



April 12, 2019

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Office of Nuclear Material Safety and Safeguards

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

Docket No. 72-1040

Subject: Follow Up to April 10, 2019 Meeting on HI-STORM UMAX MPCs

Dear Mr. Regan:

As promised in the public meeting on Wednesday April 10, 2019, having consulted with my colleagues, I am now able to respond to your question on the dividing line between manufacturing and service life of an MPC, and the corresponding applicable ASME Code section, as follows.

The in-shop manufacturing of the Multi-Purpose Canister (MPC) and its closure system ends when its *Final Acceptance Testing & Examination (FATE)* is successfully completed. All tests and examinations are carried out using QA validated procedures. After that point, the MPC and its field-installed components (Closure Lid and Closure Ring segments) are packaged and shipped to the site using the applicable Holtec procedure. Upon arrival at the site, the MPC is unpackaged and subjected to what is known as *Site Acceptance Testing & Examination (SATE)* using the applicable quality validated procedure. The successful completion of the SATE makes the MPC *eligible for fuel loading*.

The act of fuel loading is referred to as *Short Term Operations* in NRC's regulatory literature, and also within the HI-STORM UMAX FSAR, during which time the final act in the MPC's manufacturing occurs when the Closure Lid and the Closure Ring are welded shut and the vent and drain ports are closed. Thus strictly speaking, the manufacturing of the MPC does not end until it is hermetically sealed with a double closure system and the closure welds pass the specified inspections. Incidentally, the MPC does not fully meet "NB" of the ASME Section III because, limited by the state of the art, the final closure welds don't possess the thru-thickness weld profile required of Category C vessel welds, nor can they be volumetrically (UT or radiography) examined, as required by NB. Instead, specific inspections of the final closure welds are performed, per the requirements of applicable NRC regulatory documents. Such alternatives to NB are recognized in the HI-STORM FW and HI-STORM UMAX FSARs and

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approved by the NRC through their respective Certificates of Compliance. After completion of fuel loading, the MPC undergoes certain on-site handling and transfer operations ending up on the ISFSI pad where it begins its *Operating (or Service) Life*.

The maintenance and inspection program for the operation of the system during the initial licensed period is outlined in Chapter 10 of the FSAR. Nuclear plants under 10 CFR Part 50 utilize ASME Section XI to perform inspections. However, Section XI is not invoked in Chapter 10, nor in any other section of the FSAR. This is consistent with the fact that for the initial licensed period of 20 years for the HI-STORM UMAX system, the system is certified requiring only minimal maintenance and inspection activities. In fact, the applicable Table 10.2.1 of the FSAR containing the maintenance program does not identify any required maintenance or inspections for the MPC. All activities described in the FSAR for the initial licensing period, including short term operation and long term storage, as certified by NRC, are therefore governed by the ASME Code section referenced in the application, namely ASME Section III. Consequently, any concepts and approaches from ASME Section III, specifically the consideration of surface scratches as generating peak stresses only and are not subject to any specific stress limit, are applicable to the entire operation of the systems during the initial licensing period, including short term operations and long term storage.

For the license renewal after the initial certification period, an Aging Management program needs to be implemented. This program includes additional inspections, over and above those required for the initial period, including inspections on the MPC. For that reason, the activities in the aging management program are in part informed by ASME Section XI, and this section is referenced accordingly in the regulatory documents that govern license renewal and aging management.

Note that if any inspections on an MPC are performed, over and above those required in the FSAR, they may also be informed by ASME Section XI. Specifically, Section IWB-3500 provides convenient and conservative acceptance criteria to assess any inspection results. However, such an approach does not invalidate the applicability of ASME Section III as stated above. In fact, some statements in the general portion of Section XI, namely IWA-3100(b), link back explicitly to the construction code, i.e. Section III for the MPC shell.

In summary:

- The manufacturing of the Canister, in effect, ends with the final closure of the canister after loading.
- Operating Life (i.e. Storage) of the MPC begins when it is placed on the ISFSI pad.
- All activities during the initial (typically 20 year) licensed life are governed by ASME Section III, including short term operation and long term storage
- Inspections as part of the aging management program after license renewal are appropriately informed by ASME Section XI. This section can also be used for any inspections performed during the initial licensed period over and above the requirements in the FSAR.



Note: This communication, under Holtec's QA program requires concurrence from two dry storage professionals qualified in the Company's Personnel qualification program, as listed below.

If you have any questions, please contact me at (856)-797-0900 ext. 3659.

Sincerely,

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