

Notifiable incident

Incident ID [5118](#)

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	26/10/2017 06:20 AM (WST)
Notification date	27/10/2017 03:15 PM (WST)
NOPSEMA response date	27/10/2017 04:15 PM (WST)
Received by	
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	27/10/2017
Final report received	23/11/2017
All required data received	23/11/2017
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 - A back up emergency generator failed to operate to performance standard.
Location	Engine room
Subtype/s	Power failure
Summary <i>(at notification)</i>	<p>Emergency Generator B was deployed but over heated and had to be shut down - this is reportable because the performance of the generator did not meet the performance standard that systems be fit for purpose. The facility ran on UPS power until another generator could be brought online. The sequence of events was that;</p> <ol style="list-style-type: none">1. at 5:45hrs, main power generator tripped on low seawater pressure. This was due to seawater lift pump A being subject to vibrations that upset its function as well as the function of seawater pump C.2. Emergency Diesel Generator B [EDG-B] came into operation at this time. However at 06:20 high engine temperature was noticed in EDG-B and it was manually shut down.3. The facility was run on UPS power until Emergency Generator A, which had been isolated for maintenance was brought on line.4. Overheating of EDG-B was found to be caused by a closed valve in the cooling system. The valve was opened, the engine allowed to cool down and it was then brought into operation.5. The facility is now working as normal with the main power generator operating as normal.

<p>Details (from final report)</p>	<p>Emergency Generator B was deployed but over heated and had to be shut down - this is reportable because the performance of the generator did not meet the performance standard that systems be fit for purpose. The facility ran on UPS power until another generator could be brought online. The sequence of events was that;</p> <ol style="list-style-type: none"> 1. at 5:45 main power generator tripped on low seawater pressure. This was due to seawater lift pump A being subject to vibrations that upset its function as well as the function of seawater pump C. 2. Emergency Diesel Generator B [EDG-B] came into operation at this time. However at 06:20 high engine temperature was noticed in EDG-B and it was manually shut down. 3. The facility was run on UPS power until Emergency Generator A, which had been isolated for maintenance was brought on line. 4. Overheating of EDG-B was found to be caused by a closed valve in the cooling system. The valve was opened, the engine allowed to cool down and it was then brought into operation. 5. The facility is now working as normal with the main power generator operating as normal. <p>The initial report states:- On the 26 October 2017, the Main Power Generation tripped at approximately 05:45hrs due to low seawater pressure. This was a result of the Sea Water Lift Pump A tripping on Hi Hi vibration and subsequently inducing a vibration in Sea Water Lift Pump C. Consequently, the Emergency Diesel Generator B (EDG B) started.</p> <p>At approximately 06:20hrs EDG B's engine temperature increased due to no cooling circulation and the machine was manually shutdown. On investigation it was found that the cooling system had a closed valve on the return line.</p> <p>EDG A, which was isolated for maintenance, was de-isolated and brought online. During this change over to the EDG A the facility was running on UPS power.</p> <p>EDG B's closed valve on the return line was opened. The machine was then allowed to cool and when cool, was made available to run.</p> <p>EDG B engine did not meet the performance standard S060-AH-PST-10027 functionality F.2.2 Engine and generator cooling; which states:- Cooling systems, including lube oil, generator CACW, engine charge air and jacket water systems, shall be fit for purpose.</p>
<p>Immediate cause/s</p>	<p>EDG B: Closed valve on the return line of the cooling system</p>
<p>Root cause/s</p>	<p>HPD - PROCEDURES - Followed incorrectly - no check off, HPD - HUMAN ENGINEERING - Human-machine interface - controls NI, HPD - WORK DIRECTION - Preparation - work package / permit NI</p>
<p>Root cause description</p>	<p>Work Permit needs improvement - The permit (and isolations) associated with the work on EDG A was valid from 21 October 2017 to 4 November 2017. EDG A is safety critical equipment and the ISSOW Manual requires safety critical equipment to be isolated for the least possible duration. Work was completed on EDG A on 25 October 17 however the isolations were not removed and the permit was not closed.</p> <p>This also resulted in EDG A having to be de-isolated whilst the facility was on UPS</p> <p>Human Engineering – Controls Need Improvement - The vibration alarms on the SWLP's are causing the SWLP's to trip. The vendor advised that the vibration alarms are not used on other similar systems and vibration does not create warranty or performance issues. The vendor has advised INPEX to inhibit these alarms to prevent the system from tripping but INPEX has not initiated this recommendation. The sea water lift has not been de-linked from the MPG trip.</p> <p>Work Package Review Needs Improvement - The Radiator Isolation Valve was found to be closed when it should be open. There is no evidence for why this valve was in the incorrect configuration, however inspections and walk through of the systems should identify that the equipment is in a ready state. This is the second significant event where isolation valves were identified in the incorrect configuration.</p>

<p>Duty inspector recommendation</p>	
<p>Date</p>	<p>27/10/2017</p>
<p>Duty inspector</p>	<p>██████████</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></p>

Major investigation decision	
Date	30/10/2017
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	30/10/2017
Inspector	██████████
Risk gap	Moderate
Type of standard	Established
Initial strategy	Investigate

Recommended follow up strategy	
Recommended strategy	Investigate
Supporting considerations	<p>Need to check how long it took to have emergency power re-stored as it influences "Likelihood" (therefore the risk gap). Emergency power provides power to emergency ventilation, AMP & TR HVAC, watertight doors and hatches including hull control (hydraulic & ballast) system. Based on information provided by ██████████ (INPEX) on 1/11/2017, there were two periods during which the FPSO was on UPS power, the longest of which was approximately 32 minutes. Investigation ongoing.</p> <p>There are questions as to why emergency power cooling water valve on return line was isolated and if there is a carseal arrangement in place plus inspection regime associated with carseal / locked open / locked close valves. ██████████</p>

Non-major investigation decision	
Date	09/11/2017
RoN	██████████
RoN review result	Agree with recommendation
Strategy decision	Investigate
Supporting considerations	Agreed.

Associated inspection	
Inspection ID	1695