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ComEd

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JMHLTR: #98-0134

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

SUBJECT: Dresden Station Units 2 and 3
Regulatory Guide 1.97 Closeout
NRC Docket Nos. 50-237 and 50-249

REFERENCE: (1) B. Boger letter to C. Tully (BWROG), NRC Evaluation of BWR Owners' Group Topical Report NEDO-31558, dated January 13, 1993.

(2) M. J. Vonk letter to USNRC, Compliance with Regulatory Guide 1.97, (Neutron Flux Monitor), dated November 12, 1993.

The purpose of this letter is to provide a plan and schedule for closing Regulatory Guide 1.97 items as they relate to the adequacy of the Neutron Instrumentation System during post-accident monitoring at Dresden Station. In response to the requirements Regulatory Guide 1.97, the BWR Owners Group (BWROG) developed a set of alternate criteria for Neutron Instrumentation which are outlined in GE report NEDO-31558, "Requirements for Post Accident Neutron Monitoring System." The NRC Staff approved NEDO-31558 in Reference (1). The NRC required ComEd to submit an action plan to ensure existing designs met the sixteen criteria contained in NEDO-31558. Our response was submitted in Reference (2).

In Reference (2), ComEd closed the majority of the requirements in NEDO-31558; however, four items were deferred pending further evaluation. Two of the four items are now considered closed based on additional BWROG guidance. The Attachment provides a description of all four items including a plan and schedule for the remaining open items.

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Should you have any questions regarding this letter, please contact Mr. Frank Spangenberg, Regulatory Assurance Manager, at (815) 942-2420, extension 3800.

Sincerely,

J.M. Heffley
Site Vice President
Dresden Station

Attachment - Reg. Guide 1.97 Neutron Instrumentation Requirements Closeout Plan

cc: A. Bill Beach , Regional Administrator - RIII
K. R. Riemer, Senior Resident Inspector - Dresden
L. W. Rossbach, Project Manager - NRR
Office of Nuclear Facility Safety - IDNS

Reg. Guide 1.97 Neutron Instrumentation Requirements Closeout Plan

1. NEDO-31558 Item 2: Instrument Accuracy (± 2%) [CLOSED]

Original Commitment

In the response to NEDO-31558, Dresden committed to perform an APRM error analysis. If the error analysis could not support the specified accuracy, operating practices would be adjusted appropriately. This action has not been completed; however, justification consistent with the BWROG position on this topic is provided below.

Revised Commitment

NEDO-31558, Requirement 5.2.2, specifics an accuracy requirement of 2% of rated power. This requirement is more restrictive than Reg. Guide 1.97, which is silent on instrumentation accuracy. Contrary to our original commitment, Dresden has not completed an engineering analysis to determine the total loop inaccuracies for the APRM system. However, Dresden has determined that the APRM system will NOT meet the NEDO accuracy requirement of 2% of rated power. This judgment is based on evaluations performed for other stations with similar design features, and based the effects of the anticipated off-normal core conditions following an ATWS event (control rod pattern, xenon, etc.). Dresden has evaluated the impact of not conforming to NEDO-31558 Requirement 5.2.2 and concludes the deviation is acceptable. The justification for this conclusion is provided below and is consistent with the BWROG position on this subject.

The steady-state APRM system measurement uncertainty is governed primarily by the plant Technical Specifications. A weekly surveillance ensures the APRM system is calibrated to within 2% of core thermal power using the reactor heat balance calculation. The plant heat balance is the most accurate method of determining reactor core thermal power and is generally accurate to less than or equal to 2%. During an ATWS condition, the APRM measurement uncertainties are compounded by the off-normal core conditions (xenon and control rod pattern). Therefore, the total APRM power measurement uncertainties are expected to be in excess of 2% during an ATWS event.

Dresden uses the Emergency Procedure Guidelines (EPGs) to achieve shutdown during an ATWS event. When the ATWS condition potentially threatens containment, shutdown is accomplished by injecting boron via the Standby Liquid Control system. The decision to inject boron is independent of the APRM indications and is predicated on degrading containment conditions (rising suppression pool temperature). Therefore, an APRM system uncertainty beyond that specified in NEDO-31558 is acceptable and does not compromise plant safety. Therefore, Dresden considers this item closed.

Closure Date

Dresden considers this item closed. No further action is required.

2. NEDO-31558 Item 4: EQ Requirements – Operate in an ATWS Environment [OPEN]

Original Commitment

In the response to NEDO-31558, Dresden committed to evaluate the impact of a postulated ATWS on the LPRM components following the BWROG review of equipment qualification requirements for an ATWS environment. General Electric has completed an analysis that provides a bounding containment response for Dresden during an ATWS event. This item remains open.

Revised Commitment

For the purposes of post accident monitoring, the NEDO requires the APRM/LPRM system to remain functional during an ATWS event for a one-hour period. In general, this is not an issue with BWRs because an ATWS event does not produce conditions more severe than the design basis LOCA event. However, for plants equipped with safety relief valves that vent directly to the containment atmosphere, the containment environment may degrade significantly during an ATWS. GE has prepared a report that evaluates the containment response during an ATWS event (using Dresden as the limiting plant). This information will be used to evaluate the performance of the LPRM system (cables and connectors) during an ATWS event to ensure the operators have APRM indication (reactor power) for a one-hour duration.

Closure Date

This action will be completed by December 1, 1998

3. NEDO-31558 Item 8: Power Supplies – Uninterruptible and Reliable [CLOSED]

Original Commitment

In the response to NEDO-31558, Dresden deferred a response to this issue because it was under review by the BWROG. Dresden committed to provide a response when the BWROG evaluation was completed.

Revised Commitment

NEDO-31558, Requirement 5.2.8, specifies that the power supply for the APRM system is reliable and uninterruptible. A review of the APRM system at Dresden concludes that the power source is reliable but NOT uninterruptible. Dresden has evaluated the impact of not conforming to NEDO-31558 Requirement 5.2.8 and concludes the deviation is acceptable. The justification for this conclusion is provided below and is consistent with the BWROG position on this subject.

The APRM system at Dresden is comprised of two divisions with independent power supplies. In each division, there are three separate APRM channels. Each APRM division is powered from one of two RPS buses. Each RPS bus is powered from one of two independent reactor protection system (RPS) motor-generator sets. The motor-generator (MG) sets are, in-turn, powered from safety-related power supplies. An alternate (backup) power supply to each RPS bus is also available and can be aligned to one bus in the event the normal power supply is lost. All electrical power feeds to RPS are protected by Electrical Protection Assemblies (EPAs) which monitor the quality of power to prevent inadvertent application of out-of-tolerance voltage and frequency to the RPS.

Although the power supply to the APRMs would be interrupted during a loss of offsite power event, power would be easily restored via operator action (procedurally controlled) once the Emergency Diesel Generators (EDGs) restored power to the safety related buses. In addition to the EDGs, the Station Blackout Diesels (SBO) could be aligned to restore power to RPS if required.

Loss of the most direct indication of reactor power during the short period required to re-energize RPS would not preclude the operators' ability to determine power level. Many alternate indications can be used to determine power output (examples include the plant Safety Parameter Display System, turbine generator output (if not tripped), containment heat load input, and relief valve or turbine bypass valve positions). In addition, the key decision to inject boron via the standby liquid control system is not compromised by a loss of APRM indication. The decision to inject boron to shutdown the reactor during an ATWS is independent of the APRM indications and is predicated on degrading containment conditions (rising suppression pool temperature).

Each reactor at Dresden is equipped with a total of four recorders that record APRM data. Two of the four APRM recorders are powered form the associated unit's Essential Service (ESS) Bus. The ESS Bus provides a continuous source of power to these APRM recorders. The normal supply of power to the ESS Bus is the ESS Uninterruptable Power supply (UPS) which is normally powered from Safety Related 480v Bus 29(39). The UPS also has Unit 2(3) 250 VDC Station Batteries and Non Safety 480v Bus 25(36) available in the event of various failures. The transition between these power supplies is "bumpless" and requires no operator actions. Should the UPS fail, the power to the ESS Bus is automatically transferred to Safety Related 480v MCC 28(38)-2. This configuration provides a continuous source of power to the APRM recorders powered by the ESS Bus.

The other two ARPM recorders are powered from the Unit's Main Instrument Bus (MIB). The normal power supply to MIB is Safety Related 480v MCC 28(38)-2 . In response to a loss of normal feed, the MIB will automatically transfer to Non –Safety Related 480v MCC 25(35) –2. The MIB automatically transfers back to the original source with no operator action if power is restored. Should offsite power be lost, the EDGS would automatically provide a source of power to MCC 28(38)-2. In this circumstance, the affected APRM recorders would experience a loss of power for approximately 10 seconds. This momentary loss of power would not hamper the operators ability to continuously monitor the APRM recorders, since two APRM recorders will be powered by the ESS Bus.

Therefore, Dresden concludes the deviation from NEDO-31558, criteria 5.2.8, is acceptable and does not compromise plant safety. This is consistent with a BWROG owners group position on this topic. Therefore, Dresden considers this item closed.

Closure Date

Dresden considers this item closed. No further action is required.

4. NEDO-31558 Item 10: Limited QA Requirements (GL 85-06) [OPEN]

Original Commitment

In the response to NEDO-31558, Dresden committed to identify and locate all non-safety NMS components in the Master Equipment List (MEL) and assign augmented quality standards to these items consistent with Generic Letter 85-06. Since that time, the MEL has been superseded by the EWCS program. This action has not been completed.

Revised Commitment

Dresden will identify and locate all non-safety related components of the LPRM/APRM system and assign augmented quality requirements consistent with Generic Letter 85-06 to these components. This information will be reflected in EWCS.

Closure Date

This item will be completed by December 1, 1998