

## INTERNAL USE ONLY

# Notifiable incident

<b>Notification ID</b>	<a href="#">NTF11809</a>
<b>Duty holder</b>	Woodside Energy Ltd
<b>Facility/Activity</b>	CWLH OKHA FPSO
<b>Nearest state</b>	WA
<b>Incident</b>	OHS-DSCE - Lift Gas Compressor Failure to Meet Performance Standard

Basic information provided at time of notification	
<b>Notification type</b>	Incident
<b>Incident date</b>	14/10/2022 07:59 PM (AWST)
<b>Notification date</b>	14/10/2022 07:59 PM (AWST)
<b>NOPSEMA response date</b>	(AWST)
<b>Received by</b>	██████████

Summary of information provided	
<b>Brief descriptive title</b>	OHS-DSCE - Lift Gas Compressor Failure to Meet Performance Standard
<b>Incident location</b>	Process deck
<b>Subtype/s</b>	
<b>Summary</b> <i>(provided at notification)</i>	██████████ advised of damage to safety critical equipment and a potential failure of performance standard S06. During trip response for a lift gas compressor LGC2, it had been identified as there could be a potential gap in the cause-and-effect logic that required investigation from the Woodside Energy Technical Support team. LGC2 is currently offline while the engineering Technical Support completes its operational risk assessment to identify risk mitigations and controls.

Request permission to disturb the site	
<b>Permission given</b>	Not Applicable
<b>Permission given by</b>	
<b>Permission given on</b>	

Initial spill and release amounts	
<b>Gas (kg)</b>	
<b>Liquid (L)</b>	
<b>Release type</b>	
<b>More information</b>	

Details of person providing information to NOPSEMA	
<b>Full name</b>	██████████
<b>Job title</b>	██████████

Initial notification category	
<b>Initial category type</b> <i>(based on notification)</i>	Dangerous Occurrence
<b>Initial category</b> <i>(based on notification)</i>	OHS - damage to safety-critical equipment

Running sheet	
Created by	[REDACTED] at 7:42 AM 09/11/2022
Objective reference	A888871
Details	Email received from Woodside requesting an extension on the 30 day report up to 21/11/22 (original due date 13/11/22) In [REDACTED] absence I have granted the exception.

Decision	
Escalate to level 1	Yes
Inspector	[REDACTED]
Escalated on	18/10/2022 07:32

Final notification category	
Final category type <i>(based on final report)</i>	Dangerous Occurrence
Final category <i>(based on final report)</i>	OHS - damage to safety-critical equipment

Immediate causes	
Details	To be determined as part Internal investigation in accordance with the Woodside "Health, Safety and Environment Event Reporting, Investigating and Learning Procedure"

Initial report	
Due date	17/10/2022
Received date	17/10/2022
Reviewed date	24/10/2022
Reviewed by	[REDACTED]

<b>Additional details provided by duty holder</b>	<p>Brief description of incident During trip response for LGC 2 it has been identified a potential gap in the Cause &amp; Effect logic that required investigation from Woodside Engineering Technical Support. This is a potential failure of Safety Instrumented System F06.4 - "Automatically respond to detected unsafe process or equipment condition by initiating executive actions."</p> <p>The executive action of shutdown without blowdown on indication of loss of purge did not occur in accordance with the C&amp;E (failure of F06.4 acceptance criteria).</p> <p>Work or activity being undertaken at time of incident: Trip response as per Manage Process Upsets Guideline</p> <p>What are the Internal Investigation Arrangements: Internal investigation in accordance with the Woodside "Health, Safety and Environment Event Reporting, Investigating and Learning Procedure"</p> <p>Action taken to make the work-site safe: Action taken LGC 2 remained offline whilst and Engineering Technical Support completed an Operational Risk Assessment to identify risk mitigations and controls.</p> <p>Details of any disturbance of the work site: Fault finding of LGC2 to assist with Operations Risk Assessment.</p> <p>Was an emergency response initiated? No Was anyone killed or injured? No</p> <p>Immediate action taken/intended, if any, to prevent recurrence of incident. Action Initiated Operational Risk Assessment and Trip response support Responsible party [REDACTED] Completion date 14-Oct-2022 Actual or Intended Actual</p>
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Final report	
Due date	21/11/2022
Received date	21/11/2022
Reviewed date	23/11/2022
Reviewed by	[REDACTED]
<b>Additional details provided by duty holder</b>	<p>Full Report:</p> <p>Describe investigation in detail, including who conducted the investigation and in accordance with what standard/procedure Significant Event (Level 3) Investigation was conducted in accordance with the Woodside Health, Safety and Environment Event Reporting, Investigating and Learning Procedure. On 14/10/2022 at 08:30 a Lift Gas Compressor 2 (LGC2) motor stop occurred due to loss of ExP motor pressurisation, a control of ignition sources (F27) requirement. The motor trip in the Unit Control Panel (UCP) did not cascade to the required Integrated Control and Safety System (ICSS) shutdown as per Cause and Effects (C&amp;Es), due to a missing link in the UCP logic. LGC2 remained stopped with the suction and discharge Shutdown Valves open for 30 minutes, which represented an elevated risk of Minimum Design Metal Temperature exceedance (due to backflow or cold blowdown) and seal damage (due to liquid dropout). No actual Health &amp; Safety impact occurred. Initial investigation confirmed that the correct logic was in place on LGC1 and other similar machines (Export Gas Compressor 1&amp;2 and Flash Gas Compressor). The investigation found that the incorrect logic likely originated from the Okha project phase circa 2010 (Root Cause 1). LGC2 was originally installed on Cossack Pioneer FPSO and was reused on Okha FPSO. LGC1 was a new machine, using the same design as LGC2 and with common vendor drawings, including common UCP Cause &amp; Effects which contain LGC1</p>

tags only. Commissioning evidence contains a single set of LGC UCP Cause & Effects, so it is possible that testing was carried out only for LGC1 and not LGC2. No evidence can be found of the logic change occurring in the operate phase in the extensive records available. Current Engineering Standards require thorough testing of safety logic during Factory Acceptance Testing, so no action is required to prevent reoccurrence for Root Cause 1. Offline Cause & Effect validation for Okha compressor packages was conducted in late 2016. This was an F06 assurance task driven by Management of Change item MOC-51092, with the MOC risk assessed as a Moderate Legal & Compliance risk. The validation activity identified the anomaly with LGC2 motor pressurisation logic, along with other minor inconsistencies, however the MOC risk assessment was not updated based on these findings (Root Cause 2). MOC-51092 was later cancelled based on the documented risk, and the recommendations were not actioned. Woodside's Management of Change Procedure is clear that MOC should reflect current risk, and the Engineering team have recently been refreshed on MOC best practice including the requirement to update MOC to reflect current risk when conditions change. The two actions below address the issues found during the investigation, with no further action required to prevent reoccurrence for Root Cause 2.

Action 1 to correct LGC2 logic must be completed before LGC2 can be brought back online. Action 2 to address other findings of the offline package C&E validation can be completed over the next 6 months, as the investigation team determined that none of the recommendations represent a high risk.

Actions to prevent recurrence of same or similar incident

Action: Update LGC2 motor pressurisation logic to be as per Cause & Effects. LGC2 to remain offline until this action is complete.

Responsible party [REDACTED]  
 Completion date 31-Jan-2023  
 Actual or Intended Intended

Action: Review Findings of previous package offline C&E validation and implement changes to address recommendations where justified based on risk.

Responsible party [REDACTED]  
 Completion date 31-May-2023  
 Actual or Intended Intended

Final spill and release amounts	
Gas (kg)	0.00
Liquid (L)	0.00
Release type	
More information	

Root causes	
Code	

<b>Description</b>	Has the investigation been completed? Yes  Root cause analysis  Root Causes Analysis Factor: HP3-2 Management System - SPAC Not Used Comments Incorrect logic was introduced in the project phase and was not identified in the course of Factory Acceptance Testing (FAT) or Site-based Commissioning.  Root Causes Analysis Factor: HP4-1 Procedures - Not Used/Not Followed
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<b>All data received</b>	
<b>Date</b>	23/11/2022