WCR VOL 2

HALIBUT-2

W1090

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Esso Australia Ltd.

WELL COMPLETION REPORT

HALIBUT-2

VOLUME 2

INTERPRETED DATA

GIPPSLAND BASIN, VICTORIA

ESSO AUSTRALIA LTD

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I. INTRODUCTION

Halibut 2, an appraisal well located on the north eastern flank of the Halibut structure, 275m NNE of Halibut 6 and 1.4km NW of Halibut A19 within VIC\L5, was drilled to determine whether there were sufficient incremental reserves to justify an additional drilling program at Halibut.

The objectives of the well were:

(i) locate the current oil-water-contact within the Halibut M171 reservoir and thereby evaluate the presence of lagging oil identified by field studies;

(ii) confirm the presence of the Turrum Formation at this location and investigate its reservoir potential;

(iii) provide velocity and structural control in this region of the field;

(iv) obtain petrophysical data to calibrate the Halibut field log analysis.

As a result of the Central Fields Depletion Study, significant potential for undeveloped oil reserves was identified on the north eastern flank of the Halibut Field. From Halibut A19 and A4 TDT analysis and East Halibut 1 open hole log analysis, the current OWC within the M171 and deeper reservoirs was interpreted to be approximately -2377m, north of the Halibut A19/A4 fault, and -2387m to the south of the fault. Reservoir studies, including a full field simulation model, however, indicated that the contact deepened progressively to the north and south of HA19 and HA4 and that there could be a considerable volume of lagging oil in the deeper reservoirs. Most of this undrained oil was north of the fault with the wedge of lagging oil increasing in dimension northward. Halibut 2, updip of HA6, was ideally located to test the reservoir simulation results with the well over a kilometre north from Halibut A19 and with the M171 reservoirs prognosed to be intersected at depths where the interval bounded by the interpreted COWC (HA19,EH1) and the HKW(HA6) would be fully investigated.

The Turrum Formation was interpreted from seismic to thicken on the north-eastern flank of Halibut. To-date only 2 to 5m of Gurnard "greensands", the very upper section of the Turrum Formation, had been intersected at Halibut. At Halibut 2, the Turrum Formation was prognosed to be 32m thick with the reservoir potential of this additional section another objective of the well.

Halibut 2 intersected the top of the Turrum Formation on prognosis. No net is interpreted. The unprognosed Flounder Formation was then intersected 20m below that. Oil saturated sands were intersected within the Flounder Formation however they are interpreted to be draining. The M171 and deeper Halibut reservoirs were intersected 2 to 3m low and were water saturated. It is hypothesised that the sandprone Flounder Formation is acting as a chimney for oil to move vertically up the truncation edge, from the deeper reservoirs to shallower completions. Consequently no lagging oil is interpreted north of Halibut A19.

II. FORMATION TOPS

FORMATION	AGE	PREDICTED mTVDSS	ACTUAL mMDKB	ACTUAL mTVDSS
Top of Latrobe Group	Paleocene to Mid Eocene	2306.0	2331.0	2305.3
Top of Turrum Formation	Mid Eocene	2306.0	2331.0	2305.3
Top of Flounder Formation	Early Eocene		2351.0	2325.3
"Top of Coarse Clastics"	Paleocene	2338.0	2391.0	2365.3
M171 Flooding Surface		2373.0	2401.0	2375.3
M181 Flooding Surface		2405.0	2434.0	2408.3
M191 Flooding Surface		2435.0	2464.0	2438.3

III. STRUCTURE

The Halibut structure is a paleotopographic high that was formed in the early Paleocene to middle Eocene by erosion of the west to southwest dipping Latrobe Group sediments. Internally the structure is a west dipping homocline that has been dissected by a number of faults with the throw on these faults decreasing toward the Top of Latrobe unconformity. The internal reservoir units dip at a steeper angle than the "Top of Coarse Clastics" unconformity such that progressively older beds subcrop at the unconformity in an easterly direction.

During the early Paleocene to middle Eocene, in response to a base level fall, there was an episode of submarine channelling within the Gippsland Basin and two major channel systems were formed: the Tuna Flounder Channel and then the Marlin Channel. The Tuna Flounder Channel was hitherto not thought to have existed in this region however the intersection of the unit in Halibut 2 negates this interpretation. The Channel is now interpreted across the northeastern tip of the Halibut Field. Deposition of the Flounder Formation, Tuna Flounder Channel fill, could have been more extensive but is interpreted to have been eroded by the Marlin Channel. This Channel runs down the north and east sides of the Halibut field with the deep incision of both of the Channels into the Latrobe sediments forming the steep northern and eastern flanks of the Halibut section of the field. The Marlin channel was subsequently filled with marine sandstones and siltstones of the Turrum Formation. At the end of the Eocene there was again a major fall in base level and the Turrum Formation was to a greater degree eroded away. The channel was subsequently filled by the Lakes Entrance Formation providing seal for the structure.

IV. STRATIGRAPHY

The Top of Latrobe Group unconformity, the top of the Turrum Formation, was intersected 1m high to prognosis. The Turrum Formation, Mid Eocene(N.asperus) is predominantly sandstone with abundant argillaceous matrix and siliceous and calcareous cement. No porosity is measured. Limonitic staining is observed. FMI analysis indicates the dip azimuth in the Turrum Formation is 40 degrees, that is to the northeast. Dips in the Turrum Formation flatten up indicating the channel cut is filling up. With the dips to the northeast, channel direction is interpreted to be at 90 degrees to that, NW - SE.

The Flounder Formation was intersected 20m below the top of Latrobe. It consists of reworked Halibut "Coarse Clastics" lithologies with no apparent reduction in reservoir quality, however, lithologically the sandstones in the Flounder Formation contain minor glauconite, a mineral not observed in the Halibut "Coarse Clastics" reservoir units. Palynology indicates the Flounder Formation is Early Eocene (P. asperopolous) in age whereas the Halibut stratigraphy is Paleocene(L.balmei). Dip azimuth within the Flounder Formation varies in an arc between north and east. If the Flounder Formation was deposited by a submarine channel the channel axis is interpreted to have varied between north - south to east - west during the period in which the Formation was deposited. If the deposits are submarine fan facies, the dip azimuth is the downslope direction.

The top of "Coarse Clastics" is difficult to pick exactly. It is either at 2391m(palynology) or 2394.2m MD(FMI analysis). The palynological pick is preferred at this time.

The top of the M171 reservoir was intersected 2.5m low. Generally, lithology and tops were as prognosed with one exception. The upper section of the M172B from 2407 to 2417m MDRT is a fluvial sand of significance and would appear to be another sequence not recognised in the previous wells. Cores were cut from the M171B through to the M181 but at the time of this report were yet to be described due to core analysis requirements.

FMI (Formation Micro Imager) analysis has provided some additional information not previously available in Halibut. The M171B sandstone is interpreted to be a fining upward braided fluvial unit. Dip azimuth is spread almost evenly in an easterly arc between north and south with stratigraphic dip ranging between 7 to 34 degrees. This 180 degree spread in the dip azimuth is typical of a braided river system with the median dip azimuth, east, the major direction of flow. Within the M181 dip azimuth changes substantially at 2441m MD. From the top of the M181 down to 2441m MD the dominant dip azimuth is SE indicating the dominant depositional regime is fluvial, whereas from 2441m MD down to the bottom of the unit the dominant dip azimuth is to the west indicating marine influence on deposition. With fluvial facies over marine, sea level must have dropped therefore a sequence boundary is interpreted at 2441m MD hence the M181 should now be broken into 2 sequences. Dip azimuth within the M191 is WNW indicating a strong marine influence, probably estuarine.

V. HYDROCARBONS

The principal objective of the Halibut 2 outpost well was to locate the current oil-water contact (COWC) in the M-171 reservoir and confirm the presence of lagging oil identified by field studies. The reservoir potential of the Turrum Formation was a secondary target.

No reservoir quality sandstones were intersected in the Turrum Formation. The Flounder Formation is sandprone and net oil sands were intersected within the Formation. Log analysis indicates two zones 2353.5 to 2363.5 and 2366.5 to 2370.5m MD. Pressure analysis indicates that the Flounder Formation is in communication with the Halibut "Coarse Clastics" reservoirs. The well intersected the M-171 and deeper Halibut reservoirs 2.5 to 4m low to prognosis however all zones had been swept. Flounder Formation sands are interpreted to lie along the truncation edge of the "Coarse Clastics reservoirs allowing oil to flow from deeper reservoirs through Tuna-Flounder sands to shallower Halibut reservoirs. Deeper reservoirs in the northeast section of the Field are thereby being drained by completions in shallower reservoirs and the previously postulated lagging oil has been produced.

VI. GEOPHYSICAL SUMMARY

Geophysical control over the Halibut field is provided by the G89AF 3D Seismic Survey.

The depth to the Top of Latrobe Group unconformity was basically on depth prognosis indicating the velocity stability in this area of the field.

A 20m non-net, Turrum Formation, section was encountered in the well. Pre-drill thickness was interpreted to be 30m indicating an incorrect time pick for this complex channel sequence. Furthermore, a 40m section of Flounder Formation was encountered. The Flounder Formation consists of good quality sands with no significant impedance difference from the main Halibut reservoirs, thus this channel sequence was not interpreted pre-drill.

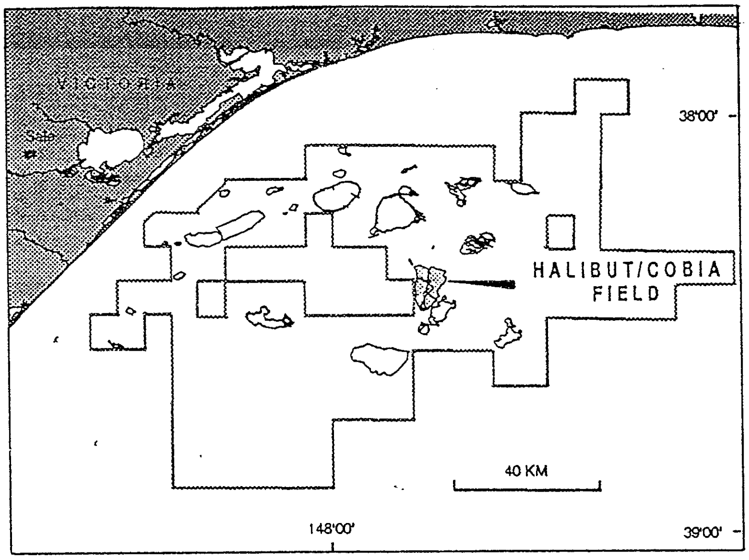
A zero offset VSP was recorded in the Halibut 2 well for velocity control and for accurate seismic to lithology ties in this area of the field.

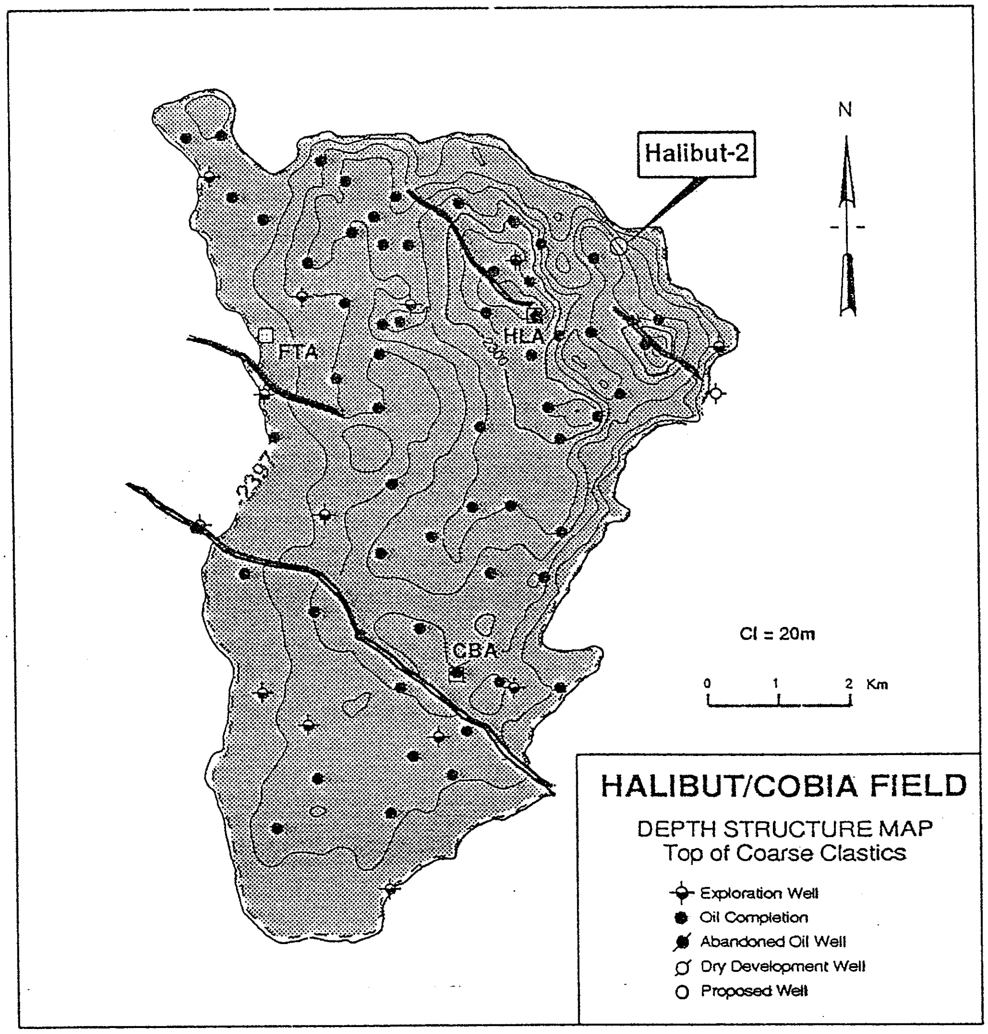
VII. GEOLOGICAL SUMMARY

The Halibut 2 well was designed to locate the current oil-water-contact within the Halibut M171 reservoir and thereby evaluate the presence of lagging oil identified in field studies, and to confirm the presence of the Turrum Formation and investigate its reservoir potential.

No potential reservoir was intersected in the Turrum Formation. The unprognosed Flounder Formation was intersected under the Turrum Formation. Two oil saturated sandstones are interpreted within this interval however are interpreted to be being drained by current Halibut completions. This Formation is interpreted to be draped along the truncation edge of the Halibut "Coarse Clastics" reservoirs thereby creating a "chimney" for oil to move from the deeper reservoirs to the shallower reservoirs/completions. Hence the deeper reservoirs, M171 down, are water saturated in this region.

FIGURE 1: HALIBUT 2 LOCALITY MAP





APPENDIX
1

APPENDIX 1

HALIBUT-2

Palynological Analysis

Palynological Analysis of Halibut-2 Gippsland Basin

by

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INTERPRETATIVE DATA

Introduction

Palynological Summary of Halibut-2

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Table-1: Interpretative Palynological Data

Confidence Ratings

Introduction

Twenty-three samples comprising 19 sidewall cores and 4 core samples were analysed in Halibut-2. The author cleaned, split the selected sidewall cores and forwarded them to Laola Pty Ltd in Perth for processing to prepare the palynological slides. The four core samples were sent directly to Laola Pty Ltd for initial urgent age dating.

An average of 21.8 grams of the conventional core samples but only 11.4 grams of the sidewall cores were processed for palynological analysis (Table 2). Residue yields were moderate from the cores and mostly low to very low from the sidewall cores. Palynomorph concentration on the slides was quite variable but generally low to barren in the coarser channel sands. The few high yielding sidewall cores with high palynomorph concentrations were from the Paleocene *L. balmei* Zone. Preservation of palynomorphs varied from poor to good. In the Paleocene portion of the Latrobe Group the poor preservation was due to greater maturation and over-oxidation of the palynomorph residues. The poor preservation of the shallower two samples from Turrum Formation is probably due to partial post-depositional oxidation of this unit. Preservation of palynomorphs from samples in the Flounder Formation varies from poor to excellent. Here the poor preservation is due to partial biodegradation of the fossils or to breakage and fragmentation of specimens. Fragmentation was particularly a problem with the dinoflagellates and could have been caused by early post-depositional bioturbation of the sediments or later during the palynological preparation of the samples. Spore-pollen diversity is very low to high from 2 to 39+ species. The average diversity is 23+ species in the twenty productive samples. Microplankton diversity is very low (1-4 species) in the undifferentiated Latrobe Group, and low to moderate (3-19 species) in the overlying Flounder and Turrum Formations. The single sample from the Seaspray Group has moderate diversity but not all species have been identified. The lower diversity samples correspond to low residue recoveries.

Lithological units and palynological zones from the base of the Seaspray Group to Total Depth are given in the following summary. The interpretative data with zone identification and Confidence Ratings are recorded in Table-1 and basic data on residue yields, preservation and diversity are recorded on Tables-2 and 3. All species which have been identified with binomial names are tabulated on the palynomorph range charts. Relinquishment list for palynological slides and residues from samples analysed in Halibut-2 are provided at the end of the report.

Palynological Summary of Halibut-2

AGE	UNIT/FACIES	SPORE-POLLEN ZONES (DINOFLAGELLATE ZONES)	DEPTHS (mKB)
MIOCENE TO OLIGOCENE	SEASPRAY GROUP	*P. tuberculatus*	2326.5
MIDDLE EOCENE	LATROBE GROUP Turrum Formation	Lower *N. asperus* (*A. australicum*) Undifferentiated interval	2332.5 (2332.5) 2338.5-2349
EARLY EOCENE	LATROBE GROUP Flounder Formation	*P. asperopolus* (*K. edwardsii*) (*K. thompsonae*)	2350-2381 (2350-2358) (2366.5-2381)
PALEOCENE	LATROBE GROUP Undifferentiated coastal plain facies of shale, coals and sands.	*L. balmei* undifferentiated (*A. homomorphum*) Lower *L. balmei*	2391.2-2495 *(2391.2)* 2560

T.D. 2590m

Geological Comments

1. Halibut-2 on the eastern flank of the Halibut field was expected to intersect the Marlin Channel and find sediments of the Middle Eocene Turrum Formation overlying the eroded Latrobe Group undifferentiated coarse clastics. Instead it found a sandy channel fill section assignable to the Early Eocene *P. asperopolus* Zone which is correlated to the older Flounder Formation. The discovery of channel fill sediments of this age was a surprise and implies that this distal part of the Marlin Channel as well as the eastern flank of the Halibut was originally eroded by older Tuna-Flounder Cannel events.

2. The initial erosion of the Top of Latrobe in the Halibut field area should now be correlated to at least the 50.5 Ma sequence boundary on the charts of Haq *et al.* (1987, 1988) and may even be older. This is distinctly older than the interpretation given by Marshall & Partridge (1988) which argued that the major erosive event at the top of the Latrobe Group coarse clastics was best correlated to the 49.5 Ma sequence boundary.

3. The unexpected discovery of an older fill within what has traditionally been mapped as the Marlin Channel reinforces the thalweg hypothesis, originally postulated by Dr P.R. Evans in 1971, that the location of the cutting of the Marlin Channel was controlled by the western flank of the earlier Tuna-Flounder Channel system.

4. The base of the Flounder Formation is picked at 2390.5m at the base of a 3 metre sand which lies above the first sample containing only *L. balmei* Zone species at 2391.2m. The possibility of confirming a *P. asperopolus* Zone age for this sand, and hence Flounder Formation assignment, by palynological analysis of cuttings was discussed with Paul Hinton on 28 March 1994. However it was considered impractical because the top of the *L. balmei* Zone was unlikely to be confidently identified due to the consistent presence of reworked *L. balmei* Zone fossils as rare elements in most samples from the Flounder Formation.

5. The Flounder Formation in Halibut-2 contains the two dinoflagellate zones recognised in the *P. asperopolus* Zone. Dinoflagellate abundances between 22% to 25% (calculated as % of combined spore-pollen and microplankton count but excluding fungal spores) and total microplankton diversity of >34 species makes these assemblages distinctly different from those recovered from the Flounder Formation intersected in Turrum-4 where the microplankton abundances are <1% and total species diversity very low (Partridge, 1993). The reason for this marked difference in microplankton abundance and diversity is unknown. It may relate to differences in facies as the sequence in Turrum-4 consists of 44 metres of claystone overlying a 15.5 metre sand, whilst the section in Halibut-2 is mainly fairly coarse quartz sandstone. Alternatively, it may reflect increasing abundance of microplankton with increasing distance from the palaeoshoreline, although this is hard to rationalise with an equivalent increase in grain size. A more likely possibility is that the difference can be correlated to different system tracts, with the sands at Halibut-2 being deposited during low stand to transgressive system tracts and the finer claystones at Turrum-4 deposited during one or more high stand system tracts.

6. The sidewall core 22 at 2349m is quite distinct in assemblage composition from the four core samples between 2350-2356m and sidewall core 21 at 2358m. Because there is no clear break in the shale package from 2347-2353.7m it is **suggested as a possibility** that core-1 may be displaced and may have actually been recovered from below 2353.7m.

7. Mixed results were obtained from the interval assigned to the Turrum Formation as only the sidewall core at 2332.5m could be confidently assigned to a zone. Although the sidewall core lithologies indicate the interval is coarser grained than the typical Turrum Formation assignment to this unit rather than the Gurnard Formation is favoured because the samples lack the dominance of glauconite which characterise the latter unit. The distinctive microplankton assemblage at 2349m containing an abundance of the dinoflagellate *Arachnodinium antarcticum* has not been recorded elsewhere in the Gippsland Basin and may belong to either the Turrum or Flounder Formations.

8. The assemblage recovered from the base of the Seaspray Group although definitive on both spore-pollen and microplankton is overall nondescript and cannot be correlated to any particular foraminiferal zone. Thus it provides no more than a broad Oligocene to Miocene age.

Biostratigraphy

Zone and age determinations are based on the spore-pollen zonation scheme proposed by Stover & Partridge (1973), partially modified by Stover & Partridge (1982) and Helby, Morgan & Partridge (1987), and a dinoflagellate zonation scheme which has only been published in outline by Partridge (1975, 1976). Other modifications and embellishments to both zonation schemes can be found in the many palynological reports on the Gippsland Basin wells drilled by Esso Australia Ltd. Unfortunately this work is not collated or summarised in a single report.

Author citations for most spore-pollen species can be sourced from Stover & Partridge (1973, 1982), Helby, Morgan & Partridge (1987) or other references cited herein. Author citations for dinoflagellates can be found in the indexes of Lentin & Williams (1985, 1989), in the paper by Wilson (1988), or other references cited herein. Species names followed by "ms" are unpublished manuscript names.

Proteacidites tuberculatus Zone: 2326.5 metres — Oligocene to Early Miocene.

The single sidewall core analysed from the Seaspray Group gave a meagre yield from which were recorded moderate diversity spore-pollen and microplankton assemblages which were overall well preserved. The sample can be confidently assigned to the *P. tuberculatus* Zone on the frequent presence of the spore

Cyatheacidites annulatus. The remainder of the recorded spore-pollen are long ranging species. Rare reworked Permian spores were recorded from the sample.

The microplankton assemblage can be assigned to the informal *Operculodinium* spp. Association of Partridge (1976) on the frequent occurrence of the long ranging *Operculodinium centrocarpum* associated with the Oligocene or young index species *Protoellipsodinium simplex* ms, and *Pyxidinopsis pontus* ms.

Lower *Nothofagidites asperus* Zone
and
***Areosphaeridium australicum* Zone: 2332.5 metres Middle Eocene.**

The spore-pollen assemblage is assigned to the Lower *N. asperus* Zone based on the incoming of abundant *Nothofagidites* spp. (47% of spore-pollen count) and continued presence of *Proteacidites asperopolus* and *P. pachypolus* (the latter 5% of spore-pollen count). The last two species typically range no higher than this zone. The abundant microplankton (40% of total count) in the sample supports the spore-pollen age and provides further refinement. The presence of *Areosphaeridium australicum* ms, together with *Tritonites pandus* and *T. tricornus* indicated the middle part of the Lower *N. asperus* Zone with approximate equivalence to the planktonic foraminiferal zones P.12 to P.13 (Marshall & Partridge 1988).

The sample at 2338.5m may also belong to this zone but although a high residue yield was extracted the palynomorphs were extremely rare in the slides and consequently insufficient species could be identified and recorded to assign the sample to a zone based on either species ranges or abundances.

Arachnodinium antarcticum
Microplankton Association: 2349 metres Middle or Early Eocene.

This sidewall core is best characterised by containing common *Arachnodinium antarcticum*. The author has never previously examined nor seen reported a sample from the Gippsland Basin containing this species is such abundance. Unfortunately the few other dinoflagellates recorded are not diagnostic, whilst the spore-pollen recorded although of high diversity (29+ species) lack key indicators for either the Lower *N. asperus* or *P. asperopolus* Zones. The dominance of *Haloragacidites harrisii* over *Nothofagidites* spp. would however favour assignment to the *P. asperopolus* Zone. The unusual nature of the assemblage suggests this particular section or marine environment has not previously been sampled in the basin.

***Proteacidites asperopolus* Zone: 2350-2381 metres** **Early Eocene.**

This zone is recorded from four core samples and four sidewall cores and there are an additional five sidewall cores in the zone interval which were either barren or contained too few recorded species to be zone diagnostic. The key zone species identified are *Proteacidites asperopolus* at 2350m and *Conbaculites apiculatus* ms between 2350-2366.5m. The samples below 2366.5m lack these species but are still considered to belong to the zone because of the associated dinoflagellates. The larger sample size processed from the conventional cores clearly show that, where yields are good, recorded species diversity is characteristically high. Total spore-pollen diversity recorded in the zone is 88+ species,

Characteristic species which don't range above this zone are *Myrtaceidites tenuis* (LAD at 2350m), *Intratriporopollenites notabilis* (between 2350-2377m) and *Proteacidites ornatus* (at 2355m). Supporting an age no older than this zone are the consistent presence of *Santalumidites cainozoicus* whose FAD is within the upper part of the underlying Upper *M. diversus* Zone, and common abundance of *Proteacidites pachypolus* (eg. 9% at 2350m). Reworking of sediments of the older undifferentiated Latrobe Group cut by the channel is evidenced by the recording of *Lygistepollenites balmei* from most of the more productive samples.

***Kisselovia edwardsii* Zone: 2350-2358 metres** **Early Eocene.**

Kisselovia edwardsii occurs in four of the five samples in the interval and samples are only assigned to the zone if they contain this species. Other diagnostic Early Eocene microplankton in the high diversity (>35 species) suite recorded are *Deflandrea flounderensis, Homotryblium tasmaniense, Systematophora traphosus* ms, *Tritonites bilobus, Wetzeliella articulata,* and *Wilsonidinium quirratus* ms. The last species has only previously been recorded from near the top of the Flounder Formation in Grunter-1 from the sidewall core at 1870m.

***Kisselovia thompsonae* Zone: 2366.5-2381 metres** **Early Eocene.**

The top and bottom samples from this interval each contain several specimens of *Kisselovia thompsonae* ms. Although no other species diagnostic of the zone were recorded the presence of *Deflandrea flounderensis* and *Wetzeliella articulata* are characteristic of Flounder Formation. Total microplankton species diversity in the interval is a modest 14 species, but this is largely a reflection of the overall low yields.

Lygistepollenites balmei Zone: 2391.2-2495.0 metres **Paleocene.**
and
Apectodinium homomorphum Zone: 2391.2 metres **Late Paleocene.**

All five samples over this zone interval clearly belong to the broader *L. balmei* Zone based on the consistent and often common occurrence of *Lygistepollenites balmei*. Associated indicator species which range no younger than this zone are *Australopollis obscurus*, *Gambierina rudata*, and *Polycolpites langstonii* (at 2408.5m) all of which are less consistent. No species were recorded which clearly assign the samples to either the Upper or Lower *L. balmei* Zones even though the total diversity over the interval is >45 species and individual sample diversity can be >30 species. The poor preservation of all the samples is undoubtedly the reason index species were so hard to find.

The shallowest sample in the interval a 2391.2m can be assigned to the *A. homomorphum* dinoflagellate Zone on the frequent occurrence of the short spined variety of *Apectodinium homomorphum* in an otherwise extremely limited assemblage.

Lower _Lygistepollenites balmei_ Zone: 2560 metres **Early Paleocene.**

The deepest sidewall core recovered in Halibut-2 can be confidently assigned to the Lower *L. balmei* Zone on the mutual occurrence of *L. balmei* with *Juxtacolpus pieratus* ms, *Proteacidites angulatus* and *Tetracolporites verrucosus* in a diverse assemblage of >35 species. A single fragment of a palynomorph with the characteristic ornament of *Eisenackia crassitabulata* was recorded but searching all of the available slides failed to find a complete specimen to enable confident assignment of the sample to the *E. crassitabulata* Zone. If confirmation of this zone is required additional palynological slides could be prepared from remaining residue or cuttings samples analysed between 2560m and T.D. at 2590m.

References

HAQ, B.U., HARDENBOL, J. & VAIL, P., 1987. Chronology of fluctuating sea levels since Triassic. *Science 235*, 1156-1167.

HAQ, B.U., HARDENBOL, J. & VAIL, P., 1988. Mesozoic and Cenozoic chronostratigraphy and cycles of sea-level change. *SEPM Special Publication No. 42,* 71-108.

HELBY, R., MORGAN, R. & PARTRIDGE, A.D., 1987. A palynological zonation of the Australian Mesozoic. *Mem. Ass. Australas. Palaeontols 4,* 1-94.

LENTIN, J.K. & WILLIAMS, G.L., 1985. Fossil Dinoflagellates: Index to genera and species, 1985 Edition. *Canadian Tech. Rep. Hydrog. Ocean Sci. 60,* 1-451.

LENTIN, J.K. & WILLIAMS, G.L., 1989. Fossil Dinoflagellates: Index to genera and species, 1989 Edition. *AASP Contribution Series No. 20,* 1-473.

MARSHALL, N.G. & PARTRIDGE, A.D., 1988. The Eocene acritarch *Tritonites* gen. nov. and the age of the Marlin Channel, Gippsland Basin, southeastern Australia. *Mem. Ass. Australas. Palaeontols 5,* 239-257.

PARTRIDGE, A.D., 1975. Palynological zonal scheme for the Tertiary of the Bass Strait Basin (Introducing Paleogene Dinoflagellate Zones and Late Neogene Spore-Pollen Zones). *Geol. Soc. Aust. Symposium on the Geology of Bass Strait and Environs, Melbourne*, November, 1975. *Esso Aust. Ltd. Palaeo. Rept. 1975/17* (unpubl.).

PARTRIDGE, A.D., 1976. The geological expression of eustacy in the early Tertiary of the Gippsland Basin. *APEA J. 16* (1), 73-79.

PARTRIDGE, A.D., 1993. Palynological analysis of Turrum-4, Gippsland Basin. *Biostrata Report 1993/2,* 1-32.

STOVER, L.E. & PARTRIDGE, A.D., 1973. Tertiary and late Cretaceous spores and pollen from the Gippsland Basin, southeastern Australia. *Proc. R. Soc. Vict. 85,* 237-286.

STOVER, L.E. & PARTRIDGE, A.D., 1982. Eocene spore-pollen from the Werillup Formation, Western Australia. *Palynology 6,* 69-95.

WILSON, G.J., 1988. Palaeocene and Eocene dinoflagellate cysts from Waipawa, Hawkes Bay, New Zealand. *N.Z. Geol. Surv. Palaeo. Bull. 57*, 1-96.

Table-1: Interpretative Palynological Data for Halibut-2, Gippsland Basin.

Sample Type	Depth (m)	Spore-Pollen Zone	CR	Microplankton Zone (or Association)	CR	Comments or Key Species
SWC-29	2326.5	*P. tuberculatus*	B3	(*Operculodinium* spp.)		FAD *Cyatheacidites annulatus*.
SWC-27	2332.5	Lower *N. asperus*	B1	*A. australicum* (*T. pandus*)	B3	*Tritonites pandus* and *T. tricornus*. Microplankton 41%.
SWC-25	2338.5	Indeterminate				Abundant altered kerogen recovered with palynomorphs extremely rare.
SWC-22	2349.0	Indeterminate		(*A. antarcticum*)		ACME assemblage of *Arachnodinium antarcticum*. *H. harrisii* >> *Nothofagidites*.
Core-1	2350.0	*P. asperopolus*	B2	*K. edwardsii*	B2	*Proteacidites asperopolus* and *Conbaculites apiculatus* ms. Microplankton 25%.
Core-1	2351.0	*P. asperopolus*	B4			Few diagnostic species. Microplankton 24%.
Core-1	2355.0	*P. asperopolus*	B1	*K. edwardsii*	B2	*Conbaculites apiculatus* ms.
Core-1	2356	*P. asperopolus*	B1	*K. edwardsii*	B2	*C. apiculatus* ms.
SWC-21	2358.0	*P. asperopolus*	B4	*K. edwardsii*	B3	Low diversity due to low yield.
SWC-20	2360.0	Indeterminate				Barren of palynomorphs.
SWC-19	2362.5	Indeterminate				No diagnostic species recorded.
SWC-17	2366.5	*P. asperopolus*	B2	*K. thompsonae*	B3	*Conbaculites apiculatus* ms.
SWC-16	2368.0	Indeterminate				Barren of palynomorphs.
SWC-15	2372.0	Indeterminate				No zone diagnostic palynomorphs recorded.
SWC-14	2373.5	Indeterminate				Barren of palynomorphs.
SWC-13	2377.0	*P. asperopolus*	B4			*Wetzeliella articulata* present.
SWC-12	2381.0	*P. asperopolus*	B1	*K. thompsonae*	B2	FAD *Conbaculites apiculatus* ms Microplankton 22%.
SWC-10	2391.2	*L. balmei*	B3	*A. homomorphum*	B3	Very low yield assemblage, could be reworked.
SWC- 9	2397.0	*L. balmei*	B3			Common *Lygistepollenites balmei*.
SWC- 7	2408.5	*L. balmei*	B1			*Polycolpites langstonii* present.
SWC- 5	2459.0	*L. balmei*	B2			Very poorly preserved.
SWC- 3	2495	*L. balmei*	B2			*Camarozonosporites bullatus* and *Tetracolporites textus* ms.
SWC- 1	2560.0	Lower *L. balmei*	B1			LADs *Proteacidites angulatus*, *Tetracolporites verrucosus* and *Juxtacolpus pieratus* ms. A possible fragment of *Eisenackia crassitabulata* also recorded.

Confidence Ratings

The concept of Confidence Ratings applied to palaeontological zone picks was originally proposed by Dr. L.E. Stover in 1971 to aid the compilation of micropalaeontological and palynological data and to expedite the revision of the then rapidly evolving zonation concepts in the Gippsland Basin. The original scheme which mixed confidence in fossil species assemblage with confidence due to sample type gradually proved to be rather limiting as additional refinements to existing zonations were made. With the development of the STRATDAT computer database as a replacement for the increasingly unwieldy paper based Palaeontological Data Sheet files a new format for the Confidence Ratings was proposed. These are given for individual zone assignments on Table 1, and their meanings are summarised below:

Alpha codes: Linked to sample type

- **A** Core
- **B** Sidewall core
- **C** Coal cuttings
- **D** Ditch cuttings
- **E** Junk basket
- **F** Miscellaneous/unknown
- **G** Outcrop

Numeric codes: Linked to fossil assemblage

1. **Excellent confidence:** High diversity assemblage recorded with key zone species.
2. **Good confidence:** Moderately diverse assemblage recorded with key zone species.
3. **Fair confidence:** Low diversity assemblage recorded with key zone species.
4. **Poor confidence:** Moderate to high diversity assemblage recorded without key zone species.
5. **Very low confidence:** Low diversity assemblage recorded without key zone species.

BASIC DATA

Table 2: Basic Sample Data

Table 3: Basic Palynomorph Data

Relinquishment Lists Of Palynological Slides & Residues

Palynomorph Range Chart

Format: Relative Abundance By Highest Appearance

Table 2: Basic Sample Data for Halibut-2, Gippsland Basin

Sample Type	Depth (metres)	Lithology	Sample Wt (g)	Residue Yield
SWC-29	2326.5	Med. gry calcareous claystone. Not laminated.	15.8	Low
SWC-27	2332.5	Blk-brn poorly sorted sandstone in siltstone matrix, with mica, weathered glauconite and quartz pebbles up to 3mm.	15.1	Low
SWC-25	2338.5	Reddish brn mod. sorted sandstone with white clay flecks and iron staining. Probable weathered glauconite present. Broken friable portion processed, contamination likely.	16.0	High
SWC-22	2349	Med. gry f.-crs grn. sandstone with arg. matrix. Broken, friable portion of sample processed contamination likely.	9.1	Low
Core-1	2350	Med.-dk brn, f.-med grn. sandstone with abundant arg. matrix, tr. glauconite.	23.6	Moderate
Core-1	2351	Grey-brn glauconitic sandstone.	21.2	Moderate
Core-1	2355	Med. brn-gry, med-crs gran. sandstone with abundant arg. matrix, tr. glauconite.	20.2	Moderate
Core-1	2356	Lt. gry, med-crs grn. sandstone, tr. glauconite.	22.1	Moderate
SWC-21	2358	Med. gry friable sandstone. No obvious glauconite. Broken portion processed contamination likely.	11.5	Low
SWC-20	2360	Lt gry friable qtz sandstone with tr. (<5%) glauconite. Not cleaned contamination likely.	10.1	Very low
SWC-19	2362.5	Lt-med. gry, med-crs grn friable qtz sandstone with tr. (<5%) glauconite. Not cleaned contamination likely.	12.2	Very low
SWC-17	2366.5	Med gry poorly sorted crs friable qtz sandstone with tr. (<5%) glauconite. Not cleaned contamination likely.	11.1	Low to moderate
SWC-16	2368	Green and grey crs grn friable qtz sandstone with glauconite <10%. Not cleaned contamination likely.	17.9	Very low
SWC-15	2372	Lt gry poorly sorted crs friable qtz sandstone, tr. (<2%) glauconite. Not cleaned contamination likely.	8.6	Very low
SWC-14	2373.5	Lt & dk gry, f.-med grn pyritic sandstone. No obvious glauconite. Not cleaned contamination likely.	13.2	Very low
SWC-13	2377	Gry white, f.-med. grn friable qtz sandstone, tr. (<2%) glauconite. Not cleaned contamination likely.	10.1	Moderate
SWC-12	2381	Med. gry, poorly sorted med-crs grn friable sandstone with silty matrix. Glauconite not obvious. Not cleaned contamination likely.	11.7	Low to Moderate
SWC-10	2391.2	Lt. gry-off-white, med-crs grn. friable sandstone with tr. (<2%) glauconite. Not cleaned contamination likely.	6.9	Very low
SWC- 9	2397	Med. gry, f. grn sandstone. Not cleaned contamination likely	5.8	Very low

Table 2: Basic Sample Data for Halibut-2, Gippsland Basin Cont...

Sample Type	Depth (metres)	Lithology	Sample Wt (g)	Residue Yield
SWC- 7	2408.5	Gry black friable siltstone. Sample broken and mud penetrated not cleaned.	9.9	High
SWC- 5	2459	Gry blk fissile shale. Sample broken, could not be cleaned.	13.0	High
SWC- 3	2495	Med.-dk gry, f.-crs grn. pyritic sandstone with silty matrix. Loose fragments processed, not cleaned.	6.9	Moderate
SWC- 1	2560	Gry. black siltstone. Sample broken could not be cleaned.	11.7	High

Table-3: Basic Palynomorph Data for Halibut-2, Gippsland Basin

Sample Type	Depth (m)	Palynomorph Concentration	Palynomorph Preservation	Number S-P Species*	Microplankton Abundance	Number MP Species*
SWC-29	2326.5	High	Fair-good	18+	Abundant	10+
SWC-27	2332.5	Moderate	Poor-very poor	31+	Abundant	19+
SWC-25	2338.5	Very low	Very poor	5+		NR
SWC-22	2349.0	Low	Poor-good	29+	Common	6+
Core-1	2350.0	High	Fair-good	39+	Common	14+
Core-1	2351.0	Moderate	Fair-good	29+	Common	9+
Core-1	2355.0	Moderate	Fair-good	37+	Common	18+
Core-1	2356.0	Moderate	Fair-good	31+	Common	18+
SWC-21	2358.0	Moderate	Poor-good	27+	Common	4+
SWC-20	2360.0	Very low	Poor	NR		NR
SWC-19	2362.5	Very low	Poor-good	2+	Low	3+
SWC-17	2366.5	Low	Poor-good	17+	Frequent	4+
SWC-16	2368.0	Barren		NR		NR
SWC-15	2372.0	Low	Poor-fair	10+		NR
SWC-14	2373.5	Barren		NR		NR
SWC-13	2377.0	Moderate	Poor-good	40+	Low	8+
SWC-12	2381.0	Low	Fair	28+	Common	8+
SWC-10	2391.2	Very low	Poor	4+	Very low	2
SWC- 9	2397.0	Low	Poor	9+		NR
SWC- 7	2408.5	High	Poor	30+	Very low	1
SWC- 5	2459.0	High	Very poor	24+	Very low	1?
SWC- 3	2495.0	Moderate	Poor-fair	19+	Very low	2
SWC- 1	2560.0	High	Poor-fair	35+	Very low	4

NR = Not recorded

Diversity:

Very low	= 1-5	species
Low	= 6-10	species
Moderate	= 11-25	species
High	= 26-74	species
Very high	= 75+	species

RELINQUISHMENT LIST - PALYNOLOGY SLIDES

WELL NAME & NO: HALIBUT-2
PREPARED BY: A.D. PARTRIDGE
DATE: 26 APRIL 1994

Sheet 1 of 2

SAMPLE TYPE	DEPTH (M)	CATALOGUE NUMBER	DESCRIPTION
SWC-29	2326.5	P196478	Kerogen slide sieved/unsieved fractions
SWC-29	2326.5	P196479	Oxidised slide 2
SWC-27	2332.5	P196480	Kerogen slide sieved/unsieved fractions
SWC-27	2332.5	P196481	Oxidised slide 2
SWC-25	2338.5	P196482	Kerogen slide sieved/unsieved fractions
SWC-25	2338.5	P196483	Oxidised slide 2
SWC-25	2338.5	P196484	Oxidised slide 3
SWC-25	2338.5	P196485	Oxidised slide 4
SWC-25	2338.5	P196486	Oxidised slide 5
SWC-22	2349.0	P196487	Kerogen slide sieved/unsieved fractions
SWC-22	2349.0	P196488	Oxidised slide 2
CORE-1	2350.0	P196489	Kerogen slide sieved (1/2 cover slip)
CORE-1	2350.0	P196490	Oxidised slide 2
CORE-1	2350.0	P196491	Oxidised slide 3
CORE-1	2351.0	P196492	Oxidised slide 2
CORE-1	2351.0	P196493	Oxidised slide 3
CORE-1	2355.0	P196494	Oxidised slide 2
CORE-1	2355.0	P196495	Oxidised slide 3
CORE-1	2356.0	P196496	Oxidised slide 2
CORE-1	2356.0	P196497	Oxidised slide 3
SWC-21	2358.0	P196498	Kerogen slide sieved/unsieved fractions
SWC-21	2358.0	P196499	Oxidised slide 2
SWC-20	2360.0	P196500	Kerogen slide sieved/unsieved fractions
SWC-19	2362.5	P196501	Kerogen slide sieved/unsieved fractions
SWC-17	2366.5	P196502	Kerogen slide sieved/unsieved fractions
SWC-17	2366.5	P196503	Oxidised slide 2 (1/2 cover slip)
SWC-16	2368.0	P196504	Kerogen slide sieved (1/2 cover slip)
SWC-15	2372.0	P196505	Kerogen slide sieved/unsieved fractions
SWC-14	2373.5	P196506	Kerogen slide sieved (1/3 cover slip)
SWC-13	2377.0	P196507	Kerogen slide sieved/unsieved fractions
SWC-13	2377.0	P196508	Oxidised slide 2
SWC-13	2377.0	P196509	Oxidised slide 3
SWC-13	2377.0	P196510	Oxidised slide 4 (1/2 cover slip)

RELINQUISHMENT LIST - PALYNOLOGY SLIDES

WELL NAME & NO: HALIBUT-2
PREPARED BY: A.D. PARTRIDGE
DATE: 26 APRIL 1994

Sheet 2 of 2

SAMPLE TYPE	DEPTH (M)	CATALOGUE NUMBER	DESCRIPTION
SWC-12	2381.0	P196511	Kerogen slide sieved/unsieved fractions
SWC-12	2381.0	P196512	Oxidised slide 2 (1/2 cover slip)
SWC- 9	2397.0	P196514	Kerogen slide sieved/unsieved fractions
SWC- 7	2408.5	P196515	Kerogen slide sieved/unsieved fractions
SWC- 7	2408.5	P196516	Oxidised slide 2
SWC- 7	2408.5	P196517	Oxidised slide 3
SWC- 7	2408.5	P196518	Oxidised slide 4
SWC- 7	2408.5	P196519	Oxidised slide 5
SWC- 5	2459.0	P196520	Kerogen slide sieved/unsieved fractions
SWC- 5	2459.0	P196521	Oxidised slide 2
SWC- 5	2459.0	P196522	Oxidised slide 3
SWC- 5	2459.0	P196523	Oxidised slide 4
SWC- 5	2459.0	P196524	Oxidised slide 5
SWC- 3	2495.0	P196525	Kerogen slide sieved/unsieved fractions
SWC- 3	2495.0	P196526	Oxidised slide 2 (1/2 cover slip)
SWC- 1	2560.0	P196527	Kerogen slide sieved/unsieved fractions
SWC- 1	2560.0	P196528	Oxidised slide 2
SWC- 1	2560.0	P196529	Oxidised slide 3
SWC- 1	2560.0	P196530	Oxidised slide 4
SWC- 1	2560.0	P196531	Oxidised slide 5

RELINQUISHMENT LIST - PALYNOLOGY RESIDUES

WELL NAME & NO: HALIBUT-2
PREPARED BY: A.D. PARTRIDGE
DATE: 26 APRIL 1994

SAMPLE TYPE	DEPTH (M)	DESCRIPTION
SWC-27	2332.5	Kerogen residue
SWC-25	2338.5	Oxidised residue
SWC- 7	2408.5	Kerogen residue
SWC- 7	2408.5	Oxidised residue
SWC- 5	2459.0	Kerogen residue
SWC- 5	2459.0	Oxidised residue
SWC- 1	2560.0	Kerogen residue
SWC- 1	2560.0	Oxidised residue

PE900498

This is an enclosure indicator page.
The enclosure PE900498 is enclosed within the container PE900966 at this location in this document.

The enclosure PE900498 has the following characteristics:

ITEM_BARCODE = PE900498
CONTAINER_BARCODE = PE900966
NAME = Palynomorph Range Chart
BASIN = GIPPSLAND
PERMIT = VIC/L5
TYPE = WELL
SUBTYPE = DIAGRAM
DESCRIPTION = Halibut 2 Palynomorph Range Chart. From appendix 1 of WCR volume 2.
REMARKS =
DATE_CREATED =
DATE_RECEIVED =
W_NO = W1090
WELL_NAME = Halibut-2
CONTRACTOR =
CLIENT_OP_CO = Esso Australia LTD.

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX 2

APPENDIX 2

HALIBUT-2

Log Analysis Report

Esso Australia Ltd
Exploration Department

HALIBUT 2 FORMATION EVALUATION

INTERVAL: 2345m MDKB to 2556m MDKB
PETROPHYSICIST: WM SCOTT DODGE SNR
DATE: DECEMBER 1994

HALIBUT 2 FORMATION EVALUATION

INTERVAL: **2345m MDKB to 2556m MDKB**

PETROPHYSICIST: **WM SCOTT DODGE Snr**

DATE: **DECEMBER 1994**

The Halibut 2 well was evaluated over the main reservoir sequences from 2345m to 2556m MDKB for reservoir quality and hydrocarbon content. This appraisal well located on the north eastern flank of the Halibut strucutre, was drilled to determine whether there were sufficient incremental reserves to justify an additional drilling program at Halibut. Formation Evaluation of this well shows the Halibut 2 present day oil water contact at 2370.7m MDKB which yields an oil column 17.4 metres thick. Reservoirs sands containing residual oil have been swept by water aquifer influx down to 2425.9m. The Formation Evaluation Petrophysical analysis is shown on Figure 1 and Enclosure 1. Listing 1 shows the results in a tabular format over the oil bearing reservoirs.

The Top of Latrobe reservoir sands from 2351.2m MDKB to 2394.2m MDKB are determined from palynological age dating and FMI borehole image interpretation (Dodge, 1994) to be from the Flounder Formation. The net oil reservoir from 2353.4m to 2359.2m MDKB is 5.0 metres in thickness with an average effective porosity of 18 p.u. and average effective water saturation is 0.28. A structural fault is interpreted at the base of this reservoir sand at 2359 metres. This fault was identified from the FMI by a high angle unconformity intersecting the wellbore. The faulted surface is identifiable on the wireline logs by low porosity and truncation of the underlying high resistivity sand at 2360 metres. Table 1 contains the reservoir petrophysical summary for Halibut 2.

A high quality oil bearing reservoir sand 3.8 metres in net thickness from 2359.6m MDKB to 2363.5m MDKB has an effective porosity of 20 p.u. and effective water saturation of 0.28. An unusual low resistivity log response 1 metre in thickness occurs at 2362.5m MDKB. A side wall core sample recovered at this depth is described as a light grey sandstone, predominantly medium to coarse grain, poor to moderate sorting, trace pyrite and glauconite with fairly good porosity and 100 percent moderately bright yellow fluorescence and Hydrogen Sulphide odour. The iron rich glauconite and pyrite could explain the low resistivity response, however the photoelectric measurement from the LDT does not show a high response as expected. If this is a mineralogic effect on the resistivity, then the in-situ water saturation should be lower than the water saturation as computed at 0.50 which compares to about 0.15 in the overlying sand.

The lowermost oil bearing reservoir from 2366.7m MDKB to 2370.6m MDKB contains 3.7 metres net sand with an average effective porosity of 18 p.u. and 0.24 effective water saturation. The present day oil-water contact in this well occurs at 2370.6m MDKB. The mean shale volume in each of these oil reservoirs ranges from 4 to 9 percent of the rock bulk volume. A dense overlying siltstone from 2366m MDKB to 2366.7m MDKB shows a significantly elevated photoelectric response which indicates a concentration of iron rich pyrite. This silt may form an effective permeability barrier between this lower most oil reservoir and the overlying two oil reservoirs.

The reservoir sands between the oil-water contact at 2370.6m MDKB and 2425.9m MDKB contain high water saturations and have been swept during production. The effective water saturation in these sands ranges from 0.82 near the current oil-water contact, to 0.96 near the original field oil-water contact.

Over the upper portion of the Top of Latrobe formation the HIRES nuclear bulk density, photoelectric and thermal neutron porosity measurements show a number of thin silts which have a density as great as 2.80 g/cc and high PEF of 6 b/e. Several sidewall cores from these silts have been described to contain significant amounts of pyrite and glauconite. A mixture of these minerals support the observed log responses in the silts. It is interesting to note that these dense silts are not present below the identified base of the Tuna/Flounder channel sequence at 2394.2m MDKB. This base was determined from the FMS borehole images where a high angle fault or unconformity occurs at this depth. Additionally, palynological samples bracket the channel depth to occur between 2381m MDKB (P.asperopolus) and 2397m MDKB (L. balmei).

All reservoir sands penetrated below the 2425.9m MDKB show no signs of hydrocarbons from logs, side wall core, or mud log.

Reference

Dodge, W.S., "Halibut 2 FMI Analysis", Esso Australia Ltd, Exploration Department Memorandum, WSD:lrw:1253.doc, May 12, 1994.

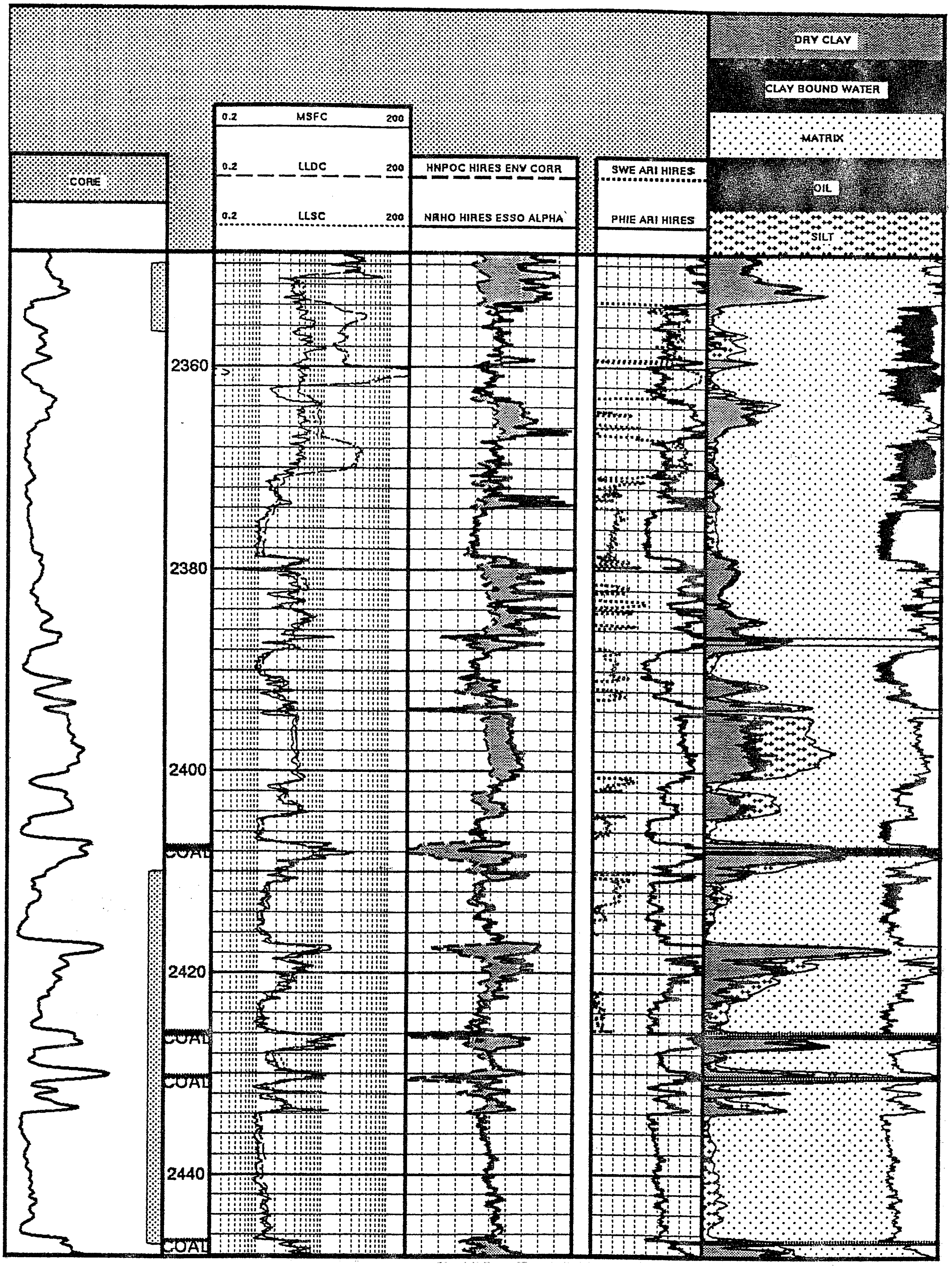

Figure 1 *Halibut 2*
Formation Evaluation Petrophysics Analysis

HALIBUT 2 VOLAN DUAL POROSITY MODEL

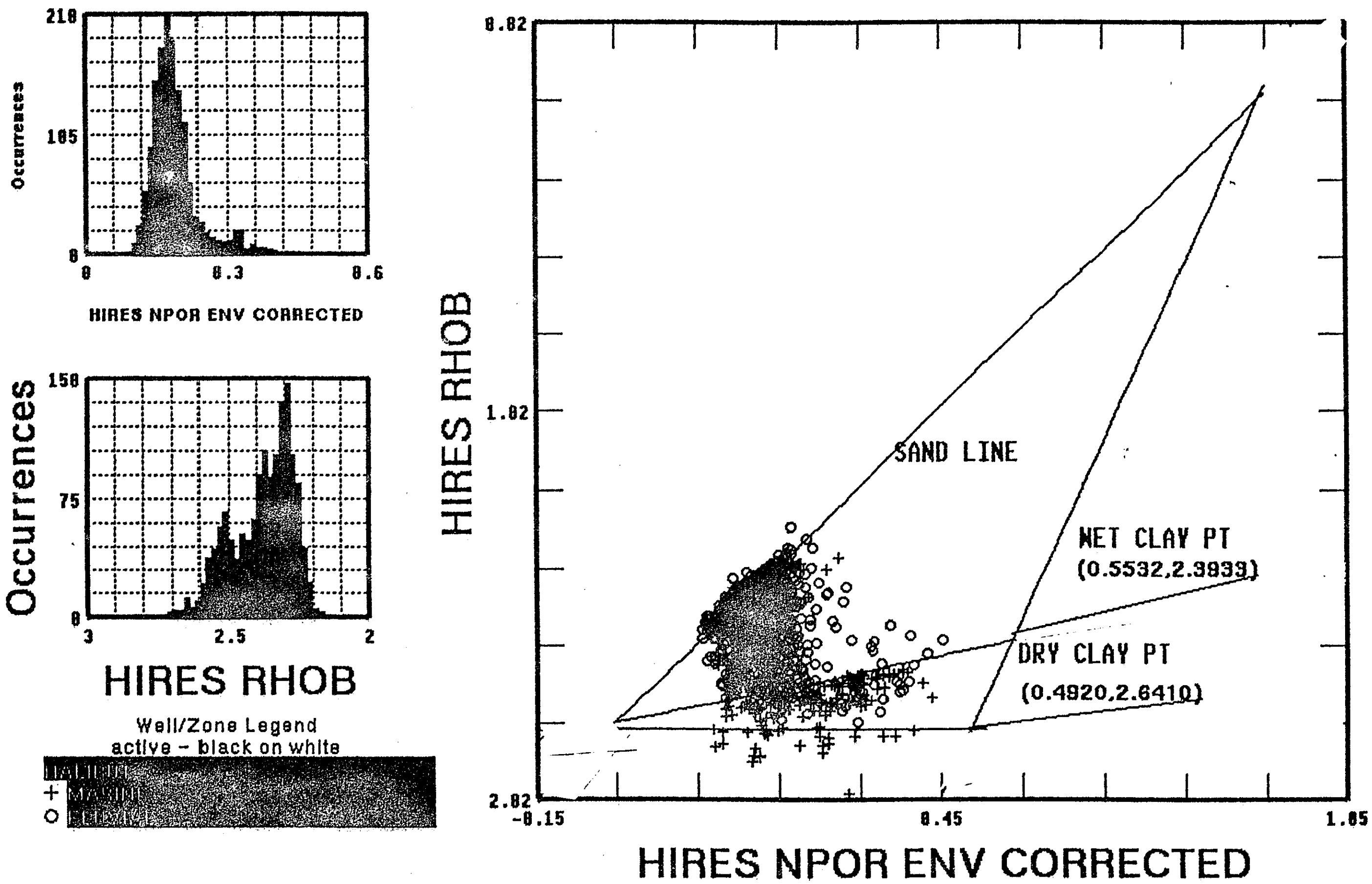

Figure 2 *Halibut 2*
Formation Response of Bulk Density and Neutron Porosity.

TABLE 1 HALIBUT 2

CLAM ANALYSIS SUMMARY

Net porosity cut-off..........: 0.120 volume per volume
Net water saturation cut-off..: 0.500 volume per volume

Net Porous Interval based on Porosity cut-off only.
Both Porosity and Sw cut-offs invoked when generating Hydrocarbon-Metres.

GROSS INTERVAL (metres) (top) -(base)	Gross Metres	NET POROUS INTERVAL Net Metres	Net to Gross	Mean Vsh	(Std.) (Dev.)	Mean Porosity	(Std.) (Dev.)	Mean Sw	FLUID ID
2353.4-2359.2	5.7	5.0	87 %	0.09	(0.048)	0.18	(0.027)	0.28	OIL
2359.6-2363.5	3.9	3.8	96 %	0.09	(0.071)	0.20	(0.033)	0.28	OIL
2366.7-2370.6	3.9	3.7	94 %	0.04	(0.007)	0.18	(0.025)	0.24	OIL
HALIBUT 2 CURRENT OWC 2370.6m MDKB									
2370.7-2372.6	1.9	1.9	100 %	0.05	(0.015)	0.18	(0.028)	0.81	SWEPT
2372.7-2373.9	1.2	0.3	29 %	0.05	(0.008)	0.16	(0.015)	0.94	TIGHT
2374.0-2379.2	5.2	4.9	95 %	0.06	(0.019)	0.25	(0.028)	0.82	SWEPT
2387.4-2393.4	6.1	5.2	85 %	0.12	(0.085)	0.21	(0.043)	0.85	SWEPT
HALIBUT A19 OWC 2402m MDKB									
2400.3-2403.2	2.9	2.4	83 %	0.20	(0.102)	0.18	(0.018)	0.90	SWEPT
2404.3-2407.1	2.8	2.8	98 %	0.09	(0.099)	0.23	(0.034)	0.91	SWEPT
2410.5-2417.1	6.6	6.4	97 %	0.06	(0.045)	0.21	(0.028)	0.89	SWEPT
2420.0-2425.9	5.9	5.2	88 %	0.16	(0.075)	0.20	(0.038)	0.96	SWEPT
HALIBUT ORIGINAL FIELD OWC 2425.9m MDKB									
2427.0-2429.7	2.7	2.2	82 %	0.13	(0.098)	0.18	(0.018)	1.00	WATER
2433.6-2446.8	13.1	12.9	99 %	0.06	(0.046)	0.20	(0.023)	1.00	WATER
2448.6-2453.2	4.6	4.0	85 %	0.14	(0.098)	0.20	(0.032)	1.00	WATER
2454.8-2458.7	3.9	3.6	92 %	0.17	(0.077)	0.17	(0.024)	1.00	WATER
2459.9-2462.3	2.4	1.9	79 %	0.11	(0.068)	0.25	(0.044)	1.00	WATER
2463.6-2483.1	19.5	19.5	100 %	0.11	(0.044)	0.22	(0.028)	1.00	WATER
2483.2-2493.6	10.4	6.4	62 %	0.24	(0.080)	0.15	(0.023)	1.00	WATER
2495.4-2500.2	4.8	4.4	92 %	0.08	(0.072)	0.21	(0.019)	1.00	WATER
2500.9-2514.7	13.8	13.2	95 %	0.06	(0.041)	0.22	(0.024)	1.00	WATER
2519.8-2529.4	9.6	8.9	93 %	0.11	(0.094)	0.21	(0.022)	1.00	WATER
2531.1-2547.6	16.5	15.3	92 %	0.26	(0.139)	0.17	(0.032)	1.00	WATER

LISTING 1

HALIBUT_2 FORMATION EVALUATION PETROPHYSICS

DEPTH metres	VWCLAY fraction	PHIT FRAC	SWT fraction	BVW FRAC	PHIE FRAC	SWE fraction
2353.400	0.315	0.058	1.000	0.003	0.003	1.000
2353.600	0.177	0.058	1.000	0.027	0.027	1.000
2353.800	0.072	0.185	0.374	0.057	0.173	0.329
2354.000	0.044	0.192	0.327	0.055	0.184	0.299
2354.200	0.064	0.104	0.560	0.048	0.093	0.508
2354.400	0.061	0.101	0.583	0.048	0.090	0.534
2354.600	0.032	0.191	0.214	0.035	0.185	0.191
2354.800	0.027	0.196	0.195	0.034	0.192	0.176
2355.000	0.025	0.183	0.202	0.033	0.179	0.182
2355.200	0.028	0.177	0.189	0.029	0.172	0.166
2355.400	0.027	0.143	0.316	0.041	0.138	0.293
2355.600	0.000	0.207	0.254	0.053	0.207	0.254
2355.800	0.000	0.211	0.260	0.055	0.211	0.260
2356.000	0.000	0.232	0.226	0.052	0.232	0.226
2356.200	0.000	0.209	0.269	0.056	0.209	0.269
2356.400	0.061	0.181	0.333	0.050	0.171	0.292
2356.600	0.117	0.148	0.428	0.043	0.128	0.338
2356.800	0.004	0.178	0.340	0.060	0.177	0.338
2357.000	0.000	0.184	0.244	0.045	0.184	0.244
2357.200	0.012	0.185	0.245	0.043	0.183	0.236
2357.400	0.027	0.172	0.324	0.051	0.167	0.305
2357.600	0.021	0.162	0.338	0.051	0.159	0.323
2357.800	0.058	0.143	0.447	0.054	0.133	0.406
2358.000	0.013	0.170	0.298	0.048	0.168	0.288
2358.200	0.000	0.187	0.288	0.054	0.187	0.288
2358.400	0.000	0.189	0.290	0.055	0.189	0.290
2358.600	0.000	0.168	0.327	0.055	0.168	0.327
2358.800	0.000	0.206	0.242	0.050	0.206	0.242
2359.000	0.013	0.168	0.317	0.051	0.165	0.308
2359.200	0.172	0.096	0.533	0.022	0.067	0.325
2359.400	0.207	0.067	1.000	0.031	0.031	1.000
2359.600	0.155	0.172	0.318	0.028	0.146	0.193
2359.800	0.096	0.201	0.284	0.040	0.184	0.219
2360.000	0.000	0.267	0.185	0.050	0.267	0.185
2360.200	0.031	0.221	0.159	0.030	0.216	0.138
2360.400	0.025	0.230	0.089	0.016	0.226	0.072
2360.600	0.023	0.188	0.060	0.009	0.184	0.050
2360.800	0.000	0.195	0.050	0.010	0.195	0.050
2361.000	0.022	0.193	0.057	0.009	0.189	0.050
2361.200	0.027	0.189	0.079	0.010	0.185	0.055
2361.400	0.018	0.197	0.110	0.019	0.194	0.096
2361.600	0.000	0.230	0.139	0.032	0.230	0.139
2361.800	0.029	0.209	0.181	0.033	0.204	0.161
2362.000	0.028	0.210	0.258	0.049	0.206	0.240

DEPTH metres	VWCLAY fraction	PHIT FRAC	SWT fraction	BVW FRAC	PHIE FRAC	SWE fraction
2362.200	0.000	0.265	0.374	0.099	0.265	0.374
2362.400	0.099	0.239	0.492	0.101	0.222	0.453
2362.600	0.117	0.208	0.553	0.095	0.188	0.505
2362.800	0.013	0.235	0.482	0.111	0.233	0.477
2363.000	0.126	0.214	0.508	0.087	0.192	0.452
2363.200	0.258	0.158	1.000	0.113	0.113	1.000
2363.400	0.189	0.172	1.000	0.140	0.140	1.000
2363.600	0.245	0.099	1.000	0.056	0.056	1.000
2363.800	0.181	0.107	1.000	0.075	0.075	1.000
2364.000	0.235	0.102	1.000	0.061	0.061	1.000
2364.200	0.245	0.093	1.000	0.051	0.051	1.000
2364.400	0.198	0.092	0.887	0.048	0.058	0.820
2364.600	0.181	0.092	0.877	0.049	0.061	0.813
2364.800	0.208	0.099	1.000	0.063	0.063	1.000
2365.000	0.209	0.079	1.000	0.043	0.043	1.000
2365.200	0.219	0.048	1.000	0.011	0.011	1.000
2365.400	0.207	0.058	1.000	0.022	0.022	1.000
2365.600	0.142	0.078	1.000	0.054	0.054	1.000
2365.800	0.100	0.103	0.790	0.065	0.086	0.748
2366.000	0.089	0.108	0.806	0.072	0.093	0.774
2366.200	0.083	0.000	1.000	0.000	0.000	1.000
2366.400	0.070	0.051	1.000	0.039	0.039	1.000
2366.600	0.052	0.000	1.000	0.000	0.000	1.000
2366.800	0.041	0.123	0.665	0.075	0.116	0.645
2367.000	0.048	0.123	0.653	0.072	0.114	0.628
2367.200	0.018	0.171	0.382	0.062	0.168	0.371
2367.400	0.000	0.242	0.213	0.052	0.242	0.213
2367.600	0.028	0.186	0.282	0.048	0.181	0.263
2367.800	0.021	0.180	0.233	0.038	0.177	0.217
2368.000	0.050	0.172	0.221	0.029	0.163	0.180
2368.200	0.012	0.203	0.182	0.035	0.201	0.174
2368.400	0.023	0.189	0.206	0.035	0.185	0.188
2368.600	0.000	0.201	0.194	0.039	0.201	0.194
2368.800	0.016	0.180	0.220	0.037	0.177	0.208
2369.000	0.028	0.167	0.240	0.035	0.162	0.218
2369.200	0.032	0.183	0.206	0.032	0.177	0.182
2369.400	0.035	0.203	0.191	0.033	0.197	0.167
2369.600	0.046	0.170	0.279	0.039	0.162	0.243
2369.800	0.053	0.174	0.218	0.029	0.165	0.175
2370.000	0.046	0.192	0.213	0.033	0.184	0.179
2370.200	0.000	0.223	0.228	0.051	0.223	0.228
2370.400	0.013	0.207	0.260	0.051	0.204	0.251
2370.600	0.059	0.200	0.431	0.076	0.190	0.401
2370.800	0.026	0.229	0.661	0.147	0.225	0.654
2371.000	0.072	0.162	0.913	0.135	0.149	0.905
2371.200	0.078	0.178	0.731	0.116	0.164	0.709
2371.400	0.069	0.198	0.672	0.121	0.186	0.651

DEPTH metres	VWCLAY fraction	PHIT FRAC	SWT fraction	BVW FRAC	PHIE FRAC	SWE fraction
2371.600	0.052	0.178	0.828	0.138	0.169	0.819
2371.800	0.038	0.189	0.793	0.144	0.183	0.786
2372.000	0.036	0.162	0.979	0.152	0.156	0.978
2372.200	0.038	0.197	0.864	0.163	0.190	0.860
2372.400	0.041	0.184	0.851	0.150	0.177	0.845
2372.600	0.000	0.217	0.751	0.163	0.217	0.751
2372.800	0.035	0.000	1.000	0.000	0.000	1.000
2373.000	0.038	0.147	0.946	0.132	0.140	0.943
2373.200	0.045	0.073	1.000	0.065	0.065	1.000
2373.400	0.054	0.093	1.000	0.084	0.084	1.000
2373.600	0.061	0.000	1.000	0.000	0.000	1.000
2373.800	0.059	0.158	1.000	0.148	0.148	1.000
2374.000	0.048	0.230	0.786	0.173	0.222	0.778
2374.200	0.000	0.233	0.760	0.177	0.233	0.760
2374.400	0.000	0.235	0.786	0.185	0.235	0.786
2374.600	0.019	0.235	0.800	0.184	0.231	0.797
2374.800	0.000	0.261	0.743	0.194	0.261	0.743
2375.000	0.000	0.267	0.749	0.200	0.267	0.749
2375.200	0.012	0.257	0.825	0.210	0.255	0.824
2375.400	0.000	0.263	0.796	0.210	0.263	0.796
2375.600	0.000	0.261	0.825	0.215	0.261	0.825
2375.800	0.005	0.268	0.818	0.219	0.267	0.818
2376.000	0.012	0.262	0.813	0.211	0.260	0.811
2376.200	0.000	0.268	0.816	0.219	0.268	0.816
2376.400	0.000	0.260	0.853	0.222	0.260	0.853
2376.600	0.021	0.264	0.831	0.216	0.261	0.829
2376.800	0.000	0.261	0.807	0.210	0.261	0.807
2377.000	0.000	0.258	0.828	0.214	0.258	0.828
2377.200	0.015	0.255	0.857	0.216	0.252	0.855
2377.400	0.000	0.271	0.828	0.224	0.271	0.828
2377.600	0.000	0.269	0.836	0.225	0.269	0.836
2377.800	0.028	0.272	0.857	0.229	0.267	0.855
2378.000	0.064	0.261	0.879	0.219	0.250	0.874
2378.200	0.033	0.269	0.852	0.224	0.264	0.849
2378.400	0.057	0.271	0.850	0.220	0.261	0.844
2378.600	0.083	0.259	0.900	0.218	0.244	0.894
2378.800	0.130	0.155	0.829	0.106	0.133	0.800
2379.000	0.140	0.123	0.934	0.091	0.099	0.917
2379.200	0.128	0.138	0.727	0.078	0.116	0.675
2379.400	0.120	0.095	1.000	0.075	0.075	1.000
2379.600	0.125	0.169	0.744	0.104	0.147	0.706
2379.800	0.141	0.000	1.000	0.000	0.000	1.000
2380.000	0.149	0.029	1.000	0.000	0.003	1.000
2380.200	0.149	0.000	1.000	0.000	0.000	1.000
2380.400	0.141	0.066	1.000	0.042	0.042	1.000
2380.600	0.138	0.077	1.000	0.053	0.053	1.000
2380.800	0.131	0.118	1.000	0.096	0.096	1.000

DEPTH metres	VWCLAY fraction	PHIT FRAC	SWT fraction	BVW FRAC	PHIE FRAC	SWE fraction
2381.000	0.122	0.076	1.000	0.055	0.055	1.000
2381.200	0.114	0.027	1.000	0.000	0.008	1.000
2381.400	0.097	0.102	1.000	0.086	0.086	1.000
2381.600	0.083	0.133	0.789	0.091	0.119	0.764
2381.800	0.077	0.122	0.761	0.080	0.109	0.732
2382.000	0.077	0.107	0.884	0.081	0.094	0.867
2382.200	0.072	0.132	0.752	0.087	0.120	0.726
2382.400	0.061	0.000	1.000	0.000	0.000	1.000
2382.600	0.067	0.000	1.000	0.000	0.000	1.000
2382.800	0.082	0.030	1.000	0.016	0.016	1.000
2383.000	0.100	0.098	0.901	0.071	0.080	0.880
2383.200	0.006	0.175	0.550	0.095	0.174	0.547
2383.400	0.070	0.173	0.585	0.089	0.161	0.554
2383.600	0.055	0.169	0.769	0.120	0.159	0.755
2383.800	0.105	0.000	1.000	0.000	0.000	1.000
2384.000	0.110	0.150	0.689	0.085	0.131	0.644
2384.200	0.128	0.140	0.720	0.079	0.118	0.668
2384.400	0.150	0.024	1.000	0.000	0.000	1.000
2384.600	0.206	0.000	1.000	0.000	0.000	1.000
2384.800	0.236	0.052	1.000	0.012	0.012	1.000
2385.000	0.185	0.116	1.000	0.084	0.084	1.000
2385.200	0.184	0.107	1.000	0.075	0.075	1.000
2385.400	0.168	0.118	0.908	0.078	0.089	0.878
2385.600	0.145	0.154	0.713	0.085	0.129	0.657
2385.800	0.144	0.099	1.000	0.074	0.074	1.000
2386.000	0.143	0.107	1.000	0.082	0.082	1.000
2386.200	0.166	0.067	1.000	0.038	0.038	1.000
2386.400	0.274	0.053	1.000	0.006	0.006	1.000
2386.600	0.000	0.000	1.000	0.000	0.000	1.000
2386.800	0.359	0.000	1.000	0.000	0.000	1.000
2387.000	0.214	0.000	1.000	0.000	0.000	1.000
2387.200	0.322	0.075	1.000	0.019	0.019	1.000
2387.400	0.298	0.074	1.000	0.023	0.023	1.000
2387.600	0.238	0.118	1.000	0.077	0.077	1.000
2387.800	0.147	0.175	0.911	0.134	0.150	0.896
2388.000	0.040	0.205	0.825	0.162	0.198	0.819
2388.200	0.027	0.221	0.765	0.164	0.216	0.760
2388.400	0.025	0.212	0.905	0.188	0.208	0.903
2388.600	0.001	0.220	0.901	0.198	0.220	0.901
2388.800	0.000	0.248	0.839	0.208	0.248	0.839
2389.000	0.000	0.273	0.795	0.217	0.273	0.795
2389.200	0.000	0.270	0.791	0.214	0.270	0.791
2389.400	0.000	0.270	0.798	0.216	0.270	0.798
2389.600	0.000	0.273	0.800	0.219	0.273	0.800
2389.800	0.008	0.250	0.827	0.205	0.249	0.826
2390.000	0.011	0.252	0.837	0.209	0.250	0.836
2390.200	0.009	0.250	0.832	0.206	0.248	0.831

DEPTH metres	VWCLAY fraction	PHIT FRAC	SWT fraction	BVW FRAC	PHIE FRAC	SWE fraction
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2390.400	0.038	0.262	0.806	0.205	0.255	0.802
2390.600	0.051	0.282	0.697	0.188	0.273	0.687
2390.800	0.120	0.244	0.803	0.175	0.223	0.784
2391.000	0.187	0.176	1.000	0.144	0.144	1.000
2391.200	0.169	0.203	1.000	0.174	0.174	1.000
2391.400	0.199	0.217	1.000	0.183	0.183	1.000
2391.600	0.212	0.191	1.000	0.155	0.155	1.000
2391.800	0.186	0.197	0.894	0.144	0.165	0.873
2392.000	0.131	0.205	0.762	0.133	0.182	0.732
2392.200	0.090	0.243	0.800	0.179	0.228	0.786
2392.400	0.024	0.234	0.812	0.186	0.230	0.808
2392.600	0.045	0.194	0.772	0.142	0.186	0.762
2392.800	0.112	0.175	0.878	0.134	0.155	0.863
2393.000	0.189	0.134	1.000	0.102	0.102	1.000
2393.200	0.145	0.151	1.000	0.126	0.126	1.000
2393.400	0.358	0.117	1.000	0.056	0.056	1.000
2393.600	0.217	0.000	1.000	0.000	0.000	1.000
2393.800	0.000	0.000	1.000	0.000	0.000	1.000
2394.000	0.000	0.000	1.000	0.000	0.000	1.000
2394.200	0.082	0.000	1.000	0.000	0.000	1.000
2394.400	0.167	0.137	1.000	0.108	0.108	1.000
2394.600	0.129	0.158	1.000	0.136	0.136	1.000
2394.800	0.272	0.126	1.000	0.079	0.079	1.000
2395.000	0.238	0.138	1.000	0.097	0.097	1.000
2395.200	0.195	0.145	1.000	0.111	0.111	1.000
2395.400	0.224	0.129	1.000	0.091	0.091	1.000
2395.600	0.192	0.139	1.000	0.106	0.106	1.000
2395.800	0.192	0.145	1.000	0.112	0.112	1.000
2396.000	0.228	0.137	1.000	0.097	0.097	1.000
2396.200	0.217	0.135	1.000	0.097	0.097	1.000
2396.400	0.202	0.138	1.000	0.103	0.103	1.000
2396.600	0.241	0.130	1.000	0.088	0.088	1.000
2396.800	0.213	0.142	1.000	0.105	0.105	1.000
2397.000	0.209	0.135	1.000	0.099	0.099	1.000
2397.200	0.199	0.135	1.000	0.101	0.101	1.000
2397.400	0.199	0.135	1.000	0.101	0.101	1.000
2397.600	0.201	0.130	1.000	0.096	0.096	1.000
2397.800	0.230	0.118	1.000	0.078	0.078	1.000
2398.000	0.221	0.124	1.000	0.086	0.086	1.000
2398.200	0.280	0.096	1.000	0.048	0.048	1.000
2398.400	0.227	0.112	1.000	0.073	0.073	1.000
2398.600	0.244	0.108	1.000	0.066	0.066	1.000
2398.800	0.245	0.110	1.000	0.068	0.068	1.000
2399.000	0.259	0.103	1.000	0.058	0.058	1.000
2399.200	0.244	0.107	1.000	0.065	0.065	1.000
2399.400	0.255	0.096	1.000	0.052	0.052	1.000
2399.600	0.255	0.090	1.000	0.046	0.046	1.000

DEPTH metres	VWCLAY fraction	PHIT FRAC	SWT fraction	BVW FRAC	PHIE FRAC	SWE fraction
2399.800	0.214	0.107	1.000	0.070	0.070	1.000
2400.000	0.143	0.140	1.000	0.116	0.116	1.000
2400.200	0.195	0.127	1.000	0.093	0.093	1.000
2400.400	0.243	0.106	1.000	0.064	0.064	1.000
2400.600	0.143	0.130	0.724	0.070	0.106	0.659
2400.800	0.097	0.132	0.734	0.080	0.115	0.695
2401.000	0.000	0.162	0.633	0.103	0.162	0.633
2401.200	0.000	0.171	0.735	0.126	0.171	0.735
2401.400	0.004	0.186	0.881	0.163	0.186	0.881
2401.600	0.000	0.199	0.864	0.172	0.199	0.864
2401.800	0.022	0.171	0.892	0.149	0.167	0.889
2402.000	0.065	0.184	1.000	0.173	0.173	1.000
2402.200	0.145	0.203	1.000	0.178	0.178	1.000
2402.400	0.120	0.220	1.000	0.199	0.199	1.000
2402.600	0.138	0.202	1.000	0.178	0.178	1.000
2402.800	0.152	0.205	1.000	0.179	0.179	1.000
2403.000	0.137	0.209	1.000	0.186	0.186	1.000
2403.200	0.218	0.158	1.000	0.121	0.121	1.000
2403.400	0.187	0.167	1.000	0.134	0.134	1.000
2403.600	0.178	0.168	1.000	0.137	0.137	1.000
2403.800	0.178	0.148	1.000	0.117	0.117	1.000
2404.000	0.169	0.147	1.000	0.117	0.117	1.000
2404.200	0.126	0.173	1.000	0.152	0.152	1.000
2404.400	0.122	0.171	0.770	0.111	0.150	0.738
2404.600	0.019	0.212	0.954	0.199	0.209	0.953
2404.800	0.000	0.250	0.882	0.221	0.250	0.882
2405.000	0.007	0.245	0.899	0.219	0.244	0.899
2405.200	0.000	0.258	0.837	0.216	0.258	0.837
2405.400	0.000	0.247	0.871	0.215	0.247	0.871
2405.600	0.000	0.246	0.879	0.216	0.246	0.879
2405.800	0.000	0.259	0.841	0.218	0.259	0.841
2406.000	0.026	0.220	1.000	0.215	0.215	1.000
2406.200	0.000	0.263	0.853	0.224	0.263	0.853
2406.400	0.018	0.239	0.946	0.223	0.236	0.945
2406.600	0.000	0.237	0.990	0.235	0.237	0.990
2406.800	0.000	0.227	1.000	0.227	0.227	1.000
2407.000	0.268	0.183	1.000	0.137	0.137	1.000
2407.200	0.538	0.166	1.000	0.073	0.073	1.000
2407.400	0.539	0.001	1.000	0.000	0.000	1.000
2407.600	0.002	0.000	1.000	0.000	0.000	1.000
2407.800	0.000	0.000	1.000	0.000	0.000	1.000
2408.000	0.000	0.000	1.000	0.000	0.000	1.000
2408.200	0.574	0.142	1.000	0.043	0.043	1.000
2408.400	0.588	0.102	1.000	0.000	0.000	1.000
2408.600	0.520	0.146	1.000	0.056	0.056	1.000
2408.800	0.377	0.174	1.000	0.109	0.109	1.000
2409.000	0.250	0.158	1.000	0.115	0.115	1.000

DEPTH metres	VWCLAY fraction	PHIT FRAC	SWT fraction	BVW FRAC	PHIE FRAC	SWE fraction
2409.200	0.201	0.177	1.000	0.143	0.143	1.000
2409.400	0.086	0.234	1.000	0.219	0.219	1.000
2409.600	0.206	0.191	1.000	0.155	0.155	1.000
2409.800	0.171	0.219	1.000	0.190	0.190	1.000
2410.000	0.100	0.235	0.638	0.133	0.217	0.610
2410.200	0.174	0.085	1.000	0.055	0.055	1.000
2410.400	0.173	0.125	1.000	0.096	0.096	1.000
2410.600	0.135	0.122	0.882	0.084	0.098	0.854
2410.800	0.076	0.169	0.721	0.108	0.155	0.698
2411.000	0.000	0.244	0.765	0.186	0.244	0.765
2411.200	0.048	0.235	0.763	0.171	0.226	0.754
2411.400	0.048	0.240	0.758	0.174	0.232	0.749
2411.600	0.062	0.228	0.804	0.173	0.217	0.795
2411.800	0.048	0.239	0.814	0.186	0.231	0.807
2412.000	0.038	0.243	0.776	0.182	0.236	0.769
2412.200	0.021	0.242	0.763	0.181	0.239	0.759
2412.400	0.044	0.241	0.811	0.188	0.233	0.805
2412.600	0.062	0.248	0.808	0.190	0.237	0.799
2412.800	0.048	0.260	0.767	0.192	0.252	0.760
2413.000	0.079	0.250	0.817	0.190	0.236	0.807
2413.200	0.068	0.222	0.923	0.194	0.211	0.919
2413.400	0.054	0.192	0.975	0.179	0.183	0.974
2413.600	0.000	0.198	0.973	0.193	0.198	0.973
2413.800	0.000	0.226	0.931	0.210	0.226	0.931
2414.000	0.009	0.234	0.945	0.219	0.232	0.944
2414.200	0.000	0.247	0.906	0.224	0.247	0.906
2414.400	0.000	0.247	0.903	0.223	0.247	0.903
2414.600	0.000	0.259	0.863	0.223	0.259	0.863
2414.800	0.028	0.204	1.000	0.199	0.199	1.000
2415.000	0.017	0.186	1.000	0.183	0.183	1.000
2415.200	0.000	0.222	1.000	0.222	0.222	1.000
2415.400	0.021	0.202	1.000	0.199	0.199	1.000
2415.600	0.007	0.227	1.000	0.225	0.225	1.000
2415.800	0.014	0.213	1.000	0.210	0.210	1.000
2416.000	0.000	0.215	0.956	0.206	0.215	0.956
2416.200	0.001	0.180	1.000	0.180	0.180	1.000
2416.400	0.000	0.168	1.000	0.168	0.168	1.000
2416.600	0.000	0.190	0.998	0.190	0.190	0.998
2416.800	0.026	0.167	1.000	0.163	0.163	1.000
2417.000	0.026	0.148	1.000	0.143	0.143	1.000
2417.200	0.516	0.031	1.000	0.000	0.000	1.000
2417.400	0.761	0.045	1.000	0.000	0.000	1.000
2417.600	0.788	0.051	1.000	0.000	0.000	1.000
2417.800	0.628	0.061	1.000	0.000	0.000	1.000
2418.000	0.576	0.073	1.000	0.000	0.000	1.000
2418.200	0.445	0.131	1.000	0.054	0.054	1.000
2418.400	0.218	0.167	1.000	0.130	0.130	1.000

DEPTH metres	VWCLAY fraction	PHIT FRAC	SWT fraction	BVW FRAC	PHIE FRAC	SWE fraction
2418.600	0.219	0.135	1.000	0.097	0.097	1.000
2418.800	0.185	0.158	1.000	0.126	0.126	1.000
2419.000	0.265	0.109	1.000	0.063	0.063	1.000
2419.200	0.350	0.056	1.000	0.000	0.000	1.000
2419.400	0.311	0.097	1.000	0.043	0.043	1.000
2419.600	0.351	0.101	1.000	0.041	0.041	1.000
2419.800	0.363	0.066	1.000	0.004	0.004	1.000
2420.000	0.247	0.101	1.000	0.059	0.059	1.000
2420.200	0.184	0.125	1.000	0.094	0.094	1.000
2420.400	0.060	0.170	1.000	0.160	0.160	1.000
2420.600	0.189	0.123	1.000	0.090	0.090	1.000
2420.800	0.172	0.156	1.000	0.127	0.127	1.000
2421.000	0.159	0.178	1.000	0.150	0.150	1.000
2421.200	0.143	0.167	1.000	0.143	0.143	1.000
2421.400	0.078	0.175	1.000	0.162	0.162	1.000
2421.600	0.112	0.161	1.000	0.142	0.142	1.000
2421.800	0.048	0.194	1.000	0.186	0.186	1.000
2422.000	0.080	0.197	0.953	0.174	0.183	0.950
2422.200	0.110	0.198	0.937	0.167	0.179	0.930
2422.400	0.181	0.143	1.000	0.112	0.112	1.000
2422.600	0.092	0.194	0.978	0.174	0.179	0.976
2422.800	0.035	0.227	0.938	0.207	0.221	0.936
2423.000	0.074	0.219	0.987	0.204	0.206	0.986
2423.200	0.059	0.215	0.979	0.200	0.205	0.977
2423.400	0.003	0.224	0.928	0.207	0.224	0.928
2423.600	0.000	0.248	0.891	0.221	0.248	0.891
2423.800	0.039	0.238	0.927	0.214	0.232	0.925
2424.000	0.019	0.253	0.886	0.221	0.250	0.885
2424.200	0.000	0.243	0.930	0.226	0.243	0.930
2424.400	0.020	0.212	0.897	0.186	0.208	0.895
2424.600	0.024	0.226	1.000	0.222	0.222	1.000
2424.800	0.088	0.220	1.000	0.204	0.204	1.000
2425.000	0.057	0.242	0.911	0.211	0.232	0.907
2425.200	0.028	0.256	0.904	0.227	0.251	0.902
2425.400	0.078	0.246	0.915	0.212	0.233	0.910
2425.600	0.000	0.231	0.903	0.209	0.231	0.903
2425.800	0.000	0.252	1.000	0.252	0.252	1.000
2426.000	0.000	0.000	1.000	0.000	0.000	1.000
2426.200	0.438	0.000	1.000	0.000	0.000	1.000
2426.400	0.439	0.111	1.000	0.035	0.035	1.000
2426.600	0.353	0.092	1.000	0.031	0.031	1.000
2426.800	0.383	0.107	1.000	0.041	0.041	1.000
2427.000	0.507	0.093	1.000	0.005	0.006	1.000
2427.200	0.442	0.107	1.000	0.031	0.031	1.000
2427.400	0.244	0.164	1.000	0.122	0.122	1.000
2427.600	0.097	0.183	1.000	0.167	0.167	1.000
2427.800	0.000	0.209	1.000	0.209	0.209	1.000

DEPTH metres	VWCLAY fraction	PHIT FRAC	SWT fraction	BVW FRAC	PHIE FRAC	SWE fraction
2428.000	0.058	0.204	1.000	0.194	0.194	1.000
2428.200	0.101	0.202	1.000	0.185	0.185	1.000
2428.400	0.064	0.209	1.000	0.197	0.197	1.000
2428.600	0.048	0.191	1.000	0.182	0.182	1.000
2428.800	0.000	0.198	1.000	0.198	0.198	1.000
2429.000	0.037	0.180	1.000	0.174	0.174	1.000
2429.200	0.032	0.175	1.000	0.169	0.169	1.000
2429.400	0.049	0.163	1.000	0.154	0.154	1.000

Appendix A

HALIBUT 2

PETROPHYSICS LOGGING SUMMARY

PETROPHYSICS INTERPRETATION SUMMARY

FORMATION TESTING AND CORING SUMMARY

PREDRILL WIRELINE LOGGING PROGRAMME

ESSO AUSTRALIA LIMITED

PETROPHYSICS LOGGING SUMMARY

WELL :	HALIBUT 2	
FIELD:	HALIBUT	
COMPANY:	ESSO AUSTRALIA LIMITED	
LOGGING CO:	SCHLUMBERGER	
LOG DATE:	04-03-94	LAT: 148 19'47.79" E
COUNTRY:	Australia	LONG: 38 23'45.42" S

ELEVATION DATA

PERMANENT DATUM:	MSL	0.00	metres
	KB:	25.00	metres
	DF:	24.70	metres
	GL:	-79.00	metres

SUITE INFORMATION

SUITE NO:	1				
DEPTH-DRILLER:	2590.00	metres	CSG-DRILLER:	791.00	metres
DEPTH-LOGGER:	2590.00	metres	CSG-LOGGER:	791.00	metres
BTM LOG INT:	2580.00	metres	CSG-SIZE:	13.375	inches
TOP LOG INT:	2250.00	metres	BIT SIZE:	9.875	inches

WELLBORE FLUID

FLUID TYPE:	KCL-PHPA-POLYMER	SAMPLE SOURCE:	FLOWLINE
DENSITY:	9.34 ppg	FLUID LOSS:	4.80 cc
VISCOSITY:	37.00 seconds	PH:	9.10

MUD RESISTIVITY

	TEMP (degC)	*RM (ohmm)*	*RMF (ohmm)*	*RMC (ohmm)*
SURFACE:	23	0.175	0.157	0.245
BOTTOM HOLE:	97	0.066	0.059	0.092

TIME CIRC STOPPED:	15:11	03-03-94
TIME LOGGER @ BTM:	01:20	04-03-94

LOGGING SERVICES

RUN #1:	DSI-GR-MSFL-GPIT-ARI
RUN #2:	FMI-LDTD-CNTG-NGTD-AMS
RUN #3:	FDC-GR
RUN #3:	MDT-GR
RUN #4:	SAT (ZERO-OFFSET VSP)
RUN #5:	CST-GR

REMARKS

LOGGING ENGINEER: NAKANISHI / MCPHERSON
DSI Modes: DIPOLE / MONOPOLE / FMD
Cable stretch applied +1M at bottom
GPIT ran with DIP mode
NGS Barite and Potassium corrections made: Potassium = 1.2988%, VBAR=0.9938
LDL, CNL, and NGS run in HIRES mode (DPPM=HIRES)
CNT eccentered with bowspring, only CNT holesize correction made in realtime
PETROPHYSICIST: S. DODGE
Excellent hole and log quality

ESSO AUSTRALIA LIMITED

PETROPHYSICS INTERPRETATION SUMMARY

HALIBUT 2

PETROPHYSICIST: S. DODGE

DATE: 25-03-94

PETROPHYSICS MODEL	
ANALYSIS PROGRAMME:	CLAM
POROSITY MODEL:	VOLAN DUAL WATER POROSITY MODEL
WATER SATURATION MODEL:	ARCHIE

WATER SATURATION PARAMETERS

	SALINITY (eq. NaCl ppm)		*RESISTIVITY (ohmm)*	*TEMPERATURE (degC)*
FORMATION WATER:	29000		0.080	97
CLAY BOUND WATER:	n.a.		n.a.	97
MUD FILTRATE:	44,000		0.055	97
CEMENTATION EXPONENT:		'm'	1.85	
SATURATION EXPONENT:		'n'	2.00	
FORMATION FACTOR CONSTANT:		'a'	1.00	

PETROPHYSICAL PARAMETERS

		DENSITY (g/cc)	*NEUTRON PHI (frac)*	*SLOWNESS (usec/m)*	*GAMMA RAY (GAPI)*
MINERAL MODEL	QUARTZ	2.65	-0.02	165.00	23.00
	WET CLAY	2.41	54.00	250.00	140.00
	DRY CLAY	2.70	n.a.	n.a.	n.a.
	SHALE	2.53	27.00	250.00	140.00
MINERAL MODEL					
	FM WATER	1.02	n.a.	620.00	n.a.

ESSO AUSTRALIA LIMITED

FORMATION TESTING & CORING SUMMARY

HALIBUT 2

FORMATION TOPS		
FORMATION NAME	TOP *(metres KB)*	AGE
TOP OF LATROBE	2331.00	EOCENE

CORES					
CORE NO. / SHIFT	TOP *(metres)*	BASE *(metres)*	CUT *(metres)*	RECOVERY *(metres)*	RECOVERY (%)
1 / +1.5 metres	2350.00	2356.60	6.60	6.60	100
2 / +1.0 metres	2410.00	2428.50	18.50	18.50	100
3 / +1.0 metres	2428.50	2446.90	18.40	18.40	100

FORMATION PRESSURES			
TYPE / NO. *WIRELINE FORMATION TESTER*	*Depth (metres)*	*PRESSURE (psia)*	*DRAWDOWN MOBILITY (md/cp)*
MDT 1	2507.56	3432.37	418.00
MDT 2	2467.96	3375.00	1596.00
MDT 3	2464.18	3365.55	5761.00
MDT 4	2455.74	3357.04	184.00
MDT 5	2450.07	3347.45	1097.00
MDT 6	2443.01	3337.46	121.00
MDT 7	2435.18	3326.47	163.00
MDT 8	2431.26	3320.46	83.70
MDT 9	2428.05	3314.87	7.80
MDT 10	2424.04	3307.99	460.00
MDT 11	2414.26	3293.03	6597.00
MDT 12	2405.65	3280.38	4590.00
MDT 13	2414.37	3293.23	3464.00
MDT 14	2402.83	3275.87	420.00
MDT 15	2392.22	3259.18	3127.00
MDT 16	2389.34	3255.20	4792.00
MDT 17	2385.54	3263.96	0.40
MDT 18	2381.84	3246.26	1.80
MDT 19	2376.04	3226.63	8228.00
MDT 20	2370.26	3218.63	2922.00
MDT 21	2367.55	3215.64	2258.00
MDT 22	2362.51	3206.10	1977.00
MDT 23	2360.05	3203.14	445.00
MDT 24	2357.25	3200.25	1085.00
MDT 25	2354.83	3197.60	200.00

wsd 25/03/94

ESSO Australia Limited
Wireline Logging Programme

Well Name: **HALIBUT #2** *PREDRILL*
Location: 38 33' 28.25" So 148 32' 36.09" E
Service Co: Schlumberger Well Services
Top of Latrobe: 2330 mKB
Suite Number: 1
Number of Runs: 6

DEPTHS		EAL FORMATION EVALUATION CONTACT	
SURFACE CSG:	13 3/8" @ 792 mKB	NAME:	Scott Dodge
TOTAL DEPTH:	2590 mKB	EAL PHONE:	(03)270 3848
RKB:	25 m	EAL FAX:	(03)270 3877
Water Depth:	75 m	HOME PHONE:	(03)598 7803

SUITE #	FROM	TO	HOLE SIZE	MUD TYPE	HOLE ANGLE
ONE	TOTAL DEPTH	See Interval*	9.875"	KCL(3-5%)/PHPA	0 - 5 deg
REPEAT	2450	2370			

RUN #	TOOL STRING CONFIGURATION	*INTERVAL	Comments
1	DSI-MSFL-GR-ARI-AMS-GPIT	TD to 2310m: ARI-DSI 2 Modes 2310m to 100m: DSI 1 Mode	DSI: 4.5 metres/min, Mode: P&S, DIPOLE DSI: 9 metres/min, Mode: P&S DSI: P&S 10usec, DIPOLE 40usec ARI: HIRES sampling ARI/DSI centered, 4CMEZ standoffs
2	FMI-LDT-CNTH-NGTD-AMS	TD to 2250m	LDT/CNT HIRES: 4.5 metres/min FMI HIRES 1:48 scale MSD/FMI/NGT/ALPHA processing at FLIC
3	FDC-GR	TD to 2250m	
4	MDT -GR-AMS	Usage determined on-site	12 Pressures + 1 Sample 2.75 gallon chamber (1) Pump out module
5	Zero Offset VSP	Usage determined on-site	
6	CST -GR	Usage determined on-site	2-30 shot guns.

Mneumonics	Tool Name	Service
ARI	Azimuthal Resistivity Imager	Resistivity
MSFL	Micro Spherically Focused	Micro Resistivity
DSI	Dipole Sonic Imager	Acoustic
GR	Gamma Ray	Shale Indicator
AMS	Auxiliary Measurement Services	Borehole Temp, Rm, Tension
GPIT	General Purpose Inclinometry	Deviation, Azimuth
LDT	Litho Density Log	Formation Bulk Density
CNTH	Compensated Neutron Log	Neutron Porosity
NGT	Spectral Gamma Ray	Mineral Identification
FMI	Formation Micro Scanner Imager	Structural-Stratigraphic Data
CST	Sidewall Core Percussion Gun	Core Formation Sample
MDT	Modular Dynamics Tester	Pressures and Samples
VSP	Vertical Seismic Profile	Velocity Survey

wsd 3/01/94

ESSO Australia Limited
Wireline Logging Programme

WELL NAME: **HALIBUT #2** **PREDRILL**

SERVICE CO.: Schlumberger Well Services

ENGINEER OPERATING AND PROCESSING INSTRUCTIONS

ARI	Maximum logging speed: 9 metres/min Run tool centralized with CMEZ standoffs HIRES @ 0.5 inch acquisition
DSI	Logging Speed: DIPOLE 4.5 metres/min, P&S 9 metres/min Waveform sampling: P&S (10usec), DIPOLE(40usec) Run tool centralized with CMEZ standoffs
LDT-CNT-NGT	DPPM = High Resolution @ 4.5 metres per min CNTH eccentered w/ long arm bow spring Present HIRES HRHO, HTNP, SGR, CGR, POTA @ 1:200 Present STD RHOB, TNPH @ 1:200 NGT Environmental; Set CBAR, PMUD
CNTH	No Environmental Corrections Realtime, only CNTH hole size Playback data on separate file applying ENV CORR to CNTH BSCO/FSCO/HSCO/MWCO/PTCO - YES FSAL = 35000 ppm
FMI	Knuckle joint between FMI & LDT Present FMI Images w/HNRH, HNPO @ 1:48 scale

FIELD LOG QUICK LOOK INTERPRETATION

XPLOT	RHOB (Y: 2.85-1.85) vs NPHI(X: 0-0.45); Repeat & Main	
PERT	Formation Water Resistivity, Rw	0.18 @ 25degC
	Cementation Exponent, m	1.85
	Resistivity Index Exponent, n	2.00
	Shale Indicator, Vsh	GR
	Matrix density, rhoma	2.65
	Neutron Matrix	Sand
	LC01	RO = Rw@BHT / (PHIX^1.85)
	LC02	SW = (LCO1 / RT)^0.5

ESSO DATA REQUIREMENTS

3.5" DOS Format	Sampling 6-inch (4 significant figures)	
	RUN #	CHANNELS:
	1	GR, LLHR, LLD, LLS, MSFL, DTCO, HTEN, TENS
	2	SGR, RHOB, TNPH, PEF, POTA, HTEN, TENS
6250 BPI LIS	Run 1, 2, 3, 4, 5, 6 raw data channels (ex FMI,DSI)	
4mm DAT DLIS	FMI, DSI, ARI	

MELBOURNE Log Interpretation Centre

MSD	Process MSD at FLIC MSD Parameters; Search Length 1 m x 0.5 m x 35 degrees.
FMI	FMI Static and Dynamic Processing
NGT	NGT Potassium & Barite Environmental Correction NGT NFO=ALPHA Filtering (not Kalman)
LDT-CNT	ALPHA Processing
8mm EXABYTE	FMI, ARI processed channels for FLIP/FRACVIEW

ESSO Petrophysicist Scott Dodge (03) 2703848 03-03-94

ESSO Australia Limited
Wireline Logging Programme

Well Name: **HALIBUT #2** ***LOG HEADER FORMAT***

RUN #	TOOL STRING CONFIGURATION
1	DSI-MSFL-GR-ARI-AMS-GPIT

LOG PRESENTATION #1 **ARI-MSFL-GR**

MAIN PASS

	Mud Cake (dk brown)						
	Washout (lt brown)			0.2		MSFL	2000.0
0.0	GR	200.0	HTEN	0.2		LLS	2000.0
8.0	CALS	18.0	TENS	0.2		LLD	2000.0
8.0	BS	18.0	1:200	0.2		LLHR	2000.0

ARI IMAGE PRESENTATION

					Azimuthal Resistivity	
			ARI	0.2	MSFL	2000.0
Electrical Standoff	ARI		3M	0.2	LLS	2000.0
Hole Azimuth	RAW	SGR	NORM	0.2	LLD	2000.0
Pad 1 Azimuth	IMAGE	1:200	IMAGE	0.2	LLHR Caliper Corrected	2000.0

LOG PRESENTATION #2 **DIPOLE SONIC IMAGER**

DELTA-T PRESENTATION

				900.0	Delta-T Comp - FMD (DT5)	100.0
1.0	SONIC VPVS	3.0	HTEN	900.0	Delta-T Comp - P & S (DT4P)	100.0
0.0	SONIC PR	0.5	TENS	900.0	Delta-T Shear - P & S (DT4S)	100.0
0.0	GR	200.0	1:200	900.0	Delta-T Shear - DIPOLE (DT2)	100.0

HIGH FREQUENCY MONOPOLE COMPRESSIONAL MODE

1.0	SAM4 Waveform Deptr	25.0	HTEN						
0.0	SAM4 Waveform Gain	60.0	TENS	500.0	Delta-T Comp - (DT4P)	100.0	100.0	Amplitude (SPR4)	500.0
0.0	GR	200.0	1:200	500.0	Delta-T Comp - (DT5)	100.0	100.0	Delta-T Comp (DTRP)	500.0

ENGINEER OPERATING AND PROCESSING INSTRUCTIONS	
ARI	Maximum logging speed: 9 metres/min
	Run tool centralized with CMEZ standoffs
	HIRES 0.5 inch acquisition
DSI	Logging Speed: 4.5 metres/min
	Two mode sampling: P&S (10usec), DIPOLE(40usec)

ESSO Australia Limited
Wireline Logging Programme

Well Name: **HALIBUT #2** ***LOG HEADER FORMAT***

RUN #	TOOL STRING CONFIGURATION
2	FMI-LDT-CNTH-NGTD-AMS

LOG PRESENTATION #1 **LDT-CNL-NGS**

MAIN PASS

	Mud Cake (dk brown)						
	Washout (lt brown)						
	CGR - SGR (green)				0.90	DRHO	-0.10
0.0	SGR	200.0			Crossover (RHOB -> TNPH: yellow)		
0.0	CGR	200.0	HTEN	1.85	RHOB		2.85
8.0	CALI	18.0	TENS	0.45	TNPH		-0.15
8.0	BS	18.0	1:200	0.0	PEF		20.0

HIRES PASS

	Mud Cake (dk brown)						
	Washout (lt brown)						
	CGR - SGR (green)				0.90	HDRH	-0.10
0.0	SGR	200.0			Crossover (HRHO -> HTNP: yellow)		
0.0	CGR	200.0	HTEN	1.85	HRHO		2.85
8.0	CALI	18.0	TENS	0.45	HTNP		-0.15
8.0	BS	18.0	1:200	0.0	HPEF		20.0

HIRES ALPHA PROCESSING

	Mud Cake (dk brown)						
	Washout (lt brown)						
	CGR - SGR (green)				0.90	HDAL	-0.10
0.0	SGR	200.0			Crossover (HNRH -> HNPO: yellow)		
0.0	CGR	200.0	HTEN	1.85	HNRH		2.85
8.0	CALI	18.0	TENS	0.45	HNPO		-0.15
8.0	BS	18.0	1:200	0.0	HPEF		20.0

AMS LOG

			HTEN							
0.0	SGR	200.0	TENS				0.25	Quality LS (QLS)	-0.25
0.0	Mud Resistivity (MRES)	0.5	1:1000	50.0	Mud Temp (MTEM)	100.0	-0.25	Quality SS (QSS)	0.25

LOG PRESENTATION #2 **NATURAL SPECTRAL GR**

MAIN PASS

	CGR - SGR (green)		HTEN	-10	Uranium (URAN)				30
0.0	SGR	200.0	TENS	0.1	Potassium (POTA)	0.0	0.0	Thorium (THOR)	40
0.0	CGR	200.0	1:200		Potassium (POTA to rt: magenta)			Thorium (lt to THOR: green)	

ENGINEER OPERATING AND PROCESSING INSTRUCTIONS	
LDT-CNT-NGT	DPPM - High Resolution @ 4.5 metres per min
	CNTH eccentered w/ long arm bow spring
	Present HIRES HRHO, HTNP, SGR, CGR, POTA @ 1:200
	Present STD RHOB, TNPH @ 1:200
	NGT Environmental: Set CBAR, PMUD
CNTH	No Environmental Corrections Realtime, only CNTH hole size
	Playback data on separate file applying ENV CORR to CNTH
	BSCO/FSCO/HSCO/MWCO/PTCO - YES
	FSAL = 35000 ppm

ESSO Australia Limited

Wireline Logging Programme

Well Name: **HALIBUT #2** ***LOG HEADER FORMAT***

LOG PRESENTATION #3 **FMI IMAGES - GR WITH HIGH RESOLUTION LDT-CNL**

SPECIAL FMI IMAGE PRESENTATION

					FMI PAD8
					FMI PAD7
					FMI PAD6
					FMI PAD5
	Crossover (HNRH -> HNPO: yellow)				FMI PAD4
	HiRes Bulk Density (HNRH)				FMI PAD3
SGR	HiRes NPOR (HNPO)				FMI PAD2
1/48		0.90	HDRH	-0.10	FMI PAD1

LOG PRESENTATION #4 **FMI QUALITY LOG**

MAIN PASS

					FMI Data Button 8
	-40.0	Relative Bearing		360.0	FMI Data Button 7
	-40.0	Pad One Azimuth		360.0	FMI Data Button 6
	-40.0	Hole Azimuth		360.0	FMI Data Button 5
SGR	C1 > C2 (blue)				FMI Data Button 4
HTEN	C1 < C2 (cyan)				FMI Data Button 3
TENS	Caliper 2 (C2)	0.0	DEVIATION	10.0	FMI Data Button 2
1/200	Calipler 1 (C1)	0.9	ANOR	-0.1	FMI Data Button 1

ENGINEER OPERATING AND PROCESSING INSTRUCTIONS	
FMI	Knuckle joint between FMI & LDT
	Present FMI Images w/HNRH, HNPO @ 1:48 scale

RUN #	TOOL STRING CONFIGURATION
PBACK	ARI-LDT-CNT-NGT

LOG PRESENTATION #1 **PERT QUICK LOOK**

PERT PRESENTATION

					RO - RT (cyan)		1	SW (LC02)	0
2.5	App Grain Density	3.0	HTEN	0.2	RFA Resistivity	2000.0	0.5	Neutron Porosity	0
0.0	SGR	200.0	TENS	0.2	RT Resistivity	2000.0	0.5	Density Porosity	0
8.0	Caliper (CALI)	18.0	1:1000	0.2	R0 (LC01)	2000.0	0.5	Cross Plot Porosity	0

wsd 1/03/94

PE600789

This is an enclosure indicator page.
The enclosure PE600789 is enclosed within the container PE900966 at this location in this document.

The enclosure PE600789 has the following characteristics:

ITEM_BARCODE =	PE600789
CONTAINER_BARCODE =	PE900966
NAME =	CPI - Formation Evaluation Log
BASIN =	GIPPSLAND
PERMIT =	
TYPE =	WELL
SUBTYPE =	WELL_LOG
DESCRIPTION =	CPI - Formation Evaluation Log for Halibut-2
REMARKS =	
DATE_CREATED =	29/11/1994
DATE_RECEIVED =	23/12/1994
W_NO =	W1090
WELL_NAME =	Halibut-2
CONTRACTOR =	Solar
CLIENT_OP_CO =	ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

APPENDIX 3

APPENDIX 3

APPENDIX 3

HALIBUT-2

Wireline Test (MDT) Report And Plot

HALIBUT-2

MDT Pressure Test Results and Analysis

March 5, 1994

Chris Thompson & Peter Symes
Reservoir Technology
Production Department
Esso Australia Ltd.

Contents

1.0 Introduction and Summary

This report details the results and interpretation of wireline formation test data acquired from the Halibut-2 (HL-2) well on 5th March 1994.

HL-2 is located 616 142 m east, 5 749 397 m north (latitude 38° 23' 45.52" south, longitude 148° 19' 47.98" east), 275 m NNE of the Halibut A-6 production well. The well was drilled to a total depth of 2590 m MDRKB (KB=25m).

Pressure data was gathered over the interval 2347m to 2507.5m MDRKB using the Schlumberger Modular Formation Dynamics Tester (MDT), no samples were taken. A total of 27 pretests were conducted with no seat failures. Of these 27 pressure tests two indicated relatively low permeability, but were still apparently valid. A further three tests indicated tight formation, two of these displaying some degree of supercharging.

The calibration of the CQG quartz crystal gauge No. 098 used with the MDT was checked on March 16 1994 in Sale using a Dead Weight Tester (DWT). This calibration check took place at ambient temperature and assumed atmospheric pressure to be 14.7 Psia. The results (Figure 3) show that the gauge is working well as the measured readings fall within the DWT error.

2.0 Conclusions

From analysis of the distributed pressure measurement the following conclusions can be made:

- Hydrocarbon gradients of 1.15 psi/m were identified in the upper Flounder Formation.
- Aquifer gradients of 1.40 psi/m were identified below the OWC at 2345.5 m TVDSS.
- Pressures measured in HL-2 are generally in line with recent pressure data from the offset Halibut A-14, A-19 and East Halibut-1 wells.
- Drawdown of the aquifer from the original Gippsland aquifer gradient ranged from 170 to 181 psi.
- Drawdown in the reservoir meant that despite the identification of oil and water gradients, the precise location of the OWC could not be identified from MDT data.
- The amount of drawdown is variable, with pressure discontinuities ranging from 3 to 10 psi.
- Sands encountered in HL-2 are in good pressure communication with the Halibut field proper.

3.0 MDT Pressure Tests

Figure 1 shows the test results from the MDT indicating good reservoir quality with supercharging uncommon and no lost seals. Full details of the test results are documented in Appendix 1.

Two oil gradients of 1.1 psi/m were identified by the MDT, 3 psi apart. The separation between oil gradients occurs in the upper Flounder Formation and is coincident with a low porosity zone identified from logs between 2363.5 m and 2367m MDRKB.

Multiple aquifer gradients were also recognised with gradients of 1.4 psi/m. These gradients indicate drawdown of between 170 psi and 181 psi from the original Gippsland aquifer gradient. Drawdown is greatest in the upper sands of the aquifer.

Thin shales can be observed, from open hole logs, within the reservoir section and it is probable that they are responsible for the pressure discontinuities. The shifts in the aquifer gradient occur between the M172B and M171B reservoirs and in the middle to upper M182 reservoir. Low porosity layers can be interpreted from logs within these zones by increases in gamma-ray and density tool response. A similar situation exists in the oil leg as discussed above.

The OWC was identified by wireline logs at 2345.5 m TVDSS, but due to depletion in the reservoir could not be identified precisely by the distributed pressure measurement of the MDT.

4.0 Comparison with Halibut Field Data

Figures 2 and 2A allow a comparison of the HL-2 well to the Halibut A-14, A-19 and East Halibut-1 wells.

The East Halibut-1 (EH-1) RFT survey was run on September 24, 1985. Oil and water gradients were interpreted from the survey, the OWC being identified at 2378 m TVDSS. The aquifer gradient observed in EH-1 is very similar to that for HL-2 and indicates a pressure drop of approximately 39 psi, at a depth of 2400 m TVDSS, during the 8.5 years between surveys(4.6 psi/yr). Approximately 148 MSTB of oil and 110 MBL of water was produced from the Halibut field during this period.

Data from more recent static gradient surveys for the HLA-14 and A19 show pressure values closer to that for HL-2:

> Pressure data was gathered for the HLA-14 well on September 10, 1989 during the static up pass of a PLT survey. The well was perforated in the M-1.5.1, sand over the interval 2789.5 to 2803.2 m MDRKB. A BHP of 3198 psi was measured at the depth of 2315.2 m TVDSS, approximately 15 psi higher than the HL-2 oil gradient at that depth. After correcting for field wide decline of 4.6 psi/yr this corresponds to approximately 6 psi lower than HL-2.
>
> A static gradient survey was run on November 2, 1992 in the HLA-19 well. The well was perforated in the M-1.6.2 sand, over the interval 3065.4 to 3073.6 m MDRKB. At

the run depth of 2357 m TVDSS, a SBHP of 3253.7 psi was measured. This pressure is approximately 12 psi higher than the aquifer gradient for HL-2 at that depth or, allowing for field-wide pressure decline, 6 psi higher.

From the consistency of HL-2 pressure data with recent pressure data from offset wells, it is apparent that the reservoir section of HL-2 is in pressure communication with the Halibut field proper. The position of the OWC as intersected by the HL-2 well also indicates that this oil is being drained by structurally higher wells nearby.

HALIBUT 2

FIGURE 1: MDT PRESSURE SURVEY DATA

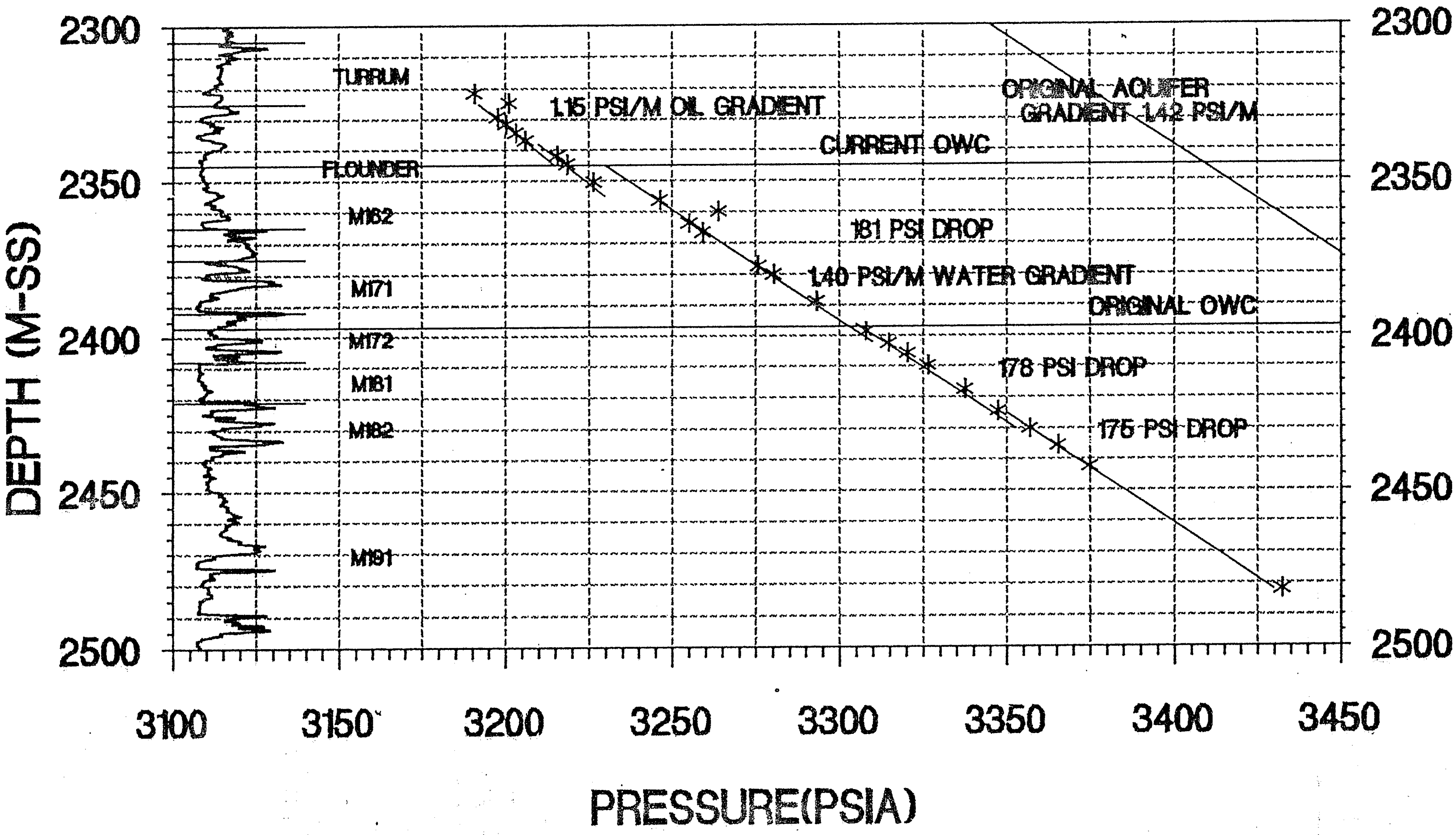


Figure 2A: Expanded Comparison of HL-2 with Halibut Field Data

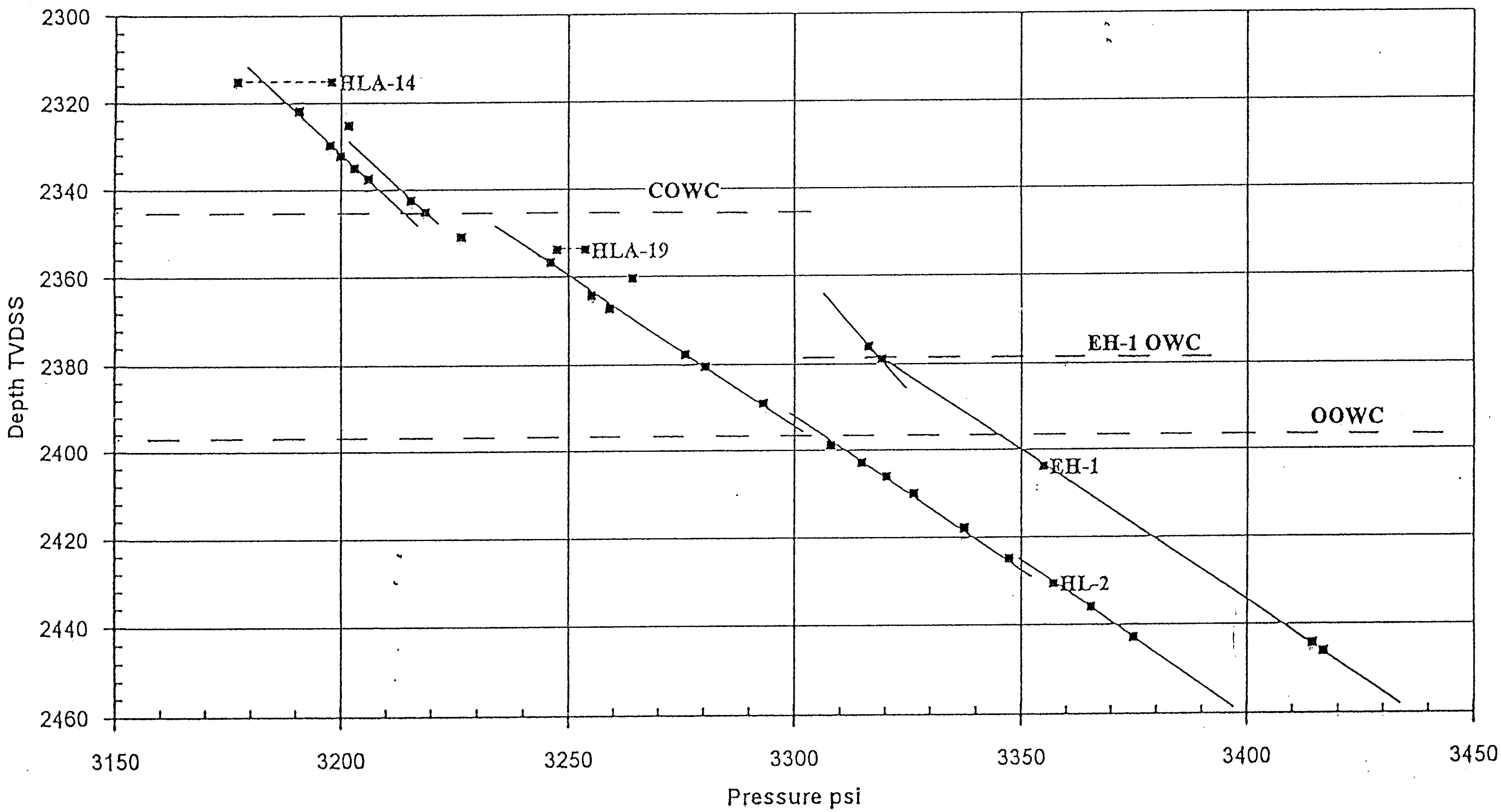
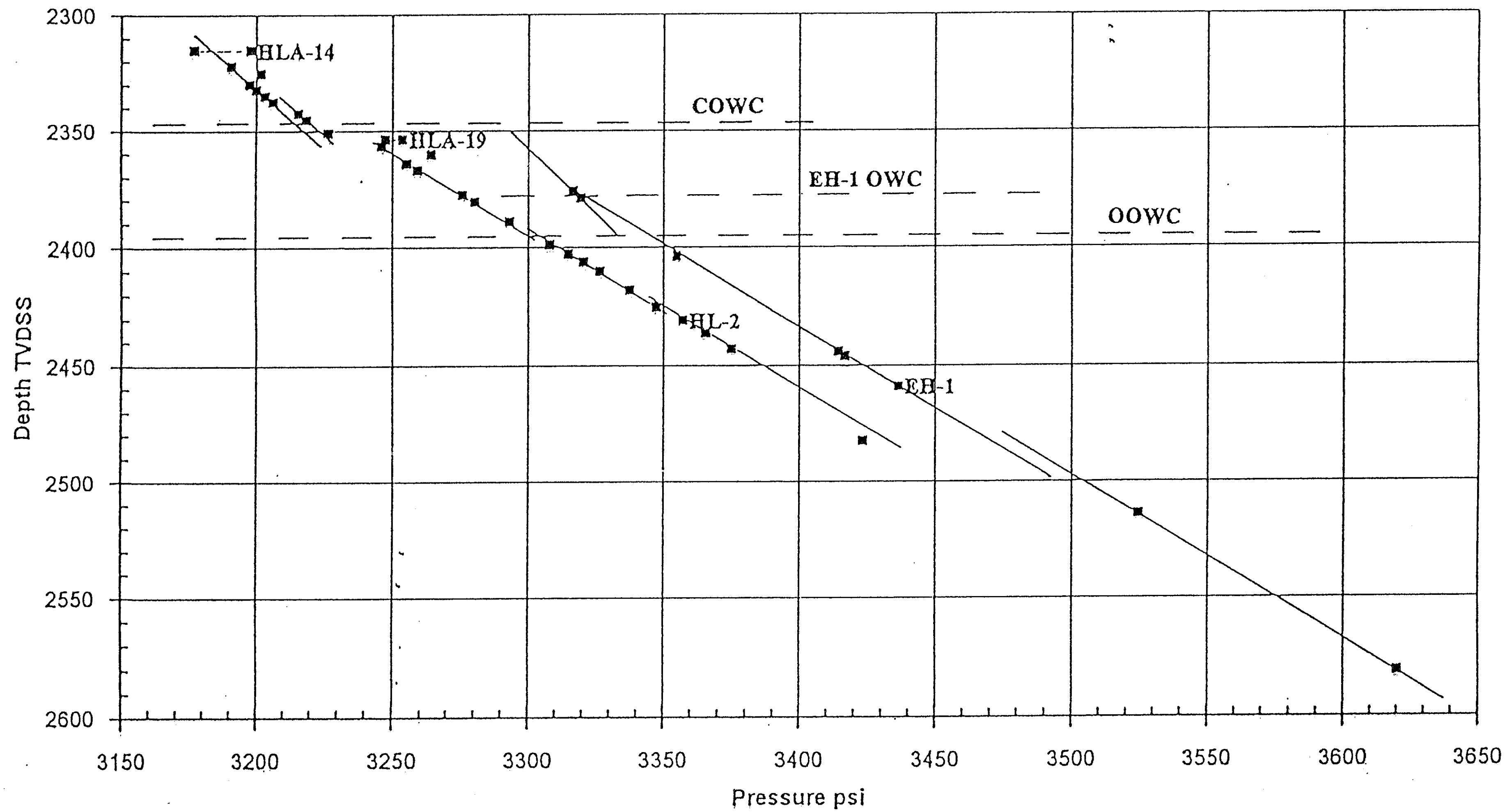


Figure 2: Comparison of Halibut Field Data



CQG 098 Test result by DWT

Date 16-Mar-1994
By S.Nakanishi

Test condition: Atmosphere temperature 16.7degC

App.DWT (psig)	Corr DWT (psia)	DWT error +- 0.05 % psi	CQG 098 reading(psia)	Delta (DWT-CQG) psi	Delta high	Delta low
0	14.7	0.00735	13.72	0.98	0.98735	0.97265
900	914.3155452	0.457157773	913.65	0.6655452	1.122703	0.208387
1800	1813.93109	0.906965545	1813	0.9310904	1.838056	0.024125
2700	2713.546636	1.356773318	2712.42	1.1266356	2.483409	-0.23014
3600	3613.162181	1.80658109	3611.8	1.3621808	3.168762	-0.4444
4500	4512.777726	2.256388863	4511.2	1.577726	3.834115	-0.67866
5400	5412.393271	2.706196636	5410.33	2.0632712	4.769468	-0.64293
6300	6312.008816	3.156004408	6309.4	2.6088164	5.764821	-0.54719
7200	7211.624362	3.605812181	7208.8	2.8243616	6.430174	-0.78145
8100	8111.239907	4.055619953	8107.8	3.4399068	7.495527	-0.61571

DWT mode DH 5304 S LD S/N 3611
DWT corrected by local gravity and Altitude
Atmosphere pressure 14.7 psi applied
DWT uncertainty 0.05 %R

CQG specification
Accuracy 2.5 psi
Resolution 0.01 psi

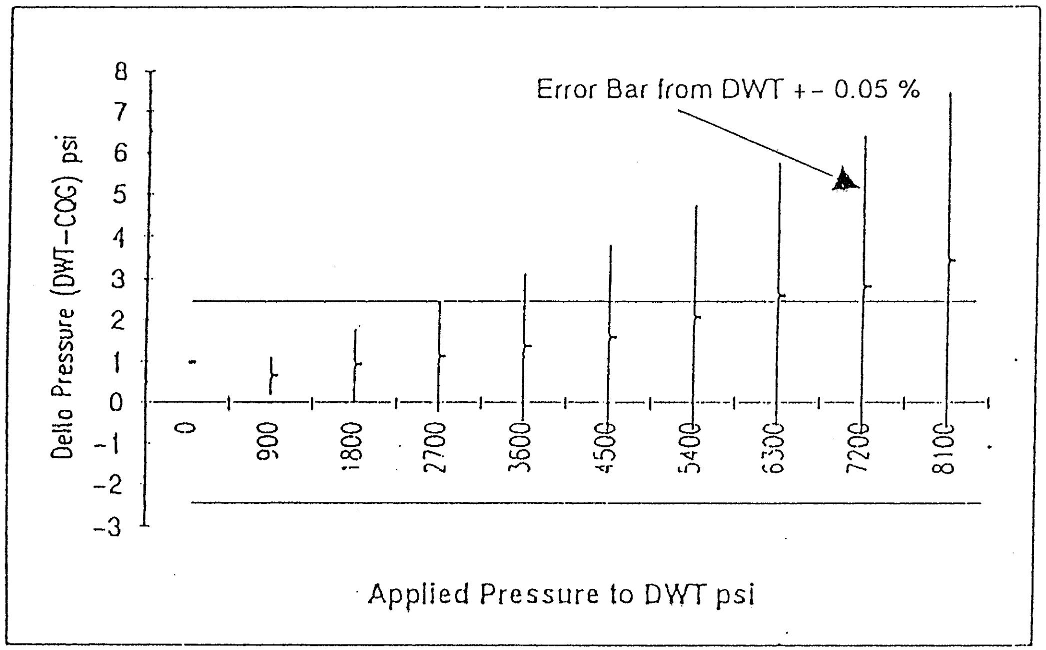


Figure 3: Calibration Check of Quartz Crystal Gauge No. 98

Appendix I

Full Halibut-2 Testing Dataset

ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	HALIBUT-2	Page	1 of 4
Date	5-Mar-94	Geologist-Engineer	Peter Symes/Chris Thompson/Greg Clota
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	25
Gauge Type	CQG	Probe type	Conventional probe
Pressure units (psia, psig)	PSIA	Temperature units (degF, degC)	degC

Run-Seat Number	P=Pretest S=Sample	Depth m MDRKB	Depth m TVDSS	Initial Hydrostatic Pressure	PPg	Time Set (HH:MM:SS)	Minimum Flowing Pressure	Formation Pressure	PPg	Temp	Time Retract (HH:MM:SS)	Final Hydrostatic Pressure	PPg	Delta Time (MM:SS)	Comments Including Test Quality and Fluid Type.
1/1	P	2507.6	2482.6	4501.8	9.47	3:18:00	3412.9	3432.4	8.08	99.0	3:23:00	4051.4	9.47	05:00	10cc Withdrawal Normal Pretest 418.7 md/cp
1/2	P	2468.0	2443.0	3987.4	9.47	3:40:00	3372.5	3375.0	8.10	99.2	3:45:00	3987.5	9.47	05:00	10cc Withdrawal Normal Pretest 1595.9 md/cp
1/3	P	2461.2	2436.2	3976.8	9.47	3:50:00	3364.9	3365.6	8.10	98.4	3:55:00	3976.2	9.47	05:00	10cc Withdrawal Normal Pretest 5761.5 md/cp
1/4	P	2455.7	2430.7	3967.6	9.47	4:00:00	3314.4	3357.0	8.10	98.1	4:03:00	3967.3	9.47	03:00	20cc Withdrawal Normal Pretest 184.6 md/cp
1/5	P	2450.1	2425.1	3958.4	9.47	4:08:00	3342.5	3347.5	8.09	98.0	4:12:00	3958.1	9.47	04:00	10cc Withdrawal Normal Pretest 1097.9 md/cp
1/6	P	2443.0	2418.0	3947.0	9.47	4:19:00	3280.4	3337.5	8.09	97.8	4:21:00	3946.7	9.47	02:00	10cc Withdrawal Normal Pretest 121.2 md/cp
1/7	P	2435.2	2410.2	3934.6	9.47	4:28:00	3290.9	3326.5	8.09	97.5	4:30:00	3934.4	9.47	02:00	10cc Withdrawal Normal Pretest 163.5 md/cp
1/8	P	2431.3	2406.3	3928.0	9.47	4:35:00	3248.3	3320.5	8.09	97.3	4:39:00	3927.8	9.47	04:00	10cc Withdrawal Normal Pretest 83.7 md/cp

ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	HALIBUT-2	Page	2 of 4
Date	5-Mar-94	Geologist-Engineer	Peter Symes/Chris Thompson/Greg Clota
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	25
Gauge Type	CQG	Probe type	Conventional probe
Pressure units (psia, psig)	PSIA	Temperature units (degF, degC)	degC

Run-Seat Number	P=Pretest S=Sample	Depth m MDRKB	Depth m TVDSS	Initial Hydrostatic Pressure	PPg	Time Set (HH:MM:SS)	Minimum Flowing Pressure	Formation Pressure	PPg	Temp	Time Retract (HH:MM:SS)	Final Hydrostatic Pressure	PPg	Delta Time (MM:SS)	Comments Including Test Quality and Fluid Type.
1/9	P	2428.0	2403.0	3923.0	9.47	4:43:00	2687.6	3314.9	8.09	97.1	4:45:00	3922.8	9.47	02:00	10cc Withdrawal Lower permeability 7.8 md/cp
1/10	P	2424.0	2399.0	3916.7	9.47	4:50:00	3295.9	3308.0	8.09	97.0	4:53:00	3916.6	9.47	03:00	10cc Withdrawal Normal Pretest 460.5 md/cp
1/11	P	2414.3	2389.3	3900.9	9.47	4:55:00	3292.1	3293.0	8.08	96.5	5:00:00	3900.7	9.47	05:00	10cc Withdrawal Normal Pretest 6597.6 md/cp
1/12	P	2405.7	2380.7	3887.0	9.47	5:03:00	3279.3	3280.4	8.08	96.1	5:05:00	3886.9	9.47	02:00	10cc Withdrawal Normal Pretest 4590.5 md/cp
1/13	P	2414.4	2389.4	3901.1	9.47	5:10:00	3291.6	3293.2	8.08	96.2	5:12:00	3901.2	9.47	02:00	10cc Withdrawal Normal Pretest 3464.7 md/cp
1/14	P	2402.8	2377.8	3882.5	9.47	5:16:00	3260.8	3275.9	8.08	95.8	5:19:00	3882.5	9.47	03:00	10cc Withdrawal Normal Pretest 420.1 md/cp
1/15	P	2392.2	2367.2	3865.9	9.47	5:24:00	3258.1	3259.2	8.07	95.6	5:27:00	3865.8	9.47	03:00	10cc Withdrawal Normal Pretest 3127.4 md/cp
1/16	P	2389.3	2364.3	3861.2	9.47	5:31:00	3254.1	3255.2	8.07	95.2	5:34:00	3860.9	9.47	03:00	10cc Withdrawal Normal Pretest 2792.4 md/cp

ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	HALIBUT-2	Page	3 of 4
Date	5-Mar-94	Geologist-Engineer	Peter Symes/Chris Thompson/Greg Clota
Tool Type (MDT, RFT)	Schlumberger MDT	KB (metres):	25
Gauge Type	CQG	Probe type	Conventional probe
Pressure units (psia, psig)	PSIA	Temperature units (degF, degC)	degC

Run-Seat Number	P=Pretest S=Sample	Depth m MDRKB	Depth m TVDSS	Initial Hydrostatic Pressure	PPg	Time Set (HH:MM:SS)	Minimum Flowing Pressure	Formation Pressure	PPg	Temp	Time Retract (HH:MM:SS)	Final Hydrostatic Pressure	PPg	Delta Time (MM:SS)	Comments Including Test Quality and Fluid Type.
1/17	P	2385.5	2360.5	3854.9	9.47	5:38:00	28.1	3264.0	8.11	94.9	5:50:00	3855.0	9.47	12:00	10cc Withdrawal Tight formation Supercharged
1/18	P	2381.8	2356.8	3849.2	9.47	5:54:00	109.5	3246.3	8.07	94.6	5:58:00	3848.8	9.47	04:00	10cc Withdrawal Tight formation 1.8 md/cp
1/19	P	2376.0	2351.0	3839.7	9.47	6:00:00	3226.7	3226.6	8.05	94.1	6:03:00	3839.6	9.47	03:00	10cc Withdrawal Normal Pretest 8228.7 md/cp
1/20	P	2370.3	2345.3	3830.3	9.47	6:05:00	3216.4	3218.6	8.05	93.6	6:07:00	3830.3	9.47	02:00	10cc Withdrawal Normal Pretest 2922.1 md/cp
1/21	P	2367.6	2342.6	3826.0	9.47	6:12:00	3212.8	3215.6	8.05	93.5	6:15:00	3825.9	9.47	03:00	10cc Withdrawal Normal Pretest 2258.1 md/cp
1/22	P	2362.5	2337.5	3818.2	9.47	6:19:00	3203.5	3206.1	8.04	93.2	6:22:00	3817.5	9.47	03:00	10cc Withdrawal Normal Pretest 1977.4 md/cp
1/23	P	2360.1	2335.1	3813.9	9.47	6:25:00	3192.9	3203.1	8.04	93.1	6:27:00	3814.0	9.47	02:00	10cc Withdrawal Normal Pretest 445.4 md/cp
1/24	P	2357.3	2332.3	3809.5	9.47	6:30:00	3195.4	3200.3	8.04	92.8	6:35:00	3809.4	9.47	05:00	10cc Withdrawal Normal Pretest 1085.9 md/cp

ESSO AUSTRALIA LTD - PRESSURE DATA FORM

Well	**HALIBUT-2**	Page	**4 of 4**
Date	**5-Mar-94**	Geologist-Engineer	**Peter Symes/Chris Thompson/Greg Clota**
Tool Type (MDT, RFT)	**Schlumberger MDT**	KB (metres):	**25**
Gauge Type	**CQG**	Probe type	**Conventional probe**
Pressure units (psia, psig)	**PSIA**	Temperature units (degF, degC)	**degC**

Run-Seat Number	P=Pretest S=Sample	Depth m MDRKB	Depth m TVDSS	Initial Hydrostatic Pressure	PPg	Time Set (HH:MM:SS)	Minimum Flowing Pressure	Formation Pressure	PPg	Temp	Time Retract (HH:MM:SS)	Final Hydrostatic Pressure	PPg	Delta Time (MM:SS)	Comments Including Test Quality and Fluid Type.
1/25	P	2354.8	2329.8	3805.7	9.47	6:38:00	3140.5	3197.6	8.05	92.7	6:40:00	3805.4	9.47	02:00	10cc Withdrawal Normal Pretest 200.2 md/cp
1/26	P	2350.4	2325.4	3798.6	9.47	6:43:00	3090.2	3201.1	8.07	92.3	6:55:00	3798.4	9.47	12:00	10cc Withdrawal Low permeability Supercharged
1/27	P	2347.1	2322.1	3793.3	9.47	6:57:00	158.6	3190.8	8.05	92.0	7:02:00	3793.3	9.47	05:00	10cc Withdrawal Tight formation 1.8 md/cp

APPENDIX 4

APPENDIX 4

APPENDIX 4

HALIBUT-2

FMI Analysis

* No figure 17

M E M O R A N D U M

TO:	Edmund Yew	MELBOURNE:	May 12, 1994
		OUR REF:	WSD:lrw:1253.doc
FROM:	Andy Mills	SUBJECT:	Halibut-2 FMI Analysis

This memorandum summarises results from the Halibut 2 FMI structural and stratigraphic analyses. This data was analysed by Scott Dodge and Paul Hinton the week of April 25, 1994 using Schlumberger's Fracview FMI application software. The data and software were loaded on a leased Sun Sparc 2 workstation resident in Esso's Melbourne Central office.

Summary

The major finding are as follows:

- Structural dip within Paleocene (L. balmei): Dip 3.9 deg, Azimuth 253 deg
- Base of Turrum formation channel fill (L.N. asperus): 2351.2 metres
- Turrum age channel axis strike : NW/SE
- Base of Tuna/Flounder formation (P. asperopolus): 2394.2 metres

Table 1 summarises the structural and stratigraphic features interpreted from FMI images. All events are documented on separate log image plots wherein a (1) 1:200 scale log shows static images and selected structural and stratigraphic events and (2) 1:10 expanded scale log image plot showing actual planar events indicated on the dynamic processed images. Enclosure 1 contains the preliminary Halibut 2 formation evaluation log with FMI interpretation events. Each feature was classified as as one of the following events:

- Structural Bedding
- Planar Bedding
- Crossbed (Hummocks or Trough)
- Reactivation Surfaces (crossbed bounding surfaces)
- Unconformity (erosional features)

Palynological markers were used to constrain the depth range which contains the base of the Turrum formation eocene channel and the base of Tuna/Flounder eocene age sediments. The palynology spore-pollen samples are listed in Table 2.

Structural FMI Image Events

The structural dip within the Latrobe group sediments is 3.9 degrees dipping towards 253 degrees azimuth. The individual bed forms selected and resulting dip magnitude and direction are shown in figure 1. The structural beds selected to represent structural orientation were confined to high gamma ray shales which mostly occurred below 2500 metres in the Latrobe section. A good example of structural bedding within a shale is shown in figure 2 at 2530m. This shale bed shows structural dip orientation at 2 to 4 degrees and azimuth WSW.

Stratigraphic FMI Image Events

Within the category of stratigraphic events; planar bedding, crossbeds, reactivation surfaces and unconformities have been identified. Each depositional sequence has been summarised in figures 3 through 14 showing the stratigraphic events identified therein.

An overview of all stratigraphic planar beds is shown in figure 3. These bedding features can be described as continuous planar bedding within a reservoir sand sequence. No reactivation surfaces are present for the planar beds which is usually associated with crossbed events. The planar bedding can represent lateral accretion surfaces in fluvial environments which prograde 90 degrees to the channel flow axis. In marine sediments the planar beds are usually present in lower energy settings like the lower shore face. These beds indicate the paleo current flow direction. Overall the planar beds are observed to dip in the SE and WSW quadrant. Each reservoir depositional sequence is summarised in Table 1.

The stratigraphic crossbeds and associated reactivation surfaces are shown in figure 4 as an overview of all features identified within Halibut 2. An uppermost limit of approximately 32 degrees dip is observed for the crossbedding. This upper limit represents the angle of repose which is the highest angle at which rock remains stable on a slope. Most of the reactivation surfaces are low angle events less than 10 degrees. The reactivation surfaces act as truncation surfaces to crossbedding. The dip azimuth of a majority of the reactivation surfaces is shown to be WSW conformable upon structural dip.

Stratigraphic bedding has been evaluated post removing structural dip of 3.9 degrees and 253 degrees azimuth. Removal of structural dip shows the stratigraphic features relative to the slope of the depositional surface. Figure 5 shows an overview of all crossbeds with structural dip removed. The crossbedding dip angle ranges from 6 to 32 degrees with a dip azimuth that ranges in all directions. The style of crossbedding yields information about paleo current flow direction, therefore each reservoir sequence must be evaluated on an individual basis to understand the resulting crossbed orientation.

Several unconformities have been identified within Halibut 2. Figure 6 shows several erosional and fault plane intersections of the wellbore identified from FMI images. The significant features are listed in the above summary. A significant high angle fault plane intersection occured at 2359 metres within the oil bearing reservoir sequence from 2353.6m to 2370.6m. Several of these events are shown on attached figures.

Turrum Formation Channel Sequence

The Turrum channel sands identified by the L.N. asperus spore pollen are shown in figure 7 from 2331m to 2351m. This sequence 20 metres in thickness is interpreted as a marine channel fill with flattening upward dip trend. The dip azimuth is 40 degrees which points towards the center of the channel or thalweg. This NE dip direction positions the channel axis NW/SE or 90 degrees to the dip azimuth. The channel orientation is indicated on the azimuth histogram in figure 7.

Within the basal unit of the channel is an erosional unconformity at 2348.5m as shown in figure 8. The scour surface is dipping to the south with overlying beds dipping at 32 degrees north.

The base of the Turrum channel depositional sequence at 2351.2m can be seen in figure 9. This erosional unconformity shows the southerly dipping erosional scour surface with overlying northerly dipping planar bedding. The channel base occurs at the base of the observed high angle NE dipping beds seen in figure 9.

This interpretation of the base of Turrum formation is consistent with the palynological dating. The SWC-22 at 2349m is identified as L.N. asperus whereas the Core-1 sample at 2351.5m is dated as P. asperopolus. Inspection of the conventional log resistivity LLD measurement shows a very distinct facies change at the channel base of 2351.2m.

Tuna/Flounder Sedimentation

Within the Tuna/Flounder sequence, a fault is observed at 2359 metres. This high angle fault plane intersection occurs within the main oil bearing reservoir sequence from 2353.6m to 2370.6m. Figure 10 shows the FMI image of the fault surface in the wellbore dipping at 45 degrees to the south. This single wellbore event contains the highest dip angle of any structural or stratigraphic event over the analysed interval. A significant change towards good reservoir quality below 2360 metres in the oil reservoir can be observed by the high resistivity of the LLD measurement. Above this depth to the top of the oil bearing reservoir sequence a shift towards lower resistivity and porosity occurs up to 2353.6m. The abrupt appearance of the LLD resistivity at 2360m is somewhat uncharacteristic of marine sequences and can be explained by an overlying fault plane truncating the reservoir sequence. The stratigraphic bedding is significantly different above and below the fault plane. Above the fault at 2359m high angle easterly dipping crossbeds are observed. However below the fault plane low angle planar ESE dipping beds can be observed in figure 11.

The stratigraphic bed forms within the lowermost oil bearing reservoir sequence from 2367.5m to 2378.6m is shown in figure 12. The low angle planar beds are observed to dip northerly down to 2374m. At 2374m a change from low angle planar beds to higher northerly crossbeds occurs. Both the laterolog resisitivity data and nuclear data show a distinct change towards uniform higher porosity reservoir quality from 2374m to 2378.6m. The change to better porosity with high angle crossbedding has been observed in other wells in the Gippsland basin. The northerly dipping beds is difficult to interpret in terms of paleo flow direction. If the Tuna/Flounder deposition is of marine channel fill origin, the model invoked in the Turrum formation can similarly be used in this sequence. The northerly bed dip indicates the direction towards the thalweg, which orients the marine channel in the E/W strike plane. The erosional surface at the base of this reservoir sand sequence at 2378.6m can be observed in figure 13 from the FMI wellbore images.

Determination of the base of the Tuna/Flounder formation contains some uncertainty. From the palynological data, conventional log suites and FMI images the base of the Tuna/Flounder is thought to be 2394.2 metres. There are two independent pieces of data which could deny this interpretation. The first is the possible presence of coal beds at 2386.8m and 2394m within the marine reservoir sequence, figure 14. The other being a questionable palynological SWC-10 L. balmei dating at 2391.2m. If either of these questionable pieces of data are true, the interpretation of the Tuna/Flounder marine sequence base at 2394.2m would be invalid.

Data supporting the base of Tuna/Flounder at 2394.2m are the valid palynological samples bracketing the base; SWC-12 at 2381m P. asperopolus, and SWC-9 at 2397m L. balmei. Figure 15 shows a high angle fault or erosional surface at 2394.2m on the FMI images which is the base of the Tuna/Flounder formation.

The northerly dipping beds in figure 16 is difficult to interpret in terms of paleo flow direction. However the model of climbing ripple bedding when present results in dip direction 180 degrees out of phase with paleo current flow. This model is a possible explanation of the northerly dipping beds within this sequence. The remainder of the attached figures summarise the stratigraphy identified from the FMI images.

Halibut 2 FMI Structural and Stratigraphic Orientation

Table 1

Event	Depth Range (metres)	Dip Magnitude (degrees)	Dip Azimuth (degrees)	Reference(1)	Age
Structural	2425 - 2575	3.9	253	True	Paleocene
Planar	2331 - 2351	8 - 34	40	True	Eocene (Turrum fm)
Planar	2359 - 2366	3	ESE	Rel	Eocene (Tuna/Flounder fm)
Crossbeds	2359 - 2366	22	SSE	Rel	Eocene (Tuna/Flounder fm)
Planar	2367.5 - 2378	3 - 14	N	Rel	Eocene (Tuna/Flounder fm)
Crossbeds	2367.5 - 2378	6 - 25	N	Rel	Eocene (Tuna/Flounder fm)
Crossbeds	2388 - 2391	8 - 12	NE	Rel	Eocene (Tuna/Flounder fm)
Crossbeds	2401 - 2404	2 - 16	ENE/S	Rel	Paleocene
Planar	2403 - 2404	2 - 8	NW	Rel	Paleocene
Crossbeds	2408 - 2417	8 - 34	NNE/ESE	Rel	Paleocene
Crossbeds	2424 - 2426	9 - 22	NW	Rel	Paleocene
Planar	2435 - 2446	5 - 12	SE	Rel	Paleocene
Crossbeds	2435 - 2446	10 - 28	NW/SW	Rel	Paleocene
Planar	2464 - 2475	3.5	WSW	Rel	Paleocene
Crossbeds	2464 - 2475	6 - 22	WNW	Rel	Paleocene
Crossbeds	2496 - 2500	15 - 28	S	Rel	Paleocene
Planar	2500 - 2515	23	SW	Rel	Paleocene
Crossbeds	2500 - 2515	20	NW	Rel	Paleocene
Crossbeds	2520 - 2530	20 - 30	WSW	Rel	Paleocene
Planar	2531 - 2545.5	5	SSE	Rel	Paleocene
Crossbeds	2531 - 2545.5	5	SSE & SW	Rel	Paleocene

(1) Reference: Rel indicates structural dip of 3.9 deg, azimuth 253 deg removed

Palynology Analyses by Dr. Alan Partridge

Table 2

Age	Sample	Depth	Spore-Pollen Zone
Oligocene (Lakes Entrance)	SWC-29	2326.5	P. tuberculatus
Eocene (Turrum Formation)	SWC-27	2332.5	L.N. asperus
	SWC-22	2349.0	L.N. asperus
(Tuna/Flounder Formation)			
	Core-1	2351.5	P. asperopolus
	Core-1	2352.5	P. asperopolus
	Core-1	2356.5	P. asperopolus
	Core-1	2357.5	P. asperopolus
	SWC-21	2358.0	P. asperopolus
	SWC-17	2366.5	P. asperopolus
	SWC-13	2377.0	P. asperopolus
	SWC-12	2381.0	P. asperopolus
Paleocene	SWC-10	2391.2	L. balmei (low confidence)
	SWC-9	2397.0	L. balmei
	SWC-7	2408.5	L. balmei
	SWC-5	2459.0	L. balmei
	SWC-3	2495.0	L. balmei
	SWC-1	2560.0	L. L. balmei

Note: Core 1 depths adjusted to log depths: +1.5 metres

PE904869

This is an enclosure indicator page.
The enclosure PE904869 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904869 has the following characteristics:

ITEM_BARCODE =	PE904869
CONTAINER_BARCODE =	PE900966
NAME =	Halibut 2 Structural Events
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Structural events in Halibut 2. Dip 3.9 deg., Azimuth 253 deg. Figure 1 from appendix 4 of WCR volume 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

(Inserted by DNRE - Vic Govt Mines Dept)

PE904870

This is an enclosure indicator page.
The enclosure PE904870 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904870 has the following characteristics:

ITEM_BARCODE =	PE904870
CONTAINER_BARCODE =	PE900966
NAME =	Structural Bedding in Shale
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Good structural bedding in shale at 2530 m. Figure 2 from appendix 4 of WCR volume 2, Halibut 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

(Inserted by DNRE - Vic Govt Mines Dept)

PE904871

This is an enclosure indicator page.
The enclosure PE904871 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904871 has the following characteristics:

ITEM_BARCODE =	PE904871
CONTAINER_BARCODE =	PE900966
NAME =	Stratigraphic Planar Beds Overview
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Halibut 2 Stratigraphic planar beds overview (SDR). Figure 3 from appendix 4 of WCR volume 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

(Inserted by DNRE - Vic Govt Mines Dept)

PE904872

This is an enclosure indicator page.
The enclosure PE904872 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904872 has the following characteristics:

ITEM_BARCODE =	PE904872
CONTAINER_BARCODE =	PE900966
NAME =	Stratigraphic Crossbeds
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC /L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Halibut 2 Stratigraphic crossbeds and associated reactivation surfaces overview. Figure 4 from appendix 4 of WCR volume 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

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PE904873

This is an enclosure indicator page.
The enclosure PE904873 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904873 has the following characteristics:

ITEM_BARCODE = PE904873
CONTAINER_BARCODE = PE900966
NAME = Stratigraphic Crossbeds Overview
BASIN = GIPPSLAND
ON_OFF = OFFSHORE
PERMIT = VIC/L5
TYPE = WELL
SUBTYPE = MONTAGE
DESCRIPTION = Halibut 2 Stratigraphic crossbeds overview (SDR). Figure 5 from appendix 4 of WCR volume 2.
REMARKS =
DATE_CREATED =
DATE_RECEIVED = 23/12/94
W_NO = W1090
WELL_NAME = Halibut 2
CONTRACTOR =
CLIENT_OP_CO = Esso Australia

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PE904874

This is an enclosure indicator page.
The enclosure PE904874 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904874 has the following characteristics:

ITEM_BARCODE =	PE904874
CONTAINER_BARCODE =	PE900966
NAME =	Unconformities, erosional and faults
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Halibut 2 Identification of significant unconformities, erosional and faults. Figure 6 from appendix 4 of WCR volume 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

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PE904875

This is an enclosure indicator page.
The enclosure PE904875 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904875 has the following characteristics:

ITEM_BARCODE =	PE904875
CONTAINER_BARCODE =	PE900966
NAME =	Turrum formation NE fill Channel
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Halibut 2 2331 - 2351m Turrum formation NE fill towards channel axis. Channel oriented NW/SE. Note upwards dip decrease reflects channel fill. Figure 7 from appendix 4 of WCR volume 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

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PE904876

This is an enclosure indicator page.
The enclosure PE904876 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904876 has the following characteristics:

ITEM_BARCODE =	PE904876
CONTAINER_BARCODE =	PE900966
NAME =	Unconformity in basal channel
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Halibut 2 Erosional unconformity in basal Turrum channel fill, 2348.5 m. Figure 8 from appendix 4 of WCR volume 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

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PE904877

This is an enclosure indicator page.
The enclosure PE904877 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904877 has the following characteristics:

ITEM_BARCODE = PE904877
CONTAINER_BARCODE = PE900966
NAME = Unconformity at base of channel
BASIN = GIPPSLAND
ON_OFF = OFFSHORE
PERMIT = VIC/L5
TYPE = WELL
SUBTYPE = MONTAGE
DESCRIPTION = Halibut 2 Erosional unconformity at base of Turrum channel (L.N. asperus) 2351.2 m. Figure 9 from appendix 4 of WCR volume 2.
REMARKS =
DATE_CREATED =
DATE_RECEIVED = 23/12/94
W_NO = W1090
WELL_NAME = Halibut 2
CONTRACTOR =
CLIENT_OP_CO = Esso Australia

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PE904878

This is an enclosure indicator page.
The enclosure PE904878 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904878 has the following characteristics:

```
      ITEM_BARCODE = PE904878
 CONTAINER_BARCODE = PE900966
              NAME = Fault surface within reservoir
             BASIN = GIPPSLAND
            ON_OFF = OFFSHORE
            PERMIT = VIC/L5
              TYPE = WELL
           SUBTYPE = MONTAGE
       DESCRIPTION = Halibut 2 High angle fault surface
                     within oil reservoir sequence, 2359 m.
                     Figure 10 from appendix 4 of WCR volume
                     2.
           REMARKS =
      DATE_CREATED =
     DATE_RECEIVED = 23/12/94
              W_NO = W1090
         WELL_NAME = Halibut 2
        CONTRACTOR =
      CLIENT_OP_CO = Esso Australia
```

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PE904879

This is an enclosure indicator page.
The enclosure PE904879 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904879 has the following characteristics:

```
      ITEM_BARCODE = PE904879
 CONTAINER_BARCODE = PE900966
              NAME = Easterly change from reservoir
             BASIN = GIPPSLAND
            ON_OFF = OFFSHORE
            PERMIT = VIC/L5
              TYPE = WELL
           SUBTYPE = MONTAGE
       DESCRIPTION = Halibut 2 2359 - 2366 m Significant
                     easterly change from underlying
                     reservoir sequence. Fault at 2359 m.
                     Figure 11 from appendix 4 of WCR volume
                     2.
           REMARKS =
      DATE_CREATED =
     DATE_RECEIVED = 23/12/94
              W_NO = W1090
         WELL_NAME = Halibut 2
        CONTRACTOR =
      CLIENT_OP_CO = Esso Australia
```

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PE904880

This is an enclosure indicator page.
The enclosure PE904880 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904880 has the following characteristics:

ITEM_BARCODE =	PE904880
CONTAINER_BARCODE =	PE900966
NAME =	Northerly Bed Dip
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Halibut 2 2367.5 - 2378 m Northerly bed dip. Possible E/W channel axis. Note bed form change at 2374 m. Figure 12 from appendix 4 of WCR volume 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

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PE904881

This is an enclosure indicator page.
The enclosure PE904881 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904881 has the following characteristics:

```
      ITEM_BARCODE = PE904881
 CONTAINER_BARCODE = PE900966
              NAME = Unconformity at base of reservoir
             BASIN = GIPPSLAND
            ON_OFF = OFFSHORE
            PERMIT = VIC/L5
              TYPE = WELL
           SUBTYPE = MONTAGE
       DESCRIPTION = Halibut 2 Erosional unconformity at
                     base of main reservoir sand, 2378.6 m.
                     Figure 13 from appendix 4 of WCR volume
                     2.
           REMARKS =
      DATE_CREATED =
     DATE_RECEIVED = 23/12/94
              W_NO = W1090
         WELL_NAME = Halibut 2
        CONTRACTOR =
      CLIENT_OP_CO = Esso Australia
```

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PE904882

This is an enclosure indicator page.
The enclosure PE904882 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904882 has the following characteristics:

```
     ITEM_BARCODE = PE904882
CONTAINER_BARCODE = PE900966
             NAME = Possible coal bed
            BASIN = GIPPSLAND
           ON_OFF = OFFSHORE
           PERMIT = VIC/L5
             TYPE = WELL
          SUBTYPE = MONTAGE
      DESCRIPTION = Halibut 2 Possible coal bed, 2386 m
                    (10cm) and 2387.2 m (10cm). Figure 14
                    from appendix 4 of WCR volume 2.
          REMARKS =
     DATE_CREATED =
    DATE_RECEIVED = 23/12/94
             W_NO = W1090
        WELL_NAME = Halibut 2
       CONTRACTOR =
     CLIENT_OP_CO = Esso Australia
```

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PE904883

This is an enclosure indicator page.
The enclosure PE904883 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904883 has the following characteristics:

ITEM_BARCODE =	PE904883
CONTAINER_BARCODE =	PE900966
NAME =	Fault locates base of Flounder formation
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Halibut 2 High angle fault locates base of Flounder formation, 2394.2 m. Figure 15 from appendix 4 of WCR volume 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

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PE904884

This is an enclosure indicator page.
The enclosure PE904884 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904884 has the following characteristics:

ITEM_BARCODE =	PE904884
CONTAINER_BARCODE =	PE900966
NAME =	NE low angle crossbeds
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Halibut 2 2388 - 2391 NE low angle crossbeds. Figure 16 from appendix 4 of WCR volume 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

(Inserted by DNRE - Vic Govt Mines Dept)

PE904885

This is an enclosure indicator page.
The enclosure PE904885 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904885 has the following characteristics:

ITEM_BARCODE = PE904885
CONTAINER_BARCODE = PE900966
NAME = Top of crossbedded sequence
BASIN = GIPPSLAND
ON_OFF = OFFSHORE
PERMIT = VIC/L5
TYPE = WELL
SUBTYPE = MONTAGE
DESCRIPTION = Halibut 2 2408 - 2417 Top of Core 2 crossbedded sequence. Figure 18 from appendix 4 of WCR volume 2.
REMARKS =
DATE_CREATED =
DATE_RECEIVED = 23/12/94
W_NO = W1090
WELL_NAME = Halibut 2
CONTRACTOR =
CLIENT_OP_CO = Esso Australia

(Inserted by DNRE - Vic Govt Mines Dept)

PE904887

This is an enclosure indicator page.
The enclosure PE904887 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904887 has the following characteristics:

ITEM_BARCODE = PE904887
CONTAINER_BARCODE = PE900966
NAME = Dip direction within core interval
BASIN = GIPPSLAND
ON_OFF = OFFSHORE
PERMIT = VIC/L5
TYPE = WELL
SUBTYPE = MONTAGE
DESCRIPTION = Halibut 2 2421 - 2426 m NW dip direction within core interval. Base Core 2. Figure 19 from appendix 4 of WCR volume 2.
REMARKS =
DATE_CREATED =
DATE_RECEIVED = 23/12/94
W_NO = W1090
WELL_NAME = Halibut 2
CONTRACTOR =
CLIENT_OP_CO = Esso Australia

(Inserted by DNRE - Vic Govt Mines Dept)

PE904886

This is an enclosure indicator page.
The enclosure PE904886 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904886 has the following characteristics:

ITEM_BARCODE =	PE904886
CONTAINER_BARCODE =	PE900966
NAME =	Planar beds reflect flow direction.
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Halibut 2 2435 - 2446 m Low angle SE planar beds reflect upper shore face flow direction, Core 3 interval. Figure 20 from appendix 4 of WCR volume 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

(Inserted by DNRE - Vic Govt Mines Dept)

PE904888

This is an enclosure indicator page.
The enclosure PE904888 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904888 has the following characteristics:

ITEM_BARCODE =	PE904888
CONTAINER_BARCODE =	PE900966
NAME =	Strong WNW crossbeds
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Halibut 2 2464 - 2475 m Strong WNW crossbeds. Paleo-flow ESE for climbing ripples model. Change in bedforms at 2470.6m. Figure 21 from appendix 4 of WCR volume 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

(Inserted by DNRE - Vic Govt Mines Dept)

PE904889

This is an enclosure indicator page.
The enclosure PE904889 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904889 has the following characteristics:

ITEM_BARCODE =	PE904889
CONTAINER_BARCODE =	PE900966
NAME =	Channel base southerly paleo-flow.
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Halibut 2 2496 - 2500 m Base of channel dominant southerly paleo-flow. Overlying lateral accretion oriented WNW. Figure 22 from appendix 4 of WCR volume 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

(Inserted by DNRE - Vic Govt Mines Dept)

PE904890

This is an enclosure indicator page.
The enclosure PE904890 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904890 has the following characteristics:

ITEM_BARCODE =	PE904890
CONTAINER_BARCODE =	PE900966
NAME =	SW dominant paleo-flow
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Halibut 2 2500 - 2515 m SW dominant paleo-flow in low angle planar beds. Figure 23 from appendix 4 of WCR volume 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

(Inserted by DNRE - Vic Govt Mines Dept)

PE904891

This is an enclosure indicator page.
The enclosure PE904891 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904891 has the following characteristics:

ITEM_BARCODE =	PE904891
CONTAINER_BARCODE =	PE900966
NAME =	Erosional surface b/w shale and sst.
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Halibut 2 Erosional surface between overlying shales and crossbedded sandstone, 2520.7 m. Figure 24 from appendix 4 of WCR volume 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

(Inserted by DNRE - Vic Govt Mines Dept)

PE904892

This is an enclosure indicator page.
The enclosure PE904892 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904892 has the following characteristics:

ITEM_BARCODE =	PE904892
CONTAINER_BARCODE =	PE900966
NAME =	Trough crossbeds
BASIN =	GIPPSLAND
ON_OFF =	OFFSHORE
PERMIT =	VIC/L5
TYPE =	WELL
SUBTYPE =	MONTAGE
DESCRIPTION =	Halibut 2 Excellent example of trough crossbeds, 2525 m. Figure 25 from appendix 4 of WCR volume 2.
REMARKS =	
DATE_CREATED =	
DATE_RECEIVED =	23/12/94
W_NO =	W1090
WELL_NAME =	Halibut 2
CONTRACTOR =	
CLIENT_OP_CO =	Esso Australia

(Inserted by DNRE - Vic Govt Mines Dept)

PE904893

This is an enclosure indicator page.
The enclosure PE904893 is enclosed within the container PE900966 at this location in this document.

The enclosure PE904893 has the following characteristics:

ITEM_BARCODE = PE904893
CONTAINER_BARCODE = PE900966
NAME = S SE Dominant paleo-flow
BASIN = GIPPSLAND
ON_OFF = OFFSHORE
PERMIT = VIC/L5
TYPE = WELL
SUBTYPE = MONTAGE
DESCRIPTION = Halibut 2 2531 - 2545.5 m S SE dominant paleo-flow in low angle planar beds. Figure 26 from appendix 4 of WCR volume 2.
REMARKS =
DATE_CREATED =
DATE_RECEIVED = 23/12/94
W_NO = W1090
WELL_NAME = Halibut 2
CONTRACTOR =
CLIENT_OP_CO = Esso Australia

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE
1

ENCLOSURE 1

ENCLOSURE 1

HALIBUT-2

Mudlog

PE600790

This is an enclosure indicator page.
The enclosure PE600790 is enclosed within the container PE900966 at this location in this document.

The enclosure PE600790 has the following characteristics:

ITEM_BARCODE =	PE600790
CONTAINER_BARCODE =	PE900966
NAME =	Mud Log
BASIN =	GIPPSLAND
PERMIT =	
TYPE =	WELL
SUBTYPE =	MUD_LOG
DESCRIPTION =	Mud Log for Halibut-1
REMARKS =	
DATE_CREATED =	03/03/1994
DATE_RECEIVED =	23/12/1994
W_NO =	W1090
WELL_NAME =	Halibut-2
CONTRACTOR =	Halliburton
CLIENT_OP_CO =	ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

ENCLOSURE 2

ENCLOSURE 2

ENCLOSURE 2

HALIBUT-2

Well Completion Log

PE600791

This is an enclosure indicator page.
The enclosure PE600791 is enclosed within the container PE900966 at this location in this document.

The enclosure PE600791 has the following characteristics:

ITEM_BARCODE =	PE600791
CONTAINER_BARCODE =	PE900966
NAME =	Well Completion Log
BASIN =	GIPPSLAND
PERMIT =	
TYPE =	WELL
SUBTYPE =	COMPOSITE_LOG
DESCRIPTION =	Well Completion Log for Halibut-2
REMARKS =	
DATE_CREATED =	12/12/1994
DATE_RECEIVED =	23/12/1994
W_NO =	W1090
WELL_NAME =	Halibut-2
CONTRACTOR =	
CLIENT_OP_CO =	ESSO

(Inserted by DNRE - Vic Govt Mines Dept)