

Notifiable incident

Incident ID [6147](#)

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	14/09/2019 03:40 PM (WST)
Notification date	15/09/2019 07:56 PM (WST)
NOPSEMA response date	15/09/2019 08:14 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>	Could have caused death or serious injury
3 Day report received	17/09/2019
Final report received	15/10/2019
All required data received	15/10/2019
Final category type <i>(based on final report)</i>	Dangerous Occurrence
Final category <i>(based on final report)</i>	Could have caused death or serious injury
Brief description	OHS-DODSI-Marine Loading Arm moved uncontrollably
Location	Deck
Subtype/s	Near miss / high potential
Summary <i>(at notification)</i>	<p>Operator advised that during LNG export operations:</p> <p>Four loading arms were moved roughly into place Whilst connecting one arm another arm (number 2) moved back to storage position without intervention The speed was estimated as approx. 10km/hour 2-3 technicians could have easily been in vicinity and line of fire and were focused on operation to connect another arm The moving arm could have caused death or serious injury if a worker was struck These workers were approx 3 metres away from the arm when it moved Investigation underway and arm taken out of service 3 other arms are in operation Further controls will be analysed for loading operations.</p>
Details <i>(from final report)</i>	<p>Operator advised that during LNG export operations:</p> <p>Four loading arms were moved roughly into place Whilst connecting one arm another arm (number 2) moved back to storage position without intervention The speed was estimated as approx. 10km/hour 2-3 technicians could have easily been in vicinity and line of fire and were focused on operation to connect another arm The moving arm could have caused death or serious injury if a worker was struck</p>

These workers were approx 3 metres away from the arm when it moved
Investigation underway and arm taken out of service
3 other arms are in operation
Further controls will be analysed for loading operations.

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

What happened: MLA#2 was positioned towards the LNGC manifold, with the targeting spool at a few meters above and away from the ships manifold flange. Personnel were standing on the manifold platform on the LNGC and within the MLA barriers on FLNG. Personnel on the LNGC were operating one of the other MLA's in order to position it onto the ships manifold, whilst personnel on FLNG were observing the operation. Then, suddenly MLA#2 moved back to its parking position on FLNG. It moved quickly past the personnel standing within the MLA barriered area on FLNG and could have collided with them if they had stood a few meters further, in the line of fire of the MLA#2.

Work or activity being undertaken at time of incident - Preparing for connection of MLA loading arms to LNGCC.

What are the internal investigation arrangements? Preliminary internal investigation commenced immediately gathering data, pictures and documented evidence. NOPSEMA notified. Formal investigation to be conducted by onshore investigation team.

No loss of containment.

Action taken to make the work-site safe - Personnel close by made safe and accounted for. Details of any disturbance of the work site - Nil.

Equipment damaged - MLA rubber stopper

Extent of damage - The retraction speed was as per the design. Verified through 12 monthly balancing checks Integrity and operation verified as part of Statement-of-Fitness in returning equipment to service following incident

Will the equipment be shut down? Yes - Equipment has been assessed through the statement of fitness process - Until full integrity has been established (estimate 5 days)

Immediate action taken/intended, if any, to prevent recurrence of incident. - Event analysed and additional controls put in place to ensure safe return of arms after LNG export. Responsible Production Coordinator. Completion Date - Day of incident

What were the immediate causes of the incident? Combination of control system logics and operating mode used to move the arms.

Has the investigation been completed - Yes

Root cause analysis:

Root cause 1 - Human Factor: Failure to follow procedures

Root cause 2 - The deployment of multiple MLAs has exposed a logic vulnerability, resulting in the unplanned retraction of MLA2

Full Report

MLA#2 was positioned towards the LNGC manifold, with the targeting spool at a few meters above and away from the ships manifold flange. Personnel were standing on the manifold platform on the LNGC and within the MLA barriers on FLNG. Personnel on the LNGC were operating one of the other MLA's in order to position it onto the ships manifold, whilst personnel on FLNG were observing the operation.

Then, suddenly MLA#2 moved back to its parking position on FLNG. It moved quickly past the personnel standing within the MLA barriered area on FLNG and could have collided with them if they had stood a few meters further, in the line of fire of the MLA#2.

Findings:

Two underpinning findings as a result of this incident:

1. The primary root cause identified was non-compliance with the procedure

Further investigation of the procedure deemed that articulation of the risk to personnel and the supporting JHA could be more explicit in framing the risk and controls

	<p>2. The deployment of multiple MLAs has exposed a logic vulnerability, resulting in the unplanned retraction of MLA2</p> <p>The actions highlighted in section 33 look to address these two underpinning findings</p> <p>Actions to prevent recurrence of same or similar incident: Action - Revise the operating procedure and the associated JHA to better describe the risk associated with the impact of an MLA with personnel in the line of fire, and appropriate mitigating measures, before the next LNG offtake. Responsible Party OIM. Completion Date - Complete Action - Review and improve the physical barriers and visibility of danger zone in the vicinity of the MLAs. Responsible - OIM. Completion Date - Completed Action - Review and improve the physical barriers and visibility of danger zone in the vicinity of the MLAs. Responsible - OIM. Completion Date - Completed Action - Stand-down with all Marine Teams to embed lessons-learned and expectations to follow procedure. Responsible - OIM. Completion Date - 31/12/19To cover all shifts on 3.4.3.5 Action - MLA2 to be isolated out-of-service, pending a full Statement -of-Fitness. Responsible - OIM. Completion Date - Complete Action - MLA2 to be isolated out-of-service, pending a full Statement -of-Fitness. Responsible - OIM. Completion Date - Complete</p>
Immediate cause/s	TBC
Root cause/s	
Root cause description	<p>Root cause 1 - Human Factor: Failure to follow procedures</p> <p>Root cause 2 - The deployment of multiple MLAs has exposed a logic vulnerability, resulting in the unplanned retraction of MLA2</p>

Duty inspector recommendation

Date	16/09/2019
Duty inspector	
Recommendation	Do not conduct Major Investigation
Reasoning	Does not meet MI threshold based on information received
Supporting considerations	

Major investigation decision

Date	16/09/2019
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	16/09/2019
Inspector	
Risk gap	Substantial
Type of standard	Interpretative
Initial strategy	Investigate

Recommended follow up strategy

Recommended strategy	Investigate ASAP
Supporting considerations	The use of the marine loading arms in the offshore context is a new application of the technology and so it is difficult to assess the potential/benchmark likelihood. The Potential consequence was a single fatality. Recommend to investigate ASAP to establish the details of the incident.

Non-major investigation decision	
Date	16/09/2019
RoN	
RoN review result	Agree with recommendation
Strategy decision	Investigate ASAP
Supporting considerations	Investigate ASAP to determine any immediate threat. Determine whether any interim controls have been implemented to stop the uncontrollable movement.

Associated inspection	
Inspection ID	2080