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February 13, 2003  
BYR 2003-008

United States Nuclear Regulatory Commission  
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Washington, D.C. 20555

Attention: Mr. John Hickman, Project Manager  
Decommissioning Projects Branch  
Office of Nuclear Material Safety and Safeguards

Reference: License No. DPR-3 (Docket No. 50-29)


Subject: 10CFR50.59 Biennial Summary Report

Enclosed is the Yankee Atomic Electric Company 10CFR50.59 Summary Report for 2001 and 2002. The attached report briefly describes the facility changes, tests, and experiments implemented without prior NRC approval as allowed under the provisions of 10CFR50.59. This report is submitted in accordance with 10CFR50.59(d)(2).

We trust this information is satisfactory; however, if you have any questions, please contact us.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

  
James A. Kay  
Principal Licensing Engineer

cc: Mr. R. Bellamy, USNRC, Region I  
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**YANKEE ATOMIC ELECTRIC COMPANY**

**YANKEE NUCLEAR POWER STATION**

**(DOCKET NO. 50-29)**

**10CFR50.59 BIENNIAL SUMMARY REPORT FOR 2001 / 2002**

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## **10CFR50.59 Biennial Summary Report for 2001 / 2002**

### **A. Safety Evaluation for Non Nuclear Safety Modification 00-001, Addition of New Filter/Demineralizer to Spent Fuel Pool, Revision 1**

This modification provides for the installation of a new filter/demineralizer in the Spent Fuel Pit (SFP) in order to accomplish general pool water purification and potential vacuuming (waste volume reduction) during upcoming fuel pool activities. The unit, which weighs less than 5000lbs, is a self-contained, submersible, and sluiceable pool filtration / ion exchange system. The new filter/demineralizer will be located on the SFP floor and positioned as needed in support of fuel pool activities. The SFP filter/demineralizer is classified as volume reduction equipment per Tech Spec Clarification 2000-01 and therefore is included in the approved list of loads greater than 900 lbs. permitted to travel over the SFP as stipulated in Defueled Technical Specification 3.2.

Off normal conditions and consequences associated with the installation and operation of the new filter/demineralizer (i.e., seismic event, resin spill, and heavy load drop) in the SFP were found to not result in any challenges to plant safety. The evaluation found that this modification would not result in a malfunction which could affect the accidents as described and evaluated in the FSAR or create a potential for a new accident with off-site consequences. Installation of the new filter/demineralizer into the Spent Fuel Pool was bounded by the existing 35 ton cask drop analysis. This activity was determined to not require prior NRC approval prior to implementation. In addition, the activity was found to not impact the Defueled Technical Specifications or its bases.

### **B. Safety Evaluation No. 01-01, Installation, Operation, and Removal of GTCC Sorting Equipment within the Spent Fuel Pit**

This modification provides for the installation, operation, and removal of GTCC sorting equipment for the Spent Fuel Pit (SFP). The GTCC sorting equipment, which weighs less than 5000 lbs, will be used to separate and re-package GTCC dross materials in preparation for dry cask storage. Sorting is required to separate GTCC dross material from large and discreet organic materials currently present in the GTCC dross containers. The equipment was installed at the north end of the SFP using Hilti bolts such that system components were located a minimum of 6 feet below the top of the SFP surface. The GTCC sorting equipment is classified as volume reduction equipment per Tech Spec Clarification 2001-01 and therefore is included in the approved list of loads greater than 900 lbs. permitted to travel over the SFP as stipulated in Defueled Technical Specification 3.2.

Off normal conditions and consequences associated with the operation of the GTCC sorting equipment in the SFP were found to not result in any challenges to plant systems or create unanticipated personnel doses. Postulated load drops are bounded by an earlier 35 ton cask drop

analysis. The dose consequence resulting from potential equipment mishandling is bounded by the existing materials handling event addressed in the FSAR. This activity was determined to not require prior NRC approval prior to implementation. In addition, the activity was found to not impact the Defueled Technical Specifications or its bases.

**C. Safety Evaluation No. 01-02, Evaluation for the Consolidation of Yankee Fuel**

The proposed activity addresses the transfer of all damaged rods and rod segments that were placed in storage containers at various locations within the Spent Fuel Pit to a Reconfigured Fuel Assembly (RFA) container. The RFA, which is licensed to be used in the NAC-MPC dry cask storage system, holds up to 64 whole rods or rod-segment equivalents. In addition, this activity addresses the straightening of a bowed, shrouded assembly so that it can be stored within a dry cask. Prior NRC approval provides the basis for fuel reconstitution activities at the Yankee Nuclear Power Station.

The fuel consolidation activities were found to not result in significant equipment or Spent Fuel Pit configuration changes. The proposed fuel consolidation was found to have no effect on the SFP structure, stainless steel liner, the SFP cooling pressure boundary, the SFP storage racks or the intact spent fuel assemblies. The proposed activity was determined not to affect the Technical Specification sections pertaining to criticality, crane travel over the spent fuel pit, or the fuel storage design features. Installation and use of the fuel consolidation equipment was found to be bound by, or consistent with, existing FSAR analyses and did not increase the challenges to fission product barriers. The proposed activity was determined to not require prior NRC approval prior to implementation. In addition, the activity was found to not impact the Defueled Technical Specifications or its bases.

**D. Safety Evaluation No. 01-03, Technical Specification Bases Change - Use of the Yard Area Crane Auxiliary Hook for Heavy Loads Over Spent Fuel**

This activity considered a change to the Technical Specification Bases to address the use of the Yard Area Crane auxiliary hook to move the cask hatch cover, cask components, and associated lifting devices over the spent fuel cask while there is spent fuel in the cask. Because this change only impacted the Technical Specification Bases, it was evaluated in accordance with the 10 CFR 50.59 change process.

Defueled Technical Specifications Bases Section 3/4.2, "Crane Travel – Spent Fuel Pit," stated that "the use of a single-failure-proof crane ensures that the cask hatch cover and the cask components and associated lifting devices, which are permitted over the spent fuel in the cask, cannot be dropped on the spent fuel." This statement appeared to eliminate the use of the Yard Crane (non-single failure proof) auxiliary hook for moving the cask hatch or for placement of the spent fuel cask shield lid when the cask is loaded with spent fuel.

Previous NRC correspondence from 1985 provided an assessment of Yankee Atomic Electric Company's compliance with Phase I of NUREG-0612.

Yankee performed an evaluation that concluded that use of the auxiliary hook met the requirements of Phase I of NUREG-0612 (e.g., definition of safe load paths, load handling procedures, periodic inspection and testing of cranes, qualifications / training and conduct of operators, special lifting devices satisfying ANSI N14.6, lifting devices satisfying ANSI B30.9, cranes designed to ANSI B30.2 or CMAA-70) and that the risk of a load drop was acceptably small (i.e., not credible) and therefore use of the auxiliary hook was acceptable. Load drop consequences were determined to be bounded by earlier load drop analyses. This activity did not challenge any of the physical protective boundaries or fission product barriers. This activity was determined to not require prior NRC approval prior to implementation.

**E. Safety Evaluation No. 01-04, not used**

**F. Safety Evaluation No. 01-05, EDCR 01-001, Implementation of the Yankee Rowe Dry Fuel Storage NAC-MPC System**

The scope of this evaluation covers the following proposed activities:

- The use of the Cask Setdown Pad in the Spent Fuel Pit (SFP) during fuel transfer operations.
- The use of the seismic restraint system to support the transfer cask when it is on top of the Vertical Concrete Cask (VCC).
- Proof testing, mockups and dry runs.
- Loading of the Spent Nuclear Fuel (SNF) and GTCC waste from the existing spent fuel racks to NAC Transportable Storage Canisters (TSC) in the SFP.
- Removal of the spent fuel racks from the SFP.
- Moving of the TSCs from the SFP to the Fuel Transfer Enclosure (FTE) for closure operations that include welding, draining, drying, and backfilling with an inert gas.
- Transferring the TSCs to a VCC.
- Moving the loaded VCCs to the YNPS ISFSI for dry storage.
- Storage and monitoring the loaded VCCs at the ISFSI.
- Removal of a loaded TSC from a VCC and return of the TSC to the SFP.
- Design of the mounting bracket and installation of the thermocouples for thermal monitoring of the VCCs.

SNF and GTCC canister movement within the SFP will use established procedures, assuring that movements are performed within the limitations of existing analyses. Lifts of heavy loads will be performed in accordance with the requirements of the YNPS Technical Specifications and NUREG 0612, using approved procedures and defined safe load paths. This assures that the drop of a heavy load or other impact on the structural integrity of the SFP, liner, racks or fuel assemblies is not credible. The radiological consequences for the fuel handling accident remain unchanged because the accident conditions and assumptions have not been modified.

The transfer of the SNF from the SFP to the FTE will be performed using the Yard Area Crane single-failure proof main hook. Lifting and movement will be performed in accordance with

YNPS Technical Specifications and NUREG-0612 using approved procedures with a defined safe load path. Therefore, a drop of the SNF, which would create a material-handling event, is not credible.

The stacked configuration, where the TSC is lowered from the transfer cask into the VCC, will be restrained using a seismic restraint and will be supported on the heavy haul trailer using safety chocks. As evaluated, this configuration remains stable during seismic loads. The Yard Crane motion interlock will be used to preclude inadvertent movement of the crane during this operation. Therefore, reasonable assurance is provided that a material handling accident during the transfer is not credible.

The heavy haul trailer is designed so that a component failure that would cause a loaded VCC to fall off is unlikely. However, an evaluation has been performed assuming that a VCC does fall off the trailer during transport. The evaluation concludes that the fall is bounded by the consequences of a VCC tipping over on the ISFSI pad. Various events such as Loss of Support System Events, Fire and Explosion Events, External Events, Canister Off-Normal Handling Event, and a Storage Cask 6-Inch Drop were considered in this evaluation and were found to be either bound by existing YNPS design basis dose consequences or to those events included in the NAC-MPC FSAR.

The proposed activity was determined to not require prior NRC approval prior to implementation. In addition, the activity was found to not impact the Defueled Technical Specifications or its bases.

#### **G. Safety Evaluation No. 02-01, Sipping Inspection of Yankee Fuel**

This activity provides for the installation and use of fuel (sipping) inspection equipment in the Spent Fuel Pit. The NAC-MPC FSAR does not allow damaged fuel rods to be placed into an MPC storage canister unless it is confined. Damaged fuel rods are defined as rods with greater than pinhole leaks or hairline cracks. To date, fuel assemblies have been visually inspected. However, fuel assemblies manufactured by Gulf United (GU) have stainless steel wrappers that prevent visual inspection of the fuel rods. Therefore, these assemblies will be inspected using a non-destructive vacuum sipping system. There may be other fuel assemblies that will be subject to the sipping process in addition to the GU assemblies. The vacuum sipping system identifies damaged fuel by isolating individual fuel assemblies in a sipping canister; reducing internal pressure, and sampling for released fission gas. The system is used routinely at operating nuclear facilities to inspect fuel. Only one fuel assembly will be handled or inspected at a time. However, fuel assemblies may be present in the two sipping canisters simultaneously provided that appropriate standoff distances and safe load path restrictions are maintained.

The sipping equipment consists of two canisters (each less than 1000 lbs.) and a support stand installed in the SFP with associated pumps, valving, and interconnecting hoses located on the SFP north beach. The sipping equipment is classified as spent fuel assembly non-destructive test equipment and therefore is included in the approved list of loads greater than 900 lbs. permitted to travel over the SFP as stipulated in Defueled Technical Specification 3.2.

All activities will be performed in accordance with approved procedures under the supervision of a certified fuel handler. A criticality event during assembly movement was evaluated and determined to not be credible. The fuel sipping activities were found to have no effect on the SFP structure, stainless steel liner, the SFP cooling pressure boundary, the SFP storage racks or the intact spent fuel assemblies. The proposed activity was determined not to affect the Technical Specification sections pertaining to criticality, crane travel over the spent fuel pit, or the fuel storage design features. Installation and use of the fuel sipping equipment was found to be bound by, or consistent with, existing FSAR analyses and did not increase the challenges to fission product barriers.

This activity was determined to not require prior NRC approval prior to implementation. In addition, the activity was found to not impact the Defueled Technical Specifications or its bases.