NAC INTERNATIONAL

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November 25, 2014

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

Attention: Document Control Desk

Subject: Request for Timely Renewal of U.S. Nuclear Regulatory Commission (NRC) Certificate of Compliance (CoC) No. 9225 and for Approval to Use Hardware Used to Transport NRU/NRX Fuel that has Nondestructive Examination Related Non-Conformances

Docket 71-9225

References:
1. USNRC CoC No. 9225, Revision 60, Model No. NAC-LWT Package, Dated August 8, 2014
2. NRC Letter, Extension of Authorization for a One-Time Shipment of the Dounreay Fuel Contents in the Model No. NAC-LWT Package (TAC No. L24756), November 6, 2013

The above referenced CoC, Reference 1, has an expiration date of February 28, 2015. NAC International (NAC) hereby requests the timely renewal of CoC No. 9225 for the Model No. NAC-LWT Package [Package Identification Number USA/9225/B(U)F-96] in accordance with the provisions of 10 CFR 71.38 and an extension of the Reference 2 letter authorization to December 31, 2016.

Enclosed with this request for timely renewal is one copy of the NAC-LWT Safety Analysis Report (SAR), Revision 42, which incorporates supplements dated February 3, March 2, May 24, October 26, and December 5, 2012; January 14, February 14, July 19 (two supplements), and October 18, 2013; December 31, 2013, May 30, 2014, and July 15, 2014. All supplements incorporated into Revision 42 of the NAC-LWT SAR have previously been approved by the NRC. No other changes have been made to the SAR text. As a consolidated SAR, all pages of the document are identified as Revision 42 with revision bars identifying all changes from Revision 41. A List of Effective Pages is provided for completeness. In addition, Attachments 1 and 2 of this letter detail the list of SAR and drawing changes, respectively.

NAC is currently using the NAC-LWT packaging in ongoing shipments both domestically and internationally. While in accordance with 10 CFR 71.38(b), the current CoC is not deemed to have expired as this request for timely renewal is being submitted to the NRC in not less than 30 days prior to the expiration of the current CoC, upon issuance of a revised CoC by the NRC, US and foreign competent authority certificates will have to be obtained immediately to support these ongoing shipments. Therefore, NAC hereby requests issuance of the revised CoC by January 5, 2015.

NM5501

ED20140127

In addition, NAC herewith submits a request for approval to use transport hardware that has a known non-conformance with one NRU/NRX license drawing. NAC was recently notified by our fabricator that a technician that performed nondestructive examination (i.e. weld VTs) on hardware that will be used for NRU/NRX fuel transport had been improperly certified. This lack of proper certification has resulted in the hardware, which this technician directly performed work on, not meeting the license drawing requirements for VT examination of all welds per ASME Section V. Prior to this notification, NAC's fabricator had already completed hardware fabrication and the hardware was delivered to the customer. The customer may have already loaded the NRU/NRX fuel in the affected hardware in preparation for shipment. No NRU/NRX fuel or affected hardware has been shipped to date. The following provides additional details on the non-conformance.

In November of 2013 NAC was notified by Columbiana HiTech (CHT) that one of their nondestructive examination (NDE) technicians had been improperly certified. The NDE individual had apparently not accurately represented his previous experience that was used as a partial basis for his certification. CHT developed and provided a Corrective Action Report (CAR) to NAC that described the situation in more detail and included actions to address the situation. CHT advised NAC of actions they had already taken and additional actions they intended to take to confirm that, although improperly certified, the technician was properly qualified for the NDE activities he performed such that there was no doubt regarding the adequacy of his previously reported examination results. Accordingly, NAC developed a Finding Report (FR) to document our actions for client notification and to maintain an awareness of the ongoing CHT actions as well as their ultimate conclusion. Based on CHT's completion of their committed actions and their conclusion that the examination results were not in question, NAC closed our FR in mid-January, 2014.

On November 3, 2014, NAC received an additional email from CHT advising that during a recent NRC inspection an observation was made by the inspectors that the previous CHT notice to their clients did not appear to have effectively described the ASME Code noncompliance that might exist with affected hardware they supplied when licensing commitments were such that NDE examinations were to be performed per ASME Section V. NAC has evaluated our licensing commitments and determined that the latest observation by CHT does affect hardware supplied by CHT to NAC for LWT use. See Attachment 3 for a list of affected licensed hardware and the associated license drawing. As described in this letter, CHT's CAR and NAC's FR, it is concluded that while the NDE technician was not properly certified, the quality of the welds and the quality of the NDE technician's examinations have demonstrated the

hardware delivered was fabricated correctly. In addition, NAC has kept our affected clients fully informed of the situation and its details since November of 2013

If you have any questions regarding this letter, please feel free to contact me on my direct number at 678-328-1274 or Wren Fowler, Licensing Manager at 678-328-1236.

Sincerely,

Anthony L. Patko
Director, Licensing
Engineering

Attachments

Attachment 1 – List of Changes, NAC-LWT SAR, Revision 42
Attachment 2 – List of Drawing Changes, NAC-LWT SAR, Revision 42
Attachment 3 – List of Affected Hardware and License Drawing

Attachment 1

List of Changes

NAC-LWT SAR, Revision 42

List of Changes, NAC-LWT SAR, Revision 42

Note: The List of Effective Pages and the Chapter Tables of Contents, including the List of Figures and the List of Tables, were revised as needed to incorporate the following changes.

Chapter 1

- Pages 1-ii thru 1-iv, updates to the Table of Contents reflecting figure, table, and drawing additions within the chapter.
- Page 1-iii, updated drawing revision numbers for drawing 315-40-02 to "Rev 25";
- Page 1-iv, updated drawing revision numbers; added seven new drawings; and editorial change to correct drawing numbers from "040" to "40."
- Page 1-1, added ";" to the third to last bullet; added the second and last bulleted text; editorial change removed comma and replaced with semi-colon followed by the word "and"; modified capital "U" to lowercase "u."
- Page 1-2, added last row to the bottom of table and added "s" to "Canister."
- Page 1-4, added third and fourth bullets.
- Pages 1-4 thru 1-6, text flow changes.
- Page 1-7, added the definition for "Damaged SLOWPOKE Fuel Rods" and "Undamaged NRU or NRX Fuel Assembly" to Table 1.1-1.
- Page 1.1-2, added semi-colon to the fifth bullet; added sixth and seventh bullets; added the last paragraph for SLOWPOKE.
- Page 1.1-3, added continuing SLOWPOKE paragraph and new NRU or NRX undamaged paragraph.
- Page 1.2-4, deleted text near the end of the last paragraph of Section 1.2.2.
- Page 1.2-5, added text to end of item 4 in Section 1.2.3.
- Page 1.2-7, added items 21 and 22 to the top of the page.
- Page 1.2-10, modified the gram weight numbers in the second paragraph of Section 1.2.3.2.
- Page 1.2-18, added Section 1.2.3.12; editorial change for table reference from "Table 1.2.3-14" to "Table 1.2-14."
- Page 1.2-19, added Section 1.2.3.13.
- Pages 1.2-20 thru 1.2-37, text flow change.
- Page 1.2-38, added Figure 1.2.3-19.
- Page 1.2-39, added Figure 1.2.3-20.
- Pages 1.2-40 thru 1.2-43, text flow changes.
- Page 1.2-44, modified the Table 1.2-4 data and footnotes 2, 8, and added footnote 10.

List of Changes, NAC-LWT SAR, Revision 42

Chapter 1 (continued)

- Page 1.2-45 thru 1.2-54, text flow changes.
- Page 1.2-55, added Table 1.2-14.
- Page 1.2-56, added Table 1.2-15.

List of Changes, NAC-LWT SAR, Revision 42

Chapter 2

- Page 2.2.1-2, added the third sentence in the first footnote; added two new rows at the end of Table 2.2.1-1 for SLOWPOKE fuel contents, including footnote 5; and added two NRU/NRX rows to the end of the table, including footnote 6.
- Page 2.2.1-4, added two new rows for SLOWPOKE four unit basket and payload; and added two NRU/NRX rows near the bottom of Table 2.2.1-2.
- Page 2.6.12-1, inserted NRU/NRX text into middle of paragraph 2.6.12.1; editorial change to delete "and" and updated section number for spacer analysis.
- Page 2.6.12-7, changed the number of MTR modular basket assembly configuration in the first sentence from "four" to "five."
- Page 2.6.12-8, added the second full sentence; added the sixth and seventh full sentences in the first paragraph; and added "or Table 1.2-14" to the last sentence in the first paragraph.
- Pages 2.6.12-95 thru 2.6.12-106, added Section 2.6.12.13.
- Pages 2.6.12-107 thru 2.6.12-124, added Section 2.6.12.14.
- Page 2.6.12-125, renumbered previous Section 2.3.12.14 to "2.6.12.15" "Conclusion" on last page, modified text at the end of the paragraph.
- Page 2.7.7-1, added NRU/NRX text in Section 2.7.7.1.
- Page 2.7.7-8, modified MTR modular basket assembly configuration from "four" to "five" in first sentence and added the fourth, fifth, and sixth sentences in the first paragraph in Section 2.7.7.6.
- Pages 2.7.7-72 thru 2.7.7-88, added Section 2.7.7.15.
- Page 2.7.7-73, modified text in the first sentence of the third paragraph and in the second sentence of the third paragraph; and changed "factored by 4" to "factored by ¼."
- Page 2.7.7-75, added the note under Table 2.7.7-4.
- Pages 2.7.7-76 thru 2.7.7-77, added Table 2.7.7-5.
- Page 2.7.7-78, updated the peak force: "F1 = 24,833 pounds," "F2 = 31,424 pounds," and "F3 = F2 - F1 = 31,424 – 24,833 = 6,591 lb"; and removed an extra "the" on the 11th line of the third paragraph.
- Page 2.7.7-79, updated table number to Table 2.7.7-6; updated the contact force numbers due to change in maximum SLOWPOKE canister weight from 23 lbs to 25 lbs.
- Page 2.7.7-80, updated Figure 2.7.7-2 and Figure 2.7.7-3 due to change in maximum SLOWPOKE canister weight from 23 lbs to 25 lbs.
- Page 2.7.7-81, updated Figure 2.7.7-4 to show a callout for the gap element representing the stiffness of the canister lid handle; and updated Figure 2.7.7-4 and Figure 2.7.7-5 due to the change in in maximum SLOWPOKE canister weight from 23 lbs to 25 lbs.
- Pages 2.7.7-82 thru 2.7.7-84, updated calculations due to change in maximum SLOWPOKE canister weight from 23 lbs to 25 lbs.
- Page 2.7.7-85, added Figure 2.7.7-6.

List of Changes, NAC-LWT SAR, Revision 42

Chapter 2 (continued)

- Pages 2.7.7-86 thru 2.7.7-87, updated calculations due to change in maximum SLOWPOKE canister weight from 23 lbs to 25 lbs.
- Pages 2.7.7-89 thru 2.7.7-98, added Section 2.7.7.16.
- Page 2.7.7-90, revised text in equation and note to read "Margin of Safety" and "Note: All margins of safety..." instead of "Factor of Safety" and "Note: all factors of safety..." in the middle of the page.
- Page 2.7.7-93, revised equation to read "MS = $(0.7S_u/\sigma_c)-1$ = large" instead of "FS – $(0.7S_u/\sigma_c)-1$ = large."
- Page 2.7.7-95, revised equation to read "$MS_{m+b} = (1.0S_u/P_m+P_b) -1 = 0.09$" instead of "$FS_{m+b} = (1.0S_u/P_m+P_b) -1 = 0.09$."

List of Changes, NAC-LWT SAR, Revision 42

Chapter 3

- Page 3.1-1, added last sentence to end of second paragraph and added the last four sentences in the third paragraph to support the SLOWPOKE fuel content in Section 3.1.
- Page 3.1-2, added new sentence in the middle of the first paragraph.
- Page 3.1-2, text flow changes.
- Page 3.4-4, added new paragraph number "(3)" and the last bullet.
- Pages 3.4-5 thru 3.4-37, text flow changes.
- Page 3.4-38, added Section 3.4.1.18 and subsection 3.4.1.18.1.
- Pages 3.4-39 thru 3.4-40, added Section 3.4.1.19.
- Page 3.4-41, added the last three sentences in Section 3.4.2 to reference tables.
- Page 3.4-55, added ", and NRU/NRX" text to Section 3.4.4.8 at end of first paragraph.
- Page 3.4-56, added new paragraph, bullets, and subparagraph to the end of Section 3.4.4.8.
- Pages 3.4-57 thru 3.4-78, text flow changes.
- Page 3.4-79, added Figure 3.4-21.
- Page 3.4-84, added text to "Note 2" of Table 3.4-6.
- Page 3.4-102, added a new Table 3.4-27.
- Pages 3.5-6 thru 3.5-7, added text to the second paragraph of Section 3.5.3.2.
- Page 3.5-13, added Section 3.5.3.16.
- Page 3.5-14, added Section 3.5.3.17.
- Pages 3.5-15 thru 3.5-34, text flow changes.
- Page 3.5-35, added text to the 2-star note (**) after Table 3.5-2.
- Page 3.5-36, editorial change, deleted the repeated word "Table" from all three footnotes.

List of Changes, NAC-LWT SAR, Revision 42

Chapter 4

- Page 4.2-1, added "...and SLOWPOKE..." to the second line of Section 4.2.2.
- Page 4.2-2, text flow changes.
- Page 4.2-3, added new last row to Table 4.2-1 and added footnote 8.

List of Changes, NAC-LWT SAR, Revision 42

Chapter 5

- Page 5-3, added last paragraph to the page.
- Page 5.1.1-1, added semi-colon to end of third to last bullet, added "; or" to the second to the last bullet, and added the last bullet.
- Page 5.1.1-6, inserted second paragraph on the page.
- Page 5.1.1-8, modified bullet under "Fuel Type" near the top of the page.
- Page 5.1.1-11, added additional information for NRU HEU, NRU LEU, and NRX fuel types to Table 5.1.1-1.
- Page 5.1.1-12, deleted "2.4737" from the "U Weight (kg/element)" in the "MTR (LEU)" column of Table 5.1.1-2.
- Pages 5.1.1-13 thru 5.1.1-14, text flow changes.
- Page 5.1.1-15, added continuing information to Table 5.1.1-2 for NRU HEU, NRU LEU, and NRX HEU.
- Pages 5.1.1-16 thru 5.1.1-19, text flow changes.
- Page 5.3.4-1, modified text in the second paragraph of Section 5.3.4.
- Page 5.3.4-2, modified the cooling time in the last paragraph of the page.
- Page 5.3.4-3 thru 5.3.4-4, added new text throughout the remainder of Section 5.3.4.
- Page 5.3.4-5, modified text in the first full paragraph; and added text to the first two bullets of Section 5.3.4.1.
- Page 5.3.4-6, added text to continuing Section 5.3.4.1.
- Page 5.3.4-7, added text to continuing Section 5.3.4.1 and added last two sentences to Section 5.3.4.2.
- Pages 5.3.4-8 thru 5.3.4-9, text flow changes.
- Page 5.3.4-10, added new note to Figure 5.3.4-3.
- Pages 5.3.4-11 thru 5.3.4-14, added new Figures 5.3.4-4 thru 5.3.4-10.
- Page 5.3.4-15, added text to "Note 2" of Table 5.3.4-1.
- Pages 5.3.4-16 thru 5.3.4-21, text flow changes.
- Page 5.3.4-22, added a note to the bottom of the table.
- Pages 5.3.4-23 thru 5.3.4-24, text flow changes.
- Page 5.3.4-25, added "Notes:" and note lettering "a" and "b" beneath Table 5.3.4-13.
- Pages 5.3.4-26 thru 5.3.4-27, added new Table 5.3.4-16 and Table 5.3.4-17.
- Page 5.3.14-4, editorial change—removed excess space from last sentence in fourth full paragraph.
- Pages 5.3.20-1 thru 5.3.20-29, added Section 5.3.20.

List of Changes, NAC-LWT SAR, Revision 42

Chapter 5 (continued)

- Page 5.3.20-1, added three bullets.
- Page 5.3.20-1, Section 5.3.20, added the second paragraph to include the version of SCALE used in the analysis.
- Page 5.3.20-2, added the first full paragraph in Section 5.3.20.1.
- Page 5.3.20-2 thru 5.3.20-4, text flow changes.
- Page 5.3.20-6, updated Figure 5.3.20-1.
- Pages 5.3.21-1 thru 5.3.21-45, added Section 5.3.21.

List of Changes, NAC-LWT SAR, Revision 42

Chapter 6

- Page 6-1, added "up to 800 SLOWPOKE rods" in the second to last sentence of the first paragraph, and added the last row to the "Criticality Safety Index" table.
- Page 6-1, added NRU/NRX information "or up to 18 NRU or NRX fuel assemblies" to end of first paragraph and "NRU and NRX CSI 100" to last line of the table.
- Page 6-1, editorial change "or" and added semi-colons for clarity and flow.
- Page 6.1-5, changed "critical benchmark" to "criticality benchmarks" in the last sentence of the first paragraph and added the last paragraph summarizing the SLOWPOKE fuel rod analyses.
- Page 6.1-6, added NRU/NRX information from preceding page.
- Page 6.2-1, added NRU/NRX information to the first paragraph; and editorial change to remove "or" before "up to 42..." for flow.
- Page 6.4.3-11 thru 6.4.3-12, added the second paragraph to "Set I."
- Page 6.4.3-13, added a new paragraph.
- Page 6.4.3-14, modified underlined subheading.
- Page 6.4.3-27, added reference to new note "6" to Table and inserted note 6 to Notes
- Page 6.4.3-31, added a row for "25% - K^1" in Table 6.4.3-26.
- Page 6.4.3-32, added a general note beneath Table 6.4.3-27.
- Page 6.4.3-35, added Table 6.4.3-30.
- Page 6.4.8-3, changed "critical" to "criticality" in last sentence of the first paragraph in Section 6.4.8.9.
- Page 6.4.9-3, changed "critical" to "criticality" in last two sentences of the first paragraph in Section 6.4.9.5.
- Page 6.4.10-5, editorial change, added period to end of first sentence below the last bullet.
- Page 6.5.1-1, changed Section 6.5 title from "Critical Benchmarks" to "Criticality Benchmarks" for consistency; removed the last sentence in the first paragraph under Section 6.5; and changed Section 6.5.1 title from "PWR and BWR Fuel Assemblies" to "CSAS25 Criticality Benchmark for LEU LWR Oxide Fuel."
- Page 6.5.2-1, changed Section 6.5.2 title from "MTR and DIDO Fuel Elements" to "CSAS25 Criticality Benchmarks for Research Reactor Fuel Elements (MTR and DIDO)," and added the second sentence in the first paragraph.
- Page 6.5.2-2, editorial change to the criticality safety limits equation description to change "$\square k_{BU}$" to "Δk_{BU}."
- Page 6.5.3-1, changed Section 6.5.3 title from "TRIGA Fuel Elements" to "CSAS25 Criticality Benchmarks for TRIGA Fuel Elements."

List of Changes, NAC-LWT SAR, Revision 42

Chapter 6 (continued)

- Pages 6.5.4-1 thru 6.5.4-46, moved Section 6.7.2 in its entirety to make a new Section 6.5.4; changed Section 6.5.4 title to "MCNP Criticality Benchmarks LEU Oxide and MOX LWR Fuels" (was previously Section 6.7.2, "Critical Benchmarks"); changed subsection figure and table numbers (and their references).
- Page 6.5.4-2, last sentence – changed "critical benchmarks" to "criticality benchmarks" for consistency.
- Pages 6.5.5-1 thru 6.5.5-15, added Section 6.5.5.
- Pages 6.5.6-1 thru 6.5.6-15, added Section 6.5.6.
- Pages 6.5.6-1 thru 6.5.6-15, editorial changes to updates all figures and tables within section text to reflect new section number for referencing and new Section 6.5.6.
- Page 6.7.1-1, changed "critical benchmarks" to "criticality benchmarks" in the first sentence of Section 6.7.1.
- Pages 6.7.2-1 thru 6.7.2-16, added Section 6.7.2 (the previous Section 6.7.2 was moved to Section 6.5.4).
- Page 6.7.2-3, updated Figure 6.7.2-1.
- Pages 6.7.3-1 thru 6.7.3-29, added Section 6.7.3.
- Page 6.7.3-1, editorial change, removed the word "intact" to prevent incorrect interpretation; and added second to last sentence to end of paragraph in Section 6.7.3.1.
- Page 6.7.3-2, added "(Version 1.60)" after "MCNP5" to the first sentence in Section 6.7.3.2.
- Page 6.7.3-2, added several sentences in the second paragraph in Section 6.7.3.2 under heading "Description of Calculational Models."
- Page 6.7.3-3, text flow changes.
- Page 6.7.3-4, added several sentences of text to the middle of the paragraph in Section 6.7.3.4.
- Pages 6.7.3-1 thru 6.7.3-47, renumbered headings, tables, figures and callouts throughout as section changed from 6.7.2 to 6.7.3 due to addition of new Section 6.7.2.
- Page 6.7.3-4, removed extra period in the middle of the seventh sentence.
- Page 6.7.3-29, corrections made to Table 6.7.3-7 on this replacement page are the following:
  1. The "Fuel Tube Interior Moderator" was changed from "0.9982 g/cm^3" to "0 g/cm^3" in the 10 CFR 71.59 "Normal" condition column.
  2. The "Fuel Tube Exterior Moderator" was changed from "0.9982 g/cm^3" to "0 g/cm^3" in the 10 CFR 71.59 "Normal" condition column.

List of Changes, NAC-LWT SAR, Revision 42

Chapter 6 Appendices

- Pages 6.6.17-1 thru 6.6.17-7, added Section 6.6.17 including Figure 6.6.17-1 and Figure 6.6.17-2.

List of Changes, NAC-LWT SAR, Revision 42

Chapter 7

- Pages 7-i thru 7-ii, updates to the Table of Contents reflecting page number changes, figure and drawing additions.

- Page 7.1-2, modified text near the end of the second paragraph in Section 7.1.
- Page 7.1-4, deleted the second sentence in step 9 because the sentence is not applicable to cask field operations.
- Page 7.1-14, deleted the second sentence in step 9 because the sentence is not applicable to cask field operations.
- Page 7.1-15, modified the first note following step 15.
- Pages 7.1-18 thru 7.1-22, modified text throughout Section 7.1.5.
- Page 7.1-24, modified Figure 7.1-2 and the title.
- Pages 7.1-25 thru 7.1-29, revised Figure 7.1-3 thru Figure 7.1-7.
- Page 7.1-33, added Figure 7.1-12.
- Page 7.1-34, added Figure 7.1-13.
- Pages 7.1-35 thru 7.1-36, text flow changes.
- Page 7.1-37, deleted the second sentence in step 9 because the sentence is not applicable to cask field operations.
- Pages 7.1-38 thru 7.1-39, text flow changes.
- Page 7.1-40, changed "50 ± 10 inch-pounds" to "50 ± 2 ft-lbs" in step 8.
- Pages 7.1-41 thru 7.1-43, text flow changes.
- Page 7.1-44, deleted the second sentence in step 9 because the sentence is not applicable to cask field operations.
- Pages 7.1-45 thru 7.1-46, text flow changes.
- Page 7.1-47, deleted the second sentence in step 10 because the sentence is not applicable to cask field operations.
- Page 7.1-53, deleted the second sentence in step 9 because the sentence is not applicable to cask field operations.
- Pages 7.1-56 thru 7.1-61, added Section 7.1.13.
- Pages 7.1-61 thru 7.1-65, added Section 7.1.14.
- Pages 7.1-65 thru 7.1-67, added Section 7.1.15.

List of Changes, NAC-LWT SAR, Revision 42

Chapter7 (continued)

- Page 7.2-5, changed Section 7.2.3 title; modified the text in the first sentence.
- Page 7.2-7, added ", or SLOWPOKE" to the first sentence and changed all instances of "DFCs" to "fuel canisters" in step 19.
- Page 7.2-8, changed Section 7.2.4 title; changed the first sentence to add punctuation marks for additional text; added ", or SLOWPOKE, or NRU/NRX"; and added "Remove TID" to step 5.
- Page 7.2-9, added punctuation marks for additional text; added ", SLOWPOKE, or NRU/NRX" and "transfer" to text in step 18.
- Pages 7.3-1 thru 7.3-2, deleted Section 7.3, "Procedures for Preparation of the Empty Package for Transport" per NRC recommendation to remove parts of the SAR that address handling of empty cask.

List of Changes, NAC-LWT SAR, Revision, 42

Chapter 8

- No changes.

List of Changes, NAC-LWT SAR, Revision, 42

Chapter 9

- No changes.

Attachment 2

List of Drawing Changes

NAC-LWT SAR, Revision 42

List of Drawing Changes, NAC-LWT SAR, Revision 42

Drawing 315-40-02, LWT Cask Body Assembly, Revision 25

Sheet 1:

1. Revised Delta Note 8 as follows: "THE NEUTRON SHIELD TANK IS FILLED WITH A WATER/ETHYLENE GLYCOL/POTASSIUM TETRA-BORATE MIXTURE THAT WILL NOT FREEZE AT-40°F (MIN) AND CONTAINS AT LEAST I WT.% BORON.", was "THE NEUTRON SHIELD TANK IS FILLED WITH A LIQUID CONSISTING OF 58 WT. % ETHYLENE GLYCOL, 39 WT.% DEMINERALIZED WATER, 3 WT.% POTASSIUM TETRA-BORATE (K2B4O7)."

All Sheets:

2. Revised the title block.

Drawing 315-40-04, LWT Transport Cask Lid Assembly, Revision 12

1. B.O.M., Item 7, Revise Description to "Shamban S11214-0460"; was "Shamban S11214-460."
2. B.O.M., Item 2, Revise Drawing No. to "315-40-08-19"; was "315-40-08-21."
3. For Item #3, O-ring, delete "Viton" from material, and "Parker 3-904V747-75" from the description, and add reference to "Drawing No. 315-40-02-6."
4. For Item #4, Thread Insert, delete information in the material, specification and description columns, and add reference to "Drawing No. 315-40-08-13."
5. Revise "Material" for Item # 8, O-ring, from "STSTL" to "X-750."
6. Title Block, Revise scale callout to "N.T.S."; was "1/4."
7. Zone A7 Detail B-B, Revise Scale callout to "Scaled"; was "Scale: 2/1" and Zones C6 & C8 Sections E-E & D-D, Revise Scale callout to "Scaled"; was "2/1."
8. Title Block, Delete weight callout "938 lbs."
9. Title Block, Update to current title block.

Note: Items 3, 4, and 5 were incorporated prior to Revision 12.

Drawing 315-40-080, Weldment, 7 Cell Poison Basket, TRIGA Fuel Base Module, Revision 4

1. Add delta note 11 as follows: "Seal weld in locations where defined weld is not achievable due to component geometry."
2. Add delta note 11 call out to 1/4" fillet weld zone E3 and 1/8" fillet weld zone C8.

Drawing 315-40-081, Weldment, 7 Cell Poison Basket, TRIGA Fuel Intermediate Module, Revision 4

1. Add delta note 11 as follows: "Seal weld in locations where defined weld is not achievable due to component geometry."
2. Add delta note 11 call out to 1/4" fillet weld zone E3.

Drawing 315-40-082, Weldment, 7 Cell Poison Basket, TRIGA Fuel Top Module, Revision 4

1. Add delta note 11 as follows: "Seal weld in locations where defined weld is not achievable due to component geometry."
2. Add delta note 11 call out to 1/4" fillet weld zone E3.

Drawing 315-40-083, Spacer, LWT Cask Assembly, TRIGA Fuel, Revision 0

1. Initial Issuance.

Drawing 315-40-087, Canister Lid Assembly, Sealed Failed Fuel Can, TRIGA Fuel, Revision 7

1. Revise Delta Note 3, to: "...Article NG-5350."; was "...Article NB-5350."
2. Item 12 (Lift Lug) in Zone C6, change "R.5" dimension to "R.3" and Zone C7, add "TYP" to 45° X .13 dimension.

Drawing 315-40-088, Canister Body Assembly, Sealed Failed Fuel Can, TRIGA Fuel, Revision 3

1. Revise Delta Note 3, to: "...Article NG-5350."; was "...Article NB-5350." And Zone E7, Delete Delta symbol 3 callout.
2. Revise Title Block scale factor in "Scale" box to "N.T.S."; was "FULL", delete word "NOTED" in "Weight" box and Zones C4 & D4 Delete weight callout for Assy 99 & 98.
3. Replace border and title block with newer version.

Drawing 315-40-104, Legal Weight Truck Transport Cask Assy, PWR/BWR Rod Transport Canister, Revision 6

1. B.O.M., Items 14 & 15, Delete Qty "4" from Assy 96.

Drawing 315-40-106, MTR Plate Canister, LWT Cask, Revision 2

1. All sheets, revised scale factor in "Scale" box to N.T.S. and deleted word "NOTED" in "Weight" box.

Sheet 1:

2. Replaced border and title block with newer version.
3. Zone B-5, deleted weight from assembly 99 call out
4. Revised delta note 1 to "ENGRAVE APPROXIMATELY AS SHOWN. LETTERS .5 HIGH X .03 MAS DEEP, FILL WITH BLACK WETHER RESISTANT PAINT. "#" SERIALIZES THE COMOPNENT. "#" SHALL BE SPECIFIED AS 01-999. "XX" TO BE AS MEASURED AT FINAL ASSEMBLY. "YY" TO BE SPECIFIED IN THE FABRICATION SPECIFICATION, BUT SHALL BE LESS THAN OR EQUAL TO 30 POUNDS."; **was** "ENGRAVE APPROXIMATELY AS SHOWN. LETTERS .5 HIGH X .03 MAX DEEP, FILL WITH BLACK WEATHER RESISTANT PAINT. "##" SERIALIZES THE COMPONENT. "##" SHALL BE SPECIFIED AS 01-99. "XX" TO BE AS MEASURED AT FINAL ASSEMBLY. "YY" TO BE SPECIFIED IN THE FABRICATION SPECIFICATION, BUT SHALL BE LESS THAN OR EQUAL TO 30 POUNDS." and Zone C3, revised serial number designation to "315-391-106-#"; **was** "315-391-106-##."
5. Changed material for items 1, 2 and 3 to "ALUM 6061-T651"; **was** "ALUM 6061-T6511".

Sheet 2:

6. Zone D-3, changed serial number designation to 315-391-106-#, **was** 315-391-106-##
7. Zone A-6, deleted scale callout in item 4 label callout **was** "SCALE: 4/1."

Drawing 315-40-128, Legal Weight Truck Transport Cask Assy, TPBAR Shipment, Safety Analysis Report, Revision 4

Sheet 1:

1. Add "N.T.S." to Title Block.

Sheet 2:

2. Revise Title Block to "N.T.S."; was "1/8."

Drawing 315-40-129, Canister Body Assembly, Failed Fuel Can, PULSTAR, Revision 2

1. Revise Delta Note 3, to: "...Article NG-5350."; was "...Article NB-5350."
2. Revise Title Block on drawing to "Canister Body Assembly, Sealed Failed Fuel Can, Pulstar"; was "Canister Body Assembly, Failed Fuel Can, Pulstar."
3. Zone E7, Delete Delta symbol 3 callout.

4. Add "N.T.S." to scale callout in title block.

Drawing 315-40-130, Assembly, Failed Fuel Can, PULSTAR, Revision 2

1. Revise Title block on drawing to "Assembly, Sealed Failed Fuel Can, Pulstar"; was Assembly, Failed Fuel Can, Pulstar."
2. Title block scale callout, Add "N.T.S."

Drawing 315-40-133, Transport Cask Assembly, PULSTAR Shipment, LWT Cask, Revision 2

1. Title block scale callout, Add "N.T.S." on sheets 1 & 2.

Sheet 1:

2. Revise Delta Note 5 to "...Article NG-5350."; was "...Article NB-5350."
3. B.O.M., Item 11, Revise Name to "Sealed Failed Fuel Can"; was "Failed Fuel Can."

Sheet 2:

4. Revise Delta symbol 6 to 5.

Drawing 315-40-134, Body Weldment, Screened Fuel Can, PULSTAR Fuel, Revision 2

1. Revise Delta Note 1 to "...Article NG-5350."; was "...Article NB-5350."
2. Title block scale callout, Add "N.T.S."

Drawing 315-40-156, Canister Assembly SLOWPOKE Fuel, Revision 3

1. Sheet 1: Zone D4, Revise Max Loaded Weight to "25LBS"; was "23LBS."
2. B.O.M. Item 1, deleted Qty. "1" from assy. 98
3. B.O.M. Items 2, 3 and 4, moved Qty. from assy. 97 to 98
4. B.O.M. Item 17, revised Qty. to "2" was "4"

Drawing 315-40-158, Legal Weight Truck Transport Cask Assy SLOWPOKE Fuel, Revision 0

1. Initial Issuance.

Drawing 315-40-170, LWT Transport Cask Assy., AECL NRU/NRX Components, Sheet 1 of 1, Revision 1

1. Zone F4, add dimension "(177.3)."

Drawing 315-40-172, Lid Assembly, NRU/NRX, Sheets 1 and 2 of 2, Revision 0

1. Initial issuance.

Drawing 315-40-173, Basket Weldment, NRU/NRX, Revision 2

Sheet 1:

1. Revise Note 9 to "MATERIAL SHALL BE 304 ST. STL. WITH TENSILE STRENGTH, YIELD STRENGTH, AND ELONGATION EQUAL TO, OR GREATER THAN, THOSE OF ASME SA249 TYPE 304 ST. STL."; was "304 ST. STL. MEETING AT A MINIMUM, THE DIMENSIONAL, PHYSICAL (TENSILE, YIELD, ELONGATION), AND CHEMICAL REQUIREMENTS OF SA249."

Drawing 315-40-174, Basket Spacer, NRU/NRX, Revision 0

1. Initial issuance.

Drawing 315-40-175, Caddy Assembly, NRU/NRX Sheet 1 of 1, Revision 1

1. Zone D6, add callout for delta symbol 3.
2. Zone A8, add delta note 3 as follows: "MARK AS SHOWN, LETTERS TO BE .5" HIGH. "XX" IS A CONSECUTIVE UNIT NUMBER BEGINNING WITH 01."
3. B.O.M., Add Item 3, As follows "Name "Wire Mesh", Qty "A/R", SPEC "COML", Material "Aluminum" and Description "16 X 16 X .018 Wire Dia."
4. Zone E7, Add graphic, weld callout & balloon callout.

Attachment 3

List of Affected Licensed Hardware and License Drawing

List of Affected Licensed Hardware

1. NRU/NRX Basket Weldments
    - License Drawing No. – 315-40-173
    - Serial Nos. – 315-391-173-01, -03 thru -06
    - Affected Welds – Joint 8 for 315-391-173-01 and Joints 1, 2, 3, 4, 5A, & 5B for 315-391-173-03 thru -06

List of Affected License Drawings

1. 315-40-173, Revision 2, Basket Weldment, NRU/NRX
    - Note 9, "VISUALLY INSPECT (VT) ALL WELDS PER ASME SECTION V, ARTICLES 1 & 9. ACCEPTANCE CRITERIA PER SECTION III, NG-5360"