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Charles A. Bottemiller
Manager
Plant Licensing

GNRO-2005/00026

May 3, 2005

U.S. Nuclear Regulatory Commission
Washington, DC 20555-001

Attention: Director, Spent Fuel Project Office
Office of Nuclear Material Safety and Safeguards

Subject: Report Pursuant to 10 CFR 71.95 (c)

Dear Sir or Madam:

On behalf of Entergy Operations Grand Gulf Nuclear Station, the attachment is submitted to report a condition as required by Title 10 Code of Federal Regulations, Part 71.95 (c) regarding the use of Duratek Cask 3-55. The packaging operates under the U.S. Nuclear Regulatory Commission Certificate of Compliance Number 5805.

There are no commitments contained in this submittal.

If you have any questions or need additional information, please contact Dennis Coulter at (601) 437-6595.

Sincerely,

A handwritten signature in cursive script, appearing to read "C. Bottemiller for".

CAB/DMC:dmc

attachment: Report Pursuant to 10 CFR 71.95 (c)

cc: (See Next Page)

cc: NRC Senior Resident Inspector
Grand Gulf Nuclear Station
Port Gibson, MS 39150

U. S. Nuclear Regulatory Commission
ATTN: Dr. Bruce S. Mallett (w/2)
Regional Administrator, Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-4005

U.S. Nuclear Regulatory Commission
ATTN: Mr. Bhalchandra Vaidya, NRR/DLPM (w/2)
ATTN: ADDRESSEE ONLY
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Mail Stop OWFN/7D-1
Washington, D.C. 20555-0001

U.S Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Mr. D. E. Levanway (Wise Carter)
Mr. L. J. Smith (Wise Carter)
Mr. N. S. Reynolds
Mr. J. N. Compton

Report Pursuant to 10 CFR 71.95 (c)

(1) **Brief abstract**

On 3/11/2005, GGNS shipped a Type B cask containing irradiated hardware with a destination of Barnwell, South Carolina for disposal. One out of six reinforcing blocks that are part of the shipping cask impact limiter structure was found in the Grand Gulf Nuclear Station work area after cask shipment.

The shipment was stopped and the cask was returned to GGNS. An inspection determined that a reinforcing block was missing from the cask.

(2) **Narrative description of the event**

On Wednesday, March 9, 2005 the Grand Gulf Control Rod Blade/Pool Cleanup project team prepared the third cask for shipment. After the morning briefing, work began on 208' Auxiliary Building. The cask was decontaminated in preparation for shipment. The closure lid was torqued and a lid O-ring leak test was performed.

Rotating trunions were installed and the cask was rotated to horizontal and landed on the cask cradle at 1458.

Workers then began installing the spacer blocks. One of the workers in the area was the Duratek supervisor. The other worker was a Duratek employee. Each worker was responsible for installing 3 of the 6 spacer blocks. One of the workers began having problems installing one of the lower spacer blocks. This led to a focus on that block. An ironworker who was in the CA to flag the crane operator assisted in installing the lower block.

After the workers completed installation of the spacer blocks the base plate impact limiter was installed. Cask work was secured for the day.

Thursday, March 10, 2005 started with the daily crew briefing at 0635. The cask was lowered to the trailer in the Auxiliary Building Rail Bay (ARB) at approximately 0900. The travel restraints were then bolted to the cask/trailer and seals were placed on the impact limiters. The cask transport trailer was inspected for general condition by the Entergy Project Manager.

The cask was shipped offsite on Friday, March 11 at 1100. Duratek workers were on the refuel floor cleaning up and discovered a reinforcing block in the work area. The workers recognized that this was most likely one of the required reinforcing blocks from the cask shipped that morning. They exited the area and notified the Duratek Site Project Manager. At 1300 the Duratek site PM notified the Entergy Project Manager of the issue.

At 1300, the Entergy Project Manager notified the GGNS Shift Manager and The Duty Manager.

At 1315, a conference call was conducted including the Entergy PM, Duratek Site PM, Duratek Engineering, the RP Supervisor, and the RP Radwaste Specialist, and Licensing. The decision was made to stop the shipment en-route immediately.

At 1330 the truck was given the order to stop by the Hittman Transport dispatcher. Duratek Engineering provided written permission and preliminary analysis to permit the truck to travel with the cask in a non-conforming condition.

Permission was obtained from applicable authorities and notifications were made to allow the truck to reverse its route and return to GGNS. The truck arrived at 1800 and was quarantined in the Northwest Laydown Area.

(2)(i) Status of components or systems that were inoperable at the start of the event and that contributed to the event;

All components were operable at the start of, during, and after the event.

(2)(ii) Dates and approximate times of occurrences;

The shipment being out of compliance with the C-of-C was discovered at approximately 1300 March 11, 2005.

(2)(iii) The cause of each component or system failure or personnel error, if known;

Work Practices: Error Detection. Other intended or required verification were not performed. The individual assigned to install the spacer block in this location got distracted while installing one of the other blocks. The block was difficult to install, so the worker asked for assistance from the ironworker in the area. This distraction led to the individual failing to verify the installation of the final block prior to moving on to the next step in the procedure. Independent verification of cask procedure steps was not fully implemented throughout the cask procedure.

Management Methods: Management expectations were not being properly communicated or enforced. The use of a green sticker for place-keeping in the procedure was accepted by the management team. This was the method preferred by Duratek to prevent making multiple copies of the procedure (one for each cask). The EN standard would have been to use the circle and slash method. Use of the circle and slash method has two distinct actions; the initiation of the step (circle) and the completion (slash). Place-keeping is one of the Human Performance tools to address the trap of distractions, so it is reasonable to assume that using the circle and slash method as described in Entergy Nuclear procedure HU-102 would have prevented the error.

(2)(iv) The failure mode, mechanism, and effect of each failed component, if known;

No components failed.

(2)(v) A list of systems or secondary functions that were also affected for failures of components with multiple functions;

No components failed.

(2)(vi) The method of discovery of each component or system failure or procedural error;

The cask was shipped offsite on Friday, March 11 at 1100. Duratek workers were on the refuel floor cleaning up in preparation for a new cask to be loaded. While cleaning up Duratek personnel discovered a reinforcing block in the work area. The workers recognized that this was most likely one of the required reinforcing blocks from the cask shipped that morning. They subsequently exited the area and notified the Duratek site PM. At 1300 the Duratek site PM notified the Entergy Project Manager of the potential issue.

At 1300, the Entergy Project Manager notified the GGNS Shift Manager that a radioactive shipment had been made that may not have conformed to the Certificate of Compliance for the shipping container used. The Duty Manager was contacted and advised of the same.

At 1315, a conference call was conducted including the Entergy PM, Duratek Site PM, Duratek Engineering, the RP Supervisor, and the RP Radwaste Specialist, and Licensing.

(2)(vii) For each human performance-related root cause, a discussion of the cause(s) and circumstances;

Work Practices: Error Detection. Other intended or required verification were not performed. The individual assigned to install the spacer block in this location got distracted while installing one of the other blocks. The block was difficult to install, so the worker asked for assistance from the Ironworker in the area. This distraction led to the individual failing to verify the installation of the final block prior to moving on to the next step in the procedure. Independent verification of cask procedure steps was not fully implemented throughout the cask procedure.

Management Methods: Management expectations were not being properly communicated or enforced. The use of a green sticker for place-keeping in the procedure was accepted by the management team. This was the method preferred by Duratek to prevent making multiple copies of the procedure (one for each cask). The EN standard would have been to use the circle and slash method. Use of the circle and slash method has two distinct actions; the initiation of the step (circle) and the completion (slash). Place-keeping is one of the Human Performance tools to address the trap of distractions, so it is reasonable to assume that using the circle and slash method as described in Entergy Nuclear procedure HU-102 would have prevented the error.

(2)(viii) The manufacturer and model number (or other identification) of each component that failed during the event; and

No component failed.

(2)(ix) For events occurring during use of a packaging, the quantities and chemical and physical form(s) of the package contents.

The physical form was solid. The chemical form was metal oxides. The package contained a total activity of 4.7×10^8 megabecquerels (1.27×10^7 millicuries) consisting of the following isotopes: H-3, Cr-51, Fe-55, Co-60, Ni-63, Sr-90, Nb-94, Tc-99, Cs-137, Ag-110m, Nb-95, Sr-89, Zn-65, Ni-59, Co-58, Fe-59, Mn-54, and C-14.

(3) An assessment of the safety consequences and implications of the event. This assessment must include the availability of other systems or components that could have performed the same function as the components and systems that failed during the event.

The load distributor blocks have been utilized for the evaluation of the 3-55 Cask under the 30-ft hypothetical side drop loading conditions. Two cases have been analyzed in the Safety Analysis Report (SAR) (Reference 2). In one case the drop on the short pipe buffers is evaluated for the 'cask cover not breaking open' (Page 2-49 of the SAR - included in Appendix I of this document) and in the other case the drop on the long pipe buffers is evaluated for the same conditions. Since in the case of the drop on the long pipe, substantially more metal is available for energy absorption, the case of the drop on the short pipes is more critical. If the analysis performed for the drop on the short pipes is repeated, neglecting the volume of the distributor block, the volume of the metal available for energy absorption is reduced from 409 cubic inches to 339 cubic inches. The absorbed energy is reduced from 13.1×10^6 in-lb to 10.85×10^6 in-lb – a reduction of 17%. The margin of safety against the failure in this mode is $989,000/650,000 = 1.52$, i.e. 52%. The 17% reduced absorbed energy, which will be accommodated by larger amount of crush of the cask, will still provide a large amount of margin of safety against failure. It is, therefore, concluded that the omission of one of the load distributor blocks in the cask assembly reduces the margin of safety very slightly and does not constitute a significant deviation from the SAR evaluation. Thus the safety of the cask is not compromised and the requirements of 10CFR71 are met, albeit with a smaller margin of safety.

(4) A description of any corrective actions planned as a result of the event, including the means employed to repair any defects, and actions taken to reduce the probability of similar events occurring in the future.

A Human Performance stand-down with Duratek personnel will be conducted to reinforce the Entergy standards for Self-Checking, Peer Checking and Place-keeping.

Duratek revised cask procedure TR-OP-019 to include independent verification of steps that are vital to meeting the Certificate of Compliance requirements.

Project leads, project managers, and other oversight personnel will be included in the coaching card and Leadership Effectiveness Log Book programs when they are providing oversight on a vendor related project. The review of the coaching cards and log books will identify coaching weaknesses and provide coach-the-coach opportunities.

Supplemental coaching training will be provided to individuals who do not routinely supervise personnel.

- (5) ***Reference to any previous similar events involving the same packaging that are known to the licensee or certificate holder.***

There are no previous similar events.

- (6) ***The name and telephone number of a person within the licensee's organization who is knowledgeable about the event and can provide additional information.***

Paul Stokes, Grand Gulf Nuclear Station – 601-437-6697

Greg Lane, Duratek – 757-488-8596

- (7) ***The extent of exposure of individuals to radiation or to radioactive materials without identification of individuals by name.***

No personnel received additional radiation exposure as a result of this event.