UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

October 3, 2005

Tennessee Valley Authority
ATTN: Mr. Karl W. Singer
Chief Nuclear Officer and
Executive Vice President
6A Lookout Place
1101 Market Street
Chattanooga, TN 37402-2801

SUBJECT: BROWNS FERRY NUCLEAR PLANT - INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI) DRY RUN NRC INSPECTION REPORT 07200052/2005001

Dear Mr. Singer:

On September 12, 2005, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Browns Ferry Nuclear Plant following the successful loading, transport, and storage of the first Independent Spent Fuel Storage Installation (ISFSI) cask. The enclosed inspection report documents the inspection findings, which were discussed on July 15, 2005, with Mr. Brian Grady of your staff. A phone exit was also held with Mr. James Davenport of your staff on September 12, 2005, following the successful completion of the first cask loading and storage operation.

The inspection examined activities conducted under your ISFSI license as they relate to safety and compliance with the Commission's rules and regulations. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel. These inspections included observation of activities associated with your pre-operational testing program and the loading of your first ISFSI cask. The pre-operational testing and training exercises are performed to satisfy the requirements of the Holtec Certificate of Compliance (CoC) 1014. The inspections were conducted to confirm compliance of your program and activities with the requirements specified in the CoC, Technical Specifications, Final Safety Analysis Report and the NRC's Safety Evaluation Report for the Holtec HI-STORM 100 dry cask storage system.

The enclosed report presents the results of this inspection. Overall, the inspection found that activities were being performed in accordance with procedural and regulatory requirements. Based on direct observation of activities and review of the various procedures, the inspectors determined that the licensee was safely loading spent fuel from the Spent Fuel Pool (SFP) into the Multi Purpose Cannister (MPC), and performing the steps necessary to close the MPC, including draining, vacuum drying, helium backfill, and helium leakage rate testing. Furthermore, the licensee was safely transporting the storage cask to the ISFSI pad. Procedures and administrative controls have been established to ensure compliance with CoC requirements. The inspectors also determined that the licensee was capable of re-transferring spent fuel from the ISFSI to the SFP.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document
system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).
If you have any questions concerning this inspection, please contact Mr. Binoy Desai, Senior Project Engineer, at (404) 562-4519 or the undersigned at (404) 562-4510.

Sincerely,

/RA/

Kerry D. Landis, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Docket No. 72-52
License No. CoC 1014. Amendment 1 (Holtec)

Enclosure: NRC Inspection Report 07200052/2005-001w/Attachment: Supplemental Information

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NAME	BDesai	RChou	SAtwater	RKellar	FGee	TRoss	K.Hardin
DATE	9/20/2005	9/20/2005	9/21/2005		9/21/2005	9/22/2005	9/23/2005
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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	72-52
License No.:	CoC 1014, Amendment 1
Report No.:	07200052
Licensee:	Tennessee Valley Authority (TVA)
Facility:	Browns Ferry Nuclear Plant Independent Spent Fuel Storage Installation
Location:	Corner of Shaw and Nuclear Plant Roads Athens, AL 35611
Dates:	July 5 - September 12, 2005
Inspectors:	B. Desai, Senior Project Engineer (Team Leader) R. Chou, Reactor Inspector, Region II R. Kellar, DNMS, Region IV S. Atwater, DNMS, Region IV J. Rivera, Reactor Inspector, Region II F. Gee, Inspector, NMSS/HQ K. Hardin, Reviewer, NMSS/HQ T. Ross, Senior Resident Inspector
Approved by:	Kerry D. Landis, Chief Reactor Projects Branch 5 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

BROWNS FERRY NUCLEAR PLANT - INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI)

NRC Inspection Report 07200052

The Browns Ferry Nuclear Plant developed and implemented a dry cask storage program to remove spent fuel from the reactor spent fuel pool (SFP) for storage at the Browns Ferry Independent Spent Fuel Storage Installation (ISFSI). The ISFSI is located within the current reactor protected area.

The licensee utilized the Hotec cask system for spent fuel storage needs. The Holtec system consists of a stainless steel multi purpose canister (MPC) in which the spent fuel is placed. This transportable MPC is welded shut and placed in a HI-STORM 100 vertical concrete cask which is then transported to the ISFSI pad. All handling and movement of the loaded MPC prior to insertion into the concrete cask is performed with the MPC inside the HI-TRAC cask. The HI-TRAC provides the necessary shielding of the MPC to allow workers to perform duties near the MPC which include welding, vacuum drying, backfilling with helium, as well as performing the necessary tests on the welds to ensure quality of the welds.

The NRC conducted onsite inspections of the activities associated with the licensee's Holtec cask storage program. NRC inspectors were also present for the heavy lift of the loaded MPC and the lowering of the MPC into the HI-STORM. The NRC inspections focused on the licensee's efforts to demonstrate that adequate equipment, procedures, and personnel were in-place to safely move spent fuel from the SFP to the ISFSI pad. The pre-operational test requirements covered key activities related to loading a cask and moving the cask to the ISFSI pad. Throughout the demonstrations observed by the NRC, the Browns Ferry staff functioned professionally and performed their assigned duties safely.

Based on direct observation of activities and review of the various procedures, the inspectors determined that the licensee was capable of safely loading spent fuel from the SFP into the MPC, and performing the steps necessary to close the MPC, including draining, vacuum drying, helium backfill, and helium leakage rate testing. Furthermore, the licensee was capable of transporting the storage cask to the ISFSI. Procedures and administrative controls have been established to ensure compliance with CoC requirements. The inspectors also determined that the licensee was capable of re-transferring spent fuel from the ISFSI to the SFP.

Furthermore, during the initial spent fuel storage campaign, the licensee conducted dry cask loading, processing, transport, and storage operations, in accordance with approved procedures, Technical Specification, and acceptance criteria outlined in the Final Safety Analysis Report (FSAR) for the Holtec casks.

NRC made several observations during the licensee dry run demonstrations and initial spent

fuel storage campaign. These observations were captured by the licensee in the corrective action program documents.

Report Details

1. Dry Run Observations

a. Inspection Scope (60854)

The inspectors observed licensee dry run demonstrations for the Holtec Independent Spent Fuel Storage Installation (ISFSI) system at the Browns Ferry Nuclear Plant (BFNP) from July 5, 2005, through September 12, 2005. The dry run activities were intended to demonstrate licensee readiness in their capability to safely load, seal, transport, and store spent fuel in the ISFSI system. During the course of the inspection, the inspectors verified and/or observed the following attributes to assess licensee performance relating to dry cask storage activities:

- Licensee's pre-operational test program to determine if the licensee is capable of safely using the Holtec cask system. The pre-operational test program is intended to ensure that the conditions and requirements of the Certificate of Compliance (CoC) are being met and that the licensee is capable of safely loading spent fuel into the ISFSI and transferring spent fuel back to the spent fuel pool (SFP) from the ISFSI pad.

- The licensee had completed an evaluation to verify compliance with the conditions of the Holtec system design, Final Safety Analysis Report (FSAR), and requirements in 10 CFR Part 72.

- The licensee had established a safe loads path for cask related heavy load movement activities.

- The licensee had incorporated into procedures the correct requirements for helium backfill of the canister after drying. The acceptable leak rates for passing the test were consistent with the requirements in the Technical Specifications (TS). Personnel assigned to perform the leak tests were qualified to the appropriate leak test certification requirements.

- Vacuum drying time limits and acceptance criteria had been incorporated into procedures.

- Strong radiological controls had been established to support cask activities.

- Licensee demonstration involving: lifting the empty Multiple Purpose Canister (MPC) with the HI-TRAC cask into the loading pit; setting the lid on top of the MPC; verification of positive engagement of lifting devices to the trunnions; fuel loading (using "simulated assemblies"), moving the loaded cask to the cask setting area by following the heavy load lifting path; automatic welding of the lid to the MPC shell; liquid penetrant examinations (PT), transferring the MPC from

the HI-TRAC to the HI-STORM using the mating device, transporting the HI-STORM to the pad, and placing the HI-STORM on the pad were safely conducted.

b. Observations and Findings

The inspectors reviewed licensee procedures and observed the implementation of the procedures which tested the site's capability to safely load spent fuel from the SFP into the MPC and transfer it to the ISFSI pad. The procedures were well developed and complete. The licensee held pre-job briefings prior to each segment of the procedure. These pre-job meetings were conducted such that necessary items to enhance safety (such as the need for three way communication, pre-staging of equipment, specific assignment of job functions by name and reinforcement of teamwork among work parties) were discussed. The briefs included reviews, select portions of procedures and discussion for particular contingencies during loading activities.

The inspectors determined that licensee appropriately implemented procedures related to the MPC movement, fuel loading, blowdown /draining, vacuum drying, and helium backfill and cooldown operations.

The licensee was prompt in initiating corrective action documents for areas requiring improvement during the dry run activities. The inspectors discussed with Regulatory Compliance, Fuel Engineering, and Reactor System Engineering personnel the process required for lid removal and cask unloading should it become necessary.

The inspectors determined that crane operation involved good communication and team work among crews, that the procedure was at the work station, and that the procedure steps were initialed as completed.

The inspectors observed that the licensee followed the established procedures at the work station and followed all safety cautions. The inspectors concluded that ISFSI related operations were conducted in a safe manner.

In conclusion, based on direct observation of activities and review of the various procedures, the inspectors determined that the licensee was capable of safely loading spent fuel from the SFP into the MPC, and performing the steps necessary to close the MPC, including draining, vacuum drying, helium backfill, and helium leakage rate testing. Furthermore, the licensee was capable of transporting the storage cask to the ISFSI. Procedures and administrative controls have been established to ensure compliance with CoC requirements. The inspectors also determined, based on procedure review, that the licensee was capable of re-transferring spent fuel from the ISFSI to the SFP.

2. Procedures

a. Inspection Scope (IP 60854)

The licensee is required by 10 CFR 72.212(b)(9) and the Holtec CoC to conduct

activities related to storage of spent fuel in accordance with written procedures. The inspectors also reviewed licensee procedures that included contingency plans to place the Holtec MPC in a safe condition after loading operations when interrupted by abnormal circumstances. Specifically, the contingency plans associated with providing alternate cooling water to the MPC were reviewed.

b. Observations and Findings

The following heavy load procedures were reviewed:

MSI-0-079-DCS035, “Dry Cask Storage Campaign Guidelines," Revision 0 was used to provide overall direction for cask loading and unloading. This procedure branched to other procedures for implementation of individual dry cask storage operations.

MSI-0-079-DSC-005, “HI-STORM System Site Transportation," Revision 0 was used to move the storage cask between the ISFSI pad and the reactor building.

MSI-0-079-DSC-008, “Movement and Transfer Operations of HI-TRAC and HI-STORM in the Reactor Building," Revision 0 was used to move the storage cask, transfer cask and canister into the reactor building, load an empty canister into the transfer cask, install the mating device and transfer cask onto the storage cask, transfer the canister from the transfer cask into the storage cask, remove the mating device and transfer cask from the storage cask, install the storage cask lid, and remove the storage cask from the reactor building.

MSI-0-000-LFT 001, “Lifting Instructions for the Control of Heavy Loads," Revision 35 was used to control all heavy lifts near the spent fuel pools.

The inspectors also reviewed selected procedures to verify that FSAR requirements were implemented, and the procedures were adequately identified as Quality Assurance related. Specifically, the inspectors verified that the following requirements were incorporated into the selected operating procedures:

- pressure relief valves values for MPC air displacement and hydrostatic testing equipment, MPC blowdown system, helium backfill equipment, and MPC cooldown equipment as established in Chapter 8 of the FSAR

- water flooding requirements for the HI-TRAC annulus area during unloading operations as established in Chapter 4 of the FSAR

- HI-STORM 100 system bolt torque requirements as established in Chapter 8 of the FSAR

- time to boil limits after a loaded HI-TRAC cask has been removed from the pool and prior to the start of vacuum drying operations as established in Chapter 4 of the HI-STORM FSAR

- MPC helium exit temperature requirements for unloading operations as established in TS A.3.1.3

- MPC gas sampling to determine, during unloading operations, if fuel damage has occurred as established in Chapter 8 of the FSAR

- actions to handle damaged fuel containers as established in Chapter 8 of the FSAR (the licensee does not intent to place damaged fuel into the dry casks. The licensee will develop procedures as needed or use existing procedures to handling damaged fuel in the pool)

The inspectors also reviewed the licensee's compliance with Condition 9 of the CoC, which requires that a validation test has to be performed to validate the analytic methods and predicted thermal behavior described in the FSAR. No additional testing is required for a system after it has been tested at a heat load to or greater than 16kW by other Holtec user. TVA will take credit for the validation test performed at Columbia Generating Station using an MPC-68 with a 17.1 kW heat load, thus additional testing will not be required.

With regard to abnormal conditions, the licensee had prepared Procedure MSI-0-079-DCS037, "ISFSI Abnormal Conditions Procedure (Placing the MPC in a Safe Condition)," Revision DRAFT, to provide guidance for placing the loaded MPC in a safe condition after loading operations had been interrupted by abnormal circumstances. The licensee had provided contingency actions to be taken for several scenarios that could occur. The inspectors focused their review on the portions of Procedure MSI-0-079-DCS037 that dealt with providing alternate cooling to the MPC. The licensee had identified several potential locations where problems could be encountered, such as suspended from a crane. Additionally, abnormal plant conditions that could be encountered were evaluated, including loss of a cooling supply, loss of a power supply to the cooling equipment and loss of the crane. In conclusion, the scenarios and recovery operations were well developed and provided adequate guidance in the event that alternate cooling was required to the MPC.

The inspectors concluded that licensee procedures met the requirements of 10 CFR 72.212 and the Holtec CoC. The procedure sequences were easy to follow, the steps were clear and complete, and branching to other procedures was appropriate.

3. Part 72.212(b) Requirements

a. Inspection Scope (60856)

The inspectors reviewed the BFNP 10 CFR 72.212 Report to determine if the licensee was in compliance with the requirements of 10 CFR 72.212(b). The inspectors examined documents and interviewed licensee personnel regarding selected requirements of 10 CFR 72.212(b).

b. Observations and Findings

The licensee performed written evaluations which established that: the conditions set forth in CoC 1014, Amendment 1, have been met; the cask storage pads have been designed to support the stored static load of the storage casks; and the requirements of 10 CFR 72.104 regarding effluents and direct radiation from the ISFSI have been met.

The licensee reviewed FSAR referenced in CoC 1014, and the associated NRC Safety Evaluation Report (SER). The licensee determined that the cask design bases are enveloped by the reactor site parameters for ambient temperature and temperature extremes, flooding, tornadoes, earthquakes, lightning, fire and explosion, snow and ice loads, burial under debris, and offsite doses from hypothetical accidents.

The licensee reviewed the site emergency plan, quality assurance program (QAP), training program, and radiation protection program, modified each program as appropriate, and determined the effectiveness of these programs is not decreased by ISFSI activities. In accordance with the BFNP QAP, procedures have been developed or existing procedures modified to control activities associated with operation of the ISFSI.

The licensee evaluated the activities related to the storage of spent fuel in accordance with the provisions of 10 CFR 50.59, and determined that NRC approval was not required.

In conclusion, the inspectors did not note any significant problems with the 10 CFR 72.212 evaluation conducted by the licensee.

4. Quality Assurance

a. Inspection Scope (IP 60854)

The inspectors reviewed the licensee's compliance with 10 CFR Part 72, Subpart G Quality Assurance requirements. In view of the past performance and audit history, the inspectors focused on the control of measuring and test equipment (M&TE). The inspectors also reviewed the incorporation of receipt inspection and other attributes of the quality assurance program.

b. Observations and Findings

Control of M&TEs:

- The inspectors reviewed the report of the M&TE with calibration due date from July 13, 2005 to July 20, 2005; and randomly sampled calibration reports of various instruments in the cabinets in the onsite M&TE shop. The inspectors also verified a list of M&TEs that were not available for services. The licensee told the inspectors that complex and elaborated instruments were sent off site for calibration to the TVA Central Laboratories Services in Chattanooga, where TVA had standards traceable to the National Institute of Standards and Technology.

The inspectors also verified two different digital pressure gauges calibrated to such traceable national standard on their reports of calibration. In addition, the inspectors reviewed a list of investigation report of out-of-tolerance M&TEs from the TVA Central Laboratories Services. The M&TEs were no longer in service.

- The inspectors reviewed the self-assessments performed in April 2000. The inspectors determined that from observation and review of computer generated data sheets, past weakness was corrected before this inspection.

- The inspectors verified selected instruments for calibration stickers which stated the last calibration date and the future calibration due date. The inspectors also observed the segregation of nonconformance items and the calibrated items. The inspectors determined that the calibration program had adequate control and that computer database was tracking the onsite M&TEs correctly.

- The inspectors verified that the licensee performed activities in accordance with Procedure SPP- 6.4 at the onsite M&TE shop from M&TE inventories to record maintenance.

Quality Assurance Records

- During the inspection, the inspectors observed all quality records were distinctly marked as such to indicate the quality of the document.

Control of Purchased Material, Equipment, and Services

- The inspectors reviewed the MPC receipt inspection procedure dated May 9, 2005 and a draft copy of Revision 0001 during the inspection. The procedure referred to Final Safety Analysis Report (FSAR) 1014, Table 8.1.9 of receipt inspection checklist for HI-STORM 100. The inspector determined that the procedure was adequate to cover this aspect of the quality assurance process.

Identification and Control of Materials, Parts, and Components

- The inspectors reviewed the Master Equipment List (MEL) for equipment identification and controls. The list provided the necessary identifications and unique means for controls of materials, parts, and components. The inspectors determined that the list satisfied the regulatory requirements.

Corrective Action

- The inspectors sampled selected Problem Evaluation Report (PER) summary of corrective action plans:

  Browns Ferry Nuclear Plant (BFN) 37340, 99-007248-000, dated June 28, 1999
  BFN 39082, 02-008170-000, dated July 30, 2002

BFN 84656, dated June 24, 2005
BFN 84884, dated June 27, 2005
BFN 83969, dated June 15, 2005

The inspectors concluded that the corrective actions were adequate.

Audits

- The inspectors reviewed the recently completed L17 050712 800, "Nuclear Assurance (NA) - Audit Report No. BFA0507 - BFN, Independent Spent Fuel Storage Installation (ISFSI) Audit," dated July 12, 2005. The audit report identified several level C and D PERs for an audit conducted during June 13 - 24, 2005. The audit conducted with internal and external qualified experts and managers. There were no significant audit issues. The inspectors determined that the audit satisfied the regulatory requirements.

In conclusion, the inspectors determined that requirements of 10 CFR 72, Part G, were adequately covered by the licensee quality assurance program.

5. Fuel Selection for Storage and Fuel Assembly Loading

a. Inspection Scope (60854)

The inspectors reviewed the licensee fuel selection and loading verification procedures for compliance with the requirements of the Holtec HI-STORM 100 cask system Certificate of Compliance (CoC) No. 1014, Appendix B. The characteristics of selected fuel assemblies, that had been identified by the licensee for loading into the initial three canisters, were compared to the fuel characteristics specified in the CoC. Additionally, the licensee classification criteria for determining whether the spent fuel assemblies were considered to be intact or damaged were compared to the criteria established by the NRC.

b. Observations and Findings

TVA Nuclear Procedure NFTP-100, "Fuel Selection for Dry MPC Storage," Revision 1, provided the governing instructions for selection of fuel assemblies to be stored in the HI-STORM 100 cask system. Procedure NFTP-100 was a corporate procedure that provided generic instructions for fuel selection and verification that were applicable to both the Browns Ferry and Sequoyah Nuclear Stations. The majority of the fuel assembly characteristics were maintained by the licensee in a separate database, which corporate personnel utilized to verify compliance with the CoC conditions. Additionally, the licensee had incorporated verification steps into Procedure NFTP-100 that documented fuel assembly compliance with the Holtec CoC.

Procedure 0-TI-509, "Spent Fuel Cask Loading Verification," Revision 0000, required that each fuel assembly serial number be verified against the Cask Loading Map to ensure that the correct fuel assemblies had been loaded in the MPC. If any

discrepancies were discovered during the fuel verification process, Procedure Step 6.2 required that the licensee follow the actions specified in Section 2.2 of the Holtec CoC 1014, Appendix B, to place the fuel assemblies in a safe condition and notify the NRC.

The licensee provided a list of the fuel assemblies proposed to be loaded in the initial three MPC canisters. A uniform loading strategy would be utilized for the initial canisters. The fuel characteristics for the initial three MPC canisters were verified to meet the requirements of Appendix B of the CoC, including the decay heat load, fuel cooling time limit, fuel enrichment and maximum average fuel burn-up.

Licensee Procedure 0-TI-267, "Fuel Integrity Assessment Program," Revision 16, provided guidance for classification of the fuel assemblies as intact, damaged or as failed fuel. The definitions contained in Procedure 0-TI-267 and methods to determine if a fuel assembly should be classified as intact were in agreement with NRC guidelines.

Based on a review of licensee procedures and discussions with reactor engineering personnel, the inspectors concluded that the licensee process to select and verify fuel assemblies for loading in the Holtec MPC met regulatory requirements.

6. 10 CFR 72.48 Requirements

a. Inspection Scope (IP 60857)

At the time of inspection, there were 72.48 screenings and no 72.48 evaluations had been performed. The inspectors reviewed seventeen 72.48 screenings related to maintenance procedure implementations.

b. Observations and Findings

The inspectors had the following conclusions:

- The governing procedure for the 72.48 review was TVA BFN SPP-9.9, Revision 0B1. The inspectors reviewed SPP-9.9, and determined that the procedure provided adequate guidance in performing 72.48 reviews.

- The seventeen 72.48 screenings were performed according to the SPP- 9.9. The inspectors determined that the screenings were performed adequately.

- The inspectors reviewed a list of personnel trained and qualified to perform 72.48 screenings and the associated training lesson plans. Sixty-three persons were trained and qualified to perform 72.48 reviews. The inspectors interviewed several licensee personnel from the qualified list. The inspectors determined that the qualified personnel were knowledgeable in performing 72.48 reviews. In addition, the inspectors reviewed the lesson plan for the 72.48 training for the dry cask storage system. The lessons emphasized the difference between 10 CFR 50.59 and 10 CFR 72.48 in relation to maintenance.

7. Welding

a. Inspection Scope (IP 60853)

The inspectors observed welding and non-destructive examination (NDE) activities associated with the MPC lid to MPC shell and the MPC Vent Cover Plate. The observations included review of design welding requirements, a review of the welding procedure and its qualification records, and a review of welder qualification records.

b. Observations and Findings

The inspectors verified that the welding activities were conducted to the applicable requirements of the 2001 Edition of ASME Section IX during the dry run. The welding was performed on a MPC mockup. The inspectors concluded that welder qualifications and training as well as technique were in accordance with approved procedures. The inspectors also determined that PT activities following the welding demonstration was conducted in accordance with established procedures.

8. Helium Backfill Observations

a. Inspection Scope (IP 60853)

The inspectors witnessed the licensee's demonstration of helium backfill operations for the Holtec MPC canister. The licensee procedures that provided directions for performing the helium backfill process were reviewed for compliance with the Holtec CoC 1014 requirements. Requirements for helium purity and calibration of the gas mass flow instruments used for the helium backfill operations were also reviewed by the inspectors. The inspectors also reviewed licensee corrective action document, PER 86974, that documented a discrepancy between the mass flow meter calibration and the tolerance or accuracy specified in the licensee's procedural calculation.

b. Observations and Findings

Licensee personnel demonstrated Section 6.11 of Procedure MSI-0-079-DCS012, “MPC Processing,” Revision 0000, that performed the MPC helium backfill operations. The personnel were knowledgeable in the use of the procedure and equipment required for the helium backfill operation. Although the licensee utilized industrial grade helium during the demonstration, the procedures required the use of helium with a purity greater than or equal to 99.995%, as required by the Holtec CoC. The licensee provided a copy of the certification for the helium to be used for MPC backfill (Part Number 24001333), which had a purity level of 99.999%.

The Holtec CoC 1014 required that the MPC canister be backfilled with helium to a pressure between 29.3 and 33.3 psig, at 70 degrees Fahrenheit. To accomplish this, the licensee utilized two calibrated gas mass flow meters to measure the amount of helium used to fill the MPC. The volume of helium necessary to achieve the required

pressure at 70 degrees Fahrenheit was calculated in Appendix B of Procedure MSI-0-079-DCS012. This calculation converted the required helium pressure to the necessary volume of helium required at 70 degrees Fahrenheit. Several variables were considered in the calculation including the MPC volume, the volume of the fuel assemblies, and the calibrated accuracy or tolerance of the gas mass flow meter. The licensee demonstrated the ability to perform the calculation to determine the minimum and maximum values to achieve the required MPC helium backfill volume.

The calibration reports for the gas mass flow meters were reviewed by the inspectors. The licensee used two separate gas mass flow meters to perform the helium backfill, in the event that a problem was later discovered with one of the meters. Each of the gas mass flow meters had been calibrated at three discrete points, namely 10, 15 and 20 Standard Cubic Feet per Minute (SCFM). The tolerance or accuracy band of the "as left" calibration reports varied considerably between the calibrated mass flow meters and were all outside of the tolerance band that the licensee had planned to use the value of +/- 1%. As previously stated, the tolerance value of the mass flow meters were used to calculate the minimum and maximum values to achieve the required Holtec CoC helium backfill volume. The apparent discrepancy was discussed with the licensee on August 2, 2005, during a teleconference. The licensee issued PER 86974 to document the discrepancy between the "as left" tolerance of the mass flow meters and the value that had been planned to use in determining the required helium backfill volume. The licensee then revised the associated tolerance of the mass flow meters used in the helium backfill volume calculation to use the value of +/- 2%. It was later discovered that only one of the mass flow meters had been calibrated within the range of +/- 2%. The licensee performed a calculation to demonstrate that the helium backfill volume for MPC-68 #0113 was within Holtec CoC requirements. The inspectors reviewed the documentation and concurred that the helium backfill volume for MPC-68 #0113 met Holtec CoC requirements. The licensee reported plans to re-calibrate the mass flow meters to a tighter tolerance for future use. This discrepancy is not safety significant due to the single calibrated mass flow meter that had been used to perform the helium backfill of MPC-68 #0113, was within the Holtec CoC requirements. Although this condition requires correction, it constitutes a violation of minor significance that is not subject to enforcement in accordance with Section IV of the Enforcement Policy.

9. Heavy Loads

a. Inspection Scope (IP 60854)

The inspection focus with regard to heavy loads was on the following items: reactor building crane, lift yoke, transfer cask trunnions, and heavy load operations as described below.

Reactor Building Crane: The inspectors reviewed the reactor building crane, which is an overhead gantry crane designed, maintained and tested to the requirements of the American Society of Mechanical Engineers (ASME) standard B30.2. NUREG 0554 required that the maximum critical load plus operational and seismically induced

pendulum and swing load effects on the crane be considered in the design of the trolley, and added to the trolley weight for the design of the bridge.

Lift Yoke:

American National Standards Institute (ANSI) standard N14.6 required acceptance testing of the lift yoke prior to first use. The lift yoke main beam assembly shall be load tested to three times the rated load of 125 tons for a minimum of 10 minutes. Following load testing, the lift yoke shall undergo non-destructive examination. Visual testing shall be performed on the strongbacks, actuator plates, and lift arms. Liquid penetrant or magnetic particle testing shall be performed on the main pins and actuator pins. There are no load bearing welds in the Holtec lift yoke design.

Each sling pin shall be load tested to three times the rated load of 22.5 tons for a minimum of 10 minutes. Following the load testing, liquid penetrant or magnetic particle testing shall be performed on the sling pin.

ANSI N14.6 also required annual testing of the lift yoke. The licensee may repeat the acceptance load testing OR may perform visual testing of the strongbacks, actuator plates, and lift arms AND dimensional testing and liquid penetrant or magnetic particle testing of the main pins and actuator pins. The annual testing may be deferred until the next use, if the lift yoke has been out of use for greater than one year.

Transfer Cask Trunnions:

The Holtec FSAR required acceptance testing of the transfer cask trunnions prior to first use. The acceptance load testing must be conducted at three times the rated load for a minimum of 10 minutes with no deformation, distortion or cracking of the trunnions.

The Holtec FSAR also required annual testing of the lifting trunnions. The licensee may repeat the acceptance load testing OR may perform dimensional testing, visual inspection, and liquid penetrant or magnetic particle testing of the trunnions and trunnion attachment areas. The acceptance criteria is no deformation, distortion or cracking. The annual testing may be deferred until the next use, if the transfer cask has been out of use for greater than one year.

Heavy Load Operations:

Use of a single-failure proof crane ensures that a heavy load drop will not adversely impact the spent fuel pool, safe shutdown equipment or decay heat removal systems. When heavy loads must be transported through areas with potential adverse impacts from a load drop, operational restrictions are required.

b. Observations and Findings

Reactor Building Crane:

The inspectors determined that the annual mechanical inspection of the reactor building crane was last performed on December 7, 2004, under Work Order 04-714071 and Procedure MPI-0-111-CRA001, “Reactor Building Overhead Crane Inspection, Testing, and Preventive Maintenance," Revision 20. The bridge and trolley inspection points included the drum pinion and bull gear, trolley and hoist brakes, gear box internals, shaft couplings, rails, equalizer sheaves and cylinders, block sheaves and wire rope. The crane structure and end trucks were inspected for cracks, loose or missing bolts, worn or distorted parts, and alignment. The hook was inspected for cracks, increased throat openings and twists. No abnormal degradation was discovered.

The inspectors determined that the annual electrical inspection of the reactor building crane was last performed on December 9, 2004 under Work Order 04-713026 and Procedure EPI-0-111-CRA001, “Inspection and Functional Testing of Reactor Building Crane," Revision 9. The inspection points included the brushes and commutators, main contactor arc chutes, motor/generator (MG) sets, and motors on the hoist, bridge and trolley. Operation of the control panel air conditioners and main hoist rope spooling monitor were also inspected. No abnormal degradation was discovered.

The licensee had recently upgraded to a single failure proof trolley for the dry fuel storage operations. ASME standard B30.2 stated that new, altered, repaired and modified cranes should be load tested prior to initial use. If a load test is conducted it shall not be less than 100% of the rated load. If a 100% load test is performed, the trolley should transport the load across the full length of the bridge and the bridge should transport the load across the full length of the runway.

Following replacement of the trolley, the licensee conducted a 100% load test of the bridge and trolley in the vertical direction only. Due to limited height above the refueling floor, the bridge and trolley could not move horizontally with the 100% load test weights installed. PER 85422 was generated to determine if the crane load testing satisfied the requirements of ASME B30.2 for a 100% load test. The licensee concluded that the requirement for horizontal movement of the bridge did not apply in this case because; 1) The new trolley weighed 20 tons less than the one it replaced; 2) The crane had frequently transported loads at or near full rated capacity through the full range of trolley and bridge motion since the new trolley had been installed; and 3) Non-destructive testing of the bridge girder critical structural welds performed during the week of June 27, 2005, found no evidence of cracking or other signs of distress. After review of the data, the NRC inspectors confirmed that the licensee was in compliance with ASME standard B30.2 for crane testing following modification.

The additional loads placed on the crane due to the pendulum effect during a design basis earthquake(DBE) were analyzed and added to the trolley weight to determine if the bridge design was adequate. The analysis was performed for the worst case scenario with the crane loaded to the maximum critical load of 125 tons with the main hook at the lowest possible position when the DBE occurred. The analysis was completed by Berger/Adams Engineers, Inc. on July 14, 2004 and the results were documented in Browns Ferry Nuclear (BFN) calculation CDQ 030320040145, “Seismic Analysis and Evaluation of the Reactor Building Crane and Steel Superstructure,"

Revision 0.

In conclusion, the reactor building crane was designed, tested, inspected and maintained in accordance with NUREG 0554 and ASME standard B30.2.

Lift Yoke:

The initial load testing of the lift yoke was performed by U.S. Tool and Die, Inc. on August 31, 2004, under Procedure CSP 0414-1, “HI-TRAC 125 Ton Lift Yoke Load Test Procedure," Revision 0. The load test data was captured in Attachment 3.2.

The lift yoke main beam assembly was tested at three times the rated capacity of 125 tons. The minimum acceptable loading was 750,000 pounds and the actual test loading was 762,080 pounds. Each of the two sling pins was load tested at three times the rated capacity of 22.5 tons. The minimum acceptable loading was 135,000 pounds and the actual test loading was 138,330 pounds. All three load tests were held for 10 minutes. Following load testing the lift yoke was disassembled. The strongbacks, actuator plates, and lift arms were visually tested. The main pins and actuator pins were liquid penetrant tested. Visual testing was performed on the interior surfaces of the pin holes. No indications were identified.

The annual inspection for re-certification of the lift yoke was controlled by Preventive Maintenance #500136643 and Procedure MSI-0-000-LFT001. The first annual inspection was due August 31, 2005.

In conclusion, the acceptance testing and annual testing of the lift yoke met the requirements of ANSI standard N14.6 for special lifting devices.

Transfer Cask Trunnions:

The initial load testing of the transfer cask trunnions was performed by U.S. Tool and Die Inc. on September 24, 2003. The load testing data was captured in Exhibit 3.4 of Procedure DP 0119-001, titled “Trunnion/Support Lug Load Test Record."

The transfer cask trunnions were tested at three times the rated capacity of 125 tons. The minimum acceptable loading was 750,000 pounds and the actual test loading was 761,992 pounds for 10 minutes. Following load testing, visual testing (VT) was performed and no indications were identified.

The annual examination of the transfer cask trunnions was controlled by Preventive Maintenance #500136563 and Procedure MSI-0-079-DCS017, “HI-TRAC Annual Inspection and Maintenance," Revision 0. The procedure performed a visual examination on the accessible portions of the lifting trunnion to identify cracks, wear, corrosion and physical damage on the surfaces. A liquid penetrant or magnetic particle examination was then performed to identify sub-surface cracking. The trunnion diameter and length was measured to identify deformation.

In conclusion, acceptance testing and annual testing of the transfer cask trunnions met the requirements of the Holtec FSAR and ANSI standard N14.6 for special lifting devices.

Heavy Load Operations

Movement of heavy loads within 15 feet of the spent fuel pools was controlled under Procedure MSI-0-000-LFT 001, “Lifting Instructions for the Control of Heavy Loads," Revision 35. The procedure ensured the following technical requirements were met:

- Technical requirement 3.9.4 required functional testing of the reactor building crane cab controls, over-travel limit switch interlocks, speed control and braking operations, main/auxiliary hoist interlock, and the remote emergency stop. TR 3.9.4 also required a visual inspection of the 125 ton hoist and cask yoke safety wire ropes.

- Technical requirement 3.9.5 prohibited lifting of an empty fuel cask until a visual inspection was made of the cask lifting trunnions and fastening connection.

- Technical requirement 3.9.6 limited the spent fuel cask lift height to 6 inches above the refueling floor and required the spent fuel cask yoke safety links to be properly positioned at all times. This technical requirement did not apply when the cask was in the decontamination chamber. (the 6-inch lift height was being raised to 12 inches to accommodate the 9 inch-braking distance required by the new Ederer hoist)

- Technical requirement 3.9.7 prohibited movement of loads over spent fuel assemblies in the spent fuel pool.

Procedure MSI-0-000-LFT 001 identified the safe load paths and established a temperature range of 56-104EF for reactor building crane operations. Table 2 of the procedure provided the weights of the transfer cask, transfer cask pool lid, temporary shield ring, lift yoke, canister, canister lid, storage cask lid, mating device, and Automated Welding Machine (AWS) base plate. The individual component weights were listed, as well as the total weights for components in various combinations. The minimum required rigging capacities were also specified.

Rigging of heavy loads near the spent fuel pools was controlled under TVA Safety Procedure 721, “Rigging," Revision 3. The procedure required all riggers to be qualified through TVA approved training courses. The minimum training consisted of rigging fundamentals and hand signals.

TVA Safety Procedure 721 required all rigging equipment to be inspected annually and prior to each use. Defective equipment was to be tagged and removed from service immediately. The procedure required an accurate determination of the load weight prior to each lift. The known weight was to be checked against the sling rating and hitch angle to ensure the rigging capacity was adequate.

In conclusion, movement of heavy loads near the spent fuel pool was controlled through procedures that ensured technical requirements were met, the safe load paths were identified, and the rigging equipment and personnel qualifications were specified.

10. ISFSI Pad and Transport Route

a. Inspection Scope (IP 60854)

The Holtec FSAR recommended ISFSI pad cask spacing of a minimum tributary area of 225 square feet for each cask.

The Holtec technical specifications required the storage cask transport route hardness to be less than or equal to the ISFSI pad hardness to ensure a cask drop along the transport route would be bounded by the design basis drop analysis. This Technical Specification did not apply when the transport device provided support from underneath the cask such as a rail car, heavy haul trailer, air pads, etc.

The Holtec FSAR required a minimum static coefficient of friction of 0.53 between the ISFSI pad and the bottom of the storage casks.

b. Observations and Findings

The ISFSI pad was designed for storage of 96 casks, configured in 4 rows of 24 casks each. The casks were spaced on 16 foot centers, yielding a tributary area for each cask of 256 square feet.

Draft input to the licensee's 10 CFR 72.212 report was reviewed. Section 5.2.3 titled "Transport Configuration and Route Conditions" contained the licensee's methodology for meeting the technical specification for transport route hardness.

- While in the reactor building truck bay, the storage cask was supported from underneath by a rail dolly and the technical specification did not apply. The seismic analysis indicated the storage cask did not tip over during the design basis earthquake when supported by the rail dolly.

- The Vertical Cask Transporter (VCT) was designed in accordance with ANSI standard N14.6 with redundant drop protection features. While the storage cask was being transported by the VCT, cask drop and tip-over were not credible. Therefore, the transport route hardness, including the steel plates used for roadway protection, was not analyzed.

- The concrete turning pad adjacent to the ISFSI pad was constructed to the same hardness criteria as the ISFSI pad.

ISFSI pad coefficient of friction testing was completed on March 25, 2005, under Work

Order 05-712733 and Procedure MSI-0-079-021, “ISFSI Pad Static Friction Test," Revision 0. The horizontal pull-meter method was used, as specified in the Holtec FSAR. Four horizontal pulls (N, S, E, and W) were made in 10 locations, for a total of 40 data points. The average static coefficient of friction was 0.5406, as documented in Appendix A to the procedure. The instruments used were controlled under the M&TE program and were within their calibration interval.

In conclusion, the Holtec FSAR and Technical Specification requirements for storage cask spacing, transport route hardness and ISFSI pad coefficient of friction were met.

11. Radiological

a. Inspection Scope (IP 60854)

The Holtec FSAR recommended that pre-job ALARA briefings be held with workers and radiological protection personnel prior to work on or around the dry cask storage system.

b. Observations and Findings

A comprehensive pre-job briefing was conducted prior to the pre-operational testing. The briefing included job scope, industrial safety and radiological safety. The job scope topics included the testing sequence, the importance of using human performance tools to minimize error, related operating experience and communication methods.

The industrial safety topics included fall protection, heat stress, burns from elevated metal temperatures, and use of personnel protective equipment (PPE). The radiological safety topics included dose limits, contamination limits, and use of Radiation Work Permit (RWP) 05000100.

In conclusion, the pre-job briefing was informative and well received. The briefing contained the information needed by the workers to understand the task and to work safely. Actual dose received during the first cask loading was well within the expected range.

12. Initial Cask Loading and Storage Observation

a. Inspection Scope (IP 60855)

The inspectors reviewed and monitored licensee activities associated with the initial spent fuel storage campaign. Observed activities included dry cask loading, processing, transport, and storage operations. The inspectors verified that the actual spent fuel storage campaign was in accordance with approved procedures, Technical Specification, and acceptance criteria outlined in the FSAR for the Holtec ISFSI cask.

b. Observations and Findings

The inspectors verified appropriate prerequisites and preparations were accomplished in accordance with applicable procedures prior to the loading of spent fuel from the Unit 3 spent fuel pool into MPC 113. The inspectors also attended one of the "Complex and Infrequently Performed Evolution" pre-job briefings held by responsible contractor supervision and senior licensee management. During actual DCS operations, the inspectors witnessed significant portions of initial MPC fuel loading, transfer, seal welding, vacuum drying, and helium backfill in accordance with MSI-0-079-DCS011, “MPC Fuel Loading,” MSI-0-079-DCS-012, “MPC Processing Operations,” and 0-GOI-100-3B, “Operations in Spent Fuel Storage Pool Only.” Also, during MPC processing, the inspectors examined time to boil calculations and temperature considerations, including implementation of alternate MPC cooling in accordance MSI-0-079-DCS-015, “Alternate Cooling Water System Operation." Furthermore, throughout the initial MPC 113 loading, processing, transport and storage operations the inspectors monitored and verified radiation protection controls were established and implemented to limit personnel dose and contamination.

The inspectors closely examined licensee and contractor response to resolve equipment failures related to the HI-STORM transport dolly. The inspectors also verified actions taken to monitor and evaluate MPC 113 conditions during the unanticipated extended time on the refueling floor while in the HI-TRAC. To address this condition, Holtec performed a detailed evaluation for the licensee that was documented as Holtec Report #HI-2053422, "Steady-State Thermal Evaluation of HI-TRAC With 22.868 KW MPC For Browns Ferry." The inspectors reviewed the results of this report and discussed the same with responsible Holtec and TVA personnel. The actions resulting from the report were appropriately captured in the licensee corrective action program.

Following repairs to the HI-STORM transport dolly, the inspectors witnessed a re-demonstration and post-maintenance test of the transport dolly capability to move the HI-STORM in and out of the reactor building equipment lock. Furthermore, once MPC 113 was transferred into the HI-STORM and transported to the ISFSI pad, the inspectors verified the HI-STORM cask (BFN-0-Cask-079-10012) was properly placed and in its required stored configuration.

Lastly, the inspectors met with the Special Nuclear Materials Coordinator (SNMC), examined specific applicable records (e.g., 0-TI-509, Spent Fuel Cask Verification), and reviewed SPP-5.8, "Special Nuclear Material Control," to confirm that the licensee has identified, documented and maintained quality records of each fuel assembly loaded in the MPC.

In conclusion, the licensee established, maintained, and implemented adequate control of dry cask loading, processing, transport and storage operations per approved procedures. Technical Specifications requirements and acceptance criteria as outlined in the FSAR for the HOLTEC casks were followed appropriately. Radiation protection controls were adequately established and implemented. The loading campaign for the first cask was safely completed by the licensee. Minor problems encountered during actual DCS operations that were identified by the licensee and the inspectors were appropriately entered into the licensee's corrective action program.

Meetings, Including Exit

An inspection exit was held with the licensee on July 15, 2005, and an exit by telephone was conducted with the licensee on September 12, 2005, to discuss inspector observations. No proprietary information was received.

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee Personnel

B. Aukland, Nuclear Plant Manager
A. Chapman, Project Management
J. Davenport, Licensing
C. Gaines, SWCI
J. Ledgerwood, DCS Implementation
M. Mitchell, Radiation Operations Manager
M. Skaggs, Site Vice President

NRC

T. Ross, Senior Resident Inspector (Operations)
W. Bearden, Senior Resident Inspector (Construction)
E. Christnot, Resident Inspector
R. Monk, Resident Inspector

INSPECTION PROCEDURES USED

60854	Preoperational 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

ITEMS OPENED, CLOSED, AND DISCUSSED

None

Attachment

List of Documents Reviewed

Procedures as well as other references used by the inspectors:

Tennessee Valley Authority (TVA) SPP-6.4, "Measuring and Test Equipment," Revision 2, dated December 10, 2004

BFN, BFN-M&-00-005, "Maintenance and Modifications Self Assessment," dates of assessment: April 1, 2000 and April 15, 2000

BFN, MSI-0-079-DCS011, "MPC Fuel Loading," Revision 0000, dated June 30, 2005

BFN, MSI-0-079-DCS016, "MPC Receipt Inspection," Revision 0000, dated May 9, 2005

BFN, MSI-0-079-DCS018, "HI-STORM Initial Inspection," Revision 0, dated April 1, 2005

BFN, MSI-0-079-DCS019, "HI-TRAC Initial Inspection," Revision 0, dated April 1, 2005

BFN, MSI-0-079-DCS026, "HI-STORM, MPC and HI-TRAC Storage an Pre-Use Inspection," Revision 0001, dated July 7, 2005

BFN M&TE, "M&TE with Calibration Due between 07/13/2005 and 07/20/2005," dated July 13, 2005

TVA BFN, Technical Instruction 0-TI-396, "Battery Capacity Tester Calibration," Revision 1, dated November 17, 1999

TVA BFN, Technical Instruction 0-TI-401, "DOP Detector Calibration," Revision 0, dated March 13, 2000

TVA BFN, Technical Instruction 0-TI-162, "Digital Multimeter Calibration Verification," Revision 6, dated April 15, 1999

TVA BFN, Technical Instruction 0-TI-276, "Toolroom Calibration Facility M&TE Calibration Instruction," Revision 3, dated November 9, 2004

TVA BFN, Technical Instruction 0-TI-114, "Wide Range Monitor Test Fixture Calibration," Revision 10, dated March 25, 2002

TVA BFN, Technical Instruction 0-TI-113, "Rosemount Bench Test Facility Calibration," Revision 3, dated April 5, 1995

TVA BFN, Technical Instruction 0-TI-112, "Rosemount Readout Assembly Calibration," Revision 4, dated April 5, 1995

TVA BFN, Technical Instruction 0-TI-111, "Pressure Gauge Calibration," Revision 6, dated April

11, 1999

TVA BFN, Special Instrument Instruction SII-MTE-00-001, “Instrumentation and Controls Standards Lab M&TE Post-Use Instruction,” Revision 4, dated June 26, 2003

L17 041005 800, “Nuclear Assurance - TVA Nuclear-Wide - Audit Report No. SSA0405 - Maintenance Program,” dated October 8, 2004

L17 050712 800, “Nuclear Assurance (NA) - Audit Report No. BFA0507 - Browns Ferry (BFN), Independent Spent Fuel Storage Installation (ISFSI) Audit,” dated July 12, 2005

TVA BFN, SPP-9.9, “10 CFR 72.48 Evaluations of Changes, Tests, and Experiments for Independent Spent Fuel Storage Installation,” Revision 0B1, dated June 24, 2005

BFN Engineering Support Personnel Training, “Dry Cask Storage 10 CFR 72.48,” EGT124.300, Revision 1, dated February 22, 2005

TVA BFN Manual MPC-BFN-001, Rev. 0, Multi-Purpose Canister (MPC) Welding Manual (Welding Services, Inc. or WSI)

Procedure MPC-BFN-001-1, Rev. 0, Precautions, Guidelines, and References

Procedure QAP 8.0, Rev. 8, Control and Issue of Weld Filler Metal

Procedure QAP 9.1, Rev. 12, Welding Procedure and Performance Qualification

Procedure QAP 9.3, Rev. 16, Workmanship, and Visual Inspection Criteria for ASME Welding

Procedure QAP 9.6, Rev. 10, Liquid Penetrant Inspection Procedure

Procedure QAP 9.16, Rev. 2, High Temperature Liquid Penetrant Inspection Procedure, Using Color Visible/Solvent Removable Penetrant Technique

Procedure Traveler No. BFN 101664-MOCK-Up, Rev. 0, Work Traveler for Seal Welding and NDE of MPC Lid, Vent Plate, Drain Plate, Set Screws, and Closure Ring

Procedure Qualification Record (PQR) PQR-08-08-TS-001, Rev. 0, GTAW (Machine) and SMAW (Manual)

Procedure Qualification Record (PQR) PQR-08-08-T-901, Rev. 0, GTAW (Machine)

Welding Procedure Specification (WPS) WPS-08-08-TS-001, Rev. 2, GTAW (Manual and Machine) and SMAW (Manual)

Welding Procedure Specification (WPS) WPS-08-08-T-901, Rev. 0, GTAW (Machine)

Weld Map and Data Sheets

Holtec Drawing Nos. 2524, Sheets 1 to 7, Rev. 9, MPC Weld Mockup Ancillary #502

MSI-0-079-DCS-023, “Cask Unloading Transfer Operations and Auxiliary Building Movements,” Rev. 0

MSI-0-079-DCS-011, “MPC Loading Operations,” Rev. 0

MSI-0-079-DCS-005, “HI-STORM System Site Transportation,” Rev. 0

MSI-0-079-DCS-008, “HI-STORM Cask Loading Transfer Operations and Auxiliary Building Movements,” Rev. 0

MSI-0-079-DCS-012, “MPC Processing Operations,” Rev. 0

MSI-0-079-DCS-035, “Dry Cask Storage Campaign Guidelines,” Rev. 0

MSI-0-079-DCS-024, “MPC Cooldown and Weld Removal”, Draft

0-GOI-100-3B, “Operations in Spent Fuel Storage Pool Only,” Rev. 29

72.212 Report, Attachment A-Certificate of Compliance Evaluation, Rev.0, Draft

HOLTEC Report HI-2043195, “HI STORM 100 System Overpack Air Temperature Rise at 17.1 kW”

Procedure MSI-0-079-DCS012, “MPC Processing,” Revision 0000

Procedure MSI-0-079-DCS035, “Dry Cask Storage Campaign Guidelines,” Revision 0000

Procedure MSI-0-079-DCS037, “ISFSI Abnormal Conditions Procedure (Placing the MPC in a Safe Condition),” Revision DRAFT

Procedure NFTP-100, “Fuel Selection for Dry MPC Storage,” Revision 1

Procedure 0-TI-267, “Fuel Integrity Assessment Program,” Revision 16

Procedure 0-TI-508, “Fuel Assembly Inspection Prior to MPC Loading,” Revision 0000

Procedure 0-TI-509, “Spent Fuel Cask Loading Verification,” Revision 0000