

VVM instead of the 10.75 ft required by the RPS. The dose rates at the surface of the excavation are presented in table 5.4.4 for both MPC-32 and MPC-37. This dose rate is very low, specifically lower than the dose rates at 1 m from the inlet/outlet vents of the modules. The dose rates at a construction site might therefore be dominated by the dose rates from the inlet/outlet vents, and depending on the loading condition of the operating part of the ISFSI, temporary shielding might be used to reduce dose rates to the construction site. It is to be noted that 6.5 feet of soil is considered for this purpose without any concrete enclosure wall.

5.4.2 Design Basis Dose Rate Limits

As discussed in Appendix 13.A, Section B 5.3, dose rate measurements are to be performed, amongst other locations, on top of the VVM and compared with calculated values. Even though comparison of dose rates can occur across any location, the locations chosen are based on positions where higher dose rates are expected. Higher dose rates provide better measurements to protect against measurement inaccuracy. Based on this, dose rate locations are selected to be on the side of the closure lid. For the standard HI-STORM UMAX lid design, the results shown in Tables 5.1.1 and 5.1.2 together with the information in Figure 5.1.1 show that this would be location 1. Dose rates on the corresponding location have also been evaluated for the Version B lid, and are shown in Table 5.4.6. Based on this, the limit values listed in Table 5.4.7 are specified. These values are larger than the highest expected value, to assure that measurement and location uncertainties will not result in an inadvertent failure of the comparison. It should be noted that this value is an overall bounding limit, which is used in addition to a site specific limit that typically is significantly lower, and hence is typically the more limiting condition.

The standard lid is essentially rotational symmetric, and hence the azimuthal orientation of the 4 required dose rate locations is not critical. The Version B lid is not round, and hence the shielding configurations vary azimuthally. It is therefore recommended to have the dose rate locations on each side of the square lid rotationally symmetric at 0, 90, 180 and 270 degrees of the lid.

Finally, an important aspect is that the locations of the calculations to determine the limits and the locations where the measurements are taken are as close as possible to each other, so that a valid comparison is made. This needs to be recognized when selecting and identifying the locations.

For the side of the HI-TRAC VW, evaluations are performed in the HI-STORM FW, Chapter 5 [5.0.3]. The dose rate limit based on those evaluations is specified in Table 5.4.7.

HOLTEC INTERNATIONAL COPYRIGHTED MATERIAL	
HI-2115090	Proposed Rev. 5B
5-37	

Table 5.4.6	
DOSE RATES ADJACENT TO THE HI-STORM UMAX MODULE WITH VERSION B LID FOR NORMAL CONDITIONS MPC-37 DESIGN BASIS ZIRCALOY CLAD FUEL	
Location	Value
Side of the VVM lid Adjacent to the Inlet Vent	22 mrem/hr

Table 5.4.7	
DESIGN BASIS DOSE RATE LIMITS	
Location	Value
Side of HI-TRAC	3500 mrem/hr
Standard Lid (On the side of the closure lid approximately midheight)	180 mrem/hr
Version B Lid (On the side of the closure lid approximately midheight and adjacent to the inlet vent)	60 mrem/hr

BASES

ACTIONS
(continued)

C.2.2

In lieu of implementing Required Action C.2.1, transfer of the MPC into a TRANSFER CASK will place the MPC in an analyzed condition and ensure adequate fuel cooling until actions to correct the heat removal system inoperability can be completed. Transfer of the MPC into a TRANSFER CASK removes the SFSC from the LCO Applicability since STORAGE OPERATIONS does not include times when the MPC resides in the TRANSFER CASK.

An engineering evaluation must be performed to determine if any deterioration which prevents the VVM from performing its design function. If the evaluation is successful and the air inlet duct screens have been cleared, the VVM heat removal system may be considered operable and the MPC transferred back into the VVM. Compliance with LCO 3.1.2 is then restored. If the evaluation is unsuccessful, the user must transfer the MPC into a different, fully qualified VVM to resume STORAGE OPERATIONS and restore compliance with LCO 3.1.2

In lieu of performing the engineering evaluation, the user may opt to proceed directly to transferring the MPC into a different, fully qualified VVM or place the TRANSFER CASK in the spent fuel pool or dry unloading facility and unload the MPC.

The Completion Time of 24 hours reflects the Completion Time from Required Action C.2.1 to ensure component temperatures remain below their short-term temperature limits for the respective decay heat loads.

C.2.3

In lieu of implementing Required Action C.2.2, an engineering evaluation may be performed using the 3D CFD thermal model described in Section 4.4 of the FSAR (or a previous evaluation using the thermal model described in Section 4.4 of the FSAR may be referenced) to determine if any components exceed a temperature which would prevent it from performing its design function. If the evaluation shows none of the components exceed such a temperature, and the air flow obstructions have been cleared, the SFSC heat removal system can be considered operable and the MPC remains in the VVM. Compliance with LCO 3.1.2 is then restored. If a similar evaluation is not available for reference, or an evaluation cannot be performed within the stipulated time, required action C.2.1 or C.2.2 must be implemented.

(continued)

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HI-2115090

Proposed Rev. 5B

13-A-21

B 5.0 Administrative Controls and Programs (LCO) APPLICABILITY

B 5.3 Radiation Protection Program

BASES

- B.5.3.1 5.3.1 requires that the licensee appropriately includes provisions in their radiation protection program to account for the dry storage system from loading through unloading. These provisions should also include the requirements included in Section 5.3 of the CoC.
- B.5.3.2 5.3.2 includes the requirements of 10CFR72.212(b)(2)(i)(c) for a documented evaluation that the dose limits of 10CFR72.104(a) are met. This evaluation should utilize the site-specific ISFSI layout, the planned number of casks, and the cask contents to demonstrate compliance with 10CFR72.104
- B.5.3.3 In accordance with 5.3.3, licensees should use the analysis performed in 5.3.2 to also establish dose rate limits at the top of the VVM (in accordance with the measurement location specified in 5.3.8), the side of the transfer cask (in accordance with the measurement location specified in 5.3.8), and the outlet vents on the VVM. If measured dose rates exceed these limits, it could be an indication of a loading error that may require corrective actions. These calculated limits are used in comparison with the measured values in 5.3.8.
- B.5.3.4 5.3.4 contains additional dose rate limits for a loaded VVM and transfer cask. These dose rate limits are set at a value above the maximum expected dose rates at the locations described in 5.3.8, from a system loaded with design basis fuel. If measured dose rates exceed these limits, it could be an indication of a gross design or loading error that may require corrective actions. Section 5.4.2 of this FSAR contains additional discussions on the selection of the location and dose rate limits.
- B.5.3.5 5.3.5 provides the requirement that the licensee measure dose rates at the locations outlined in 5.3.8 and compare them to the lower of the two limits established in Section 5.3.3 or 5.3.4. This ensures that the most conservative limit is used.
- B.5.3.6 5.3.6 establishes corrective actions that shall be taken in the event of measured dose rates that exceed the lower of the two limits in Section 5.3.3 or 5.3.4. These corrective actions include verifying that contents were loaded correctly, performing analyses to ensure 10CFR72.104 dose limits are met, and determining the cause of the higher dose rate.
- B.5.3.7 5.3.7 states that any evaluation under 5.3.6 that shows that 10CFR72.104 dose rate limits will not be met will prevent the MPC from being installed in the VVM or it will be removed from the VVM. This control ensures that the site continues to meet all regulatory requirements.

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HI-2115090

Proposed Rev. 5B

13-A-34