

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: 28-MAY-2019 TIME: 2100 HOURS

2. OPERATOR: Anadarko Petroleum Corporation

REPRESENTATIVE:

TELEPHONE:

CONTRACTOR: Diamond Offshore Drilling, Inc.

REPRESENTATIVE:

TELEPHONE:

- STRUCTURAL DAMAGE
- CRANE
- OTHER LIFTING
- DAMAGED/DISABLED SAFETY SYS.
- INCIDENT >\$25K \$180,000
- H2S/15MIN./20PPM
- REQUIRED MUSTER
- SHUTDOWN FROM GAS RELEASE
- OTHER

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

8. OPERATION:

4. LEASE: G21444

AREA: KC LATITUDE:

BLOCK: 875 LONGITUDE:

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

5. PLATFORM:

RIG NAME: DIAMOND OCEAN BLACKHORNET

6. ACTIVITY:

- EXPLORATION(POE)
- DEVELOPMENT/PRODUCTION (DOCD/POD)

9. CAUSE:

7. TYPE:

INJURIES:

HISTORIC INJURY

OPERATOR CONTRACTOR

REQUIRED EVACUATION

LTA (1-3 days)

LTA (>3 days)

RW/JT (1-3 days)

RW/JT (>3 days)

FATALITY

Other Injury

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

POLLUTION

FIRE

EXPLOSION

LWC HISTORIC BLOWOUT

UNDERGROUND

SURFACE

DEVERTER

SURFACE EQUIPMENT FAILURE OR PROCEDURES

10. WATER DEPTH: 6809 FT.

11. DISTANCE FROM SHORE: 218 MI.

12. WIND DIRECTION:
SPEED: M.P.H.

13. CURRENT DIRECTION:
SPEED: M.P.H.

14. SEA STATE: FT.

15. PICTURES TAKEN:

16. STATEMENT TAKEN:

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

On 28 May 2019, Anadarko Petroleum Corporation (Anadarko) had a fire incident with a required muster onboard the Diamond Offshore (DO) Ocean Blackhornet drillship while conducting well operations at the surface location of Keathley Canyon Block 875. The incident involved smoke that was detected from an electrical fire in a drilling Switchboard Room. The general alarm required that all personnel report to their assigned muster or duty stations. There were no reported injuries however, the assessed damage due to the electrical fire was approximately \$180,000. At 09:00 hours on 29 May 2019, Anadarko reported the incident to the Bureau of Safety and Environmental Enforcement (BSEE) Lafayette District.

At approximately 21:00 hours on 28 May 2019, two smoke detectors sounded off when smoke was detected in the DO Ocean Blackhornet's Starboard 690V Drilling Switchboard Room located on the uppertween deck. Immediately, the general alarm was given that required all response personnel to report to their assigned duty stations and all non-essential personnel to report to their designated lifeboat muster stations. At the time of the incident, DO was tripping in the hole to circulate and filter wellbore fluid.

The DO Chief Mate and the DO Marine Section Leader mobilized to the Starboard 690V Drilling Switchboard Room at approximately 21:06 hours and they observed smoke in the room, but saw no visible fire. At 21:11 hours, Fire Team #1 confirmed that there was no fire in the room. However, they noted that the panels on the top and back of the Aux Drawworks B (ADWB) motor drive cabinet were blown off and severely damaged from the release of pressure inside the cabinet. The equipment housed inside the ADWB cabinet including two Inverter Modules and two Variable Frequency Drives (VFDs) were also severely damaged and had visible signs of burn and smoke damage from an electrical fire. The Starboard 690V Drilling Switchboard Room was secured and ventilated. At 21:18 hours, the all clear was given and all personnel were then dismissed from their muster stations.

On the day of the incident, DO suspected that a circuit breaker had overloaded on the direct current bus side that caused the circuit breakers feeding the 690V Drilling Drive to trip. In addition, DO personnel reported that the rig's lights had flickered prior to the ADWB's failure. DO stated to BSEE that they believed the ADWB equipment failure was due to an instantaneous electrical arc discharge. However, the root cause(s) of the ADWB equipment failure could not be determined until a failure analysis report is received from ABB, who is the ADWB manufacture.

On 30 May 2019, an ABB Field Service Engineer (FSE) mobilized to the DO Blackhornet and conducted a field investigation into the ADWB equipment failure. He inspected the ADWB equipment, reviewed all previous work conducted on the ADWB equipment, read information recorded by the event logger, interviewed DO vessel electrical group personnel and studied incident photographs.

On 18 June 2019, BSEE Inspectors mobilized to the rig and conducted an incident investigation by gathering all available documentation. BSEE Inspectors were informed that the ADWB equipment that failed had already been shipped to ABB for a failure analysis.

On 19 September 2019, the BSEE Lafayette District investigation team received the ABB FSE's Field Service Report (FSR) from Anadarko. The ABB FSR was unable to identify the exact cause or causes due to the severity of ADWB equipment damaged including the two Inverter Modules and the two VFDs. The ABB FSR recommended that further analysis will have to be conducted on the ADWB equipment since it is very difficult to determine where the fault originated in these types of incidents. However, the ABB FSE's FSR did list the following possible causes for this incident: 1) a faulty Inverter Module; 2) a cooling water leakage from a valve assembly positioned over an Inverter Module

since to liquid spray marks were observed inside the ADWB cabinet; and 3) faulty or damaged DC fuses. Moreover, the ABB FSE also recommended that two Inverter Modules from the ADWB cabinet be sent in for a thorough failure analysis.

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

The BSEE incident investigation team determined that the probable cause(s) for this incident cannot be identified since ABB was unable to identify a probable cause or causes since it was not possible to determine where the fault originated due to the extensive damaged to the equipment in the ADWB cabinet. Additional failure analysis testing of the ADWB equipment would have to be conducted in order to possibly identify exactly where the fault or faults originated.

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

BSEE's investigation into this incident identified the following possible contributing causes: 1) a faulty Inverter Module; 2) the ADWB cabinet cooling water system may have developed a leak inside the enclosure due to a mixtures of metal content, total bacteria, and pH level and the leak may have caused a short circuit and subsequent flash from an Inverter Module; 3) the DC fuses may not have been properly torqued when installed given that ceramic fuses have a specific torque spec that when not followed, can develop hairline cracks and a break down in the insulation making the fuses susceptible to shorting.

20. LIST THE ADDITIONAL INFORMATION:

21. PROPERTY DAMAGED:

NATURE OF DAMAGE:

Yes, the ADWB cabinet equipment in the Starboard 690V Drilling Switchboard Room was severely damaged during this incident.

The ADWB cabinet equipment was damaged beyond repair and had to be replaced due to fire and smoke damage.

ESTIMATED AMOUNT (TOTAL): \$180,000

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

The BSEE Lafayette District makes no recommendations to the Office of Incident Investigations.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: NO

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

Not applicable.

For Public Release

25. DATE OF ONSITE INVESTIGATION:

18-JUN-2019

26. INVESTIGATION TEAM MEMBERS:

**David Suire / Roy Kuhn / Troy Naquin
(Report Author) /**

27. OPERATOR REPORT ON FILE:

28. ACCIDENT CLASSIFICATION:

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

OCS REPORT:

30. DISTRICT SUPERVISOR:

Robert Ranney

APPROVED

DATE: **04-DEC-2019**