

UNITED STATES DEPARTMENT OF THE INTERIOR  
 MINERALS MANAGEMENT SERVICE  
 GULF OF MEXICO REGION  
**ACCIDENT INVESTIGATION REPORT**

1. OCCURRED

DATE: **22-MAY-2008** TIME: **1535** HOURS

2. OPERATOR:

**Shell Offshore Inc.**

REPRESENTATIVE: **DiCarlo, Theresa**

TELEPHONE: **(504) 728-6237**

CONTRACTOR:

REPRESENTATIVE:

TELEPHONE:

- STRUCTURAL DAMAGE
- CRANE
- OTHER LIFTING DEVICE
- 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:

6. OPERATION:

4. LEASE:

**G11455**

AREA: **GB** LATITUDE:

BLOCK: **128** LONGITUDE:

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

5. PLATFORM:

**A-Enchilada**

RIG NAME:

6. ACTIVITY:

- EXPLORATION(POE)
- DEVELOPMENT/PRODUCTION  
(DOCD/POD)

8. CAUSE:

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

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
- POLLUTION
- FIRE
- EXPLOSION

- 9. WATER DEPTH: **705** FT.
- 10. DISTANCE FROM SHORE: **119** MI.
- 11. WIND DIRECTION:  
SPEED: M.P.H.
- 12. CURRENT DIRECTION:  
SPEED: M.P.H.
- 13. SEA STATE: FT.

- LWC  HISTORIC BLOWOUT
- UNDERGROUND
- SURFACE
- DEVERTER
- SURFACE EQUIPMENT FAILURE OR PROCEDURES
- COLLISION  HISTORIC  >\$25K  <=\$25K

17. DESCRIBE IN SEQUENCE HOW ACCIDENT HAPPENED:

Field Gas Compressor (FGC) #2 suffered a fracture and ejection of the 3rd stage cylinder head. The ejected head struck an adjacent gas turbine air inlet housing 35 feet away, with no injuries to personnel sustained. The Pressure Safety Low (PSL) on the preceding compressor stage activated and shut down the compressor. The Abandon/Muster alarm sounded at 15:36 hours. Operations personnel shut down the entire facility at 15:38 hours by activating the manual Emergency Shut Down (ESD). The muster was complete at 15:40 hours and a fire team investigated the situation at 15:45 hours. The compressor was secured and locked out of service by 17:50 hours.

Dresser-Rand, the compressor manufacturer, issued a Product Safety Warning concerning this situation on 1 July 2008, and has agreed to replace all compressor cylinder heads of this type with a new and improved design.

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

A corrosion pit on the bottom of the acorn nut (part of the 3rd stage compressor cylinder head) provided an initiation point for pitting and a fatigue crack. This crack, over a period of approximately 85 minutes, spread far enough to cause the failure and ejection of the acorn nut. This pitting and eventual crack was believed, due to the presence of chlorides found in the pitting/crack, to be caused by salt water entrained in the ambient air or in the process gas stream.

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

Corrosion inside the cylinder head was noted during an overhaul in February 2008. The interior of the acorn nut was machined away to remove the corrosion, and a layer of chrome was applied to the machined surface. The post-incident examination revealed that all the corrosion was not removed from the acorn nut bore. Had this repair procedure been properly executed, the incident may have been averted.

20. LIST THE ADDITIONAL INFORMATION:

21. PROPERTY DAMAGED:

NATURE OF DAMAGE:

- 1) FGC 2 third stage compressor cylinder
- 2) Gas turbine air inlet housing

- 1) Fractured acorn nut assembly
- 2) Dented gas turbine air inlet housing

ESTIMATED AMOUNT (TOTAL):                   **\$100,000**

22. RECOMMENDATIONS TO PREVENT RECURRENCE NARRATIVE:

**All operators that possess Dresser-Rand D-VIP Compressors with Acorn Nut Part Number TEVM0001 should install a cylinder head of the revised design immediately, or remove the compressor from service until such a cylinder head replacement can be made.**

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

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

25. DATE OF ONSITE INVESTIGATION:

26. ONSITE TEAM MEMBERS:

/

29. ACCIDENT INVESTIGATION

PANEL FORMED:       **NO**

OCS REPORT:

30. DISTRICT SUPERVISOR:

**Elliott S. Smith**

APPROVED

DATE:   **01-OCT-2008**