

Reportable incidents in relation to a well in a title area – Notification, Reports and Record

Division 8 of the Offshore Petroleum and Greenhouse Gas Storage (Resource Management and Administration) Regulations 2011 (OPGGs (RMAR)) introduced notification, reporting and recording requirements as from 1 January 2016 for titleholders in relation to well-related incidents.

Part 5: Incidents, reports and records

Reg 5.26 Notifying reportable incident

- (1) A titleholder commits an offence if:
 - (a) there is a reportable incident in relation to a well in the title area; and
 - (b) the titleholder does not give notice of the reportable incident to the Regulator in accordance with subregulation (3).
Penalty: 80 penalty units.
- (2) An offence against subregulation (1) is an offence of strict liability.
Note: For strict liability, see section 6.1 of the *Criminal Code*.
- (3) The notice:
 - (a) must be given to the Regulator as soon as practicable after:
 - (i) the first occurrence of the reportable incident; or
 - (ii) if the reportable incident was not detected by the titleholder at the time of the first occurrence—the time the titleholder becomes aware of the reportable incident; and
 - (b) must be given orally; and
 - (c) must contain:
 - (i) all material facts and circumstances concerning the reportable incident that the titleholder knows or is able, by reasonable search or enquiry, to find out; and
 - (ii) any action taken, or proposed to be taken, to stop, control or remedy the reportable incident.

Part 5: Incidents, reports and records

Reg 5.26A Written report of reportable incident

- (1) A titleholder commits an offence if:
 - (a) there is a reportable incident in relation to a well in the title area; and
 - (b) the titleholder does not give a written report of the reportable incident to the Regulator in accordance with subregulation (3).
Penalty: 80 penalty units.
- (2) An offence against subregulation (1) is an offence of strict liability.
Note: For strict liability, see section 6.1 of the *Criminal Code*.

Part 5: Incidents, reports and records
Reg 5.26A Written report of reportable incident

- (3) The report:
- (a) must be given to the Regulator:
 - (i) not later than 3 days after the first occurrence of the reportable incident; or
 - (ii) if the reportable incident was not detected by the titleholder at the time of the first occurrence—not later than 3 days after the time the titleholder becomes aware of the reportable incident; or
 - (iii) if the Regulator agrees to another period within which the report must be provided—within that period; and
 - (b) must contain:
 - (i) all material facts and circumstances concerning the reportable incident that the titleholder knows or is able, by reasonable search or enquiry, to find out; and
 - (ii) any action taken, or proposed to be taken, to stop, control or remedy the reportable incident; and
 - (iii) any action taken, or proposed to be taken, to prevent a similar incident occurring in the future.

Details for notification of reportable incidents

Reportable incidents in relation to a well in a title area must be notified to NOPSEMA in accordance with Regulations 5.26 and 5.26A.

A reportable incident in relation to a well is defined by Regulation 5.02:

- (a) A loss of integrity of the well, including a well kick, resulting in a release of more than 1 kilogram (1kg) of gas or 80 litres of liquid;
- (b) *A failure of hydrostatic pressure as a primary barrier, leading to a build-up of pressure or a positive flow back; and the operation of a blowout prevention or diversion system;*
- (c) Damage to, or failure of, well-related equipment that has led or could lead to a loss of integrity of the well;
- (d) Any other unplanned occurrence that requires the titleholder to implement measures or arrangements to regain control of the well.

Reportable incidents in relation to a well in a title area must be notified to NOPSEMA in accordance with regulations 5.26 and 5.26A.

The purpose of this section is to provide guidance for:

- Categorisation and classification of well control incidents
- Classification of well integrity incidents in the operational and production phases
- Correct evaluation and alerting, notification and reporting to NOPSEMA.

Please note that any incident or leakage downstream from the wellhead of XT valves are not covered by this guidance and not defined as a well integrity incident, even if the incident may lead to a temporary leak from the well to the environment (e.g. leakage from a flowline).

Drilling and completion colour codes

The matrix is organised according to criticality into four colour coded categories:

- Red – Critical well control incidents: graded 1 – 4:
 - Grade 1: Blowout
 - Grade 2: High HC influx rate
 - Grade 3: High rate shallow gas flow
 - Grade 4: High rate shallow water flow.
- Yellow – Serious well control incidents: graded 1 - 3:
 - Grade 1: Medium HC influx, volume > kick tolerance that can be handled with kill procedures
 - Grade 2: Loss of fluid barrier requiring closure of BOP
 - Grade 3: Medium rate shallow gas flow to seabed or diverted on installation.
- Green – Regular well control incidents: graded 1 - 3:
 - Grade 1: Low HC or water influx, volume < kick tolerance that can be handled with well control procedures
 - Grade 2: Low rate shallow gas with no gas on the installation
 - Grade 3: Low rate shallow water flow.
- Grey – None classified incidents (not reportable to NOPSEMA):
 - Grey incidents; incidents such as non-continuous HC migration.

Matrix for categorisation and classification for well control incidents drilling and completion operations

Level 1 – Red Critical well control incidents	1. Blowout	Blowout to environment or facility including underground blowout where there is a failure of primary and secondary barrier.
	2. High HC influx volume / rate	Failure of primary well barrier. Successful activation of the secondary well barrier. Critical kill operations with high risk of blowout.
	3. High rate shallow gas flow	Shallow gas incident with unsuccessful kill operation. Gas flowing to seabed or installation (diverter), until all gas is released.
	4. High rate shallow water flow	Shallow water flow influencing stability of an installation (jack-up, fixed installation or template).
Level 2 – Yellow Serious well control incidents	1. Medium HC influx volume/rate	Influx volume above design criteria for kick margin, but possible to regain barrier with standard kill procedure.
	2. Total fluid barrier lost	Loss situation without being able to maintain the hydrostatic pressure in the well.
	3. Medium rate shallow gas flow	Shallow gas incident with kill operations or gas handled on installation by diverter.
Level 3 – Green Regular well control incidents	1. Low HC or water influx volume/rate	Influx volume below design criteria for kick margin, and successfully regained barrier with standard kill procedure without degrading well integrity.
	2. Low rate shallow gas flow	Shallow gas incident with kill operations. No gas handled on installation (riser-less operation).
	3. Low rate shallow water flow	Shallow water flow incident.
Level 4 – Grey Non Classified (NC)	1. Non-continuous gas/water migration in well - with all barriers in place	Release of a barrier element with contained volume of gas/water trapped below or behind casing.

Examples of drilling and completion incidents

1. Blowout	
	Blowout where the installation is evacuated and blowout handled from remote location or another vessel (relief well, capping, etc.)
	Underground blowout breaching to seabed
	Blowout breaches seabed but well killed from installation
2. High HC influx rate	
	High influx volume (significantly above design criteria on kick margin) and shear ram activated, i.e. in ultimate stage
	Shut in pressure exceeding casing burst pressure or well control equipment working pressure whichever is less
	Loss of surface well control components leading to closing of shear seal ram as only option
	Shear seal ram closed due to internal blowout inside drill pipe (failure to close IBOP/install FOSV)
	Riser evacuated to surface, loss of primary well barrier. BOP activated and influx contained by secondary barrier, well killed from installation
3. High rate shallow gas flow	
	Fixed installation or jack-up where gas blows to installation
	Floater where gas through sea is coming up to the installation
	Gas in such magnitude that instability of rig is experienced
	Jack up where gas breaches out on seabed threatening stability of installation
	Long term diverting of gas with high potential for failure of diverting system
	Large OD top hole section riser less with gas flowing and unable to kill
4. High rate shallow water flow	
	Shallow water flow incident under a jack up or a fixed installation - no threat to installation/template
1. Medium HC influx rate	
	Medium/high influx volume (above design criteria on kick margin) but kick circulated out using conventional kill method. Note: Also valid for medium/high influx volume in sections designed with infinite kick margin
	Underground blowout not breaching to seabed (activation of shear rams in a cyclone evacuation scenario)
2. Total fluid barrier loss	
	Sagging of mud resulting underbalanced situation - (influx volume > kick margin) Handled using conventional kill methods
	Loss situation without being able to maintain the hydrostatic pressure in the well and closure of BOP with pressure underneath
3. Medium rate shallow gas flow	
	Large OD top hole section riser less with gas flowing and able to kill
	Shallow gas diverted on installation
1. Low HC or water influx rate	
	Small HC kick volume (below design criteria on kick margin) handled using conventional kill methods
	Water kick handled using conventional kill methods
	Sagging of mud resulting underbalanced situation - (influx volume < kick margin) Handled using conventional kill methods
2. Low rates shallow gas	
	Shallow gas incident with kill operations. No gas handled on installation (riser-less operation)
3. Low rate shallow water flow	
	Shallow water flow incident with no risk for stability of installation
	Shallow water flow left flowing. Re-spud new location

Non-classified incidents	
	Circulation of mud with high drilled gas content with closed BOP as precautionary measure, but without applying additional backpressure
	Circulate and increase mud weight due to increasing gas trend without closing BOP.
	Shallow gas bubbles from top hole section
	Released gas after cutting or perforation of casing string - no continuous flow
	Released gas after releasing downhole plugs / packers without having an underbalanced situation in the well
	Lost mud returning into wellbore (ballooning)
	Release of Nitrogen after a foam cement operation
	Release gas during pulling of cores
	Planned circulating bottoms up after performing RFT sampling

Well intervention – colour codes column on left hand side

The left column in the matrix is organised according to criticality into four colour coded categories:



Red – Critical well control incidents

Red incidents; graded 1 - 2

Grade 1: Blowout

Grade 2: Loss of primary and secondary barriers.



Yellow – Serious well control incidents

Yellow incidents; graded 1 - 2

Grade 1: Failure of primary well barrier. Activation of secondary barrier with no other redundant barrier elements available.

Grade 2: Failure of primary well barrier. Activation of secondary barrier with other redundant barrier elements available.



Green – Regular well control incidents

Green incidents; 1 grade

Grade 1: Temporary degraded well barrier element that requires activation of a secondary well barrier to enable re-establishment of degraded barrier element.



Grey – Non-classified incidents (not reportable to NOPSEMA)

Grey incidents cover non-classified incidents, such as non-continuous HC migration.

Matrix for categorisation and classification for well control incidents well intervention operations

Level 1 – Red Critical well control incidents	1. Blowout	Blowout to environment or facility. Failure of primary and secondary barriers that can be handled by relief well drilling, capping or handled on the installation.
	2. High HC influx volume / rate	Well control equipment damaged from external loads or non-shearable item stuck across BOP and safety head. Well flowing to surroundings. Well killed or well capped on location.
Level 2 – Yellow Serious well control incidents	1. Failure of primary well barrier. Activation of secondary well barrier – no other redundant barrier elements available	Well secured by closing one single valve (safety head or XT valve). String blocking other valves preventing redundant barrier element.
	2. Failure of primary well barrier. Activation of secondary well barrier – other redundant barrier elements available	Failure of one well barrier element. Activation of redundant well barrier elements and re-establishment of well barrier element within primary barrier. Secondary barrier intact.
Level 3 – Green Regular well control incidents	1. Low HC or water influx volume/rate	Influx volume below design criteria for kick margin, and successfully regained barrier with standard kill procedure without degrading well integrity.
Level 4 – Grey Non Classified (NC)	1. Very small leak (<1kg gas, 80 litres liquid), no activation of BOP necessary	Very small leak, able to pull out of hole and close normal lubricator valves to repair leak. Two barriers intact.

Examples of well intervention incidents

	1. Blowout
	Non shearable item stuck across BOP, leakage above BOP - not able to close any BOP rams - DHSV not available - installation to be evacuated
	Well control equipment damaged from external loads - not able to operate equipment - well flowing to surroundings - installation to be evacuated
	2. Failure of primary and secondary barriers
	Non shearable item stuck across BOP, leakage above BOP - not able to close any BOP rams - DHSV not available - non essential personnel evacuated - well killed with kill mud or well capped with assistance from well control service company
	Well control equipment damaged from external loads - not able to operate equipment - well flowing to surroundings - well killed with kill mud or well capped with assistance from well control service company
	1. Failure of primary well barrier. Activation of secondary well barrier – no other redundant barrier elements available
	Leak below safety head and well secured by cutting string and close other valves
	Well secured by cutting string using safety head. String blocking other valves (not possible to achieve double block)
	2. Failure of primary well barrier. Activation of secondary well barrier – other redundant barrier elements available
	Leak between Safety head and BOP. Well secured by cutting string using safety head. Other valves available after cutting - double block achieved
	Leak in or above BOP, BOP failed, Safety Head activated to cut string, valves below closed to provide double block
	1. Temporary degraded well barrier element function
	Necessary to close BOP to repair leak above BOP
	Pressure containing stuffing box, grease injection head or strippers redressed to repair leak
	Barrier compromised in well without flow potential
	1. Non classified incidents
	Very small leak, able to pull out of hole and close normal lubricating valves to repair leak. Two barriers intact

Well-related equipment is defined in the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGSA) as:

- (a) plant; or
- (b) equipment; or
- (c) other thing; for containing pressure in a well.

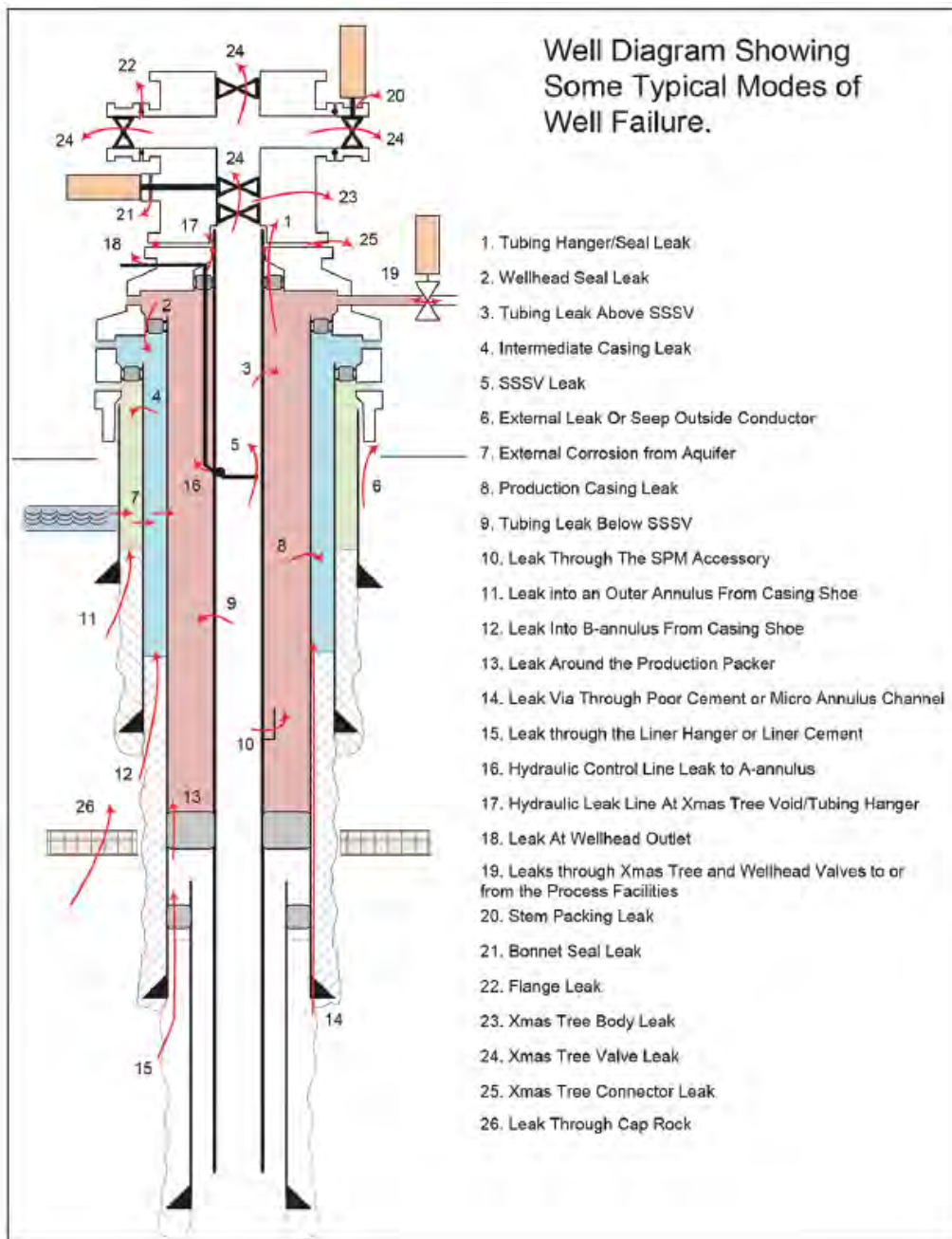
NOPSEMA considers that if damage to or failure of well-equipment has, or could, lead to a loss of well integrity, then such equipment would generally be pressure containing equipment relating to the barrier envelope of a well at its various stages of construction, operation etc. and this should guide a titleholder's consideration of the reporting requirement of subregulation 5.02(c).

Reportable incidents in relation to a well in a title area must be notified to NOPSEMA in accordance with new regulations 5.26 and 5.26A.

A reportable incident in relation to a well is defined by Regulation 5.02:

- (a) A loss of integrity of the well, including a well kick, resulting in a release of more than 1 kilogram (1kg) of gas or 80 litres of liquid;
- (b) A failure of hydrostatic pressure as a primary barrier, leading to a build-up of pressure or a positive flow back; and the operation of a blow-out prevention or diversion system;
- (c) *Damage to, or failure of, well-related equipment that has led or could lead to a loss of integrity of the well;*
- (d) Any other unplanned occurrence that requires the titleholder to implement measures or arrangements to regain control of the well.

The “example of possible well leak paths” can be found in Annex Q of ISO/TS 16530-1:2017(E).



The diagram displays the majority of leak paths generally experienced in production wells. The titleholder’s production WOMP will include the well barrier diagrams for production wells (either generic or actual) and these barrier diagrams will reflect the barriers in the diagram above.

The titleholder may quote the number on the diagram when notifying NOPSEMA of a barrier failure.

The titleholder must describe all material facts and circumstances concerning the reportable incident that the titleholder knows or is able, by reasonable search or enquiry, to find out; and provide any action taken, or proposed to be taken, to stop, control or remedy the reportable incident in a report form or alternatively if the actions taken to control or remedy the incident is detailed in the WOMP (e.g. WFM – well failure model), the titleholder may choose to quote this for NOPSEMA WIS to review. This may be followed up and verified on inspection.

Matrix for categorisation and classification of well integrity incidents for wells in operation/production
Well Integrity Incident is defined as: An incident that unintentionally changes or affects the status of the well barrier envelopes

Guideline for classification of well integrity incidents

Level 1 – Red Critical well integrity incidents with high risk for personnel, environment and facility	Blowout or Major HC releases	Blowout to environment or facility. Failure of primary and secondary barriers that can be handled by relief well drilling, capping or handled on the installation.
LEVEL 2 – Orange: Serious well integrity incidents	HC release	Failure of one barrier with release threatening parts of facility/plant or environment. Well secured by activating the intact barrier.
Level 3 – Yellow Medium well integrity incidents	1. Crossflow	Failure of one barrier resulting in uncontrolled cross flow between formations. No potential for breaching to surface or pollution.
	2. Leak	Leak to environment through degraded barrier.
	3. Dual Barrier failure	Two barriers failed. On site containment with no release to environment.
Level 4 – Grey Minor well integrity incidents	1. Single Barrier Failure	Leak through a barrier element. Pressure still contained by intact barrier.
	2. Minor Leak	Small HC release to environment not due to failure of well barrier.

Examples of well integrity incidents

Level 1	BLOWOUT OR MAJOR HC RELEASE
	<ol style="list-style-type: none"> 1. Loss of all well barriers, uncontrolled outflow. 2. Casing leak below production packer into formation above reservoir. Packer set in un-cemented casing. Release to environment. 3. Tubing and production casing leak resulting in leakage to an annulus not qualified as a barrier. Release to environment. 4. Loss of gas lift gas containment resulting in high amount of HC gas threatening the whole facility.
Level 2	HC RELEASE
	<ol style="list-style-type: none"> 1. Release of gas lift gas with functioning ASV. 2. Flowline rupture and failure of XT valves resulting in large amount of HC release until DHSV closes.
Level 3	1. CROSSFLOW
	<ol style="list-style-type: none"> 1. Casing leak below production packer into formation above caprock. Packer set in un-cemented casing. No potential for breaching to surface. 2. Leak through cement into formation above cap rock. No potential for breaching to surface. 3. Leak of gas lift gas through production casing into formation. No potential for breaching to surface.
	2. LEAK
	<ol style="list-style-type: none"> 1. Failure of DHSV and MMV stem packing resulting in HC release to environment. 2. Gas lift leak into WH void and external leak through exit block. 3. Accumulated HC in B-annulus released through WH. If large amount of HC released evaluate and raise to Level 2 or 1. 4. Tubing to annulus communication (TTAC) below DHSV and small leakage through XT valves to sea. 5. Leak in TH neck seal and XT/WH connection (ring gasket). 6. Leak in control line with small release to installation.
	3. DUAL BARRIER FAILURE
	<ol style="list-style-type: none"> 1. DHSV, HVM & PMV failed but HC contained by valves down stream 2. Casing leak below production packer into formation above reservoir. Packer set in un-cemented casing. Resulting in HC in an annulus not qualified as barrier. 3. Tubing and production casing leak resulting in leakage to an annulus not qualified as a barrier.
	1. SINGLE BARRIER FAILURE
Level 4	<ol style="list-style-type: none"> 1. Failure of DHSV other barrier elements intact. 2. Failure of HVM other barrier elements intact. 3. Tubing to annulus communication (TTAC). 4. Unacceptable TH neck seal leakage.
	2. MINOR LEAK
	<ol style="list-style-type: none"> 1. Miss-operation of valves.

Reportable incidents in relation to a well in a title area must be notified to NOPSEMA in accordance with Regulations 5.26 and 5.26A.

A reportable incident in relation to a well is defined by Regulation 5.02:

- (a) A loss of integrity of the well, including a well kick, resulting in a release of more than 1 kilogram (1kg) of gas or 80 litres of liquid;
- (b) A failure of hydrostatic pressure as a primary barrier, leading to a build-up of pressure or a positive flow back; and the operation of a blow-out prevention or diversion system;
- (c) Damage to, or failure of, well-related equipment that has led or could lead to a loss of integrity of the well;
- (d) *Any other unplanned occurrence that requires the titleholder to implement measures or arrangements to regain control of the well.*

Subregulation 5.02 (d) any other unplanned occurrence that requires the titleholder to implement measures or arrangements to regain control of the well:

Example

Reportable unplanned occurrences that require the titleholder to implement other arrangements may include:

- bullheading an influx into the formation
- a 'lubricate and bleed' well kill measure
- any other unconventional well control measure
- inadvertent activation of a surface well control device.

Verbal notification of a reportable incident

Titleholders must make a verbal notification of a reportable incident to NOPSEMA, via the dedicated

NOPSEMA incident phone number (08) 6461 7090

as soon as practicable after the reportable incident, or after first becoming aware of a reportable incident. In this context “as soon as practicable” includes having due regard to any immediate emergency response necessary.

This verbal notification must contain:

- (i) All available material facts and circumstances concerning the reportable incident
- (ii) Any action taken, or proposed to be taken, to stop, control or remedy the reportable incident.

Written report of reportable incident

All reports provided to NOPSEMA must be submitted to: **submissions@nopsema.gov.au**

or via secure file transfer at: **<https://securefile.nopsema.gov.au/filedrop/submissions>**

The titleholder must submit the report no later than 3 days after the first occurrence of the reportable incident and may use the NOPSEMA report form (N-03000-FM1635) available from the NOPSEMA website.

The report must contain:

- (i) All material facts and circumstances concerning the reportable incident that the titleholder knows or is able, by reasonable search or enquiry, to find out
- (ii) Any action taken to, or proposed to be taken, to stop, control or remedy the reportable incident
- (iii) Any other action taken or proposed to be taken, to prevent a similar incident occurring in the future.

However, if the titleholder has been unable to identify ALL the material facts and circumstances, and remedial actions, to be taken within the 3 days; the (initial) report must nevertheless be submitted with all of the information available at that time. Subsequently, a complete (final) report must be submitted to NOPSEMA within a time period agreed with NOPSEMA. For example, a titleholder may require additional time to investigate and ascertain the cause of the incident and determine actions to prevent the incident from occurring again.

Example

Reportable damage to, or failure of, well related equipment requiring additional time to report

During the production phase, tubing by “A” annulus pressure communication has been identified and a tubing leak or production packer failure was suspected. The well was shut-in, to re-instate the 2 barriers, while the titleholder formulates a plan and sources a rig to perform investigation

In this scenario the formulation of the plan and mobilisation of a rig to investigate and identify all the material facts and circumstances of the incident will likely require additional time and the titleholder should seek to agree with NOPSEMA a timeframe for the submission of the complete written report.

Where a titleholder wishes to make such a request, they should do so by submitting the request through **submissions@nopsema.gov.au** providing the reasons for the request NOPSEMA will consider each request on a case by case basis and the titleholder will be advised of the final decision.

Part 5: Incidents, reports and records

Reg 5.26B Titleholder must keep copy of report

- (1) A titleholder commits an offence if the titleholder does not store a copy of a written report given to the Regulator under regulation 5.26A in a way that makes retrieval of the report reasonably practicable.
Penalty: 30 penalty units.
- (2) An offence against subregulation (1) is an offence of strict liability.
Note: For strict liability, see section 6.1 of the *Criminal Code*
- (3) Subregulation (1) does not apply if the report was given to the Regulator more than 5 years ago.

Regulation 5.26B is self-explanatory and requires no guidance.

Critical factors for success

A reportable incident (as defined in regulation 5.02) is verbally notified to NOPSEMA as soon as practicable after the occurrence and followed up with a written report using form (N03000-FM1635) within 3 days of the occurrence and if applicable a final report in a timeframe agreed with NOPSEMA.

Contact details

For more information regarding this well integrity guidance note, contact NOPSEMA.

- Telephone: +61 (0)8 6188 8700; or
- e-mail: submissions@nopsema.gov.au