

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: 11-SEP-2016 TIME: 0826 HOURS

2. OPERATOR: Anadarko Petroleum Corporation

REPRESENTATIVE:

TELEPHONE:

CONTRACTOR: Diamond Offshore

REPRESENTATIVE:

TELEPHONE:

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

4. LEASE: G11075

AREA: GC LATITUDE:

BLOCK: 562 LONGITUDE:

5. PLATFORM:

RIG NAME: DIAMOND OCEAN BLACKHORNET

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

DAMAGED/DISABLED SAFETY SYS.

INCIDENT >\$25K

H2S/15MIN./20PPM

REQUIRED MUSTER

SHUTDOWN FROM GAS RELEASE

OTHER EDS activation, BOP stack  
drop

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: 3910 FT.

10. DISTANCE FROM SHORE: 102 MI.

11. WIND DIRECTION: NNE

SPEED: 12 M.P.H.

12. CURRENT DIRECTION: ESE

SPEED: 2 M.P.H.

13. SEA STATE: 3 FT.

## 17. INVESTIGATION FINDINGS:

On September 11, 2016, the Diamond Ocean Blackhornet working for Anadarko Petroleum Corporation, accidentally initiated the Emergency Disconnect Sequence (EDS) while pulling the Blow Out Preventer (BOP) to surface. The BOP was suspended approximately 1,550 feet below the water line at the time the EDS was activated, and the BOP stack fell approximately 2,330 feet to the sea floor. The rig was located in the designated safe zone at the time of EDS activation and there was no subsea infrastructure impacted by the BOP being dropped. There was no damage to the rig, no injury to personnel, or environmental impact.

The EDS is an emergency system designed to shut-in the wellbore, disconnect the Lower Marine Riser Package (LMRP) from the lower BOP stack, and allow the rig to safely get off of location during emergency situations. The EDS is manually activated, and it is initiated via two buttons that must be pushed at the same time in order to fire the EDS. One is a "push to operate" and the other is the button to actually fire the system. There are multiple EDS stations located in various manned locations on the rig, such as the Bridge, Rig Floor at each drilling chair, and each BOP station. Once activated, the EDS will automatically close the blind shear and casing shear rams in a pre-determined sequence, disconnect the LMRP from the lower BOP stack, and pull the LMRP to a pre-determined height above the BOP so the rig can move off location without damaging the wellhead.

In the days leading up to the incident, the rig had jetted in the 36 inch casing, and open water drilled and set casing down to the 22 inch surface casing. The 22 inch casing was cemented from its total depth of 7,954 feet back to the mudline on September 6th, and once cement was set the rig moved into the designated safe zone and prepared to run the BOP. On September 7th, the rig started running the BOP stack and in the process they were testing the back sides of the choke and kill valves located on the BOP stack. On September 8th, a mismatch alarm was observed for the Yellow pod Subsea Electronic Module (SEM) B. The BOP was pulled back to surface and after troubleshooting the issue, a solenoid in the Yellow pod was changed and the rig started running the BOP again on September 9th. On September 10th, the Remotely Operated Vehicle (ROV) observed a leak from the lower outer choke valve while pressure testing the back side of the valve, and the decision to pull the BOP stack back to surface was made.

Also, previous to the incident, several software upgrades had been made to the BOP system which included upgrades to the EDS. On several occasions during the software upgrades and during the stump test, the Dynamic Positioning Officers (DPOs) were asked to initiate the EDS to test the system. During these tests the DPOs would receive a simple phone call with the request for them to push the EDS buttons. There was no pre-job planning or discussion that otherwise would have given them time to think about the test being conducted.

On September 11th, the Anadarko compliance technician contracted through Onward LLC decided to conduct the weekly Emergency Shut Down (ESD) system test for the subsea infrastructure in the Marco Polo field. The Onward technician called the Bridge at approximately 0825 and informed the Bridge that he wanted them to function the rig's ESD. At the time of the phone call, only the Junior Dynamic Positioning Officer (JDPO) and the Senior Dynamic Positioning Officer (SDPO) were on the bridge. The phone call was taken by the JDPO. When the JDPO answered the phone, he heard, "I want you to function the ESD." When he heard this, he stood and looked at the SDPO and repeated out loud to the SDPO, "You want me to function the ESD." Upon hearing this, the SDPO stood up and walked the short distance to the EDS station. At this time the JDPO asked whom he was speaking with and the Onward representative told him his name. It's noteworthy that the Onward technician's name was very similar to the name of a BOP technician that the SDPO had been discussing BOP related issues with earlier this

same day. The JDPO repeated the Onward representative's name out loud to the SDPO, and the SDPO turned to the EDS panel, and activated the EDS sequence. Almost immediately the SDPO realized his mistake and he and the JDPO quickly started looking over the system to see if the EDS sequence initiated. Shortly thereafter they felt the recoil of the BOP being released, and they knew the system had indeed fired. The JDPO immediately called the Marco Polo production facility to notify them that they had just dropped the BOP stack, and at this time the SDPO started notifying rig management of what had just occurred. The time from when the phone call was answered until the EDS button was mistakenly pushed was approximately one minute. The ROV dove to inspect the LMRP and BOP stack, and confirmed that the BOP stack was not connected to the LMRP. The ROV then proceeded to the sea floor and found the BOPstack approximately 484 feet away from the well head, in the safe zone and away from all subsea infrastructure. The BOP was found with only a few feet of the BOP stack sticking up above the mudline.

BSEE Inspectors visited the rig the following day, September 12th, and started the initial investigation. The Inspectors gathered as much information as possible at the time, and met with Diamond and Anadarko's investigation team. They also participated in the interviews of the personnel involved with the incident, but were forced to leave the rig early due to inclement weather. BSEE Inspectors conducted a follow up investigation on September 20th. BSEE Inspectors were able to conduct their own independent interviews of personnel and inspect the Bridge work area which includes the EDS station and ESD station. The EDS panel was noted as being only a few feet from where the SDPO was sitting at the time the phone was answered, and the ESD was noted as being approximately 12 feet away. The panels and buttons also look nothing alike. The EDS panel requires the "push to operate" button to be pushed as well as the EDS activation button. The ESD station is a pull type, where the button is pulled out rather than pushed in to activate its function. Though the acronyms are similar because the same letters are used in different order, the panels and functions are very different.

It was also noted that the SDPO was an experienced employee with 6 years of experience as a DPO, and he has been a Senior DPO for 4 years. He understood the difference between the EDS and the ESD. His action to initiate the EDS rather than the ESD appears to be due to momentary confusion brought on by all of the EDS tests that he had participated in prior to the incident. Also, the Onward representative's name was very similar to the BOP technicians name of which the SDPO had previously been discussing BOP related issues. He had been in the habit of assisting EDS tests by pushing the EDS buttons when requested by phone call from either Subsea Engineers or BOP technicians, and when the phone call came in for him to test the ESD, his mind processed the information as EDS. In interviews, the JDPO also stated that even though he heard ESD and even repeated ESD outloud, due to the previous EDS tests and BOP conversations, he was even thinking EDS at the time the phone call came in. The moment the EDS function was initiated though, they realized that it did not make sense to test the EDS at this time and this must be a mistake.

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

-Human error. The Senior Dynamic Positioning Officer mistakenly initiated the EDS

while attempting to test the ESD.

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

- Similarities between the acronyms of EDS and ESD.
- Similarities between the personnel's names asking for the EDS and ESD tests to be conducted.
- Lack of pre-job planning. The Bridge personnel (DPOs') were not involved with pre-job planning before ESD or EDS tests were conducted. They were not notified until they were called and asked to make a function.
- Informality of EDS testing in the past. Subsea Engineers normally oversee BOP functions but were not present when several EDS functions were made previous to the incident.

20. LIST THE ADDITIONAL INFORMATION:

The following are Andarko and Diamond's plans to prevent future occurrences:

- Include Bridge personnel (DPOs') in pre-job, face to face notifications before tests are to be done.
- Require a Subsea Engineer to be present at each EDS station during tests.
- Place a sign over EDS buttons when the BOP is unlatched warning that these buttons are not to be touched while unlatched.
- Require the Offshore Installation Manager (OIM), Rig Superintendent, or Tool Pusher to be notified prior to EDS tests.
- Consideration being given to placing an inhibit switch on the EDS that would only be used when the BOP is unlatched.
- The ESD test has been revised. Onward will no longer supervise the weekly ESD test. This will now be the responsibility of the Anadarko Lead Drilling Supervisor. Anadarko will have their own employees and the rig's Tool Pusher stationed at the three ESD stations during ESD tests located at the Bridge, the primary ESD station located in the Local Equipment Room (LER), and the Driller's Cabin.
- ESD tests will not be conducted while the BOP stack is unlatched.

Note: The BOP stack was recovered on September 28, 2016.

21. PROPERTY DAMAGED:

NATURE OF DAMAGE:

ESTIMATED AMOUNT (TOTAL):

22. RECOMMENDATIONS TO PREVENT RECURRENCE NARRATIVE:

**The Houma District has no recommendations to make to the Office of Incident Investigations at this time.**

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

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

25. DATE OF ONSITE INVESTIGATION:

**12-SEP-2016**

28. ACCIDENT CLASSIFICATION:

**MINOR**

26. ONSITE TEAM MEMBERS:

**Josh Ladner / Clint Campo /**

29. ACCIDENT INVESTIGATION

PANEL FORMED: **NO**

OCS REPORT:

30. DISTRICT SUPERVISOR:

**Bryan Domangue**

27. OPERATOR REPORT ON FILE: **YES**

APPROVED

DATE:

**16-NOV-2016**