

October 12, 1999

SVP-99-182

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Quad Cities Nuclear Power Station, Units 1 and 2
Facility Operating License Nos. DPR-29 and DPR-30
NRC Docket Nos. 50-254 and 50-265

Subject: Request for Technical Specifications Change, Reactor Protection System Instrumentation

In accordance with 10 CFR 50.90 we request a change to the Technical Specifications (TS) of Facility License Nos. DPR-29 and DPR-30 for the Quad Cities Nuclear Power Station, Units 1 and 2 respectively. The proposed change is to TS Sections 2.2, "Limiting Safety System Settings," and 3/4.1.A, "Reactor Protection System."

The proposed change removes the turbine electro-hydraulic control (EHC) low oil pressure trip from the reactor protection system (RPS) trip function requirements. Commonwealth Edison (ComEd) Company has determined that the existing turbine control valve fast closure scram provides an equivalent level of protection. Furthermore, the Turbine EHC Control Oil Pressure - Low trip function is not credited in any design basis event described in the Updated Final Safety Analysis Report (UFSAR). This proposed change has been reviewed and endorsed by our nuclear steam supply system (NSSS) supplier, General Electric Company

The plant design changes required to remove this trip function are scheduled during the next refueling outage on Unit 2; therefore, ComEd requests approval of this amendment by January 20, 2000. A similar design change will be implemented on Unit 1 during the 16th refueling outage scheduled to begin in October 2000.

This request is subdivided as follows:

1. Attachment A gives a description and safety analysis of the proposed changes.
2. Attachment B includes the marked-up TS pages with the requested changes indicated.
3. Attachment C provides information supporting a no significant hazards finding in accordance with 10 CFR 50.92(c),
4. Attachment D provides information supporting an Environmental Assessment.

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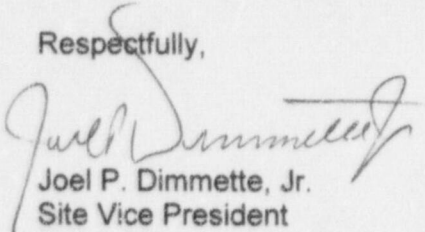
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These proposed changes have been reviewed by the Plant Operations Review Committee and the Nuclear Safety Review Board in accordance with the Quality Assurance program.

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

Should you have any questions concerning his letter, please contact Mr. C. C. Peterson at (309) 654-2241, extension 3609.

Respectfully,



Joel P. Dimmette, Jr.
Site Vice President
Quad Cities Nuclear Power Station

Attachments

Affidavit

Attachment A: Description and Safety Analysis for Proposed Changes

Attachment B: Marked-Up TS Pages for Proposed Changes

Attachment C: Information Supporting No Significant Hazards Finding

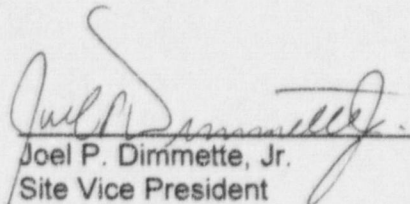
Attachment D: Information Supporting an Environmental Assessment

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station
Office of Nuclear Facility Safety – IDNS

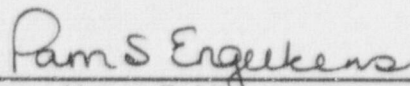
STATE OF ILLINOIS)
COUNTY OF ROCK ISLAND)
IN THE MATTER OF)
COMMONWEALTH EDISON (COMED) COMPANY) Docket Numbers
QUAD CITIES NUCLEAR POWER STATION UNITS 1 and 2) 50-254 and 50-265
SUBJECT: Request for Technical Specifications Change -
Reactor Protection System Instrumentation

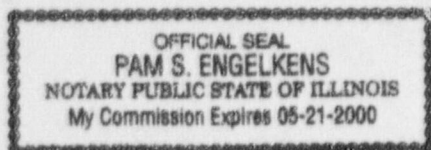
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I affirm that the content of this transmittal is true and correct to the best of my knowledge, information and belief.


Joel P. Dimmette, Jr.
Site Vice President

Subscribed and sworn to before me, a Notary Public in and
for the State above named, this 12th day of
October, 19 99.


Notary Public



ATTACHMENT A

Proposed Change to Technical Specifications Quad Cities Nuclear Power Station - Units 1 and 2 (Page 1 of 5)

DESCRIPTION AND SAFETY ANALYSIS FOR PROPOSED CHANGES

A. SUMMARY OF PROPOSED CHANGES

In accordance with 10 CFR 50.90 ComEd is proposing a change to the Technical Specifications (TS) of Facility License Nos. DPR-29 and DPR-30 for the Quad Cities Nuclear Power Station, Units 1 and 2 respectively. The proposed change is to TS Sections 2.2, "Limiting Safety System Settings," and 3/4.1.A, "Reactor Protection System."

The proposed change removes the turbine electro-hydraulic control (EHC) low oil pressure trip from the reactor protection system (RPS) trip function requirements. The Turbine EHC Control Oil Pressure - Low trip function is not required due to the existing Turbine Control Valve Fast Closure trip function, which provides adequate protection during a postulated loss of EHC control oil event. Furthermore, the trip function is not credited in any design basis event described in the Updated Final Safety Analysis Report (UFSAR). This proposed change has been reviewed and endorsed by our nuclear steam supply system (NSSS) supplier, General Electric Company.

The proposed changes are described in detail in Section E of this Attachment. The marked up TS pages are shown in Attachment B.

B. DESCRIPTION OF THE CURRENT REQUIREMENTS

TS Section 2.2, "Limiting Safety System Settings," establishes the operational settings for protective instrumentation. TS Table 2.2.A-1, Functional Unit 10, provides the following RPS Instrumentation Setpoint:

Turbine EHC Control Oil Pressure-Low \geq 900 psig

TS Section 3/4.1.A, "Reactor Protection System," provides the requirements for RPS instrumentation operability. TS Table 3.1.A-1, Functional Unit 10, establishes the requirements for the Turbine EHC Control Oil Pressure-Low trip function, including applicable OPERATING MODE(s), Minimum OPERABLE CHANNEL(s) per TRIP SYSTEM, and the ACTION(s) necessary if the Limiting Conditions for Operation are not satisfied. TS Table 4.1.A-1 provides the surveillance requirements for Functional Unit 10.

C. BASES FOR THE CURRENT REQUIREMENT

The EHC control system operates using high-pressure oil to provide both control and trip functions for the main turbine. There are several points in this oil system where a loss of oil pressure could result in a rapid operation (i.e. fast closure) of the turbine control valves. During operating conditions, a fast closure of the turbine control valves causes a reactor pressure transient, which can cause reactor power (i.e. neutron flux) to increase rapidly.

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Proposed Change to Technical Specifications Quad Cities Nuclear Power Station - Units 1 and 2 (Page 2 of 5)

The loss of EHC control oil event was not originally protected by the turbine control valve fast closure scram function. The control valve fast closure scram function was initially designed as a direct reactor trip on actuation of the fast acting solenoid valves (via a limit switch that sensed actuation). However, loss of the EHC control oil system pressure did not result in actuation of the fast acting solenoid valves. In response to this design concern, Quad Cities Nuclear Power Station added the subject EHC low control oil pressure reactor scram (i.e. Turbine EHC Control Oil Pressure-Low) to ensure safety margins consistent with other pressurization events such as the main generator load reject event. (This modification was installed in the early 1970's.) These RPS switches sense loss of EHC control oil pressure and provide an anticipatory reactor scram signal when EHC fluid pressure is below 900 psig. This trip function anticipates the pressure transient, that would be caused by imminent control valve closure, and results in a reactor shutdown before any significant increase in neutron flux occurs. Note that this scram function is bypassed when thermal power is less than 45% of rated thermal output.

D. NEED FOR REVISION OF THE REQUIREMENT

In the early 1990s, ComEd implemented a design change that replaced the turbine control valve direct scram on fast acting solenoid actuation with a pressure switch, on each control valve, that provides a scram function on low EHC fluid pressure, specifically low Fluid Actuator Supply Trip Control (FASTC) pressure at the turbine control valves. This change was accepted by the NRC in Safety Evaluations dated February 21, 1991, and July 23, 1991, for Unit 1 and Unit 2, respectively. This modified scram function (i.e. Turbine Control Valve Fast Closure) is functionally equivalent to the Turbine EHC Control Oil Pressure-Low scram function during a postulated loss of EHC control oil event.

The current TS requirements place an undue burden upon plant operations (i.e., the testing and maintenance associated with the instrumentation) without a corresponding increase in reactor safety. Removal of this redundant trip function enhances operational safety because the potential for inadvertent plant scrams is reduced, the number of test cycles on equipment is minimized and the use of plant personnel can be better optimized.

E. DESCRIPTION OF THE PROPOSED CHANGES

The following TS changes are proposed:

Page 2-5: Eliminate Functional Unit 10, Turbine EHC Control Oil Pressure - Low

Pages B 2-9

and B 2-10: Eliminate Bases discussion for Functional Unit 10, Turbine EHC Control Oil Pressure - Low

Page 3/4.1-3: Eliminate Functional Unit 10, Turbine EHC Control Oil Pressure - Low

Page 3/4.1-8 Eliminate Functional Unit 10, Turbine EHC Control Oil Pressure - Low

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Proposed Change to Technical Specifications Quad Cities Nuclear Power Station - Units 1 and 2 (Page 3 of 3)

Page B 3/4.1-2 Eliminate reference to turbine EHC control oil low-pressure scram

F. SAFETY ANALYSIS OF THE PROPOSED CHANGES

The purpose of the EHC system is to provide cooled, filtered, high pressure fluid for the control of the turbine valves. The EHC system supplies high-pressure oil to three primary headers:

Fluid Actuator Supply (FAS) Header
Fluid Actuator Supply Trip Control (FASTC), and
Emergency Trip Supply (ETS)

The FAS header supplies the high pressure oil for positioning selected main turbine steam valves and also provides the oil to the FASTC and ETS headers. The FASTC header is used for the control and trip functions of certain turbine steam valves including the turbine control valves. The FASTC fluid enters the control valve positioning unit and is directed to the servo-valve and the fast acting solenoid valve. The FASTC fluid is transmitted through the fast acting solenoid valve to the disk dump valve. The purpose of the disk dump valve is to seal the end of the hydraulic positioning cylinder so that the servo-valve can direct FASTC fluid into the single acting actuator cylinder of the turbine control valve. The turbine control valve uses the FASTC pressure to open against a closing spring and steam pressure. The disk dump valve, which normally remains closed by the FASTC pressure, will open to release actuator positioning cylinder pressure, in the event the fast acting solenoid valves are energized.

When the load control unit of the EHC logic system senses a turbine/generator load mismatch, the logic system sends a signal to the fast acting solenoid valve to reposition. When the fast acting solenoids reposition, the FASTC fluid begins to drain as a result of the repositioned fast acting solenoid valve. The FASTC pressure, which holds the disk dump valve seated, begins to decrease. As a result of the decreasing FASTC pressure, the disk dump valve is forced away from its seat and the FASTC fluid in the hydraulic cylinder is rapidly drained causing the control valve to close rapidly.

In the 1970's, Quad Cities Nuclear Power Station, Units 1 and 2, installed a low EHC fluid actuator (FAS) supply oil pressure reactor scram to anticipate turbine control valve fast closure on a loss of EHC control oil pressure. This trip generates a reactor scram on decreasing FAS oil pressure at a setpoint greater than or equal to 900 psig. This modification was installed as recommended by our turbine supplier, General Electric.

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Proposed Change to Technical Specifications Quad Cities Nuclear Power Station - Units 1 and 2 (Page 4 of 5)

The original turbine control valve fast closure sensor was designed as a direct trip on actuation of the fast acting solenoid via a limit switch that detected solenoid actuation. In response to poor equipment performance, Quad Cities Nuclear Power Station upgraded the fast acting solenoid valves in the early 1990s. Based on a recommendation from General Electric, the new design was more reliable and was equipped with a pressure port for a separate pressure switch. This pressure switch senses decreasing EHC fluid (i.e. FASTC) pressure and initiates a scram signal at ≥ 460 psig (TS Table 2.2.A-1, Functional Unit 11). This scram is anticipatory in nature in that decreasing FASTC pressure causes the turbine control valves to close in a rapid manner. The low FASTC oil pressure sensor is functionally the same configuration currently installed in most of the General Electric operating BWRs. In addition, most operating BWR plants with EHC control oil systems have only the FASTC oil pressure scram and do not have a low FAS oil pressure scram.

There are no UFSAR design basis events that take credit for the low FAS oil pressure scram. The scram resulting from low FASTC oil pressure mitigates all events involving Turbine Control Valve fast closure, including the load rejection with bypass failure event. The loss of EHC control oil pressure event was also reviewed to determine the consequences of such an event on fuel thermal limits in the absence of the low FAS oil pressure scram. This review determined that the FASTC sensor will initiate a scram in response to a loss of control oil event coincident with Turbine Control Valve closure. In this respect the low FAS oil pressure scram is a redundant scram since the FASTC scram is capable of the same level of protection. The FASTC scram will provide equivalent protection to fuel thermal limits. This scram configuration with the existing turbine control valve fast closure FASTC oil pressure sensor is functionally the same as the configuration on all BWR 4 through BWR 6 designs.

Based on this review, it has been determined that the existing turbine control valve fast closure scram on low FASTC oil pressure provides adequate protection for reactor pressure vessel ASME code compliance with respect to pressure, for an Anticipated Operational Occurrence and for Design Basis Accident criteria. For these reasons, the proposed change which removes the low FAS oil pressure scram is acceptable and does not involve a reduction in plant safety.

Furthermore, the EHC system provides additional protection against a postulated loss of EHC fluid pressure through an independent control hydraulic fluid pressure trip function that initiates a turbine trip when hydraulic fluid pressure decreases to 1100 psig. Above 45% thermal power, a turbine trip results in an anticipatory reactor scram on turbine stop valve closure.

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G. IMPACT ON PREVIOUS SUBMITTALS

ComEd has reviewed the proposed Operating License amendment request regarding impact on any previous submittals, and has determined that there is no impact on any outstanding previous submittals.

H. SCHEDULE REQUIREMENTS

We request approval of this amendment prior to January 20, 2000, to support activities in the Unit 2 cycle 15 refueling outage.

I. REFERENCES

None