April 25, 2001

Mr. William T. O'Connor, Jr.
Vice President - Nuclear Generation
Detroit Edison Company
6400 North Dixie Highway
Newport, MI 48166

SUBJECT: FERMI 2 - CORRECTIONS TO THE NRC ISSUED SAFETY EVALUATION FOR AMENDMENT NO. 141 RELATED TO SPENT FUEL POOL RERACK (TAC NO. MA7233)

Dear Mr. O'Connor:

By letter dated January 25, 2001, the NRC issued Amendment No. 141 to Facility Operating License No. NPF-43 for the Fermi 2 facility. Amendment No. 141 consisted of changes to the Fermi 2 Technical Specifications (TSs) to increase the capacity of the spent fuel pool (SFP). By letter dated March 21, 2001, Detroit Edison Company (DECo or the licensee) informed the NRC that upon reviewing the safety evaluation (SE) issued with the amendment, the licensee identified 11 minor discrepancies between the staff's SE and the actual plant configuration as related to the SFP rerack project. The licensee provided these discrepancies in a table attached to their letter and proposed modifications to the wording of the SE to correct the discrepancies. The licensee stated that it believes that these discrepancies are not significant and do not affect either the conclusion of the SE or the TS changes.

The staff has reviewed the discrepancies identified in the March 21, 2001, letter and the licensee's proposed modifications to the wording of the SE. Although, some of the discrepancies were due to a lack of clarity in the submittals, the staff concurs with the licensee's belief that the discrepancies are not significant and that they do not affect the conclusion of the SE or the TS changes. The staff also concurs with the licensee's proposed wording for the SE. Based on the above, please update the SE for Amendment No. 141 by removing pages 1, 2, 3, 4, 7, 9, 13, 17, and 19 and inserting the corresponding replacement pages included in the enclosure to this letter. The revised pages contain marginal lines indicating the areas of change. If you have any questions regarding this issue, please call me at 301-415-2859.

Sincerely,

/RA/

Mohammed A. Shuaibi, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-341

Enclosure: Revised safety evaluation pages

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 141 FACILITY OPERATING LICENSE NO. NPF-43

DETROIT EDISON COMPANY

FERMI 2

DOCKET NO. 50-341

1.0 INTRODUCTION

By application dated November 19, 1999, as supplemented May 31, August 2, October 19, and November 21, 2000, the Detroit Edison Company (DECo or the licensee) requested changes to the Technical Specifications (TSs) for Fermi 2. The proposed changes would revise the TSs by changing (1) the design features description of the fuel storage equipment and configuration to allow an increase in the spent fuel pool (SFP) storage capacity and (2) the description of the high-density spent fuel racks program to clarify that the surveillance program is applicable only to racks containing Boraflex as a neutron absorber. Specifically, the proposed amendment would revise the TSs to increase the capacity of the SFP from 2,414 to 4,608 fuel assemblies.

The May 31, August 2, October 19, and November 21, 2000, supplemental letters provided clarifying information that was within the scope of the original application and did not change the initial proposed no significant hazards consideration determination.

2.0 BACKGROUND

Fermi 2 is a boiling-water reactor which commenced commercial operation on January 23, 1988. Its current Operating License will expire in March 2025. The Fermi 2 reactor core contains 764 fuel assemblies. The SFP currently contains 14 high-density racks and four low density racks for a total storage capacity of 2,385 spent fuel assemblies (SFAs). There is an additional rack currently installed that is designed to accommodate 31 defective SFAs. There are 2,383 useable storage cells with two locations designated for the neutron absorber material surveillance program. Based upon the current inventory of SFAs and projected discharge estimates by the licensee, full core discharge capability will be lost in June 2001. At that time, the SFP inventory (both new and spent fuel) will be 1,744 assemblies. The proposed reracking of the SFP will increase the total storage capacity to 4,608 SFAs. The completed configuration represents a storage capacity increase of 2,194 SFAs. The new spent fuel storage racks will contain Boral as the active fixed neutron absorbing poison for primary reactivity control.

The proposed reracking will be accomplished in three campaigns. The first campaign will include the placement of four Holtec International (Holtec) high density storage racks (Holtec Racks A, B, C1, and C2) with 763 additional storage locations. The second campaign will consist of the removal of two existing racks (including the defective fuel storage rack) and four low density racks and the installation of five new high density racks (with 630 additional storage locations; Holtec Racks D, E, F, G, and H). The final campaign involves a significant construction effort consisting of the removal of the remaining 13 racks and the installation of 14 new racks (with 3,215 additional storage locations).

The proposed new spent fuel racks also contain two additional design features. Holtec racks E and F contain a total of 10 dual purpose cells, which are designed to store items of larger cross-sections (e.g., control blades and defective fuel containers). Each dual purpose cell can be converted into four normal fuel storage cells with the installation of a cruciform insert. Two spent fuel racks (Racks B and G) are also designed to accommodate overhead platforms with a 5-ton storage capacity. These platforms are movable and can be installed by inserting the four support legs into empty storage cells.

To accommodate this proposed modification, the following three TS changes have been proposed:

(1) TS 4.3.1.c will be modified to include the four storage rack types (i.e., high density storage racks with Boral, high density storage racks with Boraflex, low density storage racks, and defective fuel assembly storage racks) that will be in the pool,

(2) TS 4.3.3 will be modified to reflect the increase in storage capacity from 2,414 SFAs to 4,608 SFAs, and

(3) TS 5.5.13 will be modified to state that a program will be provided for the high density storage racks that contain Boraflex to ensure no unanticipated degradation.

This safety evaluation presents the results of the review of the proposed amendment in the areas of criticality, occupational radiation exposure, radioactive waste, structural integrity and adequacy, fuel-handling accidents, safe handling of heavy loads, and thermal hydraulics.

3.0 EVALUATION

3.1 Criticality

The proposed amendment by DECo will include the installation of new storage racks and the replacement of existing storage racks with high density racks in a three-phased approach. The initial phase will add up to four racks to the SFP in open spaces to increase the storage capacity to 3,146 assemblies. The second phase will remove the four GE racks, the existing defective fuel storage rack, one existing Boraflex rack, and install five high density racks. This modification will increase the storage capacity to 3,588 assemblies. The third phase will replace the remaining 13 existing Boraflex racks with 14 new high density racks to increase the storage capacity to 4,608 assemblies. The complete configuration represents a storage capacity increase of 2,194 assemblies.

The boron for the Fermi 2 spent fuel racks is in the form of Boral, which is composed of aluminum and boron carbide. No Boraflex is used in the new design. The use of Boral as the boron containing material has been approved by the NRC staff in many earlier reviews. The Boral is fastened to the fuel cells and provides a high thermal neutron removal cross section, and has proven to be structurally sound in fuel pool applications.

The current, NRC-approved, Fermi 2 analysis approach and the TSs for the SFP and existing racks state that the reactivity status, k-effective, of the SFP shall be less than or equal to 0.95 at a 95-percent probability and confidence level. This meets the NRC staff's reactivity requirement. The specification further indicates that this k-effective value is satisfied if the maximum k-infinity of each of the stored fuel assemblies is no greater than 1.33. The present submittal does not propose to change this analytical approach or the SFP criterion, which remains at 0.95 for both the old and new racks. The maximum k-infinity for the fuel assemblies has been reduced to 1.31. (k-infinity is calculated with an infinite array of specified, uncontrolled assemblies in a cold, 20 degrees Celsius, reactor core configuration). The fuel assembly chosen for the k-infinity and corresponding pool analyses was the GE 12 fuel assembly configuration with a 5.0 weight percent Uranium-235 (U-235) content. GE 12 was chosen because it has the highest reactivity for a given enrichment and gadolinium loading. The 5.0-percent enrichment should encompass most future loadings, but this is not a requirement since the loading will have to meet the primary k-effective and k-infinity requirements.

The nuclear design and safety analysis was done by Holtec. The criticality analyses for the high density fuel storage racks was performed with the CASMO4 code. CASMO4 is a two-dimensional multi-group transport theory code. The MCNP code, a three-dimensional transport theory code, and the NITAWL-KENO5a code, a three-dimensional code, were used for verification purposes. The 238 group SCALE cross-sections were used. These methodologies and cross sections are well known and have been accepted in past NRC reviews, including previous analyses by Holtec. The use of the two codes, MCNP and KENO5a, provides greater assurance for the analysis accuracy.

The methodologies and cross-sections have been benchmarked by Holtec (and many other groups) against a number of relevant critical experiments simulating parameters related to storage racks. These benchmark calculations have been used to develop methodology bias and uncertainty factors to be added to the nominal k-effective calculations for the racks. Holtec has also determined the potential variation of rack and fuel parameters, which are used in determining the k-effective of the rack and fuel system. These parameters include rack manufacturing tolerances, boron loading variations, Boral width tolerance variation, and cell lattice pitch variation. The variation of k-effective with these parameters (taken at a 95/95 probability/confidence level) was determined. These parameters were statistically combined with the methodology uncertainty to provide a delta k uncertainty which was added to the base k-effective calculation. This treatment of the uncertainties is in conformance with past NRC recommendations and approvals.

Holtec has also investigated abnormal conditions that might be associated with the SFP. These include (1) pool water temperature effects (reference temperature was 20 degrees Celsius, but a worst-case temperature, 4 degrees Celsius, was assumed for the investigation) (the moderator temperature reactivity coefficient is negative so that temperature increases or boiling reduce reactivity) (2) eccentric fuel positioning (the nominal analysis case with the fuel centered in the cell yields maximum reactivity), (3) dropped fuel assembly (no significant reactivity increase), and (4) rack lateral movement (no significant reactivity increase). These analyses have provided a satisfactory demonstration that possible abnormal conditions will not lead to a reactivity problem if the required k-infinity and k-effective limits are met.

For the spent fuel racks, the TSs retain the currently approved TS k-effective limit of 0.95. |
There is a proposed maximum k-infinity limit of 1.31 for the fuel that can be in the racks. The introduction of a k-infinity limit is an acceptable improvement over the current new fuel rack TSs, which do not provide a k-infinity approach with such a specific criterion. Similar to the review for the SFP, this is an acceptable approach and specification.

3.1.1 Technical Specification Changes

To accommodate the proposed amendment, DECo requested to change the Fermi 2 TSs. More specifically, Section 4.3, "Fuel Storage," discusses the current storage capacity and design features of the existing and new racks, which ensure adequate design margin with respect to criticality.

Sub-Section 5.5.13, "High Density Spent Fuel Racks," is also included to clarify that the surveillance program is only applicable to racks that utilize Boraflex as neutron absorber. The NRC staff has determined that the proposed TS changes are consistent with the technical analyses provided by the licensee and the NRC staff technical evaluation described in Section 3.1 above. The NRC staff finds these changes to the TSs for Fermi 2 to be acceptable.

3.1.2 Summary of Criticality Considerations

The NRC staff reviewed the reports submitted by DECo describing the addition of fuel racks to the SFP, the criticality analyses performed and methods used and the changes to the TSs (for both the SFP and for the new fuel racks) resulting from the analyses. Based on this review, the NRC staff concludes that appropriate documentation was submitted and that the proposed changes satisfy the NRC staff positions and requirements in these areas. The criticality aspects of the spent fuel racks and the new unburned fuel racks are acceptable.

3.2 <u>Occupational Radiation Exposure</u>

The NRC staff has reviewed the licensee's plan for the replacement of the existing SFP storage racks at Fermi 2 with respect to occupational radiation exposure. As stated above, the licensee plans to replace the existing fuel storage racks in the SFP with 23 new high-density racks. A number of facilities have performed similar operations in the past. On the basis of the lessons learned from these operations, the licensee estimates that the proposed fuel rack installation can be performed within a radiological dose of approximately 12 person-rem. This estimate includes the radiation waste processing of the existing contaminated racks, as well as the projected dose to divers in the event they are used consistent with the licensee's contingency plan.

All of the operations involved in the fuel rack installations will utilize detailed procedures prepared with full consideration of as low as is reasonably achievable (ALARA) principles. Workers performing the SFP reracking operation will be given pre-job briefings to ensure that they are aware of their job responsibilities and the precautions associated with the job. The licensee will monitor and control work, personnel traffic, and equipment movement in the SFP area to minimize contamination and to assure that exposures are maintained ALARA. Personnel will wear protective clothing and respiratory protective equipment, if necessary. Alarming dosimeters will be used as needed to confirm exposure and dose rates, while thermal

3.4.1 Spent Fuel Pool Racks

SFP racks are seismic, Category I equipment and are required to remain functional during and after a safe shutdown earthquake (SSE) under all applicable loading conditions pursuant to 10 CFR Part 50, Appendix A, Design Criterion 62. The licensee's consultant, Holtec, performed the design, fabrication, and safety analysis of the new high density SFP storage racks.

The principal construction materials for the new racks are made of American Society of Mechanical Engineers (ASME) SA240-Type 304L stainless steel. The neutron absorber material is Boral. The overall design of the new racks at Fermi 2 is similar to Holtec racks that NRC has approved for service at many other nuclear power plants. The key design criteria are based on NRC memorandum entitled "Review and Acceptance of Spent Fuel Storage and Handling Applications," dated April 14, 1978, as modified by amendment dated January 18, 1979.

The key design criteria of the Fermi 2 SFP racks are described in Section 2.1 of the November 19, 1999, application. The following criteria are applicable from the structural safety point of view: (1) all new rack modules are required to be free-standing; (2) all free-standing rack modules are required to be kinematically stable (against overturning) when subjected to a seismic event, with safety factors of 1.5 and 1.1 for operating basis earthquake (OBE) and SSE conditions, respectively; (3) all primary stresses in the rack modules must satisfy the limits postulated in Section III, Subsection NF of the ASME *Boiler and Pressure Vessel Code*; (4) the spatial average bulk pool temperature is required to remain under 150 degrees following a normal refueling; and (5) the ability of the reinforced concrete structure of the SFP to withstand | the effects of the load combinations set forth in the Fermi 2 UFSAR must be demonstrated.

At the time of the original rack installation in the Fermi 2 SFP, the seismic evaluation of the racks was performed using single-rack (SR), three-dimensional (3-D) simulations. However, for the current SFP expansion, both SR and whole pool multi-rack (WPMR) analyses were performed to simulate the dynamic behavior of the high density rack structures. Holtec used a computer program, DYNARACK, for the dynamic analysis to demonstrate the structural adequacy of the spent fuel rack design under the earthquake loading conditions. The DYNARACK program (which can perform simultaneous simulation of all racks in the pool for the WPMR analysis) has been accepted by the NRC in previous rerack analyses for several nuclear power plants. The DYNARACK program utilizes a nonlinear analytical model consisting of inertial mass elements, spring elements, gap elements, and friction elements to simulate the three-dimensional dynamic behavior of the rack and the fuel assemblies, including the frictional and hydrodynamic effects. The DYNARACK computer code simulates the friction, impact, and other nonlinear dynamic events accurately. The code models the beam characteristics of the rack, including shear, flexibility, and torsion effects appropriately by modeling each rack as a three-dimensional structure having the support pedestals and the fuel assemblies in proper locations. The potential rattling between the fuel and storage cells is simulated by permitting the impact at any of the four facing walls followed by rebound and impact at the opposite wall. Further, the rack pedestals can lift off, or slide, to satisfy the instantaneous dynamic equilibrium

The licensee calculated the weld stresses at the rack connections (e.g., baseplate-to-cell welds, and baseplate-to-pedestal welds, cell-to-cell welds) under the SSE and OBE loading conditions and found that all the calculated weld stresses are well below the corresponding allowable stresses specified in ASME Code, Section III, Subsection NF, indicating that the weld connection design of the rack is adequate.

In summary, the licensee's parametric study (e.g., varying coefficients of friction, different geometries and fuel loading conditions of the rack) involving both SR and WPMR analyses showed that (1) all stresses are well below their corresponding "NF" limits, (2) there are no rack-to-wall or rack-to-rack impacts, and that (3) the rack overturning is not a concern. Therefore, the NRC staff concludes that the rack modules will perform their safety function and maintain their structural integrity under postulated loading conditions and are, therefore, acceptable.

3.4.2 Spent Fuel Pool Structure

The SFP is a safety-related, seismic Category I, reinforced concrete (RC) structure, supported by a two-way RC slab. The inside (plan) dimensions of the SFP are 34 feet - 0 inches by 40 feet - 0 inches and the pool depth is 39 feet - 1 inches. The minimum thickness of the slab is 72 inches. The east and the west walls of the SFP are 6-feet-thick, and the north wall thickness is reduced from 72 inches to 48 inches above elevation 659 feet - 6 inches, where the mechanical equipment storage room is located. The south wall of the SFP is an integral part of the concrete reactor shield and it has a minimum thickness of 4 feet. In response to an NRC staff question related to the pool liner, the licensee stated that the pool liner consists of an array of 1/4-inch stainless steel plates. The plates are spliced together by 1-1/2 inch by ½ inch rectangular bars, which also provide the backing surface for the liner seam welds. The liner anchorage consists of an array of 3/8-inch diameter by 4-inch long bolts, which are fastened to the rectangular bar. These bolts are embedded in the concrete on 12-inch spacing along the plate splices.

The pool structure was analyzed using the finite element computer program, ANSYS, and the results for individual load components were combined using factored load combinations per SRP 3.8.4, and American Concrete Institute (ACI) 349-85. In addition to the dead and live loads, the analysis considered the seismic, thermal, and hydrodynamic loadings. Tables 8.4 and 8.5 in the November 19, 1999, application show the minimum safety factors for the bending strength evaluation and shear strength evaluation of the slab and walls. These tables show all the predicted safety factors to be greater than 1.0, thus demonstrating the structural integrity of the SFP under the increased loads due to the additional racks.

The NRC staff has reviewed the effect on the SFP structure of the increase of 15 degrees above the allowable value of 150 degrees in the maximum pool water temperature. The NRC staff notes that the higher pool water temperature slightly reduces the safety factors for bending of the SFP concrete pool slab, but the reduced safety factors are still within acceptable limits. Also, the staff noted that the safety factors for bending in the north wall lower portion actually increases slightly because the higher temperature increases the compressive stresses in the reinforced concrete walls.

3.6.2 Evaluation

3.6.2.1 Hoisting System

NUREG-0612 recommends that when licensees handle heavy loads in the proximity of safe shutdown equipment or irradiated fuel in the SFP, specific actions be implemented to minimize the potential for an accidental drop. These actions include: the use of cranes and special lifting devices that are inspected, tested, and maintained to specific guidelines; the development of specific procedures to cover the load handling operations; and the use of trained and qualified crane operators and other personnel.

The new spent fuel modules will be delivered to the first floor of the reactor building. As stated by the licensee, the maximum rack weight for the proposed new high density racks is 37,905 lbs. (Rack B, Campaign I). The 117-ton single-failure proof cask handling crane (same as the RBOC main hoist) will be used to lift the racks to the refueling deck. The handling and installation of the racks will be done with the cask handling crane (RBOC). As stated by the licensee, the cask handling crane has been designed, fabricated, and qualified in accordance with the guidelines of Sections 5.1.1(6) and (7) of NUREG-0612, the American National Standard Institute (ANSI) Standard B30.2-1976, and the Crane Manufacturers Association of America Specification CMMA-70.

The 5-ton auxiliary hook of the RBOC may be utilized for the removal of the lift rig following rack installation, or handling the long-handled rack leveling tool, which is used for final rack leveling following installation. The licensee has also discussed the use of an additional temporary hoist in conjunction with the lift rig, which may be used during the installation process. Though the licensee states that the use of the main hook should preclude the need for this arrangement, the use of temporary cranes is permissible per NUREG-0612, provided the design is redundant or rated for twice the load (static plus dynamic). The licensee states that the temporary hoist will comply with the latter provision, and be rated for a minimum of 37.5 metric tons (37,500 kilograms or 82,673.25 pounds mass or 41.34 tons).

The licensee states that the remotely engageable lifting rig complies with all the provisions of Section 5.1.6 of NUREG-0612 and ANSI 14.6-1978, and is similar to that used at numerous other plants. The lift rig consists of independently loaded lift rods which engage the underside of the spent fuel rack baseplate. The redundancy provided ensures that a failure of any one of the lift rods which make up the lift rig will not result in the uncontrolled lowering of the rack module. In order to address the safe lifting of the asymmetric racks, the licensee states that large turnbuckles will be used in each of the four loadpaths leading from the four lift rig eyepads. These will aid in leveling the hanging racks in which the lift rig is offset from the racks' center of gravity.

NUREG-0612 recommends that licensees provide an adequate defense-in-depth approach to maintain safety during the handling of heavy loads near spent fuel and cites four major causes of accidents: (1) operator errors, (2) rigging failures, (3) lack of adequate inspection, and (4) inadequate procedures. The licensee plans to implement measures using procedures and administrative controls in each of these areas. The licensee states that the training of crane operators will be in accordance with Chapter 2-3 of ANSI B30.2-1976 as well as specialized training provided by the rack vendor. Additional licensee personnel who will provide hand signals to the crane operator during rack movement and others who will serve as spotters will be similarly trained. As previously discussed, the specially-designed redundant lifting rig

3.7.2 Evaluation

3.7.2.1 Spent Fuel Pool Cooling System

The fuel pool cooling and cleanup system (FPCCS) at Fermi 2 cools the SFP by transferring decay heat through heat exchangers to the reactor building closed cooling water system (RBCCWS). The FPCCS is composed of two trains, each containing one fuel pool cooling pump and one heat exchanger. The FPCCS heat exchangers are shell and tube units; the hot water from the SFP is sent to the tube side and the cold cooling water is supplied to the shell side of the heat exchangers from the RBCCWS. Under specific plant and system conditions, backup cooling is provided to the SFP by the residual heat removal (RHR) system. In this configuration, supplemental cooling is provided to the SFP by means of a permanently piped cross-tie to the RHR system. The cross-tie piping and the necessary FPCCS are Seismic Category 1. In this mode of operation, one RHR pump and the corresponding RHR division heat exchanger will provide the means to cool the SFP. The cold tube side flow to the RHR heat exchanger is supplied from the RHR service water (RHRSW) system and the shell side water is supplied from the SFP.

According to the submittals provided by the licensee, two trains of the FPCCS provide cooling for the SFP until the water temperature exceeds the high temperature alarm set point. The alarm set point is 130° F. Should the SFP pool temperature exceed the alarm set point, the operators will take action based on alarm response Plant Operating Procedure 2D9, and align one division of RHR to cool the SFP. The specific prerequisites and steps needed to align one division of RHR to the SFP cooling system are provided by Plant Operating Procedure 23.205 for the RHR system.

Table 1 shows the heat removal capabilities of the FPCCS and RHR from the SFP for various configurations with a SFP temperature of 125° F. The cold shell side water inlet temperature from RBCCWS for the FPCCS heat exchangers is assumed to be 95° F, and the cold tube side water inlet temperature from RHRSW for the RHR heat exchanger is assumed to be 89° F.

Table 1 SFP Heat Removal Capabilities

System Configuration	Heat Removal Capability (10^6 Btu/hr)
1 train of FPCCS (1 FPCCS pump and 1 FPCCS heat exchanger)	4.56
2 trains of FPCCS (2 FPCCS pumps and 2 FPCCS heat exchangers)	9.12
One division of RHR (1 RHR pump and 1 RHR heat exchanger)	30.72

Since the proposed increase in SFP storage capacity would result in the increase of SFP heat load for all discharge scenarios, the licensee reevaluated the effects of the increased SFP storage capacity on the SFP heat loads and temperatures.

(5) The cooling effect of evaporation heat losses and all other passive heat removal mechanisms (i.e., conduction through the wall and slab) were neglected.

(6) Design temperatures were used for the coolant water inlet to the FPCCS and RHR system heat exchangers.

(7) The thermal performance of all cooling system heat exchangers was determined incorporating a 5-percent tube plugging allowance.

(8) The once-burned fuel assemblies for full core discharge scenarios are conservatively assumed as twice-burned, thereby increasing their decay heat generation rate.

BNL and the NRC staff concur that the methodology and assumptions the licensee used to calculate the decay heat loads meet the intent of the NRC guidelines. The coincident net decay heat load for each scenario estimated by the licensee is given in Table 2.

Table 2 Net Decay Heat Loads

Scenario Number	Discharge Scenario	Coincident Net Decay Heat Load (10^6 Btu/hr)
1	Normal partial core discharge without a single failure	12.20
2	Full core discharge	41.84
3	Emergency full core discharge with 12 months decay	42.37
4	Normal partial core discharge with a single failure	20.24
5	Emergency full core discharge with minimum decay time of 36 days	43.25

The licensee solved the differential equations representing the transient heat balance and the thermal response of the SFP, using the Holtec QA validated computer program ONEPOOL, to obtain the bulk pool temperature. This program utilizes the above data on heat removal capability of the heat exchangers and the heat exchanger geometric data as well as the temperature effectiveness values estimated for the heat exchangers. The assumptions discussed above were also incorporated into the model. BNL and the NRC staff concur that the methodology and assumptions the licensee used to calculate the SFP bulk temperatures meet the intent of the NRC guidelines. Table 3 shows the maximum pool bulk temperature calculated for each scenario by the licensee.