

# ACCIDENT INVESTIGATION REPORT

1. OCCURRED

DATE: **03-MAY-2025** TIME: **1730** HOURS

2. OPERATOR: **Shell Offshore Inc.**

REPRESENTATIVE:

TELEPHONE:

CONTRACTOR: **Helmerich & Payne**

REPRESENTATIVE:

TELEPHONE:

- STRUCTURAL DAMAGE
- CRANE
- OTHER LIFTING
- DAMAGED/DISABLED SAFETY SYS.
- INCIDENT >\$25K **Expected to exceed \$1,000,000**
- H2S/15MIN./20PPM
- REQUIRED MUSTER
- SHUTDOWN FROM GAS RELEASE
- OTHER

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

4. LEASE: **G07963**

AREA: **MC** LATITUDE:

BLOCK: **807** LONGITUDE:

5. PLATFORM: **A (Mars)**

RIG NAME:

6. ACTIVITY:
- EXPLORATION (POE)
  - DEVELOPMENT/PRODUCTION (DOCD/POD)
  - DECOMMISSIONING

7. TYPE:

INJURIES:

- HISTORIC INJURY
  - REQUIRED EVACUATION
  - LTA (1-3 days)
  - LTA (>3 days)
  - RW/JT (1-3 days)
  - RW/JT (>3 days)
  - FATALITY
  - Other Injury
- OPERATOR CONTRACTOR

- POLLUTION
- FIRE
- EXPLOSION

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

COLLISION  HISTORIC  >\$25K  <=\$25K

8. OPERATION:

- PRODUCTION
  - DRILLING
  - WORKOVER
  - COMPLETION
  - HELICOPTER
  - MOTOR VESSEL
  - PIPELINE SEGMENT NO.
  - OTHER **Management Systems**
- TEMP ABAND
  - PERM ABAND
  - DECOM PIPELINE
  - DECOM FACILITY
  - SITE CLEARANCE

9. CAUSE:

- EQUIPMENT FAILURE
- HUMAN ERROR
- EXTERNAL DAMAGE
- SLIP/TRIP/FALL
- WEATHER RELATED
- LEAK
- UPSET H2O TREATING
- OVERBOARD DRILLING FLUID
- OTHER \_\_\_\_\_

10. WATER DEPTH: **2933** FT.

11. DISTANCE FROM SHORE: **52** 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:

## INCIDENT SUMMARY:

On 03 May 2025, at approximately 1715 hours, a crane incident occurred on the Mississippi Canyon (MC) 807 A (Mars) platform. Mars is a Shell Offshore Inc (Shell) operating Tension Leg Platform (TLP) in the Gulf of America. A Helmerich & Payne (H&P) crane operator was utilizing crane #2 to lift a 22 foot basket weighing about 26,649 pounds (84% of the crane's Safe Working Load Limit (SWLL) at a 140 degree boom radius) when a popping sound was heard. The crane then tilted forward, and the load descended to the deck without the Crane Operator functioning any crane control mechanisms. After the load settled, the Crane Operator stood up in the crane cab and noticed the crane was no longer level. Upon exiting the cab, the Crane Operator discovered that the crane had partially separated from the davit just above the slew gear teeth. The facility was already shut in and de-inventoried at the time of the incident due to an ongoing turnaround. However, the operator decided to temporarily de man the facility due to the severity of the damage and the potential risk to personnel and the environment if the crane were to further separate from the platform. On 05 May 2025, a repair team boarded the platform to stabilize the crane and prevent the risk of full separation or collapse. Once structural stability was restored, personnel were allowed back on the platform. Most of the crane boom was removed in May 2025, and the remaining crane structure was removed in November 2025. No injuries or pollution occurred, but Mars Crane #2 sustained extensive damage from the incident.

## SEQUENCE OF EVENTS:

At approximately 1715 hours, on 03 May 2025, the H&P Crane Operator was conducting a lift involving a 22 foot basket weighing 26,649 pounds. As the load was raised roughly one foot off the deck, the Operator heard a distinct popping sound, indicating an abnormal structural response within the crane assembly. Immediately following the noise, the load began to descend gradually without any input from the Crane Operator, this suggested a mechanical failure affecting load bearing components. After the load contacted the deck, the Operator lowered the main line to disconnect the rigging and observed that the crane structure was pitched forward. The Operator secured the controls, exited the cabin, and visually confirmed a partial structural separation at the davit above the slew gear teeth, prompting an immediate call for area evacuation.

The Shell Offshore Installation Manager (OIM) was summoned to the scene by the H&P Deck Supervisor. Upon assessment, the OIM determined that the crane's condition represented a significant structural hazard with the potential for collapse. All nonessential personnel were promptly cleared from the upper deck, and the affected area was isolated using barricade tape at the +40 level to establish a controlled exclusion zone.

At 2018 hours, on 03 May 2025, Shell formally notified the Bureau of Safety and Environmental Enforcement (BSEE) of this crane incident. A follow up email with preliminary incident details was sent at 2036 hours. During this time, Shell evaluated the evolving structural risk and determined that continued occupancy of the platform posed unacceptable hazards. As such, the operator mobilized multiple motor vessels to transfer personnel to MC 807 B (Olympus) or Port Fourchon. By midday on 04 May 2025, all remaining personnel had been transported offsite.

Following the de-manning, Shell maintained continuous remote surveillance of Crane #2 through the platform's camera system, monitored from a land based remote-control room (RCR). On 05 May 2025, Shell's Damage Assessment Team arrived on the platform to perform a detailed evaluation and initiate stabilization planning. Structural reinforcement activities began shortly thereafter. Between May 9 and May 11, a total

of 18 structural clips were welded in place. On 12 May 2025, torsion pieces and stiffeners were installed, which completed the stabilization phase and reduced the likelihood of further structural failure.

Once the crane was deemed structurally stable, Shell began a phased removal of the crane boom assemblies. Six boom sections were removed by 27 May 2025, leaving only the heel and the two mid sections in place pending complete crane removal. In November 2025, all remaining crane components were detached from the facility and transported to shore for detailed metallurgical evaluation. On 26 March 2026, Shell provided BSEE with the metallurgical analysis report along with a supplemental investigative presentation. Shell's final report was expected to be completed by May 2026.

#### BSEE INVESTIGATIONS:

Shell notified BSEE of the incident at 2018 hours on 03 May 2025 and provided a followup email at 2036 hours with preliminary details of the incident. On 15 May 2025, Shell submitted an electronic report in Ewell containing additional information about the incident. A BSEE Accident Investigator (AI) was assigned to the incident on 16 May 2025 and requested supporting documentation from the operator to initiate root cause analysis. BSEE and the United States Coast Guard (USCG) conducted independent, concurrent investigations pursuant to Memorandum of Agreement (MOA) OCS 05, maintaining coordinated information exchange throughout the investigation to ensure alignment of findings and avoid duplication of effort.

On 14 July 2025, the AI and BSEE Senior Incident Investigations Coordinator (SIIC) conducted an onsite inspection of Mars Crane #2, collected photographic evidence, and assessed the remaining structural components on the facility. The AI and SIIC learned that certain maintenance and inspection records were held at Shell's office in New Orleans office. On 24 July 2025, they performed a comprehensive review of the crane files at that location. The documentation provided to BSEE during the investigation encompassed Crane Communications Monitoring (CCM) data logs, load cell certifications, static and dynamic load chart information, five year load test records, annual and monthly inspection reports, witness statements and interview materials, Shell's crane operational policies, imagery and records detailing Hurricane Katrina damage, annual kingpost inspection records, borescope video inspection results, original equipment manufacturer (OEM) specifications and design documentation, structural repair packages with photographs, Shell's internal investigative presentation, and metallurgical testing results.

Mars Crane #2 was installed in 1995, equipped with a 180-foot boom, and classified as a medium usage crane. Relative to the facility's other cranes, it operates less frequently than Crane #3 and more frequently than Crane #1. All crane operations are conducted by H&P personnel, and service and maintenance activities are performed by Seatrax.

The investigation addressed the following four principal causal categories: material condition, fabrication and installation integrity, operational and maintenance factors, and historical structural trauma associated with Hurricane Katrina impacts in 2005. Metallurgical testing confirmed that the kingpost material met all API 2H Grade 50 requirements for tensile strength, yield strength, and chemical composition. Microscopic evaluation revealed no inclusions, voids, or microstructural anomalies indicative of inherent material weakness. On this basis, material related causes were deemed unlikely contributors to the failure.

Fabrication and installation deficiencies were similarly discounted. Measurements

showed the kingpost wall thickness at the failure location to be between 1.503 and 1.525 inches, exceeding the original design specification of 1.375 inches. Weld examinations identified no evidence of undercutting, incomplete fusion, porosity, or other discontinuities commonly associated with workmanship defects. These observations indicate that the fracture mechanism was not attributable to fabrication or installation non conformance, therefore is unlikely to have contributed to the kingpost separation.

Operational review focused on CCM overload alarms and the fidelity of input parameters affecting calculated SWLL. The free-swinging boom radius indicator was found to intermittently misreport boom radius, thereby reducing the computed SWLL and generating false overload alarms. Although these anomalies do not, by themselves, constitute a primary cause, operational context remained relevant: Crane #2 has a 30 year service history, has performed numerous lifts—estimated around 156,000 lifts—and may have experienced occasional shock loading or undocumented lifts exceeding SWLL. In combination with pre existing damage, these conditions likely accelerated fatigue progression over time but were unlikely to be the cause of the crack initiation.

Historical structural trauma associated with damage from Hurricane Katrina was identified as the most probable initiator of the failure. Metallurgical analysis concluded that the 2005 Hurricane Katrina event, during which a 700 ton derrick collapsed onto Crane #2's boom, imparted high strain rate dynamic loads capable of producing microscopic tears at the toe of the upper bull gear fillet weld. These microtears would act as stress risers, promoting long term fatigue crack propagation under normal operational loading. Direct visual evidence of the initial tears may have been obscured by post fracture mechanical damage; however, fracture morphology, stress distribution, crack geometry, and load path analysis are consistent with a Katrina related initiation mechanism. Considering all evidence, the 03 May 2025, kingpost failure was most likely the culmination of progressive fatigue cracking initiated by storm related impact and compounded by subsequent operational service.

#### IN CONCLUSION:

On 03 May 2025, the crane failure on the Mars platform was determined to be the likely result of progressive fatigue cracking initiated by structural damage sustained during Hurricane Katrina in 2005. Material quality and fabrication integrity were confirmed to be in full compliance with applicable standards, eliminating these as causal factors. Although operational anomalies were observed, they were secondary in nature and did not independently account for the failure mechanism.

The forensic evidence strongly indicates that the dynamic impact forces imparted during the 2005 hurricane event produced micro tears in critical load bearing components of the kingpost assembly. Over the subsequent two decades, normal operational loading—including heavy lifts, potential shock loading, and general wear—contributed to the gradual propagation of these cracks until structural separation became imminent.

Shell's mitigation actions were prompt and appropriate. Immediate hazard recognition, platform de-manning, controlled stabilization of the crane structure, and eventual removal of all compromised components prevented further deterioration and eliminated the risk of injury to personnel or environmental impacts. Although the incident resulted in significant equipment damage, Shell's response effectively minimized operational impact and ensured the protection of personnel and the surrounding environment.

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

Equipment Failure: The kingpost experienced structural failure resulting from long term fatigue cracking that originated from storm induced impact trauma. The capacity of the equipment was ultimately exceeded due to cumulative fatigue damage and compromised structural integrity.

Equipment failure: Preventive Maintenance/ Inadequate Equipment Repair- Although inspections were performed, the latent hurricane related trauma hidden beneath intact exterior surface was not detectable through routine inspection methods, leaving the underlying initiation points unaddressed.

Equipment Failure: Inadequate Equipment testing/Inspection- Standard inspection and monitoring practices were insufficient to detect micro tears or internal fatigue progression originating from the 2005 structural impact, allowing the damage to go undetected for nearly two decades.

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

Equipment Failure: Capacity of Equipment Exceeded (Historical Contributor)- Over its 30 year service life, Crane #2 experienced approximately 156,000 lifts, potential shock loading, and possible lifts near or above Safe Working Load Limits, which accelerated fatigue progression in an already compromised structure.

Work Environment: Other Weather Influences- Severe storm impact during Hurricane Katrina created the original structural trauma that initiated the fatigue crack. This environmental event was the foundational contributor to the long term deterioration

Management Systems: While Shell maintained documentation and inspection programs, the long term latent damage created by the hurricane remained undetectable through standard inspection protocols, representing a limitation in available diagnostic capabilities rather than a procedural deficiency.

20. LIST THE ADDITIONAL INFORMATION:

DATE OF ONSITE INVESTIGATION:

14 July 2025 (MARS)  
24 July 2025 (Shell New Orleans Office)

21. PROPERTY DAMAGED:

NATURE OF DAMAGE:

Crane kingpost'

Broken/Separated

ESTIMATED AMOUNT (TOTAL): \$17,500,000.00-  
\$25,500,000.00 (USD)

ESTIMATED AMOUNT (TOTAL):

22. RECOMMENDATIONS TO PREVENT RECURRENCE NARRATIVE:

**The BSEE New Orleans District office makes no recommendations to the Regional Office of Incident Investigations.**

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: **NO**

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

25. DATE OF ONSITE INVESTIGATION:

**14-JUL-2025**

28. ACCIDENT CLASSIFICATION:

26. Investigation Team Members/Panel Members:

29. ACCIDENT INVESTIGATION PANEL FORMED:

**NO**

OCS REPORT:

27. OPERATOR REPORT ON FILE:

30. DISTRICT SUPERVISOR:

**Michael J. Saucier**

APPROVED

DATE:

**26-MAY-2026**