

UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT, REGULATION AND ENFORCEMENT  
GULF OF MEXICO REGION

# ACCIDENT INVESTIGATION REPORT

1. OCCURRED

DATE: **02-OCT-2010** TIME: **0700** HOURS

2. OPERATOR: **Merit Energy Company, LLC**

REPRESENTATIVE: **Signe, Lloyd**  
TELEPHONE: **(337) 262-8192**

CONTRACTOR:

REPRESENTATIVE: **Martin, Sherel**  
TELEPHONE: **(985) 385-3132**

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

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

6. OPERATION:

4. LEASE: **G08641**

AREA: **EC** LATITUDE:  
BLOCK: **83** LONGITUDE:

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

5. PLATFORM: **A**

RIG NAME:

6. ACTIVITY:  EXPLORATION (POE)  
 DEVELOPMENT/PRODUCTION  
(DOCD/POD)

8. CAUSE:

7. TYPE:

- HISTORIC INJURY
- REQUIRED EVACUATION **1**
- LTA (1-3 days)
- LTA (>3 days)
- RW/JT (1-3 days)
- RW/JT (>3 days)
- Other Injury

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

- FATALITY
- POLLUTION
- FIRE
- EXPLOSION

9. WATER DEPTH: **59** FT.

- LWC
- HISTORIC BLOWOUT
  - UNDERGROUND
  - SURFACE
  - DEVERTER
  - SURFACE EQUIPMENT FAILURE OR PROCEDURES

10. DISTANCE FROM SHORE: **28** MI.

11. WIND DIRECTION: **NE**  
SPEED: **25** M.P.H.

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

COLLISION  HISTORIC  >\$25K  <=\$25K 13. SEA STATE: FT.

17. INVESTIGATION FINDINGS:

On 2 October 2010, during simultaneous operations, a flash fire occurred at approximately 0700 hrs which resulted in the pump operator receiving burns to his neck, left arm, shoulder and facial area. During the time leading up to the incident, a lift boat was adjacent to the producing platform with Coil Tubing (CT) operations in progress. At approximately 2300 hrs on 1 October 2010, the pump unit associated with the CT operations began cavitating due to an accumulation of foam in the trip tank. At this time, CT circulating operations were shut down and the trip tank was cleaned out. On 2 October 2010 at approximately 0230 hrs, pumping operations resumed with no fluid returns from the fluid outlet (U-tube) associated with the gas buster. Although safer methods of checking for fluid returns from the well were available, the crew allowed the bottom clean-out valve on the gas buster to remain in the open position while attempting to establish fluid returns from well A-1. This resulted in gas venting from both the top and bottom of the gas buster. Furthermore, the investigation findings revealed that fluid returns were never re-established and the crew did not make any attempt to pump fluid into the gas buster (i.e., establish a fluid column in the gas buster to direct the gas out the top). A double diaphragm pump (fill-up pump) was available to pump fluid from the trip tank into the gas buster, but was not hooked-up until after the flash fire incident.

Witnesses stated that they heard the revolutions per minute (rpm) on the pump unit's engine increase and decrease followed by a small "pop" (backfire) from the left bank exhaust muffler. The BOEMRE investigation revealed the decision was made to close the clean-out valve on the bottom of the gas buster rather than closing the choke on the inlet to the gas buster. The initially opened gas buster clean-out valve resulted in a large gas plume migrating from beneath the gas buster to the pump engine's air intake. The engine's rpm increased again, causing the engine to backfire and ignite the gas plume (flash fire). The flash fire engulfed the pump operator's work station, causing him to dive to the deck in an attempt to vacate the area. The flash fire self-extinguished in seconds and a small fire associated with the air intake breather element was extinguished with water. The choke operator closed the choke and then the pump operator pulled the emergency kill switch on the diesel engine's air intake shutdown for the pump unit. The well was secured and the crew administered medical treatment to the pump unit operator.

Subsequent to the incident, the BOEMRE Lake Charles District performed an inspection and accident investigation for the production platform and lift boat operation to determine that: (1) the kill line on the Blow Out Preventer (BOP) stack was not installed as required in the approved Application For Permit to Modify (APM), (2) the chikson piping running down the center of the catwalk from the lift boat to the platform inhibited emergency egress, (3) the diesel engine's air intake shutdown on the replacement pump unit was stuck in the open position and failed to function, (4) the Job Safety Analysis (JSA) utilized during the time of the incident did not identify all associated job hazards, including vented gas causing a hazardous atmosphere and possible ignition sources and (5) slings on the coil tubing reel skid were found to have separating strands.

Based on interviews with the parties involved, it was also determined that: (1) the senior lead, well site supervisor and engineering staff never conducted any detailed discussions concerning the simultaneous operations, (2) the Simultaneous Operations Plan (SIMOPS) was emailed to the job site on 4 October 2010, two days after the incident, (3) the SIMOPS involved coil tubing operations with the injector head installed on well A-1, which was with-in ten (10) feet of the natural gas compressor and (4) there was no Emergency Shut Down (ESD) Station installed on the lift boat during the simultaneous operations.

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

The bottom clean-out valve on the gas buster was in the open position while trying to establish fluid returns from well A-1. A significant amount of gas was allowed to vent from beneath the gas buster and in close proximity where personnel were working, thus creating a hazardous atmosphere. Furthermore, the wind direction across the deck of the lift boat caused the migration of gas vapors to the diesel engine associated with the pump unit. Gas vapors entered the engine through the air intake breather resulting in the backfire and subsequent flash fire.

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

Human error by all parties involved resulting from failure to:

1. Perform a thorough JSA and identify all potential hazards, including vented gas causing a hazardous atmosphere and potential ignition sources.
2. Utilize Stop Work Authority (SWA) to stop the job when operating in an abnormal condition; i.e., venting gasses through the gas buster clean-out valve.
3. Locate and stage equipment in a safe manner to prevent vented gas from contacting an ignition source(s).
4. Shutdown the pump unit's diesel engine and/or close the choke on the inlet to the gas buster when the initial engine rpm increase occurred.

20. LIST THE ADDITIONAL INFORMATION:

N/A

21. PROPERTY DAMAGED:

N/A

NATURE OF DAMAGE:

N/A

ESTIMATED AMOUNT (TOTAL): \$

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

The Lake Charles District does not have any recommendations for the Regional Office of Safety Management.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: YES

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

G-110 Unsafe workmanlike operations: (1) flash fire/injury to the pump operator, (2) clean out valve on the gas buster was found in an open position, (3) no ESD station was installed on the lift boat during simultaneous operations, (4) chickson piping was running down the center of the catwalk from the lift boat to the platform and (5) slings on the coil tubing reel skid were found to have separating strands.

25. DATE OF ONSITE INVESTIGATION:

02-OCT-2010

26. ONSITE TEAM MEMBERS:  
Darron Miller / Royce Buford /  
Marcus Mouton /

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

OCS REPORT:

30. DISTRICT SUPERVISOR:

**Williamson, Larry**

APPROVED

DATE: **06-JAN-2010**

# FIRE/EXPLOSION ATTACHMENT

1. SOURCE OF IGNITION: **Engine's air intake and resulting backfire**

2. TYPE OF FUEL:
- GAS
  - OIL
  - DIESEL
  - CONDENSATE
  - HYDRAULIC
  - OTHER

3. FUEL SOURCE: **Well A-1 to Gas Buster tank**

4. WERE PRECAUTIONS OR ACTIONS TAKEN TO ISOLATE KNOWN SOURCES OF IGNITION PRIOR TO THE ACCIDENT ? **NO**

5. TYPE OF FIREFIGHTING EQUIPMENT UTILIZED:
- HANDHELD
  - WHEELED UNIT
  - FIXED CHEMICAL
  - FIXED WATER
  - NONE
  - OTHER **Flash fire self-extinguished**

# INJURY/FATALITY/WITNESS ATTACHMENT

<input type="checkbox"/>	OPERATOR REPRESENTATIVE	<input checked="" type="checkbox"/>	INJURY
<input type="checkbox"/>	CONTRACTOR REPRESENTATIVE	<input type="checkbox"/>	FATALITY
<input checked="" type="checkbox"/>	OTHER <u>MER pump operator</u>	<input type="checkbox"/>	WITNESS

NAME:

HOME ADDRESS:

CITY:

STATE:

WORK PHONE:

TOTAL OFFSHORE EXPERIENCE:

YEARS

EMPLOYED BY:

BUSINESS ADDRESS:

CITY:

STATE:

ZIP CODE:

<input type="checkbox"/>	OPERATOR REPRESENTATIVE	<input type="checkbox"/>	INJURY
<input checked="" type="checkbox"/>	CONTRACTOR REPRESENTATIVE	<input type="checkbox"/>	FATALITY
<input type="checkbox"/>	OTHER _____	<input checked="" type="checkbox"/>	WITNESS

NAME:

HOME ADDRESS:

CITY:

STATE:

WORK PHONE:

TOTAL OFFSHORE EXPERIENCE:

YEARS

EMPLOYED BY:

BUSINESS ADDRESS:

CITY:

STATE:

ZIP CODE:

# INJURY/FATALITY/WITNESS ATTACHMENT

OPERATOR REPRESENTATIVE

INJURY

CONTRACTOR REPRESENTATIVE

FATALITY

OTHER CETCO Choke Operator

WITNESS

NAME:

HOME ADDRESS:

CITY:

STATE:

WORK PHONE:

TOTAL OFFSHORE EXPERIENCE:

YEARS

EMPLOYED BY:

BUSINESS ADDRESS:

CITY:

STATE:

ZIP CODE:

