

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: 04-MAY-2019 TIME: 1400 HOURS

2. OPERATOR: BP Exploration & Production Inc.

REPRESENTATIVE:
TELEPHONE:

CONTRACTOR:
REPRESENTATIVE:
TELEPHONE:

- STRUCTURAL DAMAGE
- CRANE
- OTHER LIFTING
- DAMAGED/DISABLED SAFETY SYS. Fire & Gas System
- INCIDENT >\$25K >25K
- H2S/15MIN./20PPM
- REQUIRED MUSTER
- SHUTDOWN FROM GAS RELEASE
- OTHER Loss of power

3. OPERATOR/CONTRACTOR REPRESENTATIVE/SUPERVISOR ON SITE AT TIME OF INCIDENT: 8. OPERATION:

4. LEASE:

AREA: MC LATITUDE: 28.52090278
BLOCK: 474 LONGITUDE: -88.28878889

5. PLATFORM: A(NA KIKA FPDS)
RIG NAME:

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

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

9. CAUSE:

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

- 10. WATER DEPTH: 6340 FT.
- 11. DISTANCE FROM SHORE: 59 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:

On May 4, 2019, at 1351 hours, a partial loss of power occurred at BP Exploration & Production Inc. Mississippi Canyon (MC) 474-A (Nakika) Platform. The facility restored power on May 4, 2019 at 1431 hours. In response to the power loss, all production safety systems functioned as designed. No evacuations, injuries, or pollution occurred.

Sequence of Events:

On May 4, 2019, crewmembers from Nakika attempted to repair the roof on the facility's warehouse building with forecasted precipitation. Prior to completion of the repairs, crewmembers stopped work due to incoming precipitation and increasing winds. The unfinished repairs exposed the sections of the warehouse's roof that protected the Emergency Safety System (ESS)-2-panel to water ingress. Rainwater seeped through the roof and into the ventilation fans located on top of ESS-2 panel.

The rainwater inside the cabinet disrupted the ESS-2 processor. This processor handles safety functions related to the platform electrical power. Therefore, when the processor failed, it sent a signal to trip the generators. Per the Input/Output (I/O) Card Wiring Diagrams, this processor also handled firewater systems, header blowdown valves, Emergency Shut Down (ESD), and ventilation devices. When main power was lost, the platform's Uninterruptable Power Supply (UPS) provided power to critical devices.

The event triggered the general muster alarm. The emergency generator failed to start automatically as designed. Facility personnel contacted the Motor Vessel Holiday to stand-by for further instructions in case of an evacuation.

As the crewmembers tried to start the emergency generator, they found a faulty lube oil temperature switch. The emergency generator alarm panel displayed "High Lube Oil Temp". Crewmembers bypassed the temperature switch, started the emergency generator, and routed power to the emergency bus. Crewmembers continuously monitored the lube oil temperature to ensure the generator did not overheat.

With the emergency generator online, the crew began troubleshooting the loss of power. The Automation Specialist began reviewing the safety builder software to look for potential problems with the ESS system. The Automation Specialist identified the ESS data was missing. Then, he went to the ESS-2 panel location. Upon arriving, he noticed that the panel was wet. The Automation Specialist then notified the ICC commander and maintenance team leader of the issue. The Technician opened the panel to dry it. Personnel executed a re-boot and the fire and gas system restored. Personnel performed a systematic test of each module to confirm functionality of the ESS. The Construction Team installed temporary covers to prevent additional water from entering the building.

BSEE Investigation:

On May 7, 2019, a team consisting of one Bureau of Safety and Environmental Enforcement (BSEE) investigator and two United States Coast Guard (USCG) members performed an investigation. While onboard, investigators assessed the systems related to the partial loss of power. BSEE and USCG decided to conduct a joint investigation per MOU OCS-04.

The BSEE investigator verified that after the ESD, all the subsea wells, Surface Controlled Subsurface Safety Valves (SCSSVs), Shutdown Valves (SDVs), and Boarding Shutdown Valves (BSDVs) closed per the approved Deepwater Operation Plan (DWOP). The BSEE investigator verified that the valves functioned per the closure times listed in the DWOP.

Conclusion :

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BSEE determined the root cause of the partial loss of power to be the failure of the ESS-2 due to rainwater ingress. BP failed to include the roof in an inspection or repair program. The condition of the roof deteriorated after several years. When personnel discovered the roof condition and started repairing it, the Construction Team failed to protect the roof from exposure during a work stoppage. When main power was lost, the UPS system functioned as designed. However, the emergency generator failed to start. BSEE concluded that the faulty lube oil temperature switch prevented the generator from starting. The delay in starting the emergency generator caused the platform to operate on UPS power for longer than expected.

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

- Human Error: Inadequate Management of Change Procedures- The Construction Team failed to failed to protect the roof from exposure during a work stoppage.

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

- Equipment Failure: Inoperable safety device- The faulty lube oil temperature switch prevented the generator from starting. The delay in starting the emergency generator caused the platform to operate on UPS power for longer than expected.one

20. LIST THE ADDITIONAL INFORMATION:

There were several actions taken prior to restart of production. The Construction Team repaired the roof where the water ingress occurred. They coated the roof to prevent future corrosion. They replaced faulted components in the ESS-2 panel. Lastly, personnel tested all devices connected to the panel prior to restart.

In addition, BP has developed an integrity review and associated maintenance program for enclosures that contain safety critical equipment.

21. PROPERTY DAMAGED:

NATURE OF DAMAGE:

ESS-2 panel components

Rain water through leaking roof of building.

ESTIMATED AMOUNT (TOTAL):

22. RECOMMENDATIONS TO PREVENT RECURRENCE NARRATIVE:

The BSEE New Orleans District makes no recommendations to the Office of Incident Investigation.

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

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24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

25. DATE OF ONSITE INVESTIGATION:

09-MAY-2019

28. ACCIDENT CLASSIFICATION:

26. INVESTIGATION TEAM MEMBERS:

**Pierre Lanoix - Accident Investigation
Specialist /**

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

OCS REPORT:

30. DISTRICT SUPERVISOR:

David Trocquet

27. OPERATOR REPORT ON FILE:

APPROVED

DATE:

30-JUL-2019