

Petroleum Act compliance report 2007

Petroleum and Geothermal Group



Government of South Australia
Primary Industries and Resources SA

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COVER

A Mirage 3D Vibroseis survey in the Cooper Basin (photo 405147); drilling in the Cooper Basin (courtesy of Santos Ltd; photo 043377); laying the ethane pipeline from Moomba to Sydney (photo 044027); Moomba, Cooper Basin (courtesy of Santos Ltd; photo 043361).

INTRODUCTION

The *Petroleum Act 2000*¹ covers all exploration and production activities for petroleum, gas storage and geothermal resources for onshore South Australia, as well as the technical regulation of gas transmission pipelines. In summary, the key objects of the Petroleum Act include:

- providing security of tenure to licensees for the resources covered by the Petroleum Act
- protecting the environment and public from the inherent risks associated with the activities undertaken to exploit these resources
- where relevant, ensuring appropriate levels of security of natural gas supply are provided for
- promoting and facilitating competitive development of the state's petroleum, gas storage and geothermal resources through the acquisition and release of relevant geotechnical and engineering data and information.

It is the pursuit of these objectives that drive the compliance and enforcement priorities of the Petroleum and Geothermal Group of PIRSA. This report covers the year 2007 and its purpose is to:

- outline PIRSA's regulatory activities in administering the Petroleum Act
- provide a summary of the regulatory performance of the industries covered by the Petroleum Act.

COMPLIANCE AND ENFORCEMENT

Compliance of the industries regulated under the Petroleum Act is presented in the context of the compliance and enforcement pyramid (Fig. 1) adopted by PIRSA for monitoring and enforcing compliance.

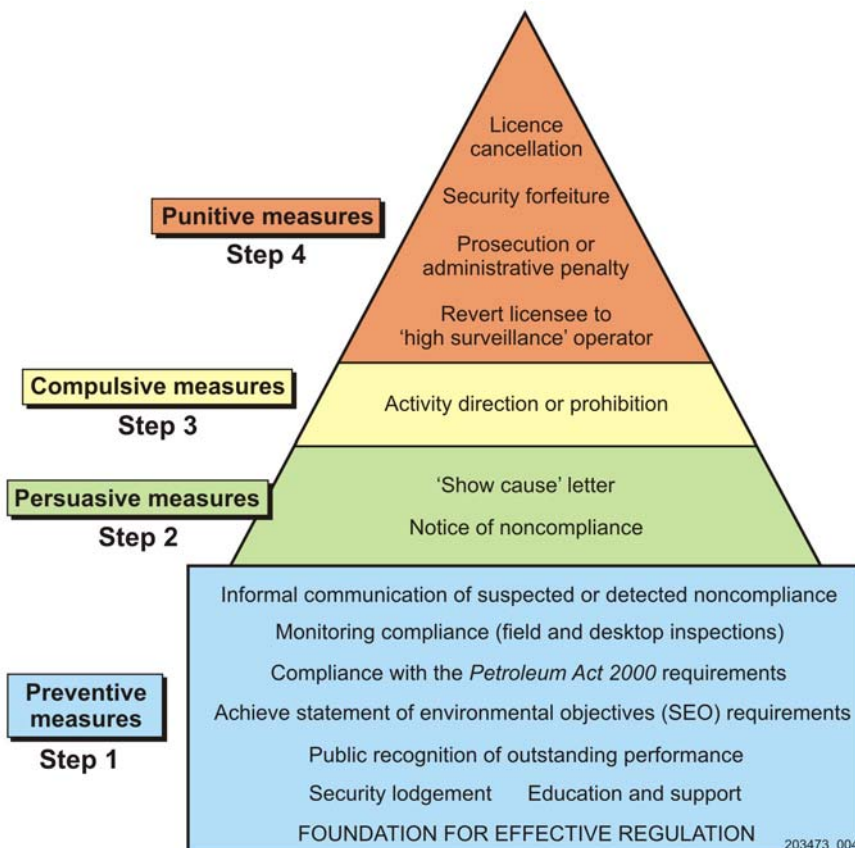


Figure 1 PIRSA Petroleum and Geothermal Group compliance and enforcement pyramid.

1 One of the intended amendments to the Petroleum Act planned in 2008 is to rename this legislation (as the Petroleum and Geothermal Act) to reflect its coverage of both upstream petroleum and geothermal energy licences.

The pyramid details a series of steps and measures available to PIRSA for facilitating, monitoring and, where necessary, enforcing compliance. PIRSA aims to maintain its regulatory activities at 'Step 1: Preventative measures', shown as the base of the pyramid in Figure 1. In cases where industry fails to adequately and appropriately respond to detected noncompliance, 'Step 2: Persuasive measures' is instigated. Only in extreme and exceptional cases would PIRSA expect to utilise Steps 3 and 4, 'Compulsive' and 'Punitive' measures, respectively, to enforce compliance and achieve acceptable environmental or administrative outcomes.

The balance of this annual report on regulation pursuant to the Petroleum Act is divided into five overall sections as follows:

- Section 1: Preventative measures
- Section 2: Persuasive measures
- Section 3: Compulsive measures
- Section 4: Punitive measures
- Section 5: Compliance statistics.

SECTION 1: PREVENTATIVE MEASURES

These measures include:

- Maintaining an effective and efficient regulatory regime through one-window for all co-regulation pursuant to all state (such as the *Environmental Protection Act 1993* etc.) and Commonwealth Acts (such as the *Native Title Act 1993*) — with PIRSA having stewardship responsibility to manage that one-window for co-regulation.
- Implementing approval and compliance requirements of the Petroleum Act.
- Monitoring regulatory compliance (undertaken by both licensees and PIRSA), through audits and inspections (both field and desktop).
- Working collaboratively with licensees, industry and stakeholders to clarify and advise on regulatory requirements and expectations.
- Addressing stakeholder interests and requirements through the statements of environmental objectives (SEOs) to establish and maintain their trust.

During 2007 the main preventative measure activities carried out by both PIRSA and industry are discussed below.

Preventative measures enabled through the Petroleum Act

An effective and efficient regulatory framework is critical to establishing a commercially and environmentally sustainable industry that achieves standards of environmental, safety and social performance acceptable to the community. Such a framework also needs to elicit community confidence in the performance of both the industry and the government agency regulating the industry. It is widely recognised that the Petroleum Act and its associated Regulations deliver such a framework. The Act focuses regulation on the practical achievement of outcomes that meet both investor and community expectations, and was established on the basis of five key principles: (1) certainty, (2) openness, (3) transparency, (4) flexibility and (5) efficiency.

Since the promulgation of the Act in September 2000, PIRSA continues to review the effectiveness of the Act to ensure it continues to facilitate acceptable industry behaviour and performance in relation to environmental protection, public safety, security of gas supply, and protection of other land user rights. In 2007 the Petroleum and Geothermal Group released, and consulted extensively with both industry and non-industry stakeholders on, a green paper into the review of the Petroleum Act. The outcomes of this

consultation were incorporated into a cabinet submission, which led to approval to draft an amendment Bill for public release and consultation in the first half of 2008.

The proposed amendments seek to enhance the Petroleum Act to cover new forms of complementary licences (for gas storage and facilities) and to improve the efficiency of its processes so that industry and stakeholder interests are satisfied more cost-effectively. Elements of these enhancements have been driven by the need to align certain provisions of the Act with national initiatives, through the Ministerial Council on Mineral and Petroleum Resources, seeking consistency in legislation across Australia.

A number of the proposed enhancements are required to improve security of title and hence reduce sovereign risk to licensees. A particular example is the proposal to introduce compatible gas storage rights. These rights will include geosequestration of greenhouse gases, including carbon dioxide. Landowner rights to notification and compensation will be clarified, thus reducing the likelihood of land use conflicts.

A highlight of effective preventative measures undertaken in 2007 relates to the planned shutdown for maintenance of significant plants operating at Moomba in the term date December 2007 to January 2008. In the event, gas supplies were safely sustained during this nationally significant plant shutdown.

Statement of environmental objectives — approvals and reviews

Effective preventative measures can only be established if the regulatory objectives for regulated activities are relevant to the risks associated with such activities and satisfy stakeholders' interests and concerns. Through adherence to the principles of certainty, openness and transparency, the Act, through its stakeholder consultation provisions, seeks to establish such objectives. A key requirement of the Act is that achievement of these objectives is measurable, to allow industry to report its performance against agreed criteria. These objectives and associated measurement criteria identified through this process are documented in approved SEOs. Under the Act, no activity can be undertaken unless it is covered by an approved SEO. Approved SEOs become project-specific regulations that are gazetted and made publicly available from the [Environmental Register](#) on the Petroleum Channel of the PIRSA website².

In the context of the Petroleum Act, the legal standards set for the protection of natural, social, heritage and economic environments are agreed through a robust, open and transparent process that culminates in licence operators developing, owning and abiding by SEOs. These are based on environmental impact reports (EIRs) which are developed by licensees from robust, transparent consultation with relevant stakeholders. Environmental impact reports must detail potential impacts of proposed operations on the natural, social, heritage and economic environment. SEOs are a means to enable PIRSA to act as a one-stop shop on behalf of co-regulatory agencies.

Embedding the objectives and standards of co-regulatory regimes in SEOs fosters mutual trust between government agencies charged with the co-regulation of resource exploration and production operations. Formal memoranda of understanding and administrative arrangements agreed by co-regulatory agencies can explicate mutual expectations and underpin both the efficiency and effectiveness of co-regulation. Trust engendered with SEOs is very much reflected with the memoranda of understanding and administrative arrangements established between PIRSA's Petroleum and Geothermal Group and key co-regulatory agencies, including South Australia's Department for Environment and Heritage, Environmental Protection Agency (SA), Office of the Technical Regulator, Safework SA and Planning SA.

By incorporating the objectives and standards of co-regulatory agencies into SEOs, a breach of standards set by other legislation also becomes a breach of the SEOs pursuant to the Petroleum Act. Approval of

²www.petroleum.pir.sa.gov.au Go to Environment & Land Access, Environmental Register.

SEOs brings into force area- and operation-specific criteria to measure licensees' compliance with environmental objectives and outcomes.

Seven regional SEOs have been developed for: airborne geophysics in South Australia; geophysical operations in the South Australian Cooper Basin; geophysical operations in the South Australian Otway Basin; drilling in the South Australian Cooper Basin; work-over and production operations in the Cooper Basin; pipeline preliminary survey activities in South Australia; and non-seismic ground-based geophysical operations (such as electromagnetic, gravimetric and magnetic surveys) within South Australia. Regional SEOs can cover a range of landforms and activities with varying levels of impact risk. This variability is reflected in the SEOs, and specific local issues for individual work programs are addressed one-by-one when applications to undertake activities are lodged.

All other SEOs are operator-, operation- and area-specific. Pursuant to the Petroleum Act, exploration and production licensees are required to report on their performance against SEOs and, following the principle of transparency, these reports are available to the public from the Environmental Register.

During 2007 SEO consultation processes covered:

- *Geophysical operations in the Otway Basin, South Australia, SEO review.* The original SEO for seismic operations in the Otway Basin was created in 2001 and was due for revision in 2006. Consultation with relevant government agencies was conducted initially in 2006 on the original SEO. The SEO was then reviewed and released for further government consultation in 2007. The revised SEO was approved and gazetted in June 2007.
- *Statewide ground-based geophysical operations (non-seismic) SEO.* A new generic SEO covering all those non-seismic operations, such as gravimetric and magnetic surveys, was prepared by PIRSA. This SEO and the attendant environmental impact report were subject to the appropriate consultation processes prior to the SEO being approved and subsequently gazetted in August 2007.
- *Officer Basin Energy Pty Ltd's Petroleum Exploration Licences (PELs) 81 and 253 geophysical operations SEO.* Preparation of this SEO commenced in April 2007 and involved an extensive stakeholder consultation process, particularly with the Maralinga Tjarutja people. Subsequently, the SEO was approved and gazetted on 13 September 2007.
- *SAPEX Limited's Arckaringa Basin exploration drilling activities SEO and geophysical operations SEO.* An extensive public consultation process was conducted by PIRSA for these two SEOs, which were approved and gazetted on 8 November 2007.
- *Eden Energy Limited's Chowilla 1, Geothermal Energy Licence (GEL) 175, geothermal exploration drilling SEO.* An SEO for geothermal exploration drilling activities in GEL 175 within the Chowilla Regional Reserve, about 50 km NE of Renmark in South Australia's Riverland region, was approved and gazetted on 15 November 2007. This SEO was subject to an internal government consultation process prior to its approval.
- *Santos Limited's Pipeline Licence (PL) 2 SEO review.* A review of the Moomba to Port Bonython Liquids Pipeline SEO was concluded in 2007. The revised PL 2 SEO will be approved and gazetted in early 2008.
- *Australian Pipeline Trust's PL 7 SEO review.* A review of the SEO for the South Australian section of the Moomba to Sydney gas pipeline commenced during 2006. It is expected that the revised SEO will be approved and gazetted in early 2008.
- *South Australian Cooper Basin Joint Venture's production and processing operations SEO.* A review of the SEO for production and processing activities in the Cooper Basin was initiated in late 2006, and will be progressed by Santos during 2008.
- *South Australian Cooper Basin operators' drilling and well operations SEO.* An important feature of SEOs is the need for readily measurable assessment criteria for measuring the attainment of the various objectives detailed in the SEO. Also important is the need to ensure that any subjectivity in such

assessment criteria is minimised and preferably avoided where possible. The potential for such a challenge exists in the development of site rehabilitation criteria, such as those developed and used by PIRSA for assessing the effectiveness of restoration practices on disturbed land (e.g. wellsites, access tracks and seismic lines). As part of dealing with this challenge, in 2006 PIRSA initiated an external review of the current assessment criteria used for restored abandoned wellsites and access tracks against the relevant objectives in the 'Cooper Basin operators' drilling and well operations SEO'. External consultants Fatchen Environmental Pty Ltd and Woodburn and Associates, who were extensively involved in the development of the current criteria, undertook the review in 2007. The results of the review will be released for public review and consultation during 2008, before being adopted in the next revision of the 'Cooper Basin operators' drilling and well operations SEO'.

- *DMS Exploration Inc's Stansbury Basin PEL 73 drilling SEO*. An SEO for the drilling operations conducted in the Stansbury Basin licence area within PEL 73, on the Yorke Peninsula, was approved and gazetted on 1 February 2007, following an internal government consultation process.
- *Adelaide Energy Pty Ltd's Otway Basin PEL 255 drilling SEO*. An SEO for drilling operations in the onshore Otway Basin, in the South East region of South Australia, was approved and gazetted on 8 May 2007, following an internal government consultation process.
- *Study of induced seismicity associated with engineered geothermal systems*. A key function of the SEO process is to assess proposed regulated activities, identify potential risks inherent in the relevant regulated activities, and set standards for compliance that either eliminate risks or, where it is not possible to eliminate, to minimise risks to an acceptable level, and implement management practices that reduce risks to 'as low as reasonably practicable'. In doing so, operations are required to be managed (by licence holders) so that outcomes (from regulated activities) meet both legislated requirements and stakeholders' expectations. To this end, during 2006, a University of Adelaide study was commissioned by PIRSA into potential risks associated with fracture stimulation in geothermal well bores in the Cooper Basin region. This study by [S Hunt and C Morelli](#), released as a draft in 2007, has been the subject of international peer review through 2007, and is available for download from the Geothermal Energy Channel of the of the PIRSA website³. The findings provide support for the SEO for geothermal operations in the Cooper Basin and are also providing the basis for the development of hazard assessment protocols for induced seismicity beyond the Cooper Basin.

Activity notifications

In accordance with Petroleum Regulations 18 and 19, licensees are required to notify PIRSA prior to commencing any regulated activity within a licence area. For low-level supervision operators, 21 days notice is required. For high-level supervision operators, 35 days notice is required. In the case of the latter, Regulation 19 requires the licensee to obtain approval before commencing their activities, where approval is granted on the basis of licensees' demonstrated capability against the Regulation 16 operator assessment factors.

Low-level supervision status is granted to licensees on the grounds of a demonstrated and proven level of capability to achieve regulatory objectives. These licensees are not required to demonstrate their capability for every activity proposal. Notification provided under Regulation 18 is simply required so that PIRSA confirms that the proposed activity is covered by the approved SEO. Activity notifications received by PIRSA for geophysical, drilling and production operations increased from 247 in 2006 to 289 in 2007 (Fig. 2). During 2007 these included 18 notifications for geophysical activities (11 for high-level supervision), 152 for drilling activities (22 for high-level supervision) and 119 for production activities (28 for high-level supervision). Of these, 7.5% were drilling notifications related to geothermal operations.

3 <www.pir.sa.gov.au/geothermal> Go to Products & Data, Publications and Reports.

PIRSA noted on several occasions the high standard of operational policy and procedure put in place by high-level supervision operators when undertaking geophysical operations.

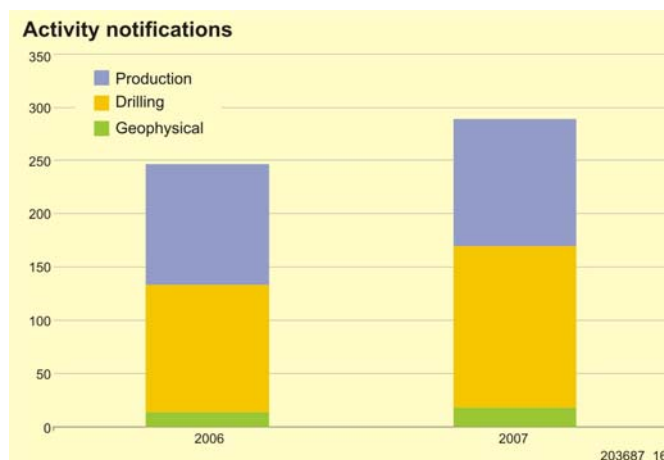


Figure 2 Activity notifications submitted to PIRSA in 2006 and 2007.

Operator capability assessment — health, safety and environment management systems and resources

As part of its preventative measures, PIRSA requires all high-supervision licensees to demonstrate their capability to achieve the relevant SEO and regulatory requirements prior to gaining approval to commence their activities. This demonstration eventually leads to low-supervision status under the Act. The demonstration is required to address the effectiveness of licensees' management systems, competency and skills of licensees' human resources, and suitability of licensees' equipment (as per Regulation 16 operator assessment factors).

As part of demonstrating capabilities against the Regulation 16 operator assessment factors, a number of licensees and contractors carried out and reported to PIRSA their management system self-assessments using the [self-assessment tool recommended by PIRSA](#) and published on the Petroleum Channel⁴. The main focus of the self assessment is to assess the effectiveness of a licensee's health, safety and environment (HSE) management system, in particular workforce understanding, implementation and resultant behaviour in relation to the various elements of the system. The elements addressed by the self-assessment tool include:

- management commitment and leadership
- health, safety and environment policies and objectives
- responsibilities
- training and competencies
- contractor management
- communication
- risk and hazard identification and management
- asset/equipment integrity management
- operating procedures and work instructions
- management of change
- emergency management
- inspection and auditing
- incident management and corrective actions.

⁴ Go to Legislation & Compliance, Activity Approval Process, HSE Management Systems.

The assessment criteria score each element on a scale from level 1 to level 4, where level 1 indicates poor performance requiring urgent attention for the particular element assessed, while level 4 represents best practice.

The results of the self assessments carried out during 2007 by four companies are presented in Figure 3 and represent the average scores obtained from assessments carried out at various levels within each of the organisations. In most cases the assessments were carried out at operator level, middle management (field supervisors/superintendent) and at senior management level. The self assessments assist both the company and PIRSA to gain an appreciation of where the individual companies are with respect to the effective implementation of their management systems and to identify areas for improvement (e.g. areas targeted for more detailed audits). Being a self-assessment process, disclosure of the results are provided to PIRSA on the understanding that they are to be used as a basis for monitoring progress against continuous improvement of the company's system and not as a basis for regulatory enforcement or punitive action. They also provide a basis on which PIRSA can work with the individual company to assist the licensee in gaining low-supervision status pursuant to section 74 of the Petroleum Act.

The results of the self assessment are also used by PIRSA to target future regulatory surveillance activities. In 2008 PIRSA will seek to extend the application of this assessment tool to more licensees and contractors.

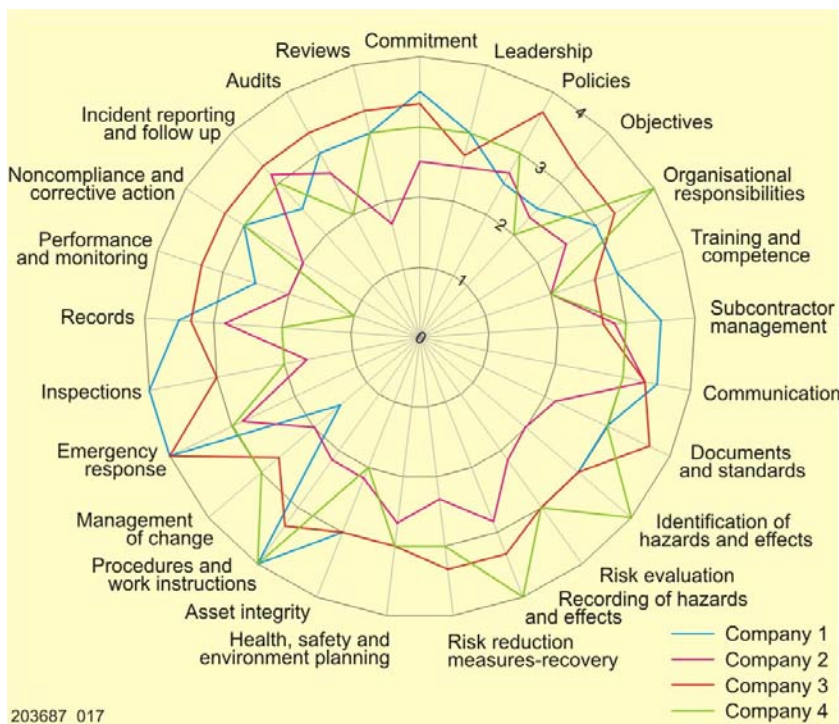


Figure 3 Results of self assessments carried out on company health, safety and environment management systems in 2007.

Quarterly compliance meetings

PIRSA strives to work in a cooperative and educative manner with licensees to proactively facilitate regulatory compliance. A key component of this strategy is the quarterly compliance meetings between PIRSA and individual licensees, where regulatory and compliance issues are discussed, reviewed and monitored. In the case of drilling operations, PIRSA also meets quarterly with individual drilling contractors to discuss compliance issues specific to drilling operations. In 2007 PIRSA continued to meet quarterly with: Santos, Beach Petroleum Limited, Stuart Petroleum Limited, Origin Energy Resources Ltd, APT O&M

Services (formerly Origin Energy Asset Management Ltd), Epic Energy SA Pty Ltd and South East Australia Gas Pty Ltd (SEA Gas). PIRSA also met with the Australian Pipeline Trust during 2007.

In addition, PIRSA attends a number of industry forums, such as the Santos-facilitated wellsite forum. This quarterly forum brings all licensees and contractors together to discuss and review various safety and environmental matters. The petroleum industry's peak national body, Australian Petroleum Production and Exploration Association (APPEA), also convenes an annual environmental conference which PIRSA attends.

The Petroleum and Geothermal Group participates in, and convenes, forums to enable it to monitor and contribute proactively in compliance initiatives. Such forums involve the Australian Pipeline Industry Association (APIA), the Australian Geothermal Energy Association (AGEA, which formed in 2007), the South Australia Chamber of Mines and Energy (SACOME), the Australian Environmental Law Enforcement and Regulators Network, and peak professional bodies such as the Society of Petroleum Engineers (SPE), the Petroleum Exploration Society of Australia (PESA), the Australian Society of Exploration Geophysicists (ASEG) and the Australian Geothermal Energy Group (AGEG).

Fitness-for-purpose reviews

In keeping with the preventative focus of Step 1 in the compliance pyramid, the Act requires licensees to ensure that their facilities are maintained to be fit for purpose. In line with best practice regulatory requirements, the focus is on eliminating any risks, or where it is not possible to eliminate, to minimise these risks to an acceptable level. Under Regulation 30, licensees are required to assess and report to PIRSA on the fitness for purpose of their respective facilities at least every five years. These assessments are required to address the physical condition of the facilities and the effectiveness of the management systems utilised for operating and maintaining them. By reviewing these reports, PIRSA seeks to assess the integrity of the conclusions reached by the licensee. [Fitness-for-purpose assessment reports](#), together with PIRSA reviews, are available from the Environmental Register on the Petroleum Channel⁵.

In the fitness-for-purpose assessments discussed below, all licensees concluded in the reports that their facilities were fit for purpose. PIRSA's report review and validation process involved a detailed review of key areas of interest, to confirm the validity of the conclusions made.

Moomba facilities

In 2007 PIRSA commenced its review of Santos's September 2006 fitness-for-purpose assessment report on Cooper Basin oil and gas processing facilities (including the Moomba Gas Plant, pipelines and wells⁶). This review is being undertaken collaboratively with the Major Hazardous Facility Unit within Safe Work SA. The review concluded that the report adequately addresses the majority of the Regulation 30 requirements, in particular those relating to the current and ongoing:

- physical condition/integrity of facility equipment and utilities
- effectiveness of the facility management and maintenance systems
- management of risk to ensure safe and effective operations.

Notwithstanding this, PIRSA and Safe Work SA have requested additional information to clarify the basis for Santos's assessment on a number of issues identified in the report. To this end, four meetings were set up for Santos to make presentations to PIRSA and Safe Work SA. Two meetings were held in 2007, and a further two further meetings are scheduled in the first half of 2008. This review is expected to be completed

⁵ Go to Environment & Land Access, Environmental Register, Fitness for Purpose Assessments.

⁶ Entitled 'Santos, Fitness for purpose report 2006 for compliance with the Petroleum Act 2000 South Australia'.

during 2008 and is also likely to involve joint PIRSA and Safe Work SA site visits to confirm a number of system and risk mitigation control measures.

Origin Energy Katnook facilities

In 2007 PIRSA reviewed Origin Energy's January 2007 fitness-for-purpose assessment report of the Katnook and Ladbroke Grove gas field facilities in Petroleum Production Licences (PPLs) 62, 168 and 202 in the South Australian onshore Otway Basin. PIRSA's review concluded that the report adequately addresses the requirements of Regulation 30 for these facilities. Notwithstanding this, PIRSA requested additional information to clarify the basis for Origin's assessment on a number of issues identified in the report. In response Origin Energy adequately addressed the additional information requests through a combination of a face-to-face meeting and submission of written material.

Air Liquide Caroline carbon dioxide gas plant

In May 2007 Air Liquide Australia Ltd submitted a report on its fitness-for-purpose assessment of the Caroline carbon dioxide processing plant near Mount Gambier in PPL 21. Air Liquide owns and operates the facility. PIRSA's review of this report and other additional information submitted as requested by PIRSA concluded that the report had adequately addressed the fitness-for-purpose issues for this facility. On the basis of the information provided, PIRSA formed the opinion that Air Liquide satisfied the requirements of Regulation 30.

Santos pipeline (PL 2), Moomba to Port Bonython liquids line

A fitness-for-purpose assessment report of the Santos Moomba to Port Bonython liquids line (PL 2) was submitted by the South Australia Cooper Basin Joint Venture in August 2007. The report was prepared by Epic Energy SA Pty Ltd, operator of the pipeline. On the basis of the information provided in the report, PIRSA formed the opinion that Epic Energy satisfied the requirements of Regulation 30.

SEA Gas pipeline (PL 13)

SEA Gas submitted a report on its first fitness-for-purpose assessment for the Port Campbell to Adelaide Natural Gas Pipeline in April 2007. PIRSA's review of this report concluded that it adequately addressed the requirements of Regulation 30 for the pipeline and associated facilities. Notwithstanding this, PIRSA requested additional information to clarify the basis for SEA Gas's assessment on a number of issues identified in the report. SEA Gas is in the process of addressing the above requests for information to PIRSA's satisfaction.

Drilling rigs

During 2007 PIRSA continued its review into the fitness for purpose of drilling and workover rigs operating onshore in South Australia. These reviews focused on both the physical integrity of rig plant and equipment and the effectiveness of rig management and maintenance systems. The reviews included discussions with both licensees and their drilling contractors through office and field visits. PIRSA noted an increase in third party inspections of facilities organised by licensees and individual contractors. The third party inspection reports were analysed as part of PIRSA's reviews of drilling activities.

Annual reports

Under Regulation 33, licensees are required to submit annual reports summarising the year's activities and declaring their level of compliance with the Act and any relevant SEOs. The main purpose of this is to ensure licensees assess and review their performance regularly, and through this process proactively take

corrective actions, where required, to rectify any identified deficiencies, and improve their performance on a continuous basis.

In 2007 a total of 83 annual reports (for single or multiple licences) were received and 59 have been reviewed for compliance with Regulation 33 of the Petroleum Act, with the remainder to be reviewed in 2008. All annual reports submitted to PIRSA under the Act are made publicly available on the Environmental Register. By making company performance a matter of public record, it is anticipated that appropriate compliant behaviour will be encouraged, as poor performance is subject to public scrutiny.

Emergency response exercises

Another key component of the preventative measures is to ensure appropriate plans are in place for emergency incidents. Under the Act, measures must, in particular, focus on the prevention of environmental, public safety, and security of gas supply incidents. Regulation 31 requires that licensees maintain effective response procedures to be followed in the event of such emergencies. It also requires that these plans be tested for their effectiveness at least once every two years, and that a report into the findings of the exercise be prepared and provided to PIRSA.

A number of emergency response drills were carried out in 2007 by Santos, Beach Petroleum, Stuart Petroleum, Epic Energy SA, APT O&M Services, SEA Gas and East Australian Pipeline Ltd (formerly Agility Management Pty Ltd). These included exercises relating to drilling, production and transmission pipeline operations, addressing the effectiveness of emergency response plans to potential:

- spill and fire incidents during typical tanker loading operations
- vehicle accidents
- uncontrolled gas releases during plant and well operations
- pipeline gas leaks resulting in loss and curtailment of gas supply to customers
- serious injury to personnel operating single person remote facilities.

Emergency response drills conducted during 2007 included:

- An emergency shut down simulation of the SESA Pipeline near Mount Gambier resulting in the need to curtail gas supply to major gas customers in the region. The simulation demonstrated that for the type of incident simulated, gas supply to customers was resumed within 12 hours.
- An emergency exercise along the Riverland Pipeline to assess the operator's response to both a serious injury and a major gas escape. The simulation identified a potential issue with the PIRSA emergency contact number. In response, corrective actions have been put in place by PIRSA to mitigate the likelihood of any problems.
- A line rupture on the Dry Creek lateral off the Epic Moomba to Adelaide Pipeline (PL 1) which feeds the International Power Station. During this exercise Epic Energy focused on testing their first on site response and repair procedures.
- A simulation of a gas leak along the SEA Gas Pipeline (PL 13) involving the testing of procedures for a main line valve isolation, a blow-down and excavation of the effected section of the pipeline.
- A gas leak simulation from the inlet pipe flange into the Ladbroke Grove Gas Plant in the South East. The simulation identified that personnel evacuation and emergency service contact procedures, and their subsequent response, worked well.
- Simulated medical evacuations of injured personnel from the Stuart Petroleum Acrasia oil facility and Innamincka Petroleum Flax oil facility. In both cases the exercise revealed successful response times.

Overall, PIRSA was satisfied that the response exercises carried out were of sufficient standard to address the effectiveness of the relevant emergency response procedures in accordance with the requirements of Regulation 31.

Field inspections

On a regular basis during the year, as part of an ongoing field inspection program, PIRSA identified and targeted a number of key areas or themes to monitor compliance. The main focus in 2007 included geophysical operations, drilling operations, plant operations, pipeline operations, work site restoration activities, water disposal, oil spill management and truck transport⁷. Inspections carried out by PIRSA seek to ascertain the level of:

- *Effectiveness of licensee health, safety and environment management systems in meeting the requirements of the Regulation 16 operator assessment factors.* For example, in 2007 PIRSA visited a number of drilling rigs with a focus on rig maintenance system effectiveness. PIRSA also visited a number of landowners through whose properties the SEA Gas Pipeline easement traverses, with a focus on assessing the effectiveness of SEA Gas's landowner communication and liaison procedures.
- *Compliance with the SEOs.* Monitoring compliance with the SEOs includes assessments of the effectiveness of rehabilitation of abandoned work sites (see [Goal Attainment Scaling](#) on the Petroleum Channel⁸). In most cases, inspections revealed that adequate compliance with relevant SEOs was achieved, while all detected breaches were of minor nature and promptly rectified, by the responsible licensee, to PIRSA's satisfaction.

Wellsite inspections

PIRSA inspects restored wellsites and access tracks in the South Australian sector of the Cooper Basin for the purpose of assessing the level of compliance achieved against relevant restoration objectives. Figure 4 shows goal attainment scores of all inspection results over the term 1993 to 2007. The criteria used to assess against these objectives are detailed in the PIRSA '[Field guide for the environmental assessment of abandoned petroleum wellsites in the Cooper Basin, South Australia](#)', June 2007 (available on the Petroleum Channel⁹). Restored wellsites and their associated access tracks are assessed against two key objectives: 'minimisation of visual impact' and 're-establishment of indigenous vegetation'. In the case of the latter, due to the time and rainfall dependency of achieving revegetation, the sites are inspected against two sets of criteria — a time frame for less than five years since the completion of the restoration work, and a time frame for greater than five years.

In summary, scores of -2 and -1 represent unacceptable restoration outcomes as observed and assessed against the criteria, whereas 0, +1 and +2 represent acceptable outcomes expected at various time frames since the completion of the restoration work on the wellsites and access tracks. The inspection results to date show that, in general, wellsite and access track restoration activities have been successful in attaining desired restoration objectives.

In the case of visual impact objectives, a goal attainment score of -1 is the result of past practices (no longer utilised) where excessive foreign material was brought in to construct access tracks and wellsites. In many cases the colour of such material has resulted in a visual impact in contrast to the surrounding soil.

7 Inspection of road transport operations was coordinated with South Australia Police, with the police taking the lead role.

8 Go to Legislation & Compliance, Environmental Regulation, Goal Attainment Scaling.

9 Go to Legislation & Compliance, Environmental Regulation, Goal Attainment Scaling, Field Guides.

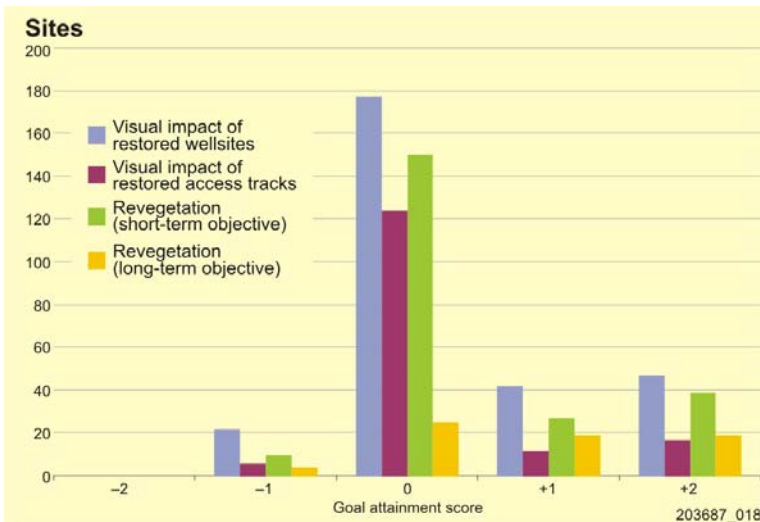


Figure 4 Compliance of wellsite and access track restoration activities (all years of data, 1993–2007).

In the case of the revegetation objective, a –1 score is a result of past restoration practices (now discontinued) where sites were not ripped to facilitate revegetation. In all these cases, it is expected that the impacts will naturally remediate, however, over a longer period of time than if current restoration practices were adopted at the time.

Geophysical operation inspections

Goal attainment scores from field inspections of geophysical operations conducted in 2007 are shown in Figure 5. These inspections are an assessment of the condition of recently abandoned seismic lines in the Cooper, Eromanga, Arrowie and Officer basins. The assessment, in effect, measures the degree to which objectives set for line preparation (the process of greatest potential impact), survey operations and restoration, as included in the relevant SEOs, have been met.

The goal attainment score criteria used for assessing seismic lines are provided in the relevant SEO and PIRSA’s ‘Field guide for the environmental assessment of recently completed seismic lines in the Cooper Basin, South Australia’, September 2006 (available on the Petroleum Channel⁹). Goal attainment score criteria have not, as yet, been developed for the Officer Basin; however pertinent criteria from the Cooper Basin SEO have been applied to some elements of operations in the Officer Basin (e.g. visual impact, impact on land surface, and litter and pollution).

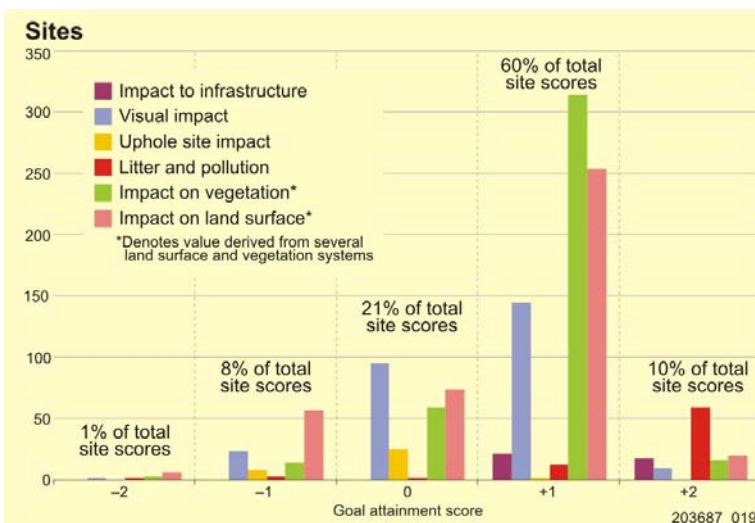


Figure 5 Compliance of seismic line preparation activities with the relevant SEO in 2007.

Six areas of impact are usually assessed, with 'visual impact', 'impact on vegetation' and 'impact on land surface' the key indicators of whether operators are meeting their environmental obligations in line preparation. The distribution of scores presented in Figure 5 highlights the attainment of a desirable outcome (scores of 0, +1 and +2) in over 90% of recorded observations. This is an excellent outcome for operator compliance with regulatory objectives and community expectations. Furthermore, with over 90% of goal attainment scores recorded in the desirable range, the expectation that these seismic lines will recover to the level of natural variability in the landscape in the short to medium term is likely to be realised.

Significant geophysical operation inspection activities

Officer Basin Energy's seismic program in PELs 81 and 253 was the focus of inspections in the later part of the year. This program was in a frontier province with little existing infrastructure and was being undertaken by operators with very limited experience operating under the Petroleum Act. This involved extensive on-ground and aerial monitoring that has enabled interactive feedback to the operator on achievement of objectives under the SEO.

Inspections conducted in the Cooper Basin identified that licence operators undertaking geophysical field operations during 2007 continued to exhibit an excellent culture of compliance. PIRSA inspections focused on new operational techniques such as Australia-first trials of Q-Land and high-resolution seismic data acquisition at Bookabourdie, as well as on operations conducted in sensitive areas, such as Embarka Swamp at Tirrawarra oil field.

Results of these inspections, particularly the minimal cumulative impacts from the three surveys conducted at Bookabourdie during the year, provide a further example of the high standard achieved by licensees undertaking geophysical field operations in 2007.

Geophysical operator audit reports

To conform to the requirements of the appropriate SEO, three environmental audit reports for geophysical survey field operations were submitted to PIRSA. Remaining environmental audit reports are due for submission in 2008.

Development of airborne video monitoring and surveillance system

PIRSA's airborne video monitoring and surveillance system continued to be developed during the year. This camera provides PIRSA with the ability to acquire higher definition imagery of linear features (e.g. seismic lines and pipeline routes) and point features (e.g. wellsites), and monitor impacts of geophysical operations in remote or ecologically sensitive areas. It was successfully used in acquiring imagery along several proposed pipeline routes in, and adjacent to, the Cooper Basin as well as for inspection of historical and recent seismic lines.

With the commencement of a 2D regional survey in the Officer Basin, the airborne video monitoring and surveillance system has provided an invaluable tool for PIRSA to monitor operations as they are being conducted in a vast and remote area. An aerial inspection, conducted in December 2007, enabled PIRSA to record and evaluate the standard of line preparation for the survey and provide direction to the survey operator on how to improve environmental performance. The airborne monitoring system also acquired imagery of proposed lines from the yet to be recorded section of the survey. This imagery will be supplied to the survey operator to use as an aid for the final positioning of the lines and will also give the line preparation contractors an appreciation of the terrain to be traversed. This is another demonstration of an application of the surveillance system and shows how aerial inspections can result in immediate benefits.

Legacy issues

Santos and its joint venture partners, as licensees of the now expired PELs 5 and 6, have set aside funds to offset the residual environmental effects of their seismic exploration activities in the Merninie Range, to the north of Innamincka. The funds are administered under a formal deed of arrangement between Santos and the Minister for Mineral Resources Development, and are dedicated for projects that are to provide a tangible benefit to the environmental assets of the Innamincka Regional Reserve. The Department for Environment and Heritage, as the manager of the Innamincka Regional Reserve, has nominated a series of projects within the reserve that fit the requirements contained in the deed of arrangement. The projects are currently in planning stage, with on-ground work and flora and fauna surveys scheduled to commence in 2008.

Water disposal facility inspections

In the South Australian sector of the Cooper Basin, co-produced water is disposed of through evaporation and seepage ponds, operation of which is covered by SEOs. Figure 6 shows goal attainment scores of all inspection results carried out during 2006 and 2007 of water disposal ponds in the South Australian sector of the Cooper Basin against SEO objectives. The criteria used for visual assessment of these ponds are detailed in Appendix 5 of the [‘South Australia Cooper Basin Operators statement of environmental objectives: production and processing’](#), October 2003 (available on the Petroleum Channel¹⁰). Over 90% of the sites inspected are compliant, with the noncompliances (–1) detected relating to visible oil detected on intermediate holding ponds. This was caused by temporary process upsets in the water separating facility/operation. As this oil was confined to the holding ponds and had not discharged into the open area evaporation / seepage area of the pond system any serious environmental harm was mitigated.

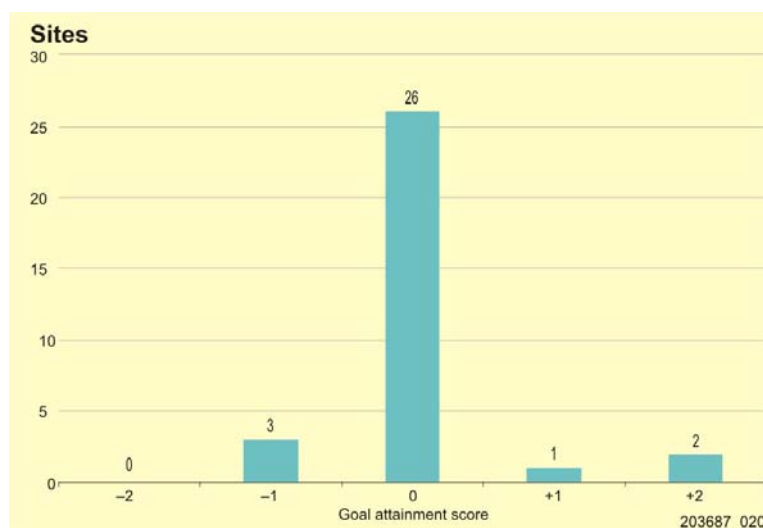


Figure 6 Compliance of water disposal facilities in the Cooper Basin in 2007.

Borrow pit inspections

In the South Australian sector of the Cooper Basin, material used for the construction of roads, wellsites and any other site for the exploration and production of regulated resources is often extracted from pits — known as borrow pits — within close proximity of the proposed work sites. The rehabilitation of the borrow pits is regulated under the requirements of the relevant approved SEOs. Figure 7 shows the results of all inspections carried out by PIRSA during 2007 to assess the level of rehabilitation of restored borrow pits against the relevant SEO objectives. The criteria used for these visual inspections are detailed in a number of drilling, and production and processing SEOs for the Cooper Basin (e.g. see App. 5 in the [‘South Australia](#)

¹⁰ Go to Environment & Land Access, Environmental Register, SEO, EIR and ESA Reports, Production and Processing Activity Reports, Cooper Basin, South Australian Cooper Basin Joint Venture.

Cooper Basin Operators statement of environmental objectives: drilling and well operations' November 2003¹¹).

The results of the inspection have shown poor performance against the relevant SEO requirements and PIRSA will be focusing on this area as part of its regulatory priorities in 2008.

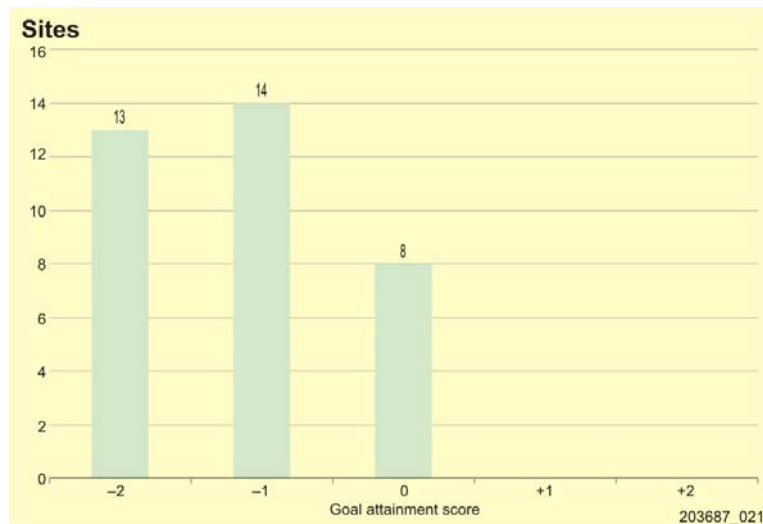


Figure 7 Compliance of borrow pits in the Cooper Basin in 2007.

Road transport safety compliance

In accordance with the Petroleum Act’s public safety protection objective, PIRSA maintains a regulatory focus on public safety risks associated with various regulated activities. One such risk relates to road transport of heavy equipment such as drilling rigs and crude oil tanker transportation on public roads. A key strategy adopted by PIRSA in facilitating compliance with this objective is through a collaborative initiative with the South Australian Police (SAPOL) and the road transport Division within the Department for Transport, Energy and Infrastructure (DTEI). Through this approach the industry is educated on the road transport regulatory requirements with respect to transporting oversize and heavy loads and is informed through PIRSA on SAPOL–DTEI detected road transport breaches. During 2007 monthly compliance statistics collected through SAPOL and DTEI heavy vehicle surveillance activities in the Cooper Basin region were provided to PIRSA to seek assistance to resolve detected heavy vehicle breaches relating to petroleum and geothermal activities.

The number of total monthly breaches with road transport regulations and vehicle permit conditions detected by SAPOL and/or DTEI for all heavy vehicles inspected in the Cooper Basin area during 2007 are shown in Figure 8. This shows that breaches were detected consistently throughout the year and as a result PIRSA , SAPOL and DTEI have agreed to provide all licensees during 2008 with transport contractor company names and the times and dates of all detected breaches. It is expected that this information will be used by licensees to enforce contractual conditions on transport companies to ensure vehicle compliance with all road regulations and permits, so that the level of compliance will markedly improve.

11 Go to Environment & Land Access, Environmental Register, SEO, EIR and ESA Reports, Drilling Activity Reports, Cooper Basin, South Australian Cooper Basin Joint Venture.

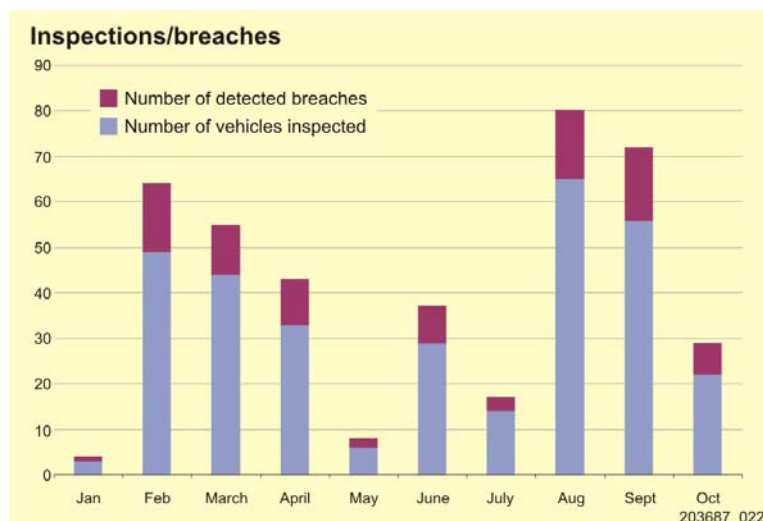


Figure 8 Compliance of heavy vehicles in the Cooper Basin in 2007.

Serious incidents

Section 85 of the Petroleum Act defines a serious incident as an incident arising from activities conducted under a licence in which:

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

Furthermore, pursuant to Regulation 12, more specific definitions of events which constitute a serious incident under the broad definition in section 85 are provided in respective SEOs.

Any serious incident must be reported to PIRSA immediately and then followed up by a detailed report explaining the root cause and corrective actions taken to prevent its re-occurrence. The Act requires licensees to take appropriate action to ensure that any long-term damage is avoided (i.e. breach to relevant SEO), and that adequate corrective action is taken to minimise the likelihood of the re-occurrence of such an incident. Therefore one of the purposes of requiring licensees to prepare and submit detailed reports, into the cause of such incidents and the proposed corrective actions to prevent their reoccurrence, is to ascertain whether a breach has occurred and warrants further enforcement action.

During 2007 the following serious incidents were reported:

- *Moomba Plant gas supply outage incidents.* On 9 January and 5 February 2007 two separate power supply incidents in the Moomba Plant resulting in reductions of gas supply from the plant for periods of ~8 hours and 24 hours, respectively. The 9 January incident was brought about by a wiring integrity issue on one of the main steam turbines, whereas the 5 February incident was caused by an overheating of the turbine bearings on one of the main gas turbines. In both cases backup power supply failed to engage, causing the plant outages. The detailed report into these incidents was submitted by Santos. In both cases the proposed remedial and preventative actions focused on the primary causes of each incident and on improvements to the response time of backup power supply and load shedding. After reviewing the report, PIRSA was satisfied that Santos had responded appropriately to the causes and that the corrective actions taken have reduced the risk of a recurrence of such incidents to as low as reasonably practicable.

- *Truck rollover spill incident.* On 10 February 2007, during a Beach Petroleum rig move operation, a truck transporting the camp generator and water tank rolled on a bend and dislodged its load. The incident resulted in minor injuries to the driver and a spillage of ~800 L of diesel from the generator and prime mover and about 12 500 L of water from the camp water tank, covering an area of ~10 x 30 m. The detailed serious incident report was submitted by Beach Petroleum in accordance with the Regulation 32 requirements. The report revealed that the incident resulted from the water load shifting in the water tank due to the excessive volume of water being carried (contrary to the drilling contractors procedural limit) and absence of adequate baffling in the tank. The root causes identified as the main contributors to this incident related to inadequate work procedures/instructions and training for the management of such loads. After reviewing the report, PIRSA was satisfied that Beach Petroleum and its contractor had responded appropriately to the causes and that the corrective actions taken have reduced the risk of a recurrence of such an incident to as low as reasonably practicable.

Education and support initiatives

A key component to any preventative measure is the need for regulators to effectively educate and advise industry on regulatory requirements to support their efforts in achieving compliance. An effective means for providing such education and support initiatives is through various regulatory and industry forums where PIRSA's regulatory requirements and philosophy can be communicated effectively and efficiently to industry representatives and other stakeholders. Initiatives undertaken in 2007 included:

- Sponsoring of, and presenting at, a workshop in March 2007 organised by the Australian Pipeline Industry Association to inform and educate industry on the revised Australian Standard for the design and construction of pipelines, AS 2885.1.
- Presenting and facilitating a panel discussion at an oil and gas corrosion symposium, held in June 2007 in Adelaide, on the role of objective and risk-based regulation in facilitating industry best practice and behaviour in the areas of process safety and facility integrity management.
- Presenting at public meetings, convened by PIRSA and Natural Resources Management boards/groups and held in Glendambo, Yunta and Marree, to inform landowners of licensee's obligations under the Petroleum Act in relation to environmental protection and landowner notification provisions. Landowners were also informed of their rights under the Act in terms of negotiating access arrangements with the licensee and compensation for any deprivation of use of their land resulting from a licensee's activities.

Data compliance

The Petroleum Act requires explorers and producers to provide PIRSA with geotechnical and ancillary data relevant to their operations. The data requirements are specified in the Regulations. These data become a future asset for the state and are used to assist future explorers in investment opportunities. Guidelines for the format, timing and content of these data have been developed by PIRSA to assist companies comply with these requirements. Due to the highly sophisticated and complex nature of the data involved in the petroleum and geothermal industry, some guidelines are particularly detailed, and many companies find it a challenge to meet them, in the first instance. PIRSA provides considerable assistance to new explorers in attempting to meet the guidelines. This assists in developing capacity to comply in the future, as well as facilitating the collation of statewide assets for future use.

SECTION 2: PERSUASIVE MEASURES

In the case where noncompliance with the Act or reportable or serious incidents is not responded to appropriately by the licensee, Step 2 on the compliance and enforcement pyramid (Fig. 1) is triggered. The purpose of such measures is to instigate urgent corrective action from the licensee through formal expression of concern from the regulator regarding the licensee's compliance and the threat of more punitive action.

In 2007 there were three Step 2 cases (persuasive measures). All three related to the following pipeline incidents:

- *Spill incident on the Santos-operated Tirrawarra Trunkline on 28 February 2007.* In response to the initial report, PIRSA immediately issued to Santos a formal noncompliance and a show cause letter requesting Santos to demonstrate why the minister's delegate should not issue an immediate direction for the trunkline to remain shut in. In response Santos advised that they were not operating the line and had completed investigative work that concluded that the trunkline was no longer fit for service and would be decommissioned and abandoned by the end of 2008. In light of the response given, PIRSA was satisfied and saw no reason to pursue more punitive measures to elicit compliant behaviour.
- *Construction of a surface-laid glass reinforced epoxy flowline by Innamincka Petroleum in its Flax Field in the Cooper Basin without seeking or obtaining approval pursuant to section 74(3)(a) of the Petroleum Act.* In response PIRSA issued Innamincka Petroleum with a formal notice of noncompliance on 26 October 2007 and a direction (see Step 3 below) to cease all flowline activities. PIRSA also requested that Innamincka Petroleum demonstrate to PIRSA's satisfaction that the flowline has been constructed in accord with the requirements of AS 2885, and that any landowner concerns have been resolved. At the time of finalising this annual report, Innamincka Petroleum had yet to conclude its corrective actions entailing a submission of its risk assessment, design basis and environmental management and safety and operating plan for the proposed flowline. Upon receipt of the relevant information PIRSA will commence its review for the granting of approval.
- *Construction of two flowlines (Callawonga 2, 3) and operation of one (Callawonga 2) in the Cooper Basin by Beach Petroleum without PIRSA approval and in the absence of a submitted safety and operating plan as required by AS 2885.* In response PIRSA issued a formal notice of noncompliance on 14 December 2007 and a direction (see Step 3 below) to cease all flowline construction activities. PIRSA also issued a show cause requesting that Beach Petroleum demonstrate why the minister's delegate should not direct Beach Petroleum, pursuant to section 88 of the Petroleum Act, to cease the operation of its flowline until such time that it can be demonstrated to PIRSA's satisfaction that the flowline has been designed, constructed, operated and maintained in accord with the requirements of AS 2885.

SECTION 3: COMPULSIVE MEASURES

In the case where Step 2 measures fail to deliver the required compliant behaviour, or where it is decided the offence is serious enough to warrant proceeding to Step 3 immediately, ministerial directions or prohibitions under the Act are available. In 2007 the following three directions were issued:

- Stuart Petroleum contracted Hunt Energy Rig 3 to drill the Worrior 5 well, which was spudded on 13 August 2007. In response to a draw works cable drum incident on 22 August on the rig, Stuart Petroleum were issued with a direction on 23 August pursuant to section 88(1) to not recommence drilling operations with that rig. This direction was conditional until such time that Stuart Petroleum could demonstrate to PIRSA's satisfaction that upon completion of relevant repairs, critical equipment on the rig were fit for purpose and appropriate action was taken to identify and remedy any deficiencies to the rig's preventative maintenance system. In response repairs were immediately undertaken and an independent third party review of the repairs and other critical equipment on the rig was undertaken. On the basis of the findings and recommendations of the third party review PIRSA lifted the direction on 6 September 2007.
- In response to the above mentioned Innamincka Petroleum noncompliance relating to the Flax Field flowline, a direction pursuant to section 88(1) of the Act to cease all flowline operations immediately was issued on 25 October 2007. At the time of finalising this annual report, the direction had yet to be lifted as Innamincka Petroleum was still in the process of addressing the requirements of the direction.
- In response to Beach Petroleum failing to seek and obtain PIRSA approval for the construction of two flowlines in its Callawonga Field in the Cooper Basin prior to commencing construction, a direction was issued for the company to cease any further flowline construction activities in the Callawonga Field until such time that the required approvals under section 74(3)(a) were granted.

SECTION 4: PUNITIVE MEASURES

As a final measure, for extreme cases where noncompliant behaviour cannot be dealt with effectively through Steps 2 and 3, prosecution and ultimate licence cancellation measures are available. To date no such measures have been required to ensure compliance.

SECTION 5: COMPLIANCE STATISTICS

The following graphs provide a snapshot of the upstream petroleum and geothermal industries' performance in terms of incidents (both reportable and serious) and the findings of the root cause analysis into these incidents.

For all incidents in 2007, the licensee responses and preventative corrective actions satisfied the Act's and PIRSA's requirements.

Spill incidents

All incidents involving the uncontrolled release of hydrocarbon or other contaminants (including produced water) into or onto an area that has not been designed for the specific purpose of containing such a release, are deemed to be spills, regardless of the volume released. For example, if a tank containing oil ruptures and the contents released are contained inside the impervious bunded area surrounding the tank installed to prevent environmental damage, this is not deemed a spill, and hence is not required to be reported as a spill. On the other hand, in the case of a similar incident where a portion of the oil overflows the bund, then this is deemed a spill and must be reported in accordance with the regulatory requirements.

Spill incidents are reported and monitored due to their potential environmental risks, such as pollution and contamination of water and soil, the degradation of vegetation and/or the productive capacity of the land affected.

Figure 9 is a graph of all spills reported since 2001 to end of 2007 for the onshore petroleum and geothermal industries in South Australia. The graph shows the portion of these spills that are oil as opposed to other contaminants. The relative frequency of types of fluids spilled in 2007 is shown in Figure 10.

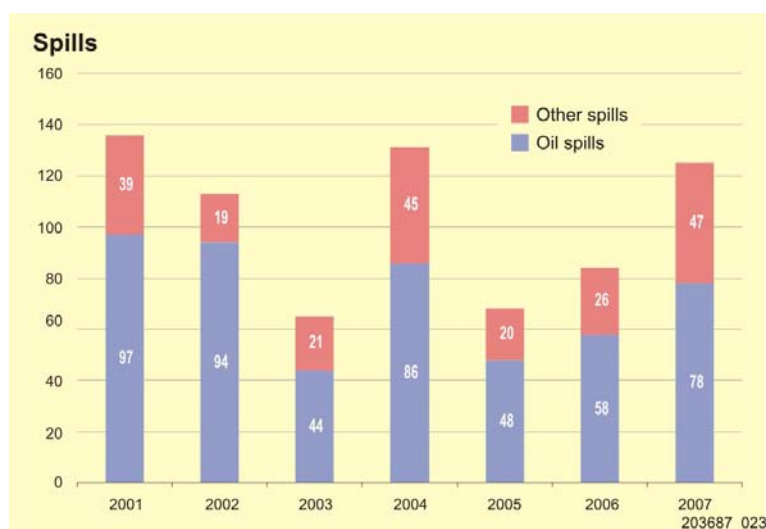


Figure 9 Annual regulated substance spills, 2001–07.

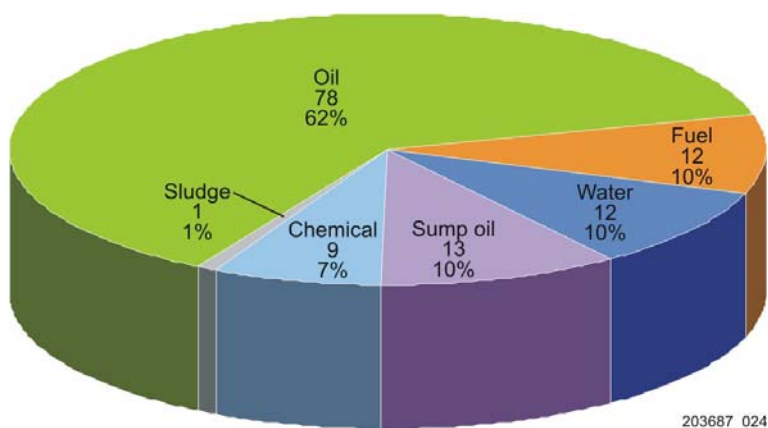


Figure 10 Categories of regulated substance spills in 2007.

The number of spill incidents shown in Figure 9 needs to be considered in the context of the severity (in terms of environmental consequence of the spills, and the volume of oil spilled). Figure 11 shows that the oil spilled expressed as a percentage of total oil production is small and trending lower, from ~0.18% (805 m³) in 2001 to <0.01% (29 m³) in 2007. The relatively higher percentages in 2001 and 2002 represent two major spill incidents that occurred in those years — a pipeline leak in 2001 released 500 m³ (more than half the total volume spilled in that year) and a breach in an oil interceptor pond wall in 2002 released 200 m³ of oil (again more than half the total spill volume for that year). Between 2001 and 2007 only one incident (the 2001 pipeline leak of 500 m³) was deemed as having the potential to cause serious environmental harm and was hence treated as a serious incident under the Act. The decreasing trend shown in Figure 11, despite increases in the volumes of annual oil production over this period, reflects substantial improvement in the effectiveness of industry’s oil spill prevention and management plans.

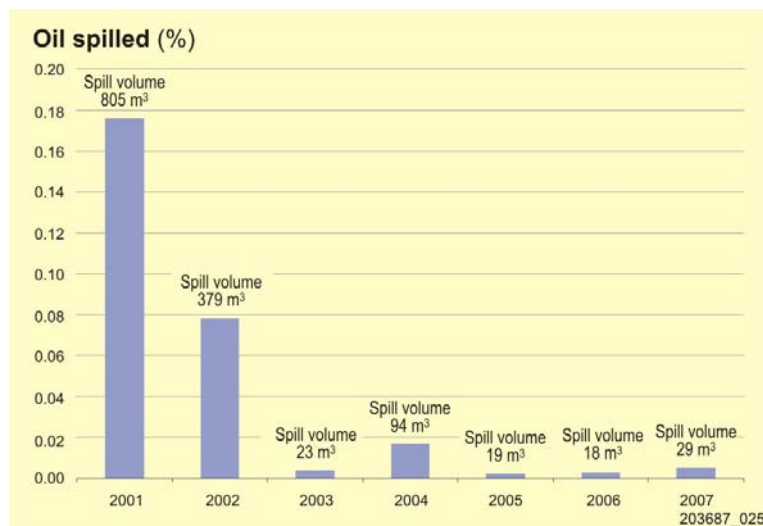


Figure 11 Percentage of volume of oil spilled to total oil produced, 2001–07.

Other incidents

The Petroleum Act includes objectives pertaining to public safety, security of supply and the protection of interests of other land users and landowners. Therefore any incident that may impact on compliance with these objectives must be reported to PIRSA. Figure 12 gives a breakdown of the total number of all incidents reported to PIRSA for the year 2007 into the various categories.

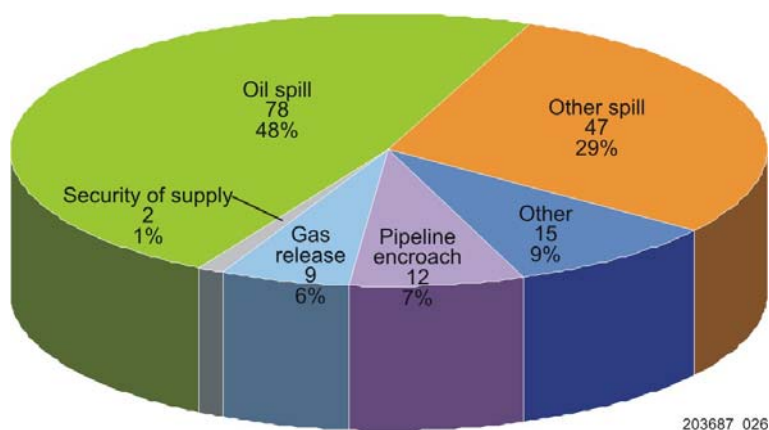


Figure 12 Categories of incidents in 2007.

Security of supply

These incidents represent those relating to gas processing facilities or gas transmission pipelines, which have resulted in sufficiently long outage to warrant concern regarding a potential for interruption or restrictions to gas supply.

Pipeline encroachment

These incidents include detected unauthorised third party entry or activity on pipeline easements. Such incidents are taken seriously by pipeline companies because they often indicate a failure of the systems to pick up unauthorised encroachments and activities on the easement. The need to avoid unauthorised activities is of paramount importance to safeguard the pipeline against any potential threats to its integrity. Pipeline companies seek to achieve this through various initiatives such as landowner easement access agreements, warning signs along the pipeline easement, regular landholder liaison programs, and the use of the 'dial before you dig' service.

Gas release

These incidents relate to uncontrolled and unintended releases at processing facilities and pipelines. Such incidents may be indications of equipment integrity issues that may have security of supply and/or safety implications.

Root cause analysis

As highlighted earlier, through the Regulation 16 operator assessment factors, the PIRSA focus is on licensees' capabilities to achieve SEO compliance in terms of personnel competency, fit-for-purpose equipment and management system effectiveness. Consistent with this approach, PIRSA requires the investigation of the cause of all incidents by licensees to be analysed in these terms. To this end, PIRSA has recommended to licensees the adoption of the following causal factor definitions when analysing the primary contributors to the cause of incidents (see [Incident Reporting](#) on the Petroleum Channel¹²):

- *Design.* The suitability and fitness for purpose of the equipment utilised in the activity.
- *Monitoring/maintenance.* Inadequate monitoring of, and preventative maintenance on, the equipment utilised in the activity.
- *Work practices.* Unclear, incorrectly used, or the absence altogether, of written procedures.
- *Communication.* Absence of, or error in, communication between personnel performing the activity.

¹² Go to Legislation & Compliance, Guidelines, Incident Reporting.

- *Supervision.* Absence of, or inadequate support, oversight or supervision of, those carrying out the activity by the person in charge (supervisor).
- *Risk management.* Inadequacy of the risk review or assessment of the activity (e.g. job hazard analysis (JHA), permit to work (PTW), hazard analysis (HAZAN) / hazard and operability (HAZOP)) carried out prior to the activity.
- *Induction/training.* Appropriateness of training, skills and/or induction of the personnel carrying out the activity.

Figure 13 summarises the root cause analysis of reported incidents during 2007. These findings show that the majority of incidents in 2007, like in 2006, continue to be a result of deficiencies in the monitoring and maintenance of equipment. In all these cases PIRSA is satisfied that the relevant licensees took appropriate corrective action. For some of these cases PIRSA continues to monitor the progress of the corrective actions until they are satisfactorily implemented. Furthermore, the outcome of these root cause analysis findings will continue to influence PIRSA's inspection activities in 2008.

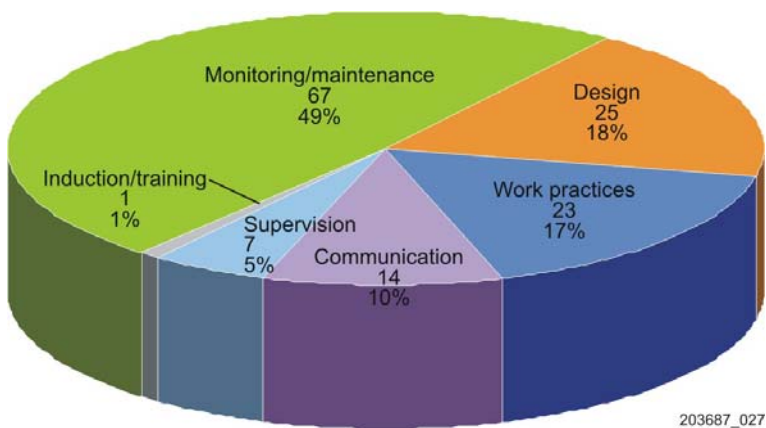


Figure 13 Summary of root causes of incidents in 2007.