

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

# ACCIDENT INVESTIGATION REPORT

1. OCCURRED

DATE: **18-MAR-2022** TIME: **1800** HOURS

2. OPERATOR: **Shell Offshore Inc.**

REPRESENTATIVE:

TELEPHONE:

CONTRACTOR: **Helix Well Ops Group**

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: **G19409**

AREA: **AC** LATITUDE:

BLOCK: **815** LONGITUDE:

5. PLATFORM:

RIG NAME: **HELIX Q-4000**

6. ACTIVITY:

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

7. TYPE:

INJURIES:

HISTORIC INJURY

OPERATOR CONTRACTOR

REQUIRED EVACUATION

LTA (1-3 days)

LTA (>3 days)

RW/JT (1-3 days)

RW/JT (>3 days)

FATALITY

Other Injury

8. OPERATION:

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

9. CAUSE:

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

POLLUTION

FIRE

EXPLOSION

LWC

HISTORIC BLOWOUT

UNDERGROUND

SURFACE

DEVERTER

SURFACE EQUIPMENT FAILURE OR PROCEDURES

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

10. WATER DEPTH: **9356** FT.

11. DISTANCE FROM SHORE: **159** MI.

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

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

14. SEA STATE: **2** FT.

15. PICTURES TAKEN:

16. STATEMENT TAKEN:

## 17. INVESTIGATION FINDINGS:

On 18 March 2022, Shell Offshore, Inc. (Shell) reported a pollution incident of an approximate 50/50 mixture of 188 barrels of Mono Ethylene Glycol (MEG) and seawater (SW) into the Gulf of Mexico (GOM). The incident occurred from Shell's Alaminos Canyon (AC) 815 well SA001's subsea tree, during abandonment operations conducted from the Helix Q-4000.

### Timeline:

On 18 March 2022, operations for abandonment with coiled tubing was in progress. At 1800 hours a five-barrel cement squeeze was attempted on the FR-12 reservoir in the Silvertip 001 well for zonal isolation. Shell attempted to pressure test the cement squeeze to 1,000 psi with the MEG/SW mixture. The pressure test failed to hold 1000 psi over 15 minutes as required per 30 CFR 250.1715. Investigation into the failed pressure test by Shell revealed the chemical injection tree valve 1 (CIT1) on the subsea tree was leaking the MEG/SW mixture, which resulted in the mixture being released into the GOM. The TechnipFMC Subsea Tree (SST) Supervisor hydraulically functioned open and close the CIT1 valve three times with no movement showing on the CIT1 mechanical position indicator. The SST Supervisor then attempted to use the ROV to manually close the CIT1 with five clockwise turns. The manual attempt resulted in slight movement on the CIT1 mechanical position indicator. The CIT1 valve was then hydraulically functioned open and closed by the SST Supervisor before the leak stopped. The CIT1 valve was successfully pressure tested to 3500 psi, and the CIT1 valve worked as designed for the rest of the abandonment operation.

### Investigation:

On 18 March 2022, at 2050 hours, NRC Report #1331496 was submitted by Shell of a discharge of completion fluid from a subsea tree needle valve. On 19 March 2022, the Bureau of Safety and Environmental Enforcement (BSEE) Lake Jackson District was notified of the incident via after hours phone call. On 22 March 2022, the BSEE Lake Jackson District Accident Investigator (AI) received the initial incident report, synopsis of the incident, path forward from the incident by Shell, the Coiled Tubing Operation Job Safety Analysis for running in hole and pulling out of hole, Shell Perdido SA001 Well Handover Procedure, and the Material Safety Data Sheets

Due to weather, scheduling conflicts and BSEE's COVID-19 protocols the onsite investigation was delayed. On 1 April 2022, the BSEE Lake Jackson District Accident Investigator (AI) began the onsite investigation into the incident. The BSEE AI conducted interviews with Shell's Company Man for AC 815, the Well-site Supervisor and TechnipFMC's SST Supervisor. The AI reviewed the Shell Perdido SA011 Well Handover procedural documentation. The AI found that the CIT1 valve was documented and verified as closed on the Shell Perdido SA001 Well Handover Procedure by the Well Site supervisor. However, the AI found the CIT1 valve was not functioned to the closed position prior to the pressure test when speaking with Shell and that Shell used the last documented position of CIT1 valve as a verification of the valve being in the closed position. The exact position of the CIT1 valve was not known since the CIT1 valve was never functioned before or during the operation. The CIT1 valve was not functioned during the latch-up, or during any other pre-operation check and test. The CIT1 valve appeared to be in the closed position until the ROV manually functioned CIT1 valve and the CIT1 position indicator moved slightly. Shell is in the process of changing the Shell Perdido SA001 Well Handover Procedure to include procedures for verifying status of all valves on the subsea tree.

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

**Cause Category is Management Systems**

CIT1 valve was not fully closed during the operation. Operator failed to verify proper valve alignment prior to conducting the zonal isolation procedure

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

**Cause Category is Management Systems**

Shell procedure does not specify how to verify CIT1 valve is closed. The CIT1 mechanical position indicator, visually appeared to be in the closed position but the CIT1 valve was not fully closed.

20. LIST THE ADDITIONAL INFORMATION:

**NRC report # 1331496**

21. PROPERTY DAMAGED: NATURE OF DAMAGE:

**None**

ESTIMATED AMOUNT (TOTAL):

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

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

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

**Pollution 30 CFR 250.300**

Lessee failed to prevent an unauthorized discharge of pollutants into offshore waters. On March 18th, 2022, Lessee failed to verify proper valve alignment prior to conducting operations. This failure resulted in approximately 188 bbls of Mono Ethylene Glycol and Sea Water mix (50/50) which was released into the environment.

25. DATE OF ONSITE INVESTIGATION:

**01-MAR-2022**

28. ACCIDENT CLASSIFICATION:

26. INVESTIGATION TEAM MEMBERS:

**Perry Brady /**

29. ACCIDENT INVESTIGATION

PANEL FORMED: **NO**

OCS REPORT:

27. OPERATOR REPORT ON FILE:

30. DISTRICT SUPERVISOR:

**Stephen Martinez**

APPROVED

DATE:

**04-AUG-2022**