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9. CONDUCT OF OPERATIONS

This chapter describes the organization and general plans for the ISF Facility Independent Spent Fuel Storage Installation (ISFSI). The organization section includes a brief description of the DOE-ID organization, contractor transitional organizations, and responsibilities of key personnel. The preoperational testing program is described. The training program for the facility staff is described. Procedures that govern routine operations and maintenance and the records developed as a result of those operations are also discussed.

9.1 ORGANIZATIONAL STRUCTURE

This section discusses the organizational structures established for ISF Facility design, construction, pre-operation testing, startup, operation, and decommissioning. Figure 9.1-1, Figure 9.1-2 and Figure 9.1.3 illustrate these organizational structures. Section 9.1.1 discusses DOE's organization, relationships with contractors and suppliers, and technical staffing. Section 9.1.2.2 and Section 9.1.2.3 discuss the ISF Facility construction and operating organization.

9.1.1 Department of Energy Idaho Operations Office Organization

The Assistant Secretary for Environmental Management, pursuant to designation from the Secretary of Energy, has designated the Manager of the Department of Energy, Idaho Operations Office to act as the authorized representative of the Secretary of Energy per the requirement of 10 CFR Part 72.16(b). (Redesignation Order 00-09.01-01, Revision No. 1 (October 18, 2007)). The Manager of the Department of Energy Idaho Operations Office (DOE-ID) is thus authorized to be the license holder for the ISF Facility (Materials License SNM-2512). As the facility owner and licensee, DOE retains ultimate responsibility for the safe operation of the facility and for compliance with all license conditions.

9.1.1.1 DOE-ID Functions, Responsibilities, and Authorities

The Manager of DOE-ID is the authorized DOE representative having direct authority and responsibility for compliance with the ISF Facility license. The Manager of DOE-ID is responsible for overall executive management of the Idaho Operations Office, has signature authority for the ISF Facility license, and is the person ultimately responsible for compliance with the facility's license conditions and overall nuclear safety. The DOE-ID Manager shall take any measures needed to ensure acceptable performance of the staff in operating, maintaining, and providing technical support to the facility to ensure nuclear safety and compliant operations. The responsibilities of the personnel reporting directly to the DOE-ID Manager, as depicted in Figure 9.1-1, are described below.

The responsibility of the Deputy Manager (DM) for the Idaho Cleanup Project (ICP) is the overall execution of DOE Environmental Management (EM) funded programs and operations at the Idaho National Laboratory (INL), under which spent nuclear fuel storage (including NRC-licensed ISFSI construction and operations) falls. The actual day-to-day execution of programs and operations associated with the NRC-licensed ISFSIs is performed by a contractor. NRC is notified of DOE's intent to rebid its contractor support contract, the selection of the subsequent contractor, and an evaluation of contractor performance within 180 days of the contract effective date. The DM for ICP and staff provide

management direction and oversight of contractor performance in accordance with DOE-ID's Quality Assurance Program and commitments herein.

The Assistant Manager for Operational Support is independent of the facility line management and is responsible for environmental protection, safety, health, quality assurance, and security. This Office provides DOE-ID oversight of the contractor for licensed activities independent of the DM for ICP organization.

The responsibility for developing the appropriate revisions to the contract is delegated to the Assistant Manager for Administration Support.

The responsibility for DOE-ID's role of providing direction to the contractor for spent fuel management lies with the DM for ICP. Oversight of the EM owned spent fuel management facilities and activities, including the NRC-licensed ISFSIs, is assigned by the DM for ICP to the Assistant Manager for Facility and Material Disposition.

Reporting directly to the Assistant Manager for Facility and Material Disposition is the ISF Facility Director, who is responsible for oversight of the contractor and to ensure that approved requirements and performance objectives are met for the ISF Facility. The ISF Facility Director has an alternate, designated in writing, who meets the training and qualification requirements specified below for the Facility Director. The ISF Facility Director has direct access to the Manager of DOE-ID on issues related to the safety and surety of ISFSI construction and operations.

Also reporting to the Assistant Manager for Facility and Material Disposition through the Tank Waste Disposition Federal Project Director is the NRC Licensing Manager. The Licensing Manager is responsible for the preparation and submittal of license applications (including any necessary amendments thereto), timely response to NRC communications and inquiry, and other licensing and interface support.

The responsibility for oversight of both the contractor's Quality Assurance (QA) Program (QAP) for the NRC-licensed ISFSIs as well as the DOE-ID oversight program of the ISFSI operations is assigned through the Assistant Manager for Operational Support to the Quality and Safety Division Director. The Quality and Safety Division Director assigned the responsibility for QA oversight of the ISFSIs to the ISFSI QA Program Manager. The roles and responsibilities of the ISFSI QA Program Manager are further described in Chapter 11 of this SAR. As with the ISF Facility Director, the ISFSI QA Program Manager has direct access to the Manager of DOE-ID on issues related to the safety and surety of ISFSI operations.

9.1.1.2 Interrelationships with Contractors and Suppliers

The DOE utilizes a contractor for the ISF Facility construction and operations activities. Prior to a decision to proceed with construction and operation of the ISF Facility, the responsibility for compliance with license requirements and applicable regulations is contractually tasked to the contractor. The authority for the construction, management, and operation of the facility will be contractually awarded/assigned at some future time. To exercise DOE's ultimate responsibility, DOE will: (1) retain responsibility for and perform independent audits of the contractor's ISFSI QAP (both the achievement of quality by contractor management and the verification of quality by contractor QA personnel), (2) ensure

the license requirements for the facility are included in the contract, (3) assess the performance of the contractor against the terms of the contract, (4) retain the responsibility to budget funds necessary and sufficient to safely operate the facility, and (5) retain the authority to revise the contract in the event contract deficiencies are found relative to proper implementation of license requirements.

The key relationships between DOE-ID's ISF Facility Director, Licensing Manager, and ISFSI QA Program Manager and its contractor's current organization are depicted in Figure 9.1-2.

9.1.1.3 ISFSI Oversight Program

The Facility Director is the DOE-ID day-to-day management employee responsible for the compliance of ISF Facility construction and operations. The ISF Facility Director shall verify or audit the ISF Facility for compliance with regulatory requirements and license basis commitments and apprise DOE-ID management of ISF Facility status based on observations.

The DOE-ID ISF Facility Director or alternate shall perform surveillances of the contractor's as low as reasonably achievable (ALARA) Committee and the ISFSI Safety Review Committee, and shall be an ex officio member (as a quorum requirement) of these committees when they meet to review ISFSI matters to ensure these committees' functions are satisfactory and report to DOE-ID management as necessary.

The DOE-ID ISF Facility Director or alternate shall review the results of management assessments performed for the following contractors' programs: training, security, emergency, quality assurance, and radiation protection.

The DOE-ID ISF Facility Director or alternate shall review and concur with all of the following with respect to the ISF Facility:

- All 72.48 evaluations and TS Basis evaluations (TS 5.5.1)
- 10 CFR 72.44(e) – Physical Protection Plan evaluations, 10 CFR 72.44(f) – Emergency Plan evaluations, and evaluations of changes to DOE-ID's other essential programs (TS 5.5.2)
- Changes to TS Bases
- All changes to the SAR
- 10 CFR 72.70 SAR update
- Nuclear Material Status Reports (submitted electronically)
- Annual environmental report
- Other reports which may be submitted to NRC in response to conditions or events that are not submitted by the Manager of DOE-ID.

9.1.1.4 DOE-ID Technical Staff

The DOE Idaho Operations Office has a technical staff representing several areas of expertise with the wide variety of projects and activities at the INL. This staff is available to assist the management and oversight of the DOE activities at the ISF Facility. Staff assigned to assist the management and oversight in the areas of security, radiation protection, emergency preparedness, and quality assurance are trained and qualified in accordance with Licensing Management Procedures, or perform work directly under the supervision of the ISF Facility Director.

9.1.2 Contractor Organization, Management, and Administrative Control System

The construction and operating organizations, line management, and administrative control systems are provided by DOE's contractor personnel. The DOE and its contractor commit to provide the NRC with ready access to the ISF Facility, personnel, and records that NRC considers necessary to carry out its regulatory responsibilities.

DOE-ID has assigned responsibility and delegated authority for the management and operation of the facility to the contractor. DOE-ID policy requirements for constructing and operating the ISF Facility are assigned to the contractor through the contract. Specifically, the contract requires the contractor to manage and operate the ISF Facility in compliance with all applicable:

- Human health and safety regulations,
- Environmental regulations,
- NRC regulations and license conditions, and
- Quality assurance requirements.

DOE-ID commits to providing a contractor with management and staff for construction, routine operation and maintenance of the ISF Facility and support organizations to implement DOE's program commitments in quality assurance, security, training, radiological protection, environmental monitoring, and spent fuel accountability.

9.1.2.1 Transition Organization

Until such time a decision is made to proceed with construction of the ISF Facility and a contract award/selection is made, the contractor's (currently CH2M – WG Idaho, LLC) organization structure provides the necessary resources for maintaining the ISF Facility license and license basis documents in accordance with 10 CFR 72. The contractor organization supports the Environmental Management missions at the INL, which include but are not limited to the management and operation of the ISF Facility for transition purposes. The following organizational descriptions document the organization resources necessary to manage the ISF Facility.

The contractor's Chief Executive Officer is responsible for overall management of contractor activities and is ultimately accountable for complying with the contract conditions. Authorities are delegated and resources are provided to manage the ISF Facility in the areas of emergency preparedness, engineering,

environmental management, operations, maintenance, quality assurance, radiological control, safety and health, security, training, and transportation. In addition to the interfaces shown on Figure 9.1-2, personnel assigned to the above functions maintain interfaces with their functional counterparts at DOE-ID.

Reporting to the Manager, ISFSI Management is the ISF Facility Manager, the FSV ISFSI Manager, the TMI-2 ISFSI Manager, and the Licensing and Regulatory Compliance Lead. Support staff for essential positions within the ISFSI Management department report to the ISF Facility Manager for services provided for the ISF Facility. The Manager, ISFSI Management is accountable to the DOE-ID ISF Facility Director. This interface is the primary operations interface between DOE-ID and its contractor for the ISF Facility during the transition period.

The Quality Assurance Director assigned to the ISF Facility reports to a level equal to or above the reporting level of the Manager, ISFSI Management. The Quality Assurance Director assigned to the ISF Facility also interfaces with the DOE-ID ISFSI QA Program Manager who is responsible for the ISF Facility QA Program (see Chapter 11).

9.1.2.2 Construction Organization

This section describes the management and organizational relationships established for the design and construction review, including QA functions. Figure 9.1-3 shows the key management positions and their relationships within the ISF Facility Project Organization.

The ISF Facility Project Director reports to the Chief Executive Officer and has responsibility and authority for the design review and construction of the ISF Facility. The ISF Facility Project Director is also responsible for ensuring that procedures, programs, and policies are developed, implemented, and maintained to ensure that design and construction activities are performed consistent with the QAP.

The Chief Engineer is responsible for ensuring that:

- design activities are properly defined, planned, controlled, verified, and documented;
- plans and procedures are developed, maintained, and implemented describing the design process, design interfaces, design verification, and design changes;
- applicable design specification requirements are correctly translated into drawings, procedures, and instructions;
- design documents (e.g., design specifications, design reports, code data reports, construction specifications, drawings, specifications, reports, and calculations) have been properly prepared, reviewed, approved, and certified (when required);
- analysis and design adequacy are independently verified, and for computational accuracy and appropriate use of computer programs that perform analytical operations; and
- As Low As Reasonably Achievable (ALARA) considerations have been appropriately incorporated into the ISF Facility design.

The Chief Engineer has authority for the following:

- approves design documents,

- assures certification of design documents, and
- approves design staff assignments.

Four principal subcontractors support the ISF Facility design. Section 9.1.2.2.1 discusses their responsibilities and oversight. During design and construction of the ISF Facility, the technical staff reports to the Chief Engineer.

The Chief Engineer is also responsible for establishing and maintaining procedures and programs associated with configuration management including:

- the control, maintenance, and implementation of a configuration management program;
- proper preparation, review, and approval of configuration management procedures, and
- establishment, implementation, and maintenance of the document control and records management systems.

The Chief Engineer has authority for the following:

- approves configuration management procedures and submittals, and
- approves configuration staff assignments.

The Construction Manager reports to the ISF Facility Project Director and is responsible for performing constructability reviews during initial design and subsequent modifications. During construction, the Construction Manager oversees procurement and construction activities to ensure that the ISF Facility is constructed in accordance with design requirements. The Construction Manager is responsible for oversight of the acceptance testing of SSCs before turnover to operations for pre-operational testing. The Construction Manager is responsible for ensuring that construction and construction-related procurement activities are performed in accordance with the QAP.

The Construction Manager has authority for the following:

- cease work (construction phase),
- secure properly trained and experienced craft personnel, and
- source and recommend vendors and suppliers.

The ESH&Q Manager, during design, assists the Chief Engineer, to ensure that industrial safety standards are incorporated into design. During construction, the ESH&Q Manager assists the Construction Manager in establishing safety programs and has the authority and responsibility for conducting assessments and audits to ensure that safety programs are effectively implemented. During construction the ESH&Q Manager's functions include the review and qualification of subcontractors before performance of onsite work. The ESH&Q Manager is responsible for providing results of these assessments and audits to the ISF Facility Project Director, and requesting support for resolution of related issues. The ESH&Q Manager has authority for the following:

- cease work,
- audit/surveillance of project ESH&Q performance,
- establish compliance with ESH&Q requirements, and
- approves ESH&Q assignments.

The ESH&Q Manager also has the authority and responsibility to verify the adequacy and implementation effectiveness of the quality programs of the ISF Facility organization, including contractors and subcontractors. The ESH&Q Manager is responsible for overseeing the ISF Facility activities to ensure that quality activities are implemented in accordance with the QAP and integrated with other facility management, administrative, and oversight programs as appropriate. During design and construction, the ESH&Q Manager has the authority and responsibility to verify that structures, systems, and components (SSC) important to safety (ITS) are designed, procured, fabricated, inspected, and tested in accordance with the QAP. The ESH&Q Manager has cease work authority for quality related issues.

The Licensing Manager assists the ISF Facility organization to ensure that NRC regulatory requirements are incorporated into the design and administrative programs. The Licensing Manager is responsible for establishing procedures to ensure that the license basis documents remain consistent with facility operation and design. The Licensing Manager has authority for the following:

- cease work, and
- approve licensing staff assignments.

The Facility Manager is responsible for providing operations input and operability reviews on the facility design during design and construction.

9.1.2.2.1 Interrelationships with Subcontractors and Suppliers

The ISF Facility design is under the direct control and supervision of DOE-ID. DOE-ID, as licensee, maintains full responsibility, authority, and accountability for all project activities. Management of design, construction, and operation activities is provided by DOE's contractor personnel. The following table summarizes key subcontractors to FWENC that supported the current ISF Facility design, and whom may be called upon (through subcontracts) as necessary by DOE's contractor to provide future technical support.

Company	Responsibility
RWE NUKEM LTD.	Transfer Area design
ALSTEC, Ltd. (ALSTEC)	Storage Area design
Utility Engineering (UE)	Building steel, steel structures design, and balance-of-plant design
Tetra Tech FW, Inc.	Storage Tube and Canister design

In accordance with contractual requirements, a QA Program is established and maintained to ensure quality oversight of subcontractors. Activities are overseen in accordance with the QAP. The Tetra Tech FW, Inc., Storage Tube and Canister design is conducted in accordance with an ASME nuclear certified QA program. An Authorized Nuclear Inspector oversees the activities.

As part of ISF Facility design, FWENC contracted equipment suppliers to provide SSCs ITS. FWENC issued specifications to these suppliers to develop system and component design, fabrication requirements, construction and installation details, and testing criteria. DOE-ID's contractor will continue to oversee these activities (if and when reinitiated) in accordance with the QAP. The table below identifies major equipment suppliers.

Company	Equipment, System, Component
ALSTEC	Canister handling machine (CHM) turret
American Crane and Equipment Co.	Cask receipt crane
Ederer, Inc	Cask trolley, canister trolley, cask handling machine bridge and trolley
Mid Columbia Engineering	Decanning machine
PAR, Inc	Fuel handling machine (FHM)
Hot Cell Services	Shield windows

Electrical, plumbing, and other specialty subcontractors will be used to complete ISF Facility construction activities as appropriate. Subcontractors must be qualified to perform activities in accordance with the QAP. Quality of work is ensured by routine oversight of activities by ISF Facility construction supervision and management and oversight in accordance with the QAP.

9.1.2.2.2 Technical Staff

This section describes the contractor technical staff under the direction of the Chief Engineer. Contractor technical staff and consultant support for ISF Facility engineering, construction, and operation report functionally to the ISF Facility Project Director. Section 9.1.2.3 discusses staffing for the construction, pre-operational testing, and operation. Contractor and consultant technical staff support must meet the qualification requirements for onsite technical staff as provided in Section 9.1.3.

The Chief Engineer retains design oversight of the entire facility and is supported project engineers and discipline-area engineers. Tetra Tech FW, Inc., Utility Engineering, RWE NUKEM LTD., and ALSTEC support the project engineers.

Civil Engineers responsible for review and approval of the civil design associated with ISF Facility structures prepare, review, and approve the site seismic analysis, structural drawings, calculations, and analyses to ensure compliance with applicable design codes.

Mechanical Engineers responsible for review and approval of the mechanical design aspects of the ISF Facility SSCs prepare, review, and approve mechanical drawings, calculations, and analyses including the thermal and stress analyses of the storage components (e.g., ISF canisters and storage tubes).

Nuclear Engineers are responsible for the preparation, review, and approval of analyses related to criticality, nuclear decay heat generation, and radiation dose calculations.

Process Engineers are responsible for the preparation, review, and approval of the fuel and waste handling processes, and ensure that the processes are integrated with the design.

Electrical Instrument and Control Engineers are responsible for the preparation, review, and approval of design activities associated with electrical distribution, instrumentation, and control systems.

Utility Engineering, or its successor, provides civil/structural design support for the steel structures in the Cask Receipt Area, Transfer Area, and Storage Area. In addition, Utility Engineering, or its successor, provides design support for the heating, ventilation, and air conditioning (HVAC) systems. DOE-ID retains responsibility and approval authority for the design. Such work is overseen by review by DOE-ID and contractor engineering staff in addition to the oversight required by the QAP.

RWE NUKEM LTD., formerly AEA, is responsible for the Fuel Packaging Area layout and for supporting development of design requirements and specifications of SSCs used for receipt and handling of the received fuel, including:

- cask trolley,
- Transfer Area port plugs,
- shield windows,
- master/slave manipulators,
- special lifting fixtures (e.g., FHM lifting fixtures),
- FHM,
- worktable and ancillary equipment, and
- canister trolley.

DOE-ID retains responsibility and approval authority for the design specifications. The work performed by RWE NUKEM LTD. is overseen by review by DOE-ID and contractor engineering staff, in addition to the oversight required by the QAP.

ALSTEC, formerly ALSTOM, is responsible for the design of the Canister Closure Area (CCA), storage vault, ISF canister internals (baskets), and the design and fabrication of the CHM. DOE-ID retains responsibility and approval authority for the design. ALSTEC's work is overseen by review by DOE-ID and contractor engineering staff, in addition to the oversight required by the QAP.

The ISF canisters and storage tubes are to be designed and fabricated to ASME Boiler and Pressure Vessel Code Section III, Division 1 requirements (see Section 4.2.1). The work is to be performed by Tetra Tech FW, Inc., in its Richland, Washington, Operations Office, which is an ASME-certified design organization. An Authorized Nuclear Inspector will oversee ASME work performed by Tetra Tech FW, Inc.

9.1.2.3 Operations Organization

The ISF Facility project organization will transition to an operations organization under the facility Manager when facility construction is complete. The ISF Facility operations organization, similar to the contractor's organization shown in Figure 9.1-1, but more expanded, will be set up along functional lines that integrate assigned responsibilities and interrelationships of functional areas such as design, engineering, procurement, licensing, business, ES&H, quality, maintenance, and operations. Responsibilities and authorities of key personnel are summarized in Section 9.1.2.3.1. ITS functions and responsibilities such as nuclear criticality safety, QA, operations, health physics, maintenance, engineering, training and qualification, and emergency planning and response are noted in the applicable position descriptions. Each functional area manager is responsible for ensuring that personnel are properly qualified and authorized to perform assigned duties.

The ISF Facility modes of operation are based on the spent nuclear fuel (SNF) handling activities, which fall into the following four operational modes:

- receipt operations,
- loading operations,

- canister handling, and
- storage operations.

Operations at the ISF Facility can encompass any combination of these activities. Each operational mode can be related to the confinement boundary provided for the SNF handling activities. For each operational mode, minimum staffing levels are established. Each of these operational modes is discussed below.

Receipt Operations

Receipt operations include activities associated with handling the SNF while it is contained in a transfer cask. Receipt operations begin when the transfer cask is received at the ISF Facility, and end when the first transfer cask lid bolt is detensioned. During receipt operations, the confinement boundary for the fuel is the transfer cask. Minimum operational staffing during receipt operations will consist of one shift supervisor and one equipment operator.

Loading Operations

Loading operations include activities associated with repackaging the fuel into ISF canisters. Loading operations exist whenever: (1) SNF is contained in a transfer cask without a fully tensioned closure lid; (2) fuel is in the fuel packaging area; or (3) fuel is in an ISF canister that has not completed its leak rate acceptance test. During loading operations, the confinement boundary for the SNF consists of the ISF Facility structures and systems as described in Section 3.3.2. During loading operations the minimum staffing include one shift supervisor, one certified operator, one equipment operator, and one radiation protection technician.

Canister Handling

Canister handling operations exist when SNF is contained in an ISF canister that has passed its leak rate acceptance test and the ISF canister is not contained in a sealed storage tube. During canister handling operations, the confinement boundary for the SNF is provided by the ISF canister structural integrity. Minimum operational staffing during canister handling operations will be one shift supervisor.

Storage Operations

Storage operations exist when an ISF canister containing SNF is contained in a sealed storage tube. During this mode of operation, the fuel is contained within a double confinement boundary, and decay heat is passively removed by natural convection. With the ISF Facility in this configuration there will be no active operations, and the minimum operational staffing will consist of one shift supervisor.

Adequate staffing levels will be maintained to ensure radiation doses for individuals remain below occupational radiation exposure limits. Section 7.4.1 provides a summary of the operational dose assessments. Section 7.1 discusses the ISF Facility's commitment to an ALARA program and the monitoring of personnel exposure to ensure compliance with administrative and regulatory limits.

9.1.2.3.1 Personnel Functions, Responsibilities, and Authorities

The daily management of the ISFSI operation is provided by the ISF Facility Manager. The ISF Facility Manager reports to the Manager, ISFSI Management. Assuring requirements are satisfied in the operation of the ISFSI is the responsibility of the ISF Facility Manager.

Personnel assigned to ISF Facility operations report to the ISF Facility Manager. Other personnel from the INL that may be assigned to work at the ISFSI will report to the ISF Facility Manager while at the ISFSI site. The ISF Facility Manager is responsible for maintaining the Operations Log that will be used to note the performance of all significant on-site activities and conditions.

ISF Facility staff-level committees include an ALARA Committee and staff level safety review committee(s) or board(s) responsible to review changes to license basis documents and any associated evaluations.

ISF Facility Manager

During construction the ISF Facility Manager reports to the ISF Facility Project Director. During operations ISF Facility Manager reports to the Manager, ISFSI Management and provides leadership and overall direction and coordination for the facility. The ISF Facility Manager is responsible for the safe overall operation of the ISF Facility in accordance with the ISF Facility policies and programs and the NRC license. The ISF Facility Manager shall hold line managers, including direct reports, accountable for implementing necessary controls for safe performance of work in their area of responsibility. The ISF Facility Manager provides direct oversight and exercises upper-level management control over the operations activities through direction and oversight of the shift managers.

The ISF Facility Manager or designee has the following responsibilities:

- establish and implement policies, programs, and procedures to ensure the safe, legal, and efficient operation of the ISF Facility,
- establish and implement policies, programs, and procedures to ensure that the quality requirements of the QAP are achieved,
- ensure that regulatory requirements, commitments, and required notifications to NRC and other agencies are satisfied,
- cease work activities associated with the ISF Facility and/or initiate emergency procedures in an emergency or abnormal condition, and authorize resumption of work activities when the initiating condition has been determined and corrective action has been taken to prevent recurrence,
- certification of personnel to operate ITS equipment and controls in accordance with Section 9.3 Training Program,
- review and approve proposed facility modifications, procedural changes, and tests to ensure they do not require prior NRC approval in accordance with 10 CFR 72.48,
- ensure that subordinate or delegated responsibilities, assignments, and authorities are understood and implemented by ISF Facility staff,
- ensure that adequate resources, staffing, and training are available to safely operate the ISF Facility,
- safe daily ISF Facility operations and maintenance,
- cessation of work activities associated with the ISF Facility and/or initiation of emergency procedures in an emergency or abnormal condition,

- adherence to applicable local, state, and Federal regulations and Technical Specifications,
- implementation of policies, programs, and procedures by shift operators,
- identification and resolution of shift crew performance weaknesses, and
- development and implementation of operating procedures.

The ISF Facility Manager has responsibility and oversight of the following positions:

- Shift Managers that have overall responsibility to ensure that shift operations of the ISF Facility are safely conducted in accordance with ISF Facility procedures, policies, and Technical Specifications. The Shift Operating Organization retains full authority and responsibility for the safety of the SNF. When the ISF Facility Manager is not on site, the Shift Manager is the onsite senior management representative for matters pertaining to safe operation of the ISF Facility, with authority and responsibility to cease work activities and/or initiate emergency procedures in an emergency or abnormal condition.

- Certified Operators that report to the Shift Manager and have responsibility to safely conduct fuel movement activities in accordance with ISF Facility procedures, policies, and Technical Specifications. The Certified Operators conduct applicable surveillances to meet the requirements of the Technical Specifications.

- Equipment Operators that report to the Shift Manager and have responsibility to safely conduct operations of support systems and components under the direction of a Certified Operator in accordance with ISF Facility procedures, policies, and Technical Specifications. The Equipment Operators conduct applicable surveillances to meet the requirements of the Technical Specifications. The Equipment Operators monitor operation of systems and components at the ISF Facility and performs switching and safety tagging operations to support maintenance activities.

Facility Safety Officer

The Facility Safety Officer reports to the ISF Facility Manager and provides oversight and direction of engineering activities associated with ISF Facility design, maintenance, and operation, fire protection, licensing, configuration management, and fuel accountability. The Facility Safety Officer oversees and directs onsite engineering and technical staff for the following functions and activities for support of ISF Facility operation and maintenance activities.

The Facility Safety Officer has responsibility for, oversees and directs matrixed administrative and training functions at the ISF Facility.

The Facility Safety Officer supports the ISF Facility Manager in day-to-day operations but reports to the ESH&Q Manager for issues involving personnel health or safety. This direct line to the ESH&Q Manager ensures appropriate independence from line management in health safety functions, including sufficient independence from cost and schedule issues.

The Facility Safety Officer is responsible for environmental, health and safety, emergency planning, security, and administers radiation safety at the ISF Facility. The Facility Safety Officer, like all employees, has the authority to cease work activities not in compliance with environmental, safety, or radiation

protection programs or procedures. The Facility Safety Officer oversees and directs the following ISF Facility activities.

- developing and implementing industrial health and safety procedures,
- complying with applicable Occupational Safety and Health Administration (OSHA) standards,
- ensuring compliance with environmental permit requirements,
- planning and direction of radiation protection and ALARA programs,
- development and implementation of radiation protection procedures,
- packaging, storing, and shipping of radioactive waste,
- advising and informing the ISF Facility Manager on matters pertaining to radiological safety, including the status of radiological health aspects of facility operation and maintenance and the identification of potential radiological concerns,
- maintaining radiation protection-related records and monitoring for trends that may affect ISF Facility operation,
- ensuring that the ISF Facility is maintained in a state of readiness for effective emergency response in accordance with the *ISF Facility Emergency Plan* (Ref. 9-3),
- ensuring adequacy of the *ISF Facility Emergency Plan* implementing procedures, including that the ISF Facility staff is adequately trained in emergency response, and that emergency response facilities and equipment are adequate and properly maintained in a state of readiness, and
- establishing and maintaining physical security in accordance with the *ISF Facility Physical Protection Plan* (Ref. 9-2).

The Facility Safety Officer is also responsible for implementing the Radiological Protection Program. and, like all employees, has the authority to cease work activities not in compliance with radiation protection or ALARA program requirements The Facility Safety Officer supervises radiation protection technicians in performance of their assigned duties, which include:

- monitoring radiological and environmental conditions,
- determining and evaluating radiation hazards in relation to prescribed limits,
- developing and recommending control and protective measures for radiological conditions,
- performing radiation surveys of ISF Facility areas and equipment to define existing and potential hazards,
- monitoring worker practices to ensure compliance with radiation protection and ALARA program requirements,
- packaging and storing radioactive waste associated with radiation protection operations in accordance with applicable requirements,
- calibrating survey and analytical instruments,
- developing and implementing personnel monitoring activities, including maintenance of personnel exposure records and environmental survey records,

- maintaining radiation protection logs, and
- performing investigations of personnel overexposure and excessive contamination and reporting the findings and corrective action recommendations to the ISF Facility Manager.

The Facility Safety Officer is also responsible for the development and maintenance of the auditing and verification functions of the QAP. The Facility Safety Officer, through performance of QA audits and surveillance of project performance, ensures compliance with QAP requirements. The Facility Safety Officer responsibilities include:

- initiating a work cessation action when necessary, to ensure implementation of the QAP,
- overseeing implementation of the QAP to meet the requirements of 10 CFR, Part 72, Subpart G,
- overseeing effective implementation of QAP procedures,
- verifying, through monitoring of ongoing activities and reviews of records, that ITS activities are performed correctly and in compliance with governing procedures, standards, policies, and regulations,
- coordinating ISF Facility quality activities to ensure appropriate oversight, in accordance with the required frequency,
- developing, maintenance, and implementation of audit programs and schedules, and
- timely and appropriate feedback to functional area managers of the results of audits, surveillance, inspections, and monitoring activities.

The Facility Safety Officer will notify the Shift Manager of any significant adverse to quality condition pertaining to ITS SSCs, including operating and maintenance activities in progress.

9.1.2.4 ISFSI Safety Review Committee

Reporting to and chartered by a senior executive for operations is the ISFSI Safety Review Committee. This committee is comprised of senior technical personnel and management personnel with extensive nuclear experience in various areas.

The purpose of this committee is to evaluate the performance of staff level safety review committees, to review performance indicators (such as audit findings, reportable events and conditions, Technical Specification violations); to review 10 CFR 72.48 evaluations (and associated procedure or design changes); to review changes to the Technical Specification Bases, SAR, Emergency Response Plan, and Physical Protection Plan; to approve license amendment requests; and to review preparations for major changes in operation (such as removing fuel from the ISFSI). The ISFSI Safety Review Committee shall also perform special reviews at the direction of the DOE-ID Facility Director.

Core members, appointed in writing by the chartering senior executive, provide the needed technical expertise in engineering, radiological control, criticality safety, nuclear facility operations, and nuclear quality assurance; their technical qualifications are described in section 9.1.3 below. Other members may be appointed as considered appropriate by the chartering senior executive.

A quorum shall include three core members, the technical disciplines appropriate for the matters under review, and the DOE-ID ISF Facility Director. The DOE-ID ISF Facility Director is informed of all appointments to the Safety Review Committee.

9.1.2.5 Succession of Operation Authority and Responsibilities

The ISF Facility Manager has overall responsibility and authority for the ISF Facility. To ensure continuity of operation and organizational responsiveness to off-normal situations, a normal order of succession and delegation of authority will be established. The ISF Facility Manager will designate in writing personnel qualified to act as ISF Facility Manager in their absence.

The ISF Facility Manager is the senior management representative on site with authority and responsibility for matters pertaining to safe receipt, packaging, and storage of SNF; as well as compliance with Technical Specifications. When the ISF Facility Manager is off site, the on-duty Shift Manager will assume these responsibilities.

9.1.3 Personnel Qualification Requirements

9.1.3.1 Minimum Qualification Requirements

The following DOE-ID positions require minimum qualifications and training for the management and oversight of the ISF Facility:

- ISFSI QA Program Manager
- ISF Facility Director and designated alternate

Both positions have direct access to the licensee on an as-needed basis and shown in Figure 9.1-1. The DOE-ID ISFSI QA Program Manager shall have a minimum of a Baccalaureate degree in an engineering or physical science field and five years of experience in nuclear quality assurance and certification as lead auditor. The minimum training for this position shall include the 10 CFR 72.48 process, QA program indoctrination, NRC requirements, and the ISF Facility License Basis (consisting of the identification of and orientation to the license and design basis documents).

The DOE-ID ISF Facility Director shall have a minimum of a Baccalaureate degree in an engineering or physical science field and five years of experience in nuclear facility operations. The minimum training for this position shall include the 10 CFR 72.48 Process, QA program indoctrination, Technical Specifications, NRC requirements, and the ISF Facility License Basis. The designated alternate for the ISF Facility Director shall meet the same minimum qualifications and training requirements.

The following contractor positions require minimum qualifications and training for the operation of the ISF Facility:

- ISFSI Safety Review Committee members
- Manager, ISFSI Management
- ISF Facility Manager and designated alternate

- ISF Facility Safety Officer and designated alternate
- Certified ISFSI Operators
- Quality Assurance Manager assigned to ISF Facility

The Chair, Members, and Alternates of the ISFSI Safety Review Committee (SRC) shall have a minimum of a Baccalaureate degree in an engineering or physical science field and five years of experience in one or more of the following technical areas at nuclear facilities:

- Radiological Safety
- Nuclear Safety (with at least two years of experience in criticality safety analysis)
- Nuclear Facility Operations
- Nuclear Quality Assurance
- Engineering

The minimum training for the Chair, Members, and Alternates of the ISFSI SRC shall include the 10 CFR 72.48 process, QA program indoctrination, Technical Specifications, NRC requirements, and the ISF Facility License Basis.

The Manager, ISFSI Management shall have a minimum of a Baccalaureate degree in an engineering or physical science field and five years of supervisory experience in nuclear facility operations. No minimum training requirements are associated with this position.

The ISF Facility Manager shall have a minimum of a Baccalaureate degree in an engineering or physical science field and five years of supervisory experience in nuclear facility operations or equivalents for education and experience as approved by the Manager, ISFSI Management. The minimum training for this position shall include 10 CFR 72.48 process, ISF Facility License Basis, Radiation Worker, Emergency Response, and ISF Facility Qualification training. The designated alternate for the ISF Facility Manager shall meet the same minimum qualifications and training requirements.

The ISF Facility Safety Officer shall have a minimum of a Baccalaureate degree in an engineering or physical science field and five years of supervisory experience in radiation protection for nuclear facility operations. The minimum training for this position shall be the ISFSI Radiation Protection Program. The designated alternate for the ISF Facility Safety Officer shall meet the same minimum qualifications and training requirements.

The minimum qualifications for the position of Certified ISFSI Operators are successful completion of the biennial medical examination, training, and certification in accordance with the requirements in Section 9.3.

The minimum qualifications for the QA manager assigned to the ISF Facility are a Baccalaureate degree in an engineering or physical science field and five years experience in nuclear operations quality assurance. No minimum training requirements are associated with this position.

9.1.3.2 Qualification of Personnel

The resumes or other appropriate documentation of personnel occupying the positions listed above will be kept on file to demonstrate compliance with the minimum requirements described.

9.1.4 Liaison with Outside Organizations

Despite the fact that the ISF Facility is a DOE-owned facility located on the INL with several other DOE-owned facilities and DOE-managed programs, the external regulation by the NRC of the ISF Facility sets this facility apart in some respects. The INL is a large, remotely located site and has its own large security police force, a fire department, medical staff, emergency response teams, and full-time shift plant supervision. Thus, the INL infrastructure will be considered to serve equivalent functions as independent local agencies (similar to local city or county) do for typical commercially-licensed sites

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9.2 PREOPERATIONAL TESTING AND OPERATION

The purpose of the pre-operational testing at the ISF Facility is to ensure that the facility can safely receive, package, and load spent fuel into the ISF canister and place the loaded canisters in storage.

The pre-operational test program starts with acceptance testing of safety-significant components (SSCs). This acceptance testing is performed by the construction organization and involves testing to verify compliance with construction specifications, procurement documents, and design requirements. This acceptance testing includes a functional test of the SSCs for proper system/component operation (e.g., testing of interlocks, load testing of cranes, system flow verifications). After acceptance testing is completed, the systems are turned over to the startup test organization who is responsible for "dry-run" testing using mock fuel assemblies and canisters fabricated to the dimensions and weights of the actual components. Dry-run testing is an integrated test program that verifies system interface operations, procedure usage, and adequacy of personnel training before receipt of SNF. The main objective of the pre-operational test plan is to verify the integrity of the structures and equipment and to substantiate the safety analysis. The pre-operational testing includes off-normal operation scenarios with mitigation plans. Overall goals of the pre-operational dry run are to:

- demonstrate the functionality of equipment
- verify adequacy of procedures used for receipt, transfer, and storage of SNF
- verify adequacy of staff training and qualifications to safely operate the ISF Facility
- develop proficiency with procedures involving radiation exposures to determine likely exposures for specific procedures and to consider alternative procedures to minimize exposures

9.2.1 Administrative Procedures for Conducting Test Programs

Test procedures will be developed for the ISF Facility. Approval of procedures, performance of tests, evaluation of test results, and incorporation of any needed system modifications or procedural changes (based on the results of the tests) will be performed by the contractor using administrative controls existing at the INL.

ISF Facility administrative control procedures will be used for: 1) preparing, reviewing, approving, and conducting procedures and test instructions, and 2) documenting, evaluating, and accepting the test results. The minimum requirements for planning and conducting tests are contained in Section 11.11 of the SAR Chapter 11 (QAP). The pre-operational test program consists of two separate but integrated phases, 1) acceptance testing and 2) dry-run testing. Following completion of pre-operational testing, operations testing will be performed on initial receipt of each fuel type. The ISF Facility Manager has overall authority and responsibility for both the pre-operational and operational testing.

The ISF Facility Manager is responsible for ensuring that acceptance tests prior to and during the pre-operational testing are identified, acceptance test procedures are developed, and testing personnel qualifications are identified and met. These acceptance test procedures at the ISF Facility will be reviewed and approved by the ISF Facility technical staff, and test performance will be coordinated with the Construction Manager. Test procedures performed off site by equipment suppliers or contractors will be controlled in accordance with the QAP. The administrative process for conducting the initial test

procedures will include provisions for review of the activities to identify and incorporate lessons learned into dry-run procedures.

The ISF Facility Manager is responsible for ensuring dry-run tests are identified, developed, and performed by qualified and trained personnel. Dry-run testing is performed, using mock fuel assemblies and canisters, to ensure that facility operations can be performed using the proposed operating procedures with qualified personnel before initial fuel receipt. The technical staff will review test procedures for technical accuracy. The dry-run test procedures will be verified and validated by table-top reviews or plant walk-downs by personnel qualified to perform the test and approved by the ISF Facility Manager. Pre-operational test procedures performed at the ISF Facility will contain the following minimum requirements.

- personnel qualifications
- objective(s)
- prerequisites
- applicable design, procurement, and/or facility license requirements
- description of test configuration
- test instructions
- QA inspection hold points (if required)
- acceptance criteria
- measuring and test equipment requirements
- test requirements and acceptance limits

Completed preoperational testing will be documented by test reports that will include as a minimum:

- item/system tested
- date of test
- test results and acceptability
- identification and signature of test personnel
- identification of measuring and test equipment used during test
- evaluation of test results for acceptability
- actions taken regarding any nonconformance noted

Following completion of pre-operational testing, test reports will be reviewed to determine the need to incorporate system modifications or procedure changes, based on lessons learned. When changes to the system design or procedures are necessary, they will be reviewed to ensure that they do not require prior NRC approval in accordance with 10 CFR 72.48. In addition, a fuel acceptance readiness review (FARR), as described in Section 9.2.3, will be performed to ensure that the ISF Facility equipment, procedures, programs, and staffing are in place before receipt of the first fuel assemblies and commencement of startup testing.

Startup testing will be performed during initial fuel receipt for each fuel type to verify compliance with calculated dose projections and heat removal aspects evaluated in the SAR. The startup test plan will include the following elements as a minimum:

- test procedures and confirmation of exposure times involving actual radioactive sources
- direct radiation monitoring of Transfer Cask, canister trolley shielding, and facility shielding (including plugs, covers, shield windows, doors, etc.) for radiation dose rates, streaming, and surface "hot spots"
- verification for the effectiveness of the passive heat removal features associated with the storage system
- plans and preparations for controlling radiological activities include, as a minimum:
    - ALARA reviews and planning
    - radiation work permits
    - hot particle controls
    - contamination, exposure, and airborne controls
    - alarms and monitoring systems
    - contingency plans to restore plant to a safe condition if unexpected results are obtained

The administrative process for conducting operational test procedures will include provisions for review of the activities to identify and incorporate lessons learned into facility design and operating procedures. In addition, design and operator training deficiencies will be identified, reviewed, and appropriate corrective actions taken. Changes to facility design or operations will be reviewed to ensure the change does not require prior NRC approval in accordance with 10 CFR 72.48. The ISF Facility Manager or designee approval of the changes is required prior to implementation.

9.2.2 Test Program Description

This section describes the pre-operational test objectives and the general methods for achieving those objectives, and discusses the bases for selection of acceptance criteria that will be used to evaluate the test results.

Pre-operational tests will closely simulate actual operations involving fuel receipt, fuel packaging, canister closure, and canister storage, to ensure that qualified ISF Facility staff using the operational procedures can safely perform these operations. The testing program will be conducted using mock fuel assemblies, rods, or modules to simulate the different types of fuels to be handled in the Fuel Packaging Area of the Transfer Area. Either a Transfer Cask (Peach Bottom cask and canister/basket) or mock cask will be used to simulate receipt operations. Mock ISF canisters (i.e., canisters similar in configuration and construction but not to final QA or QC standards) will be used to test handling equipment (fuel repackaging process) and canister closure operations (i.e., welding, nondestructive examination [NDE], vacuum drying, and helium backfilling). These mock ISF canisters will be used to pre-operationally test Cask Handling Machine operations including insertion of mock canisters into a storage tube. Verification of ALARA practices, which are not completely achievable during dry runs, will take place during the initial fuel loading.

Before pre-operational test performance, test personnel shall have a clear understanding of their duties and responsibilities. The following shall be completed before pre-operational testing:

- Personnel training and qualification per the approved training program.
- A pre-job briefing for affected staff.
- Hold and inspection points are clearly identified.
- Stop-work criteria and contingency plans are established to place the spent fuel in a safe configuration. (e.g., established guideline for how long a cask or canister may remain suspended from a crane).
- Personnel are aware of compensatory measures.
- Oversight command and control responsibilities are clearly established, including notification requirements.
- Specific radiological hazards are identified and controls are implemented.
- Radiation dose rates will be verified during initiation of start-up testing to ensure that actual values are within prescribed limits.

The methods for accomplishing the objectives and the acceptance criteria that will be used to evaluate the test results will be included in the procedures and test instructions. In addition, the general prerequisites for performing the tests, including special conditions to simulate normal and off-normal operating conditions, will be included in the procedures and test instructions.

9.2.3 Physical Facilities

This section discusses the type of tests and inspections to be performed on the ISF Facility safety significant components (SSCs) before receipt of SNF.

During construction, testing or inspections will be used to verify configuration, materials, performance, and quality for SSCs ITS (see Section 3.4 for a list of ITS items). The purpose of testing and inspections during construction is to verify that design requirements, specifications, and applicable code criteria are satisfied. Construction, materials, operations, or quality items that are found not to satisfy requirements will be identified as nonconforming and resolution/corrective action will be taken as required by the QAP.

Vendor-supplied SSCs are procured, tested/inspected, and received in accordance with the QAP. Quality oversight of this process requires the use of pre-approved vendors with conforming QA programs. Purchased items will be accompanied by documentation of conformance with requirements specified by DOE.

The construction organization will acceptance test and inspect SSCs (e.g., testing of interlocks, load testing of cranes, system flow verifications) before turnover to the ISF Facility operations organization for pre-operational testing, to ensure that individual systems and components operate properly and will perform as designed. The ISF Facility Manager is responsible for development of acceptance test/inspection procedures, and for review and approval of testing/inspection requirements provided by vendors before implementation. Table 9.2-1 lists the SSCs that will be acceptance tested/inspected.

Satisfactory completion of the test/inspection will require conformance with the acceptance criteria specified in the test/inspection procedure. Section 9.2.1 presents the administrative process for conducting the test program.

9.2.4 Operations

This section discusses those operations to be tested. Operations testing begins after completion of the construction and functional testing of SSCs. This section discusses the dry-run testing. Startup testing is described in Section 9.2.3.

Dry-run testing is the integrated system testing performed before initial fuel receipt to verify that the ISF Facility can be safely operated by individuals, qualified in accordance with the training program described in Section 9.3, using facility operating procedures. Mock fuel assemblies and canisters are used to simulate actual operations. Dry-run testing will verify that these activities can be performed:

- Receipt Operations. Activities related to receipt of spent fuel at the ISF Facility, including unloading of the receipt cask from the transporter through transport to the Fuel Processing Area (FPA) fuel receipt port.
- Packaging Operations. Activities performed in the FPA of the Transfer Area, where spent fuel is removed from the receipt containers (baskets or canisters), inspected, and placed in an ISF basket/canister in preparation for canister closure operations.
- Canister Closure Operations. Activities performed to prepare new ISF Facility canisters and baskets for SNF loading, and activities associated with receipt of loaded canister from the FPA through closure of the ISF Facility canister (lid weld, vacuum drying, helium backfill, and leak test). Special emphasis will be placed on verifying ability to satisfactorily perform the final closure weld.
- Loading Operations. Activities related to transferring sealed ISF Facility canisters from the Canister Closure Area (CCA) to the Storage Area and loading them into storage tubes in the dry vault storage system.
- Unloading Operations. Activities relating to retrieving an ISF facility canister from an individual storage tube in the modular dry-vault storage system and transferring it either back into the FPA or into a licensed transportation device.
- Waste Processing Operations. Activities involving handling and processing of radioactive waste (e.g., liquid, compactable, contact, and non-contact waste types).

Pre-operational testing will be completed, results reviewed, and required corrective actions (e.g., procedure and equipment modifications) will be completed before receipt of fuel. The FARR is discussed in Section 9.2.3. Once the operational readiness is completed, the startup test program can commence.

9.2.5 Test Discussion

After pre-operational testing is complete, a FARR will be performed before receipt of SNF, to verify the ability of the ISF Facility and staff to safely receive, repackage, and store fuel. The FARR will consist of

a programmatic and procedure review, equipment and staffing review, and a performance assessment of operators, support staff, and management. The FARR will cover the following areas:

Construction

Construction activities complete (as required), as-built drawings updated and available in document control system, open items resolved, non-conformances corrected, acceptance construction test completed and approved, and inspections performed and accepted.

Engineering and Technical Support

Onsite technical staffing is adequate and available. Design control procedures are written and approved, required vendor information and manuals, design bases calculations, and as-built drawings are available as approved documents through the document control system.

Operations

Operating, off-normal, surveillance, and emergency response procedures are approved, operationally tested, and available in the document control system. Pre-operational testing including corrective actions for identified deficiencies and non-conformances, as required, are complete. Operational staffing is trained and adequate to support operations.

Training

Training procedures are written and approved. ISF Facility staff have completed required training.

Radiological Controls

Radiation protection procedures are approved, health physics personnel are trained, required radiation posting is completed, and radiological monitoring equipment has been tested and is operational.

Maintenance and Surveillance

Maintenance and surveillance procedures are approved, required spare parts is identified and available, post maintenance testing is complete as required, surveillances necessary to receive fuel are completed and current.

Organization and Management

Procedures affecting organization and management are approved and available through document control, adequately trained and qualified personnel available.

Security

Security procedures are approved, adequately trained and qualified personnel are available. Security equipment has been tested and is operational.

Fire Protection

Procedures are approved, fire detection/suppression systems have been tested and are operational, and adequate fire personnel are trained and available.

Emergency Response

Emergency plan implementing procedures are approved, agreements for support organizations are in place, required emergency equipment has been tested and is operational, and emergency response staff is trained and qualified.

Nuclear Safety

Criticality controls and fuel accountability control procedures, and procedures for fuel acceptance verification, are approved and available through document control.

The FARR team will consist of a team leader and support personnel with experience in operations, engineering and technical support, maintenance and surveillance, document control, security, fire protection, emergency response, and nuclear safety. The FARR team will develop a written report to document the results of their findings. Before commencement of startup testing, the FARR report will be presented to the DOE ISF Facility Director, who has approval authority for receipt of SNF.

A startup test plan and implementing procedures will be written and approved before receipt of SNF. These documents will verify that the ISF Facility design bounds the calculated dose projections and the heat generation and removal aspects evaluated and presented in the SAR. Section 9.2.1 presents the elements of the startup test program. Startup testing will be performed on the first two fuel receipt shipments for each of the various fuel types to be handled by the ISF Facility.

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9.3 TRAINING PROGRAM

This section of the SAR comprises DOE's ISF Facility Training Program and is submitted pursuant to Subpart I of 10 CFR Part 72. The requirements of this training program are implemented by contractor procedures providing for the administration of training programs. Changes which do not decrease the effectiveness of this program will be documented in annual SAR updates.

The objective of this training program is to use a systematic approach to training (SAT) to provide competent contractor personnel to perform all functions related to the operation of the ISF facility. The application of the SAT process will use a graded approach, with the training modules for the operation and maintenance of ISF structures, systems, and components identified as important-to-safety subject to the most rigorous application.

9.3.1 Administration

This training program ensures that qualified individuals will be available to perform planned and unplanned tasks while protecting the health and safety of plant personnel and the public. DOE, through its contractor, commits to maintain additional training to support the emergency plan, physical protection plan, quality assurance plan, and administrative and safety requirements, as required. Procedures and lesson plans used to implement this training program will be developed and maintained by the contractor.

The Training Manager is responsible for the administration of training programs and for maintaining up to date records on the status of contractor and DOE-ID trained personnel, training of new employees, and refresher or upgrade training of present personnel.

The ISF Facility Manager is responsible for ensuring that training requirements are specified for personnel assigned to support the ISF. In this role, the ISF Facility Manager or designee will approve all ISF Facility specific lesson plans, applications for exceptions of training requirements, and extensions of retraining and requalification requirements. Training material for ISF Facility support functions (such as radiation protection, ESH&QA, emergency response/emergency plan, and security/physical protection plan) may be developed and approved by the appropriate support organization.

The ISF Facility Manager is responsible for ensuring that training requirements have been satisfied for personnel assigned to the ISF Facility.

9.3.2 Records

The following records on the status of trained personnel will be maintained for a minimum of five years in accordance with the Records Section 9.4.2 below:

a. Results of each Certified ISF Operator’s biennial medical examination.

b. The completed records of operator certification.

9.3.3 Instructor Qualifications and Development

The DOE contractor shall provide for and document the qualification and training of the Training Staff. Instructors designated to teach the Certified ISF Facility Operator Program shall possess subject matter

expertise for a particular subject or topic. Instructors initially qualified shall maintain qualifications by instructing classes, and administering or grading examinations and On-the-Job Training (OJT) guides, and preparing, reviewing, or revising Certified ISF Facility Operator instructional material.

9.3.4 Development of Training Material

The DOE contractor shall maintain procedures providing for the analysis of jobs, design of initial and continuing training, development of instructional material, implementation (conduct of training), and evaluation (examinations, performance demonstration, program effectiveness, etc.). The development of training material shall be performed by trained and qualified staff. The DOE contractor shall maintain academic lesson plans and On-the-Job training (OJT) guides developed in accordance with this training program.

Because of varied complexity and scope of job functions, the degree of analysis (needs analysis, job analysis, task analysis) necessary to define training program content will vary. For example, a job and needs analysis may be appropriate for operations and maintenance personnel, whereas a less formal broad-based assessment of training needs is appropriate for technical staff personnel. Job analyses need not be conducted for technical support staff personnel. Consensus-based content guides should be used to assist with the determination of technical support staff training program content.

9.3.5 Training Improvement

The DOE contractor shall provide for and document the evaluation of training programs in order to ensure the continued improvement of training material and the conduct of training. A DOE assessment of the contractor's implementation of this training program shall be performed biennially.

9.3.6 Frequency of Training

Training requirements must be completed within the period specified in the sections below for General Employee Training and Certified ISFSI Operator Training; however, a grace period of 25% is allowed. Not completing the retraining requirements within the specified frequency will require completion of the initial training course in order to have qualification reinstated.

9.3.7 General Employee Training

Personnel requiring unescorted access to the ISF Facility must successfully complete General Employee Training (GET). The GET training program will be composed of topics derived through analysis (e.g., needs, job, or task analysis). Refresher training is required annually in order to convey pertinent modifications, procedure changes, regulatory changes, or other significant material as applicable.

9.3.8 Certified ISF Facility Operator Training

The training for Certified ISF Facility Operators and supervisors shall provide for initial training and testing of personnel who operate equipment identified as important to safety and will also provide for retraining, proficiency testing, and requalification as required based on job function analysis. Certified

ISF Facility Operators will be actively maintained during transport and loading and unloading operations. During extended storage periods, qualifications will be required for ISF Facility monitoring activities.

ISF Facility equipment and controls that have been identified as important to safety in this SAR and in the license shall be operated by either personnel who have been trained and certified in accordance with this section or who are under the direct visual supervision of a trained, certified individual. Personnel who are in-training shall not independently make decisions or take actions that could affect facility safety, nor shall personnel who are in-training be placed in such positions. However, they may independently perform specific tasks or job assignments for which they are qualified.

Qualification and Certification is contingent upon meeting and maintaining the following criteria: obtaining a score of >80% on all academic examinations; and satisfactory performance of all OJT practical evaluations. A score of < 80% on any academic examination or failure to demonstrate satisfactory performance of an OJT practical evaluation shall result in the removal of the qualification or certification associated with the examination or evaluation. Following a failure, the qualification or certification is regained through successful completion of remedial training and retesting.

The physical condition and general health of certified personnel shall be verified by physical examination before initial certification and biennially thereafter. These physical examinations consider conditions which might cause impaired judgment or motor coordination. In addition, if an employee's behavior or condition creates a hazard to health or safety, then stop work may be imposed.

Each individual shall be given instructions regarding the hazards and safety precautions applicable to the type of work to be performed, general workplace hazards, and the procedures for protecting themselves from injury. These instructions are normally given during pre-job briefs prior to operations.

The certified operator continuing training programs shall be structured using a graded approach of the SAT process commensurate with specific position needs, and shall be administered on a biennial cycle.

9.3.9 Technical Support Positions

Technical support staff personnel are typically involved in surveillance, testing, analyzing facility data, planning modifications, program review, and technical problem resolution in their area of expertise (e.g., electrical, mechanical, instrumentation and control, chemistry, radiation protection, safety, quality assurance, facility engineering, security, emergency response).

The DOE contractor shall develop a list of specific technical staff positions that have a direct impact on employee, facility, or public safety.

Training for the applicable support positions shall include administrative and management controls associated with ensuring compliance with the ISF facility license conditions.

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9.4 NORMAL OPERATIONS

This section describes the procedure controls associated with ITS operations, and the management system for maintaining records related to the operation of the ISF Facility.

9.4.1 Procedures

Procedures are used to document the performance of ITS activities and compliance with regulatory requirements. The format and content of written procedures include:

- Introduction (includes purpose and scope)
- precautions and limitations
- prerequisites
- instructions (sequence, forms to be completed, acceptable conditions, actions if conditions aren't acceptable, approvals)
- records

ISF Facility procedures are to be followed verbatim to ensure that activities are conducted safely and in accordance with regulatory requirements. If a procedure cannot be performed as written, the person performing the activity will stop the activity and, if necessary, place the system or component in a safe condition. The Shift Manager will be notified of procedure inadequacies and the activity will not resume until corrective actions have been implemented.

ITS activities and activities affecting quality are accomplished in accordance with approved and documented instructions, procedures, and drawings. Detailed written procedures developed, reviewed, and approved in accordance with ISF Facility requirements are used to perform operations, maintenance, surveillance, and testing activities. The following are the categories, criteria, and attributes of the types of procedure that will be implemented and maintained at the ISF Facility.

Administrative Procedures are instructions to ISF Facility personnel to provide an understanding of operating philosophy and management policies. These procedures include instructions for personnel conduct and procedures to develop, review, change, and approve facility procedures. Administrative procedures describe activities to ensure that personnel safety, working environment, procurement, and other general activities of the ISF Facility are conducted with quality and in a safe manner.

Radiation Protection Procedures are used to implement the radiation control program and ensure compliance with 10 CFR 20 and ALARA principles (Ref. 9-1). The procedures describe the methods for:

- use of environmental monitoring and measurement equipment
- qualifications and training of radiation protection personnel
- performance of surveys, measurements, and assessment of radiological conditions
- control of radiation hazards

- generation, review, and control of radiation work permits

Maintenance Procedures are used to implement the preventative and corrective maintenance program. Preventative maintenance procedures, including calibrations, are performed at a specified frequency to preclude degradation of ISF Facility SSCs. Corrective maintenance procedures are used to repair broken or degraded equipment. These maintenance procedures identify the level of qualification necessary for performance and provide a record of the activities performed, the date performed, and the person(s) performing the activity. In addition, prerequisites to perform the maintenance are identified, as well as post-maintenance testing requirements. Prerequisites include such things as facility operation mode, equipment configuration, or verification of alternate equipment availability.

Surveillance Procedures are used to implement the surveillance requirements of the ISF Facility operating license, which includes the Technical Specifications, to verify that plant operations and equipment operability comply with the conditions of the ISF Facility operating license. Surveillance procedures are performed periodically and before return to service after equipment maintenance or modification. Surveillance procedures will identify the level of qualification necessary for performance and will establish requirements for methods used to provide a record of the activities performed, the date performed, and the person(s) performing the activity. These procedures will also identify the source requirement for the surveillance, period for performance, acceptance criteria, and actions necessary if the acceptance criteria are not satisfied.

Operating Procedures provide instructions for normal and off-normal operations, including receiving, handling, repackaging, and storing spent fuel, and other operations ITS, such as those identified in the Technical Specifications. Procedures for operating equipment ITS include specification of certification/qualification requirements for personnel performing the procedure. Operating procedures also provide instructions for operation of equipment such as the storage area monitoring equipment and other plant equipment.

QA Procedures prescribe necessary elements of quality oversight to ensure that activities ITS are conducted in a controlled manner in accordance with the QAP.

Review, Change, and Approval Process

Written administrative procedures control the approval of new procedures and subsequent revisions. Administrative procedures specify the format, review process, and approval requirements. The ISF Facility Manager is responsible for ensuring that the administrative procedures for facility processes are implemented.

New procedures and subsequent revisions to procedures are reviewed by appropriate subject matter experts on the facility staff and by affected organizations. Before implementation, the ISFSI Operations Safety Board (OSB) will review new procedures and subsequent changes. The ISF Facility Manager or designee must approve new procedures and subsequent revisions before issue. The procedure reviews and approval process will be documented in accordance with the QAP.

9.4.2 Records

Administrative procedures have been implemented to ensure that quality records are identifiable and retrievable. Information Management Services will maintain records of historical operation of the ISF Facility. ISF Facility personnel are responsible for ensuring that QA records are legible, accurate, complete, and identifiable to the item or activity to which they apply. In addition to QA records, the following records will also be maintained in accordance with the regulatory reference(s) provided:

- records of spills or other abnormal occurrences involving the spread of radiation in and around the facility, equipment, or site, in accordance with 10 CFR 72.30(d)(1)
- as-built drawings and modifications of structures and equipment in restricted areas where radioactive materials are used and/or stored, and of locations of possible inaccessible contamination such as buried pipes, in accordance with 10 CFR 72.30(d)(2)
- a list contained in a single document and updated no less than every 2 years of the following, in accordance with 10 CFR 72.30(d)(3):
    - areas designated and formerly designated as restricted areas as defined under 10 CFR 20.1003
    - Areas outside of restricted areas that require documentation under 10 CFR 72.30(d)(1)
- records of cost estimate performed for the Proposed Decommissioning Funding Plan, in accordance with 10 CFR 72.30(d)(4)
- records of receipt, inventory, disposal, acquisition, and transfer of all spent fuel and high-level radioactive waste in storage, as required by 10 CFR 72.72(a)
- records of physical inventories and current material control and accounting procedures as required by 10 CFR 72.72(b) and 10 CFR 72.72(c)
- records of changes in the facility design, of changes in procedures, and of tests and experiments made pursuant 10 CFR 72.48(c)(1). These records must include a written evaluation that provides the bases for the determination that the change, test, or experiment does not require a license amendment pursuant to 10 CFR 72.48 (c)(2), pursuant to the requirements of 10 CFR 72.48(d)(1).
- records of employee certification as required by 10 CFR 72.44
- QA records as required by 10 CFR 72.174
- radiation protection program records as required by 10 CFR 20 Subpart L which includes
    - program contents, audits, and reviews
    - radiation surveys
    - determination of prior occupational dose
    - planned special exposures
    - individual (worker) monitoring results
    - dose to individual members of the public

  - test of entry control devices for very high radiation areas

- records of changes to the *Physical Protection Plan* as required by 10 CFR 72.44(e) and 72.186, and other physical protection records required by 10 CFR 73.21 and 10 CFR 73.70
- records of occurrence and severity of natural phenomenal as required by 10 CFR 72.92
- record copies of:
  - SAR and updates per 10 CFR 72.70
  - Safety Review Committee records
  - reports of accidental criticality or loss of special nuclear material as required by 10 CFR 72.74 and 10 CFR 73.71
  - material status reports per 10 CFR 72.76
  - nuclear material transfer reports per 10 CFR 72.78
  - *Physical Protection Plan* per 10 CFR 72.180
  - Other records and report per 10 CFR 72.82

The following records will be maintained as QA records in accordance with the QAP:

- operating records, including maintenance records on significant equipment
- records of off-normal occurrences and events associated with radioactive releases
- environmental survey records and environmental reports
- radiation monitoring readings and/or records (e.g., strip charts)
- report of preoperational test acceptance criteria and test results
- written procedures

The above records will be stored in accordance with the QAP. Security records, including security training and qualification records, will be maintained in accordance with the *Physical Protection Plan* (Ref. 9-2).

9.5 EMERGENCY PLANNING

The ISF Facility will repackage and store SNF; therefore, the *Emergency Plan* was written to meet the requirements of 10 CFR 72.32(b) (Ref. 9-3). In accordance with 10 CFR 72.32(b), the *Emergency Plan* provides for two classifications of accidents: “alerts” and “site area emergencies.” The *Emergency Plan* developed emergency action levels for postulated accidents in each of the following areas:

- transfer cask accidents
- fuel packaging accidents
- fuel storage accidents
- external events (loss of power, earthquake, flood, extreme wind, lightning, accidents at nearby sites, volcanism, and aircraft impacts)

Because the ISF Facility site is remote, the DOE or its support contractors primarily provide emergency support services described in the *Emergency Plan*.

The ISF Facility Manager, or in the manager’s absence, the Shift Manager(s) provide the onsite management and interface with the DOE INL infrastructure to respond to an event requiring implementation of the *Emergency Plan*.

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9.6 DECOMMISSIONING PLAN

The *Proposed Decommissioning Plan* describes the proposed ISF Facility decontamination and decommissioning activities and funding method (Ref. 9-4), to demonstrate that it can be safely and effectively decommissioned. If DOE does not request and receive an exemption from the decontamination and decommissioning provisions of the NRC regulations, DOE-ID will provide a final decommissioning plan prior to the start of decommissioning work.

The *Proposed Decommissioning Plan* was developed in accordance with NRC Regulatory Guide 3.65 and discusses the following topics (Ref. 9-5):

- plans for safely and efficiently decommissioning the ISF Facility
- ISF Facility design features to facilitate decommissioning
- estimate of decommissioning costs and financing method
- tentative selection and description of the plan decommissioning method
- basis for tentative selection of decommissioning method

If DOE does not request and receive an exemption from the decontamination and decommissioning provisions of the NRC regulations , to facilitate decommissioning, the records required by 10 CFR 72.30(d)(1) through 72.30(d)(4) will be maintained as quality records until decommissioning is complete and the ISF Facility license is terminated.

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9.7 PHYSICAL PROTECTION PROGRAM

The purpose of the physical protection program is to establish and maintain the physical protection of the SNF stored in the ISF Facility in accordance with 10 CFR 72 Subpart H, *Physical Protection,* and applicable portions of 10 CFR 73 (Ref. 9-6).

The ISF Facility Physical Protection Program is described in the *Physical Protection Plan* (Ref. 9-2). The plan includes as appendices the *Security Personnel Training and Qualification Plan* and the *Safeguards Contingency Plan*.

Because the *Physical Protection Plan* contains safeguards information and is controlled and protected in accordance with 10 CFR 73.21 and 10 CFR 2.390, it has been submitted for NRC review under separate cover (Ref. 9-7).

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9.8 REFERENCES

9-1 Title 10, Code of Federal Regulations, Part 20, *Standards for Protection Against Radiation*, Office of the Federal Register, Washington, D.C.

9-2 PLN-2215, *ISF Facility Physical Protection Plan*

9-3 PLN-2214, *ISF Facility Emergency Plan*

9-4 SAR-221, Appendix B, *Proposed Decommissioning Plan*

9-5 U.S. Nuclear Regulatory Commission, Regulatory Guide 3.65, *Standard Format and Content of Decommissioning Plans for Licenses Under 10 CFR Parts 30, 40, 70* (August 1989)

9-6 Title 10, Code of Federal Regulations, Part 73, *Physical Protection of Plants and Materials*, Office of the Federal Register, Washington, D.C.

9-7 Title 10, Code of Federal Regulations, Part 2, *Rules of Practice for Domestic Licensing Proceedings and Issuance of Others*, Office of Federal Register, Washington, D.C.

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Table 9.2-1
Acceptance Tests

Structure, System, or Component	**Summary of Test**
Cask receipt crane	Functional test of controls and interlocks and load test (NUREG-0554 criteria)
Cask trolley	Functional test of controls and interlocks, load testing (NUREG-0554)
FHM	Functional test of controls and interlocks and load test (includes power manipulator system), Test criteria based on NUREG-0554, ANSI/ASME B30.2, and CMAA Specification 70.
MSMs	Functional test per vendor recommendation
Decanning machine	Functional test using mock cans
Worktable system	Functional testing to verify capability to tip, rotate, and cut canisters and cans
Canister trolley	Functional test of controls and interlocks, load testing (NUREG-0554)
CCA	Testing in accordance with ASME B30.2 and DOE-STD-1090 Section 7.3
Canister welding equipment	Functional/demonstration test on mock canister weld areas
Vacuum drying system	Functional test per vendor recommendation
Helium back fill system and leak test system	Functional test per vendor recommendation
CHM	Functional test of controls and interlocks and load test (NUREG-0554 criteria)
Storage tube	Fit test to verify shield plug and cover plate fit up
Special lifting fixtures	Load test, functional test to verify grapple/load engagement
Transfer Tunnel doors	Functional test of controls and interlocks
HVAC system	Functional test to include controls and interlocks, ventilation flow and balance, and HEPA filter efficiency
Instrumentation and controls	Channel functional tests and channel calibrations
Fire protection equipment	Testing will be performed to satisfy the following: NFPA 25(1998) - water suppressions NFPA 72 (1999) - detection and alarms
Normal and emergency lighting	Functional test

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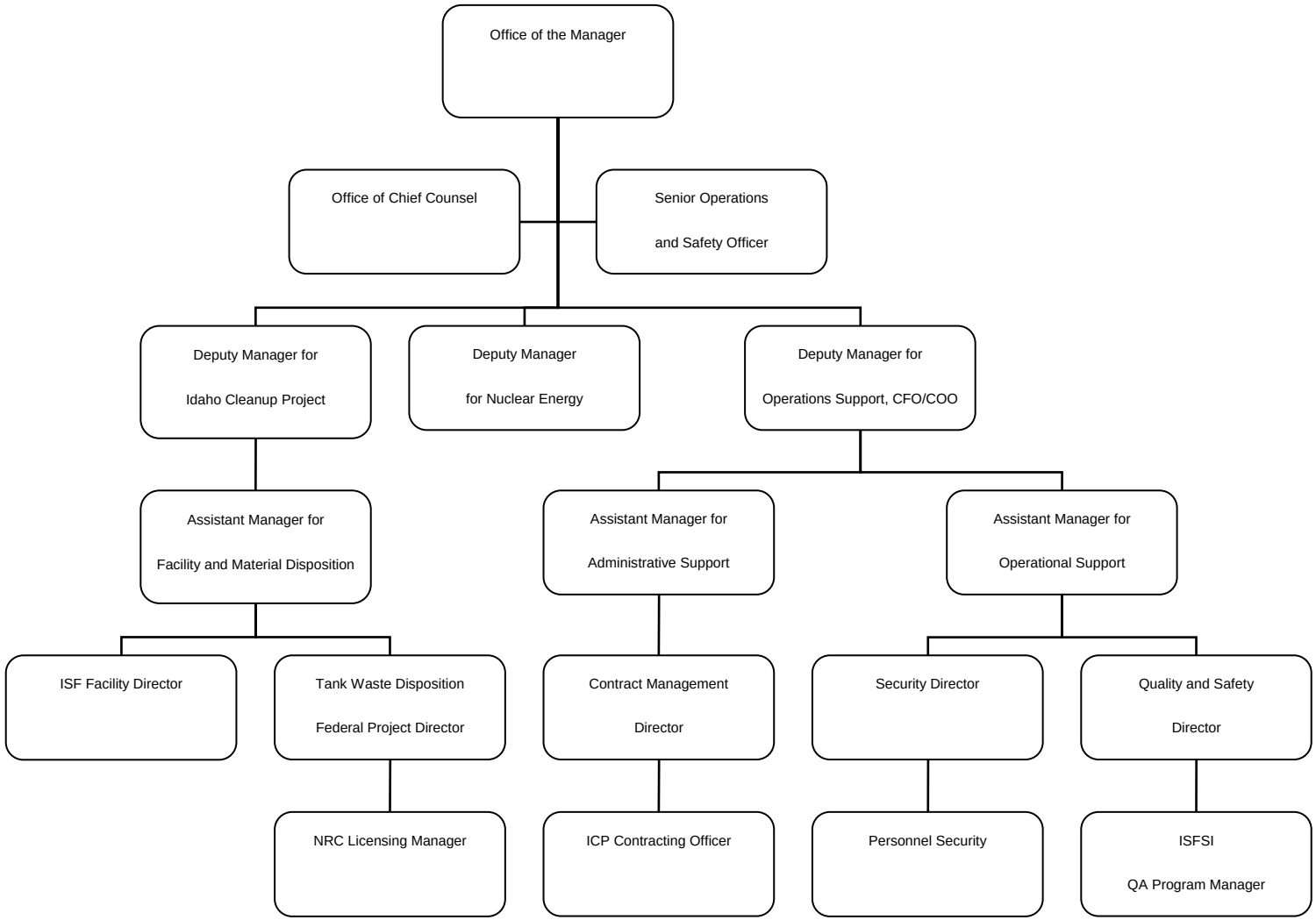

Figure 9.1-1. DOE-ID ISF Facility Organization

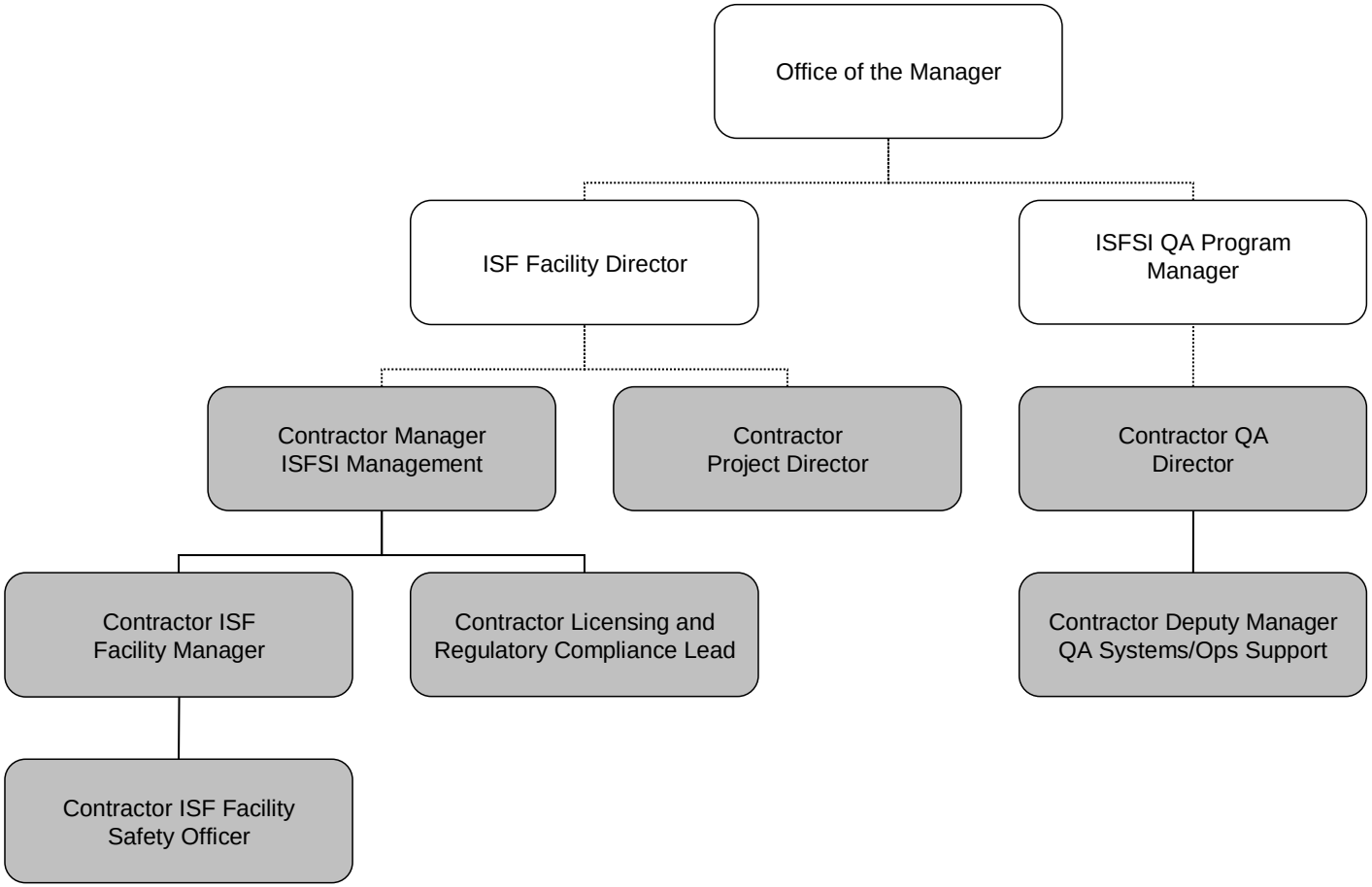

Figure 9.1-2. DOE-ID ISF Facility Organization and Contractor Interfaces

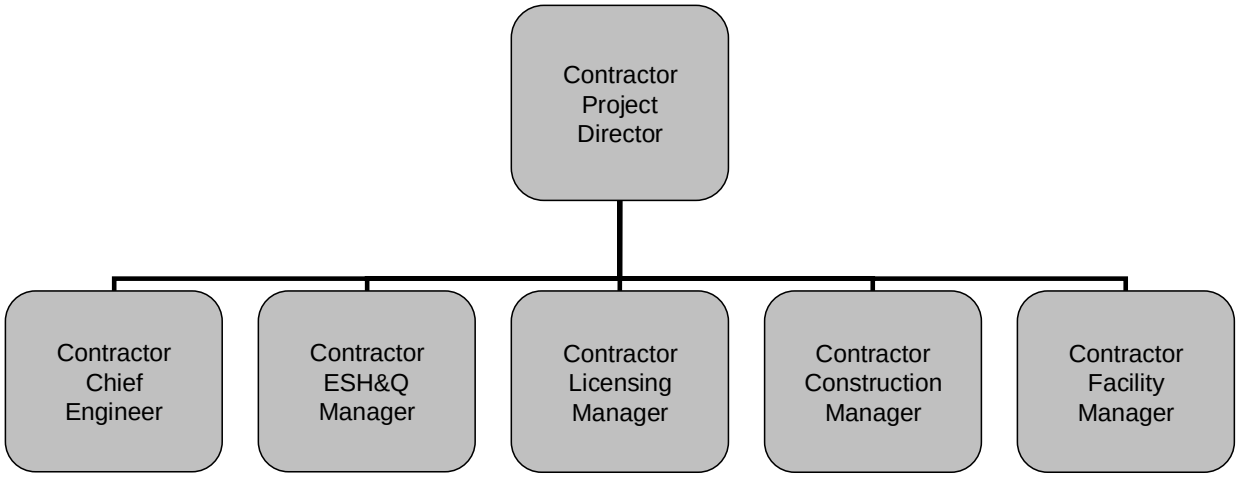

Figure 9.1-3. Contractor ISF Facility Project Organization

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