

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

1. OCCURRED
DATE: **02-MAR-2007** TIME: **0615** HOURS

2. OPERATOR: **Shell Offshore Inc.**
REPRESENTATIVE: **Theresa Dicarlo**
TELEPHONE: **(504) 728-6237**
CONTRACTOR:
REPRESENTATIVE:
TELEPHONE:

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

4. LEASE: **G08241**
AREA: **GB** LATITUDE:
BLOCK: **426** LONGITUDE:

5. PLATFORM: **A-Auger TLP**
RIG NAME:

6. ACTIVITY: 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
- 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 **500,000.00**
- H2S/15MIN./20PPM
- REQUIRED MUSTER
- SHUTDOWN FROM GAS RELEASE
- OTHER **Arc flash**

6. OPERATION:

- 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: **2861** FT.

10. DISTANCE FROM SHORE: **137** MI.

11. WIND DIRECTION: **NNE**
SPEED: **22** M.P.H.

12. CURRENT DIRECTION: **E**
SPEED: **17** M.P.H.

13. SEA STATE: **5** FT.

17. DESCRIBE IN SEQUENCE HOW ACCIDENT HAPPENED:

On March 2, 2007, at approximately 0500 hours, the control room of the Garden Banks Block 426 Tension Leg Platform (TLP) A-Augur received an alarm indicating that the Serrano Robicon electrical heat had shut down. Three to four seconds later the power input breaker for the Serrano EH transformer tripped open. A Computer Assisted Operations Operator (CAOO) acknowledged the alarm in the CAOO's office, then went to the Robicon building and unsuccessfully attempted several times to reset the Robicon unit. The CAOO viewed a "nuisance alarm" message on the Robicon equipment, but did not scroll through other screens to determine if there were other alarms triggered. The CAOO then cycled the control power (a normal procedure) to reset the Robicon unit. This procedure will reset the Robicon unit even with alarm conditions remaining. The CAOO went to CAOO's office and acknowledged alarms caused by the cycling of control power. The CAOO then went to the main switchgear room and closed the power input breaker for the Serrano EH transformer, which is contrary to the Lessee's Electrical Safe Work Practice policy. Closing the power input breaker prohibits resetting a circuit breaker while an alarm condition exists. When the CAOO returned to the CAOO's office, alarm indications were observed. At 0606 hours, approximately 70 seconds subsequent to the power input breaker being closed, an arc flash occurred in the Serrano/Oregano power conversion building. Fast Responders immediately responded to extinguish the resulting fire.

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

Equipment Design Issues:

- * The associated control system did not include the necessary breaker trips, thus a system short circuit was detected by two separate fault detection functions (Input Transformer 1 Cycle Fault and Excess Power Supply Losses Fault). Neither of these tripped the main power, as the control system had not been configured to utilize this protective function.
- * The safety system was configured to interrupt the main power only after the transformer had overheated as a result of the fault. With proper fault detection features, the short circuit within Cell A6 would only have persisted for two seconds, instead of the estimated seventy seconds, and the damage would likely not have been as extensive.
- * If the vendors had communicated to determine the proper or optimum fuse sizes for the control system, the fuses would have been sized to melt/blow at the short-circuit current, and the fault between the primary and secondary winding of the transformer may not have developed.
- * The control system lacked proper lockouts that would prevent reclosure of the circuit breaker while an alarm condition continued to exist.

Operational Issues:

- * The CAOO Operator did not follow the Lessee's Electrical Safe Work Practice policy by resetting the circuit breaker while an alarm condition existed.
- * The CAOO Operator did not take the time to display and comprehend all fault messages displayed by the Robicon safety system before attempting to reset the system.

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

- * Failure of the safety system to interrupt the main power as a result of the safety system not configured to interrupt the main power on that condition.
- * The safety system was configured to interrupt the main power only after the transformer had overheated as a result of the fault.
- * The associated control equipment did not include the necessary breaker trips for Excess Power Supply Losses Fault, Input Transformer 1 Cycle Fault, Capacitor Share Fault, IGBT Out of Saturation Fault, Cell Link Fault, Cell Count Mismatch, and DC Bus Over Voltage.
- * Interfacing of different manufacturer components was delegated to those respective manufacturers, rather than the Lessee reviewing the design of the safety system.
- * The Lessee purchase specifications did not specify what protective circuitry was to be included in the equipment. Rubicon, the manufacturer of the Variable Frequency Drive equipment, had not been previously asked to provide a complete list of Critical Faults and Alarms, nor provide recommendations of what should be included in the breaker trip circuitry.

20. LIST THE ADDITIONAL INFORMATION:

21. PROPERTY DAMAGED:

**Entire Serrano/Oregano Power Conversion
Building**

NATURE OF DAMAGE:

**Bent building exterior doors
Burned and charred electrical components
throughout
Destroyed breaker panels & doors**

ESTIMATED AMOUNT (TOTAL): **\$500,000**

22. RECOMMENDATIONS TO PREVENT RECURRENCE NARRATIVE:

**The MMS Lafayette District Office makes no recommendation to the MMS Regional
Office of Safety Management(OSM).**

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

24. SPECIFY VIOLATIONS DIRECTLY OR INDIRECTLY CONTRIBUTING. NARRATIVE:

**G-110: The CAO employee exposed personnel and other equipment to an immediate
danger by resetting the tripped circuit breaker in a manner contrary to the
Lessee's Electrical Safe Work Practice policy.**

25. DATE OF ONSITE INVESTIGATION:

02-MAR-2007

26. ONSITE TEAM MEMBERS:

**Robert Ranney / David Suire /
Johnny Serrette /**

29. ACCIDENT INVESTIGATION

PANEL FORMED: **NO**

OCS REPORT:

30. DISTRICT SUPERVISOR:

Elliott S. Smith

APPROVED

DATE: **03-FEB-2009**

FIRE/EXPLOSION ATTACHMENT

1. SOURCE OF IGNITION: **Electrical breaker**

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

3. FUEL SOURCE: **Electrical wiring and connections**

4. WERE PRECAUTIONS OR ACTIONS TAKEN TO ISOLATE
KNOWN SOURCES OF IGNITION PRIOR TO THE ACCIDENT ? **YES**

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