

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

ACCIDENT INVESTIGATION REPORT

1. OCCURRED

DATE: 03-DEC-2009 TIME: 2000 HOURS

2. OPERATOR: LLOG Exploration Offshore, Inc.
REPRESENTATIVE: Weydert, Brian
TELEPHONE: (985) 801-4300
CONTRACTOR: NOBLE DRILLING (U.S.) INC.
REPRESENTATIVE: Bronson, Dan
TELEPHONE: (281) 276-6100

- 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:

4. LEASE: G31694
AREA: GC LATITUDE: 27.84430111
BLOCK: 97 LONGITUDE: -91.4837025

6. OPERATION:

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

5. PLATFORM:
RIG NAME: NOBLE LORRIS BOUZIGARD

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 Inadvertently opened valve

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: FT.

10. DISTANCE FROM SHORE: MI.

11. WIND DIRECTION: SE
SPEED: 13 M.P.H.

12. CURRENT DIRECTION: E
SPEED: 0 M.P.H.

13. SEA STATE: 5 FT.

17. INVESTIGATION FINDINGS:

During an acid job being conducted between the frac boat and rig, acid was being pumped down the drill pipe while taking completion fluid returns through the mud return line to the gumbo box. The completion fluid returns were intended to be routed to shaker #2 and then to pit #3 however, the manual drain valve beneath the gumbo box was incorrectly positioned in the open position. This allowed 230 bbls of 15.7 ppg Zinc Bromide completion fluid to flow to the master drain line and inadvertently overboard. The open gumbo box drain valve was immediately closed once the crew members discovered the open valve. The discharged Zinc Bromide was barely visible on the Gulf waters as a result of it being a water based completion fluid.

The LLOG investigation determined that the gumbo box drain valve was left in the open position subsequent to flushing the lines from the frac boat however, there was no requirement for this valve to be opened in order to flush the lines. The gumbo box drain valve is rarely opened and should not have been opened for this operation. One individual opened the valve but did not communicate his actions with the rest of the crew.

The Derrickman had not been informed that circulation from the frac boat had been initiated, so he was not monitoring the pit volume totalizer to ensure that returns were being received. The rig camera at the Gumbo box was being used to confirm fluid returns, but no one was sent to monitor the shale shakers located downstream of the gumbo box. The investigation determined the following: 1) the gumbo box drain valve was not part of the lock-out program, 2) the crew members terminology on names for specific valves was not precise, and 3) the crew members did not monitor the operations when they returned from their meal break.

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

The gumbo box drain valve inadvertently left in the open position resulted in the overboard discharge.

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

- * There was not a valve positioning procedure in place to ensure a proper fluid flow path.
- * The lack of communication between the rig and boat crew members on the initiation of circulation from the frac boat resulted in a lack of monitoring by the Derrickman to ensure that returns were received.
- * The improper fluid flow path was not observed as a result of both the pit volume totalizer and downstream shale shakers not being monitored.
- * Use of a lockout/tagout program for the gumbo box drain valve could have resulted in the gumbo box valve being properly closed during the fluid transfer operation.
- * A better understanding by the rig crew on specific valve terminology should have reduced the risk of an improper flow path through proper valve alignment.
- * The volume of discharge could have been reduced if the crew members had monitored the operations subsequent to returning from their meal break.

20. LIST THE ADDITIONAL INFORMATION:

LLOG has taken the following measures to prevent this type of incident from recurring:

- * Ensure that all overboard rig mud system drain lines are identified and included in the rig's lockout/tagout program.
- * A lockout/tagout device and blind flange have been installed behind the gumbo box discharge valve.
- * Fluid handling personnel have been trained in the proper alignment and terminology of valves and lines.
- * Radios are issued to the Fluid Engineer and Derrickman during frac boat operations.
- * Important factors such as communication are now stressed during Job Safety Analysis (JSA) meetings.

21. PROPERTY DAMAGED:

NATURE OF DAMAGE:

Inadvertent discharge of ZnBr2 completion 230 bbls of 15.7 ppg ZnBr2 fluid.

ESTIMATED AMOUNT (TOTAL): \$120,000

22. RECOMMENDATIONS TO PREVENT RECURRENCE NARRATIVE:

Due to the specific nature of this incident, the Houma District has no recommendations to report to the Regional Office.

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

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

An E-100 warning Incident of Noncompliance (INC) was written at the onsite investigation which stated, "On 3-DEC-2009 at 2000 hours, 230 bbls of Zinc Bromide completion fluid was discharged into the Gulf of Mexico. A drain valve located below the gumbo box was inadvertently left open allowing the Zinc Bromide to flow to the master drain line and ultimately overboard."

25. DATE OF ONSITE INVESTIGATION:

21-DEC-2009

26. ONSITE TEAM MEMBERS:

Josh Ladner / Casey Bisso /

29. ACCIDENT INVESTIGATION

PANEL FORMED: **NO**

OCS REPORT:

30. DISTRICT SUPERVISOR:

Bryan A. Domangue

APPROVED

DATE: **08-JAN-2010**

