

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: 02-OCT-2015 TIME: 2025 HOURS

2. OPERATOR:

GOM Shelf LLC

REPRESENTATIVE:

TELEPHONE:

CONTRACTOR: Tetra Technologies, Inc.

REPRESENTATIVE:

TELEPHONE:

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

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

6. OPERATION:

4. LEASE: G04548

AREA: MI LATITUDE:

BLOCK: 685 LONGITUDE:

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

5. PLATFORM:

B

RIG NAME: * NONE RIG PA OPERATION (LJ)

6. ACTIVITY:

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

8. CAUSE:

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

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

9. WATER DEPTH: 95 FT.

10. DISTANCE FROM SHORE: 18 MI.

11. WIND DIRECTION: NNE
SPEED: 10 M.P.H.

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

13. SEA STATE: FT.

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

On October 2, 2015, a flash fire occurred during decommissioning activities on Matagorda Island 685, Platform "A," OCS-G-04548, operated by GOM Shelf, LLC. Fieldwood Energy has assumed decommissioning liability for this platform and associated wells. The flash fire occurred on Well B-1 (API #427034012000) at the plus ten deck when Tetra Offshore welding personnel were cutting slots in the B-1 conductor for the installation of lifting plates.

An initial combustible gas check was completed prior to commencing cutting operations. A Hot Work Permit for Tetra Offshore, a Hot Work Permit for Fieldwood Energy, and a completed Job Safety Analysis (JSA) were provided to BSEE investigators. According to the Hot Work Permits, the operator's final report and witness statements, an Altair 5x gas detector was utilized at the cellar deck level, resulting in a gas detection of 0% Lower Explosive Limit (LEL). The Altair 5x Gas Detector was bump tested by the onsite safety representative prior to use. Following the negative gas detection check, explosives were detonated in order to sever the conductor below the mud line. This caused the conductor to drop four to five feet below the cellar deck, which required the lifting plates be installed at the plus ten deck instead of just below the wellhead, where the initial gas check was completed. Following detonation, a combustible gas detection check was conducted in the innermost casing near the casing valve flanges (just below the well head), resulting in 0% LEL. After successfully cutting through the 42 inch drive pipe and the 20 inch casing, the welder began cutting the slot on the 13 3/8 inch casing. At approximately 8:25 pm, a Tetra Offshore welder cut through the 13 3/8 inch casing at the plus ten deck with an OxyLance burning bar, igniting flammable gas trapped inside the 13 3/8 inch x 9 5/8 inch casing annulus. Operator statements report personnel unsuccessfully attempted to extinguish the fire with a small water hose, and decided to radio all personnel to evacuate the platform to the supporting derrick barge (Tetra Hedron). According to personnel evacuating the platform, the flash fire burned for an estimated 30 seconds and then extinguished itself. Fieldwood Energy reported no injuries, pollution, or property damage.

After mustering the crew, the onsite supervisor assessed the situation and began mitigation. The B-1 well casing valves were again tested for the presence of a combustible gas at the wellhead. The slot cut on the plus ten deck where the flash fire occurred was also tested, but the small penetration of the 13 3/8 inch casing did not allow the gas detector to sense inside of the annulus. A 3/8 inch pilot hole was drilled at the plus ten deck through the 13 3/8 inch, 9 5/8 inch, and 7 3/4 inch wall casings, and a combustible gas test was conducted. After drilling the pilot hole, the measured LEL was too high for the gas detector to properly read. Compressed air was supplied to 7 3/4 inch casing and circulated through the 9 5/8 inch and 13 3/8 inch casings, and then vented through the 3/8 inch pilot hole. Another combustible gas test was conducted, and the LEL ranged between 5% LEL to 16% LEL in 20 minutes. The 3/8 inch pilot hole was then sealed, and compressed air was supplied into the 13 3/8 casing flange and circulated through the 13 3/8 inch x 9 5/8 inch annulus. A final combustible gas test was conducted and found to have 0% LEL. At 3:05 am, the site was deemed safe, an Ultimate Work Authority document to resume operations (provided to BSEE investigators) was completed, and operations continued.

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

Operator failed to detect trapped flammable gas inside the 9 5/8 inch x 13 3/8 inch annulus at the plus ten deck, where the OxyLance burning bar made the slot cut through

the casings. The Oxy lance burning bar ignited flammable gas inside the casing. An Altair 5x gas detector was utilized at the cellar deck level according to the hot work permit, operator's final report, and witness statements. The operator failed to check for the presence of a combustible gas at the hot work site. The gas detector was unable to properly detect the flammable gas inside the 9 5/8 inch x 13 3/8 inch annulus. The 9 5/8 inch casing valve flange, all adjacent casing valve flanges, and the 7 3/8 inch inner casing open to the atmosphere were all tested for the presence of a combustible gas at the wellhead.

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

Fieldwood Energy stated the following in their final report: "Due to the complexity of this project and unknown variables existing in decommissioning wells and removing casing, it is very difficult to identify a reason for the gas migration and momentary flare event." However, the operator did cite the following as possible causes:

- 1. Gas may have percolated slowly out of the mud in the 9 5/8 inch x 13 3/8 inch casing annulus after the explosive severing of the conductor.
- 2. There was a blockage in the 9 5/8 inch x 13 3/8 inch annulus of mud or other material which trapped gas below it.
- 3. The trapped gas was heavier than ambient air and settled above the waterline in the conductor.

20. LIST THE ADDITIONAL INFORMATION:

During the next engineering workover meeting, the following discussion is planned: Should all decommissioning activities involving the cutting of tubing and/ or casing with hot work be required to ensure the tubing and/ or casing are tested and verified as inert and free of flammable substances. This may include the circulation with an inert fluid, venting, and/ or creating an access through which the tubing and/ or casing can be purged and utilized to ensure a comprehensive combustible gas test can be completed where routine gas monitoring practices cannot detect a trapped combustible gas.

21. PROPERTY DAMAGED:

None

NATURE OF DAMAGE:

None

ESTIMATED AMOUNT (TOTAL):

\$

22. RECOMMENDATIONS TO PREVENT RECURRENCE NARRATIVE:

Safety Alert Notice Number 153 issued February 12, 1988, stated: "Cutting tubing during removal from a wellbore with a torch does not conform to safe and workmanlike practices, and the practice of cutting tubing with a torch should not be used because the potential exists for a flash fire."

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: YES

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

25. DATE OF ONSITE INVESTIGATION:

02-NOV-2015

26. ONSITE TEAM MEMBERS:

David Kearns /

29. ACCIDENT INVESTIGATION

PANEL FORMED: **NO**

OCS REPORT:

30. DISTRICT SUPERVISOR:

John McCarroll

APPROVED

DATE: **06-JAN-2016**