From: "BENNETT, STEVE A" <SBENNE2@entergy.com>
To: Tom Alexion <twa@nrc.gov>
Date: 6/17/05 11:57AM
Subject: ANO-1 50.59 Evaluation on Spent Fuel Casks

Tom,

These are the 50.59 and LBD change files that were approved by the ANO OSRC for the Part 50 considerations of the ANO-1 spent fuel cask. You may want to pass on these files to the NRR Tech Staff.

Steve B

CC: "JAMES, DALE E" <DJAMES@entergy.com>

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Subject:	ANO-1 50.59 Evaluation on Spent Fuel Casks
Creation Date:	6/17/05 11:56AM
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Files	**Size**	**Date & Time**
MESSAGE	219	06/17/05 11:56AM
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EVAL FFN-05-023.pdf	1738888	
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I. OVERVIEW / SIGNATURES

Facility: ANO Unit 1

Document Reviewed: CALC-ANO-ER-05-030 (Part 50 Analysis of an MPC-24 for Unit 1) **Change/Rev.:** 0

System Designator(s)/Description: DFS

Description of Proposed Change:

This calculation documents the criticality analyses performed to satisfy the fuel loading activity at ANO Unit 1 specifically for the HI-STORM 100 24 assembly cask system in order to comply with the fuel loading requirements presented in the Unit 1 licensing basis for the Spent Fuel Pool (SFP).

The NRC issued Regulatory Information Summary (RIS) 2005-05, *Regulatory Issues Regarding Criticality Analyses for Spent Fuel Pools and Independent Spent Fuel Storage Installations,* on March 23, 2005 which described a concern that when loading and unloading a dry cask in the SFP, the requirements of 10 CFR 50.68, *Criticality accident requirements*, should be met. The RIS notes that the requirements associated with preventing SFP criticality are included in General Design Criteria (GDC) 62, *Prevention of Criticality in Fuel Storage and Handling* and 10 CFR 50.68, *Criticality Accident Requirements*. Requirements associated with detection of SFP criticality events are described in 10 CFR 70.24, *Criticality Accident Requirements*. The RIS also highlighted the differences in the NRC Part 50 criticality requirements for the SFP and the Part 72 requirements for the spent fuel storage casks and emphasized that licensees are expected to comply with both Part 50 and Part 72 during cask loading and unloading operations.

The HI-STORM 100 Cask System Licensing Basis Documents already have criticality control requirements during loading and unloading operations of a spent fuel cask as required by Part 72; however these requirements are not the same as in Part 50. There are no Part 50 requirements specified in the Part 50 Licensing Basis Documents for cask loading. The RIS indicates that a cask system should be treated as a SFP rack from a criticality requirements perspective because there are no specific cask SFP criticality requirements. Based on the concerns raised by the NRC and reflected in RIS-2005-05, the criticality requirements for fuel assemblies in the SFP will be applied to the cask when loaded with fuel and in the cask loading pit while connected to the pool.

ANO Unit 1 currently is exempt from the requirements of 10 CFR 70.24 in accordance with the seven criticality requirements listed in the NRC's Information Notice 97-77. The Unit 1 SFP criticality analysis requirements are the same or more restrictive than the requirements outlined in 10 CFR 50.68 and from that perspective the analysis is bounding.

The analysis was performed in accordance with the SFP criticality licensing basis and it was shown that the current Unit 1 TS does not need to be revised or modified. In keeping with the detail related to storing fuel in the SFP racks, the TS bases, the Unit 1 FSAR, and the Unit 1 TRM will be revised for additional details related to the performance of the analysis for the cask.

Check the applicable review(s): (Only the sections indicated must be included in the Review.)

☐	EDITORIAL CHANGE of a Licensing Basis Document	Section I
☐	SCREENING	Sections I and II required
☐	50.59 EVALUATION EXEMPTION	Sections I, II, and III required
☒	50.59 EVALUATION (#: FFN-05-023)	Sections I, II, and IV required

Preparer: Christopher Walker / [signature] / Entergy / DFS / 6-14-05
Name (print) / Signature / Company / Department / Date

50.59 REVIEW FORM

Reviewer: Darrell Williams / Darrell Williams / UPI / DFS / 6-14-05
Name (print) / Signature / Company / Department / Date

OSRC: J.R. Eichenberger JR Eichenberger 6-16-05
Chairman's Name (print) / Signature / Date
[Required only for Programmatic Exclusion Screenings and 50.59 Evaluations.]

II. SCREENINGS

A. Licensing Basis Document Review

1. Does the proposed activity impact the facility or a procedure as described in any of the following Licensing Basis Documents?

Operating License	YES	NO	CHANGE # and/or SECTIONS IMPACTED
Operating License	☐	☒	
TS	☐	☒	
NRC Orders	☐	☒	
If "YES", obtain NRC approval prior to implementing the change by initiating an LBD change in accordance with NMM ENS-LI-113. (See Section 5.2[13] for exceptions.)			

LBDs controlled under 50.59	YES	NO	CHANGE # (if applicable) and/or SECTIONS IMPACTED
FSAR	☒	☐	Section 9.6
TS Bases	☒	☐	Section 3.7.14, 3.7.15
Technical Requirements Manual	☒	☐	Section 3.7.8
Core Operating Limits Report	☐	☒	
NRC Safety Evaluation Report and supplements for the initial FSAR[1]	☐	☒	
NRC Safety Evaluations for amendments to the Operating License[1]	☐	☒	
If "YES", perform an Exemption Review per Section III OR perform a 50.59 Evaluation per Section IV OR obtain NRC approval prior to implementing the change. If obtaining NRC approval, document the LBD change in Section II.A.5; no further 50.59 review is required. However, the change cannot be implemented until approved by the NRC. AND initiate an LBD change in accordance with NMM ENS-LI-113.			

LBDs controlled under other regulations	YES	NO	CHANGE # (if applicable) and/or SECTIONS IMPACTED
Quality Assurance Program Manual[2]	☐	☒	
Emergency Plan[2,3]	☐	☒	
Fire Protection Program[3,4] (includes the Fire Hazards Analysis)	☐	☒	
Offsite Dose Calculations Manual[3,4]	☐	☒	
If "YES", evaluate any changes in accordance with the appropriate regulation AND initiate an LBD change in accordance with NMM ENS-LI-113. No further 50.59 review is required.			

[1] If "YES," see Section 5.2[5]. No LBD change is required.
[2] If "YES," notify the responsible department and ensure a 50.54 Evaluation is performed. Attach the 50.54 Review.
[3] Changes to the Emergency Plan, Fire Protection Program, and Offsite Dose Calculation Manual must be approved by the OSRC in accordance with NMM OM-119.
[4] If "YES," evaluate the change in accordance with the requirements of the facility's Operating License Condition or under 50.59, as appropriate

2. **Does the proposed activity involve a test or experiment not described in the FSAR?**

☐ Yes
☒ No

If "yes," perform a 50.59 Evaluation per Section IV <u>OR</u> obtain NRC approval prior to implementing the change <u>AND</u> initiate an LBD change in accordance with NMM LI-113. If obtaining NRC approval, document the change in Section II.A.5; no further 50.59 review is required. However, the change cannot be implemented until approved by the NRC.

3. <u>Basis</u>

Explain why the proposed activity does or does not impact the Operating License/Technical Specifications and/or the FSAR and why the proposed activity does or does not involve a new test or experiment not previously described in the FSAR. Discuss other LBDs if impacted. Adequate basis must be provided within the Screening such that a third-party reviewer can reach the same conclusions. Simply stating that the change does not affect TS or the FSAR is not an acceptable basis.

Operating License:

The Unit 1 Technical Specifications (TS) have requirements for storing fuel in the spent fuel pools as follows:

- TS 3.7.14, Spent Fuel Pool Boron Concentration,
- TS 3.7.15, Spent Fuel Pool Storage, and
- TS 4.3.1.1, Criticality.

When the Unit 1 cask pit is open to the spent fuel pool (SFP) these TSs apply to fuel stored in the cask. The analysis performed addressed the Unit 1 TS bases and FSAR descriptions related to these TSs. All the requirements for storage in the spent fuel pool and accidents scenarios were performed for the HI-STORM 100 24 assembly cask and it was shown that the minimum boron concentration requirement would not exceed the boron concentration required in TS 3.7.14 for the storage of fuel in the SFP (the TS limit of 1600 ppm).

TS 3.7.15 describe the combination of initial enrichment and burnup for fuel assemblies to be stored in the Region 2 SFP racks. This TS does not describe the loading requirements for the Region 1 racks, the upender, the new fuel elevator, or any other fuel storage location loading requirements. The analysis performed for the HI-STORM 100 24 assembly cask has shown that there are no burnup or enrichment limits that have to be imposed to store fuel within the cask.

TS 4.3.1.1 list the critical design parameters that shall be maintained in the spent fuel pool racks. The HI-STORM 100 24 assembly cask criticality requirements are bounded by TS 4.3.1.1. TS 4.3.1.1 a. states that the maximum enrichment within the spent fuel pool is 4.1 wt%. Fuel assemblies must be stored in the SFP prior to loading in a cask, as such the maximum enrichment allowed in a cask on Unit 1 is 4.1 wt%. TS 4.3.1.1 b. requires k_{eff} to be less than or equal to 0.95 when fully flooded with unborated water considering the uncertainties listed in the FSAR. The analysis was performed with no credit for the SFP borated water and allowances for the uncertainties for the Region 1 racks were taken into consideration. The uncertainties described for the Region 1 racks were used because these racks most closely mimic the HI-STORM 100 cask with the use of a neutron absorbing material within the flux traps. TS 4.3.1.1 c. states the spent fuel pool rack nominal pitch where the HI-STORM 100 24 assembly cask has a slightly larger average nominal pitch. The ANO HI-STORM 100 24 assembly cask has a varying pitch throughout the canister as such the HI-STORM 100 24 assembly cask was modeled explicitly to account for all geometry effects. The controlling variable in this cell design is the flux trap spacing where a minimum flux trap dimension is maintained within the HI-STORM 100 CoC Appendix B, Section 3.2. Although the average center to center distance between fuel assemblies in the HI-STORM 100 24 assembly cask is larger than the center to center distance between fuel assemblies in the fuel racks, the larger distance results in a smaller k_{eff} for the fuel loaded in the HI-STORM 100 24 assembly cask.

Table 1 shows the relationship between the Part 50 and Part 72 fuel enrichment allowances and analytical assumptions, as well as the center to center distance between fuel assemblies placed in either the SFP racks or in the MPC-24. It is clearly demonstrated that the requirements of ANO-1 TS 4.3.1.1 are bounding.

Table 1

Analysis	Fuel Enrichment (wt%)	Uncertainties Considered	Center to Center Distance between Fuel Assemblies in Storage Racks	Burnup Credit Required
ANO-1 TS 4.3.1.1	4.1	All	Nominal 10.65	Burnup
MPC-24 Part 50 Analysis Assumption	4.4	All	10.906 (≥1.09 Flux Trap)	No Burnup
MPC-24 Part 72	5.0	All	10.906 (≥1.09 Flux Trap)	No Burnup

Note: TS 4.3.1.1.d & e reference TS Figure 3.7.15-1 which provides fuel storage requirements for Region 2 based on a combination of initial assembly average enrichment and assembly average burnup. The MPC-24 Part 50 Analysis results concluded that there are no loading restrictions.

In keeping with the level of detail within the Unit 1 TS there are no additional spent fuel storage requirements that need to be added to the Unit 1 TS for storage of fuel within a HI-STORM 100 24 assembly cask. The parameters important to criticality that could warrant a TS requirement are bounded by TS 4.3.1.1. The operational requirements for the operation of the cask such as thermal, criticality, and radiological limits are specified within the HI-STORM 100 CoC (equivalent to a Part 50 TS) and can not be changed or modified without prior NRC approval and do not need to be changed to support this review. The Unit 1 technical specifications, operating license, and any NRC orders have not been impacted by these calculations.

Other LBDS:

The Unit 1 FSAR discusses the HI-STORM 100 dry fuel storage system and facilities in multiple places. Specifically, in the general fuel handling section of the FSAR, it is discussed that the dry fuel storage system is utilized to store fuel. The Unit 1 FSAR also states that the full descriptions for loading the cask are located in other documents. The site 10CFR72.212 report is referenced as one of these locations. However, in keeping with the premise that the cask should be treated as a spent fuel pool rack, the review will treat the cask from the stand point of the criticality review as the Unit 1 SFP Region 1 and Region 2 racks as it relates to the amount of detail within the Unit 1 FSAR. As discussed and accepted by the NRC, once the cask loading pit gate is set in place, the spent fuel pool is isolated and the cask loading pit is no longer considered part of the SFP (0CNA070301). The FSAR describes the methodologies and the various accident conditions that are related to the Unit 1 Region 1 and Region 2 racks. The HI-STORM 100 cask differs in some of the discussions related to the Region 1 and Region 2 racks as such a full Evaluation shall be performed. Additionally, a new subsection is being added in ANO-1 SAR 9.6 to only discuss the criticality analysis for the cask loading pit while the pit gate is open. Details of the Region 1 and Region 2 racks are also described within the TS bases and as such the loading of a HI-STORM 100 cask will impact these discussion as well which will warrant a 50.59 evaluation to be performed.

The analysis considered all the normal and accident cases discussed in the Unit 1 FSAR and the Unit 1 Bases as they related to SFP criticality. The analysis was performed in accordance with a poison rack analysis which is similar to the Region 1 SFP racks. The Unit 1 FSAR describes the criticality codes used to analyze the cask. The same codes used to analyze the Region 1 racks were used to evaluate the HI-STORM 24 assembly cask with the exception that an additional code was used. The primary code for the new cask criticality calculations was MCNP, a Monte Carlo code developed by the Los Alamos National Laboratory. KENO-V, the code originally used, was also used but because it tended to produce less conservative results the MCNP runs were used.

As mentioned in the review of TS 4.3.1.1 b., the Unit 1 FSAR lists the uncertainties and tolerances considered in the SFP Region 1 criticality analysis. The FSAR states that the tolerances can be treated as worst case or by statistically combining the reactivity associated with each tolerance. All the tolerances listed in the Unit 1 FSAR for the racks were considered and their positive reactivity effects were evaluated. Some of the fuel assembly tolerances used in the analysis used more reactive parameter than originally evaluated.

The original criticality calculation for the Region 1 racks used Boraflex as the neutron absorber material. Credit was taken for the neutron absorption of all fuel length neutron absorption materials which included the rack structural materials and any material used for the purpose of absorbing neutrons. The difference being is the HI-STORM 100 cask utilizes Boral or Metamic as a neutron absorber. These materials have both been approved for use in spent fuel pools by the NRC. All the failure modes of the newer materials are the same where gamma and chemical attack will degrade these materials over the long term storage within the spent fuel pool. These failure modes from chemical attack and radiation exposure have been improved upon with the use of aluminum as a matrix material over silicon rubber. As such the poison panels did not consider end shrinkage or gap formation because these are not failures identified to occur with the newer materials. Additionally 100% of the ^{10}B content was assumed to be present in the analysis. In keeping with the Unit 1 FSAR poison material evaluation requirements the minimum dimensions and the minimum ^{10}B content was used in the analysis.

No neutron leakage was assumed to occur as originally assumed in the Unit 1 Region 1 rack analysis.

The Unit 1 FSAR states that the water was treated as 68°F. A more conservative approach was used where it was assumed that under normal storage condition the SFP temperature would be at the most reactive condition at 273K. This positive reactivity effect was treated as an additional bias.

The Unit 1 FSAR states the no credit was taken for fuel burnup in Region 1. The HI-STORM 100 24 assembly cask was evaluated for unrestricted storage of fresh fuel assemblies with no credit for fuel burnup. Additionally, in keeping with the original assumption in the Unit 1 FSAR ^{234}U and ^{236}U were not included in the fuel composition.

Minor structural members that did not extend the fuel length of the active fuel region were not included in the model as stated in the Unit 1 FSAR. This included fuel assembly end fittings, the fuel grids, and the cask bottom support plate.

The fuel assembly analyzed was a B&W 15x15 fuel assembly where no radial enrichment zoning was credited. The fuel assembly enrichment analyses were at 4.10 wt% or greater. No credit was taken for the storage of control components stored within the fuel assemblies.

No credit was taken for soluble boron present in the water for the normal storage conditions.

The results of the HI-STORM 100 24 assembly cask analysis showed that with a 95 percent probability and a 95 percent confidence level the k_{eff} was less than 0.95 as required by the Region 1 SFP rack analysis.

The Unit 1 FSAR and TS bases discuss a number of accident conditions that could affect reactivity within the spent fuel pool. When performing the analysis for postulated accidents in the SFP, the double contingency principle of ANS N16.1-1975 was applied. This states that it is unnecessary to assume two unlikely, independent, concurrent events to ensure protection against a criticality accident. Therefore, for accident conditions, the presence of soluble boron in the SFP water can be assumed as a realistic initial condition since its absence would be a second unlikely event.

The fuel assembly accident cases evaluated within the FSAR are the following, fuel drop horizontally on a cask, fuel drop on a fuel assembly, fuel drop next to a cask, a fuel drop on the cask basket, and fuel misplacement. Additionally loss of SFP cooling and seismic events were considered. The only event that was shown to effect criticality was the drop of a fuel assembly on the basket. The analysis was performed in accordance with the methodology used to evaluate this event for the Region 1 SFP racks. The analysis assumed that all the poison material was damaged and replace with water. The table below illustrates the various accident cases that effect reactivity within the ANO-1 SFP. The matrix provides analytical results for the boron concentration that is required to ensure k_{eff} remains below 0.95 for the specific accident. As required, in all cases the minimum boron concentration (1600 ppm) required by ANO-1 TS 3.7.14 bounds the analytically determined soluble boron concentration required to protect against the postulated accident.

Table 1

Criticality	TS	Criticality	Misloading	Dropped Fuel	Misalignment of

Analysis	Boron Concentration (ppm)	Assumptions $k_{eff} \leq 0.95$	Accident Analysis Boron Concentration (ppm) $k_{eff} \leq 0.95$	Assembly on the ousted of the Rack/Cask	Active Fuel Region
SFP Region 1 Part 50	≥1600	No credit for boron	0	0	1600
SFP Region 2 Part 50 (MPC-24 not included)	≥1600	No credit for boron	1600	1600	1600
MPC-24 Part 50	≥1600	No credit for boron	0	0	800
MPC-24 Part 72	0	No credit for boron	n/a	n/a	n/a

TRM 3.7.8 addresses SFP boron sampling requirements. This section will be modified to include the cask loading pit in the applicability section. The COLR and the Unit 1 SERs related to FSAR changes are not impacted by changes related to the SFP boron concentrations or the storage of fuel in a HI-STORM 100 cask system. The Unit 1 SERs for amendments that discuss in detail the stored fuel in the Unit 1 SFP do not impact the use of the HI-STORM 100 24 assembly cask in the Unit 1 SFP cask pit.

LBDs Controlled Under Other Regulations:

The QAPM, emergency plan, fire protection program, and the ODCM discussion of the storage of fuel are not impacted by the use of the HI-STORM 100 24 assembly cask system related to the site specific Unit 1 criticality calculations. No changes to these LBDs are needed.

Test and Experiment:

The HI-STORM 100 criticality analysis does not cause components or structures to be used outside its design bases and does not require operation of equipment outside the conditions analyzed in the FSAR. It is therefore not a test or experiment as defined by LI-101 and can not be a test or experiment not described in the FSAR.

ISFSI

Criticality analysis when fuel is loaded in the cask is already in compliance with Part 72. This analysis is related to the HI-STORM 100 system. However, a 72.48 Screening will be performed in accordance with LI-112 since the first checkbox in the IFSFI Screening is applicable.

4. **References**

Discuss the methodology for performing LBD searches. State the location of relevant licensing document information and explain the scope of the review such as electronic search criteria used (e.g., key words) or the general extent of manual searches per Section 5.5.1[5](d) of LI-101. **NOTE: Ensure that manual searches are performed using controlled copies of the documents. If you have any questions, contact your site Licensing department.**

LBDs/Documents reviewed via keyword search:	Keywords:
Autonomy – 50.59 Common	ALL(B&W 15x15, boron concentration, fuel burnup, burnup, dry fuel storage, ISFSI, MPC*, cask, shipping cask, fuel w/20 storage, region w/20 pool, pool w/20 enrichment, cask and "enrichment", pool w/30 cooling time, pool and "cooling time", cask w/30 licensing, "dry fuel storage"; fuel w/20 24; storage w/20 burnup, 'boron credit", spent fuel pool w/20 criticality, spent fuel pool w/20 boron, "50.68", "70.24", physics parameters, fuel parameters, fuel design, boral, metamic, boraflex

LBDs/Documents reviewed manually:

Unit 1 TS 3.7.14, 3.7.15, 4.3.1
Unit 1 TS Basis 3.7.14 and 3.7.15
Unit 1 TRM 3.7.8
Unit 1 FSAR 3A.5, 9.6, 9.10, 11.3
0CNA109805, 0CNA070301, 0CNA048314, 0CNA060304

5. **Is the validity of this Review dependent on any other change?**

☐ Yes
☒ No

If "YES", list the required changes/submittals. The changes covered by this 50.59 Review cannot be implemented without approval of the other identified changes (e.g., license amendment request). Establish an appropriate notification mechanism to ensure this action is completed.

(List the required changes / submittals.)

B. ENVIRONMENTAL SCREENING

If any of the following questions is answered "yes," an Environmental Review must be performed in accordance with NMM Procedure ENS-EV-115, "Environmental Evaluations," and attached to this 50.59 Review. Consider both routine and non-routine (emergency) discharges when answering these questions.

Will the proposed Change being evaluated:

	Yes	No	
1.	☐	☒	Involve a land disturbance of previously disturbed land areas in excess of one acre (i.e., grading activities, construction of buildings, excavations, reforestation, creation or removal of ponds)?
2.	☐	☒	Involve a land disturbance of undisturbed land areas (i.e., grading activities, construction, excavations, reforestation, creating, or removing ponds)?
3.	☐	☒	Involve dredging activities in a lake, river, pond, or stream?
4.	☐	☒	Increase the amount of thermal heat being discharged to the river or lake?
5.	☐	☒	Increase the concentration or quantity of chemicals being discharged to the river, lake, or air?
6.	☐	☒	Discharge any chemicals new or different from that previously discharged?
7.	☐	☒	Change the design or operation of the intake or discharge structures?
8.	☐	☒	Modify the design or operation of the cooling tower that will change water or air flow characteristics?
9.	☐	☒	Modify the design or operation of the plant that will change the path of an existing water discharge or that will result in a new water discharge?
10.	☐	☒	Modify existing stationary fuel burning equipment (i.e., diesel fuel oil, butane, gasoline, propane, and kerosene)?[1]
11.	☐	☒	Involve the installation of stationary fuel burning equipment or use of portable fuel burning equipment (i.e., diesel fuel oil, butane, gasoline, propane, and kerosene)?[1]
12.	☐	☒	Involve the installation or use of equipment that will result in a new or additional air emission discharge?
13.	☐	☒	Involve the installation or modification of a stationary or mobile tank?
14.	☐	☒	Involve the use or storage of oils or chemicals that could be directly released into the environment?
15.	☐	☒	Involve burial or placement of any solid wastes in the site area that may affect runoff, surface water, or groundwater?

[1] See NMM Procedure ENS-EV-117, "Air Emissions Management Program," for guidance in answering this question.

C. SECURITY PLAN SCREENING

If any of the following questions is answered "yes," a Security Plan Review must be performed by the Security Department to determine actual impact to the Plan and the need for a change to the Plan.

Could the proposed activity being evaluated:

	Yes	No	
1.	☐	☒	Add, delete, modify, or otherwise affect Security department responsibilities (e.g., including fire brigade, fire watch, and confined space rescue operations)?
2.	☐	☒	Result in a breach to any security barrier(s) (e.g., HVAC ductwork, fences, doors, walls, ceilings, floors, penetrations, and ballistic barriers)?
3.	☐	☒	Cause materials or equipment to be placed or installed within the Security Isolation Zone?
4.	☐	☒	Affect (block, move, or alter) security lighting by adding or deleting lights, structures, buildings, or temporary facilities?
5.	☐	☒	Modify or otherwise affect the intrusion detection systems (e.g., E-fields, microwave, fiber optics)?
6.	☐	☒	Modify or otherwise affect the operation or field of view of the security cameras?
7.	☐	☒	Modify or otherwise affect (block, move, or alter) installed access control equipment, intrusion detection equipment, or other security equipment?
8.	☐	☒	Modify or otherwise affect primary or secondary power supplies to access control equipment, intrusion detection equipment, other security equipment, or to the Central Alarm Station or the Secondary Alarm Station?
9.	☐	☒	Modify or otherwise affect the facility's security-related signage or land vehicle barriers, including access roadways?
10.	☐	☒	Modify or otherwise affect the facility's telephone or security radio systems?

Documentation for accepting any "yes" statement for these reviews will be attached to this 50.59 Review or referenced below.

D. INDEPENDENT SPENT FUEL STORAGE INSTALLATION (ISFSI) SCREENING
(NOTE: This section is not applicable to Waterford 3 and may be removed from 50.59 Reviews performed for Waterford 3 proposed activities.)

If any of the following questions is answered "yes," an ISFSI Review must be performed in accordance with NMM Procedure ENS-LI-112, "72.48 Review," and attached to this Review.

Will the proposed Change being evaluated:

	Yes	No	
1.	☒	☐	Any activity that directly impacts spent fuel cask storage or loading operations?
2.	☐	☒	Involve the Independent Spent Fuel Storage Installation (ISFSI) including the concrete pad, security fence, and lighting?
3.	☐	☒	Involve a change to the on-site transport equipment or path from the Fuel Building to the ISFSI?
4.	☐	☒	Involve a change to the design or operation of the Fuel Building fuel bridge including setpoints and limit switches?
5.	☐	☒	Involve a change to the Fuel Building or Control Room(s) radiation monitoring?
6.	☐	☒	Involve a change to the Fuel Building pools including pool levels, cask pool gates, cooling water sources, and water chemistry?
7.	☐	☒	Involve a change to the Fuel Building handling equipment (e.g., bridges and cask cranes, structures, load paths, lighting, auxiliary services, etc)?
8.	☐	☒	Involve a change to the Fuel Building electrical power?
9.	☐	☒	Involve a change to the Fuel Building ventilation?
10.	☐	☒	Involve a change to the ISFSI security?
11.	☐	☒	Involve a change to off-site radiological release projections from non-ISFSI sources?
12.	☐	☒	Involve a change to spent fuel characteristics?
13.	☐	☒	Redefine/change heavy load pathways?
14.	☐	☒	Fire and explosion protection near or in the on-site transport paths or near the ISFSI?
15.	☐	☒	Involve a change to the loading bay or supporting components?
16.	☐	☒	New structures near the ISFSI?
17.	☐	☒	Modifications to any plant systems that support dry fuel storage activities?
18.	☐	☒	Involve a change to the nitrogen supply, service air, demineralized water or borated water system in the Fuel Building?

IV. 50.59 EVALUATION

License Amendment Determination

Does the proposed Change being evaluated represent a change to a method of evaluation ONLY? If "Yes," Questions 1 – 7 are not applicable; answer only Question 8. If "No," answer all questions below. ☒ Yes ☐ No

The only change being performed under this 50.59 is a change to the ANO-1 criticality analysis for the Holtec HI-STORM 100 -24 cask design. Only Question 8 is necessary to be answered, however, the other 7 questions are being discussed for completeness.

Does the proposed Change:

1. Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the FSAR? ☐ Yes ☒ No

   BASIS:

   The criticality analysis of the 24 assembly cask HI-STORM 100 is being analyzed in the same manner as a spent fuel pool fuel storage location. The evaluation of the cask similarly to the spent fuel pool criticality analysis does not result in the use of fuel handling equipment in any different configuration or interface than the fuel handling equipment was originally designed for, such as loading spent fuel shipping cask in the spent fuel pool cask pit or anywhere else in the pool.

   Fuel Handling Accident

   The fuel assemblies are stored under water in the spent fuel storage pool and are moved to the cask after independent verification of pool and cask pit boron concentration. Both the storage racks and cask have a safe geometric spacing and or fixed neutron poison. Under these conditions, a criticality accident during refueling or cask loading is not considered credible. Mechanical damage to the fuel assemblies during transfer operations is possible. A mechanical damage type of accident is considered the maximum potential source of activity release during refueling or cask loading operations.

   The assumptions made for this analysis are shown in Table 14-24 of the FSAR. The reactor is assumed to have been shut down for 100 hours, since Part 50 Technical Specifications prohibit fuel handling operations prior to this time. Fuel assemblies have to be moved to the spent fuel pool to allow fission products to decay sufficiently prior to being loaded in a storage cask. Casks loading operational requirements specify a minimum fuel assembly cooling time of 3 years or more. It is further assumed that the cladding of six rows of fuel rods in the assembly, 82 of 208, suffers mechanical damage. The cask configuration is sufficiently similar to spent fuel racks as to not induce additional assembly damage; therefore, the fuel handling accident is bounded as described in FSAR Section 14.2.2.3 for cask loading. This includes fuel handling accident for four drop scenarios (fuel drop horizontally on a cask, fuel drop on a fuel assembly, fuel drop next to a cask, and a fuel drop on the cask basket) and these are unaffected by the criticality calculations performed for cask loading activities. The same equipment and procedural controls for controlling fuel within the spent fuel pool are utilized when loading fuel in the cask.

   The temperature effects on the fuel assemblies in the cask were evaluated and the fuel assemblies in the cask were evaluated for the most reactive temperature for all accident and normal storage cases. The loss of SFP cooling will have no impact on the cask criticality analysis because the temperature coefficient of reactivity is negative and the introduction of voids will further decrease reactivity.

   The cask is analyzed for loading all fresh fuel up to the Unit 1 spent fuel pool enrichment limit of 4.1 wt% and it was shown that the cask satisfies the requirement to have a k-effective that does not exceed 0.95, at a 95% probability, with a 95% confidence level. Also, loading fuel in the cask will have no impact to the boron dilution event probability. The same controls for prohibiting a dilution event during spent fuel movement activities are in use when loading/unloading a cask within the cask pit. As such boron was credited for mitigating the reactivity effect for a dropped assembly where the boron requirement was determined to be 800 ppm which is below the TS limit of 1600 ppm. Therefore, as the parameters that would increase the probability of accidental criticality are not changed from that previously analyzed, loading of a cask in the cask loading pit does not increase the frequency of occurrence of criticality events in the SFP or cask loading pit evaluated in the FSAR

2. Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component important to safety previously evaluated in the FSAR? ☐ Yes ☒ No

BASIS:

The calculation only changes the way the HI-STORM 100 cask is treated from a criticality perspective. The cask analysis will not affect failure mechanisms of the fuel handling equipment or the SFP (walls, floors, racks, cooling, etc.). There is no difference in how the spent fuel equipment or pool structure is utilized for pool or cask loading pit fuel movement operations. The fuel handling equipment and the SFP will perform as designed and described in the FSAR. The fuel handling equipment is designed to retrieve a fuel assembly from one location and place it in another. The re-located positions can be other locations in the spent fuel racks, in the upender for transfer to the reactor building or in the cask loading pit. However, for cask fuel loading in the cask loading pit, the gate is placed between the pool and the cask loading pit once the cask has been loaded to capacity. This could allow un-likely boron dilution in the pit at an accelerated rate from a hypothetical uncontrolled source of unborated water in the spent pool area such that the minimum boron concentration in the pit water is not maintained. However, subcriticality is maintained because the fuel assemblies are independently verified to be correct and properly located in the cask prior to gate closure, and like evaluated in the pool rack criticality analysis, the cask analysis evaluated the fuel without crediting soluble boron. In addition, as evaluated for the SFP, heat up of the isolated cask loading pit from 24 maximum burned fuel assemblies is sufficiently slow such that cask loading pit thermal limits are not approached during the cask loading evolution. Should extended isolated cask loading pit operation be required, the gate can be removed or cooler pool water pumped into the pit (the gate allows leakage back to the pool such that the levels are maintained near level). These scenarios are not different from those necessary for use of the originally described use of a shipping cask in the cask loading pit.

Therefore, this change does not increase the likelihood of the spent fuel handling equipment or structure malfunction.

3. Result in more than a minimal increase in the consequences of an accident previously evaluated in the FSAR? ☐ Yes ☒ No

BASIS:

The criticality requirements of the SFP and the cask loading pit ensure that there is adequate boron concentration in the pool to prevent an accident. The performance of a criticality analysis for the fully loaded cask does not perform an accident mitigation function. The fuel assembly design, enrichment limits, weight, and tolerances were the same as in the original analysis. The consequence of damaging a fuel assembly and the racks remains the same due to a fuel assembly drop. The worst case fuel misplacement in the cask showed that the boron requirements are less than the original requirement of 1600 ppm to keep reactivity below 0.95 in the pool racks. None of the accidents postulated in the FSAR from criticality, fuel assembly damage, or pool structural damage are increased as a result of putting fuel in the cask instead of a fuel pool rack. The mechanisms for potential damage are sufficiently similar or exactly the same such that increased consequences are not possible or predicted

Therefore, this change does not increase the consequences of any accident.

4. Result in more than a minimal increase in the consequences of a malfunction of a structure, system, or component important to safety previously evaluated in the FSAR? ☐ Yes ☒ No

BASIS:

The fuel handling accidents evaluated in the FSAR for the pool racks extended to the cask are assembly drop on the cask, onto another fuel assembly, next to the cask, onto cask cell, fuel misplacement, and boron dilution. The fuel assembly design, enrichment limits, weight, and tolerances were the same or bounding as in the original analysis for the spent fuel pool racks as discussed in the FSAR. However, the cask cell assembly interface with the fuel assembly is different. There are bars that extend above the cask cells for structural support of the cask lid during a loaded cask transportation accident. If the fuel assembly were dropped onto a bar, it is expected that fuel rods damaged will not exceed that previously evaluated for the drop of an assembly due to the size of the bars and fewer fuel rods would be impacted (the analysis does not credit protection from the end fittings). Also, the configuration of the edge of the cask is sufficiently similar to the edge of a rack such that increased damaged is not predicted. Therefore, the consequences resulting from a damaged fuel assembly on the racks, the cask, or the pool structure remain the same.

Dropping a fuel assembly causing a misplacement accident was reanalyzed for the HI-STORM 24 assembly cask taking into consideration the specific geometry changes associated with the cask. The worst case fuel misplacement showed that the boron requirements for the cask racks are less than the original pool rack analysis requirement of 1600 ppm to keep reactivity below 0.95.

Therefore, this change does <u>not</u> increase the consequences of any malfunction of a structure, system or component important to safety previously evaluated in the FSAR.

5. Create a possibility for an accident of a different type than any previously evaluated in the FSAR? ☐ Yes ☒ No

BASIS:

The analysis of the HI-STORM 100 cask considered all the accidents postulated for the SFP racks (fuel drop on the cask, fuel drop on fuel assembly, fuel drop next to the cask, fuel drop on the cell, fuel misplacement, and boron dilution). The cask has the same basic physical configuration of a rack where fuel assemblies are stored in vertical cells in a grid with a flux trap separation between each cell and the poison material is located on the outside of each cell. The cask cell walls are thicker than the racks, the outside wall is thicker than the racks and the space for mishandling is tighter than around the racks. The cask loading and configuration does not introduce any new rack related events that have not been previously analyzed when the cask pit is opened to the SFP. After the gate is closed and the pit isolated from the pool, heat up of the isolated cask loading pit from 24 maximum burned fuel assemblies is sufficiently slow such that cask loading pit thermal limits are not approached during the cask loading evolution and is not different from that necessary for use of the originally FSAR described use of a shipping cask loading in the cask loading pit. Once the cask loading pit gate is closed, the cask and associated analyses no longer have to be considered under Part 50, but only under Part 72. The use of a cask in the cask pit has no physical effects on the racks or abnormal effect on the fuel handling equipment. The rack accidents as discussed in the FSAR and TS bases as listed above were analyzed for loading activities in the cask. The analyses demonstrated that the rack accidents described in the FSAR and TS Bases bounded the results of the cask handling analyses.

Therefore, this change does <u>not</u> create the possibility for an accident evaluated in the FSAR.

6. Create a possibility for a malfunction of a structure, system, or component important to safety with a different result than any previously evaluated in the FSAR? ☐ Yes ☒ No

BASIS:

All the cask loading criticality analyses results from the SFP rack accidents (fuel drop on the cask, fuel drop on fuel assembly, fuel drop next to the cask, fuel drop on the cell, fuel misplacement, and boron dilution) are bounded by the same accidents as postulated in the FSAR and TS bases. The cask loaded with fuel sitting in the cask loading pit during a seismic event could result in cask impact on the cask loading pit wall, but does not have different results for the pool structure or fuel assembly integrity than that was previously evaluated for the pool racks

Therefore, this change does <u>not</u> create the possibility of causing a component important to safety from malfunctioning.

7. Result in a design basis limit for a fission product barrier as described in the FSAR being exceeded or altered?

☐ Yes
☒ No

BASIS:

The fuel assembly design, enrichment limits, weight, and tolerances were the same or bounding as in the original analysis. Fuel cladding which is a fuel fission product barrier is unaffected by the analysis of the 24 assembly HI-STORM 100 cask as a SFP rack. In addition, all fuel movement continues to be under water until the cask lid is welded which provides an additional fission product barrier

Therefore, this change does <u>not</u> affect any fission product barriers.

8. Result in a departure from a method of evaluation described in the FSAR used in establishing the design bases or in the safety analyses?

☐ Yes
☒ No

BASIS:

The RIS infers that the Part 50 criticality requirements should be imposed on the dry fuel storage cask when the cask is in the SFP. It is stated that the cask should be treated/analyzed as a spent fuel pool rack from the perspective of imposing the spent fuel pool criticality requirements for normal storage and the requirements for addressing the spent fuel pool accident cases. Since the Unit 1 24 assembly HI-STORM 100 cask criticality calculations are not explicitly detailed in the Unit 1 FSAR, comparisons can be made with the detailed discussions on how the criticality calculations are preformed on the spent fuel pool racks for Region 1 and Region 2. The justification for the four changes to the way the original analysis was performed is provided below.

Absorption Material - The neutron absorbing material is different from that currently contained in the ANO-1 spent fuel pool; however, the absorption characteristics are similar to that of Boraflex in the fact that boron is suspended in a matrix material. The purpose of this 50.59 Evaluation is not to license Boral/Metamic for the spent fuel pool, but only to ensure that criticality analysis being performed meets the current ANO-1 licensing basis requirements under Part 50. The use of a poison material to off set reactivity is the basic method addressed in the Unit 1 FSAR and the use of these other NRC approved neutron absorbers in a HI-STORM 100 cask does not differ from that methodology for controlling reactivity.

Analysis Design Parameters – The change in parameters included such things as greater fuel density, larger fuel pellet OD, flooded pellet cladding water gap, bounding enrichments used in normal and accident cases, and evaluated positive reactivity effects for temperatures below 68°F under normal storage conditions. Even though some of the design parameters have changed from that of the spent fuel pool analysis, none of these parameters represent a departure from a method approved by the NRC. Per the guidance in Section 4.3.8 of NEI 96-07 (accepted in Regulatory Guide 1.187), "*Use of a methodology revision that is documented as providing results that are essentially the same as, or more conservative than, either the previous revision of the same methodology or another methodology previously accepted by NRC through issuance of an SER*" are not considered departures from a method of evaluation. In addition in section 3.8 of NEI 96-07 an Input Parameter is not a change in methodology as the guidance states: *if a licensee opts to use a value more conservative than that required by the selection method, reduction in that conservatism should be evaluated as an input parameter change*. The changes to the criticality analysis use the same methodology as that contained in the spent fuel pool analysis. None of the input parameters were specifically accepted by the NRC staff as parameters that could not be changed under 10 CFR 50.59.

Code methodology - Even though the ANO-1 SAR references the KENO computer code, MCNP is a code widely accepted by the NRC to be used in spent fuel pool criticality applications and the industry has utilized the code extensively. The code has extensive benchmarking comparisons against test data, plant data, and other approved codes such as KENO-V. Section 3.4 of NEI 96-07 defines a departure of a methodology. Included in that definition is the ability to change from one method to another method without being a "departure." *A licensee may adopt completely new methodology without prior NRC approval provided the new method is approved by the NRC for the intended* *application. A new method is "approved by the NRC for the intended application" if it is approved for the type of analysis being conducted and the licensee satisfies applicable terms and conditions for its use.* Therefore, there is no departure from a methodology by changing from the KENO code to the MCNP code.

Therefore, this change does not depart from the evaluation methods outlined in the FSAR.

If any of the above questions is checked "YES", obtain NRC approval prior to implementing the change by initiating a change to the Operating License in accordance with NMM Procedure ENS-LI-113.

TRM 3.7.8 Changes by CALC-ANO-ER-05-030

TRM 3.7 PLANT SYSTEMS

TRM 3.7.8 Spent Fuel Pool Boron Concentration

TRO 3.7.8 The Spent Fuel Pool boron concentration shall be sampled after each makeup.

APPLICABILITY: When fuel is stored in the Spent Fuel Pool or Cask Loading Pit with the gate open.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Requirement not met.	A.1	Initiate a condition report to document the condition and determine any limitations for continued operation.	Immediately

TEST REQUIREMENTS

SURVEILLANCE		FREQUENCY
TR 3.7.8.1	-----NOTE----- Must be performed prior to transferring fuel to the Spent Fuel Pool. ----- Sample Spent Fuel Pool Boron.	After each makeup

Unit 1 FSAR Changes from CALC-ANO-ER-05-030

Section 9.6.2.4.3.1.2 of the ANO-1 currently describes the criticality analysis for spent fuel storage in Regions 1 and 2. The proposed change will add the following details in to this section for the MPC-24.

Dry Casks

Prior to loading or unloading a cask in the SFP, a SFP criticality analysis has to be performed to ensure the SFP requirements are satisfied.

Holtec HI-STORM 100 MPC-24

The methods used in the analysis of the MPC-24 include MCNP4a, CASMO-4 and KENO5a. The base assembly analyzed was AVERA Mk B-HTP 15x15 fuel assemblies. The ANO-1 SFP also contains B&W 15x15 Mark B fuel, however, the AVERA fuel represents more reactive fuel over the full range of burn-ups.

The analyses assumes the most reactive fuel and moderator temperature, no credit for the presence of control rod assemblies or burnable poison rod assemblies, and no credit was taken for soluble boron present in the water for normal operations. The analysis also conservatively assumed the ANO-1 spent fuel with initial enrichments up to 4.4 wt%. Credit was taken for soluble boron under accident conditions.

The result of these analyses is a 95 percent probability/95 percent confidence level of keff less than 0.95 for storage of spent fuel in the MPC-24 while it is in the SFP cask loading pit with the cask loading pit gate open.

Unit 1 FSAR Changes from CALC-ANO-ER-05-030

Section 9.6.2.4.3.2 of the ANO-1 SAR describes the fuel handling considerations and more specifically a discussion of the accident conditions that might result in an increase in k_{eff} in the SFP racks. A section will be added as follows to address the MPC-24

Dry Spent Fuel Storage Casks

When evaluating postulated accidents associated with loading/unloading any design of dry casks, the double contingency principle of ANS N16.1-1975 is applied, which specifies that at least two unlikely independent and concurrent events are required to produce a criticality accident. Therefore, for accident conditions, the presence of soluble boron up to 1600 ppm in the SFP water can be assumed as a realistic initial condition since its absence would be a second unlikely event. The cask is analyzed such that K_{eff} $\leq$0.95 can be easily met for postulated accidents, since any reactivity increase will be much less than the negative worth of the dissolved boron.

Holtec HI-STORM 100 MPC-24

The effects of credible abnormal and accident reactivity conditions previously analyzed for pool racks were evaluated for the HI-STORM 100 MPC-24. None of the abnormal or accident conditions identified cause the reactivity of the MPC-24 to exceed the limiting reactivity value (K_{eff} $\leq$0.95) considering the presence of the Unit 1 Technical Specification minimum soluble boron

TS Bases B 3.7.14

APPLICABILITY

This LCO applies whenever fuel assemblies are stored in the spent fuel pool, or cask loading pit (when the gate is open), until a complete spent fuel pool verification has been performed following the last movement of fuel assemblies in the spent fuel pool or cask loading pit. This LCO does not apply following the verification since the verification would confirm that there are no misloaded fuel assemblies. With no further fuel assembly movement in progress, there is no potential for a misloaded fuel assembly or a dropped fuel assembly.

SURVEILLANCE REQUIREMENTS

SR 3.7.14.1

This SR verifies that the concentration of boron in the spent fuel pool and cask loading pit is within the required limit. As long as this SR is met, the analyzed incidents are fully addressed. The 7 day Frequency for the pool is appropriate because no major replenishment of pool water is expected to take place over a short period of time

Unit 1 TS Bases Changes from CALC-ANO-ER-05-030

B 3.7 PLANT SYSTEMS

B 3.7.15 Spent Fuel Pool Storage

BASES

BACKGROUND

The spent fuel assembly storage facility is designed to store either new (nonirradiated) nuclear fuel assemblies, or burned (irradiated) fuel assemblies in a vertical configuration underwater. The spent fuel pool is sized to store 968 fuel assemblies and is connected to a pit for loading shipping or dry fuel storage casks. The spent fuel storage cells are installed in parallel rows with center to center spacing of 10.65 inches in each direction. The cask configuration is in accordance with the cask venders Certificate of Compliance.

The spent fuel storage pool is divided into two separate and distinct regions as shown in SAR Figure 9-53 which, for the purpose of criticality considerations, are considered as separate pools. Region 1 is designed to accommodate new fuel with a maximum enrichment of 4.10 wt% U-235, or spent (irradiated) fuel regardless of the discharge fuel burnup. Region 2 is designed to accommodate fuel of various initial enrichments which have accumulated minimum burnups within the acceptable domain according to Figure 3.7.15-1. Fuel assemblies not meeting the criteria of Figure 3.7.15-1 shall be stored in accordance with paragraph 4.3.1.1.e in SAR Section 4.3, Fuel Storage. The criticality considerations for the cask are the same as required for Region 1 of the spent fuel pool storage locations

APPLICABLE SAFETY ANALYSES

Criticality of fuel assemblies in the spent fuel storage rack and casks are prevented by the design of the rack or cask which limits fuel assembly interaction. This is done by fixing the minimum separation between assemblies and inserting neutron poison between assemblies in Region 1. Region 2 controls fuel assembly interaction by fixing the minimum separation between assemblies and by setting enrichment and burnup criterion to limit fissile materials. This is sufficient to maintain a k_{eff} of δ 0.95 for spent fuel of original enrichment of up to 4.10%. However, fuel assemblies to be stored in the spent fuel pool Region 2 which do not meet enrichment and burnup criterion must be stored in a checkerboard pattern to maintain a k_{eff} of 0.95 or less. In order to prevent inadvertent fuel assembly insertion into two adjacent storage locations, vacant spaces adjacent to the faces of any fuel assembly which does not meet the Region 2 burnup criteria (unrestricted) are physically blocked before any such fuel assembly is placed in Region 2 (Ref. 1). In addition, the area designated for checkerboard arrangement is divided from the normal storage in Region 2 by a row of vacant storage spaces (Ref. 2). The spent fuel pool storage satisfies Criterion 2 of 10 CFR 50.36 (Ref. 3). Spent Fuel Pool Storage

LCO

The restrictions on the placement of fuel assemblies within the fuel pool, according to Figure 3.7.15-1 or equivalent cask criticality analysis, ensure that the k_{eff} of the spent fuel pool and cask loading pit will always remain $\geq$ 0.95 assuming the pool to be flooded with unborated water. The restrictions are consistent with the criticality safety analysis performed for the spent fuel pool. Fuel assemblies not meeting the enrichment and burnup criteria shall be stored in accordance with Specification 4.3.1.1.

In the event a checkerboard storage configuration is deemed necessary for a portion of Region 2, vacant spaces adjacent to the faces of any fuel assembly which does not meet the Region 2 burnup criteria (non-restricted) shall be physically blocked before any such fuel assembly may be placed in Region 2. This will prevent inadvertent fuel assembly insertion into two adjacent storage locations.

APPLICABILITY

This LCO applies whenever any fuel assembly is stored in Region 2 of the spent fuel pool.

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, in either case, inability to move fuel assemblies is not sufficient reason to require a reactor shutdown.

When the configuration of fuel assemblies stored in the spent fuel pool is not in accordance with Figure 3.7.15-1, immediate action must be taken to make the necessary fuel assembly movement(s) to bring the configuration into compliance with Figure 3.7.15-1 or Specification 4.3.1.1.

SURVEILLANCE REQUIREMENTS

SR 3.7.15.1

This SR verifies by administrative means that the initial enrichment and burnup of the fuel assembly is in accordance with Figure 3.7.15-1 in the accompanying LCO or Specification 4.3.1.1. For fuel assemblies in the unacceptable range of Figure 3.7.15-1, performance of the SR will ensure compliance with Specification 4.3.1.1.