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

1. OCCURRED

   DATE: **15-MAR-2005** TIME: **1500** HOURS

2. OPERATOR: **BP Exploration & Production Inc.**

   REPRESENTATIVE: **Paul Lockwood**

   TELEPHONE: **(713) 232-8245**

3. LEASE: **G14658**

   AREA: **MC** LATITUDE:

   BLOCK: **822** LONGITUDE:

4. PLATFORM:

   RIG NAME **T.O. DISCOVERER ENTERPRISE**

5. ACTIVITY: [X] EXPLORATION(POE)
   [ ] DEVELOPMENT/PRODUCTION (DOCD/POD)

6. TYPE: [ ] FIRE
   [ ] EXPLOSION
   [ ] BLOWOUT
   [ ] COLLISION
   [ ] INJURY NO. _____
   [ ] FATALITY NO. _____
   [X] POLLUTION
   [ ] OTHER _____

7. OPERATION: [ ] PRODUCTION
   [X] DRILLING
   [ ] WORKOVER
   [ ] COMPLETION
   [ ] 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: **6262** FT.

10. DISTANCE FROM SHORE: **61** MI.

11. WIND DIRECTION: **SE**

    SPEED: **29** M.P.H.

12. CURRENT DIRECTION: **SE**

    SPEED: **1** M.P.H.

13. SEA STATE: **8** FT.

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

    Paul Lockwood

    CITY: **Katy** STATE: **TX**

    TELEPHONE: **(281) 398-4062**

    CONTRACTOR: **Transocean Offshore**

    CONTRACTOR REPRESENTATIVE/
    SUPERVISOR ON SITE AT TIME OF INCIDENT:

    Larry O. Rogers

    CITY: **Monticello** STATE: **MS**

    TELEPHONE: **(601) 587-4988**

17. DESCRIBE IN SEQUENCE HOW ACCIDENT HAPPENED:

On March 15, 2005, at approximately 1500 hours during a BOP function test, the slip joint hydraulic packer failed spilling 19 barrels of SBM.

Findings:
The failure of the hydraulic packer was a direct result of a failure of the hydraulic regulator supplying the packer.

There are two packers for the slip joint, one pneumatic and one hydraulic.

1) Most commonly the air packer is energized, but in this case the hydraulic packer was energized and the air packer was de-energized.
2) The air packer had experienced a small leak previously, which was identified by the bubbles seen through the rotary.

The failure of the hydraulic regulator occurred while troubleshooting the subsea BOP panel.

1) The subsea panel was non-operational at the time of the failure due to a stuck button on the panel. The incapability of the panel to function did not cause the regulator failure, since the two systems are separate.
2) Cameron has confirmed that these two events are completely separate.

An inadvertent functioning of the regulator controls on the panel did not happen. The data logger was checked to confirm that there was no functioning of the regulator.

The hydraulic regulator was identified as the source of the failure, and it was disassembled to be inspected and re-built.
1) The internal components of the regulator had some minor damage, and it was re-built.
2) Due to the small fluid volume required to maintain pressure on the packer, a small leak could cause a quick dissipation of the required pressure.
3) The existing regulator is a 0-3,000 psi output, and the new regulator is a 0-750 psi output.

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

The failure of the hydraulic packer was a direct result of a failure of the hydraulic regulator supplying the packer.

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

The output supply pressure on the regulator for the hydraulic packer could have been better sized to fit the service pressure of the packer.

There was no alarm system for the air or the hydraulic pressure on the slip joint packer. This alarm would alert the operator when a predetermined low set point pressure is detected.

21. PROPERTY DAMAGED:

19 Barrels of Synthetic Base Mud

NATURE OF DAMAGE:

19 Barrels of Synthetic Base Mud Lost Overboard

ESTIMATED AMOUNT (TOTAL): **$3,800**

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

No recommendations to MMS.

The New Orleans District concurs with BP and Transocean's recommendations to prevent recurrence as stated below:

Install new regulator with an output supply pressure range better fit for the service pressure on the hydraulic packer.
(a) The existing regulator is a 0-3,000 psi output, and the new regulator is a 0-750 psi output.

A software modification is being developed and will be installed, which will give an audible alarm when the air or hydraulic packer pressure drops below a given set point.

A switch is to be installed on the diverter panel in the subsea shop to identify which packer is energized and is to be monitored by the softwear.

A volume of accumulators will be installed downstream of the hydraulic regulator to dampen the hydraulic effects of the system and provide some additional volume in the event of a small leak.

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

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

25. DATE OF ONSITE INVESTIGATION:

18-MAR-2005

26. ONSITE TEAM MEMBERS:

Stephen Lucky /

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

OCS REPORT:

30. DISTRICT SUPERVISOR:

Troy Trosclair

APPROVED

DATE: **09-MAY-2005**

POLLUTION ATTACHMENT

1. VOLUME: GAL **19** BBL

   YARDS LONG X YARDS WIDE

   APPEARANCE: **BARELY VISIBLE**

2. TYPE OF HYDROCARBON RELEASED:
   - [ ] OIL
   - [ ] DIESEL
   - [ ] CONDENSATE
   - [ ] HYDRAULIC
   - [ ] NATURAL GAS
   - [X] OTHER **SOBM**

3. SOURCE OF HYDROCARBON RELEASED: **Slip joint on riser.**

4. WERE SAMPLES TAKEN? **NO**

5. WAS CLEANUP EQUIPMENT ACTIVATED? **NO**

   IF SO, TYPE:
   - [ ] SKIMMER
   - [ ] CONTAINMENT BOOM
   - [ ] ABSORPTION EQUIPMENT
   - [ ] DISPERSANTS
   - [ ] OTHER _____

6. ESTIMATED RECOVERY: GAL BBL

7. RESPONSE TIME: HOURS

8. IS THE POLLUTION IN THE PROXIMITY OF AN ENVIRONMENTALLY SENSITIVE AREA (CLASS I)? **NO**

9. HAS REGION OIL SPILL TASK FORCE BEEN NOTIFIED? **NO**

10. CONTACTED SHORE: **NO** IF YES, WHERE:

11. WERE ANY LIVE ANIMALS OBSERVED NEAR: **NO**

12. WERE ANY OILED OR DEAD ANIMALS OBSERVED NEAR SPILL: **NO**