



Natural Resources and Environment

AGRICULTURE • RESOURCES • CONSERVATION • LAND MANAGEMENT

DEPT. NAT. RES & ENV



PE906475

WELL SUMMARY

TUNA-3

W576

1 Folio No	2 Referred to	3 Date	4 Clearing Officer's Initials	1 Folio No.	2 Referred to	3 Date	4 Clearing Officer's Initials

FILE COVER INSTRUCTIONS FOR ACTION OFFICERS

- (1) FOLIO NUMBERS: Each subject paper attached to a file is to be given a consecutive number by the attaching officer. Papers must not be removed from or attached to a file without approval.
- (2) REFERRAL TO OTHER OFFICERS: When an Officer completes action on the file and further action is required by some other Officer, please initial Column (4) and on the next vacant line, enter the relevant folio number in Column (1), indicate to whom the file is to be forwarded in Column (2) and record the date in Column (3).
- (3) BRING UP MARKINGS: When action on a file is required at a later date, the officer will initial Column (4) and, on the next vacant line, enter the relevant folio number in Column (1), then write "B/U" followed by the action officer's name in Column (2) and the date the file is required in Column (3).
- (4) PUTAWAY MARKINGS: When ALL action on a file is completed the officer concerned will initial Column (4) and, on the next vacant line, write "P/A" in column (2).

LOCATION

REGISTRY MUST BE NOTIFIED OF ANY FILE MOVEMENTS BETWEEN OFFICERS

EARLIER FILES

LATER FILES

RECORDS DISPOSITION

P&A

Spec. 4-8-70
Comp. 5-4-70

38° 40' 00" S
143° 26' 50" E

TUNA-3.

T D 9261

576

W.D. 20' K.B. 31'

ESSO VIC/P1

GLOMER III

IES RUN 1. 2 & 5 2002-5017

" 2. " 4995-9261

" 1 & 2 2002-9261 SEP LOGS 2 AND 5

B.H.C.S./CAL " 1. 2 & 5 610.2-2822.6 m. Metric Playbacks 2002-5019

" " " 1 & 2 2002-9261 SEP LOGS 2 AND 5

FDC/GR " 1. 2 & 5 2002-5020

" 2. " 4995-9261

" " " 1 & 2 2002-9261 SEP LOGS 2 AND 5

NEUTRON " 1. 2 & 5 610.2-2822.6 m. Metric Playbacks 4300-5022

GRN " 2. " 8750-9261

" " " 1 & 2 6200-6700

4300-5022 } SEP LOGS 2 AND 5

6200-6700

8750-9261

MLL " 1. 2 & 5 4300-5017

" 2. " 8750-9261

" " " 1 & 2 6200-6700

4300-5017 } SEP LOGS 2 AND 5

6200-6700

8750-9261

EXECUTIVE

- Secy
- Deputy
- Exec AD
- Exec AD
- Exec AD
- Exec AD
- Exec AD
- Exec AD
- Exec AD
- Exec AD

C.D.M " 1. 5 2002-5013

" 2. " 4995-9257

FIT " 1 TESTS 1 & 2

" 2. " 1-9

COM

- Genl
- Chief
- Man
- Direct
- Direct
- Direct
- Direct
- Man
- Man
- Man
- Man
- Man

CORE LAB. MUDLOG 2045-9250

S.W.C DESCRIPTIONS 2100-4994. SHOT 120 REC 97.

CORE " N-3-B 4546-4596. 6400-6528. IN STORE REC 1 & 2

CORE LAB. COMPLETION CUREGRAM.

AGNEW PRESSURE RECORDER TESTS 1 & 2 AND 1-10

T.D.C.

WELL SUMMARY.

CUTTINGS IN STORE 2045-9250

CORE ANALYSIS RESULTS CORES 4-8. B.M.R.

WELL COMPLETION LOG.

DAILY & WEEKLY REPORTS.

CORE LAB SHOW REPORT.

PRIMAR SCIENT

- Man
- Man
- Chief
- Direct
- Direct
- Direct

MICROPALAEONTOLOGY REPORT BY D. TAYLOR.

PALYNOLOGY REPORT BY LE STOVER & A.D. PARTRIDGE. PLUS REVISION.

HYDROCARBON " EPR-71PS-70 J. LeP. OFFICE

PALYNOLOGY REPORT BY EVANS.

**Tuna-3
(W576)**

Well Summary Report

Table of Contents

Well Completion Report

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Completion Coregraph

Continuous Dipmeter Log

Time-Depth Curve

FIT Data

BTUNA - 3 WELL SUMMARY. & LITHOLOGY.

Type of Well - Stepout Confirmation.

Purpose of Well → Tuna 3 was designed to confirm the stratigraphy and structures in the eastern fault block of the T-1 reservoir of the Tuna structure.

Status - Plugged and abandoned.

Location m - Latitude 38° 10' 10" S.
Longitude 148° 26' 50" E.

Lease - VIC/P1.

Rig - "Glomar III".

Elevation - 31 feet above mean sea level.

Water Depth - 201 feet.

Spudded
Spudded - 18th February, 1970.

Drilling Time - 47 days.

Total Depth - 9261 feet.

Abandoned - 5th April, 1970.

Cores

Eight conventional cores were cut and 120 sidewall cores were attempted, 97 of which were recovered.

Mudlogs.

A continuous mudlog record was maintained by Core Laboratories in the interval 2045-9261 feet (T.D.)

Electric Logs.

<u>Type</u>	<u>Interval (ft)</u>
IES	2002-9261
BHCS	2002-9260
FDC/GR	2002-9261
CDM	2002-9260
Neutron	4300-5022
GRN	8750-9261
MLL	4300-5017
	6200-9260
Velocity Survey	5050-9230

TUNA - 3 WELL SUMMARY. (contin).

CEMENT RECORD

String	30"	13-3/8"	9-5/8"
Type of Cement	550 SX w/2%CaCl ₂	Plus 1180 SX w/2% Gel 300 SX neat	300 SX w/1.5% Gel & 0.4% HR-7 210 SX neat
Number of FT ³	650	2,254	685
Average weight of slurry	15.5	13.6/15.5	14.6/15.0
Cement Top	Sea Floor	Sea Floor (Calc.)	3550' (Calc.)
Casing Tested with	0	1500 psi	0
Number of Centralizers	0	5	0
Number of Catchers	0	0	0
Stage Collar etc.	0	0	0
Remarks		Gel prehydrated Top Plug did not bump	Gel prehydrated

Cement Plugs

<u>Plug no.</u>	<u>Interval (ft)</u>	<u>Cement</u>	
1	9100-8715	165 sacks +0.4%HR4.	Tagged.
2	1650-6240	150 " +0.2%HR4.	Tagged.
3	5050-4910	110 " +2%CaCl ₂ .	Tagged.
4	650-350	125 " neat cement.	

Cores

Eight conventional cores were cut and 120 sidewall cores were attempted, 97 of which were recovered.

Mudlogs.

A continuous mudlog record was maintained by Core Laboratories in the interval 2045-9261 feet (T.D.)

Electric Logs.

<u>Type</u>	<u>Interval (ft)</u>
IES	2002-9261
BHCS	2002-9260
FDC/GR	2002-9261
CDM	2002-9260
Neutron	4300-5022
GRN	8750-9261
MLL	4300-5017
	6200-9260
Velocity Survey	5050-9230

TUNA - 3 WELL SUMMARY. (contin).

Testing.

A total of 11 Formation Interval Tests were run, 6 of which were successful.

<u>F.I.T. No.</u>	<u>Depth (ft).</u>
1	4627, recovered 59.6 cub. ft. gas & 15,000 cc's oil & 1000 cc's mud.
2	4709, recovered 0.8 cub. ft. gas, 300 cc's oil & 2500 cc's mud.
3	9000, tight test.
4	8851, recovered 71.1 cub. ft. gas & 250 cc's condensate, 48° A.P.I.
5	6610, tight test.
6	6552, mechanical failure.
7	6551, mechanical failure.
8	6551, recovered 0.4 cub. ft. gas, 11,500 cc's water, 2000cc's mud with scum of oil.
9	6666, mechanical failure.
10	6492, recovered 31.6 cub. ft. gas, 10,000 cc's oil, 44° A.P.I., G.O.R. 500, 10,000 cc's water.
11	6666, recovered 20,000 cc's water & 2,000 cc's mud.

Hydrocarbons.

Two hydrocarbon reservoirs were confirmed, as follows:-

- Gas - 4436 to 4550 ft., 114 ft. gross, 82 ft. net sand.
- Oil - 4550 to 4713 ft., 163 ft. gross, 67 ft. net sand.
- Oil - 6430 to 6634 feet, 204ft. gross, 103 ft. net sand.

Stratigraphy.

<u>Formation</u>	<u>Top (R.T.) (ft.)</u>	<u>Subsea. (ft.)</u>	<u>Thickness. (ft.)</u>
Gippsland Formation.	Sea floor.	- 201	4204
Latrobe Valley Group.	4436	-4405	1994
(Base Flounder Formation)	4619	-4588	
Upper Cretaceous.	6430	-6399	2831+

APPENDIX.

Lithology.

Gippsland Formation.

Interval (ft).

2045 - 4436 Detrital micritic Limestone, light to medium grey, relatively firm, consolidated by abundant micritic matrix around fine to medium carbonate grains; scattered forams, lamellibranchs and bryozoa; disseminated glauconite, black opaques, slightly argillaceous, rare pyrite.
Marl and/or calcareous Mudstone, light to medium grey, soft, crumbly, becoming firmer with depth, abundant forams & bryozoa, disseminated pyrite & black opaques, occasional quartzose & glauconitic grains:

TUNA - 3 WELL SUMMARY. (contin).

Lithology,

Latrobe Valley Group.

Interval (ft).

4436 - 4515 Sandstone, orange to dark, red brown, hard, aggregates fine to medium grained, sub-angular, well sorted, slightly dolomitic, sparse clay matrix, scattered glauconitic grains, sugary texture, tight, poor porosity & permeability, no fluorescence. Towards base, increase in loose, clean, very coarse, sub-rounded to rounded quartzose grains.

Core No. 1.

4515-4525 Cut 10 feet, nil recovery.

Core No. 2.

4525 - 4546 Cut 21 feet, nil recovery.

Core No. 3.

4546 - 4596 Cut 50 feet, recovered 50 feet.

4546 - 4553 Sandstone, loose Sand, no fluorescence.

4553 - 4578 Firm Sandstone, excellent fluorescence.

4578 - 4596 Silty Sandstone, with thin shaly streaks, fine to medium grained Sandstone lenses with spotty fluorescence.

4596 - 4619 Silty Sandstone, as above.

4619 - 5800 Interbedded Sandstone, Coal, Siltstone & Shale. Up to 50% Sandstone, light tan, very fine to fine grained, carbonaceous, little visible porosity & permeability, silty; and white to grey, unconsolidated, medium to coarse grained, well sorted, sub-angular to sub-rounded sand. Coal black, hard, brittle, pyritic, silty in part, with laminated structures. Siltstone, light to dark brown, soft, carbonaceous. Shale, light to dark brown, carbonaceous, laminated, soft, sandy in part.

5800 - 6260 Mainly Sandstone, white, fine to coarse-grained, sub-angular, unconsolidated; some shale and coal, as above.

6260 - 6400 Mainly shale, siltstone and coal.

Core No. 4.

6400 - 6436 Cut 36 feet, recovered 36 feet.

6400 - 6415 Shale, dark, grey-black; very carbonaceous, silty interbedded with thin, fine-grained Siltstone & Sandstone, silty, horizontal bedding.

6415 - 6426 Shale, as above.

6426 - 6432 Siltstone, light grey to brown, grading to silty Sandstone, fair scattered fluorescence, good odour and cut.

6432 - 6434 Shale, dark grey, very carbonaceous, slightly silty.

6434 - 6436 Sandstone, white, medium to coarse-grained, quartzose, sub-angular to sub-rounded, clean friable, good porosity and permeability, a few thin, carbonaceous laminae, fair sorting, oil-stained, good fluorescence, odour & cut.

TUNA - 3 WELL SUMMARY. (contin).

Core No. 5.

6436 - 6482 Cut 46 feet, recovered 37 feet.
6436 - 6453 Sandstone, white, medium to coarse grained, good fluorescence, odour & cut.
6453 - 6461 Shale, as above.
6461 - 6465 Sandstone, grey-white, fine to medium grained, friable, good fluorescence, odour & cut.
6465 - 6471 Shale, as above.
6471 - 6473 Sandstone, fine to medium grained, good fluorescence, odour & cut.
6473 - 6482 Not recovered.

Core No. 6.

6482 - 6528 Cut 46 feet, recovered 46 feet. 16 feet Sandstone recovered in two separate units, remainder Shale, carbonaceous.
6528 - 6610 Coal as above, Shale as above, Sandstone, with fair fluorescence and good cut.

Core no. 7.

6610 - 6670 Cut 60 feet, recovered 50 feet, mainly Sandstone and Shale.

Core No. 8.

6670 - 6700 Cut 30 feet, recovered 22 feet, Sandstone, massive fine to medium-grained, some coarse-grained, sub-angular to sub-rounded, moderately well sorted, slightly friable to moderately consolidated, some interstitial clay, fair to good visual porosity and permeability, no shows.
6700 - 7420 Sandstone, fine to coarse-grained, white, some granular, moderately sorted, some Coal; Shale, brown grey to dark, brown-grey.
7420 - 7525 Volcanics, dark grey green abundant feldspar.
7525 - 7880 Mainly sandstone, coarse-grained to granular, angular to sub-angular, hard, partly dolomitic, minor Shale.
7880 - 8310 Shale and Coal, with some sandstone, as above, partly pyritic, and fine-grained, angular to sub-rounded sandstone.
8310 - 8725 Sandstone, milky, coarse-grained, angular to sub-angular, pyritic; and fine-grained, as above, slightly dolomitic; Siltstone, light to dark brown, firm, carbonaceous, disseminated pyrites, finely laminated; and some light brown hard shale.
8725 - 8980 Mainly Siltstone, as above; some mudstone, light to dark brown, waxy lustre, hard, firm, sub-fissile; minor sandstone, white to buff, fine to medium-grained, sub-angular quartz, abundant clay matrix.
8980 - 9060 Sandstone, coarse to very coarse, quartz, milky and siltstone.
9060 - 9261(T.D.) Siltstone, as above, and some sandstone, white to light grey, medium-grained, sub-angular, argillaceous, dolomitic, laminated with siltstone in part, some coaly layers.

LITHOLOGICAL SUMMARY FROM WEEKLY
REPORTS.

1st Sample at 1517 feet.

- 1517' - 2310' Limestone: skeletal, mottled, light grey to white, fine to coarse skeletal fragments, soft and argillaceous to fairly well cemented, trace pyrite and glauconite.
- 2310' - 4375' Marl: light grey, soft and friable with silt-size calcareous grains and traces of glauconite and pyrite.
- 4375' - 4391' Sandstone: pale brown to buff, fine to coarse grained, angular to sub-rounded, friable to unconsolidated, quartzose.
- 4391' - 4530' Sandstone: See cores Nos. 1, 2 and 3.
- 4530' - 4608' Sandstone: (See also cores 4 and 5) quartzose, light grey, unconsolidated, fine to granular grained, angular to sub-rounded, some clay matrix with occasional thin interbeds of silty shale.
- 4608' - 4790' Mudstone: brown-grey, silty and carbonaceous, slightly pyritic.
- 4790' - 5210' Sandstone: as above, with small to large amounts of dolomitic cement. Occasional interbeds of brown-grey siltstone, shale, coal.
- 5210' - 5610' Interbedded Sandstone and Shale: sandstone-quartzose, clear to white, medium-coarse grained, subangular to subrounded, well sorted, good porosity. Shale - dark brown-grey to black, carbonaceous and firm. Trace of coal.
- 5610' - 5650' Coal: black and brittle.
- 5650' - 6470' Interbedded Sandstone and Shale: as above with some coal.
- 6470' - 6580' Siltstone: light grey to greenish grey, sandy, dolomitic with interbeds of shale and coal.
- 6580' - 6679' Interbedded sandstone and Shale: see Cores 6 and 7.
- 6679' - 6870' Interbedded Sandstone, Siltstone and Coal: as above.
- 6870' - 6920' Sandstone: as above.
- 6920' - 6980' Coal: black, firm, interbedded with minor amounts of sandstone and siltstone.
- 6980' - 7214' Interbedded Siltstone and Sandstone: as above with occasional coal beds.
- 7208' (corrected)-7215' Sandstone interbedded with some Siltstone: sandstone-quartzose, fine to medium grained, carbonaceous, dolomitic cement, hard.
- 7215' - 7251' Interbedded Sandstone and Shale: see description Core 8.
- 7251' - 7330' Sandstone: light grey quartzose, trace of lithies, medium to very coarse, dolomitic cement, hard and tight, mineral fluorescence.
- 7330' - 7380' Interbedded Sandstone, Siltstone and Coal: sandstone - light grey, medium to granule, decreasing dolomitic

cement. Siltstone brown to brown grey, carbonaceous, coal - black.

- 7380' - 7790' Sandstone: with minor interbedded siltstone, silty shale and coal as above.
 - 7790' - 7860' Sandstone: quartzose, medium to coarse grained, subangular to subrounded, moderately well sorted, dolomitic cement common, very pyritic. Occasional interbeds of dark brown carbonaceous silty shale.
 - 7860' - 7880' Interbedded Sandstone and Silty Shale: sandstone-quartzose, fine-medium grained, very dolomitic and pyritic. Silty shale as above.
 - 7880' - 7960' Sandstone: like interval 7790' - 7860'.
 - 7960' - 7980' Interbedded Sandstone and Silty Shale: like interval 7860' - 7880'.
 - 7980' - 8010' Sandstone: like interval 7790' - 7860'.
 - 8013' - 8030' Mudstone: see description Core No.9.
 - 8030' - 8350' Siltstone and Shale interbedded with Sandstone: shale grey-brown, carbonaceous, pyritic, firm to hard. Siltstone - light brown, soft and carbonaceous. Sandstone - quartzose, fine to medium grained, subangular to subrounded, dolomitic cement. Trace of coal.
 - 8350' - 8390' Sandstone: quartzose, grey, friable, medium to coarse-grained, subangular to subrounded, porous. Occasional bed of siltstone and shale - as above.
 - 8390' - 8450' Siltstone and Shale interbedded with Sandstone: like 8030' -8350'.
 - 8450' - 8530' Sandstone: like 8350' - 8390'.
 - 8530' - 8560' Siltstone and Shale interbedded with Sandstone: like 8030'-8350'.
 - 8560' - 8680' Sandstone: like 8350' - 8390'.
 - 8680' - 8870' Interbedded Sandstone and Siltstone: like 8030' - 8350'.
 - 8870' - 9060' Interbedded Sandstone, Siltstone and Shale: sandstone - friable to hard, fine to medium grained; shale - grey to brown, carbonaceous and hard, trace of coal.
- (Total Depth 9060')

CORE DESCRIPTIONS AND ANALYSES

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No. #1

WELL: TUNA - 3

Interval Cored 4515 - 4525 ft., Cut 10 ft., Recovered ZERO ft., (0 %) Fm. LATROBE

Bit Type C-14, Bit Size 8 5/16 in., Desc. by CURNOW Date 24 Feb 70

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
	<p>4515</p> <p>4525</p>			

REMARKS: NO RECOVERY AS CORE CATCHER FRACTURED.
 FORMATION ALSO PROBABLY TOO FRIABLE

2/6

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

Core No. #2

WELL: TUNA-3

Interval Cored 4525-4546 ft., Cut 21 ft., Recovered ZERO ft., (0%) Fm. LATROBE

Bit Type C-22 (F.D.), Bit Size 8 5/16" in., Desc. by CURNOW Date 24 FEB 70

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology

REMARKS: FORMATION TOO FRIABLE.
BIT RINGED

CORE DESCRIPTION

3/6

Core No. #3

WELL: TUNA-3

Interval Cored 4546-4596 ft., Cut 50 ft., Recovered 50 ft., (100 %) Fm. LATROBE

Bit Type C-22, Bit Size 8 5/16" in., Desc. by CURNOW Date 25 Feb 70.

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
5	4546		4546 - 4576	Massive SANDSTONE: lt grey, medium to coarse grained at top becomes a fine grained and silty sandstone with a gradational contact at 4576; pyritic; trace carbonaceous material suggestion of poor bedding at times - generally none except from 4568 to 4576 where extreme burrowing and convolute bedding; fossils to moderately fine. Good P & P visible
45 50			4576 to 4596	SILTSTONE dk brown & grey - laminated with convolute bedding & burrowing; Sandy in part; high carbonaceous content
45 60		GOOD BRIGHT CONTINUOUS FLUORESCENCE OF OIL		Gas/Oil Contact at 4553. Oil/Water Contact not seen.
45 70				
45 80			GRADATIONAL CONTACT	
45 90		SPOTTY FLUORESCENCE ASSOCIATED WITH SAND LENSES		
45 96				

REMARKS:

Stream mouth bar sequence

CORE DESCRIPTION

4/6

Core No. 4

WELL: TUNZ-3

Interval Cored 6400-6436 ft., Cut 36 ft., Recovered 36 ft., (100%) Fm. LATROBE

Bit Type C-22, Bit Size 8 5/16 in., Desc. by BLACK & RIGG Date 6 MARCH 1970

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
6400			6400-03	SHALE - DK. GRY TO BLACK, V. CARB, SILTY, f. CARB, HARD W/ V. THIN LAMINAE OF LT. GR SS V.F.G., SILTY HARD TIGHT. SLI. X-B'D'D, SOME LENTICULAR.
5			6403-06	SHALE - AS ABOVE
10			6406-16	SHALE - DK GR TO BLK, V. CARB, WELL INDUR. W/ V. THIN LAMINAE OF V.F.G. SILTY SS. & SILTST
15			6416-27	SHALE - DK GR TO BLACK V. CARB W/ SCATTERED CARB. DEBRIS, FIRM HARD, SLI SILTY, f. MICAC. IN PLACES, SLI PYRITIC FEW SMALL SHALE DEBBLES 6418-20' V. FEW THIN COAL BEDS
20			6427-32	SILTSTONE - LT GR & BRN GR. V. HARD & TIGHT SLI CARB IN FEW PLACES GRADING DOWN TO SS, GR. V.F.G. SILTY HARD TIGHT POOR P&P SLI ODOR, FAIR SCATTERED FLOUR, GOOD CUT.
25			6432-34	SHALE DK GR V. CARB SILTY FIRM
30			6434-36	SANDSTONE - WH QTZ STAINED YELLOW-BRN W/ OIL M/CRSE FRIABLE TO UNCONSOL. W/ FEW THIN CARB. LAMINAE, CLETN SUB-RND/SUBANG. FAIR SORTING, GOOD P&P OIL-STAINED, GOOD ODOR, FLOUR, & CUT
35	RS.V			
36	SPL 51 SPL 52			

REMARKS:

STOPPED CORING AT 6436 WHEN BUMPER SUB WASHED OUT & PUMP PRESS. WAS LOST.

CORE DESCRIPTION

Core No. 5

WELL: TUNA #3

Interval Cored 6436' - 6482' ft., Cut 46' ft., Recovered 37' ft., (80 %) Fm. LATROBE.

Bit Type C-22, Bit Size 8 5/16 in., Desc. by RIGG + BLACK. Date 9th March 1970.

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
6436			6436' - 6442'	Dk. grey to blk, carb. siltst. w. thin lamin. f. to m.g. s.s. coarsening to m.g. s.s. w. occ. carb. stringers. S.s. - frosty wh. to grey, clean, friable to firm, sub.a. to sub.r., well-sorted, sec'd cement. Good odour, fl. & cot. Disturbed, slumped bedding at top. Basal contact sharp, uneven, channelled. S.S. mottled, & maybe burrowed.
6440			6442' - 6445'	Blk. carb. siltst. at top. Sharp. horiz. contact to coarse g., carb. massive s.s. S.s. otherwise, as above.
6445			6445' - 6454'	F. to m.g. s.s. (micac) grading to f.g. carb. siltst., cont. thin coaly laminae. G. size vic. to f.g. to m.g. sl. carb. s.s., + at base c.g. s.s. F.g. s.s. is hard, tight, fair P & P, good odour, fl. & cot. Structures: micro-channelling open of m.g. s.s. into f.g. s.s. + thin carb. laminae: slumped (disturbed bedding): small load-casts: s.s. & siltst. showing "boudinage": low angle trough x-bedding: Base is siltst. breccia in m. to c.g. ss. (Up to 5cm long). Base is channelled.
6450			6454' - 6464'	Blk. carb. massive siltst. with wood fragments over carb. siltst. & f. to m.g. s.s. showing slumping. Mottled carb. s.s. + clean s.s. at 4460'. Burrowed at 4463'. Base is carb. m. to c.g. s.s. - channelled.
6455			6464' - 6471'	Mainly carb. siltst. & f.g. to m.g. s.s. at top - slumped bedding. Coarsens to grey-wh. m. to g.c. s.s., friable to firm - good odour, fl. & cot. Sharp horiz. contact with underlying unit.
6465			6471' - 6473'	Thin lamin. carb. siltst. & f.g. s.s. grading to c.g. s.s. below.
6470				
6475				

REMARKS:

CORE Bbl. JAMMED AT 6482'

P. S.P = PALYNOLOGICAL SAMPLE.

R.S.V.S.P. = RESEVOIR SAMPLE.

CORE DESCRIPTION

6/6

Core No. 6

WELL: TUNA #3

Interval Cored 6482'-6528' ft., Cut 46 ft., Recovered 46 ft., (100 %) Fm. LATROBE.

Bit Type C-22, Bit Size 8 5/16 in., Desc. by RIGG & BLACK. Date 9-3-70.

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
6482			6482'-6487'	Dk. gry → blk. massive carb. siltstone, with thin carb. stringers, coaly partings & tr. of amber. Decr. in C. content ↓
85			6487'-6488'	M. → C. g. s.s., clear → whi. qtz, sub. a → sub. r, with thin carb. laminae. Friable. Good P & P. Good odour, flour, & cut.
90			6488'-6494'	Top: Carb. siltst. laminated - sub-horizontal - open channelled interiors. Grades downward to slumped zone with f. g. s.s. At 6490', qtz pebbles in band. Below this s.s. is extr. friable, c. grained, clean, clear qtz, has good P & P. & good odour, fl, & cut. Becomes firmer downward.
95			6494'-6528'	Interbedded carb. siltst. & f. m & c. g. s.s. Large zone of disturbed bedding from 6500' - 6512'. Very few sharp contacts visible. District sand lenses occur at 6512' → 6516'
6500			6524'	
			6526'	
			& 6528'	
6505				S.s. generally are m. → c. grained, grains sub. a → sub. r, white milky qtz → clear qtz, usually friable and have good odour, flour. & cut.
10				At 6512' s.s. m. grained, firm, poss. small clay content.
15				At 6515' s.s. F. → M. grained, v. firm, has patchy flour, poor odour, and poor cut. Base of sand is well-burrowed.
20				
25				At 6524' s.s. m. → c. g. Friable but with some clay.
				At 6528', f. → m. g., carb. s.s. with carb. micac. laminae. Hard, dk. gry. Patchy flour, poor odour, poor cut.
30				

REMARKS:

CORE ANALYSIS RESULTS

NOTE: (i) Unless otherwise stated, porosities and permeabilities were determined on two plugs (V&H) cut vertically and horizontally to the axis of the core. Ruska porosimeter and permeameter were used with air and dry nitrogen as the saturating and flowing media respectively. (ii) Oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates are recorded as Neg., Trace, Fair, Strong or Very Strong.

WELL NAME AND NO. TUNA NO. 3

DATE ANALYSIS COMPLETED 2 October 1975

Core No.	Sample Depth		Lithology	Average Effective Porosity two plugs (% Bulk Vol.)	Absolute Permeability (Millidarcy)		Average Density (gm/cc.)		Fluid Saturation (% pore space)		Core Water Salinity (p.p.m. NaCl)	Acetone Test	Fluorescence of freshly broken core	Sample "cut" in tetrachlorethylene
	From	To			V	H	Dry Bulk	Apparent Grain	Water	Oil				
3	4551'6"		Sst;m.gr.	30.3	601	685	1.86	2.67	6	4.4	N.D.	Trace	Trace even yellow	Trace
3	4556'6"		As above	33.8	2420	3590	1.80	2.69	8	17.1	N.D.	Strong	Good even yellow	Good
3	4562'0"		As above	31.3	1320	5390	1.85	2.69	10	10.0	N.D.	Fair	Fair even yellow	Good
3	4572'0"		Sst;f.gr. to m.g.r.	24.7	115	69	2.02	2.69	39	7.6	N.D.	Trace	Fair irreg. yellow	Fair
3	4584'9"		Sst;f.gr. carb.	16.8	0.3	5.0	2.25	2.72	55	Nil	N.D.	Trace	Nil	Nil
4	6418'0"		Shale	10.31	<0.1	1.4	2.44	2.73	29	Nil	N.D.	Nil	Nil	Nil
5	6437'0"		Sst;m.g.r.	24.1	459	303	1.98	2.68	2	15.6	N.D.	Fair	Fair irreg. yellow	Fair
5	6444'6"		Sst;m.g.r. toc.gr. arg	30.6	1370	1910	1.87	2.69	3	10.8	N.D.	Fair	Good yellow	Good

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Page 1 of 3.

Remarks: -

General File No. _____
Well File No. 74/1076

CORE ANALYSIS RESULTS

NOTE: (i) Unless otherwise stated, porosities and permeabilities were determined on two plugs (V&H) cut vertically and horizontally to the axis of the core. Ruska porosimeter and permeameter were used with air and dry nitrogen as the saturating and flowing media respectively. (ii) Oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates are recorded as Neg., Trace, Fair, Strong or Very Strong.

WELL NAME AND NO. TUNA NO. 3

DATE ANALYSIS COMPLETED 2 October 1975

Core No.	Sample Depth		Lithology	Average Effective Porosity (two plugs (% Bulk Vol.))	Absolute Permeability (Millidarcy)		Average Density (gm/cc.)		Fluid Saturation (% pore space)		Core Water Salinity (p.p.m. NaCl)	Acetone Test	Fluorescence of freshly broken core	Sample "cut" in tetrachlorethylene
	From	To			V	H	Dry Bulk	Apparent Grain	Water	Oil				
5	6453	11"	Sst; m.g.r. arg, mie, carb.	19.8	48	143	2.14	2.68	12	9.8	N.D.	Fair	Fair irreg. yellow	Fair
5	6461	18"	Sst; f.gr. to m.g.r. carb.	17.3	0.23	18	2.22	2.68	6	19.4	N.D.	Trace	Trace yellow	Trace
5	6488	13"	Sst; m.g.r. arg	24.7	146	257	2.03	2.68	1	10.9	N.D.	Fair	Fair irreg. yellow	Fair
6	6492	19"	Sst; f.gr. arg, carb.	22.3	24	193	2.09	2.68	3	13.1	N.D.	Fair	Trace yellow	Fair
6	6512	10"	Sst; f.gr. to m.g.r. arg.	15.6	1.4	6.0	2.26	2.68	14	2.6	N.D.	Nil	Nil	Nil
6	6514	14"	Sst; f.gr; slty	18.1	11	14	2.19	2.68	8	6.4	N.D.	Fair	Trace yellow	Fair
6	6521	13"	Sst; carb.	16.5	1.3	0.86	2.23	2.68	7	1.3	N.D.	Trace	Trace yellow	Trace
7	6633	18"	As above	7.9	<0.1	<0.1	2.47	2.69	14	1.8	N.D.	Nil	Nil	Nil

TUNA - 3

Remarks: -

General File No. _____
Well File No. 74/1076

2/3

CORE ANALYSIS RESULTS

NOTE: (i) Unless otherwise stated, porosities and permeabilities were determined on two plugs (V&H) cut vertically and horizontally to the axis of the core. Ruska porosimeter and permeameter were used with air and dry nitrogen as the saturating and flowing media respectively. (ii) Oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates are recorded as Neg., Trace, Fair, Strong or Very Strong.

WELL NAME AND NO. TUNA NO. 3

DATE ANALYSIS COMPLETED 2 October 1975

Core No.	Sample Depth		Lithology	Average Effective Porosity two plugs (% Bulk Vol.)	Absolute Permeability (Millidarcy)		Average Density (gm/cc.)		Fluid Saturation (% pore space)		Core Water Salinity (p.p.m. NaCl)	Acetone Test	Fluorescence of freshly broken core	Sample "cut" in tetrachlorethylene
	From	To			V	H	Dry Bulk	Apparent Grain	Water	Oil				
8	6671'0"		Sst; m.gr. to c.gr. carb	22.9	138	119	2.04	2.68	30	1.1	N.D.	N11	Trace irreg yellow	Trace
8	6674'10"		Sst; m.gr. to c.gr argill	23.8	149	510	2.04	2.68	23	1.0	N.D.	N11	N11	Trace
8	6684'6"		Sst; m.gr argill.	21.8	81	162	2.09	2.88	17	0.29	N.D.	N11	N11	N11

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Remarks: -

General File No. _____
Well File No. 74/1076

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SHOW REPORT
CL-402A

CORE LABORATORIES AUSTRALIA LTD.

Operator ESSO STANDARD OIL (AUS) LTD.
Well TUNA-3 AUSTRALIA State VICTORIA

No. 1
Date FEB. 24, 1970
CLANo. FL-155-23L

DESCRIPTION OF SHOW:

Show Interval 4430' To 4546'
Color of Flu BLUE-WHITE Intensity of Flu NIL
% Sand-Lime in Sample 40-70 % of Sand-Lime w/Flu NIL
Cut: Visual NIL Flu NIL
Lithology of Section: SANDSTONE: LT BRN, FINE-MED GR, WELL SORTED, SUBANG-SUBRNDED, GLAUCONITIC, SUGARRY TEXTURE, SOME CLAY MATRIX.

GAS UNITS:

HOT WIRE

P/H/D (CHROMATOGRAPH)

	HOT WIRE			P/H/D (CHROMATOGRAPH)					
	Hi	Lo	Mud	Methane C ₁	Ethane (+) C ₂ (+)	Ethane C ₂	Propane C ₃	Butane C ₄	Pentane C ₅
From:	22	-		2500	200	-	-	-	-
To:	150	-		170000	2500	-	1500	200	-

Cuttings

Cuttings

From:	6	-	From:		NOT MEASURED			
To:	40	-	To:		NOT MEASURED			

ADDITIONAL INFORMATION:

Bit Condition New _____ Worn X Dull _____
Drilling Break Yes X No _____
Average Drilling Rate Controlled Rate _____ Before Break 0.7 During Break 0.2
Weight on Bit Changes Increased _____ Decreased _____ No Change X
Circulated Out Yes _____ No X Depth CO NO
Chloride Changes Before _____ After _____

FIELD EVALUATION:

Minor Poor Fair Good X Remarks: DRILLED THROUGH UPPER GAS SECTION, THAN CORED LOWER SECTION TO FIND GAS-OIL CONTACT.

FINAL EVALUATION: (It is recognized that other information such as other shows, side wall samples, etc. are necessary for the best evaluation. Consequently, this final opinion will be given at the end of the job after this data is available.)

SHOW REPORT
CL-402A

CORE LABORATORIES AUSTRALIA LTD.

Operator ESSO STANDARD OIL (AUS) LTD.
Well TUNA-3 AUSTRALIA State VICTORIA

No. 2
Date MARCH 6, 1970
CLANo. FL-155-23L

DESCRIPTION OF SHOW:

Show Interval 6431' To 6610'
Color of Flu YELLOW-BRN Intensity of Flu SPOTTY-GOOD
% Sand-Lime in Sample _____ % of Sand-Lime w/Flu _____
Cut: Visual GOOD Flu GOOD
Lithology of Section: SANDSTONE: WH-CLR, FRIABLE-UNCONSOL, MED-CRSE GR, SUBANG-SUBRND.

GAS UNITS:

HOT WIRE

P/H/D (CHROMATOGRAPH)

Hi Lo Mud Methane C₁ Ethane (+) C₂ (+) Ethane C₂ Propane C₃ Butane C₄ Pentane C₅

From:	NO INCREASE	Mud	From:							
To:			To:			NO INCREASE				

Cuttings

Cuttings

From:	NO INCREASE	From:								
To:		To:			NO INCREASE					

ADDITIONAL INFORMATION:

Bit Condition New _____ Worn _____ Dull _____
 Drilling Break Yes _____ No _____
 Average Drilling Rate Controlled Rate _____ Before Break _____ During Break _____
 Weight on Bit Changes Increased _____ Decreased _____ No Change _____
 Circulated Out Yes _____ No _____ Depth CO _____
 Chloride Changes Before _____ After _____

FIELD EVALUATION:

Minor _____ Poor _____ Fair _____ Good Remarks: SHOW WAS RECOVERED IN CORE NO. 4.

FINAL EVALUATION: (It is recognized that other information such as other shows, side wall samples, etc. are necessary for the best evaluation. Consequently, this final opinion will be given at the end of the job after this data is available.)

SIDEWALL CORE DESCRIPTIONS

TUNA 3

SIDE WALL CORE DESCRIPTIONS

Run 1 - Shot 30, Recovered 30.

<u>Depth</u>	<u>Recovery</u>	<u>Description</u>
4994	1"	SHALE: Light grey, firm, homogeneous, trace of carbonaceous material.
4960	1 3/4"	COAL: Black, vitreous, poorly fissile.
4944	1"	SHALE: Dark grey, silty and highly carbonaceous, homogeneous, slightly micaceous.
4862	1"	SILTSTONE: Medium grey, firm, homogeneous, very slightly very finely sandy.
4808	1 1/2"	SANDSTONE: Dark grey, very silty, poorly sorted, fine-medium grained, angular to subangular, 30% silt-pyrite (disseminated) matrix, tr.coarse grains.
4758	2"	CLAY: Light grey, soft to firm, plastic when wet, homogeneous.
4742	1"	SILTSTONE: Medium grey, firm, very finely sandy.
4719	1"	SILTSTONE: Medium grey, firm, very finely sandy.
4710	1 1/2"	SANDSTONE: Grey, laminated and thinly bedded, (accentuated by fluorescence) very fine to fine grained, moderately well sorted, sub-angular to sub-rounded, moderately firm but readily friable, good visible porosity and permeability, laminated by carbonaceous siltstones, grey to black.
4692	1 1/2"	SILTSTONE: Laminated grey-white, pyrite modules, very slightly sandy.
4681	1 1/2"	COAL: Very dark black/brown, pyritic, dull lustre, shaley.
4670	1 1/2"	SANDSTONE: Light grey, massive, very finely grained, well sorted, angular to subangular. firm but friable, visible porosity and permeability, fluorescent (blue white) + cut. trace very fine pyrite.
4662	1 1/2"	SANDSTONE: Dark grey/brown (oil stain), medium grain with minor coarse grains, moderately sorted, good porosity and permeability, subangular to subrounded, fluorescent and cut pyritic.
4654	1 1/2"	COAL: Dark black/brown, brittle, clayey, trace pyritic.
4642	1"	SANDSTONE: Dark brown (oil stain), very weakly consolidated, poorly sorted, fine to coarse grained, pyritic and minor clay matrix, subangular, porosity and permeability only fair.
4630	1 1/2"	SANDSTONE: Brown, as above.
4623	1 1/2"	COAL: Black, vitreous lustre, brittle, hard.
4606	1 1/2"	SANDSTONE: Grey-green, fair consolidation, very pyritic, poorly sorted, very fine to medium grained, very silty.
4508	1 1/4"	SILTY SANDSTONE: Light green, massive, firm, very fine grained. sandy silt, trace glauconite.
4504	1 1/2"	SANDSTONE: Well sorted, very fine grained, no glauconite seen, massive, soft to moderately firm.
4500	1"	SANDSTONE: As above - but with 10% glauconite and pyrite.
4495	1"	SANDSTONE: As above - but fine grained.
4490	1 1/2"	SANDSTONE: Grey/brown, poorly sorted, very fine to coarse, dominantly medium, subangular, pyrite and glauconite, moderately firm.
4485	1 1/2"	SANDSTONE: As above.
4480	1 1/2"	SANDSTONE: As above.

4475	1 1/2"	SANDSTONE: As above except shows fair sorting, generally medium grained, becoming more glauconitic, faint layering seen.
4470	1 3/4"	SANDSTONE: As above.
4465	3/4"	SANDSTONE: As above.
4460	1/2"	SANDSTONE: As above.
4455	1 1/4"	SANDSTONE: Medium grained, white with 50% glauconite, medium grained, moderately sorted, angular to subangular.
<u>Run 2. - Shot 30 Recovered 22 (8 bullets in hole).</u>		
4450	1 1/2"	SANDSTONE: Dark green/white mottled - poorly sorted, very fine grained to coarse grained, glauconite, firm.
4446	NR	
4442	1 3/4"	SANDSTONE: Medium grey, fine grained, well sorted, subrounded, glauconite and pyrite, fair visible porosity and permeability.
4438	3/4"	SANDSTONE: Yellowbrown, weathered, as above but little or no porosity and permeability.
4434	NR	
4430	1 3/4"	MARL: Medium grey, massive, firm
4426	1 1/4"	MARL: As above.
4422	NR	
4400	1"	MARL: As above.
4170	NR	
4090	NR	
4000	2"	MARL: As above - trace pyrite, fossiliferous.
3870	NR	
3730	NR	
3600	1 1/2")	
3460	1 1/2")	
3320	1 1/2")	
3200	1 3/4")	
3060	1 1/2")	
2990	2")	
2920	1 1/2")	
2850	2")	MARL: Or Calcilutite, as above
2780	1 1/2")	
2670	1 1/2")	
2550	1 1/2")	
2420	2")	
2300	1")	
2180	1 3/4")	
2100	1 1/2")	
2020	NR)	

PALYNOLOGY AND PALAEOZOOLOGY

W 515

TUNA-3.
TECHNICAL FILE.

INTERPRETATIVE

PALYNOLOGY OF THE TUNA FIELD
GIPPSLAND BASIN

by

P.R. Evans

Palyn. Rept. 1970/29

July 1970.

INTRODUCTION

Three wells have been drilled into the Tuna field. A full palynological report was written only for Tuna -1 (Palyn. Rept. 1969/2). Preliminary reports of data from Tuna -2 and -3 have been issued and the relationships between Tuna -1 and -2 were considered in discussions on the Flounder field (Palyn. Rept. 1969/9). Dinoflagellates from the Early Eocene upper M. diversus zone in Tuna -1 were described in Palyn. Rept. 1970/2 and from the Early-Late Eocene of Tuna -3 in Palyn. Rept. 1970/23.

The present report includes a revised view of all palynological data from the three Tuna wells.

Interest in Tuna has centred around two main problems: 1) The size, age and characteristics of the Eocene "channel fill". 2) The position of the top of the Cretaceous. Both problems have had a direct bearing on regional interpretations of the Gippsland Basin.

Other palynological features about Tuna have received less attention, but are at least recorded below for possible future study as need arises.

INTERPRETATIVE

SUMMARY

	Tuna -2	Tuna -1	Tuna -3
<u>N. goniatus</u> Zone			
<u>O. dictyoplokus</u> *			S.4450 S.4460 S.4470 S.4480
<hr/>			
<u>D. extensa</u> *			S.4490 S.4500
<hr/>			
Undiff.		C.4430 C.4439	
<hr/>			
Upper <u>M. diversus</u> Zone	C.4535 C.4565 C.4578 C.4590		
<hr/>			
<u>W. thompsonae</u> *		C.4507 4549 4565 4574 4588 4592 4597 4607 4621	C.4586 ?S.4606
<hr/>			
Undiff.	S.4726 S.4750 S.4800 S.4820 S.5098		
<hr/>			
Lower <u>M. diversus</u> Zone			S.4623 S.4654 S.4692 S.4719 ?S.4758

* = dinoflagellate zone. C. = core; S. = sidewall core.
 Depths are in feet.

INTERPOL

	Tuna -2	Tuna -1	Tuna -3
<u>L. balmei</u> Zone	S.5494	C.5390	S.4994
	S.5684	S.5618	S.5024
	S.6196	S.5708	S.5142
	C.6508	S.5927	S.5520
	S.6580	S.6118	S.5619
	C.6615	C.6190	S.5902
		C.6205	S.6015
		C.6220	S.6181
			S.6409
			S.6414
		C.6523	
		S.6530	
<u>T. lilliei</u> Zone	S.6968	C.6462	
	S.7150	C.6478	S.6579
	C.7246	C.6493	S.6594
		C.6510	S.6602
		C.6578	S.6646
			S.6652
		S.6674	
<u>N. senectus</u> Zone	? S.7548	C.7409	S.7067
	? S 8200	C.7436	S.7824
		C.7439	S.8027
		C.8070	S.8044
		C.8074	
<u>T. pachyexinus</u> - <u>C. triplex</u>		C.9349	S.8382
		C.9358	8478
	C.10128	8770	
		9067	
		9192	
<u>A. distocarinatus</u> <u>T. pannosus</u>		C.10280	
		C.11621	
		S.11921	
		S.11940	

INTERPRETATIVE

COMMENT

Lower Cretaceous - Upper Cretaceous

There is no good evidence that Tuna -1, the deepest well, entered the Lower Cretaceous although it probably ended in sediments of the T. pannosus Zone. The T. pannosus Zone is thought to straddle the L-U. Cretaceous boundary, but at the time of drilling, evidence for the C. paradoxa Zone as a mark of distinct Lower Cretaceous was sought.

The deepest sample in Tuna -1. 11940 feet did not yield T. pannosus, but several of the spores present were atypical of the paradoxa Zone and hence even the bottom of the hole is tentatively referred to the pannosus Zone.

T. pannosus was positively identified at 11,621 feet.

The Lower Cretaceous is generally equated with the Strzlecki Group in most discussions about the Gippsland Basin. Basal section in Tuna -1 did not resemble the Strzlecki Group.

However, the T. pannosus Zone in the Otway Basin extends into the Otway Group, a lithological equivalent to the Strzlecki Group. Furthermore, a sequence in Golden Beach West -1 below a drill depth of about 5900 feet which represents in part the T. pannosus Zone has been regarded as either Strzlecki Group or an "intermediate" unit, the "Barracouta Sandstone".

It is possible, therefore, that a lower portion of the Tuna sequence, perhaps that below the lithological change at about 9800 in Tuna -1, is related to the intermediate type of lithology between the typical Strzlecki below (not encountered at Tuna) and the Latrobe Group above.

INTERPRETATIVE

UPPER CRETACEOUS

T. pachyexinus - C. triplex Zones

Studies in the Otway Basin have shown it is difficult to support the pachyexinus and triplex Zones as distinct units and insufficient data are available from Tuna by which separation might be attempted.

Representative samples of the interval are very poor in Tuna -1, but good in Tuna -3. The sidewall core from Tuna -3, 8770 feet is remarkable for its content of dinoflagellates. They have not been studied in detail, but are notable for the absence among their numbers of Deflandreid species by which equivalent levels in the Otway Basin are zoned. Nevertheless, this horizon in Tuna -3 is the only one in the Upper Cretaceous of the Gippsland Basin to yield this type of microfossil.

N. senectus - T. lilliei Zones

The limits and content of the senectus Zone are best demonstrated in Tuna -3,

Tuna -1 at 6462 feet has provided a "standard" for the lilliei zone in the eastern part of the basin. Revised determinations of the extent of the lilliei Zone undertaken during the first part of 1970 were largely based on Tuna.

The top of the zone, based on the decline in Nothofagidites spp. and the first stratigraphic appearance of Tripunctisporis sp. is documented to within an interval of about 50 feet. Main core no. 6 from within this interval could provide additional data about the top of the zone.

INTERPRETATIVE

TERTIARY

Numerous samples are available from the balmei Zone and subdivision of the zone should be possible after further study. The uppermost section of the zone (previously referred to as Pla) is recognizable in Tuna -1 at 5390 feet and Tuna -2 at 5494 feet. Presumably it continues in younger horizons in Tuna -3 but has not been specifically identified there as a subdivision of the zone. The lower M. diversus Zone above the balmei Zone in Tuna -3 is, therefore, likely to be the result of continuous deposition from balmei to diversus times.

In contrast the presence of late M. diversus Zone above the balmei Zone in Tuna -2 is an indication of the break at the base of the "channel fill" (recognized in Palyn. Rept. 1969/9 in discussion of the Flounder wells).

The upper M. diversus Zone in Tuna -1 has long been noted for its content of dinoflagellates including Wetzeliella thompsonae, at least over a short interval. No dinoflagellates were identified in Tuna -2, but their "absence" is explicable in terms of sample position.

The thompsonae Zone is represented in Tuna -3 only in core at 4596 feet, but relatively abundant dinoflagellates of uncertain zonal position occur immediately below, at 4606 feet, and are provisionally assigned to the same zone.

If the "channel" was filled only with upper M. diversus sediments (as at Flounder) the base of the "channel" could lie as traced on the accompanying diagram. The "channel" has thus cut out the lower M. diversus and a portion of the L. balmei Zone at the locations of Tuna -1 and Tuna -2.

Unlike the "channel" at Flounder, a greater portion of sandstone comprises the fill at Tuna, fewer dinoflagellates are present and the cut was not so deep.

INTERPRETATIVE

The upper M. diversus Zone appears to continue above horizons which could bear W. thompsonae in Tuna -2. However, its relationship to the N. goniatus Zone is less clear. Core at 4439 feet in Tuna -1 is assigned to the goniatus Zone mainly because of its much higher Nothofagidites content. The numerous samples from the upper N. goniatus (= N. asperus) Zone in Tuna -3 are yet stratigraphically higher and are marked by the presence of dinoflagellates of both the extensa and dictyoplokus Zones. Thus the pay section at the top of the Tuna Eocene sequence appears to be referable to the N. goniatus Zone. Whether or not one or more breaks occur below or within the goniatus Zone cannot be determined, although they remain a possibility in view of the brevity of the sequence.

Taylor reports Miocene unit G at 4350 feet in Tuna -2, immediately above the "Latrobe". The extensa and dictyoplokus Zones appear to correlate with Eocene foraminiferal zonules L or K. An hiatus at the top of the "Latrobe" therefore represents the interval Oligocene unit J to Miocene unit H.

INTERPRETATIVE

BASIN GIPPSLAND

DATE June 1971

WELL NAME TUNA -3

ELEVATION +31 feet

AGE	PALYNOLOGIC ZONES	HIGHEST DATA					LOWEST DATA				
		Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way Time	Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way Time
J.G. MIOC.	<u>T. bellus</u>										
	<u>P. tuberculatus</u>										
MIOCENE	<u>U. N. asperus</u>										
	<u>L. N. asperus</u>	4450 ⁶⁴⁴³	1			1-118	4500 ⁶⁴³⁷	0			1-130
	<u>P. asperopolus</u>	4586 ⁶⁵⁵⁵	0			1-149	4606 ⁶⁵⁷⁰	2			1-153
	<u>U. M. diversus</u>										
	<u>L. M. diversus</u>	4623 ⁴⁵⁷⁴	2	4692 ⁴⁵⁶¹	1	1-157 1-176	4758 ⁴⁷²⁷	2			1-185
PALEO-CENE	<u>L. balmei</u>	4994 ⁴⁹⁶⁵	1			1-235	5902 ⁵⁸⁷³	1			1-410
	<u>T. longus</u>	6015 ⁵⁹⁶⁴	1			1-432	6530 ⁶⁴⁷⁹	1			1-525
LATE CRETACEOUS	<u>T. lilliei</u>	6579 ⁶⁵⁴²	1			1-525	7067 ⁷⁰³⁰	1			1-619
	<u>N. senectus</u>	7824 ⁷⁷⁹³	1			1-742	8044 ⁸⁰¹³	1			1-775
	<u>C. trip./T. pach.</u>	8382 ⁸³⁵¹	1			1-822	9192 ⁹¹⁶¹	1			1-947
	<u>C. distocarin.</u>										
	<u>T. pannosus</u>										
	<u>C. paradoxa</u>										
EARLY CRETACEOUS	<u>C. striatus</u>										
	<u>U. C. hughesii</u>										
	<u>L. C. hughesii</u>										
	<u>C. stylosus</u>										
Pre-Cretaceous											

COMMENTS: Good Lower M. diversus assemblage at 4692 feet.

T.D. 22161 (1955)

- RATINGS: 0; SWC or CORE, EXCELLENT CONFIDENCE, assemblage with zone species of spores, pollen and microplankton.
 1; SWC or CORE, GOOD CONFIDENCE, assemblage with zone species of spores and pollen or microplankton.
 2; SWC or CORE, POOR CONFIDENCE, assemblage with non-diagnostic spores, pollen and/or microplankton.
 3; CUTTINGS, FAIR CONFIDENCE, assemblage with zone species of either spores and pollen or microplankton, or both.
 4; CUTTINGS, NO CONFIDENCE, assemblage with non-diagnostic spores, pollen and/or microplankton.

NOTE: If a sample cannot be assigned to one particular zone, then no entry should be made. Also, if an entry is given a 3 or 4 confidence rating, an alternate depth with a better confidence rating should be entered, if possible.

DATE RECEIVED BY: Dr. J. S. ... DATE: June 1971

DATE RECEIVED BY: ... DATE: ...

BASIN

GIPPSLAND

DATE

WELL NAME

TUNA -3

ELEVATION

KB +31'

AGE	PALYNOLOGIC ZONES	HIGHEST DATA				LOWEST DATA					
		Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way time	Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way time
EOCENE	<u>P. tuberculatus</u>										
	<u>U. N. asperus</u>										
	<u>M. N. asperus</u>										
	<u>L. N. asperus</u>	4450	1				4500	0			
	<u>P. asperopolus</u>	4586	0				4606	2			
	<u>U. M. diversus</u>										
	<u>M. M. diversus</u>										
	<u>L. M. diversus</u>	4623	2	4692	1		4758	2			
PALEOCENE	<u>U. L. balmei</u>	4994	1				5142	2			
	<u>L. L. balmei</u>	5520	1				5902	1			
	<u>T. longus</u>	6015	1				6530	1			
CRETACEOUS	<u>T. lilliei</u>	6579	1				7067	1			
	<u>N. senectus</u>	7824	1				8044	1			
	<u>C. trip./T.pach.</u>	8382	2				9194	2			
	<u>C. distocarin.</u>										
	<u>T. pannosus</u>										
EARLY CRETACEOUS											
PRE-CRETACEOUS											
	T.D.	9261									

COMMENTS:

Deflandrea heterophlycta Dinoflagellate Zone 4450(2) - 4500(2)
Wetzeliella thompsonae Dinoflagellate Zone 4586(1)

- RATINGS: 0; SWC or CORE, EXCELLENT CONFIDENCE, assemblage with zone species of spores, pollen and microplankton.
 1; SWC or CORE, GOOD CONFIDENCE, assemblage with zone species of spores and pollen or microplankton.
 2; SWC or CORE, POOR CONFIDENCE, assemblage with non-diagnostic spores, pollen and/or microplankton.
 3; CUTTINGS, FAIR CONFIDENCE, assemblage with zone species of either spore and pollen or microplankton, or both.
 4; CUTTINGS, NO CONFIDENCE, assemblage with non-diagnostic spores, pollen and/or microplankton.

NOTE: If a sample cannot be assigned to one particular zone, then no entry should be made. Also, if an entry is given a 3 or 4 confidence rating, an alternate depth with a better confidence rating should be entered, if possible.

DATA RECORDED BY: LES/ADP

DATE June 1971; Dec. 1971.

DATA REVISED BY: ADP

DATE Jan. 1975

BASIN GIPPSLAND BASIN

BY David TAYLOR

WELL NAME 700A-3

DATE 22 April 1971 ELEV. +31'

Foram Zonules

		Highest Data	Quality	2 Way Time	Lowest Data	Quality	2 Way Time
MIOCENE	A Alternate						
	B Alternate						
	C Alternate	2300	1		2300	1	
	D ₁ Alternate	2420	1		3060	1	
	D ₂ Alternate	3130	1		3500	3	
	E Alternate	3540	3		4000	1	
	F Alternate	4400	3		4430	1	
	G Alternate						
	H ₁ Alternate						
	H ₂ Alternate						
	OLIGOCENE	I ₁ Alternate					
I ₂ Alternate							
J ₁ Alternate							
J ₂ Alternate							
EOC.	K Alternate	4442	1		4504	1	
	Pre K						

COMMENTS:

Note: If highest or lowest data is a 3 or 4, then an alternate 0, 1, 2 highest or lowest data will be filled in if control is available.

If a sample cannot be interpreted to be one zonule, as apart from the other, no entry should be made.

- 0 SWC or Core - Complete assemblage (very high confidence).
- 1 SWC or Core - Almost complete assemblage (high confidence).
- 2 SWC or Core - Close to zonule change but able to interpret (low confidence).
- 3 Cuttings - Complete assemblage (low confidence).
- 4 Cuttings - Incomplete assemblage, next to uninterpretable or SWC with depth suspicion (very low confidence).

Date Revised _____

By _____

FIT DATA

R. D. AGNEW (VIC.) PTY. LTD.
100 COLLINS STREET
MELBOURNE, VICTORIA

1/10

PHONES MEL 636321
SALE 3607

ESSO STANDARD OIL (AUST) LTD

TUNA NO. 3

FORMATION INTERVAL TESTING: FEBRUARY 27 - 28, 1970.
REPORTING RESULTS FROM AGNEW AMERADA TYPE PRESSURE RECORDER
OPERATOR FOR AGNEW: LARRY MURPHY & PETER HANSCOMBE, SERVICE ENGINEERS.
SCHLUMBERGER "FORMATION INTERVAL TESTER".
Rig: GLOMAR III

MURPHY'S & HANSCOMBE'S REPORT

FEBRUARY 27, 1970

1500 HOURS DEPART LONGFORD.
1555 " ARRIVE GLOMAR III.
1200 " 1555 HOURS TO 1200 MN, STAND-BY.

FEBRUARY 28, 1970

1200 HOURS 1200 MN TO 0025 HOURS, STAND-BY.
0025 " MAKE UP AMERADA PRESSURE RECORDER.
0035 " CLOCK WOUND.
0036 " STYLUS ENGAGED.
0054 " RUN INTO HOLE.
0151 " SET PACKER @ 4627'.
0152 " OPEN TOOL.
0211 " SHUT IN TOOL.
0215 " UNSEAT PACKER.
0216 " RUN OUT OF HOLE.
0230 " ON SURFACE.
0242 " DISENGAGE STYLUS.

*NOTE: ON THIS RUN NO SHAPE CHARGE WAS FIRED.

F. I. T. TEST NO. 1 @ 4,627'

<u>TIME</u>	<u>DEPTH</u>	<u>PSIG</u>	<u>FUNCTION</u>
<u>MIN</u>			
0	4,627'	2602.9	(HYDROSTATIC
0	"	1782.2	{ OPEN TOOL }
1	"	1792.5	{ FILLING " }
2	"	1792.5	"
3	"	1792.5	"
4	"	1792.5	"
5	"	1797.7	"
6	"	1797.7	"
7	"	1808.0	"
8	"	1808.0	"
9	"	1808.0	"
10	"	1808.0	"
11	"	1808.0	"
12	"	1808.0	"
13	"	1808.0	"

(CONTINUED PAGE TWO)

ESSO STANDARD OIL (AUST) LTD.

TUNA NO. 3

2
10

FIT TESTING: FEBRUARY 27 - 28, 1970, (CONTINUED)

FEBRUARY 27 - 28, 1970F. I. T. TEST NO. 1 @ 4,627'

TIME	DEPTH	PSIG	FUNCTION
14	4,627'	1808.0	TOOL FILLED
15	"	1999.2	BUILD UP
16	"	1999.2	" "
17	"	1999.2	" "
18	"	1999.2	" "
19	"	1999.2	SHUT IN TOOL
20	"	1999.2	
21	"	1999.2	
22	"	1999.2	
23	"	2004.4	
24	"	2004.4	UNSEAT PACKER
26	"	2561.3	FINAL BY HYDROSTIC

HOURS	FUNCTION
0300	MAKE UP AMERADA PRESSURE RECORDER
0305	CLOCK REWOUND
0330	STYLUS ENGAGED
0340	RUN INTO HOLE
0432	SET PACKER AT 4709'
0433	OPEN TOOL
0438	FIRE SHAPE CHARGE
0452	SHUT IN TOOL
0500	UNSEAT PACKER
0502	COMMENCE TO RUN OUT OF HOLE
0556	DISENGAGE STYLUS
0615	DISMANTLE AMERADA PRESSURE RECORDER & STOW EQUIPMENT
1200	STANDBY TILL DEPARTURE FROM GLOMAR
1300	ARRIVE LONGFORD

F. I. T. TEST NO. 2 @ 4,709'

TIME	DEPTH	PSIG	FUNCTION
0	4,709'	2712.3	(HYDROSTATIC)
0	"	101.9	OPEN TOOL
1	"	101.9	" "
2	"	107.0	" "
3	"	112.2	" "
4	"	112.2	" "
5	"	112.2	" "
6	"	122.5	FIRE SHAPE CH
7	"	184.3	FILLING TOOL
8	"	168.8	" "
9	"	158.8	" "
10	"	148.2	" "
11	"	153.4	" "
12	"	148.2	" "
13	"	143.1	" "
14	"	137.9	" "
15	"	137.9	" "
16	"	143.1	" "
17	"	148.2	" "

(CONTINUED PAGE THREE)

ESSO STANDARD OIL (AUST) LTD.

TUNA NO. 3

FIT TESTING: FEBRUARY 27 - 28, 1970, (CONTINUED)

FEBRUARY 27 - 28, 1970

F. I. T. TEST NO. 2 @ 4,709'

<u>TIME</u>	<u>DEPTH</u>	<u>PSIG</u>	<u>FUNCTION</u>
18	4,709'	148.2	FILLING TOOL
19	"	148.2	SHUTIN TOOL
20	"	560.2	
21	"	843.5	
22	"	1689.3	
23	"	1689.3	
24	"	1946.0	
25	"	2092.8	
26	"	2098.0	
27	"	2098.0	UNSEAT PACKER
28	"	2712.3	HYDROSTATIC

PHONES: MEL 63-6321
SALE 3607

ESSO STANDARD OIL (AUST) LTD

TUNA NO. 3

FORMATION INTERVAL TESTING: MARCH 27, 1970 THROUGH APRIL 2, 1970.
REPORTING RESULTS FROM AGNEW AMERADA TYPE PRESSURE RECORDER
OPERATOR FOR AGNEW: LARRY MURPHY, SERVICE ENGINEER.
SCHLUMBERGER "FORMATION INTERVAL TESTER".

MURPHY'S REPORT

MARCH 27, 1970

0645 HOURS DEPART LONGFORD.
0800 " ARRIVE GLOMAR 111.
1100 " SCHLUMBERGER START LOGGING.

MARCH 28, 1970

0001-0700 LOGGING.
0700-1400 RUNNING GEOPHONE - VELOCITY LOG.
1400-1800 RUN DIPMETER
1800-2400 RIG TRIP TO CONDITION HOLE.

MARCH 29, 1970

0001-0200 RIG TRIP TO CONDITION HOLE.
0200 START TO RIG UP FOR F.I.T. No. 1.
0218 CLOCK WOUND (6832-N)
0219 STYLUS ENGAGED (6832-N)
0222 CLOCK WOUND (3972-N)
0223 STYLUS ENGAGED (3972-N)
0245 START INTO HOLE FOR TEST @ 9008 FT.
TOOL HUNG UP @ 8276 FT. PULLED UP
TO TEST @ 6610 FT. S.F. LOG WOULD
NOT TIE IN.
0430 START OUT OF HOLE.
0530 OUT OF HOLE.
0600 START INTO HOLE WITH C.S.T. (SIDE-WALL SAMPLER)
0930 OUT OF HOLE WITH C.S.T.
1000 PULL RISER DUE TO BAD WEATHER.
1000 2400 STAND-BY.

MARCH 30, 1970

0001 2400 STAND-BY (BAD WEATHER)

MARCH 31, 1970

0100 0800 RIG TRIP TO CONDITION HOLE.
0800 START TO RIG UP SCHLUMBERGER.
0904 CLOCK WOUND (6832-N)
0906 STYLUS ENGAGED (6832-N)
1103 CLOCK WOUND (3972-N)
1105 STYLUS ENGAGED (3972-N)
1133 INTO HOLE FOR TEST No. 2 @ 9000 FT.
1340 SET PACKER.
1341 OPEN TOOL.

IT TESTING: MARCH 27, 1970 THROUGH APRIL 2, 1970, (CONTINUED)

MARCH 31, 1970

1342 FIRE SHAPE CHARGE.
 1425 SEAL VALVE
 1438 UNSEAT PACKER.
 1505 OUT OF HOLE.
 1517 DISENGAGE STYLUS (3972-N)
 1520 DISENGAGE STYLUS (6832-N)
 1524 CLOCK WOUND (6832-N)
 1525 ENGAGE STYLUS (6832-N)
 1528 CLOCK WOUND (3972-N)
 1529 ENGAGE STYLUS (3972-N)
 1553 INTO HOLE FOR TEST No. 3 @ 8851 FT.
 1659 SET PACKER.
 1700 OPEN TOOL.
 1754 SEAL VALVE.
 1804 UNSEAT PACKER
 1840 OUT OF HOLE.
 1858 DISENGAGE STYLUS (3972-N)
 1901 CLOCK WOUND (3972-N)
 1902 STYLUS ENGAGED (3972-N)
 1906 DISENGAGED STYLUS (6832-N)
 1909 CLOCK WOUND (6832-N)
 1910 ENGAGED STYLUS (6832-N)
 1930 INTO HOLE FOR TEST No. 4 @ 6610 FT.
 2032 SET PACKER.
 2033 OPEN TOOL.
 2034 FIRE SHAPE CHARGE.
 2038 SEAL VALVE.
 2040 UNSEAT PACKER.
 2115 OUT OF HOLE.
 2125 DISENGAGE STYLUS (3972-N)
 2128 CLOCK WOUND (3972-N)
 2129 ENGAGED STYLUS (3972-N)
 2137 DISENGAGED STYLUS (6832-N)
 2140 CLOCK WOUND (6832-N)
 2141 ENGAGE STYLUS (6832-N)
 2200 INTO HOLE FOR TEST No. 5 @ 6552 FT.
 2250 SET PACKER (PACKER WOULD NOT SET, MUD-RUN.)
 2330 OUT OF HOLE.

APRIL 1, 1970

2358 DISENGAGED STYLUS (3972-N)
 0002 CLOCK WOUND (3972-N)
 0003 ENGAGED STYLUS (3972-N)
 0009 DISENGAGED STYLUS (6832-N)
 0011 CLOCK WOUND (6832-N)
 0012 ENGAGED STYLUS (6832-N)
 0045 INTO HOLE FOR TEST No. 6 @ 6551 FT.
 0138 SET PACKER (HYDROLICS FAILED, SEAL VALVE WOULD NOT CLOSE,
 NO SAMPLE OBTAINED.)
 0215 OUT OF HOLE.
 0230 DISENGAGED STYLUS (3972-N)
 0233 CLOCK WOUND (3972-N)
 0234 ENGAGED STYLUS (3972-N)
 0235 DISENGAGED STYLUS (6832-N)
 0237 CLOCK WOUND (6832-N)

ESSO STANDARD OIL (AUST) LTD.

FIT TESTING: MARCH 27, 1970 THROUGH APRIL 2, 1970, (CONTINUED)

APRIL 1, 1970

0238 ENGAGED STYLUS (6832-N)
 0300 INTO HOLE FOR TEST No. 7 @ 6551 FT.
 0354 SET PACKER.
 0355 OPEN TOOL
 0425 SEAL VALVE
 0430 UNSEAT PACKER
 0514 OUT OF HOLE.
 0534 DISENGAGED STYLUS (3972-N)
 0538 CLOCK WOUND (3972-N)
 0539 ENGAGED STYLUS (3972-N)
 0542 DISENGAGED STYLUS (6832-N)
 0543 CLOCK WOUND (6832-N)
 0544 ENGAGED STYLUS (6832-N)
 0615 INTO HOLE FOR TEST No. 8 @ 6666 FT.
 0712 SET PACKER.
 0713 OPEN TOOL.
 0723 LOST SEAL (HYDRAULICS FAILED)
 0756 OUT OF HOLE.
 0819 DISENGAGED STYLUS (3972-N)
 0822 CLOCK WOUND (3972-N)
 0823 ENGAGED STYLUS (3972-N)
 0827 DISENGAGED STYLUS (6832-N)
 0829 CLOCK WOUND (6832-N)
 0830 ENGAGED STYLUS (6832-N)
 0845 INTO HOLE FOR TEST No. 9 @ 6492 FT.
 0931 SET PACKER.
 0932 OPEN TOOL.
 0954 SEAL VALVE.
 0955 UNSEAT PACKER.
 1030 OUT OF HOLE.
 1038 DISENGAGED STYLUS (3972-N)
 1041 DISENGAGED STYLUS (6832-N)
 1043 CLOCK WOUND (6832-N)
 1044 ENGAGED STYLUS (6832-N)

STAND-BY FOR SCHLUMBERGER TO RUN C.S.T.

1428 CLOCK WOUND (3972-N)
 1429 ENGAGED STYLUS (3972-N)
 1436 INTO HOLE FOR TEST No. 10 @ 6666 FT.
 1526 SET PACKER.
 1527 OPEN TOOL.
 1544 SEAL VALVE.
 1545 UNSEAT PACKER.
 1615 OUT OF HOLE.
 1615 2400 STAND-BY.

APRIL 2, 1970

0001 1000 STAND-BY.
 1000 DEPART GLOMAR.
 1100 ARRIVE LONGFORD.

ESSO STANDARD OIL (AUST) LTD.

TUNA NO. 3

FIT TESTING: MARCH 27, 1970 THROUGH APRIL 2, 1970, (CONTINUED)

N.B.

FOR THE FOLLOWING TESTS:

RECORDER A: - 10,250 PSI. No. 3972-N 12 HR. CLOCK 7 1/2 TLS.

RECORDER B: - 10,350 PSI. No. 6832-N 12 HR. CLOCK 15 TLS.

TEST NO. 1 (9008 FT.)

TEST TOOL HUNG UP @ 8276 FT. S.P. LOG WOULD NOT TIE IN.
TEST ABANDONED.

TEST NO. 2 (9000 FT.)

TIME	PRESS. A	PRESS. B	REMARKS
0			SET PACKER
0			OPEN TOOL
1	171	171	FIRE SHAPE CHARGE
2	135	135	
3	119	120	
4	104	104	
5	83	84	
10	78	78	
15	78	78	
20	73	73	
25	73	73	
30	67	73	
35	67	68	
40	67	68	
44	67	68	SEAL VALVE
45	67	68	
50	67	68	
55	67	68	
57			UNSEAT PACKER

TEST NO. 3 (8851 FT.)

TIME	PRESS. A	PRESS. B	REMARKS
0			SET PACKER
0			OPEN TOOL
2	637	643	
4	725	725	
6	782	782	
8	814	813	
10	819	818	
20	850	849	
26	855	854	CHAMBER FILLED
28	990	988	
30	1073	1070	
32	1119	1122	
34	1202	1199	
36	1264	1261	
38	1326	1323	

8/10

SSO STANDARD OIL (AUST) LTD.

TUNA NO. 3

FIT TESTING: MARCH 27, 1970 THROUGH APRIL 2, 1970 (CONTINUED)

TEST NO. 3 (8851 FT.)

TIME	PRESS A.	PRESS. B	REMARKS
40	1389	1390	
42	1451	1447	
44	1513	1514	
46	1575	1571	
48	1637	1642	
50	1700	1700	
52	1762	1762	
54	1845	1844	SEAL VALVE
60	4005	4005	
64	4031	4031	UNSEAT PACKER
66	4684		HYDROSTATIC

TEST NO. 4 (6610 FT.)

0			SET PACKER
0			OPEN TOOL
1			FIRE SHAPE CHARGE
5	TIGHT FORMATION, ONLY SHAPE CHARGE		SEAL VALVE
7	BLAST PRESS. RECORDED (APPROX. 20 PSI)		UNSEAT PACKER
8	3461	3457	HYDROSTATIC

TEST NO. 5 (6552 FT.)

PACKER DID NOT SEAL. MUD-RUN.
 HYDROSTATIC PRESSURE:- RECORDER A:- 3435 PSI.
 RECORDER B:- 3433 PSI.

TEST NO. 6 (6551 FT.)

TOOL FAILED. LOST HYDRAULIC PRESSURE.
 HYDROSTATIC PRESSURE:- RECORDER A:- 3451 PSI.
 SAMPLING PRESS. PRIOR TO LOST SEAL:- 109 PSI.
 N.B. - NO PRESSURES WERE OBTAINED FROM RECORDER B DUE TO THE
 SHAKING OF THE RECORDER WHEN THE SEAL WAS LOST.

ESSO STANDARD OIL (AUST) LTD.

TUNA NO. 3

 $\frac{9}{10}$

FIT TESTING: MARCH 27, 1970 THROUGH APRIL 2, 1970, (CONTINUED)

TEST NO. 7 (6551 FT.)

TIME	PRESS. A	PRESS. B	REMARKS
0			SET PACKER
0			OPEN TOOL
1		148	
2		143	
3		138	
4		138	
5		138	
6		138	
7		133	
8		148	
9		159	
10	DISENGAGED STYLUS	174	
12		184	
14		195	
16		205	
18		236	
20		246	
22		272	
24		277	
26		298	
28		308	
30		334	SEAL VALVE
31		2900	
32		2905	
33		2905	
34		2905	
35		2905	UNSEAT PACKER

TEST NO. 8 (6551 FT.)

TIME	PRESS. A	PRESS. B	REMARKS
0			SET PACKER
0			OPEN TOOL
1	2860	2853	
2	2860	2853	
3	2860	2853	
4	2860	2853	
5	2855	2853	
6	2855	2848	
7	2855	2848	
8	2658	2650	
9	2658	2650	
10	2653	2645	LOST SEAL
11	3534	3530	HYDROSTATIC

ESSO STANDARD OIL (AUST) LTD.

TUNA NO. 3

FIT TESTING: MARCH 27, 1970 THROUGH APRIL 2, 1970, (CONTINUED)

TEST NO. 9 (6492 FT.)

TIME	PRESS. A	PRESS. B	REMARKS
0			SET PACKER
0			OPEN TOOL
1	2171		
2	1829	2088	
3	1959		
4	1808	1689	
5	2047		
6	2067	2004	
7	2114		
8	1855	1896	
9	1928		
10	2031	2030	
11	2052		
12	2052	1927	
13	1907		
14	1798	1813	
15	1705		
16	2062	2056	CHAMBER FILLED
17	2663	2666	
18	2850	2853	
19	2860	2863	
20	2860	2863	
23	2860	2863	SEAL VALVE, UNSEAT PACKER
25	3425	3421	HYDROSTATIC

TEST NO. 10 (6666 FT.)

TIME	PRESS. A	PRESS. B	REMARKS
0			SET PACKER
0			OPEN TOOL
1	2565	2546	
2	2586	2556	
3	2596	2572	
4	2596	2572	
5	2596	2572	
6	2601	2572	
7	2606	2572	
8	2606	2572	
9	2606	2572	
10	2606	2608	
11	2606	2608	
12	2606	2608	CHAMBER FILLED
13	2948	2902	
14	2948	2921	
15	2948	2931	
16	2948	2936	
17			SEAL VALVE & UNSEAT PACKER HYDROSTATIC
18	3529		

WELLHEAD RECOVERY PROGRAM

ESSO AUSTRALIA LTD.
WELLHEAD RECOVERY PROGRAM

Well: Tuna-3

Water Depth: 61m

Rig: Southern Cross (Drilled by Glomar III in Feb/Apr 1970).

Location: Gippsland Basin, Vic.
Latitude : 38° 10' 10.38" S
Longitude : 148° 26' 43.56" E
X = 626,616mE
Y = 5,774,371mN


Casing: 30" @ 116m RKB (Cemented to seafloor).
13-3/8" @ 621m RKB (Cemented to seafloor).
9-5/8" @ 1534m RKB (Calculated TOC @ 1093m).

Plug Status: Plug No. 1 2785 - 2668m RKB (Tagged).
Plug No. 2 2038 - 1913m RKB (Tagged).
Plug No. 3 1551 - 1508m RKB (Tagged).
Plug No. 4 209 - 118m RKB.

Wellhead: Cameron Iron Works, 13-5/8", 5000 psi with 3 post guideframe. Global Marine landing base. Wellhead at 79.1m RKB. No wellhead cap installed.

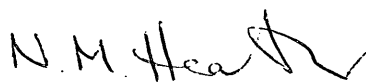
Objective: To remove the wellhead and landing base from the seafloor and seal off all annular space which is opened to drilled hole as in accordance with the Petroleum (Submerged Lands) Act.

Proximity of Marine Installations: Since anchor No. 5 will be within 1km of the Flounder gas pipeline, special mooring procedures will be followed.



EXI DRILLING MANAGER


EAL DRILLING MANAGER



GENERAL MANAGER
GIPPSLAND PRODUCTION

A. Mooring/Demooring Procedures

The rig will be moored according to the guidelines set forth in the Southern Cross Operating Manual. Since anchor No. 5 will be within 1km of the Flounder gas pipeline, the setting of this anchor must be in accordance with the "Special Mooring Procedures Near Restricted Zones" section of the Operating Manual. If applicable, the "Special Procedures for Crossing a Pipeline" of the Operating Manual will also be followed. The same procedures will be followed during the demooring operations. Refer to the "Mooring Schematic" and the "Mooring Details" of this program for additional information.

B. Abandonment Procedures

Due to the variety of optional procedures included in this program, use the "Procedure Flow Chart" as a reference.

1. Attach four guidelines to guide frame (see schematic) and run guidelines to the 3 post guide frame.

Jump divers to perform the following tasks:

- (a) Using chains, connect the guideline guide frame to the 3 post guide frame.
 - (b) Clean the running threads and top of the 13-5/8" wellhead using a water blaster.
 - (c) Measure the dimensions of the landing base to check if base can be retrieved through the moonpool.
2. Using the Universal Guide Frame with drillpipe adaptor, run the 13-5/8" wellhead running tool on HWDP and make-up into the wellhead.
 3. Rig up the cementing line and pressure test the casing to 2100psi. If the test is successful, proceed to step 11.

4. If a leak occurs, establish an injection rate. Have divers observe wellhead to note the location of flow and ensure the leak is not occurring at the running tool O-ring. Attempt to pull wellhead, limiting tension to 350kips. If wellhead pulls free go to step 9.
5. If wellhead cannot be pulled, back out running tool and retrieve running string.
6. RIH with 8-1/2" junk bit on DP to at least 96m. An obstruction was previously tagged at 86m and may require milling up to get to 96m. Circulate the wellhead clean. POH.
7. Run a 15kg explosive charge to just below the 30" Vetco connector at 92m. Winch the rig 130m away from the wellhead before detonating charge.
8. RIH with 13-5/8" wellhead running tool and attempt to retrieve wellhead.
9. After the wellhead is cleared from the seafloor, RIH with OEDP and set a balanced cement plug from 93 to 82m using 222sxs (45bbbls) of cement mixed with 26bbbls of seawater. Pull above seafloor and circulate. POH.
10. Run an inverted 5" elevator with slings attached on drillpipe. Using divers, connect slings to landing base. Retrieve landing base. If landing base cannot be lifted through the moonpool, retrieve landing base with the rig crane.

Alternate Procedures If Casing Pressure

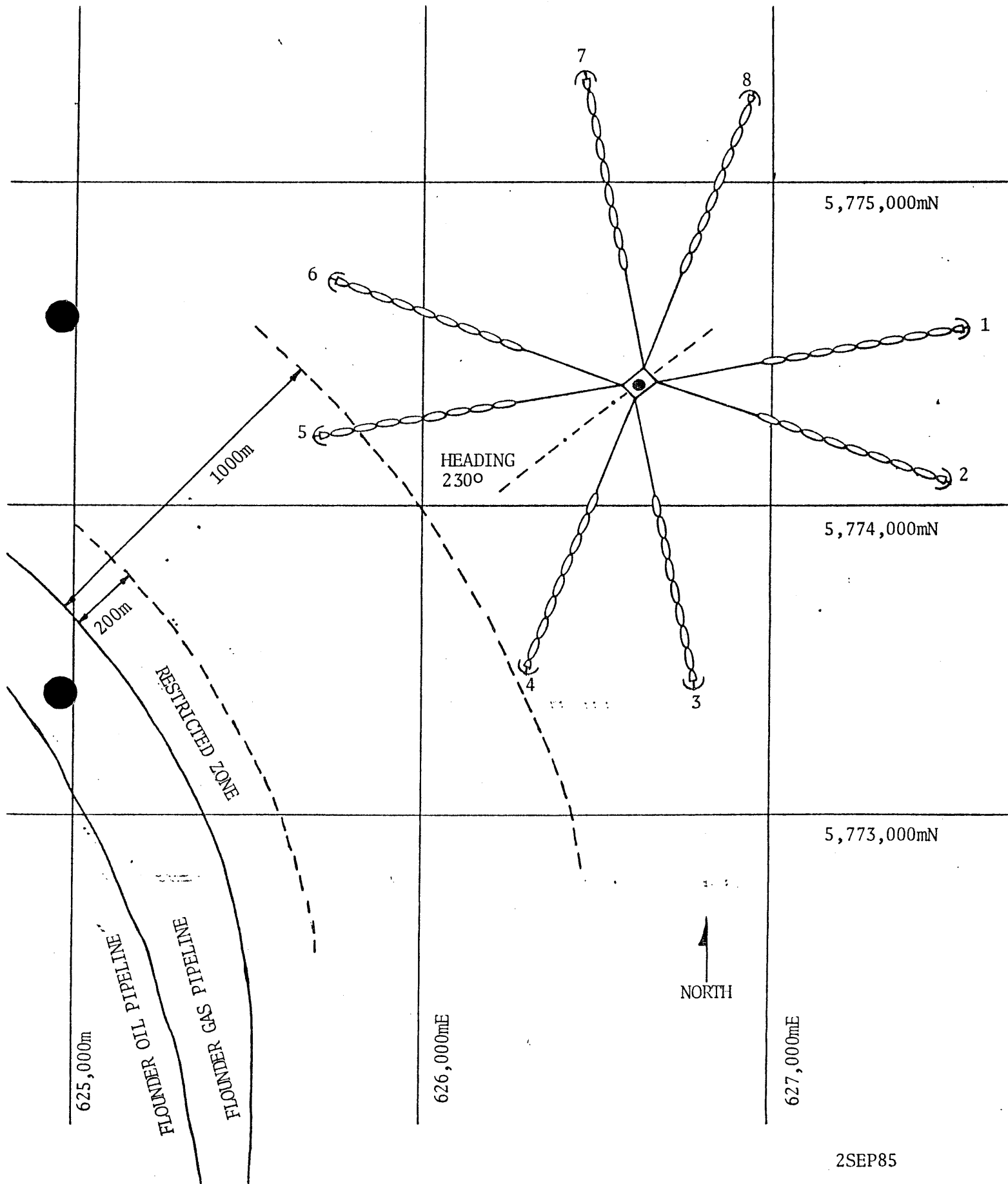
Test Is Successful

11. Rig up injection sub below Schlumberger lubricator. Pressure test string to 2100psi. RIH with 7 shots at 4spf of 1-11/16" casing punch perforations and perforate the 9-5/8" casing at 83m. Ensure injection line is closed while perforating. Check for pressure buildup.

12. Vent flow if it is small. Establish an injection rate without exceeding 1500psi. If flow is continuous, bullhead at least 200bbls of 9.2ppg mud into formation below 13-3/8" x 9-5/8" annulus. Have divers observe wellhead area for returns. Before proceeding further, ensure there is no pressure or flow through the DP.
13. Rig down lubricator and attempt to pull wellhead. If wellhead comes free go to Step 9.
14. If wellhead does not come free, squeeze 104sxs (21bbls) of cement mixed with 12bbls of seawater. Displace cement so the plug in the annulus will be from 118 to 218m. Pressure test plug to 1500psi after waiting on cement for at least 4 hours. Resqueeze annulus if leak occurs.
15. Back-out running tool and retrieve running string. Return to Step 6.

MOORING SCHEMATIC

TUNA-3 WHR



2SEP85

MOORING DETAILS

TUNA-3 WHR

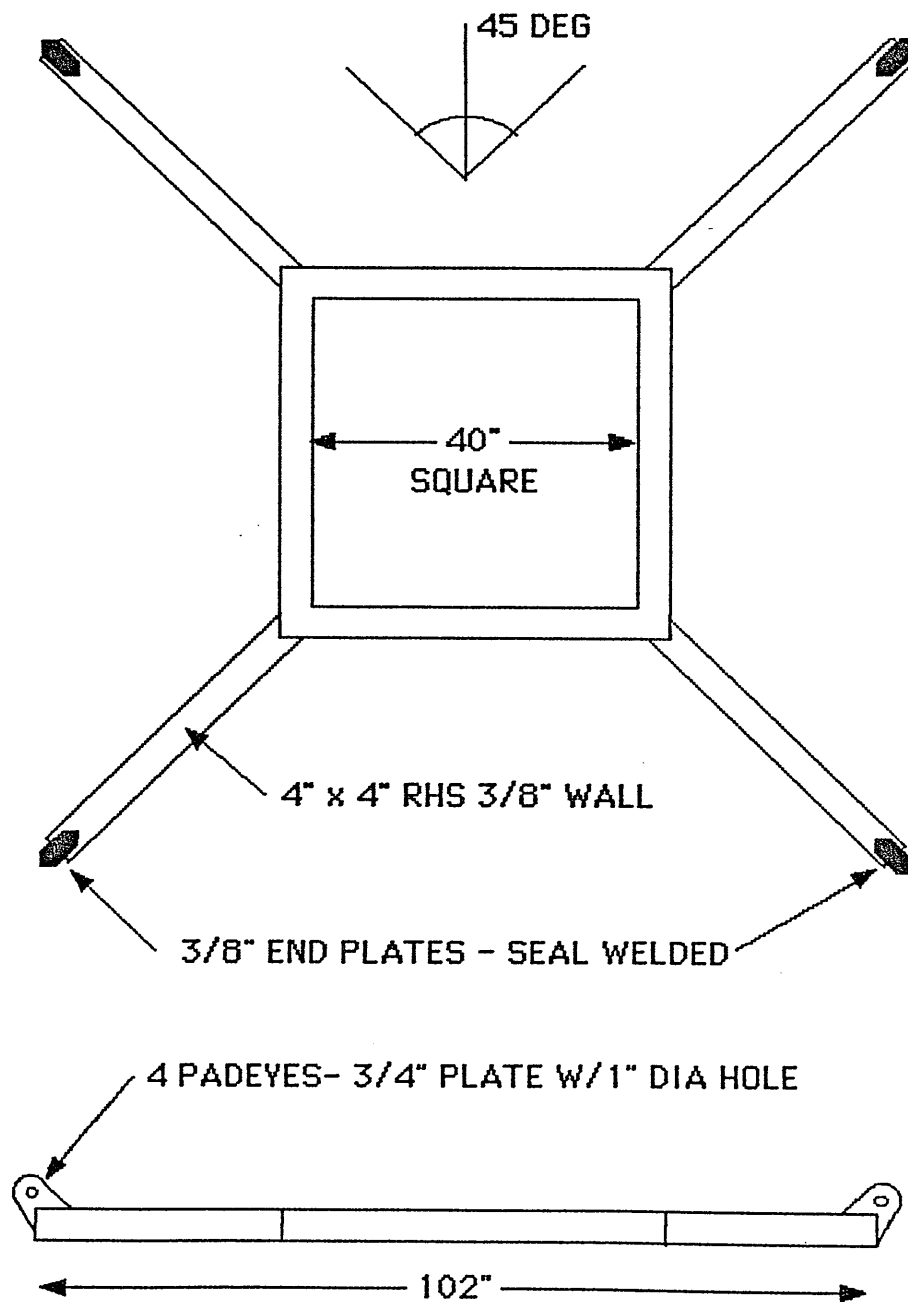
<u>Anchor No.</u>	<u>Distance F/Rig - m</u>	<u>Heading F/Rig</u>	<u>X mE</u>	<u>Y mN</u>
1	914	80	627,542	5,774,534 *
2	914	110	627,499	5,774,050
3	914	170	626,779	5,773,445
4	914	200	626,295	5,773,488 *
5	914	260	625,690	5,774,208 *
6	944	290	625,733	5,774,692
7	914	350	626,453	5,775,297
8	914	20	626,937	5,775,254 *
Location		-	626,616	5,774,371 *
Heading Buoy -	52m	230	626,546	5,774,312 *
Heading Buoy -	235m	230	626,405	5,774,194 *

*These positions will be marked with buoys before the rig's arrival.

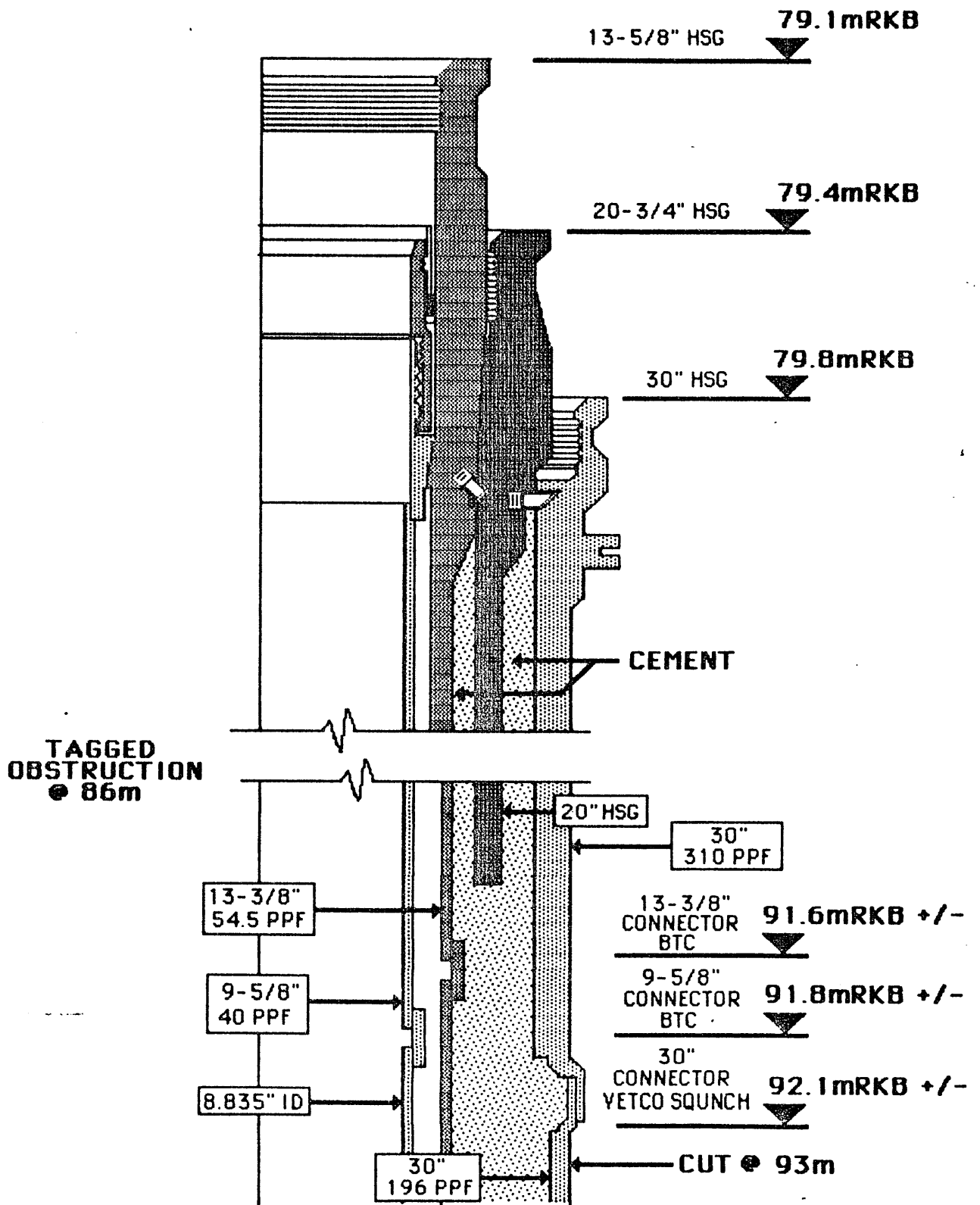
Each anchor will be deployed with 610m of chain (with the exception of 640m for anchor No. 6) and sufficient wire to reach the horizontal distances listed above.

Water depth is 61m

TUNA 3 WELLHEAD RECOVERY
GUIDELINE GUIDE FRAME

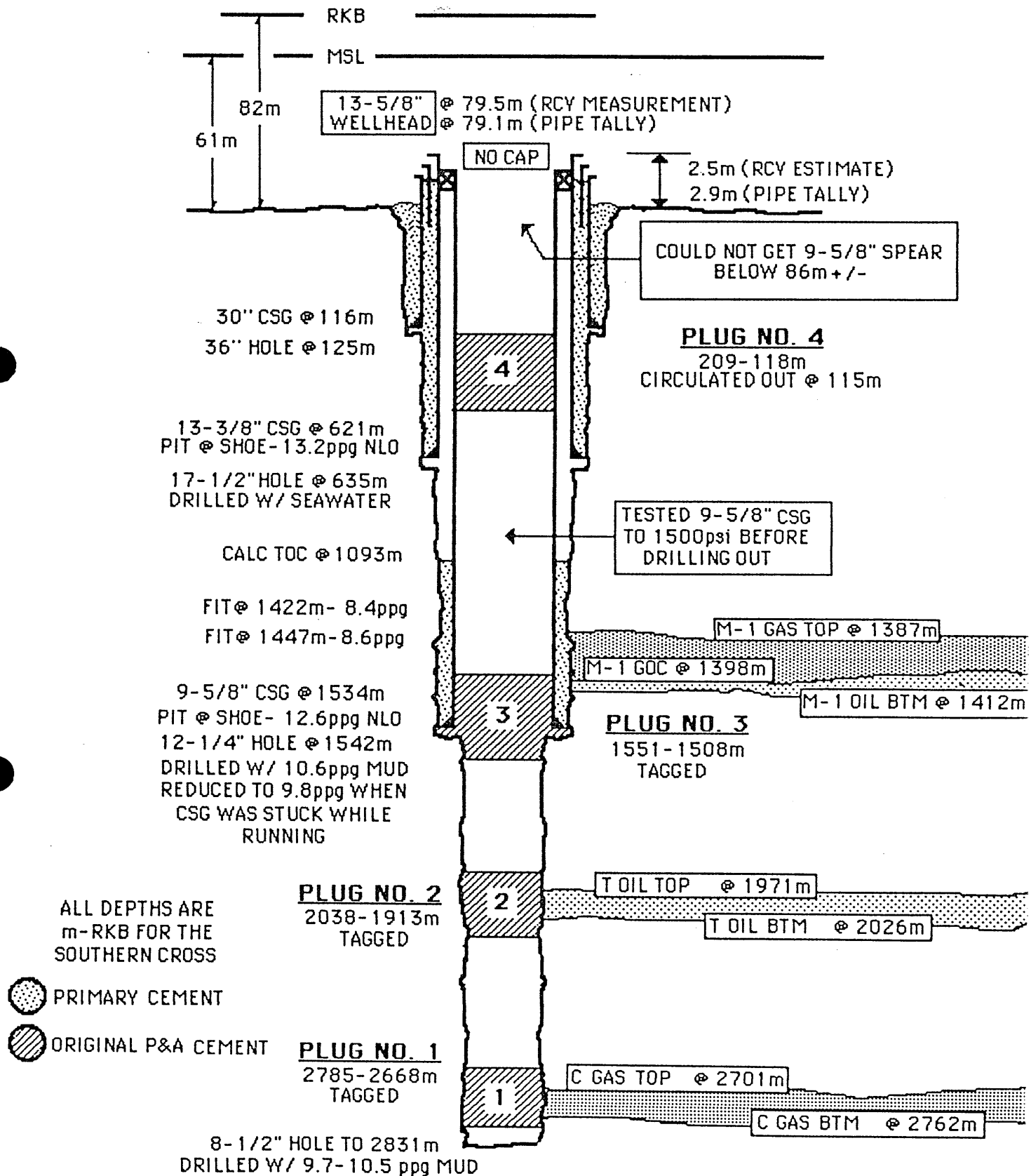


TUNA 3 WELLHEAD RECOVERY WELLHEAD SET UP

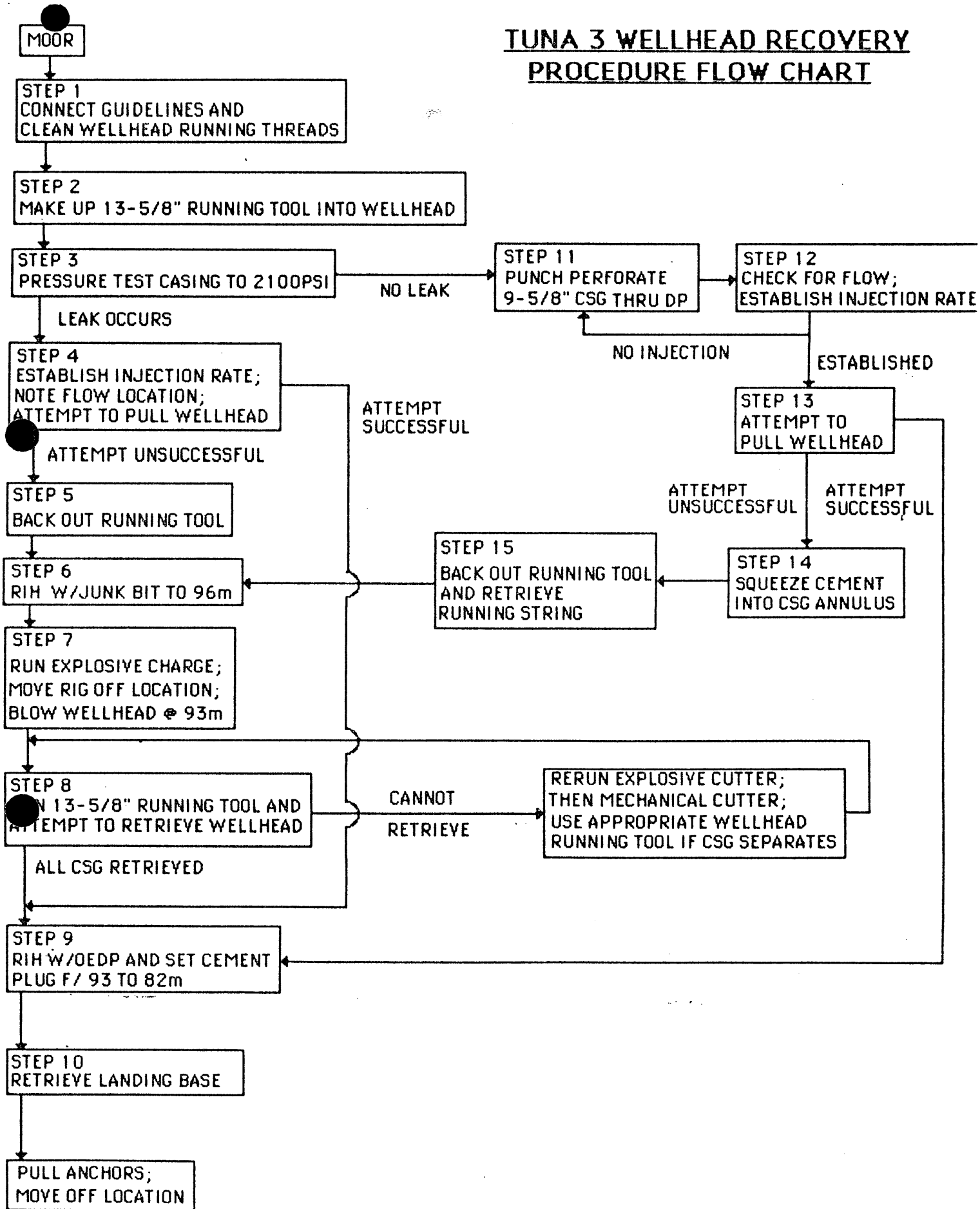


TUNA 3 ABANDONMENT SCHEMATIC

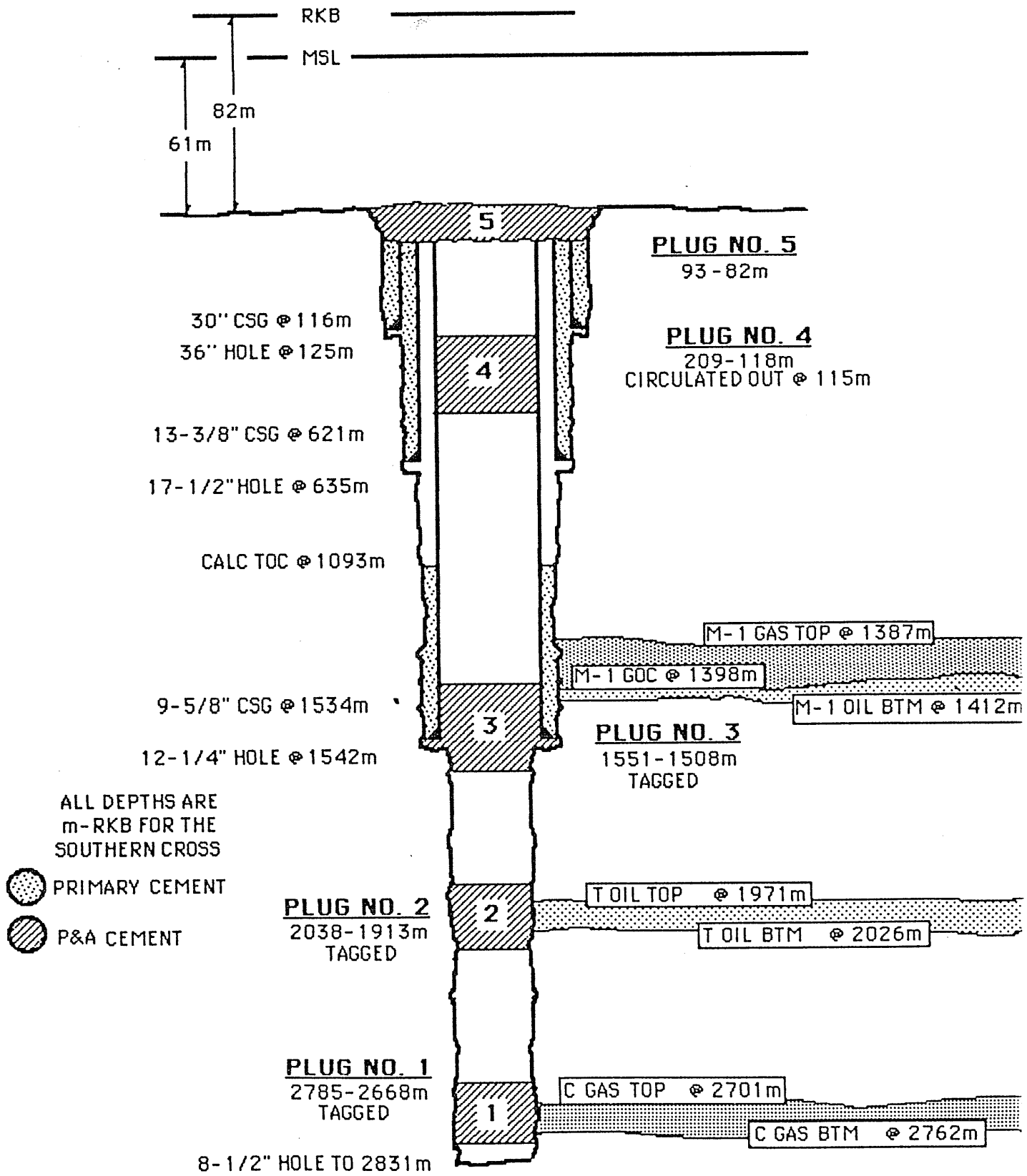
CURRENT STATUS



TUNA 3 WELLHEAD RECOVERY PROCEDURE FLOW CHART

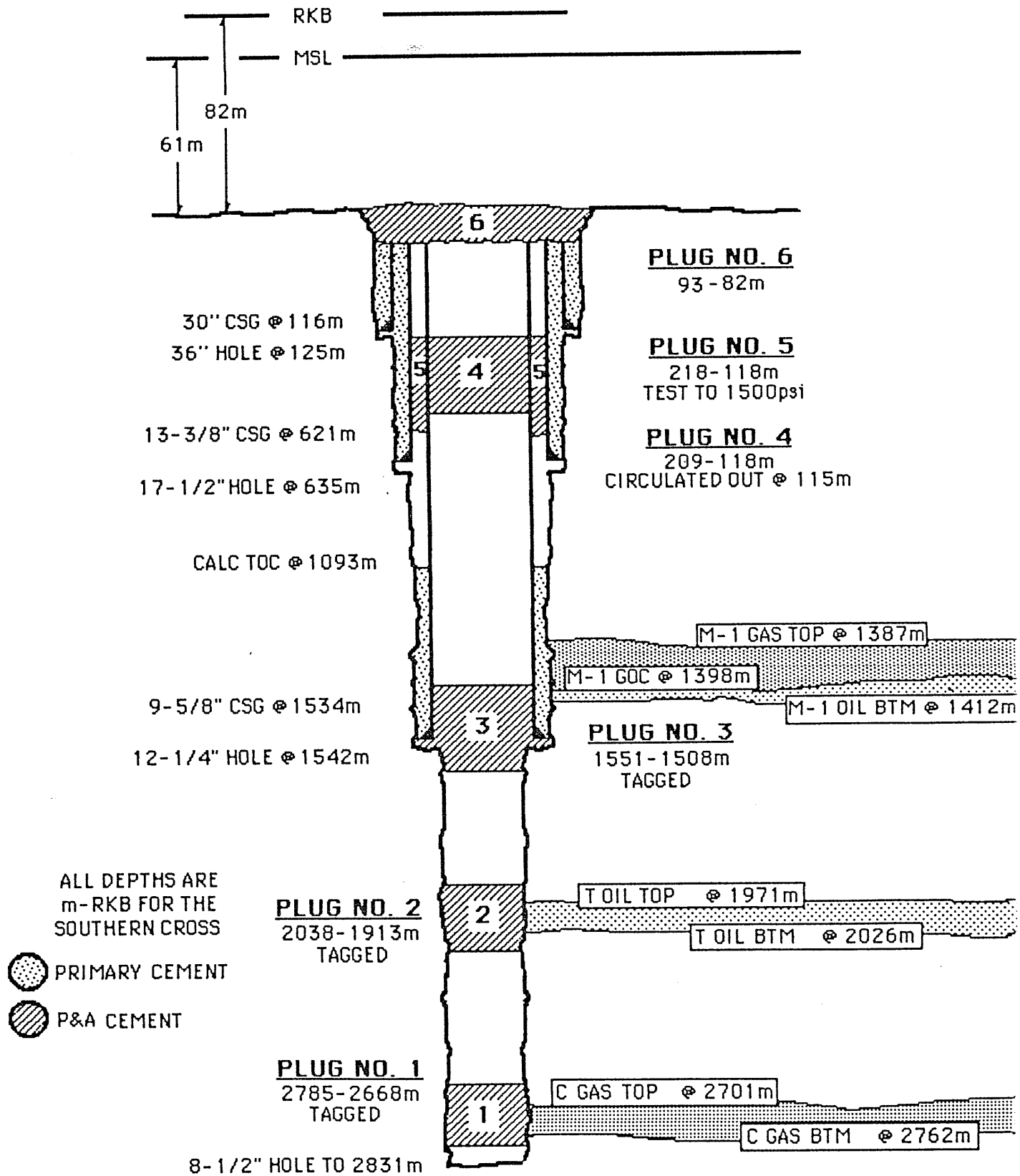


TUNA 3 ABANDONMENT SCHEMATIC FINAL STATUS

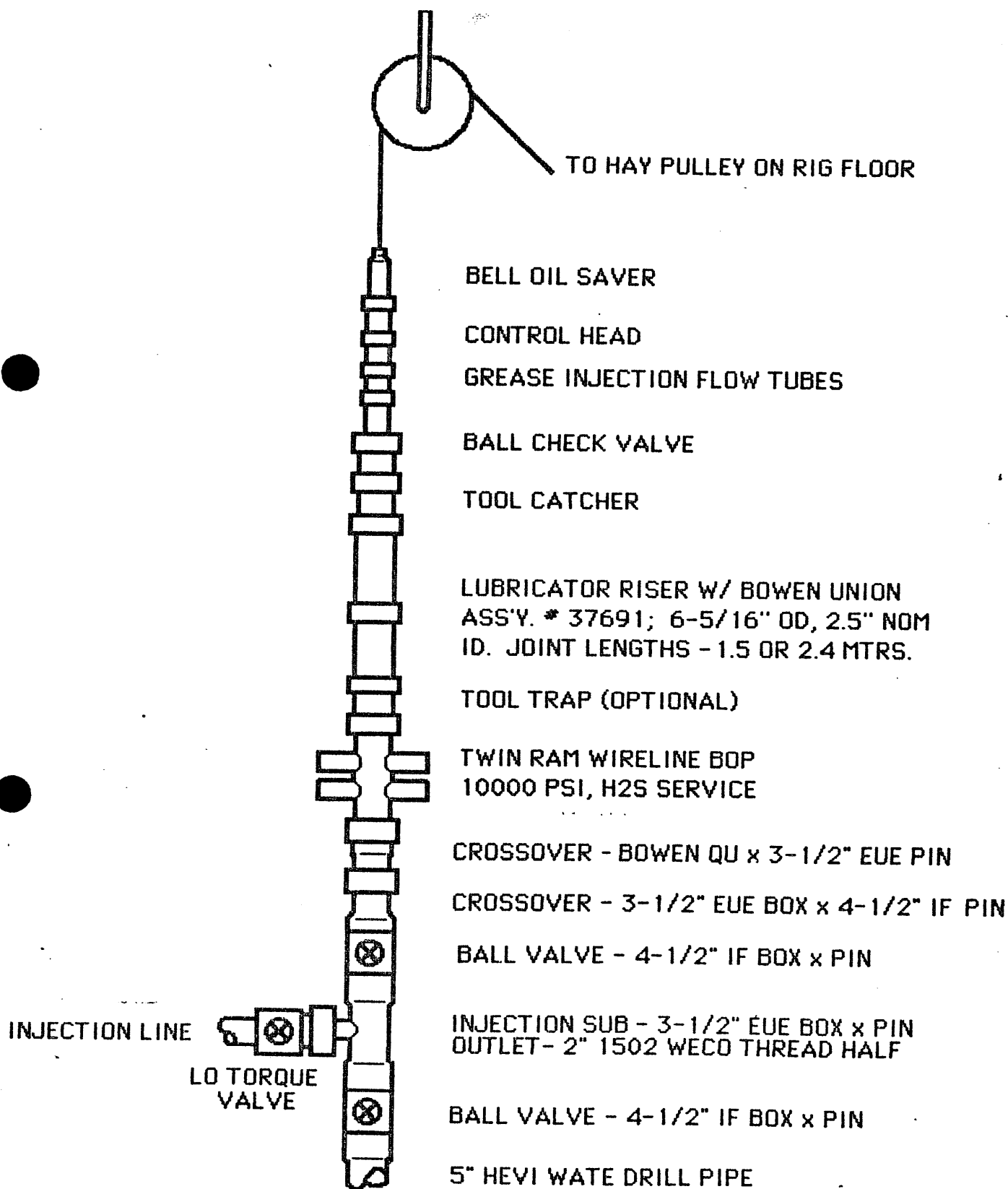


TUNA 3 ABANDONMENT SCHEMATIC FINAL STATUS

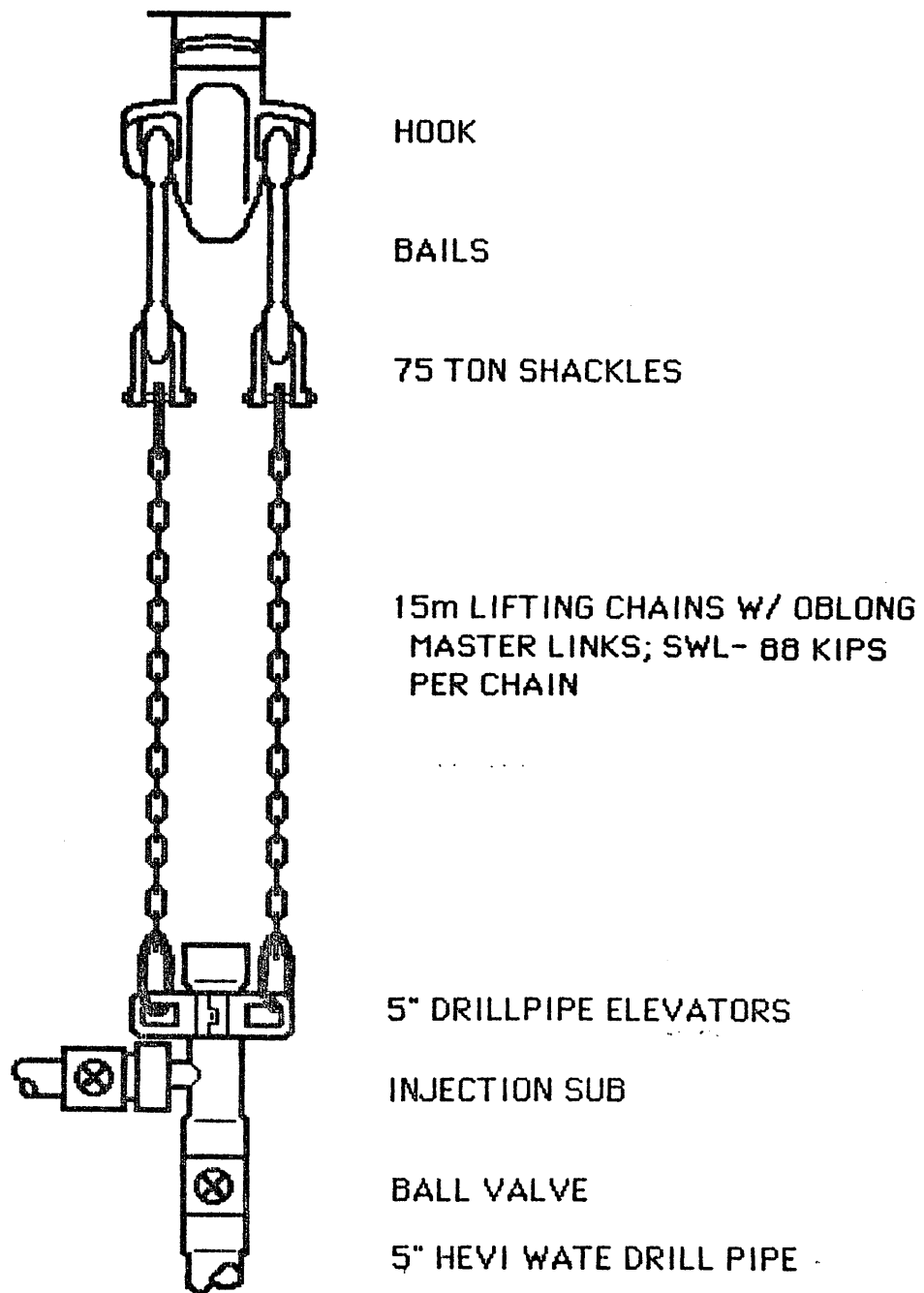
(IF STEP 14 IS PERFORMED)



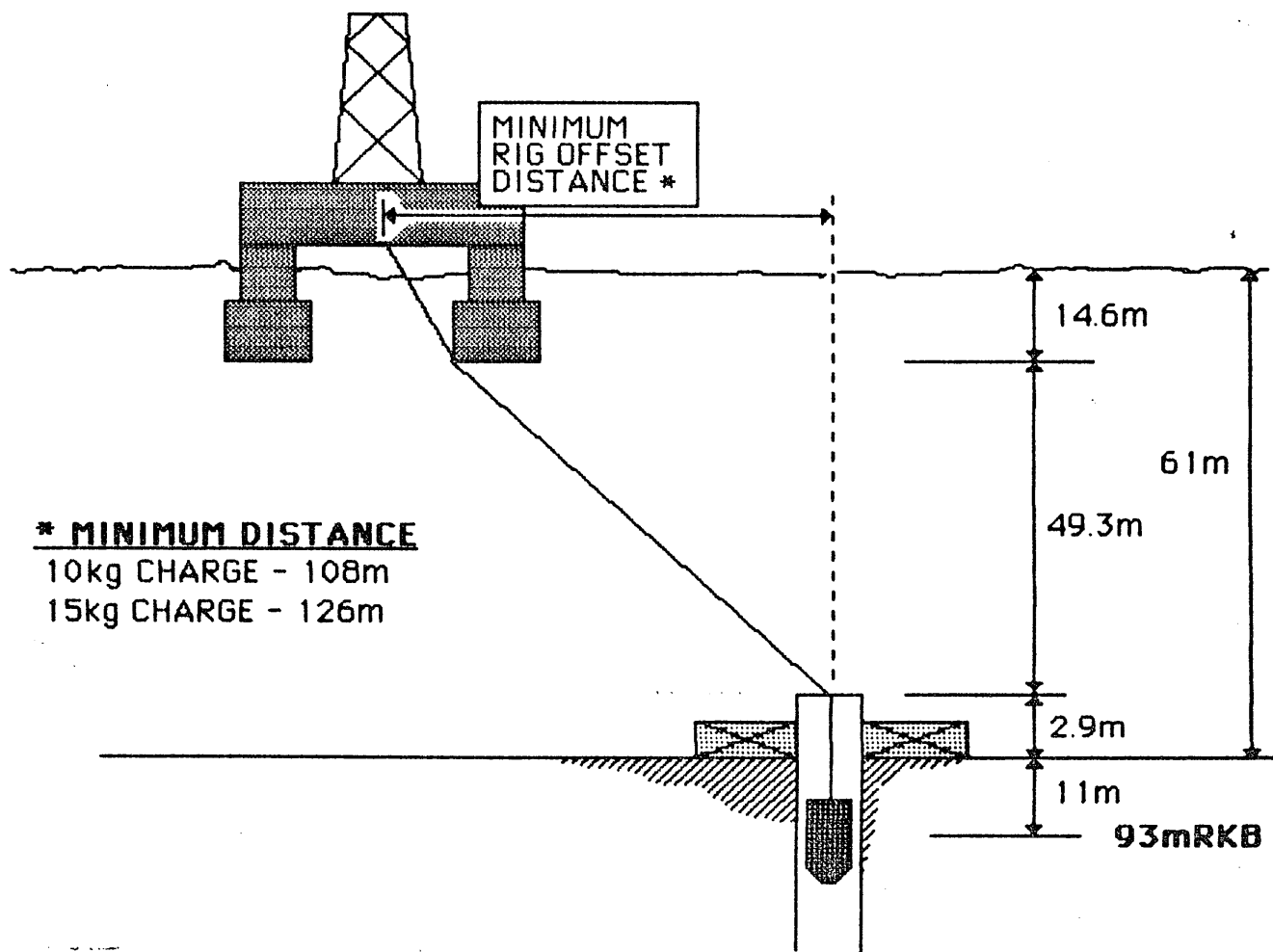
TUNA 3 WELLHEAD RECOVERY
SURFACE SET-UP FOR PERFORATING



TUNA 3 WELLHEAD RECOVERY
STRING SUPPORT SET-UP



TUNA 3 WELHEAD RECOVERY RIG POSITION WHEN BLOWING WELLHEAD



ENCLOSURES

PE601479

This is an enclosure indicator page.
The enclosure PE601479 is enclosed within the
container PE906475 at this location in this
document.

The enclosure PE601479 has the following characteristics:

ITEM_BARCODE = PE601479
CONTAINER_BARCODE = PE906475
NAME = Well Completion Log
BASIN = GIPPSLAND
PERMIT = VIC/P1
TYPE = WELL
SUBTYPE = COMPLETION_LOG
DESCRIPTION = Well Completion Log (enclosure from
Well Summary) for Tuna-3
REMARKS =
DATE_CREATED = 27/05/70
DATE_RECEIVED =
W_NO = W576
WELL_NAME = Tuna-3
CONTRACTOR =
CLIENT_OP_CO = ESSO EXPLORATION AND PRODUCTION
AUSTRALIA INC

(Inserted by DNRE - Vic Govt Mines Dept)

PE603827

This is an enclosure indicator page.
The enclosure PE603827 is enclosed within the
container PE906475 at this location in this
document.

The enclosure PE603827 has the following characteristics:

- ITEM_BARCODE = PE603827
- CONTAINER_BARCODE = PE906475
- NAME = Mud Log
- BASIN = GIPPSLAND
- PERMIT = VIC/P1
- TYPE = WELL
- SUBTYPE = MUD_LOG
- DESCRIPTION = Mud Log (Grapholog) enclosure from Well
Summary for Tuna-3
- REMARKS =
- DATE_CREATED = 27/03/70
- DATE_RECEIVED =
- W_NO = W576
- WELL_NAME = TUNA-3
- CONTRACTOR = CORE LABORATORIES
- CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE603828

This is an enclosure indicator page.
The enclosure PE603828 is enclosed within the
container PE906475 at this location in this
document.

The enclosure PE603828 has the following characteristics:

ITEM_BARCODE = PE603828
CONTAINER_BARCODE = PE906475
NAME = Completion Coregraph
BASIN = GIPPSLAND
PERMIT = VIC/P1
TYPE = WELL
SUBTYPE = WELL_LOG
DESCRIPTION = Completion Coregraph (enclosure from
ell Summary) for Tuna-3
REMARKS =
DATE_CREATED = 25/02/70
DATE_RECEIVED =
W_NO = W576
WELL_NAME = TUNA-3
CONTRACTOR = CORE LABORATORIES
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE603829

This is an enclosure indicator page.
The enclosure PE603829 is enclosed within the
container PE906475 at this location in this
document.

The enclosure PE603829 has the following characteristics:

ITEM_BARCODE = PE603829
CONTAINER_BARCODE = PE906475
NAME = Continuous Dipmeter Log
BASIN = GIPPSLAND
PERMIT = VIC/P1
TYPE = WELL
SUBTYPE = WELL_LOG
DESCRIPTION = Continuous Dipmeter (enclosure from
Well Summary) for Tuna-3
REMARKS =
DATE_CREATED = 27/02/70
DATE_RECEIVED =
W_NO = W576
WELL_NAME = TUNA-3
CONTRACTOR = SCHLUMBERGER
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)

PE902829

This is an enclosure indicator page.
The enclosure PE902829 is enclosed within the
container PE906475 at this location in this
document.

The enclosure PE902829 has the following characteristics:

- ITEM_BARCODE = PE902829
- CONTAINER_BARCODE = PE906475
- NAME = Time Depth Curve
- BASIN = GIPPSLAND
- PERMIT = VIC/P1
- TYPE = WELL
- SUBTYPE = VELOCITY_CHART
- DESCRIPTION = Time Depth Curve (enclosure from Well
Summary) for Tuna-3
- REMARKS =
- DATE_CREATED = 8/09/71
- DATE_RECEIVED =
- W_NO = W576
- WELL_NAME = Tuna-3
- CONTRACTOR =
- CLIENT_OP_CO = ESSO EXPLORATION AND PRODUCTION
AUSTRALIA INC

(Inserted by DNRE - Vic Govt Mines Dept)

PE906476

This is an enclosure indicator page.
The enclosure PE906476 is enclosed within the
container PE906475 at this location in this
document.

The enclosure PE906476 has the following characteristics:

ITEM_BARCODE = PE906476
CONTAINER_BARCODE = PE906475
NAME = FIT Data
BASIN = GIPPSLAND
PERMIT = VIC/P1
TYPE = WELL
SUBTYPE = FIT
DESCRIPTION = Formation Interval Tester Data
(enclosure from Well Summary) for
Tuna-3
REMARKS =
DATE_CREATED =
DATE_RECEIVED =
W_NO = W576
WELL_NAME = TUNA-3
CONTRACTOR = SCHLUMBERGER
CLIENT_OP_CO = ESSO AUSTRALIA LIMITED

(Inserted by DNRE - Vic Govt Mines Dept)