INTERNAL USE ONLY

Notifiable incident

Notification ID	NTF11756
Duty holder	Woodside Energy Ltd
Facility/Activity	Vincent
Nearest state	WA
Incident	OHS-DSCE: Minor loss of containment detected in turret from gas injection line

Basic information provided at time of notification	
Notification type	Incident
Incident date	05/09/2022 06:00 PM (AWST)
Notification date	06/09/2022 06:39 PM (AWST)
NOPSEMA response date	06/09/2022 07:00 PM (AWST)
Received by	[redacted]

Summary of information provided	
Brief descriptive title	OHS-DSCE: Minor loss of containment detected in turret from gas injection line
Incident location	
Subtype/s	Other
Summary *(provided at notification)*	During operator rounds a minor loss of primary containment was noted from the gas injection line in the turret. That's a failure of performance standard P08, piping systems, we've shut the compressor down. No other concerns. Icing detected on fuel injection line. No gas alarms activated. Portable gas detector did not alarm. Thought to be very small leak. Compressor shut down and isolated.

Request permission to disturb the site	
Permission given	Not Applicable
Permission given by	
Permission given on	

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

Details of person providing information to NOPSEMA	
Full name	[redacted]
Job title	[redacted]

Initial notification category	
Initial category type *(based on notification)*	Dangerous Occurrence
Initial category *(based on notification)*	OHS - damage to safety-critical equipment

Running sheet

There are no running sheet entries for this notification

Decision	
Escalate to level 1	Yes
Inspector	[redacted]
Escalated on	08/09/2022 08:14

Final notification category	
Final category type *(based on final report)*	Dangerous Occurrence
Final category *(based on final report)*	OHS - damage to safety-critical equipment

Immediate causes	
Details	Undetermined at this stage until further investigation completed.

Initial report	
Due date	08/09/2022
Received date	06/09/2022
Reviewed date	05/10/2022
Reviewed by	[redacted]

Additional details provided by duty holder	Brief description of incident: During routine operator rounds a minor LOPC was noted from the gas injection line in the turret. Measured >100% @ 100mm. Classification of Minor in the Health Safety and Environment Event Reporting Guideline. Report entered as a failure of Piping Systems P08.1 The LOPC is located on a 20mm tee on the gas injection by-pass line. After examination by the facility inspector a crack was identified on the tee-piece causing the LOPC. Work or activity being undertaken at time of incident Routine operator rounds What are the Internal Investigation Arrangements Internal investigation in accordance with Woodside “Health Safety and Environment Event Reporting, Investigating and Learning Procedure" Action taken to make the work-site safe Action taken All users transferred to liquid fuel MDO and High Pressure Compressor brought offline. Gas injection line blown down and LOPC stopped. Isolation in place and Trip Response commenced Details of any disturbance of the work site Inspection, isolation, draining, purging and flushing Was an emergency response initiated? No Was anyone killed or injured? No Immediate action taken/intended, if any, to prevent recurrence of incident. Action Gas injection blown down, isolation placed on system. Responsible party [redacted] Completion date 06-Sep-2022 Actual or Intended Actual Action Commence scoping spool for approved repair method. Responsible party [redacted] Completion date 10-Sep-2022 Actual or Intended Intended

Final report	
Due date	05/10/2022
Received date	28/10/2022
Reviewed date	05/10/2022
Reviewed by	[redacted]
Additional details provided by duty holder	Full Report : Describe investigation in detail, including who conducted the investigation and in accordance with what standard/procedure Investigation was conducted in accordance with the Health Safety and Environment Event Reporting, Investigating and Learning Procedure. As event was classified as a High Potential Hazard, a Level 3 Significant Event Investigation was conducted (highest level of investigation). Investigation was led by [redacted], supported by [redacted] and [redacted] A chronology of events was built to understand the history of the LOC location and identify causal factors: - The Small-Bore Fitting (SBF) and piping at the LOC location was installed in 2013 as part of the Vincent Transition

Project (VTP). The design of the SBF is poor and would not be repeated today as it is not as per the current Engineering
Standard [technical root cause - Root Cause 1].
- Greater Enfield Development (GED) project replaced the pipework at this location in 2019 with SS316 due to low
temperature concerns. It was assumed that the existing design was sound, hence the scope of this replacement was limited
to like-for-like dimensions of piping only and the location was excluded from the start-up vibration survey [causal factor - Root
Cause 2].
- During GED start-up in 2019, a reactive vibration survey was conducted in the gas injection riser to investigate tonal
noise, however the results achieved were variable and many points of interest including LOC location were not accessible at
the time (hard to reach or scaffolding required). A recommendation was made to repeat the testing with access to all
locations, and this was captured in an MOC study action in March 2020.
- No temporary control was put in place to manage the risk until the action was complete, likely because it was
believed to be a short duration and the risk was not perceived to be high.
- At this time, ongoing reliability issues on NY as well as COVID meant that workloads were high and there was
limited ability to get vendors and/or engineers offshore. The action was not progressed until 2022, when the original focal
point rejoined the team and picked the task back up. Planning for the survey had recommenced in August 2022, prior to the
LOC event occurring.

Post event, an Operational Risk Assessment was conducted to confirm that adequate controls were in place and risk was
acceptable prior to restart of the gas injection system.
To address root cause 1, a weld repair has been completed at the location including addition of bracing (Action 3). Any new
designs will use the current standard or require an approved deviation; hence this design should not be repeated.
Actions 1 & 2 below have been raised to address root cause 2, as it is known that no recent vibration survey has been
completed on the gas injection riser in the turret with some locations never tested (Action 1), and there may be other similar
locations that were excluded from the GED start-up vibration survey or other recent surveys (Action 2).

Actions to prevent recurrence of same or similar incident:

Action: Complete a full vibration survey of the gas injection line in the turret at the highest practical rate, and capture any recommendations in MOC.
Responsible party [redacted]

Completion date 31-Dec-2022
Actual or Intended Intended

Action: Review previous vibration surveys to identify any locations that have been missed or recommendations that have not been actioned appropriately and put plans in place to address any gaps.
Responsible party [redacted]
Completion date 15-Apr-2023
Actual or Intended Intended

Action: Weld repair of location including addition of bracing
Responsible party [redacted]
Completion date 14-Sep-2022
Actual or Intended Actual

Final spill and release amounts	
Gas (kg)	1.00
Liquid (L)	0.00
Release type	Hydrocarbon gas
More information	Was there any loss of containment of any fluid (liquid or gas)? Yes Type of fluid (liquid or gas) Hydrocarbon Please specify type of fluid Production Gas (~85% Methane) Estimated quantity - Liquid (L), Gas (kg) Minor < 1 kg for gaseous or two-phase releases in any one hour period Estimation Type Calculation Please specify estimation details Minor < 1 kg for gaseous or two-phase releases in any one hour period Composition Percentage 85 Description Methane Known toxicity to people and/or environment Toxicity to People Asphyxiant. Effects are proportional to oxygen displacement. Over exposure may result in dizziness, drowsiness, weakness, fatigue, breathing difficulties and unconsciousness. Toxicity to environment When discharged into the atmosphere, methane may contribute to the greenhouse effect. Methane has a global warming potential of 28 (CO_2 = 1). How was the leak/spill detected? Visual Did ignition occur? No Has the release been stopped and/or contained? Yes Duration of the release - hh:mm:ss Undetermined Estimated rate of release - Litres or kg per hour Undetermined Location of release What or where is the location of the release? Turret What equipment was involved in the release? Gas Injection line Is this functional location listed as safety-critical equipment? Yes Hydrocarbon release details System of hydrocarbon release Process Estimated inventory in the isolatable system Undetermined System pressure and size of piping or vessel Pressure (MPag) 12.5

Root causes	
Code	
Description	Has the investigation been completed? Yes Root cause analysis: Root Causes Analysis Factor: EQ1-1 Equipment Design - Design Specs Comments Unsupported valve attached via small bore connection and operating under vibration conditions, leading to vibration induced fatigue. Original design completed as part of Vincent Transition Project in 2012/13 used old (now superseded) design specifications and standards. Root Causes Analysis Factor: HP3-2 Management System - SPAC Not Used Comments Greater Enfield Development (GED) piping material change scope was a like-for-like replacement and the opportunity to change the design to conform with current standards or include the location in the planned start-up vibration survey was missed

All data received	
Date	05/10/2022