

Notifiable incident

Incident ID [5318](#)

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	14/03/2018 12:22 AM (WST)
Notification date	14/03/2018 09:27 AM (WST)
NOPSEMA response date	14/03/2018 10:00 AM (WST)
Received by	[REDACTED]
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	16/03/2018
Final report received	29/03/2018
All required data received	14/03/2018
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-Multiple linked GPA and muster events
Location	
Subtype/s	Alarm, Muster
Summary <i>(at notification)</i>	<p>The operator advised that on 13 March 2018 at approx. 00:22 hours an ESD0 occurred due to indication of gas in emergency switch-room. All crew mustered and the ERT was deployed. No gas was identified and all crew were stood down.</p> <p>It was subsequently identified that workers had been working on the system under a PTW and had not connected a wire correctly when they finished their work.</p> <p>Also, during the restoration of power linked to the first event on 14 March 2018 at approx. 06:21 hours there was a fire alarm activation in fire water pump room D. All crew mustered and ERT was deployed, however no fire was identified. This was associated with a high temperature issue in the Hiema panel caused by fire pump running since loss of power.</p> <p>Also, on 14 March 2018 at approx. 07:40 hours there was an indication of fire in turret area. All crew mustered and ERT was deployed, however no fire was identified. This was associated with a UPS issue in relation to the power supply to the turret area when the ICSS came back online. The alarm reset immediately.</p> <p>[REDACTED] advised the operator that as all three incidents were linked, one report covering all incidents would suffice.</p>

Details
(from final report)

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Also, during the restoration of power linked to the first event on 14 March 2018 at approx. 06:21 hours there was a fire alarm activation in fire water pump room D. All crew mustered and ERT was deployed, however no fire was identified. This was associated with a high temperature issue in the Hiema panel caused by fire pump running since loss of power.

Also, on 14 March 2018 at approx. 07:40 hours there was an indication of fire in turret area. All crew mustered and ERT was deployed, however no fire was identified. This was associated with a UPS issue in relation to the power supply to the turret area when the ICSS came back online. The alarm reset immediately.

██████████ advised the operator that as all three incidents were linked, one report covering all incidents would suffice.

1. 0022hrs - General Alarm (GA) triggered due to high gas indication in emergency switch room 2 resulting in ESD-0. FPSO Venturer facility and Jascon ASV personnel mustered and all persons were accounted for. ERT deployed to investigate high gas indication and found no indication of fire or gas present. ESD-0 resulted in loss of all power generation, with facility on UPS power. FPSO Venturer facility stood down muster at 01:00 hrs, 14.03.18 WST.
2. 0621hrs - General Alarm (GA) triggered due to confirmed fire indication in FWG room 'D'. FPSO Venturer facility and Jascon ASV personnel mustered and all persons were accounted for. ERT deployed to investigate area and confirmed no fire, but elevated temperature due to running Fire Pump. FPSO Venturer facility stood down muster at 06:54 hrs, 14.03.18 WST
3. 0740hrs General Alarm (GA) triggered due to non-hazardous ESD 1 fire in turret signal. Deluge system activated as per C&E. FPSO Venturer facility and Jascon ASV personnel mustered and all persons were accounted for. Confirmation received no fire or gas in turret area. ERT not deployed; cause identified as ICSS reset on turret during restart. FPSO Venturer facility stood down muster at 07:54 hrs, 14.03.18 WST.

There was no impact to the Facility / Personnel / Environment.

Immediate cause/s

EVENT 1 - Unintended Confirmed gas high signal resulting in ESD-0 On the 14th March at 00:22hrs, the General Alarm (GA) was triggered due to high gas indication in emergency switch room 2 resulting in ESD-0. EVENT 2 - FWPG Room D Confirmed Fire Signal (S-790-DAS-155)
At 0621hrs - General Alarm (GA) triggered due to confirmed fire indication in FWG room 'D'. EVENT 3 - TURRET Confirmed Fire Indication (S-830-DXS-702) At 0740hrs General Alarm (GA) triggered due to non-hazardous ESD 1 fire in turret signal. Deluge system activated as per C&E (Cause and Effects).

The investigation identified the following:
EVENT 1 - Unintended Confirmed gas high signal resulting in ESD-0 A summary of the incident is as follows:
Technicians were re-commencing work on the core marker sleeve replacement on the FGS (Fire and Gas System) and SIS (Safety Instrumentation System). Signals being worked on that night were a number of FGS signals cabled between S-830-PDP-021 and S-830-SYS-021.
It was confirmed by the technicians and HIMA engineer that all bypasses were in place.

During termination, only a physical pull test was conducted, however confirmation of adequate terminal contact did not involve using the appropriate test adaptor for this terminal type (QTC2.5 –MT). The test adaptor that should have been used was the Phoenix Contact 3030996, Test adapter, PS series. The technicians were unaware of this adaptor type to verify continuity. At the end of this activity, the technicians signed off on the permit and informed HIMA Engineer that the bypasses could be removed for all the signals on the bypass list. The HIMA Engineer then began to remove the bypass forces in a grouped manner. At 0022 hrs on the 14.03.18 the ESD-0 signal S-830-DXS-711 was received at safety bar S820SD001 resulting in Total Shutdown ESD-0. After the ESD-0 event had been initiated, the technician and the Operations RPE (Responsible Person Electrical) were requested to investigate the potential cause of the ESD and conducted pull tests on the cores. During the pull test on cores in the SYS (System /Marshalling cabinet, the neutral core of signal S-830-DXS-711 in terminal TS77 – 30 came free (second pull test).

Event 1 Investigation Findings
The immediate cause was:

? FGS-ESD hardwired Open circuit causing activation of ESD-0 CONF GAS HI EMERG SW 2
The 5 WHYs revealed the following:
? Inadequate terminal connection in ATR FGS S-830-SYS-021, TS77:30
? Required adaptor (Phoenix Contact 3030996, Test adapter, PS series) not used for the continuity check in conjunction with the pull test. The Technicians were unaware of this type of adaptor for continuity checks.
? No visual monitoring of the live PV (Process Value) in the HIMA system during the pull test. No waiting time considered to monitor the stability of the live PV before removing the bypass force/s. In the interview with the HIMA Engineer after the event, it was stated that before any bypass was removed a check for healthy PV (process value) was made. On investigation, a review of the method of verification of a confirmed healthy circuit on the HIMA PLC (Programmable Logic Control) prior to bypass removal revealed the length of monitoring time for doing so was inadequate.
The root causes were identified as ‘Human Engineering Human Machine Interface- tools/ instrument Needs Improvement’ and ‘Work Direction Preparation – Work package/permit Needs Improvement’
The corrective actions for EVENT 1 are detailed in Section 33 of this notification.
EVENT 2 - FWPG Room D Confirmed Fire Signal (S-790-DAS-155).
During the facility recovery from the ESD-0 event, and whilst the FWPG (Fire Water Pump Generator) was running, an indication of confirmed fire in FWPG “D” room was received. The immediate cause was:
? Elevated temperature in FWPG “D” room.
The 5 WHYS revealed the following:
? High rate of heat in room detected. (Room dampers closed due to previous ESD-0 event. This contributed to the higher than normal rate of rise of temperature in the room. The fire dampers (FD’s) closed due to lack of black start air pressure).
? Black start fire pump damper valves were closed and not manually opened when recovering from the ESD-0.
The Operations Black start procedure omits this step of opening the fire pump damper valves when the black start compressor is online. The root cause was identified as ‘Procedure wrong – situation not covered’. The corrective actions for EVENT 2 are detailed in Section 33 of this notification.
EVENT 3 - Turret Non- Hazardous ESD-1 Confirmed Fire Indication (S-830-DXS-702)
As a result of the ESD-0 event that occurred at 00:22hrs, the turret UPS batteries had isolated (as per design via turret non-hazardous area safety bar S-820-SD-120) causing complete IER3 ICSS shut down (S-820-XZY-007 SIS to FGS ISOL TURRET). During restart of the turret ICSS, the turret confirmed fire signal was initiated and received by the FPSO ICSS.
The turret restart was following the recovery steps in the current ICSS Black Start procedure, specific to the turret. The immediate identified cause was:
? Reinstatement of turret components of FGS (Fire and Gas System) was performed in an inappropriate sequence for the associated scenario, specifically:
a) Network communications first followed by,
b) Controllers and detectors simultaneously
The 5 WHYS revealed the following:
? FGS controllers and detector marshalling restored simultaneously resulting in temporary trip condition being registered by controller voting logics whilst detectors executed their warm-up cycle.
? Trip condition communicated to main plant controllers via already restored network communications
? No appropriate procedure available for this particular re– start scenario (Black start with UPS)
The root cause has been identified as ‘Procedure Wrong – Situation not covered’.
The corrective actions for EVENT 3 are detailed in Section 33 of this notification.

1. High gas signal (ICSS FGS S-830-DXS-711) in emergency switch room 2 resulting in ESD-0, initiated the FPSO General Alarm. No gas was present.
2. Confirmed fire signal (S-790-DAS-155) in FWG Room 'D' was activated by FWP room heat detectors. No actual fire event was present.
3. Confirmed fire signal (S-830-DXS-702) activated the turret deluge system during restart of the turret ICSS. No actual fire event was present.

Root cause/s	HPD - PROCEDURES - Wrong - situation not covered
Root cause description	Situation not covered by procedure

Duty inspector recommendation	
Date	14/03/2018
Duty inspector	
Recommendation	Do not conduct Major Investigation
Reasoning	Does not meet MI threshold based on information received
Supporting considerations	

Major investigation decision	
Date	14/03/2018
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	15/03/2018
Inspector	
Risk gap	Moderate
Type of standard	Established
Initial strategy	Investigate

Recommended follow up strategy	
Recommended strategy	Investigate
Supporting considerations	I am viewing this from the control of work perspective. It appears that the standard PTW activity of checking that equipment has been reassembled correctly before closing the permit has failed, resulting in the GPA. On equipment with higher stored potential this lapse could have caused an injury. Therefore, consequence - significant and likelihood goes from remote to possible. Established standard - PTW system implemented under the facility safety case. Relevant enforcement - IN 673 related to PTW.

Non-major investigation decision	
Date	15/03/2018
RoN	
RoN review result	Agree with recommendation
Strategy decision	Investigate
Supporting considerations	

Associated inspection	
Inspection ID	1759