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: **29-NOV-2017** TIME: **2015** HOURS

2. OPERATOR: **W & T Offshore, Inc.**
REPRESENTATIVE:
TELEPHONE:

CONTRACTOR: **Enterprise Offshore Drilling**
REPRESENTATIVE:
TELEPHONE:

- [ ] STRUCTURAL DAMAGE
- [X] CRANE
- [ ] OTHER LIFTING
- [ ] DAMAGED/DISABLED SAFETY SYS.
- [X] INCIDENT >$25K **200,000**
- [ ] H2S/15MIN./20PPM
- [ ] REQUIRED MUSTER
- [ ] SHUTDOWN FROM GAS RELEASE
- [ ] OTHER

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

4. LEASE: **G34340**
AREA: **ST** LATITUDE:
BLOCK: **224** LONGITUDE:

5. PLATFORM:
RIG NAME: **ENTERPRISE 264**

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

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

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

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

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

10. WATER DEPTH: **175** FT.

11. DISTANCE FROM SHORE: **50** MI.

12. WIND DIRECTION: **N**
SPEED: **10** M.P.H.

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

14. SEA STATE: **3** FT.

15. PICTURES TAKEN:

16. STATEMENT TAKEN:

On November 29, 2017, the Enterprise 264 jack-up drilling rig was contracted to W & T Offshore to drill a new well in South Timbalier Block 224. While offloading equipment from a supply vessel, the boom on the port side crane fell uncontrollably and came to rest against the side of the rig. The hull of the rig was punctured by the crane boom, which allowed approximately 38 barrels of diesel to leak into the Gulf of Mexico. There were no injuries to personnel as a result of this incident.

At approximately 1950 hours, the Crane Operator (CO) completed the pre-use inspection of the port side crane and proceeded to transfer two Enterprise personnel to the supply vessel to assist with the loading and unloading of equipment. Two other Enterprise personnel were then transferred to the rig as part of crew change. At approximately 2015 hours, the CO had made two lifts and was booming down for the third lift when he heard a loud "pop," and the 110-foot crane boom fell uncontrollably and came to rest against the side of the rig. The headache ball landed on the back deck of the supply vessel and was still attached to the crane by the cables. The crew on the supply vessel removed the headache ball by sliding the ball into the water, and the vessel moved safely away from the rig. All personnel were accounted for and once it was verified that there were no injuries, personnel surveyed the rig for damage. During this survey it was observed that there was diesel leaking below the rig, and the crew immediately transferred diesel from the port side diesel tank to the starboard side diesel tank and the supply vessel. The release was stopped by 0600 hours when the diesel transfer was complete, but approximately 38 barrels of diesel were released into the Gulf of Mexico.

The Bureau of Safety and Environmental Enforcement (BSEE) investigation team conducted an initial onsite investigation on November 30, 2017. The team collected evidence and took pictures of the Nautilus 340 L-110 port side crane and the area where the incident occurred. The investigation team examined the water in the areas around the rig and did not observe a sheen or pollution from this event. The diesel had dissipated by the time the investigation team arrived, but the sheen was initially reported to BSEE as being 5.1 miles long and up to 50 yards wide. The puncture from the crane boom to the rig's hull was on the bottom of the rig and was not visible at the time of the investigation.

The investigation determined that the two snap rings which keep the ratchet pawl cylinder pin in place were missing, allowing the pin to vibrate its way out of the linkage assembly. This pin connects the boom pawl cylinder and the boom pawl. When the pin vibrated out, the pawl engaged against the boom winch dogs. The sudden stopping force caused by the boom pawl engagement applied extreme force back to the drive motor, which sheared the bolts of the drive/motor brake bale housing and separated the drive/motor from the winch allowing the crane boom to fall. When the boom fell, part of the crane whipped under the rig and punctured the hull.

The last annual inspection on the crane was in April 2017, and the crane inspector noted that all winches were in good condition but were due to be changed. The boom winch was changed on May 19, 2017, by Enterprise personnel. During this installation, the ratchet pawl pin should have been installed, but there is not documentation stating specifically that the snap rings were actually installed. It is possible that the rings were installed, but corrosion or the actual design of the pin allowed the rings to be knocked off as the pin moved back and forth. The snap rings were not found during the investigation. The weekly inspection, which is actually a 10 hour inspection, does include a requirement to, "visually inspect pins, keepers, and bolts." W&T and Enterprise stated that this refers to pawl cylinder pin and snap rings, so the assembly was being inspected weekly/every 10 hours of use. The "Preventive Maintenance Daily Inspection" is the daily inspection that is conducted by each CO at the beginning of the shift. This inspection instructed the CO to check the

"Boom Hoist Lock Pawl Engagement/Disengagement with Ratchet Wheel Teeth," but this only ensures that the pawl is engaging and disengaging when ordered to do so. It does not instruct the CO to check the ratchet pawl cylinder pin.

Since the incident, Enterprise Offshore has installed an upgraded pin and retainer ring design so that it includes a raised shoulder on one side and a washer with duel cotter pins on the other side. The inspection program has also been improved by specifically requiring the ratchet pawl pin and its related assembly to be inspected daily, weekly and monthly. This inspection will also be added to the rig's preventative maintenance program, and Enterprise Offshore will distribute a Safety Alert for this incident to their entire fleet of rigs. The hull of the rig was repaired and put back into service on December 10, 2017.

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

- The snap rings which keep the ratchet pawl cylinder pin in place were missing, which allowed the pin to vibrate its way out of the linkage assembly.

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

- The "Preventive Maintenance Daily Inspections" did not require the CO to inspect the ratchet pawl cylinder pin.

20. LIST THE ADDITIONAL INFORMATION:

- This crane is under United States Coast Guard (USCG) jurisidiction, and they conducted their own investigation into this incident. The USCG issued a deficiency report to the Enterprise 264 as a result of their investigation.

- During the USCG investigation, it was found that the starboard side crane was also missing snap rings from one side of its ratchet pawl cylinder pin. This was corrected and approved by the USCG.

21. PROPERTY DAMAGED:	NATURE OF DAMAGE:
Port crane boom	**Damaged crane boom.**
Port side diesel tank	**Hole in Port side diesel tank**

ESTIMATED AMOUNT (TOTAL): **$200,000**

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

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

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

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

An E-100 was issued as follows: "On November 29, 2017, the Enterprise Rig 264's port crane failed causing a puncture in the rig's hull. This resulted in a discharge of 38 barrels of diesel fuel into the Gulf of Mexico."

25. DATE OF ONSITE INVESTIGATION:

30-NOV-2017

28. ACCIDENT CLASSIFICATION:

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

OCS REPORT:

26. INVESTIGATION TEAM MEMBERS:

Josh Naquin / Troy Boudreaux / Robert P Reeves /

30. DISTRICT SUPERVISOR:

Bryan Domangue

27. OPERATOR REPORT ON FILE:

APPROVED DATE: **01-MAR-2018**