

Notifiable incident

Incident ID [6314](#)

Duty holder: Shell Australia Pty Ltd
Facility/Activity: Prelude FLNG
Facility type: Floating liquefied natural gas facility

Incident details	
Division	Occupational Health and Safety
Notification type	Incident
Incident date	23/12/2019 08:46 PM (WST)
Notification date	23/12/2019 10:34 PM (WST)
NOPSEMA response date	24/12/2019 07:29 AM (WST)
Received by	[REDACTED]
Nearest state	WA
Initial category type <i>(based on notification)</i>	Dangerous Occurrence
Initial category <i>(based on notification)</i>	Unplanned event - implement emergency response plan
3 Day report received	24/12/2019
Final report received	23/01/2020
All required data received	23/01/2020
Final category type <i>(based on final report)</i>	Dangerous Occurrence
Final category <i>(based on final report)</i>	Unplanned event - implement emergency response plan
Brief description	OHS-UPE-Accommodation HVAC inlet Gas Alarm
Location	Accommodation and amenities
Subtype/s	Alarm, Emergency response, Muster
Summary <i>(at notification)</i>	<p>Operator advised that during offloading of condensate in still weather conditions, the loading tanker vented a cargo tank. Approx. 5 minutes later, a gas alarm was activated in the accommodation HVAC inlet.</p> <p>This resulted in a GPA and muster. The alarm cleared quickly and the ERT was deployed to check the area.</p> <p>The facility returned to normal operating status and cargo operations have been suspended pending a risk assessment.</p>
Details <i>(from final report)</i>	<p>Operator advised that during offloading of condensate in still weather conditions, the loading tanker vented a cargo tank. Approx. 5 minutes later, a gas alarm was activated in the accommodation HVAC inlet.</p> <p>This resulted in a GPA and muster. The alarm cleared quickly and the ERT was deployed to check the area.</p> <p>The facility returned to normal operating status and cargo operations have been suspended pending a risk assessment.</p> <p>** as supplied by duty holder **</p> <p>6. Brief description of incident - The following sequence of events occurred resulting in General Alarm. Event was initiated as result of</p>

High gas at HVAC inlet on LQ deck A and deck B when offtake tanker () vented through their mast riser in order to maintain their tank pressure.

Sequence of events:

- Weather conditions very still. Nil wind
- 2046: General alarm initiated. High gas at HVAC inlet on LQ deck A and deck B. All personnel mustered
- 2051: All gas alarms cleared
- 2056: Information received from offtake tanker that riser had been vented approximately 5 minutes earlier to manage cargo tank pressure
- 2057: Full muster
- 2104: All cargo operations suspended
- 2119: Restart LQ HVAC
- 2139: Muster stood down. Facility return to normal status. High risk hot work suspended (workshop)

7. Work or activity being undertaken at time of incident - Condensate offtake operations

8. What are the internal investigation arrangements? - Shell is conducting an investigation into this incident to prevent a repeat.

15. Action taken to make the work-site safe -

General Alarm and full facility muster

All cargo operations suspended

Hot work on the facility suspended

16. Was an emergency response initiated? - Yes

Type of response - Automatic alarm. Muster.

How effective was the emergency response? - Muster took place and all persons mustered on Prelude. The muster took 11 min (Performance Standard: 25 min); Fire team readiness to deploy: 12 min (Performance Standard: 15 min)

21. Immediate action taken/intended, if any, to prevent recurrence of incident. -

Action - Risk assessment to be completed prior to re commencement of cargo operations

Responsible party - Production Manager

Completion date - 24/12/2019

22. What were the immediate causes of the incident? - General Alarm was initiated as result of High gas at HVAC inlet on LQ deck A and deck B when the offtake tanker () vented through their mast riser in order to maintain their tank pressure. () confirmed to ERC that they had vented prior to General Alarm

** as supplied by duty holder **

32. Has the investigation been completed? - Yes

Root cause analysis -

Root cause 1 - Low winds causing Cargo vapours from offtake tanker () to settle near around facility accommodation causing HC monitors to detect Gas over 10% LEL.

Full report -

The GA (General Alarm) on Prelude FLNG was initiated at 2046hrs on 23rd December 2019. The GA initiated as result of High gas detected at HVAC inlet LEL (Lower Explosive Limit) gas monitors on LQ deck A and deck B when offtake tanker () vented cargo vapours through their mast riser in order to maintain their tank pressure.

Outcomes from the GA was

- Accounted all POB on Prelude and confirm no injured personnel.
- Undertake external observations and gas testing to confirm source of Gas.

The activation of GA alarm on the Prelude occurred following activation of LEL gas monitors, which are in place as per required controls for monitoring dangerous and hazardous Gas on the Prelude. (Fire and Gas system).

Cargo vapours venting from Offtake tankers near a terminal are known to be present, however in most environments such vapours vented get diluted due to winds which are a common occurrence in a Marine environment. In this instance with the Offtake tanker () there was very light or no winds at the time of the event.

No loss of containment. This was a controlled release by the () Offtake Tanker to maintain tank pressure. Offtake tankers vent vapour from their cargo tanks in a controlled manner and is an industry accepted venting control.

	<p>33. Actions to prevent recurrence of same or similar incident - Action - Controls to implement on offtake tankers based on measured wind speeds and direction to mitigate the risk of vapour accumulation on the tanker as well as the facility. Responsible party - Terminal Manager Completion date - Will be implemented for next Condensate offtake (Date TBC) and procedures updated by the 28th of February 2020.</p> <p>Action - Review relevant vapour dispersion study to determine whether the study requires update based on this incident. Responsible party - Technical Safety Completion date - 30 June 2020.</p>
Immediate cause/s	tbc
Root cause/s	
Root cause description	Root cause 1 - Low winds causing Cargo vapours from offtake tanker "██████████" to settle near around facility accommodation causing HC monitors to detect Gas over 10% LEL.

Duty inspector recommendation

Date	24/12/2019
Duty inspector	██████████
Recommendation	Do not conduct Major Investigation
Reasoning	Does not meet MI threshold based on information received
Supporting considerations	

Major investigation decision

Date	24/12/2019
Decision	Do not conduct Major Investigation
Reasoning	Does not meet MI threshold based on information received
Supporting considerations	

Non-major investigation review and recommendation

Date	24/12/2019
Inspector	██████████
Risk gap	None
Type of standard	Established
Initial strategy	Inclusion in annual stats/data analysis

Recommended follow up strategy

Recommended strategy	Investigate
Supporting considerations	It is not clear how, given a reasonable variation of the circumstances, a flammable gas cloud from the tanker could reach the Prelude in a concentration high enough be an ignition risk; however to establish the events that lead to the detection of gases, including the sensitivity of the gas detectors and wind conditions and direction, it is proposed to investigate at the next inspection.

Non-major investigation decision

Date	24/12/2019
RoN	██████████
RoN review result	Agree with recommendation
Strategy decision	Investigate
Supporting considerations	Agreed.

Associated inspection

Inspection ID	2129
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