

2008 Annual Report

Pipeline Licence 17

SA BORDER TO MOOMBA SECTION OF THE JACKSON TO MOOMBA OIL TRUNKLINE

This report has been prepared in accordance with the requirements of the Petroleum Act 2000 and the Petroleum Regulations 2000 and covers all of the operations conducted for the SA Cooper Basin Joint Venture by Santos Ltd during the period December 1 2007 – December 31 2008.

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LIST OF ABBREVIATIONS

ALARP	As Low As Reasonably Practical
AS2885	Australian Standard 2885 Pipelines - Gas and Liquid Petroleum
CMF	Coriolis Mass Flow Micro Motion meters
CP	Cathodic Protection
CPU	Cathodic Protection Unit
DCGV	Direct Current Voltage Gradient
EHS	Environment, Health and Safety
EHSMS	Environment, Health and Safety Management System
ERP	Emergency Response Plan
ESD	Emergency Shut Down
FAIR	Fixed Asset Integrity Review
HAZOP	Hazard Operability
HSE	Health, Safety and Environment
IMP	Integrity Management Plan
IMS	Incident Management System
Kbbls	Kilo barrels (1,000 barrels)
MIC	Microbiological Induced Corrosion
MLV	Mainline Valve
PIRSA	Primary Industries and Resources of South Australia
PL 17	Pipeline Licence 17
ROW	Right of Way
SACBJV	South Australian Cooper Basin Joint Venture
SCADA	Supervisory Control and Data Acquisition
SEO	Statement of Environmental Objectives
SIMP	Santos Incident Management Plan
SMS	Safety Management System
SRB	Sulphate Reducing Bacteria
TJ	Tera Joule
YY	Yandruwandha and Yawarrawarrka People

1 INTRODUCTION

This report is submitted in accordance with the requirements of Pipeline Licence 17 and the SA Petroleum Act and Regulations 2000.

This report reviews operations carried out from 1 December 2007 to 31 December 2008 and intended operations for 2009. Prior to 30 November 2007 operations were conducted under Preliminary Survey Licence 15 which ceased on that date when Pipeline Licence 17 was granted.

In accordance with the requirements of the Petroleum Regulations (2000), this report was due to be presented to PIRSA within 2 months of the end of the reporting period (i.e. the 30 November 2008, 12 months from when PL 17 was granted). Approval was granted by PIRSA for this reporting period to be amended to end 31 December and be submitted within 3 months of the end of the reporting period.

This Annual Report for all activity was prepared considering the relevant Statements of Environmental Objectives (SEO).

2 EXECUTIVE SUMMARY

The Jackson to Moomba pipeline transports liquid hydrocarbon from Jackson (QLD) to Moomba (SA) and has a total length of 274 km. This report relates to the portion of the pipeline covered by PL 17 which is the section of the pipeline from the SA border to Moomba, a distance of 81.8 km.

The Jackson to Moomba Oil Trunkline is owned operated and maintained by Santos Ltd.

The conduct of all operational activity in PL 17 is to the same standards and utilises the systems and procedures in place for Santos operated activity in the Cooper Basin. For specific detail of those this annual report should also refer to Annual Report of South Australian Cooper Basin Joint Venture Operations.

3 SUMMARY OF REGULATED ACTIVITIES

The following *Regulated Activities* were conducted under the Petroleum Licence,

- Operations associated with the construction, maintenance, repair and operation of pipelines, facilities and associated infrastructure.

4. PERFORMANCE

The activities covered by this report are administered in accordance with the Petroleum Act (2000), Petroleum Regulations (2000) and the relevant SEO's.

There was good compliance with the requirements of the Petroleum Act (2000) and Regulations (2000) and the SEO. There was one reportable incident during the period. This related to the disturbance of a Cultural Heritage site, this is covered in detail in Section 5. There were no other non-compliances with the relevant legislation or SEOs identified.

In accordance with the Petroleum Regulations a performance assessment is also provided with regard to the Statement of Environmental Objectives.

5 INCIDENTS

The Petroleum Act (2000) defines all Serious Incidents that are required to be reported promptly to PIRSA. There were no incidents resulting in any injury to any member of the public.

There was one Serious and no immediately Reportable Environmental Incidents recorded during this reporting period for PL 17.

On the 28th January 2008 clear and grade activities being carried out on the SA section of the Jackson-Moomba oil pipeline right-of-way resulted in a disturbance to cultural heritage sites identified earlier by the Yandruwandha and Yawarrawarrka (YY) People.

An immediate directive to all key Santos and contractor field and office based personnel to cease all clear and grade activities on the SA section of the pipeline right-of-way until this matter was investigated and resolved. The YY legal representative, Chairman of YY Committee and Consultant Archaeologist were consulted and engaged in the investigation by Santos. In response to the causal factors leading to this incident, the corrective actions taken to reduce the likelihood of a re-occurrence of such an incident include improvements to marking identified sites; communication protocols across all parties on such issues, including drawings identifying cultural heritage exclusion zones and communicating status of heritage clearance approvals; contractor procedures and checklists; and field supervision protocols.

PIRSA issued Santos with a formal non-compliance regarding the lateness of the initial reporting of the incident to PIRSA. PIRSA requested Santos to make necessary improvements to its regulatory reporting procedures. Notwithstanding this breach, in light of Santos' immediate and appropriate actions post the incident including ceasing all clear and grade activities on the right of way and entering into immediate communication with the YY People to identify and resolve their concerns, PIRSA considered that no other enforcement action was necessary.

A direction to cease all clear and grade activities on the South Australian section of the Jackson to Moomba Pipeline right of way was also issued. The direction was lifted after it was demonstrated that any concerns of the Yandruwandha and Yawarrawarrka (YY) People as a result of this incident were addressed to their satisfaction.

The detailed report into this incident was submitted to PIRSA by Santos in May 2008. Key recommendations have been identified and implemented:

- Upgrade and document the overall procedure from alignment surveys through to cultural heritage site identification, marking and barrier erection, re-survey, re-marking, realignment pegging, drawing updates, confirmation of approved right-of-way and authorisation to proceed.
- Identify opportunities to improve the effectiveness of communications amongst stakeholders including the introduction and consistent application of common terminology.
- Review cultural heritage inductions to determine whether improvements should be made on the process of the identification, pegging, marking and erection of barriers around sites of cultural heritage significance.

- Whilst maintaining the priority on discussions with the appropriate Aboriginal Party in the first instance, ensure timely notification and reporting, even in an informal sense to start with, is provided to PIRSA.

6 TECHNICAL INFORMATION

Table 1 summarizes the technical aspects of the PL 17 and Figure 1 and 2 show diagrammatically the pipeline system.

Table 1 – SA Border to Moomba Pipeline (PL 17) Technical Data

Date Constructed	2008
Date Commissioned	2008
Length PL17 – SA Border to Moomba	81.8 km
Length pipeline - Jackson to Moomba	273 km
External Diameter	219 mm
Wall Thickness:	
- Normal	5.5 mm
- Special Crossings (rivers, roads etc.)	6.5 mm
Pipe Grade	API 5LX-70
Manufacture Type	ERW
MAOP	13.9 MPa
Coating	FBE - 550 microns DFT
Depth of cover	Nominal 1200 mm 2000 mm at major road and creek crossings
Main Line Valves	Dullingari (KP 206), Strzelecki (KP 225) and Moomba (KP 274)
Fluid	Liquid Hydrocarbon
Meter Stations	Flow metering at Moomba. One Coriolis service meter and one Coriolis proving meter. Custody transfer quality.
Corrosion Protection	Temporary anodes installed. Secondary protection to be provided by an impressed current CP system
SCADA system	Integrated with Moomba SCADA system. Fibre optic system installed with pipeline. Pipeline controlled from Moomba.

Figure 1 – Jackson to Moomba Oil Trunkline

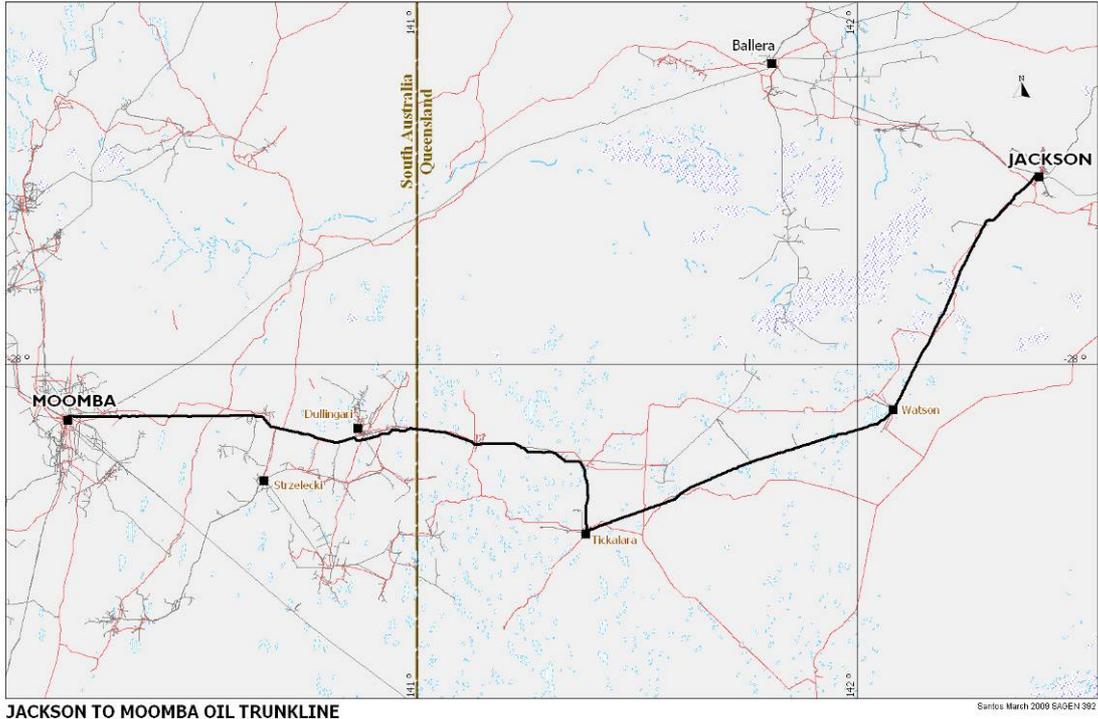
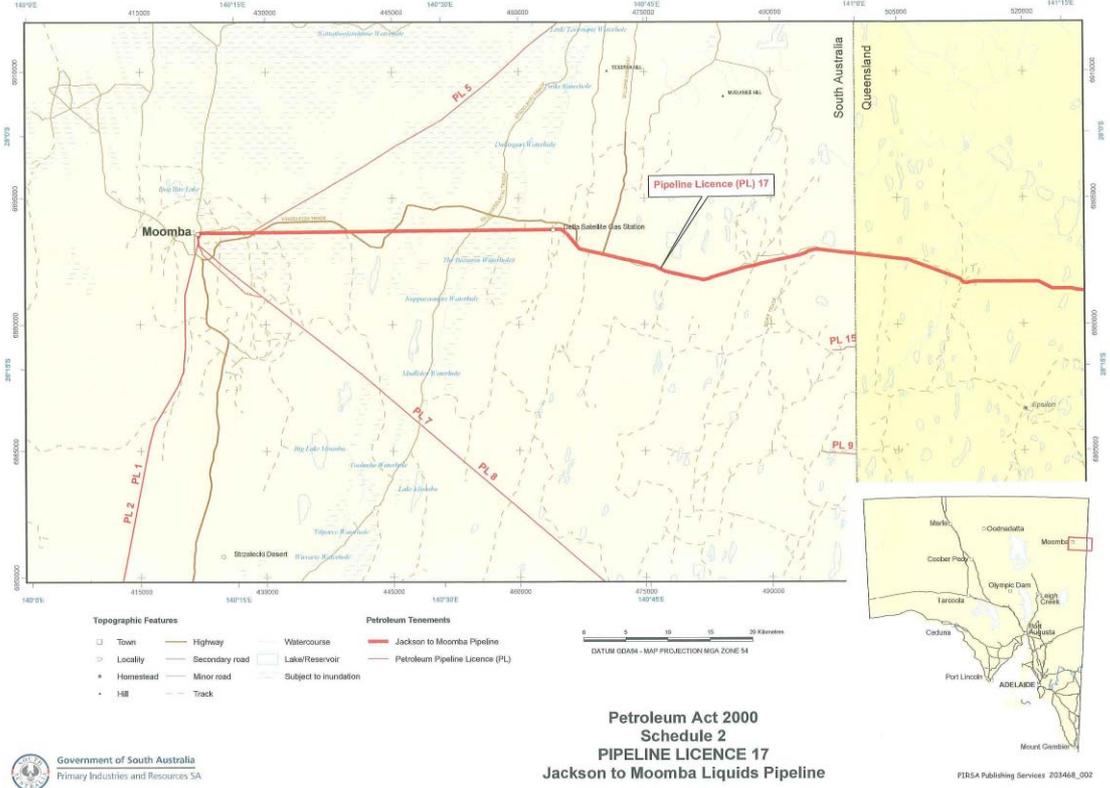


Figure 2 - PL 17 SA Border to Moomba



7 CONSTRUCTION AND COMMISSIONING ACTIVITIES 2008

7.1 Construction and Commissioning

The SA Border to Moomba Pipeline was constructed and commissioned in 2008. The pipeline was commissioned and brought into service in July 2008.

Temporary CP protection has been provided with anodes. Final installation and commissioning of the permanent impressed current CP system will occur in 1Q 2009.

A leak detection system has been installed. Final tuning of the leak detection system requires a history of operational data of the pipeline to be analysed. This work is expected to be completed by 1Q 2009.

The coating defect survey (DCVG survey) will be completed by 2Q 2009.

7.2 Risk Assessment Review

The Jackson to Moomba pipeline underwent a Risk Assessment Study to AS 2885 to identify generic threats and potential damage to the pipeline if left unmitigated. Design of the pipeline took into account the mitigation measures required to ensure the identified threats do not impose a risk to people, environment and pipeline operations at a level greater than Intermediate ALARP.

8 OPERATIONAL & MAINTENANCE ACTIVITIES - 2008

Santos field pipelines are designed in accordance with AS2885 and engineering standards. Operation and Maintenance of pipelines is managed by the Santos Pipeline Asset Management System which sets standards for integrity management and design life review to ensure EHS risks are ALARP.

Individual Integrity Management Plans (IMP) are in place for each pipeline in the Santos network. These IMP's indicate the activities and frequencies of inspections required to manage integrity of each asset, based on estimated risk analysis.

8.1 Operations & Maintenance Activities

The pipeline is remotely controlled from the Moomba end, as with other pipelines in the Cooper basin. However the system retains the facility to pump through the pipeline to Moonie. The Jackson operators are able to select which pipeline flow will be pumped to. If oil is being pumped to Moomba then system shutdowns and alarms for the Moonie pipeline operation are disarmed. Similarly if oil is being pumped to Moonie then system shutdowns and alarms for the Moomba pipeline operation are disarmed.

As shipping pumps are manually started, a local operator interface at Jackson is required. The pumps may be locally shutdown or remotely shutdown from the Moomba Control Room.

Compulsory biocide dosing, regular pigging and product sampling/analysis are carried out to reduce the effects of Sulphate Reducing Bacteria (SRB) or Microbiological Induced Corrosion (MIC). A scheduled maintenance program and log is set-up to monitor the usage of the biocide chemicals.

A detailed Integrity Management plan for the pipeline and pigging facilities is being followed.

8.2 Training

During the commissioning period a number of training sessions were held with panel operators and operators to familiarize them with the pipeline control system.

8.3 Patrol Activities

Pipeline Patrols will be carried out in accordance with the Pipeline Integrity Management Plans.

8.4 Leak Detection

A proven proprietary Leak Detection system has been installed to meet operational, environmental and regulatory requirements.

Metering at Jackson and Moomba and sensing points along the pipeline provides input to the leak detection system via the fibre optic cable. The system provides protection under both dynamic and static conditions and is expandable to allow for addition of side streams to the pipeline.

Detection of a leak automatically stops the pipeline pumps and closes the pipeline inlet and outlet valves and actuated section valves at the Dullingari and Strzelecki MLV stations. Remote closure of section valves from the Moomba control centre is also possible.

8.5 Coating Integrity

A direct Current Voltage Gradient (DCVG) will be carried some 6 to 12 months after the pipeline construction completion to confirm that the FBE coating is essentially defect-free. A detailed pipeline integrity management plan has been implemented.

8.6 Cathodic Protection

The impressed current cathodic protection system for the Jackson to Moomba Oil Trunkline is currently being commissioned.

8.7 Electrical and Instrumentation

Micro Motion Coriolis mass flow (CMF) transmitters are installed at Jackson and Moomba. Both units are used for leak detection system and specified for the custody transfer metering. The Micro Motion meters feed the Fisher ROC RTU. Totalised flow can be calculated within the fisher ROC RTU.

DN 80 CMF Elite+series meter with enhanced flow accuracy and density accuracy are installed. The meter selected is capable of measuring the entire flow spectrum; from 795 to 7,950 m³/d, within acceptable accuracy limits. Each metering skid has one service meter and a proving meter. The valving around the two meters is a double block and bleed type for provable isolation when zeroing and testing.

The meters were certified at the factory for 13,910kPag operations and to ANSI/API MPMS 5.6 for custody transfer measurement to satisfy the Queensland regulatory standard for custody transfer.

8.8 Communications

A fibre optic cable has been installed together with the new pipeline for improved communications between Jackson and Moomba. Two strands of this cable are used for leak detection and pipeline control for this pipeline.

8.9 Pigging operations

Pigging operation are carried out in accordance with the Pipeline Integrity Management Plans.

9 LAND MANAGEMENT

There are 2 properties covering the SA border to Moomba section of the pipeline. During the construction phase close communication was maintained with the Pastoral Lessees and Department for Environment and Heritage for the Innamincka RR.

Both properties have extensive Petroleum facilities on them related to SACBJV activity and close relations is maintained for all activity and awareness of working with these facilities on the properties.

10 ENVIRONMENTAL MANAGEMENT

There were no significant environmental incidents during the construction of the pipeline. Restoration was completed to a high standard and the restored right of way was aerial video recorded by PIRSA in August 2008.

[Appendix A](#) contains the "Assessment of Declared Objectives" completed for the Liquids Line.

11 EMERGENCY RESPONSE

An Emergency Response Plan (ERP) was developed for activities in South Australia, including PL 17. In the event of an incident resources would be mobilised to assist.

11.1 EMERGENCY RESPONSE CAPABILITY

Santos maintains a dedicated emergency response crew at Moomba. This consists of fully trained Emergency Officers (Fire crew) and medical response personnel together with a large inventory of emergency response equipment, material and vehicles.

11.2 EMERGENCY RESPONSE PROCEDURES

Detailed, scenario-based emergency response procedures have been developed and implemented under the Santos Incident Management Plan (SIMP) to guide personnel in emergency incident response.

Emergency response drills are regularly held in order to continuously update plans and maintain a high degree of readiness among personnel.

In the event of the emergency response procedures being used in response to an actual event a debrief of all relevant parties is conducted in order to ensure learnings are incorporated into the plans.

11.3 EMERGENCY RESPONSE DRILLS

There was an exercise held for PL 17 oil pipeline exercise "No Ship" that took place on Monday 25th August 2008. The exercise was a combination Operational (Oprex) and discussion exercise (Discecx).

The size and scope ensured that all the resources immediately available were extended.

A report on the exercise and outcomes was submitted to PIRSA in September 2009.

11.4 EMERGENCY RESPONSE

There were no events in PL 17 requiring emergency response.

12 REGULATORY COMPLIANCE

Every endeavor is made to ensure that design, manufacture, construction, operation, maintenance and testing of all appropriate facilities, is carried out in accordance with AS2885.

There are no known outstanding non compliances for the Crude Oil pipeline that Santos Ltd is aware of against:

- The Petroleum Act & Regulations 2000
- The Pipeline Licence (PL17)
- The Statement of Environmental Objectives

Any non-compliance identified is logged in the IMS where it is tracked to conclusion.

13 REASONABLY FORESEEABLE THREATS

There were no serious threats identified due to the construction or operations activities conducted in this Licence area during the reportable period.

13.1 RISK ASSESSMENT

Risks are managed to as low as reasonably practicable (ALARP). The outcomes of any risk review regarding SACBJV activities are applied to PL 17 activity.

13.1.1 Pipelines

Action items identified by Shell Global Solutions (FAIR) review conducted during 2005, along with implementation and follow-up of actions in 2007 resulted in the introduction of the Asset Integrity Management System (AIMS) within Santos Fixed Equipment Reliability department, which is the umbrella to the Pipeline Asset Management System (PAMS) currently in place. Actions put in place have also proven Santos's ability to become more proactive in managing pipeline integrity issues and further enhance the Pipeline Asset Management System to reduce pipeline failure and spill volume.

Shell FAIR score for Pipeline Management Systems increased from 642 in 2005 to 771 in 2007, which signifies a change from 'Support' to 'Proactive to asset integrity issues and needs'. Development of the Pipeline Asset Management System has lead to significant improvements in Integrity Management of pipelines, which

continued throughout 2008

14 MANAGEMENT SYSTEM

Activity in PL 17 is managed to standards that apply to SACBJV activity. These are fully reported in the 2008 SACBJV annual report and in some cases meaningful data or information are not possible given the low level of activity in this PL compared to all SA Cooper Basin activity. A summary of key elements is repeated in this report.

14.1 ENVIRONMENT, HEALTH & SAFETY MANAGEMENT SYSTEM (EHSMS)

Implementation of the Santos Environment, Health and Safety Management System (EHSMS) continued as an organisational priority during 2008. Implementation was monitored and communicated to PIRSA at quarterly meetings. Management standards performance was further validated by the use of accredited external auditors to monitor improvement initiatives highlighted by the 2007 assessment program and by the commencement of the EHSMS external audit program. .

The EHSMS contains both management standards and hazard standards. The management standards provide a framework for the sustainable achievement of acceptable EHS outcomes, whilst the hazard standards provide a clear process for control of hazards that are specific to Santos' business.

14.1.1 Management Standards

Further implementation of management standards continued throughout 2008. Process safety (the prevention of high consequence/low frequency events involving sudden loss process fluids/gasses) continued to be integrated into existing management standards. PSM data was collected and analysed during 2008. Performance of the overall management system continued to be monitored by the management steering group. Positive feedback was again received from the external assessors regarding the use and acceptance of the EHSMS.

14.1.2 Hazard Standards

Further development and implementation of hazard standards progressed in 2008. Heat stress and land transportation continued to receive significant focus. Detailed audits on Electrical Safety and Permit to Work standards were completed.

Implementation of the health and well-being hazard standard continued, with significant focus on workforce health awareness, health checks and education. Drug and alcohol testing continued in 2008 with employees and contractors at all field and office locations being subject to random, for cause and post incident testing. A fatigue management program was developed in 2008 and will be implemented in 2009.

Implementation of the hazard standards continued based on action plans developed from hazard standard baseline assessments

14.1.3 Training and Awareness

South Australian Cooper Basin EHS legal obligations awareness sessions were

provided to Santos and contractor managers, supervisors and team leaders. This training was designed to assist leaders understand their responsibilities in relation to key EHS legislation and regulation affecting SACB operations, including the Petroleum Act.

Focus was given to reinforcing EHSMS requirements with contractors. This was done through periodic contract reviews, contractor EHS forums and regular worksite inspections

14.2 AUDITS, ASSESSMENTS AND REVIEW PROCESSES

The following summarises some of the Audit, Assessment and Review processes used to determine system conformance, effectiveness and fitness for purpose.

The EHSMS Assessment process was developed to drive the effective implementation of the EHSMS. Detailed Assessment/Audit Guides were developed for each standard and these were used by external certified auditors to determine the status of conformance across all management standards. Each site/area received an annual assessment and a report which provided an assessment of conformance against relevant requirements of each management standard. Where a requirement was not at full conformance the report detailed the action required to achieve full conformance. Each requirement within each standard was allocated a score in the audit/assessment guide which enabled the assessors to quantify conformance. This enabled management to set and monitor annual performance improvement targets for system implementation.

14.3 Environmental Audits

Environmental audits were conducted during construction in February and April 2008 by the Santos environmental advisor. Identified actions were minor in nature and were addressed as appropriate.

[Appendix 1](#) contains the “Assessment of Declared Objectives” completed for the Liquids Line.

14.4 Health and Safety Audits

Health and Safety audits were ongoing by Santos and the pipeline contractor during construction of the pipeline.

15 REPORTS ISSUED DURING THE 2008 LICENCE YEAR

The following reports were generated and forwarded for the Jackson to Moomba Oil Trunkline in 2008:

- April 2008 - Jackson to Moomba Pipeline Risk Assessment Report
- May 2008 - Jackson-Moomba Pipeline Disturbance to Cultural Heritage Site
- May 2008 - Notice of Activities, Construction and Commissioning. Notification included pipeline as built coordinates.
- Sept 2008 - August 2008 Emergency Exercise “No Ship” Report

15 VOLUME OF PRODUCT TRANSPORTED

Volume Transported 2008	Estimated to be Transported 2009
296 Kbbbls	2107 Kbbbls

17 PROPOSED OPERATIONAL ACTIVITIES FOR 2009

During 2009 the following activities are proposed for the Jackson to Moomba Oil Trunkline.

- Complete all scheduled routine maintenance activities.
- Submission of a 2009 Annual Report in early 2010
- Conduct Cleaning Pigging Runs as per the Pipelines Integrity Management Plans
- Conduct Pipeline Patrol along with a 100% Cathodic Protection Survey in accordance with the Pipelines Integrity Management Plans.

18 STATEMENT OF EXPENDITURE

Jackson – Moomba pipeline apportioned for SA Section

Confidential

Appendix 1 - Environmental Objectives and Performance – Production and Processing SEO

Environmental Objectives	Guide to How Objectives Can Be Achieved	Assessment Criteria	Objective Achieved
<p>Objective 1 Minimise the risk to public and other third parties.</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. ▪ Permit to work systems in place for staff and contractors in dangerous situations. ▪ All appropriate PPE (personal protective equipment) is issued and available as required in accordance with company operating requirements and applicable standards. ▪ 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. ▪ 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. 	<ul style="list-style-type: none"> ▪ Reasonable measures implemented to ensure no injuries to the public or third parties. 	<ul style="list-style-type: none"> • There were no injuries to the public or third parties from the regulated activities

Environmental Objectives	Guide to How Objectives Can Be Achieved	Assessment Criteria	Objective Achieved
<p>Objective 2 Minimise disturbance and avoid contamination to soil.</p>	<p><u>Construction Activities (e.g. Pipelines and roads)</u></p> <ul style="list-style-type: none"> ▪ Santos operational procedures and guidelines are in place and will be followed for construction activities, for example to conserve soils resources: ▪ Consider alternate routes during planning phase to minimise environmental impacts ▪ Works are restricted to construction ROW. ▪ The need to traverse sensitive land systems and the method of managing the impacts will be justified in accordance with company procedures. ▪ Annual audit of construction practices. 	<ul style="list-style-type: none"> ▪ 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). • All fuel areas were appropriately bunded and were without incident. • Considering alternate routes at planning stage. • ROW reduction at water courses. Grading will be minimised. • Topsoil to be stockpiled separately to avoid soil inversion/mixing. • Vehicle washdown procedures for new vehicles entering the area are in place and conducted prior to commencing work. • Feral animal and weed management strategies are in place. • Operational procedures and guidelines are in place for construction activities. • Erosion control where necessary. • Hydrotest water to be disposed of to existing evaporation ponds. • Management strategies in place in Santos procedures in case of flooding. • ROW will be reinstated ASAP after construction. Compacted areas to be ripped. ▪ Access tracks are to be reinstated except strategic access points 	<ul style="list-style-type: none"> • There was no unauthorised off road driving or creation of short cuts. All accesses were planned for optimal access while maintain a small footprint • The number of site visits was minimized • All landowners were contacted prior to regulated activities. There were no landowner complaints • Fuel storage areas were bunded in accordance with regulations. Fuel storage tanks were located at the construction camp in Qld. • Pipeline alignments were chosen to minimise impact. This included paralleling existing infrastructure to minimise disturbance and avoiding crossing the Coopers Creek. • ROW were reduced to a minimum at water courses • Top soil was kept in separate wind rows and re-spread during reinstatement. • Weed management was undertaken as per company risk based procedures • Feral animals were not introduced to the area. • Construction was conducted in accordance with the appropriate procedures • Appropriate erosion control was provided. • Hydrotest water was disposed to lined ponds at Moomba. • Work and travel was stopped when roads were wet as per usual company procedure. • ROW was reinstated to a high standard. Light vehicle survey tracks were reinstated after the ROW was reinstated. • ROW was filmed by aerial survey on project completion to record reinstatement

Environmental Objectives	Guide to How Objectives Can Be Achieved	Assessment Criteria	Objective Achieved
<p>Objective 2 <u>Continued</u></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"> • Emergency procedures for spill responses are in place and regularly drilled. Learnings from drills and actual events are included in Plans. • Oil Spill Plans are up-to-date and regularly tested. • Spill response equipment and procedures are regularly audited.
<p>Objective 3 Avoid the introduction or spread of pest plants and animals and implement control measures as necessary.</p>	<ul style="list-style-type: none"> ▪ Where appropriate, weed and feral animal management strategy are in place (avoidance and control strategies). ▪ Vehicle and equipment wash downs will be 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"> • Existing roads and tracks used where possible. • There have been no reports of weeds and feral animal introduced • Number of site visits kept to a minimum • Vehicles used are located in the area
<p>Objective 4 Minimise disturbance to drainage patterns and avoid contamination of surface waters and shallow groundwater resources.</p>	<p><u>Construction Activities (e.g. Pipelines and roads)</u> Constructed activities undertaken are designed and managed to avoid diversion of water flows.</p>	<ul style="list-style-type: none"> ▪ 0, +1 or +2 GAS criteria are attained for goals related to this objective. ▪ Construction activities (i.e. access tracks) are located and constructed to maintain pre-existing water flows (i.e. channel contours are maintained on floodplains and at creek crossings). ▪ No water (surface or groundwater) contamination as a result of production activities. 	<ul style="list-style-type: none"> • There were no reported incidents of contamination of surface water and groundwater • Existing tracks and roads were used where possible • There were no surface or below ground disturbance activities undertaken during the reporting period

Environmental Objectives	Guide to How Objectives Can Be Achieved	Assessment Criteria	Objective Achieved
<p>Objective 5 Avoid disturbance to sites of known cultural and heritage significance.</p>	<ul style="list-style-type: none"> ▪ Consultation with stakeholders (i.e. government agencies, stakeholders etc) in relation to the possible existence of heritage sites, as necessary. ▪ Heritage report forms completed for any sites or artifacts identified, and report forms forward to the Department of State Aboriginal Affairs (DOSAA). ▪ 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. <p><u>Note:</u> Where a negotiated agreement or determination for heritage clearance is in place, performance with the negotiated agreement or determination takes precedence over the above criteria.</p>	<ul style="list-style-type: none"> • Proposed construction 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. • 0, +1 or +2 GAS criteria are attained for 'Aboriginal Heritage', 	<ul style="list-style-type: none"> • All relevant aboriginal groups were notified before the commencement of cultural heritage clearance activities • Aboriginal monitors were used to identify and avoid cultural heritage sites • Existing roads and tracks were used wherever possible. • Number of site visits were kept to a minimum • There was one reportable incident related to disturbance of an identified Cultural Heritage site. Refer to Section 5 for detail.
<p>Objective 6 Minimise loss of aquifer pressures and avoid aquifer contamination.</p>	<ul style="list-style-type: none"> • The volume/flow of water used by the Moomba Plant is continuously monitored to ensure appropriate management. • Water usage is continuously monitored, reviewed and management strategies implemented to minimise wastage. • Review water licensing requirements and allocation plans. 	<ul style="list-style-type: none"> ▪ There is no uncontrolled flow to the surface (i.e. no free flowing bores). <p><u>Note:</u> The Drilling and Well Operations EIR and SEO provide detailed discussion on aquifer issues.</p>	<ul style="list-style-type: none"> • There was no drilling or uncontrolled water flow to the surface as part of this activity

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<p>Objective 7: Minimise disturbance to native vegetation and native fauna.</p>	<p><u>Construction Activities</u></p> <ul style="list-style-type: none"> • Proposed construction areas 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 • Assessment records are kept and are available for auditing. • <u>Borrow Pits</u> • Pits are not established in locations which pose an unacceptable hazard to stock or wildlife (i.e. not within 50m of any roads or access tracks, well leases or other plant and equipment). • Borrow pits are restored as soon as practicable after material extraction is complete to a standard consistent with the surrounding land use. • Borrow pits are restored to minimise water holding capacity, where agreements are not in place with stakeholders • 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"> • Any sites of rare, vulnerable and endangered flora and fauna have been identified, flagged and subsequently avoided. • 0, +1 or +2 GAS criteria for 'Minimise impacts on vegetation' objective are attained during site selection and construction. • ROW route has been assessed for Rare and Vulnerable species. Alternate route selected if required. <ul style="list-style-type: none"> ▪ Procedures in place to identify and avoid vegetation. ▪ Re-use of disturbed areas is a current strategy (i.e. Campsites and /existing easements). ▪ ROW minimised through creeks. ▪ Trees are trimmed rather than removed and left in place where possible. ▪ Route selection based on minimisation of vegetation disturbance. ▪ Vegetation is stockpiled for respreading after construction. 	<ul style="list-style-type: none"> • All rare, vulnerable and endangered species sites were avoided • There were no reports of damage to native vegetation as a result of this activity. • Stands of native vegetation were avoided where possible and where clearing was required it was minimal • The number of site visits were only as deemed necessary • Route selected to minimize disturbance to natural vegetation. • Creek crossings were selected to minimize impact and ROW minimised. • Existing roads, pipeline routes/easements used where possible. • Vegetation re spread over ROW during reinstatement. • Existing campsites were used

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<p>Objective 7 cont: Minimise disturbance to native vegetation and native fauna.</p>	<p><u>Fuel and Chemical Storage and Management</u></p> <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. ▪ PFW pits are fenced as appropriate to minimise wildlife access. 	<p>Refer to assessment criteria for objectives 2 and 4.</p> <p>Refer to assessment criteria for objectives 2, 4 and 11.</p>	<ul style="list-style-type: none"> • All waste generated as part of the activities were collected and taken off site and disposed of as per Santos procedures. • Any hazardous or regulated waste was taken to Moomba or Ballera and disposed of as per company procedures
<p>Objective 8: Minimise air pollution and greenhouse gas emissions.</p>	<ul style="list-style-type: none"> ▪ Conduct production operations 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>Gathering Systems/Satellite Facilities/Moomba Plant</p> <p>Compliance with EPA requirements.</p>	<p>Operations conducted in accordance with established standards</p>
<p>Objective 9: Maintain and enhance partnerships with the Cooper Basin community.</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. <p>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.</p>	<p>No reasonable stakeholder complaints left unresolved.</p>	<ul style="list-style-type: none"> • Relevant parties are notified of proposed activities and future development plans. • Local community events and projects are actively supported. • Santos maintains active representation on relevant local committees and boards. • Emergency assistance is provided to landholders, tourists and third parties.

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<p>Objective 10: Avoid or minimise disturbance to stakeholders and/or associated infrastructure.</p>	<ul style="list-style-type: none"> ▪ Induction for all employees and contractors covers pastoral, conservation, legislation and infrastructure issues. ▪ Relevant stakeholder is 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 stakeholder and upon receipt of letter of transfer of responsibility to stakeholder. ▪ 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 (i.e. open/closed). ▪ Potential sources of contamination are fenced as appropriate to prevent stock access. ▪ System is in place for logging stakeholder 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"> ▪ No unresolved reasonable stakeholder complaints. 	<ul style="list-style-type: none"> • Company and contractor employees are advised of the requirements in respect of pastoral interests. • Relevant stakeholders are advised of construction activities prior to commencement. • Gates are left “as found”. • Where necessary, areas of potential contamination are fenced to prevent stock access. • A system is in place to record stakeholder complaints. No such complaints were recorded in 2008. • Cattle management systems (Cattle Care) are recognised and complied with.
<p>Objective 11: Optimise waste reduction and recovery.</p>	<p>Chemical and oil is purchased in bulk. ‘Bulki bins’ or other storage tanks are in place for large volume items. Fencing around waste disposal facility is regularly inspected and maintained.</p>	<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. ▪ For LTU’s contamination confined to designated treatment area. 	<ul style="list-style-type: none"> • Refer Objective 4 above. Integrated Waste Management contract put in place covering the collection, transport, segregation and disposal of waste, including recycling. • Septic tank systems are regularly emptied and cleaned.

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<p>Objective 12: Remediate and rehabilitate operational areas to agreed standards.</p>	<p>Rehabilitation/ abandonment plans for surface activities will be developed in consultation with relevant stakeholders</p> <p><u>Construction Site and Access Track Restoration</u> Compacted soil areas have been ripped (except on gibber and tablelands) and soil profile and contours are reinstated following completion of operations.</p>	<p>No unresolved reasonable stakeholder complaints.</p> <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>Construction Site and Access Track Restoration</u></p> <ul style="list-style-type: none"> ▪ The attainment of 0, +1 or +2 GAS criteria for: <ul style="list-style-type: none"> - “minimise visual impact of abandoned well sites and 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 for: <ul style="list-style-type: none"> - “minimise impact on vegetation, soil and visual impacts” 	<p>No stakeholder complaints are unresolved.</p> <p>No contaminated sites</p> <p>Access tracks are restored in accordance with restoration guidelines.</p> <p>No borrow pits</p>
<p>Objective 13: Minimise as far as reasonably practicable interruptions to natural gas supply.</p>	<ul style="list-style-type: none"> ▪ Adequate contingencies are in place which seek to address a prudent level of security of supply in the case of short and unforeseen interruption events (e.g. Adequate gas storage). ▪ Pipelines are designed, operated and maintained in accordance with AS 2885. ▪ Plant and equipment are designed, operated and maintained in accordance with appropriate industry accepted standards. ▪ Emergency Response Plan (ERP) and procedures are in place and exercised. ▪ Results and recommendations of plant and facility hazard reviews, including the five (5) yearly Fitness for Purpose assessment are appropriately addressed. 	<ul style="list-style-type: none"> ▪ No interruptions to natural gas supply which caused significant social disruption 	<p>Not applicable to oil pipeline</p>