

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: **29-MAY-2016** TIME: **1310** HOURS

2. OPERATOR: **Freeport-McMoRan Energy LLC**

REPRESENTATIVE:

TELEPHONE:

CONTRACTOR:

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: **G12362**

AREA: **MP** LATITUDE: **29.264714**
BLOCK: **299** LONGITUDE: **-88.772089**

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

5. PLATFORM: **FP**

RIG NAME:

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

8. CAUSE:

7. TYPE:

- HISTORIC INJURY
 - REQUIRED EVACUATION
 - 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

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

9. WATER DEPTH: **215** FT.

10. DISTANCE FROM SHORE: **23** MI.

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

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

13. SEA STATE: FT.

14. PICTURES TAKEN:

15. STATEMENT TAKEN:

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

17. INVESTIGATION FINDINGS:

On 29-May-2016 at 1310 hrs a Hydrogen Sulfide (H₂S) gas release of 400 parts per million (ppm) occurred on Main Pass (MP) 299-FP Platform, OCS-G 12362, operated by Freeport McMoran Energy. The MP 299-FP Platform processes gas and liquids containing a high concentration of H₂S. The field's wells are all "sour" and are located on remote satellite platforms. They are flowline connected to the FP process facility.

The FP Platform process system was designed to resist the H₂S corrosion when installed in 1991. The system has not had issues with H₂S release at a significantly higher occurrence rate than other platforms handling high concentration of H₂S.

The release occurred during pigging operations on the flowline from the MP-299 "A" to the "FP" Platform. While receiving the 6-inch pig from MP 299-A Platform to MP 299-FP Platform, the crew started draining the fluids from the pig trap. This trap ties into a common drain line header to the MBF-110 High Pressure (HP) vent scrubber.

While the crew were draining the fluids, the H₂S sensors at #81 and #83 located near the pig trap and the gas MBF-935 Buyback Gas Scrubber skid, were "amber light" activated. Then the H₂S high alarm sounded indicating a release of sour gas and the monitoring panel located in the quarters indicated the sensors previously in a "orange" state had detected a high concentration of H₂S.

The release caused the H₂S alarm to sound and the safety systems then shut in the platform. All personnel onboard mustered to the primary station where they donned the Safe-Contained Breathing Air (SCBA) and waited for further instructions. All non-essential personnel were then instructed to stay in the primary muster area. The response team (RT) that included the H₂S Safety Burner Tech, the Field Lead Operator and the Deck Lead Operator masked up with voice active SCBAs and went to inspect both H₂S sensors #81 and #83.

The RT began using gas H₂S detectors to check the area around sensors #81 and #83 to discover the source of the leak. At the same time, the Field Foreman was verbally reporting the H₂S parts per million (PPM) readings for sensors #81 and #83. While the RT was still checking the area, the Field Foreman notified the crew that the H₂S, as measured at sensors #81 and #83, had dissipated to a safe level according to H₂S panel readings. He therefore declared an "all-clear" of the H₂S high level.

Following the "all-clear," the RT went upstairs to meet with the rest of the personnel onboard. Shortly afterwards, as the crew were taking off their SCBA packs, the high H₂S alarm sounded again, activated by the H₂S sensor #81 located in the buyback skid.

The crew donned a new set of SCBAs to ensure there was enough safe breathing air to make it back downstairs to the safe breathing air manifold. The RT used gas detectors to again check the area around the MBF-935 Buyback Gas Scrubber. During this check the RT found a gas leak in 2-inch pipe outlet coming from the MBF-935 Buyback Gas Scrubber, below the south side cellar deck.

BSEE Investigators arrived on 31-May-2016 to conduct an incident investigation of the H₂S release of 400 ppm. Statements, pictures and initial reports were obtained. A safety walkthrough inspection was conducted of the 2-inch piping run that leads to a 6-inch common vent line, and then to the MBF-110 HP Vent Scrubber.

Based on inspection of the equipment, interviews, and documents reviewed, the BSEE investigation found that during a pigging operation from MP 299-A to MP 299-FP platform, the following were causes of the H₂S release:

1. The MBF-935 Buyback Scrubber 2-inch outlet piping was found to have extensive exterior corrosion which compromised the integrity of the piping. This allowed the release of the H₂S gas. Interior corrosion related to H₂S was not confirmed because inspection of that portion of the piping was not possible.

2. In addition to the above, the 6-inch vent piping connecting all vessels to the MBF-110 HP Vent Scrubber was found to have pitting corrosion. This was located on the exterior in the form of relatively small isolated "tubercles," or rust mounds, on the pipe and on the flange fasteners.

3. During the investigation, the BSEE determined the condition of the piping showed evidence of a lack of routine maintenance.

Conclusions

Failure of the Operator to perform routine corrosion assessment maintenance on piping was the primary cause of this incident.

As a result of this incident, the BSEE investigation, and the condition of the facility the Operator shut in the facility because the continued operation was uneconomical. The Operator is developing a "plan forward" as a guideline to the future of the facility and the field.

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

- The MBF-935 Buyback Gas Scrubber 2-inch outlet piping was found to have extensive deterioration and pitting corrosion on the exterior of the piping. The corrosion compromised the integrity of the pipe allowing the gas to leak.
- The corrosion that allowed the H₂S to leak was a direct result of a lack of routine piping maintenance on the facility.

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

- The 6" vent piping associated with the all vessels to the MBF-110 HP Vent Scrubber has indication of pitting corrosion on the exterior relatively small isolated mounds and extensive deterioration of fasteners. This exterior corrosion was further evidence of the lack of maintenance on the piping.

20. LIST THE ADDITIONAL INFORMATION:

FM Energy has replaced the 2 inch outlet piping of the MBF-935 Buyback Gas Scrubber and the job was completed on 05-June-2016.

1. The Operator is developing a "Plan forward" to address the issues of corrosion on the surface facility throughout the platform.

2. As of 29-May-2016 the Main Pass 299-FP field has been shut in indefinitely. Freeport McMoran has made the determination the field is uneconomical to continue to flow production.

21. PROPERTY DAMAGED:

NATURE OF DAMAGE:

2 inch piping

Corrosion

ESTIMATED AMOUNT (TOTAL):

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

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

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: YES

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

1. G-111 The MBF 935 Buyback Scrubber 2 inch outlet piping had a hole in the piping to the MBF-110 HP vent scrubber 6 inch piping that is common with the pig launcher/receiver caused from corrosion allowing 400ppm of H2S gas to be released.

2. G-111 The 6 inch piping to the MBF-110 HP vent scrubber on the Southside of the cellar deck sections of the piping, flanges and fasteners are heavily corroded.

25. DATE OF ONSITE INVESTIGATION:

31-MAY-2016

26. ONSITE TEAM MEMBERS:

28. ACCIDENT CLASSIFICATION:

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

OCS REPORT:

30. DISTRICT SUPERVISOR:

David Trocquet

APPROVED

DATE: **14-NOV-2016**