



**NUCLEAR FUEL SERVICES, INC.**  
a subsidiary of The Babcock & Wilcox Company

■ 1205 banner hill road ■ erwin, tn 37650 ■ phone 423.743.9141  
■ www.nuclearfuelservices.com

**CERTIFIED MAIL  
RETURN RECEIPT REQUESTED**

39G-13-0020  
GOV-01-55-04  
ACF-13-0006

31 January 2013

Director, Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
ATTENTION: Document Control Desk  
Washington, DC 20555

Reference: 1) Docket No. 70-143: SNM License 124  
2) US NRC Certificate of Compliance No. 9315

Subject: 60-Day Written Notification of Event

Dear Sir:

On December 11, 2012, Nuclear Fuel Services, Inc. (NFS) identified an instance in which the conditions in a certificate of compliance (Reference 2) had not been followed during a shipment from the B&W Y-12 Oak Ridge, Tennessee facility to the NFS Erwin, Tennessee facility. This letter provides the 60-day written notification of that event as required by 10 CFR 71.95.

If you or your staff have any questions, require additional information, or wish to discuss this matter further, please contact me, or Mr. Brad McKeehan, Transportation and Waste Manager, at (423)743-1773. Please reference our unique document identification number (39G-13-0020) in any correspondence concerning this letter.

Sincerely,

**NUCLEAR FUEL SERVICES, INC.**

Mark P. Elliott  
Director, Quality, Safety and Safeguards

MPE/BAM/psp  
Attachment

nuclear fuel services, inc., a subsidiary of The Babcock & Wilcox Company

IE72  
NM5524

Copy:

Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region II  
245 Peachtree Center Avenue NE, Suite 1200  
Atlanta, GA 30303

Mr. Manuel Crespo  
Senior Fuel Facility Inspector  
U.S. Nuclear Regulatory Commission  
Region II  
245 Peachtree Center Avenue NE, Suite 1200  
Atlanta, GA 30303

Mr. Kevin Ramsey  
Senior Project Manager  
Fuel Manufacturing Branch  
Division of Fuel Cycle Safety and Safeguards  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852-2738

Mr. Mark Chitty  
Acting Senior Resident Inspector  
U.S. Nuclear Regulatory Commission

Mr. Gary Person  
B&W Y-12  
Bear Creek Road  
PO Box 2009  
Oak Ridge, TN 37831-8019

**Attachment**

**60-Day Notification of Reportable Event**

**(3 pages to follow)**

## Attachment

### 60-Day Notification of Reportable Event

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.**

After being packed, closed, and prepared for shipment by Y-12, 35 ES-3100 shipping containers were shipped to NFS on December 10, 2012. After receipt at NFS and on December 11, 2012, a verbal notification was sent to Y-12 that on one ES-3100 container all eight of the drum lid nuts were found not to be torqued to the specified  $30 \pm 5$  ft-lb of torque. This is in violation of DOE CoC, USA/9315/B(U)F-96(DOE) revision 3 section 5 (d)(12). No issues were found with the torque of the other 34 ES-3100 drums or any of the containment vessels (CV). Investigations by Y-12 indicated human failure as the cause. Additional administrative controls are being established to ensure compliance with torque requirements.

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.**

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

After removing the ES-3100 packages from the CRT, NFS personnel observed the outer lid hex nuts on an ES-3100 shipping container were only “finger-tight” and not appropriately torqued as required by the Safety Analysis Report for the ES-3100. The Tamper Indicating Device (TID) for the ES-3100 was intact and there were no tampering issues identified. The contents of the ES-3100 were also check-weighed and there were no discrepancies. Further, the CVs were appropriately torqued.

- (ii) **Dates and approximate times of occurrences;**

B&W Y-12 delivered the shipment from Oak Ridge, TN to NFS’ Erwin, TN facility on December 10, 2012. NFS made the observation on December 11, 2012 at approximately 08:00 hours while unloading the ES-3100 from the CRT.

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

Human error – Failure to follow procedures.

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

Failure to torque the hex nuts as required.

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

Not applicable to this event.

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

The B&W Y-12 investigation team discussed the procedure for torquing the hex nuts with the B&W Y-12 Operators and any previous experiences with similar failures. There were no issues previously identified with the ES-3100.

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

Human Error – the hex nuts were not properly torqued. It is a procedural requirement to properly torque the hex nuts.

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

The reference for the ES-3100 is identified by the DOE CoC, USA/9315/B(U)F-96(DOE) revision 3 section 5 (d)(12).

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

ES-3100 (Serial number 2007-66-325) contained 93% Uranium Metal.

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.**

Following is an excerpt from Section 2.5.2 of the Safety Analysis Report (SAR) for the ES-3100 Shipping Package.

“The ES-3100 package, as delivered for transport, has no tie-down devices that are structural parts of the package. Therefore, the tie-down requirements of 10 CFR 71.45 are not applicable. The package is secured in the conveyance using blocking, bracing, and tie-down equipment that meets industry-standard practices to prevent shifting during Normal Conditions of Transport. When using a Safeguards Transporter (SGT), safe tie-down and transport of the package is accomplished by methods explained in the National Nuclear Security Administration (NNSA)

Technical Manual.... Another method of securing the ES-3100 package is by the use of a Cargo-Restraint Transporter (CRT) or Cargo Pallet Assembly (CPA). In these methods, a frame is positioned around the base and top of either five or six packages. These frames are then chained or locked to the floor as depicted in the NNSA Technical Manual. Tension is applied to the chains to eliminate any slack. The downward load resulting from the chain tensioning is insignificant when compared to the compression loading as specified in 10 CFR 71.71(c)(9).”

The ES-3100 for the subject shipment was secured by CRTs such that under Normal Conditions of Transport, the contents of the ES-3100 would not be compromised. Additionally, the inner containment vessel has a lid closure nut which was appropriately torqued to  $162.7 \pm 6.78 \text{ N}\cdot\text{m}$  ( $120 \pm 5 \text{ ft}\cdot\text{lb}$ ) as required by Section 7.1.2.1 of the Safety Analysis Report (SAR) for the ES-3100 Shipping Package.

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.**

1. Y-12 suspended onsite and offsite transfer of ES-3100s.
2. Y-12 filed an 8-2, Cat 3 occurrence, NA—YSO-BWXT-Y12NUCLEAR02010-0031.
3. Y-12 placed a production hold on external and internal loaded shipments of ES 3100s until the torque on the drum lid nuts are verified.
4. Personnel involved in packing operations were briefed on the issue.
5. Changes to the packing procedure and ES-3100 packing form are being reviewed for improvements to ensure drum nuts are properly torqued.

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

NFS has not had previous events with meeting the torque requirements for the ES-3100. B&W Y-12, an authorized user of the ES-3100, also has historically met the torque requirements for the ES-3100.

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.**

Brad McKeehan, NFS Transportation & Waste Unit Manager, (423) 743-1773.

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

Not applicable to this event.