UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 139 TO FACILITY OPERATING LICENSE NO. DPR-19,

AMENDMENT NO. 133 TO FACILITY OPERATING LICENSE NO. DPR-25,

AMENDMENT NO. 161 TO FACILITY OPERATING LICENSE NO. DPR-29,

AND AMENDMENT NO. 157 TO FACILITY OPERATING LICENSE NO. DPR-30

COMMONWEALTH EDISON COMPANY

AND

MIDAMERICAN ENERGY COMPANY

DRESDEN NUCLEAR POWER STATION, UNITS 2 AND 3

QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2

DOCKET NOS. 50-237, 50-249, 50-254 AND 50-265

1.0 INTRODUCTION

By letter dated December 8, 1992, as supplemented by letters dated September 10, 1993, and May 17, 1995, Commonwealth Edison Company (ComEd, the licensee) submitted an amendment requesting to upgrade sections of the Dresden Nuclear Power Station, Units 2 and 3, and the Quad Cities Nuclear Power Station, Units 1 and 2, Technical Specifications (TS). The changes have been requested as part of their Technical Specification Upgrade Program (TSUP).

As a result of findings by a Diagnostic Evaluation Team inspection performed by the NRC staff at the Dresden Nuclear Power Station in 1987, ComEd made a decision that both the Dresden Nuclear Power Station and sister site Quad Cities Nuclear Power Station, needed attention focused on the existing custom TS used at the sites.

The licensee made the decision to initiate a TSUP for both Dresden and Quad Cities. The licensee evaluated the current TS for both stations against the Standard Technical Specifications (STS), contained in NUREG-0123, "Standard Technical Specifications General Electric Plants BWR/4, Revision 4." Both Dresden and Quad Cities are BWR-3 designs and are nearly identical plants. The licensee's evaluation identified numerous potential improvements such as clarifying requirements, changing the TS to make them more understandable and to eliminate the need for interpretation, and deleting requirements that are no longer considered current with industry practice. As a result of the evaluation, ComEd elected to upgrade both the Dresden and Quad Cities TS to the STS contained in NUREG-0123.

The TSUP for Dresden and Quad Cities is not a complete adoption of the STS. The TSUP focuses on (1) integrating additional information such as equipment operability requirements during shutdown conditions, (2) clarifying requirements such as limiting conditions for operations and action statements utilizing STS terminology, (3) deleting superseded requirements and modifications to the TS based on the licensee's responses to Generic Letters (GL), and (4) relocating specific items to more appropriate TS locations.

The application dated December 8, 1992, as supplemented September 10, 1993, and May 17, 1995, proposed to upgrade only those sections of the TS to be included in TSUP Section 3/4.1 (Reactor Protection System) of the Dresden and Quad Cities TS.

The staff reviewed the proposed changes and evaluated all deviations and changes between the proposed TS, the STS, and the current TS. In no case did the licensee propose a change in the TS that would result in the relaxation of the current design requirements as stated in the Updated Final Safety Analysis Reports (UFSAR) for Dresden or Quad Cities.

In response to the staff's recommendations, the licensee submitted identical TS for Quad Cities and Dresden except for plant-specific equipment and design differences. Technical differences between the units are identified as appropriate in the proposed amendment.

2.0 EVALUATION

Review Guidelines - The licensee's purpose for the TSUP was to reformat the existing Dresden and Quad Cities TS into the easier to use STS format. Plant specific data, values, parameters, and equipment specific operational requirements contained in the current TS for Dresden and Quad Cities were retained by the licensee in the TSUP.

The STS contained in NUREG-0123 were developed by the NRC and industry because of the shortcomings associated with the custom TS which were issued to plants licensed in early 1970's (i.e., Dresden (1971) and Quad Cities (1972)). The STS developed by the NRC and industry provided an adequate level of protection for plant operation by assuring required systems are operable and have been proven to be able to perform their intended functions. The limiting conditions for operation (LCO), the allowed out-of-service times, and the required surveillance frequencies were developed based on industry operating experience, equipment performance, and probabilistic risk assessment analysis during the 1970's. The STS were used as the licensing basis for plants licensed starting in the late 1970's.

For the most part, ComEd's adoption of the STS resulted in more restrictive LCOs and surveillance requirements (SR). In some cases, however, the STS provides relief from the Dresden and Quad Cities current TS requirements. In all these cases, the adoption of the STS requirements for LCOs or SRs do not change the current design requirements of either plant as described in each plant's UFSAR. In addition, the success criteria for the availability

and operability of all required systems contained in the current TS are maintained by the adoption of the STS requirements in the proposed TSUP TS.

In addition to adopting the STS guidelines and requirements in the TSUP, ComEd has also evaluated GLs concerning line item improvements for TS. These GLs were factored into the TSUP to make the proposed TS reflect industry lessons learned in the 1980's and early 1990's.

Deviations between the proposed specifications, the STS, and the current TS were reviewed by the staff to determine if they were due to plant specific features or if they posed a technical deviation from the STS guidelines. Plant specific data, values, parameters, and equipment specific operational requirements contained in the current TS for Dresden and Quad Cities were retained by the licensee in the upgraded TS.

Administrative Changes - Non-technical, administrative changes were intended to incorporate human factor principles into the form and structure of the STS so that they would be easier for plant operation's personnel to use. These changes are editorial in nature or involve the reorganization or reformatting of requirements without affecting technical content of the current TS or operational requirements. Every section of the proposed TS reflects this type of change.

More Restrictive Requirements - The proposed TSUP TS include certain more restrictive requirements than are contained in the existing TS. Examples of more restrictive requirements include the following: placing an LCO on plant equipment which is not required by the present TS to be operable; adding more restrictive requirements to restore inoperable equipment; and adding more restrictive SR.

Less Restrictive Requirements - The licensee provided a justification for less restrictive requirements on a case-by-case basis as discussed in this SE. When requirements have been shown to provide little or no safety benefit, their removal from the TS may be appropriate. In most cases, these relaxations had previously been granted to individual plants on a plant-specific basis as the result of (a) generic NRC actions, and (b) new NRC staff positions that have evolved from technological advancements and operating experience.

The Dresden and Quad Cities plant designs were reviewed to determine if the specific design basis was consistent with the STS contained in NUREG-0123. All changes to the current TS and deviations between the licensee's proposed TS and the STS were reviewed by the staff for acceptability to determine if adequate justification was provided (i.e., plant specific features, retention of existing operating values, etc.).

Deviations the staff finds acceptable include: (1) adding clarifying statements, (2) incorporating changes based on GLs, (3) reformatting multiple steps included under STS action statements into single steps with unique identifiers, (4) retaining plant specific steps, parameters, or values,

(5) moving action statements within a TS, (6) moving action statements from an existing TS to form a new TS section, and (7) omitting the inclusion of STS steps that are not in existing TS.

Relocation of Technical Specifications - The proposed TS may include the relocation of some requirements from the TS to licensee-controlled documents. Section 182a of the Atomic Energy Act requires applicants for nuclear power plant operating licenses to state Technical Specifications to be included as part of the license. The Commission's regulatory requirements related to the content of TS are set forth in 10 CFR 50.36. That regulation requires that the TS include items in five specific categories, including (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation; (3) surveillance requirements; (4) design features; and (5) administrative controls. However, the regulation does not specify the particular requirements to be included in a plant's TS.

The Commission has provided guidance for the contents of TS in its "Final Policy Statement on Technical Specification Improvements for Nuclear Power Reactors" ("Final Policy Statement"), 58 FR 39132 (July 22, 1993), in which the Commission indicated that compliance with the Final Policy Statement satisfies Section 182a of the Act. In particular, the Commission indicated that certain items could be relocated from the TS to licensee-controlled documents, consistent with the standard enunciated in *Portland General Electric Co.* (Trojan Nuclear Plant), ALAB-531, 9 NRC 263, 273 (1979). In that case, the Atomic Safety and Licensing Appeal Board indicated that "technical specifications are to be reserved for those matters as to which the imposition of rigid conditions or limitations upon reactor operation is deemed necessary to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety."

Consistent with this approach, the Final Policy Statement identified four criteria to be used in determining whether a particular matter is required to be included in the TS, as follows: (1) Installed instrumentation that is used to detect, and indicate in the control room, a significant abnormal degradation of the reactor coolant pressure boundary; (2) a process variable, design feature, or operating restriction that is an initial condition of a design-basis accident or transient analysis that either assumes the failure of or presents a challenge to the integrity of a fission product barrier; (3) a structure, system, or component that is part of a primary success path and which functions or actuates to mitigate a design-basis accident or transient that either assumes the failure of or presents a challenge to the integrity of a fission product barrier; (4) a structure, system, or component which operating experience or probabilistic safety assessment has shown to be significant to public health and safety. As a result, existing TS requirements which fall within or satisfy any of the criteria in the Final Policy Statement must be retained in the TS, while those TS requirements which do not fall within or satisfy these criteria may be relocated to other, licensee-controlled documents. The Commission recently amended 10 CFR 50.36 to codify and incorporate these four criteria (60 FR 36953). The change to 10 CFR 50.36 was effective as of August 18, 1995.

The following sections provide the staff's evaluations of the specific proposed TS changes.

3.0. EVALUATION OF TSUP PROPOSED TS SECTION 3/4.1

The following sections provide the staff's evaluation of the TS changes reflected in proposed TS Section 3/4.1. Proposed TS 3/4.1 incorporates the guidelines of STS Section 3/4.3.1 and requirements from current TS Section 3/4.1 for both Dresden and Quad Cities. The proposed TS has been reformatted based on STS guidelines. Plant specific values for the listed parameters are included to be consistent with each station's UFSAR. Deviations between the proposed TS and current TS and between the proposed TS and STS are discussed below.

3.1 LCO and Applicability

Current TS 3.1.A for Quad Cities and 3.1.A.1 for Dresden specify the required trip setpoints, the minimum number of trip systems, and minimum number of instrument channels which must be operable per applicable tables. The proposed TS relocates the trip setpoints to TS Section 2.0, Table 2.2.A-1. TSUP Section 2.0 was approved by Amendment Nos. 134 and 128 to the Dresden TS and Amendment Nos. 155 and 151 to the Quad Cities TS. The current setpoints were retained in TSUP Table 2.2.A-1 with the exception of "Condenser Low Vacuum Scram" for Dresden which was revised to be consistent with Quad Cities TS. This change was evaluated and found to be acceptable in the SER associated with the amendments listed above. Therefore, the relocation of the trip setpoints to TSUP Section 2.0 is acceptable.

Current Dresden TS 3.1.A.2 provides requirements for the fuel design limiting ratio of centerline melt value. This information has been relocated to TSUP Section 3/4.11.B, "APRM Setpoints." The current Quad Cities TS 3.1.B provides requirements for the maximum fraction of limiting power density in relation to the fraction of rated thermal power and has been relocated to TSUP Section 3/4.11.B. TSUP Section 3/4.11 was approved by Amendment Nos. 134 and 128 for Dresden and Amendment Nos. 155 and 151 for Quad Cities. These changes are acceptable. Current Dresden TS 3.1.A.3, 4, and 5 have been relocated to TSUP 3.9.G which was approved by Amendment Nos. 138 and 132 for Dresden and Amendment Nos. 160 and 156 for Quad Cities.

The current TS for Quad Cities include the minimum number of channels and trip systems data on four separate tables, one for each operational mode. The proposed TS consolidates these into one table (Table 3.1.A). Proposed Table 3.1.A adds an additional column called Operational Modes. The proposed table format is consistent with that of STS Table 3.3.1-1. The current TS at Dresden contain one comprehensive table which has been reformatted according to STS guidelines. The changes to the current TS tables are administrative in nature to provide enhanced guidance to the operators. The proposed table maintains the operability requirements of the current TS with the following exceptions:

Table 3.1.A:

Intermediate Range Monitor

The proposed table adds requirements for the Intermediate Range Monitors (IRM) Neutron High - Flux and IRM Inoperative protective functions in Operational Modes 3 and 4 consistent with STS guidelines. With the addition of this information, these functions are required to be operable in all Operational Modes except Mode 1. This is an enhancement of the current TS and is acceptable.

The proposed table adds a note (c) to the requirements for the IRM Neutron Flux - High function in Mode 5. Note (c) requires the removal of shorting links from the reactor protection system (RPS) circuitry prior to and during the time that any control rod is withdrawn while in Mode 5. The proposed note provides more requirements and is, therefore, more conservative and is acceptable.

Average Power Range Monitor

The proposed table adds the requirement for APRM Setdown Neutron Flux - High (called APRM - High Flux (15 percent scram) in current TS) in Mode 3. This change is consistent with STS guidelines and is more conservative than current requirements. This is an enhancement of current TS and is acceptable.

A new note (c) is added to this functional unit which requires the removal of shorting links from the RPS circuitry prior to and during the time that any control rod is withdrawn while in mode 5. The proposed note is consistent with STS guidelines and provides more requirements than the current TS. Therefore, the inclusion of note (c) is acceptable.

A new note (g) is added to this functional unit which allows the APRM functions to be inoperable in Mode 5 except during Shutdown Margin Testing performed in accordance with Special Test Exception 3.12.B. Current Dresden TS state that APRM functions need not be operable when the reactor is subcritical and the reactor water temperature is less than 212 degrees Fahrenheit. Therefore, the proposed TS incorporates the current Dresden requirements. The APRM functions are not necessary for safe operation when in Operational Mode 5 because there are sufficient protective controls available (i.e., IRM, SRMs, refueling interlocks, and plant procedures) to prevent inadvertent criticality and fuel damage during refueling. The APRMs need to be operable during shutdown margin tests per TSUP 3.12.B. The proposed TS represents a relaxation of the current Quad Cities TS which require the APRM - High Flux and APRM Inoperative functions to be operable at all times in Mode 5. The removal of this requirement, except during shutdown margin tests, is acceptable based on the design of Quad Cities which provides diverse levels of protective controls. The staff has determined that the relaxation of the current Quad Cities TS requirements maintains the design requirements and the proposed TS is, therefore, acceptable. The staff finds the inclusion of note (g) acceptable.

The proposed TS deletes the current Dresden TS requirement for the APRM Flow Biased Neutron Flux - High (called APRM High Flux in the current TS) in Modes 2 and 5 consistent with STS guidance. This change is a correction of the current requirements since this protective function was never applicable in these Modes. The APRM Flow Biased Neutron Flux - High function provides a scram at high power levels. The necessary conditions are not present in Modes 2 or 5 to generate the high flux which would actuate this protective function. Other functions are applicable in Mode 5 which provide adequate protection. In Mode 2, the APRM Setdown Neutron Flux - High provides the necessary protection. Although the proposed TS do not maintain the current TS requirements, they do not affect plant operation or safety and are acceptable.

Proposed functional unit APRM Fixed Neutron Flux - High is a new requirement based on STS. The proposed TS is more conservative than the current TS and is acceptable.

Proposed functional unit APRM Inoperative adds a requirement for operability in Mode 3 consistent with STS guidelines. This represents more conservative operation than the current TS and is acceptable.

APRM Downscale Trip

Functional Unit APRM Downscale Trip has been removed in the proposed TS. Current Quad Cities TS require the Downscale trip in Operational Mode 1. This trip had previously been eliminated from the Dresden TS by Amendment Nos. 100 and 96 for Dresden, Units 2 and 3, respectively. The only function performed by the APRM Downscale Scram is during plant startup and shutdown. This scram function provides protection against operator error during startup if the reactor mode switch is improperly switched. During a normal plant startup, the mode switch is usually placed in the RUN position when the power is above 5 percent. If an operator were to prematurely place the mode switch in the RUN position, the APRM would downscale and the IRM scram function would not be bypassed. Similarly, if the operator were to delay changing the reactor mode switch during power descent, the consequences would be the same. If these errors occur, all safety concerns are addressed without reliance upon the APRM Downscale trip function. The Control Rod Drop Accident (the limiting accident during startup) is prevented by the APRM High Neutron flux scram, and the Rod Withdrawal Error is prevented by the APRM Downscale Rod Block. The current TS contain a note (11) that states that the APRM downscale trip function is automatically bypassed when the IRM instrumentation is operable and not high. Because the APRM downscale trip function is deleted, note (11) is unnecessary and has been deleted also. The staff has determined that the requirements for the APRM downscale trip are not required to be in the TS under 10 CFR 50.36 or Section 182a of the Atomic Energy Act. Further, they do not fall within any of the four criteria discussed in Section 2.0, above. Therefore, the proposed deletion of the APRM Downscale trip function does not decrease the level of safety and is, therefore, acceptable.

Reactor Vessel Steam Dome Pressure - High

The proposed TS deletes the current TS requirement for the High Reactor Pressure protective function in Mode 5. This change is a clarification of the current requirements and is consistent with the definition of Mode 5 conditions in TSUP Section 1.0. Mode 5 is defined in TSUP Section 1.0 as having one or more vessel head closure bolts less than fully tensioned or with the head removed. The current Dresden TS contain an exemption that the trip function is not required to be operable when the reactor pressure vessel head is not bolted to the vessel. Therefore, the current Dresden TS requirements are incorporated into the proposed TS. In addition, in Mode 5 the reactor status is cold shutdown, the reactor head is detensioned, and the temperature limitations for Operational Mode 5 eliminate the possibility of a high pressure condition. In this condition, interlocks are established so that only one control rod may be withdrawn when neutron monitor flux amplifiers are set at the proper sensitivity level and the refueling bridge is not over the reactor. Therefore, the Reactor Vessel Steam Dome Pressure - High (reactor scram) instrumentation is not applicable and its deletion in Mode 5 is acceptable.

The proposed table adds an exception to this functional unit in Mode 2 that allows it to be inoperable when the reactor pressure vessel head is removed per TSUP 3.12.A. TSUP 3.12.A provides requirements during special tests of primary containment. The proposed special test allows for the unbolting or removal of the reactor head in Operational Mode 2, as long as thermal power is less than 1 percent and reactor coolant temperature is less than 212 degrees Fahrenheit. Under these circumstances, a high pressure condition cannot be achieved and, therefore, there is no need for a high pressure trip function. The current Dresden TS do not require the High Reactor Pressure trip function to be operable when the reactor is subcritical and reactor water temperature is less than 212 degrees Fahrenheit. Therefore, the proposed TS exception incorporates the current Dresden TS requirement. The current Quad Cities TS do not include this exception and this change represents a relaxation. However, the design of Quad Cities also eliminates the need for a high pressure trip function under these circumstances. The staff has determined that the relaxation of current TS requirements maintains the design requirements and the proposed TS is, therefore, acceptable.

Reactor Vessel Water Level - Low

The proposed TS deletes the current TS requirement for the Reactor Low Water Level protective function in Mode 5 to make the TS consistent with current operating practice. While in the refuel mode, the reactor status is cold shutdown, the reactor head is detensioned, and the temperature limitations for Operational Mode 5 eliminate the possibility of a high pressure condition. In this condition, interlocks are established so that only one control rod may be withdrawn when neutron monitor flux amplifiers are set at the proper sensitivity level and the refueling bridge is not over the reactor. Therefore, the Reactor Vessel Water Level - Low (reactor scram) instrumentation is not applicable and the deletion of this requirement in

Mode 5 is acceptable. Although this change does not maintain the current TS requirements, it does not affect current plant operation or the safety analysis.

The current TS contain a note which clarifies the trip level setting for the Reactor Level Low Water protective function. The note provides design information which is more appropriate for plant administrative controls and has been deleted from the proposed TS. The staff has determined that the requirements for the trip level setting for the Reactor Level Low Water protective function are not required to be in the TS under 10 CFR 50.36 or Section 182a of the Atomic Energy Act. Further, they do not fall within any of the four criteria discussed in Section 2.0 above. This change does not relax any TS requirements and is acceptable.

Main Steam Line Isolation Valve Closure

The proposed table deletes the current TS requirement for the Main Steam Line Isolation Valve (MSIV) closure protective function in Mode 5 consistent with STS guidelines and to make the TS consistent with current operating practice. The current TS contain a note which states that the function may be bypassed when reactor pressure is less than 600 psig for Dresden and less than 1060 psig for Quad Cities. Therefore, the functions are currently bypassed in the refuel mode and the proposed TS does not represent a change from the current operating procedure.

The proposed TS deletes the current TS requirement for this protective function in Mode 2 for Quad Cities (the requirement is maintained for Dresden). The current Mode 2 requirement for Quad Cities contains a note which provides an exception to the requirement when reactor pressure is less than 1060 psig. This reflects the current design at Quad Cities which automatically bypasses the trip in Mode 2 when pressure is less than 1060 psig. Normal operating pressure for Quad Cities Station is less than or equal to 1020 psig. Therefore, the current MSIV closure scram is bypassed in Mode 2 at all times during normal reactor startups. The proposed TS deletes an unnecessary requirement and makes the TS consistent with current operating practice. In Operational Mode 2, the heat generation rate is low enough so that the other diverse RPS functions provide sufficient protection. The proposed TS incorporates the intent of the current Quad Cities TS and is acceptable. The Mode 2 requirement was retained for Dresden. The current Dresden TS provide an exception only when reactor pressure is less than 600 psig in Mode 2 and the proposed TS have retained this exception as a footnote.

The current TS contain a note which clarifies the minimum operable channel requirement for the MSIV closure function. This note provides design information that is more appropriate for plant administrative controls and is not included in the proposed TS. The note does not directly clarify the MSIV closure trip function other than to state that one MSIV is permitted to be closed without causing a scram. The staff has determined that the information contained in this note is not required to be in the TS under 10 CFR 50.36 or Section 182a of the Atomic Energy Act. Further, it does not fall within any

of the four criteria discussed in Section 2.0 above. This design information is adequately controlled by plant administrative controls. Its deletion does not relax any current TS requirements and is acceptable.

Main Steam Line High Radiation

The proposed TS deletes the current TS requirement for the main steam line high radiation protective function in Mode 5 consistent with STS guidelines and to make the TS consistent with current operating practice. In Mode 5, interlocks are established so that only one control rod may be withdrawn. Because the control rods can not be withdrawn, the scram instrumentation is not applicable and the deletion of this protective function is acceptable. Although this change does not maintain the current TS requirements, it does not affect current plant operation or the safety analysis.

The current Dresden Unit 2 TS contains a note which discusses the Main Steam Line Radiation monitor setting. This information has been relocated to TSUP Section 2.0, Limiting Safety System Settings, because it relates to the settings of this function which had been relocated to Specification 2.0. The current Quad Cities TS contain a note which was deleted because it pertains to design information and does not add to the clarification of this specification. These changes to this function do not represent a relaxation of the TS and are, therefore, acceptable.

Drywell Pressure - High

The proposed TS deletes the current TS requirement for the high drywell pressure protective function in Mode 5 consistent with STS guidelines. The current TS include a note which states that this function is not required when primary containment is not required. The current and proposed TS do not require primary containment Integrity in Mode 5. Therefore, the proposed TS is equivalent to the current requirements and is acceptable.

The current Dresden TS contain a note which allows this function to be bypassed when necessary during purging for containment inerting or deinerting. This note is unnecessary and potentially nonconservative, relative to STS guidelines and has been deleted from the proposed TS. The proposed TS is more conservative and is, therefore, acceptable.

Scram Discharge Volume Water Level - High

The proposed TS modifies the current TS format by specifying requirements for both types of sensors used, differential pressure switches and thermal switches or float switches. The requirements are equivalent for all types of sensors. This change in format does not represent a change in current requirements and is acceptable.

The proposed TS adds a note (i) which is not in the current TS. The note is adopted from the STS and requires the function to be operable in Mode 5 any time a control rod is withdrawn except for control rods withdrawn in

accordance with Specification 3.10.I or 3.10.J. This is a relaxation of current TS which require this function to operable at all times in Mode 5. Once all control rods are inserted, this function has no purpose. Therefore, the deletion of the requirement for this function in Mode 5 with all control rods inserted is acceptable.

Turbine Stop Valve - Closure

The proposed table deletes the current Dresden TS requirement for the turbine stop valve closure protective function in Modes 2 and 5 consistent with proposed note (d) and the proposed ACTION 16. The current Dresden TS contain a note which allows this function to be bypassed when the first stage turbine pressure is less than that which corresponds to 45 percent rated steam flow. Therefore, this function is always bypassed in Mode 5 and the deletion of Mode 5 applicability is consistent with current requirements and is acceptable. During normal reactor startup in Mode 2, the heat generation rate is inadequate to raise the turbine first stage pressure to the specified level. The APRM Setdown Neutron Flux - High trip function provides adequate protection if the heat generation rate is increased to a level which would result in the specified turbine first stage pressure. In addition, when reactor power is below 45 percent, the applicable transient for this protective function does not threaten the fuel integrity. Based upon this information, the Turbine Stop Valve Closure scram is not applicable in Operational Mode 2. The proposed note (d) states that the function shall be automatically bypassed when thermal power is less than 45 percent of rated thermal power. This note is consistent with current TS notes. The current RPS design at Dresden and Quad Cities incorporates an automatic bypass of the function when first stage turbine pressure is less than 400 psi, or approximately 45 percent of rated steam flow. The proposed ACTION 16 requires that a power reduction be initiated within 15 minutes and thermal power be reduced to less than 45 percent of rated thermal power within 2 hours. The proposed action is a clarification of the current action which does not specify the amount of power reduction. The proposed TS is more conservative by requiring the power reduction within 2 hours as opposed to the current TS allowance of 5 hours. The proposed TS maintains current requirements and is, therefore, acceptable.

Turbine EHC Oil Pressure - Low

The proposed table deletes the current Dresden TS requirement for the turbine electrohydraulic control (EHC) oil pressure low protective function in Modes 2 and 5 for the reasons discussed above under protective function Turbine Stop Valve Closure. The proposed TS is not a relaxation of current requirements and is acceptable.

Turbine Control Valve Fast Closure

The proposed table deletes the current Dresden TS requirement for this protective function in Modes 2 and 5 for the reasons discussed above under

protective function Turbine Stop Valve Closure. The proposed TS is not a relaxation of current requirements and is acceptable.

The current TS contains a note which provides information related to the fast acting solenoid valve trip function. This note provides clarifying information which is more appropriate for plant administrative controls and has been deleted from the proposed TS. The staff has determined that this information is not required to be in the TS under 10 CFR 50.36 or Section 182a of the Atomic Energy Act. Further, it does not fall within any of the four criteria discussed in Section 2.0 above. This information is adequately controlled by plant administrative controls and its deletion from the TS is acceptable.

Turbine Condenser Vacuum - Low

The proposed table deletes the current Dresden and Quad Cities TS requirement for the Turbine Condenser Low Vacuum protective function in Mode 5 consistent with STS guidelines. The current TS contain a note which states that this function is bypassed when reactor pressure is less than 600 psig for Dresden and less than 1060 psig for Quad Cities. Therefore, this function is always bypassed in Mode 5 and the proposed TS are consistent with current requirements. This change is acceptable.

The proposed table deletes the current Quad Cities TS requirement for the turbine condenser low vacuum protective function in Mode 2 to make the TS consistent with current operating practice. The current Quad Cities TS contain a note which states that this function is automatically bypassed when reactor pressure is less than 1060 psig. The proposed deletion of Mode 2 applicability incorporates the intent of this note. Normal operating pressure for Quad Cities is less than or equal to 1020 psig. Therefore, the current Quad Cities turbine condenser low vacuum scram instrumentation is bypassed in Mode 2 at all times during normal reactor startups. In addition, the heat generation rate is low enough in Mode 2 so that the other diverse RPS functions (i.e., IRM Neutron Flux - High and APRM Setdown Neutron Flux - High) provide sufficient protection. The proposed deletion does not represent a relaxation and is acceptable.

The proposed Dresden TS maintains the applicability for this function in Mode 2 with the exception that it is not required to be operable when reactor pressure is less than 600 psig. This is consistent with the current Dresden TS and is acceptable.

Reactor Mode Switch Shutdown Position

The proposed table adds the requirement that this function be operable in Modes 3 and 4 consistent with STS guidelines. The proposed TS is an enhancement of current requirements and is, therefore, acceptable.

Manual Scram

The proposed table adds the requirement that this function be operable in Modes 3 and 4 consistent with STS guidelines. The proposed TS is an enhancement of current requirements and is, therefore, acceptable.

3.2 Actions

3.2.1 ACTION 1

Proposed ACTION 1 requires that, with the number of operable channels less than required for one trip system, the inoperable channels must be placed in the tripped condition within 1 hour. Proposed ACTION 1 contains a footnote that provides an exception to the required action when it would cause the trip function to occur. In this case, the inoperable channel shall be restored to operable status within 2 hours or the action required by Table 3.1.A-1 shall be taken. This action statement and footnote, adopted from STS, incorporate requirements of current Dresden TS Table 3.1.1 note (*), Quad Cities TS 4.1.C and Quad Cities TS Table 3.1-4 note (2). The current TS for Dresden and Quad Cities require an immediate trip of a trip system when the minimum operable channels has been exceeded. Therefore, the proposed TS is a relaxation of the current TS in that it allows 1 hour to trip the system or 2 hours if tripping the inoperable system would cause the trip function to occur. This change will now allow the licensee to repair the affected channel before a half-scram is initiated or up to 2 hours before a full scram is initiated when both systems are effected. This deviation from the current TS provides a reasonable period of time to restore the inoperable channel/trip system to operable status, prior to placing the reactor in a half-scram condition (1 hour) or causing a reactor trip (2 hours). This reduces the potential for unnecessary reactor scrams and the associated challenges to the reactor vessel and safety systems. The 1 hour and 2 hour periods are consistent with STS guidelines and do not represent a significant increase in the overall risk, relative to the risk associated with placing the reactor in a half-scram condition or causing a reactor trip. Therefore, the proposed action is acceptable.

The actions required in current TS Tables 3.1.1 for Dresden and 3.1-1, 3.1-2 and 3.1-3 for Quad Cities are replaced in the proposed TS. The current tables use the letters A, B, C, and D (Dresden only) to represent the action to be taken if the minimum number of operable instrument channels can not be met. The proposed Dresden TS uses the numbers 10 through 19 and the proposed Quad Cities TS uses number 11 through 19 to represent the appropriate action. The additional action statements are due to the revision of the action statements to be more function and mode specific. The original 4 actions in the current Dresden TS (3 actions in the current Quad Cities TS) have been revised and expanded to include function and mode appropriate actions. In addition, action statements were added which apply in Modes 3 and 4 for functions which were not required to be operable in Modes 3 and 4 in the current TS. The resulting action statements are equivalent or more

conservative than the current required actions with the exception of the condition discussed in the following paragraph.

The current ACTION A is replaced by proposed ACTION 11 for the following instrument channels: High Reactor Pressure, Reactor Low Water Level, High Drywell Pressure, High Water Level in Scram Discharge Volume, Mode Switch in Shutdown, Manual Scram, IRM - High Flux, IRM - Inoperative, and APRM - High Flux (15 percent scram). The current action requires the insertion of all operable rods within 4 hours. Proposed ACTION 11 requires that the reactor be in hot shutdown within 12 hours. The proposed action, therefore, is a relaxation of the current requirements, but is consistent with the STS guidelines. In many cases the current tables require ACTION A to be performed in all modes. The proposed tables specify separate actions for each mode. Proposed ACTION 11 only applies in Modes 1 and 2. Other actions, some more restrictive, are assigned to other modes. For the instruments listed above, the current requirement to insert all rods within 4 hours was overly conservative for some modes. In addition, the current table often provides two options of actions to take, one of which may be less conservative than the proposed ACTION 11. Therefore, the required action is unclear in the current TS. The proposed TS provide clear guidance on the required action for each mode. The 12 hour period to shutdown the reactor allows for an orderly reactor shutdown, thus, reducing the probability of transients and reactivity management events due to the reactor shutdown. The proposed action is consistent with industry-accepted requirements and STS guidelines and is not a reduction of current design requirements in the UFSARs. The remaining proposed actions are either equivalent to or more conservative than the current required actions and are therefore acceptable.

3.2.2 ACTION 2

Proposed ACTION 2 is a new TS adopted from STS guidelines which incorporates the requirements of current TS note (1) for both stations. The proposed action statement enhances the current TS by specifying actions and allowed outage times (AOT) prior to tripping a channel or instrument when two trip systems are inoperable, thereby reducing the vulnerability to spurious actuation. The adoption of the proposed action represents a more conservative approach and is, therefore, acceptable.

3.3 Surveillance Requirements

3.3.1 TS 4.1.A.1

Proposed TS 4.1.A.1 requires that the RPS instrumentation channels be demonstrated operable in accordance with the tests specified in Table 4.1.A-1. The current TS contain two tables, one for functional tests and one for calibrations. These have been consolidated into one table in the proposed TS in accordance with STS guidelines. In addition, the proposed TS Table adds requirements for a channel check of some RPS instruments.

The proposed Table 4.1.A-1 deletes the "Group" column from the current Dresden TS Tables 4.1.1 and 4.1.2 and current Quad Cities TS Tables 4.1-1 and 4.1-2. This column does not contain any TS requirements but merely references the Bases Section of the TS. The information in the Bases is design information which is more appropriately located outside of the TS. This change does not relax any TS requirements and is acceptable.

The proposed Table 4.1.A-1 also deletes the columns labeled "Functional Test" and "Calibration Test." These columns provide clarifying information related to the procedure for performing a functional test of each RPS instrument. This information is more appropriately located in plant administrative controls. The staff has determined that the information relating to the performance of surveillance requirements is not required to be in the TS under 10 CFR 50.36 or Section 182a of the Atomic Energy Act. Further, it does not fall within any of the four criteria discussed in Section 2.0 above. The deletion of this information does not affect the surveillance requirements and is, therefore, acceptable.

The proposed table adds the applicable modes for each surveillance requirement consistent with STS guidelines. The applicable modes are consistent with the applicable modes in proposed Table 3.1.A-1. The proposed addition provides explicit guidance and is an enhancement of the current TS.

The proposed TS includes a note which states that neutron detectors may be excluded from the channel calibration. This note is adopted from STS guidelines and is not included in the current TS. The neutron detectors are excluded from channel calibrations because they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. In addition, detector failure will cause a total loss of signal, rather than instrument drift to a wrong indication. Changes in neutron detector sensitivity are compensated for by performing the weekly APRM calibration and the 1000 effective full power hour LPRM calibration. The neutron detectors are currently excluded from channel calibration, however, this is not stated in the current TS. Therefore, the proposed TS is a clarification of current requirements and is acceptable.

The proposed table is consistent with the current TS requirements with the following exceptions:

Addition of Channel Check Requirement

The proposed table adds the requirement for a channel check of the following protective functions: IRM Neutron Flux High, APRM Setdown Neutron Flux High, APRM Flow Biased Neutron Flux High, APRM Fixed Neutron Flux High, Reactor Vessel Water Level Low, and Main Steam Line Radiation High. Because the current TS do not require a channel check, the proposed TS is more conservative and is, therefore, acceptable.

Intermediate Range Monitor

The proposed TS includes additional requirements for the channel functional test of the IRM Neutron Flux High function. The current TS require a test prior to startup and weekly during refueling (Quad Cities only). The proposed TS require a test weekly prior to startup and weekly in Modes 2, 3, 4, and 5. This proposed TS is more conservative and is, therefore, acceptable.

The current TS require a calibration of the IRM Neutron Flux High function at every shutdown. The proposed TS provided in the December 8, 1992, letter require a calibration every 18 months. Based on discussions between ComEd and the staff, the licensee has proposed to maintain the current requirement of performing a calibration at every shutdown. This item will be left as an open item contingent upon its approval in the clean-up amendment.

The current Dresden and Quad Cities TS require a functional test of the IRM Inoperative protective function prior to startup and weekly during refueling (Quad Cities only). The proposed TS require a functional test weekly in Modes 2, 3, 4, and 5 consistent with STS guidelines. The test prior to startup has been eliminated because the current TS contain a note (6) which stipulates that the frequency of functional tests shall not exceed weekly. Therefore, the proposed TS increases the testing frequency and still maintains current requirements of note (6). The proposed TS provides a more conservative approach for the SR and is acceptable.

Average Power Range Monitor

The proposed TS adds the requirement for a functional test of the APRM Flow Biased Neutron Flux High protective function weekly in Mode 1. Because the current TS do not contain requirements for a functional test of this function, the addition of the SR is conservative and the proposed TS is acceptable.

The proposed TS increases the frequency of the functional test of the APRM Setdown Neutron Flux High function. In addition to the current requirement to test prior to startup and weekly during refueling (Quad Cities only), the proposed TS requires weekly testing in Modes 2, 3, and 5. This change is conservative and is, therefore, acceptable.

The proposed TS increases the frequency of the channel calibration for the APRM Flow Biased Neutron Flux High and APRM Fixed Neutron Flux High protective functions. The proposed TS require a semiannual calibration which is more conservative than the current frequency of once per refuel outage. The proposed TS also requires a weekly calibration of heat balance and adjustment of the core flow bias which is consistent with the current TS requirements, but clarifies the current requirements. The proposed TS contains an additional note adopted from STS guidelines. The note requires that the measured loop flow be greater than or equal to the established loop flow characteristics. This change provides additional requirements and is an enhancement of the current TS. The proposed SR is an enhancement to the current TS and is, therefore, acceptable.

The current Quad Cities TS contain surveillance requirements for APRM Downscale. These SRs were deleted in the proposed TS. This is consistent with the deletion of the Quad Cities current TS requirements associated with the APRM Downscale protective function, and deletion of Quad Cities current TS Table 3.1.A-1 note (11) as discussed in Section 3.1 of this SE. The only function provided by the APRM Downscale scram is during plant startup and shutdown to protect against operator error. However, all safety concerns are addressed without reliance upon the APRM Downscale trip function. Therefore, this requirement provides no enhancement to safety and may be deleted. The staff has determined that the requirements for a functional test of the APRM Downscale protective function are not required to be in the TS under 10 CFR 50.36 or Section 182a of the Atomic Energy Act. Further, they do not fall within any of the four criteria discussed in Section 2.0 above. Based on the above evaluation, the deletion of this SR is acceptable.

Main Steam Line Isolation Valve - Closure

The proposed TS adds the requirement for a channel calibration once per 18 months. Because the current TS do not require a channel calibration, the proposed TS is more conservative than the current requirements and is acceptable.

Main Steam Line Radiation - High

The proposed TS have relaxed the requirements for functional testing of the Main Steam Line High Radiation protective function. The current TS require a functional test once per week. The proposed frequency has been changed to once per month consistent with STS guidelines. The proposed frequency is technically supported by instrument failure history at both Dresden and Quad Cities. In addition, both stations have installed "NUMAC" main steam line radiation monitor drawers, which continuously perform internal, online diagnostic circuit checks. These checks are performed by internal hardware that is independent of the sensing circuitry. Therefore, the requirement to perform manual trip checks (functional tests) once per week does not provide additional assurance of functionality. The staff has determined that the relaxation of current TS requirements maintains the design requirements and the proposed SR is, therefore, acceptable.

The current TS require a channel calibration of this function every three months using a standard current source and every refueling outage using a radiation source. The proposed TS provided in the December 8, 1992, letter require a channel calibration once per refuel outage. Based on discussions between ComEd and the NRC staff, the licensee proposed to maintain the current requirements. This will be left as an open item and will be addressed in the clean-up amendment.

Turbine Stop Valve Closure

The proposed TS adds a requirement for channel calibration of the Turbine Stop Valve Closure function once per 18 months consistent with STS guidelines. The proposed SR is an enhancement of the current TS and is, therefore, acceptable.

Frequency of Functional Tests and Calibrations

The current TS base the frequency of the functional tests of several protective functions on TS Figure 4.1-1 which compares the number of unsafe failures to exposure hours. The current TS specify that the test frequency must be not less than monthly and no longer than three months. The proposed TS deletes the figure and requires the functional test monthly. The proposed TS is more conservative than the current TS and is, therefore, acceptable. This change applies to the following protective functions: Reactor Vessel Steam Dome Pressure - High, Reactor Vessel Water Level - Low, Main Steam Line Isolation Valve - Closure, Drywell Pressure - High, Turbine Stop Valve Closure, Turbine EHC Oil Pressure - Low, Turbine Control Valve Fast Closure, and Turbine Condenser Vacuum - Low.

The frequency of a channel functional test of the manual scram function has been increased from every 3 months to monthly. This is an enhancement of the current TS and is acceptable.

The frequency of the functional test for the Reactor Mode Switch Shutdown Position has been revised from every refueling outage to every 18 months. The proposed requirement is consistent with STS guidelines and ensures that the time between tests will be a more consistent interval. This change is acceptable.

The proposed TS modifies the frequency of the channel calibration for the following instrument channels from every refueling outage to once every 18 months: Reactor Vessel Water Level - Low, Turbine Control Valve Fast Closure, and Scram Discharge Volume Water Level - High. The current refueling outage frequency is approximately 18 months. Therefore, the proposed requirement is not a relaxation of current requirements. The proposed requirement is consistent with STS guidelines and ensures that the time between tests will be a more consistent interval. This change is acceptable.

3.3.2 TS 4.1.A.2

Proposed TS 4.1.A.2 is a new requirement for Dresden and incorporates the current Quad Cities TS Table 4.1-1, note (7). The proposed TS requires that the logic system functional test and simulated automatic operation of all channels be performed at least once per 18 months. The proposed TS is consistent with STS guidelines. Because it is an enhancement of the current Dresden TS and incorporates requirements of the current Quad Cities TS, proposed TS 4.1.A.2 is acceptable.

3.3.3 TS 4.1.A.3

Proposed TS 4.1.A.3 is a new requirement based on STS guidelines. The proposed SR requires that the response times for the trip functional unit be demonstrated at least once every N times 18 months, where N is the total number of redundant channels in a specific trip system. The proposed TS is an enhancement of current requirements and is, therefore, acceptable.

3.3.4 Relocated SRs

Current Dresden TS 4.1.A.2 and current Quad Cities TS 4.1.B have been relocated to TSUP Section 4.11. TSUP Section 3/4.11 was approved by Amendment Nos. 134 and 128 to the Dresden TS and Amendment Nos. 155 and 151 to the Quad Cities TS. This relocation is administrative and is acceptable.

Current Dresden TS 4.1.A.3 has been relocated to TSUP section 4.9.G which was approved by Amendment Nos. 138 and 132 for Dresden and Amendment Nos. 160 and 156 for Quad Cities. This change is acceptable.

Current Quad Cities TS 4.1.C requires functional testing of redundant RPS channels when a channel or trip system is inoperable, and allows 1 hour to untrip the previously tripped system in order to perform this redundant testing. This portion of current TS 4.1.C has been deleted in the proposed TS. This requirement was based on a lack of plant operating history and a lack of sufficient equipment failure data. Operating experience has shown that testing of the redundant equipment when companion equipment is inoperable is not necessary to provide adequate assurance of system operability. In addition, removal of the redundant system from service for testing removes the operable channel from monitoring the safety parameter, and creates the risk that the redundant system will fail. Industry experience of this type of configuration has indicated that failures of the redundant equipment are related to repeated testing itself and are not an indication that the system would have failed should it have been needed. The staff has determined that the requirement for testing of redundant RPS channels is not required to be in the TS under 10 CFR 50.36 or Section 182a of the Atomic Energy Act. Further, it does not fall within any of the four criteria discussed in Section 2.0, above. Based on the above evaluation, the deletion of this SR is acceptable.

Current Quad Cities TS 4.1.C allows a trip system with an inoperable channel to be placed in the untripped position for short periods of time (8 hours maximum) to allow the required functional testing of other RPS channels as long as the trip system with the inoperable channel has at least one operable channel monitoring that same variable. This requirement has been incorporated into proposed TS Table 3.1.A-1, note (a) for both stations. The proposed note allows a channel to be in an inoperable status for up to 2 hours for required surveillance without placing the trip system in the tripped condition. The proposed TS Table 3.1.A-1, note (a), is an enhancement of the current Dresden TS and is more conservative than the 8 hours previously allowed in the Quad Cities TS, and is, therefore, acceptable.

3.4 Technical Specification Bases

The staff has reviewed the proposed Bases for TS 3/4.1. The proposed Bases have been prepared using the guidelines of the STS. The staff finds these proposed Bases acceptable.

3.5 Open Items

These should be left as open items, contingent upon their approval in the clean-up amendment.

1. The frequency of channel calibrations for the IRM Neutron Flux - High in proposed Table 4.1.A-1 will be revised.

2. The frequency of channel calibrations for the Main Steam Line Radiation High functional unit in proposed Table 4.1.A-1 will be revised.

3.6 Conclusion

The proposed TS Section 3/4.1, "Reactor Protection System," clarifies the requirements of the current TS through the adoption of the STS format, adds more restrictive requirements, and relaxes some requirements of the current TS. The staff has reviewed all deviations between the STS guidelines and the proposed TS and the relaxation of current requirements. The staff has determined that the relaxations are consistent with plant design requirements and adequate justification has been provided to support these deviations. Therefore, the staff finds the proposed amendment for TSUP Section 3/4.1 acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluent that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (60 FR 29872). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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