



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

June 12, 2000

MEMORANDUM TO: Susan F. Shankman, Deputy Director
Licensing and Inspection Directorate
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

FROM: Timothy J. McGinty, Senior Project Manager
Licensing Section
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

SUBJECT: SUMMARY OF JUNE 8, 2000, MEETING WITH NAC INTERNATIONAL
ON THE PLANNED SUBMITTAL OF NAC-UMS STORAGE AND
TRANSPORTATION AMENDMENT APPLICATIONS (TAC NO. L23094)

On June 8, 2000, representatives of the Nuclear Regulatory Commission (NRC) and NAC International, Inc. (NAC) met to discuss NAC's planned submittal of amendment applications for the NAC-UMS Storage and Transport systems. An attendance list is included as Attachment 1. Attachment 2 includes the agenda provided by NAC at the meeting. No handouts regarding the presentation were provided at the meeting. This meeting was noticed on May 25, 2000.

The meeting commenced with a discussion by NAC regarding the basis for the development of the planned amendments, which are referred to as the "Advanced NAC-UMS" designs. NAC established the relationship to the existing NAC-UMS storage and transport designs under review by the NRC. For the NAC-UMS storage and transport designs, the transportable storage canister (TSC), vertical concrete cask (VCC), transfer cask and transport cask will have the same external dimensions. However, the amendments will seek changes to the allowed contents and modified baskets (internals of the TSC).

Regarding the new baskets, NAC will be departing from the existing "tube and disk" designs and will, instead, pursue the mechanical assembly of six stacked basket modules. This basket design, also referred to by NAC as "connected cell," supports fuel assemblies along the full length of the cask. The baskets will be sized to accommodate up to 32 pressurized water reactor (PWR) assemblies and up to 69 boiling water reactor (BWR) assemblies. NAC intends to seek authorized cask heat loads for storage of up to 30 kW, with fuel enrichments up to 4.5 weight-percent U-235 (possibly higher) for both the PWR and BWR designs. NAC also intends to seek some degree of burnup and spent fuel pool boron credit for the PWR contents. NAC anticipates that it will seek burnups of 55 and 50 GWd/MTU for PWR and BWR designs, respectively. The staff noted that Interim Staff Guidance No. 11, Revision 1, "Transportation and Storage of Spent Fuel Having Burnups in Excess of 45 GWd/MTU," does not restrict burnup levels and focuses on the potential cladding creep and failure mechanisms for spent fuel.

The basket internals for both PWR and BWR designs will consist of electroless nickel plated carbon steel, with borated aluminum fuel sleeves. NAC indicated that carbon steel, vice stainless steel, was selected for the basket internals to take advantage of the carbon steel's higher yield strength, lower thermal expansion, and higher thermal conductivity material properties. The construction of the modular "egg crate" basket is designed to minimize gaps, thus enhancing heat removal characteristics

NAC presented a system weight summary for the proposed amendments. The maximum fuel weight within a TSC will be under 25 tons. The loaded TSC, with lids, will weigh less than 45 tons, and a loaded VCC will weigh less than 165 tons. A loaded transport cask, without impact limiters, will weigh less than 125 tons.

For the transport cask, NAC intends to develop an enhanced impact limiter which will use balsa instead of redwood. NAC intends to confirm the performance of the modified impact limiters by scale model confirmatory drop tests.

NAC also provided an overview of its planned analytical approach for the submittals, which will include the use of the FLUENT code for thermal analysis, MONK code for criticality analysis, and an overall increase in the use of three-dimensional analysis. NAC intends to specify higher helium backfill pressures in the TSC and to take credit for convective heat transfer.

The staff observed on several occasions that there are several complicated and challenging aspects of the planned submittals. The staff indicated that the changes to the basket design, analytical approaches, credits for soluble boron and burnup, credit for convective heat transfer, higher weights, larger capacities, expanded fuel characteristics and authorized contents, and impact limiter modifications will constitute a highly complex NRC licensing review.

The meeting concluded with a discussion of NAC's planned submittal schedule for the Advanced NAC-UMS Storage and Transport applications. NAC indicated that the storage application would be submitted on December 1, 2000, with a desired approval for use by March 2002. The staff responded that, based on its understanding of the complex nature of the planned amendments, coupled with the rulemaking process for 10 CFR Part 72 certificate amendments, NAC's desired approval schedule is extremely optimistic. NAC intends to submit the transport application for amendment by February 15, 2001, and expressed a desired approval date by July 2002. Since the NAC-UMS Transport design has not been certified, with NAC having yet to respond to the staff's August 30, 1999, initial request for information, the staff did not provide NAC any feedback regarding the licensing schedule for an amendment. During the course of the meeting, no regulatory decisions were requested or made.

Docket Nos: 71-9270, 72-1015

Attachments: 1. Attendance List
2. Agenda

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*See previous concurrence

OFC	SFPO	E	SFPO	3E	SFPO	E		
NAME	TMcGinty*		VLTharpe*		JRHall*			
DATE	06/ 9 /00		06/ 9 /00		06/ 12 /00			

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June 8, 2000, Meeting between NAC International
and Nuclear Regulatory Commission

ATTENDANCE LIST

<u>Name</u>	<u>Affiliation</u>
Tim McGinty	NRC/SFPO
M. Wayne Hodges	NRC/SFPO
Steve Baggett	NRC/SFPO
Geoff Hornseth	NRC/SFPO
Bill Lee	NAC International
Charlie Pennington	NAC International
James Ballow	NAC International
Tom Thompson	NAC International
Mike Callahan	GSI

Agenda

- Introductions
- Purpose & Objectives of the Meeting
- Basis for Development of the Advanced NAC-UMS
- General Licensing & Design Considerations
 - Relationship to Existing NAC-UMS Licenses
 - General Design Considerations
- Specific Design Features
 - Authorized Contents
 - System Weight Summary
 - Technical Attributes of the Advanced NAC-UMS Design
 - Storage System
 - Transport Cask System
- Proposed Licensing Schedules
 - Storage
 - Transport

