



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

April 10, 2015

Mr. Wren Fowler  
Director, Licensing  
NAC International, Inc.  
3930 East Jones Bridge Road, Suite 200  
Norcross, GA 30092

SUBJECT: REVISION 62 OF CERTIFICATE OF COMPLIANCE NO. 9225 FOR THE  
MODEL NO. NAC-LWT PACKAGE

Dear Mr. Fowler:

As requested by your letter dated January 29, 2015, as supplemented on January 23, 2015, February 4, 2015, February 13, 2015, and March 5, 2015, enclosed is Certificate of Compliance No. 9225, Revision No. 62, for the Model No. NAC-LWT package. Changes made to the enclosed certificate are indicated by vertical lines in the margin. The staff's safety evaluation report is also enclosed.

NAC International, Inc., is registered as the certificate holder for this package. This approval constitutes authority to use the package for shipment of radioactive material and for the package to be shipped in accordance with the provisions of 49 CFR 173.471. Those on the attached list have been registered as users of the package under the general license provisions of 10 CFR 71.17 or 49 CFR 173.471.

If you have any questions regarding this certificate, please contact me or Norma Garcia Santos of my staff at (301) 415-6999.

Sincerely,

/RA/

Michele Sampson, Chief  
Spent Fuel Licensing Branch  
Division of Spent Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 71-9225  
TAC No. L24970

Enclosures: 1. Certificate of Compliance  
No. 9225, Rev. No. 62  
2. Safety Evaluation Report  
3. Registered Users List

Upon removal of Enclosure 3, this  
document is uncontrolled.

cc w/encls. 1 & 2: R. Boyle, U.S. Department of Transportation  
J. Shuler, U.S. Department of Energy  
Registered Users

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DATE:	3/30/2015		4/2/2015		4/2/2015		4/2/2015		3/30/2015		4/7/2015		4/6/2015	4/10/15

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**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
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**SAFETY EVALUATION REPORT**

**Docket No. 71-9225  
Model No. NAC-LWT Package  
Certificate of Compliance No. 9225  
Revision No. 62**

**SUMMARY**

By letters dated November 25, 2014 and January 29, 2015, as supplemented on January 23, 2015, February 4, 2015, February 13, 2015, and March 5, 2015, NAC International, Inc., (NAC or the applicant), requested renewal of Certificate of Compliance No. 9225, for the Model No. NAC-LWT package. NAC also requested approval for using five non-conforming baskets manufactured for transporting NRU\NRX fuel. These baskets were manufactured by Columbiana High-Tech (CHT).

On January 29, 2015, NAC submitted a consolidated application including Highly Enriched Uranyl Nitrate Liquid as authorized contents, which corresponds to Revision 61 of the certificate of compliance for the Model No. NAC-LWT. Since the application submitted in November 2014 did not include the information related to Revision 61 of the certificate of compliance for this package because Revision 61 was issued after it, NAC's submittal dated January 29, 2015, is considered the application for the renewal of the certificate of compliance for the Model No. NAC-LWT and is still considered a timely renewal request. Therefore, Revision 62 of this certificate of compliance references NAC's letter dated January 29, 2015.

NAC did not request any changes to the package design, contents, operating procedures, acceptance tests, and maintenance program. The certificate has been renewed for an additional five year period. The certificate holder's name and address will remain as in Revision 61 of Certificate of Compliance No. 9225, Model No. NAC-LWT package.

**EVALUATION**

**1. General Discussion**

The staff reviewed the documents referenced in the certificate and determined that the documentation was available and complete. The certificate holder did not submit any changes to the Model No. NAC-LWT package operating and maintenance procedures. A condition was added to the certificate of compliance for the Model No. NAC-LWT to allow using the baskets with serial numbers 315-391-173-01, -03, -04, -05, and -06, as fabricated by CHT for transporting NRU\NRX fuel.

**1.1 Non-Conformance – NRU\NRX Baskets**

In 2013, CHT fabricated baskets with serial numbers 315-391-173-01, -03, -04, -05, and -06 for the Model No. NAC-LWT using Licensing Drawing No. LWT 315-40-173. Note 9 of Licensing

Drawing No. LWT 315-40-173 requires, in part, that a visual inspection be performed on basket welds in accordance with the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section V, "Nondestructive Examination," Article 1, "General Requirements."

In January 2014, CHT informed NAC that five baskets manufactured for the Model No. NAC-LWT did not conform to note 9 of Licensing Drawing No. LWT 315-40-173. The non-conformance issue included inspection of weld joints 1, 2, 3, 4, 5a, and 5b on baskets 315-391-173-03, -04, -05, and -06, and weld joint 08 on basket 315-391-173-01 during the fabrication process by an individual without the proper ASME Code certification as required by Note No. 9 of Licensing Drawing No. LWT 315-40-173. At the time of this review, none of the affected baskets have been placed in service.

NAC provided supplemental information to support the review for the non-conformance issue and the renewal of the Model No. NAC-LWT. The staff reviewed the applicant's submittals related to this licensing action request to verify that the Model No. NAC-LWT package design still meets the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 71.

The requested approval did not require any changes to the analyses proposed in Revision 43 of the Model No. NAC-LWT application.

#### **1.1.2. ASME Code and CHT Procedural Requirements - Level II Visual Test Inspector**

ASME Code, Section V, Article 1, states that for those documents directly referencing Article 1, non-destructive examination (NDE) personnel must be qualified in accordance with:

- SNT-TC-1A, "Personnel Qualification and Certification in Nondestructive Testing," or
- ANSI/ASNT CP-189, "ASNT Standard for Qualification and Certification of Nondestructive Testing Personnel."

CHT's Procedure Q-21, "Qualification and Certification of NDE Personnel," is based on the recommendations in SNT-TC-1A. CHT Procedure Q-21 requires the following to be certified as a Level II Visual Test (VT) inspector:

- 24 hours of training,
- 3 months of experience,
- written examinations,
- practical examination, and
- eye examination.

The improperly certified CHT inspector provided the following information as proof of training and experience to support his certification as a Level II VT inspector:

- a training certificate - showing 24 hours required training, and
- a letter, from a previous employer - showing 3 months of prior experience.

NAC stated that the above documents were misrepresented to CHT by the inspector. Based on the information provided by NAC to support this review, the individual was improperly certified as an ASME Code Level II NDE Inspector based on these misrepresented documents. The improperly certified inspector did complete the following as verified by CHT:

- passed CHT's general and specific written examinations as well as a practical examination;
- received 120 hours of on the job training at CHT that included visual, mechanical, and quality training before certification as a VT inspector at CHT on February 17, 2012;
- passed required eye examination;
- received 40 hours of training in visual weld inspection in August 2012; and
- passed examination under the American Welding Society (AWS) as a Certified Welding Inspector (CWI) on November 1, 2012.

### **1.1.3. Reexamination of Non-Conformance Baskets**

As part of the fabrication process of the Model No. NAC-LWT, CHT performed a post-fabrication load test to the affected baskets and subsequent VT and dye penetrant test (PT) of accessible critical welds. A properly certified inspector performed these VT and PT tests. Accessible critical welds included weld joints 2, 5a, and 5b. In addition, after discovering that the inspector was not properly certified, a CHT inspector (with the required certification) reexamined weld joints 2, 5a, and 5b by the VT method and found them to be acceptable. The remaining weld joints (i.e., 1, 3, and 4) on baskets 315-391-173-03, -04, -05, and -06 are inaccessible for reexamination. Weld joint 8 on basket 315-391-173-01 is also inaccessible for reexamination.

To address the issue of the improperly certified inspector, CHT issued corrective action report (CAR) No. 13-031. CAR 13-031 states that CHT reexamined (VT) 33,432 inches of weld on various components in the CHT facility that had been previously inspected by the improperly certified inspector and found only 13.5 inches of weld with results different than the results of original inspections. CHT stated in CAR 13-031 that the discrepancies were isolated occurrences or subjective in nature and not uncommon when two different inspectors examine the same weld. CHT concluded that the extent of the issue associated with the inspector is limited to the inspector's certification documentation and not his competency for performance of nondestructive examinations.

Although joints 2, 5a, and 5b were initially inspected by an individual without the ASME Code certification required by License Drawing No. LWT 315-40-173, note 9, the staff considers these welds to be acceptable based on VT and PT examination during load testing and reexamination by the VT method after fabrication and load testing. When performing visual inspections, it is not uncommon for two different inspectors to have slightly different inspection results. Also, the individual in question successfully passed all required written and practical examinations required for a VT inspector. The discrepancy rate for reexamination by VT of the 33,432 inches of weld that had previously been inspected by the inspector in question was 0.04% which the staff finds well within reasonable expectations.

Based on the statements and representations in the information submitted by the applicant, the staff finds that NAC has reasonable assurance that the lack of properly documented training and experience by the improperly certified inspector, as required by SNT-TC-1a, did not impact the ability of this inspector to perform VT examinations. The Model No. NAC-LWT baskets 315-391-173-01, -03, -04, -05, and -06 are acceptable for use as fabricated.

#### 1.1.4. Criticality Evaluation

The staff reviewed the applicant's submittals related to this licensing action request to verify that the NAC-LWT package design still met the criticality safety requirements of 10 CFR Part 71. Based on the review of the statements and representations related to the licensing action requested and supplemental information supplied by the applicant, the staff has reasonable assurance that the package meets the criticality safety requirements of 10 CFR Part 71.

Accordingly, Certificate of Compliance No. 9225 has been revised based on the statements and representations in the application, and staff agrees that the changes do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

## 2.0 CONDITIONS

The following changes have been made to the certificate:

*Condition No. 3(b)* was revised to reflect the date of the application corresponding to Revision 62 of the certificate of compliance for the Model No. NAC-LWT (i.e., January 29, 2015).

*Condition No. 5.(a)(3)* was revised to consolidate the list of licensing drawings related to the Model No. NAC-LWT packaging design as follows:

- Revised *Condition No. 5.(a)(3)(ii)* to add the following drawings:

LWT 315-40-086, Rev. 1	Assembly, Sealed Fuel Can, TRIGA Fuel
LWT 315-40-087, Rev. 7	Canister Lid Assembly, Sealed Fuel Can, TRIGA Fuel
LWT 315-40-088, Rev. 3	Canister Body Assembly, Sealed Failed Fuel Can, TRIGA Fuel
LWT 315-40-128, Rev. 4 (Sheets 1-2)	Transport Cask Assy., TPBAR Shipment

These drawings are mentioned in *Condition Nos. 5.(b)(2)* and *14*, but these are not included in *Condition No. 5.(a)(3)*. (Drawing Nos. LWT 315-40-133, Rev. 2 (Sheets 1-2), LWT 315-40-134, Rev. 2, LWT 315-40-135, Rev. 1, and LWT 315-40-139, Rev. 1, moved to page 4 of the certificate of compliance as a result of adding these items to the list of drawings.)

Revised *Condition No. 5.(a)(3)(ii)* to remove "(Sheets 1-2)" from the description of Drawing No. 315-40-145, "Irradiated Hardware, Lid Spacer, LWT Cask," Rev. 0, since this drawing consists of one sheet and not two.

- Added *Condition No. 5.(a)(3)(iv)* to include drawings associated with the General Atomics (GA) Irradiated Fuel Material (IFM) enclosures. The new condition will be as follows:

“(iv) The General Atomics (GA) Irradiated Fuel Material (IFM) enclosures are constructed in accordance with the following GA Drawings:

GA 32334 - 032230, Rev. A	RERTR Secondary Enclosure
GA 32334 - 032231, Rev. A	HTGR Secondary Enclosure
GA 32334 - 032236, Rev. B	RERTR Primary Enclosure
GA 32334 - 032237, Rev. B	HTGR Primary Enclosure”

*Condition No. 5.(b)(1)(i)*, at the beginning of page 6, was revised to 5.(b)(1)(ii) to correct a typographical error. The statement at the beginning of page 6 of the certificate of compliance was a continuation of *Condition No. 5.(b)(1)(ii)* related to boiling water reactors fuel assemblies.

*Condition No. 17* was revised to read as follows:

“For shipment of NRU\NRX Fuel:

NRU/NRX basket weldment serial numbers (S/N's) 315-391-173-01 and -03 through -06 are authorized for use with exception to the requirement presented in License Drawing No. 315-40-173, Rev. 2, (Sheets 1-2) note 9. No other NRU/NRX basket weldments are authorized for use with exception to note 9, other than the S/N's specified in this condition.”

*Condition No. 17* was renumbered as No. 18.

*Condition No. 18* was renumbered as No. 19

*Condition No. 19* was renumbered as No. 20.

*Condition Nos. 20 and 21* were removed from the certificate because these were no longer needed.

*Condition No. 22* was renumbered as *Condition No. 21* and revised to “Expiration Date: April 30, 2020.”

Additional changes to the certificate of compliance were editorial such as uniform formatting of the conditions outline (e.g., 5.(b)(1)(i)) and text flow. These changes were not identified in the revised certificate of compliance.

Based on the statements and representations in the application, as supplemented, and the conditions listed in the certificate of compliance, the staff concludes that the package meets the requirements of 10 CFR Part 71.

## **CONCLUSION**

Based on the statements and representations in the application, as supplemented, and the conditions listed above, the staff concludes that the Model No. NAC-LWT package design has been adequately described and evaluated, and that these changes do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

Issued with Certificate of Compliance No. 9225, Revision No. 62, on  
April 10, 2015.