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INFORMATION**

**ATTACHMENT II**

**MAINE YANKEE ATOMIC POWER CO.**

**FINAL SAFETY ANALYSIS REPORT**

**for the**

**NAC UNIVERSAL MPC SYSTEM (UMS<sup>®</sup>) UNIVERSAL STORAGE SYSTEM**

**MAINE YANKEE ATOMIC POWER COMPANY  
FINAL SAFETY ANALYSIS REPORT FOR  
NAC UMS® UNIVERSAL STORAGE SYSTEM**

Description of Contents

Maine Yankee Atomic Power Company presents this Final Safety Analysis Report for the NAC UMS® Universal Storage System. Pursuant to 10CFR72.240(c), Maine Yankee is providing reference to the SAR originally submitted for the approved spent fuel storage cask design and identifying modifications to the SAR and, in particular, the Technical Specifications contained in Chapter 12 of the SAR.

The contents of the Final Safety Analysis Report reference below are hereby incorporated by reference, subject to certain modifications identified under the applicable Chapter identified below:

**SAR Reference:**

- (a) NAC Certificate of Compliance for Spent Fuel Storage Casks Issued to NAC International Inc. Certificate No. 1015, Amendment No. 3, dated 3/22/2004
- (b) Certificate of Compliance, Appendix A, Technical Specifications for the NAC-UMS® System
- (c) NAC International Inc., Final Safety Analysis Report (FSAR) for the UMS® Universal Storage System Docket No. 72-1015

**1.0 GENERAL DESCRIPTION**

The contents of this chapter include, by reference, the entire contents of the corresponding chapter of the referenced NAC UMS® Final Safety Analysis Report subject to the following modifications:

- a. Chapter 1.0 General Description, pg. 1-1 - add the following to the end of the first paragraph:

Maine Yankee Atomic Power Co. holds the 10 CFR Part 72 Certificate of Compliance for the NAC UMS® spent fuel storage casks that are being used by Maine Yankee.

- b. Chapter 1.0 General Description, Table 1.2-6 Vertical Concrete Cask Fabrication Specification Summary, pg. 1.2-27 - Second sentence under "Quality Assurance" should be revised to state:

"The quality assurance program must be accepted by Maine Yankee prior to the initiation of the work."

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- c. Chapter 1.0 General Description, Table 1.5-1 NUREG-1536 Compliance Matrix, pg. 1.5-3, Item No. 5 Quality Assurance and pg. 1.5-50, Item associated with 10 CFR 72.24 - Add the following under Description of Compliance:

“Maine Yankee maintains a quality assurance program that meets the requirements of 10CFR Part 72, Subpart G for the design, construction, testing, operation, modification and decommissioning of the spent fuel storage casks used by Maine Yankee.”

- d. Chapter 1.0 General Description, Table 1.5-1 NUREG-1536 Compliance Matrix, pgs. 1.5-51 through 1.5-53. - Replace with the pages provided below.
- e. Chapter 1.0 General Description, Section 1.6 Identification of Agents and Contractors, pgs 1.6-1 and 1.6-2 - Replace with the pages provided below.

## 2.0 PRINCIPAL DESIGN CRITERIA

The contents of this chapter include, by reference, the entire contents of the corresponding chapter of the referenced NAC UMS® Final Safety Analysis Report.

## 3.0 STRUCTURAL EVALUATION

The contents of this chapter include, by reference, the entire contents of the corresponding chapter of the referenced NAC UMS® Final Safety Analysis Report.

## 4.0 THERMAL EVALUATION

The contents of this chapter include, by reference, the entire contents of the corresponding chapter of the referenced NAC UMS® Final Safety Analysis Report.

## 5.0 SHIELDING EVALUATION

The contents of this chapter include, by reference, the entire contents of the corresponding chapter of the referenced NAC UMS® Final Safety Analysis Report.

## 6.0 CRITICALITY EVALUATION

The contents of this chapter include, by reference, the entire contents of the corresponding chapter of the referenced NAC UMS® Final Safety Analysis Report.

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**7.0 CONFINEMENT**

The contents of this chapter include, by reference, the entire contents of the corresponding chapter of the referenced NAC UMS® Final Safety Analysis Report.

**8.0 OPERATING PROCEDURES**

The contents of this chapter include, by reference, the entire contents of the corresponding chapter of the referenced NAC UMS® Final Safety Analysis Report.

**9.0 ACCEPTANCE CRITERIA AND MAINTENANCE PROGRAM**

The contents of this chapter include, by reference, the entire contents of the corresponding chapter of the referenced NAC UMS® Final Safety Analysis Report.

**10.0 RADIATION PROTECTION**

The contents of this chapter include, by reference, the entire contents of the corresponding chapter of the referenced NAC UMS® Final Safety Analysis Report.

**11.0 ACCIDENT ANALYSES**

The contents of this chapter include, by reference, the entire contents of the corresponding chapter of the referenced NAC UMS® Final Safety Analysis Report.

**12.0 OPERATING CONTROLS AND LIMITS**

The contents of this chapter include, by reference, the entire contents of the corresponding chapter of the referenced NAC UMS® Final Safety Analysis Report.

- a. Chapter 12.0 Operating Controls and Limits - Add sentence second paragraph, following second sentence as follows:

“Controls used by Maine Yankee in changes to the NAC-UMS® design are provided in the Maine Yankee Quality Assurance Program.”

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- b. Technical Specification B 3.0 Design Features, Table 12B3-1 List of ASME Code Exceptions for the NAC-UMS® System, pg. 12B3-6 - The references to NAC's approved QA Program and NAC approved suppliers under the column headed "Exception, Justification and Compensatory Measures" for the "CANISTER Vessel", "CANISTER Basket Assembly" and "CANISTER Vessel and Basket Assembly Material" should be changed to refer to either NAC's or Maine Yankee's approved QA Program and NAC or Maine Yankee approved suppliers.

Accordingly, provided below is a replacement page for page B3-6 of Appendix B, Approved Contents and Design Features for the NAC-UMS® System.

### 13.0 QUALITY ASSURANCE

The contents of this chapter include, by reference, the entire contents of the corresponding chapter of the referenced NAC UMS® Final Safety Analysis Report. The contents of this chapter are preserved to document the Quality Assurance Program under which the spent fuel storage casks were originally designed and fabricated. Maine Yankee will be using its own Quality Assurance Program pursuant to 10 CFR Part 50, Appendix B and approved by the NRC under Maine Yankee's Operating License for application to its spent fuel storage cask activities

## 1.6 Identification of Agents and Contractors

Originally, the prime contractor for the Universal Storage System design was NAC and all design and specification activities were performed by NAC. With the issuance of the Certificate of Compliance to Maine Yankee, Maine Yankee performs design and specification activities, as required, in accordance with the Maine Yankee Quality Assurance Program. Fabrication of the steel components was by qualified vendors. Assembly of the Vertical Concrete Cask is performed by a qualified concrete contractor. All fabrication activities are performed in accordance with quality assurance programs meeting the requirements of 10 CFR 71 and 10 CFR 72.

### Qualifications of NAC

NAC is a private corporation founded in 1968, whose primary focus is the tracking, inspection, handling, storage, and transportation of spent nuclear fuel. NAC is recognized in the industry as expert in all aspects of the design, licensing, and operation of spent fuel handling, inspection, storage, and transport equipment, as well as in the management of spent fuel inventories.

NAC is the leading United States company in the transport of spent nuclear fuel, owning and operating the largest fleet of commercial spent fuel transport casks in the United States. This fleet includes the following casks:

- 5 NLI-1/2 (truck) - 1 PWR/2 BWR - Approved for the transport of LWR and metallic fuel and for high level waste.
- 8 NAC LWT (truck) - 1 PWR/2 BWR - Approved for the transport of LWR fuel, metallic fuel, research reactor fuel and high level waste.
- 2 NLI-10/24 (Rail) - 10 PWR/24 BWR - Approved for the transport of LWR fuel

These casks are approved by the U.S. NRC under 10 CFR 71 and have successfully and safely completed more than 3,500 shipments of spent fuel and high level waste for more than 60 nuclear facilities.

NAC has designed, analyzed, and obtained NRC approval for the following dry storage casks:

- NAC-I26 S/T – Approved on Part 72 Subpart K with Certificate of Compliance for storage of 26 PWR fuel assemblies (Docket 72-1002)
- NAC-I28 S/T – Approved as suitable reference for use in a site specific license application for the storage of 28 PWR fuel assemblies (Docket 72-1020)
- NAC-C28 S/T - Approved on Part 72 Subpart K with Certificate of Compliance for the storage of 28 consolidated PWR fuel canisters (56 assemblies) (Docket 72-1003)

Within the past 15 years, NAC has completed fabrication or has under construction the following storage and/or transportation casks.

Part 71 fabrication statistics:

- 8 NAC-LWT shipping casks
- 16 TRUPACT-II shipping casks
- 6 RH-TRU 72B shipping casks
- 2 NAC-STC shipping casks

Part 72 fabrication/construction statistics:

- 6 UMS/MPC transfer casks
- 2 NAC-I28 S/T storage casks
- 1 NAC-I26 S/T storage casks
- 173 UMS/MPC transportable storage canisters
- 179 UMS/MPC concrete storage casks

NAC has also designed the NAC-STC rail cask for the storage and transport of directly loaded spent fuel. The NAC-STC is approved for use in site specific applications (Docket 72-1013) for storage and for transport (Certificate of Compliance Number 71-9235) of directly-loaded fuel and canistered Yankee class spent fuel.

The Multi-Purpose Canister system (NAC-MPC) is approved for the long-term storage of Yankee class spent fuel (Docket 72-1025).

Qualifications of Maine Yankee

Maine Yankee Atomic Power Co. is the sole applicant for reapproval of the Certificate of Compliance originally issued to NAC for the UMS® Universal Storage System as Certificate of Compliance No. 72-1015. Maine Yankee Atomic Power Co. was incorporated on January 3, 1966 by eleven New England investor-owned utilities for the purpose of constructing and operating a nuclear generating plant in Wiscasset, Maine. Maine Yankee as the owner of the plant has been responsible for the design, construction and fabrication of structures, systems and components used in the utilization, handling and storage of nuclear fuel for more than thirty years. Maine Yankee operated the nuclear reactor in accordance with Operating License No. DPR-36 (Docket No. 50-309) from September of 1972 until it submitted a certification of cessation of reactor operation in August of 1997. Maine Yankee is currently decommissioning the facility in accordance with an NRC approved License Termination Plan and has transferred its spent fuel from its fuel storage pool to spent fuel storage casks as a general licensee using casks approved by NRC Certificate of Compliance. No. 72-1015. As a general licensee user of these casks, Maine Yankee is qualified as an applicant for reapproval of the Certificate of Compliance for assignment to itself. Maine Yankee maintains a NRC approved Quality

Assurance Program which meets the requirements of 10 CFR Part 50, Appendix B, 10 CFR Part 71, Subpart H, and 10 CFR Part 72, Subpart G for the scope of spent fuel storage cask activities including design, procurement, document control, inspection, testing, handling, storage and shipping, corrective actions, record storage and audit activities.

Reference to 10 CFR Part 71 Certificate of Compliance

Finally, the Transportable Storage Canister reported in this SAR is designed to be transported in the Universal Transport Cask. The Safety Analysis Report for the Universal Transport Cask is submitted under Docket 71-9270.

Table 1.5-1 NUREG-1536 Compliance Matrix (continued)

Chapter 13 - Quality Assurance		
Area	Acceptance Criteria	Description of Compliance
1. Quality Assurance Organization	The SAR should describe (and illustrate in an appropriate chart) the organizational structure, interrelationships, and areas of functional responsibility and authority for all organizations performing quality- and safety- related activities, including both the applicant's organization and principal contractors, if applicable. Persons or organizations responsible for ensuring that an appropriate QA program has been established and verifying that activities affecting quality have been correctly performed should have sufficient authority, access to work areas, and organizational freedom to carry out that responsibility.	The NAC QA organization is described in Section 13.2.1. An organizational chart of the NAC QA organization is provided in Figure 13.2- 1. The Maine Yankee QA organization is described in the Maine Yankee Quality Assurance Program (MYQAP) section 1
2. Quality Assurance Program	The SAR should provide acceptable evidence that the applicant's proposed QA program will be well- documented, planned, implemented, and maintained to provide the appropriate level of control over activities and SSCs, consistent with their relative importance to safety.	The implementation of the NAC QA program is described in Section 13.2.2. The implementation of the Maine Yankee QA program is described in MYQAP Section 2
3. Design Control	The SAR should describe the approach that the applicant will use to define, control, and verify the design and development of the DCSS. An effective design control program will provide assurance that the proposed DCSS will be appropriately designed and tested and will perform its intended function	Design control for the NAC QA program is described in Section 13.2.3. Design control for the Maine Yankee QA program is described in MYQAP Section 3
4. Procurement Document Control	Documents used to procure SSCs or services should include or reference applicable design bases and other requirements necessary to ensure adequate quality. To the extent necessary, these procurement documents should require that suppliers have a QA program consistent with the quality level of the SSCs or services to be procured.	Procurement document control for the NAC QA program is described in Section 13.2.4. Procurement document control for the Maine Yankee QA program is described in MYQAP Section 4.
5. Instructions, Procedures, and Drawings	The SAR should define the applicant's proposed procedures for ensuring that activities affecting quality will be prescribed by, and performed in accordance with, documented instructions, procedures, or drawings of a type appropriate for the circumstances.	Procedures, instructions and drawings for the NAC QA program are described in Section 13.2.5. Procedures, instructions and drawings for the Maine Yankee QA Program are described in MYQAP Section 5.
6. Document Control	The SAR should define the applicant's proposed procedures for preparing, issuing, and revising documents that specify quality requirements or prescribe activities affecting quality. These procedures should provide adequate control to ensure that only the latest documents are used. In addition, the applicant's authorized personnel should carefully review and approve the accuracy of all documents and associated revisions before they are released for use.	Document control for the NAC QA program is described in Section 13.2.6. Document control for the Maine Yankee QA program is described in MYQAP Section 6

Table 1.5-1 NUREG-1536 Compliance Matrix (continued)

7. Control of Purchased Material, Equipment, and Services	The SAR should define the applicant's proposed procedures for controlling purchased material, equipment, and services to ensure conformance with specified requirements.	Control of purchased items and services for the NAC QA program is described in Section 13.2.7. Control of purchased items and services for the Maine Yankee QA program is described in MYQAP Section 7
8. Identification and Control of Materials, Parts, and Components	The SAR should define the applicant's proposed provisions for identifying and controlling materials, parts, and components to ensure that incorrect or defective SSCs are not used.	Identification and control of material, parts and components for the NAC QA program are described in Section 13.2.8 Identification and control of material, parts and components for the Maine Yankee QA program are described in MYQAP Section 8
9. Control of Special Processes	The SAR should describe the controls that the applicant will establish to ensure the acceptability of special processes (such as welding, heat treatment, nondestructive testing, and chemical cleaning) and that they are performed by qualified personnel using qualified procedures and equipment..	Control of special processes for the NAC QA program is described in Section 13.2.9 Control of special processes for the Maine Yankee QA program is described in MYQAP Section 9
10. Licensee Inspection	The SAR should define the applicant's proposed provisions for inspection of activities affecting quality to verify conformance with instructions, procedures, and drawings.	Inspection for the NAC QA program is described in Section 13.2.10. Inspection for the Maine Yankee QA program is described in MYQAP Section 10.
11. Test Control	The SAR should define the applicant's proposed provisions for tests to verify that SSCs conform to specified requirements and will perform satisfactorily in service. The applicant should specify test requirements in written procedures, including provisions for documenting and evaluating test results. In addition, the applicant should establish qualification programs for test personnel.	Test control for the NAC QA program is described in Section 13.2.11. Test control for the Maine Yankee QA program is described in MYQAP Section 11
12. Control of Measuring and Test Equipment	The SAR should define the applicant's proposed provisions to ensure that tools, gauges, instruments, and other measuring and testing devices are properly identified, controlled, calibrated, and adjusted at specified intervals.	Control of measuring and test equipment for the NAC QA program is described in Section 13.2.12. Control of measuring and test equipment for the Maine Yankee QA program is described in MYQAP Section 12.
13. Handling, Storage, and Shipping Control	The SAR should define the applicant's proposed provisions to control the handling, storage, shipping, cleaning, and preservation of SSCs in accordance with work and inspection instructions to prevent damage, loss, and deterioration.	Handling, storage and shipping for the NAC QA program are described in Section 13.2.13. Handling, storage and shipping for the Maine Yankee QA program are described in MYQAP Section 13.

Table 1.5-1 NUREG-1536 Compliance Matrix (continued)

<p>14. Inspection, Test, and Operating Status</p>	<p>The SAR should define the applicant's proposed provisions to control the inspection, test, and operating status of SSCs to prevent inadvertent use or bypassing of inspections and tests.</p>	<p>Inspection, test, and operating status for the NAC QA program are described in Section 13.2.14.  Inspection, test, and operating status for the Maine Yankee QA program are described in MYQAP Section 14</p>
<p>15. Nonconforming Materials, Parts, or Components</p>	<p>The SAR should define the applicant's proposed provisions to control the use or disposition of nonconforming materials, parts, or components.</p>	<p>Control of nonconforming items for the NAC QA program is described in Section 13.2.15.  Control of nonconforming items for the Maine Yankee QA program is described in MYQAP Section 15</p>
<p>16. Corrective Action</p>	<p>The SAR should define the applicant's proposed provisions to ensure that conditions adverse to quality are promptly identified and corrected and that measures are taken to preclude recurrence.</p>	<p>Corrective action for the NAC QA program is described in Section 13.2.16.  Corrective action for the Maine Yankee QA program is described in MYQAP Section 16.</p>
<p>17. Quality Assurance Records</p>	<p>The SAR should define the applicant's proposed provisions for identifying, retaining, retrieving, and maintaining records that document evidence of the control of quality for activities and SSCs important to safety.</p>	<p>Records for the NAC QA program are described in Section 13.2.17.  Records for the Maine Yankee QA program are described in MYQAP Section 17.</p>
<p>18. Audits</p>	<p>The SAR should define the applicant's proposed provisions for planning, scheduling, and conducting audits to verify compliance with all aspects of the QA program, and to determine the effectiveness of the overall program. The SAR should clearly identify responsibilities and procedures for conducting audits, documenting and reviewing audit results, and designating management levels to review and assess audit results. In addition, the SAR should describe the applicant's provisions for incorporating the status of audit recommendations in management reports.</p>	<p>Audits for the NAC QA program are described in Section 13.2.18.  Audits for the Maine Yankee QA program are described in MYQAP Section 18.</p>

Table B3-1 List of ASME Code Exceptions for the NAC-UMS® SYSTEM (continued)

Component	Reference ASME Code Section/Article	Code Requirement	Exception, Justification and Compensatory Measures
CANISTER Vessel	NB-8000	States requirements for nameplates, stamping and reports per NCA-8000.	The NAC-UMS® SYSTEM is marked and identified in accordance with 10 CFR 72 requirements. Code stamping is not required. The QA data package will be in accordance with NAC's or Maine Yankee's approved QA Program.
CANISTER Basket Assembly	NG-2000	Requires materials to be supplied by ASME approved material supplier.	Materials to be supplied by NAC or Maine Yankee approved suppliers with CMTRs in accordance with NG-2000 requirements.
CANISTER Basket Assembly	NG-8000	States requirements for nameplates, stamping and reports per NCA-8000	The NAC-UMS® SYSTEM will be marked and identified in accordance with 10 CFR 72 requirements. No Code stamping is required. The CANISTER basket data package will be in accordance with NAC's or Maine Yankee's approved QA Program.
CANISTER Vessel and Basket Assembly Material	NB-2130/ NG-2130	States requirements for certification of material organizations and materials to NCA-3861 and NCA-3862, respectively.	The NAC UMS® CANISTER and Basket Assembly component materials are procured in accordance with specifications for materials in ASME Code Section II with Certified Material Test Reports. The component materials will be obtained from NAC approved Suppliers in accordance with NAC's or Maine Yankee's approved QA Program.