Esso Australia Pty Ltd

WELL COMPLETION REPORT
EAST PILCHARD-1
VOLUME 1
BASIC DATA
NOVEMBER 2001

WELL COMPLETION REPORT

EAST PILCHARD-1

VOLUME 1
BASIC DATA

GIPPSLAND BASIN
VICTORIA

ESSO AUSTRALIA PTY LTD

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WELL COMPLETION RPEORT

EAST PILCHARD-1

VOLUME 1:

BASIC DATA

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WELL COMPLETION RPEORT
EAST PILCHARD-1

VOLUME 1:

BASIC DATA (cont'd)

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I. WELL DATA RECORD

LOCATION	:	Latitude : 38° 11' 54.184" S Longitude : 148° 33' 42.825" E X= 5,771,005.83 North Y= 636,764.56 East Map Projection: UTM Zone 55 / AMG Zone 55 Central Meridian 147° East Geographical Location: Victoria, Australia. Field : Gippsland Basin, Victoria
PERMIT	:	Gippsland Basin, Vic / L9
ELEVATION	:	-116.3m MD
WATER DEPTH	:	91.3m MD
TOTAL DEPTH	:	3138m MD (Driller) 3140m MD (Logger)
REASONS FOR PLUGGING BACK	:	Plugged and suspended
MOVE IN	:	2nd July 2001
SPUDDED	:	3rd July 2001
REACHED TD	:	1st August 2001
RIG RELEASED	:	13th August 2001
OPERATOR	:	Esso Australia Resources Pty Ltd.
PERMITTEE OR LICENCEE	:	BHP Petroleum (Bass Strait) Pty Ltd and Esso Australia Resources Pty Ltd
ESSO INTEREST	:	50 %
OTHER INTEREST	:	BHPP 50%
CONTRACTOR	:	Diamond Offshore General Company
RIG NAME	:	Ocean Bounty
EQUIPMENT TYPE	:	Semi-Submersible
TOTAL RIG DAYS	:	45.3
DRILLING AFE NO	:	L6101B001
TYPE COMPLETION	:	Completed and Suspended
WELL CLASSIFICATION	:	Wildcat Exploration

II. OPERATIONS SUMMARY

1. MOVING/PLUG AND ABANDON

The Ocean Bounty was released by Woodside to Esso and simultaneously commenced its tow to the East Pilchard location at 16:00 Hrs on the 29 June 2001. The Ocean Bounty arrived at location on the 2nd of July 2001 at 04:45hrs, and commenced running anchors.

2. DRILLING OPERATIONS

36" Hole/30" Casing.

The 36" hole section was drilled to 163m MD.

The 36" hole was drilled riserless using a 17-1/2" Security XT1C bit (bit run1) with a 36" hole-opener. The sea floor was tagged (firm) at 116.3m MDRT, East Pilchard-1 was spudded at 12:15 hrs on the 3rd July 2001. The 36" hole section was drilled with seawater, 50bbls hi-vis prehydrated gel (PHG) sweeps were pumped every 15 m. At section TD (163m MD) the hole was swept clean with 100 bbl's hi-vis mud and then displaced with 280bbls hi-vis mud. A Totco survey was dropped prior to pulling out the string to below the mud-line. Attempts to retrieve the Totco survey were unsuccessful when the tool became stuck in the drill pipe. The drill string was then run back to bottom and the hole was swept with 50bbls hi-vis mud and then displaced with 380bbls hi-vis mud. The drill string was then pulled out to 130m and an additional 100bbls of hi-vis was spotted. On pulling the string to surface the Totco survey was recovered and found to be a miss run. Bit run 1 was gradded as 1-1-NO-3-O-O-NO-TD.

30" casing run to 162.5m MD and cemented.

Four joints of 30", X52, ST-2 thread casing were made up and landed off the PGB on moon-pool beams. The cement stinger and running tools were engaged to the 30" casing and the casing and PGB run into the hole on HWDP. The casing was stabbed into the hole with the assistance of the ROV and by moving the rig. The 30" casing was landed at 163m MD with the PGB 1m above the mud-line, the bulls eyes on the PGB indicated 1 deg aft. The casing was circulated clean with 75bbls seawater. Halliburton line were initially tested to 1000psi prior to pumping 20bbls sea-water ahead of a single cement slurry of 211bbls (1020sks) 15.9ppg, mixed with 125bbls S/W and 2% CaCl2. The cement was displaced with 25bbls S/W the floats were checked (ok). The ROV monitored good returns throughout the cementing, however it was unable to identify cement returns. The 30" running string was slacked off and the running tools pulled out and laid down, a check of the PGB indicated the bulls-eyes still reading 1 deg aft.

17-1/2" Hole was drilled from 163 to 885m MD.

The 17 1/2" hole section was drilled riser-less with a Hycalog DS34 HF fixed cutter (PDC) bit (bit run 2), which was made up to a packed drilling assembly. The cement within the 30" casing was tagged at 162m MD and the shoe drilled at 163m MD. The 17 1/2" hole was drilled with seawater, 50bbls prehydrated gel (PHG) sweeps were pumped every 15m. Directional surveys were acquired from Anadrill's MWD at each connection. At the 17 1/2" hole section TD (885m MD), the hole was swept with a 100bbls hi-vis gel, and then a wiper trip was run back to the 30" casing shoe at 162.5m MD. On running back to bottom one metre of fill was tagged at 884m. Before pulling out to run casing a 100bbls hi-vis gel sweep was pumped, the hole was then displaced with 12ppg gel mud. There were no hole problems encountered on the way out. The final survey at 846m indicated an inclination of 0.27°. This bit drilled 722m in 22 hrs and was graded 1-1-NO-A-X-O-CT-TD.

13-3/8" Casing run 873m MD and cemented.

The 13 3/8" casing string consisted of 1 joint 20" casing at the top followed by 42 joints K55 13 3/8" casing and 63 joints L80 13 3/8" casing at the bottom of the string. The casing was filled at each joint and run into the hole to 873m MD. Halliburton tested their lines to 200/3000psi prior to pumping a lead slurry; 540bbls 12.5ppg, (1371 sacks AB class G cement to 12.99gal / sack, yield 2.21 cuft / sx, 14.6 gal/10bbls econolite). Followed by a 150 bbl, 15.8 ppg tail slurry; (726 sacks AB Class G cement to 5.11 gal/sx, yield 1.16 cu/ft/sx). The cement slurry was displaced with 350bbls and the plug was bumped with 1800psi and held for 2 minutes. The floats were then bleed off. Good returns were monitored throughout the job with the ROV. The casing was tested to 1800psi for 30 minutes, which was found to be ok.

12¼" Hole was drilled from 885m to 3138m MD (3137m TVDRT).

Prior to drilling the 12 1/4" hole section the riser and BOP stack were run and function tested.

The 12 1/4" hole section was drilled with 7 bit runs. MWD was used for direction control to 2471m MD when it was removed during a bit trip. From 2471m to TD, multi-shot surveys were taken during a bit trip at 2783m, and single shot surveys at 2945m and 3138m MD (TD). KCL/ PHPA/Polymer/Glycol mud was used to drill the12 1/4" hole section. The mud was initially weighted at 9.05 and was increased to 10.1ppg prior to drilling through the top volcanics at 2435m. Two Formation Integrity Tests (F.I.T) were conducted while drilling the 12 1/4" hole. The first F.I.T conducted at 888m MD, 3m out of the 13 3/8" shoe. This test was conducted after displacing the hole with 9.05ppg KCL/ PHPA mud. This test recorded a surface pressure of 1180psi for an EMW of 16.97 ppg. The second FIT was an

open hole test conducted at a depth of 2471m MD. This test was run while the drill string was inside the 13 3/8" casing shoe during a bit trip out of the hole. The F.I.T recorded a formation strength of EMW 11.8 ppg (700psi on a Mud Weight of 10.1ppg) at the prognosed weak point in the formation (sands in the Upper Latrobe Formation at 2420m).

Summary of bit runs:

Bit Run (3) 885m - 2054m MD 12 1/4" Smith MA89, 3x18/32"jets

Bit 3 was run into the hole following the 13 3/8" casing run. The aim of the bit run was to drill as far as possible. Bit 3 tagged the top of the cement at 848m MD and drilled the float and shoe plus 3 metres of new formation to 888m MD with seawater. A 180bbl Hi-Vis sweep, chased with 200bbl of sea-water was pumped prior to displacing the hole to 9.05ppg KCL/PHPA mud. A leak off test was then conducted at 888m MD, (MW 9.05ppg, recorded pressure 1180psi EMW 16.97ppg). Bit 3 drilled a total of 1140m in 47 hrs on bottom with an average ROP of 24.26 m/hr, the bit TD was 2054m. Bit (3) was pulled because it was unable to make hole in hard siliceous and pyritic sandstone. While Tripping out tight hole occurred from 1952 - 1884m MD (30 - 40klb 0verpull) with 200klb overpull at 1884m MD. The bit was back-reamed through 1884 - 1731m MD with 30klb of drag. The bit grading was (3-4-BT-A-X-4- -PR). The hole built to 1.86° inclination through this section.

Bit Run (4) 2054m - 2107m MD, 12 1/4" Security XL20D, 8x12/32" jets.

The aim of bit run 4 was to drill the hard pyritic and siliceous sandstones which had stopped the Smith MA89 PDC bit. While running into the hole bit 4 washed and back reamed tight spots at 1884m MD which was experienced while pulling out of the hole with the previous bit run. Bit 4 drilled from 2054m to 2107m MD in 7.75hrs with an average ROP of 6.8m/hr. Bit 4 successfully drilled the hard channel sands, however it slowed down in soft argillaceous siltstones overlying the KTFS marker. The bit run was stopped due to low ROP. Bit 4 was graded at 1-1-NO- -O-O-NO-PR. Hole inclination remained effectively unchanged through this section with 1.87° inclination being measured at 2094m.

Bit Run (5) 2107m - 2114m MD 12 1/4" Smith ARCS 2, 8x12/32" jets

The aim of bit run 5 was to drill to TD. While running into the hole a check shot survey was conducted at 1500m MD, from 1836m MD the hole was tight so the bit was reamed to bottom. Bit 5 initially drilled at 6 - 11 m/hr, however at 2114m MD the bit drilled into hard pyritic siltstone and attempts to make it cut by varying the parameters failed so the bit was pulled out of the hole. Bit 5 drilled 7m in 12hrs with an average ROP of 0.58 m/hr. The bit was graded at 1-1- -N- -O- -PR.

Bit Run (6) 2114m - 2471m 12 1/4" Security XL20-D, 3 x18/32" jets

The aim of bit run 6 was to drill into the Top Volcanics sequence and then conduct an open hole phase 3 formation integrity test. Three additional stands of 8" drill collars were added to the bottom hole assembly prior to running bit 6 so that more bit weight would be available for drilling hard bands. Circulation was broken at 885m and 1500m while running into the hole, the last two stands were reamed to bottom. Mud weight was increased to 10.1ppg through this section. Intermittent losses were addressed by adding Barracarb, which controlled losses to 1.5 BPH. Bit 6 was pulled at 2471m after drilling 357m in 70.9 hrs at an average ROP of 5 m/hr. The phase 3 formation integrity test was run from inside the 13 3/8" casing while pulling out of the hole. The F.I.T test recorded a formation strength of EMW 11.8 ppg (700psi on a Mud Weight of 10.1ppg) at the prognosed weak point in the formation (sands in the Upper Latrobe Formation at 2420m). The bit was graded at 2-2-WT-A-1-I-BT-HR.

Bit Run (7) 2471m - 2783m 12 1/4" Security XL20-D, 3 x18/32" jets.

After removing the Anadrill MWD, bit number 7 was run in, and the last two stands were washed/reamed to bottom. It drilled through a thick section of Volcanics, an interval of clastics then a thinner volcanic unit, to the base of Volcanics at 2592m MD. At this depth, a change of torque indicated that we were drilling in the S-1 reservoir, which consisted of Sandstone with Interbedded Siltstone, thin coal beds and occasional hard dolomite. At 2783m, after having drilled 312m in 82 hrs, averaging 3.8m/hr, it was decided to pull out and change the bit. Bit 7 was graded at 2-3-CT-G-E-1-WT-HR.

Bit Run (8) 2783m - 2945m 12 1/4" Reed EHP51H, 3 x 18/32" jets.

Bit # 8, was RIH with the same BHA as bit #7 and the last two stands were washed/reamed to bottom. This bit drilled 162m of the Golden Beach group Sandstones, Siltstones, minor Coals and Dolomites to 2945m. After circulating bottoms up, the bit was pulled to the 13 3/8" casing shoe where they cut and slipped drilling line then run back to bottom for a wiper trip prior to wireline logging. It performed much better than the previous bit #7, averaging 4m/hr ROP over 40.3 hours and was graded at 2-2-WT-A-F-0-NO-TD

Suite (1) of wireline log run

Run (1)	PEX-HALS-DSI-HNGS-LEHQT
Run (2)	MDT-GR-LEHQT
Run (3)	FMI-HRLA-GR-LEHQT
Run (4)	MDT-GR-LEHQT
Run (4a)	MDT-GR-LEHQT
Run (5)	MSCT-GR-LEHQT

Bit Run (9) 2945m - 3138m MD (TD) 12 1/4" Security XL20D, 3 x 18/32"

Prior to drilling ahead a BOP test was conducted. The Valves & rams were tested to 250/5000psi, and the annulars for 5/10min at 250/3500psi the swivel package and rotary hose to 250/5000psi for 5/10min, also the shear rams were function tested. The BHA had the monel drill collar replaced with an additional 8" steel drill collar maintaining a locked assembly. Due to the MDT sampling program and the presence of up to 600 litres of mud / filtrate and gas pumped into the bore hole from the formation several precautionary steps were taken which included circulating bottoms up at the shoe (max gas 3.6%), filling the string every 20 stands and circulating for 5 minutes after each fill up, to string out any gas in the hole. The bit was washed and reamed to bottom from 2915m, maximum gas reached 17.49% before being diverted through two fully open choke lines at 6 BPM. Maximum gas measured after the gas separator was only 2%. Bit run (9) drilled steadily at 1.4 to 17m/hr, with an average ROP of 3.7m/hr in 52.5hrs. The bit was graded at 2-2-CT-S-E-1-WT-TD.

Suite (2) of wire line log run

Run (1)	TLD-HGNS-HNGS
Run (2)	HALS-HGNS-DSI-LEHQT
Run (3)	MDT-GR-LEHQT
Run (4)	DUAL CSAT-VSP
Run (5)	MDT-GR-LEHQT
Run (6)	CST-GR

III. CASING DATA

Type	**Size** (inches)	**Weight** (ppf)	**Grade**	**Thread**	**Depth (**mMDRT)
Conductor	30	310	X52	ST2	162.5
Surface Casing	13.375	68	L80	BTC	873
Intermediate	9.625	47/53.5	L80	LTC	3126

IV. CEMENTING DATA

String Cemented	**Cement Type**	**Dry Cmt Vol** (sx)	**Cement Additives**	**Mix Water**	**Slurry Vol** (bbls)	**Slurry Density** (ppg)	**Cement to/from** (mMDRT)	**Csg Test Pressure** (psi)
30" Tail	ABC Class G	1020	2% CaCl2	125 (bbls)	211	15.9	116 - 163	-
13.375" Lead	AB Class G	1371	14.6 gal/10 bbl Econolite	409 (bbls)	540	12.5	114 - 562	-
13.375" Tail	AB Class G	726	14.6 gal/10bbl Econolite 0.5 gal/10bbl NF-5	88 (bbls)	150	15.8	562 – 664	1800
9.625” Lead	HTB	886	2 gal/10 bbl SCR – 100L 32 gal/10 bbl Halad 0.5 gal/10 bbl NF-5	4.35 gps (FW)	178	15.8	2392 - 3126	

IV. CEMENTING DATA (cont'd)

String Cemented	**Cement Type**	**Dry Cmt Vol** (sx)	**Cement Additives**	**Mix Water**	**Slurry Vol** (bbls)	**Slurry Density** (ppg)	**Cement to/from** (mMDRT)	**Csg Test Pressure** (psi)
9.625" Tail	HTB	586	3 gal/10 bbl SCR – 100L 2 gal/10 bbl Halad 0.25 gal/10 bbl NF-5	6.46 gps (FW)	142	14.5	2522 - 3124	

SUSPENSION PLUG (PLUG #1)

	Cement Type	**Dry Cmt Vol** (sx)	**Cement Additives**	**Mix Water**	**Slurry Vol** (bbls)	**Slurry Density** (ppg)	**Cement to/from** (mMDRT)	
Slurry	Class G	73	0.25 gal/10 bbl NF-5 (Anti-Foam)	5.15 gps (SW)	14.7	15.9	826 - 890	-

V. SAMPLES, SIDEWALL CORES

Cuttings Samples

Interval (m)	Type
875 - 1525m	Washed and dried Cuttings Samples every 30m
1530 - 3138m	Washed and dried Cuttings Samples every 5m. One sample missed at 1545m.

Conventional Cores

No conventional cores were cut at E.Pilchard-1

Sidewall Cores

E. Pilchard-1 MSCT

Core Number	Depth (MrT)	Core Length (mm)	Lithology
1	2450.0	35	Volcanics
2	2586.0	43	Volcanics
3	2594.0	55	Sand
4	2598.0	55	Sand
5	2602.0	38	Sand
6	2610.0	38	Shale
7	2620.0	34	Shaly
8	2627.5	40	Sand
9	2633.5	33	Shaly
10	2641.0	Empty	No recovery
11	2644.0	38	Shaly
12	2652.0	35	Shaly
13	2663.0	36	Sand
14	2669.0	9	Sand (+mudcake)

V. SAMPLES, SIDEWALL CORES (CONT'D)

E. Pilchard-1 MSCT

Core Number	Depth (MrT)	Core Length (mm)	Lithology
15	2700.5	33	Shaly sand
16	2708.5	3 (Empty)	Mudcake
17	2721.5	36	Sand
18	2728.5	44	Sand
19	2751.0	40	Sand
20	2754.0	Empty	Sand
21	2759.0	38	Shale
22	2763.0	41	Sand
23	2764.5	37	Sand
24	2783.0	Empty	No recovery
25	2878.5	Empty	No recovery

CST CORES

See APPENDIX 3 for Sidewall Core Descriptions.

VI. WIRELINE LOGS AND SURVEYS

Survey /Log	Company	Top (m MDRT)	Bottom (m MDRT)
Suite (1) Run at 2945m			
MWD Survey	Anadrill Schlumberger	146.11	2459.8
Multishot Survey	SDI	2488.3	2771.0
PEX-HALS-DSI-HNGS-LEHQT	Schlumberger	873.5	2945.2
MDT-GR-LEHQT	Schlumberger	1689.03	2926.5
FMI-HRLA-GR-LEHQT	Schlumberger	2220	2947.5
MDT-GR-LEHQT	Schlumberger	2593	2641
MDT-GR-LEHQT	Schlumberger	2641	2885.4
MSCT-GR_LEHQT	Schlumberger	2450	2878.5
Suite (2) Run at 3138m			
TLD-HGNS-HNGS	Schlumberger	2870	3139
HALS-HGNS-DSI-LEHQT	Schlumberger	2870	3139
MDT-GR-LEHQT	Schlumberger	2825.5	2956.2
DUAL CSAT-VSP	Schlumberger	146	3140
MDT-GR-LEHQT	Schlumberger	2825.5	3125.5
CST-GR	Schlumberger	1650	3134

VII. SUMMARY OF FORMATION TEST PROGRAMME

Interval(m)	Suite	Type
1689.03 – 2926.5	1	93 pretests and 1 sample. 11 tight, 6 lost seal.
2593.5 – 2641.0	1	5 Sample points, all ok. 7 samples, 4 ok, 2 empty, 1 filtrate
2602.0 – 2885.4	1	21 Sample points, 13 ok, 2 lost seal, 5 tight, 1 supercharged 8 samples, 3 OFA, 2 pretest
2825.5 – 2956.2	2	17 pre-tests, 9 dry,2 lost seal, 1 tight, 5 good.
2825.5 – 3125.5	2	41 pre-tests. 13 good, 12 lost seal/supercharged, 12 tight, 8 samples taken from 4 depths 7 recovered

VII. TEMPERATURE RECORD

SUITE 1

LABEL	TYPE OF LOG	FROM	TO	RPT. SECT. / SUMMARY.	Time Since Last Circ / BHT
1	PEX-HALS-DSI-HNGS-LEHQT	2947.5	873.5	2695 - 2590m, GR recorded to 91m.	15:05 hrs/ BHT = 96.7°C, 97.2°C and 97.8°C
2	MDT-GR-LEHQT	1689.03	2926.5	93 pretests and 1 sample. 11 tight, 6 lost seal.	48:30 hrs/ BHT = 108.9°C, 108.9°C, 108.9°C
3	FMI-HRLA-GR-LEHQT	2947.5	2220	2922 - 2860m, HRLA rpt 2638 - 2575m.	52:40 hrs/ BHT = 109.4°C, 109.4°C, 109.4°C,
4	MDT-GR-LEHQT (for samples)	2593.5	2641.0	5 Sample points, all ok. 7 samples, 4 ok, 2 empty, 1 filtrate	14:20 hrs/ BHT 93.3°C, 92.2°C
4A	MDT-GR-LEHQT (for pressures, samples and OFA)	2602.0	2885.4	21 Sample points, 13 ok, 2 lost seal, 5 tight, 1 supercharged 8 samples, 3 OFA, 2 pretest	35:53 hrs/ BHT 107.8°C, 107.8°C, 108.9°C
5	MSCT-GR-LEHQT	2450	2878	Cut 25 cores, recovered 20. Recovery: 80%	44:54 hrs/ BHT 110°C, 110°C, 100°C

VIII. TEMPERATURE RECORD (cont'd)

SUITE 2

LABEL	TYPE OF LOG	FROM	TO	RPT. SECT. / SUMMARY.	Time Since Last Circ / BHT
1	TLD-HGNS-HNGS	3139m	2870m	Repeat 3139m - 3078m	9:40 hrs/ BHT = 97.8°C, 97.8°C and 98.9°C
2	HALS-HGNS-DSI-LEHQT	3139m	2870m	Repeat 3139m - 3080m	14:46 hrs/ BHT = 103.3°C, 103.3°C, 102.2°C
3	MDT-GR-LEHQT (for pressures)	2825.5m	2956.2 m	17 pre-tests, 9 dry,2 lost seal, 1 tight, 5 good.	Did not reach TD.
4	DUAL-CSAT-VSP	3140m	146m	Check shot at 1775m	38:11 hrs/BHT = 111.1°C, 113.9°C,110 °C
5	MDT-GR-LEHQT (for pressures and samples)	2825.5m	3125.5 m	41 pre-tests. 13 good, 12 lost seal/supercharged, 12 tight, 8 samples taken from 4 depths 7 recovered	70:45 hrs/ BHT 117.7°C, 118.3°C, 118.9°C, 122.5°C
6	CST-GR	3134m	1650m	Shot 60 cores shot, 54 recovered, 2 Empty, 4 miss fire	

FIGURES

INSERT LOCALITY MAP –

INSERT WELL PROGRESS CURVE –

INSERT WELL BORE
SCHEMATIC–

INSERT ABANDONMENT SCHEMATIC–

INSERT HORNER TEMPERATURE PLOT

APPENDIX 1

MSCT DESCRIPTIONS

APPENDIX 2

LITHOLOGICAL DESCRIPTIONS

APPENDIX 3

SIDEWALL CORE DESCRIPTIONS

APPENDIX 4

MDT RESULTS

APPENDIX 5

MUDLOGGING REPORT

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FIELD GAS ANALYSIS
FINAL REPORT

APPENDIX 7

BASIC PALYNOLOGY REPORT

APPENDIX 8

PETROLOGY REPORT

APPENDIX 9

ROUTINE CORE ANALYSIS

ENCLOSURE 1

MUD LOG

ENCLOSURE 2

PRESSURE LOG

ENCLOSURE 3

DRILLING LOG

ENCLOSURE 4

GAS RATIO LOG