FLOUNDER A-20a

FINAL WELL REPORT

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CONTENTS

Section 1
General Well Summary

WELL DATA

Operator	: Esso Australia Ltd	
Platform	: Flounder	
Well name	: Flounder A-20a	
Country	: Australia	
Location	: Gippsland Basin	
Structure	: Flounder T-1	
Field	: Flounder	
Permit	: Vic / L11	
Location AMG co-ordinates	5 758 708.90 mN	625 840.95 mE
Location local co-ordinates	Lat: 38° 18' 39.245" S	Long: 148° 26' 21.748" E
Target Local co-ordinates	528.3 mS	321.5 mW
Profile	: Deviated	
Reference depth	: Rotary Table	
RT to Seabed	: 126.85 metres	
RT above M.S.L.	: 33.85 metres	
Sea-water depth	: 93.00 metres	
Proposed total depth	: 2789.0 metres	
Actual total depth	: 2789.0 metres	
True vertical depth	: 2629.23 metres	
Spudded on	: 07th February 2003	
Total depth reached on	: 19th February 2003	

Drilling Contractor

Drilling Contractor	: NABORS ISDL
Rig name	: 453
Rig type	: Platform

Drilling Phases

Diameter (inch)	From (m)	To (m)	Mud Type
8½"	811	2789	KCl / Glycol / PHPA

Cased Hole

Casing Diameter (inch)	Casing Type	Shoe Depth (m)
20"	Conductor	33.85 MDKB (Existing)
$13^{3}/_{8}$"	Surface	803.5 MDKB (Existing)
7"	Production	2782.0 MDKB

MUD LOGGING

Logging Unit Number: 137

Engineers: M. Smith, R. Pereira, M. Boyd, P. Rady

Sampling Interval

Flounder A-20a

Sample Type	Number of sets	Quantity per set	Sampling interval	From (m)	To (m)
Washed and Dried	3	100 grams	10 metres	1940	2085
Washed and Dried	3	100 grams	5 metres	2085	2789

Cuttings Distribution

Company	Washed and Dried Sample Set
Esso Australia	1
Victorian Department of Energy and Minerals	1
Australian Bureau of Resources	1

WELL SUMMARY

Flounder A-20a is a conventional directional well designed to achieve ultimate recovery of T1.1 and T1.2 reserves in the south western part of the T-1 reservoir. The well was drilled to a Total Depth of 2789 m MDRT (2629.23 m TVDRT) in 8½" hole and completed with a single oil completion string of 3½" tubing in 7" production casing.

Flounder A-20a was spudded at 20:30 hours on the 07th February 2003 after setting a whipstock in $13^{3}/_{8}$" casing and milling a $11^{7}/_{12}$" window from 795.5 m to 811 m.

An 8½" steerable / MWD drilling assembly was made up with a Smith S73PX PDC bit and run in the hole and worked through window to 811m. One metre of new hole was drilled and the hole circulated to condition the mud before a PIT (485 psi @ 8.85 ppg: 12.8 ppg EMW); was carried out.

Drilled, steered and rotated 8½" hole from 812 m to 922 m, taking gyroscopic surveys at 835 m, 903 m and 922 m. Rigged down wire line and survey tools and continued to drill 8½" hole from 922 m to 2049 m. From 812 m to 1508 m the well path was steered from; an initial inclination of 48° to close to vertical and from an azimuth of 209° to 238°. The inclination was then held to less than 1° until the next build and turn section.

A precautionary wiper trip to the shoe was carried out at 2049 m, before penetrating the LaTrobe Formation. The hole was then drilled from 2049 m to 2128 m, where the drill string was tripped; while an incident investigation was carried out.

On running back to the bottom, the well was drilled from 2128 m to 2330 m, starting the final build and turn at 2224 m; and holding the inclination and azimuth from 2454 m. The bit was pulled at 2330 m due to slow penetration rate. A Smith 20GF tri-cone rock bit was used to drill the next section of the LaTrobe Group. It was pulled at 2612 m, before penetrating the T-1 reservoir, due to reduced penetration rate. A Smith ER6027RP tri-cone bit was used to drill the reservoir section and the well to final depth.

Baracarb-25 and Baracarb-100 were added to the mud system prior to entering the LaTrobe Formation to bridge the pore throats and reduce the likelihood of differential sticking and seepage losses. The mud weight was reduced from 9.8 ppg to the programmed 9.5 ppg at 2259 m, due to indications of differential sticking. Finagreen-EBL was added from 2612 m to reduce torque in the lower LaTrobe Group.

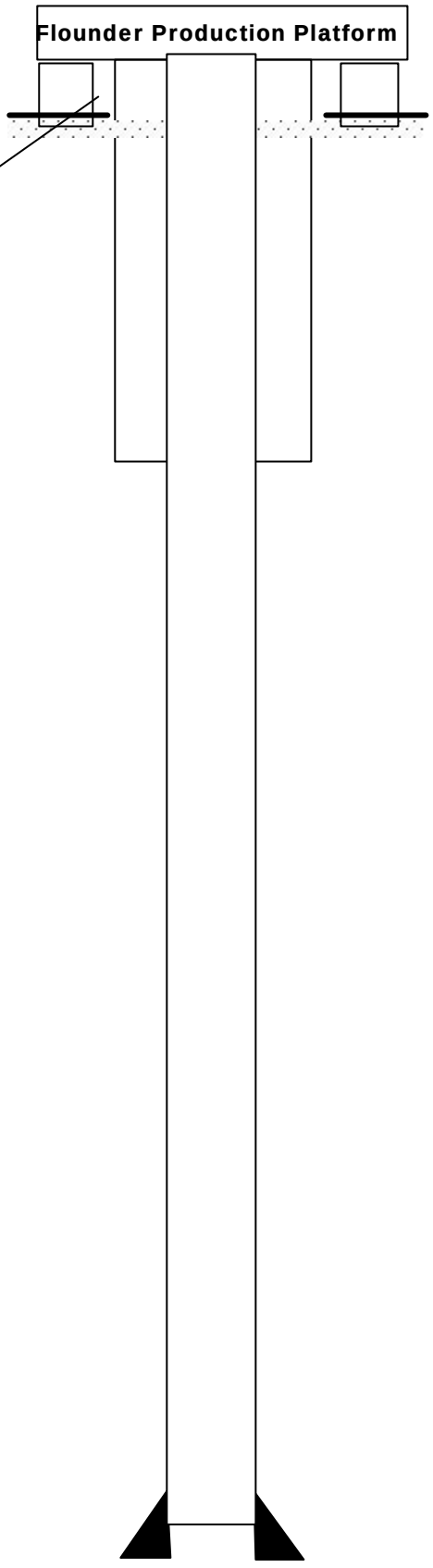
Flounder A-20a reached a Total Depth of 2789 m (2629.23 mTVD) at 03:00 hours on the 19th February 2003. The final survey at a depth of 2773.49 m had an inclination of 11.61° and an azimuth of 214.71°. The hole was logged, production casing run and the completion program executed. The well was handed over to production at 21:00 hours on the 27th of February 2003.

WELL PROFILE

Rotary Table to Mean Sea Level
33.85 m

Rotary Table to Sea Bed 126.85 m

20" Conductor Shoe at 33.85 m



Nabors Rig 453

Milled Window from
795.5 m – 811.0 m

Whipstock in $13^{3}/_{8}$" Casing at 803.5m

Spudded A-20a
07th February 2003

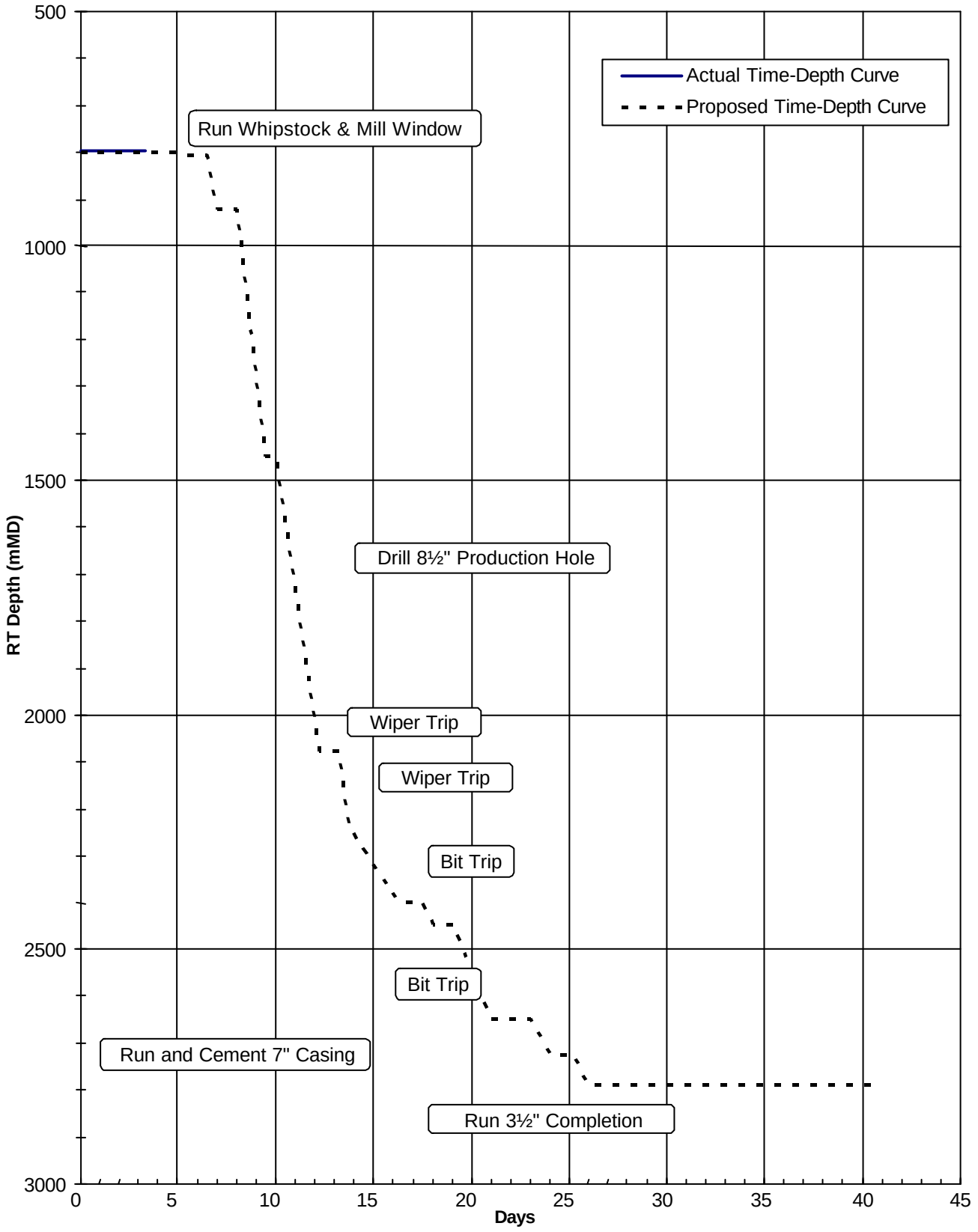
811.0 m – 2789.0 m
Mud Weight 9.0 – 9.8 ppg

7" Production Casing at 2782.0 m

8½" Hole Drilled to 2789 m

Revision	Date	Issued by	Approved by	Remarks
1	27-02-2003	Geoservices Unit 137	Base Mud logging Coordinator	

TIME-DEPTH CURVE (measured depth)



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BIT RUN SUMMARY

Bit	**Size** (")	**Type**	**Jets**	**In** (m)	**Out** (m)	**Hours**	**Condition**
1	8½"	Smith S73PX	6x16	811	2330	67.4	1-2-WT-A-X-I-CT-BHA
2	8½"	Smith 20GF	3x22	2330	2612	27.4	7-7-BT/WT/MT/CT-E-I-ER-PR
3	8½"	Smith ER6067RP	3x22	2612	2789	24.8	6-7-BT/WT/MT/CT-A-E-E-E-$^{1}/_{16}$"-ER-TD

CASING DATA

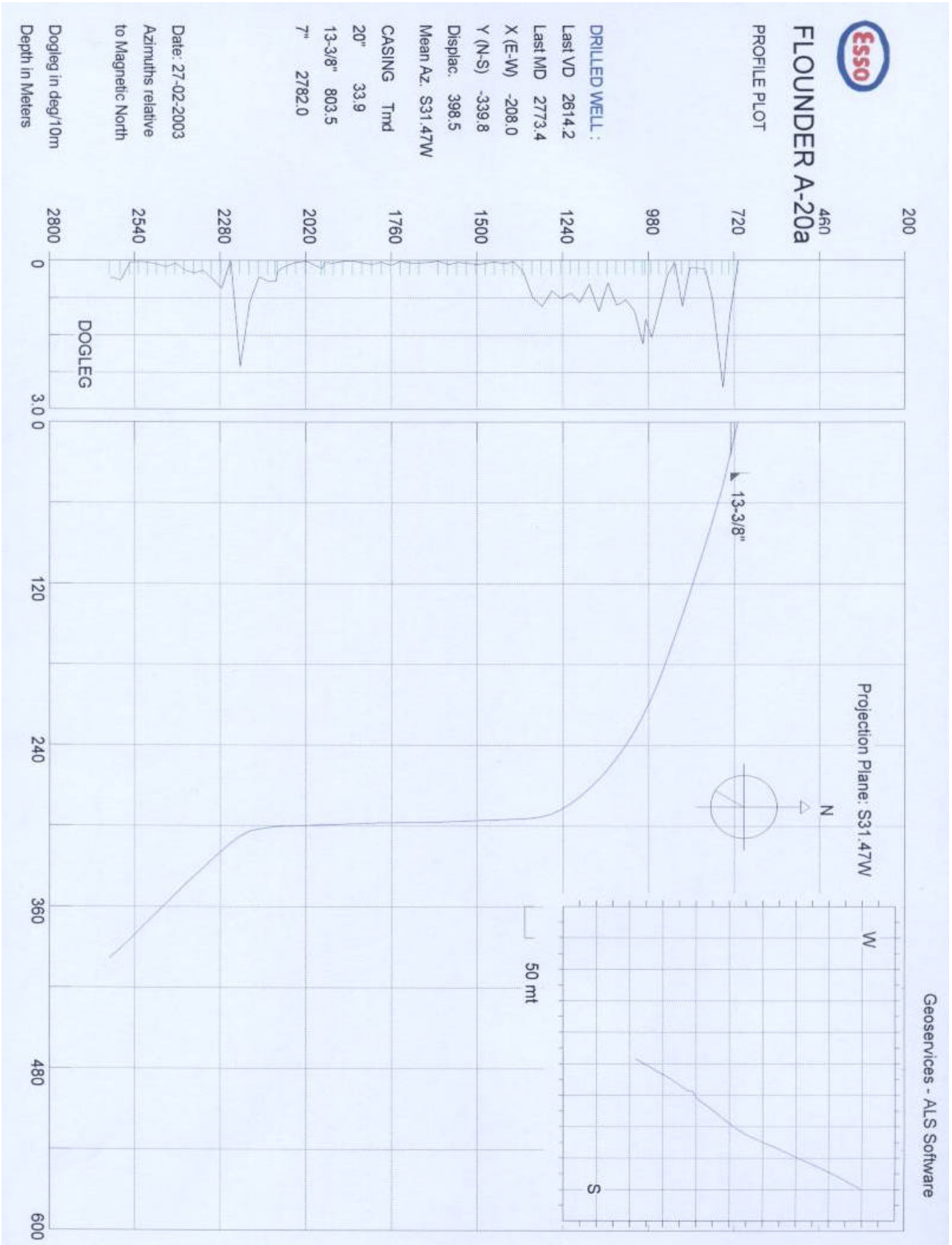
Type	**Size** (inches)	**Weight** (lb/ft)	**Grade**	**Thread**	**Depth** (mMDRT)
Conductor	20"	133	K-55	BTC	33.85
Surface	$13^{3}/_{8}$"	54.5	K-55	BTC	803.5
Production	7"	26	L-80	LTC	2782.0

CEMENTING DATA

Casing Details	**Cement Type**	**Dry Cement Volume** (sx)	**Cement Additives**	**Mix Water** (bbls)	**Slurry Volume** (bbls)	**Slurry Density** (ppg)	**Cement To / From** (mMDRT)	**Casing Pressure Test** (psi)
7"	G	710	HALAD 413L 32GAL/10 bbls SCR-100 1GAL/10 bbls CFR-3L 5GAL/10 bbls NF-5 0.25GAL/10 bbls	80.3	143	15.8	1917 m -2782 m	2000

WELL DIRECTIONAL PROFILE

(From Geoservices Software)



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WELL DIARY

02nd February 2003 **Complete rig up on Flounder at 18:00 hrs.** Prepare to mix mud. Make up test assembly and test stand pipe, BOP, lower kelly valve, stab in valve and grey valve with Howco. Break down test assembly. Remove abandonment flange and 'B' section from well head. Cameron inspect ring groove – ok. Nipple up riser, BOP, bell nipple and flow line. Mix mud.

03rd February 2003 Nipple up BOP, bell nipple and flow line. Secure riser, function test koomey unit. Lay out drill pipe and mix mud. Lift BOP and install onto riser. Complete nippling up. Howco pressure test BOP and lines. Pick up 5" drill pipe.

04th February 2003 Continue to pick up drill pipe and rack back as stands in derrick. Make up $13^{3}/_{8}$" scraper BHA, picking up 5" HWDP. Run in hole picking up the last of the drill pipe. Run in with stands to depth. Work scraper over window interval. Displace casing to mud.

05th February 2003 Continue to displace to mud. Pressure test casing as per ESSO requirements. Pull out of hole. Lay out scraper assembly. Make up whipstock and milling assembly. Pick up drill collars and run in hole to 798 m. Rig up Schlumberger and SDI. Initialize gyroscope survey tool and run in hole on wire line to 770 m. Orientate and work string. Attempt to confirm orientation – no go. Pull out tool and redress; check crown sheaves for possible hang up points.

06th February 2003 Fix Schlumberger cable. Run in and confirm orientation of whipstock. Survey well, while pulling out of hole with the wire line. Set whipstock at 803.5 m and shear off. Mill casing window from 795.5 m to 811 m. Circulate bottoms up and pump pill. Pull out of hole.

07th February 2003 Pull out of hole, laying out 8" drill collars and milling assembly. Pull wear bushing. Jet stack and function test BOP. Run wear bushing. Make up 8½" steerable drilling assembly and BHA. Run in hole to 463 m. Slip and cut drilling line. Run in hole from 463 m to 778 m. Conduct repairs on TDS. Run in hole from 778 m to 811 m; work drilling assembly through window. Orientate drilling assembly and drill to 812 m. Circulate and condition mud. Rig up Howco and conduct PIT. Continue to drill 8½" hole from 812 m to 831 m.

08th February 2003 Drill from 831 m to 835 m and conduct gyro survey. Drill ahead from 831 m to 863 m and conduct gyro survey. Drill 8½" hole from 863 m to 903 m. Rotate and work string, while cleaning mud pump #2 strainers. Drill 8½" hole from 903 m to 922 m. Rotate and work string, while power from ESSO to mud logging unit down. Remove Schlumberger sheaves from derrick. Drill 8½" hole from 922 m to 1036 m. Rotate and work string, while investigating mud pump pressure loss. Drill 8½" hole from 1026 m to 1140 m.

09th February 2003 Drill 8½" hole from 1140 m to 1180 m. Circulate and work drill string, while changing shaker screen. Drill 8½" hole from 1180 m to 1409 m. Circulate and work drill string, pull back 2 stands, with reduced pump rates. Investigate and remedy TDS fault. Drill 8½" hole from 1409 m to 1449 m.

10th February 2003 Drill 8½" hole from 1449 m to 1766 m. Circulate and work drill string, while changing shaker screens.

11th February 2003 Drill and survey 8½" hole from 1895 m to 2039 m. Pull out of hole whilst working string and racking back 1 stand every ½ hour to 922 m. Rotate and work string whilst circulating hole clean, orientate string to whipstock and pull out of hole to 877 m – tight hole. Rotate and work string from 877 m to 835 m. Rotate and work string whilst circulating hole clean at 835 m. Rotate and work string from 835 m to 807 m. Run in hole from 807 m to 890 m – ok. Pull out of hole from 890 m into shoe at 795 m. Slip and cut drilling line and work on TDS. Run in hole to 835 m.

12th February 2003 Run in hole to 2039m. Continue to drill, slide and survey from 2039 m to 2128 m, drilling at a controlled rate of 30 m/hr. Rotate and work string whilst circulating hole clean at 2126 m. Review incident and continue to rotate and work string whilst circulate hole clean; racking back 1 stand every ½ hour. Pull out of hole to 922 m and circulate hole clean. Rotate, orientate tool face and pull through window to 777m. Wait at shoe. Run in hole to bottom.

13th February 2003 Continue to run in hole to bottom. Continue to drill, slide and survey 8½" hole from 2128 m to 2259 m. Rotate and work string whilst reducing mud weight from 9.8ppg to 9.5ppg. Continue to drill, slide and survey from 2259 m to 2305 m.

14th February 2003 Continue to drill, slide and survey from 2305 m to 2330 m. Pull out of hole due to slow penetration rate. Rack back 1 stand every ½ hour to 2263 m. Pull out of hole from 2263 m to 2254 m, pump slug and continue to pull out of hole to 864 m. Orientate BHA for window and continue to pull out of hole to 849 m - stuck in hole. Work string, pump and jar attempting to rotate - free string. Back ream to shoe at 805 m. Continue to pull out of hole and rack back BHA. Retrieve wear bushing, makeup jetting tool and flush well head. Function tests BOPs, make up test assembly and set same. Rig up Howco and pressure test BOPs.

15th February 2003 Continue to test BOP. Break down test assembly and run wear bushing. Make up Bit # 2 and run in hole to 2239 m. Wash and ream from 2239 m to 2330 m. Drill, slide and survey 8½" hole from 2330 m to 2425 m.

16th February 2003 Drill, slide and survey 8½" hole from 2425 m to 2612m.

17th February 2003 Condition mud, rotate and work string, racking back 1 stand every ½ hour from 2612 m to 2469 m whilst circulating hole clean. Pull out of hole to 890 m to 810 m and orientate string. Continue to pull out of hole to 37 m. Pull out of hole and break BHA and rack back. Make up new 8 ½" bit, shallow hole test, set bend and run in hole to 2498 m, filling every 10 stands. Wash and ream from 2498 m to 2612 m whilst adding Finagreen to mud system. Drill and survey 8½" hole to 2613 m whilst adding Finagreen to mud system. Rotate and work string and reduce pump rate whilst conditioning mud. Drill and survey 8½" hole to 2617 m.

18th February 2003 Drill and survey 8½" hole from 2617 m to 2771 m

19th February 2003 Drill, slide and survey from 2771 m to 2789 m(TD). TD at 03:15hrs on 19/02/03. Circulate hole clean and condition mud, pump sweep and backream out of hole to 2060 m. Pull out of hole to 890 m and circulate hole clean. Conduct rig service while Reeves install rotoencoder to drawworks hub. Run in hole to TD, precautionary washing and reaming last 2 stands to bottom. Circulate hole clean while racking back 1 stand per ½ hour to 2698 m. Flow check, well static, slug pipe and pull out of hole.

20th February 2003 Continue to pull out of hole. Break down and lay out BHA as per Anadrill instructions. Make up reeves logging string, make up BHA, insert logging string and load radioactive source. Run in hole. Tag bottom at 2789 m. Pull out of hole to 2332 m, pump messenger dart and confirm with 300psi pressure increase. Pull out of hole with logging tools as per Reeves.

21st February 2003 Continue to pull out of hole with logging tools as per Reeves. Rack and lay out logging BHA. Lay out logging tools, remove radioactive source. Pull wear bushing, jet BOPs and wellhead. Rig up to run 7" casing. Make up cement float, shoe and run in hole with 7" casing.

22nd February 2003 Continue to run in hole with 7" casing to 2782 m. Change out slips, bales and rig up to cement casing. Cement casing with Halliburton as per program. Bump plug and hold at 2000 psi/15 minutes. Wait on cement. Perform scheduled rig maintenance. Lift and secure BOPs, centralise casing in wellhead.

23rd February 2003 Dress casing stub and nipple up B section. Dress and run riser, nipple up BOPs. Slip and cut drilling line and perform rig maintenance.

24th February 2003 Make up scraper assembly and run in hole. Pick up HWDP and run in hole to 179m. Run in hole with DP to 2300m and fill every 20 joints. Work scraper across 2150 m to 2190 m and 2220m to 2260 m. Run in hole with DP from 2300 m to tag at 2752 m. Drift all tubulars and wash last stand. Wash and rotate tag at 2752 m. Displace and circulate clean with Seawater. Howco test lines and casing to 2500 psi for 15 minutes. Displace well to inhibited brine. Pull out of hole sideways.

25th February 2003 Continue pulling out of hole sideways to 178 m. Layout scraper BHA and break out bit. Rig up shooting nipple/line wiper assembly. Howco test lines and assembly to 1000 psi. Rig up Schlumberger wireline and sheaves. Obtain radio silence, arm and pickup perforating guns and run in hole. Correlate and fire guns at 2220 m-2222 m. Pull out of hole with spent guns. Break out and lay down spent guns. Make up and run in hole with 6" gauge ring to 2752 m. Pull out of hole and layout same. Rig down wireline sheaves and shooting nipple. Monitor drink rate. Pull wear bushing. Rig down wireline unit and rig to run 3 ½" completion tubing.

26th February 2003 Continue to rig down wireline unit and rig to run 3½" completion tubing. Monitor drink rate. Run in hole with 3½" completion tubing to 1808m. Make up TRSSSV/Control line and test to 4000 psi for 15 minutes. Continue to run in completion from 1808 m to 2251 m. Pick up and make up tubing hanger. Cameron terminate control line, Run in hole and land hanger at 2266 m, PUWT - 102k, SOWT – 90k. Deploy lock ring and confirm with 10k overpull. Make up lubricator on deck, rig up FOBV and lubricator. Pressure test same 300/4500 psi for 5 minutes. Run in hole with 'N' test tool to 2250 m. Rerun and zero to confirm depths.

27th February 2003 Howco pressure tubing to 500psi to check floating seals. Increase to 4000psi and hold for 15 minutes to set packers, zero pressure at annulus. Pull out of hole with test tool to surface. Howco test tubing and lower packer integrity by 1500psi/5 minutes. Rig down wireline lubricator and FOBV. Disengage hanger run tool and layout same. Cameron run BPV. Rig down Weatherford. Nipple down BOP and riser. Cameron terminate control line. Nipple up Christmas tree and pressure test upper void to 5000psi/15 minutes. Cameron pull back pressure valve and test tree body to 5000psi/15 minutes. Nipple up wireline BOP's, riser, FOBV and lubricator. Test lines and lubricator 300/3000 psi for 3 minutes. Test tubing 2300 psi/10 minutes. Lock in same. Test production annulus 2000psi/10 minutes. Run in hole and open sliding sleeve at 2189m. Pull out of hole with wireline. Rig down lubricator, FOBV and riser. Rig down wireline BOP's and secure in sub-base. Install tree cap and reinstate grating over well. Prepare to skid rig to A-24A.

Section 2
Geological Summary

FORMATION TOPS

DESCRIPTION	MD (m) RT	TVD (m) RT	TVD (m) SS
Top of Gippsland Limestone	Not Applicable		
Top of Lakes Entrance	2070	1921.37	1887.47
Top of Latrobe Group	2083.5	1934.86	1900.96
Top of P – Sand	2218.5	2069.87	2036.02
Base Tuna - Flounder Channel	2406.0	2256.29	2222.44
Shallow Coal Marker	2439.0	2288.58	2254.73
Mid Palaeocene Coal	2498.0	2346.15	2312.30
Top of T1.1 Sand	2656.0	2500.0	2466.15
OWC	2687.0	2530.0	2496.15
Base of T1.1 Sand	2696.5	2540.0	2506.15
Top of T1.2 Sand	2712.5	2555.0	2521.15
Base of T1.2 Sand	2716.0	2558.0	2524.15
TOTAL DEPTH	2789.0	2629.63	2595.78

GEOLOGICAL SUMMARY

GIPPSLAND FORMATION:

811 m - 2070 m **CALCILUTITE**

CALCILUTITE: Light grey to medium grey, olive grey in part, argillaceous, grading to CALCAREOUS CLAYSTONE with depth, trace disseminated and nodular pyrite, trace calcite and fossil fragments, occasional carbonaceous specks, occasional Ooids, soft to firm, sub-blocky to amorphous.

LAKES ENTRANCE FORMATION:

2070 m – 2083.5 m **CALCAREOUS CLAYSTONE**

CALCAREOUS CLAYSTONE: Olive grey to pale green grey, rare silty, common abundant disseminated pyrite, firm to moderately hard, sub-blocky to blocky.

LATROBE GROUP:

2083.5 m – 2218.5 m **Interbedded CALCAREOUS CLAYSTONE, SILTSTONE and SANDSTONE**

CALCAREOUS CLAYSTONE: Pale grey to medium grey, slight micro-micaceous, occasional disseminated pyrite, firm to moderately hard, sub-blocky to blocky.

SILTSTONE: Brown to dark brown, argillaceous grading to SILTSTONE in part, common to abundant micro-micaceous, minor to common carbonaceous specks, trace common disseminated and nodular pyrite, occasional glauconite nodules, trace dolomite, very soft to soft, amorphous to sub-fissile, sub-blocky in part.

SANDSTONE: Clear to translucent, opaque to frosted, fine to medium, moderately sorted, sub-angular to sub-rounded, weak siliceous cement, trace disseminated and nodular pyrite, generally clean, loose good inferred porosity, no fluor.

P SANDS:

2218.5 m -2393 m **SANDSTONE interbedded with SILTSTONE and trace LIMESTONE.**

SANDSTONE: Clear to translucent, opaque to frosted, fine to very coarse grains in part, dominantly medium to coarse, poor to moderately sorted, sub-angular to sub-rounded, angular fragments in part, weak siliceous cement, minor to abundant calcareous/ dolomite matrix, generally clean loose grains, trace fine dolomite/ pyrite cement, very hard aggregates, dominantly good inferred porosity.

FLUORESCENCE: 2215 m – 2275 m, trace %, pale to moderately bright yellow white pin point to patchy fluor, milky blue green white, slow bleed, instant cut, thin residue ring.

FLUORESCENCE: 2230 m – 2235 m, 40 – 50 %, pale to moderately bright yellow, white pin point patchy fluor, milky blue green white slow bleed, instant cut thin ring residue.

SILTSTONE: Green brown to dusky brown, argillaceous grading to CLAYSTONE, abundant micro-micaceous material, minor carbonaceous specks, trace lignite, trace dolomite, locally grey – pink dolomite stringers, trace nodular pyrite, trace bryozoa, very soft to soft, firm to brittle in part, dispersive in part, amorphous to sub-fissile, blocky in part.

LIMESTONE: Moderately orange pink to translucent orange brown, rare medium grey, dolomitic, crystalline to cryptocrystalline in part, hard to very hard.

2393 m – 2406 m **SANDSTONE**

SANDSTONE: clear to translucent, occasional pink grains, fine to very coarse, poor sorted, rounded to sub-angular, weak to moderately strong siliceous and calcareous cement in aggregate, common white to light grey argillaceous matrix, trace pyrite, loose to moderately hard aggregates, fair inferred porosity, poor visible porosity.

FLUORESCENCE: 2393 m – 2400 m, trace % moderately bright yellow green patchy fluorescence in aggregates. Slow, weak, yellow crush cut, thick yellow residual ring.

BASE TUNA-FLOUNDER CHANNEL:

2406 m - 2498 m **Interbedded SANDSTONE with SILTSTONE and trace COAL.**

SANDSTONE: Translucent, occasionally clear, very fine to very coarse, rare granular, poorly sorted, angular to sub-rounded, occasionally angular fracture, poor cementing, trace strong dolomitic and siliceous cement, generally clean, minor silty matrix, trace nodular pyrite, dominantly loose, occasionally moderately hard aggregates, fair to poor inferred porosity, very poor to poor visible porosity, no fluorescence.

FLUORESCENCE: 2420 m – 2425 m, trace, moderately bright yellow patchy fluorescence, moderately fast, yellow green crush cut, thick yellow residual ring.

SILTSTONE: Light brown to grey brown, pale grey, common argillaceous, arenaceous in part, grading to very fine SANDSTONE, minor to carbonaceous material, rare disseminated pyrite, common micro-micaceous, soft-firm, sub-fissile to fissile.

COAL: Black to black brown, brown in part, earthy to dull minor sub-vitreous, firm to moderately hard, hard to very hard in part, blocky to sub-fissile, hackly to angular fracture, grading to CARBONACEOUS SILTSTONE.

MID PALAEOCENE MARKER

2498 m - 2560 m **SANDSTONE.**

SANDSTONE: Clear to translucent, opaque to milky, pale brown, fine to very coarse, poor sorted, sub-angular to rounded, moderately strong siliceous and dolomite cement in part, quartz overgrowths in part, angular quartz fragments, minor disseminated pyrite, clean, loose, occasional hard to very hard aggregate, fair inferred porosity, poor to ti visible porosity, no fluorescence.

2560 m - 2656 m **Interbedded SANDSTONE with SILTSTONE.**

SANDSTONE: White to very pale grey, very fine to fine, well sorted, sub-angular to angular, moderately strong to strong calcareous cement/ matrix, moderately hard to hard, very hard in part, poor visible porosity.

SILTSTONE (1): Pale yellow brown, white to very light grey in part, light brown grey in part, siliceous, arenaceous, minor argillaceous, grading to silty SANDSTONE, common to abundant micro-micaceous, common pyrite, trace glauconite and chlorite, trace mica flakes, soft to firm, sub-blocky to amorphous.

SILTSTONE (2): Yellow brown to grey orange, light brown to moderately brown in part, argillaceous, dolomitic in part, common very fine sand grains in part.

TOP of T 1.1 SANDSTONE

2656 m – 2696.5 m **SANDSTONE.**

SANDSTONE: Clear to translucent, pale grey, medium to coarse, occasional very coarse grains, moderately poor sorted, sub-rounded, sub-angular in part, trace to common weak siliceous cement, locally common light grey silty matrix, friable, generally loose, clean, fair inferred porosity, poor visible porosity.

FLUORESCENCE: 2656 m to 2685 m, 10- 60 % dull to occasional moderately bright green yellow patchy fluorescence, moderately fast green yellow crush cut, thick residual ring.

SANDSTONE: Clear to translucent, very pale grey, dominantly coarse, medium to very coarse in part, moderately well sorted, sub-rounded to sub-angular, minor rounded, weak siliceous cement, trace white argillaceous matrix, common pyrite quartz, clean friable to moderately hard, hard to very hard in part, common loose, poor visible porosity.

FLUORESCENCE: 2685 m to 2687 m, 70 – 90 % dull to moderately bright yellow even fluorescence, green yellow crush cut, thick residual ring.

2696.5 m – 2712.5 m **SILTSTONE.**

SILTSTONE: m brown to brown grey, arenaceous, grading to very fine SILTSTONE, trace carbonaceous specks, micro-micaceous, sub-blocky to sub-fissile.

TOP T 1.2 SANDSTONE

2712.5 m – 2716 m **SANDSTONE.**

SANDSTONE: Translucent, opaque, pale brown, med to very coarse, poor sorted, angular to sub-angular, common strong dolomitic cement, trace pyrite cement, trace brown grey silty matrix, moderately hard to hard, poor to ti visible porosity, no fluorescence, common min fluorescence.

2716 m – 2789 m **Interbedded SANDSTONE, SILTSTONE and minor COAL.**

SANDSTONE: Clear to translucent, frosted, very fine to very coarse, moderately poorly sorted, sub-angular to sub-rounded, calcareous/ dolomite cement, trace light argillaceous/ silty matrix, trace lithics, moderately hard, fair to poor inferred porosity, poor visible porosity, no fluorescence, trace mineral fluorescence.

SILTSTONE: Moderately yellow brown to dark brown grey, siliceous arenaceous, common carbonaceous specks, micro-micaceous, dolomite in part, soft to dispersive, amorphous.

COAL: Black to brown black, sub-vitreous, moderately hard to friable, sub-fissile, uneven, siliceous, silty.

GAS REPORT

Gas was present immediately on exiting from $13^3/_8$" casing window into the Gippsland formation at 811 m with background values increasing to 5 units and remaining around 5 to 10 units. Minor gas peaks of between 15 to 20 units were recorded during the Gippsland formation with Methane (C1) as the only constituent.

Through out the Latrobe formation there was a gradual increase in the background gas but not until the P-sand well within the Latrobe formation at 2215 m did gas values increase to above 50 units (1%) peaking at 335 units at 2224.5 m. The peak consisted of Methane through to n-Butane and the resultant gas ratios signified a significant Oil bearing rock.

After which background gas dropped back to between 5 to 10 units by around 2250 m and remained with a few minor peaks until 2630 m with another noticeable increase in levels to around 25 to 50 units above the top of the T-sands at 2656 m. Again there was an increase in the heavier gases with the gas ratios showing a drier reservoir.

No Connection gas was observed throughout the drilling of Flounder a-20a

Localised increases in background gas are attributed to both lithology variations and the penetration rate, which was dependant upon the drilling method (being either rotary or slide) carried out at the time. No CO_2 or H_2S was detected while drilling Flounder A-20a.

Gas peaks through the Latrobe Group

Depth metres	**Total Gas** units	**C_1 %**	**C_2 %**	**C_3 %**	**iC_4 %**	**nC_4 %**	**iC_5 %**	**nC_5 %**
2225.0	335.3	1.57	0.44	0.41	0.09	0.15	0.06	0.06
2438.5	27.9	0.54	0.03	0.01	0.00	0.00	0.00	0.00
2444.0	39.6	0.71	0.03	0.01	0.00	0.00	0.00	0.00
2635.5	60.3	0.86	0.09	0.04	0.01	0.01	0.01	0.01
2646.0	65.6	0.85	0.1	0.05	0.01	0.01	0.01	0.01
2654.5	94.7	1.2	0.13	0.07	0.02	0.02	0.02	0.01
2658.0	90.6	1.06	0.13	0.07	0.02	0.02	0.01	0.01