Global Nuclear Fuel
A Joint Venture of GE, Toshiba, & Hitachi

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

August 29, 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 August 1, 2006 event involving a partial horn failure of the Criticality Warning System (CWS). The event was reported within 24 hours by telephone on August 1, 2006 by Mr. Rick Foleck, 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 August 1, 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 August 1, 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.

These 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

The extent of condition in this event was limited to a failed uninterruptible power supply (UPS) system providing power to the DCP horn signal activation circuit and was therefore a partial failure of the installed CWS horn signals. 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 internal switching component failure occurred inside an uninterruptible power supply (APC Smart UPS Model SU 1400 manufactured by American Power Conversion, W. Kingston, RI) that supplies power to a portion of the warning system horns inside the FMO/FMOX building. An investigation determined the primary root cause of the event to be equipment reliability. The unit is designed to supply power from battery backup to the horn system in the event of loss of normal AC power. Following a power interruption the unit failed in an intermediate state resulting in loss of both the normal AC and battery backup power. It was not anticipated that the CWS UPS switch would fail to reset upon restoration of power thus making the DCP area horns inoperable.

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. Power was promptly restored to the horns 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. After the confirmatory testing indicated that the CWS horns for the DCP area were not functioning, all processes were stopped and the affected areas were evacuated. **COMPLETE**
2. The UPS system was reset onto 120vac power and tested to insure that the AutoCall horns were operable. **COMPLETE**
3. With the AutoCall system confirmed operable, operations were resumed in the areas unaffected by the DCP AutoCall horns. **COMPLETE**
4. A new UPS system was secured and placed into operation supplying the AutoCall system. The CWS system was tested again to insure that the new UPS would properly sustain the AutoCall horns for three minutes minimum, sufficient to evacuate the facility. **COMPLETE**
5. With the DCP AutoCall and UPS system confirmed operable, the remainder of the building was re-occupied and operations restarted. **COMPLETE**

Long-term (Preventative) Corrective Actions

1. Maintenance work orders were written and scheduled into the work order system to test the UPS system by removing 120vac power and confirming switchover to battery backup on a monthly basis. **COMPLETE**
2. Maintenance work orders were written and scheduled into the work order system to replace the UPS system every two years. **COMPLETE**
3. Investigate the failure mode of commercial UPS systems and determine if there is a design available that will provide enhanced reliability. **Due: 10-1-06**
4. Evaluate and determine if an additional fault-tolerant circuit can be installed to detect UPS failure of the 120vac power supply to the AutoCall Horn signal system by independent means. Upon fault tolerant detection, response and corrective actions would be prescribed. **Due: 10-1-06**
5. Evaluate and document potential for a generic failure mode of the remaining inside CWS FMO/FMOX AutoCall horn signal activation circuits and outside CWS horn signal activation circuits. **Due: 10-1-06**

Integrated Safety Analysis (ISA)

The event was not identified and evaluated in the Integrated Safety Analysis (ISA) because the system was considered a part of the facility infrastructure as a required element under 10CFR70.24. The current configuration management practices and procedures governing ISA review for regulatory required monitoring systems and their modifications will be evaluated. **Due: 10-1-06**

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

Sincerely,

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

Attachment
cc: SPM 06-005
Dr. W. Travers, Region II Administrator, Atlanta, GA
N. Baker, HQ Washington, DC
J. Pelchat, Region II, Atlanta, GA

Attachment 1 – **Event Description**

AUDIBLE HORN SYSTEM MALFUNCTION

"During a routine monthly test of the Criticality Warning System (CWS), a segment of that system (DCP & DCP Warehouse) was found to have no audible horns functioning. Processes were shutdown, the personnel evacuated and the emergency organization assembled.

"The preliminary investigation found that an Uninterruptible Power Supply (UPS) that supplies power to the CWS horn amplifiers was not functioning.

"After a retest verified that the horns in the balance of the plant were functioning, those areas were allowed to resume operations. At the same time, the UPS for the DCP/DCP Warehouse segment of the system was replaced with a new unit and allowed to charge. Once charged, the system was tested and verified to have audible horn coverage. Operations were then allowed to restart in these areas.

"As of approximately 1210 PM the CWS horns were fully operational and the facility was returned to normal operational status.

Investigation of the incident is continuing including an attempt to determine the root cause of the UPS malfunction."

Rick Foleck
Acting Manager, Licensing and Liabilities
8/01/2006