TABLE 1.—TOTAL DOSE TO AN INDIVIDUAL AS A RESULT OF A FUEL CANISTER FAILURE ACCIDENT AT A SURFACE STORAGE INSTALLATION (MREM)

Pathway	Skin	Total Body	Thyroid	Lung
Air Submersion	1.0×10^{-1}	1.1×10^{-3}	1.1×10^{-3}	1.1×10^{-3}
Inhalation		1.2×10^{-5}	1.1×10^{-2}	7.3×10^{-5}
Total	1.0×10^{-1}	1.1×10^{-3}	1.2×10^{-2}	1.1×10^{-3}

Note: The maximum individual is defined as a permanent resident at a location 1600 meters southeast of the stack with a time-integrated atmospheric dispersion coefficient (E/Q of 1.5 x 10–4 sec/m³). The accident involves failure of a fuel canister containing approximately 1.7 MTHM.

Since the time these calculations were performed, the storage canisters have increased in capacity, and today the capacity of the largest approved design is approximately 9 MTHM. However, because dose varies directly with inventory, when the totals are increased by a factor of ten, they are still a very small fraction of the 300 mrem/yr[4] an individual receives from natural background radiation, and is below the EPA protective action guides.

Nonetheless, the Commission believes it appropriate to require enhanced offsite emergency planning at an MRS (as well as any ISFSI that conducts similar operations) because of the broader scope of activities which could be performed at such a facility.

In addition to the handling and repackaging for storage of large numbers of individual fuel bundles, which involves the receipt, inspection, and transfer of several thousand transport casks, MRS operations may also encompass the consolidation of the stored fuel into casks for subsequent geological disposal after interim storage. At this time, a final MRS design has not been selected. The MRS may be a large industrial facility equipped to handle the loading, unloading, and decontaminating of a large number of spent fuel shipping containers arriving by both truck and rail. It could also include facilities to disassemble the fuel bundles and consolidate that fuel into special storage/transport containers, and facilities to handle solidified high-level waste. These facilities would require the equipment necessary to process low- and high-level waste that would be associated with the above operations. It is also possible, however, for an MRS facility to serve primarily as a warehouse operation, limited solely to accepting, sorting and later transhipping a large number of multi-purpose canister (MPC) systems of the type being considered by DOE.

The Multi-Purpose-Canister (MPC) being considered by the DOE would be used to store and transport spent fuel. The MPC system provides a sealed canister into which spent fuel would be loaded. After loading, the MPC is evacuated, backfilled with an inert gas, and then permanently sealed. At this point the MPC concept offers several options: the sealed canister could be placed into a storage overpack at the reactor site, or it could be placed in a transportation overpack for movement to an ISFSI or MRS. After arriving at the ISFSI or MRS the MPC would most likely be placed in the storage configuration awaiting transport to the geological repository. When the repository is ready to accept fuel, several options would exist. The canisters could be placed into the transport overpack for movement to the geological repository. Once there, the canister could be transferred directly into the disposal overpack for emplacement into the repository. An option to repackage the spent fuel into disposal canisters allowing the optimum configuration required at the repository remains possible. This could take place at either the repository or MRS. Because the canister may only be opened once during its entire storage life and individual fuel elements only handled under a controlled environment, the MPC concept appears to reduce the overall risk to public health and safety.

Given the uncertainties in the design and operation of an MRS, the Commission believes it prudent to plan and provide for an enhanced level of emergency planning to include some offsite preparedness should operation of a MRS (or any ISFSI conducting similar operations) present accident risks that exceed those analyzed in NUREGs 1140 and 1092. Because the level of risk to the public health and safety from such an MRS (or ISFSI) may exceed that from a typical ISFSI, the relevant emergency planning requirements should be enhanced to include an offsite component. To achieve this goal, the final enhanced emergency plan requirements are modeled after 10 CFR 50.47(d). The intent of 10 CFR 50.47(d) was to mandate a minimum level of offsite response capability during initial reactor licensing and low power operations. This same level of response capability is considered appropriate to MRS (and any comparable ISFSI) operations. Because much of the language needed to achieve this level of offsite protection has already been codified in 10 CFR Part 50, similar language is included within the final emergency planning requirements for an MRS (and ISFSI) (10 CFR 72.32(b)(15)(i-vi)).

The Commission notes that, for both types of facilities, this rulemaking is not required in order to provide adequate safety and may not be justified based solely on a comparison of the anticipated costs of implementing these regulations to the increase in public health and safety. Rather, the Commission believes that it is justified in terms of safety enhancement such as the intangible benefit of being able to assure the public that local authorities will be notified in the event of an accident so that they may take appropriate actions. The NRC feels that such preparedness is prudent and consistent with the NRC's philosophy of defense-in-depth.

Public Comments

The NRC received a total of 25 comment letters. Five were from utilities, two were from organizations representing utilities, eight were from State and/or local emergency management agencies, three were from the Mescalero Indian Tribe, five were from environmental/intervener groups, one was from a private citizen, and one was from the Department of Energy.

One of the letters that opposed the proposed regulation came from a member of the Mescalero Indian Tribe and included the signatures of 40 other tribal members who agreed with opposition to the proposed rule change. Opposition also came from the private citizen, all of the intervener/environmental groups, and a local governmental official.

Letters that were generally in agreement with the proposed rule change were submitted by the Mescalero Tribal MRS Program Manager, the Department of Energy, all of the utilities, all of the State governmental

[4] NRCP Report No. 94.