

# Notifiable incident

**Incident ID** [6300](#)

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

Incident details	
<b>Division</b>	Occupational Health and Safety
<b>Notification type</b>	Incident
<b>Incident date</b>	14/12/2019 11:42 PM (WST)
<b>Notification date</b>	15/12/2019 10:04 AM (WST)
<b>NOPSEMA response date</b>	15/12/2019 10:09 AM (WST)
<b>Received by</b>	[REDACTED]
<b>Nearest state</b>	WA
<b>Initial category type</b> <i>(based on notification)</i>	Dangerous Occurrence
<b>Initial category</b> <i>(based on notification)</i>	Damage to safety-critical equipment
<b>3 Day report received</b>	17/12/2019
<b>Final report received</b>	17/01/2020
<b>All required data received</b>	23/01/2020
<b>Final category type</b> <i>(based on final report)</i>	Dangerous Occurrence
<b>Final category</b> <i>(based on final report)</i>	Damage to safety-critical equipment
<b>Brief description</b>	OHS-DSCE-Shut down valve did not operate as per design
<b>Location</b>	Process deck
<b>Subtype/s</b>	Valve failure
<b>Summary</b> <i>(at notification)</i>	<p>Operator advised that a production trip occurred at 2342hrs due to an instrument air leak on flow control valve.</p> <p>As part of the re-start process a review of the safety valve performance was undertaken. It was identified that a compartmentalisation valve (UZV) tag number 2222 on the overheads compressor package for the stabiliser failed to close in the require time. The package has been isolated and the plant was to be re-started.</p>
<b>Details</b> <i>(from final report)</i>	<p>Operator advised that a production trip occurred at 2342hrs due to an instrument air leak on flow control valve.</p> <p>As part of the re-start process a review of the safety valve performance was undertaken. It was identified that a compartmentalisation valve (UZV) tag number 2222 on the overheads compressor package for the stabiliser failed to close in the require time. The package has been isolated and the plant was to be re-started.</p> <p><b>** As Supplied by Duty Holder**</b></p> <p>Brief description of incident - UZV – 2222 Failed to meet performance standard on demand.</p> <p>Work or activity being undertaken at time of incident - Production Operations</p> <p>What are the internal investigation arrangements? 5 Causal Reasoning Investigation (Completed – see attached)</p>

Action taken to make the work-site safe - Assurance to confirm plant tripped as per design and no design envelope exceedance. This concluded that:

- Plant tripped as per design
- UZV-2222 Stabilizer Overhead Compressor failed to meet performance standards
- Utilities restart approved
- Confirmed that no SoF required for process plant restart (Stabilizer Overhead Compressor quarantined and will require SoF prior to restart)
- Repair FCV 1006B

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

Action - Inspection and remedial plan to assure that Flowserve valve instrument tubing secure and supported. Responsible - Maintenance Coordinator. Completion - TBA

Action - Assurance checks on UZV-2222 valve / shuttle. Responsible - Maintenance Coordinator. Completion Date - Prior to start up of package

Action - SoF prior to returning Stabilizer Overhead Compressor to service. Responsible - Prelude OIM. Completion Date - Prior to start up of package.

What were the immediate causes of the incident?

- On inspection / testing of the actual trip valve solenoid it was discovered that the ESD trip solenoid "bug" guard on the vent was restricted. This restricted the actuator air to vent, that allows the valve to close under spring tension within time.
- It highlighted that vents and air dump ports are critical in the operation of the safety device and protection and should be assured during PM maintenance activities.

This is the preliminary investigation and further study is needed to determine if this is indeed the root cause. Further testing of valve in situ may also be recommended.

(Please note This is a repeat failure of UZV-2222. This was previously reported to NOPSEMA 5/12/2019 when valve failed to meet performance standard on demand during GPSD.)

Actions to prevent recurrence of same or similar incident:

Action - Vent filter removal. Responsible - [REDACTED]. Completion Date - Closed

Action - Check filter condition on UZV-2211 which has similar issues. Responsible - [REDACTED]. Completion Date - Closed

Has the investigation been completed? Yes

Root cause 1 Partially blocked bug vent

Full Report: Note see diagrams in report

Investigation done by offshore technicians after the valve failed, this indicated that the bug vent was found to be partially blocked. As shown in the photograph below, a preservative coating was applied over the bug vent, resulting in the partial blockage of the SIS solenoid vent.

This phenomenon caused a high back pressure to be trapped on the pilot sensing line, which prevented the Booster from switching due to lack of differential pressure across the booster.

The fact that the solenoid vent port was only partially blocked; there was insufficient dP available to activate the Booster.

It is evident that the booster was never active during the demand trip, as the air coming from the actuator took the path of least resistance via the By-pass channel, maintaining pressure on the Booster signal port.

Numerous Demand strokes after the event have confirmed that the valve and actuator assembly is performing satisfactorily.

Actions to prevent recurrence of same or similar incident:

Action - Vent filter removal - Maintenance Team Lead - Closed

Action - Check filter condition on UZV-2211 which has similar issues - Maintenance Team Lead - Closed

Immediate cause/s

tbc

Root cause/s	
Root cause description	Root cause 1 Partially blocked bug vent

### Duty inspector recommendation

Date	16/12/2019
Duty inspector	[REDACTED]
Recommendation	Do not conduct Major Investigation
Reasoning	Does not meet MI threshold based on information received
Supporting considerations	

### Major investigation decision

Date	16/12/2019
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	16/12/2019
Inspector	[REDACTED]
Risk gap	Moderate
Type of standard	Established
Initial strategy	Investigate

### Recommended follow up strategy

Recommended strategy	Investigate
Supporting considerations	Similar failures have been reported before and is a known issue. It is under investigation - inspection #2051. The issue may be with valves and actuators supplied by a specific OEM, "[REDACTED]". Investigation is ongoing, to be followed-up at the next PI.

### Non-major investigation decision

Date	16/12/2019
RoN	[REDACTED]
RoN review result	Agree with recommendation
Strategy decision	Investigate
Supporting considerations	

### Associated inspection

Inspection ID	<a href="#">2129</a>
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