

May 31, 1999

U.S. Nuclear Regulatory Commission
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Braidwood Station, Units 1 and 2
Facility Operating License Nos. NPF-72 and NPF-77
NRC Docket Nos. STN 50-456 and STN 50-457

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

Dresden Nuclear Power Station, Units 2 and 3
Facility Operating License Nos. DPR-19 and DPR-25
NRC Docket Nos. 50-237 and 50-249

LaSalle County Station, Units 1 and 2
Facility Operating License Nos. NPF-11 and NPF-18
NRC Docket Nos. 50-373 and 50-374

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: Status of Design Basis Initiative Program Efforts and Program Commitment Changes

References: See Attached List

The purpose of this letter is to provide the status of Commonwealth Edison (ComEd) Company design basis information activities, and to describe the improved approach we are implementing for the remaining activities based on lessons learned during the development and execution of activities in this area.

As a result of an NRC inspection at the Dresden Nuclear Power Station in late 1996, we identified, in Reference 1, specific activities to enhance the accuracy and control of design basis information. A significant portion of this effort was the review and reconstitution of the design basis information for the twelve most risk-significant systems at the Dresden Nuclear Power Station.

In Reference 2, we identified a series of near-term corrective activities to improve the quality, maintenance and accessibility of design basis information, and committed to development of a plan to improve design basis information accuracy and availability for all stations. In Reference 3, we provided a summary of the comprehensive plan for the Design Basis Initiative (DBI) Program, and committed to completion of the activities in the plan by May 1999. The major

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elements of the plan for the DBI Program consisted of:

- validation of the Updated Final Safety Analysis Report (UFSAR);
- validation of existing and development of the new Design Basis Document (DBD) manuals for each station; and
- validation and reconstitution of critical calculations.

Revised completion dates for DBD validation for Dresden and Quad Cities Nuclear Power Stations were provided, respectively, in References 4 and 5. Although the UFSAR validation effort is complete for all five stations, the approach to complete the remaining work has changed as detailed below. Given this revised approach, all work will be completed by the end of December 2000.

The DBI program plan addressed improvements in three broad areas described below.

A. UFSAR Validation

The DBI program performed an accuracy review of the UFSARs of all five stations, and was completed in 1998. This review allowed us to develop a comprehensive understanding of the licensing basis for each of the five stations. The results of the review have been captured in a set of hard copy binders at the sites and in the electronic Design Basis Database (DBdb). A project Open Item database was established and is being utilized to address questions and concerns encountered during the validation. Where potential operability concerns or safety-significant issues have been identified, they have been entered into the site's Corrective Action Program for resolution, as appropriate. Changes to the UFSARs that were identified as a result of the validation effort will be captured in the normal plant specific UFSAR update cycle. Review of the Technical Specifications will be achieved through the Improved Technical Specifications (ITS) project, which has been completed for Braidwood and Byron Stations, and is on-going for Dresden Nuclear Power Station, LaSalle County Station, and Quad Cities Nuclear Power Station.

B. Design Basis Information Validation and Development

We planned, in Reference 3, to validate the existing DBD manuals that were written in the early 1990s for Dresden and Quad Cities Nuclear Power Stations, and to expand the scope and coverage of the DBD manuals. The plan's objective was to assure the plants were maintained within their design bases by making key design basis information readily retrievable, and by validating the information. The objective was to be accomplished by validating the existing DBDs, and preparing an additional number of hard copy traditional DBD manuals for a selected number of systems and topical areas at each of our Boiling Water Reactors.

This plan of design basis information validation and presentation has been improved by utilizing recent applications of information technology. The structure we chose for the DBdb provides a more efficient method to link key design basis functions with their associated calculations. An Electronic Work Control System (EWCS), accessible to engineers, is now widely used within ComEd to control configuration changes to each plant. This system can be linked to the DBdb

information. We have launched a pilot project to determine the practicality of effectively integrating the large volume of design basis data gathered and validated in the DBdb with EWCS, to be electronically accessed by the engineers. This electronic database will replace hard copy DBD manuals for selected systems.

We have also reexamined the value of topical DBDs as a complement to the system-based pilot project described above. The information that would be captured in topical DBDs is readily available and retrievable for our newer plants. Braidwood and Byron Stations currently have no topical DBDs, and do not require any. LaSalle County Station has three topical DBDs covering seismic, electrical separation, and internal/external flooding, and does not require any additional DBDs. Dresden and Quad Cities Nuclear Power Stations will have topical DBDs covering the following seven topics: seismic, electrical separation, high and moderate energy line breaks, wind/tornado loadings, single failure criteria, structural design criteria, and piping design criteria.

These topical reports for Dresden and Quad Cities Nuclear Power Stations will be completed by the end of December 2000.

C. Critical Calculation Information

Reference 3 outlined three actions to improve the quality of calculations necessary to support the design bases. First, ComEd would take custody of a significant portion of the calculations developed in support of the original design and subsequent modification efforts. These calculations were held by the Architect/Engineers. Second, a corporate Nuclear Engineering Procedure (NEP) would be generated to provide guidance on critical essential calculations. These two actions have been completed. Third, selected key design basis calculations were to be reviewed. The status of this effort at each station is presented below.

For the newer sites, Braidwood, Byron and LaSalle County Stations, no further efforts on the calculations are necessary to validate their design bases. Calculations and design documents at these plants are readily retrievable. For Braidwood and Byron Stations, self-assessments of a number of significant systems, including Residual Heat Removal (RHR), Direct Current (DC), Component Cooling Water, and Auxiliary Feedwater, have confirmed that the design documents and calculations accurately describe the facilities and systems. Additionally, modifications to a number of significant systems, including the station batteries, steam generator replacement, ultimate heat sink reconstitution, and the Thermo-Lag resolution, have demonstrated that the calculations are retrievable and accurate. Those calculations have been updated as appropriate.

A similar conclusion is supported at LaSalle County Station based upon the extensive work performed during the extended shutdowns. This work has confirmed that the design documents and calculations accurately describe the facilities and systems. Some of the activities performed include:

- Safety System Functional Reviews of 42 systems;
- Over 350 design modifications at each unit;
- Review/rework of Engineered Safeguards Features automatic actuation setpoints and

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- Review/rework of critical essential calculations. Examples include battery sizing/duty cycle, Loss of Coolant Accident (LOCA) block start, Emergency Core Cooling System (ECCS) Net Positive Suction Head (NPSH), and Emergency Diesel Generator (EDG) loading.

Additionally, calculation and design document review for ongoing projects, such as ITS, 24 month Fuel Cycle, and Power Uprate, will further validate conformance with the design basis.

Dresden Nuclear Power Station will complete review of the remaining calculations in accordance with the commitment in Reference 6.

With reference to the commitments in Reference 5, Quad Cities Nuclear Power Station has conducted detailed design reviews for eight safety significant systems, and revised or reconstituted calculations as a result of those reviews. Some of the calculations which were reconstituted include calculations of RHR and RHR Service Water pump discharge pressure and flow, as well as pump motor horsepower and sequencing of the pumps on the EDGs, LOCA containment pressure, and NPSH limit curves for the ECCS pumps. Other calculations, that were identified for rework, such as 125 Volt DC load profiles and voltage drop calculations, are presently in progress. Quad Cities Nuclear Power Station will perform additional reviews of its 12 most risk significant systems in a similar manner as was done for Dresden Nuclear Power Station. Critical calculations requiring revision or reconstitution will be completed by the end of December 2000.

Should you have any questions concerning this letter, please contact Mr. S.R. Dort at (630) 663-3741.

Respectfully,



R.M. Krich
Vice President – Regulatory Services

Attachment: List of References for Design Basis Initiative Program

cc: Regional Administrator – NRC Region III
NRC Senior Resident Inspector – Braidwood Station
NRC Senior Resident Inspector – Byron Station
NRC Senior Resident Inspector – Dresden Nuclear Power Station
NRC Senior Resident Inspector – LaSalle County Station
NRC Senior Resident Inspector – Quad Cities Nuclear Power Station

Attachment

List of References for Design Basis Initiative Program

- 1). Letter from J.S. Perry (ComEd) to A. Bill Beach (U.S. NRC), dated November 8, 1996.
- 2). Letter from T.J. Maiman (ComEd) to A. Bill Beach (U.S. NRC), "Program to Improve the Quality, Maintenance, and Accessibility of the Design Bases at ComEd Nuclear Stations," dated November 12, 1996.
- 3). Letter from T.J. Maiman (ComEd) to A. Bill Beach (U.S. NRC), "ComEd Plan for Upgrading the Quality and Access to Design Information at all Six Nuclear Stations," dated January 30, 1997.
- 4). Letter from J.S. Perry (ComEd) to U.S. NRC, "Design Bases Initiative Program," dated November 17, 1997.
- 5). Letter from E.S. Kraft (ComEd) to U.S. NRC, "Assigning Docketed Due Dates to Open Ended NRC Commitments," dated February 12, 1998.
- 6). Letter from J.M. Heffley (ComEd) to U.S. NRC, "Status of Design Basis and Calculation Validation Efforts," dated September 8, 1998.