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Constellation Energy
Nine Mile Point Nuclear Station

May 4, 2007

Director
Div. of Spent Fuel Storage and Transportation (formerly Spent Fuel Project Office)
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

ATTENTION: Document Control Desk

SUBJECT: Nine Mile Point Nuclear Station
Unit No. 2; Docket No. 50-410

Voluntary Report Consistent with10 CFR 71.95

On February 26, 2007, during receipt inspection at the Barnwell Low Level Radioactive Waste Disposal Facility in Barnwell, SC, of a CNS Model 3-55 Type B shipping package containing irradiated hardware from Nine Mile Point Nuclear Station, Unit No. 2, several closure bolts that secure the cask base to the cask body were found to be not fully torqued. Nine Mile Point Nuclear Station, LLC (NMPNS) , has assessed the as-found condition of the cask and determined that the conditions for reporting specified in 10 CFR 71.95 have not been met. However, due to potential regulatory interest in the event, a report consistent with the content requirements of 10 CFR 71.95 has been developed and is attached.

Should you have any questions regarding the information in this submittal, please contact M. H. Miller, Director Licensing, at (315) 349-5219.

Very truly yours,

KJN/JJD/kms

Attachment: (1) 10 CFR 71.95 Report

NMSS01

cc: M. J. David, NRC
S. J. Collins, NRC
Resident Inspector, NRC
Duratek

ATTACHMENT (1)

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10 CFR 71.95 REPORT

Nine Mile Point Nuclear Station, LLC
May 4, 2007

While Nine Mile Point Nuclear Station LLC (NMPNS), has determined that the requirements for reporting pursuant to 10 CFR 71.95 have not been met for the event described below, the information presented has been structured to match the information requirements of 10 CFR 71.95(c). Review of the event has determined that there was not a significant reduction in the effectiveness of the NRC-approved Type B packaging, no defects with safety significance were identified, and that the conditions in the certificate of compliance were followed. However, we understand that this occurrence is of interest to the NMSS staff and is voluntarily being provided by NMPNS to inform you of the results of our investigation.

(1) Brief abstract

On February 26, 2007, during receipt inspection at the Barnwell Low Level Radioactive Waste Disposal Facility in Barnwell, SC, of a CNS Model 3-55 Type B shipping cask containing irradiated hardware from Nine Mile Point Nuclear Station, Unit No. 2, several closure bolts that secure the cask base to the cask body were found to be not fully torqued.

NMPNS has suspended further use of this cask type pending final resolution of the issue by ENERGY*SOLUTIONS*/Duratek and acceptance by NMPNS.

(2) Narrative description of the event

The Model No. CNS 3-55 package is used for transport of depleted Sb-Be neutron sources and irradiated metal components. During loading, the cask base plate is secured to the body with twelve 1½" diameter bolts. The base plate to body interface provides the containment boundary. The base plate is a flanged lid with a double O-ring seal. Prior to shipment the 12 bolts are tightened to a torque of 75 +/- 7 ft-lbs and the cask is leak tested. Subsequent to securing the base plate to the cask, an impact limiter is attached to the cask body encompassing the base plate. The impact limiter is attached using six equally spaced 1" diameter bolts. The connection of the impact limiter to the cask is similar in design to the base plate connection, i.e., the bolts for the base plate and impact limiter are on the same bolt circle and both penetrate the cask body flange. The impact limiter bolts are wrench tightened with no specific torque value specified. The base plate bolts are designed to keep a tight seal to prevent leakage of the packaging contents from the cask and to keep the base plate attached to the cask during normal and hypothetical accident conditions as required by 10 CFR Part 71.

On February 22, 2007, cask 3-55-1 was loaded with irradiated hardware at Nine Mile Point Nuclear Station, Unit 2. The plate bolts were torqued to 75 ft-lbs and the cask leak tested prior to shipment. The cask arrived at the Barnwell facility on February 23, 2007. During receipt inspection by ENERGY*SOLUTIONS* personnel on February 26, 2007, two of the twelve base plate bolts were found to be less than hand tight. Four other base plate bolts were found to be torqued to less than 75 ft-lbs. The breakaway torque on the impact limiter bolts was found to be between 100 ft-lbs and 150 ft-lbs.

Upon identification of the under-torqued bolts, ENERGY*SOLUTIONS* notified NMPNS. The six bolts were re-tensioned to 75 ft-lbs prior to movement of the cask to the burial trench area. The cask was not unloaded until further review of the condition was completed by NMPNS personnel at the Barnwell site.

Upon notification, NMPNS began an investigation of the occurrence in accordance with its corrective action program and made a voluntary event notification to the NRC in accordance with 10 CFR 50.72 (EN 43194). An investigation team was sent to Barnwell and further shipment using the Model CNS 3-55 cask suspended until completion of the investigation.

As part of the investigation, the same cask was transported empty to Nine Mile Point Nuclear Station and subsequently back to Barnwell. In preparation for transportation each time, the base plate bolts were torqued to 75 +/- 7 ft-lbs. Receipt inspections after each shipment found that several base plate bolts had become not fully torqued.

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

Six of twelve base plate bolts were found to be not fully torqued upon receipt at the disposal facility, with two of the bolts to be found hand-loose. The six impact limiter bolts were found to be torqued to between 100 and 150 ft-lbs.

(2)(ii) ***Dates and approximate times of occurrence***

The less than fully torqued bolts were identified February 26, 2007 at the Barnwell facility.

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

Prior to shipment, the 12 base plate bolts are tightened to a torque of 75 +/- 7 ft-lbs. Subsequent to securing the base plate to the cask, an impact limiter is attached to the cask body using six other bolts. Both sets of bolts attach to the same cask body flange. It is believed that the torquing of the impact limiter bolts to the 100-150 ft-lb range causes additional compression of the base plate which could lead to relief of the 75 ft-lb pretensioning of the base plate bolts.

Please contact ENERGY*SOLUTIONS*/Duratek, the cask owner/Certificate holder, directly for their analysis of the cause of the condition.

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

The effect of this condition is discussed under item (3), below.

(2)(v) ***A list of systems or secondary functions that were also affected for failure of component with multiple functions***

A secondary function of the cask plate is to prevent leakage of the cask contents. The higher torquing of the impact limiter bolts provides an additional compression to the base plate sealing surface. As discussed in item (7) below, contamination surveys at the disposal site did not identify any abnormal surface contamination. Additionally, subsequent visual inspection of the O-rings did not identify any unacceptable conditions for further use. Therefore, the leakage protection function of the base plate was not affected by the condition.

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

The under-torqued bolts were found during receipt inspection of the loaded cask at the Barnwell facility.

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

NMPNS has determined that Certificate requirements were met during loading of the cask and that the closure bolts were properly torqued to 75 +/- 7 ft/lbs as required by the vendor procedure. As such, there was no human performance related cause. This determination was reviewed by the NRC during the recent Occupational Radiation Safety inspection that was conducted in April 2007.

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

The cask is a model CNS 3-55, with a cask identification number of 3-55-1. This packaging is subject to NRC Certificate of Compliance No. 5805, issued to Duratek, Inc.

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

The cask contained radioactive irradiated metal components from Nine Mile Point, Unit 2. These components provided an internal decay heat load of 154 watts; less than the 250 watts limit.

(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***

Engineering analysis has been performed to determine the effect of having two loose base plate bolts during transportation. No credit was taken in the initial safety analysis for the preloading of the bolts to applied torques; therefore, the as-found less than fully torqued condition of the other four bolts is not considered in the engineering analysis of this condition. The initial safety analysis took credit for 11 of 12 base plate bolts. The engineering analysis performed for the condition only assumed 10 of 12 bases plate bolts, assuming the two farthest adjacent bolts from the point of impact were missing.

The analysis of a hinged-type rotational failure of the cover during a postulated 30-foot corner drop of the cask results in the minimum margin of safety for the bolts. The structural analysis did not consider the additional structural support provided by the impact limiter bolts. The analysis of this accident with 10 cover plate bolts determined that the allowable stress of 225,000 psi would not be reached. Therefore, the two loose base plate bolts found on the cask on February 26, 2007, would not have any safety consequences in an actual event.

(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***

NMPNS has suspended further use of this cask type pending final resolution of the issue by ENERGY*SOLUTIONS*/Duratek and acceptance by NMPNS.

ENERGY*SOLUTIONS*/Duratek, the cask owner/Certificate holder, may be contacted directly for a description of any general or generic corrective actions taken or planned as a result of the event.

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

There have been no previous similar events involving the Model CNS 3-55 cask when utilized by NMPNS. A review of industry operating experience reports by NMPNS did not identify any similar occurrences for this cask type.

ENERGY*SOLUTIONS*/Duratek may be contacted directly for the results of their operating experience review.

(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***

Should you have any questions regarding the information in this submittal, please contact M. H. Miller, Director Licensing, at (315) 349-5219.

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

ENERGY*SOLUTIONS*/Duratek has indicated that no personnel received radiation exposure above normal for the processing of this type of cask. A radiological survey of the cask, cask impact limiter and the shipping trailer was performed at Barnwell which confirmed that the dose rate and contamination levels were within the 49 CFR 173.441 and 49 CFR 173.443 limits.