UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

POWER AUTHORITY OF THE STATE OF NEW YORK

DOCKET NO. 50-333

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 115
License No. DPR-59

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Power Authority of the State of New York (the licensee) dated May 17, 19[illegible] as supplemented August 4, 1988, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-59 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 115 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert A. Capra

Robert A. Capra, Director
Project Directorate I-1
Division of Reactor Projects, I/II

Attachment: 115
Changes to the Technical
Specifications

Date of Issuance: August 26, 1988

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

ATTACHMENT TO LICENSE AMENDMENT NO. 115

FACILITY OPERATING LICENSE NO. DPR-59

DOCKET NO. 50-333

Revise Appendix A as follows:

Remove Pages	Insert Pages
94	94
227	227
228	228
229	229
230	230
230a	230a
230b	230b
230c	230c
231	231
232	232
233	233
235	235
235a	235a
235b	235b
236	236

3.3 (cont'd)

4. Control rods shall not be withdrawn for startup or during refueling unless at least two source range channels have an observed count rate equal to or greater than three counts per second except as permitted by Specification 3.10.B.3 and 3.10.B.4.

5. During operation with limiting control rod patterns, as determined by the designated qualified personnel, either:

   a. Both RBM channels shall be operable, or

   b. Control rod withdrawal shall be blocked, or

   c. The operating power level shall be limited so the MCPR will remain above the Safety Limit assuming a single error that results in complete withdrawal of any single operable control rod.

4. Prior to control rod withdrawal for startup or during refueling, verify that at least two source range channels have an observed count rate of at least three counts per second except as permitted by Specification 3.10.B.3 and 3.10.B.4.

5. When a limiting control rod pattern exists, an instrument functional test of the RBM shall be performed prior to withdrawal of the designated rod(s).

3.10 LIMITING CONDITIONS FOR OPERATION

3.10 CORE ALTERATIONS

Applicability:

Applies to fuel handling and core reactivity limitations.

Objective:

To assure that core reactivity is within the capability of the control rods and to prevent criticality during refueling.

Specification:

A. Refueling Interlocks

1. The Reactor Mode Switch shall be locked in the Refuel position during core alterations and the refueling interlocks shall be operable except as permitted by Specifications 3.10 A.5, 3.10.A.6, 3.10.A.7 and 3.10.D.

2. Fuel shall not be loaded into the reactor core unless all control rods are fully inserted except as permitted by Specification 3.10.A.7.

4.10 SURVEILLANCE REQUIREMENTS

4.10 CORE ALTERATIONS

Applicability:

Applies to the periodic testing of those interlocks and instruments used during refueling and core alterations.

Objective:

To verify the operability of instrumentation and interlocks used in refueling and core alterations.

Specification:

A. Refueling Interlocks

1. Prior to any fuel handling, with the head off the reactor vessel, the refueling interlocks shall be functionally tested. They shall also be tested at weekly intervals thereafter until no longer required and following any repair work associated with the interlocks.

2. Whenever the reactor mode switch is in the Refuel position and refueling interlocks are bypassed, one licensed operator and a member of the reactor analyst department shall verify that the control cell contains no fuel before the corresponding control rod is withdrawn.

3.10 (cont'd)

3. The fuel grapple hoist load switch shall be set at less than or equal to 650 lbs.

4. If the frame-mounted auxiliary hoist, the monorail-mounted auxiliary hoist, or the service platform hoist is to be used for handling fuel with the head off the reactor vessel, the hoist load switch on the hoist to be used shall be set at less than or equal to 400 lbs.

5. Any number of control rods may be withdrawn or removed from the reactor core provided:

   a. The reactor mode switch is locked in the "Refuel" position; and

   b. The fuel assemblies situated in the control cell of the control rod to be withdrawn have been removed; and

   c. Refueling interlocks associated with all control cells containing fuel are operable. Refueling interlocks associated with a specific control rod may be bypassed after the fuel assemblies in the control cell have been removed; and

   d. Fuel on-loading operations shall be suspended until Specification 3.10.A.2 is satisfied.

3.10 (cont'd)

6. A spiral off-load may be conducted provided:

   a. Refueling interlocks are operable for any control cell which contains fuel; and

   b. Refueling interlocks are bypassed only for those control cells which contain no fuel; and

   c. Fuel is removed from a control cell before its control rod is withdrawn.

7. A spiral onload may be conducted provided:

   a. Refueling interlocks may be bypassed only for those control cells which contain no fuel; and

   b. The spiral onload may commence at either the core center around a "dunking type detector" or, around one of the source range monitors. (Placement of the "dunking type detector" in the core center does not violate the intent of the spiral onloading pattern. Fuel may be loaded into this bundle location when the dunking detector has been removed.); and

   c. Before loading fuel into an empty control cell, its control rod is fully inserted, and the refueling interlocks for that control rod are operable; and

   d. Refueling interlocks are operable for any control cell which contains fuel.

3.10 (cont'd)

B. Core Monitoring

During core alterations two SRM's shall be operable, one in the core quadrant where fuel or control rods are being moved and one in an adjacent quadrant. For an SRM to be considered operable, the following conditions shall be satisfied:

1. The SRM shall be inserted to the normal operating level. (Use of special movable, dunking type detectors during initial fuel loading and major core alterations in place of normal detectors is permissable as long as the detector is connected into normal SRM circuit).

2. The SRM shall have a minimum of 3 counts/sec with all rods fully inserted in the core except as noted in 3 and 4 below.

3. Prior to spiral unloading, the SRM's shall have an initial count rate of 3 CPS. During spiral unloading, the count rate of the SRM's may drop below 3 CPS.

4.10 (cont'd)

B. Core Monitoring

Prior to making alterations to the core the SRM's shall be functionally tested and checked for neutron response. Fuel may be on-loaded as described in Specification 3.10.B.4 prior to this functional test. Thereafter, the SRM's will be checked daily for response, except as specified in Specification 3.10.B.3 and 4.

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3.10 (cont'd)

4. During Spiral reload, SRM operability will be verified by using a portable external source every 12 hours until enough fuel is loaded to maintain 3 CPS. Alternatively, a maximum of four fuel assemblies will be loaded in different cells containing control blades around each SRM to obtain the required 3 CPS. Until these assemblies have been loaded in a given quadrant, it is not necessary for the SRM in that quadrant to indicate the minimum count rate of 3 CPS. The loading of fuel near the SRM's does not violate the intent of the spiral reloading pattern.

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3.10 (cont'd)

C. Spent Fuel Storage Pool Water Level

Whenever irradiated fuel is stored in the spent fuel storage pool, the pool water level shall be maintained at a minimum level of 33 ft.

D. Control Rod and Control Rod Drive Maintenance

1. Two control rods may be withdrawn from the reactor core to perform maintenance provided:

   a. The Reactor Mode Switch is locked in the Refuel position and all refueling interlocks are operable except for those necessary to perform the demonstration and maintenance described in Specification 4.10.D.1.

   b. Control rods immediately face and diagonally adjacent to the control rods to be withdrawn are fully inserted, electrically disarmed and sufficient margin to criticality demonstrated.

   c. Control rods to be withdrawn are separated by three or more cells in any direction. (This specification does not apply to the control rods used to perform the demonstration required by Specification 3.10.D.1.b.)

4.10 (cont'd)

C. Spent Fuel Storage Pool Water Level

Whenever irradiated fuel is stored in the spent fuel storage pool, the pool water level shall be recorded daily.

D. Control Rod and Control Rod Drive Maintenance

1. When two control rods are withdrawn from the reactor core for maintenance, the following surveillance shall be performed:

   a. If the reactor vessel head is removed, specification 4.10.A.1 shall be satisfied.

   b. Demonstrate that the reactor core can be maintained subcritical with a margin of 0.38 percent Δk at any time during the maintenance with the analytically determined strongest worth operable control rod fully withdrawn. This margin shall be demonstrated after Specification 3.10.D.1 has been satisfied.

3.10 (cont'd)

2. More than two control rods may be withdrawn from the reactor core to perform maintenance provided:

   a. Specification 3.10.A.5 is satisfied.

4.10 (cont'd)

2. When more than two control rods are withdrawn from the reactor core for maintenance, the following surveillance shall be performed:

   a. Specifications 4.10.A.1 and 4.10.A.2 shall be satisfied.

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3.10 BASES (cont'd)

Switch is in the Refuel position only one control rod can be withdrawn except as noted in Specifications 3.10.A and 3.10.D. The refueling interlocks, in combination with core nuclear design and refueling procedures limit the probability of an inadvertent criticality. The nuclear characteristics of the core assure that the reactor is subcritical even when the highest worth control rod is fully withdrawn. The combination of refueling interlocks for control rods and the refueling platform provide redundant methods of preventing inadvertent criticality even after procedural violations. The interlocks on hoists provide yet another method of avoiding inadvertent criticality.

For a new core, the dropping of a fuel assembly into the vacant fuel location adjacent to a withdrawn control rod does not result in an excursion or a critical configuration, thus adequate margin is provided.

A spiral off-loading pattern is one in which the fuel in the outer-most cells (four fuel bundles surrounding a control blade) is removed first. Off-loading continues by removing the remaining outermost fuel by cell so that the center cell will be removed last. A spiral on-load may start at either the core center around a dunking chamber or around one of the SRMs. Spiral on-loading and off-loading precludes the formation of flux traps (moderator-filled cavities surrounded on all sides by fuel.) It is not necessary to accomplish a full core offload or onload in order to utilize the spiral movement procedure as long as the partial unloading/reloading plan complies with the description given above.

The Spiral off-loading procedure is a special case of the method described in Specification 3.10.A.5. The spiral loading procedure is justified by the same logic used in the Bases for Specification 3.10.D. There it is noted that any control cell which contains 4 fuel bundles and a fully inserted control blade is more reactive than the same control cell after the fuel bundles and control blade have been withdrawn. Thus, during spiral onloading or offloading, the shutdown margin of the partially loaded core cannot possibly be less than the shutdown margin of the complete core which is required to comply with Specification 3.3.

B. Core Monitoring

The SRM's are provided to monitor the core during periods of plant shutdown and to guide the operator during refueling operations and plant startup. Requiring two operable SRM's in or adjacent to a core quadrant where fuel or control rods are being moved assures adequate monitoring of that quadrant during such alterations. The requirement of 3 counts/sec provides assurance that neutron flux is being monitored and insures that startup is conducted only if the source range flux level is above the minimum assumed in the control rod drop accident.

Under the special condition of spiral core unloading, it is expected that the SRM count rate will drop below 3 CPS before all of the fuel is unloaded. Since there will be no reactivity additions, a lower number of counts will not present a hazard. When all of the fuel has been removed to the spent fuel storage pool, the SRM's will no longer be required. Requiring the SRM's to be operable prior to fuel removal assures that the SRM's are operable and can be relied on even when the count rate drops below 3 CPS.

During spiral loading of the core, SRM operability will be verified by using a portable external source every 12 hours until enough fuel has been loaded to maintain at least 3 CPS. Alternatively, a maximum of four fuel assemblies will be loaded in different cells containing control blades around each SRM to obtain the required 3 CPS. Until these assemblies have been loaded, the adjacent SRM is not required to indicate the minimum count rate of 3 CPS.

C. Spent Fuel Storage Pool Water Level

To assure that there is adequate water to shield and cool the irradiated fuel assemblies stored in the pool, a minimum pool water level is established. The minimum water level of 33 ft. is established because it would be a significant change from the normal level (37 ft.-9 in.), well above a level to assure adequate cooling (just above active fuel).

D. Control Rod and Control Rod Drive Maintenance

During certain periods, it is desirable to perform maintenance on two control rods and/or control rod drives at the same time. Specification 3.10.D.1 provides assurances that inadvertent criticality does not occur during such maintenance.

The maintenance is performed with the Mode Switch in the Refuel position to provide the refueling interlocks normally available during refueling operations as explained in Part A of these Bases. In order to withdraw a second control rod after withdrawal of the first rod, it is necessary to bypass the refueling interlock on the first control rod, which prevents more than one control rod from being withdrawn at the same time. The requirement that an adequate shutdown margin be demonstrated with the control rods remaining in-service insures that inadvertent criticality cannot occur during this maintenance. The shutdown margin is verified by demonstrating that the core is shut down even if the strongest control rod remaining in-service is fully withdrawn. Disarming the directional control valves does not inhibit control rod scram capability. Disarming a fully inserted control rod renders it incapable of being withdrawn and, therefore, excludes it from selection as the highest worth control rod for the purposes of the demonstration described in Specification 4.10.D.1.b.

The requirement for SRM operability during the maintenance is covered in Part B above.

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The intent of Specification 3.10.D.2 is to permit the unloading of a significant portion of the reactor core for such purposes as in-service inspection requirements, examination of the core support plate, etc.

This Specification provides assurance that inadvertent criticality does not occur during such operation.

This operation is performed with the Mode Switch in the Refuel position to provide the refueling interlocks normally available during refueling as explained in Part A above. In order to withdraw more than one control rod, it is necessary to bypass the refueling interlock on each withdrawn control rod which prevents more than one control rod from being withdrawn at a time. The requirement that the fuel assemblies in the cell controlled by the control rod be removed from the reactor core before the interlock can be bypassed ensures that withdrawal of another control rod does not result in inadvertent criticality. Each control rod essentially provides reactivity control for the fuel assemblies in the cell associated with that control rod. Thus, removal of an entire cell (fuel assemblies plus control rod) results in a lower reactivity potential of the core.

The requirement for SRM operability during these operations is covered in Part B above.