

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