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

ACCIDENT INVESTIGATION REPORT

1. OCCURRED
   DATE: **11-SEP-2016** TIME: **1030** HOURS

2. OPERATOR: **Shell Offshore Inc.**
   REPRESENTATIVE:
   TELEPHONE:
   CONTRACTOR:
   REPRESENTATIVE:
   TELEPHONE:

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

4. LEASE: **G21861**
   AREA: **WR** LATITUDE:
   BLOCK: **551** LONGITUDE:

5. PLATFORM:
   RIG NAME:

6. ACTIVITY:
- [ ] EXPLORATION(POE)
- [X] DEVELOPMENT/PRODUCTION (DOCD/POD)

7. TYPE:
- [ ] HISTORIC INJURY
- [X] REQUIRED EVACUATION **2**
- [ ] LTA (1-3 days)
- [X] LTA (>3 days **2**
- [ ] RW/JT (1-3 days)
- [ ] RW/JT (>3 days)
- [ ] Other Injury
- [ ] FATALITY
- [ ] POLLUTION
- [ ] FIRE
- [ ] EXPLOSION

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

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

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

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

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

9. WATER DEPTH: **9490** FT.

10. DISTANCE FROM SHORE: **163** MI.

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

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

13. SEA STATE: FT.

17. INVESTIGATION FINDINGS:

At approximately 1016 hours on September 11, 2016, a pressurized steam release from Boiler No.1 occurred on the Floating Production Storage and Offloading (FPSO) vessel Turritella. The FPSO is located at Walker Ridge 551-A, OCS-G 21861 (Stones development). The operator of record is Shell Offshore, Inc. During the steam release incident, two personnel received moderate to severe burns, were treated onsite, and were then medevaced to the nearest land-based hospital. At the time of the incident, the Port Side Boiler No.2 piping pressure and temperature were approximately 227 pounds per square inch (psi) at 428 degrees Fahrenheit. The steam release and injuries to personnel from the valve on Boiler No.1 were directly related to Boiler No.2 at the time of the incident.

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

During normal operations, maintenance personnel were instructed to repair a steam leak on the Primary Steam Valve (Valve 1) on Auxilliary Boiler No. 1. During the operation, it was determined that Valve 1 was not leaking, and after consulting with the Assistant Maintenance Supervisor, a decision was made to repair a leak on the Warming Through Valve (Valve 4). This was done without consulting the Engine Room Supervisor about the change in job task. After repairs to Valve 4 were nearly complete, a maintenance worker asked the Assistant Maintenance Supervisor if they could also change the packing on the Secondary Steam Valve (Valve 2). The Assistant Supervisor told him to check the storage room to see if they had the proper packing size. Once the worker retrieved the packing, he proceeded to the Engine Room Supervisor for permission to change out the valve packing. Assuming the work was being performed on Valve 1, the Engine Room Supervisor gave him approval. The two maintenance workers then proceeded to remove the old packing from Valve 2, when the steam escape incident occurred, injuring both personnel. Neither supervisor was at the worksite when the incident occurred; however the Assistant Supervisor did periodically check on the maintenance crew during repairs on Valve 4.

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

Factors that may have contributed to the incident include: (1) a lack of communication between supervisors and maintenance crew and (2) a failure to revisit Task Risk Assessments, Tool Box Talks, Cold/Hot Work Permits, and Stop Work Authority when the job task changed. Both the Cold Work Permit (CWP) and the Task Risk Assessment were generic and, according to the Shell INC G-110 response, "included risks that were not relevant to the task and that did not include the steam hazard." For example, a CWP was issued to "[r]epair leak on steam line for Main Boiler #1." The CWP did not mention potential hazards to personnel repairing a valve on out-of-service Boiler No. 1, which was interconnected with in-service and functioning Boiler No. 2. (Note: Neither of the two injured personnel were involved with the CWP prior to work on Boiler No. 1.)

20. LIST THE ADDITIONAL INFORMATION:

21. PROPERTY DAMAGED:

N/A

NATURE OF DAMAGE:

N/A

ESTIMATED AMOUNT (TOTAL):

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

The Houma District has no recommendations for Office of Incident Investigations.

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

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

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?" The operator is not performing all operations in a safe and workmanlike manner. On September 11,2016 an incident occurred while personnel were working on the auxiliary boiler No.1 (starboard). After completing work on two valves, the operators attempted to change packing in a 3rd valve without realizing the back side of the valve was holding back pressurized high temperature steam causing burn injuries to both personnel. After receiving medical aid the injured personnel were medivaced to the nearest land based hospital. Note: At the time of the incident the port side boiler No.2 and associated piping pressure and temperature was approximately 227 psi at 428°F.

25. DATE OF ONSITE INVESTIGATION:

29-SEP-2016

26. ONSITE TEAM MEMBERS:

Keith Barrios/ Terry Hollier/ Amber Wyatt /

28. ACCIDENT CLASSIFICATION:

MINOR

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

OCS REPORT:

30. DISTRICT SUPERVISOR:

Bryan A. Domangue

27. OPERATOR REPORT ON FILE: **NO**

APPROVED DATE: **21-DEC-2016**