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Power  
Company

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Director,  
Nuclear Reactor Regulation  
US Nuclear Regulatory Commission  
Washington, DC 20555

DOCKET 50-155 - LICENSE DPR-6 - BIG ROCK POINT PLANT -  
IMPLEMENTATION SCHEDULE FOR 10CFR50.62, REQUIREMENTS FOR  
REDUCTION OF RISK FROM ANTICIPATED TRANSIENTS WITHOUT SCRAM (ATWS)

In July, 1984 the NRC published requirements (10CFR50.62) for the reduction of risk from anticipated transients without scram (ATWS). This rule requires licensees to submit a proposed schedule for meeting the requirements of paragraphs (c)(1) through (c)(5) by 180 days after the issuance of QA guidance for non-safety related components. The QA guidance was issued in Generic Letter 85-06 dated April 16, 1985. Accordingly, the requirements that apply to Big Rock Point are summarized as follows:

- 10CFR50.62(c)(3) Alternate rod injection system  
(diverse from the existing reactor protection system)
- 10CFR50.62(c)(4) Liquid poison control system which has an equivalent capacity of 86 gpm of 13 weight percent sodium pentaborate solution
- 10CFR50.62(c)(5) Automatic recirculating pump trip

Our response to these requirements is as follows:

Alternate Rod Injection System - 10CFR50.62(c)(3)

Consumers Power Company will perform risk based evaluations to determine the efficacy of alternate rod injection. This work will be ranked and scheduled as part of the Big Rock Point Living Schedule. Future updates and status reports will be provided with Living Schedule updates.

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Liquid Poison Control System - 10CFR50.62(c)(4)

Equivalent control capacity for standby liquid control was defined by the NRC in a letter dated January 28, 1981 (Generic Letter 85-03). The Big Rock Point liquid poison system exceeds the requirements of this rule. Smaller vessels require proportionally less sodium pentaborate flow to meet the rate of poison injection requirement of 10 CFR 50.62(c)(4) than does the 251 inch diameter vessel on which the rule was based. The Big Rock Point reactor vessel has a diameter of only 106 inches and sodium pentaborate solution is on the order of 19 weight percent. Injection rate with the reactor at power is 132 gpm.

It should be noted that because of unique operating features associated with plant design that the injection rates established by the rule are probably not appropriate for Big Rock Point. It is useful to get a sufficient amount of poison to the core to shut the reactor down quickly during a Big Rock ATWS. The effectiveness of the poison system in providing a relatively quick shutdown of the reactor and a detailed description of the poison system itself was provided as a part of our February 26, 1981 Automatic Recirculating Pump Trip risk evaluation. The system operates on natural circulation and requires no charging pumps. A high pressure nitrogen accumulator is available to provide initial force to establish poison flow to the reactor. With the reactor at power, sufficient sodium pentaborate can be injected to the primary coolant to result in reactor shutdown on the order of one minute following actuation. Five minutes of natural circulation injection provides a sufficient amount of poison to permit subcriticality even at cold conditions.

The Big Rock Point poison system has been designed to requirements more restrictive than this portion of the rule and therefore no further action is required.

Automatic Recirculating (RPT) Pump Trip (RPT) - 10CFR50.62(c)(5)

Automatic recirculating pump trip (RPT) has been demonstrated to be of minimal safety significance at Big Rock Point because of several unique plant design features: oversized safety relief valve capability on the order of 200% rated power precludes the potential for primary system overpressurization and a large containment volume relative to primary system stored and decay energy minimizes the potential for containment overpressurization.

Unlike other BWRs, the principle benefit of an automatic recirculating pump trip is limited to an extension of time for operator initiation of the liquid poison system. Extensive evaluation of this issue by the NRC and Consumers Power Company has been performed in recent years:

- October, 1975 - NEDE-21065 Anticipated Transients Without Scram Study for the Big Rock Point Power Plant.
- February 21, 1980 - Staff Confirmatory Order to install automatic RPT at Big Rock Point.
- December 3, 1980 - CPC request for deferral of automatic RPT based on preliminary insights from risk assessment.

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- January 15, 1981 - Amendment 38 to Big Rock Point license deferring RPT until staff review of PRA was complete.
- February 26, 1981 - Consumers Power Company's risk assessment of automatic RPT and alternatives.
- September 10, 1981 - Response to staff questions on efficacy of  
& December 17, 1981 automatic RPT.
- May, 1984 - NUREG-0820 Integrated Plant Safety Assessment Section 5.3.18 concluding that the benefits of automatic RPT are limited at Big Rock.
- May 17, 1984 - NRC Safety Evaluation of the Big Rock Point Probabilistic Risk Assessment and requested deferrals concluding that the benefits of automatic RPT are limited at Big Rock.
- May 30, 1984 - Response to NRC request concluding automatic RPT is not cost-beneficial even if non-safety grade equipment is procured.

Based on the limited benefits of an automatic RPT as demonstrated in the referenced NRC and Consumers Power Company evaluations, an exemption from the requirements of 10 CFR 50.62(c)(5) is requested.

  
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