

UNITED STATES DEPARTMENT OF THE INTERIOR  
MINERALS MANAGEMENT SERVICE  
GULF OF MEXICO REGION

ACCIDENT INVESTIGATION REPORT

1. OCCURRED

DATE: 08-OCT-2006 TIME: 0200 HOURS

2. OPERATOR: BP Exploration & Production Inc.  
REPRESENTATIVE: Scherie Douglas  
TELEPHONE: (281) 366-6843  
CONTRACTOR: Transocean Offshore  
REPRESENTATIVE: Jimmy Harrell  
TELEPHONE: (601) 537-3426

- STRUCTURAL DAMAGE
- CRANE
- OTHER LIFTING DEVICE
- DAMAGED/DISABLED SAFETY SYS.
- INCIDENT >\$25K Failed Casing Slips
- 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: G17456  
AREA: GB LATITUDE:  
BLOCK: 873 LONGITUDE:

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

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

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: 4704 FT.

LWC  HISTORIC BLOWOUT  
 UNDERGROUND  
 SURFACE  
 DEVERTER  
 SURFACE EQUIPMENT FAILURE OR PROCEDURES

10. DISTANCE FROM SHORE: 150 MI.

11. WIND DIRECTION: E  
SPEED: 12 M.P.H.

12. CURRENT DIRECTION: NE  
SPEED: 1 M.P.H.

COLLISION  HISTORIC  >\$25K  <=\$25K 13. SEA STATE: 1 FT.

17. INVESTIGATION FINDINGS:

Description of incident:

On 8 October 2006 at 0200 hours, the T.O. Deepwater Horizon had picked up joints ( feet) of 13-5/8 inch 88.2 ppf Q-125 casing. The joints of 13-5/8 inch casing were set in the Frank's 750 Ton Flush Mount casing slips. As the drill crew was picking up the next stand of 13-5/8 inch casing, the Frank's 750 Ton Flush Mount casing slips failed. The 13-5/8 inch casing fell to the well's total depth of feet. A total of 112 slip dies were lost along with the load ring off the bottom of three slip segments.

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

After performing dimensional analysis, metallurgical testing and analytical evaluation of the slips the probable cause of the accident is as follows:

The Finite Element Analysis (FEA) and testing effort performed by National Oilwell Varco (NOV) indicate an unmatched set of slip segments as the probable cause. Slip segment number 4 (the only intact segment) was found to have a slightly lower yield strength than specified by the manufacturer. Using a laser based dimensional inspection, slip segment number 4 was found to have been outside the dimensional tolerances due to wear. With slip segment number 4 being outside the dimensional tolerances, this caused the other 3 slip segments to pick up a disproportional share of the casing load causing the failure.

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

The contributing causes of the accident are as follows:

It was also noted that the load rings were welded directly to the slip segment versus using retainers as called for in the design. It is possible that the heat affected zone could weaken the load ring and segment toe area. Also, the welding of the load ring can change the load distribution created by the slip inserts relative to the NOV design basis for the tool and is a contributing cause of the failure.

Additionally, tests also demonstrated that the old design slip segments can be positioned so that the toe of the segment is unsupported. This is not a problem with the newer 1992 slip segment design. NOV does not currently recommend suspending the slips in a flush mounted configuration in the rotary, as they were on this well, but suggests a base plate so the casing can be more easily centered for proper load distribution in the slip segments. Uneven loading of the slips was identified as another contributing cause of the failure.

20. LIST THE ADDITIONAL INFORMATION:

Recommendations to prevent a recurrence of this event are as follows:

See National Oilwell Varco Service Bulletin for complete recommendations to prevent a recurrence of the incident.

Operators should examine the use of Varco 750 ton slips dressed with an improved 1992 segment design in an above rotary configuration (i.e. on a base plate).

NOV does not recommend slip segments to be dressed with grooved dies as was the case

with the Frank's supplied unit, although physical testing did not indicate any problem with the custom Frank's inserts.

21. PROPERTY DAMAGED:

NATURE OF DAMAGE:

The 13-5/8 inch casing was successfully recovered using a Weatherford Deepwater Hi-Pressure Underwater Wellhead Casing Patch. The monetary value includes the time from dropping the casing to drilling ahead.

N/A

ESTIMATED AMOUNT (TOTAL): \$7,200,000

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

The Lafayette District makes no recommendation to the Regional Office of Safety Management.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: NO

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

NA

25. DATE OF ONSITE INVESTIGATION:

11-OCT-2006

26. ONSITE TEAM MEMBERS:

Marty Rinaudo / Johnny Serrette /

29. ACCIDENT INVESTIGATION

PANEL FORMED: NO

OCS REPORT:

30. DISTRICT SUPERVISOR:

Elliott S. Smith

APPROVED  
DATE:

25-APR-2007

