UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT
GULF OF MEXICO REGION

# ACCIDENT INVESTIGATION REPORT

*For Public Release*

1. OCCURRED
   DATE: **07-SEP-2022** TIME: **1600** HOURS

2. OPERATOR: **Arena Offshore, LP**
   REPRESENTATIVE: **Mouton, Joseph**
   TELEPHONE: **(337) 769-6613**
   CONTRACTOR:
   REPRESENTATIVE:
   TELEPHONE:

- [ ] STRUCTURAL DAMAGE
- [X] CRANE
- [ ] OTHER LIFTING
- [ ] DAMAGED/DISABLED SAFETY SYS.
- [X] INCIDENT >$25K
- [ ] H2S/15MIN./20PPM
- [ ] REQUIRED MUSTER
- [ ] SHUTDOWN FROM GAS RELEASE
- [ ] OTHER

3. OPERATOR/CONTRACTOR REPRESENTATIVE/SUPERVISOR ON SITE AT TIME OF INCIDENT:

4. LEASE: **G24878**
   AREA: **SM** LATITUDE:
   BLOCK: **192** LONGITUDE:

5. PLATFORM: **A**
   RIG NAME:

6. ACTIVITY:
- [ ] EXPLORATION(POE)
- [X] DEVELOPMENT/PRODUCTION (DOCD/POD)

7. TYPE:
   INJURIES:
- [ ] HISTORIC INJURY

| | OPERATOR | CONTRACTOR |
|---|---|---|
| [ ] REQUIRED EVACUATION | | |
| [ ] LTA (1-3 days) | | |
| [ ] LTA (>3 days) | | |
| [ ] RW/JT (1-3 days) | | |
| [ ] RW/JT (>3 days) | | |
| [ ] FATALITY | | |
| [ ] Other Injury | | |

- [ ] POLLUTION
- [ ] FIRE
- [ ] EXPLOSION

LWC
- [ ] HISTORIC BLOWOUT
- [ ] UNDERGROUND
- [ ] SURFACE
- [ ] DEVERTER
- [ ] SURFACE EQUIPMENT FAILURE OR PROCEDURES

COLLISION [ ] HISTORIC [ ] >$25K [ ] <=$25K

8. OPERATION:
- [X] PRODUCTION
- [ ] DRILLING
- [ ] WORKOVER
- [ ] COMPLETION
- [ ] HELICOPTER
- [ ] MOTOR VESSEL
- [ ] PIPELINE SEGMENT NO.
- [ ] OTHER

9. CAUSE:
- [ ] EQUIPMENT FAILURE
- [X] HUMAN ERROR
- [ ] EXTERNAL DAMAGE
- [ ] SLIP/TRIP/FALL
- [ ] WEATHER RELATED
- [ ] LEAK
- [ ] UPSET H2O TREATING
- [ ] OVERBOARD DRILLING FLUID
- [ ] OTHER _____

10. WATER DEPTH: **399** FT.
11. DISTANCE FROM SHORE: **94** MI.
12. WIND DIRECTION:
    SPEED: M.P.H.
13. CURRENT DIRECTION:
    SPEED: M.P.H.
14. SEA STATE: FT.
15. PICTURES TAKEN:
16. STATEMENT TAKEN:

On 7 September 2022, at approximately 1600 hours, damage to the platform crane was discovered on Arena Offshore, (Arena) LP's OCS-G24878 South Marsh Island (SM) 192 A Facility. Arena operators discovered damage to the crane boom heel section while conducting a monthly facility inspection. The crane was placed out of service by a crane mechanic that was on board assisting the operators during the monthly inspection. The estimated cost to repair the boom damage is $30,732.

Sequence of Events:
From 8 June 2022, thru 15 July 2022, the SM 192A platform crane was used for Plug and Abandonment (P&A) operations on the A2 well and the A3 well. During this time frame, 3 different crane operators used the crane.

On 21 August 2022, the crane operator (CO #1) boarded SM 192A platform and attempted to conduct a pre-use inspection prior to using the crane. During the pre-use inspection, the CO #1 checked off all the sections on the pre-use inspection prior to physically conducting the inspection. When the CO #1 attempted to start the crane, the CO #1 discovered the battery was dead. The battery was swapped out by the CO #1 but failed to physically complete the pre-use inspection which included function testing the high angle kick-out and the anti-two block. The CO #1 also noticed the bends on the upper boom cords but thought the crane was made that way. CO #1 used the crane to move 2 generators weighing 8140 lbs. each and a diesel tote tank weighing 3140 lbs.

On 07 September 2022, Production operators were on site for a monthly facility inspection, and to offload a 25-man life capsule. A crane mechanic was tasked to join operators for the life capsule removal in case the crane needed mechanical ignition work from limited use due to the monthly visitation of the shut-in facility. During the crane pre-use inspection, the production operator's found damage to the boom heel section and asked the crane mechanic to verify findings. The crane mechanic verified the two bent vertical lacings as well as uniform bends in both upper chords of the boom heel section. The crane mechanic immediately placed the crane out of service, disconnected the crane battery, and completed the lock-out tag-out procedure. The life capsule was not offloaded from the facility.

On 13 September 2022, an MOC was initiated and the crane was de-rated by a crane engineer. The documentation was provided to the crane engineer by the onsite crane mechanic. The crane was de-rated in accordance with API Specification 2C, with an expiration date of 12 December 2022. According to the de-rated Lifting Capacity Chart, the dynamic capacity at 78 degrees is 15,000 lbs.

On 20 September 2022, the crane was used by a different CO (#2) to move the 25-man life capsule that weighed 250 lbs. The CO #2 checked off all the sections on the pre-use inspection form including the block for the high-angle kick-out but failed to function test.

On September 21, 2022, the crane was inspected by a crane mechanic for a function test of the high-angle kick-out, which was found to be inoperable and did not function as required. The crane mechanic readjusted the kick-out to initiate at 78 degrees, allowing sufficient space to impede a boom stop impact. The crane mechanic placed the boom in a high angle position, to confirm impact points aligned with the boom stops, that resulted in the current damage to crane. Crane has not been operated following this inspection.

**BSEE INVESTIGATION:**

On 7 September 2022, the Bureau of Safety & Environmental Enforcement (BSEE) Lafayette District (LD) Accident Investigator (AI) received a phone call notification of an incident causing damage to the boom heel section of the crane that occurred on Arena's SM 192 A Facility. The AI requested additional information pertaining to the incident such as JSAs, Operating Practices and other relevant documents from Arena.

Arena Offshore, LP felt the damage may have occurred during the P&A operations and interviewed the 3 crane operators. Though the crane operators interviewed by Arena could not provide information on how the crane boom was damaged. Arena suspects the crane damages occurred sometime from June 8th 2022 to August 21st 2022.

CO#1 stated to Arena during their investigation and to BSEE during the onsite investigation, that he thought the crane was made that way due to the bends on the upper boom chords being parallel from each other.

The CO #2 was asked by Arena if the high angle boom kick out was tested on September 20th. The CO #2 stated during a phone conversation with Arena, that he knew he wasn't going to be anywhere close to that angle during the lift, so he did not test the high angle kick-out.

The crane mechanic inspection conducted on 21 September 2022, confirms the damage is consistent with the boom heel upper chords impacting the boom stops. When Arena conducted their investigation, it was stated by the CO #1 that the high-angle kick-out and anti-two block had been checked off the pre-use inspection, but the devices were not tested. The CO #2 stated the high-angle kick-out had been checked off the pre-use inspection, but the device was not tested.

On 9 September 2022, Arena emailed photos of the damaged crane boom at SM 192 A. On 28 September 2022, Arena emailed a lift plan, the JSA for the day of the generator offload and the crane annual inspection. The BSEE LD AI conducted an onsite investigation at SM 192 A on 26 September 2022. During the onsite investigation, CO#1 stated to the BSEE AI that he did not notice any damage to the chord during pre-use inspection and states he noticed the bends in left and right lacings during the pre-use inspection but assumed it was the way the crane was designed. This information was also documented in Arena's final report.

**CONCLUSION:**

Based on the crane mechanic's findings on 21 September 2022, the crane boom heel section was damaged because the high-angle boom-kickout failed to function allowing the boom to make contact with the boom stops thus bending the 2 main upper cords and 2 boom lacings. The high angle boom kick out switch was not in the correct position to allow the boom to make contact with the switch. When the switch is pushed in by the boom, it disables the boom from moving back any further thus preventing contact with the boom stops.

Also, using the crane with damages to the boom heel section and failing to test the high angle boom kick-out could have led to further damages to the crane boom and injury to personnel.

**As per API RP 2D C.4.1.2 the operator shall perform a walk-around visual examination of the crane boom and support structure to ensure that no visible damage exists. The crane operator failed to recognize the damage to the boom heel section during the visual examination. Also, the Crane Pre-Use Inspection Form AOL-SWP-180-FRM-002 section #8 high angle kick-out was checked which gave a false indication that the device was tested. On two different occasions, the operators checked the high angle boom kick-out section as tested on the pre-use inspection but failed to conduct the testing of the high angle kick-out.**

18. LIST THE PROBABLE CAUSE(S) OF ACCIDENT:

**• Equipment Failure: Inoperable safety device – The high angle boom kick-out switch was inoperable due to its mounted position. The crane mechanic had to readjust the position of the high-angle boom kick-out to initiate at 78 degrees.**

**• Human Performance Error: Not following proper procedures – Though the crane pre-use forms were filled out, personnel failed to function test the high angle boom kick-out switch during crane pre-use inspections.**

19. LIST THE CONTRIBUTING CAUSE(S) OF ACCIDENT:

**• Equipment Failure: Inadequate Equipment Inspection - The CO #1 failed to recognize the damage to the crane boom heel section during the pre-use inspection and utilized the crane to make lifts.**

20. LIST THE ADDITIONAL INFORMATION:

21. PROPERTY DAMAGED:

**Crane boom**

NATURE OF DAMAGE:

**Boom heel upper chords contacted the boom stops**

ESTIMATED AMOUNT (TOTAL): **$30,732**

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

**The BSEE Lafayette District office makes no recommendations to the Regional Office of Incident Investigations (OII).**

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: **YES**

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

**On September 7, 2022, a crane operator discovered damage to the SM-192A platform crane boom heel section while conducting a monthly facility inspection. On September 13, 2022, an MOC was initiated and the crane was de-rated by a crane engineer in accordance with API Specification 2C. During the investigation it was revealed that the crane was operated on August 21, 2022, but the high angle kick-out and the anti-**

**two block were not tested despite the sections for the safety devices being checked off as tested on the pre-use form. Also, the crane operator failed to recognize the damage to the crane boom heel section during the pre-use inspection. After the crane was derated, a different crane operator used the crane and checked the pre-use section for the safety devices but also failed to test the high angle kick-out. On September 21, 2022, the platform crane's high angle kick out was tested by a crane mechanic and failed. Failing to test the high angle kick-out and the anti-two block could have resulted in severe damage to the crane boom that had previously sustained damage and injury to personnel.**

25. DATE OF ONSITE INVESTIGATION:

**26-SEP-2022**

26. Investigation Team Members/Panel Members:

**W. Guillotte /**

27. OPERATOR REPORT ON FILE:

28. ACCIDENT CLASSIFICATION:

29. ACCIDENT INVESTIGATION PANEL FORMED:

**NO**

OCS REPORT:

30. DISTRICT SUPERVISOR:

**Mark Malbrue**

APPROVED DATE: **23-FEB-2023**