

Energy ResourcesRegulatory Guidelines

006

Incident reporting guidance note



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Purpose

Energy resource exploration and production activities are licenced and regulated in South Australia under the *Energy Resources Act 2000* (ER Act) and associated Regulations. The Department for Energy and Mining (DEM) administers the ER Act on the behalf of the Minister for Energy and Mining.

This incident reporting guidance note provides information for ER Act licensees, and the community, on the licensees' legislative requirements for reporting incidents that occur in the course of carrying out regulated activities under the ER Act.

The ER Act and Regulations set out the types of incidents that must be reported and the timing and requirements for such reports.

This guide is provided in response to a need from licensees for further clarification on incident classification and DEM expectations, including the level of detail and supporting information that may be required in incident reports, to ensure compliance with the ER Act.

The reporting requirements specified in this guide are intended to be clarifications and do not in any way replace the requirements of the ER Act and Regulations or any applicable licence conditions or other relevant legislation.

DEM use the information received in incident reports to:

- assess the licensee's compliance with statutory obligations
- confirm that the underlying root cause(s)
 of mistakes or failures are identified and
 understood by the licensee, and that
 appropriate action is taken to prevent re occurrence of the incident by treating the
 root cause(s) of the incident

- analyse trends in incident data in order to appropriately focus its surveillance activities
- identify areas of regulatory research to support effective regulation of the industry.

Incident statistics are published in DEM's annual compliance report.

While some incidents may result in non-compliances with the relevant Statement of Environmental Objectives (SEO) and may trigger further enforcement measures, other incident events serve as leading and lagging indicators that can be used to monitor management system effectiveness. These indicators are tracked and provide input into DEM's annual surveillance program. The reporting of incidents by licensees may therefore result in further requests, audits of supporting information or management system probing by DEM, but are not necessarily in themselves considered to be non-compliances with the SEO.

The determination of whether and to what extent the incident has led to a breach of the ER Act, Regulations or the relevant SEO would be based on the comprehensive reports and DEM surveillance, and is a separate assessment process. The Act requires that regulated activities are properly managed to reduce environmental damage and are carried out in a way that eliminates or limits the risk of any long-term damage (i.e. compliance with the relevant SEO), and that adequate corrective action is taken to minimise the likelihood of the recurrence of such an incident. Enforcement measures where the incident results in a breach of the ER Act, its regulations or the SEO would be determined by DEM in accordance with the compliance policy.

ER Act licensees' regulated activities are also subject to other legislation such as, and not limited to, the South Australian Work Health and Safety Act 2012 and the Environment



Protection Act 1993. While this guidance note relates to the requirements under the ER Act only, it is the licensee's responsibility to maintain their compliance with the ER Act and all other relevant legislation. As the lead regulator for energy resource regulated activities in South Australia, DEM are available as a first point of contact for licensees to assist them in understanding their obligations or to provide contact with co-regulatory agencies.

Classification of incidents that must be reported under the ER Act and Regulations

Section 85 of the ER Act classifies incidents that must be reported to DEM as either immediately reportable incidents or reportable incidents. Both immediately reportable and reportable incidents must be defined within the relevant Statement of Environmental Objectives as prescribed in Section 85 (3) of the ER Act. The SEO becomes in effect part of the regulations, wherein meeting the objectives and measurement criteria defined in a SEO is instrumental to the compliant operation of regulated activities.

All active SEOs are published on the Environmental Register on the Department for Energy and Mining website.

Reporting requirements

Reporting requirements for immediately reportable and reportable incidents, including the timing and the content of reports, is described in the ER Act Section 85 and Regulation 32 and detailed below.

Immediately reportable incidents – initial report

Immediately reportable incidents must be reported initially to DEM by emailing DEM.Engineering@sa.gov.au or telephone the reportable incident number (08) 8463 6666 within 24 hours after the licensee becomes aware of the occurrence of the incident. Email notification is preferred. If initial notification is by telephone, in the event that the number is unattended, record a message and DEM will return the call as soon as practicable.

The immediately reportable incident initial report should be emailed to DEM. engineering@sa.gov.au and must include the following information in accordance with Regulation 32(3):

- (a) the name and business address of the licensee
- (b) the name and telephone number of a person who can be contacted about the matter
- (c) the time and date of the occurrence of the incident
- (d) the place where the incident occurred (using GDA 2020 co-ordinates or distances from significant topographical features)

- (e) in a case involving a spillage the approximate quantity of the spillage
- (f) the approximate size of any area affected by the incident (if relevant)
- (g) the nature and extent of any injury to a person and, if death has occurred, the cause and place of death
- (h) the steps that have been taken to control, minimise or address any damage to any area affected by the incident.

It is important to note that the licensee must report all immediately reportable incidents as defined within the relevant SEO, within 24 hours after the licensee becomes aware of the occurrence of the incident.

Immediately reportable incidents – comprehensive report

A comprehensive report on the immediately reportable incident must be provided within 3 months after the occurrence of the incident (Regulation 32(2)(b)).

The requirements for what must be included in a comprehensive report for an immediately reportable incident are stated clearly in the Regulations. This guide is provided to clarify DEM's expectations regarding the level of detail required, particularly for incident root cause (i.e. how/why this incident was allowed to happen, not just the causal failure mechanism), environmental impacts, remedial and preventative measures.

Regulation 32 (4) provides the detail for what must be included in a comprehensive report for an immediately reportable incident.

(4) comprehensive report of an immediately reportable incident must be made in a manner and form determined by

the Minister and include the following information:

(a) the results of any assessment or investigation of the conditions or circumstances that caused or contributed to the occurrence of the incident, including an assessment of the effectiveness of the design, procedures and management systems that were in place to prevent the incident occurring

It is expected in all cases of an immediately reportable incident that a detailed assessment or investigation will be conducted into the conditions or circumstances that caused or contributed to the occurrence of the incident and information provided in the comprehensive report on both the method and the findings.

The immediately reportable incident report should also include details of any information sourced from post incident investigations, such as the findings of any excavations or any material testing/analysis that may have been undertaken.

The investigation should not only consider the causal factors, but also the in-depth root cause analysis that has been conducted. The root cause of an incident is the cause which if eliminated or managed would prevent recurrence of the incident and hence correct identification of the root cause is necessary to develop the appropriate actions to prevent the incident from recurring.

As outlined clearly in the regulations above, the root cause analysis must include an assessment of the effectiveness of the design, procedures and management systems that were in place to prevent the incident occurring.

The analysis should also take into consideration whether previous incidents of this type have occurred, near misses or relevant operating excursions, and whether



there are themes, repeated failures or previous inadequate assessments that have led to this incident's occurrence. The potential for further similar incidents for example with a type of equipment (or a similar procedure or failure prevention method) should also be considered.

To identify all potential root causes and hence corrective actions, the scope of the investigation should consider disciplines across the business (whether operational, environmental or engineering).

The incident investigation must be continued until the specific root cause is determined.

There are many established techniques that may be used to investigate the root cause of an incident, and the selected technique and level of complexity will need to be appropriate to the type of incident. Further information on root cause analysis techniques is provided in Appendix 1.

To aid licensees in the identification of the root cause, and to ensure consistent information

is submitted for monitoring trends across the industry, DEM has provided definitions of root cause categories in Table 1. The identified root cause should be classified in one of these categories which will then lead to proposed preventative action.

DEM requires the root cause category to be specified in the incident report for all incidents. DEM requires an assessment of the effectiveness of the controls (within that category) that were in place to prevent the incident occurring. In addition, the specific root cause must be identified to enable clear and specific actions to be developed to prevent or avoid the incident re-occurrence.

This provides the basis for information to be provided under Regulation 32(4)(d) to report on the steps that have been taken, or are proposed to be taken, to prevent recurrence of the incident. Without undertaking a root cause analysis, preventative action may be initiated which is not effective in eliminating or alleviating the problem.

Table 1 Root cause categories.

ROOT CAUSE CATEGORY	DEFINITION					
Design	Lack of suitable and fit for purpose equipment utilised in the activity.					
Monitoring/maintenance	Inadequate monitoring of and preventative maintenance on the equipment utilised in the activity.					
Work practices	Either unclear, incorrectly used or the absence altogether of written procedures.					
Communication	Absence or error in communication between people performing the activity					
Supervision	Absence 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/Hazard and Operability Analysis (HAZAN/HAZOP) carried out prior to the activity.					
Induction/training/fit for work	Inadequate training, skills and/or induction of the people carrying out the activity, physical/mental impairment to carry out task and responsibilities.					

(b) the nature and extent of any damage to the environment that occurred as a result of the incident

The nature and extent of any damage must be completely determined for reporting in the comprehensive report for an immediately reportable incident. Descriptions of environmental damage must consider the environmental objectives stipulated in the relevant SEO. To determine the nature and extent of any damage that has occurred as a result of a loss of containment (LOC) event, lateral and vertical delineation of impacts must be achieved.

Sufficient data and supporting documentation should be included in the report to substantiate any conclusions or statements on the nature and extent of damage to allow the reader to reach an informed decision on whether any breach of the relevant SEO has occurred.

Examples of supporting documentation that should be provided in the comprehensive report include:

- Assessment of compliance against all relevant objectives of the SEO by an appropriately qualified person/s
- Site maps showing the affected area including all environmental features
- Information on any sampling methods undertaken including maps of sampling locations relevant to the incident location
- Analytical laboratory results and/or field measurements showing that vertical and lateral delineation of impact has been achieved
- Known or estimated depth to groundwater including source of data
- Relevant photos.

(c) the steps that have been taken, or are proposed to be taken, to clean up and rehabilitate any area affected by the incident

The comprehensive report must describe the clean-up and rehabilitation activities (where applicable) that have been undertaken to address the area affected by the incident. If clean-up and rehabilitation has not been completed within the required reporting period, detailed forward plans including timeframes for completion must be provided.

Clean-up and rehabilitation activities must be undertaken in accordance with the requirements of the relevant SEO. Pursuant to Section 100(2) of the ER Act, all SEOs are required to include 'rehabilitation of land adversely affected by regulated activities' as an objective. Using a LOC incident as an example, a number of current SEOs include the following assessment criteria to measure achievement of objectives relating to impacts on flora, fauna, soil and water:

'Any escape of petroleum, processed substance, chemical or fuel is either immediately contained and removed or assessed in accordance with the requirements of the National Environment Protection (Assessment of Site Contamination) Measure 1999, amended 2013 (NEPM), and remediated in accordance with relevant guidelines in a timely manner'.

In this case, it must be shown in the comprehensive incident report, how the assessment and clean-up and rehabilitation activities undertaken or planned by the licensee meet this assessment criteria and in turn comply with the relevant objectives of the SEO.

Note: SEOs also include assessment criteria relating to rehabilitation of other potential immediately reportable incidents that may



arise for example, to measure achievement of objectives relating to introduction of weeds, public safety and cultural heritage.

In all cases, appropriate supporting documentation must be included in the comprehensive report to demonstrate how any area affected by the incident has been rehabilitated in accordance with the relevant SEO.

(d) the steps that have been taken, or are proposed to be taken, to prevent a recurrence of the incident

The steps that have been taken, or are proposed to be taken, to prevent a recurrence of similar and/or systemic incidents will follow from the investigation and root cause analysis process reported under Regulation 32(4) (a). Where steps to prevent a recurrence of the incident are proposed these should be provided as actionable tasks with a clear completion time frame and accountabilities.

Regulations 32(4)(d) for immediately reportable incidents and 32(6)(g) for reportable incidents both require licensees to state what measures have been proposed or implemented to prevent a recurrence of the incident. This information is required to provide assurance to DEM that the risk associated with the incident recurring due to the same root cause(s) is managed. Where risks cannot be avoided, or reduced to either a low or negligible level, then they should be reduced to As Low as Reasonably Practicable (ALARP).

ALARP is achieved if the cost of further risk reduction is grossly disproportionate to the benefit gained.

Reportable incidents – reporting requirements

Reportable incidents are to be reported to the Energy Regulation Branch within the Department for Energy and Mining via email to DEM.Engineering@sa.gov.au on a quarterly basis within 1 month after the end of each quarter as required by Regulation 32(5)

Regulation 32 (6) provides the information that must be provided in a report on reportable incidents as below:

- (a) the time and date of the occurrence of the incident and the time and date of detection
- (b) the place where the incident occurred (using appropriate co-ordinates or distances from significant topographical features)
- (c) in the case of a spillage the approximate quantity of the spillage

The quantity should also identify, where relevant, approximate percentages of the different components of the spillage (for example the Produced Formation Water and Hydrocarbon ratio or percentage).

(d) the approximate size of any area affected by the incident (if relevant)

In the case of LOC events, DEM expect the three-dimensional size of any area affected be provided. Where a significant quantity is released and the incident has not been classified as immediately reportable, the licensee must ensure that the appropriate documentation has been retained and is available upon request, to demonstrate that the area affected both horizontally and vertically has been determined.

 (e) the cause of the incident, including an assessment of the effectiveness of the design, procedures and management systems that were in place to prevent the incident occurring

While it is not expected that a report on reportable incidents will include the same level of detail for each incident as a comprehensive serious incident report, the regulations still require an assessment of the effectiveness of the design, procedures and management systems that were in place to prevent the incident occurring. A recognised incident investigation such as a root cause analysis will satisfy the requirements of regulation 32(6)(e) and (g). Background information on the investigation and the assessment of the effectiveness of the controls that were in place to prevent the incident occurring may be audited and must be available upon request by DFM.

DEM requires the root cause category to be specified in the incident report for all incidents. In addition, the specific root cause must be identified to enable clear and specific actions to be developed to prevent or avoid the incident re-occurrence.

(f) the steps that have been taken, or are proposed to be taken, to clean up and rehabilitate any area affected by the incident; and

Information should include the methods used, for example for a spill the volume of affected soil removed, to what depth, if removed offsite then where removed to, and/or how it was treated. Where rehabilitation actions are not yet completed and are proposed, a completion date should be provided.

(g) the steps that have been taken, or are proposed to be taken, to prevent a recurrence of the incident.

As for the comprehensive report for an immediately reportable incident, the root cause analysis or equivalent completed for a reportable incident will provide the basis for the steps taken or proposed to be taken to prevent recurrence of the incident, which must be described in the reportable incident report in accordance with regulation 32(6)(g).

Through this process and DEM's surveillance and monitoring of incident trends, it may become apparent that further investigation is required to address certain recurring incident types, or recurring root causes. Individually these incidents may not be deemed to be high risk or lead to significant consequence but cumulatively are more significant or signify systemic issues of the licensee or the industry as a whole. Well conducted incident investigations and consistently thorough reporting provide an opportunity for improvement and considered targeted actions to prevent potential future incidents.

To meet the requirements of Regulation 32(6), reportable incident reports may be presented in a tabulated form. For an example of an acceptable preferred format for consistency in reportable incident reporting please see Appendix 2. While a table format is acceptable, it is the expectation of DEM that the licensee will retain all relevant information, such as measurement data, analyses, or other relevant records, to support the information in the report. DEM will audit this supporting information at times and the licensee will be required to provide it upon request in accordance with Section 122 of the Act.



A note on Regulation 32(7)

A report under subregulation (4) or (6) must be signed by a person (being either the licensee or a person authorised by the licensee) who has taken reasonable steps to review the report to ensure the accuracy of the information contained in the report.

Regulation 32(7) relates to accountability and requires both immediately reportable incidents and reportable incidents to be signed by a person who has reviewed the report and verifies the accuracy of the information contained in the report.

Appendix 1. Root cause analysis techniques

There are many established techniques that may be used to investigate the root cause of an incident.

The ER Act and Regulations do not mandate a specific investigation method but require that the investigation identify particular information. It is the licensee's responsibility to select a method appropriate to the level of investigation required for a particular circumstance.

A common technique that could be adopted is the Root Cause Logic Tree as summarised in Figure 1.

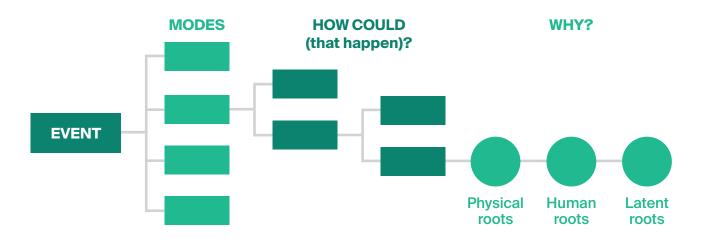


Figure 1 Root Cause Logic Tree.

The fundamental steps in a Root Cause Logic Tree analysis of a particular incident are provided in Table 2.

Table 2 Root Cause Logic Tree analysis steps

STEP	DESCRIPTION
Event	Establish and confirm the event leading to the incident, that is, an uncontrolled release of crude oil, fire or explosion. This is considered as an undisputable and clear fact.
Mode of failure analysis	Identify via physical examination the failure that lead to the event, that is, for example pipe or vessel rupture or overfill. Secondly, through more detailed examination confirm the mechanism that lead to the failure occurring. For example, corrosion, over pressure, high/low temperature etc.
Physical Root Cause(s)	Establish evidence to confirm the physical mechanism that lead to the mode of failure. For example, deterioration of protective coating, malfunctioning corrosion protection, malfunction pressure relief, failure of level control etc.
Human Root Cause(s)	Establish evidence to confirm what actions were or were not taken that lead to the physical root cause. For example, failure to inspect or to properly administer corrosion inhibitor or to respond an alarm or to administer a procedure.
Latent Root Cause(s)	Establish evidence to confirm why the physical or the human root cause(s) occurred. For example, deficiencies in design, training, competencies, procedures, supervision, worker physical and mental condition and maintenance etc.

Other Root cause methodology that lead to the same findings include the '5 whys' (which may require more or less than 5 why's), ICAM or fishbone analysis.

Regardless of chosen methodology the analysis is a problem solving exercise and should aim to be thorough and efficient, focussing on systems and processes rather than individual performance. It may be useful to map a timeline of the events and causal factors that led to the incident. The link between the incident occurrence and the root cause would be described through causal factor statements to describe a mistake or failure that, if corrected, would have prevented the incident from occurring or would have significantly mitigated the consequences.

Causal factor statements should ensure that they are clear cause and effect statements and should consider the underlying reasons why something occurred, for example rather than human error consider what condition or missing process led to the error being made or whether and why it was an individual's duty to correctly complete an action to prevent the incident.

The root cause of an incident is the underlying reason for the occurrence of that incident. The identification of the root cause is necessary to develop the appropriate actions to prevent the incident from recurring.

The root cause identified through the investigation or assessment conducted under the Energy Resources Regulations, Regulation 32 (4) part (a) will lead to the development of clear actions that must be detailed under part (d).

The root cause and causal factors should consider all potential causes whether operational, environmental or engineering discipline specific and how the learnings from the incident could be applied across the business. The analysis should also take into consideration whether previous incidents of this type have occurred, near misses or relevant operating excursions, and whether there are themes, repeated failures or previous inadequate assessments that have led to this incident's occurrence. Further, by asking the right questions and continuing the investigation to a sufficient level with involvement from a range of disciplines, a structured holistic response could be designed to prevent or minimise incident recurrence of the same or higher consequence.

Appendix 2. Reportable incident report table example

The table below is provided as an example of a preferred format for a reportable incident report table. This contains the required information and level of detail and should be used as guidance for consistency in reportable incident reports.

Relevant Regulation	32(6)(a)	32(6)(a)	32(6)(a)	32(6)(a)	32(6)(b)	32(1)	32(1)(a) and 32(6)(c)	32(6)(c)	32(6)(d)	32(6)(d)	32(6)(e)	32(6)(e)	32(6)(f)	32(6)(g)
Information required / Operators' incident ID	Date of incident	Time of incident	Date of detection	Time of detection	Site location	Incident description	"Substance/s (include % of each component)"	Total volume released (m³)	Surface area impacted (m²)	Depth impacted (m)	Causal factor	Root cause	"Corrective measures (steps taken or proposed to remediate)"	"Preventative measures (steps taken or proposed to prevent recurrence)"
Example 1	2/01/2019	10:00	2/01/2019	13:00	[Name] Oil well	Beam pump ESB overflowed into cellar with some crude blown to grade by wind	90% produced formation water + 10% crude oil	0.5	20	0.1	Leaking packers	Monitoring/ maintenance	Approximately 2 cubes of impacted soil to 0.1 m depth removed to [Name] landfarm for treatment. Excavation to be replaced with clean fill Q2 2019	"Well isolated and packers replaced. Review of maintenance proceedures. Investigation into alternative technologies to trigger shutdown to be complete by end 2019"
Example 2	20/02/2019	13:00	20/02/2019	13:00	[Name] Gas satellite	Pinhole leak from weld in pipework on the compressor discharge header was identified following trip of compressor unit (due to unrelated issue). ESD was not required; leak was isolated and failed spool fully de-pressured.	Raw gas with approximately 30% CO ₂ . No liquids.	Unknown. Duration approximately 1 hour after identification.	N/A	N/A	Weld procedure did not specify fit up requirements; overstress resulted in crack in weld.	Work practices	"Leak isolated and depressured. Failed spool removed and positively isolated. Spool repaired off- site and reinstalled on site."	"Similar welds using this procedure to be inspected using NDT to inspect for cracking. Weld procedure reviewed."

Table continued

Relevant Regulation	32(6)(a)	32(6)(a)	32(6)(a)	32(6)(a)	32(6)(b)	32(1)	32(1)(a) and 32(6)(c)	32(6)(c)	32(6)(d)	32(6)(d)	32(6)(e)	32(6)(e)	32(6)(f)	32(6)(g)
Example 3	30/05/2024	11:00	7/05/2024	9:00	[Name] Transmission pipeline	Landowner Unauthorised Activity - RoW patrol observed several new fence posts have been installed by a landholder above pipelline, pipelline was contacted by one post, but no repair required.	N/A	N/A	N/A	N/A	New Landowner unaware of responsibilities regarding pipeline, did not lodge a BYDA enquire prior to works or contact [Name].	Communication	Excavated pipeline at location and inspected pipeline for damage.	[Name] provided the landowner with formal correspondence about the unauthorised activity. Discussion with the landowner, who had recently purchased the property, outlined the responsibilities of the easement, the DBYD requirements and land use restrictions. [Name] increased frequency of landholder liaison contact activities in the area.
Example 4	30/05/2024	13:00	30/05/2024	13:00	[Name] Gas Satellite	Inlet XSV manual vent valve [name] was incorrectly tubed up. Instead of venting the XSV to close it was venting the controller causing the XSV to remain open. Automated trip functionality not compromised if called upon	No release	N/A	N/A	N/A	XSV instrument tubing incorrectly connected – Human error	Inductions/ Training	No remediation required. Correction made to tubing	Correction made to tubing. Error raised in toolbox meeting and communicated through company safety bulletin.

ACKNOWLEDGEMENT OF COUNTRY

As guests on Aboriginal land, the Department for Energy and Mining (DEM) acknowledges everything this department does impacts on Aboriginal country, the sea, the sky, its people, and the spiritual and cultural connections which have existed since the first sunrise.

Our responsibility is to share our collective knowledge, recognise a difficult history, respect the relationships made over time, and create a stronger future.

We are ready to walk, learn and work together.

FURTHER INFORMATION

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