

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

1. OCCURRED  
 DATE: **20-FEB-2008** TIME: **0915** HOURS

2. OPERATOR: **McMoRan Oil & Gas LLC**  
 REPRESENTATIVE: **Keller, Jo Ann**  
 TELEPHONE: **(504) 582-4818**  
 CONTRACTOR: **Rowan Companies, Inc.**  
 REPRESENTATIVE:  
 TELEPHONE:

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

4. LEASE: **G21669**  
 AREA: **ST** LATITUDE:  
 BLOCK: **168** LONGITUDE:

5. PLATFORM:  
 RIG NAME: **ROWAN GORILLA IV**

6. ACTIVITY:  EXPLORATION (POE)  
 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 **2**  
 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.  
 INCIDENT >\$25K  
 H2S/15MIN./20PPM  
 REQUIRED MUSTER  
 SHUTDOWN FROM GAS RELEASE  
 OTHER

6. OPERATION:

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

8. CAUSE:

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

9. WATER DEPTH: **70** FT.

10. DISTANCE FROM SHORE: **35** MI.

11. WIND DIRECTION: **S**  
 SPEED: **10** M.P.H.

12. CURRENT DIRECTION: **N**  
 SPEED: **5** M.P.H.

13. SEA STATE: **4** FT.

17. DESCRIBE IN SEQUENCE HOW ACCIDENT HAPPENED:

On February 20, 2008, at approximately 0915 hours, the port bow crane on the U.S. flagged jack-up rig Rowan Gorilla IV collapsed while crews were installing a boat tie-up rope on the port side of the forward leg. Two (2) fatalities occurred because of this incident. As the port bow crane was being used to install the boat tie-up rope, the hook load on the auxiliary hoist or "fast line" had one roustabout over the side of the rig harnessed into a "Billy Pugh" workbasket and the inboard main hoist line was unloaded. The procedure for installing the tie-up rope on the forward leg placed the port bow crane in the maximum vertical position.

The crane was being operated with a remote control panel which was located forward of the crane pedestal at the main deck level near the rig handrail and closer to the work operation. After the workbasket was positioned adjacent to the bowleg, the crane operator stepped away from the control panel to observe the crewmember working over the side. Before the crane operator stepped away, the boom in/out hoist control lever was returned to center, this would normally set the boom hoist brake for the main boom arm.

With the boom lever in the center position, the boom arm continued to be pulled in a vertical motion and against the travel stops. With the enormous stress load caused by this exceeded vertical motion, it caused the head assembly to brake apart, and this caused the tip section of the boom arm, the harnessed roustabout and workbasket to plunge into the Gulf of Mexico. Commercial divers in approximately 70 foot of water discovered the individual's body the next day. When the tip of the boom arm broke off, the bridle section did not sustain the rest of the boom armload, so this made the boom arm nose-dive. When the boom arm reached the deck below it sheered off at the hinge plate, and the bail assembly fell and crushed a second roustabout killing him instantly.

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

Probable cause was the crane arm traveling too far due to a possible broken secondary travel limit switch (STLS), the primary travel limit switch (PTLS) being intentionally bypassed and unintentionally moving due to a control panel malfunction.

After the incident, technicians from the crane manufacturer, Le Tourneau Technologies Inc. (LTI), were dispatched to survey the crane damage and inspect limit/control devices. During inspection of the port bow crane, LTI technicians found the primary causes to be the following:

1. The PTLS was in the bypass position. Interviews conducted immediately following the incident indicated that the primary limit switch was placed in bypass to provide access to the leg mounted raw water well on the bowleg, so installation of the water well was completed prior to beginning the installation of the boat tie-up ropes on the bowleg, but the primary limit switch was never reset. If the PTLS was operational, the PTLS would have stopped the electric motor and set the hoist brake.

2. The STLS also failed to activate, and the failure of the backup limit switch was

not able to be determined, but the LTI technicians found the boom hoist breaker tripped, and that the breaker was possibly tripped by falling debris during the collapse. If the STLS was operational, the STLS would have tripped the hoist motor circuit breaker located in the main machinery house.

3. The inspection of the remote control panel used during the incident revealed that the boom joystick potentiometer (POT) wiper voltage was out of tolerance. Interviews indicated the original remote control panel had been damaged, and a new control box had been fabricated on the rig, and components from the damaged control box were transferred to the newly fabricated box. The newly fabricated box was not constructed to the same standard for protecting internal components from exposure to the elements as the original design. Based on crew interviews, the POT wiper voltage range was not calibrated to the neutral position prior to being placed into service. With the POT out of adjustment and the control lever being in the neutral position, the control system sensed a requirement to rotate at low speed. If the crane operator had followed Rowan's operational procedures, he would have shutdown the control panel when it was left unattended.

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

The extent of operator error, maintenance deficiencies and equipment design flaws may have contributed to the boom arm encountering the travel stop, the winch pulling on the head assembly and causing the bail assembly to collapse to the deck. The possible contributing causes are as follows:

1. The first of two limit switches was in bypassed and the second limit switch failed to perform its design function.
2. The boom joystick control potentiometer was replaced but not calibrated.
3. Investigation suggests that the crane operator did not check required items prior to crane operations.
4. Training program requires testing of controls and limit switches prior to operations, but crane operator denies knowledge of the limit switch being in bypass.
5. Failure to turnoff function switches when portable control console is not in use or left unattended.

20. LIST THE ADDITIONAL INFORMATION:

Rowan's Remedial Measures:

1. A technical advisory was sent to the fleet on February 25, 2008.
2. Replacing limit switches and implementing an engineering review throughout the fleet.
3. Modifying daily crane inspections are being conducted throughout the fleet.
4. Enhancing procedures to manage limit switch bypass.

5. OEM inspections are being conducted throughout the fleet.
6. Preventative maintenance deployment is scheduled for 1Q 09.
7. JSA/Work permit improvements are being developed throughout fleet.
8. Rowan is enhancing crane operator training throughout fleet.

Recommendations from the investigative committee include the following:

1. Replace all end-of-travel limit switches.
2. Fill out a comprehensive one page PRE-USE or daily crane inspection procedure form prior to every crane use.
3. An original equipment manufacturer (OEM) inspection shall be conducted throughout Rowan's fleet.
4. A software plant maintenance implementation (SAP) shall be conducted throughout Rowan's fleet.
5. Work permit and JSA improvements for boat tie-ups.
6. Enhanced operator training shall be implemented throughout Rowan's fleet.

21. PROPERTY DAMAGED: NATURE OF DAMAGE:  
**Port Bow Crane - LeTourneau PCM350SS Crane collapse**  
**Crane**

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

22. RECOMMENDATIONS TO PREVENT RECURRENCE NARRATIVE:

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

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

**There were no violations issued.**

25. DATE OF ONSITE INVESTIGATION:

**20-FEB-2008**

26. ONSITE TEAM MEMBERS:

**/ Tim McGraw, MMS / LT. Angel  
Flood, USCG / LT. John Luff, USCG  
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29. ACCIDENT INVESTIGATION

PANEL FORMED: **NO**

OCS REPORT:

30. DISTRICT SUPERVISOR:

**Bryan A. Domangue**

APPROVED

DATE: **01-DEC-2008**

# INJURY/FATALITY/WITNESS ATTACHMENT

OPERATOR REPRESENTATIVE  
 CONTRACTOR REPRESENTATIVE  
 OTHER \_\_\_\_\_

INJURY  
 FATALITY  
 WITNESS

NAME:

HOME ADDRESS:

CITY:

STATE:

WORK PHONE:

TOTAL OFFSHORE EXPERIENCE:

YEARS

EMPLOYED BY: **Rowan Companies, Inc. / 00302**

BUSINESS ADDRESS: **5450 Transco Tower  
2800 Post Oak Blvd.**

CITY: **Houston**

STATE: **TX**

ZIP CODE: **77056-6196**

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