



**Global Nuclear Fuel**

A Joint Venture of GE, Toshiba, & Hitachi

**Global Nuclear Fuel – Americas, LLC**  
Castle Hayne Road, Wilmington, NC 28401

December 7, 2006

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, D.C. 20555-0001

**Subject:** 30-day Report of Event – Criticality Warning System (CWS) Horn Failure

**References:** 1) NRC License SNM-1097, Docket 70-1113  
2) NRC Regulation 10CFR70.50

Dear Sir or Madam:

In accordance with 10CFR70.50(c)(2), the Global Nuclear Fuel – Americas L.L.C. (GNF-A) facility in Wilmington, North Carolina hereby submits the required written report for the November 9, 2006 event involving a partial horn failure of the Criticality Warning System (CWS). The event was reported within 24 hours by telephone on November 9, 2006 by Mr. Phillip Ollis, Acting Manager, Licensing and Liabilities to the NRC Operations Center in accordance with 10CFR70.50.

The applicable information required by 10CFR70.50(c)(1) was submitted by facsimile on November 9, 2006 and is included as Attachment 1.

Additional information required by 10CFR70.50(c)(2) is provided as follows:

### **Event Details and Safety Significance**

During a routine monthly horn test on November 9, 2006, it was reported that a portion of the fuel manufacturing operations (which include FMO/FMOX and the Dry Conversion Process (DCP) building horns did not sound during a routine test. The portion of the horns that failed to actuate were associated with the DCP which is located adjacent to FMO/FMOX. The horns in the remainder of the FMO/FMOX complex remained operational. The detection and monitoring system for criticality events remained fully functional in all areas of the FMO/FMOX and DCP facilities.

The remaining FMO/FMOX horns would have provided audible indications to portions of the DCP facility in the event of a criticality but are not sufficient to provide audible coverage for the entire facility. In an actual event, personnel accountability procedures and alternate announcements would have resulted in rapid identification of the issue both to emergency response personnel and personnel in the affected area.

This condition is considered to have low safety significance.

### **Extent of Condition**

By design, either of two interlocking signal paths to the DCP horn signal activation circuit is capable of sounding the DCP building horns. Two unrelated failures were identified – the failure of a signal interface card and a wire terminal solder joint on an alternate signal path. The ability of the system to detect a criticality event was never compromised. The inside CWS detectors remained fully functional and remote monitoring of real-time dose rates at the Radiation Protection Office and the remote CWS console in the Emergency Control Center was not compromised.

If the system had been required to sound during an actual event, approximately 200 personnel in the unaffected FMO/FMOX facility would have heard the CWS horn signal activation and promptly evacuated. The four 1's would have sounded to summons the emergency organization to the ECC and would have been audible in all areas including the DCP. Per normal Emergency Plan accountability procedures, the few personnel who may have potentially remained in the affected DCP area of the plant would have been promptly notified using the separate independent building paging system.

### **Probable Cause of Event**

An investigation determined the root cause of the event to be coincident equipment failure. The failure of the interface cards on one interlocking signal path resulted in the loss of this signal's ability to complete the connection. The failure of the wire solder connection at the printed circuit board in the second signal path prevented the other signal from being received by the DCP horn system.

It was not anticipated that the two failures would occur simultaneously.

### **Corrective Actions**

The on-site emergency organization was notified using the four 1's and immediately requested that all fuels building personnel be relocated to the staging area for personnel accounting purposes. This was accomplished per normal practice using the independent

building paging system. The horn signal path was promptly restored to the amplifiers in the dry conversion areas and the system tested before re-entry into these areas was allowed. The following corrective actions have been completed or will be completed to prevent recurrence:

#### **Near-term Corrective Actions**

1. Determined root cause and contributing factors to failure of audibility test and corrected wiring and solder joint. **COMPLETE**
2. Tested system actuation for both interconnection paths and initiation by Criticality alarm systems from both FMO and DCP areas. **COMPLETE**
3. Updated documents showing wiring corrections and system modifications. **COMPLETE**
4. Performed an independent review of troubleshooting and problem resolution with report back to investigation team. **COMPLETE**
5. The system was tested for actuation of both interconnection paths and initiation by alarm systems from both FMO and DCP areas. **COMPLETE**
6. Repeated performance of criticality warning system horn audibility test on Nov. 10, 2006 to insure that monthly paperwork can be completed for all DCP horns and areas. **COMPLETE**

#### **Long-term (Preventative) Corrective Actions**

1. Evaluate installed signal interface components to fully understand design intent and potential benefits. Due: 12/31/06
2. Evaluate current market offerings and their suitability for a Criticality Warning System for Fuel Manufacturing Operation, Dry Conversion Process and outside Areas. Due: 2/28/07

If additional information is needed regarding the event, please contact me on (910) 675-5950.

Sincerely,

*Original Signature on File*

S.P. Murray,  
Manager, Licensing and Liabilities COE

#### Attachment

cc: SPM 06-019  
Dr. W. Travers, Region II Administrator, Atlanta, GA  
N. Baker, HQ Washington, DC  
J. Pelchat, Region II, Atlanta, GA

**Attachment 1 – Event Notification Description**

**AUDIBLE HORN SYSTEM MALFUNCTION**

"At 0500 on 11/09/06, during a routine monthly test of the Criticality Warning System (CWS), a segment of the System covering the Dry Conversion Process (DCP) was found to have no functioning evacuation horns. Appropriate personnel were notified, the DCP processes were shut down, DCP personnel evacuated, and the area cordoned off. The activation of the evacuation horns in the balance of the plant were fully functional.

A follow-up test was immediately scheduled for 0900. The building was evacuated and the emergency organization assembled in accordance with normal procedures. During this test, the DCP horns again failed to function.

The Emergency Director determined that the processes stay shut down and all personnel remain out of the area while investigations and testing were conducted.

The problem was located in the interface between the Data Acquisition Modules (DAM's) and the Auto-Call system that initiates the alarm signals. After a repair was completed, a re-test was completed which confirmed functionality of the DCP process area horns.

Current plans are to resume normal operations beginning with the 1500 (evening) shift.

This event is being reported within 24-hours pursuant to 10CFR70.50(b)(2) as a safety equipment failure."

Phillip Ollis  
Acting Manager, Licensing and Liabilities  
11/9/2006