Petrofina Exploration Australia S.A.

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PETROFINA EXPLORATION AUSTRALIA S.A.

AYU-1

POST DRILLING APPRAISAL REPORT

GL/90/057
PhL/JMQ/kl
12 July 1990

WELL DATA SUMMARY: AYU-1

Well:		Ayu-1	
Permit:		VIC/P20, Gippsland Basin, Australia	
Operator:		Petrofina Exploration Australia S.A.	(30%)
Partners:		Japex Gippsland Limited	(30%)
		Overseas Petroleum & Investment Corporation	(30%)
		Bridge Oil Limited	(10%)
Latitude:		38°36'35.02" S	
Longitude:		148°17'02.66" E	
UTM:	X =	611,800.7 E	
	Y =	5,725,734.3 N	
KBE:		28m	
WD:		84m	
Type of Rig:		Semi-Submersible	
Name:		Zapata Arctic	
Contractor:		Zapata Offshore Company	
Objectives:		Upward coarsening upper shoreface Palaeocene sandstones within a combination stratigraphic (subcrop)/structural closure.	
Spud Date:		30 January 1990	
Date Reached TD:		13 February 1990	
Date Plugged and Abandoned:		19 February 1990	
Drilled Depth:		2750m (drillers) 2740.5m (loggers)	
Well Status:		Plugged and abandoned. Dry well.	

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1. SUMMARY AND CONCLUSIONS

(a) Ayu-1 was designed to test a combined stratigraphic (subcrop) and structural trap within the Palaeocene section below the Top Latrobe Unconformity (Figs. 1 and 3), with oil as the reservoired hydrocarbon.

(b) The well was plugged and abandoned as a dry well on 19 February 1990 after 23 days on location. Total depth was 2722m bsl (2750m bkb).

(c) Ayu-1 confirmed structural closure although this is smaller than originally estimated.

(d) Two possible correlations of the top-seal (Basal Palaeocene Unit "II" transgressive shales) are possible on the western flank of the Ayu Structure (Fig. 1 and Encl. 1) The first correlation, as originally prognosed, calls for this shale to subcrop the Top Latrobe Unconformity west of the well location. The second model correlates this shale from 2599.5m bkb at Roundhead-1 to 2532.5m bkb at Ayu-1 (Fig. 4) without subcropping the Top Latrobe Unconformity. Regardless of which correlation is correct, the well is considered a valid test of the prognosed primary and secondary targets. However with the second model, a small closure not tested by this well could be present just west of the crest of the Ayu closure. Calculations indicate a maximum potential of 0.7 MMBBL oil recoverable reserves from this closure which does not justify a second well.

(e) Within the 215.5m of Palaeocene section drilled at Ayu-1, 165m are net reservoirs comprising well-developed sandstones with excellent reservoir characteristics (net/gross ratios from 77% to 96%; average porosities from 20% to 22.4%). These are water-saturated.

(f) Palynological age dating confirms that the entire Palaeocene section was tested by Ayu-1, and that the well reached TD in the Upper T.longus biostratigraphic zone of the Upper Maastrichtian.

(g) The main explanations invoked for the absence of hydrocarbons from the Palaeocene sandstone are poor lateral and/or vertical seal integrity in the Basal Palaeocene Unit 'II' transgressive shales and/or channelling at the crest of the structure during Eocene times (Fig. 4).

2. INTRODUCTION

Exploration well Ayu-1 is located in the northwest corner of Permit VIC/P20 in the Gippsland Basin offshore Victoria, south-eastern Australia. This was the third well of a four well drilling commitment in the Permit to be fulfilled before 23 July 1990. The Joint Venture partners for the operation are:

Petrofina Exploration Australia S.A.	30%	(Operator)
Japex Gippsland Limited	30%	
Overseas Petroleum and Investment Corporation	30%	
Bridge Oil Limited	10%	

The objective of Ayu-1 was to evaluate the hydrocarbon potential of Palaeocene sandstones in a possible combination stratigraphic and structural trap. Top-seal was envisaged as a composite sealing unit comprising the Gurnard Formation to the east and a basal transgressive claystone within the Palaeocene to the west (Fig. 1). The principal exploration risks were the integrity of the top-seal and the presence of closure at the Ayu location which is not evident on TWT maps, but becomes apparent after depth conversion. The structural risk revolves around the velocity model used and problems associated with heterogeneous velocity units of the Gippsland Limestone. Acquisition of the Roundhead-1 well report prior to spudding Ayu-1 provided sufficient additional velocity data to reduce the perceived structural risk to a minimum.

Ayu-1 was spudded on 30 January 1990 using the semi-submersible rig Zapata Arctic. It reached a total depth of 2750m (drillers) on 13 February 1990. No hydrocarbon zones were encountered in the target reservoirs and Ayu-1 was plugged and abandoned on 19 February 1990 as a dry well.

3. PRE-DRILLING MODEL

3.1 Velocity Model and Depth Conversion

As part of a regional mapping programme for VIC/P20, the key horizons were tied to all wells in the Permit, and interactively interpreted using a LANDMARK Workstation. Following interpretation of the Ayu Prospect area, the horizon and fault data for the following levels were exported to a MicroVAX system for gridding, depth conversion and contouring with the ZYCOR mapping package:

Top Lakes Entrance Formation
Base Lakes Entrance Formation
Top Palaeocene Unit 'I' (Intra Palaeocene)
Near Top Maastrichtian Sequence Boundary

Closure at the level of the primary target is not apparent on the TWT map, but a closed structure becomes evident after depth conversion. The sensitivity of closure to the velocity model required a detailed interval velocity evaluation using various methods.

Depth conversion of the various horizons specifically addressed the interval velocity heterogeneities associated with channel units within the basal Gippsland Limestone sequence. The sensitivity of the Ayu closure to velocities was evaluated by using functions of the form $\Delta t(\Delta z) = a+b(\Delta z)$ regressed from the T-Z data of VIC/P20 and available nearby wells, and by applying the SIVA technique to the CDP gathers of GF88 survey 2-D lines over the Ayu Prospect.

After comparison of these methods, the well-based technique was used to generate the maps while the SIVA results were used to confirm the optimum drilling location. The drill site was selected on the crest of the closure in order to minimise the structural risk arising from inaccuracies in the depth conversion. Accordingly, the well was located east of the assumed subcrop limit of the basal Palaeocene Unit 'II' transgressive shale (Figs. 1 to 4).

3.2 Structure and Seal

Ayu-1 was drilled to test the hydrocarbon potential of a combination stratigraphic (subcrop) and structural closure within the Palaeocene sequence updip from Hermes-1. The trap model envisaged an intra-Palaeocene marine shale (the basal Palaeocene Unit 'II' transgressive shales; Fig. 1), subcropping the Top Latrobe unconformity, as a seal on the western flank of the structure, with closure on the eastern flank sealed by a thinly-developed Gurnard Formation directly above the Top Latrobe Unconformity. It was expected that if the Gurnard Formation was absent on the eastern flank, top-seal would be provided by shales at the base of the Lakes Entrance Formation.

The presence of basal Palaeocene Unit 'II' shales (Fig. 1) invoked as top-seal for the underlying Palaeocene Unit 'I' reservoirs at Ayu was confirmed by Roundhead-1, where it is 15.5m thick. Seismic evidence indicates that this shale becomes thinner eastward from the Kingfish Field, but by analogy to similar shales at the base of Unit 'I' in Roundhead-1, these shales were interpreted to extend over the Ayu structure (Fig. 1). Its presence near the crest of the Ayu Prospect cannot be proved since it is below seismic resolution, but it was strongly suggested by the tails of downlapping clinoforms above the top Palaeocene Unit 'I' surface (Fig. 2).

The base Lakes Entrance Formation was prognosed 129m and 85m downdip to the east of Kingfish-6 and Roundhead-1 respectively, and 45.5m updip of Hermes-1. Hermes-1 is in fact considered to have tested the eastern limit of the Ayu closure (Fig. 3).

Vertical closure was estimated at 52m, with oil down to 2492m bsl (equivalent to the base of the Gurnard Formation in Hermes-1). A maximum possible vertical closure of 66.5m (OWC = 2506.5m bsl), equivalent to the top of the first clean Palaeocene sandstone in Hermes-1 where no hydrocarbon shows were encountered (Fig. 1), was assumed for the Monte Carlo simulation in the reserves determination. The mean recoverable oil was estimated at 45.3m MMSTB. A possible secondary target was envisaged in shallow marine sandstone below the intra-Palaeocene Unit 'II' shale and a shale

drape covering a prograded lobe within the Unit 'I' reservoir section (Fig. 1).

3.3 Reservoir

Upward-coarsening, upper shoreface sandstones with excellent reservoir characteristics were prognosed within the Palaeocene Unit 'I'. Up to 200m of gross sandstone reservoirs were envisaged by the model, with a net to gross ratio of 100% within the reservoir section in closure.

The porosity and water saturations were prognosed to range from 17% to 25%, and from 10% to 40% respectively.

3.4 Hydrocarbon Charge

The Ayu structure was expected to share the same oil-prone kitchen as the nearby Kingfish Field, and to contain oil rather than gas/condensate in the target intervals.

4. AYU-1 WELL RESULTS

4.1 Stratigraphy

Formations and seismic horizons intersected during the drilling of Ayu-1 are listed in Table 1.

Ayu-1 penetrated 2378m of limestone, marls, calcareous claystones and siltstones of the Pliocene to Oligocene Seaspray Group which directly overlies the Latrobe Group. The base of this group has been dated by micropalaeontology to be of Late Oligocene age.

The Top Latrobe unconformity was intersected at 2490m bkb (2462m bsl). A total of 260m of the Latrobe Group was drilled to TD at 2750m bkb. The youngest Latrobe Group sediments are shown by palynology to belong to the Lower *L.balmei* biostratigraphic zone (Palaeocene) which persists to 2705.5m bkb, below which the Upper *T.longus* (Maastrichtian) zone is present down to TD.

Palynological and micropalaeontological data indicate that the Gurnard Formation, originally predicted between 2440m and 2445m bsl, is absent at Ayu-1, pinching out further to the east of the wellsite than originally predicted, with sandy glauconitic shales at the base of the Lakes Entrance Formation directly overlying the Palaeocene Sandstones. The Palaeocene section of the Latrobe Group (L.balmei) is characterized by a basal pro-delta shale overlain by three upward coarsening regressive sandstone units with excellent reservoir characteristics. These units are interpreted as having developed within a prograding deltaic and beach environment with the lowest cycle being the most distal.

The 44.5m of Maastrichtian (Upper T.longus) interval drilled at Ayu-1 (2705.5-2750m bkb [TD]) consists of marginally marine to lower coastal plain siltstones, sandstones and coals.

4.2 Seismic Interpretation

The vertical seismic profile (VSP) run in Ayu-1 confirmed that the time picks for all prognosed horizons were correct. Depths prognosed for Top Lakes Entrance Formation, Base Lakes Entrance Formation and Near Top Maastrichtian were respectively 4.5m deeper (-0.3%), 22m higher (+0.9%) and 27m higher (+1.0%) than actual depths as determined from wireline logs.

The 27m discrepancy at the Top Maastrichtian stems more from a revision of the horizon pick in Hermes-1 than from a depth conversion error (see section 5.2). The Top Latrobe, equivalent to the Top Palaeocene (Primary Objective), was encountered 17m deeper than prognosed, showing the crest of the Ayu structure to lie only 30m higher than at Hermes-1.

The close match between prognosed and actual depths indicates that the velocity model used in the depth conversion is valid and confirms the Ayu closure.

4.3 Reservoir

As prognosed, Ayu-1 encountered excellent Palaeocene sandstone reservoirs below the Top Latrobe. Within the 215.5m of Palaeocene section, 165m (77%) are net reservoir (Vshale < 40%; porosity > 6%) with an average porosity of 20%. The reservoirs within the primary and secondary targets have a high net/gross ratio of 96% with average porosities of 20.9% to 22.4%.

4.4 Hydrocarbons

No hydrocarbon shows in the form of fluorescence and cut in cuttings or mud-gas anomalies were encountered while drilling Ayu-1. Subsequent log evaluation confirmed that the sandstones were water wet.

5. CORRELATIONS BETWEEN AYU-1, ROUNDHEAD-1 AND HERMES-1

The stratigraphic picks at Ayu-1 and the correlations between Ayu-1, Roundhead-1 and Hermes-1 are summarised in Table 2, and illustrated for the Latrobe section on a cross-section in Enclosure 1.

The geology of the Gurnard Formation and the Palaeocene section, together with the correlation of these units between the three wells Ayu-1, Roundhead-1 and Hermes-1, are discussed individually below.

5.1 Gurnard Formation

Palynological and micropalaeontological results indicate that the Gurnard Formation is missing at Ayu-1. The glauconitic sandy siltstone between 2457m and 2462m bsl initially interpreted as the Gurnard Formation contains P.tuberculatus biomarkers of Early Oligocene age down to 2462m bsl (2490m bkb), and therefore belongs to the basal Lakes Entrance Formation.

The Gurnard Formation found in Hermes-1 between 2485.5m and 2492m bsl, and characterised by the N.asperus spore/pollen zone of middle Eocene Age, does not extend to Ayu-1, but onlaps the Top Latrobe Unconformity between Hermes-1 and Ayu-1. Prior to the drilling of Ayu-1, the Gurnard Formation was tentatively interpreted in Roundhead-1 as a 3m thick radioactive siltstone between 2355m and 2358m bsl. However, detailed log correlations between Ayu-1 and Roundhead-1 now show that these radioactive siltstones correlate exactly with the basal Lakes Entrance Formation at Ayu-1, and therefore the Gurnard Formation is now interpreted as missing at Roundhead-1.

5.2 Base Palaeocene - Top Maastrichtian Marker

This marker is well defined in Ayu-1 where it was picked at the base of a 9m thick shale at 2677.5m bsl (2705.5m bkb). This shale contains the Palaeocene Lower L.balmei and T.evittii biomarkers (2700m bkb; SWC), while the underlying sandstone contains Upper T.longus and M.druggii biomarkers of Maastrichtian age (2708m bkb; SWC).

This pick correlates well with the Top Maastrichtian at 2792.5m bsl (2813.5m bkb) in Roundhead-1, similarly situated at the base of a shale unit (22m thick) containing the same lower Palaeocene biomarkers.

In Hermes-1, the Top Maastrichtian marker had been previously picked at 2626m bsl (2649m bkb) essentially on the basis of poor palynological data. However, with the drilling of Ayu-1 and Roundhead-1, and the good log correlation between Ayu-1 and Hermes-1, the Top Maastrichtian pick at Hermes-1 has now been moved 36m lower from 2626m bsl (2649m bkb) to 2662m bsl (2685m bkb) at the base of a 14.5m thick shale.

The shales at the base of the Palaeocene in the three wells Ayu-1, Roundhead-1 and Hermes-1 are now referred to as the Basal Palaeocene Unit 'I' transgressive shales. This shale unit thins towards the Ayu structure where it is only 9m thick, compared to 22m and 14.5m at Roundhead-1 and Hermes-1 respectively, and suggests a slight palaeo-high in the Ayu area in early Palaeocene time.

5.3 Tertiary Section

Good intra-Palaeocene log correlations can be established between Ayu-1 and Hermes-1 which are only 1.5 km apart. The Palaeocene section at Hermes-1 shows the same three upward coarsening regressive cycles found at Ayu-1, except that these are slightly shalier at Hermes-1, reflecting a more distal depositional environment. The more distal location of Hermes-1 is further evidenced by the lack of topsets in contrast to Ayu-1 (Encl. 1).

In comparing Roundhead-1 and Ayu-1, palynological evidence clearly shows that the Early Eocene M.diversus zone and the latest Palaeocene A.homomorpha zone present in Roundhead-1 are missing in Ayu-1 owing to erosion at the Top Latrobe Unconformity (Mid-Eocene).

Correlation of the Palaeocene interval (Lower L.balmei zone) between Ayu-1 and Roundhead-1 is much more difficult owing not only to the distance between the two wells (5.25 km) but also the lack of unambiguous intra-Palaeocene biomarkers. The problem is further compounded by the absence of a direct seismic line tying the two wells. The correlation section in Enclosure 1 shows all relevant wells, projected onto Line GF88C-38 (Fig. 2) which parallels the main progradation direction of the Palaeocene sediments to the southeast. However, the projection of Roundhead-1 onto this section is along an axis normal to the direction of progradation (Encl. 1), which explains the apparent inconsistencies in the correlations of the prograding wedges in the Palaeocene Unit 'I' from Roundhead-1 to Ayu-1.

As noted earlier, palynological data at the base of the Palaeocene section (T.evittii, P.pyrophorum, spinidinium zones) allow reliable chronostratigraphic correlations and the basal Palaeocene Unit 'I' transgressive shales in Roundhead-1, Ayu-1 and Hermes-1 wells can readily be tied (Encl. 1).

The main correlation uncertainty between Ayu-1 and Roundhead-1 remains the Basal Palaeocene Unit 'II' transgressive shales (sealing shales of western flank of the Ayu structure) which occur between 2584m and 2599.5m bsl in Roundhead-1 (Encl. 1).

The Palaeocene biomarkers speciosa and E.crassitabulata occur in the interval 2480m bsl to 2618m bsl at Roundhead-1 which correlates with the interval 2502m bsl to 2542m bsl at Ayu-1 (Encl. 1). This allows the shales at 2532.5m bsl at Ayu-1 to be correlated either with the transgressive Palaeocene Unit "II" shales at 2599.5m bsl at Roundhead-1 or with the shales at the shallower depth of 2527m bsl in the same well. However, these biomarkers are not time specific and are known to occur at several levels in the Palaeocene sequence of other Gippsland Basin wells. They do not, therefore, provide a basis for precluding the possibility that the basal Palaeocene Unit 'II' shales at 2599.5m bsl in Roundhead-1 subcrop the Top Latrobe Unconformity west of Ayu-1 as depicted in Figure 1 (original model) and on Enclosure 1.

6. DISCUSSION

The correlation and distribution of the Basal Palaeocene Unit "II" shales covering the western flank of the Ayu Structure remains the major unresolved problem concerning the structure. This problem stems from the need to position the well east of the interpreted subcrop limit. Interpretation of wireline logs, palynological and seismic data does not provide a unique solution.

Two models are possible. The first assumes that, as originally prognosed, the Palaeocene Unit 'II' shale subcrops the Top Latrobe Unconformity just west of the well location (Fig. 1 and Encl. 1). The second model based on palynological evidence, suggests that the Unit 'II' shale correlates with equivalent intra-Palaeocene shales at 2532.5m at Ayu-1 (Encl. 1 and Fig. 4), and does not subcrop the Top Latrobe Unconformity at all. The implications of the second model are that there is no primary objective at Ayu-1 as originally defined, and that only the secondary objective in the sandstones below 2532.5m bkb exists. Furthermore, this model indicates that there is a minor 10m updip potential west of Ayu-1 (Encl. 1). Reserves estimates for this very small closure are calculated at a maximum of 0.7 MMSTB recoverable. Independently of the models envisaged, it is felt that the Ayu-1 well adequately tested both possibilities and that an additional well to test the small potential accumulation is not warranted.

There are several possible explanations for the lack of reservoired hydrocarbons in the Palaeocene section of the Ayu structure. These are:

(i) Lack of lateral and/or vertical seal integrity in the Basal Palaeocene Unit 'II' shales on the western flank of the structure. These shales may have been eroded and/or depositionally thinned out west of Ayu-1, thereby effectively breaching the seal of either the first and/or secondary targets (Encl. 1 and Fig. 4).

(ii) Possibility that hydrocarbons have never migrated into the structure.

Assuming the model of the subcropping sealing shales west of Ayu-1, additional reasons for lack of hydrocarbons would be:

(iii) Channelling at the crest of the structure during Eocene times (apparent on some seismic sections), affecting seal integrity along the subcrop trace (Fig. 4).

(iv) Poor seal potential of sandy glauconitic shales at the basal Lakes Entrance Formation, which blanket the eastern flank of the structure.

Assuming the second model of the sealing shale being present in both Roundhead-1 and Ayu-1, a possible reason for the lack of hydrocarbons is:

(v) The absence of a primary objective in the sandstones from 2462m bsl to 2532m bsl (Encl. 1 and Fig. 4) with only the sandstones below 2532m being in closure.

Whichever model is invoked, well correlations and seismic evidence indicate that the first possibility relating to seal integrity provides the most likely explanation for the lack of hydrocarbons at Ayu-1.

The concept tested at Ayu, although stratigraphically complex, remains a valid high-risk high-reward play, especially at these shallow stratigraphic levels where oil is the likely hydrocarbon type. Within the VIC/P20 Permit, there is further scope to investigate such plays, especially within the Maastrichtian interval. A barrier bar feature was identified in this interval from seismic data east-northeast of Helios-1 in February 1989. This is a very large feature approximately 8 km by 3 km and should be re-assessed both because of its significant potential and because of the greater understanding of seismic facies in the Permit. Helios-1 is the only well in the Permit to have a significant shallow-marine sequence in the Maastrichtian and encountered excellent reservoir sandstones interbedded with potentially sealing marine shales. Marine facies in the Maastrichtian should be re-assessed wherever present to identify further stratigraphic plays equivalent to Ayu.

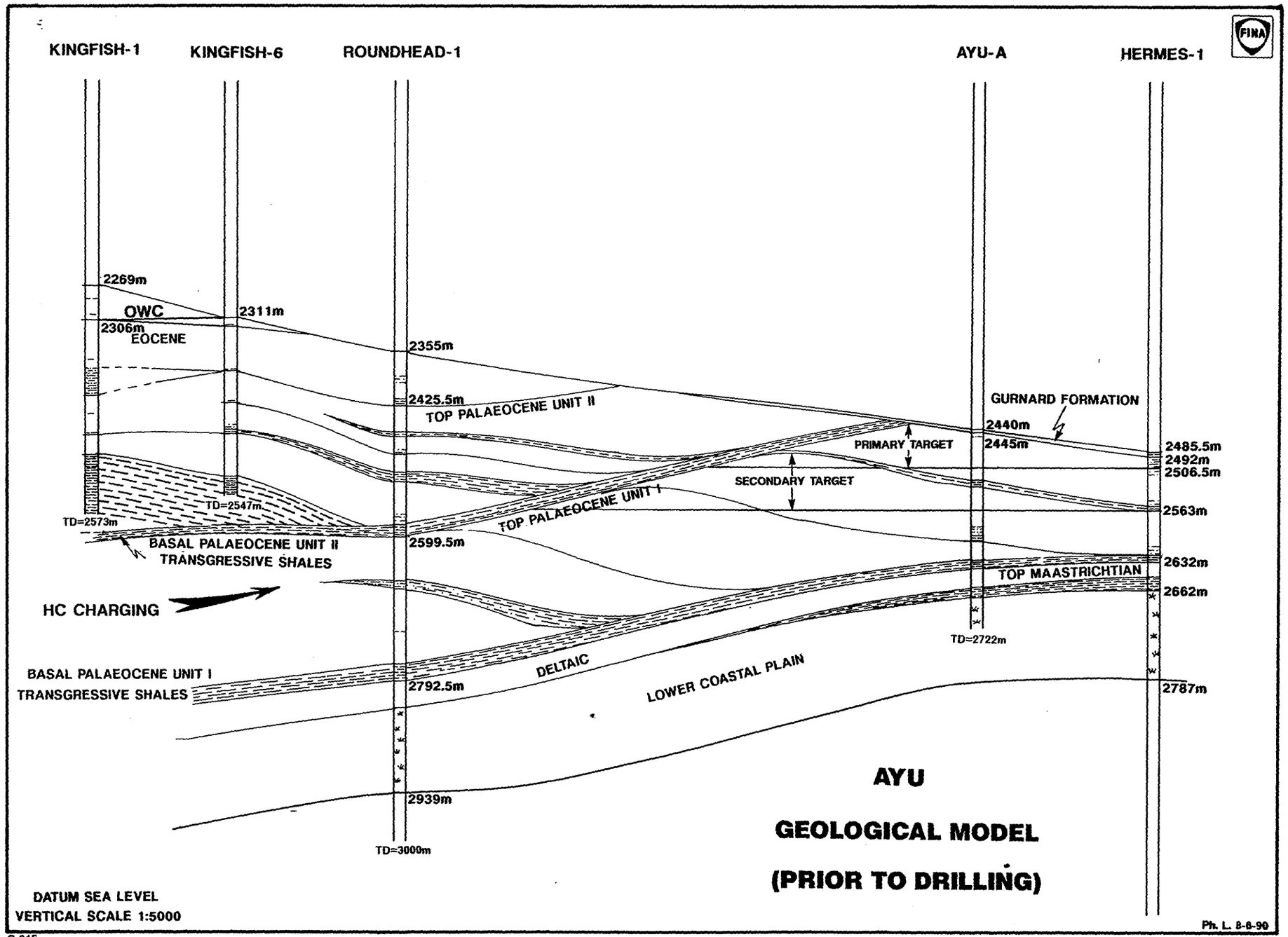

KINGFISH-1
KINGFISH-6
ROUNDHEAD-1
AYU-A
HERMES-1
FINA
2269m
OWC
2311m
2306m
EOCENE
2355m
2425.5m
TOP PALAEOCENE UNIT II
GURNARD FORMATION
2440m
2445m
PRIMARY TARGET
SECONDARY TARGET
2485.5m
2492m
2506.5m
2563m
TD=2547m
TD=2573m
TOP PALAEOCENE UNIT I
2599.5m
BASAL PALAEOCENE UNIT II
TRANSGRESSIVE SHALES
TOP MAASTRICHTIAN
2632m
2662m
HC CHARGING
TD=2722m
BASAL PALAEOCENE UNIT I
TRANSGRESSIVE SHALES
DELTAIC
LOWER COASTAL PLAIN
2792.5m
2787m
2939m
TD=3000m
AYU
GEOLOGICAL MODEL
(PRIOR TO DRILLING)
DATUM SEA LEVEL
VERTICAL SCALE 1:5000
Ph. L. 8-6-90
G 915

FIGURE 1

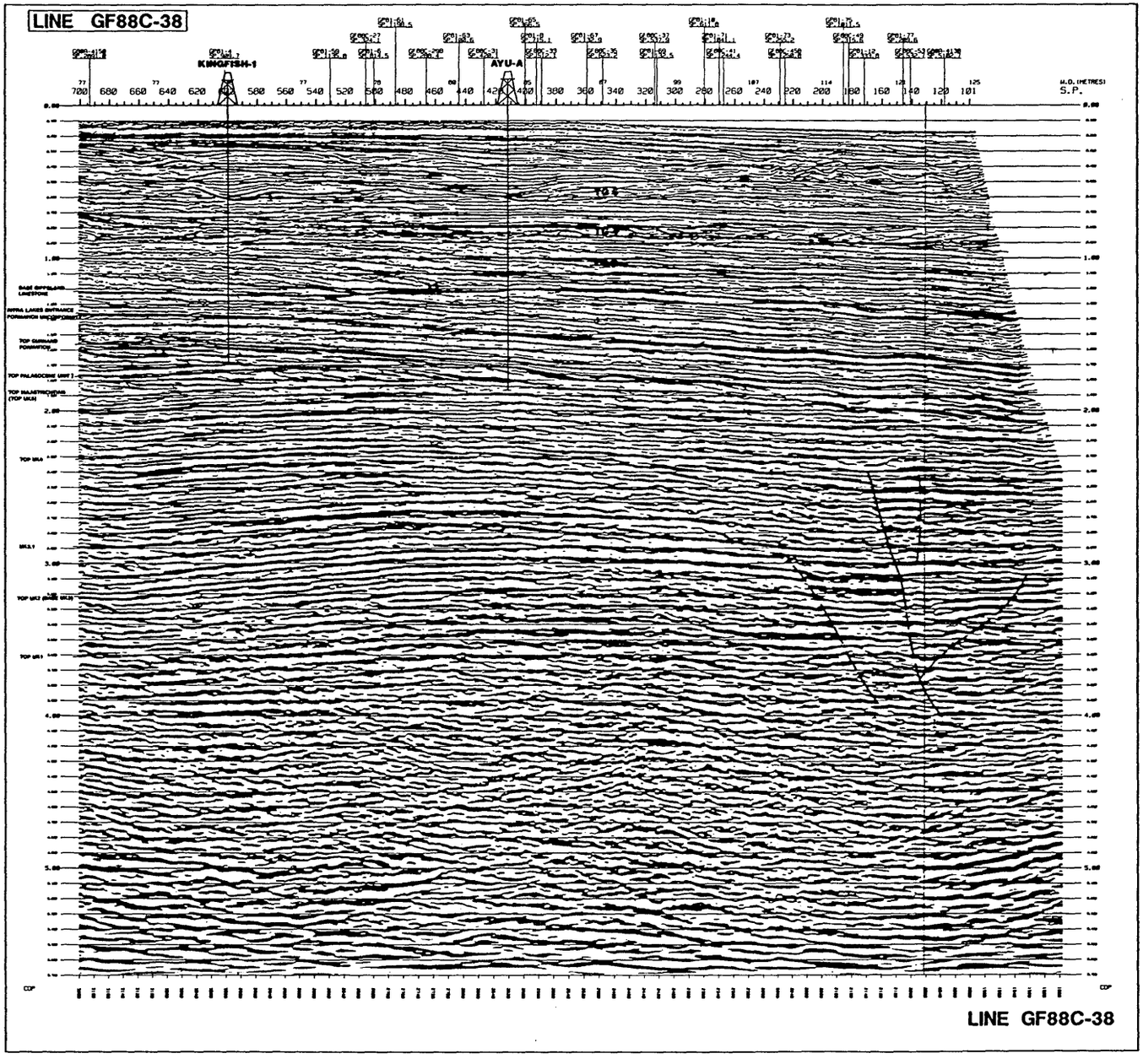
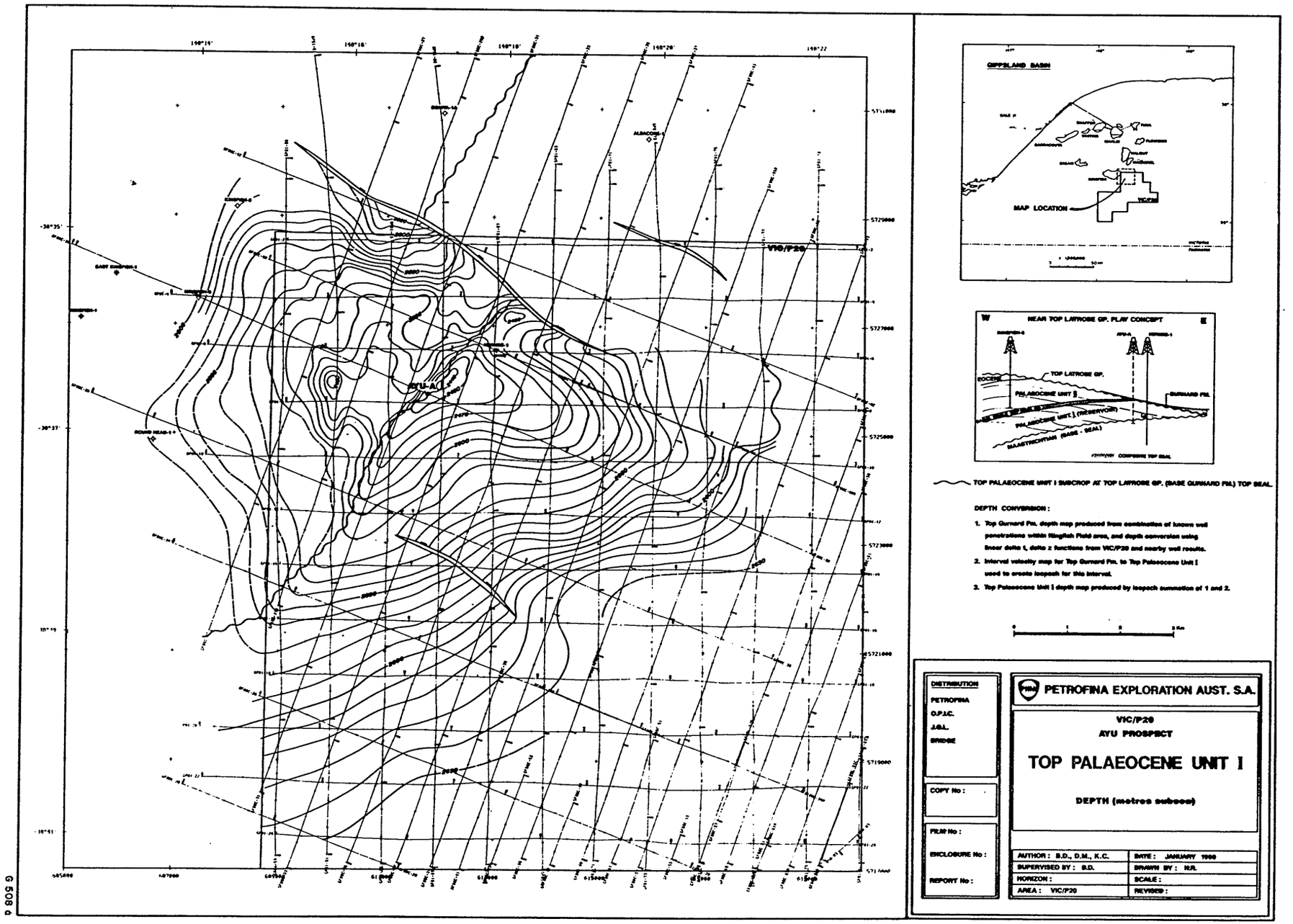


FIGURE 2


GIPPSLAND BASIN
MAP LOCATION
VIC/P20
AYU-A
NEAR TOP LATROBE GP. PLAY CONCEPT
W
E
TOP LATROBE GP.
PALAEOCENE UNIT 1
GURNARD FM.
MAASTRICHTIAN (BASE - SEAL)
TOP PALAEOCENE UNIT I SUBCROP AT TOP LATROBE GP. (BASE GURNARD FM.) TOP SEAL.
DEPTH CONVERSION :
1. Top Gurnard Fm. depth map produced from combination of known well penetrations within Kingfish Field area, and depth conversion using linear delta t, delta z functions from VIC/P20 and nearby well results.
2. Interval velocity map for Top Gurnard Fm. to Top Palaeocene Unit I used to create isopach for this interval.
3. Top Palaeocene Unit I depth map produced by isopach summation of 1 and 2.
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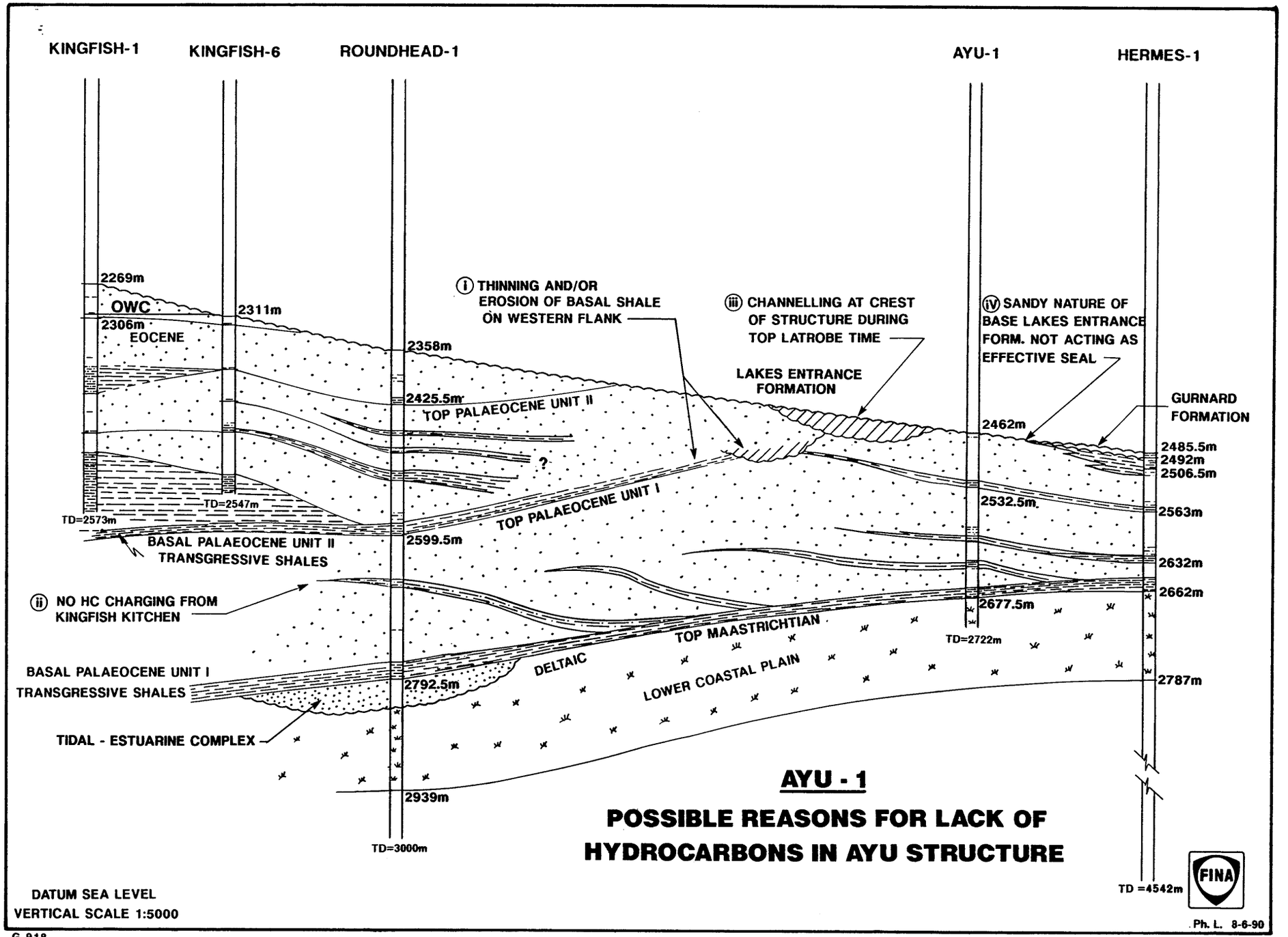
ENCLOSURE No :
REPORT No :
PETROFINA EXPLORATION AUST. S.A.
VIC/P20
AYU PROSPECT
TOP PALAEOCENE UNIT I
DEPTH (metres subsea)
AUTHOR : B.D., D.M., K.C.
DATE : JANUARY 1990
SUPERVISED BY : B.D.
DRAWN BY : N.R.
HORIZON :
SCALE :
AREA : VIC/P20
REVISED :

FIGURE 3



G 918

FIGURE 4

TABLE 1

Formation and Seismic Tops, Ayu-1

Horizon	Depth (RKB)m	Depth (SS)m	TWT sec
Sea Floor/ Gippsland Limestone	112	(-84)	0.112
Lakes Entrance Fm	1740	(-1712)	1.221
Intra Lakes Entrance	2140	(-2112)	1.482
Palaeocene/Latrobe	2490	(-2462)	1.714
Maastrichtian/UK5	2705.5	(-2677.5)	1.830
Total Depth	2750	(-2722)	2.064

TABLE 2

CORRELATIONS BETWEEN AYU-1, HERMES-1 AND ROUNDHEAD-1

HORIZONS	AYU-1			HERMES-1			ROUNDHEAD-1		
	DEPTH		THICK-NESS	DEPTH		THICK-NESS	DEPTH		THICK-NESS
	mkb	msl		mkb	msl		mkb	msl	
Sea Level	28	0	- - - -	23	0	- - - -	21	0	- - - -
			84			85			60
Seabead Floor/	112	84	- - - -	108	85	- - - -	81	60	- - - -
Gippsland Limestone			1628			1770			1533
Lakes Entrance Fm	1740	1712	- - - -	1878	1855	- - - -	1614	1593	- - - -
			400			284			419
Intra Lakes Entrance	2140	2112	- - - -	2162	2139	- - - -	2033	2012	- - - -
			350			346.5			346
Gurnard Formation	Absent	Absent	- - - -	2508.5	2485.5	- - - -	Absent	Absent	- - - -
			0			6.5			0
Eocene	Absent	Absent	- - - -	Absent	Absent	- - - -	2379	2358	- - - -
Top Palaeocene			0			0			67.5
Latrobe Group	2490	2462	- - - -	2515	2492	- - - -	2446.5	2425.5	- - - -
			215.5			170			367
Maastrichtian/UK5	2705.5	2677.5	- - - -	2685	2662	- - - -	2813.5	2792.5	- - - -
			>44.5			954?			>207.5
Campanian/UK4.1	Not		- - - -	3639?	3616?	- - - -	Not	Not	- - - -
	Reached						Reached	Reached	
			?			>926			?
Total Depth	2750	2722	- - - -	4565	4542	- - - -	3021	3000	

PE903116

This is an enclosure indicator page.
The enclosure PE903116 is enclosed within the container PE903115 at this location in this document.

The enclosure PE903116 has the following characteristics:

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CONTAINER_BARCODE	= PE903115
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BASIN	= GIPPSLAND
PERMIT	= VIC/P20
TYPE	= WELL
SUBTYPE	= MAP
DESCRIPTION	= Ayu 1 structure post drilling report
REMARKS	=
DATE_CREATED	= 12/07/90
DATE_RECEIVED	= 6/11/90
W_NO	= W1020
WELL_NAME	= Ayu-1
CONTRACTOR	= Petrofina Exploration Australia S.A
CLIENT_OP_CO	= Petrofina Exploration Australia S.A

(Inserted by DNRE - Vic Govt Mines Dept)