

Notifiable incident

Notification ID	NTF11640
Duty holder	Woodside Energy Ltd
Facility/Activity	CWLH OKHA FPSO
Nearest state	WA
Incident	OHS-DSCE: Weekly midships crane inspection identified kinked main hoist rope

Basic information provided at time of notification	
Notification type	Incident
Incident date	12/07/2022 09:00 AM (AWST)
Notification date	12/07/2022 04:37 PM (AWST)
NOPSEMA response date	12/07/2022 04:55 PM (AWST)
Received by	[REDACTED]

Summary of information provided	
Brief descriptive title	OHS-DSCE: Weekly midships crane inspection identified kinked main hoist rope
Incident location	
Subtype/s	Dropped object, Lifting operations
Summary <i>(provided at notification)</i>	report that whilst we're conducting our weekly inspections of the mid shift crane, we found some damage to the main hoist rope. We have taken the crane out of service for investigation. We have in the process of checking the other cranes as well. The crane is fine food crane it to be inspected. Our intention is to change the rope out on the midship screen as we have a rope on board and we're preparing for a rope change out campaign. Thank you.

Request permission to disturb the site	
Permission given	Yes
Permission given by	[REDACTED]
Permission given on	12/07/YYYY

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

Running sheet	
Created by	██████████ at 6:30 AM 11/08/2022
Objective reference	
Details	WEL requested delay to 30 day report to 2 September to allow completion of the investigation. Accepted by ██████████.

Decision	
Escalate to level 1	Yes
Inspector	██████████
Escalated on	13/07/2022 07:03

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	During weekly inspection, the main hoist rope had what appeared to be some damage to the outer layer, potentially from bird-caging, on ██████████ preliminary advice, but yet to be confirmed pending further inspection and failure analysis after removal by Approved Vendor Nobles.

Initial report	
Due date	15/07/2022
Received date	18/07/2022
Reviewed date	19/07/2022
Reviewed by	██████████

Additional details provided by duty holder	<p>Brief description of incident: Whilst conducting weekly inspections of midships crane some damage was found to the main hoist rope. This renders the crane main hoist non-compliant with Lifting Equipment Performance Standard P20.1</p> <p>Work or activity being undertaken at time of incident: Weekly inspection only. It is not yet known exactly when the damage to the rope may have occurred as is still under investigation.</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>Was there any loss of containment of any fluid (liquid or gas)? No</p> <p>Action taken to make the work-site safe: Was permission given by a NOPSEMA inspector to interfere with the site? Yes Action taken - Midships Crane taken out of service. Rope inspected and determined not fit for use and requiring replacement. Details of any disturbance of the work site - Nil at the time. However rope replacement has commenced after approval given by NOPSEMA Duty Inspector. The removed rope will be sent for failure analysis by Approved Vendor Nobles.</p> <p>Was an emergency response initiated? No</p> <p>Was anyone killed or injured? No</p> <p>Was there any serious damage? No</p> <p>Will the facility be shut down? No</p> <p>Immediate action taken/intended, if any, to prevent recurrence of incident.: Action 1 - Midships crane taken out of service Responsible party - [REDACTED] Completion date - 11-Jul-2022 Actual or Intended - Actual</p> <p>Action 2 - Aft and Forward cranes also inspected for any similar indication of damage. None found Responsible party - [REDACTED] Completion date - 12-Jul-2022 Actual or Intended - Actual</p> <p>Action 3 - Rope replacement commenced Responsible party - [REDACTED] Completion date - 14-Jul-2022 Actual or Intended - Actual</p>
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Final report	
Due date	02/09/2022
Received date	02/09/2022
Reviewed date	06/09/2022
Reviewed by	[REDACTED]

Additional details provided by duty holder

Extension of 30 day Report Granted - 02 Sep 2022

Full Report:

Describe investigation in detail, including who conducted the investigation and in accordance with what standard/procedure:

This investigation (WELEV22070039) was initiated to understand and prevent root cause of the damaged main crane rope on the Okha midship Crane found on 11th July 2022. The investigation was conducted by a team independent of asset operations, and included interviews of offshore personnel, [REDACTED] and the [REDACTED].

Damage to the Okha midship crane rope was found during weekly inspection by the crane operator. There was deformation of 7 outer strands in one location and a further 4 to 5 strands on the opposite side. At the time discovery, the damage was considered sufficient to take the crane out of service until the rope was replaced. There was no readily available explanation for how or when the damage may have occurred. Hence, the event was classified as potential risk B2 (HS), and as a non-compliant Safety Critical Element (P20). The Forward and Aft Cranes ropes were inspected after the damaged rope was found, neither had any damage. The three Okha Cranes were designed/manufactured by [REDACTED] to the same specifications.

As part of this investigation, Strength testing of the damaged crane rope section was undertaken on 10th August, concluding that the reduction in Minimum Breaking Load (MLB) due to the damage incurred was not significant. The incident risk assessment was revised to B1 (HS). Even though the incident is no longer classified as an HPI, the investigation was completed and actions to prevent re-occurrence have been adopted.

The investigation team believe that the damage was caused by either:

- 1) impact between the auxiliary hook/headache ball with the main hoist line (eg against stiffening plate); and/or
- 2) due to 'fouling and entanglement' of the auxiliary hook/headache ball with the main hoist line and subsequent snagging/abrasion of the main line.

These mechanisms were corroborated by offshore crane geometry trials which indicated that the location of damaged rope would have been in vicinity of the crane boom tip when the hook is at the midship laydown area. That location is the most likely place where swinging auxiliary hook would occur. Also, an examination of the aux hook shows numerous recent abrasions/impacts that indicate frequent contact has been occurring. Finally, the detailed CVI of the rope conducted by local SME concluded that the rope damage would have been as a result of impact damage .

The ability for this damage mechanism to occur has been increased due to a change to the upper hoist limits (i.e. it was lowered) leaving more aux rope freely moving and more likely to result in impact or entanglement. Further, it is likely that the change to upper hoist limits was made as a result of the winch speeds being operated at higher than OEM recommendations. That, in turn, meant that the winch may not have been able to stop quickly enough to prevent a two-block incident, potentially driving the lengthening and lowering of the upper hoist/nbsp limit. The correct crane control limits have been checked and restored to BOD for all Okha cranes.

MOC-106844 has been raised to manage the ongoing risk of operating the mid-ships crane, until the engineering assessment for options to mitigate impact/entanglement is complete. The controls implemented include enhanced rope inspections during the crane pre-checks, and crane ops instruction to ensure wire remains under tension at all times when operating the crane.

Actions to prevent recurrence of same or similar incident:

Action 1 - Complete engineering assessment for options to mitigate midship and FWD auxiliary and main hooks impact/entanglement.

Responsible party - [REDACTED]

Completion date - 10-Dec-2022

Actual or Intended - Intended

Action 2 - Develop crane signage and communication packs for Okha to ensure that the operations team clearly understand crane settings which cannot be altered outside of engineering direction and/or the MOC process

Responsible party - [REDACTED]

Completion date - 07-Oct-2022

Actual or Intended - Intended

Final spill and release amounts

Gas (kg) 0.00

Liquid (L) 0.00

Release type

More information	
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Root causes	
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Code	
Description	<p>Has the investigation been completed? Yes</p> <p>Root Causes - Analysis Factor: EQ1-1 Equipment Design - Design Specs Comments - Design of the crane(s) tip – auxiliary and main wires too close together and no parking pockets to prevent collisions.</p> <p>Root Causes - Analysis Factor: HP4-1 Procedures - Not Used/Not Followed Comments - A change was made to the crane control system setting (winch speed and hoist limit), setting it outside of OEM recommendations, without using the management of change process.</p>

All data received	
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Date	05/09/2022
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