



January 11, 1996

United States Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

Subject: Application for Amendment to Appendix A, Technical Specifications,
for Facility Operating Licenses:

Byron Nuclear Power Station, Units 1 and 2
Facility Operating Licenses NPF-37 and NPF-66
NRC Docket Nos. 50-454 and 50-455

Braidwood Nuclear Power Station, Units 1 and 2
Facility Operating Licenses NPF-72 and NPF-77
NRC Docket Nos. 50-456 and 50-457

Specification 3.3.1, Reactor Trip System Instrumentation, Table 3.3-1,
Functional Unit 6, Source Range, Neutron Flux

Reference: 1. NUREG-1431, "Standard Technical Specifications Westinghouse
Plants," Revision 1, April 1995

Ladies and Gentlemen:

Pursuant to Title 10, Code of Federal Regulations, Part 50, Section 90 (10 CFR 50.90), Commonwealth Edison Company (ComEd) proposes to amend Appendix A, Technical Specifications, for Facility Operating Licenses NPF-37, NPF-66, NPF-72, and NPF-77 for Byron Nuclear Power Station, Units 1 and 2 (Byron), and Braidwood Nuclear Power Station, Units 1 and 2 (Braidwood), respectively. ComEd proposes to revise Technical Specification 3.3.1, "Reactor Trip System Instrumentation," Table 3.3-1, Functional Unit 6, "Source Range, Neutron Flux," consistent with the Improved Standard Technical Specifications (Reference 1).

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This proposed license amendment request would remove the overly conservative requirements placed on continued plant operation in Modes 3, 4, and 5 when only one source range detector is operable for a period of greater than forty-eight (48) hours. Specifically, this proposed license amendment request will still require that the reactor trip breakers (RTBs) be opened after 48 hours with one inoperable source range detector. However, the requirements to suspend all operations involving positive reactivity changes and verifying valves CV-111B, CV-8428, CV-8439, CV-8441, and CV-8435 are closed and secured in position will be removed. The remaining operable source range detector will continue to provide the necessary indication and input into the boron dilution protection system (BDPS) to mitigate the consequences of an uncontrolled dilution event. These overly conservative requirements can have adverse effects on shutdown safety considerations such as reactor coolant system inventory control. The requirements for both source range detectors being simultaneously inoperable would remain essentially unchanged.

The proposed changes in this license amendment request have been reviewed and approved by both On-site and Off-site Review in accordance with ComEd procedures. A detailed description and a safety analysis of the proposed changes are presented in Attachment A. The proposed changes to Appendix A, Technical Specifications, are presented in Attachments B-1 and B-2 for Byron and Braidwood, respectively. ComEd has reviewed this proposed license amendment request in accordance with 10 CFR 50.92(c) and has determined that no significant hazards consideration exists. This evaluation is documented in Attachment C. An Environmental Assessment has been completed and is contained in Attachment D.

ComEd is notifying the State of Illinois of our application for this license amendment request by transmitting a copy of this letter and its attachments to the designated State Official.

Furthermore, ComEd respectfully requests that the United States Nuclear Regulatory Commission (NRC) Staff review and approve this license amendment request no later than March 1, 1996. Braidwood is planning to replace both source range detectors during the Braidwood, Unit 2, Cycle 5, Refuel Outage (A2R05) currently scheduled to begin March 2, 1996. Approval of this proposed license amendment request prior to A2R05 would minimize outage scheduling conflicts and potential adverse effects on shutdown safety considerations with no decrease in the level of safety afforded during the replacement of the source range detectors.

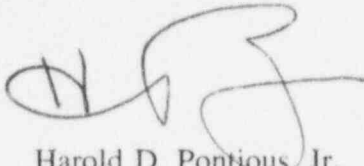
To the best of my knowledge and belief, the statements contained in this document are true and correct. In some respects these statements are not based on my personal knowledge, but on information furnished by other ComEd employees, contractor

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employees, and/or consultants. Such information has been reviewed in accordance with company practice, and I believe it to be reliable.

Please address any comments or questions regarding this matter to this office.

Very truly yours,



Harold D. Pontious, Jr.
Nuclear Licensing Administrator

Signed before me

on this 11th day of January, 1995

by Mary Jo Yack
Notary Public



- Attachment A: Description and Safety Analysis of the Proposed Changes
- Attachment B-1: Proposed Changes to Appendix A, Technical Specifications, for the Byron Nuclear Power Station, Units 1 and 2
- Attachment B-2: Proposed Changes to Appendix A, Technical Specifications, for the Braidwood Nuclear Power Station, Units 1 and 2
- Attachment C: Evaluation of Significant Hazards Considerations
- Attachment D: Environmental Assessment
- cc: H. J. Miller, Regional Administrator - RIII
G. F. Dick Jr., Byron Project Manager - NRR
R. R. Assa, Braidwood Project Manager - NRR
H. Peterson, Senior Resident Inspector - Byron
C. J. Phillips, Senior Resident Inspector - Braidwood
Office of Nuclear Facility Safety - IDNS

ATTACHMENT A

DESCRIPTION AND SAFETY ANALYSIS FOR PROPOSED CHANGES TO APPENDIX A, TECHNICAL SPECIFICATIONS, OF FACILITY OPERATING LICENSES NPF-37, NPF-66, NPF-72, AND NPF-77

A. DESCRIPTION OF THE PROPOSED CHANGE

Commonwealth Edison Company (ComEd) proposes to amend Technical Specification (TS) 3.3.1, "Reactor Trip System Instrumentation," Table 3.3-1, Functional Unit 6, "Source Range, Neutron Flux," for both Byron Nuclear Power Station, Units 1 and 2 (Byron), and Braidwood Nuclear Power Station, Units 1 and 2 (Braidwood) to be consistent with NUREG-1431, "Standard Technical Specifications Westinghouse Plants," Revision 1, April 1995 (NUREG-1431), TS 3.3.1, "Reactor Trip System Instrumentation," Table 3.3.1-1, Function 5, "Source Range Neutron Flux."

This proposed license amendment request would remove the overly conservative requirements placed on continued plant operation in Modes 3, 4, and 5 when only one source range detector is operable for a period of greater than forty-eight (48) hours. Specifically, this proposed license amendment request will still require that the reactor trip breakers (RTBs) be opened after 48 hours with one inoperable source range detector. However, the requirements to suspend all operations involving positive reactivity changes and verifying valves CV-111B, CV-8428, CV-8439, CV-8441, and CV-8435 are closed and secured in position will be removed. The remaining operable source range detector will continue to provide the necessary indication and input into the boron dilution protection system (BDPS) to mitigate the consequences of an uncontrolled dilution event. These overly conservative requirements can have adverse effects on shutdown safety considerations such as reactor coolant system (RCS) inventory control.

With both source range channels inoperable in Modes 3, 4, and 5, this proposed license amendment request would require that the RTBs be opened, all positive reactivity changes be suspended, dilution path valves be closed and shutdown margin requirements be periodically verified. This is also consistent with the requirements of NUREG-1431, TS 3.3.1, Table 3.3.1-1, Function 5.

TS 3.1.2.7, "Boron Dilution Protection System," is not being revised to be consistent with NUREG-1431, TS 3.3.9, "Boron Dilution Protection System (BDPS)." In comparison with the current TS 3.1.2.7, NUREG-1431, TS 3.3.9 contains overly conservative requirements which could also have adverse effects on shutdown safety considerations such as RCS inventory control. The United States Nuclear Regulatory Commission (NRC) Staff review and approval of the current TS 3.1.2.7 is documented in the Safety Evaluation of Byron TS Amendment 51 and Braidwood TS Amendment 40 dated October 5, 1992.

These changes are described in detail in Section E of this Attachment. Copies of the affected TS pages showing the actual proposed changes are included in Attachments B-1 and B-2 for Byron and Braidwood, respectively, of this license amendment request.

B. DESCRIPTION OF THE CURRENT REQUIREMENT

Currently, TS 3.3.1, Table 3.3-1, Functional Unit 6.b requires that at least 2 source range channels be operable in Modes 3, 4 or 5. If this requirement is not met, Action Statement 5 applies per Table 3.3-1.

With one channel inoperable, Action Statement 5 allows 48 hours for restoration of the inoperable channel or reactor trip breakers must be opened, operations involving positive reactivity addition suspended, and dilution valves must be verified closed within the following hour. With both source range channels inoperable, compliance with the shutdown margin requirements of TS 3.1.1.1 or 3.1.1.2 is verified and 1 hour is allowed to open reactor trip breakers, suspend operations involving positive reactivity addition, and verify dilution valves are closed. In addition, compliance with these actions is to be verified at least once per 12 hours thereafter.

C. BASES FOR THE CURRENT REQUIREMENT

The operability of the reactor trip system instrumentation ensures that: (1) the associated action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof reaches its setpoint, (2) the specified coincidence logic and sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance consistent with maintaining an appropriate level of reliability of the reactor protection instrumentation, and (3) sufficient system functions capability is available from diverse parameters.

Operability of the source range instrumentation input to the reactor trip system provides core protection during reactor startup to mitigate consequences of an uncontrolled rod cluster control assembly bank withdrawal from a subcritical condition. This trip provides redundant protection to the Low Setpoint trip of the Power Range channels in MODES 2, 3, 4 and 5. The source range instruments also provide indication of an inadvertent positive reactivity addition during shutdown conditions.

Since only one source range channel is sufficient to provide the reactor trip, the actions for a single inoperable source range channel allow operation with the reactor trip breakers closed for a period of time. Once this time limit is exceeded, or if two source range channels are inoperable at the same time, action is taken to place the plant in a condition where the source range channels are no longer providing protection. This includes opening reactor trip breakers to prevent an uncontrolled rod cluster control assembly withdrawal from a subcritical condition, the suspension of operations which could result in positive reactivity changes and closure of dilution path valves to prevent an unmonitored inadvertent positive reactivity addition and periodic verification of compliance with shutdown margin requirements, to ensure no inadvertent positive reactivity addition has taken place.

D. NEED FOR REVISION OF THE REQUIREMENT

Source range detector life is generally much shorter than plant life. Thus, over the life of the plant it is likely that one or more source range detectors will need to be replaced.

The requirements in the current TS place very conservative restrictions on plant operations when one source range channel is inoperable. These restrictions can place the plant in a non-conservative condition with respect to other shutdown safety requirements, such as RCS inventory and temperature control, and can result in both shutdown and startup scheduling problems. Once the allowed outage time (AOT) of the current specification for one inoperable channel is expired, no positive reactivity changes can be made and the normal dilution flow path valves cannot be opened. This makes control of necessary plant evolutions difficult. For example, a cooldown represents a positive reactivity change when a negative moderator temperature coefficient is present and is therefore, not allowed. RCS temperature normally fluctuates slightly even during steady state operations, thus the restrictions on positive reactivity changes with one source range inoperable for a period of time makes plant temperature control difficult.

RCS inventory control is also difficult under the provisions of the current action statement. Normal makeup for RCS inventory changes is complicated by the restrictions on positive reactivity addition and dilution valve closure. If the makeup source water is at a lower boron concentration than the RCS by any amount, makeup would be considered a positive reactivity addition and would not be allowed. This would be the case even when the boron concentration of the makeup source water was sufficient to preserve the required shutdown margin. Boration and dilution of the RCS makeup source is slow and difficult and sometimes results in conflicts with other Specifications. For example, if the RCS boron concentration is greater than the maximum loop accumulator boron concentration allowed by TSs, the makeup source would need to be borated to the RCS concentration for RCS inventory control, but would need to be diluted again to fill accumulators when that became necessary.

The fact that the dilution flow path valves must be locked closed with one source range detector inoperable beyond the AOT can complicate evolutions such as chemical additions to the primary system by forcing the use of non-routine lineups.

Replacement of an inoperable source range detector does not alleviate these restrictions until sufficient source range counts can be obtained to declare the new detector operable. With one source range detector remaining operable and the RTBs open, the restrictions of the current Action Statement 5 are overly conservative.

With one source range detector inoperable, the operable source range detector and BDPS are still available to monitor and provide automatic response to any possible reactivity transients. In the event that BDPS is inoperable, TS 3.1.2.7 provides the actions to ensure that an inadvertent dilution or unmonitored reactivity addition is prevented.

Thus, to minimize possible non-conservative shutdown risk situations and possible outage scheduling conflicts when one source range detector is inoperable, it is desired to revise TS 3.3.1.

E. DESCRIPTION OF THE REVISED REQUIREMENT

An asterisk will be added to Functional Unit 6.b of Table 3.3-1 of TS 3.3.1 to limit applicability of Unit 6.b to conditions where the RTBs are in the closed position and the control rod drive system is capable of rod withdrawal. The Action associated with Functional Unit 6.b will be changed to Action 5a.

Table 3.3-1 will also be revised to include a new Functional Unit 6.c to address source range instrumentation requirements in Modes 3, 4, and 5 when RTBs are in the open position. Functional Unit 6.c will contain the following information:

Functional Unit: 6.c Shutdown**

Total No. of Channels: 2

Channels to Trip: N/A

Minimum Channels Operable: 1

Applicable Modes: 3**, 4**, 5**

Action: 5b

A new Note ** associated with Functional Unit 6.c will be added to the Table Notations section of Table 3.3-1. The new Note ** will read:

***With Reactor Trip System Breakers in the open position. In this condition, source range function does not provide reactor trip, but does provide input to the Boron Dilution Protection System (Technical Specification 3.1.2.7) and indication."

The current action 5 of Table 3.3-1 will be replaced by Actions 5a and 5b. Actions 5a and 5b will read as follows:

"Action 5a- With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, restore the inoperable channel to OPERABLE status within 48 hours or within the next hour open the reactor trip breakers. With no channels OPERABLE, immediately open the reactor trip breakers."

"Action 5b- With no channels OPERABLE, immediately suspend operations involving positive reactivity additions and within 1 hour verify valves CV-111B, CV-8428, CV-8439, CV-8441, and CV-8435 are closed. Also, within 1 hour and at least once per 12 hours thereafter, verify compliance with the SHUTDOWN MARGIN requirements of Specification 3.1.1.1 or 3.1.1.2, as applicable."

F. BASES FOR THE REVISED REQUIREMENT

This proposed revision would allow indefinite operations with one source range channel inoperable in Modes 3, 4 and 5 if the RTBs are open. This is consistent with the requirements of NUREG-1431. With both source range detectors inoperable, this change would require that RTBs be immediately opened, all positive reactivity additions be immediately suspended, dilution path valves be locked closed and shutdown margin requirements be periodically verified. This is also consistent with NUREG-1431.

One operable source range detector is acceptable in Modes 3, 4, and 5 with RTBs open since under these conditions no core alterations that could affect core reactivity are possible, and control rod withdrawal is not possible. Under these conditions, the operable source range detector is only providing indication and input to BDPS. The impact of an inoperable source range detector on BDPS is addressed by compliance with the Action Requirements of TS 3.1.2.7. With one channel of source range inoperable for longer than 72 hours which corresponds to one train of BDPS inoperable for 72 hours, TS 3.1.2.7 requires that the dilution isolation valves be closed and secured in position within the next hour. A footnote to TS 3.1.2.7 allows these valves to be opened on an intermittent basis, under administrative control, to support plant evolutions. Thus, the potential for a reactivity addition from a dilution event is addressed by complying with the action requirements of the BDPS TS. Therefore, one operable source range detector provides sufficient indication and actuation capability for Mode 3, 4, or 5 operation.

With both source range detectors inoperable, this proposed revision requires that the reactor trip breakers be immediately opened, all operations involving positive reactivity additions be immediately suspended and within 1 hour, and at least once per 12 hours thereafter, the shutdown margin requirements of TS 3.1.1.1 or 3.1.1.2, whichever is appropriate, must be verified. Also, within one hour the dilution valves must be verified closed. Thus, this revision requires that the potential sources of positive reactivity addition be disabled and the shutdown condition of the core be periodically verified, if both source ranges are inoperable.

G. IMPACT OF THE PROPOSED CHANGE

Implementation of this proposed change will not result in any new equipment being installed or any existing equipment being modified. No new operating modes or procedures will be created. Therefore, these proposed changes will have no significant negative impact on any operating mode, equipment or procedure.

H. SCHEDULE REQUIREMENTS

Braidwood is currently scheduled to replace both Unit 2 Source Range detectors in the upcoming Braidwood, Unit 2, Cycle 5, Refuel Outage (A2R05), scheduled to begin March 2, 1996. One detector will be replaced at the start of the outage, the other at the end of the outage. Thus, to minimize possible non-conservative shutdown safety situations and outage scheduling conflicts as described in Section D above, ComEd requests that this proposed change be approved by March 1, 1996.

ATTACHMENT B-1

PROPOSED CHANGES TO APPENDIX A, TECHNICAL SPECIFICATIONS, OF FACILITY OPERATING LICENSES NPF-37 AND NPF-66

BYRON NUCLEAR POWER STATION, UNITS 1 AND 2

Affected Pages

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