

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: 06-NOV-2016 TIME: 1050 HOURS

2. OPERATOR: BP Exploration & Production Inc.

REPRESENTATIVE:

TELEPHONE:

CONTRACTOR:

REPRESENTATIVE:

TELEPHONE:

- STRUCTURAL DAMAGE
- CRANE
- OTHER LIFTING DEVICE
- 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:

6. OPERATION:

4. LEASE: G09868

AREA: MC LATITUDE: 28.19060986  
BLOCK: 778 LONGITUDE: -88.49558496

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

5. PLATFORM:

RIG NAME: THUNDER HORSE PDQ

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

8. CAUSE:

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

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. WATER DEPTH: 6037 FT.

10. DISTANCE FROM SHORE: 67 MI.

11. WIND DIRECTION: E  
SPEED: 16 M.P.H.

12. CURRENT DIRECTION: W  
SPEED: 2 M.P.H.

13. SEA STATE: 3 FT.

## 17. INVESTIGATION FINDINGS:

On 6 November 2016, an incident occurred on the Thunderhorse PDQ that resulted in a 175 barrel discharge of 11.7 Synthetic Oil Based Mud (SOBM). The operation at the time of the incident was reverse circulating cement down the kill line up the drill pipe.

At 0530 hours, attempting to reverse circulate, the Operator pumped 80 barrels of SOBM down the kill line with no indication of circulation. The decision was then made to swap to the choke line and the Operator successfully reverse circulated out the SOBM spacer and cement. At this time the decision was made to troubleshoot the kill line. Thinking that the entire kill line drained out, the Operator pumped an additional 54 barrels to make the total pumped at this time 134 barrels. This was calculated to be a kill line volume plus 13 barrels. Approximately 0930 hours the decision was made to pump down the kill line in an attempt to obtain pressure at the pump or on the kill line by closing the upper inner failsafe. The Operator pumped 41 barrels with no success. Total pumped at this time is 175 barrels. The Operator then decided to test against the kill line valve on surface where pressure was observed at the mud pump. Pumping operations were then stopped to continue troubleshooting. At 1050 hours subsea personnel noticed that the kill line coflex hose separated at the swivel on the gooseneck and was hanging in the water at the moon pool.

On 7 November the BSEE inspectors arrived on location to investigate the incident. During the investigation it was discovered that the Operator pumped 175 barrels of SOBM into offshore waters. The SOBM lost overboard was 59% Synthetic Base Oil; total pollution is 103 barrels. The investigation also revealed that the gooseneck assembly including the swivel was recertified on 4 May 2016. The Inspectors also reviewed the BOP test documentation from 28 October 2016 where the kill line was successfully pressure tested several times. At this time the cause of the failure is unknown; the Operator will be sending the swivel to the OEM for analysis. The Operator will have a BP and Ensco representative present during the failure analysis.

**\*UPDATE\***

On 1 February 2017 the Operator submitted two reports to BSEE, the Root Cause Analysis Report and a Detachment Inspection Report. The Root Cause Analysis Report noted the following.

- 1) Wear ring swelling due to water absorption creating excessive loads on the setscrews.
- 2) Locking setscrews sheared allowing the adapter to unscrew.
- 3) Wear ring material is not recommended for use in high humidity or where water is present.
- 4) No periodic inspection or maintenance instructions.
- 5) No indicator to offer a preemptive warning.

The Operators Root Cause Analysis Report noted the following recommendations.

- 1) Design review to investigate a positive locking feature.
- 2) Replace wear ring with a new material.
- 3) Develop manual to include periodic visual inspection.
- 4) Design review to add visual indicator feature.

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

1) Wear ring swelling due to water absorption creating excessive loads on the setscrews.

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

- 1) Locking setscrews sheared allowing the adapter to unscrew.
- 2) Wear ring material is not recommended for use in high humidity or where water is present.
- 3) No periodic inspection or maintenance instructions.
- 4) No indicator to offer a preemptive warning.

20. LIST THE ADDITIONAL INFORMATION:

1) The BSEE inspectors questioned the Operators troubleshooting methods and the Operator agreed that a change in their trouble shooting procedure is needed. The amount of SOBM lost overboard could have been significantly reduced, had the operator performed a visual check on surface for leaks, prior to continuing pumping operations.

21. PROPERTY DAMAGED:

175 bbls Synthetic Oil based Mud

NATURE OF DAMAGE:

Discharged overboard

ESTIMATED AMOUNT (TOTAL): \$

22. RECOMMENDATIONS TO PREVENT RECURRENCE NARRATIVE:

The New Orleans recommends a safety alert be issued to inform other Operators that may be using this type swivel.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: YES

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

E-100 (W) 250.300(a) On 11-6-2016, an incident occurred that resulted in a 175 barrel discharge of 11.7 pound per gallon Synthetic Based Mud.

25. DATE OF ONSITE INVESTIGATION:

07-NOV-2016

26. ONSITE TEAM MEMBERS:

Alvin Edwards / Chris Brown /  
Michael Sonnier /

29. ACCIDENT INVESTIGATION

PANEL FORMED: NO

OCS REPORT:

30. DISTRICT SUPERVISOR:

David Trocquet

APPROVED

DATE: 13-FEB-2017