

**SAFEGUARDS EVALUATION BY THE OFFICE OF NUCLEAR MATERIALS**  
**MATERIAL SAFETY AND SAFEGUARDS**  
**ON THE PHYSICAL PROTECTION PROGRAM FOR**  
**PRIVATE FUEL STORAGE FACILITY**  
**DOCKET NUMBER 72-22**

**18 PHYSICAL PROTECTION PLAN**

**18.1 Conduct of Review**

This Safeguards Evaluation Report addresses the Physical Protection Plan (Plan) submitted by Private Fuel Storage, L.L.C., (PFS) in support of the application to license the Private Fuel Storage Facility (PFSF) at the Skull Valley Reservation in Tooele County, Utah. The Plan was submitted to NRC for review. Formal requests for additional information were sent to the applicant, and the applicant's responses to these requests were adequate. This safeguards evaluation is based on Revision 2 to the PFS Physical Protection Plan.

**18.1.1 Applicable Regulations and Guidance**

10 CFR Part 72, Subpart H - Physical Protection

10 CFR 73.51, "*Physical Protection*," section (a), provides the regulatory requirements for ISFSI Physical Protection Plans.

The Standard Review Plan for Physical Protection Plans for the Independent Storage of Spent Fuel and High-Level Radioactive Waste, NUREG-1619, July 1998, provides guidance for staff reviewers.

**18.2 Evaluation**

**18.2.1 Facility Description**

The PFS Plan provides an adequate description of the facility and site. It includes site maps showing the cask storage area, important supporting structures, and the boundaries of the protected area as well as descriptions of the area adjacent to the site.

**18.2.2 General Performance Objectives**

The general objective of the physical protection system is to provide high assurance that activities involving spent nuclear fuels do not constitute an unreasonable risk to public health and safety.

To achieve this objective, the physical protection system must provide for the following performance capabilities in accordance with 10 CFR §73.51(b):

- (i) Store spent nuclear fuel and high level radioactive waste only within a protected area;
- (ii) Grant access to the protected area only to individuals who are authorized to enter the protected area;

- (iii) Detect and assess unauthorized penetration of, or activities within the protected area;
- (iv) Provide timely communication to a designated response force whenever necessary; and,
- (v) Manage the physical protection organization in a manner that maintains its effectiveness.

In addition, 10 CFR 73.51(b)(3) requires that the physical protection system be designed to protect against loss of control of the facility that could be sufficient to cause a radiation exposure exceeding the dose specified in 10 CFR §72.106(b) from any design basis accident.

The applicant has reaffirmed the general design objective of the implemented physical protection system to protect the storage of spent fuel and to protect the facility from loss of control by providing a physical protection plan with commitments that meet the requirements of 10 CFR §72.180 and §73.51.

### **18.2.3 Physical Barrier Systems**

As required by 10 CFR 73.51(d)(1), the applicant must store spent fuel only within a protected area so that access to this material requires passage through or penetration of two physical barriers, one barrier at the perimeter of the protected area and one barrier offering substantial penetration resistance.

The applicant has provided for spent fuel to be stored within a protected area such that access to stored spent fuel requires passage through or penetration of at least two security barriers. The first barrier is the protected area barrier which is comprised of double fences, meeting the definition of physical barrier in 10 CFR 73.2. The protected area barrier includes twenty-foot isolation zones between the outer and inner fences as well as on either side of the protected area barrier system. The inner isolation zone is free from clutter and is provided with an intrusion detection system prior to penetration of the inner fence of the protected area barrier system. The second barrier (the storage casks), which are constructed of high density concrete, along with metal liners, offers substantial penetration resistance by requiring specialized equipment or explosives to penetrate the cask and disperse nuclear materials. Once installed, these barriers will be included in the pre-operational inspection.

The commitments in the Plan for physical barriers meet the requirements of 10 CFR 73.51(d)(1).

### **18.2.4 Illumination**

As required by 10 CFR 73.51(d)(2), illumination must be sufficient to permit adequate assessment of unauthorized penetrations of or activities within the protected area.

The applicant has provided for sufficient illumination to allow surveillance and adequate assessment within the protected area. Illumination will be included in pre-operational performance inspections to assure the illumination levels are sufficient.

The commitments in the Plan for illumination therefore meet the requirements of 10 CFR 73.51(d)(2).

### **18.2.5 Surveillance**

As required by 10 CFR 73.51(d)(3), the perimeter of the protected area must be subject to continual surveillance and be protected by an active intrusion alarm system which is capable of detecting penetrations through the isolation zone and that is monitored in a continually-staffed primary alarm station and in one additional continually-staffed location. The primary alarm station must be located within the protected area and have bullet-resisting walls, doors, ceiling and floor; and the interior of the station must not be visible from outside the protected area. A timely means for assessment of alarms must also be provided. Regarding alarm monitoring, the redundant location need only provide a summary indication that an alarm has been generated.

The applicant has committed to have the capability to detect unauthorized penetrations through the isolation zones at the perimeter of the protected area. The intrusion detection system covers all of the inner areas of the protected area. The intrusion detection system is comparable to those systems described in Regulatory Guide 5.44, "Perimeter Intrusion Detection Systems." The applicant commits to meeting Regulatory Guide 5.44. The intrusion detection system is tamper-indicating and has line supervision.

The applicant has provided a primary alarm station (PAS) located in the Security and Health Physical Building Access Control Facility. This PAS is a hardened facility that is within the protected area. It is protected by the protected area intrusion detection system, access control, and barriers which meets acceptable standards ( UL 752, Standard for Bullet-Resisting Equipment). All access control and intrusion alarms are monitored from this facility. A summary indication of alarms also annunciate in the alternate alarm station (AAS) which is located in the Administration Building.

Once installed, these surveillance systems including the alarm stations will be the included in the pre-operational inspection.

The commitments in the Plan for alarm surveillance and annunciation therefore meets the requirements of 10 CFR 73.51(d)(3).

### **18.2.6 Security Patrols**

As required by 10 CFR 73.51(d)(4), the protected area must be monitored by daily random patrols.

The applicant has provided for security force personnel who are on duty at all times. Normal duties include the operation of the PAS, the AAS, and control of personnel entry, including searches of persons who enter the protected area. Security force personnel conduct daily random patrols to monitor the protected area boundaries for the presence of unauthorized persons or activities, and for physical protection system or barrier degradation.

The commitments in the Plan for patrols therefore meets the requirements of 10 CFR 73.51(d)(4).

### **18.2.7 Security Organization**

As required by 10 CFR 73.51(d)(5), a security organization with written procedures must be established. The security organization must include sufficient personnel per shift to provide for monitoring of detection systems and the conduct of surveillance, assessment, access control, and communications to assure adequate response. Members of the security organization must be trained, equipped, qualified, and re-qualified to perform assigned job duties in accordance with Appendix B to Part 73, Sections I.A.1.a. and b., I.B.1.a., and the applicable portions of Section II.

The applicant has established a security organization that includes trained individuals, oversight, and written procedures in which to carry out security duties. This organization provides for a security force captain, sergeants, and officers. Each shift has sufficient armed individuals to meet regulatory requirements. The applicant has chosen to provide trained armed individuals (guards) instead of watchmen in order to augment the ability of the guard to control the site pending the arrival of the offsite response force. Shift manning levels may be increased dependent upon planned daily activities. In addition the applicant has provide guard training and qualification sufficient to meet the requirements of Section III of Appendix B to 10 CFR Part 73.

#### **18.2.7.1 Qualifications for Employment in Security**

The applicant has committed to perform screening for individuals, including security personnel, granted unescorted access to the protected area where spent fuel is stored prior to the granting of such access. Security force personnel shall meet the requirements of 10 CFR Part 73, Appendix B, General Criteria for Security Personnel, Sections I. A. 1. a., Educational Development; I. A. 1. b., Felony Convictions; I. B. 1. a., Physical Weaknesses or Abnormalities; and the applicable portions of Section II, Training and Qualifications. The screening includes a five-year local criminal history check of counties the individual has resided in within the five-year period prior to assignment as a security force member. Psychological evaluation, Federal Bureau of Investigations criminal history records, drug and alcohol testing and a continual behavioral observation program is included in the PFS established access authorization program.

#### **18.2.7.2 Security Force Training**

The applicant submitted an ISFSI Security Training and Qualification Plan as an attachment to its Physical Protection Plan. The Plan documents that the applicable criteria of Appendix B to Part 73 will be met.

The applicant has committed to training and qualifying all non-supervisory security personnel to all non-supervisory duty functions including PAS and AAS operator, physical searches, personnel identification, and logging functions as well as response functions. The shift sergeant will also be trained and qualified to perform all of the non-

supervisory functions. All shift security personnel are to be trained in searching for firearms, explosive materials, and incendiary devices.

The ISFSI Security Training and Qualification Plan is included as part of the "Private Fuel Storage Independent Spent Fuel Storage Installation Security Plan" and includes firearms training which meets the requirement of Appendix B to 10 CFR Part 73 Section III

Once implemented the security organization and training will be included in the pre-operational inspection.

The commitments in the Plan for the security organization therefore meets the requirements of 10 CFR 73.51(d)(5).

#### **18.2.8 Response Liaison**

As required by 10 CFR 73.51(d)(6), documented liaison with a designated offsite response force or local law enforcement agency (LLEA) must be established to permit timely response to unauthorized penetration or activities.

The applicant has included a Site Safeguards Contingency Plan as an attachment to its Physical Protection Plan. The Contingency Plan includes documented liaison with the Tooele County Sheriff as the LLEA. Timely response is provided through the use of an augmented armed onsite response force combined with the offsite LLEA response.

The commitments in the Plan for offsite response therefore meets the requirements of 10 CFR §73.51(d)(6).

#### **18.2.9 Identification and Controlled Lock Systems**

As required by 10 CFR 73.51(d)(7), a personnel identification system and a controlled lock system must be established and maintained to limit access to authorized individuals.

The applicant has included in its Physical Protection Plan an identification system which will be used at the facility. The system provides unique identification of individuals granted unescorted access to the protected area. In addition, the identification system identifies individuals requiring escort while within the protected area.

The licensee has implemented a key and lock control system that will limit access to, and within, the protected area to authorized individuals.

Once implemented the identification and controlled lock system will be included in the pre-operational inspection.

The commitments in the Plan for identification and controlled lock systems therefore meet the requirements of 10 CFR §73.51(d)(7).

### **18.2.10 Communications Capability**

As required by 10 CFR 73.51(d)(8), redundant communications capability must be provided between onsite security force members and designated response force or LLEA.

The applicant in its Physical Protection Plan commits to each security individual being equipped with two-way radios capable of maintaining continuous communications with the security posts. The Primary Alarm Station has both a base radio system and a commercial telephone to maintain contact with the LLEA. Onsite communication is backed up by an uninterruptible power supply (UPS). Therefore, redundant communications is available between the onsite security force and the offsite response force.

Once implemented the communication capability will be included in the pre-operational inspection.

The commitments in the Plan for communications capability therefore meets the requirements of 10 CFR §73.51(d)(8).

### **18.2.11 Access Controls at the Protected Area**

As required by 10 CFR 73.51(d)(9), all individuals, vehicles, and hand-carried packages entering the protected area must be checked for proper authorization and visually searched for explosives before entry.

#### **18.2.11.1 Access to Protected Areas**

The Physical Protection Plan describes procedures for determining an individual's need for access to the protected area. Access to protected areas is limited to individuals authorized escorted or unescorted access in order to perform job duties. Procedures are also described for dealing with required access of emergency response personnel vehicles.

#### **18.2.11.2 Access Controls at the Protected Area**

The applicant's has provided procedures for granting access of individuals and packages into the protected area. Only those vehicles listed on the Designated Vehicles List are allowed into the protected area. Authorization is checked and individuals, packages, and vehicles are searched for firearms, incendiary devices, and explosives. The search is conducted visually and by physical search (pat down) or with the use of a portable explosive detector.

#### **18.2.11.3 Escorts and Escorted Individuals**

The applicant's Plan identifies the individuals designated to be granted unescorted access into the protected area as well as describes the requirements and procedures for escorting individuals who need escorted access.

Once implemented the access control measures will be included in the pre-operational inspection.

The commitments in the Plan for access control commitments therefore meet the requirements of 10 CFR §73.51(d)(9).

#### **18.2.12 Procedures**

As required by 10 CFR 73.51(d)(10), written response procedures must be established and maintained for addressing unauthorized activities within the protected area including Category 5, "Procedures," of Appendix C to Part 73. The applicant shall retain a copy of response procedures as a record for 3 years or until termination of the license for which the procedures were developed. Copies of superseded material must be retained for 3 years after each change or until termination of the license.

The applicant response procedures for dealing with detection of unauthorized presence or activities within the protected area are described in its Physical Protection Plan. These procedures detail the actions to be taken and decisions to be made by each member or unit of the response organization

Once implemented the security procedures will be included in the pre-operational inspection.

The commitments in the Plan to provide procedures therefore meets the requirements of 10 CFR §73.51(d)(10).

#### **18.2.13 Equipment Operability**

As required by 10 CFR 73.51(d)(11), all detection systems and supporting subsystems must be tamper-indicating with line supervision. These systems, as well as surveillance/assessment and illumination systems, must be maintained in operable condition. Timely compensatory measures must be taken after discovery of an inoperable condition, to assure that the effectiveness of the security system is not reduced.

The applicant has committed to perform testing of all security related equipment to applicable manufacturer's specifications. The applicant has committed to check the security systems and support equipment for operability weekly and each time the equipment is used. The applicant has committed to a repair and preventive maintenance program as well as interim compensatory measures until the system is restored to normal capability. The applicant commits to following Regulatory Guide 5.44, "Perimeter Intrusion Alarm Systems" operability tests.

Once implemented the measures to assure equipment operability will be included in the pre-operational inspection.

The commitments in the Plan for equipment operability therefore meet the requirements of 10 CFR §73.51(d)(11).

**18.2.14 Audits**

As required by 10 CFR 73.51(d)(12), the Physical Protection Program must be reviewed once every 24 months by individuals independent of both Physical Protection Program management and personnel who have direct responsibility for implementation of the Physical Protection Program. The Physical Protection Program review must include an evaluation of the effectiveness of the physical protection system and a verification of the liaison established with the designated response force or LLEA.

The applicant has committed to conduct security audits at least every 24 months by individuals independent of both security program management and of personnel directly responsible for implementation of the security program. The audits include evaluation of the effectiveness of the physical protection system and verification of the liaison established with the LLEA. The reports are maintained in a form sufficient for auditing, available for inspection, for a period of three years.

The commitments in the Plan for the audit program therefore meets the requirements of 10 CFR 73.51(d)(12).

**18.2.15 Documentation**

As required by 10 CFR 73.51(d)(13), documentation must be retained as a record for 3 years after the record is made or until termination of the license. Duplicate records to those required under § 72.180 of Part 72 and § 73.71 of this part need not be retained under the requirements of this section.

The applicant's Contingency Plan describes response record data and commits to maintaining those records for a period of three years. These records include:

- (1) Screening records until the affected individual terminates employment.
- (2) Training and qualification records required by Appendix B, Section II. B.
- (3) Current written procedures that require access control personnel to identify authorized versus unauthorized entry for the period the applicant stores spent fuel,
- (4) The record of escorted individuals for a period of three years from the date of the record,
- (5) Written procedures for key and lock control for the period the applicant stores spent fuel,
- (6) Audit reports and resolutions, and
- (7) A record of assessment and response to alarms,

The commitments in the Plan for record keeping therefore meets the requirements of 10 CFR §73.51(d)(13).

### **18.3 Evaluation Findings**

As required by 10 CFR 72.180, the Physical Protection Plan describes how the applicant will meet the requirements of 10 CFR 73.51. The staff has concluded that the Private Fuel Storage Facility Physical Protection Plan, Revision 2; Safeguards Contingency Plan, Revision 1; and the Security Training and Qualification Plan, Revision 1 are adequate and meet the requirements of 10 CFR §72.180 and 10 CFR §73.51.

Therefore, the requirements of 10 CFR 72.180 have been satisfied. Further, when fully implemented the applicant's physical protection program satisfies the provisions of 10 CFR 72.40 by providing for the common defense and security and the protection of the health and safety of the public.

### **License Conditions**

The licensee shall follow the Physical Protection Plan entitled, "Private Fuel Storage, L.L.C. Independent Spent Fuel Storage Installation Security Plan," dated June 8, 1999, and as it may be further amended under the provisions of 10 CFR 72.44(e) and 72.84(d).

The licensee shall follow the Safeguards Contingency Plan entitled, "Private Fuel Storage, L.L.C. Independent Spent Fuel Storage Installation Safeguards Contingency Plan," dated June 8, 1999, and as it may be further amended under the provisions of 10 CFR 72.44(e) and 72.84(d).

The licensee shall follow the Guard Training and Qualification Plan entitled "Private Fuel Storage, L.L.C. Independent Spent Fuel Storage Installation Security Training and Qualification Plan," dated June 8, 1999, and as it may be further amended under the provisions of 10 CFR 72.44(e) and 72.84(d).