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

ACCIDENT INVESTIGATION REPORT

1. OCCURRED
   DATE: **14-JUN-2008** TIME: **2122** HOURS

2. OPERATOR: **Shell Offshore Inc.**
   REPRESENTATIVE: **DiCarlo, Theresa**
   TELEPHONE: **(504) 728-6237**
   CONTRACTOR: **NOBLE DRILLING (U.S.) INC.**
   REPRESENTATIVE: **Frank Febro**
   TELEPHONE: **(504) 728-0803**

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

4. LEASE: **G19409**
   AREA: **AC** LATITUDE:
   BLOCK: **815** LONGITUDE:

5. PLATFORM:
   RIG NAME: **NOBLE CLYDE BOUDREAUX**

6. ACTIVITY:
- [ ] EXPLORATION(POE)
- [X] 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
- [ ] STRUCTURAL DAMAGE
- [ ] CRANE
- [ ] OTHER LIFTING DEVICE
- [ ] DAMAGED/DISABLED SAFETY SYS.
- [X] INCIDENT >$25K **Dropped BOP**
- [ ] H2S/15MIN./20PPM
- [ ] REQUIRED MUSTER
- [ ] SHUTDOWN FROM GAS RELEASE
- [X] OTHER **Dropped BOPs**

6. OPERATION:
- [ ] PRODUCTION
- [X] DRILLING
- [ ] WORKOVER
- [ ] COMPLETION
- [ ] HELICOPTER
- [ ] MOTOR VESSEL
- [ ] PIPELINE SEGMENT NO.
- [ ] OTHER

8. CAUSE:
- [X] EQUIPMENT FAILURE
- [ ] HUMAN ERROR
- [ ] EXTERNAL DAMAGE
- [ ] SLIP/TRIP/FALL
- [ ] WEATHER RELATED
- [ ] LEAK
- [ ] UPSET H2O TREATING
- [ ] OVERBOARD DRILLING FLUID
- [ ] OTHER _____

9. WATER DEPTH: **9336** FT.

10. DISTANCE FROM SHORE: **220** MI.

11. WIND DIRECTION: **ENE**
    SPEED: **6** M.P.H.

12. CURRENT DIRECTION: **SSW**
    SPEED: **1** M.P.H.

13. SEA STATE: **5** FT.

17. DESCRIBE IN SEQUENCE HOW ACCIDENT HAPPENED:

On June 14, 2008 at 21:30 hours the Noble Clyde Boudreaux semi-submersible drilling rig was engaged in Marine Riser running operations. The riser running operations was being staged to coincide with the completion of mooring operations. Riser joint number 107 was landed in the spider gimble, which put the Blowout Preventer Stack (BOP) at a depth of 8400 feet Rotary Kelly Bushing (RKB). A satisfactory test of the Choke and Kill lines was conducted to a pressure of 7500 psi. The rigid conduit lines were left charged to 5000 psi to monitor pressures while waiting for the next stage of riser running. During this time frame there was a sporadic change in the pressures at the surface panel. The Remotely Operated Vehicle (ROV) was jumped to perform a stack supply pressure inspection of the manual gauges on the Lower Marine Riser Package (LMRP) and the following observations were made. At 21:15 hours, all pressures were observed to be normal on the LMRP manual gauges. At 21:22 hours the pressures on the Conduit, Supply Pressure, Pilot Pressure and Manifold Pressure fell to 0 psi. The ROV also observed a cloud of what was assumed to be BOP fluid developing around the LMRP. At 21:25 hours, the ROV visually confirmed that the BOP package had disconnected from the LMRP.

A bottom survey utilizing the ROV confirmed that the BOP had fallen approximately 1400 feet to the seafloor. The BOP was found lying half submerged in the sea floor on a heading of 250°, approximately 180 feet from the Rig 1 Rotary Center.

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

Probably combinations of events lead to the accidental release of the BOPs, however it is felt that the root cause was from a Leaking Pilot-Operator Check Valve (POCV) in the LMRP locking circuit, and a parted wire associated with the multi-pin connector for the lock mechanism on the riser connector.

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

Contributing cause could have been that a Sub Plate Mounted (SPM) valve supplying hydraulic pressure to the LOCK side leaked, allowing the lock pressure to leak over to the UNLOCK side. Other possible contributing causes are the corrosion observed on two of the four multi-pin electrical connectors in the LMRM or the contaminated dielectric fluid that was discovered on the backside of the multi-pin connector. It is also possible that a combination of the above items may have contributed to the accidental release.combinations of the above items may have contributed to the accidental release.

20. LIST THE ADDITIONAL INFORMATION:

To reduce the possibility of a reoccurrence Shell has put the following engineered barriers into place:
a. A second SPM valve has been added with an independent control circuit to the connector's lock function. In the event of a failure in one of the locking circuits, the second lock SPM would maintain locking pressure. Also, a vent SPM will be installed that will prevent any unlocking force on the riser connector while in the lock mode.
b. A second POCV was installed in the LMPR locking circuit. The redundant POCV would

allow the locking fluid to remain trapped in the event that the secondary POCV leaked. Also, a pressure transmitter will be installed to measure the actual locking pressure downstream of the POCV.
c. The complete 156-pin connector and wiring have been replaced.
d. The backside of the 156-pin connectors has been filled with a dielectric fluid that is heavier than water. Any water ingress will float on the dielectric fluid rather than causing corrosion of the pins.

21. PROPERTY DAMAGED:

The BOP stack was damaged when dropped 1400 feet.

NATURE OF DAMAGE:

Some valves and lines were damaged by impact with the sea floor.

ESTIMATED AMOUNT (TOTAL): **$750,000**

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

Due to the nature of the incident, the Lake Jackson District has not recommendations to the Regional Office.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: **NO**

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

25. DATE OF ONSITE INVESTIGATION:

25-JUL-2008

26. ONSITE TEAM MEMBERS:

Jarvis Outlaw / Craig Pohler /

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

OCS REPORT:

30. DISTRICT SUPERVISOR:

John McCarroll

APPROVED

DATE: **08-AUG-2008**