



**PEL 107
Cooper/Eromanga Basin
South Australia**

**Annual Report
Permit Year 2**

2nd April 2004 to 1st April 2005

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1 Introduction

Petroleum Exploration Licence No. 107 is located on the southern margin of the Patchawarra Trough, Cooper/Eromanga Basin, South Australia. The licence was awarded on 2nd April 2003, and the second year of the licence covers the period 2nd April 2004 to 1st April 2005.

This report summarises the work performed by the Joint Venture during this second year of the licence, in accordance with the requirements of Section 33 of the Petroleum Regulations 2002.

2 Permit Summary

The working interests in PEL 107 at the end of this reporting period were:

Beach Petroleum Ltd (Operator) 40%
Great Artesian Oil and Gas Ltd 60%

The agreed work commitments for PEL 107 are summarised as follows:

Licence Year	Minimum Work Program	Actual Work
Year 1 (2/04/03-1/04/04)	One well; 50km 2D seismic	One well; 153km 2D; 270km seismic reprocessing
Year 2 (2/04/04-1/04/05)	One well; 50km 2D seismic	One well; 86km 2D; 313km seismic reprocessing
Year 3 (2/04/05-1/04/06)	Four wells; 50km 2D seismic	
Year 4 (2/04/06-1/04/07)	Two wells	
Year 5 (2/04/07-1/04/08)	Two wells	

Two work program variations were approved during the permit term, both relating to the timing of drilling. Drill scheduling was affected by rig demand and by weather-related seismic delays. The first variation was granted on 25-Jun-04, and the second on 14-Mar-05.

3 Exploration Activity

1.1 Drilling

One exploration well (Goolwa-1) was drilled during the permit term.

Goolwa-1 spudded on 9/04/04 and reached a TD of 2684m after penetrating designated Permian targets. Two DSTs were conducted, the first failing to flow from tight reservoir, and the second producing formation water. The well was subsequently plugged and abandoned, and the rig released on 2/05/04.

1.2 Seismic Data Acquisition

A total of 86km of new 2D seismic data was recorded during Year 2, primarily detailing the Kiana and Tyinga prospects. The final operations report for the Malleus seismic survey is currently in preparation.

At the end of Permit Year 2, the total acquired 2D seismic has fulfilled the entire licence commitment.

1.3 Seismic Data Processing/ Reprocessing

A total of 313 km of existing seismic was reprocessed during the permit year.

1.4 Geological and Geophysical Studies.

Technical studies during this second permit term were chiefly directed toward the drilling of the Goolwa-1 well, the interpretation of newly acquired seismic data from the Malleus program, and the detailed mapping of prospects based upon new and re-processed data. At the end of the permit year, preparations were underway to drill the Kiana and Tyinga prospects in Q3 2005.

4 Administration

4.1 Regulatory Compliance

A Compliance Report is attached which details the operator's compliance with the 2000 Petroleum Act, its Regulations, the terms and conditions of the Licence, and the agreed Statements of Environmental Objectives governing field operations undertaken during the permit term.

4.2 Data submissions.

A list of the items submitted during the report period is contained in the table below.

Table 1

**PEL 107
Annual Report
Licence Year 2
2nd April 2004 to 1st April 2005**

List of documents generated

	<u>Title</u>	Date Submitted to PIRSA
	Albus Seismic Survey PEL 107 – Operations Report	8-Oct-04
	Malleus Seismic Survey PEL 107 – Environmental Monitoring Report	10-Jan-05
	Albus Seismic Survey PEL 107 - Interpretation Report	4-Mar-05
	Goolwa-1 Well Completion Report	15-Nov-04
(Digital)	Reservoir Micro Analysis – Goolwa-1 and Carrickalinga-1	29-Nov-04

4.3 Planned Exploration Program for Year 3

Four exploration wells are anticipated for Year 3. The locations for Kiana-1 and Tyinga-1 have been approved, a work area clearance has been undertaken and well proposals were being prepared at the end of the reporting period. The two wells are expected to spud in July and August 2005, respectively. An additional two wells are planned for early 2006; it is expected that one will be drilled in the western portion of the permit, while the second location has yet to be decided.

Beach has initiated a multi-permit Permian study to better understand the hydrocarbon geology of the southern Patchawarra Trough. Although yet to be defined, it is anticipated that about 100km of new seismic may be acquired to better address the study objectives.

5 Expenditure statement

A licence expenditure summary for the period 2nd April 2004 to 1st April 2005 is presented as Table 2.

Table 2

**PEL 107
Annual Report
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2nd April 2004 to 1st April 2005**

Statement of Expenditure

Commercial in confidence

ANNUAL
COMPLIANCE
REPORT

FOR

PEL 107 - YEAR 2

(APRIL 2004 - MARCH 2005)

COOPER BASIN, SOUTH AUSTRALIA



Introduction

Pursuant to Regulation 33 (2) of the 2000 Petroleum Act, Beach Petroleum, as operator of PEL 107 in the Cooper Basin, South Australia, herewith submits its report on compliance with :

- the Petroleum Act,
- its Regulations,
- the PEL License conditions, and
- the various Statements of Environmental Objectives to which Beach Petroleum was committed in conducting its work commitments for Year 2 of the Licence.

A table is attached summarizing the instances during Year 2 of the Permit where Beach Petroleum did not comply with the Regulations or the requirements of the relevant SEO under which it conducted its operations.

Further details of the circumstances surrounding any non-compliances are outlined below.

Petroleum Act and PEL License Conditions

There were no instances of non-compliance with the 2000 Petroleum Act or the terms of the Licence during Year 2 of PEL 107.

Regulations of the 2000 Petroleum Act

- **Drilling**

There were no instances of non-compliance with the Regulations in regard to Beach's **drilling operations** in PEL 107 during Year 2.

The Goolwa-1 well was drilled in April, 2004. Digital wireline logging data from this well was submitted to PIRSA on the due date.

Beach requested two (week long) extensions for the submission of the Well Completion Report (WCR) for Goolwa-1, and the WCR was submitted on the final day of the second weekly extension.

- **Seismic**

There were no instances of non-compliance with the Regulations in regard to Beach's **seismic field operations** in PEL 107.

The 2004 Malleus Seismic Survey included the recording of 90 kilometres of survey lines in PEL 107. Data acquisition finished on 20th October 2004.

The Environmental Report for this survey was submitted on 10th January 2005, and the attached Geophysical Reports Checklist shows that the data sets and other Reports associated with the Malleus Survey are all to be submitted to PIRSA in Year 3 of the permit.

Although not a requirement of the work program for Year 2, a total of 313 kilometres of **archive seismic data** from the PEL 107 area were **reprocessed** . The archive data was processed simultaneously with the newly acquired data and the combined data set was delivered to Beach on 11th March 2005.



Record of Non - Compliance with Regulations

Permit : PEL 107 Year 2 : 2 April 2004 - 1 April 2005

Drilling		
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Non Compliance with SEO	Date	Incident Date & Description	Resolution
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Non Compliance with Submission of Reports	Date Due	Report Name	Resolution
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*Well Completion Report for **Goolwa-1** was submitted on the final day of the second extension period approved by PIRSA.*

Non Compliance with Submission of Data & Samples	Date Due	Data Type	Resolution
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*Wireline logging data for **Goolwa 1** was submitted on due date. Drilling samples were submitted prior to the due date.*

Seismic		
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Non Compliance with SEO	Date	Incident Date & Description	Resolution
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Non Compliance with Submission of Reports	Date Due	Report Name	Resolution
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2003 Albus Survey :

*Operations Report and support data (obs logs, nav data, etc) for the **2003 Albus** survey were submitted 5 days late. Interpretation Report was submitted prior to due date.*

2004 Malleus Survey :

*Environmental Report for the PEL 107 component of the **2004 Malleus** seismic survey was submitted on 10th Jnuary 2005. No further Reports from the 2004 Malleus Survey are required to be submitted to PIRSA until Year 3 of the Lice*

Non Compliance with Submission of Data	Date Due	Data Type	Resolution
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2003 Albus Survey :

*Field data and processed (SEG Y) data for the **2003 Albus** survey were submitted 12 days late.*

2004 Malleus Survey :

*No data sets from the **2004 Malleus** Survey are required to be submitted to PIRSA until Year 3 of the Licence.*

CHECKLIST FOR NOTIFICATIONS OF DRILLING OPERATIONS

Permit : PEL 107 Year 1 : 2 April 2004 - 1 April 2005

Well Name : Goolwa -1

Commenced Drilling Operations : 9 April 2004

Completed Drilling Operations : 2 May 2004

REQUIREMENT	Format	Person / agency to whom Notification is to be provided	Period required for Notification	DUE DATE for Notification	ACTUAL DATE of Notification	Beach officer responsible for compliance	Comments
Notification of proposed drilling activity including demonstration of the suitability of an existing SEO.		PIRSA / Mike Malavazos	35 days prior to proposed start date	6-Mar-04	2-Mar-04	Exploration Manager	PIRSA Approval received on 24 April 2003.
Notification of proposed commencement of earthworks – preparation of access tracks and well leases		PIRSA / Tony Wright	2 days prior to proposed start date			Exploration Manager	
Notification to landowner (s)		Pastoral Lessee;	21 days prior to proposed start date	20-Mar-04	6-Feb-04	Exploration Manager	Mungeranie Station and Murta Station
		National Parks;	21 days prior to proposed start date	20-Mar-04	Not required	Exploration Manager	
		Native Title Claimant(s);	21 days prior to proposed start date	20-Mar-04	6-Feb-04	Exploration Manager	Ngayana Dieri Karna
		Other PEL or PL Licencees as appropriate	21 days prior to proposed start date	20-Mar-04	Not Required	Exploration Manager	

CHECKLIST FOR SUBMISSION OF DRILLING REPORTS TO PIRSA

Permit : PEL 107 Year 2 : 2 April 2004 - 1 April 2005

Well Name : **Goolwa -1**

Commenced Drilling Operations : 9 April 2004

Completed Drilling Operations : 2 May 2004

REPORT / DATA SET	Format	Person / agency to whom information is to be provided.	Period allowed for Submitting data.	Date Due	Date Submitted	Beach officer responsible for compliance	Comments
Daily Drilling Reports		PIRSA	Within 12 hrs of report period.	During Drilling Operations	During Drilling Operations	Exploration Manager	
Wireline logs		PIRSA	Within 2 months of acquisition of data.	2-Jul-04	2-Jul-04	Exploration Manager	Transmittal Note No. 04_0179
Mud logging data		PIRSA	Included with Daily Drilling Reports, then subsequently with the Well Completion Report.	During Drilling Operations	During Drilling Operations	Exploration Manager	
Well samples		PIRSA	Within 6 months of rig release.	2-Nov-04	15-Jun-04	Exploration Manager	
Well Completion Report		PIRSA	Within 6 months of rig release.	2-Nov-04	15-Nov-04	Exploration Manager	Submitted two weeks overdue. Transmittal Note No. 04_0227
Reportable Incidents.		PIRSA	Serious incidents must be reported immediately (within 24 hrs), with a written report following within 3 months.	No Reportable Incidents		Exploration Manager	
<i>Note : Well Completion Reports contain Borehole Deviation data ; Surveyed Location of well ; and other technical reports associated with the well.</i>							

CHECKLIST FOR SUBMITTING GEOPHYSICAL DATA AND REPORTS TO PIRSA - PEL 107

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REPORTS DUE FROM YEAR 1 PROGRAMS : 2 April 2003 - 1 April 2004

Geophysical Data	Specifics	Format	Allowed Time Period	Due Date	Comments
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Survey Name : 2003 Albus Seismic Survey

Recording of the Albus Survey was completed on 3rd October 2003

Geophysical Progress Reports		Word or PDF	Periodic basis determined after consultation with Minister		
Geophysical Operations Reports - recording and processing		Hardcopy, PDF	The allowed period is now 12 months after completion of recording of the data.	3-Oct-04	Submitted on 8th October 2004 - 5 days late
Geophysical Data - Seismic	Seismic Field Data / Processed SEG Y data	SEG Y		3-Oct-04	Submitted on 15th October 2004 - 12 days late
Geophysical Data - Seismic	Obs Logs	GDA 94		3-Oct-04	Submitted on 8th October 2004 - 5 days late
Geophysical Data - Seismic	Nav data including elevations & bathymetry	GDA 94		3-Oct-04	
Geophysical Data - Seismic	Field statics			3-Oct-04	
Geophysical Data - Seismic	Processed 2D seismic sections	CGM files		3-Oct-04	Submitted on 15 th October 2004 - 12 days late
Geophysical Interpretation Reports		Hardcopy & PDF		Within 12 months of completion of processing of data (increased from 6 months)	30-Mar-05
Geophysical Data - Seismic	Processed 3D data vols and velocities			N / A	No 3D surveys recorded during Permit Year
Geophysical Data - Seismic	Processed 3D time slices (if they have been produced)			N / A	No 3D surveys recorded during Permit Year
Geophysical Data	Environmental Report for Albus Survey	Hardcopy & PDF			Submitted on 7 th June 2004

Reprocessing of 270 kms

Reprocessing of archive data was completed on 30th March 2004

Geophysical Operations Reports - reprocessing		Hardcopy, PDF	Within 2 months of completion of reprocessing data	30-May-04	Reprocessing of archive seismic data was undertaken simultaneously with the processing of the new data from the 2003 Albus survey. The combined data sets were delivered to PIRSA when the new data was due, on 15th Oct, 2004. Similarly, the interpretation of the reprocessed data was combined with the interpretation of the new 2004 data, and the Interp Report for these <u>combined</u> data sets was submitted on 18th March, 2005, just prior to the due date.
Geophysical Interpretation Reports		Hardcopy, PDF	Within 12 months of completion of reprocessing data	5-Aug-04	
Geophysical Data - Seismic	Reprocessing - transcribed copy of field data		Same time as associated Operations Reports	30-May-04	
Geophysical Data - Seismic	Reprocessing - field tape transcription log			30-May-04	
Geophysical Data - Seismic	Reprocessing - tape & file listing of field data that has been copied & reprocessed			30-May-04	

CHECKLIST FOR SUBMITTING GEOPHYSICAL DATA AND REPORTS TO PIRSA - PEL 107

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REPORTS DUE FROM YEAR 2 PROGRAMS : 2 April 2004 - 1 April 2005

Geophysical Data	Specifics	Format	Allowed Time Period	Due Date	Comments
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Survey Name : 2004 Malleus Seismic Survey

Recording of Malleus Survey was completed on 19th October 2004

Geophysical Progress Reports		Word or PDF			
Geophysical Operations Reports - recording and processing		Hardcopy, PDF	Operations Reports and associated data are to be submitted within 12 months after completion of the recording of the data.	19-Oct-05	<i>No Data or Reports for the Malleus Survey are required to be submitted <u>until after</u> the end of Permit Year 2</i>
Geophysical Data - Seismic	Seismic Field Data			19-Oct-05	
Geophysical Data - Seismic	Obs Logs	GDA 94		19-Oct-05	
Geophysical Data - Seismic	Nav data including elevations & bathymetry	GDA 94		19-Oct-05	
Geophysical Data - Seismic	Field statics			19-Oct-05	
Geophysical Data - Seismic	Processed 2D seismic sections			19-Oct-05	
Geophysical Interpretation Reports		Hardcopy, PDF	Within 12 months of completion of processing of data (increased from 6 months)	11-Mar-06	Processing of the data recorded in PEL 107 for the Malleus survey was completed on 11th March 2005 .
Geophysical Data - Seismic	Processed 3D data vols and velocities			N / A	No 3D surveys recorded during Permit Year
Geophysical Data - Seismic	Processed 3D time slices (if they have been produced)			N / A	No 3D surveys recorded during Permit Year
Geophysical Data	Environmental Report for Malleus Survey	Hardcopy & PDF			Submitted on 10th January 2005

Reprocessing of 313 kms

Reprocessing of archive data was completed on 11th March 2005

Geophysical Operations Reports - reprocessing		Hardcopy, PDF	Within 2 months of completion of reprocessing data	11-May-05	Reprocessing of archive seismic data was undertaken simultaneously with the processing of the new data from the Malleus survey. The combined data sets were delivered to Beach on 11th March, 2005 . Consequently, these data sets are not due to be submitted to PIRSA until 11th May, 2005, which will be in Year 3 of the permit. Details of the techniques and algorithms used for the reprocessing were documented in the Processing Report delivered with the data.
Geophysical Interpretation Reports		Hardcopy, PDF	Within 12 months of completion of reprocessing data	11-Mar-06	
Geophysical Data - Seismic	Reprocessing - transcribed copy of field data		Same time as associated Operations Reports (refer above)	11-May-05	
Geophysical Data - Seismic	Reprocessing - field tape transcription log			11-May-05	
Geophysical Data - Seismic	Reprocessing - tape & file listing of field data that has been copied & reprocessed			11-May-05	

Statements of Environmental Objectives.

A) Drilling Operations

Government approval for Beach to drill the Goolwa-1 well in PEL 107 was conditional on Beach committing to achieving the objectives defined in the “Statement of Environmental Objectives for Drilling and Well Operations in the Cooper / Eromanga Basins – South Australia “.

No commercial quantities of hydrocarbons were encountered during the drilling of the well, and it was plugged and abandoned. Rehabilitation of the well site will commence when the standing water remaining in the sump pit has fully evaporated. It is anticipated that the Goolwa-1 site should be ready for rehabilitation in the second quarter of 2005.

Accordingly, it will not be possible to assess Beach’s performance in achieving the SEO objectives relating to site rehabilitation until that time.

The access track to the Goolwa-1 well site will not be rehabilitated, as requested by the landowner.

Beach is satisfied that all the other objectives required by the SEO were met, and the spreadsheet below summarises the strategies that were employed to accomplish this compliance.

**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELL NAME : GOOLWA-1

PEL No. : 107

SPUD DATE : APRIL 2004

OBJECTIVE	COMMENT	GUIDE TO HOW OBJECTIVES CAN BE ACHIEVED	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
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<p><u>Objective 1:</u> <i>Minimise the risk to public and other third parties.</i></p>	<p>The criteria for assessing the achievement of this objective have been developed on the basis of the current understanding of the risks associated with drilling and well operations.</p> <p>The key to achieving this objective in relation to both downhole abandonment and surface well site restoration is to ensure that the visual prominence of the abandoned well site and its access track(s) is minimised to the extent where it is difficult for third parties to detect and therefore access these sites.</p>	<ul style="list-style-type: none"> ▪ All employees and contractor personnel complete a safety induction prior to commencement of work in the field. ▪ All employees and contractor personnel undertake a refresher induction every 2 years. ▪ Signage in place to warn third parties of access restrictions to operational areas, with particular warnings when potentially dangerous operations are being undertaken. 	<ul style="list-style-type: none"> ▪ Reasonable measures implemented to ensure no injuries to the public or third parties. 	<p>The design and operation of the Goolwa-1 well was undertaken in accordance with Beach safety policies, standards and guidelines.</p> <p>All employees undertook a safety induction prior to commencing work in the field and will undertake a refresher course if/when required.</p> <p>Goolwa-1 well was plugged and abandoned. The well site was located approximately four kms away from the Santos haul road which connects Moomba to the Tantanna oil field. The general public is prohibited from using this haul road.</p>
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**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELL NAME : GOOLWA-1

PEL No. : 107

SPUD DATE : APRIL 2004

OBJECTIVE	COMMENT	GUIDE TO HOW OBJECTIVES CAN BE ACHIEVED	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
		<ul style="list-style-type: none"> ▪ Permit to work systems in place for staff and contractors in dangerous situations. 		<p>Beach Permit to Work system was in operation during the drilling operations to control potentially dangerous situations.</p>
<p>Objective 1: (Continued)</p>	<p>The backfilling of the well cellar and the removal of rubbish from the restored well site should be carried out</p> <p>Fires or explosions at well sites could result in complications resulting in a spill of production fluids (formation water and hydrocarbon), atmospheric emissions, disturbance of native vegetation and wildlife habitat, loss of reservoir pressure, and risk to employees, contractors and the public.</p>	<ul style="list-style-type: none"> ▪ Reporting systems for recording injuries and accidents in place, and annual; (at minimum) review of records to determine injury trends. Implementation of appropriate corrective actions. ▪ Ensuring safety management plans are updated and reviewed. ▪ All appropriate PPE (personnel protective equipment) is issued and available as required in accordance with company operating requirements and applicable standards. 		<p>Accident / incident reporting systems were in place as defined in the Beach Drilling Operation Manual. Records are reviewed regularly to assess trends.</p> <p>Beach safety management plans are updated and reviewed on a regular basis.</p> <p>Appropriate PPE was issued to all personnel involved in the drilling operations.</p>

**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELL NAME : GOOLWA-1

PEL No. : 107

SPUD DATE : APRIL 2004

OBJECTIVE	COMMENT	GUIDE TO HOW OBJECTIVES CAN BE ACHIEVED	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
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<p>Objective 1: (<i>Continued</i>)</p>	<p>The movement of heavy equipment associated with rig moves present a risk to the safety of employees, contractors and third parties (ie tourists).</p>	<ul style="list-style-type: none"> ▪ Effective Emergency Response Plan (ERP) and procedures are in place in the event of a fire or explosion. ▪ Annual exercise of ERP. ▪ Communication of rig moves and other potential hazards to safety associated with drilling and well operations to potentially affected parties prior to commencement of operations. 		<p>An Emergency Response Plan (ERP) was prepared for the drilling operations at Goolwa-1, and all personnel involved in the operations were aware of the Emergency Response Plan. However, no situation arose that required the implementation of the Plan.</p> <p>Beach undertakes regular ERP exercises at selected drilling operations.</p> <p>Beach maintained regular contact with landholders and associated stakeholders during the drilling operations at the Goolwa-1 site.</p>
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**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELL NAME : GOOLWA-1

PEL No. : 107

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OBJECTIVE	COMMENT	GUIDE TO HOW OBJECTIVES CAN BE ACHIEVED	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
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<p><u>Objective 2 :</u> <i>Minimise disturbance and avoid contamination to soil.</i></p>	<p>The impacts associated with soil disturbance can potentially include wind and water erosion and dust generation. The main source of disturbance to soils is associated with lease and access track construction, creation of borrows pits, restoration activity, vehicle movement in off-road locations and sub-surface excavations (i.e. sumps, flare pits and borrow pits).</p>	<p><u>Well Site and Access Track Construction</u></p> <ul style="list-style-type: none"> ▪ Consider alternate routes during planning phase to minimise environmental impacts ▪ Gibber mantle on access tracks and well sites (excluding sumps) has not been removed, only rolled, during construction and restoration on gibber and tableland land systems. ▪ Topsoil stockpiled (including gibber mantle) from sump construction and respread on abandonment. ▪ The need to traverse sensitive land systems and the methods of managing the impacts should be justified in accordance with company procedures, recorded and available for auditing. 	<p><u>Well Site and Access Track Construction</u></p> <ul style="list-style-type: none"> ▪ 0, +1 or +2 GAS criteria are attained for "Minimise visual impacts of abandoned well sites and access tracks" objective as listed in Appendix 4 for well lease and access track construction. ▪ No unauthorised off-road driving or creation of shortcuts. ▪ No construction activities are carried out on salt lakes, steep tableland land systems or wetlands land systems (as defined in EIR). 	<ul style="list-style-type: none"> • Site construction was in accordance with the guidelines outlined in Guidelines for Lease Construction and Restoration. • There were no gibber pavements along the access track or at the Goolwa-1 well site. • Topsoil was stockpiled for subsequent resspreading when restoration activities are conducted. • Vehicle movements were strictly limited to the defined access track and well pad area – areas which had been given cultural heritage clearance for the drilling operations.
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**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELL NAME : GOOLWA-1

PEL No. : 107

SPUD DATE : APRIL 2004

OBJECTIVE	COMMENT	GUIDE TO HOW OBJECTIVES CAN BE ACHIEVED	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
<p>Objective 2: (<i>Continued</i>)</p> <p>(<i>Minimise disturbance and avoid contamination to soil.</i>)</p>		<p><u>Production Testing / Well Blowdowns</u></p> <ul style="list-style-type: none"> ▪ If appropriate use: <ul style="list-style-type: none"> - impermeable flare pit - flare tanks. 	<p><u>Borrow pit construction and restoration</u></p> <ul style="list-style-type: none"> ▪ 0, +1 or +2 GAS criteria are attained for "Minimise Visual Impacts for constructing borrow pits" objective as listed in Appendix 3, and "Minimise visual impacts" and "Minimise impact on soil" objectives as listed in Appendix 5. 	<ul style="list-style-type: none"> • The Goolwa-1 wellsite will be rehabilitated and restored in accordance with the guidelines set down in PIRSA's Field Guide for the Environmental Assessment of Abandoned Petroleum Wellsites in the Cooper Basin, South Australia to attain the highest feasible GAS rating. Rehabilitation of the site is scheduled to occur in the third quarter of 2005. • Borrow pits will be rehabilitated and restored in accordance with the guidelines set down in PIRSA's Field Guide for the Environmental Assessment of Abandoned Petroleum Wellsites in the Cooper Basin, South Australia, to attain the highest feasible GAS rating.

**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELL NAME : GOOLWA-1

PEL No. : 107

SPUD DATE : APRIL 2004

OBJECTIVE	COMMENT	GUIDE TO HOW OBJECTIVES CAN BE ACHIEVED	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
<p>Objective 2: (Continued)</p> <p>(Minimise disturbance and avoid contamination to soil.)</p>			<p><u>Production Testing / Well Blowdowns</u></p> <ul style="list-style-type: none"> ▪ No soil contamination as a result of production testing or well blowdown operations. 	<ul style="list-style-type: none"> • No Production testing was undertaken at Goolwa-1. • All fuel, oil and chemicals were stored in accordance with relevant standards. • Refuelling was undertaken as per Drilling Contractors' procedures. • There were no spills during the drilling operations that required reporting or corrective action to be taken in accordance with the Beach Incident Reporting system.
<p>Objective 2:</p>		<p><u>Fuel and Chemical Storage and Handling</u></p> <ul style="list-style-type: none"> ▪ All fuel, oil and chemical storages banded in accordance with the appropriate standards ▪ Records of spill events and corrective actions maintained in accordance with company procedures. 	<p><u>Fuel and Chemical Storage and Handling</u></p> <ul style="list-style-type: none"> ▪ No spills/leaks outside of areas designed to contain them. ▪ Level of hydrocarbon continually decreasing for in situ remediation of spills. 	<ul style="list-style-type: none"> ▪ There were no spills during the drilling operations outside of areas designed to contain them.

**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELL NAME : GOOLWA-1

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SPUD DATE : APRIL 2004

OBJECTIVE	COMMENT	GUIDE TO HOW OBJECTIVES CAN BE ACHIEVED	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
<p>(<i>Continued</i>)</p> <p>(<i>Minimise disturbance and avoid contamination to soil.</i>)</p> <p>Objective 2: (<i>Continued</i>)</p>		<ul style="list-style-type: none"> ▪ Spills or leaks are immediately reported and clean up actions initiated. ▪ Logged incidents are reviewed annually to determine areas that may require corrective action in order to reduce spill volumes in subsequent years (and drive continual improvement). ▪ Chemical and fuel storage procedures, including signage, are reviewed and monitored in audit process. <p><u>Spill Response / Contingency Planning</u></p> <ul style="list-style-type: none"> ▪ Results of emergency response procedures carried out in accord with Regulation 31 show that oil spill contingency plan in place in the event of a spill is adequate and any necessary remedial action needed to the plan is undertaken promptly. ▪ Oil spill contingency plan (reviewed annually) is up to date with specific scenarios relating to spills to creeks and floodplain areas. 	<ul style="list-style-type: none"> ▪ Soils remediated to a level as determined by the SHI process. 	<ul style="list-style-type: none"> • Beach's Oil Spill Contingency Plan is included in the Emergency Response Plan.

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WELL NAME : GOOLWA-1

PEL No. : 107

SPUD DATE : APRIL 2004

OBJECTIVE	COMMENT	GUIDE TO HOW OBJECTIVES CAN BE ACHIEVED	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
<i>(Minimise disturbance and avoid contamination to soil.)</i>		<ul style="list-style-type: none"> ▪ Spill response equipment is audited annually. ▪ Annual spill response training exercise is undertaken. 		
		<p><u>Waste Disposal (domestic, sewage and sludges)</u></p> <ul style="list-style-type: none"> ▪ Covered bins are provided for the collection and storage of wastes. ▪ All loads of rubbish are covered during transport to the central waste facility. ▪ Pits are not established in locations, which pose an unacceptable hazard to stock or wildlife. 	<ul style="list-style-type: none"> ▪ All domestic wastes are disposed of in accordance with EPA licensing requirements. ▪ 0, +1 or +2 GAS criteria for 'Waste material' objective is attained. ▪ No spills or leaks from sewage treatment process and sludge pits. 	<ul style="list-style-type: none"> • Wastes were managed as described in the Cooper Basin Drilling & Well Operations EIR. • Wastes were collected, stored and transported in covered bins / containers. • All rubbish was disposed of at a licensed waste facility.

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<p><u>Objective 3 :</u> <i>Avoid the introduction or spread of pest plants and animals and implement control measures as necessary.</i></p>	<p>Activity associated with lease and access track construction, such as movement of vehicles and equipment, is a potential source of weed or disease introduction and spread. The most effective technique to prevent the introduction and spreading of weed species is to ensure that vehicles and equipment are appropriately cleaned prior to entry into a construction site.</p>	<ul style="list-style-type: none"> ▪ Where appropriate a weed and feral animal management strategy is in place (avoidance and control strategies). ▪ Rig and vehicle wash downs are initiated in accordance with the management strategy. 	<ul style="list-style-type: none"> ▪ No weeds or feral animals are introduced to operational areas. 	<ul style="list-style-type: none"> • Drilling rig and associated equipment and vehicles had already been working in the Cooper Basin prior to commencing the drilling operations at Goolwa-1.

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<p><u>Objective 4 :</u> <i>Minimise disturbance to drainage patterns and avoid contamination of surface waters and shallow ground water resources.</i></p>	<p>The main threats to drainage patterns and surface waters, and shallow ground waters are considered to be interruption of natural flows as a result of earthworks and contamination.</p> <p>Access track and well site selection should aim to minimise impact to drainage systems, by avoiding sensitive areas and appropriate construction methods to avoid windrows.</p>	<p><u>Drilling Mud Sumps and Flare Pits</u></p> <ul style="list-style-type: none"> ▪ All drill cuttings, muds and non toxic drill fluids are contained within the designated mud sumps with adequate freeboard at the completion of operations to allow for a 1m cover of clean fill at remediation. 	<p><u>Well Lease and Access Track Construction</u></p> <ul style="list-style-type: none"> ▪ Well leases and access tracks are located and constructed to maintain pre-existing water flows (i.e. channel contours are maintained on floodplains and at creek crossings). <p><u>Drilling Mud Sumps and Flare Pits</u></p> <ul style="list-style-type: none"> ▪ No overflow of drill cuttings, muds and other drilling fluids from mud sumps. ▪ No waste material disposal to sumps and flare pits. 	<ul style="list-style-type: none"> • The Goolwa-1 well site was not located in an area where flooding from local watercourses is likely to occur. • The drill pad and access track were constructed and located to avoid diverting flood waters from their natural direction of drainage in the event of local inundation. • All drill cuttings, muds and non toxic drill fluids were contained within designated mud sumps with adequate freeboard at the completion of operations to allow for a 1m cover of clean fill at remediation.
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<p>Objective 4 : (Continued)</p> <p><i>(Minimise disturbance to drainage patterns and avoid contamination of surface waters and shallow ground water resources.)</i></p>	<p>There is potential for the contamination of chemical and fuel storage areas, from oil and gas systems at well heads, during transportation of fuel and chemicals and during transportation of wastes. Localised contamination may result from spills or leaks of well operations chemicals (eg. corrosion inhibitors) during storage and handling.</p>	<p><u>Well Heads (Oil and Gas Systems)</u></p> <ul style="list-style-type: none"> ▪ Where appropriate, imperviously lined well cellars are installed on oil wells. ▪ Chemical containment devices are installed on gas well skids. ▪ Well heads shut in and chemicals removed prior to flood events. ▪ Jet pumps are installed within containment device with an adequately sized containment sump. 	<p><u>Well Heads (Oil and Gas Systems)</u></p> <ul style="list-style-type: none"> ▪ No leaks/spills outside of areas designed to contain them. 	<ul style="list-style-type: none"> • Goolwa-1 well was plugged and abandoned. There was no requirement for a well head.
		<p><u>Well Blowdown / Production Testing</u></p> <ul style="list-style-type: none"> ▪ Activity is conducted in accordance with accepted industry standards / good oilfield practice. ▪ If appropriate use: <ul style="list-style-type: none"> - impermeable flare pit - flare tanks - separators - supervision 	<p><u>Well Blowdown/Production Testing</u></p> <ul style="list-style-type: none"> ▪ No water (surface or groundwater) contamination as a result of production testing or well blowdown operations. 	<ul style="list-style-type: none"> • No Production testing was undertaken at Goolwa-1.

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<p><u>Objective 4</u> (Continued)</p> <p>(Minimise disturbance to drainage patterns and avoid contamination of surface waters and shallow ground water resources.)</p>		<p><u>Fuel and Chemical Storage and Handling</u></p> <ul style="list-style-type: none"> ▪ All fuel, oil and chemical storages bundled in accordance with the appropriate standards ▪ Records of spill events and corrective actions maintained in accordance with company procedures. ▪ Spills or leaks are immediately reported and clean up actions initiated. ▪ Logged incidents are reviewed annually to determine areas that may require corrective action in order to reduce spill volumes in subsequent years (and drive continual improvement). ▪ Chemical and fuel storage procedures, including signage, are reviewed and monitored in audit process. 	<p><u>Fuel/Chemical Storage and Handling</u></p> <ul style="list-style-type: none"> ▪ No leaks/spills outside of areas designed to contain them. 	<ul style="list-style-type: none"> • Specific oil spill containment / cleanup materials were on site at all times. • All fuel, oil and chemicals were in accordance with relevant standards ▪ Refuelling was undertaken as per Drilling Contractors' procedures. ▪ There were no spills during the drilling operations outside of areas designed to contain them.
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<p><u>Objective 4 cont :</u></p> <p>(Minimise disturbance to drainage patterns and avoid contamination of surface waters and shallow ground water resources.)</p>	<p>The major threat of spills is the threat to soil, vegetation and watercourses directly impacted by the spill. Therefore, the achievement of this objective also consequently contributes to the achievement of Objectives 2 and 7 in relation to minimising the impacts on soil and natural habitats.</p> <p>Avoidance of spills will be paramount in areas where the spill can be potentially spread beyond the immediate confines of the spill area into sensitive environments such as creeks and wetlands.</p>	<p><u>Spill Response / Contingency Planning</u></p> <ul style="list-style-type: none"> ▪ Results of emergency response procedures carried out in accord with Regulation 31 show that oil spill contingency plan in place in the event of a spill is adequate and any necessary remedial action needed to the plan is undertaken promptly. ▪ Oil spill contingency plan (reviewed annually) is up to date with specific scenarios relating to spills to creeks and floodplain areas. ▪ Spill response equipment is audited annually. ▪ Annual spill response training exercise is undertaken. 		<ul style="list-style-type: none"> • Beach's Oil Spill Contingency Plan is included in the Emergency Response Plan.
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<p><u>Objective 5 :</u></p> <p><i>Avoid disturbance to sites of cultural and heritage significance.</i></p>	<p>The aim of the objective is to ensure that any sites of cultural (Aboriginal or non-Aboriginal) heritage significance are identified and protected.</p>	<p>Consultation with stakeholders (i.e. government agencies, landholders etc) in relation to the possible existence of heritage sites, as necessary.</p> <p>Heritage report forms completed for any sites or artefacts identified, and report forms forward to the Department of State Aboriginal Affairs (DOSAA).</p> <ul style="list-style-type: none"> ▪ Survey records are kept and are available for auditing. ▪ Areas requiring remediation which lie outside previously surveyed sites should be surveyed in accordance with company heritage clearance procedures. 	<ul style="list-style-type: none"> ▪ Proposed well sites and access tracks have been surveyed and any sites of Aboriginal and non-Aboriginal heritage identified. ▪ Any identified cultural and heritage sites have been avoided. <p><u>Note:</u></p> <p>Where a negotiated agreement or determination for heritage clearance is in place, compliance with the negotiated agreement or determination takes precedence over the above criteria.</p>	<p>Beach have an agreement with the Dieri Aboriginal Corporation Native Title Claimant group which specifies the requirements for scouting proposed wells and access tracks to identify and avoid areas of heritage value and archaeological significance.</p> <p>Joint site visits were carried out with the Native Title Claimant group. Proposed drilling locations and access routes have been agreed and given heritage clearance.</p> <p>Areas of significance were recorded and marked as exclusion zones.</p>
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<p><u>Objective 6 :</u> <i>Minimise loss of aquifer pressures and avoid aquifer contamination.</i></p>	<p>This objective seeks to protect the water quality and water pressure of aquifers that may potentially be useful as water supplies, and to maintain pressure in sands that may host petroleum accumulations elsewhere.</p> <p>To address this objective, the risks of cross flow between aquifer cells known to be permeable and in natural hydraulic isolation from each other, or where there is insufficient information to determine that they are permeable or in hydraulic communication, must be assessed on a case by case basis and procedures implemented to minimize the fresh water aquifer cells from contamination and isolate potential and producing formations from formations</p>	<p><u>Drilling & Completion Activities :</u></p> <ul style="list-style-type: none"> ▪ A competent cement bond between aquifer and hydrocarbon reservoirs is demonstrated. <p>For cases where isolation of these formations is not established, a risk assessment incorporating the use of pressure / permeability / salinity data is undertaken in consultation with DLWBC & AAWCMB to determine if lack of cement or poor bond will cause or has caused damaging crossflow which needs to be remediated.</p> <p><u>Producing, Injection and, Inactive Wells</u></p> <ul style="list-style-type: none"> ▪ Monitoring programs implemented (eg. Through well logs, pressure measurements, casing integrity measurements and corrosion monitoring programs) to assess condition of casing and cross-flow behind casing. 	<p><u>Drilling & Completion Activities</u></p> <ul style="list-style-type: none"> ▪ There is no uncontrolled flow to surface (Blow out). ▪ Sufficient barriers exist in casing annulus to prevent crossflow between separate aquifers or hydrocarbon reservoirs. ▪ Relevant government approval obtained for abandonment of any radioactive tool left downhole. <p><u>Producing, Injection, Inactive and Abandoned Wells</u></p> <ul style="list-style-type: none"> ▪ No cross-flow behind casing between aquifers, and between aquifers 	<p>The Drilling Program for Goolwa-1 well was designed to ensure minimal loss of reservoir and aquifer pressures and minimal contamination of freshwater aquifers.</p> <p>During the abandonment operation, cement plugs were placed to isolate any aquifers penetrated below surface</p>
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<p><u>Objective 6 :</u> (Continued)</p> <p>(Minimise loss of aquifer pressures and avoid aquifer contamination).</p>	<p>that may deplete the reservoir pressure when not on production.</p> <p>The following geological formations are aquifers in the Cooper-Eromanga Basins. They may contain permeable sands which may be in natural hydraulic isolation from each other (from shallowest to deepest), and in general isolation will be maintained between these groups:</p> <ul style="list-style-type: none"> • Eyre; • Winton, • Mackunda; • Coorikiana; • Cadna-owie; • Murta (including McKinlay Member) • Namur, Adori, • Birkhead, Hutton, Poolowanna, • Cuddapan; Nappamerri Group formations, Walkandi and Peera Peera formations • Toolachee; Daralingie; 	<ul style="list-style-type: none"> ▪ Casing annulus pressures are monitored every 2 years. ▪ The condition of the primary casing barrier is adequate. ▪ For cases where crossflow is detected, a risk assessment incorporating the use of pressure / permeability / salinity data is undertaken in consultation with DLWBC & AAWCMB to determine if lack of cement or poor bond will cause or has caused damaging crossflow which needs to be remediated. <p><u>Well Abandonment Activities :</u></p> <ul style="list-style-type: none"> ▪ Isolation barriers are set in place to ensure that cross-flow, contamination or pressure reduction will not occur. 	<p>and hydrocarbon reservoirs unless approved by DWLBC.</p>	<p>casing (as per the outline under "Comments" in the SEO) and any zones of pressure differential to ensure no likelihood of cross-flow.</p>

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	<ul style="list-style-type: none"> • Epsilon, Patchawarra or Mt Toodna or Purni; 			
<p><u>Objective 6 :</u> (Continued)</p> <p>(Minimise loss of aquifer pressures and avoid aquifer contamination).</p>	<ul style="list-style-type: none"> • Tirrawarra sandstone or Stuart Range; Merrimelia; Boorthanna; Crown Point formations and Basement reservoirs. <p>Note: Crossflow (if it occurs), should not compromise the long term sustainability of a particular resource.</p>	<ul style="list-style-type: none"> ▪ Barriers will be set to meet or exceed the requirements of applicable standards for the decommissioning and abandonment of water bores and abandonment of petroleum wells. ▪ The placement of isolation barriers will in general be to isolate the groups of formations as listed under comments. The number and placement of barriers may be varied from this standard approach on a case-by-case basis by SACB Operator personnel using relevant available data and the SA Cooper Basin Water Pressure and Salinity Module Report (2002), and in consultation with DWLBC. 		

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<p><u>Objective 7:</u> <i>Minimise disturbance to native vegetation and native fauna.</i></p>	<p>Primary risks to native fauna include clearing of habitat and obstruction of movement through cleared areas, the presence of borrow pits, fuel and chemical storage and management, and waste management activities.</p>	<p><u>Well Lease and Access Track Construction and Restoration</u></p> <ul style="list-style-type: none"> ▪ Proposed well sites, camp sites, access tracks and borrow pit sites have been assessed for rare, vulnerable and endangered flora and fauna species before the commencement of construction. ▪ Consider alternate routes during planning phase to minimise environmental impacts ▪ Facilities (e.g. borrow pits, well cellars) are designed and constructed as far as practicable to minimise fauna entrapment. ▪ Sumps and mud pits are fenced as appropriate to minimise wildlife access ▪ Assessment records are kept and are available for auditing. ▪ In recognised conservation reserves (i.e. Innamincka Regional Reserve) excavations are left in a state as agreed with the responsible 	<p><u>Well Lease and Access Track Construction and Restoration</u></p> <ul style="list-style-type: none"> ▪ Any sites with rare, vulnerable and endangered flora and fauna have been identified and avoided. ▪ 0, +1 or +2 GAS criteria are attained for "Minimise impacts on vegetation" objective as listed in Appendix 2, during well lease and access track site selection and construction and for "Re-establish natural vegetation on abandoned well sites and access track" objective in Appendix 4. 	<p>The Goolwa-1 well was not located in or near areas of high biological or wilderness values and hence the drilling operation presented no long term impact to any such area.</p> <p>National Parks and Wildlife flora/fauna databases contain no records of vulnerable or endangered species within 30km of the site.</p> <p>Access track construction required minimal clearance of vegetation and has been aligned to avoid clearing trees.</p> <p>The site contained sparse vegetation, and clearance was minimised. Trees that were present on the site and adjacent to the site were not cleared.</p>
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<p><u>Objective 7:</u> (Continued)</p> <p>(Minimise disturbance to native vegetation and native fauna)</p>		<p>statutory body</p> <ul style="list-style-type: none"> ▪ Borrow pits are restored to minimise water holding capacity, where agreements are not in place with stakeholders. <p><u>Waste Management</u></p> <ul style="list-style-type: none"> ▪ Covered bins are provided for the collection and storage of wastes. ▪ All loads of rubbish are covered during transport to the central waste facility. ▪ Pits are not established in locations, which pose an unacceptable hazard to stock or wildlife. 	<p><u>Borrow Pits Construction and Restoration</u></p> <ul style="list-style-type: none"> ▪ 0, +1 or +2 GAS criteria are attained for "Minimise impacts on vegetation" objective as listed in Appendix 4 during borrow pit site selection and construction, and "Minimise Impact on Vegetation" objective in Appendix 5 for borrow pit restoration. <p><u>Waste Management</u></p> <ul style="list-style-type: none"> ▪ Refer to assessment criteria for Objective 11. <p><u>Fuel and Chemical Storage and Management</u></p> <ul style="list-style-type: none"> ▪ Refer to assessment criteria for Objectives 2 and 4. 	<p>Facilities were designed and constructed to minimise fauna entrapment.</p> <ul style="list-style-type: none"> • Borrow pits will be rehabilitated and restored in accordance with the guidelines set down in PIRSA's Field Guide for the Environmental Assessment of Abandoned Petroleum Wellsites in the Cooper Basin, South Australia, to attain the highest feasible GAS rating. • Beach's Drilling Operations Manual sets out the company's policy in relation to storage, use and disposal of hazardous material.

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				<ul style="list-style-type: none"> • At the Goolwa-1 well site wastes were managed as described in the Drilling & Well Operations EIR. • Wastes were collected, stored and transported in covered bins / containers. • All rubbish was disposed of at a licensed waste facility.

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<p><u>Objective 8 :</u> <i>Minimise air pollution and greenhouse gas emissions.</i></p>	<p>Atmospheric emissions occur as a result of standard practices undertaken during drilling and well operations. Emissions of particular environmental significance are:</p> <ul style="list-style-type: none"> ▪ combustion by-products (eg. oxides of nitrogen, carbon monoxide and sulphur dioxide); ▪ organic carbon and carbon particulates (black smoke); and ▪ flared/vented hydrocarbons (gases). 	<p><u>Well Testing</u></p> <ul style="list-style-type: none"> ▪ Conduct well testing in accordance with appropriate industry accepted standards. ▪ Continually review and improve operations. ▪ Appropriate emergency response procedures are in place for the case of a gas leak. <p><u>Well Blowdown</u></p> <ul style="list-style-type: none"> ▪ Blowdown carried out in accordance with industry accepted standards / good production practice. ▪ Any well that is consistently blown down is identified for a small ID tubing or plunger lift installation to minimise blow downs on that well. 	<ul style="list-style-type: none"> ▪ Compliance with EPA requirements. 	<p>Well testing was undertaken in accordance with appropriate industry standards.</p> <p>No well blow-downs were undertaken.</p>
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<p><u>Objective 9:</u> (Maintain and enhance partnerships with the Cooper Basin community.)</p>	<p>The importance of liaison with and contribution to the local community is recognised by the South Australian Cooper Basin Operators. Notification, consultation, contribution to community activities, projects and events and membership of relevant organisations are considered to be key strategies for ensuring partnerships with the local community are enhanced.</p>	<ul style="list-style-type: none"> ▪ Relevant affected parties are notified and consulted on proposed activities. ▪ Forward development plans are presented to the local community. ▪ Local community projects and events are sponsored and supported where appropriate. ▪ Industry membership of appropriate regional land management committees and boards i.e. the Lake Eyre Basin Consultative Council, Marree Soil Conservation Board, and Catchment Committees. 	<ul style="list-style-type: none"> ▪ No unresolved reasonable complaints from the community. 	<ul style="list-style-type: none"> ▪ Beach maintained regular contact with landholders and associated stakeholders prior to and while undertaking drilling operations at the Goolwa-1 site. • Beach sponsors local community social events including the Innamincka Races. • Beach also provides a substantial (\$30,000 per year) on-going sponsorship to the Royal Flying Doctor Service.
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<p><u>Objective 10 :</u> <i>Avoid or minimise disturbance to stakeholders and/or associated infrastructure</i></p>	<p>Communication and the establishment of good relations with stakeholders and community is fundamental to minimising disturbance to as low as practicably possible. Many pastoral properties are certified under the Organic Beef or CattleCare accreditation schemes and therefore may be affected by fuel and chemical storage, moving machinery and contaminated sites.</p>	<p>Induction for all employees and contractors covers pastoral, conservation, legislation and infrastructure issues.</p> <p>Relevant stakeholders are notified prior to survey and construction of well sites, camp sites and access tracks and undertaking of operations (pursuant to Petroleum Regulations). Borrow pits left open (unrestored) if requested by landholder and upon receipt of letter of transfer of responsibility to landholder.</p> <ul style="list-style-type: none"> ▪ Gates or cattle grids are installed to a standard, consistent with pastoral infrastructure in fences where crossings are required for access. ▪ All gates left in the condition in which they were found (ie. open/closed). 	<ul style="list-style-type: none"> ▪ No reasonable stakeholder complaints left unresolved. 	<ul style="list-style-type: none"> ▪ Beach maintained regular contact with landholders and associated stakeholders prior to and while undertaking drilling operations at the Goolwa-1 site. ▪ The access track and well were located away from tourist routes. ▪ The landowner has requested that no rehabilitation be undertaken on either the access track or the culvert over the Tantanna pipeline. ▪ The Goolwa-1 well site was not located near a cattle watering point and cattle were not present in significant numbers.

**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELL NAME : GOOLWA-1

PEL No. : 107

SPUD DATE : APRIL 2004

OBJECTIVE	COMMENT	GUIDE TO HOW OBJECTIVES CAN BE ACHIEVED	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
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<p><u>Objective 10 :</u> <u>(Continued)</u></p> <p><i>(Avoid or minimise disturbance to stakeholders and/or associated infrastructure.)</i></p>		<ul style="list-style-type: none"> ▪ Potential sources of contamination are fenced as appropriate to prevent stock access. ▪ System is in place for logging landholder complaints to ensure that issues are addressed as appropriate. ▪ Requirements of the Cattle Care and Organic Beef accreditation programs are complied with. ▪ In recognised conservation reserves (i.e. Innamincka Regional Reserve) excavations are left in a state as agreed with the responsible statutory body. 		<ul style="list-style-type: none"> ▪ When the initial lease restoration was conducted, suitable fencing was erected to isolate any pits or plant installed in site.
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**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
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WELL NAME : GOOLWA-1

PEL No. : 107

SPUD DATE : APRIL 2004

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<p><u>Objective 11 :</u></p> <p>Optimise waste reduction and recovery.</p>	<p>Waste reduction requires continual improvements in purchasing, efficiency of use and reuse. Due to the distances involved the costs of recycling a large range of products is not possible however continual review of recycling options is required to ensure that any opportunities are taken advantage of.</p>	<ul style="list-style-type: none"> ▪ Bulk chemical and oil purchasing and use of "bulki bins" or other storage tanks in place for large volume items. 	<ul style="list-style-type: none"> ▪ With the exception of drilling fluids, drill cuttings and other fluids disposed during well clean-up, and sewage wastes, all wastes to be disposed of at an EPA licensed facility in accordance with EPA Licence conditions. ▪ Attainment of GAS criteria for "Site left in clean, tidy and safe condition after final clean-up" objective during well site restoration (refer Appendix 4). ▪ Attainment of GAS criteria for "Site left in clean, tidy and safe condition" objective during borrow pit restoration (refer Appendix 5). 	<ul style="list-style-type: none"> ▪ Waste was removed from the Goolwa-1 well site in accordance with Beach's policy set out in the company's Drilling Operations Manual. ▪ Non-putrescible waste material (including hazardous material) was stored safely on site for later removal to an EPA approved disposal facility.
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WELL NAME : GOOLWA-1

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<p><u>Objective 12 :</u></p> <p><i>Remediate and rehabilitate operational areas to agreed standards.</i></p>		<p>Rehabilitation / abandonment plans for surface activities will be developed in consultation with relevant stakeholders</p> <p><u>Well Site and Access Track Restoration</u></p> <ul style="list-style-type: none"> ▪ Compacted soil areas have been ripped (except on gibber and tablelands) and soil profile and contours are reinstated following completion of operations. 	<ul style="list-style-type: none"> ▪ No unresolved reasonable stakeholder complaints. <p><u>Contaminated Site Remediation</u></p> <ul style="list-style-type: none"> ▪ Contaminated sites are remediated in accordance with criteria developed with the principles of the National Environment Protection Measure for Contaminated sites and in consultation with the EPA. <p><u>Well Site and Access Track Restoration</u></p> <ul style="list-style-type: none"> ▪ The attainment of 0, +1 or +2 GAS criteria for (refer Appendix 4): - "minimise visual 	<p>Well restoration activities will be conducted as per the standards and procedures detailed in the Cooper Basin SEO for Drilling and Well Operations and internal guidelines.</p> <p>Contaminated sites were remediated in accordance with Beach Guidelines and Industry Standards.</p> <p>The Goolwa-1 borrow pits and well site will be rehabilitated and restored in accordance with the guidelines set down in PIRSA's Field Guide for the Environmental Assessment of Abandoned</p>
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**ASSESSMENT OF BEACH PETROLEUM'S PERFORMANCE IN ACHIEVING
THE ENVIRONMENTAL OBJECTIVES DEFINED IN THE COOPER BASIN DRILLING SEO**

WELL NAME : GOOLWA-1

PEL No. : 107

SPUD DATE : APRIL 2004

OBJECTIVE	COMMENT	GUIDE TO HOW OBJECTIVES CAN BE ACHIEVED	ASSESSMENT CRITERIA	PERFORMANCE IN ACHIEVING OBJECTIVE
<p><u>Objective 12 :</u> <u>(Continued)</u></p> <p>Remediate and rehabilitate operational areas to agreed standards.</p>			<p>impact of abandoned well sites"</p> <ul style="list-style-type: none"> - "minimise visual impact of abandoned access tracks" - "re-establish natural vegetation on abandoned well sites and access tracks" <p><u>Borrow Pit Restoration</u></p> <ul style="list-style-type: none"> ▪ The attainment of 0, +1 or +2 GAS criteria (refer Appendix 5) for : "minimise impact on vegetation", "minimise impact on soil", "Minimise visual impacts" ▪ <u>Note:</u> Well abandonment issues addressed under objective 6. 	<p>Petroleum Wellsites in the Cooper Basin, South Australia, to attain the highest feasible GAS rating.</p> <ul style="list-style-type: none"> ▪ The landowner has requested that no rehabilitation be undertaken on either the access track or the culvert over the Tantanna pipeline.

B) Seismic Operations

Government approval for Beach to undertake its seismic operations in PEL 107 was conditional on Beach committing to the objectives defined in the “Statement of Environmental Objectives for Seismic Operations in the Cooper / Eromanga Basins – South Australia “.

Beach’s strategies for achieving each of the SEO objectives for the 2004 Malleus 2D Survey are outlined below.

The SEO requires an Environmental Report to be submitted at the completion of each seismic survey. The Environmental Report for the portion of the Malleus Survey that was recorded in PEL 107 was submitted on 10th January 2005.

SEO Objective 1 :	Ensure that the potential impacts of the proposed seismic operations on biological diversity and cultural requirements of the environment are assessed within a planning process and incorporated into field management procedures.
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Goal 1.1 : *Identify important or sensitive environmental and cultural components.*

Beach has an Agreement with The Dieri Aboriginal Corporation Claimant Group, whose Claim Area covers PEL 107. Prior to the commencement of line preparation, a Work Area Clearance was undertaken by representatives of The Dieri under the terms of the Agreement. The scouting party inspected a representative sample of the proposed lines.

A report was prepared by the accompanying anthropologist, documenting the locations where deviations would be required to the proposed seismic lines to avoid sites of cultural significance. The report further documented general guidelines to assist the line preparation crew on appropriate deviation procedures where further sites of cultural significance were identified along the survey lines that had not been inspected by the scouting team.

All field crews associated with the seismic program had attended an induction on cultural heritage issues for this area, with particular emphasis on identification and avoidance of significant cultural material.

Goal 1.2 : *Identify threatening processes and activities*

No processes or activities associated with the survey operations were considered to be threatening to the subject environment.

Goal 1.3 : *Assess any adverse impact on biological diversity likely to arise from the proposed operation on a regional basis.*

The lines from the 2004 Malleus Seismic Survey that were recorded in PEL 107 were all located in a predominantly dunefield land system. GAS criteria for assessing adverse impacts on biodiversity for a dunefield land system are provided in the Statement of Environmental Objectives (Tables A2.2. and A2.3).

The impacts of the 2004 Malleus Seismic Survey have been audited against these criteria and the results are presented in the attached table.

Goal 1.4 : *Ensure that issues raised in the planning process are incorporated into field management procedures.*

All personnel involved in the field operations had been briefed prior to the commencement of the survey operations as to appropriate procedures for environmental management and protection of cultural heritage.

A company representative was present with the line clearing and recording crews throughout the field operations to ensure adherence to the planned field management procedures.

SEO Objective 2 :	Monitor and manage those activities that have , or are likely to have, temporary impacts on biological diversity, cultural components of the environment, groundwater, or other land users, and facilitate rehabilitation so as to minimize such impacts if they occur.
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As defined in the SEO, the goals of this objective are to minimize :

- clearing of native vegetation,
- disturbance to native fauna,
- impacts on soil, surface drainage , visual ambience and other land users,
- the potential for third parties to use survey tracks and sites following completion of operations.

Two sets of GAS criteria are defined in the SEO for assessing the extent of these impacts. One set of criteria relates to assessment carried out **at the completion** of the field operations. The second set relates to assessment carried out when the lines have **been left to rehabilitate** for some period.

At the completion of field operations for the Malleus survey, an assessment of the impacts from the survey was undertaken at some 12 locations along the lines recorded in PEL 107. The results of this GAS audit are presented in the attached chart and table.

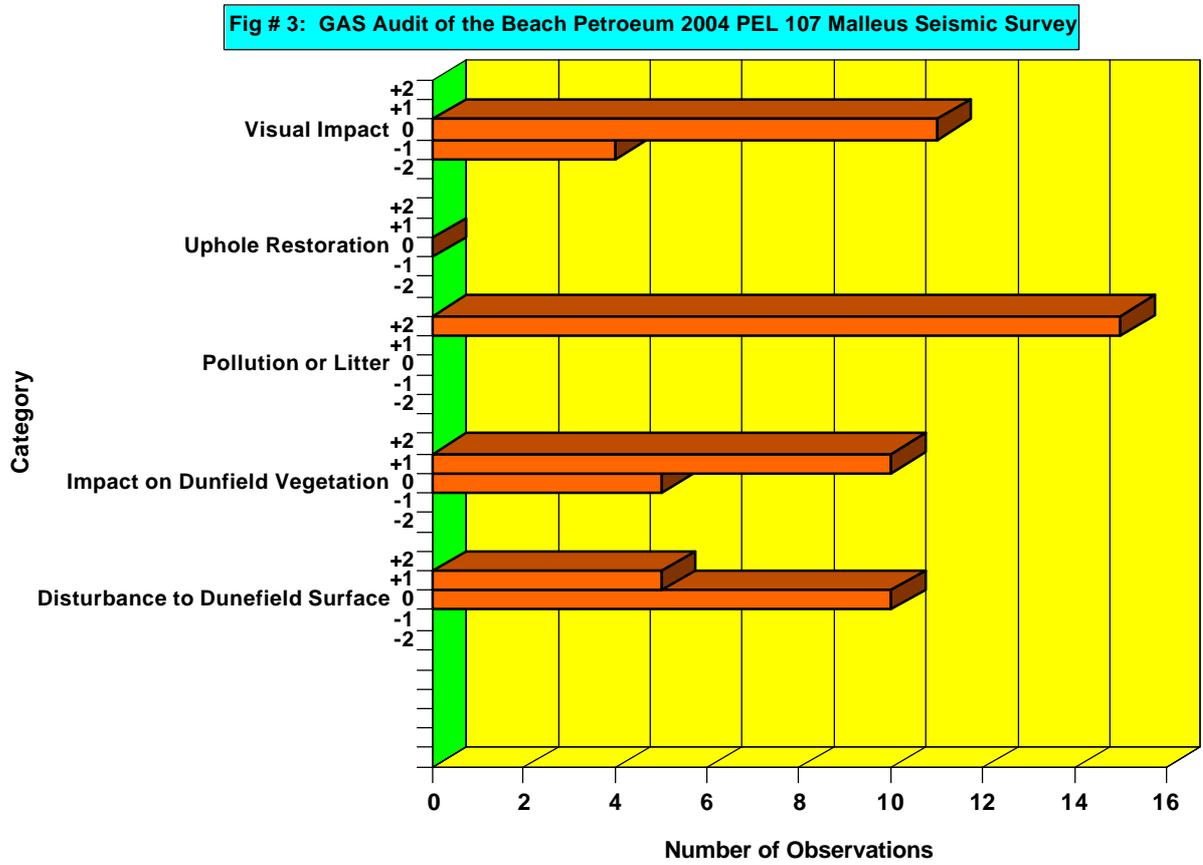
The GAS scores were in the range of 0 to +2 with one exception. The score for the “Visual Impacts” category was –1, due to two deficiencies in the procedures employed for line preparation. Firstly, the survey line tracks did not have sufficient “dog legs” where they intersected existing roads or tracks, and secondly, where the lines were “weaved” in the inter-dunal swales, there were some instances where the width of the weaving was insufficient to achieve the desired effect of reducing the visual impact of the line.

One Environmental Monitoring Point (EMP) : BC04-01, was established in PEL 107 in a dunefield environment. Photographs were taken at this location immediately after field operations had finished, and further photographs will be taken at various times over the next few years to record the progress of the natural rehabilitation.

SEO Objective 3 :	Avoid undertaking any activities which have, or are likely to have, long-term significant adverse impact(s) on biological diversity, cultural components of the environment, groundwater, or other land uses
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The line clearing crews used environmentally appropriate techniques that will enable the combination of wind action and occasional rainfall to revegetate the lines to the point they will be indiscernible within a few years.

The technique of weaving the routes of the seismic lines was practiced extensively, allowing significant tress to be left standing, and minimizing the visual impact from the operations while natural rehabilitation proceeds.



Some photos illustrating the audited areas follow:

GAS scores for assessing seismic lines on completion of survey in the Cooper Basin, South Australia

Beach Petroleum Limited.: 2004 PEL 107 Malleus 2D Seismic Survey: Recorded October 15th to 19th, 2004: Audited by: Bruce Beer

LAND SYSTEM (Locations)	MEASURE (Associated goals) ^(a)	SCORE				
		+2 ^(b, c)	+1 ^(b, c)	0 ^(b, c)	-1	-2 ^(d)
Non land system specific 1) EMP-BC04-01; Line BC04-65 # 269 Note: GAS scores refer to the area 500m either side of the EMP location	Impact on infrastructure 2.6			• N/A	•	•
	Visual impact 2.5, 2.7	•	•		• 1)	•
	Uphole site restoration 2.3, 2.5 ^(e)	•	•	N/A	•	•
	Pollution or litter 2.1, 2.2, 2.3, 2.5	1)	•		•	•
Dunefield	Impact on vegetation 2.1, 2.2 ^(f)	•	1)		•	•
	Disturbance to land surface 2.2, 2.3 ^(e)	•	1)		•	•

(.../cont.)

(Table A2.2 cont.)

LAND SYSTEM	MEASURE (Associated goals) ^(a)	SCORE				
		+2 ^(b, c)	+1 ^(b, c)	0 ^(b, c)	-1	-2 ^(d)
Floodplain and wetlands	Impact on vegetation 2.1, 2.2 ^(f)	•		• N/A	•	•
	Disturbance to land surface 2.2, 2.3, 2.4, 2.5 ^(e)	•		• N/A	•	•
Gibber plain and tableland	Impact on vegetation 2.1, 2.2	•	•	• N/A	•	•
	Disturbance to land surface 2.2, 2.3, 2.5 ^(e)	•	•	• N/A	•	•
Salt lake	Disturbance to land surface 2.3, 2.5 ^(e)	•	•	• N/A	•	•

(a) Goals under Objective 2:

- 2.1 Clearing or other impacts on native vegetation are minimised.
- 2.2 Disturbance or other impacts on native fauna and their habitats are minimised.
- 2.3 Impact on soil is minimised.
- 2.4 Impact on surface drainage is minimised
- 2.5 Visual impact of operations (including litter) is minimised.
- 2.6 Impact on other land users is minimised.
- 2.7 Third party use of sites, following the completion of operations, is discouraged.

(b) If any criterion (dot point) within a -1 or -2 cell occurs, then a score of -1 or -2 will be allocated.

(c) For 0,+1 and +2 cells, all relevant criteria (dot point) within the cell must be satisfied to score at that level.

(d) Some criteria at -2 level may also be subject to defined conditions, but are included in this table to ensure that they are clearly identified.

(e) All vertical measurements to be measured from normal ground surface.

(f) Priority classification refers to Wiltshire and Schmidt (1977).

(g) 'Windrows' in this context means mounding of gibbers through the action of wheel trafficking and associated dispersal of gibbers away from wheel tracks.