

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: 16-MAY-2018 TIME: 1015 HOURS

2. OPERATOR: Noble Energy, Inc.

REPRESENTATIVE:  
TELEPHONE:

CONTRACTOR:  
REPRESENTATIVE:  
TELEPHONE:

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

3. OPERATOR/CONTRACTOR REPRESENTATIVE/SUPERVISOR ON SITE AT TIME OF INCIDENT: 8. OPERATION:

4. LEASE: G27306

AREA: MC LATITUDE: 28.26728694  
BLOCK: 736 LONGITUDE: -88.39892063

5. PLATFORM: A(Thunder Hawk)  
RIG NAME:

- PRODUCTION
- DRILLING
- WORKOVER
- COMPLETION
- HELICOPTER
- MOTOR VESSEL
- PIPELINE SEGMENT NO.
- OTHER

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

7. TYPE:

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

- FATALITY
- POLLUTION
- FIRE
- EXPLOSION

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

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

9. CAUSE:

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

- 10. WATER DEPTH: 6050 FT.
- 11. DISTANCE FROM SHORE: 66 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:

## 17. INVESTIGATION FINDINGS:

On May 16, 2018 at 1015 hours, a pollution event occurred at Noble Energy's Mississippi Canyon (MC) 736 A (Thunder Hawk) Platform. The original pollution event was reported on May 15, 2018, describing the sheen as 1,500 feet [0.25 nautical miles (nm)] by 25 feet [0.004 nm]; and the quantity was 9.6 ounces of hydrocarbon. On May 16, 2018, Bureau of Safety and Environmental Enforcement (BSEE) inspectors observed a sheen estimated at 14.77 barrels of oil discharging from the MC 736 A facility's overboard water line.

**Sequence of Events:**

From May 13 to May 16, 2018; the Thunder Hawk platform experienced three separate shut-in and start-up events. The facility operators pumped methanol and hydrate inhibitor into the flowlines to prevent hydrates from forming in the subsea flowlines after each shut-in event which caused additional demand on the overboard water treatment system.

On May 13, 2018, the first shut-in occurred. At approximately 1700 hours, a capacitor failure in the uninterruptible power supply (UPS) activated the smoke alarm, dropped power to the UPS system, and prompted a full uncontrolled shut-in of production including closure of the Surface Control Subsurface Safety Valves (SCSSVs). After the shut-in, methanol and Low-Dose Hydrate Inhibitor (LDHI) were pumped into the system to prevent hydrates from forming in the subsea flowlines. While bringing the production back online on May 14, 2018, control room operators (CRO's) experienced slugging, or irregular gas or liquid flow. The CRO's also noted issues with level control and safety devices in several process vessels.

On May 15, 2018 at 0800 hours, Deck Operator 1 observed a 25 feet by 1,500 feet sheen (silvery light colored) emanating from the overboard water discharge on the southeast corner of the facility. The Offshore Installation Manager (OIM) instructed the deck operators to initiate a collection of an overboard water sample within two (2) hours of first observation of the sheen and additional samples within the first twenty-four (24) hours of sheen observation to submit to a third-party lab, per National Pollutant Discharge Elimination System (NPDES) permit requirements. Noble Energy personnel reported the sheen to the National Response Center (NRC # 1212188).

On May 15, 2018 at approximately 1000 hours, CRO's performed a controlled shut-in (second shut-in) of production to repair the UPS system. This shut-in did not require the closure of SCSSVs. Therefore, a lesser volume of methanol and LDHI was pumped into the subsea flowlines. At approximately 1230 hours, CRO's brought production back online. During the ramping up phase, the CRO's again noted issues with level control and safety devices in several process vessels. The CRO's instructed the deck operators to visually verify the vessels' levels to determine the readings' accuracy. While the deck operators verified the levels in the Free Water Knockout (FWKO), they discovered oily water in the produced water weir. The deck operators manually adjusted the water level in the FWKO to prevent oily water from discharging to the float cell. Next, the CRO's made adjustments to the levels in the float cell to prevent oily water from discharging through the produced water outlet. The level was controlled manually in these vessels throughout the night until the next morning.

On May 16, 2018, the crew observed another sheen on the water. The OIM was made aware of the sheen and relayed this information to onshore Noble energy personnel. According to one of the operators, the sheens was residual hydrocarbon from the nights of the 14th and 15th. The operators continued to monitor the sheen into the morning.

BSEE inspectors arrived on the facility at approximately 1040 hours on May 16, 2018 to find that production was online, and the platform was actively sheening. On May 16, 2018, at approximately 1300 hours, CRO's performed a controlled shut-in (third shut-in) of production as ordered by BSEE's issuance of two (2) Notifications of Incident of Noncompliance (INCs).

**BSEE Investigation:**

On May 16, 2018, the BSEE New Orleans District (NOD) Accident Investigator received a summary email of the previous day's report to the NRC. This email included NRC report #1212188. Also, that morning, the NOD received a Marine Pollution Surveillance Report (MPSR) from National Oceanic and Atmospheric Administration (NOAA). This report indicated, with high confidence, possible oil observed via satellite at 1835 hours on May 15, 2018. The report described the sheen measuring 7.7 nm long and 2 nm wide possible oil. The NOAA analyst indicated that the sheen was connected to MC 736 A (Thunder Hawk) platform according to the latitude and longitude. Although Noble did not report this incident to BSEE directly, the NOD Office dispatched a team of inspectors to conduct an incident follow-up inspection of the facility on May 16, 2018.

The inspectors observed a sheen approximately 5 miles long by 3.5 miles wide estimating it at 14.77 barrels of oil, confirming the NOAA's marine pollution surveillance report of a possible sheen. During the overflight, inspectors spotted and took photos of two whales swimming in the dark oil parts of the sheen. There were no records of a sheen reported to the NRC on the morning of May 16, 2018.

The BSEE inspectors landed on location at approximately 1040 hours on May 16, 2018, and the platform was still online with the sheen observed emanating from the overboard water line. The operators informed the inspectors the platform had been shut-in since May 15, 2018 due to a UPS repair and they were in the process of bringing the facility back online. During the onsite investigation, inspectors confirmed the sheen was emanating from the Float Cell overboard water line. While on location, the BSEE investigation team reviewed information regarding the pollution event that occurred on May 15-16, 2018.

On June 11, 2018, after reviewing the collected documents, the BSEE investigation team returned to the facility. The team interviewed half of the key witnesses (other half were on days off) that were directly involved in the troubleshooting of the process upset. The team later interviewed the other half by phone. The investigation team gathered additional documents needed to complete the investigation and conducted an inspection of the process equipment mentioned in the report. Operators stated that due to the ramp-up sequence, insufficient water inventory could have caused the produced oil and high volumes of methanol and LDHI to affect the specific gravity of the fluid inside of the process vessels. This may have caused the level sensors to have an inaccurate reading of the true fluid level.

The Noble Energy conclusion revealed indications of undeveloped administrative controls for adjusting standards and procedures. Noble Energy's report stated: "With increased communication between offshore operations and onshore production leadership, the operational and reporting causal factors could be eliminated. The updating of start-up procedures and quality control checks to ensure proper sequencing of subsea well ramp-ups to account for large volumes of the chemical would help set a clearer expectation for operations and maintenance staff, as well as third-party contractors."

## Conclusion:

In conclusion, the investigation team found that the pollution event was most likely caused by inadequate operational procedures. From the end of 2017 to the time of the incident, water production increased by approximately 6,000 barrels per day (BPD). However, the increase in water production did not prompt a review of the produced water handling system and well start up procedures. A review of operational procedures and start-up procedures in particular may have identified the need to sequence well startups from unplanned shutdowns. Prior to the incident, the facility started their highest oil producing wells first. The high oil producing wells may have filled water handling vessels with a low volume of an oily water, LDHI, and MEOH mixture. Next, when the operators brought on wells with a higher water-cut, the incoming water may not have had adequate separation before high fluid levels caused fluid discharge through the water outlet. This problem may have been exacerbated by the relatively high levels of MEOH and LDHI present in the flow stream. These chemicals are water soluble and change the Specific Gravity of the fluid, which could result in inaccurate readings on the level sensors. The supposed inaccuracies may have caused the failure to remotely control the oil and water interface.

The BSEE inspectors issued two shut-in INCs to Noble Energy for this incident: (1) An E100 for failing to prevent an unauthorized discharge of pollutants into offshore waters, including the incident reported on the morning of May 15, 2018, and the BSEE Inspectors observations the following morning; and (2) a G110 for failing to conduct operations that preserve the environment.

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

- Management Systems- Inadequate Management of Change (MOC) procedures: The change in water production did not prompt a review of the produced water handling system.

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

- Human Performance Error - inadequate knowledge of equipment operations: With the ongoing pollution, personnel continually adjusted chemical rates and levels in the FWKO, Float Cell, and the Wet Oil Tank following the production start-ups from May 13, 15, and 16, 2018 without taking the appropriate action shutting in the facility.

## 20. LIST THE ADDITIONAL INFORMATION:

An additional INC was issued on June 11, 2018, for not reporting the muster event caused by a fire in the MCC room that occurred on May 13, 2018.

## 21. PROPERTY DAMAGED:

NATURE OF DAMAGE:

22. RECOMMENDATIONS TO PREVENT RECURRENCE NARRATIVE:

**The BSEE New Orleans District makes no recommendations to the Office of Incident Investigation.**

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

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

**E100 Lessee failed to prevent unauthorized discharge of pollutants into offshore waters.  
G110 Lessee failed to prevent unauthorized discharge of pollutants into offshore waters.**

25. DATE OF ONSITE INVESTIGATION:

**16-MAY-2018**

28. ACCIDENT CLASSIFICATION:

29. ACCIDENT INVESTIGATION  
PANEL FORMED: **NO**

26. INVESTIGATION TEAM MEMBERS:

**Jewel Mayer / Jonathan Connelly /  
Nathan Bradley / Pierre Lanoix /**

OCS REPORT:

30. DISTRICT SUPERVISOR:

**David Trocquet**

27. OPERATOR REPORT ON FILE:

APPROVED

DATE: **06-MAY-2019**