CNT
10.5
47.8
TEMPERATURE deg C
56
55
54
53
52
51
50
49
48
47
46
45
44
43
42
0.1
1
dT/(dT+Tc)

3.2 Method of Calculation

(a) Main Zones of Interest

WAARRE SANDSTONE (1252.9-1325.0m analysed)

A petrophysical summary plot of the Waarre Sandstone is provided in Figure 7. Petrophysical listings are provided in Section 3.4, Table 2.

The following steps outline the detailed petrophysical analysis undertaken over the Waarre Sandstone using the log analysis package TERRALOG from Terrasciences.

i) Appropriate environmental corrections are made.

ii) Appropriate tornado plot corrections to resistvity logs are made.

iii) Vshale is calculated using corrected GR log and "linear" algorithm except in the upper Nullawarre Greensand, see below.

iv) Hydrocarbon corrections are made to the density and neutron logs. As there are no shows these corrections have nil effect, but are included to maintain a consistent method of analysis.

v) Shale corrections are applied to the hydrocarbon corrected density and neutron logs and a cross plot density/neutron porosity is derived.

vi) Water saturations were calculated using density/neutron cross plot porosity (shale corrected) and the Indonesia equation.

vii) Net potential reservoir in the Waarre Sandstone is considered to be sandstone with porosity $\geq$10% and Vshale $\leq$30%.

Results of Waarre Sandstone analysis (Net Sand: Vsh < 30%, Phi > 10%; Net Pay: Sw < 50% in Sandstone):

Net sandstone thickness	23.9m
Net to Gross	33.1%
Net Pay	Nil

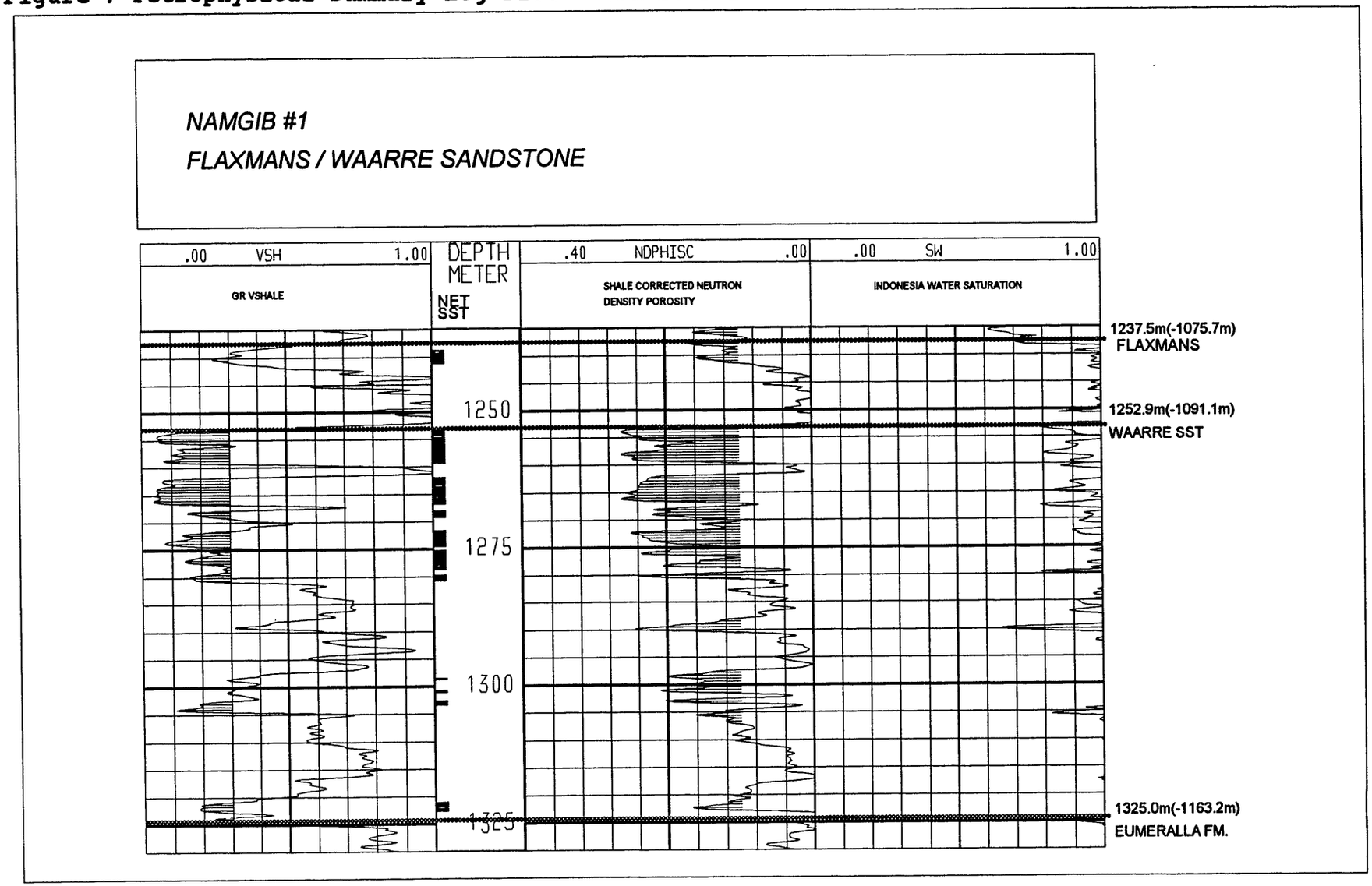
Average Reservoir Properties

Porosity (effective)	20.5%
Sw (Indonesia)	95.5%
Vshale	15.7%

Listed below are the relevant constant/parameters used in this analysis along with the source of the information and comments where appropriate.

CONSTANT/ PARAMETERS		SOURCE
a, m and n	:	1, 1.74 and 2.08 respectively. From Iona -1 special core analysis of the Waarre Formation.
Rw	:	0.62 ohm-m @ 48.1°C. From Vogel -1 log analysis.
Rshale	:	7.5 ohm-m. From overlying shale.
RHO matrix	:	2.65 gm/cc. From published data.
CNL Matrix	:	-0.03 (limestone matrix).
RHO Shale	:	2.30 gm/cc. From overlying shale.
CNL Shale	:	0.24 (limestone matrix). From overlying shale.
RHO Fluid	:	1.00 gm/cc. From published data.
CNL Fluid	:	1.00. From published data.
RHO Hydrocarbon	:	0.15 gm/cc.
BHT	:	50.6°C. From extrapolation, Figure 9.
Mean T	:	15°C. Assumed.
GRBHC Clean	:	15 API units.
GRBHC Shale	:	135 API units.

Figure 7 Petrophysical Summary Log Plot - Waarre Formation



(b) Secondary Objectives

Procedures as outlined for the main objective [(Section 3.2 (a) steps (i)-(vii)] were applied to the analyses of the secondary objectives as follows:

FLAXMANS
(1237.5 - 1257.9m)

The following constants were used in the analysis:

Rw	:	0.62 ohm-m @ 48.1°C (From Vogel -1 log analysis)
GRBHC clean	:	15 API units
GRBHC shale	:	110 API units
RHO shale	:	2.3 gm/cc
CNL shale	:	0.52
R shale	:	6.0 ohm-m
a, m, n	:	1, 1.74 and 2.08 respectively

Vshale (GR "Tertiary" algorithm), shale corrected neutron/density cross plot porosity and Indonesia Sw were calculated. These are displayed in Table 3, a constrained petrophysical listing through net sandstone zones.

Results (Net Sand: Vsh < 30%, Phi > 10%; Net Pay: Sw < 50% in Sandstone) :

Net sandstone thickness	2.7m
Net to Gross	17.7%
Net Pay	Nil

Average Reservoir Properties

Porosity (effective)	12.7%
Sw (Indonesia)	96.9%
Vshale	30.4%

NULLAWARRE GREENSAND
Two intervals analysed: 1096.1 - 1150m and 1150 - 1205.5m

(1096.1-1150.0m)

The following constants were used in the analysis:

Rw	:	6.0 ohm-m @ 44°C (estimated from Pickett Plot)
SP clean	:	15 mV
SP shale	:	-45 mV
RHO shale	:	2.3 gm/cc
CNL shale	:	0.48
R shale	:	4.0 ohm-m
a, m, n	:	1, 2 and 2 respectively

Vshale was calculated three ways using GR, SP, and Neutron Density. All three results appear on the Nullawarre petrophysical summary log plot (Figure 8). SP Vshale was chosen as the most representative Vshale and is certainly the most indicative of the non net, zero permeability argillaceous sandstone which gives rise to the anomalous high resistivities through this section. Similar high resistivities were encountered in the top of the Nullawarre Greensand at Vogel #1. A common feature of the highest resistivities is that the MSFL is overlying the DLL indicating no invasion in support of the SP interpretation of zero permeability. The large separation of the RHOB and NPHI curves also indicates a high clay content in confirmation of the mudlog description of a "very silty sandstone (greensand) grading to arenaceous siltstone". The mudlogger also stated that there was "nil to very poor visible porosity and no shows". Therefore, even though it is possible to calculate hydrocarbon saturations through this zone, they are discounted on the basis of tightness of the rock caused by its clay content and particular mineralogy.

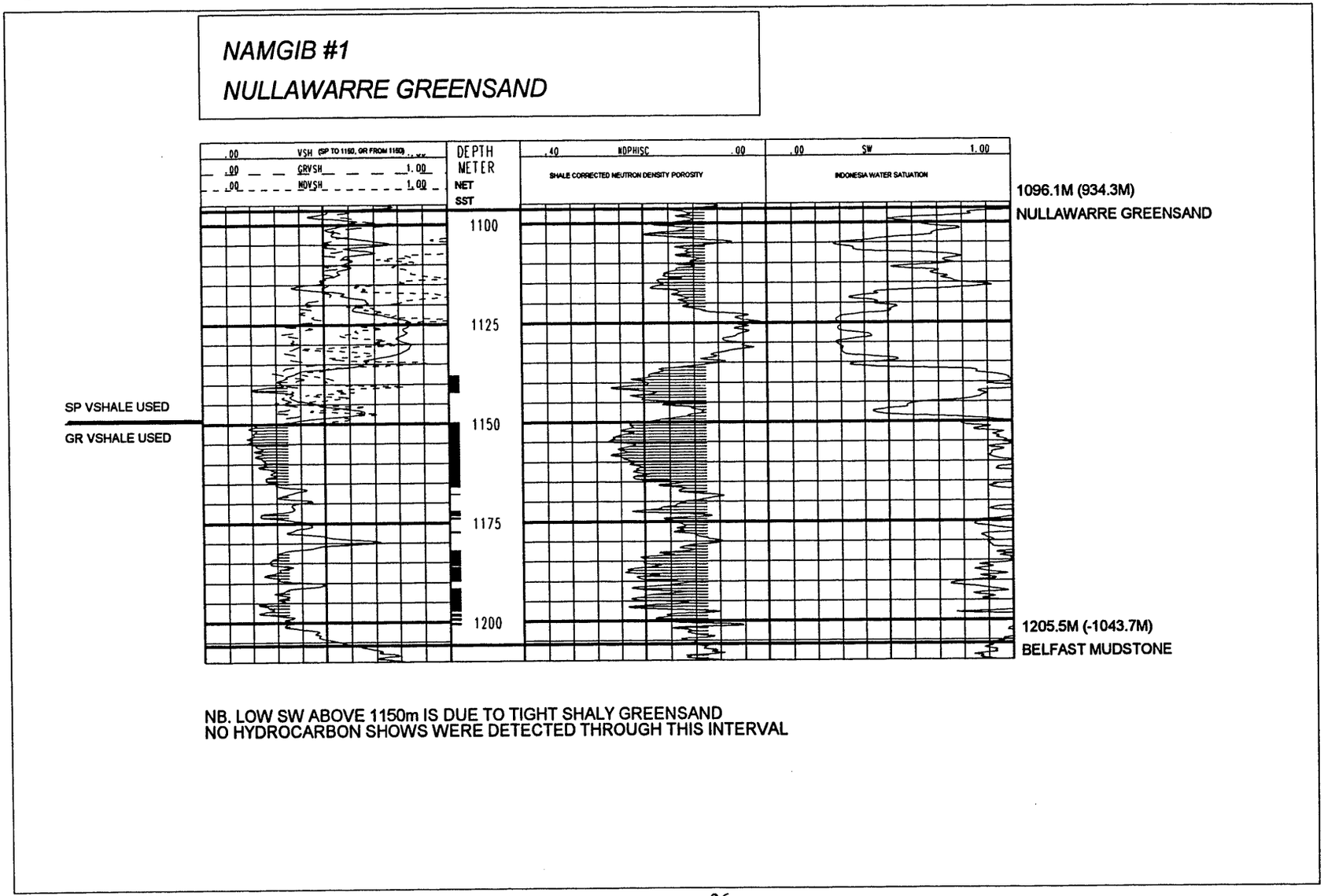
Results (Net Sand: Vsh < 30%, Phi > 10%; Net Pay: Sw < 50% in Sandstone):

Net sandstone thickness	4.7m
Net to Gross	8.8%
Net Pay	Nil

Average Reservoir Properties

Porosity (effective)	21.0%
Sw (Indonesia)	95.2%
Vshale	30.1%

Figure 8 Petrophysical Summary Log Plot - Nullawarre Greensand



NB. LOW SW ABOVE 1150m IS DUE TO TIGHT SHALY GREENSAND
NO HYDROCARBON SHOWS WERE DETECTED THROUGH THIS INTERVAL

NULLAWARRE GREENSAND continued
(1150.0-1205.5m)

The following constants were used in the analysis:

Rw	:	1.0 ohm-m @ 46°C (estimated from Pickett Plot)
GRBHC clean	:	15 API units
GRBHC shale	:	135 API units
RHO shale	:	2.3 gm/cc
CNL shale	:	0.48
R shale	:	4.0 ohm-m
a, m, n	:	1, 2 and 2 respectively

Vshale (GR "linear" algorithm), shale corrected neutron/density cross plot porosity and Indonesia Sw were calculated. These are displayed in Table 4, a constrained petrophysical listing through net sandstone zones.

Results (Net Sand: Vsh < 35%, Phi > 10%; Net Pay: Sw < 50% in Sandstone):

Net sandstone thickness	33.4m
Net to Gross	59.8%
Net Pay	Nil

Average Reservoir Properties

Porosity (effective)	20.3%
Sw (Indonesia)	94.5%
Vshale	27.0%

PAARATTE FORMATION
(653.7-972.7m)

The following constants were used in the analysis:

Rw	:	6.0 ohm-m @ 36°C (estimated from Pickett Plot)
GRBHC clean	:	30 API units
GRBHC shale	:	135 API units
RHO shale	:	2.35 gm/cc
CNL shale	:	0.45
R shale	:	15 ohm-m
a, m, n	:	1, 2 and 2 respectively

Vshale (GR "linear" algorithm), shale corrected neutron/density cross plot porosity and Indonesia Sw were calculated.

Results (Net Sand: Vsh < 30%, Phi > 10%; Net Pay: Sw < 50% in Sandstone):

Net sandstone thickness	155.3m
Net to Gross	48.6%
Net Pay	Nil

Average Reservoir Properties

Porosity (effective)	27.7%
Sw (Indonesia)	93.1%
Vshale	18.0%

PEBBLE POINT FORMATION
(621.5 - 653.7m analysed)

The following constants were used in the analysis:

Rw	:	6.0 ohm-m @ 36.0°C (estimated from Pickett Plot)
GRBHC clean	:	30 API units
GRBHC shale	:	135 API units
RHO shale	:	2.35 gm/cc
CNL shale	:	0.45
R shale	:	20 ohm-m
a,m,n	:	1, 2 and 2 respectively

Vshale (GR "linear" algorithm), shale corrected neutron/density cross plot porosity and Indonesia Sw were calculated. These are displayed in Table 5, a constrained petrophysical listing through net sandstone zones.

Results (Net Sand: Vsh < 30%, Phi > 10%; Net Pay: Sw < 50% in Sandstone):

Total net sandstone:	5.0m
Net to Gross:	15.6%
Net pay:	Nil

Average Reservoir Properties

Average porosity (effective):	25.3%
Average Vshale:	17.5%
Average Sw (Archie):	91.0%

3.3 Conclusions

(1) Log quality is good.

(2) No log pay is recognised in the primary or secondary objectives.

(3) Results of petrophysical analysis of the Waarre Sandstone, Flaxmans, Nullawarre Greensand, Paaratte Formation and Pebble Point Formation lead one to conclude that net porous sandstone zones in these formations are water saturated.

(4) The high resistivity anomally at the top of the Nullawarre Greensand is interpreted to be caused by tight argillaceous greensand grading to arenaceous siltstone and not hydrocarbon saturations.

3.4 Petrophysical Listings

Table 2 WAARRE SANDSTONE

Well Name: NAMGIB#1
Location: OTWAY BASIN,PEP 108 Date: 20/5/93
Constraints: VSH <.30 NDPHISC >.10

DEPTH	GRBHC	VSH	NDPHIS	RT	SW
1253.185	49.8657	.2905	.1528	11.7348	.7909
1253.338	39.7082	.2059	.2020	10.2890	.7838
1253.490	32.1330	.1428	.2381	9.0399	.7966
1253.642	28.1930	.1099	.2563	8.0926	.8226
1253.795	25.8302	.0903	.2620	7.4887	.8562
1253.947	23.9803	.0748	.2626	7.2983	.8782
1254.100	22.1341	.0594	.2603	7.3232	.8962
1254.252	21.3192	.0527	.2557	7.4757	.9059
1254.404	21.0077	.0501	.2517	7.6475	.9096
1254.557	21.4778	.0540	.2471	7.8637	.9071
1254.709	22.0513	.0588	.2404	7.9404	.9181
1254.862	22.5799	.0632	.2350	7.7827	.9394
1255.014	22.5405	.0628	.2334	7.4078	.9674
1255.166	22.0903	.0591	.2355	6.8950	.9983
1255.319	22.3548	.0613	.2369	6.4110	1.0266
1255.471	25.6631	.0889	.2302	6.1683	1.0385
1255.624	34.9747	.1665	.2072	6.2294	1.0241
1255.776	46.8336	.2653	.1768	6.8542	.9693
1256.233	42.7732	.2314	.1882	8.4759	.8746
1256.386	33.2097	.1517	.2104	8.6231	.8808
1256.538	29.3128	.1193	.2163	8.4659	.9033
1256.690	30.1270	.1261	.2105	8.3611	.9198
1256.843	31.8435	.1404	.2023	8.6393	.9161
1256.995	32.5259	.1460	.1980	9.0006	.9059
1257.148	31.5475	.1379	.1998	9.1992	.8992
1257.300	29.7314	.1228	.2073	9.1702	.8927
1257.452	28.0573	.1088	.2207	8.8240	.8825
1257.605	27.3787	.1032	.2390	8.4353	.8552
1257.757	28.7288	.1144	.2546	7.9842	.8281
1257.910	31.2279	.1352	.2619	7.7197	.8076
1258.062	32.8009	.1483	.2611	7.6710	.8019
1258.214	32.0512	.1421	.2542	7.6205	.8249
1258.367	29.1659	.1180	.2461	7.4340	.8756
1258.519	25.8175	.0901	.2425	7.1767	.9264
1258.672	23.8026	.0734	.2440	6.8131	.9618
1258.824	24.2286	.0769	.2470	6.4812	.9724
1258.976	27.6134	.1051	.2458	6.2594	.9643
1259.129	35.8232	.1735	.2311	6.1423	.9487
1259.281	49.8146	.2901	.2021	6.1626	.9177
1261.872	42.4885	.2291	.1734	6.3881	1.0566
1262.024	28.8777	.1156	.2053	6.4140	1.0758
1262.177	24.1736	.0764	.2183	6.4463	1.0721
1262.329	23.4921	.0708	.2235	6.5065	1.0547
1262.482	23.4482	.0704	.2256	6.5268	1.0459
1262.634	23.4908	.0708	.2261	6.6129	1.0370
1262.786	24.7618	.0813	.2265	6.7873	1.0109
1262.939	27.2259	.1019	.2284	6.9762	.9697

Table 2 continued **WAARRE SANDSTONE**

DEPTH	GRBHC	VSH	NDPHIS	RT	SW
1263.091	28.4684	.1122	.2328	7.3117	.9243
1263.244	28.0585	.1088	.2359	7.7670	.8922
1263.396	25.8332	.0903	.2361	8.1287	.8897
1263.548	23.0924	.0674	.2367	8.1965	.9056
1263.701	21.3959	.0533	.2381	8.1911	.9153
1263.853	21.0961	.0508	.2388	8.0189	.9248
1264.006	20.9265	.0494	.2396	7.7034	.9417
1264.158	20.9622	.0497	.2397	7.6500	.9442
1264.310	21.2574	.0521	.2384	7.9841	.9268
1264.463	21.4440	.0537	.2391	8.4762	.8968
1264.615	21.4122	.0534	.2423	9.0362	.8609
1264.768	21.1173	.0510	.2482	9.2720	.8362
1264.920	20.7328	.0478	.2534	9.0511	.8347
1265.072	20.6180	.0468	.2554	8.4514	.8580
1265.225	21.3528	.0529	.2522	7.7592	.8977
1265.377	22.1543	.0596	.2459	7.0575	.9521
1265.530	22.3519	.0613	.2420	6.7577	.9828
1265.682	21.8866	.0574	.2445	6.6693	.9851
1265.834	20.7785	.0482	.2526	6.5798	.9751
1265.987	19.6767	.0390	.2611	6.4730	.9657
1266.139	19.6542	.0388	.2638	6.4296	.9610
1266.292	20.7508	.0479	.2577	6.2409	.9844
1266.444	24.0067	.0751	.2413	6.1281	1.0177
1266.596	32.0666	.1422	.2126	6.3778	1.0201
1266.749	46.6040	.2634	.1712	6.7781	.9941
1267.968	39.9714	.2081	.2086	7.2692	.9029
1268.120	33.6907	.1558	.2178	6.6024	.9713
1268.273	33.5571	.1546	.2084	6.1824	1.0354
1268.425	36.0326	.1753	.1951	6.0236	1.0711
1268.578	38.2390	.1937	.1934	6.0500	1.0528
1268.730	39.0734	.2006	.2047	5.9799	1.0122
1268.882	40.9309	.2161	.2174	5.8364	.9685
1269.035	44.6520	.2471	.2194	5.7905	.9369
1269.187	48.3538	.2779	.2086	5.6815	.9464
1271.626	46.5952	.2633	.1299	8.3478	1.0510
1271.778	41.1342	.2178	.1514	7.7424	1.0593
1271.930	36.3193	.1777	.1865	8.0511	.9572
1272.083	32.7767	.1481	.2254	7.3091	.9100
1272.235	31.4106	.1368	.2486	6.6628	.8970
1272.388	32.5624	.1464	.2495	6.3034	.9103
1272.540	34.7730	.1648	.2419	6.1984	.9210
1272.692	35.9514	.1746	.2361	6.3988	.9137
1272.845	34.9600	.1663	.2339	6.4973	.9206
1272.997	32.7693	.1481	.2331	6.4852	.9410
1273.150	29.8661	.1239	.2314	6.3652	.9787
1273.302	27.4344	.1036	.2277	6.1707	1.0273
1273.454	25.4293	.0869	.2251	5.9013	1.0781
1273.607	24.1504	.0763	.2241	5.8656	1.0974

Table 2 continued **WAARRE SANDSTONE**

DEPTH	GRBHC	VSH	NDPHIS	RT	SW
1273.759	23.8456	.0737	.2227	5.9685	1.0968
1273.912	25.4628	.0872	.2170	6.1547	1.0858
1274.064	27.9694	.1081	.2091	6.4195	1.0681
1274.216	31.6502	.1388	.1998	6.7562	1.0395
1274.369	37.8296	.1902	.1856	7.0796	1.0062
1274.521	48.3126	.2776	.1594	7.2934	.9828
1275.131	48.9087	.2826	.1681	6.5693	.9971
1275.283	42.2374	.2270	.1909	6.2084	1.0093
1275.436	42.7000	.2308	.1959	5.9308	1.0108
1275.588	46.3338	.2611	.1969	5.7070	.9941
1275.740	47.6810	.2723	.2075	5.4672	.9718
1275.893	45.5244	.2544	.2242	5.2945	.9570
1276.045	41.7799	.2232	.2358	5.0674	.9749
1276.198	39.1131	.2009	.2323	5.0279	1.0099
1276.350	37.5952	.1883	.2074	5.3863	1.0681
1276.502	36.3664	.1781	.1665	6.3053	1.1588
1276.655	34.7895	.1649	.1269	7.6366	1.2805
1276.807	33.1257	.1510	.1027	8.9086	1.3877
1276.960	32.4132	.1451	.1025	9.3830	1.3699
1277.112	32.5424	.1462	.1238	9.5624	1.2029
1277.264	33.8308	.1569	.1464	9.3801	1.0713
1277.417	37.1552	.1846	.1551	8.5434	1.0388
1277.569	41.6814	.2223	.1551	7.7991	1.0335
1277.722	46.6522	.2638	.1547	7.5095	1.0016
1277.874	50.4030	.2950	.1638	6.9364	.9718
1278.179	49.8057	.2900	.2012	5.7511	.9491
1278.331	47.9800	.2748	.2049	5.4503	.9779
1278.484	47.6342	.2720	.1897	5.6852	1.0069
1278.636	48.6617	.2805	.1515	7.0137	1.0267
1278.788	49.4699	.2872	.1015	10.8292	1.0175
1279.703	36.1293	.1761	.1360	18.4852	.7880
1279.855	34.2816	.1607	.1906	7.9554	.9669
1280.008	34.9483	.1662	.2252	4.7124	1.1020
1280.160	35.7875	.1732	.2383	3.7621	1.1720
1280.312	36.0799	.1757	.2283	3.5506	1.2384
1280.465	36.5430	.1795	.1994	3.7840	1.3114
1280.617	39.3701	.2031	.1552	4.2775	1.4131
1280.770	46.0128	.2584	.1122	4.9149	1.4751
1298.448	50.1028	.2925	.2023	3.6673	1.1687
1298.600	48.8582	.2822	.1960	3.6854	1.2004
1298.753	50.5904	.2966	.1812	3.8535	1.2122
1300.734	50.1007	.2925	.1706	5.0787	1.1033
1300.886	49.0312	.2836	.1971	5.1629	1.0155
1301.039	49.2386	.2853	.2103	4.3183	1.0626

Table 2 continued **WAARRE SANDSTONE**

DEPTH	GRBHC	VSH	NDPHIS	RT	SW
1302.563	45.3560	.2530	.1404	7.0180	1.1049
1302.715	40.1950	.2100	.1824	4.6365	1.2143
1302.868	37.7058	.1892	.2035	3.5013	1.3246
1303.020	37.7111	.1893	.1996	3.1227	1.4174
1303.172	38.3946	.1950	.1771	3.3420	1.4742
1303.325	38.7632	.1980	.1331	4.3174	1.5518
1321.003	44.7093	.2476	.1105	3.7082	1.7220
1321.156	39.7282	.2061	.1170	3.5146	1.8222
1321.308	37.8303	.1903	.1181	3.3649	1.8962
1321.460	38.3293	.1944	.1142	3.3021	1.9391
1321.613	38.7646	.1980	.1138	3.2917	1.9356
1321.765	38.2412	.1937	.1211	3.3204	1.8706
1321.918	37.5291	.1877	.1357	3.3568	1.7521
1322.070	37.3494	.1862	.1539	3.3770	1.6183
1322.222	37.7270	.1894	.1669	3.3831	1.5289
1322.375	39.4930	.2041	.1672	3.3543	1.5060
1322.527	41.9739	.2248	.1606	3.3174	1.5130
1322.680	46.8670	.2656	.1437	3.3845	1.5207

Table 3 FLAXMANS

Well Name: NAMGIB#1
Location: OTWAY BASIN, PEP108 Date: 20/5/93
Constraints: VSH <.35 NDPHISC >.10

DEPTH	GRBHC	VSH	NDPHIS	RT	SW
1137.971	37.9265	.3489	.1924	14.6143	.9073
1138.123	38.0128	.3444	.1932	14.0796	.9323
1138.276	39.3490	.3406	.1936	13.6200	.9548
1138.428	41.1169	.3392	.1922	13.3895	.9679
1138.580	42.8889	.3394	.1912	13.2877	.9727
1138.733	43.2487	.3310	.1980	13.2204	.9831
1138.885	42.3842	.3205	.2094	13.3074	.9863
1139.038	40.7367	.3129	.2186	13.5132	.9819
1139.190	40.5084	.3075	.2220	13.6180	.9850
1139.342	40.5190	.3053	.2197	13.5894	.9943
1139.495	40.6738	.3073	.2134	13.6273	.9978
1139.647	39.8721	.3109	.2066	13.6785	.9981
1139.800	38.5462	.3208	.1996	13.7430	.9841
1139.952	37.3470	.3282	.1956	14.1215	.9604
1140.104	36.9365	.3311	.1949	14.9619	.9284
1140.257	37.1900	.3319	.1942	15.7073	.9053
1140.409	37.9399	.3270	.1944	16.3054	.8979
1140.562	39.3021	.3108	.1984	16.8531	.9107
1140.714	40.7867	.2894	.2061	17.0778	.9399
1140.866	41.8414	.2618	.2204	16.8045	.9911
1141.019	41.9425	.2324	.2386	16.2362	1.0547
1141.171	41.6199	.2095	.2518	15.8869	1.1083
1141.324	40.7254	.1985	.2547	15.8327	1.1387
1141.476	39.5359	.2020	.2503	15.8937	1.1343
1238.707	75.2931	.3396	.1044	7.7237	1.0478
1238.860	72.7705	.3118	.1108	7.3638	1.0860
1239.012	72.2983	.3068	.1163	7.8415	1.0375
1239.164	72.4250	.3082	.1225	8.6272	.9649
1239.317	74.7982	.3340	.1200	8.9410	.9249
1239.469	75.7816	.3453	.1152	9.2959	.9112
1239.622	74.8302	.3344	.1117	9.0214	.9510
1239.774	71.4609	.2981	.1152	8.6186	1.0083
1239.926	68.3438	.2673	.1232	7.7140	1.0758
1240.079	65.5896	.2422	.1391	7.9602	1.0302
1240.231	65.8915	.2449	.1510	7.4785	1.0105
1240.384	67.6298	.2607	.1571	7.3100	.9785
1240.536	69.3532	.2770	.1565	7.2224	.9659
1240.688	70.9427	.2928	.1488	7.2070	.9735
1240.841	72.5997	.3100	.1373	7.3299	.9846
1240.993	73.8808	.3238	.1301	7.4402	.9857
1241.146	75.7946	.3454	.1236	7.4628	.9805

Table 4 NULLAWARRE GREENSAND

Well Name: NAMGIB#1
Location: OTWAY BASIN PEP 108 Date: 20/5/93
Constraints: VSH <.35 NDPHISC >.10

DEPTH	GRBHC	VSH	NDPHIS	RT	SW
1137.971	37.9265	.3489	.1924	14.6143	.9073
1138.123	38.0128	.3444	.1932	14.0796	.9323
1138.276	39.3490	.3406	.1936	13.6200	.9548
1138.428	41.1169	.3392	.1922	13.3895	.9679
1138.580	42.8889	.3394	.1912	13.2877	.9727
1138.733	43.2487	.3310	.1980	13.2204	.9831
1138.885	42.3842	.3205	.2094	13.3074	.9863
1139.038	40.7367	.3129	.2186	13.5132	.9819
1139.190	40.5084	.3075	.2220	13.6180	.9850
1139.342	40.5190	.3053	.2197	13.5894	.9943
1139.495	40.6738	.3073	.2134	13.6273	.9978
1139.647	39.8721	.3109	.2066	13.6785	.9981
1139.800	38.5462	.3208	.1996	13.7430	.9841
1139.952	37.3470	.3282	.1956	14.1215	.9604
1140.104	36.9365	.3311	.1949	14.9619	.9284
1140.257	37.1900	.3319	.1942	15.7073	.9053
1140.409	37.9399	.3270	.1944	16.3054	.8979
1140.562	39.3021	.3108	.1984	16.8531	.9107
1140.714	40.7867	.2894	.2061	17.0778	.9399
1140.866	41.8414	.2618	.2204	16.8045	.9911
1141.019	41.9425	.2324	.2386	16.2362	1.0547
1141.171	41.6199	.2095	.2518	15.8869	1.1083
1141.324	40.7254	.1985	.2547	15.8327	1.1387
1141.476	39.5359	.2020	.2503	15.8937	1.1343
1141.628	39.0503	.2238	.2396	16.3136	1.0749
1141.781	39.4600	.2542	.2282	16.9471	.9930
1141.933	39.8609	.2874	.2175	17.1474	.9257
1142.086	39.9018	.3191	.2063	16.8170	.8840
1142.238	38.9369	.3460	.1934	16.2737	.8637
1149.706	35.8493	.3348	.1908	13.0327	.9919
1149.858	35.8560	.3105	.1969	12.6286	.6869
1150.010	37.0666	.1839	.2345	12.3557	.7992
1150.163	38.6554	.1971	.2292	12.0330	.8002
1150.315	40.6934	.2141	.2239	11.8270	.7918
1150.468	41.5538	.2213	.2231	11.6171	.7896
1150.620	40.9785	.2165	.2251	11.4660	.7978
1150.772	40.1036	.2092	.2251	11.2177	.8182
1150.925	38.6342	.1970	.2234	10.9381	.8532
1151.077	37.4756	.1873	.2213	10.5563	.8910
1151.230	37.3783	.1865	.2194	10.2703	.9099
1151.382	38.0415	.1920	.2201	10.0316	.9083
1151.534	39.4799	.2040	.2236	9.8415	.8863
1151.687	41.4802	.2207	.2275	9.7238	.8539
1151.839	41.4247	.2202	.2363	9.5862	.8412
1151.992	40.7626	.2147	.2411	9.4166	.8470
1152.144	40.4044	.2117	.2387	9.1048	.8716
1152.296	39.7787	.2065	.2318	8.8138	.9113
1152.449	39.3709	.2031	.2242	8.5859	.9489

Table 4 continued **NULLAWARRE GREENSAND**

DEPTH	GRBHC	VSH	NDPHIS	RT	SW
1152.601	39.9960	.2083	.2185	8.4165	.9634
1152.754	39.9715	.2081	.2209	8.3695	.9602
1152.906	39.9191	.2077	.2265	8.4058	.9443
1153.058	40.1921	.2099	.2333	8.3342	.9270
1153.211	39.7956	.2066	.2392	8.3401	.9182
1153.363	38.4318	.1953	.2449	8.2957	.9270
1153.516	37.2753	.1856	.2489	8.1748	.9411
1153.668	36.4461	.1787	.2524	8.1653	.9454
1153.820	36.9122	.1826	.2526	8.1243	.9402
1153.973	38.4146	.1951	.2511	7.9045	.9346
1154.125	39.3034	.2025	.2501	7.6952	.9364
1154.278	38.8424	.1987	.2531	7.4645	.9502
1154.430	38.4563	.1955	.2554	7.2366	.9651
1154.582	37.5210	.1877	.2585	7.2053	.9736
1154.735	37.0721	.1839	.2601	7.2478	.9735
1154.887	37.6673	.1889	.2553	7.3777	.9679
1155.040	38.7985	.1983	.2458	7.5684	.9623
1155.192	39.6134	.2051	.2366	7.6037	.9709
1155.344	40.7926	.2149	.2265	7.6058	.9783
1155.497	41.1436	.2179	.2199	7.6568	.9869
1155.649	41.0949	.2175	.2166	7.5993	1.0002
1155.802	41.5429	.2212	.2168	7.5867	.9931
1155.954	42.2575	.2271	.2197	7.6904	.9675
1156.106	43.4172	.2368	.2246	7.7449	.9345
1156.259	44.4029	.2450	.2307	7.7321	.9071
1156.411	44.3738	.2448	.2367	7.6452	.8990
1156.564	42.9042	.2325	.2412	7.4832	.9188
1156.716	41.0849	.2174	.2444	7.3802	.9436
1156.868	39.9330	.2078	.2452	7.3181	.9627
1157.021	40.6932	.2141	.2418	7.2873	.9616
1157.173	42.5959	.2300	.2363	7.2468	.9496
1157.326	44.3080	.2442	.2310	7.3358	.9318
1157.478	45.0698	.2506	.2286	7.4909	.9170
1157.630	44.6198	.2468	.2311	7.5727	.9125
1157.783	43.1817	.2348	.2393	7.5477	.9152
1157.935	41.6348	.2220	.2481	7.5604	.9156
1158.088	40.7783	.2148	.2536	7.5977	.9127
1158.240	40.5419	.2128	.2563	7.5781	.9109
1158.392	41.6168	.2218	.2516	7.6124	.9047
1158.545	43.1351	.2345	.2441	7.6623	.8980
1158.697	43.9040	.2409	.2395	7.5514	.9045
1158.850	43.9186	.2410	.2378	7.4145	.9164
1159.002	44.3927	.2449	.2353	7.3356	.9205
1159.154	44.5099	.2459	.2347	7.1818	.9300
1159.307	44.6071	.2467	.2348	6.9738	.9421
1159.459	45.2810	.2523	.2322	6.8183	.9493
1159.612	45.7414	.2562	.2270	6.6301	.9685
1159.764	44.9923	.2499	.2237	6.3604	1.0083
1159.916	45.0416	.2503	.2186	6.1464	1.0384
1160.069	45.0845	.2507	.2178	6.0904	1.0444

Table 4 continued **NULLAWARRE GREENSAND**

DEPTH	GRBHC	VSH	NDPHIS	RT	SW
1160.221	45.5525	.2546	.2197	6.0966	1.0313
1160.374	45.8731	.2573	.2230	6.1624	1.0126
1160.526	45.3003	.2525	.2250	6.3837	.9984
1160.678	42.9734	.2331	.2253	6.6516	1.0129
1160.831	42.0566	.2255	.2192	6.9486	1.0221
1160.983	42.6537	.2304	.2124	7.2215	1.0110
1161.136	44.3447	.2445	.2063	7.2807	.9957
1161.288	46.4874	.2624	.2046	7.2498	.9690
1161.440	48.0833	.2757	.2083	7.1524	.9430
1161.593	48.5713	.2798	.2131	6.9975	.9352
1161.745	48.7337	.2811	.2158	6.7919	.9407
1161.898	50.0880	.2924	.2145	6.7160	.9306
1162.050	51.3910	.3033	.2112	6.5519	.9320
1162.202	51.2127	.3018	.2131	6.2423	.9531
1162.355	49.4676	.2872	.2187	5.8963	.9920
1162.507	48.1509	.2763	.2198	5.6337	1.0315
1162.660	48.0213	.2752	.2138	5.4979	1.0616
1162.812	49.4319	.2869	.2025	5.6572	1.0541
1162.964	51.0116	.3001	.1933	5.8593	1.0348
1163.117	51.3234	.3027	.1939	6.1178	1.0065
1163.269	49.9720	.2914	.2012	6.2867	.9951
1163.422	48.1348	.2761	.2096	6.3087	.9997
1163.574	46.2771	.2606	.2164	6.3431	1.0080
1163.726	45.4807	.2540	.2198	6.3753	1.0092
1163.879	45.7100	.2559	.2196	6.4042	1.0037
1164.031	46.0054	.2584	.2189	6.5280	.9915
1164.184	45.7189	.2560	.2171	6.6013	.9947
1164.336	45.8758	.2573	.2128	6.5336	1.0084
1164.488	46.3642	.2614	.2057	6.5073	1.0215
1164.641	48.0064	.2751	.1920	6.5676	1.0268
1164.793	50.3177	.2943	.1706	6.8158	1.0279
1164.946	51.6990	.3058	.1500	7.3834	1.0211
1165.098	51.2926	.3024	.1396	8.0859	1.0116
1165.250	50.6489	.2971	.1426	7.4377	1.0572
1165.403	50.5314	.2961	.1541	7.5226	1.0199
1165.555	51.4128	.3034	.1661	8.3140	.9255
1165.708	52.2137	.3101	.1758	7.8126	.9195
1165.860	53.5324	.3211	.1791	7.2071	.9308
1166.012	55.5053	.3375	.1763	6.9175	.9296
1167.841	55.8319	.3403	.1186	6.8438	1.0806
1172.108	56.7982	.3483	.1968	6.3872	.9052
1172.261	53.4493	.3204	.2120	6.1593	.9316
1172.413	49.0649	.2839	.2225	5.9668	.9819
1172.566	45.2044	.2517	.2188	6.1372	1.0346
1172.718	43.5393	.2378	.1970	6.8535	1.0654
1172.870	43.1597	.2347	.1674	8.2007	1.0684
1173.023	43.4479	.2371	.1381	9.7488	1.0694
1173.175	42.9960	.2333	.1143	11.4323	1.0828

Table 4 continued **NULLAWARRE GREENSAND**

DEPTH	GRBHC	VSH	NDPHIS	RT	SW
1173.785	48.9043	.2825	.1173	9.4091	1.0465
1173.937	52.4895	.3124	.1441	7.4243	1.0209
1174.090	54.8147	.3318	.1651	6.5744	.9897
1177.290	55.9097	.3409	.1471	5.6897	1.0954
1177.442	56.0229	.3419	.1545	5.4390	1.0974
1182.014	55.5850	.3382	.1237	6.7263	1.0781
1182.167	54.6935	.3308	.1224	6.8028	1.0919
1182.319	53.1203	.3177	.1321	7.3425	1.0500
1182.472	51.8145	.3068	.1474	7.3135	1.0301
1182.624	50.8955	.2991	.1635	7.4176	.9934
1182.776	51.0529	.3004	.1775	7.5944	.9439
1182.929	51.3222	.3027	.1787	7.6741	.9322
1183.081	51.3894	.3032	.1664	7.7969	.9539
1183.234	50.9062	.2992	.1544	7.8738	.9882
1183.386	50.7199	.2977	.1552	7.2741	1.0291
1183.538	51.1656	.3014	.1688	7.5274	.9682
1183.691	51.5883	.3049	.1886	7.0304	.9458
1183.843	50.8355	.2986	.2043	6.6279	.9476
1183.996	49.2655	.2855	.2091	6.3937	.9757
1184.148	48.4665	.2789	.2060	6.3996	.9946
1184.300	48.3452	.2779	.2024	6.5440	.9942
1184.453	48.1304	.2761	.2012	6.7314	.9865
1184.605	47.3495	.2696	.2028	6.7187	.9953
1184.758	47.3658	.2697	.2020	6.6331	1.0035
1184.910	47.5368	.2711	.2001	6.5010	1.0159
1185.062	47.5334	.2711	.1998	6.4726	1.0189
1185.215	47.4757	.2706	.2013	6.5056	1.0134
1185.367	47.4779	.2706	.2044	6.6832	.9919
1185.520	48.9480	.2829	.2015	6.9083	.9609
1185.672	52.1884	.3099	.1922	7.1797	.9194
1185.824	55.7547	.3396	.1819	7.3191	.8872
1186.282	56.7149	.3476	.1838	7.1174	.8837
1186.434	54.3464	.3279	.1933	6.8290	.9115
1186.586	52.5545	.3130	.2044	6.7266	.9174
1186.739	51.9602	.3080	.2168	6.6362	.9047
1186.891	52.3009	.3108	.2264	6.7013	.8765
1187.044	52.7557	.3146	.2304	6.9071	.8505
1187.196	52.4091	.3117	.2301	7.1192	.8422
1187.348	51.3965	.3033	.2282	7.1669	.8545
1187.501	50.9459	.2995	.2259	7.1449	.8657
1187.653	49.4416	.2870	.2306	6.9826	.8844
1187.806	47.7268	.2727	.2349	6.9897	.8963
1187.958	45.9206	.2577	.2282	7.3001	.9149
1188.110	44.9074	.2492	.2093	7.7381	.9471
1188.263	44.4228	.2452	.1899	8.2493	.9742
1188.415	45.6677	.2556	.1786	8.6913	.9592

Table 4 continued **NULLAWARRE GREENSAND**

DEPTH	GRBHC	VSH	NDPHIS	RT	SW
1188.568	46.6856	.2640	.1850	8.7145	.9254
1188.720	48.4073	.2784	.2007	8.2388	.8887
1188.872	50.5471	.2962	.2129	7.6855	.8652
1189.025	52.0422	.3087	.2159	7.1632	.8713
1189.177	52.0043	.3084	.2142	6.7549	.9013
1189.330	51.6880	.3057	.2105	6.5365	.9285
1189.482	52.4492	.3121	.2048	6.5882	.9272
1189.634	55.3753	.3365	.1941	6.6888	.9061
1191.616	56.9280	.3494	.2216	6.3271	.8581
1191.768	55.6509	.3388	.2238	6.2022	.8766
1191.920	55.1621	.3347	.2155	6.2076	.8980
1192.073	54.6623	.3305	.2017	6.2942	.9265
1192.225	53.9548	.3246	.1860	6.6061	.9481
1192.378	53.1584	.3180	.1675	7.2442	.9594
1192.530	51.6640	.3055	.1500	8.1688	.9693
1192.682	49.7928	.2899	.1408	9.0400	.9762
1192.835	49.6074	.2884	.1409	9.4702	.9565
1192.987	51.1852	.3015	.1513	9.4660	.9043
1193.140	53.6081	.3217	.1682	8.9686	.8547
1193.292	55.9178	.3410	.1843	8.0665	.8378
1193.444	56.8812	.3490	.1965	7.1323	.8548
1193.597	56.5757	.3465	.2025	6.6559	.8763
1193.749	55.3684	.3364	.2031	6.4917	.9006
1193.902	53.8970	.3241	.2021	6.5338	.9180
1194.054	52.1436	.3095	.2066	6.6157	.9250
1194.206	51.7846	.3065	.2143	6.6589	.9098
1194.359	51.7748	.3065	.2238	6.6531	.8906
1194.511	53.6232	.3219	.2247	6.5725	.8723
1194.664	54.6223	.3302	.2184	6.4788	.8793
1194.816	54.0477	.3254	.2027	6.5834	.9113
1194.968	50.8934	.2991	.1795	7.0406	.9766
1195.121	46.9519	.2663	.1536	7.6780	1.0722
1195.273	43.2354	.2353	.1365	8.2980	1.1681
1195.426	41.9316	.2244	.1323	8.6995	1.1889
1195.578	42.1607	.2263	.1414	8.5273	1.1581
1195.730	43.0588	.2338	.1596	7.9920	1.1081
1195.883	44.8890	.2491	.1793	7.2287	1.0631
1196.035	46.0907	.2591	.1985	6.5747	1.0366
1196.188	46.6673	.2639	.2140	6.0821	1.0260
1196.340	46.4079	.2617	.2257	5.8962	1.0162
1196.492	46.8587	.2655	.2295	5.8944	1.0003
1196.645	47.6615	.2722	.2278	5.8171	.9993
1196.797	49.1092	.2842	.2190	5.7021	1.0097
1196.950	49.2235	.2852	.1954	5.8361	1.0564
1197.102	47.9007	.2742	.1572	6.6599	1.1202
1197.254	45.5968	.2550	.1225	9.3391	1.1000

Table 4 continued **NULLAWARRE GREENSAND**

DEPTH	GRBHC	VSH	NDPHIS	RT	SW
1198.016	46.1323	.2594	.1219	18.8835	.7669
1198.169	49.2438	.2854	.1491	13.2761	.7936
1198.321	52.4618	.3122	.1673	7.3930	.9598
1198.474	55.6348	.3386	.1680	5.5140	1.0579
1199.083	56.7933	.3483	.1778	5.1707	1.0493
1199.236	55.0812	.3340	.1844	5.2121	1.0538
1199.388	54.3218	.3277	.1853	5.2151	1.0625
1199.540	55.1887	.3349	.1823	5.2020	1.0585
1200.455	55.1307	.3344	.1427	5.3483	1.1549
1200.607	55.0337	.3336	.1138	6.1089	1.1728

Table 5 PEBBLE POINT

Well Name: NAMGIB#1
Location: OTWAY BASIN, PEP 108 Date: 20/5/93
Constraints: VSH <.30 NDPHISC >.10

DEPTH	GRBHC	VSH	NDPHIS	RT	SW
632.460	61.1303	.2965	.1980	45.1787	1.0024
633.374	61.3269	.2984	.1858	48.4429	.9967
633.527	58.9701	.2759	.2061	50.5619	.9600
633.679	56.5106	.2525	.2225	53.5004	.9295
633.832	53.2714	.2216	.2404	58.9083	.8899
633.984	49.6298	.1869	.2572	64.8734	.8601
634.136	46.3735	.1559	.2708	69.9598	.8420
634.289	43.1534	.1253	.2821	72.5468	.8455
634.441	40.3355	.0984	.2898	73.9362	.8588
634.594	39.1829	.0875	.2918	71.7455	.8837
634.746	38.8554	.0843	.2906	68.4038	.9133
634.898	39.3408	.0890	.2858	65.6673	.9377
635.051	40.1855	.0970	.2809	64.4466	.9464
635.203	40.8590	.1034	.2785	64.4896	.9418
635.356	41.5511	.1100	.2765	65.3735	.9298
635.508	42.5446	.1195	.2730	67.1423	.9112
635.660	42.4255	.1183	.2699	67.9863	.9155
635.813	41.7010	.1114	.2672	68.1393	.9337
635.965	40.8854	.1037	.2661	68.0348	.9512
636.118	41.4525	.1091	.2656	67.5097	.9468
636.270	43.2836	.1265	.2636	66.1442	.9315
636.422	46.3019	.1553	.2598	65.4075	.8988
636.575	49.3491	.1843	.2542	64.7108	.8721
636.727	51.4262	.2041	.2478	63.9221	.8626
636.880	53.3572	.2224	.2402	63.1123	.8586
637.032	54.5555	.2339	.2344	62.0664	.8625
637.184	54.4838	.2332	.2322	59.9949	.8833
637.337	54.3928	.2323	.2299	57.9587	.9056
637.489	55.0191	.2383	.2282	55.9060	.9169
637.642	55.3760	.2417	.2290	53.4101	.9306
637.794	56.0855	.2484	.2287	51.6926	.9359
637.946	57.1062	.2582	.2239	51.3759	.9353
638.099	58.9538	.2757	.2129	51.5377	.9334

ENGINEERING

4) DRILLING DATA

4.1 Drilling Diary

4.2 Time Allocation

4.3 Chemical Consumption

4.4 Mud Recap

4.5 Bit Record

4.6 Deviation Surveys

4.7 Casing & Cementing Data

4.8 Tubular Tally

4.9 General Rig Data

4.10 Operating Time-Depth Curve

4.11 Abandonment Diagram

4.12 Problem Summary

4.1 Drilling Diary

BRIDGE OIL LIMITED
DRILLING REPORT SUMMARY
WELL: NAMGIB -1

DATE	DEPTH	OPERATION
23-Feb-93	152	Mobilised Atco Rig No.2 from Millicent and rigged up. Drilled rat and mouse holes. Spudded Namgib No.1 at 1700 hrs 23 Februay 1993. Drilled 12.1/4" hole to 152m.
24-Feb-93	218.5	Drilled to 218.5m. Made wiper trip to conductor. Circulated hole clean. POH and laid out 8" DC. Rigged to run casing and ran 16 jnts 9.5/8" 36ppf J55 R3 LTC casing to 216.3m. Circulated 150% casing contents. Cemented with 190sx class A cement plus 2.3% prehydrated gel mixed at 13.1 ppg. Tailed in with 100sx class A cement plus 1% CaCl2 mixed at 15.6 ppg. Displaced with mud and bumped plug with 1500 psi. Good cement returns, float held OK. WOC 6 hrs. Nippled up BOP. Repaired damaged casing threads.
25-Feb-93	218.5	Nippled up BOP. Pressure tested BOP to 300 and 1500 psi. Laid flare line. Made up 8.1/2" BHA and RIH. Tagged plug at 202m. Pressure tested pipe rams to 400 and 1500 psi, Hydril to 1000psi. Drilled out shoe track and drilled 8.5" hole to 223m. Ran FIT, EMW = 17.4 ppg. Drilled 8.1/2" hole.
26-Feb-93	811	Drilled 8.1/2" hole to 811m. RT for bit change. Hole tight 732-505m. 50-60k overpull.
27-Feb-93	1000	RIH. Reamed 647-666, 685-723, washed 11m to bottom. Drilled 8.1/2" hole to 1000m. Jets plugged, unable to clear. POH. Found 1 collar, bit, and crowsfoot plugged with cement from inside DP. Laid out collar. Made up bit and RIH. Reamed 777-865m.
28-Feb-93	1285	Reamed 865-1000m. Drilled 8.1/2" hole. Circulated samples at 1243 & 1256m.
01-Mar-93	1387	Drilled 8.1/2" hole to 1387m. Circulated clean and POH to 504m. Hole tight 1318 - 664m, max 500001bs overpull. RIH reaming tight spots. Washed and reamed 21m to bottom. Circulated clean. POH.

02-Mar-93 1387	Completed POH. Rigged up Halliburton Logging. Ran :- DLL-MSFL-BHCS-GR-CAL SLD-CNT VSP
03-Mar-93 PB 37m	Completed VSP. Rigged down HLS. RIH BHA and laid out. RIH open ended drill pipe to 1280m and circulated clean. Set plug No.1, 1280 - 1200m with 90sx class A cement mixed at 15.6ppg. Pulled back to 620m and set plug No.2, 620 - 540m with 88sx class A cement mixed at 15.6ppg. Laid out excess DP. Pulled to 310m and spotted a 25bbl high viscosity pill 340 - 250m. Pulled back to 250m and set plug No.3, 250 - 170m with 83sx class A cement plus 1.5% CaCl2 mixed at 15.6ppg. Laid out excess DP. Removed BOP and casing bowl. WOC 5 hrs. Tagged plug No.3 at 213m with 5000lbs string weight. Top of plug 3m inside casing. Set top up plug No.4, 213 - 170m with 50sx class A cement plus 2% CaCl2. Pulled back to 161m and displaced casing to mud inhibited with biocide and corrosion inhibitor. Laid out excess DP. Pulled back to 57m and set plug No.5, 57 - 37m with 25sx class A cement plus 2% CaCl2 mixed at 15.6ppg. Treated mud tanks with flocculant and dumped.
04-Mar-93 PB 37m	Completed flocculating and cleaning mud tanks. Rig released to Gas & Fuel at 0400hrs 4-3-93.

4.2 TIME ALLOCATION

NAMGIB #1

Operation	Hrs
Drill	78.00
Trip	26.00
Circulate	6.00
Ream	9.00
Casing/cementing	16.50
BOP	17.00
Core	0.00
Drill Stem Testing	0.00
Logging	23.50
Repair	0.00
Fishing	0.00
Abandonment	27.00
Complete	0.00
Total Hours	203.00
Total days	8.5

Figure 9

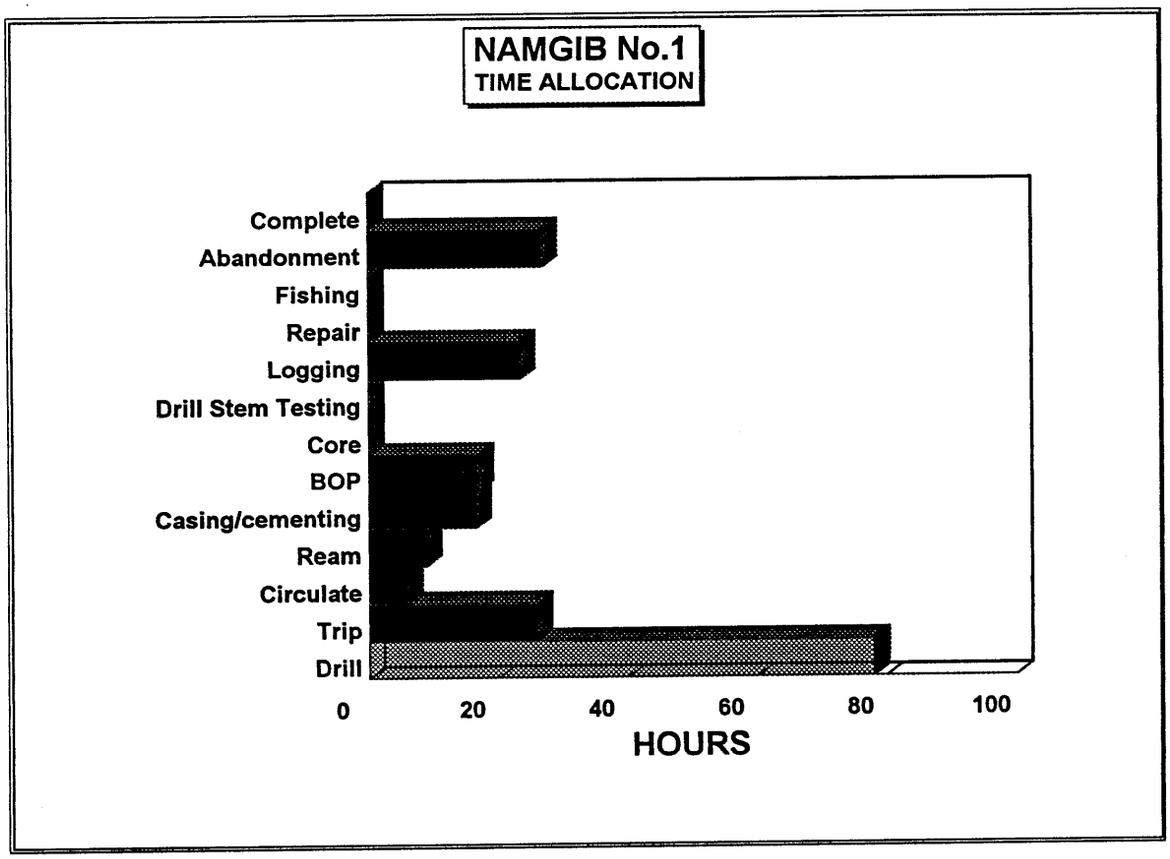
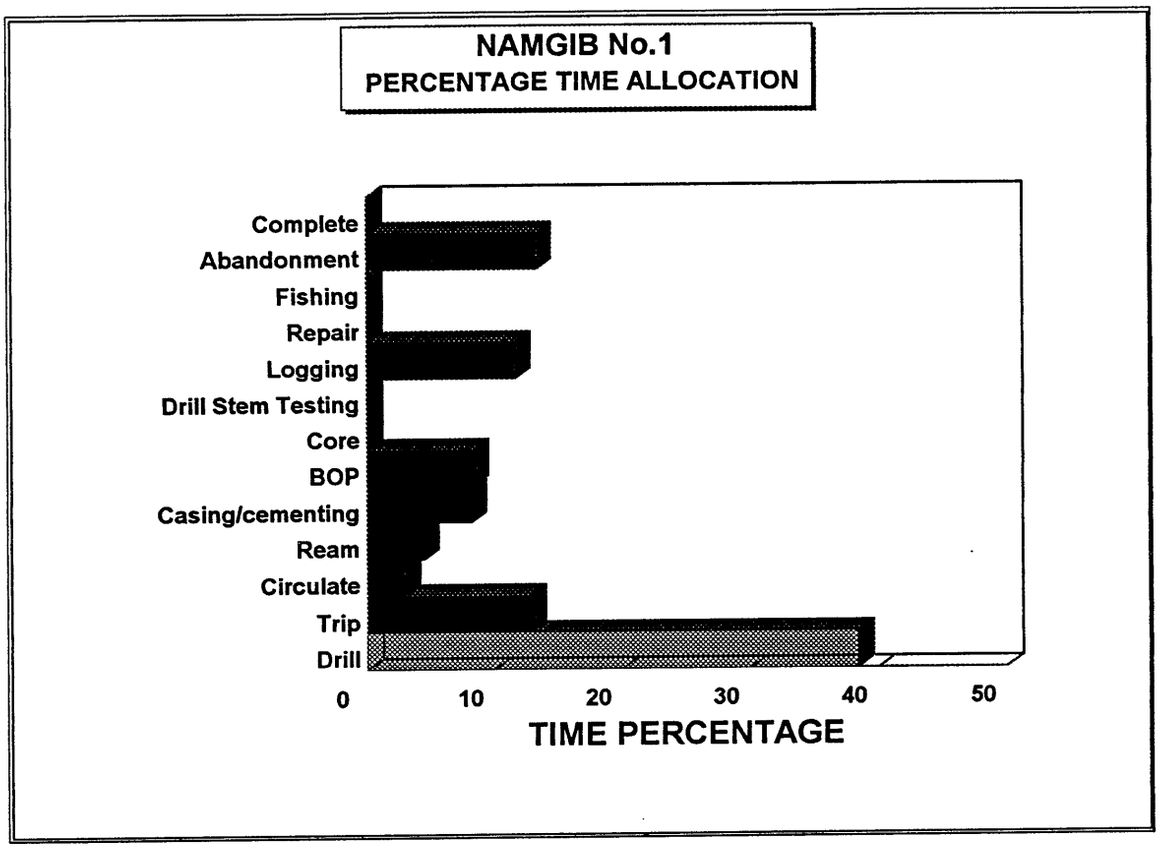


Figure 10


NAMGIB No.1
PERCENTAGE TIME ALLOCATION
Complete
Abandonment
Fishing
Repair
Logging
Drill Stem Testing
Core
BOP
Casing/cementing
Ream
Circulate
Trip
Drill
0
10
20
30
40
50
TIME PERCENTAGE

4.3 CHEMICAL CONSUMPTION

Table 6

MUD PRODUCTS	Kg	Cost $
Wyoming Bentonite	1136	652.75
Caustic Soda	200	222.32
Lime	0	0.00
Defoam-A	0	0.00
JK 261 Polyacrylamide	675	3996.00
Poly Plus	0	0.00
Poly Pac	454	3194.00
Potassium Chloride (Tech)	6000	3000.00
Soda Ash	0	0.00
Sodium Nitrate	0	0.00
Sodium Bicarbonate	250	202.70
Magco Mica	0	0.00
Paraformaldehyde	0	0.00
Biomate 5792 biocide	15	272.40
OS-1 Oxygen scavenger	225	454.14
CMC-LV	0	0.00
Barite	0	0.00
Conqor 303A	50	112.02
Mud Fibre	0	0.00
Total Mud Cost	A$	12106.33

CEMENT & ADDITIVES	Kg	Cost $
Class A cement	22355	5154.80
Class G cement	0	0.00
Calcium Chloride	175	173.25
Spherelite	0	0.00
HR-4	0	0.00
Hallad-322	0	0.00
Morflo I	0	0.00
Morflo II	0	0.00
D-Air II	0	0.00
Wyoming bentonite	909	522.20
Total Cement Cost	A$	5850.25

MISC. CHEMICALS	Kg	Cost $
Aluminium sulphate	1000	1200.00
Total Misc. Chemical Cost	A$	1200.00

4.4 Mud Recap

Table 7

WELL: NAMGIB No.1 **MUD TYPE :** KCL-PHPA **SPUD :** 23-2-93

Date	Depth m	Density ppg	Visc. sec	PV	YP	Gels 0	Gels 10	Fluid loss ml	Solids %	Sand %	MBC ppb	pH	Pm	pf	mf	NO3 ppm	Cl ppm	Ca ppm	Operations
23-Feb	152	8.7	35	10	10	8	18	99.0	2.2	0.25	20.0	8.4		0.20	0.40	0	600	100	Drill 12.1/4"
23-Feb	218.5	8.9	37	12	14	12	24	99.0	4.4	0.50	16.5	8.4		0.05	0.20	0	1100	160	Drill 12.1/4"
25-Feb	325	8.8	38	11	16	10	18	99.0	3.7	0.25	14.5	11.1		0.40	0.50	0	600	600	Drill 8.1/2"
26-Feb	440	8.8	34	10	14	7	10	99.0	3.7	Tr	12.0	10.5		0.15	0.15	0	500	480	Drill 8.1/2"
26-Feb	734	9.0	40	24	10	2	5	11.0	4.9	0.25	12.0	9.6		0.05	0.15	0	6000	560	Drill 8.1/2"
27-Feb	811	9.0	40	20	12	3	5	9.5	4.4	0.25	12.0	8.6		0.05	0.15	0	13500	360	Drill 8.1/2"
27-Feb	979	9.1	47	29	18	4	10	8.2	5.0	0.25	10.0	8.9		0.15	0.30	0	17000	160	Drill 8.1/2"
27-Feb	1035	9.1	44	28	14	3	5	7.8	5.1	0.25	8.0	8.8		0.10	0.30	0	15500	120	Drill 8.1/2"
28-Feb	1206	9.1	44	28	17	3	5	7.4	5.0	0.25	8.8	8.8		0.10	0.30	0	16000	140	Drill 8.1/2"
01-Mar	1311	9.1	44	28	19	3	9	7.2	4.9	Tr	9.0	8.7		0.15	0.25	0	17500	100	Drill 8.1/2"
01-Mar	1387	9.1	50	31	21	5	12	7.0	4.9	Tr	9.0	8.8		0.10	0.35	0	15400	80	TD

4.5 Bit Record

Table 8

HUGHES **BIT RECORD** **HUGHES**

COUNTRY	AREA (BLOCK)	FIELD	☐ IN FILL ☐ DEVELOPMENTAL ☒ EXPLORATORY	LOCATION	WELL NO.	DRILL COLLARS
AUSTRALIA	PEP 108 VICTORIA-OTWAY	EXPLORATION		NAMGIB	1	NO 18 OD 6¼ ID 2¼ / NO ___ OD ___ ID ___ / NO ___ OD ___ ID ___

OPERATOR	X(1)	OPERATOR REPRESENTATIVE(S)	CONTRACTOR	X(2)	TOOL PUSHER(S)	DRILL PIPE
BRIDGE OIL LTD		KEN SMITH	ATCO-APM DRILLING		KEVIN MURPHY	SIZE 4½ WT 16.6 GR G / 2 SIZE ___ WT ___ GR ___

SALESMAN	PUMPS	LINER	TYPE RIG	COST/DAY (US$)	SPUD DATE	T.D. DATE	TOOL JOINTS
	1. NAT 8-A-80 / 2. NAT K500	1. 6" / 2. 6"	☒ LAND ☐ JU ☐ SHIP ☐ SS ☐ PL ☐ BARGE		23-2-93	1-3-93	1 TYPE IF OD 6¼ ID ___ / 2 TYPE ___ OD ___ ID ___

NO.	SIZE	MAKE	TYPE	NOZZLES 32nd IN	SERIAL NO.	DEPTH OUT ☐ FEET ☒ METERS	☐ FEET ☒ METERS	HRS.	ROP ☐ FT/HR ☒ MT/HR	ACCUM DRLG HRS	WT ☒ KLB ☐ KGS	RPM	VERT DEV	☒ PSI ☐ BARS ☐ KPA	☐ GPM ☐ LPM	MUD WT	MUD VIS	MUD PV/YP	IADC DULL GRADE I	O	D	L	B	G	O	R
IRR	12¼"	VAREL	L116	1×15-2×16	64534	218.5	218.5	9	24.3	9	10-15	120	3/4	1200	550	8.8	37	12/14	1	1	FC	A	E	I	NO	TD
2	8½"	HTC	JG-3	3×10	C11PY	811	593	24	24.7	33	20-30	100	1/2	1250	275	9.0	40	20/12	6	7	SS	A	E	I	NO	PR
3	8½"	HTC	JG-3	3×11	D08PR	1000	189	11	17.2	44	20-30	100	1/4	1150	275	9.1	44	28/14	3	4	SS	A	E	I	NO	DSF
4	8½"	HTC	ATJ05	3×11	K09PP	1387	387	28	13.8	72	30	100	1/4	1250	275	9.1	48	30/20	2	2	WT	A	E	I	NO	TD
		BHA	Bit No.1 :	Bit - bit sub - 2×8" DC - x/o - 16×6¼" - 6× HWDP																						
		BHA	Bit Nos 2-4 :	Bit - bit sub - shock sub - 2×6¼" DC - stab - 16×6¼" DC - 6× HWDP																						

4.6 Deviation Surveys

Table 9

Depth m KB	Angle deg
47	0.75
103	0.75
150	0.50
214	0.75
323	0.75
521	0.25
720	0.50
920	0.25
1119	0.50
1318	0.25

Radius of Uncertainty 10.6 metres

4.7 CASING AND CEMENTING

Table 10

Hole Depth - metres KB	218.5	
Hole Size - millimetres	311	
Casing Size - millimetres	244	
Weight - kg/metre	53.7	
Grade	J55	
Coupling	LTC	
Range	3	
Shoe Type	GUIDE	
Collar Type	FLOAT	
Shoe Depth - metres KB	216.3	
Collar Depth - metres KB	202.2	
Centraliser Type	SPRING	
Centraliser Depths - metres KB	213, 189, 175	
Cementing Service Co.	HALLIBURTON	
Casing Running Service Co	NA	
	TAIL	**LEAD**
Cement Type	CLASS A	CLASS A
Cement Quantity - 42.5 kg sacks	100	190
Slurry Density - Sg	1.87	1.57
Slurry Volume - cubic metres	3.34	9.85
Percent Excess	50	50
Volume Estimate From Calliper/Nominal	NOMINAL	NOMINAL
Cement Additives	Prehydrated Gel	CaCl2
Additive percent	2.3% BWOW	1.0
Preflush Type	WATER	
Preflush Volume - cubic metres	4.8	
Preflush Density - Sg	1.0	
Displacement Fluid Type	MUD	
Displacement Fluid Volume - cubic m.	8.48	
Displacement Fluid Density - Sg	1.05	
Bumped Plug With - kPa	10300	
Top of Cement - Obs./Est./CBL/Temp.	SURFACE-OBSERVED	
Remedial Cementing Required Y/N	NO	
Casing Running Time - Hrs	5.5	
Circulating Time - Hrs	0.5	
Cement Mixing Time - Mins	19	
Cement Displacement Time - Mins	10	
Wiper Plugs Used - Top/Bottom	TOP	
Reciprocated During Circulation Y/N	YES	
Rotated During Circulation Y/N	NO	
Reciprocated During Displacement Y/N	NO	
Rotated During Displacement Y/N	NO	

4.8 Tubular Tally

Table 11

Well : Namgib-1 Field : Explor. Date : 24-Feb-93
Pipe Size: 9.5/8" Threads : 8 Rnd

Jnt No.	No.of jnts	Weight-lb/ft	Grade	Coupling	Depth
1-16	16	36	J55	LTC	216.3

Jnt No.	Length	Cum.Length	Jnt No.	Length	Cum.Length
BDF	5.80	5.80	28		
1	13.20	19.00	29		
2	12.45	31.45	30		
3	13.10	44.55	31		
4	11.90	56.45	32		
5	12.83	69.28	33		
6	13.17	82.45	34		
7	13.13	95.58	35		
8	13.43	109.01	36		
9	13.07	122.08	37		
	122.08			0.00	
10	13.27	135.35	38		
11	13.66	149.01	39		
12	13.11	162.12	40		
13	13.45	175.57	41		
14	13.47	189.04	42		
15	13.06	202.10	43		
Collar	0.45	202.55	44		
16	13.24	215.79	45		
Shoe	0.51	216.30	46		
17			47		
	94.22			0.00	
18			48		
19			49		
20			50		
21			51		
22			52		
23			53		
24			54		
25			55		
26			56		
27			57		
	0.00			0.00	

4.9 General Rig Data

Drilling Contractor:	Atco APM Drilling Pty Ltd 4 Formation Street Wacol QLD 4076 (Rig Inventory Attached)
Cementing:	Halliburton Australia Pty Ltd 44 Churchill Road Dry Creek S.A. 5094
Electric Logging:	Halliburton Logging Services P.L.8 Ballantyne Road Kewdale W.A. 6105
Mudlogging:	Exploration Logging Of Australia 1- 5 Bell Street Canning Vale W.A.6155
Velocity Survey:	Velocity Data Pty Ltd PO Box 1103 Caboolture QLD 4510
Wellsite Geology:	Steve Robinson Oxford Geological Consultants 8 Oxford Street Hyde Park S.A. 5061

Rig Inventory

ATCO-APM DRILLING PTY. LTD.

RIG A2

RIG TYPE: MIDCONTINENT U-36-A
NOMINAL DEPTH CAPACITY: 3,600 m (12,000')

DRAWWORKS:

MidContinent U-36-A Single Drum Drawworks

Horsepower Rating	:	1000 Input, 600 Continuous, 800 intermittent
Hoisting Speeds	:	2
Rotary Speed	:	1
Catheads	:	Kelco Model 16-L
Hydromatic	:	Parmac 281
Drive	:	GE 752 DC traction motor with 10hp electric blower
Crown Saver	:	Barber

RIG POWER:

S.C.R.	:	GE AMP Supply 600 Volts, 3 phase, 3 wire, 60 Hz, 2300 Amp. Power converter rating 750 VDC 1000 AMP DC complete with interface panel for 4 - 500 KW generators and S.C.R. power converters
GENERATORS	:	4 x Brushless Synchronous Alternator powered by 4 - D379 Turbo charged diesel engines complete with Barber Rig Savers

DERRICK:

MAST	:	131' Modified Lee C. Moore Mast Leg Spread 18 Ft. GNC. 650,000 lbs Max. Hook Load 10 lines - 450,000 lb
CROWN BLOCKS	:	Cross Sheave - 5 - 36" Grooved 1-1/8" Fast Sheave - 1 - 36" Grooved 1-1/8" Dead Sheave - 1 - 36" Grooved 1-1/8"
SUBSTRUCTURE	:	Dreco Four Section Box Style Max. Pipe Set Back Capacity - 330,000 lbs Max. Rotary Table Capacity - 475,000 lbs Overall Size - 27'W x 39'6"L x 16'H
ROTARY TABLE	:	National Model C205, Size - 20-1/2", Complete with Split Master Bushings.
TRAVELLING BLOCK	:	Model 542 E 200 National Block and Hook Combination with 5 - 42" Diameter Sheaves Capacity - 200 Tons

SWIVEL	:	National Model N-69 Swivel, complete with support for Foster Kelly Capacity - 300 Tons
MUD PUMPS		
NO: 1	:	National 8P80 triplex 6 1/4" x 8 1/2" Hydril K-20 pulsation dampener Discharge strainer cross 2" Cameron safety relief value 1 GE752 DC traction motor rated to 800 hp
NO: 2	:	National K500A Duplex 7 1/4" x 15" Hydril K10 pulsation dampener Discharge strainer cross 2" Cameron safety relief valve 1 GE752 DC traction motor rated to 550 hp. 1 x Mission magnum 5" x 6" x 14" mud mixing pump powered by 60 hp electric motor.
MUD TANKS	:	Total Capacity - 562 Bbls.
TANK NO. 1	:	Three compartment tank with sand trap Overall size -10'W x 42'L x 6'H Three subsurface guns Swaco vacuum degasser
TANK NO. 2	:	Three Compartment Tank Overall size - 10'W x 42'L x 6'H 2 agitators powered by 10 hp electric motors 1 agitator powered by 5 hp electric motor
SHALE SHAKERS	:	2-Brandt dual tandem shale shakers each driven by a 5 hp electric motor
DESANDER	:	2 x 250 mm (10") cones driven by a Mission Magnum "I" 6"x5"x14" pump powered by a 60 hp electric motor
DESILTER	:	10 - 100 mm (4") cones rated at 2,250 lt/min (500 gal/min), driven by a Mission Magnum 5"x6"x11" pump, powered by a 50 hp electric motor
BLOWOUT PREVENTERS	:	
ANNULAR	:	Shaffer 'Spherical' 346mm - 34,470 kPa
RAMS	:	(13-5/8" - 5,000 psi) 2 - Shaffer "SL-SGL" 346 mm - 34,470 kPa (13-5/8" - 5,000 psi) single gate ram preventers
ADDITIONAL BLOCKS	:	1 set each of the following; Tubing - 2 3/8", 2 7/8" and 3 1/2" Casing - 5 1/2", 7", 9 5/8"

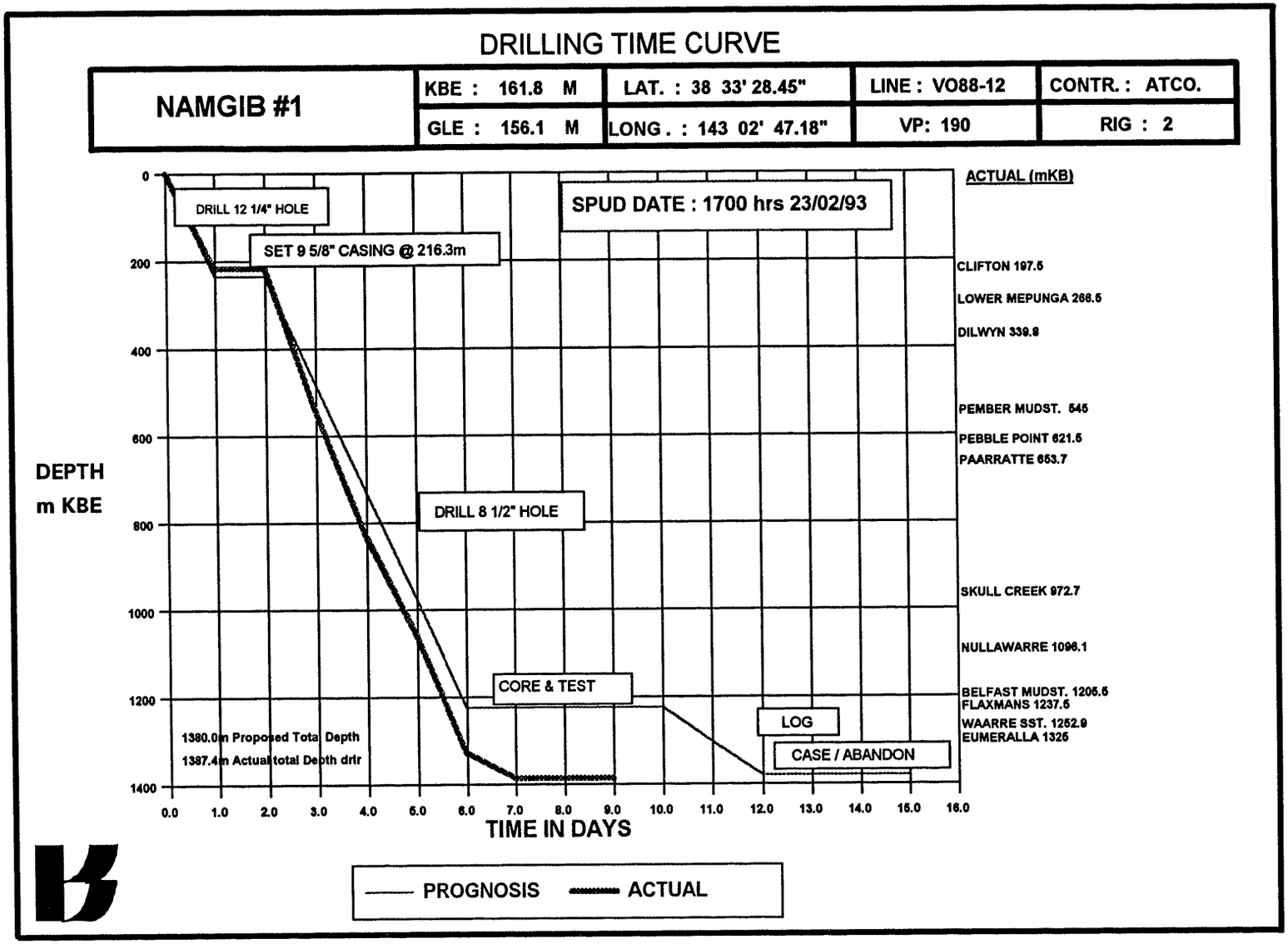
SPOOLS AND VALVES:		1 - 13-5/8" x 12" 900 Series Adaptor Spool with 3" 5,000 psi flanged outlets 1 - 13-5/8" x 13-5/8" 900 Series Adaptor Spool with 3" 5,000 psi flanged outlets 5 - McEvoy automatic self sealing gate valves 3" Fig. 120 API full port RM-12 Trim 5,000 psi 1 - McEvoy H.P. check valve, 3" 5,000 psi full port 1 - 13-5/8" 5,000 x 11" 3,000 psi cross-over spool
HYDRAULIC FLUID ACCUMULATOR	:	Wagner Model 20-120-3BNH Accumulator 120 gallon Capacity, 5 station control valves, Nitrogen Bottle Backup System Triplex Pump w/ 20 Hp Electric motor Remote Drillers Control Panel
WELL CONTROL MANIFOLD	:	McEvoy automatic self sealing gate valves, 3" Fig 29, fullport RM-12 trim 5,000 psi 2 - Willis M-3 Multi-Orifice Chokes 550 Ft. Flare line, 2 7/8" Tubing 120 Ft. Degasser Line, 4" tubing 1 - 16" Flow Nipple
DRILL PIPE	:	10 - Jnts 4-1/2" OD "HEVI WATE" w/ 4 IF connections 200 - Jnts 4-1/2" OD Grade "E" drill pipe, 16.60 # w/ 4 IF connections, internal coated and hard banded 200 - Jnts 4-1/2" OD Grade "G" drill pipe, 16.60 # w/ 4 IF connections, internal coated and hard banded
DRILL COLLARS	:	25 - 6-1/2" OD w/ 4 IF connections 5 - 8" OD w/ 6-5/8" regular connections
HANDLING TOOLS	:	
SLIPS, SPIDER & SAFETY CLAMPS	:	1 - Varco 4-1/2" drill pipe slips 1 - Varco 5" drill pipe slips 1 - Varco 7" drill collar slips 1 - Varco 9" drill collar slips
ROTARY TONGS	:	1 Set Wooley rotary tongs complete with jaws 2-3/8" - 17" with Tugger pull back
ELEVATORS & LINKS	:	2-1/4" X 108" Weldless elevator links 4-1/2" "GG" centre latch 18 degree, drill pipe elevators 7" - 13 3/8" casing elevators
WINCHES & FLOORLINES	:	Curtis Hoover hydraulic power system driven by a 50 hp electric motor (mounted in substructure) 1 - Gearmatic hydraulic tugger winch complete with 250' of 5/8" steel cable 1 - wireline survey unit with 10,000' of .092 plow steel line

INSTRUMENTATION	:	1 - Geolograph remote pump pressure gauge 1 - Geolograph rotary torque system panel mount with 6" gauge 1 - Geolograph RPM Tach Drive Assembly 1 - SPM Tach Drive Assembly 1 - Geolograph Tong Line Pull Assembly 1 - M/D indicator complete with diaphram 1 - weight indicator transmitter 1 - Geodril Bit Sentry automatic drilling control 1 - Geolograph Drill-Sentry 6 Pen Recorder 1 - Cameron Type "C" mechanical deadline anchor type weight indicator 2 - mud pressure gauges - floshow, pump stroke counter, pitograph 1 - Dual shot deviation recorder 7° + 14°
BUILDINGS	:	
Generator Bldg #1	:	Size: 10'W X 38'L X 10'H (for Generators Nos. 2 & 3)
Generator Bldg #2	:	Size: 10'W X 38'L X 10'H (for Generators Nos. 1 & 4)
Tool House	:	Size: 10'W X 30'L X 9'H
Dog House	:	Size: 10'W X 25'L X 8'5"H Contents: knowledge box, lockers, outside tool board, first aid kit, fold-away metal table, steel bench, double-door parts cabinet
Pump House #1	:	Size: 10'W X 30'L X 9'H
Pump House #2	:	Size: 10'W X 30'L X 9'H
Accumulator/ Storage Room	:	Size: 10'W X 40'L X 8'8"H
STORAGE TANKS	:	
WATER TANK	:	Size: 12'W X 36'3"L X 8'6"H Total Capacity: 550 Bbls.
WATER CIRCULATING PUMPS	:	No. 1 and No. 2: Mission 2 x 3R Centrifugal pumps driven by 10 hp electric motors
FUEL TANK	:	Size: 7' dia. X 30'L Total Capacity: 32,000 litres
FUEL TRANSFER PUMP	:	2 - 1" X 1" fuel transfer pumps driven by 1 HP electric motors
ADDITIONAL EQUIPMENT:		
CATWALK AND PIPE RACKS	:	1 - 7'8"W X 40'L X 3'6"H Catwalk 5 - 3'6"H x 30'L sets of tumble pipe racks
SUBS	:	All subs required for Contractor's tubulars

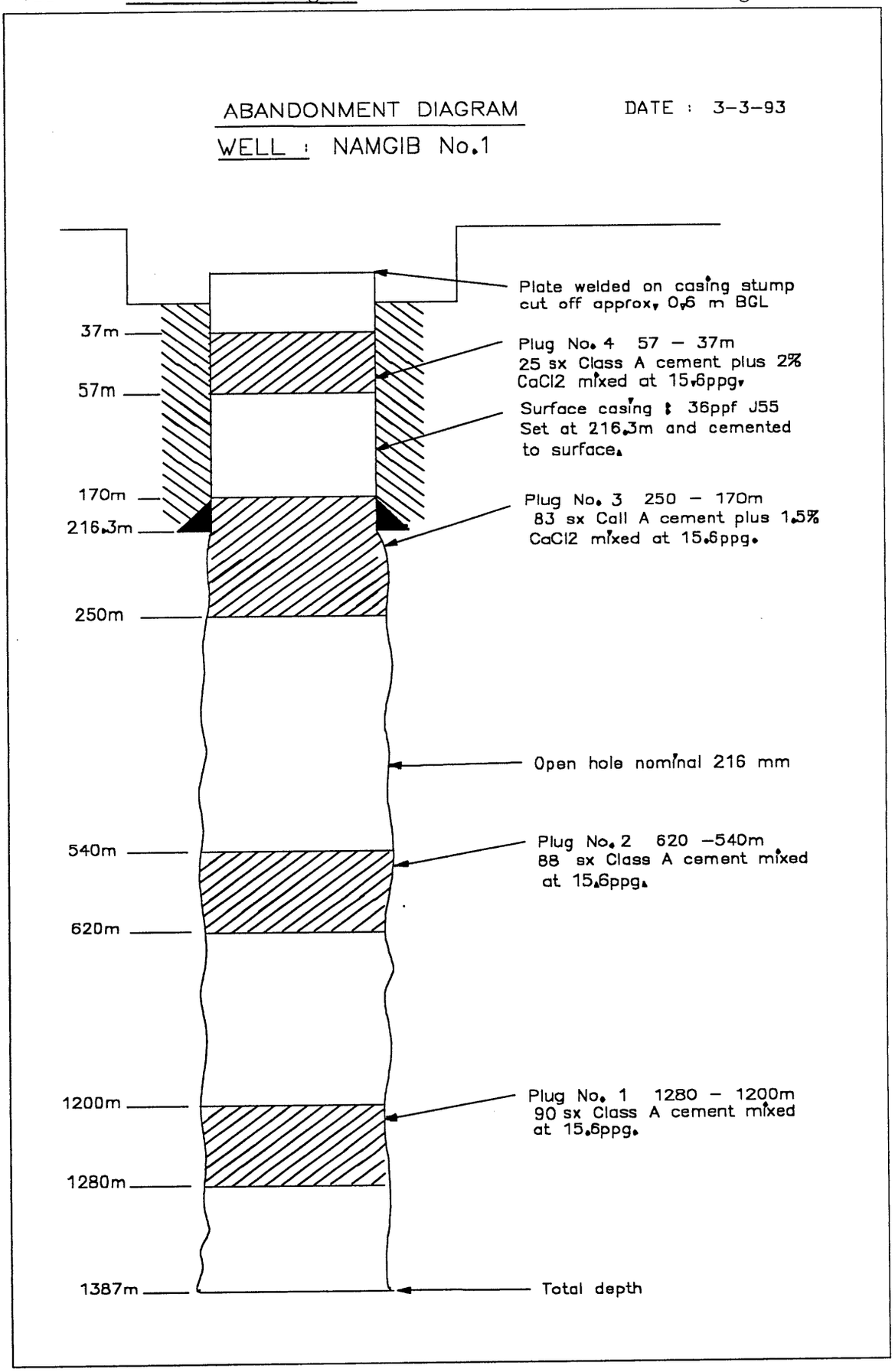
CASING AND TUBING	:	Farr Model 'LW' Hi-Torque casing tongs with torque gauge assembly, complete with: 5-1/2", 7", 9-5/8" and 13-3/8" casing jaws Casing elevators and slips for: 5-1/2", 7", 9-5/8" and 13-3/8"
FISHING EQUIPMENT	:	To suit all Contractor's tubulars
KELLY, KELLY BUSHING KELLY COCK AND STABBING VALVE	: :	1 - 4 1/4" x 40' square kelly with 6 5/8" Reg connection 1 - Foster Type '77-1' kelly spinner 1 - Roller driver kelly bushing 1 - upper kelly cock with 6 5/8" Reg connections 1 - lower kelly cock with 4" XH connections 1 - Griffith stabbing valve
SWABBING UNIT (Avail. on request)	:	Type "H-25" Ideco. 9000' x 9/16" line. Powered by GM 4-71 diesel motor, complete with: 1 - 10' X 1-3/4" sinker bars 1 - 9/16" swivel rope socket 1 - 2-3/8" swabbing mandril 1 - 2-7/8" swabbing mandril
MISCELLANEOUS	:	1 - High pressure water blaster
SAFETY EQUIPMENT	:	Includes stretcher, safety belts, first aid kits, general TGC 20 lb. fire extinguishers, inflatable air splints, chemical goggles, geronimo safety slide, face shields, vest type safety harnesses, lift harnesses and attachment, trolley mounted 50 lb dry chemical extinguisher, RFDS Medical Chest, 2 x eye wash stations, 2 sets 'Drager' breathing apparatus kits, Hazardous Materials Register, full complement of safety signs, white board for emergency phone numbers & crew training in telephone usage.
VEHICLES	:	1 - 4 Wheel Drive Forklift complete with bucket and forks 1 - Toolpusher Ute 1 - Crew Wagon
COMMUNICATION EQUIPMENT:		Single side band two-way radios 2020 - local 7770 - up to 1500 km 54890.5 - local 10174 - 1000-2000 km 6845 - Flying Doctor 13988 - 1500-3000 km
TOOLPUSHER UNIT	:	One Unit comprising of 2 bedrooms, 2 offices and ablution area - fully furnished

4.10 Operating Time-Depth Curve

Figure 11



4.11 Abandonment Diagram Figure 12



4.12 Problem Summary

Namgib No.1

1. Plugged Drill Pipe

While drilling ahead at 1000m, drill pipe pressure suddenly increased to the point that circulation was not possible. On tripping the pipe it was found that one drill collar and the bit were full of flaked cement. Subsequent inspection of the drill pipe on the rack revealed some 37 joints of pipe with a cement coated ID. Total lost time including reaming was 10 hrs at a cost of approx. A$7000.

2. Excessive tight hole on TD wiper trip.

A total of approx. 10 hrs were spent making a wiper trip at TD prior to logging. The trouble free time should be in the order of 3 hrs. The open hole logs showed the well to be almost perfectly in gauge to slightly undergauge. A slight mud cake therefore caused the string to act as a piston. This problem is very common when using a very inhibitive KCl/PHPA mud system. It is felt to be preferable to have tight hole problems rather than the previous washed out hole problems, with the resultant evaluation difficulties.

Future wells will use much higher hydraulics to give some borehole erosion without the rugosity problems. Estimated lost time was 7 hrs at a cost of approx. A$4800.

3. Casing shoe plug tagged low.

In spite of setting a hi-vis plug below the casing shoe cement plug, the plug apparently fell and was tagged 43m low, and only 3m above the shoe. This necessitated a top up plug to give the required distance above the shoe. Fortunately the plug was tagged inside the shoe and so the top up plug did not have to be tagged after waiting on cement. Had this been necessary, then a further 4-5 hrs would have been lost.

In future wells, a plug cutter shoe will be used, and LCM will be included in the hi-vis plug and the cement plug. Estimated lost time 1.1/2 hrs at a cost of A$1800.

GEOPHYSICS

5) VELOCITY SURVEY REPORT

The velocity survey was carried out on March 2, 1993 by Velocity Data Pty Ltd using a dynamite source.

The final report is contained in a separate bound document. Excerpts of significant data from that report are reprinted on the following pages.

BRIDGE OIL LIMITED

NAMGIB #1

LATITUDE: 38 33' 28" S
LONGITUDE: 143 02' 49" E

PEP 108

WARNAMBOOL
VICTORIA
AUSTRALIA

VERTICAL SEISMIC PROFILE

ACQUISITION:

Velocity Data Pty. Ltd.
Box 1103
Caboolture Qld. 4510
Australia

Ph: (074) 95 3077
Fax: (074) 95 7314

3rd March, 1993

PROCESSING:

Wavebaud Associates
36 Grimes St.
Yeronga Qld. 4104
Australia

Ph: (07) 892 2239
Fax: (07) 892 2239

19th April, 1993

BRIDGE OIL LIMITED

VERTICAL SEISMIC PROFILE

NAMGIB #1

ACQUISITION SUMMARY

Client:	Bridge Oil Ltd
Client rep.:	Steve Robinson
Well:	NAMGIB #1
Permit/ATP:	PEP 108
Latitude:	38 33' 28" S
Longitude:	143 02' 49" E
Survey units:	metres
Elevations	
Datum:	150.00
Ground:	156.10
Kelly Bushing:	161.80
Depths	
Casing:	216.30
Total:	1375.70

Acquisition:	Velocity Data
Date:	3/03/93
Observer:	H. Hunt
Shooter:	J. Brown
Logging Co.:	Halliburton
Drilling Co.:	Atco
Rig identification:	2
Energy source:	Powergel
Geophone type:	Camlock Three Component
Weather:	Wet & Windy

Numbers of Shots:	
Datum shots:	4
VSP Control Shots:	15
VSP Shots:	53

Processing:	Wavebaud Associates
Date:	7th May, 1993

NAMGIB #1
Vertical Seismic Profile

Table 2: Velocity Survey Calculations for 'Datum' Shots

Phone Depth (KB)	Phone Depth (GL)	Phone Depth (SD)	Shot Location	Shot Depth (m)	Raw Time (ms)	Interpolated Vertical Time-to-SD (ms)	Interpolated GL-to-SD Time (ms)
19.0	13.3	7.2	a	0.2	14.0	5.9	6.1
19.0	13.3	7.2	b	0.2	22.0	5.8	6.0
19.0	13.3	7.2	d	0.8	32.0	3.6	6.2
19.0	13.3	7.2	d	0.8	32.0	3.6	6.2

Notes:

(1) Shots at Locations a and b are 'datum' shots near Ground Level.
(2) Shots at d are in mud pit, for reduction of subsequent mud-pit shots.

(3) Estimation of GL to SD time.

These computations are intended to provide an *estimate* of the travel time from Ground Level at the well (GL) to Seismic Datum (SD).

Since Datum is only 6.1 m below GL, direct recording to Datum is inappropriate as oblique ray paths increase the likelihood of recording refracted arrivals. The estimates in the above Table have utilised data from a level below datum (KB 19m), but ray paths are still oblique, especially for shots at location d (mud-pit).

Column 7 of the above table shows the Vertical time to Datum from each shot based on a simple depth interpolation of the Vertical Time to KB 19.0. The corresponding adjustment to provide the GL-to-SD time (Column 8) has been made using a near surface velocity of 1000 m/s, estimated from the direct times for shots at Locations a and b.

In practice, ground velocities between GL and Datum are likely to be lower than between Datum and KB 19m. Hence the values in Columns 7 and 8 of Table 2 are likely to be *underestimates*.

Processing: Wavebaud Associates
Date: 5th March 1993

NAMGIB #1
Vertical Seismic Profile

Table 3: Velocity Survey Calculations for VSP Control Shots

Phone Depth (KB)	Phone Depth (GL)	Phone Depth (SD)	Shot Locn	Shot Depth (m)	Direct Time (ms)	Vert Time (ms)	Datum Time (ms)	Av Vel (m/s)	RMS Vel (m/s)	Int Dist (m)	Int Time (ms)	Int Vel (m/s)
161.8	156.1	150.0	d	0.8	101.0	99.2	93.2	1610	1610			
										35.8	19.4	1800
197.6	191.9	185.8	d	0.8	120.0	118.6	112.6	1651	1653			
										69.8	38.4	1800
267.4	261.7	255.6	d	0.8	158.0	157.0	151.0	1693	1696			
										72.4	35.3	2100
339.8	334.1	328.0	d	0.8	193.0	192.2	186.2	1761	1769			
										205.1	94.3	2200
544.9	539.2	533.1	d	0.8	287.0	286.6	280.6	1900	1915			
										76.6	31.1	2500
621.5	615.8	609.7	d	0.8	318.0	317.6	311.6	1956	1977			
										50.8	18.0	2800
672.3	666.6	660.5	d	0.8	336.0	335.7	329.7	2004	2032			
										282.7	109.1	2600
955.0	949.3	943.2	d	0.8	445.0	444.8	438.8	2150	2184			
										141.1	54.0	2600
1096.1	1090.4	1084.3	d	0.8	499.0	498.8	492.8	2200	2235			
										113.5	35.0	3200
1209.6	1203.9	1197.8	d	0.8	534.0	533.8	527.8	2269	2315			
										27.9	12.0	2300
1237.5	1231.8	1225.7	d	0.8	546.0	545.8	539.8	2270	2316			
										15.4	7.0	2200
1252.9	1247.2	1241.1	d	0.8	553.0	552.8	546.8	2270	2314			
										72.3	21.0	3400
1325.2	1319.5	1313.4	d	0.8	574.0	573.9	567.9	2313	2365			
										50.5	21.0	2400
1375.7	1370.0	1363.9	d	0.8	595.0	594.9	588.9	2316	2367			

Notes:

(1) Datum Times obtained from Vertical Times by subtraction of estimated Vertical Time Datum Shot at Shot Location d (6.0 ms).

(2) Reference Elevation for calculation of Average and RMS velocities: 150.0 m

Processing: Wavebaud Associates
Date: 5th March, 1993

Table 4(a): Velocity Survey Calculations for VSP Shots (P-Wave)

Phone Depth (KB)	Phone Depth (GL)	Phone Depth (SD)	Shot Locn	Shot Depth (m)	Direct Time (ms)	Vert Time (ms)	Datum Time (ms)	Av Vel (m/s)	RMS Vel (m/s)	Int Dist (m)	Int Time (ms)	Int Vel (m/s)
290.0	284.3	278.2	f1	2.0	170.5	164.4	161.4	1724	1724	27.0	12.7	2100
317.0	311.3	305.2	f2	2.0	182.5	177.1	174.1	1753	1756	27.0	13.1	2100
344.0	338.3	332.2	f3	2.0	195.0	190.2	187.2	1774	1779	27.0	13.5	2000
371.0	365.3	359.2	f4	2.0	208.0	203.7	200.7	1790	1795	27.0	12.4	2200
398.0	392.3	386.2	f5	2.0	220.0	216.1	213.1	1812	1820	27.0	13.3	2000
425.0	419.3	413.2	f6	2.0	233.0	229.4	226.4	1825	1832	27.0	11.8	2300
452.0	446.3	440.2	f7	2.0	244.5	241.2	238.2	1848	1858	27.0	11.3	2400
479.0	473.3	467.2	f8	2.0	255.5	252.4	249.4	1873	1886	27.0	12.2	2200
506.0	500.3	494.2	f9	2.0	267.5	264.6	261.6	1889	1902	27.0	12.7	2100
533.0	527.3	521.2	f10	2.0	280.0	277.3	274.3	1900	1913	37.0	16.9	2200
570.0	564.3	558.2	e9	2.0	296.5	294.2	291.2	1917	1931	37.0	14.2	2600
607.0	601.3	595.2	e8	2.0	310.5	308.3	305.3	1949	1967	37.0	14.1	2600
644.0	638.3	632.2	e7	2.0	324.5	322.5	319.5	1979	2001	29.0	10.6	2700
673.0	667.3	661.2	e7	2.0	335.0	333.1	330.1	2003	2028	29.0	9.6	3000
702.0	696.3	690.2	e5	2.0	344.5	342.7	339.7	2032	2063	29.0	12.6	2300
731.0	725.3	719.2	e4	2.0	357.0	355.2	352.2	2042	2072	29.0	12.0	2400
760.0	754.3	748.2	e3	2.0	369.0	367.3	364.3	2054	2084	29.0	11.1	2600
789.0	783.3	777.2	e3	2.0	380.0	378.4	375.4	2071	2102	29.0	11.0	2600
818.0	812.3	806.2	e1	2.0	391.0	389.4	386.4	2087	2119	15.0	7.1	2100
833.0	827.3	821.2	d1	2.0	398.0	396.5	393.5	2087	2119	15.0	5.0	3000
848.0	842.3	836.2	d1	2.0	403.0	401.5	398.5	2098	2132	15.0	6.0	2500

(continued over)

Table 4(a) (cont.): Velocity Survey Calculations for VSP Shots (P-Wave)

Phone Depth (KB)	Phone Depth (GL)	Phone Depth (SD)	Shot Locn	Shot Depth (m)	Direct Time (ms)	Vert Time (ms)	Datum Time (ms)	Av Vel (m/s)	RMS Vel (m/s)	Int Dist (m)	Int Time (ms)	Int Vel (m/s)
863.0	857.3	851.2	d2	2.0	409.0	407.6	404.6	2104	2137			
										15.0	5.0	3000
878.0	872.3	866.2	d3	2.0	414.0	412.6	409.6	2115	2150			
										15.0	6.1	2500
893.0	887.3	881.2	c2	2.0	420.0	418.8	415.8	2120	2154			
										15.0	7.0	2100
908.0	902.3	896.2	c1	2.0	427.0	425.8	422.8	2120	2154			
										15.0	7.1	2100
923.0	917.3	911.2	b3	2.0	434.0	432.9	429.9	2120	2153			
										15.0	5.0	3000
938.0	932.3	926.2	b4	2.0	439.0	437.9	434.9	2130	2165			
										15.0	6.0	2500
953.0	947.3	941.2	b5	2.0	445.0	443.9	440.9	2135	2169			
										19.0	6.0	3100
972.0	966.3	960.2	b6	2.0	451.0	450.0	447.0	2148	2186			
										19.0	7.0	2700
991.0	985.3	979.2	b7	2.0	458.0	457.0	454.0	2157	2195			
										19.0	5.5	3400
1010.0	1004.3	998.2	b6	2.0	463.5	462.5	459.5	2172	2214			
										19.0	7.5	2500
1029.0	1023.3	1017.2	b7	2.0	471.0	470.0	467.0	2178	2219			
										19.0	8.0	2400
1048.0	1042.3	1036.2	b8	2.0	479.0	478.1	475.1	2181	2222			
										19.0	6.0	3200
1067.0	1061.3	1055.2	b9	2.0	485.0	484.1	481.1	2193	2236			
										19.0	8.0	2400
1086.0	1080.3	1074.2	b10	2.0	493.0	492.1	489.1	2196	2238			
										19.0	7.0	2700
1105.0	1099.3	1093.2	b11	2.0	500.0	499.1	496.1	2204	2245			
										19.0	6.0	3200
1124.0	1118.3	1112.2	b12	2.0	506.0	505.1	502.1	2215	2259			
										19.0	8.0	2400
1143.0	1137.3	1131.2	b13	2.0	514.0	513.1	510.1	2217	2260			
										19.0	5.0	3800
1162.0	1156.3	1150.2	b14	2.0	519.0	518.1	515.1	2233	2280			
										19.0	6.1	3100
1181.0	1175.3	1169.2	a14	2.0	525.0	524.2	521.2	2243	2292			
										19.0	6.0	3200
1200.0	1194.3	1188.2	a13	2.0	531.0	530.2	527.2	2254	2304			
										13.0	2.0	6400
1213.0	1207.3	1201.2	a12	2.0	533.0	532.3	529.3	2270	2333			
										12.0	6.0	2000
1225.0	1219.3	1213.2	a11	2.0	539.0	538.3	535.3	2266	2330			
										12.0	3.0	4000

(continued over)

Table 4(a) (cont.): Velocity Survey Calculations for VSP Shots (P-Wave)

Phone Depth (KB)	Phone Depth (GL)	Phone Depth (SD)	Shot Locn	Shot Depth (m)	Direct Time (ms)	Vert Time (ms)	Datum Time (ms)	Av Vel (m/s)	RMS Vel (m/s)	Int Dist (m)	Int Time (ms)	Int Vel (m/s)
1237.0	1231.3	1225.2	a10	2.0	542.0	541.3	538.3	2276	2342			
										20.0	8.0	2500
1257.0	1251.3	1245.2	a9	2.0	550.0	549.3	546.3	2279	2345			
										20.0	7.0	2900
1277.0	1271.3	1265.2	a8	2.0	557.0	556.3	553.3	2287	2352			
										20.0	7.0	2900
1297.0	1291.3	1285.2	a8	2.0	564.0	563.3	560.3	2294	2359			
										20.0	7.0	2900
1317.0	1311.3	1305.2	a6	2.0	571.0	570.4	567.4	2301	2365			
										12.0	4.0	3000
1329.0	1323.3	1317.2	a5	2.0	575.0	574.4	571.4	2305	2370			
										12.0	3.5	3400
1341.0	1335.3	1329.2	a4	2.0	578.5	577.9	574.9	2312	2378			
										11.5	6.5	1800
1352.5	1346.8	1340.7	a3	2.0	585.0	584.4	581.4	2306	2372			
										11.5	3.5	3300
1364.0	1358.3	1352.2	a2	2.0	588.5	587.9	584.9	2312	2379			
										11.7	4.5	2600
1375.7	1370.0	1363.9	a1	2.0	593.0	592.4	589.4	2314	2380			

Notes:

(1) Datum Times obtained from Vertical Times by subtraction of estimated Vertical Time for Datum Shot from the VSP grid (3.0 ms).

(2) Reference Elevation for calculation of Average and RMS velocities: 150.0 m

(3) Due to small intervals, interval velocities have large percentage errors.

Processing: Wavebaud Associates
Date: 5th March, 1993

Table 4(b): Velocity Survey Calculations for VSP Shots (S-Wave)

Phone Depth (KB)	Phone Depth (GL)	Phone Depth (SD)	Shot Locn	Shot Depth (m)	Direct Time (ms)	Vert Time (ms)	Datum Time (ms)	Av Vel (m/s)	RMS Vel (m/s)	Int Dist (m)	Int Time (ms)	Int Vel (m/s)
893.0	887.3	874.0	c2	2.0	1154.0	1150.6	1144.6	770	770			
										15.0	15.0	1000
908.0	902.3	889.0	c1	2.0	1169.0	1165.6	1159.6	773	773			
										15.0	9.4	1600
923.0	917.3	904.0	b3	2.0	1178.0	1175.0	1169.0	779	783			
										15.0	11.1	1400
938.0	932.3	919.0	b4	2.0	1189.0	1186.1	1180.1	785	791			
										15.0	12.1	1200
953.0	947.3	934.0	b5	2.0	1201.0	1198.1	1192.1	789	797			
										19.0	17.1	1100
972.0	966.3	953.0	b6	2.0	1218.0	1215.2	1209.2	794	802			
										19.0	17.1	1100
991.0	985.3	972.0	b7	2.0	1235.0	1232.3	1226.3	798	807			
										19.0	12.1	1600
1010.0	1004.3	991.0	b6	2.0	1247.0	1244.4	1238.4	806	818			
										19.0	21.1	900
1029.0	1023.3	1010.0	b7	2.0	1268.0	1265.4	1259.4	808	819			
										19.0	17.1	1100
1048.0	1042.3	1029.0	b8	2.0	1285.0	1282.5	1276.5	812	824			
										19.0	14.1	1400
1067.0	1061.3	1048.0	b9	2.0	1299.0	1296.6	1290.6	818	832			
										19.0	15.0	1300
1086.0	1080.3	1067.0	b10	2.0	1314.0	1311.6	1305.6	823	838			
										19.0	14.0	1400
1105.0	1099.3	1086.0	b11	2.0	1328.0	1325.6	1319.6	828	845			
										19.0	16.0	1200
1124.0	1118.3	1105.0	b12	2.0	1344.0	1341.7	1335.7	833	850			
										19.0	10.0	1900
1143.0	1137.3	1124.0	b13	2.0	1354.0	1351.7	1345.7	841	862			
										19.0	8.0	2400
1162.0	1156.3	1143.0	b14	2.0	1362.0	1359.8	1353.8	850	879			
										19.0	12.2	1600
1181.0	1175.3	1162.0	a14	2.0	1374.0	1371.9	1365.9	856	887			
										19.0	13.1	1500
1200.0	1194.3	1181.0	a13	2.0	1387.0	1385.0	1379.0	862	894			
										13.0	7.1	1800
1213.0	1207.3	1194.0	a12	2.0	1394.0	1392.1	1386.1	867	902			
										12.0	11.0	1100
1225.0	1219.3	1206.0	a11	2.0	1405.0	1403.1	1397.1	868	903			
										12.0	5.0	2400
1237.0	1231.3	1218.0	a10	2.0	1410.0	1408.2	1402.2	874	913			
										20.0	11.1	1800

(continued over)

Table 4(b) (cont.): Velocity Survey Calculations for VSP Shots (S-Wave)

Phone Depth (KB)	Phone Depth (GL)	Phone Depth (SD)	Shot Locn	Shot Depth (m)	Direct Time (ms)	Vert Time (ms)	Datum Time (ms)	Av Vel (m/s)	RMS Vel (m/s)	Int Dist (m)	Int Time (ms)	Int Vel (m/s)
1257.0	1251.3	1238.0	a9	2.0	1421.0	1419.2	1413.2	881	923			
										20.0	14.0	1400
1277.0	1271.3	1258.0	a8	2.0	1435.0	1433.3	1427.3	886	929			
										20.0	9.0	2200
1297.0	1291.3	1278.0	a8	2.0	1444.0	1442.3	1436.3	895	943			
										20.0	10.0	2000
1317.0	1311.3	1298.0	a6	2.0	1454.0	1452.3	1446.3	902	954			
										12.0	4.0	3000
1329.0	1323.3	1310.0	a5	2.0	1458.0	1456.4	1450.4	908	966			
										12.0	7.0	1700
1341.0	1335.3	1322.0	a4	2.0	1465.0	1463.4	1457.4	912	971			
										11.5	10.0	1100
1352.5	1346.8	1333.5	a3	2.0	1475.0	1473.4	1467.4	914	972			
										11.5	10.0	1100
1364.0	1358.3	1345.0	a2	2.0	1485.0	1483.4	1477.4	915	973			
										11.7	15.0	800
1375.7	1370.0	1356.7	a1	2.0	1500.0	1498.4	1492.4	914	972			

Notes:

(1) Datum Times obtained from Vertical Times by subtraction of estimated Vertical Time (S-wave) for Datum Shot from the VSP grid (6 ms). This is based on the corresponding P-wave time (3 ms) used in Table 4(a).

(2) Reference Level for calculation of Average and RMS velocities: Seismic Datum

(3) Due to small intervals, interval velocities have large percentage errors.

Processing: Wavebaud Associates
Date: 10th March, 1993

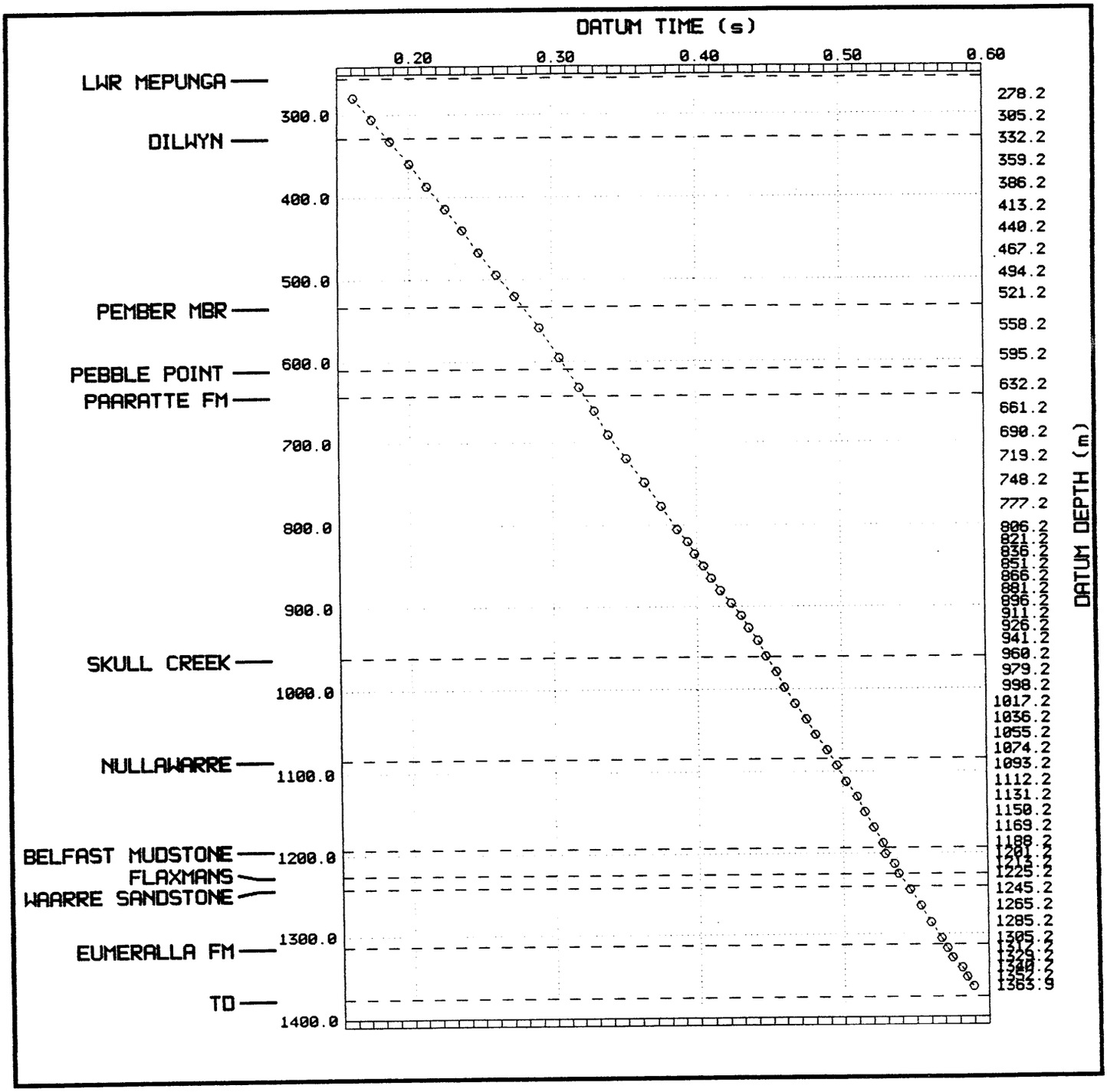
BRIDGE OIL LTD.

VERTICAL SEISMIC PROFILE

NAMGIB #1

PLOT 3(a.1) TIME versus DEPTH (P-wave)

Processing:
Wavebaud Assoc.
10th March 1993



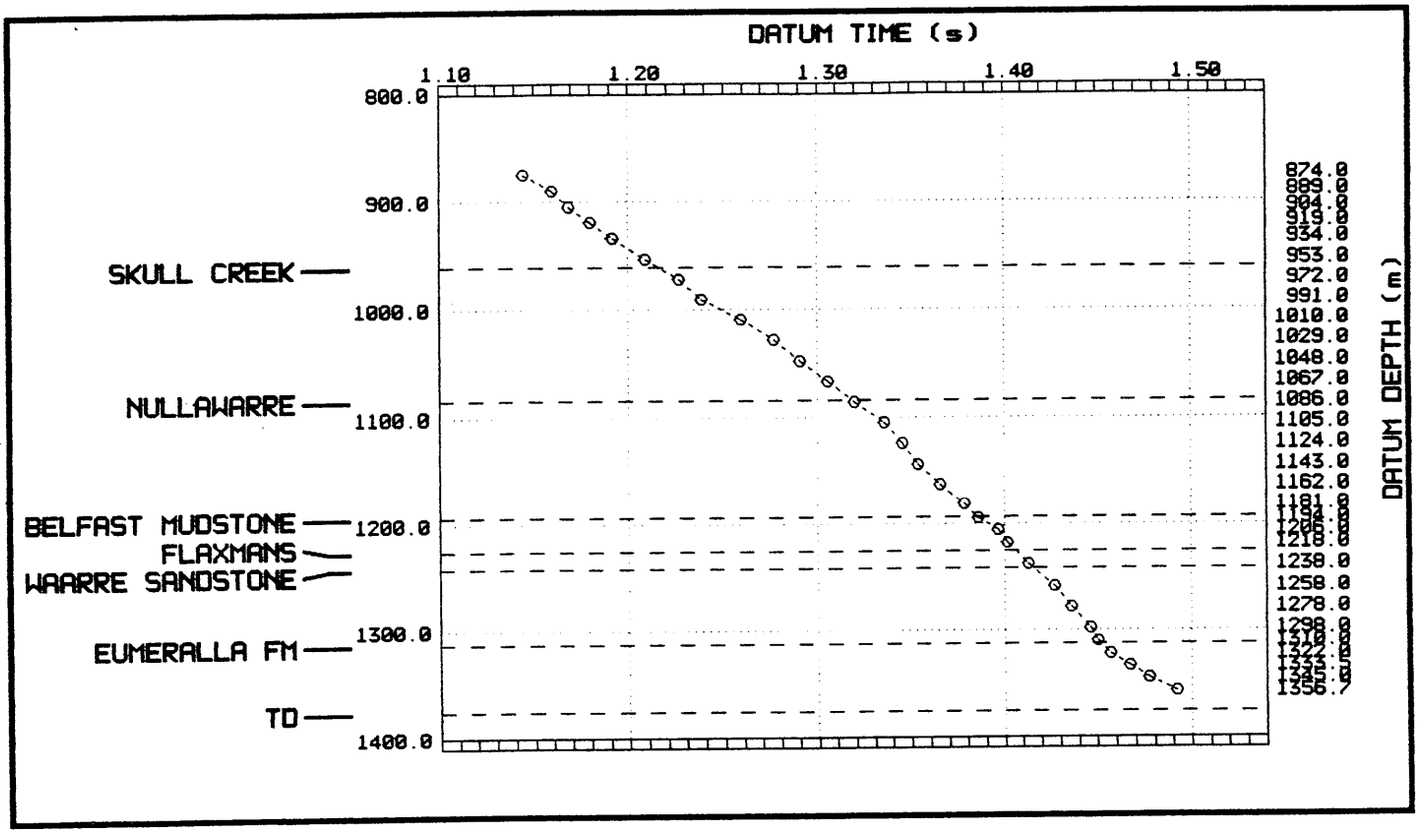
BRIDGE OIL LTD.

VERTICAL SEISMIC PROFILE

NAMGIB #1

PLOT 3(a.2) TIME versus DEPTH (S-wave)

Processing:
Wavebaud Assoc.
10th March 1993



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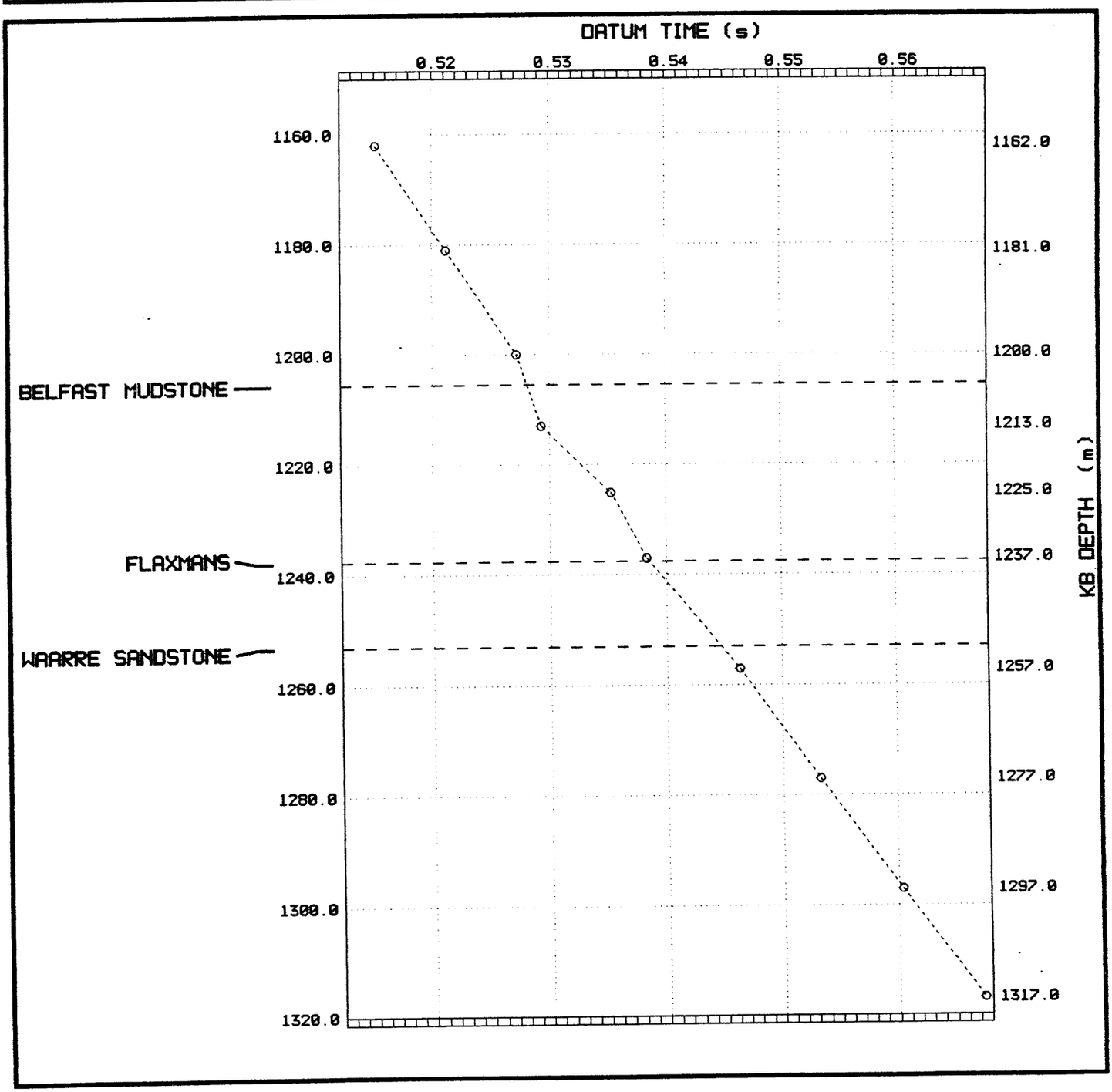
VERTICAL SEISMIC PROFILE

NAMGIB #1

PLOT 3(a.3) P-WAVE TIME vs DEPTH (detail)

Processing: Wavebaud Assoc. 10th March 1993



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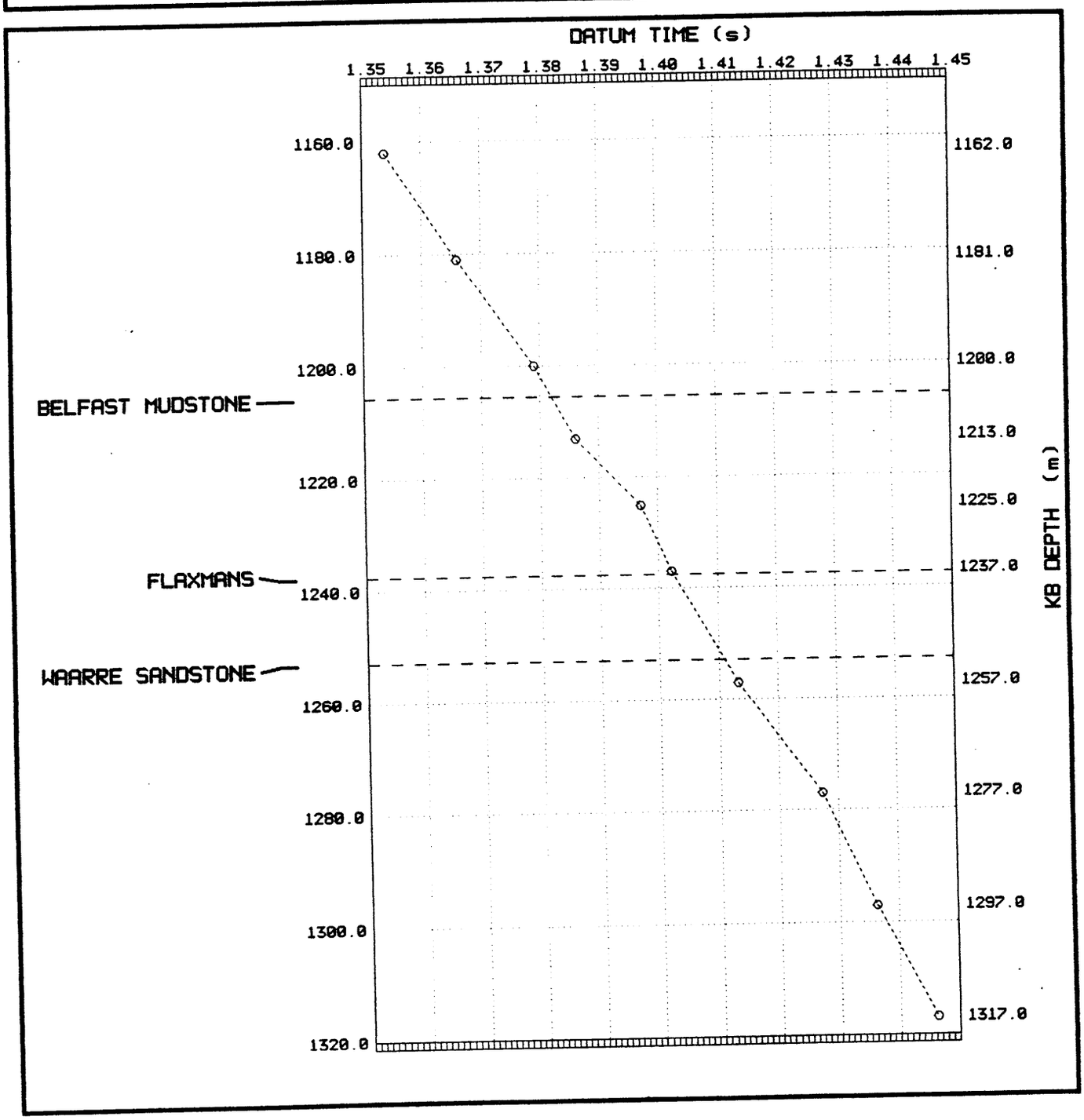
VERTICAL SEISMIC PROFILE

NAMGIB #1

PLOT 3(a.4) S-WAVE TIME vs DEPTH (detail)

Processing: Wavebaud Assoc. 10th March 1993



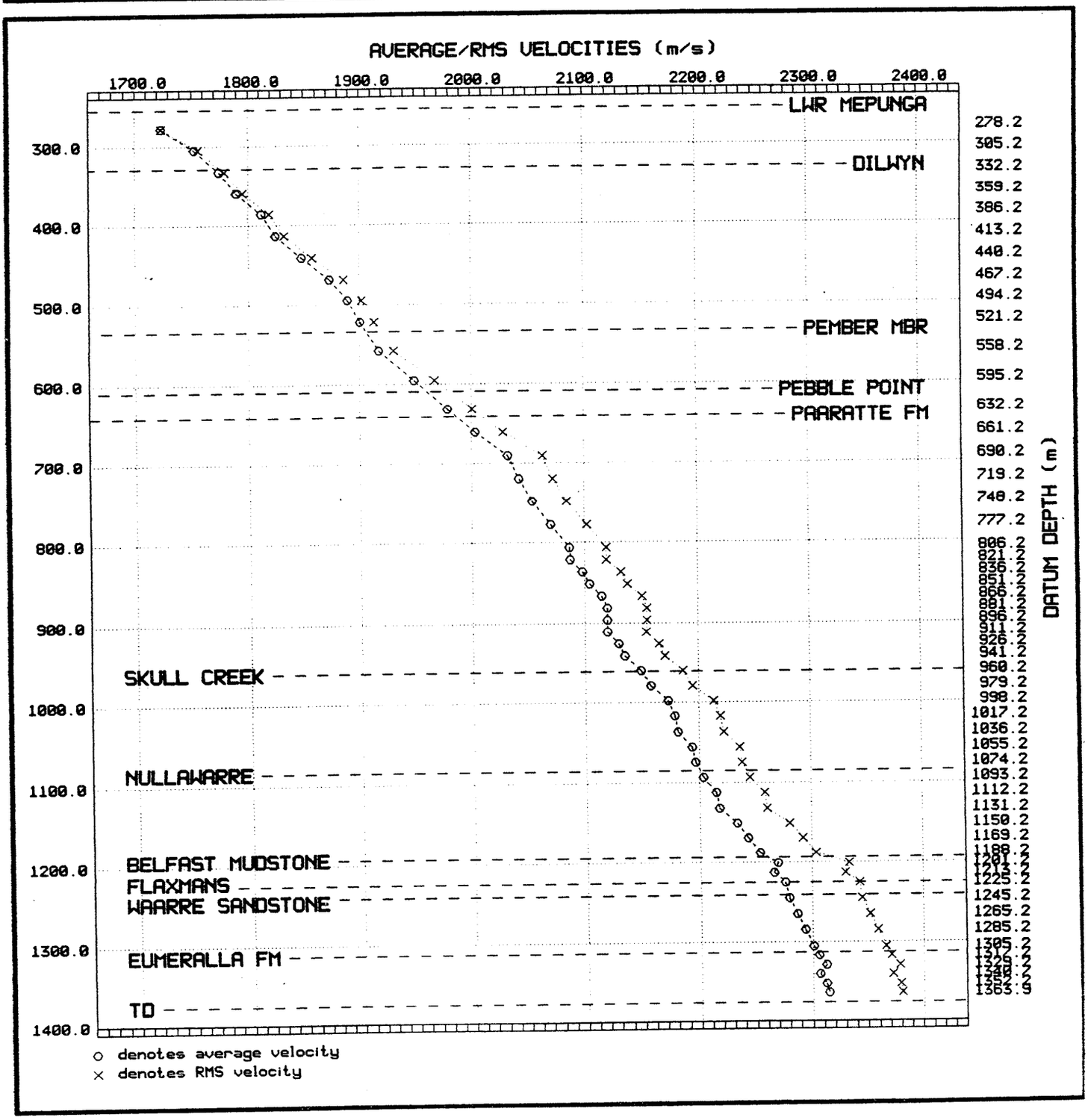
BRIDGE OIL LTD.

VERTICAL SEISMIC PROFILE

NAMGIB #1

PLOT 3(b.1) AVERAGE & RMS P-WAVE VELOCITIES versus DEPTH

Processing:
Wavebaud Assoc.
5th April 1993



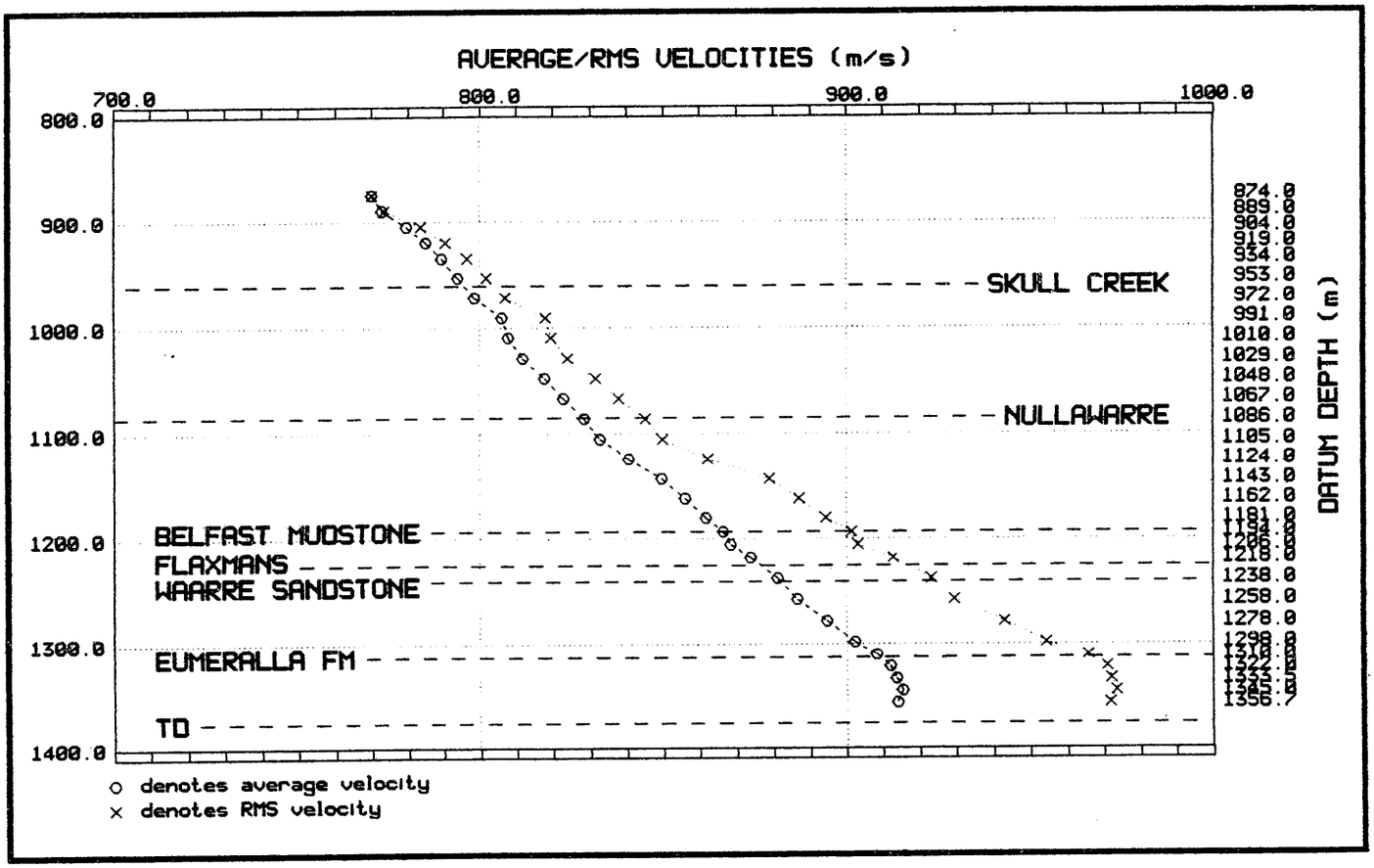
BRIDGE OIL LTD.

VERTICAL SEISMIC PROFILE

NAMGIB #1

PLOT 3(b.2) AVERAGE & RMS S-WAVE VELOCITIES versus DEPTH

Processing:
Wavebaud Assoc.
5th April 1993



PE600795

This is an enclosure indicator page.
The enclosure PE600795 is enclosed within the container PE900970 at this location in this document.

The enclosure PE600795 has the following characteristics:

ITEM_BARCODE	PE600795
CONTAINER_BARCODE	PE900970
NAME	Mud Log
BASIN	OTWAY
PERMIT	PEP 108
TYPE	WELL
SUBTYPE	MUD_LOG
DESCRIPTION	Mud Log/Formation Evaluation Log (enclosure 1 from Well Completion Report) for Namgib-1, Otway Onshore, PEP 108
REMARKS	
DATE_CREATED	1/03/93
DATE_RECEIVED	
W_NO	W1078
WELL_NAME	Namgib-1
CONTRACTOR	EXLOG
CLIENT_OP_CO	Bridge Oil Limited

(Inserted by DNRE - Vic Govt Mines Dept)

PE604728

This is an enclosure indicator page.
The enclosure PE604728 is enclosed within the container PE900970 at this location in this document.

The enclosure PE604728 has the following characteristics:

ITEM_BARCODE	= PE604728
CONTAINER_BARCODE	= PE900970
NAME	= Composite Log
BASIN	= OTWAY
PERMIT	= PEP108
TYPE	= WELL
SUBTYPE	= COMPOSITE_LOG
DESCRIPTION	= Composite Well Log (enclosure 2 from WCR) for Namgib-1, Otway Onshore, PEP 108
REMARKS	=
DATE_CREATED	= 4/03/93
DATE_RECEIVED	=
W_NO	= W1078
WELL_NAME	= NAMGIB-1
CONTRACTOR	=
CLIENT_OP_CO	= BRIDGE OIL LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)