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: **14-FEB-2019** TIME: **0100** HOURS

2. OPERATOR: **Talos Petroleum LLC**
REPRESENTATIVE:
TELEPHONE:

CONTRACTOR: **ISLAND OPERATOR CO. INC.**
REPRESENTATIVE:
TELEPHONE:

- [ ] STRUCTURAL DAMAGE
- [ ] CRANE
- [ ] OTHER LIFTING
- [ ] 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:

4. LEASE: **G05825**
AREA: **MC** LATITUDE:
BLOCK: **109** LONGITUDE:

5. PLATFORM: **A-Amberjack**
RIG NAME:

6. ACTIVITY:

- [ ] EXPLORATION(POE)
- [X] 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
- [X] EXPLOSION

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

COLLISION [ ] HISTORIC [ ] >$25K [ ] <=$25K

8. OPERATION:

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

9. CAUSE:

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

10. WATER DEPTH: **1100** FT.

11. DISTANCE FROM SHORE: **15** 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:

17. INVESTIGATION FINDINGS:

INCIDENT SUMMARY:

An explosion occurred on 14 February 2019, at 0115 on the Mississippi Canyon (MC) 109 A (Amberjack) Platform, Lease OCS-G 5825, operated by Talos Petroleum LLC (Talos). The explosion originated from a 12 Volt (V) battery located inside a Remote Terminal Unit (RTU) Panel. The force of the explosion blew the panel door off the enclosure. Debris from the explosion landed 45 feet away. The explosion did not cause damage to nearby equipment. No injuries or pollution occurred.

Sequence of Events:

At 0115 on 14 February 2019, night operators, who had just made their rounds, heard a boom and felt the platform shake. They investigated the explosion and found the RTU Panel to be the source. The Night Operators chose not to activate the Emergency Shut Down (ESD), shut in production, or muster. Personnel searched but could not identify a gas source. They woke up and notified the Person In Charge (PIC). The PIC investigated the incident the next morning.

At 0800, MC 109 A shut in due to an unrelated high pipeline pressure.

At 0820, Talos verbally notified BSEE of the incident.

BSEE INVESTIGATION

BSEE Inspectors arrived onsite 14 February 2019 at 0925 to begin the investigation. The investigators found that American Midstream, a gas sales contractor, installed and operated the RTU Panel. American Midstream personnel arrived on location at 1000 to begin their investigation with Talos personnel.

The inspectors performed a walkthrough and photographed the damage outside and inside the RTU Panel. Investigators interviewed personnel and took statements. Inspectors requested and reviewed documents and drawings. The inspectors noted the panel was located in a Class 1 Division 2 area according to the Area Classification Layout.

Talos' investigation indicated on 12 January 2019, the platform electrician attempted to find out why the American Midstream RTU Panel did not have power. The electrician discovered the 110V electrical input to the panel disconnected in the communications room next to the Motor Control Center (MCC) room. This caused the depletion of the two 12V Odyssey PC925 non-spillable drycell batteries within the panel. The electrician could not fully recharge the batteries after several hours. He then replaced two 12V Odyssey batteries with one 12V ACDELCO Voyager II Marine/RV Battery. Although the electrician stated that he adjusted the charging voltage to 12V, the battery showed signs of cracking/splitting from overcharging. Talos' investigation report also revealed eliminating one battery resulted in directing the 24V charge into the one 12V battery causing a hazardous overcharge. The overcharged battery released excess hydrogen inside the non-vented panel creating an explosive environment. BSEE inspectors noted that the electrical components inside the panel were not listed by a Nationally Recognized Testing Laboratory (NRTL) for use in a Class 1 Division 2 hazardous area.

BSEE Investigators found that the operators did not have knowledge of the battery's ability to vent hydrogen within the panel. However, API RP 14F (incorporated by reference in 30 CFR 250.198) states, "All rechargeable type batteries release hydrogen to the atmosphere in varying degrees." API RP 14F continues, "All rechargeable battery systems should be installed such that hydrogen cannot collect in sufficient quantity to create a hazard."

The installation of rechargeable batteries inside a non-vented panel creates a Class 1 Division 1 location inside of the panel according to API RP 500. However, the components inside the panel were not rated for a Class 1 Division 1 area. Even if the panel was vented, Talos installed the panel in a Class 1 Division 2 area. However, the components inside were not rated for a Class 1 Division 2 area.

The BSEE investigation determined that the event was not a rupture as initially reported by Talos, but an explosion.

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

Equipment Failure – Flawed Equipment Design or Construction: The installation of rechargeable batteries inside a non-vented panel creates a Class 1 Division 1 location inside of the panel according to API RP 500. However, the components inside the panel were not rated for a Class 1 Division 1 area. Even if the panel was vented, Talos installed the panel in a Class 1 Division 2 area. However, the components inside were not rated for a Class 1 Division 2 area.

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

Personnel Training - Personnel Poorly Trained: Personnel failed to recognize that rechargeable batteries vent hydrogen.
Management Systems – Inadequate or Improper Area Classifications: The installation of rechargeable batteries inside a non-vented panel creates a Class 1 Division 1 location inside of the panel according to API RP 500.
Management Systems – No or Inadequate Hazard Analysis: Personnel failed to perform a Hazard Analysis before changing the design of the RTU Panel.

20. LIST THE ADDITIONAL INFORMATION:

The purpose of the RTU Panel is to communicate meter readings to shore via radio. The backup battery prevents data loss in case the platform loses power. The radio takes information in the RTU Panel and transmits it to the antennae located on the west side bottom deck.

21. PROPERTY DAMAGED:	NATURE OF DAMAGE:
The American Midstream Sales Gas Measurement Communication RTU Panel	**Impact due to explosion**

ESTIMATED AMOUNT (TOTAL): **$3,267**

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

The New Orleans District recommends that the Office of Incident Investigations considers drafting a Safety Alert regarding electrical components and hazardous areas.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: **YES**

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

F-103 – 30 CFR 250.114: C ARE ALL RECHARGEABLE BATTERY SYSTEMS INSTALLED SUCH THAT HYDROGEN CANNOT COLLECT IN SUFFICIENT QUANTITIES TO CREATE A HAZARD AND TO PROTECT THE BATTERIES IN ACCORDANCE WITH API RP 14F, PARAGRAPHS 10.3.4.2 AND 10.3.4.3, AND API RP 14FZ, PARAGRAPHS 10.3.4.2 AND 10.3.4.3?
A rechargeable battery installed inside of a non-vented enclosure released hydrogen causing an ignition of electrical components inside the enclosure.

F-108 - 30 CFR 250.114(c) ARE ELECTRICAL INSTALLATIONS MADE IN ACCORDANCE WITH API RP 500 AND API RP 14F OR API RP 505 AND API RP 14FZ?

Electrical components inside the RTU Panel were not rated for the Class 1 Division 2 area in which the panel was installed.

Date of Office or Onsite Investigation:
February 14, 2019 – Jason Bowens - Onsite
February 14, 2019 – Alan Williams -Onsite
February 14, 15, 2019 – Gerald Taylor - Office
March 20, 2019 – Gerald Taylor – Onsite
May 1, 2019 – Gerald Taylor – Office
May 3, 2019 – Gerald Taylor – Office

25. DATE OF ONSITE INVESTIGATION:

14-FEB-2019

26. INVESTIGATION TEAM MEMBERS:

Gerald Taylor / Alan Williams / Jason Bowens /

28. ACCIDENT CLASSIFICATION:

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

OCS REPORT:

30. DISTRICT SUPERVISOR:

David Trocquet

27. OPERATOR REPORT ON FILE:

APPROVED DATE: **20-SEP-2019**