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: **21-SEP-2020** TIME: **2100** HOURS

2. OPERATOR: **Chevron U.S.A. Inc.**
   REPRESENTATIVE:
   TELEPHONE:
   CONTRACTOR: **Transocean Offshore**
   REPRESENTATIVE:
   TELEPHONE:

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

4. LEASE: **G18745**
   AREA: **WR** LATITUDE:
   BLOCK: **634** LONGITUDE:

5. PLATFORM:
   RIG NAME: **T.O. DEEPWATER CONQUEROR**

6. ACTIVITY:
   - [X] 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		

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

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

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

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

8. OPERATION:
   - [ ] PRODUCTION
   - [X] 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: **6804** FT.
11. DISTANCE FROM SHORE: **197** MI.
12. WIND DIRECTION:
    SPEED: M.P.H.
13. CURRENT DIRECTION:
    SPEED: M.P.H.
14. SEA STATE: **2** FT.
15. PICTURES TAKEN:
16. STATEMENT TAKEN:

On September 21, 2020, an incident occurred on the Transocean Deepwater Conqueror, operating for Chevron, located in Walker Ridge Block 634. The Driller was attempting to take the drill string weight with the Crown Motion Compensator (CMC), when the command was given to open the CMC valve while the CMC cylinders were at mid stroke. The CMC rapidly dropped 13 feet, and sheared one of the equalizing bumper assembly bracket and the sheared equalizer bumper assembly bracket fell to the rig floor. Operations were shut down immediately and proper personnel were notified. No injuries were reported and an onsite investigation was initiated.

On the evening of September 21, 2020, the “D” drill crew prepared to slip and cut drill line on the drawworks with the drill pipe set in the slips of the rotary table. From approximately 1800 hours to 2000 hours, a safety meeting was held prior to the slip and cut operation and a Job Safety Analysis (JSA) was reviewed and signed by all participating rig crew members involved. The Driller commenced the operation by stroking the CMC cylinders all the way out, in order to cut 155 feet of 2 1/8 inch drill line that needed to be replaced on the drum of the drawworks. The slip and cut operation was completed and the drawworks was calibrated with a brake test performed as per procedure. Once completed, the Driller then stroked the CMC cylinders approximately halfway in and connected the top drive to the drill string in the drill pipe slips. As the drill string was raised, the Driller initiated the CMC valve to the open position which resulted in the CMC falling rapidly 13 feet, coming to rest on the beams. All of the bolts on one of two bumper assemblies located on the CMC in the derrick sheared as a result. The bumper, weighing approximately 48 pounds, fell 203 feet striking the drill floor and coming to rest next to the drop shelter.

On September 23, 2020, the Bureau of Safety and Environmental Enforcement (BSEE) investigation team was able to conduct a limited on-site investigation for this incident, due to the entire drill floor being designated as a “No Entry Zone” while the derrick was being inspected. All areas on and around the CMC and derrick structure were being inspected for broken or loose items. The team was able to collect documents, pictures and requested video footage of the incident. The team discovered that the drill crew made the 12 1/4” drilling assembly and proceeded to run it in the wellbore to approximately 27,088 feet. The top drive was connected to the drill string and drilling fluid was circulated as the drill crew prepared to slip and cut drill line. There was a pre job safety meeting held with the “D” drill crew prior to the slipping and cutting 155 foot of 2 1/8” drill line. With the drill string set in the slips in the rotary table, the Driller positioned the block and top drive in the derrick to be connected to the hang-off line. Next, according to the procedure, the Driller extended the CMC cylinders all the way out to insure the necessary wraps on the drum of the drawworks. The slip and cut mode was selected to the on position on the drillers panel and the procedure went forward as planned. Once completed, the Driller deselected the slip and cut mode and proceeded to raise the block and top drive and remove the hang-off line. The drill crew made the Rotating Control Device (RCD) to the drill string and the Texas Iron Works (TIW) valve was removed. The top drive was screwed in, drilling fluid was circulated, and the well was static while monitored on the trip tank. At approximately 2045 hours, the Driller attempted to pull the drill string weight out of the slips with the CMC. The CMC cylinders were only mid-stroke and never fully retracted back down to the beams after the slip and cut procedure was completed. The driller initiated the command on the drillers console to open the CMC valve and the CMC free fell approximately 13 feet before coming to rest on the beams. This resulted in shearing all 7 bolts on the 48-pound starboard equalizing bumper assembly bracket allowing it to fall 203 feet to the drill floor. The port equalizing bumper assembly had 6 out of 7 bolts sheared with 1 bolt securing it from dropping. According to the slip and cut procedure, the Driller is responsible for lowering the CMC cylinders back to the beams before proceeding forward to the next step. The pressure differential between the air and the hydraulic system was created when the Driller brought the CMC to mid stroke and then hydraulically locked the CMC.

Because the system was locked, the additional hook load caused an increase in pressure differential across the circuit. The CMC has a built-in safety system to automatically equalize pressures if there was an imbalance of more than 30 psi exists, when the CMC is commanded to open. The automatic by-pass would open to equalize the pressure so the main air valve could be opened. When the CMC valve attempted to open, the excessive pressure caused the cylinders to retract quickly. National Oilwell Varco (NOV) confirmed there was a software logic error which prevented the pressure from equalizing prior to opening the CMC / Olmsted valve. The CMC auto equalizing feature did not work as designed, allowing the Olmsted Valve to only open 44 percent for approximately 2 seconds then quickly closing again prior to the system equalizing.

Since the incident, Transocean has reviewed and updated the procedure related to the CMC activities making sure that the CMC setup and sequences are correct and documented. Transocean has also implemented rig specific CMC on the job training with additional training for the Toolpushers, Drillers, Assistant Drillers and Derrickmen. In addition, NOV has updated and installed the new software logic in relation to the safety interlocks of the Olmsted valve opening when it is activated. The software upgrade will prevent the CMC valve from unintentionally opening, if there is a differential pressure over the CMC valve in any direction. A successful function test was performed to verify and test the CMC valve after the software upgrade.

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

1) Not following procedure: The Driller did not follow Transocean's Slip & Cut procedure by retracting the CMC cylinders all the way down to the beams before proceding forward to the next step.

2. A software logic error allowed for the system to open the olmsted valve before the system have equalized pressure on both sides of the valve.

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

The CMC cylinders were not retracted down to the beams after the slip & cut procedure was completed.

20. LIST THE ADDITIONAL INFORMATION:

n/a

21. PROPERTY DAMAGED: **N/A**

NATURE OF DAMAGE: **N/A**

ESTIMATED AMOUNT (TOTAL):

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

BSEE Houma District has no recommendations for the Office of Incident Investigation at this time.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: **NO**

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

n/a

25. DATE OF ONSITE INVESTIGATION: **23-SEP-2020**

28. ACCIDENT CLASSIFICATION:

26. INVESTIGATION TEAM MEMBERS:

Tony Bass / Paul Reeves /

27. OPERATOR REPORT ON FILE:

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

Amy Pellegrin

OCS REPORT:

APPROVED DATE: **26-FEB-2021**