

July 27, 2001

U.S. Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852-2738

Attn: Document Control Desk

Subject: Supplemental SAR Changed Pages for the Final Safety Analysis Report for the
NAC-MPC Multi-Purpose Canister System to Incorporate Amendment 1 for Yankee
Rowe

Docket No. 72-1025 (TAC No. L23213)

- References:
1. Certificate of Compliance (CoC) for the NAC International, Inc, Multi-Purpose Canister (MPC) System, U.S. Nuclear Regulatory Commission (NRC), April 10, 2000
 2. Request for Amendment of the NAC-MPC CoC for Yankee Rowe Fuel, NAC International, September 29, 2000
 3. NRC/NAC Conference Calls on July 25 and 26, 2001

In accordance with conference call discussions (Reference 3), NAC International (NAC) herewith submits ten copies of the Final Safety Analysis Report (FSAR) changed pages to supplement the request for Amendment #1 of the NAC-MPC Multi-Purpose Canister System Certificate of Compliance (Reference 1).

This submittal includes the FSAR changed pages, which are designated as Revision MPC-01C. The changed pages have been prepared in accordance with the following conventions:

- Revision indicators (revision bars) are used to highlight changes. Revision bars are not used to indicate text flow, but the revised "text flow" pages are provided for completeness.
- The changed pages for this submittal are designated as Revision MPC-01C to provide a unique identification of the pages and changes.
- All of the pages in the List of Effective Pages are designated Revision MPC-01C, but no revision bars are used on those pages.

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The SURVEILLANCE FREQUENCIES for LCO 3.1.2, CANISTER Vacuum Drying Pressure, and LCO 3.1.3, CANISTER Helium Backfill Pressure, in Chapter 12, are revised to be consistent with the extended operating times incorporated in LCO 3.1.5 by this requested Amendment. The associated changes in the BASES for LCO 3.1.2 and 3.1.3 are also incorporated.

If you have any comments or questions, please contact me at my direct number (678) 328-1321.

Sincerely,



Thomas C. Thompson
Director, Licensing
Engineering & Design Services

Enclosures

cc: Bruce Holmgren (YAEC)
James Kay (YAEC)

JULY 2001

REVISION MPC-01C

NAC-MPC

SAFETY ANALYSIS REPORT

for the

NAC Multi-Purpose Canister System

Docket No. 72-1025



Atlanta Corporate Headquarters
655 Engineering Drive, Norcross, Georgia 30092
Phone 770-447-1144, Fax 770-447-1797
www.nacintl.com

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CANISTER Vacuum Drying Pressure
A 3.1.2

- 3.1 NAC-MPC SYSTEM Integrity
3.1.2 CANISTER Vacuum Drying Pressure

LCO 3.1.2 The CANISTER vacuum drying pressure shall meet the limit specified in Table 12A3-1.

APPLICABILITY: During LOADING OPERATIONS

ACTIONS

-----NOTE-----

Separate Condition entry is allowed for each NAC-MPC SYSTEM.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CANISTER vacuum drying pressure limit not met.	A.1 Establish CANISTER cavity vacuum drying pressure within limit.	25 days
B. Required Action and Associated Completion Time not met.	B.1 Remove all fuel assemblies from the NAC-MPC SYSTEM.	5 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.2.1 Verify CANISTER cavity vacuum drying pressure is within limit	Prior to TRANSPORT OPERATIONS.

CANISTER Helium Backfill Pressure
A 3.1.3

3.1 NAC-MPC SYSTEM Integrity
3.1.3 CANISTER Helium Backfill Pressure

LCO 3.1.3 The CANISTER helium backfill pressure shall meet the limit specified in Table 12A3-1.

APPLICABILITY: During LOADING OPERATIONS

ACTIONS

-----NOTE-----

Separate Condition entry is allowed for each NAC-MPC SYSTEM.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. CANISTER helium backfill pressure limit not met.	A.1 Establish CANISTER helium backfill pressure within limit.	25 days
B. Required Action and Associated Completion Time not met.	B.1 Remove all fuel assemblies from the NAC-MPC SYSTEM.	5 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.1.3.1 Verify CANISTER helium backfill pressure is within limit	Prior to TRANSPORT OPERATIONS.

CANISTER Vacuum Drying Pressure
B 3.1.2

The heat-up of the CANISTER and contents will occur during CANISTER vacuum drying but is controlled by LCO 3.1.5.

LCO A vacuum pressure, meeting the limit specified in Table 12A3-1, indicates that liquid water has evaporated and been removed from the CANISTER cavity. Removing water from the CANISTER cavity helps to ensure the long-term maintenance of fuel cladding integrity.

APPLICABILITY Cavity vacuum drying is performed during LOADING OPERATIONS OPERATIONS before the TRANSFER CASK holding the CANISTER is moved to transfer the CANISTER to the CONCRETE CASK. Therefore, the vacuum requirements do not apply after the CANISTER is backfilled with helium and leak tested prior to TRANSPORT OPERATIONS and STORAGE OPERATIONS.

ACTIONS A note has been added to the ACTIONS, which states that, for this LCO, separate Condition entry is allowed for each CANISTER. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory measures for each CANISTER not meeting the LCO. Subsequent CANISTERS that do not meet the LCO are governed by subsequent Condition entry and application of associated Required Actions.

A.1

If the CANISTER cavity vacuum drying pressure limit cannot be met, actions must be taken to meet the LCO. Failure to successfully complete cavity vacuum drying could have many causes, such as failure of the vacuum drying system, inadequate draining, ice clogging of the drain lines, or leaking CANISTER welds. The Completion Time is sufficient to determine and correct most failure mechanisms. Excessive heat-up of the CANISTER and contents is precluded by LCO 3.1.5.

B.1

If the CANISTER fuel cavity cannot be successfully vacuum dried, the fuel must be placed in a safe condition. Corrective actions may be taken after the fuel is placed in a safe condition to perform the A.1 action provided that the initial conditions for performing A.1 are met.

CANISTER Vacuum Drying Pressure
B 3.1.2

A.1 may be repeated as necessary prior to performing B.1. The time frame for completing B.1 cannot be extended by re-performing A.1. The Completion Time is reasonable based on the time required to reflood the CANISTER, perform fuel cooldown operations, cut the shield lid weld, move the TRANSFER CASK into the spent fuel pool, and remove the CANISTER shield lid in an orderly manner and without challenging personnel.

SURVEILLANCE
REQUIREMENTS

SR 3.1.2.1

The long-term integrity of the stored fuel is dependent on storage in a dry, inert environment. Cavity dryness is demonstrated by evacuating the cavity to a very low absolute pressure and verifying that the pressure is held over a specified period of time. A low vacuum pressure is an indication that the cavity is dry. The surveillance must be performed prior to TRANSPORT OPERATIONS. This allows sufficient time to backfill the CANISTER cavity with helium, while minimizing the time the fuel is in the CANISTER without water or the assumed inert atmosphere in the cavity.

REFERENCES

1. SAR Sections 4.4, 7.1 and 8.1.
-

CANISTER Helium Backfill Pressure
B 3.1.3

B.1

If the CANISTER cavity cannot be backfilled with helium to the specified pressure, the fuel must be placed in a safe condition. Corrective actions may be taken after the fuel is placed in a safe condition to perform the A.1 action provided that the initial conditions for performing A.1 are met. A.1 may be repeated as necessary prior to performing B.1. The time frame for completing B.1 can not be extended by re-performing A.1. The Completion Time is reasonable based on the time required to re-flood the CANISTER, perform cooldown operations, cut the CANISTER shield lid weld, move the TRANSFER CASK and CANISTER into the spent fuel pool, remove the CANISTER shield lid, and remove the spent fuel assemblies in an orderly manner and without challenging personnel.

SURVEILLANCE
REQUIREMENTS

SR 3.1.3.1

The long-term integrity of the stored fuel is dependent on the storage in a dry, inert atmosphere, and maintenance of adequate heat transfer mechanisms. Filling the CANISTER cavity with helium at a pressure within the range specified in Table 12A3-1 will ensure that there will be no air in-leakage, which could potentially damage the fuel. This pressure of helium gas is sufficient to maintain fuel cladding temperatures within acceptable levels.

Backfilling of the CANISTER cavity must be performed successfully on each CANISTER before placing it in storage. The Surveillance must be performed prior to TRANSPORT OPERATIONS. This allows sufficient time to backfill the annulus with helium, while minimizing the time the loaded CANISTER is in the TRANSFER CASK without the assumed inert atmosphere in the cavity.

REFERENCES

1. SAR Sections 4.4, 7.1 and 8.1.
-

CANISTER Helium Leak Rate
B 3.1.4

3.1 NAC-MPC SYSTEM Integrity

3.1.4 CANISTER Helium Leak Rate

BASES

BACKGROUND

A TRANSFER CASK with an empty CANISTER is placed into the spent fuel pool and loaded with fuel assemblies meeting the requirements of the Functional and Operating Limits. A shield lid is then placed on the CANISTER. The TRANSFER CASK and CANISTER are raised out of the spent fuel pool. The TRANSFER CASK and CANISTER are then moved into the cask decontamination area, where dose rates are measured and the CANISTER shield lid is welded to the CANISTER shell and the lid welds are inspected and pressure tested. The water is drained from the CANISTER, and CANISTER cavity vacuum drying is performed. The CANISTER cavity is backfilled with helium and leak tested. Additional dose rates are measured, and the CANISTER vent port and drain port covers and structural lid are installed and welded. Non-destructive examinations are performed on the welds. Contamination measurements are completed prior to moving TRANSFER CASK and CANISTER in position to transfer the CANISTER to the CONCRETE CASK. After the CANISTER is transferred, average CONCRETE CASK surface dose rate measurements are taken. The CONCRETE CASK is then moved to the ISFSI.

Backfilling the CANISTER cavity with helium promotes heat transfer from the fuel to the CANISTER shell. The inert atmosphere protects the fuel cladding. Prior to transferring the CANISTER to the CONCRETE CASK, the CANISTER helium leak rate is verified to meet leak tight requirements to ensure that the fuel and radioactive materials are confined.

APPLICABLE
SAFETY ANALYSIS

The confinement of radioactivity (including fission product gases, fuel fines, volatiles, and crud) during the storage of spent fuel in the CANISTER is ensured by the multiple confinement boundaries and systems. The barriers relied on are: the fuel pellet matrix; the metallic fuel cladding tubes where the fuel pellets are contained; and the CANISTER where the fuel assemblies are stored. Long-term integrity of the fuel and cladding depends on maintaining an inert atmosphere, and maintaining the cladding temperatures below established long-term limits. This is accomplished by removing water and oxidizing gases