Commonwealth Edison
Byron Nuclear Station
4450 North German Church Road
Byron, Illinois 61010

July 29, 1994

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Mr. William Russell, Director
Office of Nuclear Reactor Regulation
U.S Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Request for Notice of Enforcement Discretion for Technical Specification 3.3.3.5
Byron Station Unit 1, NPF-37, NRC Docket Numbers 50-454

Dear Mr. Russell:

The purpose of this letter is to request a Notice of Enforcement Discretion for Technical Specification 3.3.3.5, Remote Shutdown Instrumentation, for Byron Station Unit 1.

On July 25, 1994, at 0920 hours, Byron Unit 1 entered Technical Specification 3.3.3.5, Action Statement "a" due to having less than the minimum number of operable remote shutdown monitoring channels as required by Table 3.3.9, Remote Shutdown Monitoring Instrumentation. Specifically, item 3..., hot leg wide range RTD, of the table requires a minimum of one channel per loop to be operable. The 1B RTD, although operating as required by Technical Specifications, is in a degraded condition. ComEd has declared the channel inoperable because there is reason to believe that it may not be available under certain containment cooling conditions.

The basis of the request for Enforcement Discretion is provided in the attachment and includes:

- The Technical Specification that will be violated;
- The circumstances surrounding the condition, including the need for prompt action;
- Any proposed compensatory measure(s);

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- The safety basis for the request that enforcement discretion be exercised, including an evaluation of the safety significance and potential consequences.

- Justification for the duration of the request;

- The basis for the conclusion that the request will not have a potential adverse impact on the public health and safety and that a significant safety hazard is not involved; and

- The basis for the conclusion that the request will not involve adverse consequences to the environment.

ComEd requests that the Enforcement Discretion extend the allowed outage time for the affected channel until September 9, 1994, when the unit is scheduled to begin a refueling outage, or until approval of an emergency Technical Specification change. The required repair is scheduled during the refueling outage, as originally planned, when the channel is not required by the Technical Specification.

This request for Enforcement Discretion has been reviewed and approved by the Byron On-Site Review Committee in accordance with station procedures.

ComEd sincerely appreciates the NRC Staff's effort and participation in the review of this request. Please direct any questions or comments to Ken Gerling at (815) 234-5441, extension 2474.

Sincerely,

D K Schwartz for

Kenneth L. Graesser
Site Vice President
Byron Nuclear Power Station

KLG/KG/rp

Attachment

cc: G. F. Dick, Byron Project Manager - NRR
H. Peterson, Senior Resident Inspector - Byron
J. B. Martin, Regional Administrator - Region III
Office of Nuclear Facility Safety - IDNS

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REQUEST FOR ENFORCEMENT DISCRETION
BYRON STATION
UNIT 1
JULY 28, 1994

1. TECHNICAL SPECIFICATION OR LICENSING CONDITION THAT WILL BE VIOLATED:

A. Summary of the relief request.

Byron is requesting enforcement discretion from Technical Specification 3.3.3.5, Remote Shutdown Instrumentation, for the Unit 1B wide range (WR) Hot Leg RTD. This specification requires that with the number of OPERABLE remote shutdown monitoring channels less that the Minimum Channels operable, restore the inoperable channel to the operable status within 7 days, or be in at least Hot Standby within the next 6 hours and in Hot Shutdown within the following 6 hours.

The 1B Hot Leg RTD was declared inoperable on July 25,1994 at 0920 (CDT). The 7 day allowable outage time (AOT) will expire on Monday August 1, 1994 at 0920(CDT) at which time the action required to meet the intent of the Technical Specification is to place the unit in Hot Standby. To avoid placing Byron Unit 1 in an unnecessary shutdown condition from its current coastdown operations, and cycling Unit 1 through an unnecessary thermal transient, Commonwealth Edison Company (ComEd) requests an allowance outage time extension of six weeks or until approval of an emergency technical specification change. The emergency tech spec change will be submitted by the end of business on Tuesday, August 2, 1994. Byron Unit 1 is currently in coastdown operations due to the end of cycle fuel depletion. Large changes in reactor power during this period in the core fuel cycle or completely shutting the reactor down will induce Xenon and Delta I transients creating reactivity changes that can sometimes be difficult to stabilize. ComEd will not request an extension to the requested time period and will implement proper repairs to the connections if an outage were to occur.

B. The current licensing requirement(s).

The remote shutdown monitoring instrumentation channels given in Table 3.3-9 shall be operable with readouts displayed external to the control room. With the number of operable remote shutdown monitoring channels less than the Minimum Channels operable, restore the inoperable channel to the operable status within 7 days, or be in at least Hot Standby within the next 6 hours and in Hot Shutdown within the following 6 hours.

C. Basis for the license requirements

The Remote Shutdown System provides the Nuclear Station Operator (NSO) with sufficient instrumentation and controls to place and maintain the unit in a safe shutdown condition from a location other than the control room. The operability of the remote shutdown instrumentation ensures that sufficient information is available to permit shutdown and maintain Hot Standby conditions of the facility from locations outside of the control room. This capability is required in the event control room habitability is lost and is consistent with General Design Criterion 19 of 10 CFR Part 50. If the control room becomes inaccessible, the operators can establish control at the remote shutdown panel (RSDP), and place and maintain the unit in MODE 3. The unit automatically reaches MODE 3 following a unit shutdown and can be maintained safely in MODE 3 for an extended period of time. With the unit in MODE 3, the Auxiliary Feedwater (AFW) System and the steam generator (SG) safety valves or the SG atmospheric dump valves can be used to remove core decay heat and meet all safety requirements.

2. CIRCUMSTANCES SURROUNDING THE SITUATION:

During the performance of Technical Specification monthly surveillance requirement (SR) 4.6.3.2 a of the Reactor Containment Fan Coolers (RCFCs) it was noted that the 1B Hot Leg RTD indication becomes erratic. This problem was first noted while performing the RCFC surveillance in April and again in May of 1994. The problem was reviewed by the System Engineer and the Instrument Maintenance Department (IMD). The RTD Amplifier card (NRA card) was removed and replaced with a qualified spare after the May occurrence. This action returned the indication of the 1B Hot Leg WR RTD to normal. The Instrument Maintenance department assumed the NRA card was bad and wrote a work request to repair the card. This action was reviewed and believed to be the root cause of the erratic indication of the 1B wide range RTD problem.

The indication remained within the required allowable tolerances specified for operability for the next month. On performing the RCFC surveillance for June, the RTD started indicating erratically. The NSOs noted the problem, logged the deviation, and noted that the indication on the 1B RTD returned to normal within minutes after completion of the surveillance. The June event appeared to be a short spike and therefore the channel was not declared inoperable at that time.

During the July RCFC surveillance, conducted on July 25, the 1B wide range RTD again provided erratic indications. The 1B wide range RTD was declared inoperable at 0920 on the 25th and the seven day action requirement was entered. The System Engineer and IMD were informed of the problem and an investigation was initiated to determine the root cause of the problem.

The NRA card was replaced again, and multiple combinations of RCFCs were utilized in an attempt to recreate the erratic indication. Some effect was seen on the RTD output. Although the deviations were minor and within allowable tolerances this indicates that a problem still exists that cannot be corrected from outside of the containment. Based on tests of the instrument loop and prior experience with narrow range RTD instrumentation it is believed that the root cause of the problem is a cable splice located inside containment.

3. COMPENSATORY ACTIONS:

During the period of time that the enforcement discretion is in effect the following compensatory actions will be in place:

- At power conditions will be maintained for Unit 1 during the coastdown period.

- Operation personnel will be made aware of the circumstances surrounding the enforcement discretion and a special operating order will be written on the requirement to monitor the redundant instrumentation available at the Fire Hazards Panel if evacuation of the control room and use of the RSDP is required.

- The work required to correct the erratic operation of the 1B Hot Leg wide range RTD has been added to the Pending Action Work Schedule if the unit is shutdown prior to the scheduled outage date. If an unscheduled outage does not occur, the repair will be performed as scheduled for B1RO6.

- The NRA card has been replaced and the channel is currently operating within the acceptance criteria.

4. EVALUATION OF THE SAFETY SIGNIFICANCE AND CONSEQUENCES:

The OPERABILITY of the remote shutdown instrumentation ensures that sufficient information is available to permit shutdown and maintenance of Hot Standby of the facility from locations outside of the control room. This capability is required in the event control room habitability is lost. The operators can establish control at the remote shutdown panel and place and maintain the unit in MODE 3.

With Byron Unit 1 in a normal at power configuration, the 1B wide range RTD for the Hot Leg responds as expected. The wide range loop RTDs are a dual element RTD. One element provides indication to the control room and RSDP. The second element in the RTD well, while not safety related, inputs to the Fire Hazards Panel which is powered from a safety related bus.

The probability of an event that would require evacuation of the control room is very low and if required, plant procedures direct the operating personnel to use other available instrumentation, in the event the 1B WR RTD indication is unavailable.

The wide range RTDs are also required by Technical Specification 3.3.3.6, Post Accident Monitoring (PAM) Instrumentation, however only two loops are required to be operable at any one time to satisfy the requirements of the Specification. The primary purpose of the PAM instrumentation is to display unit variables that provide information required by the control room operators during accident situations. The operability of the accident monitoring instrumentation ensures that there is sufficient information available on selected unit parameters to monitor and to assess unit status and behavior following an accident. This specification is satisfied with the current plant conditions.

In the event of an accident requiring the use of the wide range temperature indications in the control room, the other three loops Hot Leg indications are operable and available. Each loop's cold leg RTD is also operable and available in the control room. The preferred instrumentation in the control room for measuring RCS temperature indication is the Core Exit Thermocouples (CETCs), which are also operable.

5. JUSTIFICATION FOR THE DURATION OF THE REQUEST:

The requested allowed outage time extension for the 1B Hot Leg wide range RTD is six weeks. This time is requested to complete the current fuel cycle and coincide with the scheduled refueling outage, B1RO6, to begin on September 9, 1994 . The following activities and estimated time durations are necessary to correct the probable cause of a loose lug connection at the junction box located in containment if this NOED is not allowed. The repair would require entering the containment at power or completely shutting down Byron Unit 1.

Performing the repair at power:

- Repairs at power would entail approximately 2 to 3 hours in a 4 to 7 REM/hr radiation field making this option unacceptable due to ALARA considerations.

- Ramping down reactor power to reduce radiation fields also presents challenges due to induced Xenon/Delta I transients which are amplified during coastdown. Ramping down causes Xenon concentrations in the core to increase which in turn reduces reactor power even further through a negative reactivity feedback loop. With the loss of mechanisms to provide positive reactivity insertions, such as RCS Boron dilution, the negative reactivity feedback loop can result in a "Xenon-Induced" shutdown.

Performing the repair after a shutdown:

- Currently Byron Unit 1 has experienced a Loss of Full Power Capability (LFPC) and is in coastdown operations. The Unit is at 70% reactor power and at 18,473 MWD/MTU in burnup.

  With the Unit in coastdown the core is sensitive to changes in reactivity such as those in reactor power, control rod movement, and RCS temperature. The core responds to reactivity changes through Xenon/Delta I transients that can sometimes be difficult to stabilize. These core sensitivities are attributed to fuel depletion in the center region of the core with the core end regions relatively neutronically decoupled.

  Startup from the shutdown condition will again present challenges. In order to minimize Xenon/Delta I transients, startup should begin with the core Xenon-free. Even at the Xenon-free condition, this startup would experience Xenon build-in/Delta I effects from power increases, control rod movement, temperature changes and RCS dilution due to the inherent separable behavior of the core. The Xenon build-in distribution effects may also impact Quadrant Power Tilt Ratio.

Therefore, the AOT extension is requested to complete the current fuel cycle and repair the lug connection with the butt connection as currently scheduled to coincide with the refueling outage to begin on September 9, 1994 .

6. EVALUATION OF SIGNIFICANT HAZARDS CONSIDERATION:

Commonwealth Edison has evaluated the proposed relief request and determined that it involves no significant hazards considerations. According to 10CFR50.92(c), the proposed relief involves no significant hazards considerations if operation of the facility in accordance with the relief request would not:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated; or

2. Create the possibility of a new or different kind of accident from any accident previously evaluated; or

3. Involve a significant reduction in a margin of safety.

According to 10CFR50.92(c), the basis for this determination of no significant hazards considerations if continued operation of the facility is presented below.

A. The proposed relief request does not involve a significant increase in the probability or consequences of an accident previously evaluated.

Byron is requesting enforcement discretion from Technical Specification 3.3.3.5, Remote Shutdown Instrumentation. This specification requires that with the number of operable channels less than the minimum, restore the inoperable channel to the operable status within 7 days, or be in at least Hot Standby within the next 6 hours and in Hot Shutdown within the following 6 hours.

Availability of wide range hot leg temperature instrumentation is not considered a precursor for any of the accidents evaluated in the UFSAR. Therefore, providing an extension to the allowed outage time to permit an inoperable 1B wide range hot leg temperature RTD for six weeks will not result in a significant increase in the probability of an accident previously evaluated.

The operability of the remote shutdown instrumentation ensures that sufficient information is available to permit plant shutdown and provide the capability to maintain the plant in Hot Standby (Mode 3) from locations outside of the control room. This capability is required in the event control room habitability is lost. Review of 10 CFR 50 Appendix R requirements and the Byron Unit 1 Fire Protection Report identified the assumptions made in performing the safe shutdown analysis for a control room fire. It is assumed that a control room fire does not occur simultaneously with other accidents, events, or phenomena, except for a single unit loss of offsite power.

For a fire in the control room, it is assumed that the operators will evacuate the control room. Byron procedure BOA PRI-5, "Main Control Room Inaccessibility," provides the guidance to establish control from the Remote Shutdown Panel (RSDP) and to place and maintain the unit in a safe shutdown condition. When at the RSDP, BOA PRI-5 provides direction to use the indications available at the Fire Hazards Panel if indications are unavailable at the RSDP. Redundant wide range temperature indication for each loop's hot and cold legs is available at the Fire Hazards Panel. The Fire Hazards Panel is powered from a safety related power source although the wide range hot leg temperature indications are not safety related. The erratic behavior of the 1B wide range temperature indication appears to have been induced by localized temperatures or vibration. Since the event resulting in control room inaccessibility is unlikely to create the environment to induce the erratic behavior, the wide range temperature indications are expected to be available to the RSDP operator.

Procedures for natural circulation and a small break LOCA are also impacted by the loss of the wide range hot leg temperature indication. ES-0.2, "Natural Circulation", requires the use of the wide range hot leg RTDs or Core Exit Thermocouples to verify cooldown is occurring . This procedure also identifies a backup indication of the cold leg RTDs being consistent with the saturation temperature for the Steam Generators. ES-1.2, "Post LOCA Cooldown and Depressurization," directs the use of the wide range hot leg RTDs as one of five conditions which support or indicate natural circulation. The procedure also uses wide range hot leg indication during SI flow reduction, when inadequate subcooling is indicated, to determine the need for Residual Heat Removal pump restart. However, unavailability of a single loop's indication would not impact the operator's ability to correctly determine if the pump should be restarted.

Therefore, since the subject instrumentation does not contribute to the probability of occurrence of an accident and backup indication is available and identified to an operator in the event of an accident, this request for enforcement discretion will have no effect on the probability or consequences of any accident previously evaluated for power operation.

B. The proposed relief request does not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed change does not create the possibility of a new of different kind of accident from any previously analyzed. The proposed extension to shutdown panel indication allowed outage time does not result in plant operations or configurations that could create a new or different type of accident. The compensatory measures which have been implemented have been evaluated to ensure they do not result in any component or system being placed in an unanalyzed configuration.

C. The proposed relief request does not involve a significant reduction in a margin of safety.

The proposed change does not involve a significant reduction in a margin of safety. The proposed time allowed to operate with one wide range hot leg RTD inoperable, prior to requiring a shutdown, is acceptable based on the availability of redundant indication on the Fire Hazards Panel and on the small probability of a failure of the remaining indications concurrent with an event requiring the use of the Remote Shutdown Panels. The exposure of the unit to the small probability of an event requiring use of the Remote Shutdown Panels during the increased time period is insignificant and offset by the benefit of avoiding an unnecessary plant transient. Therefore, this change does not involve a significant reduction in a margin of safety. Therefore, based on the above evaluation, Commonwealth Edison has concluded that this request for enforcement discretion does not involve significant hazards consideration.

7. ENVIRONMENTAL ASSESSMENT:

Commonwealth Edison has evaluated the proposed request against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10CFR51.21. It has determined that the proposed request meets the criteria for categorical exclusion as provided for in 10CFR51.22(c). This determination is based on the fact that this request is being proposed as relief to a license issued pursuant to 10 CFR 50, and the proposed AOT extension represents a change in a requirement with respect to the availability of a facility instrumentation located within the restricted area, and the change involves no significant hazards considerations. In addition, there is no change in the amount or type of releases made offsite, and there is no significant increase in individual or cumulative radiation exposure.

8. APPROVAL BY ONSITE REVIEW:

The request has been reviewed and approved by the Byron On-Site Review Committee, in accordance with the Byron Station procedures.