

June 7, 2001

U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738
Attention: Document Control Desk

Subject: Docket No. 71-9235

Submittal of Responses to Request for Additional Information (RAI) on the Requested Amendment of the Certificate of Compliance (CoC) for the NAC International Storage Transport Cask (NAC-STC)

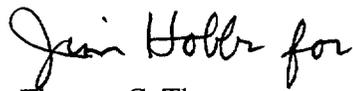
- References:
1. Request for Amendment of the CoC to Incorporate Changes for Yankee Nuclear Power Station Spent Fuel, October 5, 2000
 2. Request for Additional Information for the Model No. NAC Storage Transport Cask (NAC-STC) Package, United States Nuclear Regulatory Commission, May 7, 2001

NAC International (NAC) herewith submits the responses to Reference 2 in accordance with NAC's licensing amendment request dated October 5, 2000 (Reference 1).

This submittal includes one RAI response and no Safety Analysis Report (SAR) changed pages. The RAI includes a listing of all changes made to the drawings for the NAC-STC package from Revision 12 of the SAR through Revision STC-00B (Reference 1). The changes listed are for drawings: 455-800, Revision 2; 455-872, Revision 8; 455-881, Revision 5; 455-891, Revision 1; 455-892, Revision 2; and 455-895, Revision 4.

If you have any questions regarding this submittal, please contact me at 678-328-1321 or Len Tremblay at 978-664-0922.

Sincerely,



Thomas C. Thompson
Director, Licensing
Engineering & Design Services

Enclosure

cc: J. McCumber (DE&S)
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MMSOIR Public

ED20010822

NAC-STC
Docket # 71-9235
TAC # L23206

NAC INTERNATIONAL

RESPONSE TO THE

UNITED STATES
NUCLEAR REGULATORY COMMISSION

REQUEST FOR ADDITIONAL INFORMATION

(RAI-1; MAY 7, 2001)

NAC STORAGE TRANSPORT CASK (NAC-STC)

(TAC No. L23206, DOCKET No. 71-9235)

JUNE 2001

**NAC INTERNATIONAL RESPONSE
TO
REQUEST FOR ADDITIONAL INFORMATION**

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CHAPTER 1: GENERAL INFORMATION

Section 1.0 General Information

1-1 For each change to the engineering drawings for the package, provide a description of the change and a discussion of the impact of the change on the safety basis of the package.

Guidance on preparing engineering drawings can be found in NUREG/CR-5502. Engineering drawings are needed in order to evaluate the package under 10 CFR 71.71 and 10 CFR 71.73.

NAC Response

The following table summarizes the change in revision level of the indicated License Drawings that occurred between our Revision 12 submittal and our STC-00B submittal.

| Drawing | Rev. 12 | STC-00B |
|----------------|----------------|----------------|
| 455-800 | 1 | 2 |
| 455-872 | 5 | 8 |
| 455-881 | 2 | 5 |
| 455-891 | 0 | 1 |
| 455-892 | 1 | 2 |
| 455-895 | 2 | 4 |

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NAC Response RAI 1-1 (continued)

These drawings were revised based on the incorporation of changes evaluated in accordance with NAC's Design Change Request (DCR) change control program. The DCR change control program requires that each recommended change be evaluated for its impact on the safety analysis basis of the package, with additional analysis and evaluation performed when required. The drawing changes resulting from specific DCRs and the evaluated consequences are summarized in this response.

The effective drawings relate to canister, basket and fuel tube design for the Yankee Rowe MPC System. Consequently, the incorporated changes have also been evaluated using the 72.48 evaluation process. While not related directly to transport, this evaluation provides additional assurance that the incorporated change does not affect the safety basis of the evaluated component.

As noted in the summary evaluation of the DCRs, many of the incorporated changes are administrative changes that correct errors, improve clarity or facilitate fabrication. These changes were identified as NAC progressed to fabrication of hardware for site use.

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NAC Response RAI 1-1 (continued)

Drawing 455-800, Revision 2 — Assembly, Transport Cask, MPC-Yankee

DCR 455-800-1A

- Update title block to current NAC format
- Change Items 2 and 3 name IS) CANISTER ASSEMBLY, WAS) TSC ASSEMBLY
- Change note, Sheet 2, Zone B3 IS) “FOR GTCC-98” WAS) “FOR GTCC-99”
- Add Assembly 97, “TRANSPORT CASK ASSEMBLY, OVERSIZED PWR,” that includes the oversized tube assembly and all related components
- Sheet 1, Item 3, Drawing No. IS) 455-888 WAS) 455-886
- Change next assembly IS) 423-843 WAS) N/A

Incorporates user requirement for an oversized fuel tube assembly. All changes are editorial or administrative improvements with no impact on the safety basis of the package.

**Drawing 455-872, Revision 8 — Assembly, Transportable Storage Canister (TSC),
MPC-Yankee**

DCR 455-872-5A

- Update drawing graphics

Provides updated drawing graphics with no impact on the safety basis of the package.

DCR 455-872-6A

- Modify weld note Sheet 2, Detail A-A, to clearly identify the welds on the 2 sides above the support ring and the top of the key
- Redimension the placement of the shield lid support ring to 8.0 + .0/- .1
- Structural lid weld, Sheet 1, Zone C5 IS) 7/8 WAS) 1

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NAC Response RAI 1-1 (continued)

DCR 455-872-6A (CONTINUED)

- Shield lid support ring weld, Sheet 1, Zone F4, change to 5/16 effective throat, add a 1/8 fillet on top, remove all around symbol and note “all around, except key slot region”
- Add 1/8 butt weld to shield lid support ring weld at “key slot region only” (later removed)
- Add Delta Note for structural lid weld indicating that “the welds minimum effective throat is achieved when level with the edge of the canister shell. The lids, due to tolerances, may extend beyond the edge of the canister shell.”

Clarifies weld requirements and weld size for fabrication. There is no significant change in occupational exposure. These changes are administrative improvements for fabrication with no impact on the safety basis of the package.

DCR 455-872-7A

- Delete reference dimension “(2.00)” in Zone B-4 on Sheet 2

Deletes the reference dimension for the key for clarification in fabrication. This is an administrative improvement for fabrication with no impact on the safety basis of the package.

DCR 455-872-7B

- Delete the 1/8” butt weld for the key slot region in Zone F-4/5 on Sheet 1
- Revise the size of the partial penetration groove weld for the lid support ring (Item 4) to the key (Item 9) in Zone C-6/7 on Sheet 2 IS) (7/16”) WAS) (3/8”)

Changes welding detail to facilitate fabrication. There is no reduction in the effective weld size. There is no impact on the safety basis of the package.

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NAC Response RAI 1-1 (continued)

DCR 455-872-7C

- Add Assembly 98, "CANISTER ASSEMBLY OVERSIZED," that includes the oversized tube assembly and all related components

Incorporates user requirement for an oversized fuel tube assembly. For this drawing, this change is administrative with no impact on the safety basis of the package.

DCR 455-872-7D

- Revise length of Structural Lid Plug, Item 11, on Sheet 2 Zone E-6 IS) 2.25" WAS) 2.5"
- Add dowel pins as follows and indicate that one dowel pin is installed in the shield lid and one dowel pin is installed in the structural lid

| <u>Qty.</u> | <u>Item</u> | <u>Name</u> | <u>Material</u> | <u>Spec</u> | <u>Drawing No.</u> | <u>Description</u> |
|-------------|-------------|-------------|-----------------|-------------|--------------------|--------------------|
| 2 | 12 | Dowel Pin | St. Stl. | Coml | --- | 1 Dia x 1 Long |

Revises length of structural lid plugs to match the reduction in thread depth. Adds dowel pins that were mistakenly omitted. These changes are design and administrative improvements with no impact on the safety basis of the package.

Drawing 455-881, Revision 5 — PWR Fuel Tube, MPC Yankee

DCR 455-881-2A

- Change drawing title IS) PWR Fuel Tube, MPC-Yankee
- Add detail to show new tubing to flange fit-up

Incorporates fabrication and administrative corrections with no impact on the safety basis of the package.

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NAC Response RAI 1-1 (continued)

DCR 455-881-3A

- Weld symbol, Sheet 1, Zone F7, remove the “G” from the symbol and IS) (.03 WAS) .03
- Change angle tolerances, 4 places ARE) $X^{\circ} \pm 5^{\circ}$ WERE) X°
- Detail A-A/Detail B-B, change .09 radii/chamfer to .1 radii/chamfer
- Change flange dimension, Sheet 1, Zone D6 IS) 8.7 WAS) 8.65
- Add all around weld symbol to Detail B-B (alternate fabrication)
- Modify Detail A-A
- Add details to Items 2 and 3
- Rename Section B-B IS) Section C-C
- Add Delta Note indicating assessment of internal tube dimension is with a min. 7.65” square X 8’ long gage

Incorporates design changes to the fuel tube to facilitate fabrication. The design improvements have no impact on the safety basis of the package.

DCR 455-881-3B

- Revise dimension “.18 Typ” in Zone B-7 on Sheet 1 to a reference dimension, “.18) One Side Typ” (later changed)
- Delete the reference dimension “(7.90)” in Zone D-1 on Sheet 1

Administrative improvement with no impact on the safety basis of the package.

DCR 455-881-3C

- Add an Alternate Fabrication Detail A-A which is identical to Detail A-A except that 1) the 1/8” spot weld is deleted, and 2) the seal weld is replaced with a full thickness fillet weld (later changed)

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NAC Response RAI 1-1 (continued)

DCR 455-881-3C (CONTINUED)

- Revise the weld symbol in Alternate Fabrication Detail B-B to 1) delete the 1/32" fillet weld on the far side of the flange (Item 4), and 2) delete the 2" length on 8" intervals on the arrow side such that the 1/32" fillet weld is all-around

Adds optional welding method for installation of fuel tube BORAL cover plates to assist fabrication. The evaluation of the optional welding method shows that the optional weld is structurally adequate and there is no impact on the safety basis of the package.

DCR 455-881-3D

- Revise thickness of fillet weld (alternate fabrication detail A-A) for the fuel tube cladding to fuel tube (changed from a seal weld to full thickness fillet weld by DCR No. 455-881-3C) WAS) full thickness fillet weld IS) 1/2t

Reduces the weld size to facilitate the manufacturing process and provides an optimal welding method to facilitate fabrication. The evaluation of the optional weld method shows that the option weld is structurally adequate and there is no impact on the safety basis of the package.

DCR 455-881-3E

- Add "ITEM 2" to (7.2) dimension in, Sheet 1, Section C-C
- Indicate that the drain opening located in Section E1 is typical for two sides
- Radius dimension on Sheet 1, Detail A-A WAS) R.1 IS) R.1 TYP
- Add a weight for Assembly 99
- Add "(TYP 4 SIDES)" to Detail B-B
- Add "TYP" to the (8.084) and 7.8 dimensions, Sheet 1, Zone E8
- Delete "TYP" from the tail of the weld symbol in Detail B-B, alternate fabrication

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NAC Response RAI 1-1 (continued)

DCR 455-881-3E (CONTINUED)

- Add Assembly 98, "OVERSIZED TUBE ASSEMBLY," that does not include poison sheets or cladding and is oversized
- Detail A-A, Zone B-7 IS) (.2) WAS) (1.8)

Incorporates user requirement for an oversized fuel tube assembly. The evaluation of the oversized tube assembly (without BORAL plates) is bounded by the analysis of the heavier fuel tube having BORAL. There is no change in the heat transfer disk or structural disk design. Therefore, there is no impact on the safety basis of the package.

DCR 455-881-4A

- Remove proprietary note from title block of Sheets 2 and 3

Administrative correction with no impact on the safety basis of the package.

Drawing 455-891, Revision 1 — Bottom Weldment, Fuel Basket, MPC-Yankee

DCR 455-891-0A

- Revise specification for Item 2, Circular Pad WAS) "ASME SA479" IS) "ASME SA240/SA479" and change description WAS) "3 Dia Bar" IS) "3 Dia Plate/Bar"
- Change reference dimension in Zone C-8, "(3.0)" to an actual dimension, "3.0"

Provides flexibility in fabrication to change the material to allow fabricator to utilize an equivalent "plate" material in addition to the "bar" material originally specified. There is no change in material properties. Therefore, there is no impact on the safety basis of the package.

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NAC Response RAI 1-1 (continued)

DCR 455-891-0B

- Revise the size of the three fillet welds shown in the side view, Sheet 2 (one fillet weld in Zone C-7 and two fillet welds in Zone F-7) from 1/4" to 1/8"

Reduces the size of three fillet welds to reduce the likelihood of bottom weldment plate distortion, due to the heating during welding. The welds on the basket circular pads are not structural welds. Therefore, there is no impact on the safety basis of the package.

DCR 455-891-0C

- For the circular hole in Zone E-4 identified by "3X Ø 1.3", add the dimension of "18.2 TYP" from the centerline of bottom weldment, horizontally to the centerline of the circular hole

Administrative improvement with no impact on the safety basis of the package.

DCR 455-891-0D

- Update the title block to current NAC format
- Add a weight for Assembly 99
- Dimension, Sheet 1, Zone D6 WAS) R.25 TYP IS) R.3 TYP
- Dimensions located on Sheet 1, Zones E6 and F4 WERE) 15.6 ARE) 15.6 TYP
- Dimensions located on Sheet 1, Zones D2 and F5 WERE) 27.1 ARE) 27.1 TYP
- Add Assembly 98 including four corner holes that are oversized to reflect the Oversized Tube added as Assembly 98 on NAC Drawing 455-881

The four oversized tubes remain captured between the top and bottom weldments, but have a lower tube weight than the BORAL covered fuel tubes. Consequently, there is no impact on the safety basis of the package.

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NAC Response RAI 1-1 (continued)

Drawing 455-892, Revision 2 — Top Weldment, Fuel Basket, MPC-Yankee

DCR 455-892-1A

- Delete Item 4, Baffle, from all drawing views and the Bill of Materials

The removed baffle is not a structural component and provides no significant shielding. Its removal facilitates fabrication and has no impact on the safety basis of the package.

DCR 455-892-1B

- For the circular hole in Sheet 2, Zone F-6 identified by “3X Ø 1.3”, add the dimension of “18.2 TYP” from the centerline of top weldment, horizontally to the centerline of the circular hole
- Revise dimension in Detail C-C in Zone E-2 IS) “45° x .03 TYP Min” WAS) “45° x .09 TYP”
- Specify a full penetration double-V groove weld for the longitudinal weld of Item 2

The revised weld facilitates fabrication with no reduction in the effective weld size. There is no impact on the safety basis of the package.

DCR 455-892-1C

- Update title block to current NAC format
- Add a weight for Assembly 99
- Dimension, Sheet 1, Zone E7 WAS) R.25 TYP IS) R.3 TYP
- Dimensions located on Sheet 1, Zones E7 and F5 WERE) 15.6 ARE) 15.6 TYP
- Dimensions located on Sheet 1, Zones D4 and F6 WERE) 27.1 ARE) 27.1 TYP
- Add “TYP” to 7.78 dimension on Sheet 1, Zones F5 and F4
- Items 2 and 3 WERE) SA240, PLATE ARE) SA240/SA479, PLATE/BAR
- Add Assembly 98 including four corner holes that are oversized to reflect the Oversized Tube added as Assembly 98 on NAC Drawing 455-881

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NAC Response RAI 1-1 (continued)

DCR 455-892-1C (CONTINUED)

- Dimension, Sheet 1, Zone D4 WAS) 24.2 IS) 24.2 TYP

The four oversized tubes remain captured between the top and bottom weldments, but have a lower tube weight than the BORAL covered fuel tubes. Consequently, there is no impact on the safety basis of the package.

Drawing 455-895, Revision 4 — Fuel Basket Assembly, MPC-Yankee

DCR 455-895-2A

- Item 4 BOM Spec IS) ASTM A249/A213 WAS) ASTM A269

Facilitates material procurement with no change in the material properties considered in the analysis. There is no impact on the safety basis of the package.

DCR 455-895-2B

- Delete Note 2
- Revise weld symbol for Item 4 in Zone C-6 as follows:
 - Delete 1/8" size
 - Revise note in tail to read, "Seal Weld Top Only"

The revised weld is not structural and provides a seal only. There is no impact on the safety basis of the package.

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NAC Response RAI 1-1 (continued)

DCR 455-895-2C

- Add baffle assemblies (Items 16 and 17) and update the Bill of Materials
- Add “prior to welding” at the end of Note 1
- Add the sentence “Alternate assembly in canister is optional” at the end of Note 5 (Note 5 later changed to Note 6)
- Revise dimension on Sheet 1 Zone F-5 IS) .50 + .06 - .00 TYP WAS) .5 Gap
- Add the following sentence to Note 3 as the first sentence in the note, “This dimension applies to the gap between the tallest fuel tube and the top weldment only”
- Revise dimension on Sheet 1 Zone F-1 IS) (6.50) WAS) 6.50
- In Bill of Materials, add a space between ST. and STL. for material for Item 4

Minor changes clarify fabrication instructions and facilitate fabrication. The form, fit and function of the canister basket assembly remains unchanged. These design improvements have no impact on the safety basis of the package.

DCR 455-895-2D

- Update title block to current NAC format
- Add “TYP” to the tails of all three weld notes that add the Baffle Assemblies (Item 1 of DCR 455-895-2C), Detail D-D, Sheet 2
- Add Assembly 98, “FUEL BASKET ASSEMBLY OVERSIZED,” that includes the oversized tube assembly and all related components
- Add Note: “For Assembly 98, locate the 4 tube assembly oversized in the oversized corner openings”

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NAC Response RAI 1-1 (continued)

DCR 455-895-2D (CONTINUED)

- Update Delta Note callout on DCR 895-2C to show correct number
- Update DCR 895-2C, line 3, should be added to Delta Note 6, not 5
- Correct balloon 15 callout, Zone C5

Incorporates user requirement for an oversized fuel tube assembly. The analysis of the oversized tube is bounded by that of the heavier fuel tube having BORAL plates. Consequently, there is no impact on the safety basis of the package.

DCR 455-895-3A

- Remove proprietary note from title block of Sheet

Administrative improvement with no impact on the safety basis of the package.