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Subject: McGuire Nuclear Station
Docket Nos. 50-369, 370
Summary Report of Evaluations Performed Pursuant to 10CFR 50.59, "Changes, Tests, and Experiments"

Pursuant to 10 CFR 50.59(d)(2), attached is a summary report of evaluations performed at McGuire Nuclear Station for the period ending June 30, 2004. These evaluations demonstrate that the changes do not meet the criteria for a license amendment as defined by 10 CFR 50.59(c)(2).

Questions regarding this submittal should be directed to Kay Crane, McGuire Regulatory Compliance at (704) 875-4306.

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Attachment

IE47

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Changes Completed Under 10CFR 50.59

AP/1/A/5500/005
AP/2/A/5500/005

These abnormal procedures, Generator Voltage and Electric Grid Disturbances, provide guidance on how to respond to main generator voltage regulator malfunctions and to voltage and/or frequency disturbances on the electrical grid.

The procedures were revised to provide guidance in the unlikely event that the Transmission Control Center (TCC) notifies McGuire of a degraded grid condition. Once notified of this condition while the unit is on-line (modes 1 and 2), Technical Specification (TS) 3.0.3 is entered. Both Unit 2 offsite power sources are declared inoperable and logged per TS 3.8.1, as well as, one of the Unit 1 offsite power sources. TS 3.5.2 is also logged, however; no action is needed for two trains of the Emergency Core Cooling System (ECCS) being declared inoperable because TS 3.0.6 does not require action to be taken separately due to inoperability of a support system. Action with respect to TS 3.0.3 would proceed in a manner consistent with all other entries into TS 3.0.3 with respect to shutdown timing.

The procedure changes also add guidance to install jumpers in the 4160 volt essential bus degraded voltage circuitry. This guidance is only necessary during modes 1 and 2 when the unit generator is on-line.

EP/2/A/5000/ECA-0.0

This procedure was revised to allow use of alternate power supply to energize 2ETA using transformer SATA powered by Unit 1 6900V bus 1TC while differential relay protection is degraded. The corrective action program (PIP M-03-4174) describes a problem with this relaying. To use this power supply alignment, the differential relay protection must be defeated for transformer SATA. Additionally, the present suspected Current Transformer (CT) degradation may be postulated to create a phase fault or a phase to ground fault. This interim change is only allowed during a beyond design basis event where busline 2A is lost, busline 2B is lost, 2A diesel generator fails, AND the SATB alignment to Unit 1 fails. This change does not allow SATA alignment to Unit 1 for normal operation. The evaluation assumes a CT fault scenario even though data indicates the CT will not cause a fault.

UFSAR Section 9.1.3

Section 9.1.3 of the McGuire Updated Final Safety Analysis Report (UFSAR) was revised to state that while the BTP-9-2 method was used for the licensing basis maximum spent fuel pool decay heat analysis, decay heat calculations for various operational evolutions may utilize the ORIGEN methodology. These operational evolutions may include such things as removal of spent fuel pool cooling from service for maintenance and subsequent spent fuel pool heatup, or calculation of core and spent fuel pool decay heat for refueling outages to ensure that the design

basis maximum decay heat envelopes the actual decay heat, etc. The specific change to the UFSAR states that the SAS2H/ORIGEN-S or ORIGEN-ARP sequences may be used to perform decay heat calculations.

No change is being made to the design basis maximum Spent Fuel Pool decay heat loads. Any revision to this value would require NRC review and approval. Rather, the revision includes only the method by which the computation is performed for various operational evolutions, with the decay heat limit still being as reviewed and approved by the NRC. No structure, system or component (SSC) is directly or indirectly affected by this change.

The NRC has approved the use of the ORIGEN methodology for dry storage applications. In fact, the SCALE System of computer codes was developed at Oak Ridge National Laboratory with NRC funding for dry storage applications of irradiated nuclear fuel. This approval was extended to wet storage applications during the Spent Fuel Pool enrichment increase for Catawba Nuclear Station in 1995, when Duke Power Company reported in a response to a request for additional information that Duke intended to use ORIGEN for decay heat calculations for "various operational analyses." The NRC approved the use of the ORIGEN methodology recently in the Spent Fuel Pool capacity increase for the Kewaunee Nuclear Power Plant. Since prior NRC approval has been granted for the ORIGEN methodology, this revision does not constitute a change to a method that requires a license amendment.

Use of Potassium Iodide as a Compensatory Measure to Limit Control Room Operator Dose

The interim use of potassium iodide (KI) was evaluated as a compensatory measure to limit control room operator dose due to a degraded control room boundary discovered during tracer gas testing of the control room. Credit may be taken for a factor of 10 reduction in thyroid dose due to the administration of KI. This testing was required by NRC Generic letter 2003-01.

The Food and Drug Administration has approved KI for use during radiological emergencies and is available as an "over the counter" drug. In addition, the NRC has approved the use of KI as a control room habitability compensatory measure.

The distribution of KI will be controlled by guidance contained in site procedures. Adequate supplies of KI are available in the control room for a 30 day period. The control room operators will be screened for known reactions to iodide, iodine, iodized salt, shell fish, or contrast dyes used in diagnostic medical radiology.

This activity has no adverse effect on accidents or malfunctions evaluated in the McGuire UFSAR. It does not create any new type of unanalyzed event, does not impact the fission product barriers and does not impact any evaluation conservatisms.

The evaluation concluded that the use of potassium iodide tablets by the control room operators, as an interim compensatory measure for unfiltered control room inleakage in excess of that assumed in the accident analysis, does not require prior NRC approval for implementation.

Expansion of Service Provided by the Auxiliary Building Filtered Ventilation Exhaust System (ABFVES) to Address Long-Term ECCS Leakage

This activity involved taking credit for Auxiliary Building Filtered Ventilation Exhaust System (ABFVES) for limiting post-LOCA dose due to a small leak for a long period of time in the analytical framework for the dose calculations. The activity involves the expansion of the service provided by the ABFVES. The credit for limiting post-LOCA dose provided by the ABFVES was expanded to include a small leak of contaminated sump water outside the containment for an extended period of time. This evaluation addressed this change to the ABFVES.

This change does not result in any physical changes to any SSC or to any procedures for operating an SSC. How the ABFVES is operated, maintained, and tested is not affected. Taking credit for the ABFVES in dose calculations has no impact on the design, functions or operation of any SSC. The NRC approved the ABFVES as an acceptable engineered safety feature (ESF) for the atmosphere cleanup system for the removal of iodine. The NRC determined that the ABFVES is in conformance with Regulatory Guide 1.52.

The NRC determined that the scenario of a large leak for a short period of time (failure of a pump shaft seal) could result in calculated doses which are excessive if the assumed release of iodine is not filtered. In addressing this concern, the NRC credited the ABFVES to limit the dose from this pathway. The ABFVES was not required to limit dose due to a small leak from a long period time. However, this does not mean that the ABFVES could not be used to limit dose from this pathway if necessary. The reason for NRC not crediting the ABFVES was not due to any issues regarding ABFVES ability to be considered an acceptable ESF atmosphere cleanup system but on NRC calculations determining that the ABFVES is not required to limit dose due to a small leak for a long period of time. Needing to operate the ABFVES for a longer period of time does not result in decreased reliability or an increase in the likelihood of a malfunction of the ABFVES. Various components of the ABFVES are safety-related, including the carbon filters and fan motors. The duct work and various other components are not safety-related but are judged acceptable for post accident conditions.

This activity is not considered to be an initiator of any previously evaluated accidents. This activity does not influence any factors or conditions that could lead to an accident that has been previously evaluated. By taking credit for the ABFVES, dose consequence is reduced. There are no new failure modes associated with this activity. This change has no effect or impact on any fission product barrier. Whether or not credit is taken for the ABFVES is not considered to be an element of the methodology for calculating dose. Crediting the AVFVES is considered an input assumption of the analysis. No other aspect of the analysis is affected, the same methods used to calculate dose continue to be utilized.

UFSAR and Technical Specification (TS) Bases Change to Incorporate Asymmetric Ice Mass Requirements and New Statistical Methodology for Performing Ice Mass Verification

TS Surveillance Requirements (SRs) 3.6.12.4, 3.6.12.5 and 3.6.12.6 have been amended to incorporate asymmetric ice mass requirements and new statistical methodology for performing

the required ice mass verifications. The TS Bases changes associated with these amendments, and the UFSAR Chapters 1 and 6 changes that provide the license bases supporting these amendments, are were within the scope of this evaluation.

The TS Bases changes are consistent with an NRC approved NUREG-1431 change (TSTF-429), which revises the methodology and frequency for verifying the required quantity and distribution of ice mass within the ice condenser ice bed (stored ice).

The only deviation from TSTF-429 is in specifying a criterion for expending the initial sample population of the amended SR 3.6.12.4. This deviation has been specifically reviewed and identified as acceptable in SERs dated September 29, 2003, for the Catawba and McGuire license amendments.

The UFSAR changes incorporate an NRC approved revision to the methodology used to revise safety analysis to provide an asymmetric ice mass distribution. Specifically, Topical Report DPC-NE-3004-PA, Revision 1 provides a description of GOTHIC code changes that allows finer nodalization of the ice bed, which allows modeling of an asymmetric ice mass distribution. The revision to this methodology was approved by the NRC per SER dated February 29, 2000. The results of the safety analysis revision using this methodology were incorporated into UFSAR Chapter 6. While these changes to the UFSAR were reviewed by the NRC as part of their approval of amendments to TS 3.6.12, the containment peak pressure is actually lower with this analysis revision, which increases the design margin.

In addition, the safety analysis revision models initial conditions for upper and lower compartment temperatures in containment. This analysis revision modeled these temperatures at a lower value for McGuire than the previous analysis cases. This change to lower temperature is conservative as it reflects increased mass of air in containment which increases the sub-compartment pressure response. No change is being made to TS 3.6.5 which controls the allowed operating temperatures in containment. Such a change would require a TS amendment with additional justification, including addressing the affect on sub-compartment differential pressures.

The UFSAR and TS Bases changes add a reference to Topical Report ICUG-001. This topical provides a detailed description of the methodologies incorporated by TSTF-429. The NRC approved revision 2 to this topical report by SER dated September 11, 2003. These methodologies include the application of operating experience and maintenance strategies to develop more effective TS requirements. These methodologies enhance the effectiveness of statistically verifying that the ice mass in the ice bed complies with the analysis assumptions for design basis accidents.

Revision of Chemistry Manual 3.1 Primary Analytical Requirements and Corrective Actions for RMWST 02 limits

McGuire Unit 1 and 2 Reactor Makeup Water Storage Tank (RMWST) diaphragms are degraded (permeable to air), consequently tank Dissolved Oxygen (DO) levels cannot be maintained within the desired limit of 1 PPM. The higher RMWST DO levels are primarily experienced

early to mid-in core life when dilution volume requirements are low and tank turnover is minimal. UFSAR table 9-35 further specifies the RMWST design parameters, one of which is the ability to maintain </= 1ppm oxygen. This limit is merely a nominal design criteria and is not part of any TS or Selected Licensee Commitment (SLC) requirement. Longterm, it is desirable to refurbish the RMWST such that it complies with the UFSAR Boron Recycle (NB) system RMWST oxygen design criteria; however, in the interim it is not desirable to revise the UFSAR nominal design criteria for this parameter. Primary Chemistry provided a technical response regarding the acceptability of higher RMWST oxygen (EPRI PWR Primary Chemistry Guidelines, Revision 4, Volume 1, Table 3-5) considers oxygen in the RMWST a "Diagnostic Parameter" and recommends a sample frequency of 1/qtr with an expected value "variable". In EPRI vernacular, diagnostic parameters are "those parameters which assist the chemistry staff in interpreting primary coolant variations, or which may affect radiation field buildup, corrosion performance of system materials, or fuel integrity". This is in contrast to control parameters, which are "those parameters which require strict control due to material integrity considerations."

From a chemistry good practice standpoint, it is desirable to maintain oxygen levels low in the reactor makeup water to minimize the potential for general corrosion and for SCC within the high temperature charging supply piping. The UFSAR and SLC limits on overall NC system oxygen are not being changed as a result of this program manual change, and their explicit NC system O2 limits will continue to be met. UFSAR Table 5-14 and SLC 16.5.7 specify the maximum NC system oxygen limit as 0.1 ppm.

RMWST replenishment via deaerators can be utilized to maintain DO in spec; however; this presents a significant operational burden and is not a desirable interim means to control RMWST DO. Normal Volume Control Tank (VCT) dilutions are to the top through the spray header, whereby entrained O2 would combine with free H2; however, operators routinely dilute to the bottom of the VCT. Limiting routine dilutions to the top of the VCT is also not a desirable interim means to control RMWST DO. Similarly, if the VCT dilution/makeup is a small volume and sufficiently mixed with the contained volume of fluid within charging piping and/or the cold leg, the corrosive effects of O2 are minimized. McGuire operating experience supports that the RMWST hi-DO condition concurrent with EOC dilution volume requirements has not resulted in any challenge to the Reactor Coolant (NC) system DO limits. Furthermore, industry operating experience has not identified any explicit SSC issues associated with the charging supply piping downstream of the regenerative heat exchanger. In fact, numerous plants operate with no oxygen limits nor design provisions to control oxygen for the RMWST. A technical evaluation of the higher interim RMWST O2 limits concluded O2 levels >1ppm are acceptable in the interim (pending tank refurbishment), and that no SSC degradation would be expected. An operating experience survey identified several plants which had no provision for RMWST O2 or imposed no O2 limit. The technical evaluation further concluded interim operation with higher RMWST O2 levels did not present any technical issues, nor would it degrade any SSC.

UFSAR Section 15.6.2 (Break In Instrument Line or Other Lines From Reactor Coolant Pressure Boundary that Penetrate Containment) analyzes a guillotine break of the 3" letdown line outside of containment as the limiting non-NC system break. A postulated break in the charging supply piping would be less severe from a dose analysis standpoint, and any associated effect would be

bounded by the limiting case analyzed in UFSAR 15.6.2. A postulated break in the charging supply piping would readily be isolable from the NC system by the two series class "A" primary check valves and can further be isolated from high head injection capability via 1/2NV-244A and 245B (manually or automatically on "Ss" signal).