

April 30, 1997

U. S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, Maryland 20555-0001

Attention: Document Control Desk

Subject: Docket No. 71-9270: Safety Analysis Report for the UMS™ Universal Transport Cask, Revision 0

NAC International Inc. (NAC) hereby submits ten (10) copies of the Transport Cask Safety Analysis Report (SAR) for its private-sector MPC initiative, the Universal Multi-Purpose Canister System (UMS™).

The UMS™ is the first U. S. canister-based transportable storage system designed to safely accommodate virtually all U. S. and international light-water reactor spent fuel. The system's unique features include: an integrated, stringent Quality Assurance approach, the participation of a turn-key global team under NAC's direction, including U. S. utilities and an international consortium; a transport, operations and manufacturing-based design perspective; and incorporation of licensed components, e.g., the NAC-STC fuel basket, transport overpack, and impact limiters.

NAC hereby requests NRC approval and issuance of a Certificate of Compliance for the design of the UMS™ Universal Transport Cask under the provisions of 10 CFR 71. This safety analysis report documents the structural, thermal, criticality, shielding, and containment analyses that demonstrate the adequacy of the UMS™ Universal Transport Cask in satisfying all of the licensing requirements of 10 CFR 71. NAC has separated and enclosed ten copies of two drawings that contain proprietary information. The appropriate Affidavit requesting that these drawings not be disclosed to the public is included with this letter. A nonproprietary version of the drawings has been included in the SAR.

The UMS™ system is based on the dual-licensed and proven technology of the NAC Storable Transport Cask and patented basket (NAC-STC, Docket No. 71-9235), the NAC-STC's adaptation for canistered fuel as submitted in Revision 9 on December 30, 1996 and other licensed NAC cask designs. The entire UMS™ system is composed of a transport cask, a transportable storage canister, a vertical concrete storage cask and a transfer cask as well as appropriate handling equipment.

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In the transport cask application, the spent fuel contents are contained in a sealed welded canister which is placed within the transport cask. The UMS™ transportable storage canister contains a basket that is based on the patented tube and disk design of the NRC-licensed NAC-STC. The UMS™ system includes five different sets of canisters and baskets with capacities ranging from 24 PWR assemblies to 56 BWR assemblies. The canister and basket structural materials are primarily all stainless steel with a limited number of aluminum disks in the basket to enhance heat transfer. BORAL is used in criticality control and is encapsulated in stainless steel. Thus, corrosion and galvanic reactions are greatly minimized. The canister and basket structural design satisfies both the regulatory requirements of 10 CFR 71 for transport and 10 CFR 72 for storage packages.

The Universal Transport Cask design is based on the same proven and NRC-approved principles as other NAC licensed transport casks. This cask design is a multiwall design consisting of layers of stainless steel, lead, stainless steel and NS-4-FR neutron shielding. These are the same materials used in the NRC-licensed NAC-STC and NAC-LWT cask designs. The associated impact limiter design is based on test data already accepted by the NRC and consists of a combination of redwood and balsa wood encased in stainless steel.

The analytical techniques used to demonstrate the adequacy of the design to meet 10 CFR 71 requirements are the same as those used for the NAC-STC, NAC-LWT and NAC-MPC systems. The structural and thermal analyses used ANSYS computer code to perform the calculations. The shielding and criticality analyses used the SCALE computer code package to perform the evaluations. Conservatism in both the input values used in the analyses and in the methodology ensure that the results will be well within the appropriate regulatory limits and demonstrate adequate safety margins. All computer codes have been verified in accordance with NAC's Quality Assurance program.

NAC has performed a comprehensive series of drop tests on a quarter scale model of the NAC-STC to justify impact limiter design and those test results compared closely to predictions. An identical effort in design, development and testing was performed on a similar design in Spain with similar favorable results. Notwithstanding these experiences and knowledge, NAC is initiating design and fabrication of a quarter scale model of the Universal Transport Cask package and will perform drop tests in late 1997 or early 1998.

A companion storage SAR for the UMS™ system is in final preparation and is expected to be submitted to the NRC in the very near future. The storage application is based on the same transportable storage canister utilized in this transport application.

NAC has taken the extra step of evaluating all current Requests for Additional Information (RAI) issued by the NRC on all relevant licensing applications. NAC has addressed the issues raised by the relevant RAIs and incorporated responses into the Universal Transport Cask SAR so as to facilitate the review of the NRC technical staff and streamline the approval process.

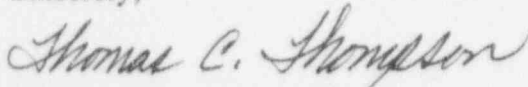
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The UMS™ system is designed to be in full compliance with the DOE OCRWM program and the canister itself meets or exceeds the DOE MPC specifications. Additionally, the UMS™ transportable storage canister is compatible with the DOE MPC guidelines for future disposal. As a result, the UMS™ system meets the anticipated needs of all the U. S. utilities, hence the name the Universal MPC System. Thus, many utilities will utilize this system at their ISFSI or at a central interim storage site after NRC-approval of the UMS™ system. Currently, the UMS™ system is under serious consideration by U. S. utilities and several major utilities are actively exploring deployment. Therefore, prompt consideration of this submittal would facilitate its implementation and use.

NAC appreciates and will support all actions that the NRC may be able to take to expedite the review and approval of the UMS™ Transport Cask SAR. NAC stands ready to cooperate with the NRC to supply any requested additional information. If you have any comments or questions, please contact me at (770) 447-1144. NAC is ready to discuss any comments or questions that your staff may identify.

Sincerely,



Thomas C. Thompson
Manager, Licensing
Engineering & Design Services

TCT/jc

Enclosures

cc: C. J. Haughney (w/o enclosures)
Tim McGinty (w/o enclosures)

**AFFIDAVIT IN SUPPORT OF
PROPRIETARY INFORMATION CONTAINED
IN THE DRAWINGS FOR THE UMSTM UNIVERSAL TRANSPORT CASK**

State of Georgia, County of Gwinnett

Willington J. Lee (Affiant), Vice President and Chief Engineer of NAC International, hereinafter referred to as NAC, at 655 Engineering Drive, Norcross, Georgia, 30092, being duly sworn, deposes and says that:

1. Affiant is personally familiar with the trade secrets and privileged information contained in the drawings of the Universal Transport Cask Impact Limiters in conjunction with the request for approval of Revision 0 of the Safety Analysis Report (SAR) for the UMSTM Universal Transport Cask. (Attachment A provides a listing of the subject drawings.) Affiant requests that the Nuclear Regulatory Commission, pursuant to Chapter 10 of the Code of Federal Regulations, Part 2.790 (10 CFR 2.790) "Public Inspections, Exemptions, Request for Withholding," withhold the information contained within the drawings, hereafter referred to as the Proprietary Material, from public disclosure.
2. This information has been and is held in confidence by NAC International Inc.
3. The information contained within the proprietary material is results of design calculations and components design details and critical dimensions that were developed by NAC. This type of information is held in confidence based on the significant commercial investment of time and money expended in its development.
4. The Proprietary material is transmitted to the Nuclear Regulatory Commission in confidence.
5. The information that is being claimed as trade secrets and privileged information has not been and is not available in public sources.

7. NAC has invested a considerable amount of time, engineering labor, and money in the development of the information. Public disclosure of this information would cause substantial harm to NAC's competitive position. Others, seeking to design similar transport cask systems, would have to make similar investments to develop the information on their own as long as the information is not disclosed to the public.

Willington J. Lee

Willington J. Lee
Vice President and Chief Engineer
NAC International Inc.

Subscribed and sworn to before me this 30th day of April, 1997.

Nancy L. Simon

Notary Public in and for
the County of Gwinnett
State of Georgia

My commission expires the ____ day of _____

**Notary Public, Gwinnett County, Georgia
My Commission Expires March 5, 2001**

**ATTACHMENT A
TO
AFFIDAVIT IN SUPPORT OF
PROPRIETARY INFORMATION CONTAINED
IN THE DRAWINGS FOR THE UMSTM UNIVERSAL TRANSPORT CASK**

NAC INTERNATIONAL PROPRIETARY DRAWINGS

Drawing No. 790-506, Revision 0, Sheets 1 & 2, Impact Limiter Assembly -
Upper, Cask, NAC-UMSTM

Drawing No. 790-507, Revision 0, Sheets 1 & 2, Impact Limiter Assembly -
Lower, Cask, NAC-UMSTM