FLOUNDER A-18A

FINAL WELL REPORT

Prepared by
Geoservices Overseas S.A.
Engineers: M. Boyd, M. Smith, P. Rady, R. Pereira

Esso Australia Ltd.
12 Riverside Quay,
South Bank, Melbourne
Victoria 3006
Australia
Tel: (03) 9270-3625
Fax: (03) 9270-3593

Geoservices Overseas SA
Suite 6, 23 Plain Street,
East Perth
Western Australia 6004
Australia
Tel: (08) 9225-5677
Fax: (08) 9225-4277

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Section 1
General Well Summary

WELL DATA

Operator	: Esso Australia Ltd	
Platform	: Flounder	
Well name	: Flounder A-18A	
Country	: Australia	
Location	: Gippsland Basin	
Structure	: Flounder T-1	
Field	: Flounder	
Permit	: Vic / L11	
Location AMG co-ordinates	5 758 711.43 mN	625 855.81 mE
Location local co-ordinates	Lat: 38° 18' 39.155" S	Long: 148° 26' 22.358" E
Target Local co-ordinates		
Primary T-1	572.22 mS	2361.78 mE
Secondary L2	552.21 mS	2231.76 mE
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	: 3726.0 metres	
Actual total depth	: 3736.0 metres	
True vertical depth	: 2612.03 metres	
Spudded on	: 06th June 2003	
Total depth reached on	: 29th June 2003	
Drilling Contractor		
Drilling Contractor	: NABORS ISDL	
Rig name	: 453	
Rig type	: Platform	

Drilling Phases

Diameter (inch)	From (m)	To (m)	Mud Type
8-½"	1225	3337	KCl / Glycol / PHPA
6"	3337	3736	KCl / Glycol / PHPA

Cased Hole

Casing Diameter (inch)	Casing Type	Shoe Depth (m)
20"	Conductor	203.0 MDRT (Existing)
10-¾"	Whipstock	1219.0 MDRT (Existing)
7"	Intermediate	3329.5 MDRT

MUD LOGGING

Logging Unit Number: 137

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

Sampling Interval

Flounder A-18A

Sample Type	Number of sets	Quantity per set	Sampling interval	From (m)	To (m)
Washed and Dried	3	100 grams	10 metres	2820	2920
Washed and Dried	3	100 grams	5 metres	2920	3736

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-18A is a re-drill well designed to intersect the primary T-1.1 sandstone targets and stacked L secondary targets in the L1, L2, L3 and L4 zones. The well was drilled to a Total Depth of 3736 m MDRT (2612.03 m TVDRT) in 6" hole and plugged and abandoned.

Flounder A-18A was officially spudded at 06:00 hours on the 06th of June 2003, setting a whipstock and milling a window in the existing 10¾" casing from 1209.79 m to 1217.24 m and drilling new formation to 1225.3 m.

An 8½" steerable / MWD drilling assembly was made up with a Smith S73HPX PDC bit and run in the hole and kicked–off from 1225 m at 04:30 hours on the 10th of June 2003. The well was drilled to 1227 m and the hole circulated to condition the mud, before a PIT (525 psi at 9.2 ppg: 12.5 ppg EMW) was carried out.

Drilled, steered and rotated 8½" hole from 1227 m to 2905 m. The well was kicked–off with an inclination of 55.77° and an azimuth of 110.36°. Gyroscopic surveys were run at 1242 m and 1270 m due to interference with the 10¾" casing. Only a minor correction in angle and direction was necessary from the casing window. The hole was predominantly rotary drilled, with only short steering intervals to maintain the required well path to KOP #2. The drop and turn commenced at 3263 m and achieved by the intermediate casing point.

A precautionary wiper trip to the shoe was carried out at 2905 m, before penetrating the Latrobe Group. The hole was then drilled from 2905 m to 3337 m. The Top of the Latrobe was at 2937 m and the edge of the P reservoir anomaly was intersected at 3264.5 m.

A wiper trip was carried out at total depth to thoroughly clean the hole prior to wireline logging. Then 7" intermediate casing was run and cemented to 3229.5 m.

A 6" SII XR-30 TODPD tri-cone insert bit was run in conjunction with a down hole motor and MWD drilling assembly which drilled from 3337 m to 3512 m and then pulled due to Total revolutions accumulated on the bit. The second 6” Tri-cone insert bit, a SII XR-40 YODPD was run with the same assembly and drilled to a depth of 3512 m where it was pulled due to the Total revolutions accumulated. The third and final 6” Tri-cone insert bit, a SII XR-30 YODPD drilled to TD to a depth of 3736 m.

Torque–Less pills were pumped at 2786 m, 2818 m and 2853 m, as well as treating the mud system with a 6 ppb concentration from 2905 m. The mud weight was maintained below 9.5 ppg to reduce the likelihood of differential sticking. Radiagreen-EBL was added from 3020 m to reduce torque and achieved a concentration of 2% by 3100 m. Baracarb-25 and Baracarb-100 were added to the mud system at 3230 m, prior to entering the potential P Sand reservoir, to bridge the pore throats and reduce seepage losses.

During the 6” hole phase Barablock was added and maintained at a concentration of 4 ppb in order to stabilise the Coals, Baracarb was added to reduce seepage losses and Glycol and Baracor-129 to maintain mud properties.

Flounder A-18A reached a Total Depth of 3736 m (2612.03 mTVD) at 12:15 hours on the 29th June 2003. The final survey at a depth of 3715.07 m had an inclination of 30.63° and an azimuth of 100.93°. The hole was logged and it was decided to plug and abandon the well. While pulling out of the hole with the wireline logging tools, the tools became stuck at 3685 m. After unsuccessfully attempting to retrieve the tools, the logging string was abandoned and the well was plugged and abandoned.

WELL PROFILE

Rotary Table to Mean Sea Level 33.85 m

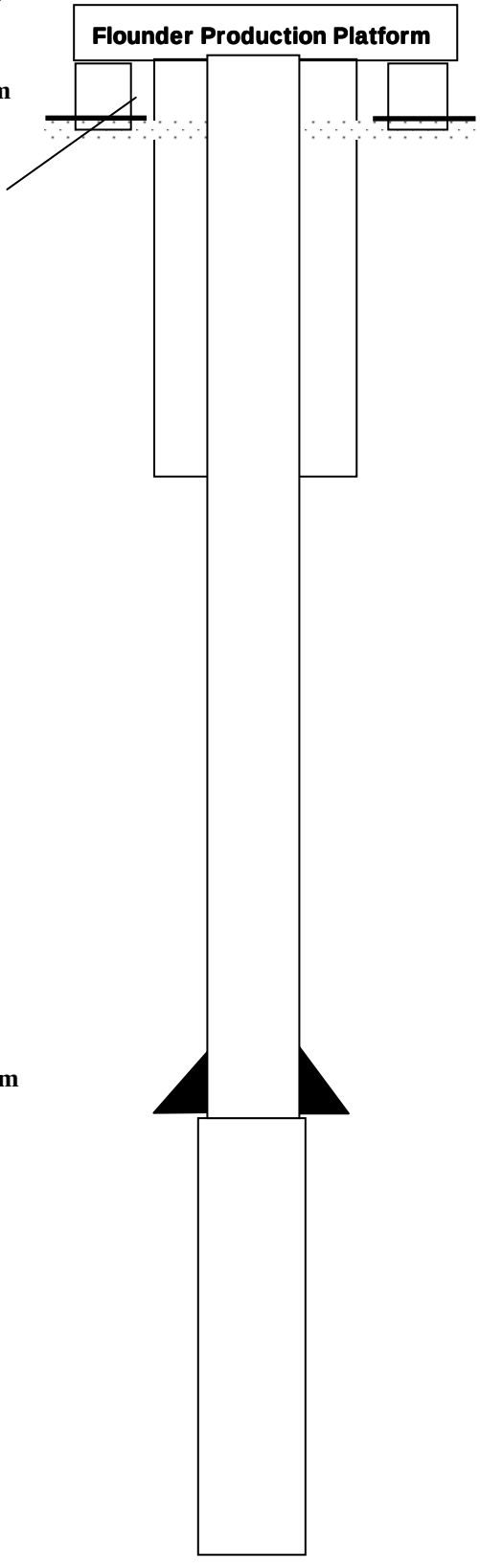
Rotary Table to Sea Bed 126.85 m

20" Conductor at 203 m

10-¾" Whipstock at 1219 m

7" Intermediate Casing at 3329.5 m

Plugged and Abandoned



NABORS Rig 453

Kicked-off A-18A 10th June 2003

Casing Window from 1209.79 m to 1217.24 m

1225 m – 3337 m
Mud Weight 9.2 ppg – 9.6 ppg

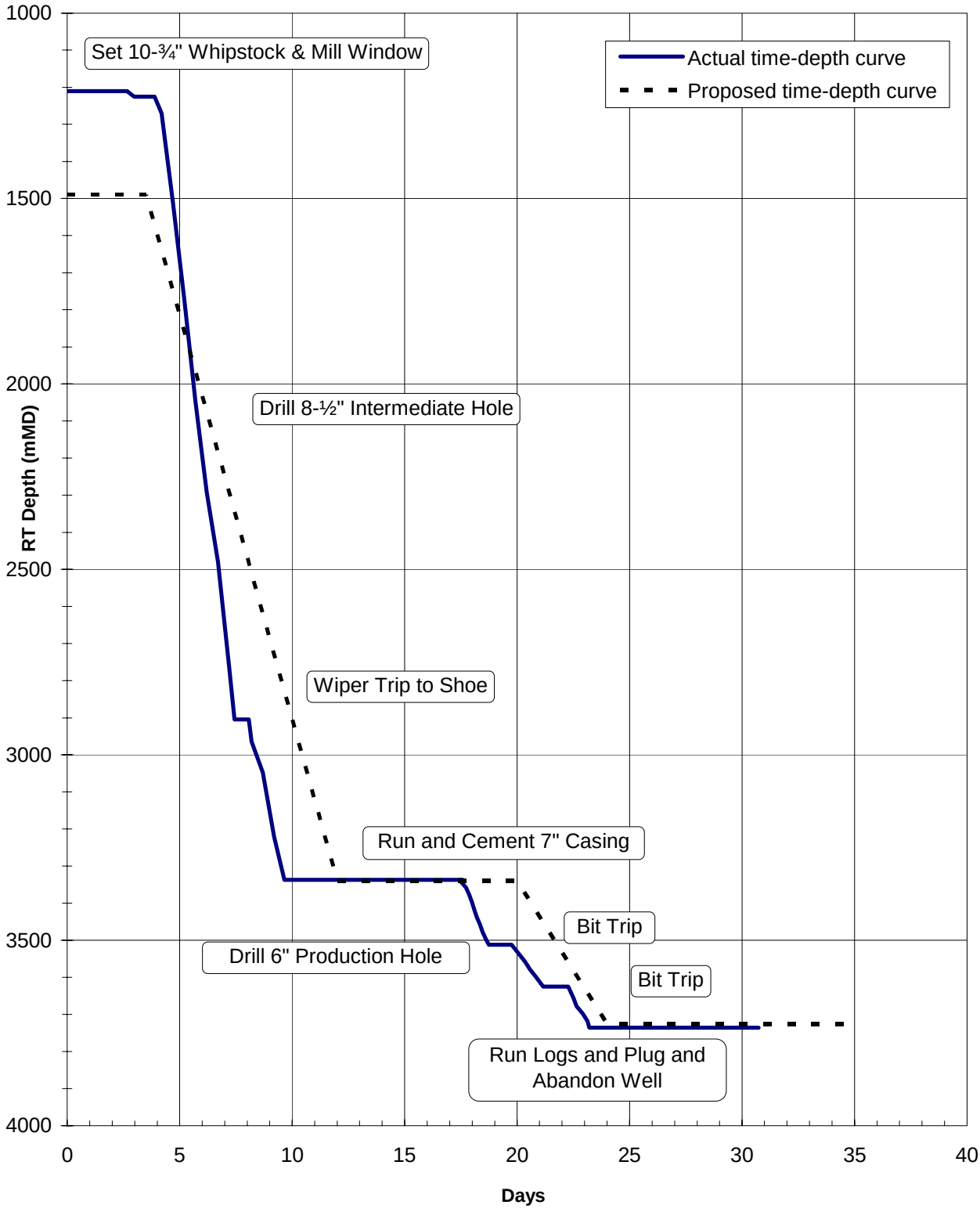
8½" Hole Drilled to 3337 m

3337 m – 3736 m
Mud Weight 9.5 ppg – 9.8 ppg

6" Hole Drilled to 3736 m

Revision	Date	Issued by	Approved by	Remarks
1	07-07-2003	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	8-½"	SII Geodiamond S73HPX	6x16	1225	3337	72.8	3-3-WT-S-X-IN-ER-TC
2	6"	SII Smith XR 30 TODPD	3x20	3337	3512	22.05	3-3-WT-A-E-E-E-1/16-ER-HR
3	6"	SII Smith XR 40 YODPD	3x18	3512	3625	30.4	8-8-BC/CC-1,2,3-F-F-F-IN-CD/LT-HR
4	6"	SII Smith XR 30 TODPD	3x18	3625	3736	18.4	3-3-WT-A-E-E-E-IN-LT/ER-TD

CASING DATA

Type	**Size** (inches)	**Weight** (lb/ft)	**Grade**	**Thread**	**Depth** (mMDRT)
Conductor	20"	133	K-55	BTC	203
Whipstock	10-¾"	40.5	K-55	BTC	1219
Intermediate	7"	26	L-80	LTC	3329.5

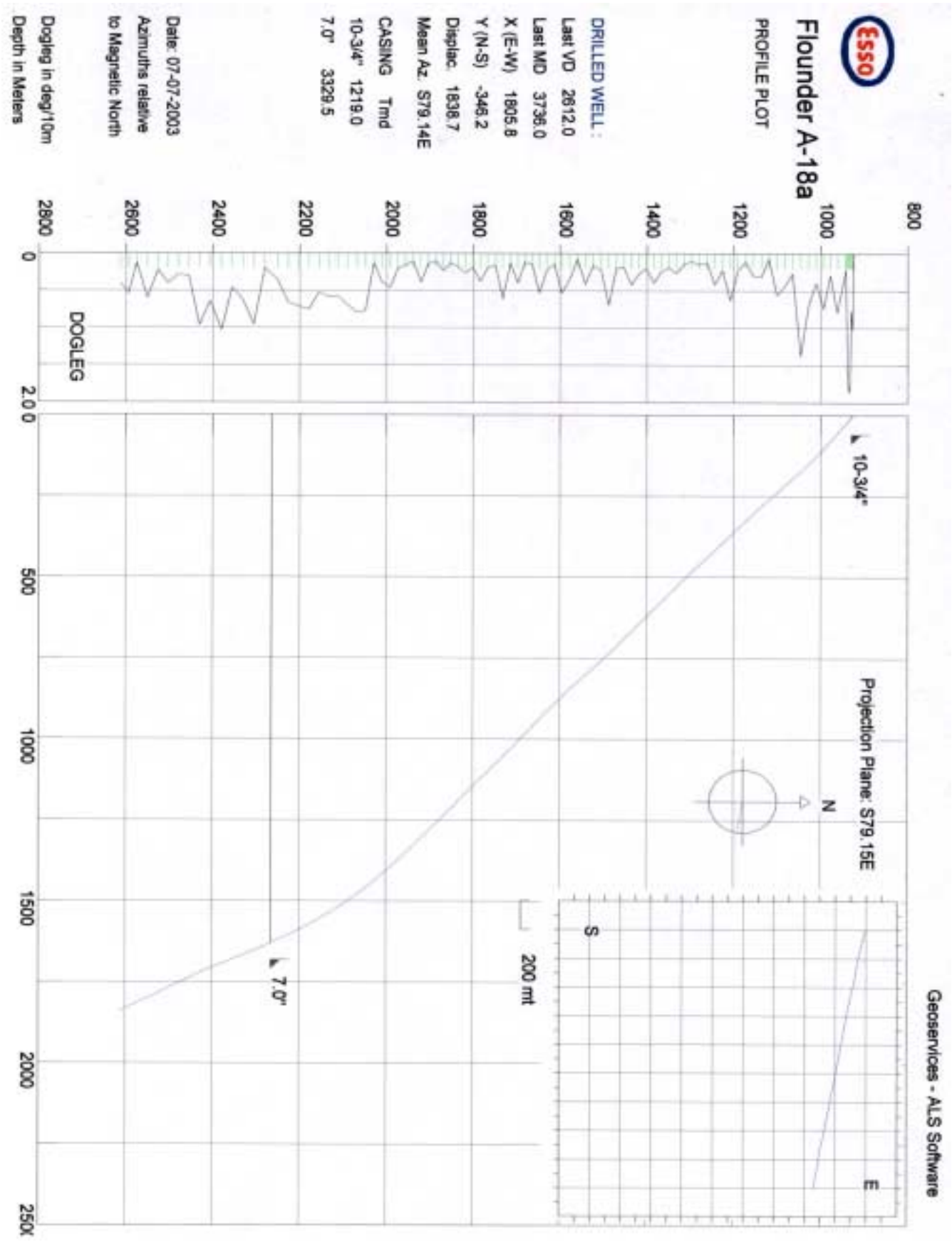
CEMENTING DATA

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" LEAD	HTB	282	HALAD 413L 30 gal / 10 bbls SCR-100L 6 gal / 10 bbls CFR-3L 5 gal / 10 bbls NF-5 0.25 gal / 10 bbls GasCon-469 60 gal / 10 bbls	68.8	94	13.0	1583 m 2505 m	
7" TAIL	HTB	442	HALAD 413L 32 gal / 10 bbls SCR-100L 1 gal / 10 bbls CFR-3L 5 gal / 10 bbls NF-5 0.25 gal / 10 bbls	50	89	15.8	2505 m 3329.5 m	2000 psi

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)
P & A Plug #1	HTB	168	HALAD 413L 20 gal / 10 bbls SCR-100L 1 gal / 10 bbls CFR-3L 3 gal / 10 bbls NF-5 0.25 gal / 10 bbls	19	34	15.8	3322 m n/a	n/a
P & A Plug #2	HTB	30	HALAD 413L 20 gal / 10 bbls SCR-100L 1 gal / 10 bbls CFR-3L 3 gal / 10 bbls NF-5 0.25 gal / 10 bbls	10	6	15.8	3281 m 3322 m	1000 psi

WELL DIRECTIONAL PROFILE

(From Geoservices ALS Software)



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WELL DIARY

5th June 2003 Make up $7^{5}/_{8}$" EZSV and running tool. Run in with EZSV on 3½" drill pipe to 1298 m. Set EZSV, mix and pump cement. Reverse circulate and pull out of hole with 3½" drill pipe.

6th June 2003 Continue to pull out of hole and lay down 3½" drill pipe. Rig up to 5" handling gear, make up scraper BHA and run in hole to tag cement. Work scraper. Pressure test casing and displace hole to KCl polymer mud. High winds, continue with rig maintenance and rig up for pressure testing, while waiting on crane.

7th June 2003 Continue to pressure test BOPs. Pull out of hole and rack back HWDP. Lay out scraper assembly. Run in hole and set EZSV. Attempt to pull EZSV free from 1219 m. No go. Shear wireline at weak point and pull out of hole. Wait on weather to make up BHA. Make up BHA and run in hole with overshot to engage fish. Pull out of hole from 1215 m. Break and lay out overshot. Test BOPs.

8th June 2003 Complete BOP tests and pick up and make up 10¾" whipstock. Pick up BHA and run in hole. Make up Gyro and run in hole to orient whipstock. Pull gyro out of hole and inspect, run in hole with gyro and orient whipstock. Start to mill 10¾" casing window from 1209.79 m.

9th June 2003 Continue to mill window in casing to 1217.24 m. Drill new formation to 1225.3 m. Pump HiVis sweep and circulate hole clean. Pull out of hole and lay down milling assembly. Pick up 8½" BHA and run in the hole, picking up 5" drill pipe from deck.

10th June 2003 Run in hole and drill 2 m of new hole to 1227 m. Circulate hole clean and perform PIT to 12.5 ppg EMW. Drill, steer and survey 8½" hole to 1242 m and run gyro survey. Continue to drill, steer and survey 8½" hole to 1270 m. Run in hole with SDI for check shot survey. Continue to drill, steer and survey 8½" hole to 1510 m.

11th June 2003 Continue to drill, steer and survey 8½" hole from 1510 m to 2045 m.

12th June 2003 Continue to drill, steer and survey 8½" hole from 2045 m to 2479 m.

13th June 2003 Continue to drill, steer and survey 8½" hole from 2479 m to 2905 m. Circulate bottoms up and pump sweep; circulate hole clean and pull out of hole to shoe.

14th June 2003 Continue to pull out of hole to shoe. Cut and slip drilling line, conduct rig service and run in hole. Wash last 2 stands to bottom. Drill, steer and survey 8½" hole from 2905 m to 3020 m. Pumps losing prime, pull back off bottom and circulate while repairing pumps. Run 3 stands back to bottom and continue to drill, steer and survey 8½" hole from 3020 m to 3048 m.

15th June 2003 Continue to drill, steer and survey 8½" hole from 3048 m to 3337 m. Pump sweep and circulate hole clean.

16th June 2003 Circulate and clean hole. Pull out of hole to 1300 m, pump 20 bbls super sweep and circulate hole clean whilst rotating and reciprocating. Pull out of hole from 1300 m to inside window at 1186 m. Run in hole from 1186 m to 3337 m. Wash and ream last two stands to bottom. Pump 30 bbls of super sweep at TD and circulate hole clean whilst rotating and reciprocating. Pull out of hole, racking back 1 stand every ½ hr to 3287 m; flow check – OK. Pump slug and pull out of hole from 3278 m to 1272 m and pump 20 bbls super sweep. Rotate and reciprocate whilst circulating clean at 1272 m. Pull out of hole from 1272 m to 125 m and wait on wind to abate.

17th June 2003 Wait on wind to abate. Rig up Schlumberger wireline, rig up Reeves and run in hole to 3337 m. Pull out of the hole, logging from 3337 m. Lay out Reeves tools and rig down Schlumberger wireline. Lay out 8½" BHA from derrick. Pull wear bushing, jet well head and BOP. Rig up Weatherford to run 7"casing. Check shoe and float and run same. Run in hole with 7" casing to 109 m.

18th June 2003 Continue running 7" casing from 109 m to 3329.5 m and circulate through casing.

19th June 2003 Continue to circulate through casing. Mix, pump and displace cement as per ESSO program. Wait on cement, changing mud pumps to 5" liners. HOWCO test lines and test casing 2000 psi / 15 min. Rig down cement head and flow line. Nipple down BOP and lift, pull up on casing and Cameron set 7" slips in 'A' section and Furmanite rough cut casing. Land out BOP and lay out casing landing joints.

20th June 2003 Set back and secure BOP's, lay out Riser, dress 7" casing stub, nipple up tubing head and test same. Rig up riser, BOP's, Bell nipple and Flow line. Lay out 5" HWDP and DP.

21st June 2003 Continue to lay out 5" DP. Redress handling equipment for 4" DP. Pick up and run in hole with 4" DP to 488 m and rack back in mast. Pull wear bushing. HOWCO test BOP's.

22nd June 2003 Rig down Howco and lay out test assembly, run wear bushing and prepare to pick up BHA. Pick up and make up 6" steerable assembly, shallow hole test and prepare to run in hole with 4" DP. Run in hole with 4" DP to 239 m. Work on broken weld in Draw works. Reinstate Draw works covers and run in hole with 4" DP.

23rd June 2003 Run in hole with 4" DP to 3253 m while mixing mud. Conduct rig service. Inspect monorail and brake linkages. Wash from 3253 m to Top of Cement at 3285 m. Drill out cement, shoe track and rat hole from 3285 m to 3337 m, shoe at 3329 m. Work string while circulate and condition mud to 9.5 ppg. Add Barablok to mud system prior to drill 6" hole. Drill 6" hole from 3337 m to 3342 m. Pull back inside casing at 3331 m. Rig to with Howco and test lines. Howco conduct PIT to 12.5 ppg EMW with 9.5 ppg mud to 1160 psi. Rig down Howco, run in hole to 3342 m. Drill, steer and survey 6" hole from 3342 m to 3356 m.

24th June 2003 Drill, steer and survey 6" hole from 3356 m to 3398 m. Rotate and work string while circulating hole clean at 3398 m. Drill, steer and survey 6" hole from 3398 m to 3466 m. Rotate and work string while circulating hole clean at 3466m. Drill, steer and survey 6" hole from 3466 m to 3510 m.

25th June 2003 Drill, steer and survey 6" hole from 3510 m to 3512 m. Rotate and work string while circulate hole clean from 3512 m to 3426 m. Flow check ok. Pull out of hole with 4" DP from 3426 m to 3085 m. Continue to pull out of hole with 4" DP from 3085 m to 211 m. Pull out of hole and rack 3 ½" HWDP, NMDC's, break and layout MWD slim pulse, change out bit, set back and rack 6" steerable assembly. Make up running tool, pull and inspect wearbushing. Slight wear to north east side, orientate and run wearbushing. Pick up 6" steerable assembly, change out string stab, and install slim pulse to MWD shallow test same. Set to 1.15° and run in hole with BHA to 210 m. Run in hole with 4" DP from 210 m to 3300 m.

26th June 2003 Continue to run in hole with 4" DP from 3300 m to 3512 m. Wash last 2 stands to bottom. Drill, steer and survey 6" hole from 3512 m to 3564 m. Flow check – OK. Continue to drill, steer and survey 6" hole from 3564 m to 3587 m.

27th June 2003 Drill, steer and survey 6" hole from 3587 m to 3625 m. Pump 30 bbls Torque-Less pill @ 3618 m. Rotate and work string while circulating hole clean from 3625 m to 3570 m. Flow check – ok. Pull out of hole with 4" DP from 3570 m to 3300 m. Flow check – ok. Conduct BOP trip drill with full well shut in. Conduct rig service. Pull out of hole with 4" DP from 3300 m to 210 m. Rack back 3½" HWDP and collars from 210 m to 24 m. Break out and layout MWD and bit. Realign, service and layout mud motor.

28th June 2003 Realign, service and layout mud motor. Clear rig floor. Rig to and pull wear bushing and inspect same. Re-run wear bushing and break down running tool. Function test koomey remote control. Pick up and make up 6" steerable assembly as per Anadrill. Shallow test BHA and run in hole to 24m. Continue run in hole from 24 m to 210 m with DC and 3 ½" HWDP. Run in hole from 210m to 1300 m. Slip and cut 80' drill line and check COM's. Rig service. Run in hole from 1300 m to 3568 m. Wash and ream from 3568 m to 3625 m. Drill, steer and survey 6" hole from 3625 m to 3681 m. Flow check at 3641 m – static.

29th June 2003 Drill and survey 6" hole from 3681 m to 3713 m. Rotate and work string while circulating hole clean. Continue to drill and survey 6" hole from 3713 m to TD at 3736 m. Rotate and work string while circulating hole clean from 3736 m to 3685 m. Pump 30 bbls super-sweep on bottom. Backream out of hole from 3685 m to 3369 m. Rotate and work string while pumping 30 bbls super-sweep and circulate hole clean from 3369 m to 3311 m. Rig service. Run in hole from 3311 m to 3736 m. Wash and ream last 2 stands to bottom. Pump 30 bbls hi-vis sweep and circulate hole clean at 3736 m. Rack stand back every ½ hour to 3656 m. Flow check – ok. Pull out of hole from 3656 m to shoe at 3330 m. Flow check – ok. Continue to pull out of hole from 3656 m to 2900 m.

30th June 2003 Continue to pull out of hole. Flush BOPs with sea water, break and lay out steerable BHA. Rig up to run logging tools. Load radioactive source run in hole with Reeves logging tools to 3736 m. Log out to 3570 m. No go, tool stuck at 3685 m. Work wireline tool, attempt to free, no go. Perform JSA and source equipment to perform strip over of wireline to fish logging tool, rig up to run in hole to fish tool.

1st July 2003 Trip into hole over wireline, review JSA and conduct rig service. Pick up 4" drill pipe from deck and continue to strip over wireline.

2nd July 2003 Continue to run in hole stripping over wireline. Wireline cut by drill pipe, 185 m of wireline left in hole. Circulate to reduce mud weight to 9.7 ppg. Perform flow check, rig service and pull out of hole.

3rd July 2003 Continue to pull out of hole. Rearrange HWDP in derrick to allow access for 4" drill pipe to be racked back. Continue to pull out of hole. Lay down overshot assembly. Clean and clear rig floor of excess equipment, test BOPs. Pick up and make up rope spear assembly. Run in hole, clip and cut drilling line, continue to run in hole. Attempt to engage fish on rope spear. Flow check and pull out of hole.

4th July 2003 Continue to pull out of hole, rack back HWDP and jar, recover 2m of wireline. Make up BHA and run in hole with rope spear. Work string and attempt to engage fish on rope spear. Pull out of hole, flow check well and continue to pull out of hole. Rack back HWDP and jars, lay down rope spear assembly (no recovery of fish). Make up 3½" mule shoe and crossover to run in hole, run in hole to pump cement.

5th July 2003 Continue to run in hole, circulate bottoms up and reciprocate pipe and 3535 m. Make up cementing surface lines and test. Pump cement plug as per program. Break out and lay down cementing surface lines. Pull out of hole to 3274 m and forward circulate until returns clean of cement. Rig up Schlumberger to tension new line while waiting on cement. Run in hole and tag cement at 3322 m. Make up cementing lines to drop second plug. Pump cement as per program.

6th July 2003 Circulate hole clean, rig down cement head and lines and pull out of hole. Break down crossover and mule shoe. Run in hole with SDI wireline logs. Tag cement at 3281 m and pull out of hole. Rig down Schlumberger and SDI equipment. Test BOPs. Perform rig service. Pressure test casing against blind rams to 1000 psi for 15 minutes. Nipple up BOP, nipple down return lines, bell nipple and BOPs. Prepare to skid rig.

7th July 2003 Continue to prepare to skid rig. Conduct pre skid Job Safety Analysis, skid rig west off FLA A18a at 01:00 hrs.

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	2905	1951.4	-1917.55
Top of Latrobe Group	2937	1971.1	-1937.25
Top M Sand (M1.2)	3299.7	2234.7	-2200.8
Base of Tuna-Flounder Channel	3359.9	2286.0	-2252.1
Shallow Coal Marker	3398.1	2319.2	-2285.4
Mid-Palaeocene Marker	3471.3	2383.7	-2349.8
Top T Shale	3569.2	2467.5	-2433.6
Top T-1.1 Sand	3667.2	2549.2	-2515.3
TOTAL DEPTH	3736.0	2612.0	-2578.18

GEOLOGICAL SUMMARY

GIPPSLAND FORMATION

1225 m - 2905 m **LIMESTONE**

CALCILUTITE: Light olive grey to olive grey, green grey, brown grey, light to medium grey, silty, grading to CALCISILTITE at shallower depths, increasingly argillaceous with depth, grading to CALCAREOUS CLAYSTONE, locally trace very fine to fine CALCARENITE aggregates, common to occasional fossil fragments, consistently trace disseminated pyrite, locally trace very fine carbonaceous and lithic specks, locally trace very fine glauconite grains, soft to locally firm, amorphous, sub-blocky to blocky.

CALCISILTITE: Light olive grey to olive grey, pale olive, brown grey, yellowish grey, lutitic, grading to CALCILUTITE, minor fossil fragments, occasional very fine carbonaceous specks, trace very fine to fine disseminated pyrite, soft to firm, sub-blocky to blocky.

LAKES ENTRANCE FORMATION

2905 m – 2937 m **Interbedded CALCAREOUS CLAYSTONE and LIMESTONE**

CALCAREOUS CLAYSTONE: Medium to dark grey, silty in part, micro-micaceous, trace very fine carbonaceous and lithic specks, minor disseminated pyrite, firm to moderately hard, sub-fissile to fissile.

CALCILUTITE: Olive grey to brown grey, very argillaceous, grading to CALCAREOUS CLAYSTONE, silty in part, micro-micaceous in part, minor to common very fine disseminated pyrite, trace very fine carbonaceous and lithic specks, firm to moderately hard, blocky to sub-fissile.

LATROBE GROUP

2937 m – 3299.7 m **SILTSTONE with minor interbedded CLAYSTONE and trace SANDSTONE**

SILTSTONE: Light to moderate brown, grey brown to dusky brown, black brown, generally very argillaceous, slightly arenaceous in part, commonly micro-micaceous, minor to locally common very fine to fine glauconite grains, trace very fine to fine disseminated and nodular pyrite, locally minor very fine mica flakes, trace very fine carbonaceous and lithic specks, dispersive, very soft to soft, rarely firm, amorphous, sub-fissile.

CLAYSTONE: Light grey, yellowish grey, pale to light green, pale yellowish brown to light brown grey, weakly calcareous, silty in part, trace very fine glauconite grains, trace very fine disseminated pyrite, soft to occasionally firm, sub-blocky to massive.

SANDSTONE: Translucent to clear, light brown, very fine to fine, well sorted, sub-rounded, weak calcareous cement, trace moderate brown silty matrix, predominantly loose, race friable aggregates, poor to fair porosity, no fluorescence.

M SAND

3299.7 m - 3310 m **SILTSTONE with trace interbedded SANDSTONE.**

SILTSTONE: Light brown to moderate brown, argillaceous, minor very fine arenaceous, grading to very fine SANDSTONE in part, trace carbonaceous micro-laminations in part, trace nodular pyrite, trace disseminated pyrite, soft to occasionally firm, sub-blocky to sub-fissile.

SANDSTONE: Clear to translucent, occasionally off white, very fine ti fine, rarely medium, moderately well sorted, sub-rounded to well rounded, moderately strong dolomite cement, rarely white kaolinite matrix, detrital carbonaceous material on medium quartz grains, predominantly moderately hard aggregates, rarely loose medium quartz grains, poor porosity, no fluorescence.

3310 m – 3359.9 m **SILTSTONE with minor interbedded SANDSTONE**

SANDSTONE: Translucent to clear, very fine to fine, occasionally medium to coarse, moderately to poorly sorted, sub rounded to well rounded, trace moderately strong calcareous cement, locally common white kaolinite matrix, occasional pyrite inclusions in coarse quartz grains, predominantly friable to moderately hard aggregates, common loose coarse quartz grains, poor porosity.

FLUORESCENCE: 3310 m– 3315 m; trace to 10% dull to occasionally bright yellowish green even to patchy fluorescence, very slow blooming cut, thin yellowish white ring residue.

SILTSTONE: Light brown to moderate brown, argillaceous, trace very fine arenaceous, micro-micaceous in part, trace very fine to fine carbonaceous micro-laminations in part, trace fine nodular pyrite, trace fine glauconite grains, soft, sub-blocky to occasionally sub-fissile.

BASE TUNA-FLOUNDER CHANNEL

3359.9 m – 3398.1 m **Interbedded SANDSTONE, SILTSTONE and CLAYSTONE.**

SILTSTONE: Brown grey to dark yellow brown, argillaceous, trace micro-micaceous, common carbonaceous specks, soft to very soft, dispersive, amorphous.

CLAYSTONE: Brown grey to dark grey, silty, trace micro-micaceous, trace carbonaceous specks, soft to dispersive, amorphous.

SANDSTONE: Clear to translucent, predominantly medium, common coarse, sub angular to sub rounded, occasionally angular, moderately sorted, weak calcareous cement, locally trace white argillaceous matrix, predominantly loose and clean, occasional friable to moderately hard aggregates, poor to fair porosity, rare patchy yellow-green fluorescence, very slow blooming cut, thin yellow- white residue.

SHALLOW COAL MARKER

3398.1 m – 3471.3 m **Interbedded SANDSTONE, SILTSTONE and COAL**

SANDSTONE: Clear to translucent, medium to coarse, sub-angular to sub-rounded, occasional angular, weak calcareous cement, locally common loose quartz grains, rare aggregates with strong siliceous cement, predominantly loose and clean, occasional friable to moderately hard aggregates, trace pyrite, trace carbonaceous inclusions and lithics, poorly-good inferred and visible porosity, no fluorescence.

SILTSTONE: Grey brown-dark yellow brown, argillaceous, common carbonaceous specks and micro-laminations, trace micro-micaceous, soft to very soft, dispersive to amorphous.

COAL: Black to brown black, dull to sub-vitreous, earthy in part, brittle to moderate hard in part, subblocky to subfissile, angular to conchoidal, silty in part, trace pyrite, occasional woody texture.

MID PALAEOCENCE MARKER

3471.3 m – 3569.2 m **SANDSTONE with interbedded SILTSTONE and minor COALS**

SANDSTONE: Clear to translucent, frosted, occasional yellow brown staining, fine to coarse, predominantly medium to coarse, generally well sorted, sub-angular to sub-rounded, occasionally rounded, occasionally angular, occasional strong siliceous cement, strong dolomitic and pyritic cement with depth, occasionally to common quartz overgrowths, trace nodular glauconite and pyrite inclusions, trace carbonaceous detritus, rare lithics, clean, predominantly loose, fair to good inferred and visible porosity, locally trace mineral fluorescence.

SILTSTONE: Dark yellow brown to moderate yellow brown, brown grey, argillaceous, micro-micaceous, abundant carbonaceous specks and inclusions, soft to very soft, dispersive in part, amorphous.

COAL: Dark brown to black, commonly earthy, occasionally sub-vitreous to vitreous, sub-fissile, occasionally subblocky, conchoidal to angular, argillaceous, trace pyrite, occasionally woody texture.

T SHALE

3569.2 m – 3667.2 m **MASSIVE SILTSTONE with trace SANDSTONE.**

SILTSTONE: Olive grey to medium dark olive grey, argillaceous, trace nodular pyrite, occasional disseminated glauconite, trace micro-micaceous, common carbonaceous inclusions, soft to firm, moderately hard with depth, amorphous to sub-blocky, occasionally sub-fissile with depth.

SANDSTONE: Clear to translucent, frosted, predominantly fine to medium, common loose quartz, well sorted, sub-angular to sub-rounded, trace aggregates with strong dolomitic and pyritic cement, clean, common loose quartz grains, poor porosity, trace min fluorescence.

T - SAND

3667.2 m – 3736 m **SANDSTONE with minor SILTSTONE**

SANDSTONE: Clear to translucent, transparent to opaque, occasionally light grey to off white, medium to coarse, occasionally very coarse, moderately sorted, sub-angular to angular, trace-common aggregates with strong siliceous dolomitic and pyritic cement, rare lithics and carbonaceous detritus**,** trace quartz overgrowths, rare glauconite, locally common white argillaceous/kaolinite matrix, common loose quartz, common hard aggregates, poorly-fair inferred porosity, fluorescence.

FLUORESCENCE: 3665-3690 trace to 10% pin point to uneven bright yellow green to dull patchy yellow green direct fluorescence, slow blooming yellow/green white cut, thin yellow white ring residual.

SILTSTONE: Pale yellow brown to dark yellow brown, arenaceous ,common to abundant carbonaceous specks and inclusions minor disseminated glauconite, occasionally disseminated pyrite, rare mica, soft-firm, sub-blocky-amorphous.

GAS REPORT

Gas was present on exiting from 10¾" casing into the Gippsland formation at 1225 m, with background values increasing to 10 units and remaining around 5 to10 units to 2400 m. Minor gas peaks of between 10 to 15 units were the norm, with an isolated peak of 47 units at 1773 m indicating the likelihood of shallow gas, as prognosed. Methane was the only constituent, apart from the one larger peak that recorded the presence of Ethane. From 2400 m there was a noticeable increase in back ground gas from 5 to10 units to 20 to 30 units, with peaks to 50 units. The presence of Ethane and trace Propane were commonly recorded.

There was a decrease in back ground gas on entering the Lakes Entrance Formation, ranging from 7 units to 15 units and Methane the only constituent.

Through the predominantly Siltstone interval of the upper interval of the Latrobe Group, there was a gradual increase in the background gas, from 15 units to 20 units increasing to 50 units to 75 units. The major gas peak of 855 units at 3271 m was generated on penetrating the P – Sand reservoir at 3264.5 m. The peak consisted of Methane through to n-Butane and the resultant gas ratios signified an Oil bearing rock. A 5 m interval of minor fluorescence was seen at 3310 m, prior to reaching the intermediate TD of 3337 m.

Through out the first bit run of the 6" phase the background gas generally remained around 30 units. Gas peaks due to Coal beds at and below the Shallow Coal marker peaked between 112-652 units. Gas peaks below the Mid-Palaeocene marker were observed in interbedded Coal seams with the highest at 736 units. There was a slight increase in the heavier gases just below the Mid-Palaeocene marker in the interbedded Coal, Sandstone & Siltstone beds but they gradually decreased along with the background gas which dropped to between 15 and 20 units towards the top of the T shale at around 3565 m. Upon entering the T shale however, these heavier gases slowly increased with the highest gas peak recorded at 3642 m of 164 units. Prior to entering the T1.1 sand the gas peaked once more at 145 units with the gas ratio showing the presence of an Oil Zone. From here the background gas slowly dropped back to 20 units. However just before TD the background gas increased to around 40 units probably due to residual Hydrocarbons trapped within the tightness of this lower section.

Connection gas of 27 units over 20 units of background gas was observed at 3685 m while drilling Flounder A-18a. The mud weight was raised one point to 9.9 ppg and this alleviated the problem.

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-18A.

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 %**
2263.0	31	0.52	0.02	0.02				
3116.0	44	0.76	0.04	0.03	0.01	0.01		
3149.0	71	1.23	0.06	0.04	0.01	0.01		
3170.0	73	1.25	0.06	0.04	0.01	0.01		
3203.0	93	1.65	0.09	0.04	0.01	0.01		
3232.0	128	1.55	0.12	0.06	0.01	0.01		
3271.5	855	4.07	0.78	0.51	0.09	0.16	0.01	
3284.0	181	1.26	0.26	0.22	0.03	0.07		
3310.0	121	0.80	0.16	0.14	0.02	0.05	0.01	0.01
3341.0	89	0.84	0.11	0.04	Trace	Trace	Trace	Trace
3376.0	112	1.11	0.15	0.07	Trace	0.01		
3400.0	652	3.52	0.49	0.18	Trace	0.02		
3464.0	736	4.37	0.56	0.20	0.01	0.04	0.01	0.01
3491.0	76	0.67	0.09	0.04	Trace	0.01	0.01	0.01
3642.0	164	2.03	0.14	0.04	Trace	0.01	Trace	Trace
3667.0	145	1.86	0.16	0.06	0.01	0.01	0.01	0.01
3671.0	79	0.67	0.08	0.04	0.01	0.01	Trace	0.01
3726.0	62	0.57	0.05	0.02	Trace	0.01	Trace	Trace