

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: 20-MAR-2016 TIME: 2343 HOURS

2. OPERATOR: BHP Billiton Petroleum (GOM) Inc.
REPRESENTATIVE:
TELEPHONE:
CONTRACTOR: Transocean Offshore
REPRESENTATIVE:
TELEPHONE:

- STRUCTURAL DAMAGE
- CRANE
- OTHER LIFTING DEVICE **Main Traveling Block**
- DAMAGED/DISABLED SAFETY SYS.
- INCIDENT >\$25K \$1,000,000
- 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: G20085
AREA: GC LATITUDE:
BLOCK: 654 LONGITUDE:

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

5. PLATFORM:
RIG NAME: T.O. DEEPWATER INVICTUS

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

8. CAUSE:

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

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

FATALITY
 POLLUTION
 FIRE
 EXPLOSION

9. WATER DEPTH: 4303 FT.

LWC HISTORIC BLOWOUT
 UNDERGROUND
 SURFACE
 DEVERTER
 SURFACE EQUIPMENT FAILURE OR PROCEDURES

10. DISTANCE FROM SHORE: 120 MI.

11. WIND DIRECTION: N
SPEED: 26 M.P.H.

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

COLLISION HISTORIC >\$25K <=\$25K 13. SEA STATE: 7 FT.

On March 20, 2016, an incident occurred onboard Transocean's drillship, the 'Deepwater Invictus', while performing drilling operations for BHP Billiton's 'I001' well. The rig was located in Green Canyon 654, Lease G20085 when the rig's top drive was hoisted beyond its allowable working limit, causing it to strike and damage equipment in the crown of the derrick.

On the morning of the incident, the rig was in the process of cleaning out the wellbore utilizing a 'clean out' assembly that was being run on 5.5 inch drill pipe. Once the cleaning operations were complete, the rig began to pull the drill pipe back out of the well and transfer it into the setback area for storage. Due to vessel movement, the drill crew had experienced numerous problems involving the rotary hose and the rig's lower proximity sensor. The proximity sensor is a safety device that is installed on the rig to prevent the rig's top drive from striking either the rig floor or the crown of the derrick. As long as this device is calibrated correctly, the system is designed to shut down all movement of the top drive and engage the brakes of the draw works should the top drive near either its high or low allowable working limits.

The crew was having an issue where, due to the ship's movement, the position of the kelly hose was inadvertently causing a trip of the systems lower proximity sensor while the top drive was still well within its safe working limits. Each time this happened, the system would shut down all operations with the top drive. At the same time, a message was sent to the Driller's console. This message prompted the driller to "confirm position" in order to proceed with operations. Transocean's procedure states that, under supervision, the Driller should accept the "confirm position" message, allow the brakes to free, and then slowly lower the block to the drill floor for re-calibration. The first time it happened, around 14:35, the Toolpusher was notified of the problem and the crew attempted to follow the procedure but were unsuccessful in disengaging the brakes. The Toolpusher suggested that they try to "come up" with the stand of pipe, rack it back, and then attempt to recalibrate the sensor again with an empty block. Upon setting back the stand of pipe, the block was once again lowered and a second attempt was made to recalibrate the sensors. Being successful, this created the practice of continuing to rack back the stand of pipe being hoisted after receiving a fault rather than following company procedure. The crew decided to continue with this process until all pipe was out of the well, at which point they would make adjustments to the kelly hose that would position it further away from the lower proximity sensor. This process was repeated a total of seven times preceding the incident.

On the eighth time the lower proximity sensor was tripped by the kelly hose, the Driller cleared the pop up window, released the brakes and continued pulling out of the hole to rack the stand; however, the Driller failed to recognize that he had pulled almost an entire stand of pipe. The Driller was solely focused on his weight indicator as the bottom hole assembly neared the slip joint. The block height was not recognized either by monitoring the number of tool joints he had pulled through the rotary or by monitoring the block position on the derrick camera display. The block was hoisted at normal speed until the top of the traveling block contacted the crown.

The inertia in the system resulted in approximately 1.8 million pounds of pressure being pulled against the traveling block. When the traveling block contacted the crown, the bolts that attached the lifting lug to the cheek plates of the block were sheared. All twenty bolts mounting the compensator cylinder in the derrick were also sheared which resulted in several bolt heads and miscellaneous debris falling to the decks below.

After the incident, all personnel were accounted for and it was confirmed no one was

injured by any debris or dropped objects from the collision. The rig floor restriction was elevated from "red zone" to "black zone" which prevented anyone from entering the rig floor without first going through the 'permit to work' process. "Black zone" status remained in place until the damaged block could be lowered down onto the deck and the derrick was completely surveyed for potential dropped objects.

BSEE was immediately notified of the incident. Instructions were given to BHP that no operations were to be performed with the well until the proper repairs were made and protocols put into place to prevent a reoccurrence. On March 30, 2016, after reviewing all documents and procedures associated with BHP's plan forward and remedial actions put into place following the incident, permission was granted by BSEE for operations to commence once all repairs were made.

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

- (1) Failure to recognize the safety hazards associated with the rig's Kelly hose positioning and movement due to vessel motion.
- (2) Failure to follow proper management of change procedures when rig equipment and safety systems are not working properly.
- (3) Failure to follow company procedures for unplanned recalibration of the Zone Positioning System.

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

- (1.) Lack of Supervision: The operator's inability to provide proper leadership to the crew for tripping operations when an unplanned event occurs.
- (2.) Lack of Awareness: The Driller's failure to notice warning signs as well as identify possible hazards associated with acknowledging inappropriate block height settings and re-calibration operations.

20. LIST THE ADDITIONAL INFORMATION:

During the investigation and interviews, it was clear that management on the rig was aware of this issue and allowed operations to continue. The practice became acceptable to operate with this safty system bypassed.

21. PROPERTY DAMAGED:

NATURE OF DAMAGE:

Traveling Block
CMC cylinder in rig derrick

Damaged Sheaves
Sheared Bolts
Damaged Wire Rope

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ESTIMATED AMOUNT (TOTAL): **\$1,000,000**

22. RECOMMENDATIONS TO PREVENT RECURRENCE NARRATIVE:

The Houma District Office has no recommendations for the Office of Incident Investigations at this time.

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

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

A G-110 Incident of Non-Compliance was issued as follows:

"On March 20,2016 an incident occurred on the Transocean Deepwater Invictus in which a traveling block struck the crown of the derrick. According to the information gathered since the incident, the traveling block struck the crown due to the drilling crew's failure to properly maintain the crown saver system."

25. DATE OF ONSITE INVESTIGATION:

21-MAR-2016

26. ONSITE TEAM MEMBERS:

**Robert Reeves / Clinton Campo /
Cedric Bernard / James Richard /**

29. ACCIDENT INVESTIGATION

PANEL FORMED: **NO**

OCS REPORT:

30. DISTRICT SUPERVISOR:

Bryan Domangue

APPROVED

DATE: **30-JUN-2016**