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DEPT. NAT. RES. & ENV.



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# Essential Petroleum Resources Limited

PEP 151

PRITCHARD-1

DRILLING PROGRAMME

January 2006

MINERALS AND PETROLEUM  
REGULATION

25 JAN 2006

RECEIVED

## 2. WELL DATA: Pritchard - 1

### 2.1 WELL SUMMARY SHEET

Well Name:	Pritchard - 1
Designation:	Exploration
Permit:	PEP 151
Basin:	OTWAY
Operator:	Essential Petroleum
<b>Permittees:</b>	Essential Petroleum Resources Limited (Operator) Bass Strait Oil Company Limited IOR Exploration Pty Ltd
Location: (Surface)	Latitude -38° 0' 26.25" Longitude 141° 12' 35.40" Easting 518,420 m Northing 5,753,355 m
Seismic Reference:	Line: WGD85 352 SP 116
Elevation:	GL 38m RT 42.3 m (MSL)
Spud Date (proposed):	February 2006
Drilling Contractor:	Hunt Minerals and Energy P/L
Rig:	Rig 2
Primary Objective:	&
Depth to Primary Objective: m	
Estimated Total Depth ("TD"):	2650 m
Ground Elevation to RT:	4.27m

### 3. DRILLING PROGRAMME

**NOTE: ALL DEPTHS ARE REFERENCED TO ROTARY TABLE ( Unless otherwise stated)**

#### 3.1 REFERENCE MANUALS

- Essential Petroleum - Emergency Response Manual
- Drilling Contractor – Onshore Drilling Emergency Response Plan
- Drilling Contractor – Onshore Drilling Operations and Safety Manual
- Department of Minerals and Energy - Petroleum Regulations

#### 3.1.1 REFERENCE WELLS

Fahley – 1, Henke-I.

#### 3.2 POSSIBLE DRILLING HAZARDS

##### 3.2.1 Shallow Gas

No shallow gas has been reported in offset wells and is not anticipated on this location.

##### 3.2.2 Lost Circulation

Some lost circulation may be encountered in surface sands – however no significant loss zones are anticipated.

##### 3.2.3 Abnormal Pressure

No overpressured zones are anticipated in this well.

##### 3.2.4 Hole Deviation

The well will be a vertical well

##### 3.2.5 Dangerous Gases

No hydrogen sulphide indications were encountered in the offset wells. Continuous monitoring will be performed through the mud logging systems to detect any H<sub>2</sub>S or CO<sub>2</sub> levels in the mud.

#### 3.3 HOLE AND CASING SIZES/DEPTHS

##### 3.3.1 Cellar construction

The site will be prepared with a 2.2m x 2.2m x 1.5m cellar.

##### 3.3.2 Conductor Pipe

A Conductor pipe may be pre-set at 10m or  
A 17 ½" hole will be drilled to approximately 25m BGL and 13 3/8" conductor pipe set.

### 3.3.3 Surface

An 12 1/4" surface hole will be drilled to +/- 850 m *BRT* prior to setting the 9 5/8" surface casing.

### 3.3.4 Production Casing

Subject to the results of the well evaluation a decision may be made to run 5 1/2" production casing.

**3.4 CASING DESIGN**

Hole Size (ins)	Casing Size (ins)	Setting Depth (m)	Specifications			Design Loads					
						(psi)		Collaps	Tensio	Safet	
										Facto	
12 1/4	9 5/8"	850	36# NT55HE BTC R3			2030	3720	1053	102,100	1.85	3.0
			Drift Dia. - 8.765"	Make-up torque - Base of API triangle							
			B = 3720 psi	C = 3140 psi	T = 564,000lb						
8 %	5 %	2650	17 lb/ft, K55, LTC, Range 3			3700	5320	4294	149,300	1.4	1.14
			Drift dia - 4.767"	Make-up torque -							
			B = 5,320psi	C = 4,910psi	T = 272000 lb						

\* 9 5/8" Casing at 850m gives an acceptable kick tolerance at 8 1/2" TD of 36bbls

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### **3.5 FORMATION PRESSURE CONTROL**

#### **3.5.1 Wellhead**

11" 3000 psi Bradenhead x 9 5/8" BTC will be fitted after setting Surface Casing.

#### **3.5.2 Blow Out Prevention Equipment**

Dual Ram 11" 3,000 psi Blow Out Preventer and 11" 3000 psi Annular Preventer will be installed after setting the 9 5/8" casing.

BOP equipment details are provided in the Well Control Procedures Manual.

#### **3.5.3 Formation Leak-off/Integrity Tests**

A Formation Integrity Test (FIT) will be conducted after drilling out the 9 5/8" surface casing.

### 3.5.4 PRESSURE TESTING SCHEDULE

Function	TEST PRESSURE (psi)						
	Plug Bump	Pipe Rams	Blind Rams	Annulars	Mud Manifold <sup>1</sup> Standpipe	Choke Manifold, Inside BOPs	Choke/Kill Lines
9 <sup>5</sup> / <sub>8</sub> " Casing Set	1,500	3,000	2,000	2,000	3,000	3,000	3,000

**Notes:**

Pressure tests shall be preceded by a low pressure test of 300 psi.

Pressure tests shall be held for 5 minutes (low pressure) and 15 minutes (high pressure). Use chart recorder.

Interim BOP tests shall not exceed 14 days between tests and shall be at the pressures applicable for that hole section. The BOP shall also be pressure tested to the above values prior to any production testing or following any repair where the BOP is disconnected from the wellhead.

BOP test procedures are provided in the Well Operations Procedures Manual.

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### 3.6 DRILLING CHRONOLOGY

Operational procedures and practices are detailed in the Well Operations Manuals.

#### 3.6.1 17 1/2" Hole / 13 3/8" Conductor

1. Rig up and drill rat hole.
2. Make up 17 1/2" bottom hole assembly. Drill 17 1/2" hole minimising washouts in surface sands. Run 1 joint of 13 3/8" Conductor.
3. After cementation, hook up flowline to conductor pipe.

#### 3.6.2 12 1/4" Hole 9 5/8" Surface Casing

4. Make up 12 1/4" bottom hole assembly and run in hole to shoe/cement. Drill out and drill ahead.
5. Drill 12 1/4" surface hole to 850m +/- to give a casing seat in the Upper Pember Mudstones.
6. Drill with fresh water/gel mud system. Refer to the Mud Programme.
7. Take inclination surveys (Totco) at 150m, 300m, 600m and casing depth.
8. At TD circulate hi-vis pill. Strap pipe out of hole.
9. Make conditioning trip as required and adjust TD to casing tally.
10. Rig up and run 9 5/8" casing. Thread lock shoe track (float shoe/one joint casing/float collar). Run centraliser on shoe joint and one in centre of next 3 joints
11. Install plug head. Circulate casing 150% casing volume. Pressure test cement lines to 2500 psi. Pump pre-flush and cement as per Cementing Programme. Bump plug to 1500 psi, bleed off pressure and check for back-flow. If floats do not hold, shut in and hold back pressure until surface samples are set.
12. After cementing the 9 5/8" surface casing, Wait on Cement before removing landing joint and installing Bradenhead.
13. Nipple up 3000 psi BOP stack. Pressure test in accordance with Pressure Testing Schedule 3.5.4.

#### 3.6.3 8 1/2" Hole 15 1/2" Casing

14. Make up 8 1/2" bottom hole assembly and run in hole to top of cement/plugs/float collar. Drill out shoe track to within 5m of shoe. Pressure test casing to 2000 psi. Drill 5m new hole and perform FIT to 1.3 sg MWE. Refer to the Bit/BHA Programme - Section 3.9.3.
15. Drill with fresh KCl/Phpa mud system. Refer to the Mud Programme. Take inclination surveys (Totco) at 200m intervals and bit changes.



16. Drill 8 112" hole to 2650m TD +/- . Open hole DST (s) may be run and cores may be cut at the discretion of the wellsite geologist on penetration.
17. At TD condition hole for logs. Pump 50 bbls hi-vis pill on bottom. Strap pipe out of hole.
18. Log as per Logging Programme.
19. A decision will be made after evaluation whether to case and suspend or P & A.
20. Dependent on the above, make a conditioning trip prior to running casing or to P&A RIH Open ended to set cement plugs as per the Department of Primary Industries Regulations.
21. To Case and Suspend, rig up and run 5 112" casing. Thread lock shoe track (float shoe two joints casing float collar). Run two centralisers on shoe joint and one in centre of next 5 joints. Run centralisers on stop rings - not over collars.
22. Install plug head. Circulate casing 150% casing volume. Pressure test cement lines to 3000 psi. Pump pre-flush and cement as per Cementing Programme. Displace cement with water, bump plug to 2000 psi, bleed off pressure and check for back-flow. If floats do not hold, shut in and hold back pressure until surface samples are set.
23. Wait on cement. Check annulus, lift BOP and set casing slips with string weight.
24. Rough cut casing and lay out landing joint. Nipple down BOP.
25. Clean Mud tanks and release the rig.

### 3.7 CEMENTING PROGRAMME

CEMENTING DETAILS								
Hole Size (ins)	Casing Size (ins)	Setting Depth mRT	Type	Weight SG	Water Reqt. (gps)	Yield (cuft/sx)	Additives	Cement Volume
17 ½	13 3/8	10	Class A	1.90	5.0	1.15	Calcium Chloride - 2% BWOC.	Cement to surface. Pre-flush – fresh water. 100% excess.
12 ¼	9 5/8	850	Class G (Lead)	1.54	12.4	2.13	Refer to Halliburton Cement Programme for additives.	Cement to surface Pre-flush – fresh water. 50% Excess Lead approx 500sx Tail approx 215sx
			Class G (Tail)	1.90	5.13	1.16		
8 %	5 %	2650	Class HTB (Lead)	1.54	15.66	2.79	Bentonite - 2.8% BWOC Refer to Halliburton Cement Programme for additives.	TOC 100 m inside 9 5/8" s hoe, tail in with 1450 annular metres of neat cement. or to 60m min above top of hydrocarbons. Pre-flush - fresh water. 15% excess on Calliper Log.
			Class HTB (Tail)	1.90	6.3	1.53		

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**3.7.1 CASING RUNNING PROGRAMME**

<b>Casing specification</b>	<b>Drift dia.</b>	<b>Shoe track/Accessories</b>	<b>Centralisers</b>	<b>Make up torque</b>
13 3/8 68 lb/ft, K55, BTC, R3 Conductor	12.259	Stab-in type float shoe only. Thread lock or tack weld shoe to casing. Requires stab-in tool and centraliser	Nil	See note 6
9 <sup>5</sup> / <sub>8</sub> " , 36 lb/ft, NT55HE, BTC, R3	8.765"	Guide shoe, one joint casing, float collar. Thread lock shoe track including casing collars. Wiper and displacement plugs, non rotating.	One on shoe joint, one in centre of next 3 joints.	See note 6
5 1/2" , 17 lb/ft, K55, LTC, R3	4.767"	Float shoe, two joints casing, float collar. Thread lock shoe track including casing collars. Wiper and displacement plugs.	One on shoe joint, one in centre of next 3 joints and one every 2 <sup>nd</sup> joint to 50m above production zone	365 m-daN

**General**

1. Ensure all casing running tools are ready in good time, checked as to condition with back-up tools as necessary.
2. Ensure circulating swage for casing size being run is available on rig floor.
3. Keep protectors on casing threads until picked up and ready to run.
4. Drift all casing with API drift.
5. Centralisers should be placed over stop rings, not casing collars.
6. Make up torque for Buttress connection - make up 5 connections to base of API triangle. Note average torque and make up remainder of pipe to same torque.
7. Use Bestolife 2000 thread compound on all casing threads.
8. Check operation of float equipment as it is picked up.
9. Fill each casing joint as it is run ( 9 5/8" every 5 joints)
10. Use casing or drill collar clamp on casing while set in slips until sufficient weight to activate slips.
11. If slip type elevator is to be used, change over at previous casing shoe.
12. Record final string weight.
13. Do not overdisplace shoe track by more than 50% if plug does not bump after pumping calculated displacement volume.

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**3.8 DRILLING FLUIDS PROGRAMME**

Hole Size ins	Depth m	Mud Weight SG	PV/YP cp/lb/100 sqft	Fluid Loss cc	Mud Type	Comments
17%	25	Air	na	na	Gel / water	
12%	850	Min	na	na	Fresh water/gel sweeps	Drill with fresh water Gel Spud Mud. Circulate 30 bbl high vis sweep if required. Pump 50 bbl gel pill on bottom before running casing
8%	2650	1.3	30120	<4	KCL/PHPA	KCL – 4-5%. PHPA Polymer - <1.5 ppb Adjust mud weight as dictated by hole conditions.

**Notes:**

The above parameters are provided as a guide. Refer to the Drilling Fluids Programme for full details. A Mud Engineer will be on site to run the mud systems and provide technical advice.

A Corrosion Control Programme should be run in accordance with the Drilling Fluids Programme.

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### 3.9 DEVIATION CONTROL

#### 3.9.1 Objectives

Maximum rate of change of angle to be less than 1½° per 30 m.  
A maximum deviation of 5° for the well.

#### 3.9.2 Surveys

12%" hole: Totco at 150, 300, 600 & casing depth

8 1/2)" hole: Totco.

Surveys shall be taken at intervals of no more than 300m unless hole conditions dictate otherwise.

#### 3.9.3 BITS/BOTTOM HOLE ASSEMBLYS/HYDRAULICS

Hole size	Depth	Bit Type IADC	Bit Selection	Back-up
17½"	25m		TBA	
12%"	850m	1.1.4	TBA	TBA
8½"	2650m	4.3.7	TBA	TBA

A recommended hydraulics programme will be provided.

Hole size	Bottom Hole Assembly
12¼"	Bit, Bit Sub, 8" DC, Stab, 8" DC, NO, 9 x 6 1/2)" DC
8 1/2)"	Bit, Bit Sub, 6 1/2)" DC, Stab, 12 x 6 1/2)" DC, Jars, 2 x 6 1/2)" DC, NO, 12 x HWDP
8 ½"	Bit, Mud Motor, 12 x 6 1/2)" DC, Jars, 2 x 6 1/2)" DC, 12 x HWDP

**Note:** The above parameters have been provided as a guide. Actual bit selection and BHA will be selected and confirmed during drilling after discussion with the Drilling Supervisor.

#### 3.10 TEST/SUSPENSION/ABANDONMENT PROGRAMME

If significant hydrocarbon shows are encountered and a decision to test or suspend the well made, an appropriate programme will be issued.

If testing is not warranted, a plug and abandonment programme will be advised after final logs have been examined.

The plug and abandonment programme will be in accordance with the requirements of the Department of Primary Industries.

#### 3.11 REPORTING

##### 3.11.1 General

All communications to joint venture participants will only take place through Essential Petroleum's office.

### **3.1.2 Reporting Requirements**

#### **Drilling Reports**

The following reports will be forwarded from the rig to:

**Essential Petroleum c/- Kelly Down Consultants: Attention – Jim Slater  
Essential Petroleum: cc - Senior Operations Geologist (Daily Drilling & Status Reports only)**

- (1) Daily Reports - by fax or email by 0700 hours EST:
  - Daily Drilling Report;
  - Daily Mud Properties and Consumption Report (mud contractor);
  - Daily Consumable Report
- (2) Other Daily Reports - by fax or email:
  - Drilling Status Report at 1600 hours EST;
- (3) Specific Reports - shortly after the event by fax or email:
  - Accident or Lost Time;
  - Casing and Cementing;
  - LOTs;
  - Coring and Testing;
  - Rig Inspection Report.
- (4) Other Reports - weekly by mail:
  - tour sheets;
  - materials movements and consumption;
  - copies of field tickets/memos/faxes.
- (5) At the completion of the well:
  - Completed Drilling Forms (eg bit records etc);
  - final inventories and movements;
  - adequate notes and reports/recommendations on any event, problem or operation specific to the well.

#### **Geological Reports**

The following reports will be forwarded from the rig to:

**Essential Petroleum: Attention - Senior Operations Geologist  
cc: Kelly Down Consultants: Attention - Jim Slater**

- Daily Report - by fax or email by 0700 hours EST;
- Daily Geological Report;
- Mud Logging Report;

#### 4. OIL SPILL CONTINGENCY PLAN

The Essential Petroleum Oil Spill Contingency Plan ("OSCP") provides guidelines for use by field and office personnel to:

- notify the relevant authorities and groups of an oil spill;  
contain and manage the spill; and  
clean up the oil spill if necessary.

The OSCP shall be kept at the rig for reference by all personnel.

**APPENDIX A**
**CONTACT NAMES AND NUMBERS**
**(a) OPERATOR/PROJECT MANAGER CONTACTS**

<b>Company/Address/Contact</b>	<b>Office Tel</b>	<b>Office Fax</b>	<b>Home Tel</b>	<b>Mobile</b>
Essential Petroleum Resources Limited Level 2 226 <b>Albert</b> Road, South Melbourne VIC 3205 Contacts: John Remfry – <i>Managing Director</i> Gordon Wakelin-King	0396993009  03 9699 3009	0396993110  03 9699 3110	  0394824584	  0419517294 0428822549
<b>Kelly</b> Down Consultants <b>Pty</b> Ltd Locked Bag 8 Chatswood NSW 2057 Contacts: Jim Slater - <i>Drilling Manager</i>	0294151244	0294151299	0294522780	0412446440
Hunt Energy and Minerals Drilling Rig #2 Contacts: Drilling Supervisors TBA	0883227511 TBA	0883227533		

**(b) DEPARTMENT OF PRIMARY INDUSTRIES CONTACTS**

<b>Address/Contact</b>	<b>Office Tel</b>	<b>Office Fax</b>	<b>Home Tel</b>	<b>Mobile</b>
Minerals & Petroleum Regulation Level 16 1 Spring Street MELBOURNE VIC 3000 Contact: David Wong –Principal Petroleum Operations Adviser	(03) 9658 4600  (03) 9658 4415	(03) 9658 4460  (03) 9658 4499		  0418 564 648

**(c) SERVICE COMPANIES**

<b>Service/Company/Address/Contact</b>	<b>Office Tel</b>	<b>Office Fax</b>	<b>Home Tel</b>	<b>Mobile</b>
Drilling Contractor Hunt Minerals & Energy P/L 15 Scarborough Way, Lonsdale. SA 5160 Contact: Larry Werecky – Area Manager Chris Brown – Operations Supt	08 8322 7511	0883227533		  0418806281 0419838202
Cementing: Halliburton				



<b>Service/Company/Address/Contact</b>	<b>Office Tel</b>	<b>Office Fax</b>	<b>Home Tel</b>	<b>Mobile</b>
<b>Drilling Fluids:</b> RMN Drilling Fluids				
<b>Electric Logging:</b> TBA	TBA	TBA		
<b>Mud Logging:</b> Colin Higgins & Associates				
<b>Coring:</b> Corepro				
<b>DST Services</b> Pacific Oilfield Services				
<b>Directional Drilling:</b> TBA				
<b>Drilling Tools:</b> TBA				
<b>Casing Running:</b>				

Service/Company/Address/Contact	Office Tel	Office Fax	Home Tel	Mobile
Wellheads: Wood Group				
Supply <b>Base/Transport:</b> K&S Freighters Canal Court Portland. Vic 3305  David Whitehead – Ops Manager	0355234144	0355235647	0355234526	0419829792
Construction: Walter J Melis Earthmoving Contractor 8 Wellington St Warrnambool VIC 3280 TBA ??	0355626259	055626259		0419598338
Solids Control Hunt drilling				
Core and Fluid <b>Analysis/Geochem</b>  TBA	TBA			

**(d) EMERGENCY CONTACTS**

Company/Address/Contact	Office Tel	Office Fax	Home Tel	Mobile
Essential Petroleum Resources Limited Level 2,226 <b>Albert</b> Road, South Melbourne VIC 3205 Contacts: John Remfry – <i>Managing Director</i> Gordon Wakelin-King	0396993009	0396993110	0394824584	0419 517 294 0428822549
<b>Kelly</b> Down Consultants <b>Pty</b> Ltd Locked Bag 8 Chatswood NSW 2057 Contacts: Jim Slater - <i>Drilling Manager</i>	0294151244	0294151299	0294522780	0412446440
Hunt Energy and Minerals Drilling Rig #2 Contacts: Drilling Supervisors TBA	0883227511 TBA	0883227533		