UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

January 6, 2004

Mr. Harold B. Ray, Executive Vice President
Southern California Edison Co.
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, California 92674-0128

SUBJECT: NRC INSPECTION REPORT 50-206/03-10; 50-361/03-10; 50-362/03-10; 72-41/03-01 FOR THE PRE-OPERATIONAL TESTING AND FIRST CANISTER LOADING AT THE INDEPENDENT SPENT FUEL STORAGE INSTALLATION

Dear Mr. Ray:

NRC inspections were conducted between June 26 and October 1, 2003, at your San Onofre nuclear generating station to evaluate the dry cask storage activities for your Independent Spent Fuel Storage Installation (ISFSI). These inspections included observation of activities associated with your pre-operational testing program and the loading of your first canister. The inspections were conducted to confirm compliance of your program and activities with the requirements specified in the license, technical specifications, Final Safety Analysis Report, the NRC's Safety Evaluation Report and 10 CFR Part 72. The enclosed report presents the results of these inspections. The inspections found that activities were being performed in accordance with procedural and regulatory requirements. No violations of NRC regulations were identified.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html. To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

Should you have any questions concerning this inspection, please contact the undersigned at (817) 860-8191 or Mr. Vincent Everett, Senior Health Physicist, at (817) 860-8198.

Sincerely,

/RA/

D. Blair Spitzberg, Ph.D., Chief
Fuel Cycle and Decommissioning Branch

Docket Nos.: 50-206; 50-361; 50-362; 72-41
License Nos.: DPR-13; NPF-10; NPF-15

Enclosure:
NRC Inspection Report
50-206/03-10; 50-361/03-10; 50-362/03-10; 72-41/03-01

cc w/enclosure:
Dwight E. Nunn, Vice President
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, California 92674-0128

Michael R. Olson
San Onofre Liaison
San Diego Gas & Electric Company
P.O. Box 1831
San Diego, California 92112-4150

Mayor
City of San Clemente
100 Avenida Presidio
San Clemente, California 92672

Chairman, Board of Supervisors
County of San Diego
1600 Pacific Highway, Room 335
San Diego, California 92101

Ed Bailey, Radiation Program Director
Radiologic Health Branch
State Department of Health Services
P.O. Box 942732 (MS 178)
Sacramento, California 94327-7320

David Spath, Chief
Division of Drinking Water and
Environmental Management
P.O. Box 942732
Sacramento, California 94234-7320

James D. Boyd, Commissioner
California Energy Commission
1516 Ninth Street (MS 34)
Sacramento, California 95814

Douglas K. Porter, Esq.
Southern California Edison Company
2244 Walnut Grove Avenue
Rosemead, California 91770

Gary L. Nolff
Power Projects/Contracts Manager
Riverside Public Utilities
2911 Adams Street
Riverside, California 92504

Eileen M. Teichert, Esq.
Supervising Deputy City Attorney
City of Riverside
3900 Main Street
Riverside, California 92522

Dr. Raymond Waldo
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, California 92674-0128

A. Edward Scherer
Southern California Edison
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, California 92674-0128

Joseph J. Wambold, Vice President
Southern California Edison Company
San Onofre Nuclear Generating Station
P.O. Box 128
San Clemente, California 92764-0128

bcc w/enclosure (via ADAMS e-mail distribution):
EECollins
DBSpitzberg
KMKennedy
SCO'Connor
ERZiegler
CCOsterholtz
MASitek
RRTemps
ABBarto
JFMelfi
JDParrott
RJEvans
WCSifre
RVAzua
TWDexter
EMGarcia
FCDB
NBHolbrook
RIV Materials Docket Files - 5th Floor

ADAMS: ☒Yes ☐No Initials: _JVE_

☒Publicly Available ☐Non-Publicly Available ☐Sensitive ☒Non-Sensitive

DOCUMENT NAME: s:\dnms\fcdb\jve\So1-2003-010 jve.wpd final r:_so1\So1-2003-10.wpd

RIV:DNMS:FCDB	FCDB	FCDB	FCDB
JVEverett	EMGarcia	RJEvans	TWDexter
/RA/	**/RA JVEverett via E/**	**/RA JVEverett via E/**	**/RA JVEverett via E/**
12/18/03	12/22/03	12/18/03	12/18/03
NMSS:DWM:HLWB	NMSS:SFPO	DRP:PBC	DRP:PBC
JDParrott	RRTemps	JFMelfi	MASitek
/RA JVEverett via E/	**/RA JVEverett via E/**	**/RA JVEverett via E/**	**/RA JVEverett via E/**
12/16/03	12/17/03	12/15/03	1/6/04
DRP:PBC	DRS:EMB	NMSS:SFPO	C:FCDB
RVAzua	WCSifre	ABBarto	DBSpitzberg
/RA JVEverett via E/	***/RA JVEverett via E/***	***/RA JVEverett via E/***	***/RA/***
12/29/03	12/18/03	12/30/03	1/6/04

OFFICIAL RECORD COPY T=Telephone E=E-mail F=Fax

ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Docket Nos.: 50-206; 50-361; 50-362; 72-41

License Nos.: DPR-13; NPF-10; NPF-15

Report No: 50-206/03-10; 50-361/03-10; 50-362/03-10; 72-41/03-01

Licensee: Southern California Edison Co.
P.O. Box 128
San Clemente, California 92674

Facility: San Onofre Nuclear Generating Station

Location: San Clemente, California

Dates: June 26 - 28, 2003 (Heavy loads demonstration)
August 4 - 8, 2003 (Pre-operational demonstration - Initial Inspection)
August 18 - 19, 2003 (Pre-operational demonstration - Final)
September 10 - 15, 2003 (First cask loading - Initial Inspection)
September 28 - October 1, 2003 (First cask loading - Final)

Inspectors: J. V. Everett, Team Leader, Region IV
R. R. Temps, Safety Inspector, NRC Spent Fuel Project Office
J. F. Melfi, Resident Inspector, Palo Verde Nuclear Station
R. J. Evans, P.E., C.H.P, Senior Health Physicist, Region IV
J. D. Parrott, Senior On-Site Representative, NRC Las Vegas Office
M. A. Sitek, Resident Inspector, San Onofre Nuclear Station
W. C. Sifre, Reactor Inspector, Region IV
A. B. Barto, Nuclear Engineer, NRC Spent Fuel Project Office
R. V. Azua, Project Engineer, Region IV
T. W. Dexter, Security Consultant
E. M. Garcia, Health Physicist, Region IV

Approved By: D. Blair Spitzberg, Ph.D., Chief Fuel Cycle/Decommissioning Branch

Attachment 1: Supplemental Information
Attachment 2: Inspector Notes

ADAMS Entry: IR05000206-03-010; 05000361-03-010; 05000362-03-010; 072000041-03-01 on 08/4/2003 - 10/01/2003; Southern California Edison Co., San Onofre Nuclear Generating Station; Units 1, 2, 3. ISFSI Report. No violations.

EXECUTIVE SUMMARY

San Onofre Nuclear Generating Station
NRC Inspection Report 50-206/03-10; 50-361/03-10; 50-362/03-10; 72-41/03-01

On October 3, 2003, Southern California Edison loaded the first canister of San Onofre Nuclear Generating Station (SONGS) Unit 1 spent fuel into their Independent Spent Fuel Storage Installation (ISFSI). The ISFSI was located at the SONGS site adjacent to the Unit 1 reactor facility. The Advanced NUHOMS Horizontal Modular Storage System was selected by Southern California Edison to store the SONGS spent fuel under a general license. This cask system had been approved for storage of irradiated nuclear fuel by the Nuclear Regulatory Commission (NRC) under Certificate of Compliance No. 72-1029. Transnuclear, Inc., was the cask vendor for this system.

Southern California Edison planned to move all Unit 1 spent fuel to the ISFSI by the spring of 2005. This will involve moving 207 spent fuel assemblies from the Unit 1 spent fuel pool, 70 assemblies from the Unit 2 pool and 118 assemblies from the Unit 3 pool. Seventeen canisters will be needed to hold the 395 Unit 1 spent fuel assemblies. The first five canisters to be loaded into the ISFSI would remove all the Unit 1 spent fuel from the Unit 3 pool. The ISFSI pad currently constructed at SONGS can accommodate 31 canisters. Each canister can hold 24 spent fuel assemblies. The ISFSI pad will be expanded as additional space is needed and as dismantlement activities at Unit 1 provide more space for ISFSI construction.

The inspections conducted by the NRC of Southern California Edison's dry cask storage project provided a comprehensive evaluation of the licensee's compliance with the requirements in the NUHOMS Certificate of Compliance No. 72-1029, Technical Specifications, Final Safety Analysis Report, NRC's Safety Evaluation Report and 10 CFR Part 72. The inspection consisted of a team of eleven NRC inspectors performing inspections of various phases of activities over a period from June 26 through October 1, 2003. Sixteen technical areas were reviewed during the inspections including such topical areas as fuel verification, security, radiological programs, quality assurance, training, and heavy loads. During the inspections, the licensee conducted numerous demonstrations for NRC observance related to the operations of equipment and the implementation of procedures to verify that all required aspects of the use of the NUHOMS cask system at the SONGS site had been adequately incorporated into site programs and procedures. The licensee had integrated together many of the programs for the Part 50 reactor operations and the Part 72 ISFSI operations to allow for an efficient use of site resources.

During the various pre-operational demonstrations and during the loading of the first canister, the SONGS workers demonstrated a comprehensive knowledge of the technical requirements related to the loading and operations of an ISFSI and for compliance with 10 CFR Part 72. Much of this advanced knowledge of ISFSI operations was a result of experience gained by Southern California Edison personnel who provided manpower support to the Rancho Seco decommissioned reactor for their ISFSI project. Rancho Seco completed the loading of 21 canisters on August 2002. Southern California Edison personnel were a key part of that successful program. The knowledge and experience gained by the Southern California Edison personnel while at Rancho Seco was brought back and integrated into the SONGS program. This

was obvious during discussions and interviews of the SONGS personnel which demonstrated actual experience and knowledge of the issues that must be addressed in order to successfully load spent fuel into the ISFSI.

During the loading of the first SONGS canister, the NRC provided 24-hour coverage of loading operations for all critical tasks at the Unit 3 fuel handling building. This included fuel movement, heavy lifts of the loaded canister, initial radiation surveys of the loaded cask, welding of the lids, vacuum drying and helium backfill of the canister. Workers were knowledgeable of their assigned tasks and had been well trained. Problems and issues were quickly identified and effectively resolved. Shift supervision provided good oversight of work activities and workers always knew who was in charge. Procedures were closely followed and a good questioning attitude was demonstrated by all employees. There was good communications between the workers. Overall, the licensee's staff was well trained and highly motivated to perform work safely and in compliance with the procedural requirements. The management team responsible for the ISFSI project had worked hard to develop and implement a comprehensive program that would provide for the safe operations of moving spent fuel at the SONGS site.

Details related to the 16 technical areas reviewed during this inspection are provided as Attachment 2 to this inspection report. The following provides a summary of the findings of this inspection.

Vacuum Drying, Helium Backfill and Helium Testing

- Vacuum drying time limits established in Technical Specification 3.1.1 had been incorporated into the licensee's procedures. Canisters with a heat load greater than 12 kW were required to be vacuum dried within a specific time frame. The licensee's procedure included provisions for establishing a helium environment in the canister or re-flooding the canister, as required by the technical specification, if the time limit was not met.

- The licensee had implemented a stepped vacuum drying process consistent with the requirements in Technical Specification 3.1.1. This stepped process of lowering the pressure in the canister to certain predetermined levels and holding at that level for a period of time was intended to reduce the likelihood of ice blockage in the system lines. The final vacuum drying pressure requirement for the canister was 3 torr. The licensee's procedures specified a value of 2.8 torr to account for instrument error and to provide an extra margin for compliance.

- Helium backfill pressure requirements established in Technical Specification 3.1.2 had been incorporated into the licensee's procedures. Provisions for documenting the final helium backfill pressure reading was provided in the procedure, including independent verification and sign-off by quality control personnel.

- Helium leak rate testing of the inner lid weld and the vent/siphon port cover welds required by Technical Specification 3.1.3 had been incorporated into the licensee's procedures. Procedural requirements included specifications for the helium to be $\geq$99 percent pure and

the leak rate to be $\leq 10^{-7}$ standard cubic centimeters/second. Procedures also required helium leak test personnel to be qualified to the standards in SNT-TC-1 "Personnel Qualification and Certification of Nondestructive Testing."

Emergency Planning

! Emergency planning provisions for the ISFSI had been incorporated into the site-wide emergency plan. This included specific emergency action levels for fires, loss of canister integrity and security events.

! The ISFSI design provided for accessability by emergency personnel and vehicles. The licensee maintained their own site fire and medical response capability. Offsite fire, security and medical support organizations were available to augment the site emergency organization.

Fire Protection

! The ISFSI had been incorporated into the San Onofre Updated Fire Hazards Analysis. Administrative controls were established to limit the quantity of combustible and flammable liquids around the ISFSI and near the transport path during movement of the canister.

! Analysis had been completed to evaluate the effect on the ISFSI of site specific explosive hazards and to confirm that the design of the ISFSI was adequate for the postulated external pressure levels that could result from an explosion.

Fuel Verification

! The SONGS Unit 1 spent fuel was stored in four locations: 270 assemblies at the General Electric spent fuel storage pool located in Morris, Illinois; 207 assemblies in the SONGS Unit 1 spent fuel pool; 70 assemblies in the SONGS Unit 2 spent fuel pool; and 118 assemblies in the SONGS Unit 3 spent fuel pool. The first loading campaign will load the Unit 1 spent fuel stored in the Unit 3 spent fuel pool. This will require five canisters.

! The requirements in Certificate of Compliance No. 1029 for the type of fuel that can be stored in the Advanced NUHOMS 24PT1 canisters was evaluated against the SONGS Unit 1 spent fuel planned for loading in the first five canisters. Criteria included type of fuel, cladding, decay heat, burn-up, neutron/gamma source strength, cooling time and enrichment. All spent fuel assemblies met the technical specification requirements.

! Twenty-seven Unit 1 fuel assemblies had been identified as damaged. Of these, four were in the Unit 3 spent fuel pool and will be included in the first loading campaign of five canisters. Damaged fuel assembles were required to be placed in special failed fuel cans inside the canisters. Criteria used by the licensee for identifying which fuel assemblies were damaged was consistent with NRC guidance.

- The licensee had established provisions for independent verification of the correct loading of the canister. This included videotaping the location of the spent fuel after loading in the canister.

- Because the NUHOMS canisters were inserted into the concrete storage modules horizontally, special center of gravity considerations for the canisters were necessary to prevent rotation of the canister during insertion into the concrete storage module. Technical specifications required the center of gravity of the loaded canister to be within 0.1" of the canister's radial center of gravity. Licensee calculations for the first five canisters demonstrated compliance with this limit. The largest deviation from the radial center of gravity was 0.0042".

Compliance with 10 CFR Part 72 General License Requirements

- The licensee evaluated the bounding environmental conditions specified in the NUHOMS Final Safety Analysis Report and Certificate of Compliance No. 1029 technical specifications against the conditions at the SONGS site. This included: tornados/high winds, flood, seismic events, snow/ice loading, tsunami, lightning, burial under debris, normal and abnormal temperatures, and fires/explosions. The site environmental conditions at the SONGS ISFSI were bounded by the NUHOMS cask design parameters.

- Radiation levels at the ISFSI were calculated for workers during loading operations and routine surveillance activities. Doses were calculated for the controlled area boundary. Doses at the controlled area boundary were projected to be 1 mrem/year, well below the 10 CFR 72.104 limit of 25 mrem/year. Projected worker doses to conduct the daily visual inspection were 172 millirem/year. Weekly radiation surveys of the ISFSI could add 49 millirem/year. A conservative estimate for loading a cask was determined to be 3117 millirem per canister loading.

- The licensee performed an evaluation of the site programs that could be impacted by the addition of an ISFSI. The evaluation included the radiation protection program, emergency planning program, quality assurance program, training program and the reactor technical specifications and Part 50 license. Revisions to the programs to incorporate the ISFSI were identified and implemented.

- The NUHOMS Certificate of Compliance and Final Safety Analysis Report had been reviewed by the licensee to verify that the design basis for the NUHOMS cask system and the conditions and requirements in the Certificate of Compliance and Final Safety Analysis Report were met.

Heavy Loads

- The licensee had incorporated the special requirements related to the ISFSI project into the site heavy loads programs and procedures. Crane operators interviewed during the ISFSI inspections were knowledgeable of the special handling requirements related to the heavy spent fuel casks.

- Special lifting device height limits and temperature restrictions during movement of the casks had been incorporated into the licensee's procedures consistent with the requirements in the Certificate of Compliance. This included the requirement to perform an inspection of the cask for damage after any drop of 15" or higher.

- The maximum weight of the loaded transfer cask had been determined by the licensee to verify the adequacy of the lift capability of the cranes planned for use in moving the spent fuel. A loaded cask being removed from the spent fuel pool represented the maximum weight to be lifted and exceeded the lifting capacity of the current Unit 1 crane. The licensee had purchased new single failure proof cranes for installation and use during the cask loading operations. The Unit 3 crane was rated at 125 tons. The Unit 1 crane would be up-rated from 100 tons to 105 tons to account for the estimated 104.1 ton weight of the loaded cask.

- A safe loads path had been identified and analyzed for moving the spent fuel from the spent fuel pool to the ISFSI. Provisions were established in procedures and through the use of limit switches to prevent the crane from moving the loaded cask outside the boundaries of the safe load path while in the fuel building. Calculations were performed for the roadway between the plant and the ISFSI to verify that the path was structurally capable of handling the weight of the loaded transfer cask and trailer.

- The licensee's heavy loads procedural requirements related to the transfer cask trunnions and the slings used for lifting the canister lid were verified against industry standards and manufacturer requirements for load tests, safety margins and inspection/maintenance.

- The adequacy of the transport trailer for the expected weight of a loaded canister and the ability of the transport trailer to safely secure and move the cask to the ISFSI was verified.

Pad/Storage Modules

- Requirements in the Final Safety Analysis Report related to the placement of the storage modules on the ISFSI pad and the module-to-module connections required for the high seismic conditions at the SONGS site were being implemented.

- The concrete storage module thermal monitoring program had been incorporated into procedures. This included the daily monitoring of the storage module temperature and the daily verification that the air inlets and outlets were free from debris.

- The thickness requirements for the concrete storage module roof and shield walls to ensure radiological levels would be below regulatory limits were verified by direct observation of the storage modules under construction and a review of the design drawings.

- The seismic design of the ISFSI pad to meet the potential earthquake intensity at the SONGS site and to address liquefaction of the soil under the pad was inspected by the

NRC on April 9, 2002, and documented in Inspection Report 50-206/02-07;72-41/02-01 issued May 21, 2002 (NRC Adams Document ML021410532).

Pre-Operational Testing

! The licensee successfully completed all the required pre-operational test requirements specified by the Certificate of Compliance. This include the loading, welding, drying, and backfilling of a canister and the unloading of a sealed canister. A weighted canister was used to demonstrate heavy load activities, transport between the Unit 3 facility and the ISFSI and insertion/removal of a canister into the concrete storage module.

Procedures and Technical Specification Requirements

! The licensee had developed the required operating procedures and programs required by the Certificate of Compliance.

! The adequacy of the level of detail in the procedures was verified by reviewing requirements in the Final Safety Analysis Report related to handling the cask at the spent fuel pool. All requirements reviewed had been incorporated as operational steps in the licensee's procedures.

Quality Assurance

! The licensee had implemented their approved reactor facility Part 50 quality assurance program for the activities associated with the ISFSI. Effective implementation of the program was observed for all phases of ISFSI activities including procurement, control of measuring equipment, corrective actions, design control, receipt inspections, storage and audits.

! Southern California Edison was constructing their canisters onsite as a fabricator to Transnuclear, Inc. An inspection conducted by the NRC's Spent Fuel Project Office on March 3-6, 2003, and documented in Inspection Report 72-1029/2003201 issued March 6, 2003, found all work activities were being properly controlled under the Southern California Edison quality assurance program (NRC Adams Document ML030940163).

! The licensee's quality assurance organization had implemented a comprehensive quality assurance audit and inspection program that was responsive to applying additional oversight to selected work activities where problems were being identified. This was most evident in the decision to place onsite quality assurance inspectors at one of the vendors to ensure the quality of the concrete storage modules.

Radiation Protection

! Requirements for radiological and contamination surveys described in the Final Safety Analysis Report had been incorporated into the licensee's health physics program for the

loading of the casks. This included special precautions related to potential high dose rate work activities.

- Calculations performed by the licensee to evaluate the potential radiological doses during normal operations at the ISFSI and during an accident demonstrated compliance with the limits specified in 10 CFR 72.104 and 10 CFR 72.106.

- The licensee had identified the reactor Part 50 exclusion area as the controlled area for the ISFSI. The distance from the ISFSI to the exclusion area boundary met the required minimum distance for a controlled area around an ISFSI specified in 10 CFR 72.106. Southern California Edison was authorized, through a signed easement, to remove personnel from the exclusion area in the event of an emergency.

- The licensee had determined a dose conversion factor for neutron doses to workers to account for the neutron spectrum expected with the loaded canisters.

- Environmental monitoring for the ISFSI had been incorporated into the existing reactor environmental monitoring program. Additional thermoluminescent dosimeters had been placed around the ISFSI to monitor the increase in radiation levels expected due to the storage of the spent fuel. Dosimeters had been placed in service in 2001 and had been used to collect background data that could be compared with the ongoing monitoring after spent fuel was placed in the ISFSI to determine the level of increase in radiation levels.

Records

- A records system had been established by the licensee under their reactor Part 50 quality assurance program. Records required for retention by 10 CFR 72.174, 10 CFR 72.212, 10 CFR 72.234 and the Final Safety Analysis Report had been identified in the licensee's program as required records for retention.

- An optical disk system was being used for permanent storage of the records. The quality assurance plan required that ISFSI related records be retained for the duration of the license or certificate of compliance.

- The required 90-day notification prior to loading the first cask had been made to the NRC on May 5, 2003. The requirement to provide notice to the NRC within 30 days of use of a cask had been incorporated into the appropriate procedure.

Safety Reviews

- Changes to the site related to the construction and operation of the ISFSI were being evaluated in accordance with 10 CFR 72.48 and 10 CFR 50.59 requirements. No issues were identified during the review of selected safety screenings.

Security

- Security for the ISFSI had been integrated into the overall site security program. The security plan and procedures had been revised to incorporate specific provisions for responding to a security threat at the ISFSI. Arrangements had been established to obtain support from local law enforcement agencies during a security event.

- Security force personnel were trained on security requirements for the ISFSI including the implementation of access controls, key controls and compensatory actions.

- Physical security systems had been installed and were operational. This included the protected area fence, lighting systems, intrusion detection systems and backup power.

- Arrangements had been made for a moving protected area around the cask during transport from Unit 3 to the ISFSI.

Training

- The licensee had implemented a training program for workers assigned to the ISFSI that incorporated the topics listed in the technical specifications and provided for documentation of completion of training and job task qualification.

- Specific training needs had been identified and incorporated into training for operations, maintenance and health physics personnel as required by the Final Safety Analysis Report.

- A computerized training records system had been established by the licensee to track completion of training by individuals.

Welding/Nondestructive Testing

- Requirements for hydrogen monitoring during welding of the inner cask lid had been incorporated into the procedures. The alarm set point had been established at 50 percent of a lower explosive limit for hydrogen. During welding of the inner lid welds, hydrogen levels were measured from 3 percent to 8.4 percent of the lower explosive limit.

- The licensee was performing the required dye penetrant examinations of welds on the canister in accordance with the Final Safety Analysis Report. Dye penetrant examination procedures had been developed for both normal temperatures and for the higher temperatures that could be encountered with the hotter casks.

- Nondestructive examination requirements for welds were adequately specified in procedures and on drawings.

- Nondestructive examination personnel were qualified to the requirements in SNT-TC-1A for performing weld examinations of the type required on the canisters.

Exit Meetings

The inspectors presented the inspection results to members of licensee management at the conclusion of the various key stages of the inspection on August 8, August 19 and October 1, 2003. The licensee acknowledged the findings presented. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspectors that had been incorporated into the inspection effort.

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

J. Agosti, Lead Auditor, Procurement Quality
A. Alexander, Security Lock and Key Specialist
J. Appel, Engineer, Design Engineering
R. Ashe-Everest, Project Manager, Spent Fuel Cask Transfer Operations
V. Barone, Cognizant Engineer, Dry Cask Storage
R. Beatty, Supervisor, Unit 1 Security
M. Bise, Program Analyst
J. Bock, Project Manager, Project Management and Engineering Support
R. Bordon, Surveillance Team Supervisor, Nuclear Oversight and Assessment
G. Broussard, Manager, Security Operations and Equipment Performance
R. Brown, ISFSI Support
R. Busnardo, Project Manager for Canister Fabrication, Nuclear Generation Maintenance
G. Cook, Supervisor, Regulatory Compliance
T. Cook, Shift Commander, Security
P. Coughlin, QA/QC Vendor Oversight, Nuclear Oversight and Assessment
J. Custer, Manager, ISFSI Operations
D. Czapski, Quality Control Inspector, Nuclear Oversight and Assessment
S. Davis, Nuclear Security Officer, Security
D. Faasamala, Security Lock and Key Specialist
G. Ferrigno, Health Physics Planner
B. Gossett, Engineer, Nuclear Fuel Services
R. Granaas, Engineer, Nuclear Fuel Services
K. Gribble, Maintenance Supervisor
P. Gyswyt, Design Engineering
N. Hansen, Radiological Environmental Monitoring Program Specialist
S. Hunn, Administrative Manager
N. Jervis, Supervisor, Security Operations
W. Kotteakos, Supervisor, Quality Control/Nondestructive Examinations
J. Larson, Supervisor, Procurement Quality
J. Linville, Acting Shift Commander, Security
M. Mason, Supervisor, Fabrication
M. McBrearty, Engineer, Nuclear Regulatory Affairs
A. Meichler, Supervisor, Weld Engineering
D. Miller, Fuel Team Leader, Training
G. Moore, Manager, Decommissioning Oversight
J. Morales, Manager, Dry Cask Storage
M. Mullen, Nuclear Security Officer, Security
S. Ordorica, Nondestructive Examination Inspector
A. Ockert, Fire Protection Engineer
M. Orewyler, Maintenance Supervisor
R. Osborne, Manager, 72.48 Program
D. Pilmer, Manager, Dry Cask Fuel Storage Licensing

D. Ripley, Manager, Maintenance Training
M. Russell, Technical Specialist
S. Salwach, Nuclear Engineer, Maintenance Engineering
D. Schell, Supervisor, Fabrication Welding
J. Scott, Emergency Planning Engineer
M. Speer, Maintenance Supervisor
D. Stoeckel, Technical Specialist, Maintenance Engineering
T. Swindle, Shift Commander, Security
R. Todd, Supervisor, Security Equipment Performance
J. Valsvig, Welding Technician
M. Watson, Shift Commander, Security
S. Wong, Nondestructive Examination Inspector
H. Wood, Surveillance Team Member, Nuclear Oversight and Assessment
T. Yee, Consulting Engineer, Design Engineering
G. Zwissler, Manager, Administration

Leak Test Specialists

D. Hecksel, Leak Testing Specialist

Transnuclear, Inc.

U. Farradj, Project Manager

INSPECTION PROCEDURES USED

60854	Pre-operational Testing of an ISFSI
60855	Operations of an ISFSI
60856	Review of 10 CFR 72.212(b) Evaluations
60857	Review of 10 CFR 72.48 Evaluations
81001	ISFSI Security

ITEMS OPENED AND CLOSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS USED

ALARA	as low as reasonably achievable
ANSI	American National Standards Institute, Inc
CFR	code of federal regulations
DAC	derived air concentration
DSC	dry shielded canister
FSAR	final safety analysis report
GWd/MTU	gigawatt days/metric ton uranium
ISFSI	independent spent fuel storage installation
kW	kilowatt
MOX	mixed-oxide fuel
NDE	nondestructive examinations
NRC	Nuclear Regulatory Commission
psi	pounds/in^2
psig	pounds/in^2 (gauge)
QA	quality assurance
SAR	safety analysis report (same as final safety analysis report)
SNT-TC	Society of Nondestructive Testing-Technical Council
SONGS	San Onofre Generating Station
std-cc/sec	standard cubic centimeters/second
Tech Specs	technical specifications
UFSAR	updated final safety analysis report