

August 15, 2012

MEMORANDUM TO: Doug Weaver, Deputy Director  
Division of Spent Fuel Storage and Transportation, NMSS

FROM: Kimberly J. Hardin, Senior Project Manager **/RA/**  
Licensing Branch  
Division of Spent Fuel Storage and Transportation, NMSS

SUBJECT: SUMMARY OF JULY 31, 2012, MEETING WITH NAC INTERNATIONAL  
TO DISCUSS A REVISION REQUEST TO ADD NRU/NRX FUEL AS  
AUTHORIZED CONTENTS IN THE MODEL NO. NAC-LWT  
TRANSPORTATION PACKAGE (TAC NO. L24656)

### Background

A meeting was held on July 31, 2012, in Rockville, Maryland, to discuss a revision request for the Model No. NAC-LWT transportation package. NAC International (NAC or the applicant) asked for the meeting to discuss a revision request to add National Research Universal/National Research Experimental (NRU/NRX) fuel as an authorized content in the NAC-LWT Certificate of Compliance (CoC) No. 9225. This request is a high priority for review to support the Department of Energy's Global Threat Reduction Program. Additionally, NAC discussed the need for an expedited review.

The meeting was noticed on June 26, 2012 (ML12178A648). The meeting attendance list is provided as Enclosure No. 1.

### Discussion

The discussion generally followed the agenda (Enclosure No. 2). The primary reason for the meeting was to discuss a request for a revision request to CoC No. 9225 to authorize the content addition of NRU/NRX fuel.

The request is to ship the NRU/NRX reactor fuel from Canada to the U.S. under the Foreign Research Reactor fuel return program. The payload is undamaged and damaged uranium/aluminum fuel rod bundles. The NRU bundles consist of 12 fuel rods, and the NRX bundles consist of 7 fuel rods. Each bundle contains approximately 0.5 kg <sup>235</sup>U.

NAC first provided a general overview of the revision request, followed by technical presentations, and a discussion of the schedule. The basket design and the fuel description were generally described. Each basket accommodates up to 18 NRU or NRX fuel bundles.

In the structural evaluation discussion, the design configuration was described. Additionally, the evaluation of the top and bottom end plates using a finite element analysis (FEA) model was discussed. Additionally, minimum safety factors were presented based on a 3D ANSYS model.

For the thermal evaluation discussion, NAC stated that the maximum total heat load in the package is 200 W. The current ANSYS model in the Safety Analysis Report (SAR) for the NAC-

LWT package body and container is used to determine the inner shell surface temperature for the NRU/NRX contents.

In the shielding evaluation discussion, NAC described the use of SCALE/TRITON computer code in the depletion model to calculate the source terms. Additionally, a 3-D MCNP model was used to calculate the dose rates.

In the criticality evaluation discussion, NAC described and showed the model images (in the slides) the MCNP5 v1.30 computer code analysis for the NRU/NRX fuel. The maximum reactivity calculated for a single cask is very close to the upper safety limit; therefore, the criticality safety index to be requested is 100.

NAC intends to submit the revision application in early September 2012. Another meeting to describe the application to the review team will be planned shortly thereafter to support an accelerated schedule request for issuing the revision by March 2013.

A copy of the presentation slides is provided as Enclosure No. 3.

Docket No. 71-9225

TAC No. L24656

Enclosures:

1. Meeting Attendees
2. Agenda
3. Presentation Slides

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Distribution: (closes TAC No. L24656)

NRC Attendees J Vera MRahimi DPstrak MSampson

G:\SFST\Hardin\NAC-LWT\MEETING SUMMARY 7-31-12.docx; G:\SFST\Hardin\NAC-LWT\NAC-LWT-July 31 2012-Public Meeting (NRU-NRX) Slides (2).pptx

**ADAMS P8 Package No.: ML12229A107 ADAMD P8 Memo No.: ML12229A109**

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**July 31, 2012, Public Meeting  
Between NAC International and  
the Nuclear Regulatory Commission**

**MEETING ATTENDANCE LIST**

Kim Hardin	NRC/SFST
Mark Lombard	NRC/SFST
Doug Weaver	NRC/SFST
Robert Einziger	NRC/SFST
Jeremy Smith	NRC/SFST
David Tang	NRC/SFST
Andrew Barto	NRC/SFST
Earl Easton	NRC/SFST
Bob Tripathi	NRC/SFST
Joe Borowsky	NRC/SFST
Sara DePaula	NRC/SFST
JoAnn Ireland	NRC/SFST
Jimmy Chang	NRC/SFST
Alexis Sotomayor	NRC/SFST
Zhian Li	NRC/SFST
Anthony Patko	NAC International
Holger Pfeifer	NAC International
George Carver	NAC International
Mike Yaksh	NAC International
David Schroeder	NAC International
Olivier Gandou	Transnuclear
Michael Conroy	DOT/PHMSH/OHMS
Chuck Messick	DOE/NNSA (via phone)
Carlyn Greene	Ux Consulting (via phone)

Agenda for the  
NRC/NAC NAC-LWT Amendment  
Pre-Submission Public Meeting  
July 31, 2012, 1:00 – 4:00 p.m.

Purpose: Pre-submission presentation of the NAC-LWT Transport CoC Amendment  
Request to include NRU/NRX as authorized contents (Docket No. 71-9225)

1:00 p.m.	Introduction/Opening Remarks	NRC/NAC
1:10 p.m.	Presentation of NAC's Planned Submittal	NAC
1:20 p.m.	Technical Discussions	NAC/NRC
3:40 p.m.	Licensing Considerations/Schedule	NAC
3:45 p.m.	Questions and Answers	NRC/NAC
3:50 p.m.	Public Questions/Comments	Public/NRC
3:55 p.m.	Closing Remarks	NRC/NAC