11 RADIATION PROTECTION EVALUATION

11.1 Conduct of Review

This chapter evaluates the Idaho Spent Fuel (ISF) Facility radiation protection plan and the capability of the organizational, design, and operational elements of the plan to meet regulatory requirements. The regulatory requirements for providing adequate radiation protection to personnel and members of the public include:

- 10 CFR §20.1101(a) requires that a licensee develop, document, and implement a radiation protection program.

- 10 CFR §20.1101(b) requires that a licensee use sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable.

- 10 CFR §20.1101(c) requires that a licensee periodically (at least annually) review the radiation protection program content and implementation.

- 10 CFR §20.1101(d) requires that a licensee, as part of the radiation protection program, establish a constraint for air emissions of radioactive materials to the environment such that a member of the public is not expected to receive a total effective dose equivalent in excess of 0.1 mSv [10 mrem] per year from these emissions.

- 10 CFR §20.1201(a) requires that a licensee control occupational dose to the following annual dose limits: a total effective dose equivalent of 0.05 Sv [5 rem] or the sum of the deep-dose equivalent and committed dose equivalent to any individual organ or tissue other than the lens of the eye of 0.50 Sv [50 rem], whichever is most limiting, a dose equivalent of 0.15 Sv [15 rem] to the lens of the eye, and a shallow-dose equivalent of 0.50 Sv [50 rem] to the skin or an extremity.

- 10 CFR §20.1301(a) establishes dose limits for a member of the public, including a total effective dose equivalent of 1 mSv [0.1 rem] in a year, and a maximum dose in any unrestricted areas of 0.02 mSv [0.002 rem] in an hour.

- 10 CFR §20.1301(b) requires that if a licensee permits members of the public to have access to controlled areas, the limits for members of the public continue to apply to those individuals.

- 10 CFR §20.1301(d) requires that the licensee comply with the environmental radiation standards in 40 CFR Part 190.

- 10 CFR §20.1302(a) requires a licensee to perform radiation surveys and monitor radioactive materials in effluents in unrestricted and controlled areas to demonstrate compliance with the dose limits for members of the public in 10 CFR §20.1301.

- 10 CFR §20.1302(b) requires that the licensee show compliance with the limits in 10 CFR §20.1301, by either demonstrating compliance with the dose limit to an

individual by calculation or measurement, or by demonstrating that radioactivity in gaseous and liquid effluents does not exceed the values in Table 2 of Appendix B to Part 20, and the dose from external sources would not exceed 0.02 mSv [0.002 rem] in an hour and 0.5 mSv [0.05 rem] in a year.

- 10 CFR §20.1406 requires that an applicant describe how facility design and procedures for operation will minimize contamination and generation of radioactive waste and facilitate decommissioning.

- 10 CFR §20.1501(a)(1) requires that a licensee make surveys necessary to comply with 10 CFR Part 20.

- 10 CFR §20.1501(c) requires that dosimeters that are used by a licensee are processed and evaluated by a processor holding accreditation from the National Voluntary Laboratory Accreditation Program.

- 10 CFR §20.1701 requires that a licensee use process or other engineering controls to control the concentrations of radioactive material in the air.

- 10 CFR §20.1702 requires that when it is not practicable to apply process or other engineering controls, that the licensee shall increase monitoring and limit intakes by use of other controls, including access control, limitation of exposure times, use of respiratory protection, etc.

- 10 CFR §72.24(e) requires that the SAR include the means for controlling and limiting occupational radiation exposure within the limits given in 10 CFR Part 20, and for meeting the objective of maintaining exposures as low as is reasonably achievable.

- 10 CFR §72.104(a) requires that, during normal operations and anticipated occurrences, the annual dose equivalent to any real individual beyond the controlled area must not exceed 0.25 mSv [25 mrem] to the whole body, 0.75 mSv [75 mrem] to the thyroid and 0.25 mSv [25 mrem] to any other organ, from various sources, including planned discharges of radioactive materials to the environment.

- 10 CFR §72.104(b) requires that operational restrictions are established to meet objectives for maintaining doses as low as is reasonably achievable from radioactive materials in effluents.

- 10 CFR §72.104(c) requires that operational limits for radioactive materials in effluents are established to ensure that the dose limits in 72.104(a) are met.

- 10 CFR §72.106(b) requires that any individual located on or beyond the nearest controlled area boundary shall not receive a dose greater than 0.05 Sv [5 rem] to the whole body or any organ from any design basis accident, and that the minimum distance from the spent fuel waste handling and storage facilities to the nearest boundary shall be at least 100 m [300 ft].

- 10 CFR §72.126(a) requires that radiation protection systems must be provided for areas and operations where onsite personnel may be exposed to radiation or airborne

radioactive materials. Structures, systems, and components for which operation, maintenance, and inspections may involve occupational exposure, must be designed, fabricated, located, shielded, controlled and tested to control external and internal radiation exposures. The design must include means to, among other things, control access to areas of potential contamination or high radiation, measure and control contamination, minimize worker time, and shield personnel.

- 10 CFR §72.126(c)(1) requires that, as appropriate for the handling and storage system, effluent systems must be provided, as well as methods for measuring the amount of radionuclides in the effluents.

- 10 CFR §72.126(c)(2) requires that areas containing radioactive materials must be provided with systems for measuring the direct radiation levels in and around these areas.

- 10 CFR §72.126(d) requires that the ISFSI be designed to limit effluents to levels that maintain doses as low as is reasonably achievable, and analyses must show that releases to the environment during normal operations and anticipated occurrences will be within the exposure limit given in 10 CFR §72.104.

The staff's review included Chapter 7, "Radiation Protection," of the Safety Analysis Report (SAR) (Foster Wheeler Environmental Corporation, 2003a). Chapter 7 of the SAR describes the radiation protection features of the proposed ISF Facility that ensure that radiation exposures to personnel and members of the public meet the regulatory requirements.

11.1.1 As Low As Is Reasonably Achievable Considerations

This section evaluates whether Foster Wheeler Environmental Corporation has appropriately considered the goal of maintaining occupational doses and doses to the members of the public as low as is reasonably achievable (ALARA) during the operation of the ISF Facility. Considerations related to maintaining doses ALARA are described in Section 7.1 of the SAR (Foster Wheeler Environmental Corporation, 2003a).

11.1.1.1 As Low As Is Reasonably Achievable Policy and Program

The ALARA policy, program, and statement for the proposed ISF Facility are described in Section 7.1.1, "Policy Considerations," of the SAR. The primary goal of the Radiation Protection Program is to minimize exposure to radiation so that the individual and collective exposures to personnel in all phases of operation and maintenance are kept ALARA. The ISF Facility ALARA program follows the guidance in Regulatory Guides 8.8 (U.S. Nuclear Regulatory Commission, 1978) and 8.10 (U.S. Nuclear Regulatory Commission, 1977). The ALARA program will maintain radiation exposures ALARA through the following methods:

- Maintaining a program to monitor occupational radiation doses ALARA;
- Maintaining personnel and organizational level ALARA goals, tracking personnel exposure, and maintaining associated records;
- Allocating the appropriate technical, administrative, and supervisory resources;

- Ensuring individual and collective exposures will not exceed the limits recommended for the appropriate circumstances;
- Controlling access to radiation and radioactive contamination areas;
- Using procedures and engineered controls (e.g., ventilation, remote handling, and shielding) and monitoring equipment (e.g., continuous air monitors and remote area monitors);
- Requiring an ALARA review of procedures and work packages for work activities that involve radiological work resulting in a 0.5-mSv [50-mrem] individual exposure per day, a 5-mSv [500-mrem] collective exposure per day, or entries into high-radiation areas where the general area radiation levels exceed 1 mSv/hr [100 mrem/hr]; and
- Requiring an ISF Facility design that ensures ALARA by minimizing required maintenance operations, minimizing radiation levels and operating times, and providing contamination control during handling, transfer, and storage of radioactive material.

In Section 7.1.1, the SAR states that the ISF Facility management is committed to compliance with regulatory requirements regarding control of personnel exposures and will establish and maintain a comprehensive program at the ISF Facility to keep individual and collective doses ALARA.

The facility management will ensure that ISF Facility personnel are appropriately trained in the ALARA program, that each staff member integrates appropriate radiation protection controls into work activities, and that each individual understands and follows procedures to maintain personal radiation dose ALARA. Management is responsible for preplanning the radiological operations and activities to allow the effective implementation of dose and the reduction of contamination.

The staff finds that the implementation of the proposed ALARA program will provide reasonable assurance that doses to workers and to members of the public will be maintained ALARA in accordance with the requirements of 10 CFR §20.1101(a–c) and §72.104(b) and (c). The proposed program contains the applicable elements in Regulatory Guides 8.8 and 8.10, such as management commitment to the ALARA program and principles, writing administrative procedures and instructions for operations involving potential radiation exposures, defining responsibility and authority for implementing the program, and using an effective measurement system to determine success of the program and any trends in exposures.

11.1.1.2 Design Considerations

Design considerations to maintain doses ALARA are provided in Section 7.1.2, “Design Considerations,” of the SAR, which delineates the following specific features of the ISF Facility.

- Use of thick concrete shield walls in the Transfer Tunnel and Fuel Packaging Area (FPA), heavy shielded transfer trolley, concrete shield plugs, shielded Canister Handling Machine and portable shielding where and when necessary to minimize direct radiation levels during all spent nuclear fuel (SNF) handling, transfer, and storage operations

- Use of remote handling technology, automatic welding system for canister closure weld, and remotely replaceable high-efficiency particulate air (HEPA) filters to minimize direct and scattered radiation exposure.

The staff finds that the design of the proposed ISF Facility will provide reasonable assurance that the doses to members of the public will be maintained ALARA and will meet the requirements of 10 CFR §72.126(a), because the ISF Facility site layout provides substantial distance between the fuel handling and storage vault areas and the controlled area boundary {at least 12.9 km [8 mi]}, and because of the design and operating features listed in this chapter. The staff also finds that the requirements of 10 CFR §20.1406 are satisfied for minimization of contamination and the amount of radioactive waste generated.

11.1.1.3 Operational Considerations

The operational considerations to maintain doses ALARA are described in Section 7.1.3, "Operational Considerations," of the SAR. The operating plans and procedures at the ISF Facility will be developed in accordance with Regulatory Guides 8.8 (U.S. Nuclear Regulatory Commission, 1978) and 8.10 (U.S. Nuclear Regulatory Commission, 1977). Specifically, the program to maintain doses ALARA includes the following operational elements:

- Procedures and work practices will be used that reflect ALARA lessons learned, including those from the Fort St. Vrain ISFSI (which is similar in some respects to the ISF Facility and was previously constructed by the applicant);
- Dry runs will be performed that will closely simulate actual operations; such as fuel receipt, packaging, canister closure, and storage; to train personnel and to minimize radiation exposure during actual operations by refining procedures; and
- Preoperational tests to be performed will include verification of off-normal procedures.

The staff finds that the use of Regulatory Guides 8.8 (U.S. Nuclear Regulatory Commission, 1978) and 8.10 (U.S. Nuclear Regulatory Commission, 1977) to plan operations to maintain doses ALARA is appropriate and will provide reasonable assurance that doses to workers and members of the public will be maintained ALARA. The use of storage canisters that are welded closed meets the requirements of 10 CFR §20.1701, because the engineering and process controls are used to prevent airborne radioactivity. As required by §20.1501(a)(1), surveys will be used to ensure that personnel exposures are within 10 CFR Part 20 limits, maintained ALARA, and the surveys are identified as an element of the ALARA program. The operational elements listed in this chapter, including the use of dry runs and the application of lessons learned from operations at the Fort St. Vrain ISFSI, are accepted tools in implementing an effective ALARA program.

11.1.2 Radiation Protection Design Features

Information relevant to the proposed radiation design features of the ISF Facility is contained in Section 7.3, "Radiation Protection Design Features," of the SAR.

11.1.2.1 Installation Design Features

The installation radiation protection design features are described in Section 7.3.1, "Installation Design Features," of the SAR. The ISF Facility will be located inside the Idaho National Engineering and Environmental Laboratory (INEEL) complex far from populated areas. The shortest distance from the ISF Facility to the INEEL controlled area boundary is approximately 12.9 km [8 mi]. The ISF Facility will be surrounded by a perimeter fence to further restrict

access to the site. The transfer route for the storage canisters occurs within the INEEL controlled area. Several restricted areas within the ISF Facility will be controlled because of radiation dose rate levels. Liquid radioactive releases are not anticipated at the ISF Facility. Airborne radioactive materials from SNF during storage will be prevented by the use of the welded helium-filled storage canisters. Any airborne radioactive materials released in the FPA during fuel repackaging will be filtered using HEPA filters that are remotely replaceable.

The staff finds the use of Regulatory Position 2 of Regulatory Guide 8.8 (U.S. Nuclear Regulatory Commission, 1978) appropriate in designing the radiation protection features of the proposed ISF Facility. Use of sealed storage canisters, the solid waste processing system located at the Solid Waste Processing Area, and HEPA filters at the ISF Facility provide reasonable assurance that contamination of the facility and the generation of radioactive waste will be minimized in accordance with 10 CFR §20.1406. Hence, the ISF Facility will meet the allowable dose for members of the public and the ALARA requirements for effluents in 10 CFR §72.104(a)–(c) and §72.126(d). The staff finds that the distance between the SNF transfer, repackaging and storage areas, and the nearest boundary of the controlled area of the proposed ISF Facility {12.9 km [8 mi]} meets the minimum distance specified in 10 CFR §72.106(b), which is 100 m [328 ft].

11.1.2.2 Access Control

The access control to the proposed ISF Facility is described in Sections 7.3.1.1, “Access Control of Radiation Areas;” 7.1.1, “Policy Considerations” (reference to Fig. 4.1-1 of the SAR); and 6.3, “Liquid Waste Treatment and Retention,” of the SAR. The ISF Facility is located within the INEEL controlled boundary. Dose rates outside the controlled area will not exceed 0.25 mSv/yr [25 mrem/yr]. The access controlled boundary for the restricted area is established along the ISF Facility site fence line. The restricted area is the space controlled for protecting non-ISF Facility workers from undue exposure to radiation and radioactive materials and for providing facility physical security. Radiologically controlled areas within the restricted area are identified as areas in which there is a potential for radiation fields to exceed a dose rate of 0.2 mSv/hr [2 mrem/hr]. Access to high- and very high-radiation areas will be controlled in accordance with Regulatory Guide 8.38 (U.S. Nuclear Regulatory Commission, 1993a). Radiation protection personnel will monitor radiation levels within the restricted area and may establish additional access requirements and area designations as needed.

The staff finds appropriate the use of Regulatory Position 2.4 of Regulatory Guide 8.38 in designating and controlling access to the radiologically controlled areas of the proposed ISF Facility. The staff finds the access control at the proposed ISF Facility is acceptable because it provides security fencing and physical and administrative controls to the radiologically controlled areas. The description of the access control at the proposed ISF Facility is acceptable and meets the requirements of §72.126(a)(3) by limiting access to radiologically controlled areas.

11.1.2.3 Radiation Shielding

The radiation shielding evaluation is contained in Chapter 7 of this Safety Evaluation Report (SER). As stated in Chapter 7 of this SER, the staff evaluated the ISF Facility SAR shielding calculations and finds them to be acceptable. The dose rates at the onsite and offsite locations

were found to be below the limits specified in 10 CFR §20.1201, §20.1301, §20.1302, and §72.104(a). The applicant's description provides reasonable assurance the ISF Facility shielding was evaluated adequately. The applicant's analysis demonstrates that no credible accident will cause a significant increase in public or personnel dose rates from direct radiation. This finding provides reasonable assurance that, during accident conditions, dose rates from direct radiation will be below limits specified in 10 CFR §72.106(b).

11.1.2.4 Confinement and Ventilation

Evaluation of the confinement and ventilation systems is provided in Chapter 9 of this SER.

11.1.2.5 Area Radiation and Airborne Radioactivity Monitoring Instrumentation

Fixed radiation monitors and continuous airborne radiation monitoring instrumentation are described in Sections 7.3.4, "Area Radiation and Airborne Radioactivity Monitoring Instrumentation," and 7.5.2, "Equipment, Instrumentation, and Facilities," of the SAR.

The FPA will be equipped with criticality monitors according to guidance provided in ANSI/ANS 8.3 (American National Standards Institute, 1997). Audio and visual signals will be energized if accidental criticality occurs. Handheld monitors, half/body contamination monitors, walk-through detectors, criticality dosimeters, self-reading dosimeters, extremity dosimeters, and thermoluminescent dosimeters will be used to monitor the amount of radiation on personnel. Fixed area monitors and continuous air monitors will monitor the cask receipt area, transfer area, operations area, and storage area. The exact locations of the monitors will be optimized by modeling and evaluating the surroundings. The types and instrument ranges of monitoring equipment are clearly identified. The alarm setpoints for area monitors will be set typically to twice nominal background dose rates. Typical alert and alarm setpoints for continuous air monitors will be set to 10 and 33 percent of derived air concentration level. Typical alert and alarm setpoints for continuous air monitors monitoring the discharge air downstream from the HEPA filter for the FPA will be set to 50 and 100 percent of the effluent concentration for representative radionuclides specified by 10 CFR Part 20, Appendix B, Table 2.

The staff finds that the radiation monitoring instrumentation described in the SAR meets the requirements of 10 CFR §72.126(c)(2), which requires that areas containing radioactive materials must be provided with systems to measure the direct radiation levels in these areas. The local area monitors include alarm systems to warn workers of unusual levels of radiation in the area. Continuous air monitoring will be performed during all activities to assure airborne radioactivity is within allowable levels as required by 10 CFR §20.1501(a)(1). The use of continuous air monitors, thermoluminescent dosimeters, and sample station monitoring as described in Sections 7.3.5 and 7.5.2 of the SAR provides reasonable assurance that the licensee will (i) adequately monitor actual dose rates at the ISF Facility and its surrounding area during its operation, (ii) detect unexpected increases in direct radiation dose rates, and (iii) verify compliance with the radiological limits in 10 CFR Parts 20 and 72 for members of the public.

11.1.3 Dose Assessment

The applicant calculated occupational exposures for site personnel at the ISF Facility based on the bounding fuel source term, which is 20 percent initially enriched TRIGA SNF with a burnup of 34,103 MWD/MTU and cooling time of 6.5 years, as discussed in Section 7.1.1 of this SER. The occupational exposures were calculated for receipt, transfer, and storage activities of the SNF as discussed in Section 7.3 of the SAR. Table 7.4-2 of the SAR (as updated in Foster Wheeler Environmental Corporation, 2003b) lists the SNF handling operations, their annual frequencies, tasks associated with each operation, the estimated number of personnel to complete each task, task duration, effective average person dose rate, and the accumulated individual and collective doses associated with all tasks involved with processing one loaded transfer cask.

The applicant calculated the offsite dose rate at the INEEL controlled area boundary and estimated the maximum annual dose to the maximally exposed individual to be $3 \times 10^{!7}$ mSv [$3 \times 10^{!5}$ mrem] from ISF Facility operations, and less than 0.0032 mSv [0.32 mrem] contributed by nearby facilities. The major fraction of these doses is caused by exposure through inhalation of radionuclides in air emissions.

The staff finds the applicant's offsite dose assessment for the ISF Facility acceptable. Results of this assessment provide reasonable assurance that the doses to members of the public will be maintained ALARA and will meet the requirements of 10 CFR §72.104 and 10 CFR Part 20. Actual dose rates during operation of the ISF Facility will be measured by active and passive radiation monitoring to verify compliance with the radiological limits in 10 CFR Parts 20 and 72. The applicant will also operate the ISF Facility in accordance with the Radiation Protection Program specified in Section 5.5.5 of the proposed facility Technical Specifications (Foster Wheeler Environmental Corporation, 2003c), to assure that radiation fields are continually monitored, and that radiation doses to workers and members of the public are maintained ALARA as actual dose information is gathered during operations. Radiation monitoring at the ISF Facility and the Radiation Protection Program are evaluated in Sections 11.1.2 and 11.1.4 of this SER.

The staff finds that the applicant has provided sufficient information on the onsite dose assessment for the ISF Facility, as discussed in Chapter 7 of this SER.

11.1.4 Health Physics Program

The health physics program is described in Sections 7.5, "Health Physics Program," and 9.1.2.2.7, "Radiation Safety Officer," of the SAR.

11.1.4.1 Organization

The health physics program organization is described in Section 7.5.1, "Organization." The Radiation Safety Officer reports to the ISF Facility Environmental Safety and Health Manager and is responsible for implementation of the Radiological Protection Program. The Environmental Safety and Health Manager does not report to the Operations Manager but reports directly to the Foster Wheeler Environmental Corporation Director of Environmental Health, Safety, and Quality. The Environmental Safety and Health Manager is responsible for

environmental health and safety, emergency planning, security, and radiation safety at the ISF Facility.

The staff finds that the proposed radiation protection program satisfies 10 CFR §20.1101(a) with regard to the program organization described previously because the program provides for an Environmental Safety and Health Manager, who reports directly to the Foster Wheeler Environmental Corporation Director of Environmental Health, Safety, and Quality; a Radiation Safety Officer; and radiation protection technicians.

11.1.4.2 Equipment, Instrumentation, and Facilities

The equipment, instrumentation, and facilities pertinent to the health physics program at the proposed ISF Facility are described in Section 7.5.2, "Equipment, Instrumentation, and Facilities," of the SAR. A sufficient inventory and variety of operable and calibrated portable and fixed radiological instrumentation will be maintained to allow effective measurement and control of radiation exposure and radioactive material and to provide backup for inoperable equipment. Equipment will be appropriate to enable the assessment of sources of gamma, neutron, beta, and alpha radiation, including the capability to measure the range of expected dose rates and radioactivity concentrations. The radiological equipment and instrumentation proposed at the ISF Facility in the radiological control program are properly selected, operated, maintained, and calibrated, and include the following:

- Radiation area monitors;
- Low- and high-dose rate instruments;
- Neutron dose rate instruments;
- Thermoluminescent dosimeters;
- Self-reading dosimeters;
- Alarming dosimeters;
- Criticality dosimeters;
- Alpha-beta scintillation counters;
- Alpha-beta proportional counters;
- Geiger-Muller friskers;
- Scalers;
- Floor monitors;
- Hand and foot monitors;
- Portal monitor;
- High- and low-volume air samplers;
- Continuous air monitors;
- Lapel air samplers;
- Stack monitor;
- Low background counting room;
- High-Purity Germanium assay system;
- Liquid scintillation counter;
- Respiratory protection equipment (to protect against airborne radioactivity);
- Anti-contamination clothing (to protect against removable contamination); and

The applicant has also committed to conduct a bioassay program in accordance with Regulatory Guides 8.9, 8.11, and 8.26 (U.S. Nuclear Regulatory Commission, 1993b, 1974, 1990). The applicant will use INEEL equipment and services for bioassay, as necessary.

The staff finds that the requirements of 10 CFR §20.1101(a) are met because the health physics equipment, instrumentation, and facilities described in the SAR are adequate to perform surveys of direct radiation and airborne radioactivity, as one element of a health physics program.

11.1.4.3 Policies and Procedures

The health physics program policies and procedures at the proposed ISF Facility are described in Sections 7.1, "Policy Considerations," and 7.5.3, "Procedures," of the SAR, and in Section 5.5.5, "Radiation Protection Program," of the proposed Technical Specifications (Foster Wheeler Environmental Corporation, 2003c). Radiological practices used to control exposure include the following procedures:

- Conducting radiological surveys for verification and documentation of radiation and contamination levels to ensure personnel exposure is ALARA;
- Performing badging functions for access authorization to the restricted area;
- Issuing personnel dosimetry and monitoring, recording, and tracking personnel exposures;
- Performing radiological safety training and refresher training;
- Performing ALARA reviews of plant procedures and monitoring operations;
- Determining radiation doses on a periodic basis at restricted area and controlled area boundaries using thermoluminescent dosimeters;
- Issuing, revising, and terminating radiation and standing radiation work permits;
- Roping off, barricading, and posting radiation control zones;
- Decontaminating personnel, equipment, and areas;
- Performing radiation surveys and smear swab sampling, counting, and calculation;
- Calibrating detection, monitoring, and dosimetry instruments;
- Quantifying airborne radioactivity; and
- Maintaining records of the radiation protection program, including audits and other reviews of program content and implementation; radiation surveys; instrument calibrations; personnel monitoring results; and records required for decommissioning.

The staff finds that the description of the health physics program policies and procedures, including the elements listed previously, is sufficient to provide reasonable assurance that the health physics program will be implemented in accordance with 10 CFR §20.1101(a) and (b). The INEEL single environmental monitoring program for areas outside individual facilities within the INEEL controlled boundary and the use of thermoluminescent dosimeters to determine dose rates at the edge of the ISF Facility satisfy 10 CFR §20.1302(a), which requires that surveys of radiation levels are made to assure compliance with the dose limits for individual members of the public. The radiation protection program procedures provide reasonable assurance that contamination will be minimized in the ISF Facility and the environment in accordance with 10 CFR §20.1406, by using smear surveys to identify areas of contamination and limiting access to contamination areas. Radiation surveys and smear swab sampling, counting, and calculation are performed as required by 10 CFR §20.1501(a)(1). Procedural

controls to limit intake of radioactive materials are in accordance with 10 CFR §20.1702, in that access may be limited and respiratory protection may be used if engineering controls are not effective in limiting airborne radioactivity. The SAR indicates that an annual review of the health physics program will be performed, which will satisfy 10 CFR §20.1101(c), which requires the health physics program be reviewed at least annually.

11.2 Evaluation Findings

Based on its review of the information in the SAR, the staff makes the following findings regarding the Radiation Protection Program for the ISF Facility:

- The design and operating procedures of the ISF Facility provide acceptable means for controlling and limiting occupational radiation exposures within the limits given in 10 CFR Part 20 and for maintaining exposures ALARA in compliance with 10 CFR §72.24(e).

- The SAR and other documentation submitted in support of the application are acceptable and provide reasonable assurance that the activities authorized by the license can be conducted without endangering the health and safety of the public in compliance with 10 CFR §72.40(a)(13).

- The proposed ISF Facility is to be on the same site as the U.S. Department of Energy INEEL nuclear facilities. The cumulative effects of the combined operations of these facilities will not constitute an unreasonable risk to the health and safety of the public in compliance with 10 CFR §72.122(e).

- The SAR provides analyses showing that releases to the general environment during normal operations and anticipated occurrences will be within the exposure limits given in 10 CFR §72.104.

- The design of the ISF Facility provides suitable shielding for radiation protection during normal and accident conditions in compliance with 10 CFR §72.128(a)(2).

11.3 References

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