

Notifiable incident

Incident ID [5591](#)

Duty holder: INPEX Operations Australia Pty Ltd
Facility/Activity: Ichthys Venturer
Facility type: Floating production storage and offloading facility

Incident details	
Division	Occupational Health and Safety
Notification type	Incident
Incident date	22/09/2018 06:00 AM (WST)
Notification date	22/09/2018 11:00 AM (WST)
NOPSEMA response date	22/09/2018 12:30 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	25/09/2018
Final report received	22/10/2018
All required data received	22/10/2018
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	OHS - DSCE
Location	Deck
Subtype/s	Other
Summary <i>(at notification)</i>	<p>Solenoid failure occurred during routine function testing of the fire water skid on zone #2 (helideck fuel package, turret, swivel) and zone #3 (cargo deck Module 7 & 8). Deluge cannot be activate from the CCR. Deluge Zone #3 shut-in on manual valve. Incident command And ERP team informed. Rectification of solenoid valve for 2 x deluge skids has commenced. Active fire protection performance standard unable to be met. (start deluge form CCR). Func. test of deluge skid remains ongoing with 7 solenoid to be tested. Facility in ESD1 for another reason. Using the time to shutdown to fix the deluge. Planning to fix turret first.</p>

<p>Details (from final report)</p>	<p>Solenoid failure occurred during routine function testing of the fire water skid on zone #2 (helideck fuel package, turret, swivel) and zone #3 (cargo deck Module 7 & 8). Deluge cannot be activate from the CCR. Deluge Zone #3 shut-in on manual valve. Incident command And ERP team informed. Rectification of solenoid valve for 2 x deluge skids has commenced. Active fire protection performance standard unable to be met. (start deluge form CCR). Func. test of deluge skid remains ongoing with 7 solenoid to be tested. Facility in ESD1 for another reason. Using the time to shutdown to fix the deluge. Planning to fix turret first.</p> <p>During routine maintenance (function testing) of the Fire water deluge skid, we experienced solenoid failures on the fire deluge skid for Deluge Zone 2 (Turret, swivel deck and Heli fuel package) and Zone 3 (Cargo deck module 7/8) which has resulted in this zone being unable to be activated in auto or from the Central Control Room (CCR). Deluge Zone 2 manual release in field has been tested and functions correctly. Deluge Zone 3 is currently shut in on manual valves, requiring manual opening on indication of fire. The Incident Command and Emergency Response Teams were informed. Rectification of solenoid faults on solenoid valves S-790-DXV-137 and S-790-DXV-157 for deluge skid for Zone 2 and solenoids S-790-DXV-747 and S-790-DXV-767 for deluge skid for Zone 3 was commenced and completed prior to re-starting the facility. Manual activation associated Deluge Zone 5 (Cargo deck area 2) reported on the 21st September to NOPSEMA via Dangerous Occurrence Notification has been repaired and now meets the performance standard requirements for auto activation from CCR. Function testing of the remaining deluge skids is completed and all deluge skids are now in compliance.</p> <p>Causal factor: valves had failed due to water ingress. Pending manufacturers Root Cause Analysis (RCA) report.</p> <p>The investigation was led by the FPSO HSE Superintendent and included Health & Safety Representatives in the investigation team. The investigation was conducted in accordance with the INPEX Event Reporting & Investigation Procedure, using the 5 Whys process. Additional analysis was conducted by the supplier (Bifold Fluidpower), on a sample (6) of the failed solenoids to determine root cause. A preliminary non-conformance report has found the following: The valves had failed due to water ingress. The built up/deposit from the water ingress had meant on certain instances, the armature plate is not moving freely, hindering the pull in and drop out of the valve. The coil was also found to be damaged as a result. The water ingress could be caused by a number of reasons. 1. Solenoid covers possibly left open during construction and yard phase. 2. Degradation of the rubber washer which lead to water ingress via the solenoid cover.</p>
<p>Immediate cause/s</p>	<p>Failure of solenoids.</p>
<p>Root cause/s</p>	<p>ED - EQUIPMENT / PARTS DEFECT - Storage, ED - PREVENTIVE MAINTENANCE - PM NI - PM for equip NI</p>
<p>Root cause description</p>	<p>Solenoid covers possibly left open during construction and yard phase. Degradation of the rubber washer which lead to water ingress via the solenoid cover.</p>

Duty inspector recommendation

<p>Date</p>	<p>22/09/2018</p>
<p>Duty inspector</p>	<p>[REDACTED]</p>
<p>Recommendation</p>	<p>Do not conduct Major Investigation</p>
<p>Reasoning</p>	<p>Does not meet MI threshold based on information received</p>
<p>Supporting considerations</p>	<p>Wait for three day report.</p>

Major investigation decision

<p>Date</p>	<p>27/09/2018</p>
<p>Decision</p>	<p>Do not conduct Major Investigation</p>
<p>Reasoning</p>	<p>Does not meet MI threshold based on information received</p>
<p>Supporting considerations</p>	<p></p>

Non-major investigation review and recommendation	
Date	27/09/2018
Inspector	
Risk gap	Moderate
Type of standard	Established
Initial strategy	Investigate

Recommended follow up strategy	
Recommended strategy	Investigate
Supporting considerations	Consequence - serious, failure of an MAE control. Benchmark likelihood - remote. Potential likelihood increases to possible, due to loss of remote control of the deluges. Established standard - as per SoV. Relevant incidents - deluge solenoid failures on CPF (NMI 5494, 5498, 5510). I don't know whether the solenoids are the same type / model, but an investigation to ensure that lessons learned on the CPF are being shared on the FPSO is warranted.

Non-major investigation decision	
Date	28/09/2018
RoN	
RoN review result	Agree with recommendation
Strategy decision	Investigate
Supporting considerations	Agreed.

Associated inspection	
Inspection ID	1794