

14.0 EMERGENCY MANAGEMENT

14.1 CONDUCT OF REVIEW

This chapter of the draft Safety Evaluation Report (SER) reviews the emergency management and related information presented provided by the applicant during a meeting with the staff on January 4, 2002 (Reference 14.3.3), further related information presented by the applicant in Chapters 5, 11, and 14 of the CAR, and information in CAR Table 5.6-1 (the principal structures, systems, and components [PSSCs] related to emergency conditions). The staff used the applicable portions of Chapter 14.0 in NUREG-1718 as guidance in performing the review. The objective of the review is to determine whether the applicant has adequately addressed the baseline design criteria (BDC) for emergency capability specified in 10 CFR 70.64(a)(6). Pursuant thereto, the MFFF design must provide (1) emergency capability to maintain control of licensed material and hazardous chemicals produced from licensed material; (2) evacuation of on-site personnel; and (3) onsite emergency facilities that facilitate the use of available offsite services.

As discussed further below, the staff evaluated the applicant's Safety Assessment provided in Chapter 5 of the CAR (including the PSSCs related to emergency conditions referenced in CAR Table 5.6-1) to ensure that the applicant considered all appropriate accident initiators, and to ensure that the BDC for emergency capability specified in 10 CFR 70.64(a)(6) were met. The staff found that the applicant considered internal, external, and natural phenomenon hazards. Those initiators that were not used as parts of the design basis were adequately explained. While DCS did not specifically cite 10 CFR 70.64(a)(6) in the CAR, DCS addressed how it planned to meet each of the BDC in the slides it presented at a meeting on January 4, 2001 (Reference 14.3.3). In the presentation, the applicant indicated that it would meet the BDC for Emergency Capability through Emergency Planning Design Criteria and the Site Work Task Agreement (WTA), including integration with the U.S. Department of Energy's (DOE's) Savannah River Site (SRS) emergency plan; the Emergency Onsite MFFF Evacuation Plan; utilization of existing onsite facilities and services at SRS, coordinated through WTA; safe havens provided to personnel while controlling potential losses of licensed material.

The applicant's assessment of potential loss of control of radioactive material is discussed in Section 5.5.2.1, "Loss of Confinement/Dispersion of Nuclear Material Events," of the CAR. In Section 5.5.2.10.6.2, "Events Involving Hazardous Chemicals and Radioactive Material," the applicant concluded that the chemical events would be bounded by the radioactive release events and no additional PSSCs in this area would be required. Although open items have been identified in other DSER sections regarding release of hazardous chemicals and radioactive material, the staff finds that the applicant has considered all of the event categories in its analysis, which is sufficient for emergency planning purposes.

In CAR Section 5.5.2.1.6, the applicant identified the following ten potential Loss-of-confinement events:

- Over-temperature.
- Corrosion.
- Small breaches in glovebox confinement boundary or backflow from a glovebox through utility lines.
- Leaks of Aqueous Polishing Process vessels or pipes within process cells.
- Canister handling operations.

- Rod handling operations.
- Breaches in containers Outside gloveboxes due to handling operations.
- Over-under-pressurization of glovebox.
- Excessive temperature due to decay heat from radioactive materials.
- Glovebox dynamic exhaust failure.

DCS identified the following 12 PSSCs to either prevent these hypothetical events from occurring, or to mitigate the potential consequences:

- The safety I&C system.
- C3 confinement system.
- Material maintenance and surveillance programs.
- The C4 confinement system.
- The process cell.
- Process cell entry controls.
- 3013 canister outer can opening device.
- M 3013 canister.
- Material handling equipment and material handling controls.
- Glovebox pressure controls.
- The high depressurization exhaust system.
- Training and procedures.

The staff's evaluation of the applicant's methodology concerning loss of confinement is presented in Section 5 of this DSER. The staff notes that 10CFR 20.1801, "Security of Stored Material," and 10 CFR 20.1802, "Control of Material Not in Storage," has specific requirements for control of licensed material and these requirements will be reviewed during the review of the applicant's request for a 10 CFR Part 70 operating license. Although open items have been identified in other DSER sections regarding release of hazardous chemicals and radioactive material, the staff finds that the applicant has considered all of the event categories in its analysis, which is sufficient for emergency planning purposes.

In order to demonstrate that the emergency capability to evacuate onsite personnel was considered during the formulation of the MFFF preliminary design, the applicant stated in the January 4, 2001, presentation that it would have an emergency onsite evacuation plan that utilizes existing onsite facilities and services at SRS, and safe havens for personnel protection, while controlling potential material loss. In Chapter 14 of the CAR the applicant committed to establishing a protocol with DOE, Savannah River Operations Office (DOE-SR), for the integration of existing SRS Emergency plans. The staff finds this acceptable for now, but will review both the facilities evacuation plan and the protocol with SRS during the review of the applicant's request for a 10 CFR Part 70 operating license. In Sections 11.1 and 11.5 of the CAR, the applicant discussed plans to provide safe havens for MFFF personnel. The applicant has committed to providing each safe haven with emergency communication systems. The PSSCs required to allow MFFF personnel time to safely leave the facility or go to safe havens would be the same as those describe above for maintaining control of licensed material and hazardous chemicals produced from licensed material. The staff finds the design basis for evacuation of onsite personnel, acceptable because the plan provides for a plan to evacuate the MFFF and/or provides safe havens for its personnel.

In order to demonstrate that onsite emergency plan/design that facilitate the use of available offsite services was considered during the formulation of the MFFF preliminary design, the

applicant identified Emergency Control Rooms and supporting systems such as emergency AC power system and Emergency Control Room air conditioning systems as PSSCs to ensure control room operators a safe environment during an event. Emergency communication systems are described in Section 11.5 of the CAR. As discussed above, the applicant in Chapter 14 of the CAR committed to establishing a protocol with DOE-SR for the integration of existing SRS Emergency plans. The staff finds the design basis for onsite emergency facilities that facilitate the use of available offsite services acceptable because the facilities provided for the establishment of an Emergency Control Room and a process to coordinate with the existing DOE safety infrastructure at the SRS.

14.2 EVALUATION FINDINGS

In Section 14 of the CAR, DCS provided design basis information for emergency management for the proposed MFFF. Based on the staff's review of the CAR and supporting information provided by the applicant relevant to emergency management, the staff finds that DCS has met the BDC for emergency capability set forth in 10 CFR 70.64(a)(6).

14.3 REFERENCES

- 14.3.1 Nuclear Regulatory Commission (U.S.) (NRC). NUREG-1718, "Standard Review Plan for the Review of an Application for a Mixed Oxide (MOX) Fuel Fabrication Facility." NRC: Washington, D.C. January 2000.
- 14.3.2 _____. NUREG/CR-6410, "Nuclear Fuel Cycle Facility Accident Analysis Handbook." NRC: Washington, D.C. 1998.
- 14.3.3 Persinko, A., U.S. Nuclear Regulatory Commission (NRC), memorandum to Leeds, E., NRC, RE January 4-5, 2001 Summary of Meeting with Duke Cogema Stone & Webster to Discuss Design Basis for the Mixed Oxide Fuel Fabrication Facility