

April 16, 2018

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50-366

NL-18-0506

ATTN: Document Control Desk
Director, Division of Spent Fuel Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington D.C., 20555-0001

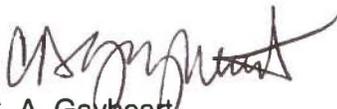
Edwin I. Hatch Nuclear Plant Units 1 & 2
Failure to Observe the Certificate of Compliance Condition of the 8-120B Cask Pre-
Shipment Leak Test

Ladies and Gentlemen:

Southern Company hereby submits the attached report providing the information required by 10 CFR 71.95(a)(3) for instances in which the conditions of approval in the Certificate of Compliance for the 8-120B Cask (Certificate of Compliance #9168) may not have been observed in making certain shipments. The circumstances described in this report are applicable to 3 shipments made by Edwin I. Hatch Nuclear Power Plant in 2011, 2012 and 2016.

This letter contains no NRC commitments. If you have any questions, please contact Robert Anderson at (912) 537-5919.

Respectfully submitted,


C. A. Gayheart
Regulatory Affairs Director

CAG/jcb/cg

Enclosure: 10 CFR 71.95 Notification

cc: Regional Administrator, Region II
NRR Project Manager – Hatch
Senior Resident Inspector – Hatch
EnergySolutions
RTYPE: CHA02.004

Edwin I. Hatch Nuclear Plant Units 1 and 2

**Failure to Observe the Certificate of Compliance Condition of the 8-120B
Cask Pre-Shipment Leak Test**

10 CFR 71.95 Notification associated with the failure to observe Certificate of Compliance condition of the 8-120B pre-shipment leak test.

(1) A brief abstract describing the major occurrences during the event, including all component or system failures that contributed to the event and significant corrective action taken or planned to prevent recurrence:

During pre-shipment leak testing of the loaded and assembled casks, conditions of Certificate of Compliance (CoC) 9168 and, therefore, the requirements of respective revisions of Chapter 8 of the 8-120B cask Safety Analysis Report (SAR) were not followed.

The events occurred for shipments made by Edwin I. Hatch Nuclear Power Plant in 2011, 2012 and 2016; shipment numbers 11-6001, 12-6001, and 16-6001 respectively. In all cases, pre-shipment leak test procedure test pressure values and/or allowable pressure drop were not in compliance with values shown in the Chapter 8 of the applicable revision of the SAR. There were no major occurrences during the events, and no component or system failures contributed to the events. The conditions in CoC 9168 were not followed in their entirety and resulted in non-compliant pre-shipment leak tests due to the failure of personnel to follow applicable procedures.

(2) A clear, specific, narrative description of the event that occurred so that knowledgeable readers conversant with the requirements of part 71, but not familiar with the design of the packaging, can understand the complete event. The narrative description must include the following specific information as appropriate for the particular event:

Event 1 – Shipment number 11-6001 in 2011

The NRC Certificate of Compliance number 9168, Rev 17, issued for the 8-120B cask states in Section 9 (i) “Each package must be maintained in accordance with Section 8.0, Acceptance Tests and Maintenance, of the application, as supplemented.”

Section 8.2.2.2 (Assembly Verification leak test) of SAR, Rev. 7, dated January 2010 states “Test shall be normally be 18 psig (up to 20 psig) and the test shall last for 1 hour. The allowable pressure drop shall be 1 psi. Any condition which results in a pressure drop of more than 1 psi will be corrected.”

Contrary to these requirements, pre-shipment leak test performed for 8-120B-1S cask on January 20, 2011 had a larger than allowable pressure drop (2.5 psig vs. allowable 1 psig) for a primary lid test. Pre-shipment leak test performed on the cask vent port had a larger than allowable pressure drop (2 psig vs. allowable 1 psig). Both tests were marked as “passed.”

Event 2: – Shipment number 12-6001 in 2012

The NRC Certificate of Compliance number 9168, Rev 17, issued for the 8-120B cask states in Section 9 (i) “Each package must be maintained in accordance with Section 8.0, Acceptance Tests and Maintenance, of the application, as supplemented.”

Section 8.2.2.2 (Assembly Verification leak test) of SAR, Rev. 7, dated January 2010 states “Test shall be normally be 18 psig (up to 20 psig) and the test shall last for 1 hour. The allowable pressure drop shall be 1 psi.” Contrary to this requirement, the pre-shipment leak test performed for 8-120B-2S cask on November 8, 2012 had an initial test pressure of 17 psig for the cask primary lid.

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Event 3: – Shipment number 16-6001 in 2016

The NRC Certificate of Compliance number 9168, Rev 22, issued for the 8-120B cask states in Section 6 (i) "The packaging must be tested and maintained in accordance with the acceptance tests and maintenance program described in Chapter 8 of application." Section 8.3.2.2.b, Pre-Shipment Leak Test of SAR, Rev. 9 dated February 15, 2015 states "The test will be performed by pressurizing the annulus between the o-ring seals of each lid, or inlet to the vent port with dry air or nitrogen to 18 psig."

Contrary to this requirement, pre-shipment leak test performed for 8-120B-4 cask on June 29, 2016 had 9 psig initial pressure for primary/ secondary lids and vent port.

For the three events, all of the other conditions required for the operation and shipment of the package in accordance with the effective Certificate of Compliance were adhered to, and the shipments were transported to their destination safely.

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

This criterion is not applicable to the event because there were no components or systems that were inoperable at the start of the event.

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

Event 1: Shipment number 11-6001; January 20, 2011 at approximately 1430 hours

Event 2: Shipment number 12-6001; November 8, 2012 at approximately 1500 hours

Event 3: Shipment number 16-6001; June 30, 2016 at approximately 1030 hours

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

No components or systems failed. The described events are the result of personnel failing to follow approved procedures and perform pre-shipment leak tests in accordance with Chapter 8 of applicable SAR revision.

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

This criterion is not applicable to the event because no components failed.

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

This criterion is not applicable to the event because no components failed.

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

During an NRC inspection, an inspector questioned the pre-shipment leak test initial pressure of 9 psig for the primary lid, secondary lid, and vent port performed for 8-120B-4 cask on June 29, 2016 to support shipment number 16-6001. The other events for shipment numbers 11-6001, and 12-6001 were discovered by Hatch Nuclear Plant personnel while performing an extent of condition review in response to the NRC inspector's question.

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

The cause of the non-compliance was a failure of the pre-shipment leak test personnel to follow approved procedures.

Potential causes:

For Events 1 and 2: Poor attention to the test details and requirements of the applicable procedure.

For Event 3: The technician reportedly transcribed the wrong pressure values on a fresh pre-shipment leak test form, because the original form was dirty from grease (cask bolt lubricant) and moisture.

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

Manufacturer and model numbers associated with component failure are not applicable because no components failed.

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

Event 1: Shipment Number 11-6001 Package Contents Description

Waste Descriptor: Mixed Ion-Exchange Media

Physical and Chemical Form: Solid / Metal Oxide(s)

Net Waste Weight and Volume: 5685.0 lbs; 103.00 ft³

Radiological Description:

Radionuclide	Activity (mCi)	Radionuclide	Activity (mCi)
C-14	1.11E+01	Ag-110m	1.52E+03
Cr-51	2.49E+03	I-131	4.12E+02
Mn-54	7.72E+04	Cs-134	7.03E+03
Fe-55	1.46E+05	Cs-137	7.59E+03
Fe-59	4.44E+02	Ba-140	6.07E+03
Co-57	7.67E+01	La-140	1.97E+02
Co-58	1.22E+04	Ce-141	7.41E+02
Co-60	1.02E+05	Ce-144	1.98E+02
Ni-63	2.37E+03	Pu-238	2.30E+00
Zn-65	4.23E+04	Pu-241	3.80E+01
Sr-89	9.60E+02	Am-241	3.70E-01
Sr-90	5.76E+03	Cm-242	3.77E+00
Sr-92	1.61E-43	Cm-243	9.28E-01
Tc-99m	2.09E-08		

Total Activity: 4.15E+05 mCi

Enclosure 1 to NL-18-0506

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Event 2: Shipment number 12-6001 Package Contents Description

Waste Descriptor: Mixed Ion-Exchange Media

Physical and Chemical Form: Solid / Metal Oxide(s)

Net Waste Weight and Volume: 5020.0 lbs; 84.00 ft³

Radiological Description:

Radionuclide	Activity (mCi)	Radionuclide	Activity (mCi)
Cr-51	9.53E+00	Ag-110m	2.10E+02
Mn-54	1.95E+04	Sb-124	7.70E+00
Fe-55	1.90E+05	Cs-134	1.53E+02
Fe-59	2.21E+01	Cs-137	1.91E+02
Co-58	5.52E+02	La-140	9.78E-49
Co-60	5.47E+04	Ce-144	4.54E+01
Ni-63	1.09E+03	Hf-181	1.86E+00
Zn-65	6.53E+03	Pu-238	7.65E-01
Sr-90	1.61E+03	Pu-241	2.62E+01
Zr-95	1.91E+01	Am-241	1.62E-01
Nb-95	3.51E+00	Cm-242	3.73E-01

Total Activity: 2.74E+05 mCi

Event 3: Shipment number 16-6001 Package Contents Description

Waste Descriptor: Mixed Ion-Exchange Media

Physical and Chemical Form: Solid / Metal Oxide(s)

Net Waste Weight and Volume: 6240.0 lbs; 104.00 ft³

Radiological Description:

Radionuclide	Activity (mCi)	Radionuclide	Activity (mCi)
H-3	9.51E+00	Sr-89	1.88E+02
Cr-51	4.62E+03	Sr-90	9.82E+01
Mn-54	6.11E+04	Zr-95	3.98E+02
Fe-55	1.97E+05	Nb-95	4.92E+01
Fe-59	1.27E+03	Tc-99	7.59E+01
Co-57	1.30E+02	Ag-110m	3.20E+03
Co-58	2.16E+04	Sb-124	2.52E+02
Co-60	2.23E+05	Cs-137	1.03E+02
Ni-63	1.75E+03	Ce-144	4.04E+02
Zn-65	6.05E+04	Au-199	1.24E+01

Total Activity: 5.75E+05 mCi

(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.

There were no safety consequences relating to these events. There were no systems or components that failed during the event. The packages were assembled as required by cask handling procedure, and received a periodic leak test within 12 months of each described event. The pre-shipment leak test is performed to verify the cask is assembled correctly. In all three events, although the cask was assembled correctly, the pre-shipment leak test acceptance criterion may not have been met.

(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.

Immediate Corrective Actions:

- Pre-shipment leak testing qualification of involved personnel in all three events were suspended
- Cask Certificate Holder and Owner of the cask (EnergySolutions) was contacted with a request to better delineate leak test acceptance requirements on pre-shipment leak test procedure forms used to document the test results
- Ensured current Southern Nuclear Company procedures contained requirements to perform leak tests for Type B packages in accordance with applicable Certificate of Compliance; requirements are present

Planned Corrective Actions:

- Cask Certificate Holder and Owner of the cask will provide proficient individuals qualified to perform pre-shipment leak tests.

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

- 10 CFR 71.95 Report on Potential Issues Involving Radwaste Cask 8-120B (Edwin I. Hatch Nuclear Plant), August 30, 2013

(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.

Robert (Bob) J. Anderson
Radiation Protection Manager
(912) 537-5919

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

No individuals were exposed to excess radiation or radioactive material as a result of these events and the packages were transported to their destination safely.