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Constellation Energy Group

Nine Mile Point
Nuclear Station

September 15, 2003
NMP1L 1773

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

SUBJECT: Nine Mile Point Units 1 and 2
Docket Nos. 50-220 and 50-410
Facility Operating License Nos. DPR-63 and NPF-69

Transmittal of Revised Neutron Transport Calculations
Benchmarking Report
TAC Nos. MB6687 and MC0331

Gentlemen:

The purpose of this letter is to transmit the revised Reactor Pressure Vessel (RPV) neutron transport calculations benchmarking report for NRC review as required to support qualification of the calculational methodology utilized in the neutron fluence determinations applicable to Nine Mile Point Units 1 and 2 (NMP1 and NMP2). In a conference call held on July 30, 2003 with the NRC, the Nine Mile Point Nuclear Station, LLC, (NMPNS) staff committed to update the data previously reported in the January 15, 2003 benchmarking report submittal [Letter No. NMP1L 1708; ADAMS Accession No. ML030290056].

The attached revised benchmarking report, "Benchmarking of Nine Mile Point Unit 1 and Unit 2 Neutron Transport Calculations," has been updated to be consistent with the NMPNS responses [Letter No. NMP1L 1749, dated July 31, 2003] to an NRC Request for Additional Information (RAI), dated May 6, 2003 [ADAMS Accession No. ML031260301]. The RAI contained a list of issues to be addressed by NMPNS pertaining to the information and analytical results provided in the January 15, 2003 benchmarking report submittal. In addressing the issues raised in the RAI, NMPNS found it necessary to perform additional analyses, which included supplemental neutron transport calculations for NMP1 Operating Cycles 9, 10, and 11, and the re-analyses of Cycles 7 and 12. The revised benchmarking report updates the data, discussions, and conclusions to incorporate the results of these additional analyses. A more detailed summary of changes is included in the report.

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By letters dated November 15, 2002 [NMP1L 1697; ADAMS Accession No. ML023250201] and August 15, 2003 [NMP2L 2096], NMPNS transmitted applications for amendments to the NMP1 and NMP2 Technical Specifications (TSs) that would revise the Reactor Coolant System (RCS) Pressure-Temperature (P-T) limit curves. The proposed P-T limit curves were developed using the MPM Technologies, Inc. methodology to determine the RPV neutron fluence values. Regulatory Guide 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence," dated March 2001, requires the benchmarking of the methodology used for fluence determinations. The MPM methodology satisfies the requirements of Regulatory Guide 1.190. The Regulatory Position 1.4 uncertainty analyses and comparisons with benchmark measurements and calculational benchmark problems (as provided in NUREG/CR-6115) have been completed and the Position 1.4 methodology qualification and uncertainty estimates have been satisfied. The benchmark analyses (Report No. MPM-402781) were submitted to the NRC for review [Letter NMP1L 1708] as required to support plant-specific (applicable to NMP1 and NMP2) qualification of the MPM methodology. Supplemental information was provided [Letter NMP1L 1749] in response to the May 6, 2003 RAI regarding the benchmark analyses. As reported in the RAI response, successful calculation of the pool critical assembly (PCA) benchmark has been achieved and comparisons of the calculated and measured reaction rates for the NMP1 dosimetry sets indicate agreement well within the ±20% requirement for fluence calculational uncertainty. Moreover, the calculations do not exhibit any significant bias. Therefore, the supplemental information provided in the RAI response confirmed that the MPM methodology used for the calculation of the NMP1 and NMP2 fluence values fully satisfies the Regulatory Guide 1.190 requirement for fluence methodology qualification by measurement and calculational benchmarks.

Contained herein as Attachment 1 (Report No. MPM-402781, Revision 1) is a revision to the benchmarking report that was originally submitted on January 15, 2003. The attached report has been updated to be consistent with the supplemental information provided in the July 31, 2003 RAI response. In addition, the revised benchmarking report also updates the results of the NMP1 Cycle 12 core shroud boat sample analyses to reflect the new neutron transport results as reported in the RAI response. The updated results of the Cycle 12 boat sample analyses are not included in the RAI response information. Note that the MPM methodology, as analyzed for methods qualification in the attached revised benchmarking report, applies to both NMP1 and NMP2 for use in RPV and reactor component (e.g., core shroud, surveillance capsule) fluence determinations.

Pursuant to the Regulatory Guide 1.190 requirement for fluence methodology qualification, Revision 1 to the RPV neutron transport calculations benchmarking report is hereby submitted for NRC review to support evaluation and approval of the currently

pending TS amendment applications for revision of the NMP1 and NMP2 RCS P-T limit curves. The NMP2 P-T curve amendment is needed by February 15, 2004 to support the Spring 2004 refueling outage (RFO9), which is scheduled to commence in March 2004.

Sincerely,

William C. Holston
Manager Engineering Services

WCH/CDM/bjh

Attachment 1: Report No. MPM-402781, Revision 1

cc: Mr. H. J. Miller, NRC Regional Administrator, Region I
Mr. G. K. Hunegs, NRC Senior Resident Inspector
Mr. P. S. Tam, Senior Project Manager, NRR (2 copies)

ATTACHMENT 1

REPORT NO. MPM-402781, Revision 1

BENCHMARKING OF NINE MILE POINT UNIT 1 AND UNIT 2 NEUTRON TRANSPORT CALCULATIONS