

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: 05-JAN-2017 TIME: 0200 HOURS

2. OPERATOR: Renaissance Offshore, LLC  
REPRESENTATIVE:  
TELEPHONE:  
CONTRACTOR: Wood Group Production Services  
REPRESENTATIVE:  
TELEPHONE:

- STRUCTURAL DAMAGE
- CRANE
- OTHER LIFTING DEVICE
- DAMAGED/DISABLED SAFETY SYS.
- INCIDENT >\$25K 2.7 million
- H2S/15MIN./20PPM
- REQUIRED MUSTER
- SHUTDOWN FROM GAS RELEASE
- OTHER

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

6. OPERATION:

4. LEASE: G01034  
AREA: SS LATITUDE:  
BLOCK: 266 LONGITUDE:

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

5. PLATFORM: A  
RIG NAME:

6. ACTIVITY:  EXPLORATION(POE)  
 DEVELOPMENT/PRODUCTION  
(DOCD/POD)

8. CAUSE:

7. TYPE:  
 HISTORIC INJURY  
 REQUIRED EVACUATION 4  
 LTA (1-3 days)  
 LTA (>3 days)  
 RW/JT (1-3 days)  
 RW/JT (>3 days)  
 Other Injury

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

FATALITY  
 POLLUTION  
 FIRE  
 EXPLOSION

9. WATER DEPTH: 180 FT.

LWC  HISTORIC BLOWOUT  
 UNDERGROUND  
 SURFACE  
 DEVERTER  
 SURFACE EQUIPMENT FAILURE OR PROCEDURES

10. DISTANCE FROM SHORE: 48 MI.

11. WIND DIRECTION: S  
SPEED: 10 M.P.H.

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

COLLISION  HISTORIC  >\$25K  <=\$25K 13. SEA STATE: 2 FT.

On January 5, 2017, at approximately 2:00 a.m., a fire resulting in evacuation occurred on the Ship Shoal (SS) 266-A platform (OCS-G 1034). The A-Operator working the night shift was making rounds on the main deck near Pipeline Pump #1 (PAX-4100) located in the generator area, when he noticed a mist/spray of oil coming from the interface sight glass area of the Heater Treater (NBK-1700). Oil from the interface sight glass saturated the protective insulation used to cover the exterior of the Heater Treater before discharging out towards the exhaust system of Pipeline Pump #1 and igniting. Due to normal operations, Pipeline Pump #1 had been operating at the time of the incident, and the exhaust manifold was hot when the ignition occurred.

Renaissance Offshore is the Owner and has been the Designated Operator of Record since January 1, 2012. Ship Shoal 266-A is located 55 miles from shore and 87 miles from Houma, Louisiana, in 180 feet of water. The facility was installed in 1968 and is equipped with a 10-man living quarters. The platform has 17 well slots, with 10 wells being active. Total production at the time of the incident is estimated at 500-600 barrels of oil per day, less than 1 million cubic feet of gas per day, and approximately 1200 barrels of water per day.

During normal operations, the Heater Treater uses a fired component to treat oil before it is sent to the LACT Surge Tank (MBJ-3400) and then pumped to sales. The oil level in the Heater Treater is fixed and cannot be changed. The oil level builds up to the height of the outlet, then spills over into a trough and out the oil outlet line. The water level can be varied by raising or lowering the height of the slot in the siphon box. The oil/water level is checked for accuracy daily. The Heater Treater is a vertical vessel measuring 10' O.D. X 40' S/S (Solid Stainless Steel), with a design pressure of 50 psig at 250 degrees Fahrenheit and an approximate liquid capacity of 360 barrels.

On January 4, 2017, prior to the fire occurring, the crew had experienced a high Basic Sediment and Water (BS&W) alarm on the LACT unit at approximately 10:00 p.m. Shortly afterwards, at 10:36 p.m., a Level Safety Low (LSL) alarm sounded due to a clogged bridle on the oil side in the Free Water Knockout (MAM-3900), causing a facility shut-in. Operators from both the day and night crews were involved in the process, as well as the Lead Operator, who was attempting to bring the BS&W down to an acceptable operating level. In an attempt to correct the BS&W levels, Operators injected acid (TA-21) into the system through the oil inlet of the Heater Treater using an M-4 diaphragm pump. According to the Night Operator, at approximately 12:00 a.m. on January 5, 2017, the Day Operator confirmed that the system had settled; and the BS&W levels had returned to normal, minus good water in the Heater Treater. The Night Operator was therefore advised to spill over to the Water Skimmer (MBM-1900) for additional water.

At about 2:00 a.m., the Night Operator noticed a mist/spray coming from the interface sight glass area at the Heater Treater while conducting water skimming operations. Once the interface sight glass was identified as compromised, it was at that time that it had begun to discharge vessel product (oil) with a force of approximately 30-40 psi of operating pressure. The discharged oil saturated the insulation covering the exterior of the Heater Treater. The Heater Treater and Pipeline Pump #1 exhaust system are located only 14 feet apart. The oil from the interface sight glass made contact with the exhaust system and subsequently caused a fire to ignite. The Night Operator was not sure if the mist/spray was coming from the interface sight glass or if a valve or seal had failed. Prior to the incident occurring, the Night Operator stated that he had worked on the level of the interface sight glass at least twice that night--at some point between 6:00 p.m. and 7:00 p.m. and again at 10:00 p.m. This was accomplished by opening the valve to drain the fluid in the interface sight glass in order to get an accurate interface level. No tools were required for this

procedure.

The Night Operator attempted to put out the fire on the Pipeline Pump #1 exhaust; however, the fire was out of control, and he was unable to do so. He therefore activated the Emergency Shut Down (ESD) system near the living quarters and woke the rest of the crew. According to the Day Operator, firefighting efforts were compared to "putting water on a hot grease fire." The fire kept reigniting on the side of the Heater Treater even after shutting in the platform. The Lead Operator contacted personnel on the nearby SS 266-B platform for help and informed them of the situation. The Lead Operator on the "B" platform dispatched the field boat to the location in order to assist personnel.

All four crew members attempted to fight the fire utilizing two "Purple K" wheeled units, one portable "Purple K" unit, and four fixed water system reels, all unsuccessfully. At approximately 2:10 a.m., after all attempts to extinguish the fire were unsuccessful, the Lead Operator, acting as the platform's Person In Charge (PIC), utilized Ultimate Work Authority (UWA) and instructed all personnel to evacuate the structure. While en route to the boat landing, the personnel onboard the platform launched one 16-man life raft and two 12-man life floats located on the North and West sides of the structure. After mustering at the boat landing, two crew members entered the Gulf of Mexico waters to retrieve one of the life floats. Upon arrival at the location at approximately 2:30 a.m., Offshore Supply Vessel (OSV) Mary Wyatt Milano retrieved two of the crew members from the water, as well as the remaining two crew members from the boat landing.

OSV Mary Wyatt Milano continued to fight the fire while several other offshore vessels in the nearby area responded to the call for help and assisted in fighting the fire onboard the platform. In an attempt to fight the fire with water cannons, it is possible that the force of the discharged water broke the remaining two Heater Treater sight glasses, allowing more oil to contribute to the fire. The Offshore Supply Vessels remained on the scene until 5:50 a.m. on January 5, 2017, when the fire was extinguished. At approximately 7:00 a.m., the four rescued crew members were transported to Terrebonne General Hospital in Houma, Louisiana, for physical examinations and were then interviewed by BSEE and Coast Guard investigators.

After the platform was deemed safe, personnel from BSEE, USCG, and Renaissance Offshore boarded the facility in order to start the investigation. While conducting a walkthrough of the facility, BSEE observed that oil was discharging from the bottom of the interface sight glass on the Heater Treater. Operators closed the isolation valve located at the bottom of the interface sight glass. The investigation revealed that the gauge cock valves located on the top and bottom of the Heater Treater's interface sight glass were not fully functional because there were no ball checks in either valve. If the ball checks were in place, they could have prevented the flow and/or mitigated the flow of oil due to interface sight glass breakage. Due to the ball checks not being in place, a constant discharge of oil continued until the level of oil in the Heater Treater dropped below the level of the bottom gauge cock valve.

After further investigation, it was determined that the low pH (potential of hydrogen) of the chemical used in the treatment process of the vessel had no effect on the stability of the sight glass. Other possibilities leading up to the failure of the sight glass could be exposure to sunlight over the years or excessive vibration on the platform while the pipeline pumps were operating. Extreme weather conditions (high winds) could also be considered a factor in determining sight glass failure.

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

A failed vessel apparatus (sight glass) external to the Heater Treater (NBK-1700) discharged product, saturating the Pipeline Pump #1 (PAX-4100) exhaust system and causing an ignition.

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

The investigation revealed that the gauge cock valves located on the top and bottom of the Heater Treater's interface sight glass were not fully functional because there were no ball checks in either valve. If the ball checks were in place, they could have prevented the flow and/or mitigated the flow of oil due to interface sight glass breakage. Due to the ball checks not being in place, a constant discharge of oil continued until the level of oil in the Heater Treater dropped below the level of the bottom gauge cock valve. As product (oil) discharged from the interface sight glass it saturated the protective insulation, external to the Heater Treater, and subsequently blew over to Pipeline Pump #1 exhaust system before igniting. The close proximity of the Heater Treater to the Pipeline Pump allowed the fire to ignite.

20. LIST THE ADDITIONAL INFORMATION:

It is estimated that the total amount of runoff was less than five barrels of oil during the time of the incident.

21. PROPERTY DAMAGED:	NATURE OF DAMAGE:
Heater Treater(NBK-1700)	Fire/water
CLX junction boxes	
Lighting and fixtures	
Control process wiring	

ESTIMATED AMOUNT (TOTAL):            \$2,700,000

22. RECOMMENDATIONS TO PREVENT RECURRANCE NARRATIVE:

The Office of Incident Investigations makes the following recommendations:

1. BSEE should issue a Safety Alert to industry identifying possible issues pertaining to Sight Glass Assemblies, Gauge Cock Valves, and Ball Check Assemblies.
2. Operators should refer to API RP 14J for Design and Hazards Analysis for Offshore Production Facilities.

23. POSSIBLE OCS VIOLATIONS RELATED TO ACCIDENT: NO

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

25. DATE OF ONSITE INVESTIGATION:

05-JAN-2017

26. ONSITE TEAM MEMBERS:

29. ACCIDENT INVESTIGATION  
PANEL FORMED:

Amber Wyatt (Field Engineer) /  
Cemal Ozoral (Engineer) / Roderick  
Belson (Lead) / Keith Barrios  
(Accident Investigator) / Terry  
Hollier (Accident Investigator) /

OCS REPORT: NO

**For Public Release**

30. DISTRICT SUPERVISOR:  
Bryan Domangue

APPROVED  
DATE: 07-JUN-2017

# FIRE/EXPLOSION ATTACHMENT

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1. SOURCE OF IGNITION: Pipeline Pump #1 (PAX-4100) Exhaust System

2. TYPE OF FUEL:
- GAS
  - OIL
  - DIESEL
  - CONDENSATE
  - HYDRAULIC
  - OTHER

3. FUEL SOURCE: Heater Treater (NBK-1700) Interface Sight Glass Gauge

4. WERE PRECAUTIONS OR ACTIONS TAKEN TO ISOLATE  
KNOWN SOURCES OF IGNITION PRIOR TO THE ACCIDENT ? NO

5. TYPE OF FIREFIGHTING EQUIPMENT UTILIZED:
- HANDHELD
  - WHEELED UNIT
  - FIXED CHEMICAL
  - FIXED WATER
  - NONE
  - OTHER