

# **NOPSEMA Inspection of Montara Venture**

## **Inspection details**

Duty holder(s) inspected			
Operator	Jadestone Energy (Eagle) Pty Ltd		
Entities inspected		NOPSEMA Inspection No.	
Facility	Montara Venture	2027	
Permissioning documents			
Safety Case	MV-70-REP-F-00004 Revision 4		
Inspection dates			
Onshore	03/02/2022		
Inspection team			
Lead Inspector			
Inspection Team			
Duty holder contacts			
Operator representative			

# **Report distribution**

Position	Company
Records management	NOPSEMA
	Jadestone Energy (Eagle) Pty Ltd

## **Revision status**

Rev	Date	Description	Prepared by	Approved by
Α	09-FEB-22	Internal draft		
В	09-FEB-22	Draft for discussion with duty holders		
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## 1. Inspection legislative framework and methodology

## **1.1.** Legislative framework

NOPSEMA conducts inspections as part of its legislated function to implement an effective compliance monitoring strategy to ensure compliance with NOPSEMA listed laws<sup>1</sup>. Inspections are undertaken by NOPSEMA inspectors appointed by NOPSEMA under Section 602 of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (OPGGSA).

This report has been prepared as required by the OPGGSA<sup>2</sup> and includes the inspectors' conclusions from the inspection and the reasons for those conclusions. Where those conclusions indicate that there is non-compliance with the requirements of the OPGGSA, and/or commitments in permissioning document(s), resulting in a risk or potential risk to safety, the inspectors have provided advice regarding the action(s) or outcomes recommended to address these conclusions.

A list of acronyms and abbreviations used in this report are provided in Appendix A.

### **1.2.** Inspection objective and scope

The objective of this inspection was to ascertain, for the scope stipulated below, whether risks to safety are being managed by the duty holder(s) as required by their duties under the OPGGSA and in accordance with accepted permissioning document(s).

The planned scope of this inspection was to verify that legacy notifications received by NOPSEMA, listed in Table 1 below, had been closed out satisfactorily. This was completed by ascertaining that there had been adequate investigation of the legacy notifications and whether the control barrier failures that led to these incidents had been adequately addressed.

Notification Number	Notification Topic	Date
5308	Riser Annuli Vent Ports Blocked on Production Riser 1 and the Gas Lift Riser	07/03/2018
6061	Finger Injury whilst using Torque Wrench	28/07/2019
6251	HVAC Fire Damper on Compass Bridge Deck Air Intake failed to close properly	14/11/2019
6267	Pump Room Damper had failed to the Close Position	22/11/2019
6303	Two Fire Dampers on the Upper Deck Laboratory not operating when tested	16/12/2019

<sup>&</sup>lt;sup>1</sup> NOPSEMA listed laws are defined in Section 601 of the OPGGSA.

<sup>&</sup>lt;sup>2</sup> Under Part 4, Division 4 of Schedule 3.



6358	Safety Critical Valve SDV 1371 failed Partial Stroke Test during HIPPS Assurancetesting on Production Export Flowline #1	27/01/2020
10036	Fire Damper on Gas Turbine B failed 6 Monthly Test	27/07/2020
10088	M04-SDV-2301 Failed to Close on Demand	23/08/2020
10128	PCV Malfunction (Fire Water 4 bar instead of 10 bar)	19/09/2020
10144	4 ESD Valves failed to meet Valve Closure Times during Routine Testing	29/09/2020
10215	Small Weep on Helifuel Refueling Filter Separator Unit	21/11/2020
10219	Complaint regarding only one Issues on Shift and Fatigue	04/12/2020
10269	Fire Dampers failed to Close during Routine Testing	23/12/2020
10312	Failure of Fixed Fire Damper on Gas Turbine B	24/01/2021
10358	Compass Bridge Deck Fire Damper failed to Close during Routine Testing	26/02/2021
10452	Hydrocarbon Weep found on Crude Oil Run-Down Line	13/04/2021
10454	Gas Leak from 2 <sup>nd</sup> Stage Scrubber of Gas Compressor	15/04/2021
10469	Cargo Oil Pump #3 Eductor Suction Line Leak	24/04/2021
10566	Dropped Chain and Chain Basket from Gantry Chain Block	12/06/2021
10631	Minor Cracks in AFT Crane Hydraulic Oil Tank Support Structure	20/07/2021

### **1.3.** Preparation and conduct of the inspection

The inspection team prepared a planned inspection brief and proposed inspection itinerary and scope and issued it to Jadestone Energy (Eagle) Pty Ltd on 10/12/2021.

Prior to the onshore inspection meeting, the inspectors reviewed the previously supplied final (30 day) reports for each notification to obtain status of close out for each incident. The operator was notified prior to the inspection meeting where additional information was required in order to allow preparation of required information.

An inspection meeting was held on 03/02/2022 to communicate the purpose of NOPSEMA's inspection, the powers of the inspectors under the OPGGSA, provide an opportunity to discuss and clarify the inspection



brief (including the scope of the inspection) and to undertake the onshore inspection. A list of persons present at this meeting is included in Appendix B:.

The inspectors collected documents in order to aid in their consideration of the topics and to obtain supporting information for their findings and conclusions.

## 2. Inspection results

The following sections contain the detailed observations, findings and conclusion(s) for the notifications covered in this inspection.

Compliance advice, in the form of recommendations, has been provided to assist the duty holder in their consideration of the conclusions and the actions they may need to take to address those conclusions. This advice indicates the actions, outcomes or considerations that should be taken into account when determining how Jadestone Energy (Eagle) Pty Ltd will address any identified risk gaps and return to compliance. The considerations may indicate better practice actions or outcomes that should be reviewed for implementation and/or provide a warning regarding potential future non-compliance. The management of risk will however always remain the responsibility of the duty holder.

### 2.1. Observations and Findings

# 2.1.1. NTF5308 – Riser Annuli Vent Ports Blocked on Production Riser 1 and the Gas Lift Riser on 07/03/2018.

A vendor survey carried out in February 2018 identified blocked vent ports on Production Riser 1 and the Gas Lift Riser. The blocked ports are below the in-fitting inside the J-Tubes in the Riser Buoy. It was concluded that accumulated gas in the annuli could permeate the various layers of the riser and escape through the outer sheath, however, the bigger concern was failure due to overpressure which could result in ingress of sea water which could corrode the metal supporting wires in the risers.

During the inspection meeting Jadestone advised inspectors that:

- The blocked ports were first identified during commissioning
- Annual pressure tests of the risers had demonstrated that only one vent port, on the Gas Injection Riser, remained to be blocked. Riser pressure testing was performed under job INS-M-0347 with completion of 2019, 2020 and 2021 work orders being demonstrated to inspectors
- The design of the risers includes three vent ports that perform identical duties to enable pressure monitoring and depressuring of the riser anulus
- As a result, of the information provided above, Jadestone advised inspectors that no further action is required for this issue in addition to the on-going pressure testing and monitoring regime.



### 2.1.2. NTF6061 – Finger Injury whilst using Torque Wrench on 28/07/2019.

The 30 Day Report for this notification identified that the injured person (IP) was not experienced in the use of the torque wrench and placed his finger in the line of fire of the tool.

Actions implemented by Jadestone were to update the onboarding induction slides to include familiarity/competency to operate tools and provide job hazard analysis (JHA) development awareness training at weekly safety meetings which are considered appropriate actions.

The inspectors determined that no further action was required by NOPSEMA for this notification.

# 2.1.3. NTF6251 – HVAC Fire Damper on Compass Bridge Deck Air Intake failed to close properly on 14/11/2019.

The 30 Day Report for this notification identified that the failed damper is exposed to harsh conditions on top of the accommodation and failure to fully close often happens.

Action implemented by Jadestone was to work with the vendor to improve the performance of the damper and to review the fire damper maintenance regime which are considered to be appropriate actions.

The inspectors determined that no further action was required by NOPSEMA for this notification.

#### 2.1.4. NTF6267 – Pump Room Damper had failed to the Close Position on 22/11/2019.

The 30 Day Report for this notification identified that the air intake damper in the pump room failed to the closed position. Investigation found metal fatigue of the shaft through the centre of the damper. Damper is located in a high airflow area and exposed to marine tropical environment.

Action implemented by Jadestone was to replace the shaft on the damper before returning it to service.

The inspectors determined that no further action was required by NOPSEMA for this notification.

# 2.1.5. NTF6303 – Two Fire Dampers on the Upper Deck Laboratory not operating when tested on 16/12/2019.

The 30 Day Report for this notification identified that the frangible bulb assembly was found to be bypassed and therefore the dampers would not work in a fire case.

Jadestone rectified the frangible bulbs and release assembly before satisfactorily testing the two fire dampers.

The inspectors determined that no further action was required by NOPSEMA for this notification.

### 2.1.6. NTF6358 – Safety Critical Valve SDV 1371 failed Partial Stroke Test during HIPPS Assurance testing on Production Export Flowline #1 on 27/01/2020.

The 30 Day Report for this notification identified that 13-SDV-1371 Solenoid A failed its function test. Investigation found an oil leak coming from hydraulic cam control valve. The hydraulic cam valve, hydraulic pre-filter and manual pressure control valve were all replaced due to being defective, in addition, the 2-Way hydraulic control valve was also replaced while the system was taken apart.

The shutdown valve (SDV) was retested and found satisfactory and operating smoothly.



#### 2.1.7. NTF10036 – Fire Damper on Gas Turbine B failed 6 Monthly Test on 27/07/2020.

The 30 Day Report for this notification identified that the solenoids on the fire dampers for the gas turbine packages were 10 years old and had aged operating in the harsh tropical marine environment.

All fire damper solenoids on the Solar Turbine Packages were subsequently replaced.

The inspectors determined that no further action was required by NOPSEMA for this notification.

#### 2.1.8. NTF10088 – M04-SDV-2301 Failed to Close on Demand on 23/08/2020.

The 30 Day Report for this notification identified that the valve required cleaning, lubrication and exercise to enable it to operate correctly. Jadestone also committed to reviewing the lubrication and function test frequency of valves if further failures are identified.

The inspectors determined that no further action was required by NOPSEMA for this notification.

#### 2.1.9. NTF10128 – PCV Malfunction (Fire Water 4 bar instead of 10 bar) on 19/09/2020.

The 30 Day Report for this notification identified that contract pressure safety valve (PCV) recertification company provided two valves (PSV7101 and PSV7102) for Fire Water Pumps A and B which had incorrect set pressures of 4 bar, even though test tags and documentation stated the correct 10 bar set pressure.

Jadestone:

- Completed an investigation with the valve recertification company
- Once incorrect set pressures were identified the valves and fire water system were reset to the correct 10 bar set pressure
- The correctly set valves were supplied, installed in fire water system and satisfactorily tested.

Jadestone advised that since this incident, no further valve recertification problems have been identified.

The inspectors determined that no further action was required by NOPSEMA for this notification.

# 2.1.10. NTF10144 – 4 ESD Valves failed to meet Valve Closure Times during Routine Testing on 29/09/2020.

The 30 Day Report for this notification identified that the interface between the re-injection compressor (RIC) Programmable Logic Controller (PLC) and the Integrated Control and Safety System (ICSS) does not allow for accurate timing of valve closure because the RIC PLC close signal command(s) to the ESD valves is not provided to the ICSS.

The four valves in question (MO4-SDV-2303, MO4-SDV-2304, MO4-SDV-2307 and MO4-SDV-2308) were subsequently tested directly from the control logic to test closure times and all four valves passed by closing within the required time of <45 seconds.

However, it was found that valve 23-SDV-9002 (Gas Lift Line in Turret) did not appear to meet its closing time. Review of the 30 Day Report established that a failure of the valve position switch gave an incorrect fail to close indication. The proximity switch was replaced and valve function tested satisfactorily.



### 2.1.11. NTF10215 – Small Weep on Helifuel Refueling Filter Separator Unit on 21/11/2020.

The 3 Day and 30 Day Reports for this notification identified a weep on a circumferential weld on the Helifuel Refueling Filter Separator Unit. A full weld repair was undertaken and as a precautionary measure the vessel has been derated from 10.34 Bar to 6.8 Bar which is inline with the delivery pressure of the system. Additionally, a new vessel was ordered to replace the repaired unit.

Jadestone confirmed that the weld repair that was undertaken was a permanent repair that was fully pressure tested and proven to be fit for purpose. However, a new replacement unit was ordered and this is currently in Darwin with it's associated pressure safety valve being re-certified. Work order 20WO-OFF-5074 is in place to fit the new unit which is scheduled to happen within the next month.

The inspectors determined that no further action was required by NOPSEMA for this notification.

# 2.1.12. NTF10219 – Complaint regarding only one on Shift and Fatigue Issues on 04/12/2020.

The complaint was regarding the workload of the **excessive** during an offload and the excessive workload/hours and fatigue management issues. It is important to note that this complaint was received in December 2020 and no further complaints have been received since.

Jadestone confirmed that no workload or fatigue management issues were raised with supervisory staff or the **second second secon** 

It was established that normal manning is to have one **and the second on day shift which provide** adequate resources, however, for offloading operations which are 24 hour continuous operations an additional **additional** is used, which Jadestone advise works "very well".

No further action required by NOPSEMA for this complaint, however, Jadestone should remind crew members that a Fatigue Management Plan is available for their use and discuss workload/fatigue issues with their supervisors.

### 2.1.13. NTF10269 – Fire Dampers failed to Close during Routine Testing on 23/12/2020.

The 3 Day and 30 Day Report for this notification identified that 3 fire dampers (FSD-06515 – Galley Inlet Damper, FSD-07203 – Steering Flat Damper and FSD-07204 – Steering Flat Damper) failed to close within the required 10 second time period during routine monthly function testing. All dampers are located in non-hazardous areas.

Fire damper linkages were lubricated and exercised and all functioned correctly.

Recommendation 1818-02 had previously been issued for Jadestone to analyse the frequency of failures of safety critical equipment (SCE), including fire dampers to ensure the reliability of SCE's was sufficient. This recommendation was satisfactorily closed out on 14/09/2021.



### 2.1.14. NTF10312 – Failure of Fixed Fire Damper on Gas Turbine B (GTB) on 24/01/2021.

The 30 Day Report for this notification identified that the design of the failed fixed fire dampener on the GTB was poor and that an upgraded original equipment manufacturer (OEM) design damper was available and has subsequently been fitted to the Solar Turbine Package.

The inspectors determined that no further action was required by NOPSEMA for this notification.

# 2.1.15. NTF10358 – Compass Bridge Deck Fire Damper failed to Close during Routine Testing on 26/02/2021.

The 3 Day and 30 Day Report for this notification identified that the:

- The compass bridge deck fire damper only closed 90% during routine monthly testing
- The damper is located in a non-hazardous area. The damper was immediately cleaned, lubricated and retested satisfactorily
- Damper test frequency has been changed from monthly to weekly.

Recommendation 1818-02 had been previously issued for Jadestone to analyse the frequency of failures of SCE's, including fire dampers to ensure the reliability of SCE's was sufficient. This recommendation was satisfactorily closed out on 14/09/2021.

The inspectors determined that no further action was required by NOPSEMA for this notification.

#### 2.1.16. NTF10452 – Hydrocarbon Weep found on Crude Oil Run-Down Line on 13/04/2021.

The 3 Day and 30 Day Reports for this notification:

- Identified that a corrosion oyster was removed to a depth below the corrosion allowance of the piping in contravention of the corrosion inspection procedure resulting in a small weep
- Stated that a temporary repair was undertaken to pipework and piping anomaly reported for further evaluation in accordance with corrosion management strategy
- Stated that the pressure piping inspection procedure was updated to clarify corrosion removal inspection requirements and inspectors briefed on corrosion removal process.

The revised corrosion management strategy and pressure piping inspection procedure was reviewed by NOPSEMA as part of General Direction 810 close out and considered satisfactory. The corrosion management process was also assessed as part of General Direction 810 close out and was considered satisfactory.

The inspectors determined that no further action was required by NOPSEMA for this notification.

### 2.1.17. NTF10454 – Gas Leak from 2<sup>nd</sup> Stage Scrubber of Gas Compressor on 15/04/2021.

Jadestone investigation found 42 double block and bleed valves on the Gas Compressor Package had manufacturing defects due to the use of 302 Stainless Steel Studs holding the valve bodies together which succumbed to chloride stress corrosion cracking.

NOPSEMA undertook a Level 2 Investigation into this incident, Inspection Number 2433, on the 29<sup>th</sup> April 2021 and was satisfied with Jadestone's management of this incident and subsequent remedial work for the defective valves.



#### 2.1.18. NTF10469 – Cargo Oil Pump #3 Eductor Suction Line Leak on 24/04/2021.

The 30 Day Reports for this notification stated that:

- A crude oil leak was identified on the eductor suction line to #3 Cargo Oil Pump
- The leak of approximately 350 litres was contained in the bilge of the pump room
- A temporary engineered wrap repair was undertaken on the pipework
- Baseline and wall thickness inspection of the pump room piping was being undertaken to identify pipe spool replacement requirements
- A spool replacement program has been developed by Jadestone.

Jadestone confirmed that defect JADE-2021-0054 was raised for the Suction Line leak and that the engineered wrap was approved by **Control of Class**, initially a Condition of Class (COC-A-008) was put in place which has since been deleted and an Actionable Item (AI-C-017) put in place with a completion date of 24/06/2022. The wrap has a design life of 2 years, however, a permanent repair is being actioned.

Jadestone have undertaken inspection of piping in the pump room and spool replacements are being engineered and planned via work order 21WO-OFF-0187 and being budgeted to be undertaken in Q4/2022.

In the interim period three monthly sample inspections of pipework are being undertaken in addition to the normal crew general inspection rounds that are undertaken in the Pump Room.

Jadestone have appropriate plans in place for pipework replacement, therefore the inspectors determined that no further action was required by NOPSEMA for this notification.

# 2.1.19. NTF10566 – Dropped Chain and Chain Basket from Gantry Chain Block on 12/06/2021.

The 30 Day Reports for this notification identified that:

- A fallen chain basket was found on the Wellhead Platform (WHP) Cellar Deck walkway with chain extended from the trolley above on the Mezzanine Deck
- The Chain Basket dropped about 6 metres
- As WHP is not normally manned it is not known when the incident happened
- A Rope access team visited the WHP on 18/06/2021 to inspect chain hoists and complete general visual inspection for potential dropped objects:
  - As part of the inspection 4 Beam Trolleys were inspected and the hook assembly, chains and containers removed from the other 3 trolleys and made safe
  - Investigation concluded that the initial failure was the bolt on the centre brace which allowed the chain box to sway in the wind and cause the one remaining bolt to wear and fail
  - The rope access team identified 6 potential dropped objects anomalies
  - Follow up with the **advised that work order 21-WO-OFF-**1233 was raised for the 6 anomalies with work scheduled to be completed before mid-August 2021. Work order 21-WO-OFF-1246 was raised for the flood light secondary retention with work scheduled to be completed before the end of September 2021.



#### As part of the NOPSEMA inspection:

- It was confirmed that work orders 21-WO-OFF-1233 and 21-WO-OFF-1246 have been satisfactorily completed
- It was noted the identified 6 potential dropped objects anomalies were mainly associated with the securing devices for covers (such as cable tray, insulation)

The inspectors determined that no further action was required by NOPSEMA for this notification.

# 2.1.20. NTF10631 – Minor Cracks in AFT Crane Hydraulic Oil Tank Support Structure on 20/07/2021.

The 30 Day Reports for this notification identified that Magnetic Particle Inspection on the hydraulic oil tank structural members found small cracks. The **structural** and **structural** consider cracks are due to fatigue as crane has been "shuddering" in use for sometime and needs hydraulics to be investigated.

Jadestone showed the inspectors a video of the crane shuddering which was significant and was rocking the crane which may have affected other sections of the crane support structures and it's pedestal which should be further investigated as part of the planned investigation and remedial work.

Remedial work progression is scheduled for mid-February 2022 with investigation into the Crane shuddering and repairing of the cracks. The crane Original Equipment Manufacturer, have approved the repair method and weld procedures.

The annual inspection of the crane is now overdue and will be undertaken as part of the full recommissioning workscope for the crane before it is put back in service.

Jadestone have appropriate plans in place for investigation, repair work and re-commissioning of the crane and NOPSEMA will follow this up during the next planned offshore inspection.

### 2.2. Conclusion(s)

As a result of these observations and findings, the NOPSEMA inspectors make the following conclusion:

#### Conclusion C2027-C01

From the 20 incident notifications that were followed up during this inspection, NOPSEMA conclude that Jadestone satisfactorily investigate incidents, undertake appropriate corrective action and provide adequate initial and final reports to NOPSEMA for incident evaluation.



# Appendix A: Acronyms and abbreviations used in this report

Acronym or abbreviation	Definition
ALARP	As Low As Reasonably Practicable
ICSS	Integrated Control and Safety System
GTB	Gas Turbine B
HIPPS	High Integrity Pressure Protection System
IP	Injured Person
JHA	Job Hazard Analysis
NOPSEMA	National Offshore Petroleum Safety and Environmental Management Authority
OEM	Original Equipment Manufacturer
OPGGSA	Offshore Petroleum and Greenhouse Gas Storage Act 2006
PCV	Pressure Control Valve
PLC	Programmable Logic Controller
RIC	Re-Injection Compressor
SDV	Shutdown Valve
SCE	Safety Critical Equipment
WHP	Wellhead Platform



## **Appendix B: Summary of meeting attendance**

### **B.1: Inspection Meeting**

The inspection meeting was held on 03/02/2022 in order to discuss the planned scope and undertake the inspection.

