

STATEMENT OF ENVIRONMENTAL OBJECTIVES

ACRASIA FIELD (PEL 90, COOPER BASIN)

EXTENDED PETROLEUM PRODUCTION TEST

February 2003

INTRODUCTION

The following Statement of Environmental Objectives (SEO) has been prepared under the requirements of Part 12 of the SA *Petroleum Act 2000* and Part 3 of the Regulations to that Act.

This SEO covers the production and transport of oil from an extended production test proposed for Acrasia #1, located in PEL 90, formerly block CO98-E within the Cooper Basin of South Australia. The Operator of the well is Stuart Petroleum NL. The SEO draws on information developed by and for Stuart Petroleum NL and presented within the Environmental Impact Report (EIR) *Proposed extended production test by Stuart Petroleum NL at Acrasia Field, Cooper Basin, SA*, prepared by Fatchen Environmental (July 2002), with reference also to more detailed relevant biophysical information provided within their EIR for the Acrasia #1 drilling operation, dated June 2000.

The purpose of the SEO is to provide the environmental objectives with which production from the extended test, and related activities including transportation, must conform, and the criteria upon which achievement of those objectives can be assessed, for consideration under Section 101(1) of the Act. A condition of approval of the activity is that Stuart Petroleum NL is liable for meeting the environmental objectives and assessment criteria.

The SEO covers objectives which apply regardless of the extent or nature of oil production and transportation, and accordingly has elements in common with smaller, initial production testing and with full production. Further, the extended production test will utilise some facilities already in place, such as rig road access, developed for other activities. Accordingly, some Environmental Objectives in this SEO are also covered by existing SEOs for those other activities.

ENVIRONMENTAL OBJECTIVES

Based on risks to the environment identified within the EIR for the production test, the following are environmental objectives relevant to this activity..

- 1) Avoid disturbance to sites of Aboriginal and non-indigenous heritage significance
- 2) Minimise disturbance to vegetation and habitat
- 3) Minimise soil impacts
- 4) Minimise disturbance to gibber surfaces
- 5) Avoid disturbance to rare, endangered and vulnerable species
- 6) Avoid impacts on high biological value or wilderness value areas
- 7) Minimise fire risk at facility; prevent the spread of any fires to wellhead
- 8) Avoid facility spills

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- 9) In the event of a facility spill, minimise impacts on biota, soils and surface water (including rapid cleanup)
- 10) Avoid transportation spills
- 11) In the event of a transportation spill, minimise the likelihood of its spread, minimise impacts of fire resulting, cleanup of oil-affected land
- 12) Formation water cleaned to no visible oil before disposal
- 13) Minimise adverse impact on livestock
- 14) Avoid contamination of stockwaters with hydrocarbons
- 15) Minimise visual impacts
- 16) Minimise public and third party risks
- 17) Minimise workforce hazards

ASSESSMENT CRITERIA

The criteria for measuring the achievement of these environmental objectives are detailed in Appendix 1. Criteria generally can be split into the following forms:

- 1) *Defined conditions*. Defined conditions apply where the achievement of an objective can be judged through ensuring that those particular conditions are met or carried out. Examples are:
 - Prohibitions of specific actions where the prohibition directly eliminates potential impacts. The best example is the objective "Avoid disturbance to sites of Aboriginal and European heritage significance", for which one assessment criterion is compliance with the *Aboriginal Heritage Act 1988* and with the CO-98E Native Title agreement.
 - Requirements to undertake actions in accordance with approved procedures or industry accepted standards. For example, several aspects of the construction of the loading facility and the safe transportation of oil are required to meet stated Australian Standards.
 - Requirements to undertake actions or develop procedures to actively limit particular risks or minimise impacts where they do occur.
- 2) *Goal Attainment Scaling (GAS) criteria*. GAS criteria are applied where assessment has to deal with a range of outcomes rather than the relatively straightforward "yes/no" assessment possible in dealing with defined conditions, and where uncertainties of subjective judgement are involved. Examples are visual assessments of minimisation of disturbance to vegetation and soil, where the level of disturbance may range from major to nil, and assessments of the level of success of well site and track rehabilitation.

In this SEO, the objectives of most importance can be assessed using Defined Conditions.

INCIDENTS

Serious incidents

Section 85(1) of the Act defines "serious incident" to mean:

"an incident arising from activities conducted under a licence in which-

- (a) a person is seriously injured or killed; or

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- (b) an imminent risk to public health or safety arises; or
- (c) serious environmental damage occurs or an imminent risk of serious environmental damage arises; or
- (d) security of natural gas supply is prejudiced or an imminent risk of prejudice to security of natural gas supply arises."

Pursuant to Regulation 12(2) of the Act, the incidents listed below are considered to be those which could arise and, if not properly managed or avoided, cause a serious incident:

- Explosion or fire at the well or loading facility;
- Failure of containment systems at storage and loading facility;
- Transportation accident involving oil spillage;
- Transportation accident resulting in fire;
- Failure of the formation water handling and cleaning system;
- Disturbance to sites of Aboriginal and non-indigenous heritage significance;
- Removal of rare, vulnerable or endangered flora and fauna species.

Reportable incidents

Pursuant to Regulation 12(2) of the Act, the incidents listed below are considered to be reportable incidents under Section 85(1) of the Act.

- Non-compliance with procedures defined or developed to implement environmental objectives
- Spills of oil outside bunded and other defined areas intended to contain spillages
- Evidence of oil in disposed formation water
- Minor transportation accidents other than those listed under "Serious incidents".

APPENDIX: ENVIRONMENTAL OBJECTIVES AND ASSESSMENT CRITERIA

Environmental objective	Assessment Criteria	Comment
1) Avoid disturbance to sites of Aboriginal and non-indigenous heritage significance	<ul style="list-style-type: none"> • Facility location and access inspected and any additional borrow material sources formally cleared for use by signatories to the CO-98E Native Title agreement. 	Use of existing access limits scope for impact. Construction is entirely on existing pad. Borrow for road maintenance taken either from existing borrow sources, or from new sources cleared by indigenous stakeholders. No known non-indigenous heritage sites near facility or access on PEL 90
2) Minimise direct disturbance to vegetation and habitat	<ul style="list-style-type: none"> • Only already existing access used. • Acrasia 1 rig road maintained to prevent off-easement movement. • Borrow for maintenance taken either from existing pits, or from sources checked for low erosion hazard, vegetation and habitat. • Procedures in place to limit spill and fire damage (see "Avoid spills" below) 	<p>The incremental nature of the action together with use of existing access means this objective is relatively minor. The main risks are secondary, from spills and fires.</p> <p>The access road has serviced four wells (two suspended) in close proximity, at Reg Sprigg 1 and 2 (Santos) and Acrasia 1 and 2 (Stuart Petroleum). Road maintenance is necessary to reduce erosion risks from breakup of rolled or other surfaces under additional traffic.</p>
3) Minimise soil impacts; and 4) Minimise disturbance to gibber surfaces	<ul style="list-style-type: none"> • Existing access to be used. • Further formation construction where necessary and maintenance of formation on Acrasia 1 rig road. • Routine maintenance applied to whole of rig road. • Borrow for maintenance taken either from existing pits, or from sources checked for low erosion hazard. • No new pad construction. • Procedures in place to limit and rehabilitate spill damage (see "Avoid spills" below) 	<p>The recent drilling by Santos at Reg Sprigg 2 and by Stuart Petroleum at Acrasia 1 has necessitated construction of formation on parts of the existing Reg Sprigg 1 access road to stop dust generation and widening of the right of way by vehicles avoiding dust. Maintenance of the formation will be necessary to avoid recurrence of major dust formation.</p> <p>Additional formation may be necessary to cope with traffic from extended testing. Formation where needed will be laid over gibber mantle, without cutting and without table or spur drain cuts.</p>
5) Avoid disturbance to rare, endangered, vulnerable species	<ul style="list-style-type: none"> • Existing access only used (other criteria already in (2) above) 	No such species known to be present along access within lease area; if present, then associated with common habitat and can be expected to be widespread in district.
6) Avoid impacts on high biological value or high wilderness value areas	<ul style="list-style-type: none"> • Procedures exist to avoid spill risks under wet conditions; see under "Avoid spills" (below) • Procedures exist to limit the spread of fires associated with spills. 	No high biological value areas within lease near access. Four oil wells/wellsites in the immediate vicinity, together with pastoral dam construction and proximity to Cordillo Downs-Innaminka road limit wilderness values. There is only a tenuous downstream connection at best between the lease area and the Ramsar "triangle". Over most of the lease roads, the carriageway is normally sufficiently distant from drainage lines for even extreme events such as complete single road train spill not to reach watercourses, other than at immediate crossings.

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Environmental objective	Assessment Criteria	Comment
<p>7) Minimise fire risk at facility and prevent the spread of any fires to wellhead</p>	<ul style="list-style-type: none"> • Facility and tanker in accordance with AS3000 to limit ignition potential. • Uninterrupted attendance at tanker filling operations • Maintenance of separation distances of well, tanks, pump and tanker filling point. • Manual shutoff/isolation of fuel possible even with a fire in process. • Pool containment as described for Objective 8. • First attack extinguishers present in operable condition for fires at loading pump or at tanker. • Notification of oil fires allowed to burn out where first attack has failed, under AS1940 <i>The Storage and Handling of Flammable and Combustible Liquids</i>. 	
<p>8) Avoid facility spills; and</p> <p>9) In the event of a facility spill, minimise impacts on biota, soils and surface water (including rapid cleanup)</p>	<ul style="list-style-type: none"> • Storage and loading facility with high containment integrity systems using steel piping and complying with AS4041 <i>Pressure Piping</i>. • Piping pressure tested to the highest forecast production operating pressures and production conditions. • Frac tanks banded with bunds sufficiently large to provide for catastrophic tank failure. • Delivery pump and manifold(s) separately banded to cope with local failure • Delivery hard-piped to pump and loading point. • Loading point with clay pad over gibber surface. • Flexible hose with automatic cutoffs for train loading • Minor spillages at loading point to be left to evaporate and bio-remediate. Where contamination is major, contaminated soils disposed into drilling sump. • Procedures in place for minimising overflow and loading spill risks, and integrity management. • Attendance at equipment at all times during road tanker filling. • Active management of storage tank filling. • Filling systems, storage tank operation and tanker procedures in accordance with AS1940 <i>The Storage and Handling of Flammable and Combustible Liquids</i> 	<p>Pollution through local oil spills, tank or filling point overflows is the main issue. Risks are limited by restriction of activities to prepared pad, provision for catching spills, and provision against catastrophic failures.</p>

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Environmental objective	Assessment Criteria	Comment
10) Avoid transportation spills	<ul style="list-style-type: none"> • Procedures in place for safe movement on lease of oil transport. • Full trains moving only in daylight hours • No movement on wet roads or in wet conditions • No "wet-wheel" fording of flowing watercourses • Upgrading/maintenance of upgraded rig access road • Appropriate speed limiting (40-60 km/hr) on rig access road 	<p>Spills in transportation most likely to result from road accidents. Procedures are intended to reduce risk from poor road conditions, and to reduce extent of spills where they occur.</p> <p>No oil should move where trucks cannot be "dry-footed", as a spill in flowing water conditions will have a much larger impact than a spill in dry conditions.</p>
11) In the event of a transportation spill, minimise the likelihood of its spread, minimise impacts of fire resulting, cleanup of oil-affected land	<ul style="list-style-type: none"> • Purchaser/transportation company to have spill contingency and emergency response plans in place, and conform to Dangerous Substances Act 1979 and Environment Protection Act 1993 • For spills in transit within the lease area, contaminated soil on sandplain or dune either landfarmed in place for bio-remediation, or in extreme cases removed for pit disposal. • Contaminated soil from spillage at a watercourse crossing removed. • No evidence of oil contamination remaining at spill site after 3 months. • Transportation fires permitted to burn out. Spread of secondary fires limited. • Fire handling provided for in emergency response plans. 	
12) Formation water cleaned to no visible oil (equivalent to approximately <30ppm hydrocarbons) before disposal	<ul style="list-style-type: none"> • No visible oil film on disposed water. • No disposal occurring once the final clarification pond (ex-turkey's nest) level has exposed the central riser of the breaker siphon. • Zone under test is shut in if production of formation water approaches limits of formation water handling system 	<p>The breaker for the siphon will be in a visible centre riser, well above the siphon intake. Normally, exposure of the breaker will break the siphon through air entry. Should the airhole in the breaker become blocked and the riser become visible while still disposing clean (bottom) water, the siphon can be manually broken before the water surface reaches the intake level.</p>
13) Minimise adverse impact on livestock; and 14) Avoid contamination of stockwaters with hydrocarbons	<ul style="list-style-type: none"> • Existing access only used. • Formation water only released where no visible oil present (<30ppm). • End-use and location of formation water determined in discussion and agreement with pastoral leaseholder (including option of use as stockwater), including fencing requirements, if any. • Contaminated water either contained (extended duration separation tank) or fenced (final clarification at turkey's nest). • Pastoral leaseholder has been informed of oil movements. 	

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Environmental objective	Assessment Criteria	Comment
15) Minimise visual impacts	<ul style="list-style-type: none"> • Existing access only to be used 	Facility is out of sight and most access is masked from the Innamincka-Cordillo Downs road.
16) Minimise public and third party risks	<ul style="list-style-type: none"> • Signage on rig road/public road intersection prohibiting entry, warning against trespassing, and warning of danger associated with petroleum activity and truck movements. • Limitations on road train movements as above. 	
17) Minimise workforce hazards	<ul style="list-style-type: none"> • Cutoff valves installed and operable at wellhead. • Firefighting provisions (extinguishers) for loading area and pump bunded area. • Sufficient separation of wellhead, pump, tanks and loading sufficient for isolating major fires. • Storage and loading facilities fully earthed (single earth). • Emergency action and evacuation procedures in place. 	