

DRONE-ASSISTED VISUAL INSPECTION · PRE-DEPLOYMENT

Pre-Deployment Rigging Inspection



[REDACTED]	REVISION 0	[REDACTED] 16
[REDACTED]		PREPARED BY AURORA MEDIA HUB

Drone-assisted visual inspection of rigging aids and lifting equipment ahead of the lifting and installation of [REDACTED] assets, conducted under [REDACTED] – Management of Change.

Document Control

REVISION HISTORY

REV	DATE	DESCRIPTION	PREPARED	REVIEWED	APPROVED
0	06 JUL 2026	ISSUED FOR REVIEW	DANIEL / AMH	–	–

DISTRIBUTION

ROLE	ORGANISATION	PURPOSE
DECK FOREMAN	VESSEL REDACTED	ACTION / ACKNOWLEDGE
SHIFT SUPERVISOR	VESSEL REDACTED	ACTION / ACKNOWLEDGE
OCM	VESSEL REDACTED	APPROVAL
WARRANTY SURVEYOR	CLIENT / MWS	VERIFICATION

REFERENCES

REFERENCE	TITLE
REDACTED	MANAGEMENT OF CHANGE – REDACTED DEPLOYMENT
REDACTED	RIGGING REGISTER – IDENTIFICATION MARK SERIES
REDACTED	LIFT PLAN & INSTALLATION PROCEDURE

CONTENTS

1	Executive Summary	3
2	Scope, Method & Rigging Inventory	4
3	Findings – Rigging Equipment Visual Checks	5
3.1	ROV Shackle 1 – PLEM Hub	5
3.2	ROV Shackle 2 – Centre	6
3.3	ROV Shackle 3 – XT Hub	7
3.4	Soft Slings	8
3.5	Spreader Bar	9
3.6	Clump Weight – Shackle Restraint	10
4	Lessons Learnt	11
5	Drone Safety Support in Offshore Operations	14
6	Inspection Sign-Off	15
A	Appendix A – Photographic Record	16

Executive Summary

Aurora Media conducted a pre-deployment visual inspection using drone support ahead of the lifting and installation of REDACTED REDACTED assets. Given the elevated and high-risk areas involved, the drone provided critical overhead visibility and assurance regarding the condition and readiness of rigging aids and lifting equipment positioned in hazardous deck locations.

The visual report was shared with the **Deck Foreman, Shift Supervisor** and **OCM**. Several findings were identified, flagged, and promptly rectified. This proactive approach directly contributed to improved rigging compliance and operational safety.

The integration of drone technology proved highly effective, particularly when inspecting large, complex structures. It also significantly reduced the need for working at height – eliminating the requirement for man baskets, ladders, or scaffolding. Notably, without this drone-assisted perspective, certain rigging hazards may have remained undetected.



FIG 1.1 — INSTALLATION VESSEL REDACTED REDACTED GN

6

FINDINGS RAISED

3

RECTIFIED ON THE SPOT

3

LESSONS LEARNT

0

PERSONNEL AT HEIGHT

Scope, Method & Rigging Inventory

The rigging equipment detailed below was subject to a **visual drone inspection** as part of the REDACTED REDACTED pre-deployment checklist. All listed items were verified in-situ prior to overboarding to ensure compliance with procedural requirements and operational readiness. Each rigging component was assessed for integrity, correct configuration, and safety. Where deviations or risks were identified, they were either rectified immediately or flagged for corrective action. This inspection and any resulting amendments were conducted in alignment with REDACTED — **Management of Change** protocol.

RIGGING INVENTORY — VISUAL CHECK, REDACTED DEPLOYMENT

IDENTIFICATION MARK	DESCRIPTION	DIA (mm)	LEN (mm)	MBL (t)	WLL (t)	SP WT (kg)	TOT WT (kg)
REDACTED	MASTERLINK, WILLIAM HACKETT HA120M †120		610	—	250.0	197.0	394.0
REDACTED -02-XX	SHACKLE, GREEN PIN SUPER BOW BN—		410	—	175.0	156.0	156.0
REDACTED -03-XX	ROV HOOK GN HK-14—		—	—	150.0	314.0	314.0
REDACTED -04-XX	HMPE ENDLESS GROMMET—		1000	—	—	3.0	3.0
REDACTED -05-XX	WIDE BODY SHACKLE, GREEN PIN P-6 †—		—	—	150.0	125.0	125.0
REDACTED -06-XX	MASTERLINK, WILLIAM HACKETT HA9 †90		—	—	150.0	98.0	98.0
REDACTED -07-XX	SHACKLE BOLT TYPE ANCHOR, G4163—		—	—	55.0	39.59	158.4
REDACTED -08-XX	WIRE ROPE SLING64		11500	55.0	55.0	218.5	437.0
REDACTED -09-XX	HMPE ENDLESS GROMMET—		6300	—	15.0	18.9	37.8
REDACTED -10-XX	HMPE ENDLESS GROMMET—		4000	—	15.0	12.0	12.0
REDACTED -11-XX	SHACKLE BOLT TYPE ANCHOR, G4163—		—	—	25.0	14.22	42.7
REDACTED -12-XX	GREEN PIN CONNECTION LINK (Ø26 mm CH)—		—	—	21.7	5.18	10.4
REDACTED -13-XX	CHAIN 26		1242	21.6	—	14.8	88.8
REDACTED -14-XX	HMPE ENDLESS GROMMET—		6000	—	15.0	18.0	18.0
REDACTED -15-XX	HMPE ENDLESS GROMMET—		6000	—	15.0	18.0	18.0
REDACTED -16-XX	ROV SHACKLE, GREEN PIN GUIDED PIN P5362D—		—	—	25.0	19.0	57.0
REDACTED -17-XX	ROUND SLING—		3000	—	10.0	9.0	18.0
REDACTED -18-XX	SHACKLE BOLT TYPE ANCHOR, P60 †—		—	—	300.0	340.0	340.0
REDACTED -19-XX	ENDLESS CARGO STRAP—		—	—	5.0	—	—
REDACTED -20-XX	ROUND SLING—		3000	—	10.0	12.0	12.0
REDACTED -21-XX	SHACKLE BOLT TYPE ANCHOR, G4163—		—	—	6.5	3.0	3.0
REDACTED -22-XX	MASTERLINK, WILLIAM HACKETT HA22ML22		270	—	7.0	2.28	4.6
REDACTED -23-XX	MONKEY FIST—		—	—	—	5.0	5.0

† DESCRIPTION TRUNCATED IN SOURCE REGISTER GRAPHIC — VERIFY AGAINST VESSEL RIGGING REGISTER.

3.1 FINDING 01

NON-CRITICAL

NO INTERVENTION

ROV Shackle 1 — PLEM Hub



FIG 3.1-A — R-CLIP RETAINED IN ROV SHACKLE, PLEM HUB



FIG 3.1-B — SHACKLE ORIENTATION & SLING EYE APPROACH

Observation summary

Upon closer aerial inspection of the ROV-deployed shackle, it was identified that an R-clip had been inadvertently left in place. The component was lodged within the shackle mechanism but posed no immediate operational hindrance.

Action taken

The ROV team was pre-emptively alerted. A review of the manufacturer's shackle manual confirmed that the R-clip's function is solely to secure the pin in the open position, which was not relevant to the planned operation.

Assessment

Based on the orientation and approach angle, it was determined that the sling eye would clear the bow of the shackle without risk of snagging or interference. No modification or recovery intervention was deemed necessary.

Conclusion

The anomaly was assessed as non-critical. Disconnection proceeded without incident, with all parameters within safe operational limits.

RIGGING REGISTER EXTRACT

IDENTIFICATION MARK	DESCRIPTION	DIA (mm)	LEN (mm)	WLL (t)	SP WT (kg)	TOT (kg)
REDACTED -016-XX	ROV SHACKLE, GREEN PIN GUIDED PIN P5362D					

ROV Shackle 2 — Centre



FIG 3.2-A — SHACKLE 2, CENTRE POSITION



FIG 3.2-B — SLING EYE SEATED AT SHACKLE BOW TIP

Observation summary

Inspection of Shackle 2 revealed that a pin was again present within the shackle body. No deviation from intended setup was observed, and the hardware remains in a mechanically sound configuration.

Position assessment

The sling eye is correctly seated at the tip of the shackle bow, enabling clean and unrestricted tensioning. Its placement ensures no contact with the inner curvature or sharp edge of the shackle, thereby eliminating the risk of fouling during raising.

Additional notes

The loose end of the sling is currently flaked neatly over the clamp edge, presenting no immediate hazard. However, this position will require active monitoring during recovery or raising to ensure it does not shift into an unfavourable orientation as tension increases.

Conclusion

All observable rigging elements are currently in a favourable and safe configuration. Proceed with operation under routine visual observation during the lift-off phase to confirm maintained positioning.

ROV Shackle 3 — XT Hub



FIG 3.3-A — CHAIN LINKS & SPLIT PINS, TAPED AND SECURED



FIG 3.3-B — XT HUB SHACKLE, UPRIGHT ORIENTATION

ROV shackle & sling overview

Aerial inspection confirmed the chain links and split pins were properly installed and secured using tape, effectively mitigating chafing risks. The sling eye was well-positioned in the shackle bow, with the shackle oriented upright for optimal alignment. The slings were bunched and fastened with cable ties, a positive measure to control excess length and reduce the risk of snagging beneath the lifting clamp. The R-clip had been removed, streamlining shackle release operations and eliminating unnecessary workload for the ROV team.

Chain link & shackle area — observation

Chains were observed hanging near the cradle support arm, with one shackle and lift sling located in close proximity to this area. This configuration introduces a potential snag risk during lift-off or dynamic motion.

Recommendation

It is advised to remove the cradle lift sling and associated shackle to eliminate this snag point. The active shackle currently in use was observed to seat the soft sling eye cleanly on the pin, with additional taping applied to prevent rotational movement of the eye. This taping ensures the sling and shackle do not rotate, allowing for even weight distribution and preserved balance during lift execution.

RIGGING REGISTER EXTRACT

IDENTIFICATION MARK	DESCRIPTION	DIA (mm)	LEN (mm)	WLL (t)	SP WT (kg)	TOT (kg)
REDACTED -012-XX	GREEN PIN CONNECTION LINK (Ø26 mm CH)					

3.4 FINDING 04

RECTIFIED

PROCEDURE UPDATE

Soft Slings



FIG 3.4-A — SOFT SLINGS CHOKED BENEATH SPREADER BAR

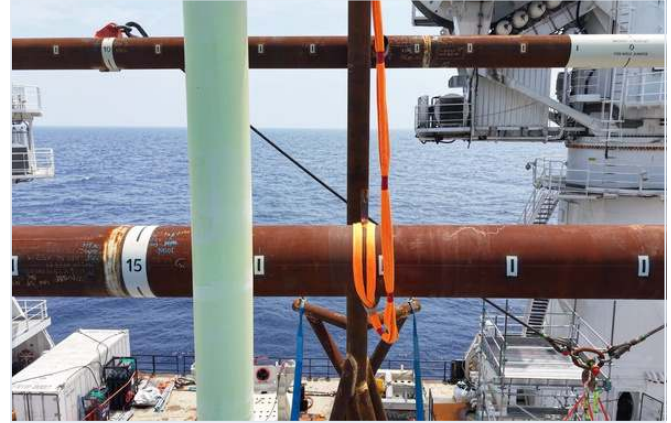


FIG 3.4-B — SLING TAILS PRIOR TO DRESSING

Overview

Visual inspection confirmed that all soft slings were correctly choked and oriented, with all load-bearing bights located beneath the spreader bar in accordance with rigging best practices.

Findings & observations

Loose excess sling tails were noted on several slings. These were not adequately secured and required additional dressing with cable ties to prevent uncontrolled movement during lift-off. A missing monkey's fist was identified on a hold-back sling; this was noted and rectified shortly after the inspection. Sling 3 at the XT-PLM side was observed to lack sufficient taping along its length. This omission posed a potential entanglement and thruster interference hazard for the ROV once subsea.

Corrective action

The issue with Sling 3 was flagged and addressed immediately, following identification via drone footage. All unsecured sling ends were subsequently tied down and re-verified prior to operations.

Conclusion

Slings are now in a safe, controlled configuration. Recommendation to include sling dressing checks in pre-deployment visual inspections to catch similar oversights in future lifts.

RIGGING REGISTER EXTRACT

IDENTIFICATION MARK	DESCRIPTION	DIA (mm)	LEN (mm)	WLL (t)	SP WT (kg)	TOT (kg)
REDACTED -020-XX	ROUND SLING					

3.5 FINDING 05

SNAG POINT FLAGGED

Spreader Bar



FIG 3.5-A — SPREADER BAR & CRADLE SUPPORT ARRANGEMENT



FIG 3.5-B — SPREADER BAR RIGGING, AERIAL VIEW

Chain link & shackle area — observation

Chains were observed hanging near the cradle support arm, with one shackle and lift sling located in close proximity to this area. This configuration introduces a potential snag risk during lift-off or dynamic motion. Shackle and sling condition at the spreader bar connections is covered under the overview in Section 3.3.

Recommendation

It is advised to remove the cradle lift sling and associated shackle to eliminate this snag point. The active shackle currently in use was observed to seat the soft sling eye cleanly on the pin, with additional taping applied to prevent rotational movement of the eye. This taping ensures the sling and shackle do not rotate, allowing for even weight distribution and preserved balance during lift execution.

RIGGING REGISTER EXTRACT

IDENTIFICATION MARK	DESCRIPTION	DIA (mm)	LEN (mm)	WLL (t)	SP WT (kg)	TOT (kg)
REDACTED -011-XX	SHACKLE BOLT TYPE ANCHOR, G4163					

Clump Weight — Shackle Restraint



FIG 3.6-A — CLUMP WEIGHT SHACKLE RESTRAINT, CARGO STRAPS



FIG 3.6-B — CUT-AWAY RELEASE ARRANGEMENT & TIMBER PACKING

Overview

During transit to the installation location, the clump weights were subject to repeated visual inspections due to elevated vibration levels caused by wind and vessel movement. These dynamic conditions introduced inherent risks, particularly around the method of shackle restraint.

Key observations

Shackles were secured using cargo straps, which incorporated sharp washers to enable cut-away subsea release by ROV. Timber planks were strategically positioned beneath the straps to create clearance for ROV knife access as a secondary detachment method. These combined elements introduced potential risk of shackle misalignment or unintentional release during transit, as well as tensioning interference against the cradles.

Conclusion

Aerial drone footage confirmed that all shackle assemblies remained in a safe, stable condition, with no visible evidence of movement, interference, or hazard escalation.

RIGGING REGISTER EXTRACT

REDACTED	MARK	DESCRIPTION	DIA (mm)	LEN (mm)	WLL (t)	SP WT (kg)	TOT (kg)
		SHACKLE, GREEN PIN SUPER BOW BN					

4.1 LESSONS LEARNT

Spreader Bar & Cradle Support Configuration

What happened

Following the initial deployment, drone footage revealed that the central (tall) cradle was not extended sufficiently. The clump weight created an angular offset, causing the centre of the spreader bar to lift off the cradle upright support prematurely, while the stern cradle remained in contact. These different-length supports, not accounting for the inclined bar during slack sling conditions, allowed the spreader to pivot unexpectedly around the stern upright cradle support due to vessel motion, leading to uncontrolled jerking.

RECOMMENDATION

Extending the centre upright cradle support to accommodate the spreader bar's incline angle during early tensioning would have provided a more stable and controlled lift profile.



FIG 4.1 — SPREADER BAR PIVOTING ON STERN CRADLE SUPPORT

4.2 LESSONS LEARNT

Shackle & Clump Weight Position — Proximity Hazard

What happened

Upon closer review, drone footage revealed that shackles were secured on the spreader bar near the XT-HUB cradle support arm. During lifting, the spreader bar tilted due to load imbalance, causing horizontal travel. As a result, the clump weight made contact with the cradle arm. Given the clump weight was secured only by cargo straps and a sharp cutter release mechanism, this presented a significant dropped object risk had the strap parted under load or impact.

RECOMMENDATION

Position shackles further from structural contact zones and revalidate tie-down security under all potential travel angles.

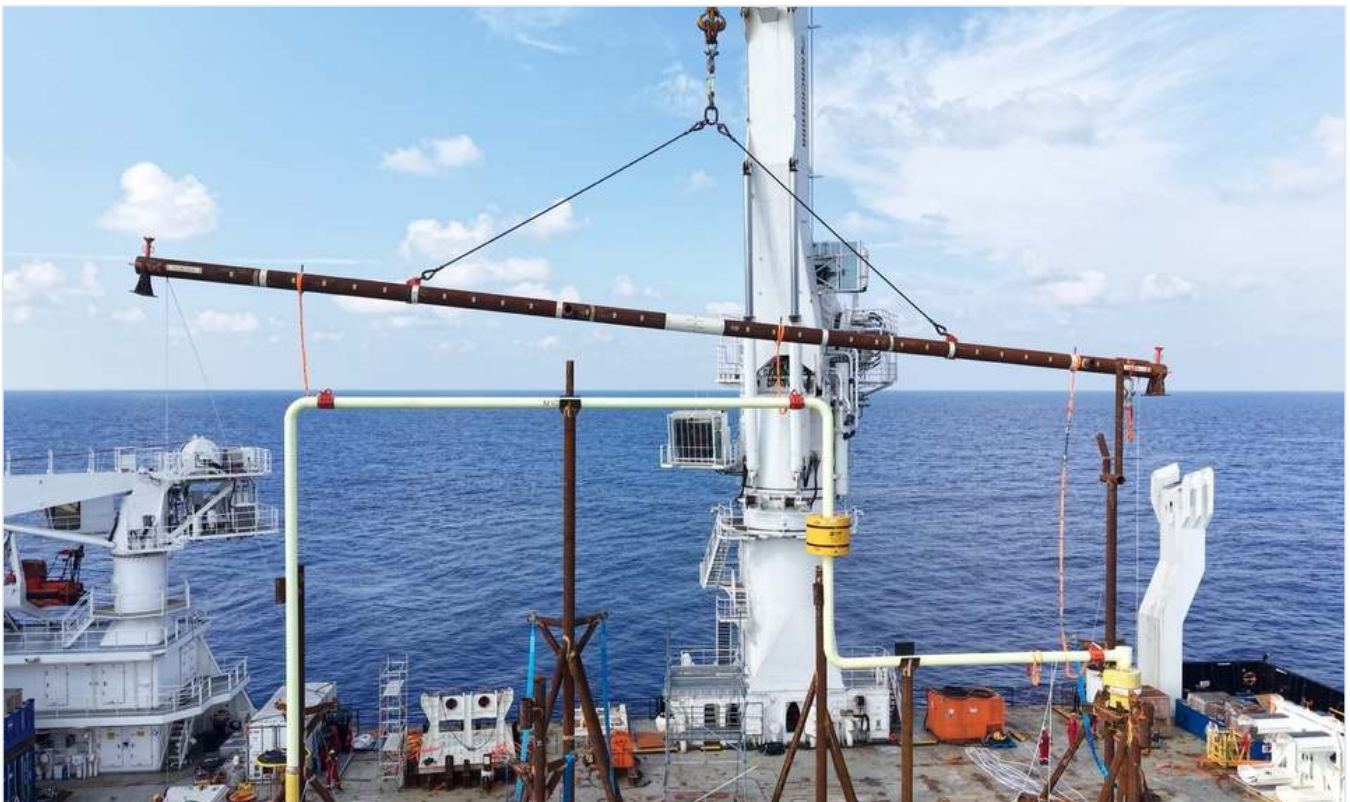


FIG 4.2 — CLUMP WEIGHT CONTACT ZONE AT CRADLE ARM

4.3 LESSONS LEARNT

Forward Cradle Extension — Jumper Routing Risk

What happened

The forward cradle support should be extended further to mitigate spool flexibility during lift-off. Once the jumper was released from its cradles, flexible movement introduced by spool dynamics created the potential for the jumper to travel behind the cradle. This posed a risk of the jumper becoming trapped or entangled, which would have introduced serious challenges during deployment mode, especially if real-time detangling was required.

RECOMMENDATION

Extend the forward cradle to maintain control over jumper routing during free-swing, ensuring consistent separation and clear line of sight for safe deployment.



FIG 4.3 — JUMPER ROUTING AT FORWARD CRADLE

Drone Safety Support in Offshore Operations

As offshore campaigns grow in complexity, external drone services have become a critical safety asset. Our high-resolution aerial inspections provide crews and engineers with **real-time visibility** of rigging paths, blind sights, and deck congestion, without exposing personnel to height or hard-to-reach zones.

By offering a third-party overhead perspective, we help identify potential hazards — such as sling fouling, spreader misalignment, or unsecured gear — **before operations commence**. This reduces reliance on scaffolds, man baskets, or guesswork and enhances confidence for the Deck Foreman.

In today's risk-averse environment, drone-based pre-deployment checks should be **standardised**, much like toolbox talks or lift plan reviews. Our drone support isn't just about media capture — it's a structured safety tool that delivers operational clarity and hazard mitigation from above.

As a dedicated external media and HSE aid service, we bridge the gap between documentation and prevention — **removing the guesswork, removing the risk, and removing people from harm's way**.

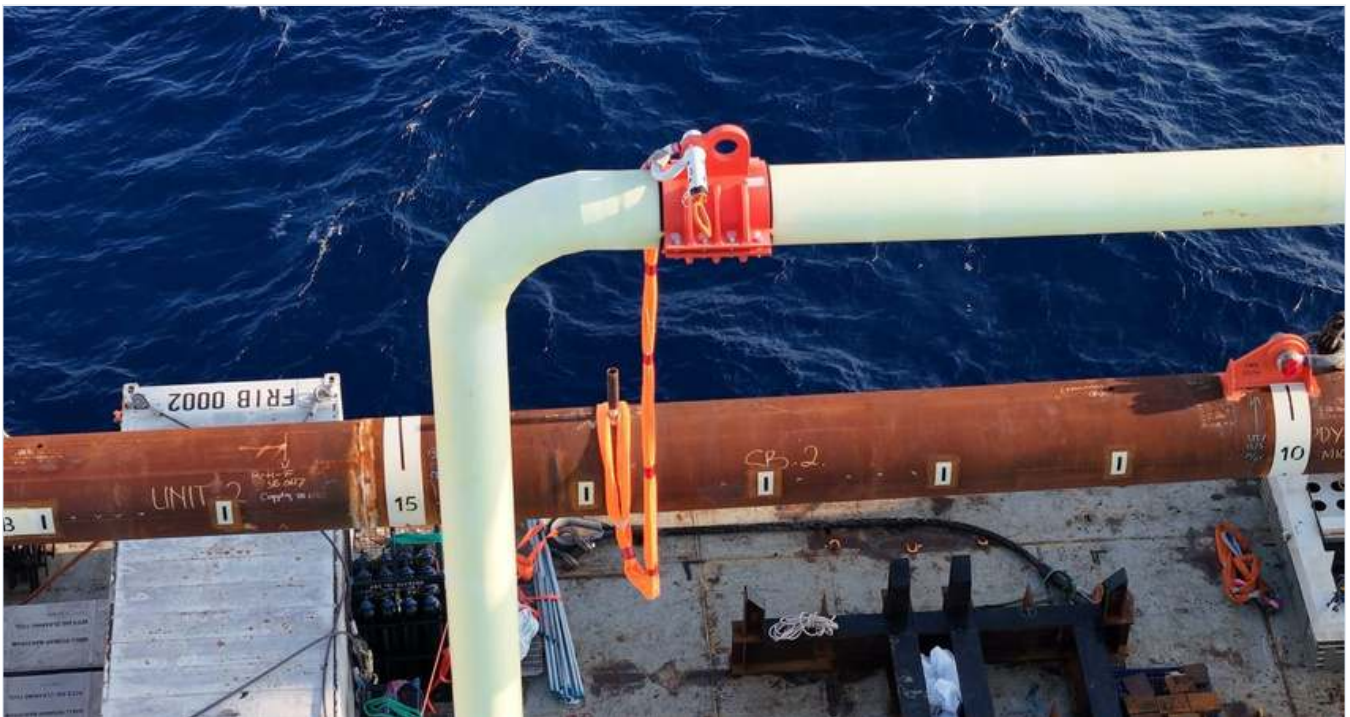


FIG 5.1 — OVERHEAD DRONE PERSPECTIVE OF DECK OPERATIONS

WHY IT MATTERS

Without this drone-assisted perspective, certain rigging hazards identified in Section 3 may have remained undetected.



Sign-Off Sheet

This document confirms that a drone-assisted visual inspection was conducted prior to critical lifting and deployment activities. The undersigned acknowledge that the inspection findings were reviewed and discussed, and that any noted corrective actions were implemented before proceeding.

01 DECK FOREMAN
Visual Inspection Acknowledgement

NAME _____

SIGNATURE _____

DATE _____

02 WARRANTY SURVEYOR
Verification & Compliance

NAME _____

SIGNATURE _____

DATE _____

03 OCM
Final Approval to Proceed

NAME _____

SIGNATURE _____

DATE _____

A APPENDIX A

Photographic Record



PLATE A-1 — ROV SHACKLE 1, PLEM HUB — AERIAL OVERVIEW

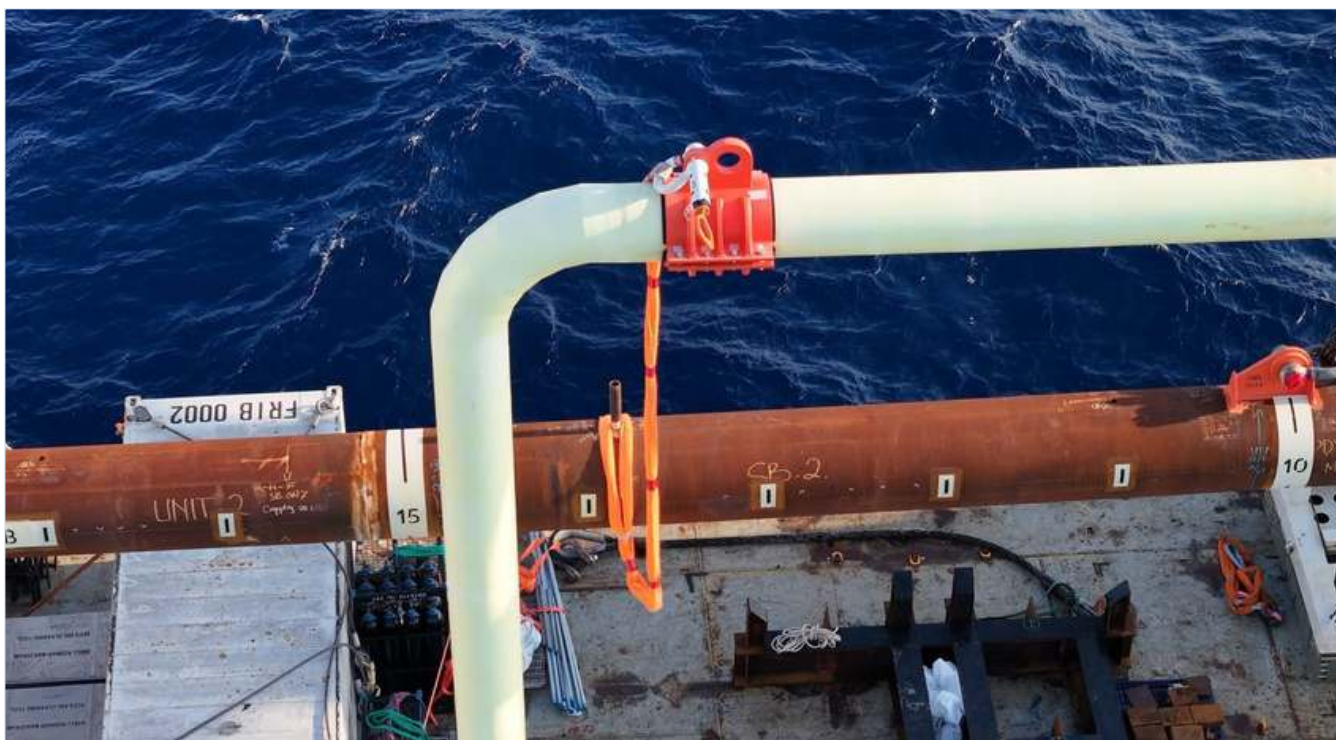


PLATE A-2 — ROV SHACKLE 2, CENTRE — DECK OVERVIEW

A APPENDIX A — PHOTOGRAPHIC RECORD (CONTINUED)



PLATE A-3 — ROV SHACKLE 3, XT HUB — CLOSE VISUAL



PLATE A-4 — SOFT SLINGS — DRESSING & TAPING CONDITION

A APPENDIX A — PHOTOGRAPHIC RECORD (CONTINUED)



PLATE A-5 — SPREADER BAR — RIGGING ARRANGEMENT



PLATE A-6 — CLUMP WEIGHT — RESTRAINT & CUT-AWAY RELEASE

A APPENDIX A — PHOTOGRAPHIC RECORD (CONTINUED)

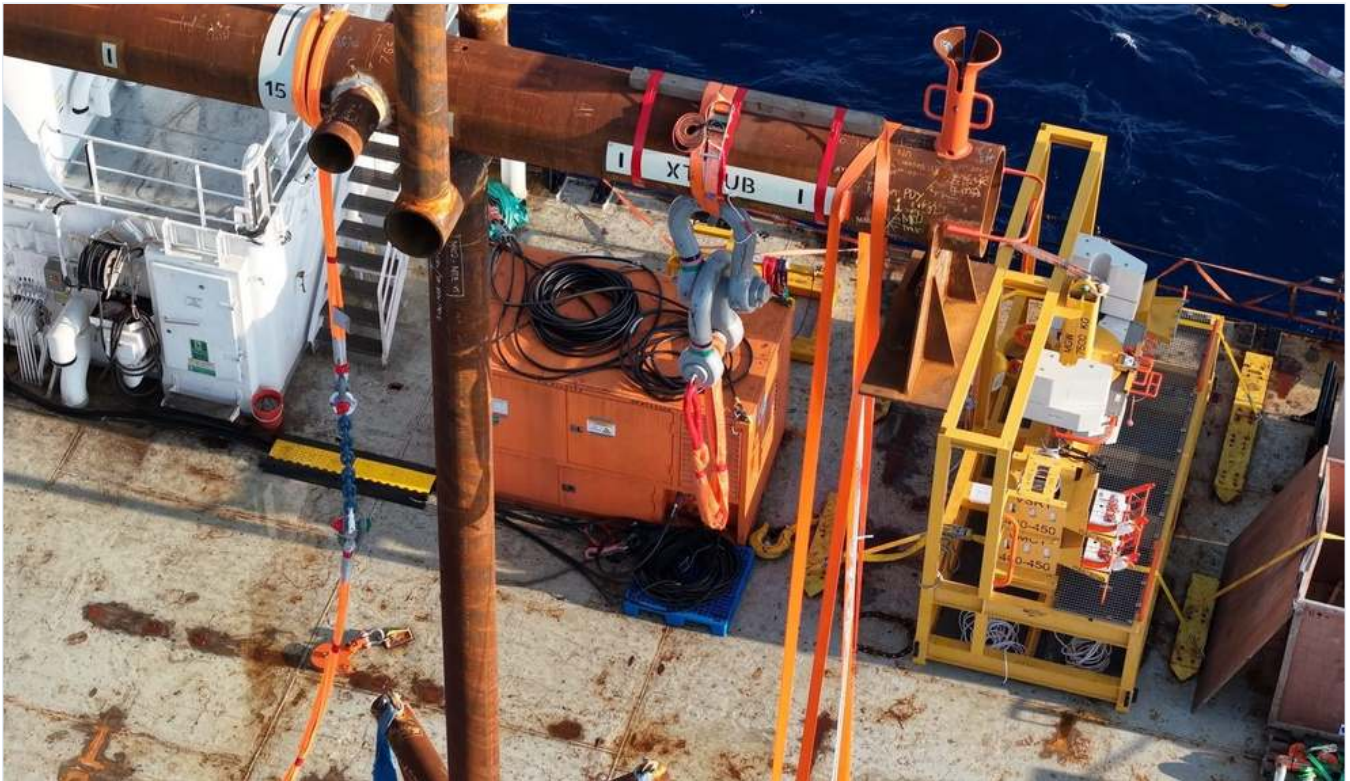


PLATE A-7 — CLUMP WEIGHT — TRANSIT CONDITION



PLATE A-8 — CRANE HOOK & MASTERLINK ASSEMBLY