

UNITED STATES DEPARTMENT OF THE INTERIOR
 BUREAU OF SAFETY AND ENVIRONMENTAL ENFORCEMENT
 GULF OF MEXICO REGION

For Public Release

ACCIDENT INVESTIGATION REPORT

1. OCCURRED

DATE: **12-MAR-2023** TIME: **1630** HOURS

2. OPERATOR: **GOM Shelf LLC**

REPRESENTATIVE:

TELEPHONE:

CONTRACTOR: **Louisiana Safety Systems, Inc.**

REPRESENTATIVE:

TELEPHONE:

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

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

8. OPERATION:

4. LEASE: **G02213**

AREA: **MP** LATITUDE: **29.1834**
 BLOCK: **311** LONGITUDE: **-88.736894**

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

5. PLATFORM: **B**

RIG NAME:

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

9. CAUSE:

7. TYPE:
 INJURIES:

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

HISTORIC INJURY

OPERATOR CONTRACTOR

- REQUIRED EVACUATION 0 1
- LTA (1-3 days)
- LTA (>3 days) 0 1
- RW/JT (1-3 days)
- RW/JT (>3 days)
- FATALITY
- Other Injury

10. WATER DEPTH: **250** FT.
 11. DISTANCE FROM SHORE: **15** MI.

- POLLUTION
- FIRE
- EXPLOSION

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

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

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

14. SEA STATE: **0** FT.

15. PICTURES TAKEN:

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

16. STATEMENT TAKEN:

17. INVESTIGATION FINDINGS:

INCIDENT SUMMARY:

On Sunday, 12 March 2023, at 1633 hours, on Main Pass (MP) 311 B platform, Lease Number

OCS-G 02213, two (2) Louisiana Safety Systems (LSS) technicians were injured while working on the well QAY B-18ST's production casing valves located on the subcellar deck of the platform. Two injuries (one serious and one minor) occurred as a result of the incident, when a 1 inch stainless steel (SS) gas lift injection tubing, rated at approximately 3100 psi, ruptured due to 4330 psi of unexpected pressure being trapped in the SS tubing. The platform was immediately shut in. One of the injuries resulted in a lost time accident greater than 3 days. MP 311 B is owned and operated by GOM Shelf LLC (GOM Shelf).

SEQUENCE OF EVENTS:

On 3 March 2023, the two LSS Technicians arrived at MP 311 B. Their assignment was to workover, repair, and lubricate all well casing valves. According to the statement from Injured Person #2 (IP #2), their job started at 0600 hours with the signing of the LSS Job Safety Analysis (JSA) by the Person In Charge (PIC). The PIC was a contractor working for Island Operating.

On 12 March 2023, at approximately 1600 hours, the technicians had completed their work on 17 casing valves, and had 3 valves left to finish. The technicians were in the process of greasing and opening and closing the production casing valves of the QAY B-18 when they heard a sound of gas flowing through the valve. The B-18 well is an out-of-service well with dual 2 inch production casing valves installed flange to flange.

At 1628 hours, one of the LSS technicians (IP #1) immediately attempted to shut the production casing valve closest to the tree. While IP #1 was shutting the valve, the 1 inch SS tubing immediately downstream of the dual casing valves ruptured. The force of the escaping gas knocked IP #1 off the 4 foot aluminum stand he was standing on to operate the manual valves, down onto the grating 4 feet below. IP #2 was standing about 2 feet from the tree when the tubing ruptured. IP #2 was hit in the face and chest by the force of the gas and was knocked backwards off his feet onto the deck as well. As IP #2 gained his senses, he struggled to his feet and attempted to render aid to IP #1 who appeared dazed, while laying on the deck. IP #2 attempted to drag IP #1 out of harm's way of the escaping gas, but was unable to move him very far. IP #2 headed up the stairs to get help and activated one of the Emergency Shutdown (ESD) stations along the way. Personnel on the top deck, after hearing the loud explosion, immediately activated the ESD as well, and headed downstairs to assist. IP #1 was then removed off the deck and carried to a safe location. A GOM Shelf Operator then closed the production casing valves on the B-18 well and isolated the pressure so that the remaining gas in the line bled down. IP #1 was placed on a stokes litter and carried to the top deck where he was brought into the Living Quarters. IP #1 was placed on a bed and provided first aid to minimize his pain as much as possible. The PIC immediately notified the Field Foreman of the incident and then notified the Field Medic, who was housed at MP 289 C. Due to weather restraints, this day was a "No fly day", making evacuating the IP #1 difficult.

At 1700 hours, the after-hours BSEE representative was contacted by a GOM Shelf representative to report the incident. GOM Shelf then sent a follow up email. A GOM Shelf investigation team arrived the next day.

At 1800 hours, the Medic arrived to MP 311 B by boat, 2 hours after the incident occurred due to the weather constraints. The Medic provided medical attention to IP #1 to stabilize his injuries and then administered an IV. IP #2 was briefly examined by

the Medic but was determined to be okay with no trauma observed at that time.

At 1830 hours, Air-Med (Acadiana) departed Lafayette after being contacted for emergency night helicopter service. The Air-Med arrived in New Orleans, took on fuel, and departed from New Orleans at 2000 hours.

At 2100 hours, the Air-Med arrived at MP 311 B. The Medical Technician arrived and prepared IP #1 for travel and then the Air-Med helicopter departed at 2135 hours for University Medical Center (UMC) in New Orleans.

On 16 March 2023, bubbles were discovered seeping from the 9-5/8 inch casing flange located at the base of the tree of well B-18. Notifications were immediately made to GOM Shelf management, and a casing diagnostic was executed to remove pressure and confirm holding of current Pump Through Plugs (PTPs). The results were that the lower PTP was leaking.

BSEE INVESTIGATION:

On 14 March 2023, two (2) New Orleans District (NOD) BSEE Inspectors, who were already inspecting a nearby location, were rerouted to MP 311 B to investigate the incident, take photos and request documents. Documents received were as follows: Personnel On Board (POB) list, February's Monthly Safety System Report, Witness Statements, LSS's JSA and interview with the PIC.

On 15 March 2023, at 1000 hours, the BSEE NOD Accident Investigator (AI) and one BSEE NOD Production Inspector arrived on location to begin their investigation. The GOM Shelf platform production personnel had a crew change earlier that morning. The AI interviewed the PIC on board and the LSS Senior Technician. The BSEE AI and Inspector performed a walkthrough of the incident area, which consisted of the subcellar deck. Pressure monitoring trends off of the Supervisory Control and Data Acquisition (SCADA) System were requested and received.

On 25 April 2023, the BSEE AI made a follow-up flight to MP 311 B. The AI found through interviews that the GOM Shelf operators had not been verifying casing pressures. Instead, they were relying on their SCADA system report which depended on a sensing line that was isolated from the casing pressure. A 3-day trending chart, obtained prior to the incident, printed out zero (0) pressures on the B-18 production casing. Because the casing valves were closed, this 0 psi reading on the SCADA system was inaccurate, and not indicative of the actual casing pressures on the well. As such, this pressure jumped up to 4330 psi as IP #1 worked the two casing valves. In addition, the BSEE AI gathered through GOM Shelf's investigative report that the casing pressure was caused by downhole well integrity issues. Operators were found to have not been monitoring casing pressures at the required intervals. This was confirmed in the GOM Shelf's internal investigative report.

The BSEE Investigation has determined that, when the two (2) LSS Technicians arrived, they were under the impression that there was zero (0) pressure on the B-18 well production casing. They were not advised of any special concerns or hazards that they needed to be aware of when asked. In the interview of the LSS Technicians, it was revealed that they were told by the PIC, "go figure it out, do your job". The failure to perform a pre-job hazard walkthrough was confirmed in the GOM Shelf's internal investigative report.

During the investigation, BSEE reviewed the currently approved drawings for the facility and found multiple inconsistencies with the installation and the drawings. The drawings show the gas lift check valve at the wellhead, the 2" casing valve, the 1" ball valve, and tubing are rated for 10,000 psi, and the gas lift tubing upstream

of the check valve is rated for 1440 psi. According to the Safety Flow Diagrams (SFDs), the shut-in tubing pressure (SITP) of well B-18ST was 2535 psig. However, the SITP was actually greater than 4000 psi. The gas lift tubing was actually rated for 3100 psi. In addition, the approved SFDs for the facility only show one casing valve, but the well actually had 2 casing valves. Therefore, multiple inconsistencies with the approved drawings, and what was actually installed in the field contributed to this incident.

GOM Shelf's investigation revealed that "The MP 311 B-18 wellhead had a grease zerk that develop a leak in July 2021 which required well intervention to mitigate the leak. Two tubing plugs were set during this intervention and the tubing and casing were bled to 0PSI. The grease zerk repair was completed on 7/14/21. The Production casing pressure on B-18 started increasing on 7/15/21. A casing diagnostic was not performed when the trigger pressure was reached post grease zerk remediation."

After thorough examination and analysis of the information presented and obtained, the BSEE investigation has confidently arrived at the following conclusions:

The platform piping and tubing was not built to the approved drawings. This directly led to the overpressure event when the casing pressure was introduced to the 1-inch tubing.

GOM Shelf failed to monitor the casing pressure. This led to the workers not knowing the pressure that was on the casing.

GOM Shelf failed to perform a pre-job safety meeting before starting work. This also led to the workers not knowing what pressure was on the casing before work.

GOM Shelf failed to carry out a vital casing pressure diagnostic, resulting in the incident. Had GOM Shelf performed this diagnostic, any downhole issues in the well could have been identified and resolved, eliminating the root cause of the casing pressure.

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

Human Performance Error: Not aware of the hazards. The LSS Technicians were unaware of the hazard (extremely high gas pressure, 4330 psi) upstream of the 2 inch production casing valve prior to starting their job.

Equipment Failure: Capacity exceeded. Tthe 1 inch SS production casing tubing line (rated for approximately 3100 psi) was overpressured by the 4330 psi flowing from the well into the production casing.

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

Human Performance Error: Not aware of the hazards. Operators failed to monitor the casing pressure on the well.

Human Performance Error: Not following procedures. Operators failed to perform a casing diagnostic as required by regulations.

20. LIST THE ADDITIONAL INFORMATION:

The failure of the possible downhole safety devices in the B-18 well is being reviewed by the BSEE New Orleans District (NOD) Well Operations Engineers with the submittal and approval of an APM focused on remediating the pressure source. APM - Remediate SCP, API# 17-724-40892-01.

On 25 April 2023, the BSEE AI made a follow up flight to MP 311 B to examine the current methods GOM Shelf has adopted to monitor production casing pressures. Upon arrival, it was mentioned that the platform has been shut in since 16 April 2023, due to shortage of available gas lift gas for the area. All SCADA sensing lines that were used to monitor production casing pressures have been removed. All 2 inch production casing isolation valves are operational. New pressure gauges and needle valves have been installed on all well casings and the operators are required to physically open and close the valves when pressure readings are being taken. Operators are no longer allowed to only observe the casing pressure readings in the control room off the SCADA System. Leaking downhole plugs have been replaced and there is no longer pressure build up in the casings.

DATES OF ONSITE INVESTIGATIONS:

March 14, 2023

March 15, 2023

March 25, 2023

21. PROPERTY DAMAGED:

NATURE OF DAMAGE:

A section of 1 inch SS tubing, a 1 inch tubing ball valve, 1 inch tubing fittings; a section of 3/8 inch SS tubing

Ruptured by high pressure gas

ESTIMATED AMOUNT (TOTAL):

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

BSSE recommends that a Safety Alert is generated emphasizing the importance of accurate readings with regards to critical pressure data. Recommend operators of dry trees on gas lift ensure that their tubing and valves are rated per their approved drawings.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: YES

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

G-110 C 30 CRF 250.107, 250.401(e) - Operators did not perform a pre-job walkthrough to determine potential hazards.

G-115 The facility was not operating in accordance with approved drawings.

P-414 The operator failed to monitor casing pressure.

P-416 The operator failed to perform a casing diagnostic when required.

25. DATE OF ONSITE INVESTIGATION:

14-MAR-2023

28. ACCIDENT CLASSIFICATION:

For Public Release

26. Investigation Team Members/Panel Members:

**Brian Wilson (Office) / Gerald Taylor /
Jarrett Emilien / Terrence Hayes /**

27. OPERATOR REPORT ON FILE:

29. ACCIDENT INVESTIGATION PANEL FORMED:

NO

OCS REPORT:

30. DISTRICT SUPERVISOR:

David Trocquet

APPROVED

DATE:

27-JUL-2023