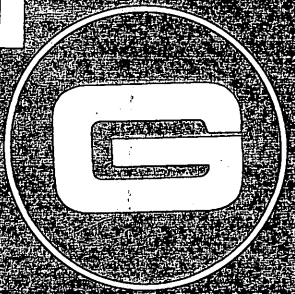


DEPT. NAT. RES & ENV



PE903251



 Geoservices

FINAL WELL REPORT

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903251 001

PETROFINA EXPLORATION AUSTRALIA

ANGLER - 1

PETROFINA EXPLORATION

02 OCT 1989

PETROLEUM DIVISION

02 OCT 1989

**INTERPRETATIVE**

ANGLER 1

VIC/P20 BASS STRAIT

FINAL WELL REPORT

FOR

PETROFINA EXPLORATION AUSTRALIA S.A.

PREPARED BY

GEOSERVICES OVERSEAS S.A.

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Company : Petrofina Exploration Australia 1.1  
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Well : Angler # 1  
-----  
Country : Australia  
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**Angler # 1**

Engineers : C. Bentley  
          : M. Crumrine  
          : D. Shields  
          : S. Manson  
Mud Loggers : B. Appleton  
          : S. Phipps  
          : D. Chryssidis  
          : S. Oades

-----  
Petrofina Exploration Australia S.A.  
476 St.Kilda Rd,  
Melbourne,  
VICTORIA 3004.

Tel : (03) 267 7999  
Fax : (03) 267 7776

Geoservices Overseas S.A.  
Unit #1,  
280-289, Grand Junction Rd.  
Athol Park, Adelaide,  
SOUTH AUSTRALIA 5012.

Tel : (08) 240 0655  
Fax : (08) 240 0933

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 Company : Petrofina Exploration Australia 1.2  
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 Well : Angler # 1  
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 Country : Australia CONTENTS  
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 Company : Petrofina Exploration Australia 1.3  
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Well : Angler # 1  
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Country : Australia GENERAL WELL DATA  
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Client : Petrofina Exploration Australia S.A.  
 Well : Angler # 1  
 Field :  
 Block : VIC/P20  
 District : Bass Strait  
 Country : Australia

Latitude : 38 deg 39' 35.3 " S  
 Longitude : 148 deg 26' 29.4 " E  
 UTM North : 625,422 E  
 UTM East : 5,719,970 E

Elevation KB AMSL : 27.0 met  
 Seawater Depth : 277.7 met  
 Proposed TD : 4000 met  
 Actual TD : 4330 met  
 TD Electric Logs : 4337 met

Spudded on : 24th MARCH 1989  
 Reached TD on : 13th MAY 1989

Rig Released on : pending logging  
 Well Status : plugged and abandoned

Contractors

Drilling	:	Zapata Offshore.
Logging	:	Geoservices
MWD	:	Teleco.
Electric Logging	:	Schlumberger
Cementing	:	Halliburton
Casing	:	Weatherford
Mud	:	Baroid
ROV	:	Sub-Sea
Testing	:	Flowpetrol
Catering	:	SOS
Velocity	:	Schlumberger

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Company	: Petrofina Exploration Australia	1.4
Well	: Angler # 1	
Country	: Australia	INTRODUCTION

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## INTRODUCTION

Angler #1 was drilled as a vertical exploration well in permit VIC/P-20. The well was spudded on the 24th March 1989 in 277.7 mt of water, and reached a revised total depth of 4330 mt on the 13th May 1989 at 10.20 am.

The primary objective the Maastrichtian Selene Sandstone was penetrated at 3247.0 mt, 153 mt high of prognosis at 3400 mt. This sandstone proved water wet, and lacked the expected shale seal.

The secondary target the Campanian Sandstones of the Latrobe Group proved gas prone with intermittent hydrocarbon shows recorded from 3815 mt to a depth of 4330 mt (TD). At 3830 mt an increase in resistivity from the MWD tool indicated the presence of hydrocarbons. Due to the tightness and pyritic nature of this sandstone a drill break didn't compliment this increase in resistivity, however once bottoms up was circulated a total gas of 0.6% with trace amounts of C2 and C3 were recorded. Previous to this gas show no gas had been recorded since penetrating the thin coal seams overlying topmost Selene Sandstone at 3200 mt. The fluorescence from this resistivity peak was described as having a moderately bright direct fluorescence, with a fast streaming bright yellow cut, an abundant brown oil stain was also present. On the basis of these indicators a 9.0 mt core was taken from 3833.0 mt to 3842.0 mt with 99% recovery (Refer to the Petrofina Core description for a hydrocarbon evaluation).

Drilling continued from 3842.0 mt through a predominately siltstone lithology with a C1 background of 0.6%. At 4205 mt an increase to 25-30 m/hr in drill rate revealed the presence of a thin (20-25met) Lower Campanian Sandstone. This sandstone proved gas prone with a total gas of 9.0%, which included gas heavies iC4 & nC4. The associated fluorescence was described as having a pale yellow direct fluorescence, with a slow weak green-yellow cut, no stain or residual ring was observed. A RFT over this interval found a gas/condensate rich sandstone (Refer to RFT summary for further details).

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 Company : Petrofina Exploration Australia 1.5  
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 Well : Angler # 1  
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 Country : Australia TIME BREAKDOWN  
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**TIME BREAKDOWN**

Activity	Hours	%	Total Days : 55 24/03/89 to 16/05/89
Rig up/tear down	2.0	0.15	
Drilling	444.75	33.7	
Reaming	97.5	7.39	
Circulating	43.50	3.3	
Tripping	250.75	19.0	
Coring	8.5	0.64	
Rig Repair	62.25	4.71	
Nipple up/test BOP:	166.50	12.5	
Deviation survey	7.00	0.53	
Cut and slip	7.25	0.54	
Casing/cementing	78.25	5.8	
Electric logs	83.00	6.2	
Fishing	17.75	1.34	
Other	56.0	4.3	
<b>Total</b>	<b>1320</b>	<b>100.0</b>	





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 Company : Petrofina Exploration Australia 2.2  
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 Well : Angler # 1  
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 Country : Australia WELL DIARY  
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DAY 4 27th MARCH 1989 00.00hrs depth: 578.0 met

Continue to drill 26" hole to 613m. Pump 50 bbls hi vis sweep and spot 500 bbls of 1.2 sg. hi vis. Drop survey, rack Kelly. POOH to wellhead, L/D string. Recover survey--misrun. Flush out 30" housing, POOH. M/U DP stinger under 30: running tool and RIH. Unable to stab in 30" running tool, POOH. M/U 26" stab and 30" running tool. RIH, stab casing engage tool. ROV retrieve slope indicator. Circulate with charge pump and check for returns to surface--none. Take 100K overpull, observe bulls eye, no movement. Disengage running tool and POOH. L/D tool, pick up 20" wellhead and install 1 jnt DP below running tool. M/U and run stinger in 20" casing, fill each jnt with seawater. M/U and run stinger, M/U 20" hanger. Stab 20" casing into 30" using ROV. P/U Kelly and fill casing with seawater, install plug in running tool. Run 20" casing on HWDP, fill each stand with seawater.

DAY 5 28th MARCH 1989 00.00hrs depth: 613.0 met

Continue running 20" casing. Land 20" casing and take 150K overpull. Slope indicator at 1 1/2". Circulate, hook up Howco and pressure test surface lines to 5000 psi. Cement 20" casing with 508 bbls cement @ 1.9 sg. Observe returns with ROV. Displace with 417 bbls seawater, bleed off OK. Back out running tool and POOH. Strap out of hole, jet well head area. R/U to run BOP's, attempt to test shear rams--negative. Open bonnets to check shear rams. Remove shear rams, place 5" shear rams and C/O lower test stump jnt. Fill BOP with seawater for pressure test.

DAY 6 29th MARCH 1989 00.00hrs depth: 613.0 met

L/D riser, M/U 17 1/2" bit, stab, and MWD tool. Test BOP's to 15klbs. STI failure. R/U and move BOP's and install joint riser. Remove LMRP, change out seals. Pressure test STI's after relatching LMRP. Choke STI failed. Remove LMRP and check seals. Relatch LMRP, remove joint riser. Fill BOP with water, test STI connector--test negative. M/U joint riser to LMRP and unlatch. Open shear ram bonnets and remove 5" pipe rams to install shear rams. Work on STI connector, relatch LMRP and remove. Fill BOP with water and test STI connectors--good. M/U TIW valve on DP stand to test annulus.

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 Company : Petrofina Exploration Australia 2.3  
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 Well : Angler # 1  
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 Country : Australia WELL DIARY  
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DAY 7 30th MARCH 1989 00.00hrs Depth: 613.0 met

Attempt to test shear ram--negative. Open bonnet and inspect seal-no visible problem. Close bonnet with 4 bolt and attempt lower pressure test. Leave at the center of rams, open bonnet, replace lateral T-seal and close bonnet. Pressure test to 15 klbs--good. Install DP and close upper annular. Pressure to 3500 to test riser connector--good. Remove drill pipe and move BOP's. M/U double riser, move BOP's to center and hook up guidelines. Grease connector, P/U BOP with 560 klbs overpull. C/O ring gasket, install beacon. Run riser pressure test. Test kill and choke lines to 3000 psi/5 min.

DAY 8 31st MARCH 1989 00.00hrs depth: 613.0 met

Continue running riser, test every 2nd jnt, choke and kill line to 7500 psi/5 min. P/U slip jnt and 50' landing jnt. P/O landing jnt and slip jnt. Hook up choke, kill and conduit lines. Latch on tensioner and land BOP's. Take 80K overpull. Stroke out inner barrel and L/O 50' landing jnt. Nipple up choke and kill lines. Pump 5 bbls down kill with Howco to maintain circulation. Test shear rams @ 1500 psi/15 min.--good. P/U diverter and test with 10K overpull. R/D BOP running gear. RIH and test plug @ 20K. Test BOP's to Petrofina standards--good. Retrieve test plug. Pressure test surface equipment.

DAY 9 1st APRIL 1989 00.00hrs Depth: 613.0 met

Continue testing surface equipment. RIH and set bore protector. M/U MWD and test. Continue to M/O BHA and RIH, tag cement @ 573m. P/U kelly and hold kill drill. Test diverter system. Drill out cement and shoe, clean out rathole from 573-607m. Ream to 613m. Drill from 613 to 618m. Pump 50 bbls hi-vis pill, perform formation leak-off test. Drill ahead--controlled drilling @ 3 singles per hour.

DAY 10 2nd APRIL 1989 00.00hrs Depth: 789.0 met

Continue drilling 17 1/2" hole from 789-1050m. Rotary torque 4500-5000 ft-lbs. Maximum overpull on connection-40Klbs. Drill ahead to TD @ 1165m. Spot 50 bbls hi-vis mud on bottom. POOH with wet pipe. Drag 60K. Slip and cut drilling line, and continue POOH.

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 Company : Petrofina Exploration Australia 2.4  
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Well : Angler # 1  
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Country : Australia WELL DIARY  
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DAY 11 3rd APRIL 1989 00.00hrs depth: 1165.0 me

Continue POOH. Remove insert packer, threads appeared to be galled between NMDC and MWD tool. R/U Schlumberger, run DIT, MSFL and gamma-ray logs (2 runs) from 03:15-08:30 hrs. R/D Schlumberger. Breakout and L/D NMDC and MWD tool--threads galled. M/U 13 3/8" casing hanger to universal with seal assembly. RIH and tag bottom--no fill. Circulate and spot 50 bbls hi-vis pill and pump slug. POOH. RIH and retrieve wear bushing. POOH, R/U ref. line. R/U and run 13 3/8" casing.

DAY 12 4th APRIL 1989 00.00hrs depth: 1165.0 met

Continue running 13 3/8" casing, land same. R/U cement line, circulate. Test cement lines to 5000 psi, and pump cement. M/U pack off, test against middle pipe ram to 1500 psi/15 mins. L/D cement head, P/U Kelly, jet wellhead. POOH, L/D casing running tool. Set BOP test tool. Pressure test on pipe rams--fail safe values to 250-7000 psi. Annulus 1 and inner choke tested to 250-5000 psi. Annulus 2, upper outer choke to 250-5000 psi. Choke and kill manifold to 250-7000 psi. Function BOP's on yellow pod. POOH 3 stds, P/U Kelly, circulate riser and flush BOP. POOH with BOP test plug. M/U and RIH with jet sub, flush well head and BOP's. POOH and L/D jet sub, close shear ram. Pressure test casing to 1750 psi. M/U and RIH with wellhead wear bushing and set. POOH with bushing running tool. M/U 2 TIW valves and pressure test surface equipment to 250-5000 psi.

DAY 13 5th APRIL 1989 00:00hrs depth: 1170.0 met

L/D 9.5" drill collars and crossovers. Attempt to run flex joint wear bushing--unable to run. P/U 12.25" bit, junk sub, and bit sub and RIH, tagging cement @1117m. Circulate with slow pump rates w 1.17 sg. mud. Drill cement and float collar. Continue drilling on float collar, shoe, and cement to 1165m. Drill 12.25" rathole from 1165 to 1170m. Circulate bottoms up. Junk sub had 7 lbs junk recovered. Hang off drill string on #3 ram-HOWCO, perform leak-off test. Mud wt. equivalent--1.80 sg. Slug pipe, POOH. R/U riser running equipment, close shear ram. Pull LMRP to check choke line leak. Unlatch with ROV observation.

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 Company : Petrofina Exploration Australia 2.5  
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Well : Angler # 1  
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Country : Australia WELL DIARY  
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DAY 14 6th April 1989 00.00hrs depth: 1170.0 met

Pull lower marine riser package--static weight 270,000 lbs. Land on test stump. Replace choke line, flex joint gooseneck. Make up double joint riser to LMRP. Run riser. Check choke-kill and conduit couplings on all riser joints. Pick up and make up slip joint and diverter package.

DAY 15 7th April 1989 00.00hrs depth: 1170.0 met

Run LMRP. R/U lines to slip joint and land LMRP, and take 50Klbs overpull, land diverter. R/D riser equipment. Test choke line to 2000psi. Attempt to test kill-line. Test unsuccessful due to leak in ST 1 connector with ROV. Open choke valves and observe zero well pressure. M/U running String, packer and storm valve-set at 366m. POOH w/-RTS. R/U riser equipment. L/O diverter, P/U and M/U riser joint to slip joint. Unlatch BOP and P/U- rig down kill and choke lines. Pull BOPs and L/D slip joint and 13 joints, rack double in derrick. Move BOPs carrier to rotary, sitting stack on stump. Unlatch LMRP, break-out STI spool kill side.

DAY 16 8th April 1989 00:00hrs depth: 1170.0 met

Continue repairs on BOPs. Pull double of riser and stand back in derrick. Fill BOP with water and test choke, kill lines and connectors to 15,000psi-test successful. M/U TIW valve on stands of drill pipe and install in BOP. L/O a stand of drill pipe and TIW valve. Test shear rams to 40,000 psi and finally at 7000psi. Function test BOPs. M/U double joint riser to BOPs. P/U BOPs and move carrier to port-install beacon, and change out conduit hose. Run BOPs, pressure test choke and kill lines. L/D 1 joint of marine riser.

DAY 17 9th April 1989 00.00hrs depth: 1170.0 met

Continue running riser, pressure testing choke, kill and conduit lines every 3rd joint. L/D 1 joint of marine riser w/-damaged pin on choke line. P/U and M/U slip joint and single of riser, connect kill, choke and conduit lines. P/U riser tensioner ring. Lower WT on riser tensioners. Lower BOP and set on wellhead latch-test w/ 50,000Klbs o/p. P/U and M/U diverter. Test locking dogs. Install hydraulic diverter packer lines. Rig down riser running equipment. Rig-up to RIH to retrieve wellhead wear bushing.

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 Company : Petrofina Exploration Australia 2.6  
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Well : Angler # 1  
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Country : Australia WELL DIARY  
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DAY 18 10th April 1989 00.00hrs depth: 1341.0 met

P/U positive displacement motor, break connection and check assembly. L/D PDM because of incomplete assembly. P/U another PDM, install kelly and lower by-pass ports below table to measure pressures. Install 12.25" clamp on stabiliser at bottom of stator housing-torque to 25,000ftlbs. P/U MWD and M/U to BHA. P/U kelly and measure pressures. P/U and install Hughes PDC bit. RIH to 1159m-wash to TD at 1170m. Continue drilling 12.25" from 1170m to 1341m. Pump 50bbls hi-vis at 1315m.

DAY 19 11th April 1989 00.00hrs depth:1352.0met

Continue drilling 12.25" hole from 1341m to 1352m. Observe a 1200psi drop in stand pipe pressure. POOH-drillstring twisted off @ mud motor below dump connection. Prepare fish assembly. Cut and slip drill line. RIH with overshot. P/U kelly, break circulation. Tag fish. Commence fishing. Engage fish, and POOH hole with same. R/D bit, release fish from overshot. P/U mud motor and M/U to Kelly-test same. M/U mud motor to MWD and surface test MWD-test unsuccessful. Pull up test string, observe that mud motor had twisted off. Prepare to M/U Fishing tool.

DAY 20 12th April 1989 00.00hrs depth:1352.0met

RIH with overshot fishing assembly, tag fish @ 1344m. Break circulation and wash over fish, engage same. POOH-- fish not recovered. B/U overshot, wait for arrival of 11-3/4" overshot on rig. M/U new overshot assembly, dress with 8-3/8" basket grapple and mill control packer. RIH to top of fish and engage. Pull to 50klbs overpull. POOH. Fish successfully recovered. M/U bit and MWD tool--negative. L/D MWD tool. M/U BHA and RIH. Break circulation at shoe; wash to bottom. Drill 12.25" hole from 1352 to 1386m.

DAY 21 13th April 1989 00.00hrs depth:1386.0met

Drill 12.25" hole from 1386m to 1435m. Circulate, run survey-1/2 deg. Continue to drill 12-1/4" hole from 1435 to 1527m. Perform slow circulation rates. Drill from 1527 to 1537m. Circulate; run survey--.5 deg. Continue drilling 12.25" hole from 1537-1641m. Circulate, run survey--.5 deg. Continue to drill 12.25" hole from 1641 to 1653m.

DAY 22 14th April 1989 00.00hrs depth:1653.0met

Drill 12.25" hole from 1653m-1740m. Circulate, run survey. Slug pipe and POOH. L/D string. Surface test MWD and RIH with Bit #7.

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 Company : Petrofina Exploration Australia 2.7  
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 Well : Angler # 1  
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 Country : Australia WELL DIARY  
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DAY 23 15th April 1989 00.00hrs depth 1740 met

RIH with new 5" drill pipe, clean and inspect. Walk in with chain tong. Strap 16 stds. Continue RIH to 1728m. Teleco survey check. Drill 12.25" hole from 1740m-1742m. Unable to make hole. Encountered 400 psi pressure loss while pumping @ 180 strokes per minute. Slug pipe and POOH. M/U PDM on Kelly and test. M/U bit, roller reamer and MWD and test. M/U BHA and RIH. M/U Kelly to jars, test same. Continue RIH to shoe. Slip and cut drill line. RIH to 1735m. P/U Kelly and wash to bottom. Drill 12.25" hole from 1742 to 1756m.

DAY 24 16th April 1989 00.00hrs Depth:1889.0 met

Drill 12.25" hole from 1756.0m to 1889.0m. Encounter 400psi increase at 1779.0m-suspect blocked nozzle. Drill ahead with a reduced flow rate. Perform slow circulation rates at 1756.0m and 1840.0m.

DAY 25 17th April 1989 00.00hrs Depth:1992.0 met

Continue drilling 12.25" hole from 1889m to 1992m. Displace hole with gel/polymer mud at 1992.0m. Perform slow circulation rates at 1992m.

DAY 26 18th April 1989 00.00hrs Depth:1992.0 met

Circulate prior to POOH. Drop survey, pump slug and begin POOH. RIH and retrieve flex joint and wellhead wear bushings. M/U test plug and RIH to test BOPs. POOH with test tool. Run wellhead/flex joint wear bushings. Test surface equipment. P/U and M/U BHA & RIH, breaking circulation at shoe.

DAY 27 19th April 1989 00.00hrs Depth:1992.0 met

Continue to RIH, fill pipe 10 stds off bottom, cont. to RIH Wash/ream from 1988m to 1922m and work junk basket. Drill 12.125" hole from 1992m to 2097m. Circulate BU. Drop totco and pump slug. POOH. P/U PDM, P/U Kelly and test.

DAY 28 20th April 1989 00.00hrs Depth:2097.0 met

Test Navdril PDM. P/U TELECO, shock subs/stab M/U bit. Fill pipe RIH to 2088m. Break circ wash 2088m-2206m. Drill from 2092m to 2535m.

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 Company : Petrofina Exploration Australia 2.8  
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 Well : Angler # 1  
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 Country : Australia WELL DIARY  
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DAY 29 21st April 1989 00.00hrs Depth:2535.0 met

Drill 2535m to 2767m circulate B/U. Drill 2767m to 2918m. Circulate hole clean. POOH.

DAY 30 22nd April 1989 00.00hrs Depth:2918 met

Slip and cut the drill line at the shoe. Cont. to POOH. R/U Schlumberger. M/U Son, MSFL, DLT, GAMMA. Stuck at 2330m POOH. L/D and R/D Schlumberger. L/O Monel s/stab MWD, DBL PIN SUB, SHOCK SUB, NAVIDRILL. M/U bit R/Reamer, s/stab to BHA and RIH. Install insert packer. Break circ at shoe tag @ 2096m. Wash and ream 2096m-2918m. Pump 40bbl Hi-Vis and sweep. Inc MW 1.16 to 1.20 sg. Pump 40 bbl Hi-Vis pill. Sweep around clean up hole. pump slug. POOH.

DAY 31 23rd April 1989 00.00hrs Depth:2918 met

P/U kelly and flush wear bushings BOP. Cont. to POOH. R/u Schlumberger. Make up tools for Run #1. Make up tools for Run #2. P/U 9 5/8" csg hanger. Make up x-over/ring tool to STD of HWDP and stand back in derrick. RIH and retrieve the wear bushings. Establish reference mark on line, POOH. Pick up 9 5/5" CSG hanger and readjust measurement on pack off. Rig up and run 9 5/8" casing.

DAY 32 24th April 1989 00.00hrs depth: 2918 met

Cont. to run 9 5/8" CSG. Rig down 9 5/8" equipment. M/U hanger and RIH w/ HWDP. Land CSG at 07:20 hrs. M/U CMT hose. Circ. hole and work CSG. Test HOWCO lines to 400 psi. CMT casing. Drop dart and displace with 615 bbl mud. Bump plug with 3000 psi, hold 10 mins. Check for back flow, disconnect hose and back out R/Tool. Pressure test pack off to 4000 psi. Circ to flush well head - break out circ hose. Pull out of hole lay out RNG tool. Make up test plug, RIH and test BOP's. Test negative trace to surface leak. Beak CMT heads and POOH with test plug. Lay out 5" drill pipe.

DAY 33 25th April 1989 00.00hrs depth: 2918 met

Cont. to lay our excess DP and 1 std 8" DC. Make up test plug and RIH. Test BOP'S and RIH. Test BOP'S, Rams #2,3,4 to 250 psi low 7000 psi high. POOH with the test plug. RIH and set well head and flex joint bushings and POOH. RIH with 12 1/4" BHA and lay out. P/U and M/U new BHA. P/U kelly and test MWD pressure to high, pull back MWD and break off bit and replace nozzles. Cont to RIH and P/U BHA and 60 jnts "S" grade new DP.





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 Company : Petrofina Exploration Australia 2.10  
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Well : Angler # 1  
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Country : Australia WELL DIARY  
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DAY 40 2nd MAY 1989 00.00hrs depth: 3756.0 met

Continue drilling 8.5" hole from 3754 to 3833m. Check for flow. Circulate up sample, check for flow. Slug pipe and POOH. Check for flow at shoe. Continue POOH--105 stands. Slip and cut drill line. Resume POOH. Break out and lay down bit #10. P/U and M/U core barrel. L/D inner barrel and M/U fiberglass inner barrel. Check service connection and M/U core head.(DBS CT303). Continue RIH with BHA.

DAY 41 3rd MAY 1989 00.00hrs depth: 3833.0 met

Continue to RIH with the coring assembly to 3743. Bit sticks at 3743m worked free and run to 3773m. P/U kelly ream and wash to 3788m. POOH to 3740m taking 40 Klbs overpull. Pump slug, rack back kelly, POOH, B/O Core Bit. M/U wear bushings, retrieve tool, RIH retrieve flex joint wear bushings, POOH and disengage wear bushings. Press test choke manifold 250-700 on LP valves, 250-2500 on buffer tank valves. Test choke and kill lines to inner fail-safe valves on BOP. RIH retrieve wellhead wear bushing, R.B the same. M/U and RIH set BOP test plug. Press test BOP rams & all fail-safe valves to 250 & 7000 psi. Annular #1 to 250 & 2500 psi. Annular # 2 250-3500 psi. C/O well head wear bushings. Function test yellow pod. POOH L/D test plug. Rig up and test surface equipment. POOH wear bushing running tool. M/U wear bushings and set. Make up and RIH 8.5" Bit #12 & BHA P/U roller reamer ,2 stabilisers and new jars.

DAY 42 4th MAY 1989 00.00hrs depth: 3833.0 met

Continue to M/U BHA and RIH, take weight at 3274m. Ream and wash from 3255-3326m. Continue RIH to 3425, take weight--pipe stuck. P/U kelly, pump free. Pump back to 3311m, L/D 12 singles, RIH to 3440m. Ream and wash form 3472-3552m. Attempt to RIH--negative. POOH, L/D 27 joints. RIH with 9 stands. Continue to ream and wash from 3552-3595m--tight hole. Work free w/- 120Klbs overpull, continue to ream to 3645.

DAY 43 5th MAY 1989 00.00hrs depth: 3833.0 met

Ream from 3645-3713m--tight hole, jarring required each single. Maximum overpull up-480K, down-320K. Ream and wash from 3713-3717m. Slug pipe and POOH. Check for flow at shoe. B/O bit #12, junk sub, roller reamers and stabilizers. M/O and RIH with bit #13, junk sub, and near bit stabilizers. L/D stabilizer, and RIH 45 stands DP. Slip and cut drill line. Continue RIH with BHA to ream.

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 Company : Petrofina Exploration Australia 2.11  
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Well : Angler # 1  
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Country : Australia WELL DIARY  
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DAY 44 6th MAY 1989 00.00hrs depth: 3833.0 met

RIH with 8.5" BHA to 3700m. P/U kelly, wash and ream from 3700 to 3790m. Pickup and pull free. Maximum overpull--440K/up, 330K/down. Continue to ream and wash from 3790-3833m. Work junk sub, circulate and condition, slug pipe. POOH to 3177m to TD, maximum overpull 20K. RIH from 3177m to TD @ 3833m--no fill. Circulate and condition mud, work pipe while circulating. Slug pipe and POOH.

DAY 45 7th MAY 1989 00.00hrs depth: 3833.0 met

POOH, strap drill pipe. Break down BHA, 60 ft core barrel and M/U 30 ft barrel. RIH with coring assembly. Tag TD @ 3833m, M/U 2 x pup joints. Drop ball and check pressure a 60 strokes. Perform slow pump rates. Cut core #1 from 3833-3842m. Break core. Circulate prior to POOH. Flow check at shoe.

DAY 46 8th MAY 1989 00.00hrs depth: 3842.0 met

Continue to POOH with coring assembly. Recover core--99%--break out and lay down barrel. M/U Stratapax bit, MWD and BHA and RIH. Circulate test mud. Continue RIH, take wt @ 3796m. Ream and wash from 3796 to 3842m. Drill 8.5" hole from 3842m to 3944m.

DAY 47 9TH MAY 1989 00.00hrs depth: 3944.0 met

Drill 8.5" hole from 3944-4039m. Rotary torque--4,000 to 12,000 ft/lbs; weight up 405K, weight down 375K. Circulate hole, pump slug. Wiper trip back to 3775m. L/D 6 singles, RIH to 3825m. Ream from 3825 to 3842m. Teleco log hole. RIH to 4039m. Drill 4039m to 4058m. Rotary torque 9,000 to 10,000 ft/lbs.

DAY 48 10th MAY 1989 00.00hrs depth: 4058.0 met

Continue drilling to 4079m. Encountered high torque, unable to make sufficient penetration rate. Slug pipe and POOH. Slip and cut drill line. Continue POOH, B/O roller reamer and bit. RIH with wear bushing running tool to retrieve flex joint. String weight up--410Klbs; down 390Klbs. Torque 6,000 to 10,000 ft/lbs. POOH with flex jnt wear bushing. M/U test plug with 2 stands of HWDP below and RIH. Test BOP's. #1 annular and #2 annular to 250-35,000 psi. Rams to 250-7000 psi. POOH with test plug, L/D same. RIH with flex joint wear bushing and POOH with running tool, L/O running tool. M/U bit and roller reamer to BHA and RIH. P/U kelly, test Teleco MWD tool--OK. Continue M/U BHA and RIH.

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 Company : Petrofina Exploration Australia 2.12  
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 Well : Angler # 1  
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 Country : Australia WELL DIARY  
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DAY 49 11th MAY 1989 00.00hrs depth: 4079.0 met

Continue to RIH to 4043m. Ream/wash from 4043m to 4079m. Break in 8.5" bit and drill from 4079m to 4191m. At 4182m take 50 klbs overpull on connection. Circulate and work pipe. POOH 10 stands on wiper trip back to 3908m. Run back into hole to 4191m; drill to 4234m. Maximum overpull on connection was 15Klbs. Unable to make further depth, POOH. Check flow at shoe--negative. B/O bit #15. L/O Teleco tool. M/U new Teleco tool; walk in new threads. M/U 8.5" bit #16. P/U Kelly and function test MWD.

DAY 50 12th MAY 1989 00.00hrs depth: 4302.0 met

Make up BHA and RIH with Bit #16. Drill new formation from 4079m to 4302m. Maximum drag on connections was 15 klbs. Rotary torque 5500 to 6500 ft/lbs.

DAY 51 13th MAY 1989 00.00hrs depth: 4330.0 met

Continue to drill 8.5" hole from 4302m to 4330m. Circulate bottoms up, work pipe, wash and circulate. Pull wiper trip back to shoe. Maximum drag on connections--15 klbs. Slip and cut drill line. RIH to 4330m--no fill. Circulate, condition mud, slug pipe. POOH, strap out. Maximum drag--15klbs.

DAY 52 14th MAY 1989 00.00hrs depth: 4330.0 met

POOH, strap pipe. B/O bit #16. R/U Schlumberger and RIH A 4:08 hrs with log run #1.--DLL,MSFL,BHC,GR. Out of hole @ 05:40. Schlumberger check and service tools. Reterminate wireline log #1 in hole @ 09:30 hrs. Run log #2, LDT-CNT-GR, out of hole at 23.10hrs.

DAY 53 15th May 1989 00.00hrs depth: 4330.0 met

Lay down log #2 tools.P/u log #3 tools-RFT. Run and recover chamber samples. Rig down Schlumberger. M/U bit #16 and RIH to circulate and condition mud.

DAY 54 16th MAY 1989 00.00hrs depth: 4330.0 met

P/U Kelly break circulation. Tag bottom @ 4330met-no fill. Circulate and condition hole. Slug pipe.POOH for log #4.Rig up Schlumberger.P/U & M/U FMS-GR. Run log #4.

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Company : Petrofina Exploration Australia 3.1  
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Well : ANGLER1 #1  
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Country : Australia

PHASE SUMMARIES  
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### 36" PHASE REPORT"

From : 303.9 met to : 363.0 met  
From : 10:27 to 18:30 on 24th March 1989

#### SUMMARY:

Angler # 1 was spudded at 10:27 hrs on 24/03/89 with Bit #1, a 26" REED Y11 with 4 x 11 jets, and a 36" hole opener with 3 x 9 jets. The 36" hole was drilled from 304m to 363m in 8.0 hours with seawater and hi-vis pills. On reaching T.D., a hi-vis sweep was pumped to clean the hole, and the hole was spotted with 500 bbls of hi-vis mud prior to pulling out of hole to run 30" casing.

#### WOB/RPM/FLOW RATE PRACTICES:

WOB was maintained at 0-3 Klbs and RPM at 35 in order to ensure a vertical and gauge hole was drilled. An average ROP of 45.1 m/hr was obtained with the above parameters. Flow rates of 250-520 gpm were used to clean the hole of cuttings and maintain penetration.

Seawater with hi-vis pills was used to drill the 36" hole and clean the hole of cuttings. Bit hydraulic optimization was of little importance in the 36" hole where the main priority was to clean the hole of cuttings and drill the hole as quickly as possible.

#### CASING AND CEMENTING:

Five joints of 30" Vetco B casing (total length 57.5m) were run in the hole with the casing shoe set at 358m. Cementing was carried out as follows : 1260 sacks of 'G' grade cement was mixed with 150 bbls of drillwater and 1% CaCl<sub>2</sub> to give 258 bbls of slurry. This was pumped and displaced with 19 bbls of sea water. A top up job followed with 300 sacks of class 'G' cement mixed with 36 bbls of 1% CaCl<sub>2</sub> mix water to make 62 bbls of slurry which was pumped and displaced by 10 bbls of sea water.

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 Company : Petrofina Exploration Australia 3.2  
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 Well : Angler # 1  
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 Country : AUSTRALIA PHASE SUMMARIES  
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### 26" PHASE REPORT

From : 363.0 met To : 613.0 met  
 From : 25 /03/89 To : 27/03/89

#### SUMMARY:

Bit 1RR, a REED Y11 with 3 x 8 jets on a 26" hole opener was run in the hole and tagged cement at 351m. Cement, shoe and rat hole was drilled out from 363m to 365m, in 1/2 hour. The hole was spotted with 50 bbl hi-vis mud and Bit 1RR was pulled out of the hole. Bit 2, an 8-1/2" REED HP11J with open jets, was run into the hole to drill an 8-1/2" pilot hole before proceeding further with the 26" bit. The smaller hole was drilled as a precaution in the event that possible shallow gas zones were encountered in this interval. The 8-1/2" hole was drilled from 365m to 585m in 10 hours and a 30 bbl hi-vis pill was used to clear cuttings from the hole before pulling out with the bit. No indications of gas were encountered while drilling the pilot hole. Bit 3, a 12-1/4" REED HP11J with 3 x 12 jets and a 26" hole opener was run into the hole, and a 26" hole was drilled from 365m to 613m in 3-1/2 hrs. A 50 bbl hi-vis sweep was pumped to clean the hole and the hole was spotted with 500 bbls of 1.2 s.g. hi-vis mud before pulling out of the hole.

#### WOB/RPM/FLOW RATE PRACTICES:

WOB was maintained between 0-2Klbs and RPM at 120 while drilling the 8.5" pilot hole, with a flow rate of 500 gpm. Wireline surveys were run to assure that the hole did not deviate. The 26" hole was then opened with WOB ranging between 0 and 10klbs, RPM between 60 and 85, and with a flow rate of 550 gpm to effectively clean the hole of cuttings. Wireline surveys were run to assure a straight hole was drilled.

#### CASING AND CEMENTING:

Twenty-five joints of Vetco X-56 R145 94 ppf 20" casing were run in the hole with the shoe set at 603.9 m. The casing was successfully stabbed into the 30" casing and landed as per program. The casing was cemented with 508 bbl of cement using 2500 sacks of class 'G' cement to give a slurry of 1.90 s.g.. Returns were observed with the ROV during cementing. The cement was then displaced with 47 bbl of seawater.

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 Company: Petrofina Exploration Australia

3.3  
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Well : Angler # 1  
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Country : Australia

PHASE SUMMARIES  
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### 17 1/2" PHASE REPORT

From : 613 m to : 1165 m  
 From : 01/04/89 to : 02/04/89

#### SUMMARY:

The 17.5" phase of Angler # 1 was drilled in 29.5 hrs using one bit. Bit # 4, a HTC CX34 with 4 x 14 jets, drilled out cement, casing shoe, rat hole and new formation from 613m to 1165m, drilling ahead with seawater and 50 bbl hi-vis pills pumped as required. Teleco telemetric surveys were taken every three stands at the top of the section and once every 5 stands toward the base. A 50 bbl hi-vis sweep was pumped to clean the hole and the hole was spotted with 50 bbls of hi-vis mud before pulling out of the hole.

The casing was landed and cement pumped as per program. No problems were encountered during the casing or cementing jobs. All surface equipment was tested satisfactorily to 5000psi.

#### WOB/RPM/FLOW RATE PRACTICES:

The drilling rate was controlled at an average rate of three singles per hour throughout the 17.5" phase but varied from 10-40 m/hr, generally around 30 m/hr. RPM averaged 95 and WOB ranged from 0 - 15 Klbs. Flow rates of between 800-890 gpm were maintained in this section of hole.

#### HYDRAULICS

Hydraulic optimization was not an important factor, cleaning the hole of cuttings and maintaining circulation was most important. Flow rates of 800 -890 gpm along with hi-vis sweeps was enough to clean the hole of cuttings. Seawater was used as the drilling fluid in order to keep mud weight to a minimum and in balance with formation pressure. Bit #4, a HTC CX34 with 4 x 14, was the only bit used to drill the 17.5" hole.

#### CEMENT AND CASING

Seventy four joints of N80 68 lb/ft BUTT 13 3/8" casing was run to a depth of 1151.47m. This was then cemented with a lead of 442.36 bbl, made up of 433.7 bbl of sea water 1149 sacs of class 'G' cement and 0.43 gps of econolite to give a slurry of 12.5 ppg. This was followed by a tail of 102.4 bbl slurry made up from 500 sacs class 'G' cement and 60 bbl seawater to give a weight of 15.8 ppg.

The volumes of cement were calculated to give a 60% excess and the cement was then displaced with 422 bbl of sea water.

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 Company : Petrofina Exploration Australia 3.4  
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Well : Angler # 1  
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Country : Australia PHASE SUMMARIES  
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### 12 1/4" PHASE REPORT

From : 1165m to : 2918m  
 From : 10 - 04 - 89 to : 21- 04- 89

#### PHASE INTRODUCTION

The 12 1/4" drilling phase of Angler # 1 was completed over seven bit runs using four Reed insert bits, and a Hughes PDC bit(HTC B9M+). The PDC bit was re-run on 3 occasions due to continuing problems with Drillex PDM motors.

#### Phase Statistics

- 13 3/8" Casing Shoe set at 1151.43m.
- Depth Range:1165m - 2918m.
- Phase Run:1753.0m.
- Phase Rotary Hours:115.6hrs.
- Phase Average ROP:15.16m/hr.

#### Phase Summary

Bit #3RR;	Type: Reed HP11J.	Rot hrs:1.0hrs.
	Nozzles:3 x 15.	ROP:5m/hr.
	In:1165m.	Wear:2/2/I.
	Out:1170m.	BHA:Slick.

Bit #3 was RIH after setting the 13 3/8" casing. Cement was tagged at 1117.0m. The cement, float collar and casing shoe were then drilled out. An additional 5m of rathole was drilled from 1165m to 1170m. Prior to POOH the junk basket was surged with 7lbs of junk being recovered.

Bit #5;	Type: Hughes HTC B9M+	Rot:11.5hrs.
	Nozzles:5 x 13,12.	ROP:16m/hr.
	In:1170m.	Wear:10%.
	Out:1352m.	BHA:packed.

Bit #5 was RIH with a positive displacement mud motor and a MWD tool situated 9.4m behind the bit. The bit was RIH to 1159.0m, circulation was then broken, washing and reaming continued to TD at 1170m. Drilling continued from 1170m. A depth of 1352m was reached before a 1200psi drop in stand pipe pressure made it necessary to POOH. On surface it was revealed that the PDM motor had twisted off below the dump valve. A fishing assembly was rigged and RIH. The fish was engaged and retrieved on the first run.

Company	: Petrofina Exploration Australia	3.5
Well	: Angler # 1	
Country	: Australia	PHASE SUMMARIES

12 1/4" PHASE REPORT cont'd

An attempt to rerun the PDM was temporarily setback when a pin sheared in the stabilizer above the mud motor while surface testing the MWD tool.

The mud motor had twisted off at surface. The fishing assembly was rigged and run for a second time. Circulation was broken above the fish at approximately 1344m. An attempt to engage the fish was thought to be successful. It was later revealed that in fact the overshot had not caught the fish. Consequently a new fishing assembly was rigged and RIH. The fish was eventually engaged and POOH with 50Klbs overpull. The mud motor was subsequently retired from drilling operations.

Bit #6;	Type:Reed HP43A.	Rot:27.0hrs
	Nozzles:2 x 13,14.	ROP:13.0m/hr.
	In:1352m.	Wear:1/1/I.
	Out:1740m.	BHA:packed.

Prior to RIH the Teleco Tool failed a surface test and was laid down. Subsequently Bit #6 was RIH without a MWD. Circulation was broken at the shoe at 1151m. The bit then continued to wash and ream to bottom at 1352.0m. Prior to 1350m the mud system was opened, and consisted predominantly of seawater with frequent hi-vis sweeps. A decision was taken, and the mud system was closed in to allow the system to naturally weight up as hi-vis pills were continued to be pumped. The mud weight steadily increased from 1.04Sg at 1445m to 1.15SG at 1680m. Rotary drilling continued to 1740m without any notable drag on connections. Bit #6 was then prematurely POOH to allow a newly arrived mud motor to resume drilling. On the way out the entire 5"drill pipe was laid down.

Bit #5RR;	Type:Hughes HTC B9M+.	Rot:0.6hrs.
	Nozzles:5 x 13,12.	ROP:0-10m/hr
	In:1740m.	Wear:10%.
	Out:1742m.	BHA:packed.

Bit #5RR was RIH with a mud motor and MWD tool. Once on bottom a very slow drill rate associated with a 400psi drop in pump pressure made it necessary to POOH. The mud motor was subsequently blamed for the drop in pressure and laid down.

Bit #7;	Type:Reed HP43A.	Rot:43.7hrs.
	Nozzles:2 x 14,13.	ROP:5.7m/hr.
	In:1742m.	Wear:3/3/1:8
	Out:1992m.	BHA:packed.



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 Company : Petrofina Exploration Australia  
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3.6

Well : Angler # 1  
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Country : Australia  
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PHASE SUMMARIES

12 1/4" PHASE REPORT cont'd

Bit #7 was RIH with a MWD tool. Circulation was broken at 1735.0m. Washing and reaming continued to 1742.0m. Rotary drilling recommenced from 1742m to 1779m, where a 400psi increase in pump pressure was detected. A blocked nozzle was suspected, nevertheless drilling continued with a reduced flow rate until 1992m. Prior to POOH the hole was displaced with a Gel/polymer mud system.

Bit #8;	Type:Reed HP 13GJ.	Rot:14.0hrs.
	Nozzles:2 x 14,13.	ROP:7.5m/hr.
	In:1992m.	Wear:2/3/1:8
	Out:2097m.	BHA:packed.

Bit #8 was RIH without either a mud motor or MWD tool. Circulation was again broken at the shoe prior to continuing to RIH. The hole was then washed and reamed from 1988m to 1992m. The junk basket was worked off bottom before drilling ahead. Rotary drilling recommenced from 2097m and continued to 2097m. The hole was then circulated out, a single shot survey dropped, and a slug was pumped. Bit #8 was prematurely POOH to allow a mud motor/PDC bit combination to drill the just newly penetrated Lakes Entrance Formation.

At 1997.0m a carbide test revealed the hole to be 18% overgauge, or an open hole with an average diameter of 15 inches.

Bit #5RR2	Type:Hughes HTC B9M+.	Rot:17.8hrs.
	Nozzles:5 x 15,12.	ROP:46m/hr
	In:2097m.	Wear:50%
	Out:2918m.	BHA:packed.

Bit #5RR2 was RIH with a mud motor and MWD tool. Circulation was broken at 2088m. Washing continued to 2092m. New 12.25" hole was then drilled from 2092m. A drill break at 2767m was circulated out in an attempt to locate the Gurnard Formation. Drilling resumed from 2767m without notable drag on connections. Good returns were continuously observed over the shakers. At 2918m the hole was circulated clean, and Bit #5RR2 was POOH. The first stand pulled recorded a maximum overpull of 50Klbs, thereafter minimal drag was observed.

Once out of the hole Schlumberger prepared for the intermediate logging runs. The first run could not pass 2330m in the Lakes Entrance Formation and was subsequently retrieved. A BHA was then made-up consisting of a near bit roller reamer and RIH. Hole fill was tagged at 2906m, 12m off bottom. Two 40bbl hi-vis sweeps were then circulated. Heavy returns were observed over the shakers as the 12m fill was circulated out of the hole. Electric logging recommenced, and two logging runs were completed before rigging to run the 9 5/8" casing.

Company	: Petrofina Exploration Australia	3.7
Well	: Angler # 1	
Country	: Australia	PHASE SUMMARIES

12 1/4" PHASE REPORT cont'd

WOB/RPM/FLOW RATE PRACTICES.

This phase was drilled by employing maximum allowable drilling parameters. Originally this section was to be drilled entirely by a mud motor/PDC combination, however problems with the mud motors made it necessary to employ conventional insert bits. For the most part the insert bits drilled with 35-50Klbs with a rotary of 60 to 65rpm. The flow rates also varied little, and were between 600-650gpm. An exception to this was Bit #8 which drilled with an reduced flow rate of 500gpm due to a blocked nozzle.

The only PDC bit to be used was eventually reran on three occasions. Initially this bit drilled from 1170m to 1152m with 10-25Klbs on the bit, and 40-80rpm on rotary. These relatively low parameters were employed to allow straight hole to be drilled out of the 13 3/8" casing shoe. On the second occasion the bit was POOH after only 2m had be drilled due to a malfunctioning mud motor. On the last occasion the drill rate was restricted to 3.5 singles an hour through the Lakes Entrance Formation. In general this section of the phase was drilled with 40-50Klbs on the bit, and 140rpm on the rotary. The flow rate for all PDC runs was approximately 780gpm.

HYDRAULICS: (See table below).

The 12.25" phase hydraulics were optimized with power ratios of 0.60-0.74 for the Reed insert bit runs. Turbulent flow was also established in the immediate vicinity of bit, however in some instances turbulent flow was created higher in the annulus. A carbide test and a Schlumberger Caliper Log proved the hole was on average 15inches in diameter.

The Hughes PDC bit was run with a positive displacement mud motor, hence the power ratios don't truly reflect the total power established at the bit.

Company : Petrofina Exploration Australia 3.8

Well : Angler # 1

Country : Australia

PHASE SUMMARIES

12 1/4" PHASE REPORT cont'd

Phase Hydraulics Summary Table:

Bit No.	Bit Type	Interval m	PDM	FR gpm	Turb /lam	Power Ratio	Nozzles	SPP psi
5	Hughes HTC B9M+	1170- 1352	YES	780	Turb	0.32	5 x 13, 1 x 12	3000
6	Reed HP 43A	1352- 1740	NO	630	Turb	0.68	2 x 13, 1 X 14	3100
5rr	a/a	1740-42	YES	750	Turb	0.29	5 x 13, 1 x 12	3000
7	Reed HP 43A	1742- 1992	NO	510 /640	Turb	0.45 /0.64	2 x 14, 1 x 13	2000 /3100
8	Reed HP 13Gj	1992- 2097	NO	650	Turb /lam	0.63	2 x 14, 1 x13	3050
5rr2	a/a	2097- 2918	YES	680	Lam	0.15	5 x 16, 1 x 12	3100

Note: PDM-Positive displacement mud motor.  
Turb/lam:refers to type of flow around the drill collars.  
Bit #7: Two flow rates due to blocked nozzle.

CASING AND CEMENTING

216 joints of N80 47lb/ft BUTT Grade 3 9 5/8" casing were run to a depth of 2888.14m. Cementing was as follows:

SPACER:10 bbl of freshwater followed by 20 bbls of a mix of freshwater and scavenger slurry.

LEAD :681 bbl total made up of Class 'G' cement plus 2.5 % prehydrated gel and 108 gal/sac freshwater to give a weight of 12.8 ppg.

TAIL :102 bbl made up of Class 'G' cement plus 4 gal/10 bbl HR-6 and 5 gal/sac freshwater to give a weight of 15.8 ppg.

DISPLACEMENT: The cement was displaced first with 23.6 bbl of freshwater and 600 bbl of drilling mud.

Company	: Petrofina Exploration Australia	3.9
Well	: Angler # 1	
Country	: Australia	PHASE SUMMARIES

### 8 1/2" PHASE REPORT

From : 2918m                      to : 4330m  
 From : 26 - 04 - 89              to : 13 - 05 - 89

#### SUMMARY

The 8 1/2" phase was drilled from 2918m to 4330m using 6 bits and one 9m core barrel, and took 173.95 rotary hours to drill.

BIT #RR2	Type: REED HP11G	Rot: 1.25hrs
	Nozzles: 3 x 13	ROP: 4 m/hr
	In: 2918m	Wear: 7/3/1/8"
	Out: 2985m	BHA: Pendulum

A rerun bit #RR2, a REED 11G with 3 x 13" nozzles was used to drill out the cement, float collar and shoe from 2822m to 2830 m, and the rat hole to 2923m. After circulating to condition the mud and flush the riser, the bit was pulled to the casing shoe for a L.O.T., which yielded a value of 1.60 sg. New formation was then drilled from 2923m to 2985m. After displacing hole with 1.10 sg mud and checking for flow the bit was pulled from the hole.

BIT #9	Type: Chr.R437	Rot.: 57.5 hrs
	Nozzles: 4 x 12	ROP : 9.1 m/hr
	In: 2985m	Wear: 100%, In
	Out: 3507m	BHA : Pendulum

Bit #9 was run into the hole with the Teleco MWD tool and reamed and washed from 2967m to 2998m. New formation was then drilled from 2998m to 3227m. At 3227m a ten stand wiper trip to 2930m was performed. During the trip a max overpull of 20 Klbs was observed. New formation was then drilled from 3227m to 3507m.

BIT #10	Type: Reed HP51A	Rot.: 44.75 hrs
	Nozzles: 3 x 13	ROP : 7.2 m/hr
	In: 3507m	Wear: 5/4/.125 out
	Out: 3832m	BHA: Pendulum

Bit #10 was run into the hole with the Teleco MWD tool. After washing down from 3491m to 3507m, new formation was drilled from 3507m to 3833m.

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 Company : Petrofina Exploration Australia  
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3.10

Well : Angler # 1  
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Country : Australia  
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PHASE SUMMARIES  
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The maximum drag experienced during connections was 5,000 lbs, with a maximum measured torque of 4,000 ft/lbs. At the TD of 3833m, a flow check was performed, but no flow was measured. A bottoms-up sample was circulated out and another flow check was performed with negative results. Bit #10 was pulled from the hole, with a final flow check made at the base of the 9-5/8" casing shoe. A Teleco survey made at 3827m indicated that the deviation drift had increased to 1.5 degrees at TD.

CORE BIT #1

Type: Chr. 303HS

Rot: 8.0

Nozzles: --

Rop: 1.125

In: 3833m

Wear: 60%

Out: 3842m

BHA: Pendulum

Core bit #1 was run into the hole with a 20m core barrel assembly. Difficulties were encountered while running in, with tight spots occurring because of an undergauge hole. After becoming stuck and working free, it was decided to pull the core bit assembly from the hole, having reached a depth of 3788m. Bit #12, a Reed S32G with 3 x 13 nozzles, junk sub and a near-bit roller reamer was run into the hole. The hole was washed and reamed from 3255m to 3717m, with tight hole conditions making it necessary to jar the string on nearly each single. Maximum overpull upwards was 480,000 lbs, and downward was 320,000. After reaching 3717m, the reaming assembly was pulled from the hole. Bit wear was rated at 2/1/1/16-under, the roller reamer at 1/4" under gauge, and the stabilizer 1/16" under gauge. Bit #13, a Reed S316 with 3 x 13 jets, was run into the hole to 3700m. The hole was washed and reamed from 3700m to 3833m. The maximum upwards overpull experienced during this run was 440,000 lbs and downwards overpull reached a maximum of 330,000 lbs. After reaming to the bottom of the hole at 3833m, the string was pulled to 3177m, experiencing only 20,000 of overpull. The reaming string was then pulled from the hole. Core bit #1 was refitted along with a 10m core barrel and run into the hole, experiencing little problem in reaching TD at 3833m. Core #1 was cut from 3833m-3842m in 8 hrs and retrieved from the hole with a recovery of 99%.

Bit #14

Type: HTC B35M

Rot. 34.7 hrs

Nozzles: 3 x 12

Rop: 6.8 m/hr

In: 3842m

Wear: 40%/I

Out: 4079m

BHA: Pendulum

Bit #14 was run into the hole with the Teleco MWD tool. The string encountered tight hole at 3976m and was washed and reamed down to 3842m. Drilling commenced and hole was made from 3842m to 4039m. High torque while drilling this section resulted in

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 Company : Petrofina Exploration Australia 3.11  
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 Well : Angler # 1  
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 Country : Australia PHASE SUMMARIES  
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poor functioning of the Teleco MWD tool. A wiper trip was made back to 3775m and six singles laid down. The string was run in hole to 3825m, and the hole was slowly reamed from 3825m to 3842m while the section was re-run with the MWD logging tool. Following the success of the logging run, the bit was run back to 4039m. Drilling was resumed from 4039m until reaching a depth of 4079m, where high torque was encountered and the bit could no longer drill formation. A slug was then circulated prior to tripping out of the hole.

Bit #15	Type: CDC R435S	Rot. 14.6 hrs
	Nozzles: 4 x 12	Rop: 10.6m/hr
	In: 4079m	Wear:50%/I
	Out: 4234m	BHA: Pendulum

Bit #15 was RIH with a MWD tool. Circulation was then broken at 4043m. Reaming and washing continued to total depth at 4079m. The bit was gradually broken before drilling ahead. At the 4182m connection 50Klbs overpull was registered. Subsequently a 10std wiper trip was performed before drilling ahead. Thereafter 15Klbs overpull on average was observed on connections. Bit #15 was POOH due to lack of penetration at 4234m. Slight overpull was observed on the initial stands pulled, thereafter no drag was recorded during tripping.

Bit #16	Type: REED HP53A	Rot. 23.75hrs
	Nozzles: 11/14/B	Rop: 4.0 m/hr
	In: 4234m	Wear:1/2/1/16"
	Out: 4330m	BHA: Pendulum

Prior to RIH with Bit #16 a new MWD tool was picked up and surface tested. Drilling continued from 4234m with a maximum of 15Klbs overpull on connections. At total depth of 4330m bottoms up was circulated while working the string. A wiper to the 9 5/8" casing shoe was then performed with a maximum of 15Klbs overpull recorded while tripping. As the bit was returned to bottom no hole fill was tagged. The mud was circulated and conditioned before pumping a slug and POOH-maximum drag 15Klbs.

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Company : Petrofina Exploration Australia 3.12  
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Well : Angler # 1  
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Country : Australia PHASE SUMMARIES  
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**8 1/2" PHASE REPORT cont'd**

**WOB/RPM/FLOW RATE PRACTICES**

To insure vertical hole was drilled out of the 9 5/8" casing shoe, a wob of 15Klbs with a rotary of 120rpm was initially employed. As new vertical hole was established the wob was gradually increased to 25Klbs with a rotary of 95rpm. An essentially sandstone formation persisted from 3000m to 3700m, however, at 3173 through to 3330m thin coal seams prompted a reduction of the wob to 20Klbs with a increased rotary of 100 rpm. From 3700m onward thin, though hard siltstone interbeds necessitated an increase in wob to 30-35Klbs with a rotary of 95rpm. This siltstone developed with depth and persisted as a 100% siltstone from 3930m to 4200m. As PDC bits were used to drill this section of the hole a wob of 15-25Klbs with a rotary of between 80-90rpm proved adequate. From 4200m to 4330m(T.D.) a moderately hard to hard pyritised sandstone was drilled with an insert bit with a wob of 35-40Klbs and a rotary of 70-80rpm.

The flow rates from 2900m to 3833m were generally held steady at between 450-480gpm, however, from 3833m onward the flow rate was reduced to 350-360gpm to avoid damaging turbulent flow higher in the annulus, while also keeping within pressure loss restrictions.

Company	: Petrofina Exploration Australia	3.13
Well	: Angler # 1	
Country	: Australia	PHASE SUMMARIES

8 1/2" PHASE REPORT cont'd

HYDRAULICS:( See Table below.)

The 8.5" phase hydraulics due to pressure loss restrictions weren't optimised with power ratios ranging from 0.36 to 0.57. Turbulent flow was in most cases generated in the immediate vicinity of the bit, while laminar flow was noted higher in the annulus.

Phase Hydraulics Summary Table:

Bit No.	Bit Type	Interval met	FR gpm	Turb /lam	Power Ratio	Nozzles	SPP psi
2rr	Reed HP 11G	2918m - 2985m	450	Turb	0.45	3 x 13,	3000
9	Chris ECR 437	2985m - 3507m	480	Turb	0.36	4 x 12	3150
10	Reed HP 51A	3507m - 3833m	470	Turb	0.39	3 x 13	3000
11	CT 303	3833m -	Core barrel unable to reach bottom				
12 & 13	Reed S31G	3833m -	Ream tight hole prior to coring with bits #12 & #13.				
11rr	DB CT 303	3833m - 3842m 9m Core:99%Rec.	290	-	-	-	1340
14	Hughes HTC B35M+	3842m - 4079m	360	Turb	0.45	3 x 12	2200
15	CDC R435S	4079m - 4234m	374	Turb	0.44	4 x 12	1900
16	Reed HP 53A	4234m - 4330m	350	Lam	0.57	11/14/B	3000



903251 033

PE904714

This is an enclosure indicator page.  
The enclosure PE904714 is enclosed within the  
container PE903251 at this location in this  
document.

The enclosure PE904714 has the following characteristics:

ITEM\_BARCODE = PE904714  
CONTAINER\_BARCODE = PE903251  
NAME = Angler-1 Bit Cost Charts  
BASIN = GIPPSLAND  
ONSHORE? = N  
DATA\_TYPE = WELL  
DATA\_SUB\_TYPE = DIAGRAM  
DESCRIPTION = Angler-1 Bit Cost Charts, VIC/P20,  
W993. 12 charts. Charts within  
"Angler-1 Final Well Report"  
(PE903251).  
REMARKS =  
DATE\_WRITTEN =  
DATE\_PROCESSED =  
DATE\_RECEIVED = 02-OCT-1989  
RECEIVED\_FROM = Petrofina Exploration Australia S.A.  
WELL\_NAME = Angler-1  
CONTRACTOR =  
AUTHOR =  
ORIGINATOR =  
TOP\_DEPTH =  
BOTTOM\_DEPTH =  
ROW\_CREATED\_BY = EC00\_SW

(Inserted by DNRE - Vic Govt Mines Dept)

Company : Petrofina Exploration Australia 4.1

Well : Angler # 1

Country : Australia BIT REPORT

**BIT REPORT**

BIT NO.	TYPE	SIZE	NOZZLES	DEPTH IN feet	RUN feet	ROT hrs	WOB Klbs	FR gpa	SPP psi	WEAR	MW Sg	REMARKS
1	REED Y11	26"	4 x 11	303	60	5.5	0-3	275	300	1/1/I	1.04	
1RR	REED Y11	26"	4 x 11	363	2	0.5	5	350	2200	1/1/I	1.04	
2	REED HP11J	8.5"	NONE	365	220	9.75	5	500	1600	2/1/I	1.04	PILOT HOLE
3	REED HP11J	12.25"	3 x 12	585	28	1.25	10	550	1660	2/2/I	1.05	OPEN HOLE
4	HTC CX 34	12.25"	4 x 14	613	552	29.5	10/25	900	3400	3/3/I	1.06	
3RR	REED HP 11J	12.25"	3 x 15	1165	5	1.0	15/20	600	1900	2/2/I	1.06	
5	HTC B9M+	12.25"	5x13,1x12	1170	182	11.5	10/15	780	3000	10%	1.06	
6	REED HP42A	12.25"	2x13,1x14	1352	388	27.0	25/40	650	3100	1/1/I	1.08	
5RR	HTC B9M+	12.25"	5x13,1x14	1740	2	0.6	30	800	3100	10%	1.08	
7	REED HP43A	12.25"	2x14,1x13	1742	251	43.7	40/45	650	3500	3/3/ 1/8"	1.08	
8	REED HP136J	12.25"	2X14,1X13	1992	105	14	40/50	630	3150	2/3/ 1/8"	1.15	
5RR	HTC B9M+	12.25"	12,5x16	2097	821	17.8	50/70	780	3300	50% IN	1.1	
RR2	REED HP116J	8.5 "	3x13	2918	67	7.5	30/45	450	3000	7/3/1/8"	1.1	Drill shoe
9	CHRIS ECR437	8.5 "	4x12	2985	522	41.5	15/25	480	3150	100%,I	1.11	D/A.
10	REED HP51A	8.5 "	3x13	3507	326	43.9	35/40	470	3000	5/4/1/8"	1.12	POOH,Core.
11	DB,CT 303	8.5 "		3833	-	-	-	-	-	-	-	POOH due to Tight hole
12	REED S316	8.5 "	3x13									REAMING TIGHT HOLE FROM 3507m to 3833m
13	REED S316	8.5 "	3x13									REAM TIGHT HOLE PRIOR TO CORING.

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 Company : Petrofina Exploration Australia 4.2  
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 Well : Angler # 1  
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 Country : Australia BIT REPORT  
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## BIT REPORT cont'd

BIT NO.	TYPE	SIZE	NOZZLES	DEPTH IN feet	RUN feet	ROT hrs	WOB Klbs	FR gpm	SPP psi	WEAR	MW Sg	REMARKS
11rr	DB,CT303	8.5"		3833	9	8.0	5/20	290	1340	60%	1.12	Core #1
14	HTC B35M+	8.5"	3x12	3842	237	34.7	15/25	360	2200	40%/I	1.13	D/A
15	CDC R435S	8.5"	4x12	4079	155	14.6	22	374	1900	50%/I	1.14	POOH
16	REED HP53A	8.5"	11/14/B	4234	96	23.75	30/35	350	3000	1/2/1/16"	1.15	TD.

Company : Petrofina Exploration Australia

4.3

Well : Angler # 1

Country : Australia

MUD REPORT

MUD RECORD

Depth	MW	FV	PV	YP	Gel	PH	WL	CL	CA	SOL	H2O	SND	CAKE	pf/af	REMARKS
303a-1386a															Drilling with sea-water and Hi-vis sweeps in a open mud system.
1387a	1.04	29	1	1	1/1	9.0	-	21K	1320	2	98	tr	-	.06/.11	
1445a	1.04	28	2	1	0/1	9.9	-	21K	1320	2	98	tr			
1538a	1.06	28	2	2	0/1	9.1	-	21K	1680	2	98	tr			
1641a	1.08	30	1	4	1/2	9.6	-	20K	1520	3	97	tr		.1/.18	
1757	1.11	29	2	3	0/1	9.3	-	20K	1360	4	96	tr		.06/.12	
1780	1.11	29	3	2	0/1	9.3	-	20K	1360	4	96	tr		.07/.16	
1836	1.11	29	2	3	0/1	9.7	-	20K	1160	4	96	tr		.07/.16	
1889	1.11	29	2	3	0/1	9.3	-	20K	1160	4.2	95	tr		.07/.16	
1956	1.12	29	2	3	0/1	9.4	-	19.5K	1080	4.2	97	tr		.06/.13	
1993	1.08	38	10	8	1/1	10.0	5.4	17K	560	3.3	96	tr	1	.07/.16	
2062	1.09	40	10	8	1/2	9.6	5.6	16.5K	600	3.3	96	tr	1	.07/.19	
2534	1.15	46	15	15	2/10	9.5	6.0	15.5K	580	6.4	93	0.25	1	.10/.28	
2918	1.20	51	15	15	7/27	9.3	8.3	16.5K	520	9.4	90	0.25	1	.06/.65	
2985	1.11	36	8	8	1/5	10.0	6.4	18.0K	520	4.3	95	0.50	1	.1/.8	
3118	1.12	43	13	15	3/5	9.7	4.8	18.5K	140	6.3	93	0.60	1	.06/.9	
3355	1.12	43	14	13	3/5	10.8	4.9	18.5K	60	5.3	94	0.25	1	.12/.9	
3508	1.12	45	17	15	3/8	10.9	4.8	19.0K	280	5.2	94	TR	1	.23/.9	Drill ahead
3590	1.12	44	15	15	3/4	10.0	5.0	19.0K	360	5.2	94	TR	1	.1/.8	POOH/RIH,D/A.
3756	1.12	45	16	15	3/6	10.3	5.0	19.0K	280	4.2	95	TR	1	.15/.7	Drill ahead
3832	1.13	46	17	17	3/9	10.6	5.1	19.0K	240	5.2	94	TR	1	.17/.8	Drill ahead

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 Company : Petrofina Exploration Australia 4.4  
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 Well : Angler # 1  
 -----  
 Country : Australia MUD REPORT  
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**MUD RECORD cont'd**

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: Depth ; MW ; FV ; PV ; YP ; Gel ; PH ; WL ; CL ; CA ; SOL ; H2O ; SMD ; CAKE ; pf/wf ; REMARKS ;
=====
: 3832 ; 1.13 ; 44 ; 15 ; 12 ; 3/5 ; 10.5 ; 5.4 ; 19.0K ; 160 ; 5.2 ; 94 ; TR ; 1 ; .19/.9 ; Test BOP. ;
=====
: 3833 ; 1.13 ; 46 ; 16 ; 15 ; 3/9 ; 10.7 ; 4.8 ; 19.0K ; 360 ; 5.2 ; 94 ; TR ; 1 ; .29/.7 ; REAMING ;
=====
: 3842 ; 1.13 ; 51 ; 19 ; 19 ; 3/12 ; 11.0 ; 4.9 ; 19.0K ; 480 ; 5.2 ; 94 ; TR ; 1 ; .45/1 ; CORING ;
=====
: 3944 ; 1.13 ; 48 ; 16 ; 16 ; 4/13 ; 9.9 ; 5.4 ; 19.0K ; 480 ; 5.2 ; 94 ; TR ; 1 ; .25/.83 ; D/A. ;
=====
: 4058 ; 1.14 ; 53 ; 19 ; 18 ; 6/18 ; 9.5 ; 5.3 ; 19.0K ; 420 ; 5.2 ; 94 ; TR ; 1 ; .18/.42 ; D/A. ;
=====
: 4079 ; 1.14 ; 51 ; 18 ; 19 ; 5/18 ; 9.4 ; 5.6 ; 19.0K ; 420 ; 5.2 ; 94 ; TR ; 1 ; .18/.4 ; TRIP, TEST BOP ;
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: 4234 ; 1.14 ; 56 ; 19 ; 21 ; 7/21 ; 10.1 ; 6.5 ; 19.0K ; 440 ; 5.2 ; 94 ; TR ; 1 ; .26/.38 ; DRILL, POOH. ;
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: 4302 ; 1.15 ; 56 ; 19 ; 22 ; 6/20 ; 9.6 ; 6.8 ; 19.0K ; 440 ; 5.2 ; 94 ; TR ; 1 ; .17/.32 ; RIM, DRILL. ;
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: 4330 ; 1.14 ; 53 ; 17 ; 20 ; 7/24 ; 9.9 ; 6.4 ; 19.0K ; 380 ; 5.2 ; 94 ; TR ; 1 ; .18/.35 ; DRILL TO TD. ;
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903251 039

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Company : Petrofina Exploration Australia 5.1  
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Well : Angler # 1  
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Country : Australia GEOLOGY SUMMARY  
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### INTRODUCTION

Angler # 1 is located on a normal fault trap in the northern part of Permit VIC/P20 in the Bass Strait. The structure is situated along a NW-SE trending fault, with dip closure to the south and fault closure to the north. The Angler prospect lies within the central part of the NW-trending Gippsland Basin. Gippsland Basin sedimentation occurred in three phases, each separated by periods of structural deformation marked by regional unconformities. Rifting and volcanism in the Late Jurassic/Early Cretaceous was followed by deposition of sediments of the Strezlecki Group. Continued wrench faulting and rifting related to the opening of the Tasman sea during the Late Cretaceous to Middle Eocene gave rise to the deposition of the Latrobe Group. Latrobe sediments are comprised of up to 2500m of shallow marine and continental shales, coals, and sandstones. They represent a regressive sequence from upper delta/braided stream to back barrier/paludal swamp sediments, culminating in shallow marine sedimentation. The last phase of basin development involved the deposition of the Late Eocene to Recent Seaspray Group, formed during a widespread thermal sag phase. During this time, upper continental slope marls and claystones of the Lakes Entrance and calcarenites and calcilutites of the Gippsland Limestone were deposited. The sediments of the Seaspray Group form a seal for hydrocarbon-bearing strata of the Latrobe accumulations.

Potential reservoirs in the Angler prospect include Latrobe sandstones of deltaic and lower coastal plain origin. The predicted source interval was within thick coals and coaly shales of the Campanian lower coastal plain sequence. The primary objective is the Selene Sandstone, previously intercepted in the nearby Selene-1 and Hapuku-1 wells, where it reaches 100m+ in thickness. The presence of 200m of coaly shale above the Selene should provide a sufficient seal for hydrocarbons which have migrated up-dip and up-fault under the Angler prospect. The predicted hydrocarbon type was oil, with potential gas in over-mature Lower Campanian sequences.



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 Company : Petrofina Exploration Australia 5.2  
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 Well : Angler # 1  
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 Country : Australia GEOLOGY SUMMARY  
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**LITHOLOGIC SUMMARY**

303-613m Returns to sea floor.

613-800m CALCARENITE: white to off-white to grey, firm to moderately cemented, sucrosic texture, fossiliferous, forams common, traces of glauconite, pyrite and mica.

800-880m CALCILUTITIC CALCARENITE: light to medium grey, fine to medium grained, chalky texture, moderately well cemented, calcilutite matrix, soft to firm, fossiliferous, common forams, glauconitic, trace mica, poor visible porosity.

880-960m CALCARENITIC CALCILUTITE: light to medium grey, chalky texture, moderately well cemented, calcite cement, trace of argillaceous matrix, fossiliferous, abundant forams, traces of glauconite and mica, trace of dolomite, poor visible porosity.

960-1070m CALCILUTITE: light to medium grey, chalky texture, moderately well cemented, calcite cement, fossiliferous, abundant forams, traces of glauconite and mica, trace dolomite, nil-poor visible porosity.

1070-1210m MARL: light grey, soft, sticky, plastic, occasionally silty.

1210-1720m CALCARENITE: off white to tan, firm to moderately hard, occasionally hard,, fine to very finely crystalline, rarely coarsely crystalline, common very fine to fine grained, moderately well cemented, common white calcite matrix, common forams, calcareous spicules, traces of glauconite, no vis porosity, grading to lt gy, sft CALCILUTITE.

1720-2060m CALCARENITE: light grey-light brown-off white, mod hard-hard, blocky-subfissile, very fine to fine grained, micro- to occasionally finely crystalline, moderately well to well cemented, calcareous/argillaceous matrix, trace forams, traces of glauconite and dolomite, no visible cement

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 Company : Petrofina Exploration Australia 5.3  
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Well : Angler # 1  
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Country : Australia  
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## GEOLOGY SUMMARY

## LITHOLOGY SUMMARY

CALCILUTITE: light grey to off white, soft to firm, occasionally moderately hard, chalky to plastic in part, occasionally silty, calcareous/argillaceous matrix, no visible porosity.

2060-2200m MARL: light brown to light grey, predominantly soft to hard in part, chalky-sticky, calcareous matrix, occasionally with argillaceous matrix, dispersive, slightly silty.

2200-2770m CALCAREOUS CLAYSTONE: light brown to grey, soft to dispersive, firm in part, blocky, silty in part, minor aggregates of microxtalline pyrite, grading to shale, marl in part.

2770-2920m SANDSTONE: brown to green to clear, dominantly unconsolidated, very fine to coarse grained, subangular to subround, poorly sorted, argillaceous matrix, common coarse glauconitic grains, poor to excellent inferred visible porosity, no shows

2920-3023m SANDSTONE: translucent-transparent, occasionally light grey to light brown, medium to coarse grained, poorly to moderately sorted, angular to subround, predominantly loose grains, weakly to moderately cemented with silica, common quartz overgrowths, locally common disseminated pyrite, tr mica, tr glauconitic pellets, grading to siltstone in part.

SILTSTONE: light to medium grey, brownish-grey in part, firm to hard, trace calcareous cement, trace argillaceous matrix, pyritic in part

3023-3325m SANDSTONE: transparent-translucent, loose, coarse to medium grained, occasionally fine grained, poor to moderately sorted, subangular to subrounded, trace of disseminated pyrite, poor to fair inferred porosity, grading to coal and siltstone in part, no shows.

SILTSTONE: light grey to light brownish-grey, firm, commonly carbonaceous, traces to common interlaminated coals, poor to no inferred porosity, tr cut fluorescence.

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 Company : Petrofina Exploration Australia 5.4  
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Well : Angler # 1  
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Country : Australia GEOLOGY SUMMARY  
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LITHOLOGY SUMMARY

COAL: black-dark grey to brownish black, dominantly subvitreous to vitreous in part, firm to hard, blocky to subconchoidal in part, fractured.

3325-3490m SANDSTONE: transparent to translucent, loose, medium to coarse grained, subangular to subrounded, poorly to moderately sorted, no visible cement or matrix, traces of disseminated pyrite, fair to good inferred porosity, no shows, grading to siltstone in part, tr coal

SILTSTONE: medium to dark grey, subfissile to subblocky, soft to firm to brittle in part, carbonaceous in part, common argillaceous matrix.

COAL: black to dark grey, subvitreous to vitreous, brittle.

3490-3520m CLAYSTONE: medium grey to dark grey, soft to firm, subblocky to subfissile, carbonaceous, silty in part, trace fluorescence, bright yellow cut, med yellow residual fluorescence.

SILTSTONE: light to dark grey, occasionally brown-brownish grey, soft to firm, subblocky, carbonaceous, common to abundant argillaceous matrix, grading in part to silty claystone

SANDSTONE: transparent-translucent, loose, coarse to fine grained, predominantly medium grained, subangular to subrounded, moderately to well sorted, no visible cement, tr disseminated pyr, fair to good inferred porosity, poor to fair yellow direct cut fluorescence.

3520-3560m SANDSTONE: transparent-translucent, coarse to fine grained, dominantly medium grained, moderately to well sorted, subangular to subrounded, no visible cement, trace of disseminated pyrite, fair to good inferred porosity, trace direct fluorescence, cut fluorescence, grading to siltstone in part.

3580-3620m SANDSTONE: 70% unconsolidated--transparent-translucent, coarse to fine grained, predominantly coarse to medium grained, moderately sorted, no

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 Company : Petrofina Exploration Australia 5.5  
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 Well : Angler # 1  
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 Country : Australia GEOLOGY SUMMARY  
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## LITHOLOGIC SUMMARY

visible, trace disseminated pyrite, fair to good inferred porosity.

30% consolidated--off white to translucent, fine grained, silty, well sorted, well cemented, silica cement, trace to common argillaceous cement, trace pyrite.

SILTSTONE: light to dark grey, occasionally brownish-grey, soft to firm, subblocky-subfissile, carbonaceous, common argillaceous matrix, grading to carbonaceous claystone.

CLAYSTONE: medium to dark grey, firm to dispersed in part, generally amorphous, carbonaceous in part.

3620-3690m SANDSTONE: transparent-translucent, loose, medium to to coarse grained--occasionally fine grained, moderately to poorly sorted, subangular to subround, no visible cement, occasionally argillaceous matrix, trace pyrite, good inferred porosity, no shows.

3690-3825m SANDSTONE: transparent-translucent-occasionally very light grey, loose, coarse to medium grained, dominantly coarse grained, occasionally fine grained, moderately sorted, subangular to subrounded, rare silica cement, no matrix, trace to minor pyrite micronodules, good inferred porosity, no shows, grading to siltstone.

SILTSTONE: medium reddish brown-light brown, firm to moderately hard, dominantly subfissile-occasionally fissile, commonly micromicaceous, very carbonaceous in part, grading to shale and coal in part.

3825-3835m SANDSTONE: transparent-translucent to occasionally white, loose, coarse to fine grained, dominantly coarse, occasionally medium, fine grained, subangular to subrounded, trace silica cement, trace white calcareous matrix, tr mica, common to abundant pyrite, 50% fluorescence--moderate bright yellow direct, fast streaming yellow cut fluorescence, abundant brown oil staining.

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 Company : Petrofina Exploration Australia

5.6  
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Well : Angler # 1  
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Country : Australia

GEOLOGY SUMMARY  
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3835-3875m SANDSTONE: transparent to milky white, very fine to medium grained, occasionally very coarse, fractured grains, poorly sorted, trace of white matrix, occasional calcareous to dolomitic cement, common pyrite -occasionally as matrix, mineral fluorescence.

3875-4005m SILTSTONE: speckled brown-reddish-black, firm to hard, occasionally very hard, subfissile to subblocky, argillaceous matrix, micromicaceous in part, carbonaceous--grading to coal in part, pyritic in part; traces of COAL: black, vitreous, hard

SANDSTONE: transparent to translucent, medium to coarse grained, subangular to subrounded, poorly sorted, trace of calcite cement, fair to poor visible porosity, common pyrite, occasionally showing 10% fluorescence--moderately bright greenish yellow, with slow streaming cut, very thin residual ring.

4005-4205m SILTSTONE: white-brown-lt brown, firm, cemented to earthy, common carbonaceous specks/grading to coal laminations in part, common feldspar grains, arenaceous in part, glauconitic in part, minor biotite with chlorite alteration, common coarse floating quartz grains, very fine mica and pyrite along fractures.

SANDSTONE: transparent, unconsolidated, fine-med grained, moderately sorted, fractured grains, frosted in part, tr calcite cement, minor pyrite aggregates, poor inferred porosity.

4205-4330m SANDSTONE: translucent-white-very light grey, fine to coarse grained-fining with depth, moderately well sorted--becoming poorly sorted with depth, dominantly subangular to subround, traces of mica, (biotite altering to chlorite), trace of calcite cement, common pyrite, good inferred porosity--decreasing to poor at depth, no show to 20% fluorescence--pale yellow fluorescence, slow weak greenish yellow cut, no stain or residual ring.

SILTSTONE: light grey to medium brown, moderately hard to hard, blocky to subfissile, very arenaceous in part, grades to very fine grained sandstone,

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 Company : Petrofina Exploration Australia 5.7  
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 Well : Angler # 1  
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 Country : Australia HYDROCARBON SUMMARY  
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## HYDROCARBON SUMMARY

DEPTH	LITHOLGY	GAS	SHOWS
3490m- 3510m	SILTSTONE	NO GAS	No direct fluor, pr-fr yel cut, med' yel residual rng.
3557m- 3579m	SANDSTONE	NO GAS	Tr-10% dul yel/grn, w/-dull yel/gold cut, lt brn res' oil stn.
3825m- 3845m	SANDSTONE #	C1:0.4% C2:.025% C3:Trace.	Mod' bright yel, fast strmg bright yel cut, abndt brn oil stn.
3985m- 4000m	SANDSTONE W/- THIN COAL SEAMS.	C1:0.1%	Tr-10% mod-bright grn/yel. W/-slow strmg yel cut, thin dull yel res' rng.
4125m- 4260m	SANDSTONE	C1:10.0% C2:0.5% C3:0.17% iC4:0.0072% nC4:0.0089%	20% mod pale yel fluor, slw wk grn-yel cut, no stn or residual ring.
4260m- 4305m	SANDSTONE	C1:0.9%	Tr-10% v. dull yel fluor, w/-wk cut, no residual rng.

# Core #1 was taken from 3833m to 3842m with 99.0% recovery.  
 SEE PETROFINA CORE DESCRIPTION FOR HYDROCARBON SHOWS.

Company	: Petrofina Exploration Australia	5.8
Well	: Angler # 1	
Country	: Australia	ELECTRIC LOG RECORD

HOLE SIZE	FROM met	TO met	ELECTRIC LOGS RUN	COMMENTS
- INTERMEDIATE LOGGING RUN -				
17.5"	1170	610	DIL-LSS-GR-CAL.	
12.25"	2887	2800	LSS-DLT-GR-CAL.	
	2887	1170	LDT-CNL-GR-CAL.	TOOL STUCK-UP AT 2330m.
- FINAL LOGGING RUN -				
8.5"	4333m	2888m	DLT-SLS-MSFL-GR-CAL-SP.	
	4336m	2888m	LDL-CNL-NGL.	
	3125m	4269m	RFT-HP-GR.	
	4336m	2888m	FMS-GR.	
	4336m	SURF	VSP.	
	4336m	3496m	CST. 60 SHOT	23 RECOVERED
	2888m	SURF	CBL.	
	3485m	2906m	CST. 30 SHOT	23 RECOVERED

Company	: Petrofina Exploration Australia	5.9
Well	: Angler # 1	
Country	: Australia	RFTs

**RFT SUMMARY**

Segregated fluid samples collected at 4226met with 2.75gal chamber.

CHAMBER CONTENTS:92.4cu ft of gas & 600cc Condensate.

GAS COMPOSITION; C1:88.24%,C2:5.0%,C3:1.63%,iC4:0.11%,nC4:0.13%.

CONDENSATE:Sg:0.77 @ 21.8 deg.C,52 degrees API.

1 gal pressure sample preserved for PVT ANALYSIS.



903251 049

Company	: Petrofina Exploration Australia	6.1
Well	: Angler # 1	
Country	: Australia	FORMATION PRESSURE EVALUATION

### OVERPRESSURE INTRODUCTION

The following is a brief summary of the methods used whilst drilling to indicate overpressure in geological formations.

"D" EXPONENT: This is a normalised rate of penetration which tries to adjust for variables such as weight on bit, rotation and mud weight. It can be used reliably in shales and clean claystones and as an indicator in siltstones, silty shales and calcareous claystones. A shift from the normal trend (representing a normal compaction) to the left (representing relative undercompaction) indicates overpressure or increased porosity due to lithology changes.

RESISTIVITY: As measured by sensors in the suction pit and flowline and the Teleco MWD tool while drilling. The mud resistivity is used to detect influxes to the mud system whereas the Teleco MWD tool measures formation resistivity which gives an indication of compaction in argillaceous formations. Decreasing formation resistivity results from undercompaction and indicates overpressure.

TEMPERATURE: As measured by the Teleco MWD tool while drilling or as a lagged parameter measured in the mud return system compared with a reference value measured in the active pits. (plotted against depth) shows overpressure by a positive change in the thermal gradient i.e. a shift to the right of a normal trend, due to lower conductivity in undercompacted formations. This is often preceded by a 'thermal shadow' indicated by a left ward shift in the trend just above the abnormally pressured zone. Measurement while drilling (Teleco) is more reliable as there is no riser cooling effect with this method.

GAS: Increase in the background and trip gas readings as well as significant connection gas readings (a significant connection gas peak is twice the current background figure.) all indicate increasing pore pressures. Note that changes in porosity caused by changes in formation type can give increases in background and trip gas which are not related to overpressure.

CUTTINGS: Small splintery cuttings indicate overpressured formations. Long propeller shaped cavings are caused by overpressure or by hydration of reactive or swelling clays. This results in overpull and drag on the drill collars and stabilisers while making connections or while tripping.

ELECTRIC LOGS: Resistivity logs as described above. Sonic logs react to a function of rock density and as such react in a very similar way to the D exponent shifting to the left of a normal compaction trend. RFT logs measure the formation pressure at selected depths. These logs can be used only as a confirmation of overpressure after the well has been drilled.

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 Company : Petrofina Exploration Australia 6.2  
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 Well : Angler # 1  
 -----  
 Country : Australia FORMATION PRESSURE EVALUATION  
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### SUMMARY

Overpressure indicators were monitored throughout the drilling of Angler #1. In the top hole section before the setting of the 20" casing at 603m only the "d" exponent was available. Once the riser was run returns were maintained for the rest of the drilling, enabling gas levels, mud volumes, cuttings, temperature and resistivity to be monitored. A Teleco MWD tool was run from the 9 5/8" casing shoe at 2888m enabling the measurement of down hole tool temperature and formation resistivity. At TD, at 4330m, RFTs were run by Schlumberger and formation pressure measured at 36 depths in the 8 1/2" section.

The formations drilled, including the target zones, were expected to be normally pressured from correlations with other wells in the vicinity. This was found to be the case, the maximum pressure gradient calculated from the RFTs being 1.065 sg.

The "d" exponent was of little value in calculating formation pressure in this well as there was only one relatively thin claystone formation. In argillaceous formations with uniform composition and calcimetry the "d" exponent generally increased with a constant gradient. The only leftward trend of any significance was in the marls from 2100m to 2500m but this was attributed to decreasing calcite content over the interval. The major or sudden changes in "d" exponent were caused by formation changes and changes in bit type, from tri-cone to PDC. As such it was useful in picking formation and bedding tops and comparing drillability. At no stage did the "d" exponent indicate overpressure.

The mud resistivity, measured as conductivity, showed no influxes of formation fluids to the mud system and therefore a balanced or overbalanced system. The Teleco MWD formation resistivity was constrained by the same formation factors as the "d" exponent, but gave no indication of overpressure.

As temperature trends also depend on formation porosity, in that formation fluids are less conductive than rock, they gave no indication of overpressure in the interbedded formations of this well.

Gas readings were useful overpressure indicators while drilling as there was background gas for much of the well. Any formation pressures approaching the hydrostatic pressure of the mud would have been obvious from the presence of connection gas and high trip gas values. As these were not present we were confident of sufficiently overbalanced mud while drilling gas bearing formations.

There were no splintery cuttings observed in this well.

Mud pit levels showed some mud losses in porous formations but never any gains, once again indicating an overbalanced system.

Electric logs, resistivity and sonic, are related to porosity and therefore were of limited use for overpressure detection. The RFT logs gave the actual formation pressure and, as a function of depth, the formation pressure gradient. This reached a maximum of 0.462 psi/ft or 1.065 sg EMW at 4220m RKB and was 0.439 psi/ft (1.014 sg EMW) in the Selene sandstones of the target formation.

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Company : Petrofina Exploration Australia 6.3  
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Well : Angler # 1  
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Country : Australia FORMATION PRESSURE EVALUATION  
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### CONCLUSIONS

There was no indication of overpressure in Angler #1 during the drilling and this was supported by electric logs run after reaching TD. The maximum pressure gradient encountered was 0.0462 psi/ft which equals an equivalent mud weight of 1.065 sg. In the interbedded non-argillaceous formations of varying porosity, and calcite and sand content, many of the calculated and sophisticated methods of overpressure detection were of less value than the classic ones such as gas readings, mud pit levels and mud resistivity changes.

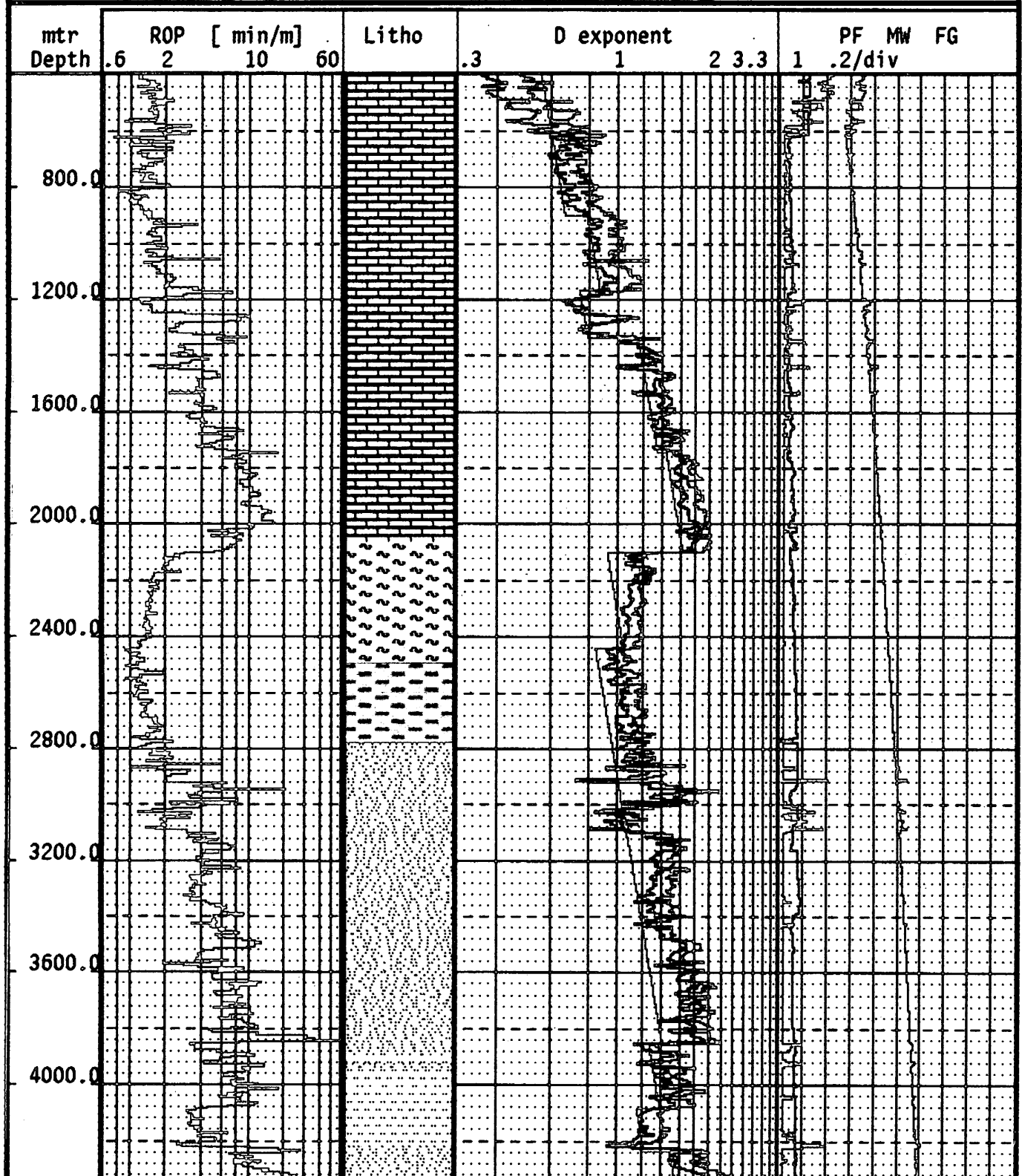


D Exponent

Scale 1: 20000

Petrofina Exploration

Bass Strait



903251 054

Company	: Petrofina Exploration Australia	7.1
Well	: Angler # 1	
Country	: Australia	GAS EVALUATION

### SUMMARY

Background gas levels monitored during the drilling of Angler #1 were low, averaging between 0 and 1% for most of the well. Levels measured through the Gippsland Limestone section ranged between 0 and 1%, averaging about .7%, with a mud weight of 1.17 s.g. The background level declined somewhat after drilling the 13-3/8" casing shoe, to a depth of 1390m. At that point, the mud weight was reduced to 1.04 s.g. and the gas level resumed as before. No connection gasses or significant shows occurred through the Gippsland Limestone interval. The gas level through the Lakes Entrance Formation was essentially the same, ranging between 0 and 1%, averaging about .8%, with a mud weight of 1.08 s.g. No connection gasses or significant shows occurred during the drilling of the Lakes Entrance section. Upon entering the sandstones at the top of the Latrobe Group, the background level dropped, averaging about 0.4% to the bottom of the 12 1/4" hole at 2918m.

The mud weight was raised to 1.11 subsequent to the drilling out of the 9-5/8" casing shoe. As a result, no background gas level was measurable to a depth of 3173m. At 3173m and below, small gas shows emanated from an interbedded sandstone/siltstone/coal sequence. The most significant shows came from a carbonaceous siltstone interval from 3212m to 3245m. The maximum peak gas was 2.5% at 3235m, with 1.8% C1, 0.4% C2, 0.2% C3, 0.01% iC4, and 0.02% nC4. Below this zone, background gas dropped to zero with a mud weight of 1.12, and continued to be absent until a depth of 3810m. Background gas resumed at this depth from a sandstone/carbonaceous siltstone sequence and continued to T.D. Levels ranged between .06 and 1%, averaging about occasionally measured in this interval, with gas shows occurring from interbedded sandstones and siltstones from 4205m to 4233m. The maximum peak gas level of 11% was recorded at 4215m, with 10% C1, 0.71% C2, 0.27% C3, 0.012% iC4 and 0.018% nC4.

After a depth of 4235m was reached, the background gas returned to a level of about .8%, until 4290m, where it dropped to a level of 0.06% through a siltstone section to T.D. at 4330m.

Company : Petrofina Exploration Australia

7.2

Well : Angler # 1

Country : Australia

GAS EVALUATION

## GAS SUMMARY TABLE

DEPTH mt		GAS LEVELS %			
from :	to	Background	Max peak	Trip gas	Conn gas
613	- 1150	.001--1.0	1.2 @ 1020m		
1150	- 1390	.001--.02	.28 @ 1313m	1.1 @ 1335m	
1390	- 2010	.02 - 0.2	0.6 @ 1727m	0.7 @ 1792m	
				0.8 @ 1995m	
2010	- 2812	.01 - 1.0	1.1 @ 2272m	0.8 @ 2100m	
2812	- 2930	.02 - 0.18	0.4 @ 2812m	.03 @ 2918m	
2930	- 3172	0 - 0		0 @ 2978m	
3172	- 3253	0 - 2.2	2.2 @ 3235m	1.1 @ 3227m	
3253	- 3810	0 - 0		0 @ 3507m	
3810	- 4205	.04 - 1.0	1.0 @ 4165m	0.3 @ 4040m	
4205	- 4330	0.1 - 11.0	11.0 @ 4215m	0.7 @ 4238	



Company	: Petrofina Exploration Australia	7.3
Well	: Angler # 1	
Country	: Australia	GAS EVALUATION

### GAS COMPOSITION DIAGRAMS

A brief explanation on the usage of gas composition diagrams;

The gas composition diagram allows the determination of two important points:

- 1) Whether the sample originates from a dry gas reservoir, or from an oil accumulation.
- 2) Whether the composition of the sample is geochemically normal, or abnormal and hence originating from gas dissolved in water.

1.1) If the point of the triangle is:

- i) UPWARD-then the sample originates from a gas reservoir.
- ii) DOWNWARD-then the sample indicates an accumulation of oil.

2.1) The homothetic centre must fall within the delimited area, if not the composition of the sample is abnormal, as described above.

ANALYSIS OF GAS COMPOSITION DIAGRAMS: (Refer to gas composition plots).

DEPTH: 3830m (Immediately before core point at 3833m).

- 1) Sample originates from a non-productive oil accumulation.
- 2) Sample geochemically abnormal.

DEPTH: 4215m (Lower Campanian Sandstone)

- 1) Sample originates from a gas zone.
- 2) Sample geochemically abnormal.

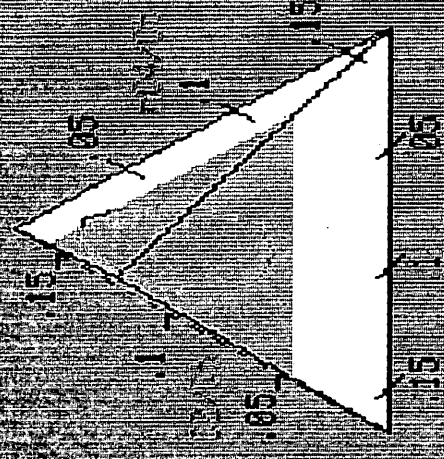
DEPTH: 4220m (RFT gas chamber sample over Lower Campanian Sst).

- 1) Sample originates from a gas zone.
- 2) Sample geochemically normal.

DEPTH: 4230m (Lower Campanian Sandstone)

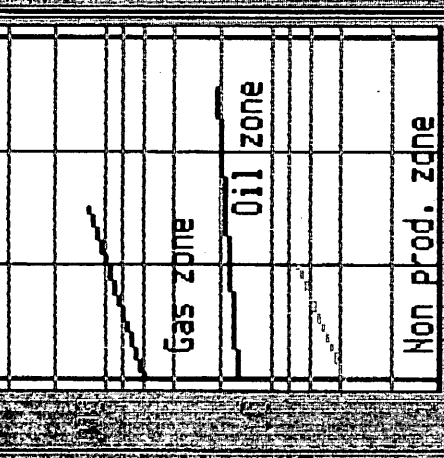
- 1) Sample originates from a gas zone.
- 2) Sample geochemically normal.

Gas Comp. Diagram



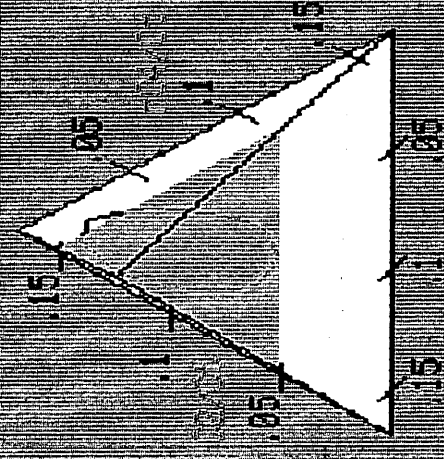
Depth:	4215.0	104	0070
01:	10.0400	n04	02/0t
02:	4780	105	03/0t
03:	1700	n05	n04/0t

Gas Comp. Diagram



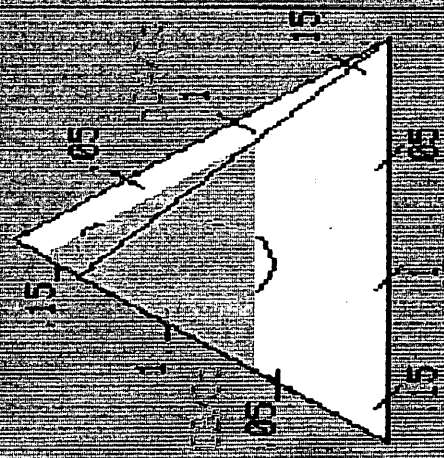
Depth:	0000	104	0000
01:	0000	n04	02/0t
02:	0000	105	03/0t
03:	0000	n05	n04/0t

Manual Gas Comp. Diagram



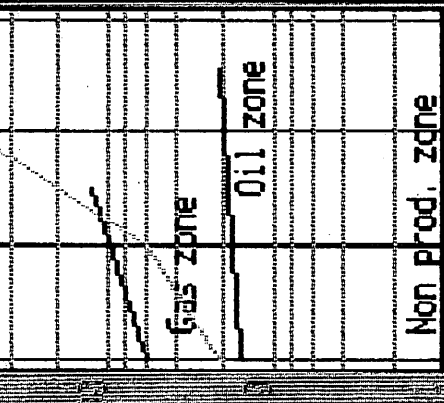
Depth:	4220.0	104	1100
01:	88.2400	n04	1298
02:	5.0000	105	0000
03:	1.5300	n05	0000

Gas Comp. Diagram



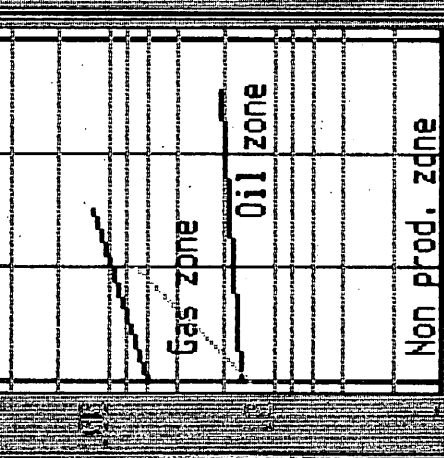
Depth:	4230.0	104	0000
01:	1.1350	n04	0000
02:	0770	105	0000
03:	0160	n05	0000

Gas Comp. Diagram



Depth:	0070	104	0070
01:	0000	n04	02/0t
02:	0000	105	03/0t
03:	0000	n05	n04/0t

Gas Comp. Diagram



Depth:	0000	104	0000
01:	0000	n04	02/0t
02:	0000	105	03/0t
03:	0000	n05	n04/0t

PE606683

This is an enclosure indicator page.  
The enclosure PE606683 is enclosed within the  
container PE903251 at this location in this  
document.

The enclosure PE606683 has the following characteristics:

ITEM\_BARCODE = PE606683  
CONTAINER\_BARCODE = PE903251  
NAME = Angler-1 Chromatolog  
BASIN = GIPPSLAND  
ONSHORE? = N  
DATA\_TYPE = WELL  
DATA\_SUB\_TYPE = WELL\_LOG  
DESCRIPTION = Angler-1 Chromatolog, Scale 1:1000,  
VIC/P20, W993. By Geoservices for  
Petrofina Exploration Australia S.A.  
(13 pages). Chromatolog to accompany  
"Angler-1 Final Well Report"  
(PE903251).  
REMARKS =  
DATE\_WRITTEN =  
DATE\_PROCESSED =  
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WELL\_NAME = Angler-1  
CONTRACTOR = Petrofina Exploration Australia S.A.  
AUTHOR =  
ORIGINATOR = Petrofina Exploration Australia S.A.  
TOP\_DEPTH = 510  
BOTTOM\_DEPTH = 4310  
ROW\_CREATED\_BY = EC00\_SW

(Inserted by DNRE - Vic Govt Mines Dept)

903251 060

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Company : Petrofina Exploration Australia 8.1  
-----  
Well : Angler # 1  
-----  
Country : Australia DEVIATION REPORT  
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### SUMMARY

Angler # 1 was drilled as a vertical exploration well. The highest deviation recorded was at 2927m with a drift of 4.6 deg. However, in general insignificant deviations and doglegs were generated during drilling.

The bottom hole assemblies employed while drilling Angler #1 can be broadly categorised as rigid assemblies from 300m to 2900m, and pendulum assemblies from 2900m to total depth at 4330m.

From 304m to 2050m a persistent calcarenite formation drilled with a negligible drift range of 0.1 to 0.8 deg. Thereafter a marl/claystone formation initiated a systematic increase in drift from 0.9 deg at 2371m to 3.6 deg at 2896m; the last survey taken prior to setting the 9 5/8" casing shoe at 2888m. Once out of the shoe the angle continued to increase though precautions such as drilling with a reduced wob and quicker rotary were taken. At 2927m a dogleg of 7.29 deg/100m had been created. With the aid on a pendulum assembly the deviation was once again reduced gradually to 1.0deg at 3770m. Thereafter the deviation was restricted to 3.0deg without restricting the penetration rate.

The displacement of the hole from the vertical at TD was 29.0m to the north and 35.2m to the west or 47.5m at 333 deg from north.

The displacement of the hole from the vertical at the primary target (Selene Sandstone) was 4.2m to the north and 29.9m to the west or 32.7m at 278.9 deg from north at 3238.2m.

ANGLER #1			TELECO					
Depth	Drift	Bearing##	Vrtel Depth	Coordinates		Dog lg Departure	o/100m	No
				N / W	S / E			
304.7	0.00	0.0 ##	304.7	0.0 N	0.0 W	0.00	0.00	1
610.1	0.30	25.9 ##	610.1	0.8 N	0.2 E	0.80	0.10	2
638.6	0.50	79.0 ##	638.6	0.9 N	0.3 E	0.96	1.40	3
668.3	0.20	107.4 ##	668.3	0.9 N	0.5 E	1.03	1.13	4
698.4	0.30	45.5 ##	698.4	0.9 N	0.6 E	1.12	0.90	5
722.3	0.20	63.1 ##	722.3	1.0 N	0.7 E	1.22	0.52	6
768.6	0.30	148.6 ##	768.6	0.9 N	0.9 E	1.31	0.75	7
824.8	0.30	168.6 ##	824.8	0.7 N	1.0 E	1.22	0.19	8
868.0	0.30	32.3 ##	868.0	0.6 N	1.3 E	1.40	1.29	9
916.1	0.10	238.6 ##	916.1	0.7 N	1.1 E	1.35	0.82	10
961.2	0.30	93.4 ##	961.2	0.6 N	1.2 E	1.31	0.86	11
1009.0	0.10	317.0 ##	1009.0	0.7 N	1.2 E	1.44	0.79	12
1064.6	0.20	98.3 ##	1064.6	0.9 N	1.3 E	1.57	0.51	13
1099.6	0.20	165.8 ##	1099.6	0.8 N	1.4 E	1.60	0.63	14
1136.3	0.10	132.0 ##	1136.3	0.7 N	1.5 E	1.61	0.35	15
1185.5	0.30	47.0 ##	1185.5	0.7 N	1.6 E	1.77	0.63	16
1213.4	0.30	57.1 ##	1213.4	0.8 N	1.7 E	1.91	0.19	17
1241.9	0.40	44.1 ##	1241.9	0.9 N	1.9 E	2.08	0.44	18
1270.4	0.50	45.9 ##	1270.4	1.1 N	2.0 E	2.29	0.34	19
1298.0	0.30	44.5 ##	1298.0	1.2 N	2.2 E	2.48	0.72	20
1502.6	0.60	50.8 ##	1502.6	2.3 N	3.4 E	4.05	0.15	21
1712.5	0.50	45.9 ##	1712.5	3.6 N	4.9 E	6.06	0.05	22
1743.4	0.50	43.1 ##	1743.4	3.8 N	5.1 E	6.32	0.00	23
1787.6	0.40	33.6 ##	1787.6	4.1 N	5.3 E	6.66	0.28	24
1825.5	0.50	35.0 ##	1825.5	4.3 N	5.4 E	6.94	0.26	25
1873.5	0.30	43.4 ##	1873.5	4.6 N	5.6 E	7.27	0.43	26
2071.1	0.10	190.0 ##	2071.1	4.3 N	6.3 E	7.58	0.20	27
2101.7	0.30	212.5 ##	2101.7	4.2 N	6.2 E	7.49	0.69	28
2138.1	0.40	196.0 ##	2138.1	4.0 N	6.1 E	7.31	0.38	29
2193.5	0.50	227.3 ##	2193.5	3.6 N	5.9 E	6.92	0.47	30
2268.4	0.70	226.2 ##	2268.4	3.1 N	5.3 E	6.15	0.27	31
2325.2	0.80	243.5 ##	2325.2	2.6 N	4.7 E	5.41	0.43	32
2371.6	0.90	257.2 ##	2371.6	2.4 N	4.1 E	4.73	0.49	33
2427.4	1.00	236.4 ##	2427.3	2.0 N	3.2 E	3.82	0.64	34
2484.8	1.00	244.5 ##	2484.7	1.5 N	2.4 E	2.82	0.24	35
2543.7	1.10	267.7 ##	2543.6	1.3 N	1.3 E	1.83	0.73	36
2605.7	1.70	265.6 ##	2605.6	1.2 N	0.2 W	1.21	0.97	37
2641.0	1.70	269.1 ##	2640.9	1.1 N	1.3 W	1.70	0.29	38
2660.6	1.90	273.4 ##	2660.5	1.2 N	1.9 W	2.20	1.23	39
2680.0	1.80	274.1 ##	2679.9	1.2 N	2.5 W	2.77	0.53	40
2709.3	2.20	281.8 ##	2709.2	1.3 N	3.5 W	3.75	1.64	41
2718.3	2.30	283.9 ##	2718.1	1.4 N	3.8 W	4.10	1.42	42
2746.0	2.30	283.9 ##	2745.8	1.7 N	4.9 W	5.21	0.00	43
2776.1	2.50	268.4 ##	2775.9	1.8 N	6.2 W	6.44	2.25	44
2801.8	2.50	278.3 ##	2801.6	1.9 N	7.3 W	7.54	1.67	45
2830.9	3.00	290.9 ##	2830.6	2.2 N	8.7 W	8.94	2.68	46
2857.6	3.30	294.1 ##	2857.3	2.8 N	10.0 W	10.39	1.30	47
2896.0	3.60	284.3 ##	2895.6	3.6 N	12.2 W	12.70	1.72	48
2920.6	4.30	280.0 ##	2920.2	3.9 N	13.8 W	14.39	3.09	49

ANGLER #1

TELECO

Depth	Drift	## Vrtcl		Coordinates		Dog lg Departure	o/100m	No
		Bearing##	Depth	N / W	S / E			
2927.8	4.60	274.1 ##	2927.4	4.0 N	14.4 W	14.94	7.59	50
2949.1	4.40	272.7 ##	2948.6	4.1 N	16.1 W	16.58	1.07	51
2958.3	4.20	272.7 ##	2957.8	4.1 N	16.8 W	17.26	2.17	52
2976.4	4.30	275.1 ##	2975.8	4.2 N	18.1 W	18.58	1.12	53
2984.4	4.30	274.4 ##	2983.8	4.3 N	18.7 W	19.17	0.70	54
3002.0	4.00	270.5 ##	3001.3	4.3 N	20.0 W	20.43	2.34	55
3011.4	3.90	272.3 ##	3010.7	4.3 N	20.6 W	21.06	1.68	56
3030.6	3.50	270.9 ##	3029.9	4.4 N	21.9 W	22.28	2.14	57
3067.1	3.30	271.6 ##	3066.3	4.4 N	24.0 W	24.42	0.56	58
3095.8	2.60	271.2 ##	3095.0	4.4 N	25.5 W	25.88	2.44	59
3134.0	2.70	263.9 ##	3133.1	4.4 N	27.3 W	27.60	0.92	60
3152.6	1.80	261.8 ##	3151.7	4.3 N	28.0 W	28.31	4.86	61
3183.1	1.00	269.1 ##	3182.2	4.2 N	28.7 W	29.03	2.68	62
3209.6	1.50	267.7 ##	3208.7	4.2 N	29.3 W	29.60	1.89	63
3238.2	1.10	278.3 ##	3237.3	4.2 N	29.9 W	30.25	1.62	64
3266.5	1.00	285.0 ##	3265.6	4.3 N	30.5 W	30.77	0.55	65
3295.3	0.90	282.5 ##	3294.4	4.5 N	30.9 W	31.24	0.37	66
3323.7	1.20	284.3 ##	3322.8	4.6 N	31.4 W	31.76	1.06	67
3350.9	1.40	280.0 ##	3350.0	4.7 N	32.0 W	32.38	0.82	68
3380.4	1.40	287.8 ##	3379.5	4.9 N	32.7 W	33.09	0.65	69
3409.1	1.60	282.5 ##	3408.2	5.1 N	33.5 W	33.84	0.85	70
3435.6	1.70	276.2 ##	3434.6	5.2 N	34.2 W	34.60	0.78	71
3464.4	1.30	273.0 ##	3463.4	5.3 N	35.0 W	35.35	1.42	72
3491.8	1.10	274.4 ##	3490.8	5.3 N	35.5 W	35.93	0.73	73
3515.5	0.90	285.7 ##	3514.5	5.4 N	35.9 W	36.34	1.18	74
3554.8	0.80	298.3 ##	3553.8	5.6 N	36.5 W	36.91	0.54	75
3600.7	1.10	311.3 ##	3599.7	6.0 N	37.1 W	37.59	0.80	76
3638.9	0.70	334.2 ##	3637.9	6.5 N	37.5 W	38.03	1.39	77
3677.9	0.80	318.4 ##	3676.9	6.9 N	37.8 W	38.38	0.59	78
3720.4	0.80	323.3 ##	3719.4	7.4 N	38.1 W	38.84	0.17	79
3770.5	1.00	338.4 ##	3769.5	8.1 N	38.5 W	39.35	0.62	80
3826.0	1.50	334.9 ##	3825.0	9.2 N	39.0 W	40.06	0.91	81
3860.6	1.60	329.3 ##	3859.6	10.0 N	39.4 W	40.68	0.52	82
3897.5	1.70	339.1 ##	3896.5	11.0 N	39.9 W	41.37	0.81	83
3974.7	1.90	358.8 ##	3973.6	13.4 N	40.4 W	42.51	0.84	84
4024.9	2.10	2.3 ##	4023.8	15.1 N	40.3 W	43.07	0.47	85
4069.0	2.10	3.7 ##	4067.9	16.7 N	40.3 W	43.59	0.10	86
4135.6	2.80	17.8 ##	4134.4	19.5 N	39.7 W	44.26	1.38	87
4178.7	3.30	23.7 ##	4177.4	21.7 N	38.9 W	44.53	1.37	88
4204.3	3.40	27.3 ##	4203.0	23.0 N	38.3 W	44.65	0.91	89
4223.6	3.20	22.7 ##	4222.3	24.0 N	37.8 W	44.78	1.71	90
4252.0	3.10	29.7 ##	4250.6	25.4 N	37.1 W	44.98	1.40	91
4281.3	3.10	25.9 ##	4279.9	26.8 N	36.4 W	45.19	0.70	92
4308.1	2.80	27.3 ##	4306.6	28.1 N	35.8 W	45.44	1.16	93
4330.0	2.80	27.3 ##	4328.5	29.0 N	35.3 W	45.65	0.00	94

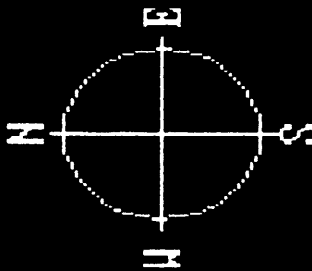
ANGLER #1  
TELECO

3-DIMENSIONAL

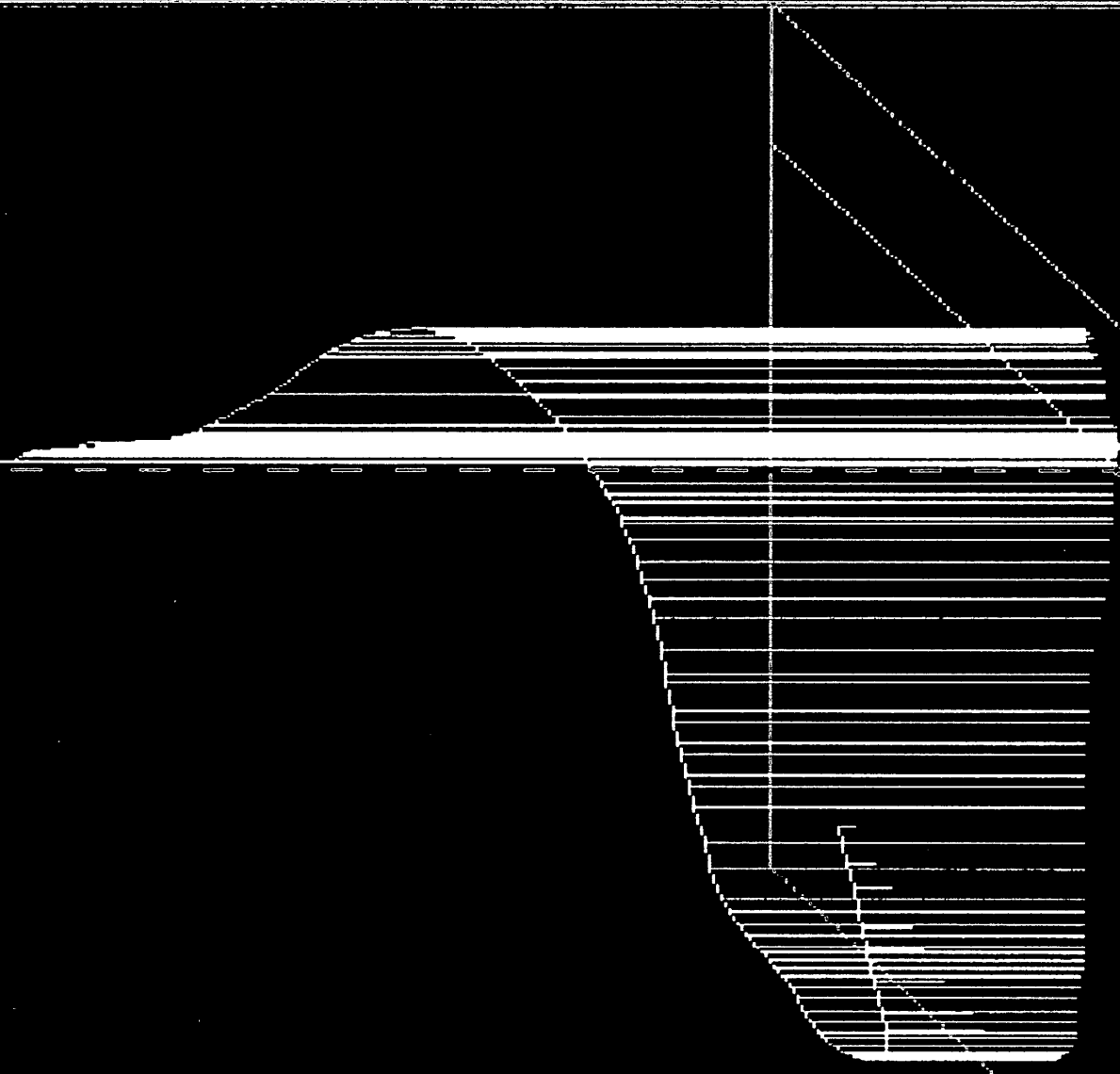
West 15.2

North 29.0

Depth 4828.5



Geoservices





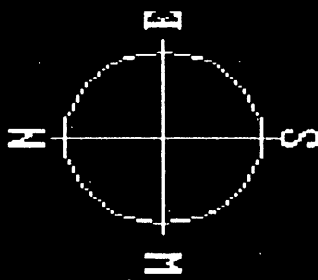
ANGLER #1  
TELECO

PLAN VIEW  
2.0/Div.

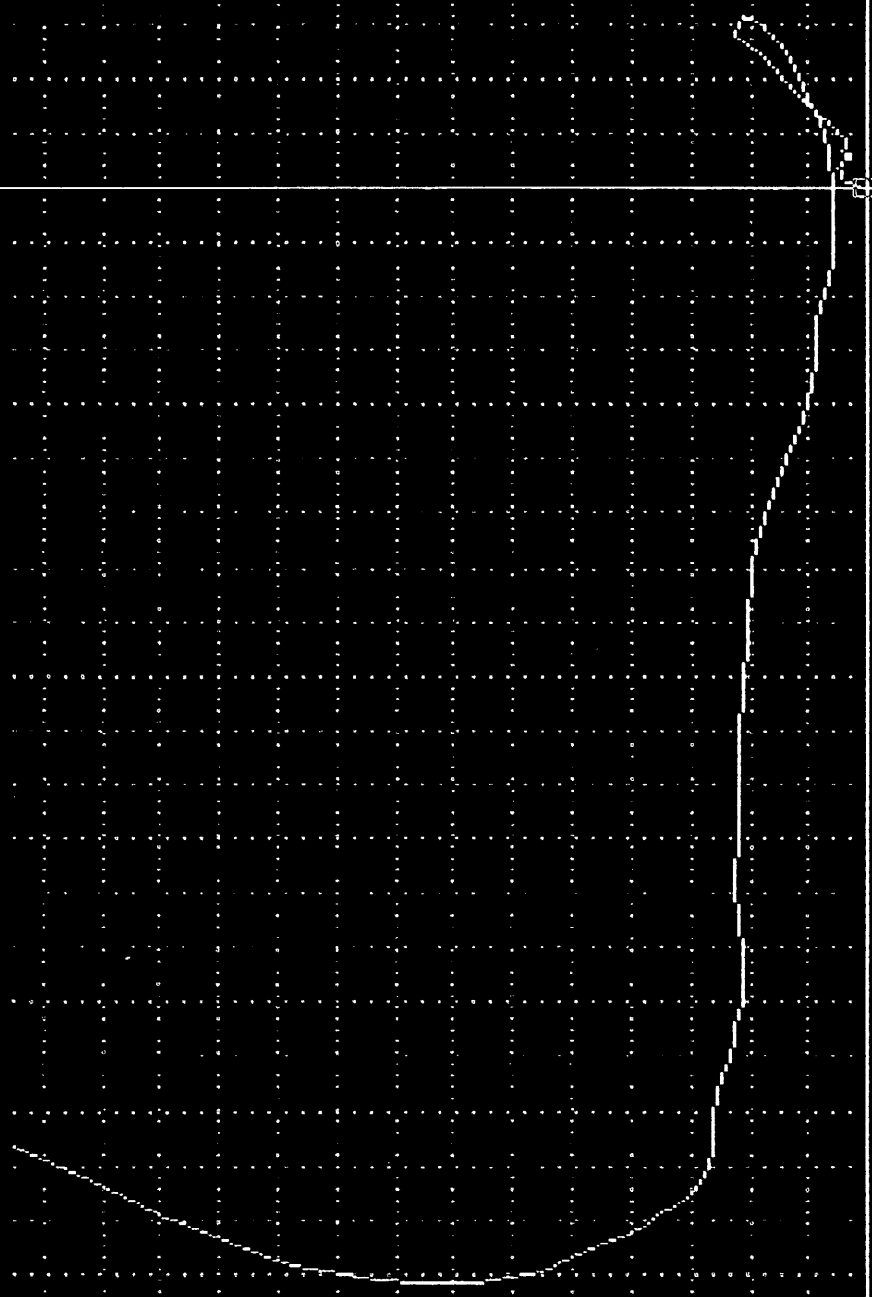
West 35.2

North 29.8

Depth 4008.5



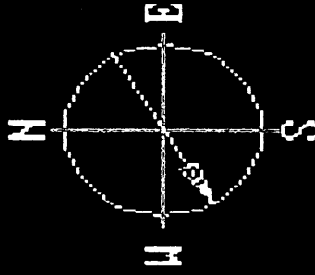
Geoservices



ANGLER #1  
TELECO

CROSS SECTION  
2.0/Div.

West 35.2  
North 29.0  
Depth 4330.5



Geoservices

500

1000

1500

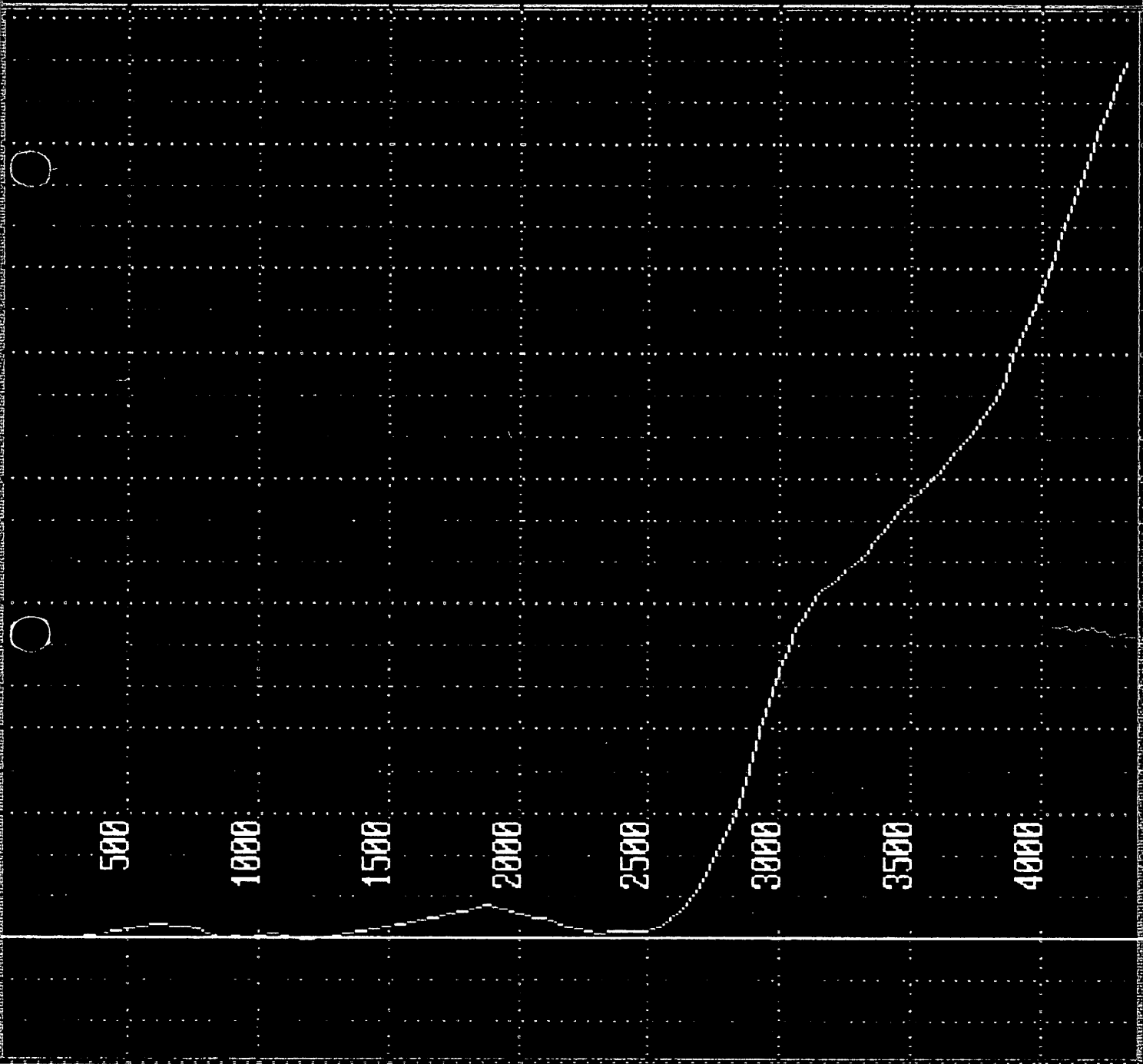
2000

2500

3000

3500

4000



PE606684

This is an enclosure indicator page.  
The enclosure PE606684 is enclosed within the  
container PE903251 at this location in this  
document.

The enclosure PE606684 has the following characteristics:

ITEM\_BARCODE = PE606684  
CONTAINER\_BARCODE = PE903251  
NAME = Angler-1 Masterlog Geological  
Evaluation  
BASIN = GIPPSLAND  
ONSHORE? = N  
DATA\_TYPE = WELL  
DATA\_SUB\_TYPE = WELL\_LOG  
DESCRIPTION = Angler-1 Masterlog Geological  
Evaluation, VIC/P20, W933, Scale 1:500,  
By Geoservices For Petrofina  
Exploration Australia S.A. (29 pages).  
To accompany "Angler-1 Final Well  
Report" (PE903251).  
REMARKS =  
DATE\_WRITTEN = 13-MAY-1989  
DATE\_PROCESSED =  
DATE\_RECEIVED =  
RECEIVED\_FROM = Petrofina Exploration Australia S.A.  
WELL\_NAME = Angler-1  
CONTRACTOR = Petrofina Exploration Australia S.A.  
AUTHOR =  
ORIGINATOR = Petrofina Exploration Australia S.A.  
TOP\_DEPTH = 0  
BOTTOM\_DEPTH = 4355  
ROW\_CREATED\_BY = EC00\_SW

(Inserted by DNRE - Vic Govt Mines Dept)

PE606685

This is an enclosure indicator page.  
The enclosure PE606685 is enclosed within the  
container PE903251 at this location in this  
document.

The enclosure PE606685 has the following characteristics:

ITEM\_BARCODE = PE606685  
CONTAINER\_BARCODE = PE903251  
NAME = Angler-1 Computer Generated Log  
BASIN = GIPPSLAND  
ONSHORE? = N  
DATA\_TYPE = WELL  
DATA\_SUB\_TYPE = WELL\_LOG  
DESCRIPTION = Angler-1 Computer Generated Log,  
VIC/P20, W933, By Geoservices/Teleco  
for Petrofina Exploration Australia  
S.A., (9 pages). To accompany "Angler-1  
Final Well Report" (PE903251).  
REMARKS =  
DATE\_WRITTEN = 18-MAY-1989  
DATE\_PROCESSED =  
DATE\_RECEIVED =  
RECEIVED\_FROM = Petrofina Exploration Australia S.A.  
WELL\_NAME = Angler-1  
CONTRACTOR = Petrofina Exploration Australia S.A.  
AUTHOR =  
ORIGINATOR = Petrofina Exploration Australia S.A.  
TOP\_DEPTH = 2975  
BOTTOM\_DEPTH = 4325  
ROW\_CREATED\_BY = EC00\_SW

(Inserted by DNRE - Vic Govt Mines Dept)