

# **WELL COMPLETION REPORT**

## **SCALLOP-1**

### **VOLUME 1 BASIC DATA**

#### **GIPPSLAND BASIN VICTORIA**

#### **ESSO AUSTRALIA PTY LTD**

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<p style="text-align: center;"><b>WELL COMPLETION REPORT</b> <b>SCALLOP-1</b></p>
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**VOLUME 1:**

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## I. WELL DATA RECORD

LOCATION : Latitude : 38° 12' 48.615" S  
Longitude : 148° 35' 28.879" E  
X= 639,314.95 East  
Y= 5,769,298.84 North  
Map Projection: (GDA94), (GRS80)  
UTM Zone 55 / AMG Zone 55 (S)  
Central Meridian 147° East  
Geographical Location: Victoria, Australia.

FIELD : Gippsland Basin, Victoria

PERMIT : Vic / RL2

ELEVATION : 25.9m MD

WATER DEPTH : 109.6m MD

TOTAL DEPTH : 3174.0mMD(Driller) 3177.5mMD(Logger)

REASONS FOR PLUGGING BACK : Plugged and abandoned

MOVE IN : 1<sup>ST</sup> February 2003

SPUDDED : 2<sup>nd</sup> February 2003

REACHED TD : 22<sup>nd</sup> February 2003

RIG RELEASED : 4<sup>th</sup> March 2003

OPERATOR : Esso Australia Resources Pty Ltd.

PERMITTEE OR LICENCEE : Esso Australia Resources Pty Ltd

ESSO INTEREST : 25%

OTHER INTEREST : BHP Billiton Petroleum Vic Pty Ltd 25%  
Santos Group 20%  
Woodside Group 30%

CONTRACTOR : Transocean Sedco Forex

RIG NAME : Sedco 702

EQUIPMENT TYPE : Semi-Submersible

TOTAL RIG DAYS : 35 days

DRILLING AFE NO : L.0201C001

TYPE COMPLETION : Plugged and Abandoned

WELL CLASSIFICATION : Wildcat

## II. OPERATIONS SUMMARY

### 1. MOVING/PLUG AND ABANDON

The Sedco 702 was released by BHP Billiton to Esso and simultaneously commenced its tow to the Scallop location at 23:00Hrs on January 29th 2003. The Sedco arrived at location on February 1st 2003 at 04:45hrs. Anchors were run without incident.

### 2. DRILLING OPERATIONS

#### 36" Hole.

The 36" hole section was drilled to 179m MD.

The 36" hole was drilled riserless using a 26" Reed Y11 bit (bit run1) with 36" hole-opener. The sea floor was tagged (firm) at 135.5m MDRT, Scallop-1 was spudded at 12:00 hrs on February 2nd 2003. The 36" hole section was drilled with seawater and 500bbls hi-vis pre-hydrated gel (PHG) sweeps, pumped every 15m. At section TD (179m MD) the hole was swept clean with 50 bbl hi-vis pill and displaced with 350 bbls of (PHG) mud. Two surveys were obtained at 148m & 163m (0 degrees) via an Anderdrift tool, but no further surveys were obtained due to tool failure. Bit 1 was graded as 1,1,1,In with one plugged nozzle. The 36" hole opener had a seized cone and a broken nozzle.

#### 30" Casing

Four joints of 30" casing were made up and landed off the PGB on moon-pool beams. The cement stinger and running tools were engaged on to the 30" casing and the whole assembly, including PGB, run on 5" DP. The casing was stabbed into the hole and landed at 179m MD, after washing through 1m of fill. After testing the cementing lines to 2000psi for 10 minutes 190 bbls of fluid were circulated at 6bpm. 20 bbls of Seawater pre-flush were pumped ahead of a single cement slurry composed of 141 bbls of mixwater, 1149 sacks Class G cement and 20 sacks of calcium chloride (yield 240 bbls @ 15.9ppg). After displacing the cement with 35 bbls of seawater, cement returns were noted at the seabed with the ROV. The floats held and an inspection with the ROV of both bulls eye indicators on the PGB showed balls at 0 degrees. Finally the running tools released and laid out.

#### 17½" Hole was drilled from 179m to 917m MDRT.

The 17½" hole section was drilled riserless with a Hycalog DS34 HF+GN fixed cutter (PDC) bit (bit run 2), made up to a packed drilling assembly. Top of cement was tagged at 173m, and the shoe drilled out at 179m. The hole section was drilled with seawater and hi-vis sweeps, 25bbl hi-vis sweeps mid stand and 50bbls hi-vis sweeps at connections. Surveys were taken every 30m from 506m with Anderdrift survey tool. (all were less than 1 degrees) At the section TD (917m MD), the hole was cleaned with 100bbls hi-vis pill and 2000 bbls of seawater, and then displaced with 800bbls of PHG mud. The hole was wiped three times before coming out to run casing due to the string hanging up in numerous places, between 237m & 692m,

## II. OPERATIONS SUMMARY (cont'd)

when tripping to bottom. A 150bbl hi-vis sweep and 1500bbl of seawater were pumped before displacing with 1200bbls of 12ppg mud. A gyro was dropped prior to pulling out of the hole. The bit was graded 1-1, X, In.

### 13<sup>3</sup>/<sub>8</sub>" Casing

The 13<sup>3</sup>/<sub>8</sub>" casing string consisted of 70 joints of 68ppf L-80 Buttress casing, with 2 centralisers on each of the lower 11 joints. The casing was run in on 5" drill pipe and landed at 900.8m MD. All cement lines were pressure tested prior to cementing the casing with a lead slurry consisting of 420bbls seawater, 1358 sacks Class G cement, 614 gals Econolite, 11 gals NF-5 and 84 gals of retarder, (yield 535bbls @ 12.5ppg) and tail slurry consisting of 726 sacks of class G cement mixed with 89 bbls of fresh water, plus 5 gal of NF-5, (yield 150bbls @ 15.8ppg). The dart was dropped, but not observed to latch with the plug, but displacement was continued with 340bbls of seawater, during which a pressure increase was observed from 200psi to 650psi. The plug was not bumped, but good cement returns were observed at the wellhead with the ROV. The floats held, the running tool was backed out and pulled out of the hole

### 12<sup>1</sup>/<sub>4</sub>" Hole was drilled from 917m to 3174m MD (3173.5m TVDRT)

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

The 12<sup>1</sup>/<sub>4</sub>" hole section was drilled with 3 bit runs. Anderdrift tools were used to monitor directional control to 2933m when MWD tools were added to the BHA for the last bit run in the hole. KCl/PHPA/Polymer/Glycol mud was used to drill the 12<sup>1</sup>/<sub>4</sub>" hole section, with an initial mud weight of 9.0ppg.

A PDC drillbit (MA89PXX) was used from the 13 3/8" shoe to a depth of 2618.4m within the top of the volcanics. Mud weight was increased to 9.6ppg prior to drilling through the Lakes Entrance Formation and progressively increased up to 10.3ppg prior to drilling through the volcanics. Maximum well deviation as recorded by the Anderdrift was 2.0 degrees. Weight on bit was kept below 10klbs to minimise hole deviation. The PDC bit (NB 3) drilled the interval 917 - 2618mRT in 127.8 hrs for an average ROP of 13.3m/hr The PDC bit graded as 2/4,CT,S,X,I,BT,PR.

NB 4 (Hughes MX20DDT), a tricone bit, was used to drill the volcanics and the top of the S1 reservoir from 2618.4 - 2933 m. Hole deviation was monitored using the Anderdrift tool every stand. A gyro survey was dropped prior to pulling out of the hole with the trip out not experiencing any problems except for the 6th and 7th stands, which pulled tight. The bit drilled the section in 74.6 hrs for an average ROP 4.6 m/hr with a mud weight of 10.2+ - 10.3 ppg. The bit was graded as 4/7,BT,S,E,1,WT,TQ.

The final section of the hole was drilled with a tricone bit (NB 5 Hughes MX20DX) with a MWD/LWD BHA assembly. The bit drilled the section 2933 - 3174mRT (TD) in 77.9 hrs at an average

## II. OPERATIONS SUMMARY (cont'd)

ROP of 5m/hr. The bit was graded as 3/7,BT,S,E,2,RG,TD. This section encountered volcanics, altered volcanics and an interbedded sequence of sandstones and claystones. The maximum gas detected while drilling was 0.25% with a background level of

0.02-0.06%. The well total depth of 3174m was reached at 09:45 hrs on 22 February and terminated in interbedded sandstones and claystones. Upon reaching total depth, the hole was circulated clean and a wiper trip conducted back to the shoe. A 100bbl hi-vis pill was circulated and bottoms up circulated twice before pulling out of hole to log.

Prior to logging a function test on the BOP stack was conducted. During testing operations, a leak was detected in the kill line at the junction between the riser and the top of the stack. Approval was granted to continue with logging operations.

Schlumberger were rigged up and logging operations were undertaken. A total of 5 logging runs were conducted as follows:

Run 1: PEX-HALS-HNGS-LEHQT

Run 2: MDT-GR-LEHQT

Run 3: FMI-DSI-GR-LEQHT

Run 4: DUAL CSAT-VSP

Run 5: CST-GR

Based on the final well results and log interpretation, it was decided to plug and abandon the well. The abandonment programme was as follows:

Plug 1a: 3174-3014 m

Plug 1b: 3014-2857 m

Plug 1c: 2857-2710 m

Plug 1d: 2710-2560 m

Plug 1e: 2560-2403.7 m

Plug 2a: 930-895 m (ESZV Bridge Plug set above plug)

Plug 2b: 895-850 m

Plug 3: 200-155 m

The rig was released from operations on 4 March 2003, after 35 days on location.

### III. CASING DATA

Type	Size (inches)	Weight (ppf)	Grade	Thread	Depth (mMDRT)
Conductor	30/20"	457/310	X52	HD90/SF60	179.0
Surface	13 <sup>3</sup> / <sub>8</sub> "	72/68	L80	BTC	900.8

### IV. CEMENTING DATA

String Cemented	Cement Type	Dry Cmt Vol (sx)	Cement Additives	Mix Water (bbls)	Slurry Vol (bbls)	Slurry Density (ppg)	Cement to/from (mMDRT)	Csg Test Pressure (psi)
Conductor	G	1149	1% CaCl by weight, 0.003gal/sk NF-5.	141	240	15.9	180.32-135.5 (seafloor)	N/a
Surface (lead)	G	1358	0.0452 gal/sk econolite, 0.06 gal/sk HR-6L,	420	535	12.5	135.5 (seafloor)	
Surface (tail)	G	726	0.003 gal/sk NF-5	89	150	15.8	900.8 - 135.5	2225

### ABANDONMENT PLUGS

	Cement Type	Dry Cmt Vol (sx)	Cement Additives	Mix Water	Slurry Vol (bbls)	Slurry Density (ppg)	Cement to/from (mMDRT)	Csg Test Pressure (psi)
Plug #1A	HTB Silica Flour	373	0.3 gpb SCR-100L, 3.2 gpb Halad 413 L and 0.025 gpb NF-5	fresh		15.83	3174-3014	



## IV. CEMENTING DATA (cont'd)

### ABANDONMENT PLUGS (continued)

	<b>Cement Type</b>	<b>Dry Cmt Vol (sx)</b>	<b>Cement Additives</b>	<b>Mix Water</b>	<b>Slurry Vol (bbls)</b>	<b>Slurry Density (ppg)</b>	<b>Cement to/from (mMDRT)</b>	<b>Csg Test Pressure (psi)</b>
Plug #1B	HTB Silica Flour	373	0.3 gpb SCR-100L, 3.2 gpb Halad 413 L and 0.025 gpb NF-5	fresh		15.8	3014-2857	
Plug #1C	HTB Silica Flour	356	0.3 gpb SCR-100L, 3.2 gpb Halad 413 L and 0.025 gpb NF-5	fresh		15.8	2857-2710	
Plug #1D	HTB Silica Flour	363	0.3 gpb SCR-100L, 3.2 gpb Halad 413 L and 0.025 gpb NF-5	fresh		15.8	2710-2560	
Plug #1E	HTB Silica Flour	373	0.1 gpb SCR-100L, 3.2 gpb Halad 413 L and 0.025 gpb NF-5	fresh		15.8	2560-2403.7	2000
Plug 2A	Class G	93		fresh	50	15.8	930-895	
Plug 2B	Class G	109		fresh	30.1	15.8	895-850	
Plug 3	Class G	109		fresh	30.1	15.8	200-155	1000

## V. SAMPLES, SIDEWALL CORES

### Cuttings Samples

<u>Interval</u> (m)	<u>Type</u>
917 - 1660m @ 10m intervals	1 of 200g lightly washed and air dried 6 of 100g washed and dried
1660 - 3174mTD @ 5m intervals	1 of 200g lightly washed and air dried

### Conventional Cores

No conventional cores were cut at Scallop –1.

### Sidewall Cores

2 guns of sidewall cores (60 bullets) were taken from 3165 m to 1717 m. Of the 60 cores taken, 52 cores were recovered with 7 missing and 1 empty. A detailed description of the sidewall cores is contained in Appendix 2.

<u>SCALLOP-1 CST</u>			
Core Number	Depth (m MDRT)	Core Length (mm)	Lithology
1	3165	2.0	Silty sandstone
2	3162	Nil	Lost
3	3157	2.0	Sandstone
4	3155.5	Nil	Lost
5	3151.5	Nil	Lost
6	3149.5	2.5	Claystone
7	3146.4		Sandstone
8	3144	1.5	Sandstone
9	3141.4	Nil	Lost
10	3130.5	2.0	Claystone
11	3129.1	2.0	Sandstone

## V. SAMPLES, SIDEWALL CORES (cont'd)

<u>SCALLOP-1 CST</u>		<u>(cont'd)</u>	
Core Number	Depth (m MDRT)	Core Length (mm)	Lithology
12	3122	1.5	Sandstone
13	3120.5	1.5	Sandstone
14	3110.5	1.5	Silty claystone
15	3107.5	Nil	Lost
16	3105.5	1.0	Sandstone
17	3103.9	2.0	Claystone
18	3101.1	1.0	Sandstone
19	3097.2	1.5	Argill. Siltstone
20	3059	1.5	Sandstone
21	3052.5	1.0	Siltstone
22	3050.5	1.5	Silty claystone
23	3031.5	1.5	Sandstone
24	3030	1.5	Sandstone
25	3022.5	2.0	Carb. shale
26	3013	1.5	Siltstone
27	2991.5	2.0	Carb. Shale
28	2983.5	2.0	Sandstone
29	2976.5	1.5	Silty claystone
30	2941	1.5	Sandstone
31	2913.9	Nil	
32	2898.5	1.5	Sandstone
33	2898.0	1.0	Sandstone
34	2889.5	1.0	Sandstone
35	2886	1.5	Claystone
36	2870.2	2.0	Silty claystone

## V. SAMPLES, SIDEWALL CORES (cont'd)

<u>SCALLOP-1 CST</u>		<u>(cont'd)</u>	
Core Number	Depth (m MD RT)	Core Length (mm)	Lithology
37	2840.9	1.0	Sandstone
38	2839.5	1.5	Sandstone
39	2758	1.5	Silty claystone
40	2750	1.5	Claystone
41	2735.5	2.0	Altered volcanics
42	2635.2	1.5	Sandstone
43	2630.5	2.0	Sandstone
44	2627.5	3.0	Altered volcanic
45	2601.5	2.0	Siltstone
46	2586.7	2.0	Claystone
47	2529.5	2.5	Claystone
48	2402.5	2.0	Claystone
49	2304	2.0	Carb. shale
50	2204.5	3.0	Sandstone (greensand)
51	2192.7	1.5	Siltstone
52	2090	2.0	Claystone
53	2029.5	Nil	Lost
54	1936.5	2.2	Claystone
55	1837.8	2.4	Claystone, carbonaceous
56	1770	3.0	Claystone
57	1762	3.0	Claystone
58	1745	2.0	Claystone
59	1725	3.0	Claystone
60	1717	Nil	Lost

## V. SAMPLES, SIDEWALL CORES (cont'd)

### CST CORES

See APPENDIX 2 for Sidewall Core Descriptions.

## VI. WIRELINE LOGS AND SURVEYS

Survey /Log	Company	Top (m MDRT)	Bottom (mMDRT)
Multishot Survey	SDI	0	907.8
Multishot Survey	SDI	907.8	2923.0
MWD/LWD	Schlumberger/ Anadrill	2923.0	3138.3
Suite1 Logs at 3174 m			
PEX-HALS-HNGT-LEHQT	Schlumberger	900.2	3177.5
MDT-GR-LEHQT	Schlumberger	1780.0	3162.0
FMI-DSI-GR-LEHQT	Schlumberger	135.0	3177.5
DUAL CSAT-VSP-GR	Schlumberger	173.6	3171.0
CST-GR	Schlumberger	1717.0	3165.0

## VII. SUMMARY OF FORMATION TEST PROGRAMME

SUITE	TYPE OF LOG	FROM	TO	RPT. SECT. /SUMMARY.	Time Since Last Circ / BHT
1	MDT-GR-LEHQT	3162	1780	--	39.0 hrs/ 115.5°C @ 3162.0m

## VIII. TEMPERATURE RECORD

### SUITE 1

LABEL	TYPE OF LOG	FROM	TO	RPT. SECT. /SUMMARY.	Time Since Last Circ / BHT
1	PEX-HALS-HNGT-LEHQT	3177.5	900.2	3170-3073	25.4 hrs/110°C @ 3177.5m
2	MDT-GR-LEHQT	3162	1780	--	39.0 hrs/ 115.5°C @ 3162.0m
3	FMI-DSI-GR-	3177.5	135.0	3160-3052	68.20hrs/ 120°C @ 3177.5m
4	DUAL CSAT-VSP-GR	3171	173.6	---	82.20hrs/ 122.2°C @3171.0
5	CST-GR	3165.0	1717.0	---	---

## VIII. LWD/MWD RUN SUMMARY

### WELL LOCATION DATA

Well Name:	Scallop-1	Licence Number:	Vic/RL2
Field:	Wildcat	Primary Objective:	S-1
Well Type:	Wildcat Exploration	Water Depth:	110
AMG co-ords (m):	X = 639,314.95 m E Y = 5,769,298.84 m N	RT Elevation:	25.6
Local co-ords:	38° 12' 48.615" S 148° 35' 28.879" E	Total Depth MDRT	3174 MDRT

### GENERAL WELL DATA

Date In / Out:	2/18/03	Run #:	BHA #5/LWD #1
Service Company:	Schlumberger – D&M	Hole Size (in):	12.25
LWD Engineers	L. Bon, K. Handley	Inclination:	1.52
Esso Geologist:	G. Wakelin-King, G. Smith	Av. Azimuth:	333.59

### MUD DATA

Mud Type:	KL/PHPA/Glycol	Chlorides (mg/l):	38,500
Mud Weight (ppg)	10.35	KCL ( ppb):	5.8 %
Viscosity (s/qt):	55	O/W/S:	0/88.2/0.15
PV: (cp):	24	Rmf (ohmm):	0.0914@21°C
YP: (lbs/100 sq ft)	39	Rmc (ohmm):	0.3090@21°C
API Filtrate (cc)	2.9	Rm (ohmm):	0.1089@24.3°C

### DRILLING DATA

Mtrs Drilled:	241	RPM:	100
Av. ROP: (m/hr):	3.5	Flow Rate (gpm):	820
Av. WOB (K lbs):	50	SPM:	230
Av. Torq (K ft/lbs):	5	Pressure (psi):	3600

### BIT DATA

Bit Make:	HTC	Drilled Interval:	From	To	Dist.
Bit Type:	TCI		2933 m	3174 m	241 m
Num Jets:	3	Reamed Interval:	2920 m	2933 m	13 m
Size (32 nds):	18				

### TIME DATA

Date pick up tools:	18-Feb-2003	Drilling Time:	69.09	Hrs
Time pick up tools:	19:45	Pump Hours:	77.9	Hrs
Date laid down Tools:	23-Feb-2003	RT Trans Hours:	77.9	Hrs
Time laid down tools:	7:30	LWD Ream Hours:	0.25	Hrs
Time below RT (hr):	107.75	Down Time:	0	Hrs

### TOOL DATA

Tool Name:	PowerPulse*	RAB8
Tool S / Number:	M805	010
Tool OD (in.):	8.25	8.375
Bit/Sec./Carrier:	6.4 bps/16 Hz	GR – 19.4
Distance to bit (m)	D&I – 26.53	Ring – 19.66

## VIII. LWD/MWD RUN SUMMARY (cont'd)

RUN SUMMARY		BHA DATA		
Good MWD/LWD Run.	Element	Size OD	Length (m)	Serial #
	TCI Bit	12-1/4	0.33	W42DV
	NB Stabiliser	12-1/4	2.45	GU2191
	Pony DC	8	2.92	502A7
	IB Stabiliser	12-1/4	1.44	207A31
	Drill Collar	8-1/4	9.33	93081
	IB Stabiliser	12-1/4	1.80	207A190
	XO		0.31	
	RAB8	8-1/4	3.82	010
	PowerPulse	8-1/4	8.44	M805
	12 x DC	8-1/4	109.23	
	XO		0.61	MSO275
	2 x HWDP	5	18.51	
	Dailey Jar	6-1/2	9.77	14161590



# FIGURES

INSERT LOCALITY MAP –

INSERT WELL PROGRESS  
CURVE –

INSERT WELL BORE  
SCHEMATIC–

INSERT ABANDONMENT  
SCHEMATIC–

INSERT HORNER TEMPERATURE  
PLOT

# APPENDIX 1

## LITHOLOGICAL DESCRIPTIONS

## APPENDIX 2

### SIDEWALL CORE DESCRIPTIONS



## APPENDIX 3

### MDT RESULTS

# APPENDIX 4

## MUDLOGGING REPORT

# APPENDIX 5

## LWD REPORT

## APPENDIX 6

### VSP REPORT

# APPENDIX 7

## PVT ANALYSIS

## APPENDIX 8

### PALYNOLOGY ANALYSIS

ENCLOSURE 1

MUD LOG

ENCLOSURE 2

PRESSURE LOG



ENCLOSURE 3

PRESSURE SUMMARY LOG

ENCLOSURE 4

DRILLING LOG

ENCLOSURE 5

GAS RATIO LOG