

Notifiable incident

Incident ID [6368](#)

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	05/02/2020 03:45 PM (WST)
Notification date	05/02/2020 03:59 PM (WST)
NOPSEMA response date	05/02/2020 04:10 PM (WST)
Received by	[REDACTED]
Nearest state	WA
Initial category type <i>(based on notification)</i>	Dangerous Occurrence
Initial category <i>(based on notification)</i>	Damage to safety-critical equipment
3 Day report received	08/02/2020
Final report received	31/03/2020
All required data received	31/03/2020
Final category type <i>(based on final report)</i>	Dangerous Occurrence
Final category <i>(based on final report)</i>	Damage to safety-critical equipment
Brief description	OHSE - DSCE - EMG running hot
Location	
Subtype/s	Power failure
Summary <i>(at notification)</i>	Forward EMG was running hot due to a damper in the closed position instead of open EMG has been shut down to investigate issue EDG is providing power for emergency services Facility topside is already shut down with no hydrocarbon inventory Duty Inspector tried to call back but received no response
Details <i>(from final report)</i>	Forward EMG was running hot due to a damper in the closed position instead of open EMG has been shut down to investigate issue EDG is providing power for emergency services Facility topside is already shut down with no hydrocarbon inventory Duty Inspector tried to call back but received no response ** As Supplied by Duty Holder** Brief description of incident - Impaired safety critical element – Forward emergency generator not serviceable. Work or activity being undertaken at time of incident - Facility was shut down with topsides fully depressurised at the time. The Facility was on essential power and had experienced several power trips due to high lube oil temperatures on the essential diesel generators. The FWD Emergency Generator was in operation during the EDG outages as per design What are the internal investigation arrangements? Causal Reasoning Investigation.

Action taken to make the work-site safe - Following the identification that the forward emergency generator (EMG) was running hot, the EMG was shutdown to prevent any engine damage. The Aft emergency generator is not impacted and is available for service. After the essential diesel generators were restarted, power was re configured to feed supplies normally fed from forward emergency generator. A risk assessment was completed for operation in a depressurised topsides condition with the forward emergency generator out of service. A remedial plan is being developed to facilitate the return to service of the forward emergency generator.

Details of any disturbance of the work site - Power management disturbance over a short term duration onboard Prelude.

Was an emergency response initiated? Yes

How effective was the emergency response? Effective response and full muster achieved.

Details of job being undertaken - Facility was shut down with topsides fully depressurised. Facility was on essential power at the time and experienced several power trips due to high lube oil temperatures on the essential diesel generators. Emergency diesel generators started, as per design, when the essential diesel generators tripped. The essential diesel generators were monitored during operation and after several hours of running, the forward diesel generator engine was identified as running hot. The engine was shut down to prevent any equipment damage.

Equipment damaged - Forward emergency generator

Will the equipment be shut down? Yes

If Yes, for how long? TBA - Remedial plan being developed to facilitate the return to service of the forward emergency generator

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

Action - After the essential diesel generators were restarted, power was re configured to feed supplies normally fed from forward emergency generator. Responsible - Maintenance Coordinator.

04/02/2020 - Completed

Action - Risk assessment completed for operation in a depressurised topsides condition with forward emergency generator out of service. Responsible - Production Coordinator . 04/02/2020 – Completed

Action - Remedial plan being developed to facilitate the return to service of the forward emergency generator. Responsible - Production Coordinator. 06/2/2020 - Ongoing

What were the immediate causes of the incident?

- During power loss to facility both EMG's (FWD & AFT) were running
- FWD EMG's ventilation dampeners closed causing high temperatures
- Engine was operating outside of safe parameters
- Manual ESD activated

**** As Supplied by Duty Holder****

Has the investigation been completed? Yes

Root cause 1 - Loss of instrument air due to leaking air solenoid in the dampener emergency/alternative activation system

Full Report:

Describe investigation in detail, including who conducted the investigation and in accordance with what standard/procedure with reference to attachments listed in the 'attachments table' (following) as applicable A 5 Causal reasoning investigation was undertaken.

Engine was running at an increased temperature (running in emergency mode with no trip values) as the dampeners to the room had closed shut, removing any airflow through the radiator and the main motive power to open dampeners/compressed air by Instrument Air Compressors was unavailable as the compressors had tripped. The trip occurred due to a leaking air solenoid in the dampener emergency/alternative activation system, which bled the remaining instrument air from the compressed air bottle to atmosphere.

Actions to prevent recurrence of same or similar incident:

Action - Repair the engine. NOTE: Target due date may change in alignment with company response to COVID 19 as vendor to be mobilised. Responsible - Maintenance Support Engineer. Completion

	<p>Date - 6 April 2020.</p> <p>Action - Amend Preventative Maintenance of annual check of the air system tightness-air hold up test for tubing and valves on emergency air system. Responsible - HVAC Engineer. Completion Date - 3 April 2020.</p> <p>Action - Raise a notification Z1 to replace NRV. Responsible - Maintenance Support Engineer. Completion Date - 23 March 2020 - Completed</p> <p>Action - Amend Preventative Maintenance to annually change NRV QV -6809281, to prevent potential internal air leak/back in the Instrument air system. Responsible - HVAC Engineer. Completion Date - 03 April 2020</p> <p>Action - Raise MOC to configure back up N2 bottle with flexible tubing. Responsible - Engineering HVAC. Completion Date - 10 April 2020</p>
Immediate cause/s	TBC
Root cause/s	
Root cause description	Root cause 1 - Loss of instrument air due to leaking air solenoid in the dampener emergency/alternative activation system

Duty inspector recommendation	
Date	05/02/2020
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	05/02/2020
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	07/02/2020
Inspector	[REDACTED]
Risk gap	Nominal
Type of standard	Established
Initial strategy	Investigate

Recommended follow up strategy	
Recommended strategy	Investigate
Supporting considerations	The Emergency Diesel Generator is designed to run to destruction and operated as required during the power outages earlier in the week. The cause of the damper being closed in being investigated. Shell advised that the EDG will be returned to service today. All functions of the EDG are currently being provided by the Essential Diesel Generators and UPSs as required. Investigate at next inspection.

Non-major investigation decision	
Date	07/02/2020
RoN	[REDACTED]
RoN review result	Agree with recommendation
Strategy decision	Investigate
Supporting considerations	

Associated inspection

Inspection ID

[2129](#)