

October 2, 2008

U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

Attn: Document Control Desk
Director, Division of Spent Fuel Storage and Transportation,
Office of Nuclear Material Safety and Safeguards

Subject: 10 CFR 71.95 Report for Instances Where the Conditions of Approval in the
Certificate of Compliance Were Not Followed During a Shipment

Docket No. 71-9225, NAC-LWT Package

Dear Mr. Brach:

Abstract:

During fabrication of canister lid assemblies for sealed failed fuel cans for TRIGA fuel and some TRIGA baskets, NAC Quality Assurance surveillance discovered that some welding details were not performed in full compliance with the applicable license drawings. Further review of the drawings revealed that the welding requirements, as specified, could not be performed due to hardware configuration and accessibility of the affected areas. The affected license drawings were corrected and approved by the U.S. Nuclear Regulatory Commission (NRC) via letter authorizations/amendment to the Certificate of Compliance (CoC).

Upon discovery, NAC immediately initiated efforts to determine the extent of these conditions. On August 6, 2008, Columbiana High Tech (CHT), the manufacturer, confirmed that all similar previously fabricated hardware has been manufactured as specified on the recently revised license drawings. This communication also confirmed that previously manufactured hardware (sealed failed fuel cans and TRIGA, MTR, ANSTO and DIDO baskets) was not in full compliance with the license drawings in effect at the time it was used in shipments made under previous revisions of the CoC. Therefore, the noted conditions are reportable to the NRC under 10 CFR 71.95(a)(3). No component or systems failed due to the noted conditions. The conditions did not have any safety consequences or implications. No individuals were exposed to radiation or radioactive material due to the conditions. NAC and CHT are addressing the conditions via Corrective Action Reports (CAR) under their respective Quality Assurance Programs.

This report includes a narrative description of the conditions discovered; the results of an assessment of safety consequences and implications; the description of the corrective actions taken to date by both NAC and CHT; the extent of the impact on past shipments; the cause of the noted conditions; and an assessment of radiological consequences.



Description:

1.0 Canister Lid Assembly, Sealed Failed Fuel Can, TRIGA Fuel
License Drawing: 315-40-087, Rev. 6 (Attachment 1)

Requirement/Condition:

Required 1/8 fillet weld between Item 11 (Support) and Item 10 (Street Elbow) is not feasible due to insufficient material left after required slip fit of Item 10 into the groove of Item 11.

Fabrication:

CHT fabricated all canister lid assemblies with seal welds between Item 11 and Item 10 (as now required by Rev. 6 of both license and design/fabrication drawings).

Drawing History:

License Drawing 315-40-087, Rev. 0 through Rev. 5, shows a 1/8 fillet weld required between Items 10 and 11. Also, Design/Fabrication Drawing 315-391-087, Rev. 0 through Rev. 5, shows the same requirement. Rev. 0 through Rev. 5 represent a 10-year period (1998 – 2008). Rev. 6 of both drawings (May 16, 2008) changed the requirement from a 1/8 fillet weld to a seal weld, bringing all previously fabricated canister lid assemblies into compliance with the current design/fabrication and license drawings.

Reportable Condition:

Canister lids fabricated prior to Rev. 6 of the license drawing and used in a shipment prior to May 29, 2008 (NRC letter authorization date) were not in full compliance with the license drawing in effect at the time of the shipment due to the drawing Rev. 6 weld arrangement being applied to all previously fabricated lids.

Impact on Operability:

None. Item 11 (Support) is a nonstructural/nonsafety-related component of the lid assembly. It provides additional support during engagement of the quick-disconnect to Item 10 (Street Elbow). Seal welding between Items 10 and 11 is performed as an ALARA program action to minimize potential crud traps. This weld is not a structural weld joint.

2.0 TRIGA Fuel Basket Hardware versus Drawing Issues

License Drawings: 315-40-070, Rev. 5 (Attachment 2)
315-40-071, Rev. 5 (Attachment 3)
315-40-072, Rev. 5 (Attachment 4)

2.1 Attachment of Item 9 (Guide) to Items 1, 2 and 8

Requirement/Condition:

Delta Note 2 of all drawings requires the attachment of Item 9 (some cases Item 7 or Item 8) – nonstructural/nonsafety guide – to be by 1/8 fillet weld on three sides. Due to the configuration of the attachment, this is not feasible.

Fabrication:

CHT has been fabricating the TRIGA baskets with a 1/8 fillet weld along the radial side of the mating connection between the guide and the base/support plates and seal welding along the plate outer edge (as required by Rev. 4 of the license drawings and Rev. 5 of the design/fabrication drawings).

Drawing History:

It is noted that the TRIGA baskets were introduced in 1997 as a duplicate design of the MTR baskets. The weld configuration of the guides was identical to the configuration depicted on the MTR drawings. All TRIGA basket license drawings, Rev. 0 through Rev. 3, contain the Delta Note requiring a 1/8 fillet weld on three sides of the guide at both ends. Rev. 4 of the TRIGA license drawings corrected the applicable Delta Note to state: “Radial inside surface, seal weld plate outer edge, both ends...”

Reportable Condition:

TRIGA baskets fabricated prior to Rev. 4 of the License drawings and used in a shipment prior to July 9, 2008 (NRC issue of LWT CoC, Rev. 48) were not in full compliance with the license drawing in effect at the time of the shipment due to the drawing Rev. 4 weld arrangement being applied to all previous guide/plate attachments.

Impact on Operability:

None. The guides are nonstructural/nonsafety-related components. They facilitate guidance of the basket during insertion into the cask. As such, attachment of the guides by a 1/8 fillet weld on one side and seal welding along the plate edge is sufficient to hold the guides in place.

2.2 The 11.18 Maximum Overall Dimension of the Fuel Cell Rows May be Exceeded Due to a Drawing Inconsistency Between License Drawings and Corresponding Design/Fabrication Drawings

Requirement/Condition:

The overall dimension of the width of the three fuel cell rows within the TRIGA baskets is defined by the license drawings as 11.18 inches maximum. The

corresponding design/fabrication drawings stated the same dimension as 11.18 inches, allowing application of a standard tolerance of ± 0.03 , which could result in the "11.18 max" dimension being exceeded by 0.03 inch. Recent drawing reconciliation (Rev. 5) resulted in adding the "11.18 max" dimensional requirement to the applicable TRIGA basket design/fabrication drawings. This resulted in the identification of eight baskets where the "11.18 max" dimension is slightly exceeded, though all within the standard tolerance as shown on the design/fabrication drawings.

Fabrication:

CHT has been fabricating all TRIGA baskets to the design/fabrication drawings, applying a standard tolerance to the 11.18 overall dimension of the three fuel cell rows.

Drawing History:

Research of the applicable TRIGA basket license and design/fabrication drawings revealed that at the Rev. 0 level of the design/fabrication drawings, the overall dimension of the three fuel cell rows was 11.22 inches maximum, while the corresponding Rev. 0 license drawings indicated a dimension of 11.18. This identified discrepancy potentially resulted in hardware that measured 11.22, exceeding the standard tolerance of 11.18 by 0.01. This condition existed while Rev. 0 of both drawings was in effect between September 12 and October 14, 1997 (no hardware was fabricated during this one-month period). The condition was corrected at the Rev. 1 level of the design/fabrication drawings when the "11.22 max" dimension was changed to "11.18 max." In November 1997, the same dimension on the design/fabrication drawings was changed to 11.18 (via Rev. 2) and remained in agreement with the license drawings until January of 1999 when the license drawings were changed to 11.18 max. The design/fabrication drawings remained 11.18 with a standard tolerance. The design/fabrication drawings were changed in July 2008 (Rev. 4) to match the license drawings. Further review of the situation resulted in revision of the license drawings to remove the maximum fuel cell row dimensions as they are irrelevant as long as individual cell dimensions are maintained within min/max as identified on the license drawings and none of the cell walls protrude beyond the outer edge of the base plate/support plate(s). This revision of the license drawings was submitted to the NRC on August 11, 2008, and authorization to use the TRIGA (and MTR) baskets manufactured in accordance with the updated license drawings was granted by the NRC on September 12, 2008.

Reportable Condition:

TRIGA baskets fabricated between January 1999 and August 2008 could potentially have a condition where the "11.18 max" dimension is exceeded by 0.03 inch. The number of the affected units is indeterminate. However, if the affected baskets were

used in shipments, these shipments were potentially not in full compliance due to the “11.18 max” dimension being exceeded potentially by as much as 0.03 inch.

CHT has identified eight recently manufactured TRIGA baskets where the “11.18 max” dimension was exceeded by up to 0.02 inch. However, all cell min/max dimensions were within the requirements of the license drawing and none of the cell walls protruded beyond the edge of the base/support plates. These baskets were accepted by NAC QA after receipt of a September 12, 2008 letter from the NRC authorizing use of the TRIGA baskets in accordance with the revised license drawings.

Impact on Operability:

None. Exceeding the “11.18 max” dimension by 0.03 inch has no impact on the operability of the cask.

Extent of Condition:

NAC determined that the conditions described under Item 2.0 also existed in association with the similar design MTR baskets, the ANSTO baskets and the DIDO baskets. All license drawings have been corrected and either approved by the NRC via letter authorization (MTR baskets), or are currently undergoing technical review as part of the ongoing ANSTO amendment request (ANSTO and DIDO baskets).

Similarly to the TRIGA baskets, the number of shipments made using the affected MTR, ANSTO and DIDO basket hardware is indeterminate. However, since the condition does not have an impact on the safe performance of the packaging, and all shipments were completed without any incident caused by the condition, NAC’s further investigation will focus on determining the extent of condition and defining corrective actions and actions to prevent recurrence.

The results of NAC’s extent of condition assessment will be considered for potential impact on any other NAC systems that are licensed by the NRC. Any noted impacts will be dispositioned in accordance with the applicable provisions of the NAC QA program and reported to the NRC as warranted.

Assessment of Safety Consequences and Implications:

NAC has performed an evaluation to determine the safety consequences and implications of the conditions described in this report and determined that none of the conditions have any safety consequence or safety implication. No components or systems failed due to any of the noted conditions.

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Corrective Actions:

In addition to having documented the conditions in various Surveillance Reports, Audit Finding Reports (AFR), Nonconformance Reports (NCR) and Vendor Nonconformance Reports (VNCR), NAC elevated the concern and issued two Corrective Action Reports (CAR) in accordance with its Quality Assurance Program. CAR 08-01 addresses the condition associated with the NAC license drawing inconsistencies and CAR 08-02 covers the issues attributed to the manufacturer's actions (CHT).

In response to CAR 08-01, NAC is performing an extent of condition investigation to determine actions necessary to assure safety-related item conformance with license drawing requirements. The response team will document the safety significance of the identified deficiencies, perform a root cause analysis to determine applicable cause(s) for the conditions identified and provide proposed actions/plans for enhancing applicable preparation, checking, reviewing and/or verification processes/actions to achieve verbatim compliance.

The initial investigation extends to all NAC-LWT license drawings and is scheduled to be completed by December 31, 2008.

Similarly, CAR 08-02 requests CHT to perform an extent of condition investigation and a root cause analysis, and to develop and implement corrective actions and actions to prevent recurrence. NAC requested CHT to address the issue under its Corrective Action Program and will oversee and approve CHT's corrective measures and actions to prevent recurrence. CHT is committed to complete its investigation by mid-October, 2008. NAC will perform a full scope audit (all applicable QA criteria) of CHT shortly after completion of their specified actions.

Previous Similar Events:

Review of historical documentation for the NAC-LWT cask revealed no similar conditions associated with drawing inconsistencies and discrepancies.

Contact:

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Radiological Consequences:

The conditions described herein did not cause any additional exposure of individuals to radiation or to radioactive materials.

Conclusion:

Because the conditions associated with the license drawings date back over a 10-year period, the exact number of shipments potentially affected is indeterminate. However, as the conditions described had no safety implication (impact on the safe operability of the NAC-LWT casks), and since all shipments were completed without any incident caused by the conditions, NAC represents that further investigation to determine the dates and approximate times of each shipment is not warranted.

NAC will concentrate its efforts to complete the extent of condition investigation and root cause analysis, as well as defining and implementing corrective actions and actions to prevent recurrence in response to the two previously discussed CARs. NAC will communicate to the NRC the results of its investigation in a follow-up report by January 30, 2009.

Should the Commission require further details regarding the conditions described herein, please contact me.

Sincerely,



Anthony L. Patko
Director, Licensing
Engineering

Attachments (License Drawings):

1. 315-40-087, Rev. 6
2. 315-40-070, Rev. 5
3. 315-40-071, Rev. 5
4. 315-40-072, Rev. 5

Figure Withheld Under 10 CFR 2.390


 NAC INTERNATIONAL			
CANISTER LID ASSEMBLY, SEALED FAILED FUEL CAN, TRIGA FUEL			
PROJECT	315-40	DRAWING	087
SCALE	FULL	WORTH 5#	DN 1 OF 1
		REV	6

Figure Withheld Under 10 CFR 2.390


 NAC INTERNATIONAL			
WELDMENT, 7 CELL BASKET, TRIGA FUEL BASE MODULE			
PROJECT	315-40	DRAWING	070
		REV	5
SCALE	1/3	EST.WT. 197 LBS	SH 1 OF 1
		10:47AM 8-7-2006	

Figure Withheld Under 10 CFR 2.390



 NAC INTERNATIONAL			
WELDMENT, 7 CELL BASKET, TRIGA FUEL INTERMEDIATE MODULE			
PROJECT	315-40	DRAWING	071
SCALE	1/3	EST. WT.	187 LBS
		SH	1 OF 1
		10-48AM 8-7-2006	

Figure Withheld Under 10 CFR 2.390

 NAC INTERNATIONAL			
WELDMENT, 7 CELL BASKET, TRIGA FUEL TOP MODULE			
PROJECT	315-40	DRAWING	072
SCALE	1/3	EST. WT.	275 LBS
		SH	1 OF 1
		10-46AM 8-7-2008	