

UNITED STATES DEPARTMENT OF THE INTERIOR -
BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT -
GULF OF MEXICO REGION -

ACCIDENT INVESTIGATION REPORT

For Public Release

1. OCCURRED

DATE: 09-JUN-2014 TIME: 1635 HOURS

2. OPERATOR: Shell Offshore Inc.

REPRESENTATIVE:

TELEPHONE: -

CONTRACTOR: -

REPRESENTATIVE: -

TELEPHONE:

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

4. LEASE: G15565

AREA: GC LATITUDE:

BLOCK: 248 LONGITUDE: -

5. PLATFORM:

RIG NAME: T.O. DEEPWATER NAUTILUS

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

POLLUTION

FIRE

EXPLOSION

LWC - HISTORIC BLOWOUT

UNDERGROUND

SURFACE

DEVERTER

SURFACE EQUIPMENT FAILURE OR PROCEDURES

COLLISION HISTORIC >\$25K <=\$25K

STRUCTURAL DAMAGE

CRANE

OTHER LIFTING DEVICE Drawworks System

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: 3233 FT.

10. DISTANCE FROM SHORE: 100 MI.

11. WIND DIRECTION: S -
SPEED: 3 M.P.H.

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

13. SEA STATE: 2 FT.

On June 9, 2014, the Transocean Deepwater Nautilus experienced an uncontrolled descent of the traveling block and top drive while on Shell's Glider 007 well, located in Green Canyon 248, OCS-G 15565. The Deepwater Nautilus had been on the Glider 007 well for 121 days and had drilled to a Measured Depth of 16,198 feet. The Bureau of Safety and Environmental Enforcement Investigation Team prepared the following report using personnel statements, requested documentation, and detailed incident reports provided by Transocean and Shell.

While in the process of pulling drill pipe out of the hole, the crew was taking pressure readings of the formation utilizing the Measurements While Drilling (MWD) tools located on the drill string. After the first pressure test had been completed, the Driller prepared to space out the drill pipe so that it could be disconnected, transferred to the pipe racking system (PRS), and placed into the pipe racks for storage. Once the pipe was in place, the crew prepared to disconnect the pipe and drain the remaining fluids before initiating the transfer. After the excess fluid had been drained, the Driller attempted to set the brakes on the drawworks to close the torque wrench on the Top Drive System so the pipe could be transferred to the PRS. When the Driller tried to set the brakes on the drawworks, he received a 'Maintenance Torque up Time Out for Internal Brake Release' fault alarm on his screen. The system is designed to stop all operations if a brake fault alarm occurs during operations. The Driller was unable to make the transfer due to the fault, and the crew began troubleshooting the issue.

The Driller called the Mechanics and Electrical Technicians (ETs) to the rig floor to assist with the problem. The Mechanic arrived to the drill floor and started troubleshooting the problem. The Mechanic then went to the Driller's console and called the Chief E.T. to request a reset of the drives. The Driller attempted a 'soft reset' of the system from the control screen located on his console, but the fault alarm did not clear. The crew continued troubleshooting the issues and the Toolpusher relieved the Driller so that he could eat lunch.

The Chief E.T. then went to the Starboard Motor Control Center, where drives # 1, 2 & 3 are located and performed a 'hard reset' of drive #1. This action usually fixed the previous alarms but did not clear this fault. After performing the hard reset, the block and drill pipe began to move up and down on its own approximately 6 inches for around 10 seconds. The Driller, on his way to lunch, saw the movement and ordered all personnel to clear the rig floor. During this time, the Chief E.T. had made his way over to the Port Motor Control Center, where drives #4, 5, & 6 are located, and saw the same fault on drive #4. The Chief E.T. called the Driller's cabin to confirm that the drawworks brakes were set so he could perform a 'hard reset' of drive #4. The Toolpusher, who was now sitting in the Driller's chair, took the call and said something to the effect of "the brakes are not set" at the same time an announcement was being made over the rigs intercom system. The Chief E.T. misunderstood and thought he heard "brakes are set" and reset drive #4 without confirming the response. The 'hard reset' interrupted the control to the drive motors, which were still holding up the top drive, and caused the traveling block to freefall. Upon seeing the drill pipe start to buckle towards the drill shack, the Assistant Driller pulled the 'Fire-Axe Handle', which is designed to dump the hydraulic pressure from the drawworks brake circuit in an emergency, causing the breaks to slam shut and stop any decent of the top drive. The breaks shut, but due to the momentum for the top drive, failed to stop the traveling block from falling to the rig floor. The fall caused damage to the drill pipe, the Driller's shack, and the traveling assembly. No injuries or pollution were reported after the incident.

\$375,000 -

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

- **Poor Communication:** Poor communication between the crew members led to confusion and misleading information in all areas of the operation.
- Crew members failed to properly investigate maintenance alarms before attempting to reset the drawworks.

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

20. LIST THE ADDITIONAL INFORMATION:

On July 4, 2014, the crew onboard the Deepwater Nautilus was in the process of changing out equipment and performing acceptance testing to prove the integrity of the system. The crew noticed an excessive heat buildup in the braking system, and after setting the brakes, began investigating the cause. During the troubleshooting process, plugs were installed on a section of vent piping that ran to a manifold and connected to all of the solenoid valves. The plugs allowed pressure to build up behind them and caused the brake calipers to open. As the brakes unset, the drawworks dropped about twenty feet before the crew was able to activate the emergency hydraulic dumps.

The investigation that followed the third incident showed that the cause of the excessive heating was due to the crew improperly installing a hydraulic pump on the braking system. Although the mistake was caught and the pump installed correctly, damages to the pump were sustained that the crew was unaware of. The pump was overheating and causing the system fluid to overheat as well.

The following two incidents occurred after the June 9 incident, while the crews were troubleshooting the system attempting to identify the causes:

On June 25, 2014, while trouble shooting the drawworks system, the rig experienced yet another uncontrolled decent of top drive. The crew had received a brake caliper alarm and pulled the emergency hydraulic dump as a precaution to ensure the breaks were set before turning the system off to investigate the problem. The hydraulic dump was reset and when the crew switched the drawworks system back on, the brake calipers all opened causing the traveling block to descend approximately 7 feet until being caught by the drill string. By resetting the hydraulic dumps, which were keeping the brakes engaged, and failing to command the top drive motors to take control, the load was left unsupported and allowed to fall.

The investigation following the second incident discovered that the brake issues were caused due to the sticking of the hydraulic solenoid valves. These valves provide pilot pressure to the brake calipers. After extensive testing, it was found that the valves were only sticking after being left in the open position for an extended period of time. Reports from Stress Engineering Services concluded that "the debris in the valves was of sufficient size and quantity to cause the sticking of these valves". It was determined that the same situation had triggered the brake alarm during the first incident.

- Travelling Block
- Drill Shack
- Drill Pipe
- Drill Line

Equipment damaged by the impact of fall top drive and drill pipe.

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22. ~~RECOMMENDATIONS TO PREVENT RECURRENCE NARRATIVE:~~
 The Houma District has no recommendations for BSEE at this time.

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

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

A G-110 INC issued following the investigation states:

"On June 9, 2014, the Transocean Deepwater Nautilus experienced an uncontrolled decent of the traveling block and top drive due to a fault in the draw works system. The incident endangered personnel and led to extensive damage to equipment on the rig floor. The incident occurred while the rig crew was troubleshooting a fault alarm that was received during operations. The crew proceeded to reset the system without first identifying the cause of the alarm or ensuring that it was safe to do so."

25. DATE OF ONSITE INVESTIGATION:

11-JUN-2014

26. ONSITE TEAM MEMBERS:

Clint Campo / Paul Reeves / Cedric Bernard / Charles Arnold / James Richard /

29. ACCIDENT INVESTIGATION

PANEL FORMED: **NO**

OCS REPORT:

30. DISTRICT SUPERVISOR:

Bryan Domangue

APPROVED

DATE: **08-OCT-2014**