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: **09-JUL-2020** TIME: **1515** HOURS

2. OPERATOR: **Shell Offshore Inc.**
   REPRESENTATIVE:
   TELEPHONE:
   CONTRACTOR: **Helix Energy Solutions**
   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: **G08496**
   AREA: **MC** LATITUDE: **28.363456**
   BLOCK: **657** LONGITUDE: **-87.923027**

5. PLATFORM:
   RIG NAME: **HELIX Q-4000**

6. ACTIVITY:
- [ ] EXPLORATION(POE)
- [X] 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		

- [X] POLLUTION
- [ ] FIRE
- [ ] EXPLOSION

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

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

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

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

10. WATER DEPTH: **7370** FT.
11. DISTANCE FROM SHORE: **129** MI.
12. WIND DIRECTION: **WSW**
    SPEED: **3** M.P.H.
13. CURRENT DIRECTION:
    SPEED: M.P.H.
14. SEA STATE: **3** FT.
15. PICTURES TAKEN:
16. STATEMENT TAKEN:

On July 9, 2020, a spill incident occurred onboard the Helix Q4000 semisubmersible vessel while working for Shell Offshore Inc (SOI) at Mississippi Canyon (MC) 657. A total of 57 barrels of SF Base fluid (Synthetic Oil Base Fluid) spilled in the Gulf of Mexico (GOM) due to the standpipe gate valve and the bleed off valve being left in the open position. Shell reported the incident to the Bureau of Safety and Environmental Enforcement (BSEE) New Orleans District (NOD).

At approximately 14:30 hours, the Helix crew held a Job Safety Analysis (JSA) with all personnel involved in the riser displacement operation. The 10.7 pounds per gallon (ppg) Calcium Chloride (CaCL) was being displaced with 6.6 ppg SF Base fluid. Helix crew members lined up Hex Pump 2 and relevant surface valves. The driller brought Hex Pump 2 on line to begin displacement of the riser. Full returns were not achieved at the return tank, and no pressure increase was observed on the pump display in the driller's shack. The driller shut down Hex Pump 2 and crew members were instructed to verify the valve lineup. While walking the lines to verify the valve line up, it was identified that the stand pipe gate valve and bleed off valve were inadvertently left in the open position.

The crew immediately closed both valves and notified vessel and client leadership. Crew members measured the pits to confirm the total amount of fluid discharged. A Safety Stand-down was conducted with the Environmental, Health, and Safety (EHS) Advisor and crew personnel to discuss events leading up to the valve line up and how to avoid reoccurrence.

On July 10, 2020, BSEE initiated an investigation for the SF Base fluid spill incident. The investigation consisted of phone and E-mail conversations with the SOI representative on site. BSEE requested Material Safety Data Sheets (MSDS) for the fluid that was spilled overboard, the procedures and JSAs for the job being performed at the time of the incident, photos, and possible causes for the incident. During the investigation, BSEE found that the stand pipe gate valve and bleed off valve were not physically verified to be closed during the valve line up verification. The crew also failed to use the task specific JSA for riser displacement.

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

Human Performance Error:

- Line up verification was performed; however, two valves were not fully verified to be closed on the stand pipe. These valves are normally kept closed and personnel failed to physically check valve status.

- Personnel in the driller's shack did not initially notice discrepancies between barrel-in/barrel-out volume and anticipated pump pressures while conducting pumping operations.

- Returns aren't always seen immediately and an assumption was made that they were receiving full returns.

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

- Crew members utilized the fluid transfer and Hex Pump JSA but did not use the task specific JSA for riser displacement.

- Stand pipe valves were not locked in the closed position and did not have an indicator to determine valve status.

20. LIST THE ADDITIONAL INFORMATION:

21. PROPERTY DAMAGED:

57 barrels of SF @$216.29 a barrel.

NATURE OF DAMAGE:

Discharged/spilled overboard.

ESTIMATED AMOUNT (TOTAL): **$12,329**

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

New Oreleans District recommends updating a previous Safety Alert that addresses this situation or possibly writing a new Safety Alert to issue to industry.

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

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

1) PINC: E100 - Is the Operator Preventing Unauthorized Discharge of Pollution Into Offshore Waters? Regulation (30 CFR 250.300a) the operator discharged 57 barrels of 6.6. ppg. SF Base fluid into OCS waters. The crew immediate investigation led them to an open stand pipe valve and an open bleed off valve. The opened valves allowed for the unauthorized discharge of the SF Base fluid.

2) PINC: G110 - Does the Lessee Perform All Operations in a Safe and Workmanlike Manner and Provide for the Preservation and Conservation of Property and the Environment? Regulation (30CFR 250.107) The crew failed to physically check the stand pipe valves status to be closed which allowed the unauthorized discharge of the SF Base fluid into the Gulf of Mexico. The crew also failed to use the task specific JSA for the riser displacement.

25. DATE OF ONSITE INVESTIGATION:

26. INVESTIGATION TEAM MEMBERS:

Frank Musacchia /

27. OPERATOR REPORT ON FILE:

28. ACCIDENT CLASSIFICATION:

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

OCS REPORT:

30. DISTRICT SUPERVISOR:

APPROVED
DATE: **03-FEB-2021**