DPG 16-150

June 29, 2016

ATTN: Document Control Desk
Director, Division of Spent Fuel Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Rancho Seco Independent Spent Fuel Storage Installation
Materials License No. SNM-2510
Docket 72-11

RANCHO SECO ISFSI FINAL SAFETY ANALYSIS REPORT, REVISION 5

Attention: William Allen

Attached is Revision 5 to the Rancho Seco Independent Spent Fuel Storage Installation (ISFSI) Final Safety Analysis Report (FSAR). The updated ISFSI FSAR reflects NRC orders, facility license amendments, and facility changes made pursuant to 10 CFR 72.48, through June 2016.

The enclosed attachments include removal/insertion instructions for the changed pages, a List of Effective Pages, and the affected FSAR pages. Vertical lines in the left hand margin of the affected FSAR pages indicate the area of changed text. "Revision 5" is also typed at the bottom right of each changed page.

If you, or members of your staff, have questions requiring additional information or clarification you may contact me at (916) 732-4893.

Sincerely,

Dan A. Tallman
Manager, Rancho Seco Assets

cc w/attachments: NRC, Region IV
RIC 1F.099

nmss26

ISFSI FSAR REVISION 5
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ACI	American Concrete Institute
AGM	Assistant General Manager
AISC	American Institute of Steel Construction
ALARA	As Low As Reasonably Achievable
ANS	American Nuclear Society
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
B&W	Babcock & Wilcox
DOE	U.S. Department of Energy
DSAR	RSNGS Defueled Safety Analysis Report
DSC	Dry Shielded Canister
FC-DSC	Fuel/Control Component DSC
FF-DSC	"Failed" Fuel DSC
FO-DSC	Fuel Only DSC
GM	General Manager
HSM	Horizontal Storage Module
IOSB	Interim Onsite Storage Building
ISFSI	Independent Spent Fuel Storage Installation
MP187	NUHOMS® Multi Purpose (Transfer and Transportation) Cask
NDRC	National Defense Research Committee
NFPA	National Fire Protection Association
NRC	U.S. Nuclear Regulatory Commission
NUHOMS	NUTECH Horizontal Modular Storage
NUREG	Nuclear Regulatory Guide
OSHA	Occupational Safety and Health Administration
PWR	Pressurized Water Reactor
RSNGS	Rancho Seco Nuclear Generating Station
SAR	Safety Analysis Report
SFA	Spent Fuel Assembly
SMUD	Sacramento Municipal Utility District
VDS	Vacuum Drying System

1. INTRODUCTION AND GENERAL DESCRIPTION OF INSTALLATION

1.1 Introduction

The Nuclear Regulatory Commission (NRC) issued an operating license, DPR-54, for Rancho Seco Nuclear Generating Station (RSNGS) in August 1974, and the plant began commercial operation in April 1975. However, as a result of a public referendum of Sacramento Municipal Utility District (SMUD) voters on June 6, 1989, RSNGS has ceased operation, and the reactor has been permanently defueled. Accordingly, on May 20, 1991, SMUD submitted its Proposed Decommissioning Plan [1.6.1] to the NRC discussing the method to be used to decommission RSNGS. This plan was approved by an NRC order dated March 20, 1995. SMUD subsequently revised the decommissioning plan to a Post Shutdown Decommissioning Activities Report (PSDAR) to meet the requirements of the revised regulations (10 CFR 50.82) regarding decommissioning.

Consistent with Rancho Seco PSDAR, the Independent Spent Fuel Storage Installation (ISFSI) is intended to provide dry storage capacity for Rancho Seco spent nuclear fuel and Greater than Class C (GTCC) radioactive waste. The storage system was designed for 50 year service, and licensed for 20 years in accordance with 10 CFR 72. Construction of the Rancho Seco ISFSI was completed during 1996 and all fuel was in dry storage at the ISFSI in August 2002.

1.1.1 Principal Function of the Installation

The Rancho Seco ISFSI design provides temporary dry storage for 100% of the Rancho Seco spent fuel assemblies (SFAs) and GTCC waste in order to complete full plant dismantlement. It is designed with safety features that eliminate the need for an operable spent fuel pool to recover from certain unlikely accident scenarios. The spent fuel will be stored in this manner until it is accepted by the Department of Energy (DOE).

1.1.2 Location of the ISFSI

The Rancho Seco ISFSI is located within the Owner Controlled Area of the Rancho Seco site which is owned and operated by SMUD. The Rancho Seco site comprises approximately 2,480 acres in Sacramento County, California. It is characterized by isolation from population centers, a sound foundation for structures, and favorable conditions of meteorology, seismology, and hydrology.

The location of the ISFSI site within the Rancho Seco site is approximately 600 feet west of the Interim Onsite Storage Building (IOSB). The Owner Controlled Area boundary lies approximately 1200 feet to the west of the ISFSI and 1500 feet to the north. Figure 1-1 shows a general layout of the site.

A general overview of the cask is shown in Figure 1-5. The cask design criteria and description are provided in Volume I, Chapters 3 and 4, and are summarized as follows:

Quantity	1
Capacity Each	1 Dry Shielded Canister
Size	91.5"ϕ x 201.5"
Approximate Weight, Empty	160,000 lbs
Gamma Shielding	Lead
Neutron Shielding	Castable Hydrogenous Solid Material

After the on-site fuel transfer campaign is completed, SMUD may make the cask available for use offsite.

the operator within the range of the umbilical cables. The use of an automatic welding machine is essential for ALARA operations in routine use. Manual welding of any of the closure welds is permissible, but is recommended only for purposes of weld repair or as a recovery procedure if the machine becomes non-operational during the closure process. Small weldments such as the vent and siphon port plug seals are made manually as part of routine operations because the weld joint is not suitable for automatic welding.

1.3.3.3 The Waste Processing System

VDS exhaust and general cask decontamination waste are generated during DSC drying and sealing operations. Decontamination waste will be managed in accordance with the requirements of the RSNGS 10 CFR 50 license.

1.3.3.4 The Security System

Intrusion detection is provided at the ISFSI as described in the Rancho Seco ISFSI Physical Protection Plan.

1.3.3.5 The Temperature Monitoring System

Instrumentation is provided for monitoring HSM temperature. The signals will be incorporated into the RSNGS Plant Integrated Computer System (PICS). Eventually, the signals will be transmitted to SMUD headquarters in Sacramento. Local readout is also available in the ISFSI Electrical Building.

1.4 Identification of Agents and Contractors

SMUD is responsible for the engineering, design, licensing, and construction of the Rancho Seco ISFSI site. SMUD has also participated in a demonstration project with DOE to provide information to the nuclear utility industry regarding the use of a transportable storage system.

Transnuclear West (TNW) is the prime contractor for the design and fabrication of the HSMs, DSCs, and associated auxiliary systems. TNW is also the prime contractor for the cask supplier and is responsible for cask transportation licensing, fabrication, testing, delivery to the site, and delineation of any cask specific requirements.

SMUD has used various contractors for site preparation and construction, as necessary.

2. SITE AND ENVIRONMENT

2.1 Geography and Demography

2.1.1 Site Location

The Rancho Seco site is located in the southeast part of Sacramento County, California. It occupies all or parts of Sections 27, 28, 29, 32, 33, and 34 of Township 6 North, Range 8 East. The site is approximately 26 miles north-northeast of Stockton and 25 miles southeast of Sacramento, as shown in Figure 2-1. The Rancho Seco Nuclear Generating Station and Rancho Seco ISFSI are shown in Figure 2-2.

More generally, the site is located between the Sierra Nevadas to the east and the Coast Range along the Pacific Ocean to the west in an area of flat to lightly rolling terrain at an elevation of approximately 200 above feet mean sea level. To the east of the site the land becomes more rolling, rising to an elevation of 600 feet at a distance of about seven miles, and increasing in elevation thereafter approaching the Sierra Nevada foothills.

The approximate coordinates of the site are 38°-20'-40" North Latitude and 121°-07'-10" West longitude, or 4245500 Mn and 664400 Me Universal Transverse Mercator coordinates.

As shown in Figure 2-3, the Rancho Seco ISFSI is located west of the site's Industrial Area, approximately 600 feet west of the Interim On-site Storage Building. The Rancho Seco ISFSI is approximately 225 feet X 170 feet in size.

2.1.2 Site Description

The entire Rancho Seco site is approximately 2480 acres with all acreage being owned by SMUD The nearest population center of 25,000 or more is Lodi, about 17 miles southwest of the site. The area around the site is almost exclusively agricultural, or is used as grazing land.

The climatology of the Rancho Seco site is typical of the Great Central Valley of California. Cloudless skies prevail during summer and much of the spring and fall seasons due to the pacific anticyclone off the California coast which prevents Pacific storms from entering inland. The rainy season usually extends from October through May. Atmospheric dispersion factors for the site are considered favorable.

Groundwater in the site area occurs under free or semi-confined conditions. It is stored chiefly in the alluvium, the older alluvial type deposits, and the Mehrten Formation. Groundwater movement in the area is to the southwest with a slope of about ten feet/mile.

There is no indication of faulting beneath the site. The nearest fault system, the Foothill Fault System, is about ten miles east of the site and has been inactive since the Jurassic

Period, some 135 million years ago. Ground accelerations of no greater than 0.05g are anticipated at the site during the life of the plant.

The soils at the Rancho Seco site are sufficiently strong to safely support the Rancho Seco ISFSI structure and appurtenant facilities. These soils can be categorized as hard to very hard silts and silty clays with dense to very dense sands and gravels.

2.1.2.1 Other Activities Within the Site Boundary

The Rancho Seco ISFSI lies wholly within the 2,480 acre Rancho Seco Nuclear Generating Station site. This site is owned and controlled by SMUD, who has full authority to determine all activities within the site including the exclusion and removal of individuals and property. The Rancho Seco ISFSI Protected Area is approximately 225 feet X 170 feet in size. The Protected Area is located within licensed boundary denoted by the 100 meter fence surrounding the Protected Area. Also within the licensed boundary of the ISFSI lies the Fuel Transfer Equipment Storage Building (FTESB), a 40 foot X 100 foot enclosure to store contaminated fuel handling and transportation support equipment while the spent nuclear fuel remains in storage.

SMUD has completed construction of a 500-MW natural gas fired power plant located approximately ½ mile south of the Industrial Area boundary.

Access for transmission lines and water lines is from the west and south sides of the property.

2.1.2.2 Boundaries for Establishing Effluent Release Limits

There are no radioactive effluent releases associated with the Rancho Seco ISFSI. The boundaries for effluent releases from the Rancho Seco site are described in the Offsite Dose Calculation Manual (ODCM) [2.2.1].

2.1.3 Population Distribution and Trends

The land surrounding the site is presently undeveloped and is used primarily for grazing beef cattle and other agricultural activities. The most recent population distribution estimates are contained in the "Evacuation Time Estimate for the Rancho Seco Plume Exposure Pathway Emergency Planning Zone" [2.2.2].

There are five counties (Amador, San Joaquin, Sacramento, El Dorado, and Calaveras) within a 15-mile radius of Rancho Seco. Only very small portions of El Dorado and Calaveras counties are within the 15-mile radius of Rancho Seco. There is no significant projected growth within these portions of these two counties. The projected development within Amador, Sacramento, and San Joaquin counties is discussed in Section 4.2 of the Rancho

Seco ISFSI Environmental Report, Revision 1 [2.2.3]. A five-mile radius area surrounding the Rancho Seco facility is defined as the low population zone. This area is primarily farm land and vineyards, with few tourist attractions and little seasonal variation in the population.

The Rancho Seco Reservoir and Recreation Area (Rancho Seco Park) attracts a number of day visitors to the area. The average annual number of visitor days at the park for the last four years is 114,860 visitor days.

Additionally, a wildlife sanctuary has been built at Rancho Seco Park. It is estimated that an additional 625 cars could visit the park during special functions at this facility.

A survey of the area beyond the 5-mile radius shows that the nearest population concentration is approximately 6.5 miles from the plant site. The nearest population center of 25,000 or more is Lodi, 17 miles south-southwest of the site. Other population centers of greater than 25,000 people include Sacramento at 25 miles, Stockton at 26 miles, and Modesto at 50 miles.

There are 16 special facilities in Amador and Sacramento Counties within a 10½ mile radius of Rancho Seco. They consist of five public schools (one high school and four elementary schools), one private elementary school, one treatment center for TB and alcoholic patients, four residential care homes, an adult training center for developmentally disabled, a California Department of Forestry Fire Academy, the Preston School of Industry, a nudist ranch, and Mule Creek State Prison. A summary of these facilities is shown in Table 2.2-3 of Rancho Seco Defueled Safety Analysis Report (DSAR), Amendment 4 [2.2.4].

2.1.4 Uses of Nearby Land and Waters

2.1.4.1 Land Use

The site area is almost exclusively agricultural. DSAR, Amendment 4 Figure 2.2-4 provides a description of agriculture and residential activities within a 5-mile radius of the site. There are no commercial dairy farms within this 5-mile radius.

There are at present three large-scale commercial dairies in the vicinity, each with over 200 cows. The closest dairy is approximately 8 miles northwest of the site. A ranch 1 mile east of the site has dairy cows for domestic use only.

Proposed land use for the southeast section of Sacramento County as adopted by the Sacramento Planning Department is predominantly (70 percent) agricultural and is expected to remain agricultural. Approximately 2000 acres of vineyards are being developed on land in proximity to the Rancho Seco site.

diffusion at the site. The system was designed to continue operation indefinitely so that a broad statistical base for meteorological conditions at the site could be assembled.

SMUD erected a 200-foot meteorological tower on the site, and in June 1969, recorded the first analog measurements. The meteorological tower replaced the temporary mechanical weather station that had been operating continuously since April 1967, and had supplied onsite data used in the Rancho Seco Nuclear Generating Station Preliminary Safety Analysis Report (PSAR) [2.2.7].

On September 8, 1969, data obtained from the tower were for the first time recorded in digital form. The first year of digital system data is presented in USAR Appendix 2B, Attachment 1. A compilation of 2 years of site data is presented in USAR Appendix 2B, Attachment 3. A detailed description of the meteorological tower including instrumentation location and performance specifications, data analysis, measurements taken, and revisions to the data collection system can be found in USAR Appendix 2B. This instrumentation has been taken out of service, and in 1998, the meteorological site was decommissioned.

2.3.3 On-Site Meteorological Measurements Program

The Rancho Seco Permanently Defueled Technical Specifications no longer require any meteorological monitoring instrumentation. The meteorological monitoring instrumentation was intended to provide data that could be used to estimate potential radiological doses to the public resulting from the routine or accidental release of radioactive material to the atmosphere.

In lieu of using actual meteorological data, SMUD will use conservative default relative concentration (χ/Q) values. In the event that real-time meteorological data is needed, the Sacramento National Weather Service can provide the required data.

2.3.4 Diffusion Estimates

During an accidental release of gaseous radioactive material, the magnitude of the offsite doses is dictated primarily by the source term and the atmospheric dispersion coefficient, χ/Q. The total number of Curies of noble gases and iodines released is directly proportional to the offsite dose. With the exception of krypton-85, these isotopes have half-lives of only a few days and, therefore, have essentially decayed away since the reactor was shutdown on June 7, 1989. Krypton-85 is now the predominant isotope in the gaseous source term.

Because of the extremely small source term that exists in the defueled condition, the NRC agreed that it is expedient and conservative to use a default χ/Q value in calculations involving the accidental release of radioactive gaseous effluent, instead of relying on meteorological monitoring instrumentation to provide the data needed to calculate actual χ/Q values. During an accidental release of radioactive material, the default χ/Q value is 4.24E-2 sec/m^3 at a distance of 383 feet from the nearest module.

2.4 Hydrology

2.4.1 Characteristics of Streams and Lakes in Vicinity

USAR Table 2.4-l provides a summary of reservoirs and lakes in the vicinity of RSNGS. Each reservoir and lake is coded by number in USAR Table 2.4-l for easy location on the location map, USAR Figure 2.4-l.

2.4.2 Topography

The site is gently rolling and is not intersected by any streams, but is bounded by well-defined drainage courses that intercept surface runoff from the higher site topography. Plant grade at approximately 165 feet elevation above sea level permits excellent drainage at all times without danger of flooding. Plant areas are graded to provide natural drainage to lower ground. The rolling terrain of the site affords excellent drainage along natural gullies at gradients varying from 2 to 6 percent. Elevations vary from 130 feet to 280 feet above sea level.

2.4.3 Terminal Disposal of Stream Runoff

The site is bounded on the north by Hadselville Creek, which intercepts all drainage from the site and empties into Laguna Creek to the west. Flow is continued westerly by Laguna Creek South, a tributary of the Consumnes River, and into the Mokelumne River. The Mokelumne is a tributary of the southerly flowing Sacramento River and enters the Sacramento River approximately 20 miles south of the city of Sacramento.

Storm water runoff at the Rancho Seco site is controlled primarily by surface ditches. Generally, overland flows will be intercepted by the ditches and diverted around the plant to natural stream channels. When this is not possible, runoff will be diverted down cut slopes in culvert pipes and discharged to the plant drainage ditch system. The drainage system was designed to accommodate the 25-year recurrence storm with a minimum of six inches freeboard and the 100-year recurrence storm with zero freeboard.

2.4.4 Historical Flooding

Within recent historical times, no flooding or inundation from storms or runoff has occurred within the site boundaries. It is unlikely that the site can be inundated or flooded, even with abnormal rainfall intensities.

To provide criteria for the design of an adequate spillway to safeguard the Rancho Seco lake dam embankment from any danger of overtopping, SMUD conducted a hydrologic study of storms which could produce critical floods. There are two types of storms that could produce the critical outflow flood for spillway design. The frontal winter storm would produce the greatest amount of total rainfall, but would be relatively low intensity. A summer thunder-storm, on the other hand, would be of short duration but with very intense rainfall.

A reservoir routing study with initial reservoir level at the spillway crest showed that with an 8-foot wide crest at elevation 240.5, no combination of the storms described above will surcharge the spillway more than 3 1/2 feet, leaving a minimum freeboard on the dam (crest elevation 248) of 4 feet.

A storm of half the magnitude of the probable maximum thunderstorm occurring by itself would surcharge the spillway about one foot, leaving a freeboard on the dam of 6 1/2 feet.

2.4.5 Prediction of Land Urbanization

SMUD has constructed a solar photovoltaic generating plant adjacent to the site. Other land adjoining the site should remain primarily for agricultural and grazing use. The rainfall runoff factors should remain constant, and not cause any difference in hydrological properties.

2.4.6 Groundwater

Initial pumping tests conducted in exploratory holes indicated the presence of groundwater underlying the site approximately 150 feet below the original ground surface. The water table has receded over recent years, and is expected to recede further due to the grape vineyards now being developed adjacent to the site. The water is of good quality and is readily extracted by wells.

2.4.6.1 Occurrence and Movement

Groundwater in this area occurs under free or semi-confined conditions as a part of the Sacramento Valley Groundwater Basin. The storage capacity of the basin is very large, but in the vicinity of the site, water levels are steadily dropping, as shown by the hydrograph of USAR Figure 2.4-13. The water is stored chiefly in the Mehrten Formation. The sand and gravel zones of that formation yield water readily to wells.

Galt and Lodi are the closest communities with public groundwater supplies to the south and west. Their spatial relationship to the project site is shown on USAR Figure 2.4-14. They are supplied by the City of Galt Water System, the Lodi Municipal Water Works, and the North San Joaquin Water Conservation District (Lodi area). The Galt Irrigation District and the Clay Irrigation District buy Rancho Seco discharge water for irrigation.

The wells supplying Galt and Lodi penetrate a number of aquifers. The Lodi wells draw water from recent alluvium, the Victor Formation, the Laguna Formation, and probably the Mehrten Formation. The Galt wells tap the Laguna Formation and probably the Mehrten Formation. The approximate time required for groundwater moving through the Mehrten Formation aquifer from the Rancho Seco site to the Galt area is discussed in USAR Section 2.4.6.1.

As discussed in USAR Section 2.4.6.1, the estimate for the movement of groundwater from the Rancho Seco site to the Galt area is thought to be conservative. Retarding factors such as borings are summarized on the individual bore logs presented in Figure 2-8 and Figure 2-9. Based on a finished subgrade elevation of 173 feet, the bottom of the ISFSI mat was founded on a 3 to 7 foot thick compacted sand layer. This is underlain by a mixture of very dense clay and silt soils which will provide good support for the ISFSI foundations without the need for additional excavation and/or compaction.

As part of the Rancho Seco ISFSI site selection process, SMUD contracted Environmental Geotechnical Consultants, Inc.to analyze borings from the proposed Rancho Seco ISFSI sites. Based on the results of the boring analyses, SMUD performed appropriate remedial measures (e.g., recompaction and/or replacement of soil) to ensure adequate structural support for the Rancho Seco ISFSI [2.2.8].

7. RADIATION PROTECTION

7.1 Ensuring that Occupational Radiation Exposures Are As Low As Is Reasonably Achievable (ALARA)

7.1.1 Policy Considerations

The policy, programs, and organizational structure for maintaining occupational radiation exposures at the Rancho Seco ISFSI ALARA are the same as those for RSNGS. SMUD's ALARA policy details Rancho Seco management's commitment to maintaining individual and collective occupational radiation exposures ALARA. The ALARA Manual and associated implementing procedures describe the implementation of this policy. The ALARA policy is applicable to all employees at RSNGS and the Rancho Seco ISFSI. The ALARA Manual lists management responsibilities for administration, implementation, and oversight of the ALARA policy and lists the ALARA responsibilities of all plant personnel. The ALARA policy is consistent with 10 CFR 20, and the guidance in Regulatory Guides 8.8 [7.7.1] and 8.10 [7.7.2].

In addition, any changes to the ISFSI design or operating procedures will be evaluated under the provisions of 10 CFR 72.48 which includes an evaluation of the impact of the change on radiation exposures.

External dose to ionizing radiation will be controlled within NRC regulations and Rancho Seco guidelines. Procedures for work in radiological environments will include applicable provisions and requirements for work, commensurate with the radiological environment, in order to maintain exposures ALARA. SMUD conducts training to ensure that all individuals are adequately prepared to work responsibly in a radiological environment and implement the requirements of the ALARA Policy.

7.1.2 Design Considerations

The ISFSI is located approximately 600 feet west of the existing IOSB. SMUD chose this location based on the following ALARA considerations:

1. The ISFSI is located in an area with little ongoing activity such that the increased dose to RSNGS personnel is minimized.

2. The ISFSI is a facility that has limited occupancy and represents a low exposure potential for personnel.

The layout of the ISFSI is designed to maintain exposures ALARA since the HSMs have sufficient separation between them to allow for ease of surveillance operations.

The equipment design considerations are ALARA since the fuel will be stored dry, inside sealed, heavily shielded HSMs. The heavy shielding will minimize personnel exposures.

The DSCs will not be opened nor will fuel be removed from the DSCs while at the ISFSI. Storing fuel in DSCs eliminates the possibility of leakage of contaminated liquids. Gaseous releases are not considered credible. The exterior of the casks will be decontaminated to site administrative limits before transfer to the ISFSI. The required maintenance and surveillance of the HSMs will be minimal and therefore ALARA. This method of spent fuel storage is also considered ALARA because it minimizes direct radiation exposures and minimizes the potential for contamination incidents.

Regulatory Position 2 of Regulatory Guide 8.8 [7.7.1] provides guidance regarding facility and equipment design features. This guidance is being followed as described below:

1. Regulatory Position 2a regarding access control is met by use of a fence with a locked gate that surrounds the ISFSI and prevents unauthorized access once a loaded DSC is placed in the ISFSI.

2. Regulatory Position 2b regarding radiation shielding is met by the shielding provided by the cask and HSMs, which minimizes personnel exposures.

3. Regulatory Position 2c regarding process instrumentation and controls is met since there are no radioactive systems at the ISFSI. No process controls are required for the ISFSI.

4. Regulatory Position 2d regarding control of airborne contaminants is met because no gaseous releases are expected. No significant surface contamination is expected because the exterior of the casks will be decontaminated to meet the administrative limits before transfer to the ISFSI.

5. Regulatory Position 2e regarding crud control is not applicable to the ISFSI because there are no radioactive systems at the ISFSI that could transport crud.

6. Regulatory Position 2f regarding decontamination is met because the exterior of the cask is decontaminated before being released from the Fuel Storage Building.

7. Regulatory Position 2g regarding radiation monitoring is met because the DSCs are seal-welded. There is no need for airborne radioactivity monitoring since no airborne radioactivity is anticipated. Area radiation monitors will not be required because the ISFSI will not normally be occupied. Dosimetry will be installed to monitor direct radiation. Portable survey meters will normally be used. Personnel dosimetry will be used within the ISFSI, as required by Radiation Protection procedures.

8. Regulatory Position 2h regarding resin treatment systems is not applicable to the ISFSI because there will not be any radioactive systems containing resins.

9. Regulatory Position 2i regarding other miscellaneous ALARA items is not applicable because these items refer to radioactive systems not present at the Rancho Seco ISFSI.

ALARA goals and policy considerations are discussed in the ALARA Manual and in Section 7.1.1

All components of the Rancho Seco ISFSI take full advantage of the design and operational experience gained at similar installations. This includes NUHOMS® testing and storage programs at the H. B. Robinson, Oconee, Davis-Besse, and Calvert Cliffs plants and fuel shipment programs at numerous facilities. This experience has served to improve the efficiency of and reduce the occupational exposure received from each new NUHOMS® installation.

The design of the DSC and HSM comply with 10CFR72 ALARA requirements. Features of the NUHOMS® system design that are directed toward ensuring ALARA are:

A. Thick concrete walls and roof on the HSM to minimize the on-site and off-site dose contribution from the ISFSI.

B. A thick shield plug on each end of the DSC to reduce the dose to plant workers performing drying and sealing operations, and during transfer and storage of the DSC in the HSM.

C. Use of a heavy shielded transfer cask for DSC handling and transfer operations to ensure that the dose to plant and ISFSI workers is minimized.

D. Fuel loading procedures, which follow accepted practice and build on existing experience.

E. A recess in the HSM access opening to dock and secure the transfer cask during DSC transfer to reduce direct and scattered radiation exposure.

F. Double seal welds on each end of DSC to provide redundant containment of radioactive material.

G. Placement of demineralized water in the transfer cask/DSC annulus, then sealing the annulus to minimize contamination of the DSC exterior and the transfer cask interior surfaces during loading and unloading operations in the fuel pool.

H. Use of a heavy shielded door for the HSM to minimize direct and scattered radiation exposure.

I. Use of a passive system design for long term storage that requires minimal maintenance.

J. Use of proven procedures and experience to control contamination during canister handling and transfer operations.

K. Use of water in the DSC cavity during placement of the DSC inner seal weld to minimize direct and scattered radiation exposure.

L. Use of water in the cask/DSC annulus during DSC closure operations to reduce radiation streaming through the annulus.

M. Use of temporary shielding during DSC draining, drying, inerting and closure operations as necessary to further reduce the direct and scattered dose.

Further ALARA measures may be implemented, as necessary.

7.1.3 Operational Considerations

Consistent with SMUD's overall commitment to keep occupational radiation exposures ALARA, specific plans and procedures are followed by personnel to ensure that ALARA goals are achieved consistent with 10 CFR 20 and the intent of Section C.1 of Regulatory Guides 8.8 [7.7.1] and 8.10 [7.7.2]. Since the ISFSI is a passive system, no maintenance is expected on a normal basis. Maintenance operations on the cask, transfer equipment, and other auxiliary equipment is performed in a very low dose environment during periods when fuel movement is not occurring.

7.4.2 Site Dose Assessment

Table 7-4, Figure 7-2, and Figure 7-3 provide dose rates at various locations both on and off the Rancho Seco site due to the Rancho Seco ISFSI [7.7.10]. This data was obtained using the methodology discussed below and includes direct and air-scattered neutrons and gamma rays. As shown in Figure 7-2, the 10 CFR 20.1301 unrestricted area dose limit of two mrem/hour is not exceeded at any location on the ISFSI fence.

The Rancho Seco ISFSI site dose assessment was performed using the Monte Carlo transport code MCNP [7.7.5]. The HSM array is modeled as a rectangular solid, with two casks modeled as spheres. Each of the 22 HSMs and two casks are assumed to contain a design basis FC-DSC.[1] This is an extremely conservative assumption as only 21 total DSCs containing spent fuel will be placed in storage of which 18 will contain control components. Additionally, about one-fourth of the Rancho Seco fuel assemblies have total sources less than half that of the design basis assembly.

The MCNP model of the ISFSI uses the HSM average dose rate on each surface of the array and the average dose rate on the surfaces of the casks as surface sources for the transport calculations. The HSM average surface dose rates reported in Volume II, Section 7.3 are used for the site dose assessment. The cask surface area-averaged dose rates are assumed to be 70 mrem/hour and 30 mrem/hour for gamma rays and neutrons, respectively. As discussed in Volume III, Section 7.3.2.2, these values bound the total (neutron plus gamma) predicted average dose rates on the cask surface. Source particles are generated on the HSM and cask surfaces with initial directions following a cosine distribution.

The ISFSI model consists of the ISFSI basemat, soil, and dry air at atmospheric pressure. No credit for self-shielding between the casks and the HSM array was taken. Computer model detectors are placed around the ISFSI fence and at the locations tabulated in Table 7-4. The flux at each modeled detector is converted to dose rate using tabulated flux-to-dose rate factors [7.7.7].

The ISFSI is surrounded by a large open area for operational and security purposes. Access to the ISFSI is restricted such that during storage, no access is allowed within the outer security fence except for security and operational activities. There are no work areas close to the ISFSI. The Fuel Transfer Equipment Storage Building, not routinely occupied, lies outside of the radiologically controlled area of the ISFSI. Dose to workers at RSNGS and other individuals in the unrestricted area due to exposure from the ISFSI is minimal and below regulatory limits.

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[1] Two loaded casks are modeled in the dose calculation because it was initially postulated that two loaded casks could potentially be stored on the ISFSI pad.

The annual dose for HSM air inlet vent inspections is estimated to be 1.2 Rem. This value is derived by assuming that one inspector performs an inspection once every day, walking around the HSMs at a distance of 20 feet. The amount of time required for the inspection is assumed to be 10 minutes, and it is further assumed that the inspector is exposed to a dose rate of 20 mrem/hr.

9. CONDUCT OF OPERATIONS

This chapter describes the organization and general plans for operating the Rancho Seco ISFSI. The organization section includes a brief description of the responsibilities of managers, supervisors, and other key personnel. The training program for the plant staff is described, along with a more general discussion of replacement and retraining plans. Standards and procedures that govern daily operations and the records developed as a result of these operations are also discussed, as are the controls used to promote safety and ensure compliance with the license and the regulations under which the facility operates.

Initially, the managerial and administrative controls for the conduct of operations at the Rancho Seco ISFSI will be built upon the existing organization under the 10 CFR 50 license. The Superintendent, Rancho Seco Assets is currently responsible for oversight of the Rancho Seco facility and for ensuring the safe storage of the spent nuclear fuel and irradiated core components. This individual will continue to be responsible for safe storage of the fuel, and will be responsible for the safe management of the Rancho Seco ISFSI.

The administrative and procedural controls applicable to the 10 CFR 50 license have been expanded to include the requirements of the 10 CFR 72 license. Programs such as radiation protection, environmental monitoring, emergency preparedness, quality assurance, and training will be adapted as necessary to ensure the safe management of the ISFSI. SMUD has submitted and the NRC has approved the ISFSI security program which addresses the specific requirements for ISFSI security.

Upon termination of the 10 CFR 50 license, those license requirements will be removed from the procedures. Appropriate 10 CFR 72.48 reviews will be conducted to ensure continued compliance with ISFSI license requirements. This process will result in stand-alone ISFSI programs that implement the 10 CFR 72 license. SMUD will maintain the appropriate administrative and managerial controls at the Rancho Seco ISFSI until the DOE takes title to the fuel.

9.1 Organizational Structure

9.1.1 Corporate Organization

SMUD's organization and its relationship to the nuclear organization is presented in the Rancho Seco Defueled Safety Analysis Report (DSAR) [9.7.1]. Both Rancho Seco licensed facilities (ISFSI and Interim Onsite Storage Building) are managed under the same organization.

9.1.1.1 Corporate Functions, Responsibilities, and Authorities

SMUD's Board of Directors is the policy-making body which has ultimate responsibility for the Rancho Seco ISFSI license. The Chief Executive Officer & General Manager (GM) reports directly to the Board of Directors. The GM, through the Chief Generation and Grid Assets Officer, and Director, Power Generation has corporate responsibility for overall safety and management of the facility and shall take any measures needed to ensure acceptable performance of the staff in managing, maintaining, and providing technical support to the facility to ensure nuclear safety.

9.1.1.2 In-House Organization

The facility organization is described in the DSAR[9.7.1].

9.1.1.3 Interrelationship with Contractors and Suppliers

The prime contractor for design and analysis of the Rancho Seco ISFSI dry shielded canisters, horizontal storage modules, auxiliary and transfer equipment and casks is Transnuclear West, Inc. of Fremont, California. The prime contractor for the design of the Rancho Seco ISFSI civil facilities, including the storage pad, fencing and lighting system, etc. was Impell Corporation of San Ramon, California. Construction of the Rancho Seco ISFSI was the responsibility of BRCO Constructors, Inc. of Loomis, California. The Rancho Seco ISFSI is owned and operated by SMUD.

9.1.1.4 Technical Staff

The Corporate technical staff supporting the Rancho Seco ISFSI is described in the DSAR [9.7.1].

9.1.2 Operating Organization, Management and Administrative Control System

9.1.2.1 Onsite Organization

The RSNGS organization is responsible for management of the Rancho Seco ISFSI. This organization is described in DSAR [9.7.1].

9.1.2.2 Personnel Functions, Responsibilities and Authorities

The responsibilities and authority of major RSNGS positions or departments are summarized below. RSNGS personnel are selected and trained for their assigned duties, with particular emphasis on the supervisory and technical staffs to assure safe and efficient management of the Rancho Seco facilities.

Chief Generation and Grid Assets Officer

The Chief Generation and Grid Assets Officer is responsible for the overall Rancho Seco facility and the Rancho Seco organization. This includes ensuring the safe storage of irradiated core components, ensuring effective day-to-day management, and maximizing the effectiveness of nuclear policies and procedures.

Director, Power Generation

The Director, Power Generation is responsible for ensuring effective management of the licensed facilities, and ensuring the safe storage of irradiated core components.

Manager, Rancho Seco Assets

The Manager, Rancho Seco Assets (MRSA) is the lead SMUD representative at the Rancho Seco site and is responsible for all facets of day-to-day management of the licensed facilities.

The MRSA is responsible for site security during routine, emergency, and contingency operations. The MRSA is also responsible for the implementation and maintenance of the Physical Protection Plan.

The MRSA meets all qualifications for and is the Radiation Protection Manager and implements the Radiation Protection program. The MRSA is responsible for health physics surveillance, personnel monitoring and record keeping, radwaste management, emergency preparedness and environmental monitoring.

The MRSA utilizes available SMUD and contract personnel to resolve engineering, design, and other technical issues required to support the 10 CFR 72 ISFSI licensing process in accordance with applicable regulations as well as similar issues conducted under the 10 CFR 50 license.

The MRSA is responsible for ensuring that management of the Rancho Seco ISFSI is conducted in accordance with Technical Specifications, federal and state regulations, Physical Protection Plan, and plant procedures and has the primary responsibility for cask and canister handling operations.

Staff under the direction of the MRSA is engaged in a continual retraining program, as described in Section 9.3, to ensure that ISFSI operations are conducted in a safe and efficient manner.

Personnel under the direction of the MRSA as designated by site procedures check, analyze, and log system parameters, and initiate corrective actions when abnormal conditions exist. These personnel perform initial fire response and notifications in accordance with the fire protection program.

Individuals on shift are trained and qualified to implement appropriate radiation protection procedures.

Supporting Organizations outside Generation and Grid Assets

Audit & Quality Services is responsible for ensuring that the quality assurance program is implemented in accordance with regulatory requirements. The Audit & Quality Services organization has the authority to take any issue regarding the quality of program management at Rancho Seco to the General Manager and the Chief Generation and Grid Assets Officer.

Emergency Preparedness is responsible for maintaining and administering the Emergency Plan under the direction of the Manager, Rancho Seco Assets. The Emergency Preparedness staff trains all personnel implementing the Emergency Plan as well as directing drills and other activities necessary to maintain regulatory compliance.

Security is responsible for providing personnel as required to implement the Physical Protection Plan. Security is also responsible for staffing the security functions as required during routine, emergency and contingency conditions at the facility. Any or all of the Security function may be staffed by contracted personnel in the future: all contracted work will be under the direction of the Manager, Rancho Seco Assets.

9.1.3 Personnel Qualification Requirements

Each member of the Rancho Seco staff meets or exceeds the minimum qualifications of ANSI N18.1-1971 for comparable positions, except the Radiation Protection Manager position which meets or exceeds the qualifications of Regulatory Guide 1.8, September 1975.

Facility personnel are selected and trained for their assigned duties to ensure safe and efficient Rancho Seco ISFSI management.

Training, retraining, and replacement training programs for the maintenance staff and security force are maintained and conducted in accordance with approved procedures.

9.1.4 Liaison with Other Organizations

Interface with DOE, Transnuclear West, and other outside organizations is performed in accordance with contractual agreements.

2. License conditions and technical specifications (overview)
3. Off-normal event procedures

Training methods may include classroom instruction, on-the-job training, group briefings, or reading assignments.

Table 3-11 identifies the major components at the ISFSI that are important to safety. In the current long term storage condition, operation of equipment important to safety is not anticipated as a routine occurrence. Prior to initiation of operations involving use of equipment important to safety, all necessary training will be completed. Individuals who operate equipment that has been designated as important to safety will either be trained, or under the direct visual supervision of someone who is trained. Supervisory personnel who personally direct the operation of equipment that is important to safety will also be trained in such operations.

SMUD will select individuals for ISFSI operations to provide reasonable assurance that their physical condition and general health will not be such as might cause operational errors that could endanger in-plant personnel or public health and safety. The process for selecting individuals for ISFSI operations will give consideration for any condition that might cause impaired judgement or motor coordination. The following sections address the training requirements for individuals operating equipment important to safety.

9.3.1.1.1 Initial Training

The responsibility for each discipline training program is assigned to the MRSA. Classroom and laboratory training are provided when appropriate or necessary. On the Job Training (OJT) is provided within most disciplines. OJT consists of, but is not limited to, task training and evaluation, procedure training, and specific discipline-related training requirements.

9.3.1.1.2 Continuing Training

Training programs are designed to meet the specific needs of the participating disciplines and may include facility change review, procedure change review, administrative training commitments, OJT training review, and material from the initial training program.

9.3.1.2 Radiation Protection Technician Training

Both SMUD and contract Radiation Protection Technicians will be ANSI qualified. SMUD will provide initial training to all Radiation Protection Technicians to ensure they are qualified to perform assigned tasks. The Radiation Protection Technician shall participate in continuing training as needed.

9.3.1.3 Dry Fuel Storage Equipment Operator Training

Certified Dry Fuel Storage Equipment Operators will be responsible for fuel loading and cask/DSC handling and transfer operations. These individuals will be certified by the MRSAand meet the requirements of the Dry Fuel Storage Equipment Operator Training and Certification Program. This program meets the

requirements of 10 CFR 72, Subpart I. The Certified Dry Fuel Storage Equipment Operators shall participate in initial and proficiency training programs.

characteristics are adequate and that no significant public or occupational health and safety hazards exist.

10.2.3 Verification Requirements

Analysis has shown that the Rancho Seco ISFSI can fulfill its safety functions during all normal and off-normal operating conditions and during all accident conditions as described in Chapter 8. No verification of the DSC is required during long-term storage. HSM verification requirements are discussed in Section 10.2.3 of Volume II.

10.2.4 Design Features

The following storage system design features are important to the safe operation of the Rancho Seco ISFSI and require design controls and limits:

1. Material Mechanical Properties for Structural Integrity Containment, and Shielding

2. Material Composition and Dimensional Control for Subcriticality

3. Decay Heat Removal

Component dimensions are not specified here since the combination of materials, dose rates, criticality safety, and component fit-up define the operable limits for dimensions (i.e., thickness of shielding materials, thickness of concrete, DSC plate thicknesses, etc.). The values for these design parameters are specified on the Volume IV drawings. Changes to any of these design features will be implemented only after conducting a safety evaluation in accordance with 10 CFR 72.48.

The combination of the above controls and limits and those discussed in the previous subsections of Section 10.2 define requirements for the Rancho Seco ISFSI components that provide radiological protection and structural integrity during normal storage and postulated accident conditions.

10.2.5 Administrative Controls

Use of SMUD's existing organizational and administrative systems and procedures, record keeping, review, audit, and reporting requirements coupled with the requirements of the Technical Specifications and this SAR ensure that the operations involved in the storage of spent fuel in the Rancho Seco ISFSI are performed in a safe manner. This includes both the selection of assemblies qualified for ISFSI storage and the verification of assembly identification numbers prior to and after placement into individual storage canisters.

10.3 Operating Control and Limit Specifications

The operating controls and limits applicable to the Rancho Seco ISFSI as documented in this SAR to be implemented by SMUD are delineated in the sections which follow. Operating controls and limits applicable to the Rancho Seco ISFSI HSMs are provided in Section 10.3 of Volume II.

10.3.1 Spent Fuel Specifications

10.3.1.1 FO and FC-DSC Fuel Specifications

See Technical Specifications Section 2.1.1

10.3.1.2 FF-DSC Fuel Specifications

See Technical Specifications Section 2.1.1

11. QUALITY ASSURANCE

11.1 Sacramento Municipal Utility District Quality Assurance Program

10 CFR 72.140 requires that licensees establish, maintain, and execute a quality assurance (QA) program satisfying each of the applicable criteria in 10 CFR 72, Subpart G. 10 CFR 72.140(d) states that an NRC-approved QA program that satisfies the criteria of 10 CFR 50, Appendix B, and that is established, maintained, and executed with regard to an ISFSI is acceptable for satisfying the QA program requirements.

SMUD has established and implemented a QA program based on the criteria in 10 CFR 50, Appendix B for the RSNGS. This program will be implemented for the structures, systems, and components of the Rancho Seco ISFSI that are important to safety.

The Plant Manager is responsible for the safe and reliable decommissioning of Rancho Seco. The Plant Manager has the responsibility and authority to implement the Rancho Seco Quality Assurance Program and ensure optimum quality performance of Rancho Seco.

The governing document for this program is the Rancho Seco Quality Manual (RSQM) [11.11.2] which has been reviewed and approved by the NRC. The program is implemented through the RSQM and appropriate administrative procedures. The objective of the QA program for operating nuclear power stations is to comply with the criteria as expressed in 10 CFR 50, Appendix B, and with the QA program requirements for nuclear power plants as referenced in the Regulatory Guides and ANSI standards. The Rancho Seco RSQM will be applied to those activities associated with the Rancho Seco ISFSI that are important to safety.

11.2 Quality Assurance Program – Contractors

11.2.1 Architect-Engineer

SMUD has the responsibility to ensure that the design and engineering of the Rancho Seco ISFSI is performed in accordance with the applicable requirements and design bases. Contractors hired to perform design or engineering of the ISFSI will perform their work in accordance with District approved quality requirements.

11.2.2 Storage System Supplier

SMUD has the responsibility to ensure that components are manufactured in accordance with applicable requirements and design bases. The Transfer Cask and Yoke, Dry Shielded Canister, and Horizontal Storage Modules are designed and manufactured under a District approved Quality Assurance Program.

5.4 Operation Support System

NUHOMS® is a self-contained passive system and requires no effluent processing systems during storage conditions.

5.4.1 Instrumentation and Control Systems

To ensure proper heat conduction, the HSM roof concrete temperatures will be monitored. This monitoring system is not important to safety and will consist of thermocouples installed in a thermowell in each HSM roof. This monitoring system will include a non-safety remote readout. The signals will be incorporated into the RSNGS Plant Integrated Computer System (PICS), with a readout in the control room. After RSNGS decommissioning, the signals will be transmitted to SMUD headquarters located in Sacramento. The temperature indications will also be accessible in the ISFSI Electrical Building.

The instrumentation and controls necessary during DSC loading, closure and transfer are described in Section 5.1.3.4.

5.4.2 System and Component Spares

Spare thermocouples, transducers and indicators will be maintained, as appropriate.

The cause of accident, the structural, thermal, and radiological consequences, and the recovery measures required to mitigate the accident are the same as are in the Standardized NUHOMS®-24P design.

8.3.3.2 FO-DSC, FC-DSC, and FF-DSC Flooding Analyses

The Standardized NUHOMS®-24P DSC flood loads bound the Rancho Seco FO-DSC, FC-DSC, and FF-DSC flood loads. The DSC shell assembly components are loaded by the hydrostatic pressure load due to the 50 foot flood water head (21.7 psig). The stress analysis of the DSC shell assemblies for the flood load is presented in Volume III, Section 8.3.3.3.

The cause of accident, the structural, thermal, and radiological consequences, and the recovery measures required to mitigate the accident are the same as are in the Standardized NUHOMS®-24P design [8.8.1].

8.3.4 Lightning

The likelihood of lightning striking the HSM and causing an off-normal condition is not considered to be a credible event.

Should lightning strike in the vicinity of the HSM the normal storage operations of the HSM will not be affected. The current discharged by the lightning will follow the low impedance path offered by the surrounding structures. Therefore, the HSM will not be damaged by the heat or mechanical forces generated by current passing through the higher impedance concrete. Since the HSM requires no equipment for its continued operation, the resulting current surge from the lightning will not affect the normal operation of the HSM. To further reduce the consequences of a lightning strike, SMUD will install lightning protection at the ISFSI.

Since no off-normal condition will develop as the result of lightning striking in the vicinity of the HSM, no corrective action is necessary. Also, there are no radiological consequences.

8.3.5 Complete Blockage of HSM Air Inlet and Outlet Vents

The Standardized NUHOMS® HSM design [8.8.1] is identical to the Rancho Seco HSM design. The design basis accident thermal event conservatively postulates the complete blockage of the HSM ventilation air inlet and outlet openings on the HSM side walls for 40 hours with the extreme ambient temperature of 117°F and maximum solar insolation. The standardized accident thermal loads bound the Rancho Seco accident thermal loads.

The cause of accident, the structural, thermal, and radiological consequences, and the recovery measures required to mitigate the accident are the same as are in the Standardized NUHOMS®-24P design. The 125°F ambient temperature cases from the standardized analysis are conservatively used to estimate the HSM concrete temperatures after 40 hours of the blocked vent transient.

Technical Specifications Section 5.5.3 discusses the bases for selecting the above conditions and characteristics. Technical conditions and characteristics for the Rancho Seco ISFSI in general are discussed in Section 10.2.2.2 of Volume I.

The overall technical and operational considerations are to assure that the fuel cladding is maintained at a temperature sufficiently low to preclude cladding degradation during normal storage conditions and that the DSC is transferred from the cask to the HSM in a safe manner. Through the analyses and evaluations provided in Chapters 7 and 8, this SAR demonstrates that the above technical conditions and characteristics are adequate and that no significant public or occupational health and safety hazards exist.

10.2.3 Surveillance Requirements

Analysis has shown that the HSM can fulfill its safety functions during all normal and off-normal operating conditions and during all postulated accident conditions as described in Chapter 8. The only surveillance required during long-term storage is the periodic visual inspection of the HSM air inlets and outlets to ensure they are clear of obstructions. A more detailed discussion of the bases for the HSM surveillance requirement is provided in Section 8.2.7 of the Standardized NUHOMS® SAR [10.10.1]. (In addition, non-safety related HSM roof concrete temperature monitoring is available to provide further assurance of required cooling.)

See Appendix B for Standardized SAR, Section 8.2.7 (pages 8.2-43 to 8.2-45).

10.2.4 Design Features

The following design features are important to the safe operation of HSM storage at the Rancho Seco ISFSI and require design controls and limits:

1. Material mechanical properties for structural integrity, containment, and shielding

2. Material composition and dimensional control for subcriticality

3. Decay heat removal

4. Passive ventilation system configuration for effective decay heat removal

Component dimensions are not specified here since the combination of materials, dose rates, criticality safety, and component fit-up define the operable limits for dimensions (i.e., thickness of shielding materials, thickness of concrete, DSC plate thicknesses, etc.). The values for these design parameters are specified on the Volume IV drawings. Changes to any of these design features should be implemented only after SMUD conducts a safety evaluation in accordance with 10 CFR 72.48.

9. CONDUCT OF OPERATIONS

The organization and general plans for operating the Rancho Seco ISFSI are provided in Volume I, Chapter 9.

9.1 Physical Security Plan and Physical Protection Plan

The ISFSI Physical Protection Plan (PPP) describes the security provisions for protecting Rancho Seco's spent fuel after placing the fuel into dry storage at the ISFSI. The PPP was developed in accordance with the guidance in NUREG-1619, 10 CFR 73.51, 10 CFR 72 Subpart H, and the applicable portions of 10 CFR 73 and 10 CFR 73 Appendix B. The Contingency Response Plan is included as Chapter 10 of the Physical Protection Plan.

The general performance objective of these security plans is to provide high assurance that activities involving spent nuclear fuel do not constitute an unreasonable risk to public health and safety. To achieve this objective, these security plans provide for the following performance capabilities:

1. Spent fuel is stored only within a protected area.
2. Only authorized individuals are granted access to the protected area.
3. The security systems have the ability to detect and assess unauthorized entry to, or activities within, the protected area.
4. The security systems have the ability to provide timely communications to a designated response force whenever necessary.
5. The security organization is managed in a manner that maintains its effectiveness.

Contingencies: The Contingency Plan associated with either of these security plans addresses specific actions to be taken in the event of:

1. Threats (Bomb/Attack)
2. Civil Disturbance
3. Actual or Attempted Sabotage
4. Fire Explosion or Catastrophe
5. Attempted Theft (Theft of Nuclear Material)
6. Security Emergencies