Attachment A

Technical Specification
Page Revisions

Consolidated Edison Company of New York, Inc.
Indian Point Unit No. 2
Docket No. 50-247
June, 1989

LIST OF FIGURES

6. The requirements for RHR pump and heat exchanger operability/operation in Specifications 3.8.A.3 and 3.8.A.4 may be suspended during maintenance, modification, testing, inspection, repair or the performance of core component movement in the vicinity of the reactor pressure vessel hot legs. During operation under the provisions of this specification, an alternate means of decay heat removal shall be available when the required number of RHR pump(s) and heat exchanger(s) are not operable. With no RHR pump(s) and heat exchanger(s) operating, the RCS temperature and the source range detectors shall be monitored hourly.

7. The reactor Tavg shall be less than or equal to 140°F.

8. Specification 3.6.A.1 shall be adhered to for reactor subcriticality and containment integrity.

B. With fuel in the reactor vessel and when:

i) the reactor vessel head is being moved, or
ii) the upper internals are being moved, or
iii) loading and unloading fuel from the reactor, or
iv) heavy loads greater than 2300 lbs (except for installed crane systems) are being moved over the reactor with the reactor vessel head removed,

the following specifications (1) through (12) shall be satisfied:

1. Specification 3.8.A above shall be met.
2. The minimum boron concentration shall be the more restrictive of either ≥2000ppm or that which is sufficient to provide a shutdown margin ≥5% $\Delta k/k$. The required boron concentration shall be verified by chemical analysis daily.
3. Direct communication between the control room and the refueling cavity manipulator crane shall be available whenever changes in core geometry are taking place.
4. No movement of fuel in the reactor shall be made until the reactor has been subcritical for at least 174 hours or the more restrictive time period specified in Figure 3.8-1.

C. The following conditions are applicable to the spent fuel pit any time it contains irradiated fuel:

1. The spent fuel cask shall not be moved over <u>any</u> region of the spent fuel pit until the cask handling system has been reviewed by the Nuclear Regulatory Commission and found to be acceptable. Furthermore, any load in excess of the nominal weight of a spent fuel storage rack and associated handling tool shall not be moved on or above El. 95' in the Fuel Storage Building. Additionally, loads in excess of the nominal weight of a fuel and control rod assembly and associated handling tool shall not be moved over spent fuel in the spent fuel pit. The weight of installed crane systems shall not be considered part of these loads.

2. The spent fuel storage pit bulk water temperature shall not exceed 180°F. In the event the bulk water temperature increases above this value, all fuel additions to the spent fuel storage pit shall cease and immediate action shall be initiated to reduce the bulk water temperature to below 180°F.

D. The following conditions are applicable to the spent fuel pit anytime it contains fuel:

1. The spent fuel storage racks are categorized as either Region I or Region II as specified in Figure 3.8-2. Fuel assemblies to be stored in the spent fuel storage racks are categorized as either Category A, B or C based on burnup and enrichment limits as specified in Figure 3.8-3. The storage of Category A fuel assemblies within the spent fuel storage racks is unrestricted. Category B fuel assemblies shall only be stored in Region I or in a Region II spent fuel rack cell with one cell wall adjacent to a non-fuel area (a non-fuel area is the cask area or the area on the outside of a rack next to a wall). Category C fuel assemblies shall be stored only in Region I. The one exception to this shall be fuel assembly F-65 which shall be stored in Region I or in a Region II spent fuel rack cell with two cell walls adjacent to non-fuel areas.

   In the event any fuel assembly is found to be stored in a configuration other than specified, immediate action shall be initiated to:

   a. Verify the spent fuel storage pit boron concentration meets the requirements of Specification 3.8.D.2, and

   b. Return the stored fuel assembly to the specified configuration.

2. At all times the spent fuel storage pit boron concentration shall be at least 1500 ppm. With the boron concentration less than this value, all fuel movement within the spent fuel storage pit shall cease and immediate action shall be initiated to restore the boron concentration to at least the minimum specified.

3. During operations described in Specification 3.8.B, the spent fuel storage pit boron concentration shall be at least equal to that required in Specification 3.8.B.2. With the boron concentration less than the specified value either:

   a. Isolate the spent fuel storage pit from the refueling cavity, or

   b. Take actions required by Specification 3.8.B.12.

E. Specification 3.0.1 is not applicable to the requirements of Specification 3.8.

Basis

The equipment and general procedures to be utilized during refueling are discussed in the FSAR. Detailed instructions, the above-specified precautions, and the design of the fuel-handling equipment incorporating built-in interlocks and safety features, provide assurance that no incident could occur during the refueling operations that would result in a hazard to public health and safety(1). Whenever changes are not being made in core geometry, one flux monitor is sufficient. This permits maintenance of the instrumentation. Continuous monitoring of radiation levels and neutron flux provides immediate indication of an unsafe condition. The residual heat removal pump is used to maintain a uniform boron concentration.

The shutdown margin requirements will keep the core subcritical. During refueling, the reactor refueling cavity is filled with borated water. The minimum boron concentration of this water is the more restrictive of either 2000 ppm or else sufficient to maintain the reactor subcritical by at least 5% $\Delta k/k$ in the cold shutdown condition with all rods inserted. These limitations are consistent with the initial conditions assumed for the boron dilution incident in the safety analysis. Periodic checks of refueling water boron concentration ensure the proper shutdown margin. The specifications allow the control room operator to inform the manipulator operator of any impending unsafe condition detected from the main control board indicators during fuel movement.

In addition to the above safeguards, interlocks are utilized during refueling to ensure safe handling. An excess weight interlock is provided on the lifting hoist to prevent movement of more than one fuel assembly at a time. The spent fuel transfer mechanism can accommodate only one fuel assembly at a time.

The 131-hour decay time following plant shutdown and the 23 feet of water above the top of the reactor vessel flanges are consistent with the assumptions used in the dose calculations for fuel-handling accidents both inside and outside of the containment. The analysis of the fuel handling accident inside of the containment is based on an atmospheric dispersion factor (X/Q) of 5.1×10^{-4} sec/m^3 and takes no credit for removal of radioactive iodine by charcoal filters. The requirement for the fuel storage building charcoal filtration system to be operating when spent fuel movement is being made provides added assurance that the offsite doses will be within acceptable limits in the event of a fuel-handling accident. The additional month of spent fuel decay time will provide the same assurance that the offsite doses are within acceptable limits and therefore the charcoal filtration system would not be required to be operating.

The decay time limits prior to movement of spent fuel in Specification 3.8.B.4, the temperature limit in Specification 3.8.C.2, the fuel enrichment and burnup limits in Specification 3.8.D.1 and the boron requirements in Specification 3.8.D.2 assure the limits assumed in the spent fuel storage safety analysis will not be exceeded.

The requirement that at least one RHR pump and heat exchanger be in operation ensures that sufficient cooling capacity is available to maintain reactor coolant temperature below 140°F, and sufficient coolant circulation is maintained through the reactor core to minimize the effect of a boron dilution incident and prevent boron stratification.

The requirement to have two RHR pumps and heat exchangers operable when there is less than 23 feet of water above the vessel flange ensures that a single failure will not result in a complete loss of residual heat removal capability. With the head removed and at least 23 feet of water above the flange, a large heat sink is available for core cooling, thus allowing adequate time to initiate actions to cool the core in the event of a single failure.

The presence of a licensed senior reactor operator at the site and designated in charge provides qualified supervision of the refueling operation during changes in core geometry.

<u>Reference</u>

(1) FSAR Section 9.5.2

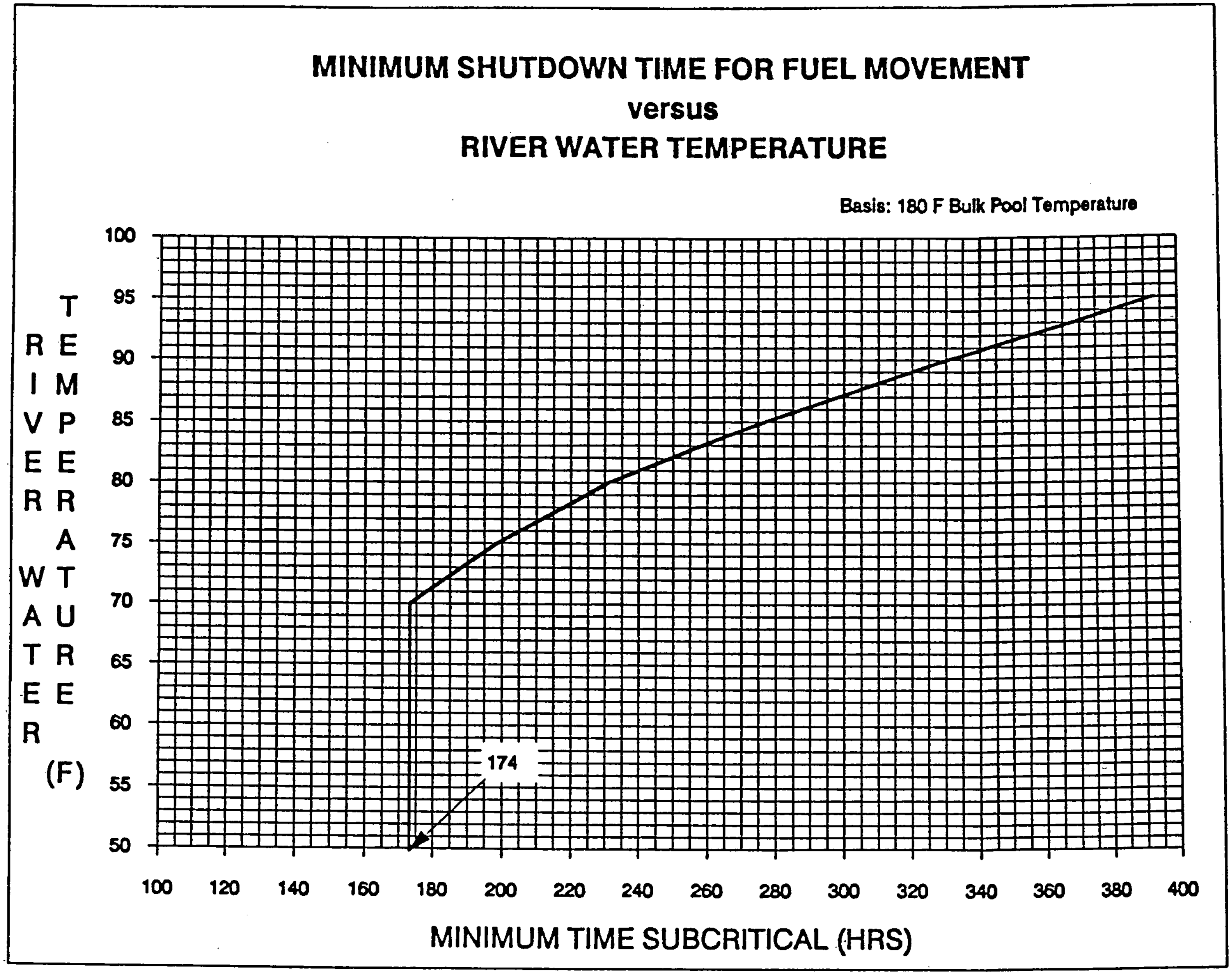

FIGURE 3.8-1

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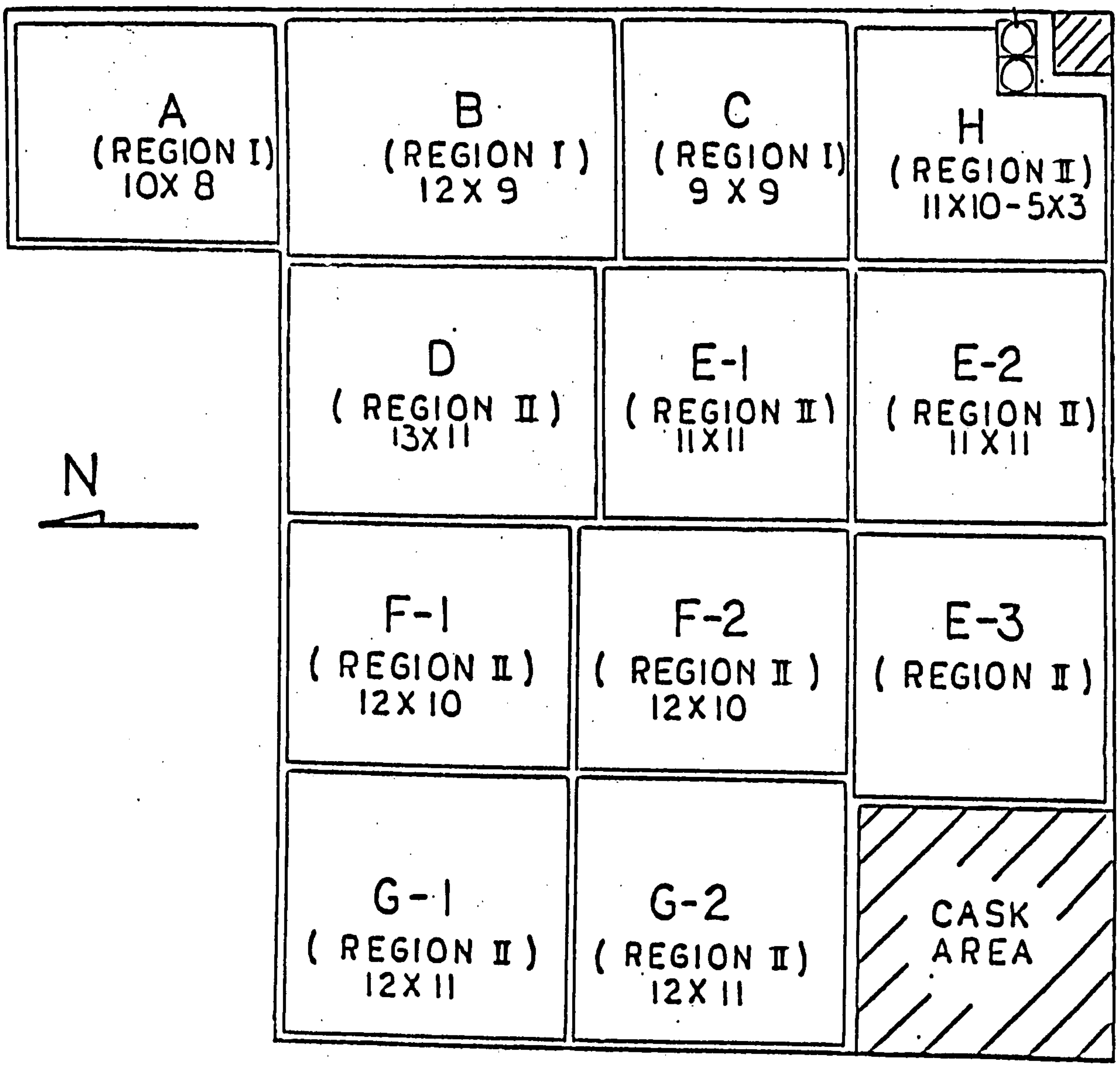

Spent Fuel Storage Rack Layout - IP2 Pool

Figure 3.8-2

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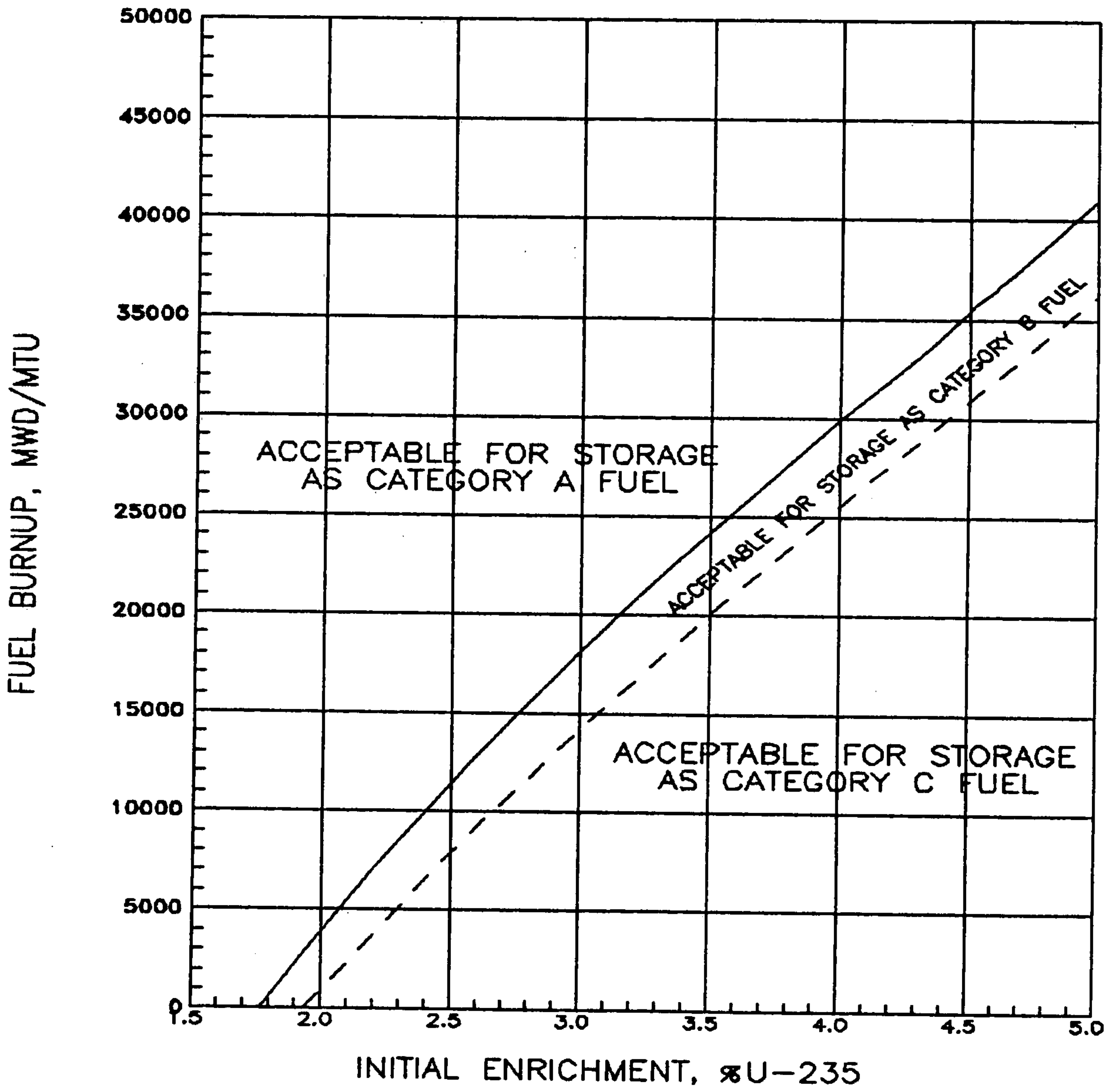

Limiting Fuel Burnup
Versus
Initial Enrichment

Amendment No.

Figure 3.8-3

TABLE 4.1-2

FREQUENCIES FOR SAMPLING TESTS

		Check	Frequency	Maximum Time Between Tests
1.	Reactor Coolant Samples	Gross Activity (1)	5 days/week (1)	3 days
		Radiochemical (2)	Monthly	45 days
		$\bar{E}$ Determination	Semi-annually (3)	30 weeks
		Tritium Activity	Weekly (1)	10 days
		F, Cl & O_2	Weekly	10 days
2.	Reactor Coolant Boron	Boron Concentration	Twice/week	5 days
3.	Refueling Water Storage Tank Water Sample	Boron Concentration	Monthly	45 days
4.	Boric Acid Tank	Boron Concentration	Twice/week	5 days
5.	DELETED			
6.	Spray Additive Tank	NaOH Concentration	Monthly	45 days
7.	Accumulator	Boron Concentration	Monthly	45 days
8.	Spent Fuel Pit	Boron Concentration	Monthly	45 days
9.	Secondary Coolant	Iodine-131	Weekly (4)	10 days
10.	Containment Iodine-Particulate Monitor or Gas Monitor	Iodine-131 and Particulate Activity or Gross Gaseous Activity	Continuous When Above Cold Shutdown (5)	NA*

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5.4 FUEL STORAGE

Applicability

Applies to the capacity and storage arrays of new and spent fuel.

Objective

To define those aspects of fuel storage relating to prevention of criticality in fuel storage areas.

Specification

1. The spent fuel pit structure is designed to withstand the anticipated earthquake loadings as a Class I structure. The spent fuel pit has a stainless steel liner to insure against loss of water.

2.A. The new fuel storage rack is designed so that it is impossible to insert assemblies in other than an array of vertical fuel assemblies with the sufficient center-to-center distance between assemblies to assure $K_{eff} \leq 0.95$ even if unborated water were used to fill the pit and with the fuel loading in the assemblies limited to 54.33 grams of U-235 per axial centimeter of fuel assembly.

2.B. The spent fuel storage racks are designed and their loading maintained within the limits of Technical Specification 3.8.D.1, such that $K_{eff} \leq 0.95$ even if unborated water were used to fill the pit and with the fuel loading in the assemblies limited to 56.6 grams U-235 per axial centimeter of fuel assembly.

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Attachment B

Licensing Report
(Including No Significant Hazards Consideration Evaluation)

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