

Notifiable incident


Incident ID 5523

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	05/08/2018 01:10 AM (WST)
Notification date	05/08/2018 07:06 AM (WST)
NOPSEMA response date	05/08/2018 08:11 AM (WST)
Received by	
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	07/08/2018
Final report received	07/08/2018
All required data received	07/08/2018
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 - Power outage caused GA and Muster
Location	Engine room
Subtype/s	Alarm, Muster, Power failure
Summary <i>(at notification)</i>	<ul style="list-style-type: none">- Facility experienced a total loss of power which resulted in a GA and Muster as per executive action initiated by power loss.- No deployment of ERT was necessary and both Prelude FLNG and Posh Arcadia mustered within required time.- OIM explained that loss of power seemed to have been caused by loss of feed water during shut down (and power transfer) between main steam turbo generators (STG).- it is believed that the electrical disturbance caused the feed water pump to trip which is likely to be related to procedural error by personnel conducting the activity.- This incident seems to have exposed an issue with a transformer for the deck foam system which is part of a separate notification for failure of SCE.

Details <i>(from final report)</i>	<ul style="list-style-type: none"> - Facility experienced a total loss of power which resulted in a GA and Muster as per executive action initiated by power loss. - No deployment of ERT was necessary and both Prelude FLNG and Posh Arcadia mustered within required time. - OIM explained that loss of power seemed to have been caused by loss of feed water during shut down (and power transfer) between main steam turbo generators (STG). - it is believed that the electrical disturbance caused the feed water pump to trip which is likely to be related to procedural error by personnel conducting the activity. - This incident seems to have exposed an issue with a transformer for the deck foam system which is part of a separate notification for failure of SCE. <p>The GA (General Alarm) was initiated around 01:00 on 5 August 2018 due to a loss of power caused by an operational upset. A planned shutdown of steam turbine 3 was occurring, whilst steam turbine 1 was also in operation. When STG3 was in process of shut down causing changes in steam/BFW demand, the boiler feed water (BFW) pressure controllers did not react quickly enough to the change in demand of boiler feed water, resulting in a high pressure trip of the BFW pumps, which cascaded into a loss of facility power.</p> <p>Personnel on the facility mustered as per normal response to GA.</p> <p>There was no risk to people or the environment during this incident.</p>
Immediate cause/s	Loss of main power triggered GA and Muster. BFW pump pressure controllers were unable to respond fast enough to process changes associated with the planned shutdown of the STG3.
Root cause/s	ED - DESIGN - Design specs - problem not anticipated
Root cause description	Boiler feed water control system reacted unfavourably during shutdown of the STG3. Action is to investigate control loop response to reduction in steam demand and high boiler feedwater pressure and tune appropriately.


Duty inspector recommendation

Date	06/08/2018
Duty inspector	
Recommendation	Do not conduct Major Investigation
Reasoning	Does not meet MI threshold based on information received
Supporting considerations	

Major investigation decision

Date	06/08/2018
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	08/08/2018
Inspector	
Risk gap	None
Type of standard	N/A
Initial strategy	Inclusion in annual stats/data analysis

Recommended follow up strategy	
Recommended strategy	Inclusion in annual report stats / data analysis
Supporting considerations	Loss of power was due to: 1. Boiler feed water pump tripped due to pressure control control failure -> Boiler Trip --> Loss of power to steam turbine generator --> Loss of total power. 2. All systems responded as expected (went to Essential Diesel Mode Power / Emergency Diesel Generators) with the exception of loss of power to foam pumps (see notification 5524 for follow up and recommendation) .

Non-major investigation decision	
Date	09/08/2018
RoN	██████████
RoN review result	Agree with recommendation
Strategy decision	Inclusion in annual report stats / data analysis
Supporting considerations	

Associated inspection	
Inspection ID	