NEI 07-02A [Revision 0]

Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed Under 10 CFR Part 52

March 2008

NEI 07-02A [Revision 0]

Nuclear Energy Institute

Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed Under 10 CFR Part 52

March 2008

Nuclear Energy Institute, 1776 I Street N. W., Suite 400, Washington D.C. (202.739.8000)

ACKNOWLEDGEMENTS

This program description document, *Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed Under 10 CFR Part 52*, NEI 07-02A, Revision 0, was developed by the NEI New Plant Maintenance Rule Program Group. We appreciate the time, efforts and expertise of the individuals who contributed to the development of this guideline.

NOTICE

EXECUTIVE SUMMARY

NEI 07-02A, *Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed Under 10 CFR Part 52*, Revision 0, provides a complete generic program description for use in developing combined license (COL) application final safety analysis reports. The document is consistent with Regulatory Guide 1.206 (Draft Guide DG-1145), *COL Applications for Nuclear Power Plants (LWR Edition).* A main objective of this program description is NRC-approved, standardized FSAR content that expedites NRC review and issuance of the combined license.

NRC approved this generic template guidance in a Safety Evaluation Report dated January 24, 2008 (see Appendix 1).

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GENERIC FSAR TEMPLATE GUIDANCE FOR MAINTENANCE RULE PROGRAM DESCRIPTION FOR PLANTS LICENSED UNDER 10 CFR PART 52

17.X.1 MAINTENANCE RULE PROGRAM

The Maintenance Rule (MR) Program provides assurance that structures, systems, and components (SSCs) within the scope of the program remain reliable and capable of fulfilling their intended functions and provides processes for assessing and managing potential increases in risk that might result from proposed maintenance activities. The MR Program meets the requirements of 10 CFR 50.65 (Reference 1).

17.X.1 MAINTENANCE RULE PROGRAM DESCRIPTION

The MR program follows the guidance in NUMARC 93-01 (Reference 2), as endorsed and modified by Regulatory Guide (RG) 1.160, (Reference 3) and revised Section 11.0 of NUMARC 93-01 (Reference 4), as endorsed and modified by RG 1.182 (Reference 5), without any exceptions that could materially and negatively affect the effectiveness of the program. The principal functions of the program are described in the following subsections**.**

The MR program includes appropriate control of procedures, documents, computer software and data, as applicable.

17.X.1.1 Maintenance rule scoping per 10 CFR 50.65(b)

17.X.1.1.a The SSCs within the scope of the MR program include safety-related SSCs and certain non-safety-related SSCs, as determined using a MR scoping procedure. The scoping procedure addresses:

- Safety-related SSCs.
- Non-safety-related SSCs that mitigate accidents or transients.
- Non-safety-related SSCs that are used in Emergency Operating Procedures, where ‘used’ means directly used to mitigate the accident or transient via explicit reference in the EOP or used in steps of procedures referenced by the EOP. Additionally, SSCs explicitly referenced in back-up or lower-tier methods in the EOPs and provide reasonable assurance of mitigation success, or whose use is implied in an EOP and essential to the completion of an EOP step, are considered within scope of the Maintenance Rule.
- Non-safety-related SSCs whose failure prevents safety-related SSCs from fulfilling their safety-related functions.
- Non-safety-related SSCs whose failure causes scrams or actuates safety systems.

The SSCs within the scope of the MR program are evaluated against performance criteria to determine which SSCs will have goals established and monitoring activities performed in accordance with 10 CFR 50.65(a)(1).

17.X.1.1.b Safety significance classifications and bases of in-scope SSCs, e.g., high safety significance (HSS) or low safety significance (LSS), are determined using processes consistent with Section 9.3.1 of NUMARC 93-01. They include determination of risk significance criteria and appropriate consideration of operating experience, generic failure data, component reliability information, probabilistic risk assessment (PRA) insights, and the recommendations of an expert panel. All SSCs identified as risk-significant via the Reliability Assurance Program for the design phase (DRAP – see FSAR Section 17.Y) are included within the initial MR scope as HSS SSCs. This includes risk-significant SSCs identified as part of the design certification phase or follow-on COL applicant/holder phases of DRAP.

17.X.1.1.c The expert panel is established in accordance with NUMARC 93-01 prior to fuel load authorization and utilizes operating, maintenance and systems expertise, PRA insights, and other applicable information to update and maintain the MR scope and SSC classifications.

17.X.1.2 Monitoring and corrective action per 10 CFR 50.65(a)(1)

SSCs within the scope of the MR are initially classified as (a)(2) (ref. Section 17.X.1.3), except where it is determined that an SSC should be initially classified as (a)(1), e.g., an SSC that fails during start-up testing.

SSCs that do not meet performance criteria established for (a)(2) monitoring (ref. Section 17.X.1.3) are evaluated for (a)(1) classification in accordance with MR program procedures, with recommended corrective actions identified as appropriate. Necessary corrective actions are implemented in accordance with the site Corrective Action Program. The MR expert panel reviews whether SSCs are to be classified as (a)(1). Monitoring goals are established for SSCs classified as (a)(1), as appropriate, commensurate with the SSCs' safety significance, and considering applicable industry operating experience, with the objective of providing reasonable assurance that the SSC is proceeding to acceptable performance levels and that the corrective actions taken were effective.

For SSCs that do not meet established (a)(1) monitoring goals following corrective actions initially identified and implemented, appropriate additional corrective actions are taken.

17.X.1.3 Preventive maintenance per 10 CFR 50.65(a)(2)

Monitoring as specified in 10 CFR 50.65(a)(1) is not required where it has been demonstrated that the performance or condition of an SSC is being effectively controlled

through the performance of appropriate preventive maintenance (PM), such that the SSC remains capable of performing its intended function.

The MR program includes procedures for managing SSC performance in accordance with 10 CFR 50.65(a)(2) requirements during plant operation consistent with NUMARC 93-01. To monitor the effectiveness of the maintenance performed on the various SSCs, performance criteria are established at the plant, system, train, or component level commensurate with safety, risk significance and SSC function. SSC performance criteria (e.g., failure rate, unavailability or condition-based) are chosen that are reasonable, measurable, and technically appropriate for the purpose of timely identification of degraded SSC performance or condition. For risk-significant SSCs identified via DRAP, performance criteria are consistent with the reliability and availability assumptions used in the PRA.

When a performance criterion is not met, the SSC is evaluated for (a)(1) classification in accordance with MR program procedures, including review by the Expert Panel. Should the Expert Panel conclude that the SSC should not be classified as (a)(1), or that no (a)(1) monitoring goals need be established, a technical justification establishing the appropriateness of continued management of SSC performance under (a)(2) is documented and maintained.

SSCs that provide little or no contribution to system safety function or can be allowed to run to failure due to an acceptable risk may be categorized in a “run-to-failure” status (i.e., perform corrective maintenance rather than preventive maintenance) consistent with NUMARC 93-01.

Preventive maintenance is subject to risk assessment and management per 10 CFR 50.65(a)(4) (ref. Section 17.X.1.5).

17.X.1.4 Periodic evaluation of monitoring and preventive maintenance per 10 CFR 50.65(a)(3)

The MR program includes procedures for the periodic evaluation of the performance and condition monitoring activities and associated goals and preventive maintenance activities in accordance with 50.65(a)(3). The following considerations are included:

- how procedures govern the scheduling and timely performance of (a)(3) evaluations.
- documenting, reviewing and approving evaluations, providing and implementing results.
- review of 50.65(a)(1) goals and 50.65(a)(2) performance criteria, condition monitoring criteria, SSC performance and condition history and effectiveness of corrective action
- making adjustments to achieve or restore balance between reliability and availability.
- industry operating experience.

17.X.1.5 Risk assessment and risk management per 10 CFR 50.65(a)(4)

The MR program includes procedures for maintenance risk assessment and management in accordance with 10 CFR 50.65(a)(4), employing the methods described in NUMARC 93-01, Section 11 (Reference 4). The risk from maintenance activities is both assessed (i.e., using a risk-informed process to evaluate the overall contribution to risk of the planned maintenance activities) and managed (i.e., providing plant personnel with proper awareness of the risk, and taking actions as appropriate to control the risk).

The MR program and procedures reflect, as appropriate, consideration of issues associated with grid/offsite power reliability as identified in NRC Generic Letter 2006-02, items 5 and 6.

17.X.2 MAINTENANCE RULE TRAINING AND QUALIFICATION

The MR program is supported by appropriate training and qualification for designated personnel. Training is commensurate with MR responsibilities, including MR program administration, the expert panel process, operations, engineering, maintenance, licensing, and plant management, as appropriate. Maintenance Rule Program training and qualification materials are based on regulatory requirements and guidance, and training records are maintained in accordance with plant procedures.

17.X.3 MAINTENANCE RULE PROGRAM RELATIONSHIP WITH RELIABILITY ASSURANCE ACTIVITIES

Reliability during the operations phase is assured through the implementation of operational programs, i.e., the MR program, the Quality Assurance Program, inservice inspection and testing programs, the Technical Specifications surveillance test program, and maintenance programs. [COL applicants should provide reference to FSAR sections where applicable operational programs are described and may also identify other applicable programs, if any (e.g., AP1000 Investment Protection Short-Term Availability Controls Program).]

17.X.4 MAINTENANCE RULE PROGRAM RELATIONSHIP WITH INDUSTRY OPERATING EXPERIENCE ACTIVITIES

Industry Operating Experience (IOE) comprises information from a variety of sources that is applicable and available to the nuclear industry with the intent of minimizing, through shared experiences, adverse plant conditions or situations. Sources of IOE include information programs organized by the reactor vendor, safety-related equipment suppliers, the NRC, the Institute of Nuclear Power Operations (INPO) and the Electric Power Research Institute (EPRI).

IOE is reviewed for plant-specific applicability and, where appropriate, is applied in various elements of the MR program and procedures, including scoping,

performance/condition criteria development, monitoring, goal-setting, corrective action, training, program assessment, and maintenance and procurement activities. The specific steps for employing IOE in the various MR program areas are contained in program procedures.

17.X.5 MAINTENANCE RULE PROGRAM IMPLEMENTATION

MR Program documents will be developed and maintained, and the MR program will be implemented by the time that initial fuel loading has been authorized.

17.X.6 REFERENCES

1 10 CFR 50.65, “Requirements for monitoring the effectiveness of maintenance at nuclear power plants.”
2 Nuclear Management and Resources Council, Inc., "Industry Guideline for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants," NUMARC 93-01, Rev. 2, April 1996.
3 Regulatory Guide 1.160, Rev. 2, “Monitoring the Effectiveness of Maintenance at Nuclear Power Plants.”
4 Nuclear Management and Resources Council, Inc., “Assessment of Risk Resulting from Performance of Maintenance Activities,” NUMARC 93-01, Section 11, February 22, 2000.
5 Regulatory Guide 1.182, “Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants.”
6 Regulatory Guide 1.206, Rev. 0, “Combined License Applications for Nuclear Power Plants (LWR Edition)”

APPENDIX 1
FINAL SAFETY EVALUATION REPORT

January 24, 2008

Mr. Adrian P. Heymer, Senior Director
New Plant Deployment
Nuclear Generation Division
Nuclear Energy Institute
1776 I Street, NW, Suite 400
Washington, DC 20006-3708

SUBJECT: REVISED FINAL SAFETY EVALUATION FOR TOPICAL REPORT NEI 07-02, "GENERIC FSAR TEMPLATE GUIDANCE FOR MAINTENANCE RULE PROGRAM DESCRIPTION FOR PLANTS LICENSED UNDER 10 CFR PART 52," REVISION 3

Dear Mr. Heymer:

By letter dated February 22, 2007, the Nuclear Energy Institute (NEI) submitted for U.S. Nuclear Regulatory Commission (NRC) staff review, its proposed Topical Report NEI 07-02, "Generic FSAR Template Guidance for Maintenance Rule Program Description," Revision 0. In response to the pending issuance of Regulatory Guide (RG) 1.206, Revision 0, this topical report was withdrawn, and subsequently by letter dated July 2, 2007, NEI submitted Revision 1 of NEI 07-02.

In response to the NRC staff's August 23, 2007, request for additional information (RAI), NEI submitted NEI 07-02, Revision 2 on August 31, 2007 and, based on a September 21, 2007 RAI, NEI submitted NEI 07-02, Revision 3 on September 25, 2007. The NRC's Final Safety Evaluation was issued under cover of our letter of December 3, 2007.

As a result of your staff's request for clarification on December 6, 2007, the PRA Licensing, Operations Support & Maintenance Branch of the Division of Safety Systems & Risk Assessment determined that its safety evaluation (SE) for NEI 07-02, Revision 3, warranted revision in order to meet the NRC "Principal for Good Regulation" of "Clarity," in that agency positions should be readily understood and easily applied. The revised safety evaluation report is enclosed. Please note that this enclosure supercedes our previous evaluation published by our letter dated December 3, 2007.

This revision addresses concerns regarding the intent and appropriateness of the listed conditions presented on page 5 of the original version. Condition 3 stated:

> If a COL [combined license] applicant determines that additional SSC [structure, system, and component] functions may be added or subtracted prior to fuel load (and the Commission's § 52.103(g) finding), the COL MRPD [maintenance rule program description] will need to be supplemented to include this contingency within the scope of the MR [maintenance rule] Program. Condition 1 also applies.

The causal issue for this "Condition" was determined to be an internal misunderstanding as to the acceptability of the NEI document changes made to address a concern identified as RAI-1 in the NRC's letter of August 23, 2007. Section 4.0, ANALYSIS, has been revised to specifically identify how NEI 07-02, Revision 3 addresses the underlying Standard Review Plan (SRP) Section 17.6 scoping issue.

This revision also addresses conditions 1 and 2 which stated:

> If a COL applicant plans to implement its MR Program at any time prior to the regulatory milestone contained in 10 CFR 50.65(a), the COL applicant must supplement or modify the description of MR Program implementation provided in NEI 07-02 to accurately describe the implementation milestone for its MR Program; and
>
> If a COL applicant plans to rely upon implementation of its MR Program to ensure the continued validity of ITAAC [inspection, test, analysis, and acceptance criteria] determinations, then the COL applicant must describe how the MR Program accomplishes that objective in its application.

Further re-evaluation by the staff concluded that these proposed conditions were not necessary in that they can be implemented by the applicant/licensee based on the guidance given in NEI 07-02, without licensing or safety impact. Section 4.1, "Conditions: Maintenance Rule Program Implementation," has been reduced to the specific implementation condition identified in 10 CFR 50.65. Informational notes on inspection scheduling and operational program milestone schedule submittals have been appended to the end of the SE as notes for the COL applicant/licensee. It should be noted that the requirement for operational program milestone updates provides a degree of assurance that the NRC will be informed if the MR Program is implemented early.

Of a more editorial nature, Section 2.0 was expanded by the addition of specific regulatory requirement citations and the RG 1.182 endorsement of NUMARC 93-01.

Enclosed is the staff's revised SE which defines the basis for acceptance of NEI 07-02, Revision 3. The NRC staff finds that for COL applications, NEI 07-02, Revision 3, provides an acceptable template for assuring that SSCs within the scope of the MR can be maintained to meet the requirements of Title 10 of the *Code of Federal Regulations*, Section 50.65.

Our acceptance applies only to material provided in NEI 07-02, Revision 3. We do not intend to repeat our review of the acceptable material described in the NEI 07-02, Revision 3. When the NEI 07-02, Revision 3 appears as a reference in COL applications, our review will ensure that the material presented applies to the specific application involved. Licensing requests that deviate from NEI 07-02, Revision 3, will be subject to a plant-specific or site-specific review in accordance with applicable review standards.

In accordance with the guidance provided on the NRC website, we request that NEI publish the accepted version of NEI 07-02, Revision 3 within 3 months of receipt of this letter. The accepted version should incorporate this letter which supersedes our letter of December 3, 2007

and the enclosed revised SE after the title page. The accepted version should also contain historical review information, including NRC RAIs and your responses. The accepted versions shall include a "-A" (designating accepted) following the report identification symbol.

If future changes to the NRC's regulatory requirements affect the acceptability of NEI 07-02, Revision 3, NEI will be expected to revise NEI 07-02 appropriately, or justify its continued applicability for subsequent referencing.

If you have any questions, please contact Michael A. Canova at (301) 415-0737 or via email at mac6@nrc.gov.

Sincerely,

/RA/

Stephanie M. Coffin, Chief
AP1000 Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Project No. 689

Enclosure:
Safety Evaluation

cc w/encl: See next page

NEI New Reactors Mailing List

cc:

Ms. Michele Boyd
Legislative Director
Energy Program
Public Citizens Critical Mass Energy
and Environmental Program
215 Pennsylvania Avenue, SE
Washington, DC 20003

W. Craig Conklin, Director
Chemical and Nuclear Preparedness &
Protection Division (CNPPD)
Office of Infrastructure Protection
Department of Homeland Security
Washington, DC 20528

Mr. Marvin Fertel
Senior Vice President
and Chief Nuclear Officer
Nuclear Energy Institute
1776 I Street, NW
Suite 400
Washington, DC 20006-3708

Ms. Leslie Compton Kass
Senior Project Manager
Nuclear Energy Institute
1776 I Street, N.W.
Suite 400
Washington, DC 20006-3708

Vanessa E. Quinn, Acting Director
Technological Hazards Division
National Preparedness Directorate
Federal Emergency Management Agency
500 C Street, NW
Washington, DC 20472

Mr. Brian Smith
Nuclear Energy Institute
1776 I Street, NW, Suite 400
Washington, DC 20006

Mr. Ed Wallace
General Manager - Projects
PBMR Pty LTD
P. O. Box 9396
Centurion 0046
Republic of South Africa

Edward G. Wallace
Sr. General Manager
U.S. Programs
PBMR Pty. Ltd.
PO Box 16789
Chattanooga, TN 37416

Mr. Gary Wright, Director
Division of Nuclear Facility Safety
Illinois Emergency Management Agency
1035 Outer Park Drive
Springfield, IL 62704

Email

APH@NEI.org (Adrian Heymer)
awc@nei.org (Anne W. Cottingham)
bennettS2@bv.com (Steve A. Bennett)
BrinkmCB@westinghouse.com (Charles Brinkman)
chris.maslak@ge.com (Chris Maslak)
cwaltman@roe.com (C. Waltman)
david.lewis@pillsburylaw.com (David Lewis)
dlochbaum@UCSUSA.org (David Lochbaum)
frankq@hursttech.com (Frank Quinn)
greshaja@westinghouse.com (James Gresham)
jgutierrez@morganlewis.com (Jay M. Gutierrez)
jim.riccio@wdc.greenpeace.org (James Riccio)
JJNesrsta@cpsenergy.com (James J. Nesrsta)
john.o'neil@pillsburylaw.com (John O'Neil)
Joseph.savage@ge.com (Joseph Savage)
Joseph_Hegner@dom.com (Joseph Hegner)
KSutton@morganlewis.com (Kathryn M. Sutton)
kwaugh@impact-net.org (Kenneth O. Waugh)
Margaret.Bennet@dom.com (Margaret Bennet)
maria.webb@pillsburylaw.com (Maria Webb)
mark.beaumont@wsms.com (Mark Beaumont)
matias.travieso-diaz@pillsburylaw.com (Matias Travieso-Diaz)
media@nei.org (Scott Peterson)
mike_moran@fpl.com (Mike Moran)
nirsnet@nirs.org (Michael Mariotte)
patriciaL.campbell@ge.com (Patricia L. Campbell)
paul.gaukler@pillsburylaw.com (Paul Gaukler)
Paul@beyondnuclear.org (Paul Gunter)
phinnen@entergy.com (Paul Hinnenkamp)
pshastings@duke-energy.com (Peter Hastings)
RJB@NEI.org (Russell Bell)
RKTemple@cpsenergy.com (R.K. Temple)
roberta.swain@ge.com (Roberta Swain)
ronald.hagen@eia.doe.gov (Ronald Hagen)
sandra.sloan@areva.com (Sandra Sloan)
sfrantz@morganlewis.com (Stephen P. Frantz)
VictorB@bv.com (Bill Victor)
waraksre@westinghouse.com (Rosemarie E. Waraks)

REVISED SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTORS

FOR TOPICAL REPORT NEI 07-02, REVISION 3

"GENERIC FSAR TEMPLATE GUIDANCE FOR MAINTENANCE RULE PROGRAM

DESCRIPTION FOR PLANTS LICENSED UNDER 10 CFR PART 52"

NUCLEAR ENERGY INSTITUTE

PROJECT NO. 689

1.0 INTRODUCTION AND BACKGROUND

By letter dated February 22, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession Number ML070610358), the Nuclear Energy Institute (NEI) submitted for U.S. Nuclear Regulatory Commission (NRC) staff review, proposed topical report NEI 07-02, Revision 0, "Generic FSAR [Final Safety Analysis Report] Template Guidance for Maintenance Rule Program Description for Plants Licensed Under 10 CFR Part 52." NEI 07-02, Revision 1 was later withdrawn from the review process pending resolution of generic issues associated with the issuance of Regulatory Guide 1.206 (RG 1.206), "Combined License Applications for Nuclear Power Plants" and NUREG-0800, "Standard Review Plan," Section 17.6, "Maintenance Rule." On July 2, 2007, NEI submitted NEI 07-02, Revision 1 (ADAMS Accession Number ML072190341), which was intended to be consistent with RG 1.206. In response to NRC staff requests for additional information, NEI 07-02, Revision 2 (ADAMS Accession Number ML072600272) and NEI 07-02, Revision 3 (ADAMS Accession Number ML072700557) were submitted for staff review on August 31 and September 21, 2007, respectively.

NEI 07-02 provides a generic template for the maintenance rule program description (MRPD) for combined license (COL) applications under Title 10 of the *Code of Federal Regulations* 10 CFR, Part 52, "Licenses, Certifications, and Approvals for Nuclear Power Plants." NEI 07-02 was developed by the NEI New Plant Maintenance Rule Program group to assist in expediting NRC review of the MRPD in COL applications. This topical report will provide further guidance to COL applicants in describing the maintenance rule operational program in the FSAR.

2.0 REGULATORY EVALUATION

The NRC staff reviewed NEI's submittal pursuant to the following regulations and guidance:

(1) 10 CFR 52.79(a):

This provision requires that a COL application contain a FSAR that describes the facility, presents the design bases and limits on its operation, and presents a safety analysis of the structures, systems, and components (SSCs) of the facility as a whole. In addition,

Enclosure

10 CFR 52.79(a)(15) requires the FSAR to include a description of the program, and its implementation, for monitoring the effectiveness of maintenance necessary to meet the requirements of 10 CFR 50.65.

(2) 10 CFR 50.65:

Paragraph 50.65(a)(1) requires each holder of a license to operate a nuclear power plant to monitor the performance or condition of SSCs, against licensee-established goals, in a manner sufficient to provide reasonable assurance that such SSCs are capable of fulfilling their intended functions.

Paragraph 50.65(a)(2) requires that monitoring, as specified in the above-referenced provision, is not required where it has been demonstrated that the performance or condition of a SSCs is being effectively controlled through the performance of appropriate preventative maintenance.

Paragraph 50.65(a)(3) requires that performance and condition monitoring activities and associated goals and preventive maintenance activities be evaluated at least every refueling cycle provided the interval between evaluations does not exceed 24 months.

Paragraph 50.65(a)(4) requires the licensee to assess and manage the increase in risk that may result from the proposed maintenance activities before performing the maintenance activities.

(3) NRC Guidance:

The NRC staff also considered the following NRC guidance documents in the course of reviewing NEI's submittal: (1) Section C.1.17.6 of RG 1.206; (2) RG 1.160, Revision 2, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants"; RG 1.182, "Assessing and Managing Risk Before Maintenance Activities at Nuclear Power Plants" and; NUREG-0800, "Standard Review Plan." In addition to providing guidance that conforms to 10 CFR 50.65, the regulatory guidance listed-above endorses the use of Nuclear Management and Resources Council (NUMARC) 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants."

3.0 TECHNICAL EVALUATION

The NRC staff utilized the regulations and regulatory guidance identified in Section 2.0 to determine the acceptability of NEI 07-02 for its intended purpose. NEI 07-02 is divided into several sections: Maintenance Rule Program Description, Maintenance Rule Training and Qualification, Maintenance Rule Program Relationship with Reliability Assurance Activities, Maintenance Rule Program Relationship with Industry Operating Experience Activities, and Maintenance Rule Program Implementation.

3.1 Maintenance Rule Program Description

NEI 07-02 states, "The Maintenance Rule (MR) Program provides assurance that structures, systems and components within the scope of the program remain reliable and capable of fulfilling their intended functions and provides processes for assessing and managing potential

increases in risk that might result from proposed maintenance activities." Included in the program are appropriate control of procedures, documents, computer software and data.

The MRPD states that SSCs within the scope of the MR Program will be determined using a scoping procedure. SSCs which are scoped into the MR Program include both safety-related and non-safety-related SSCs. The scoping procedure addresses the following classes of SSCs:

- safety-related SSCs
- non-safety-related SSCs that mitigate accidents or transients
- non-safety-related SSCs that are used in emergency operating procedures
- non-safety-related SSCs whose failure could prevent safety-related SSCs from fulfilling their safety-related function
- non-safety-related SSCs whose failure could cause scrams or unwanted safeguard actuations

Once the SSCs are in scope, they are evaluated to establish safety significance and are classified as having either high or low safety significance. This evaluation is consistent with the evaluation described in Section 9.3.1 of NUMARC 93-01. Some of the methods used for establishing the risk significant criteria are industry operating experience (IOE), probabilistic risk assessment (PRA), recommendations of an expert panel, and generic failure data. Risk significant SSCs that were identified via the Reliability Assurance Program for the design phase (DRAP) are included in the initial scope as high-safety-significant SSCs.

Paragraph 50.65(a)(1) requires each licensee to monitor the performance or condition of SSCs against Licensee-established goals, in a manner sufficient to provide reasonable assurance that such SSCs are capable of fulfilling their intended functions. However, in accordance with 10 CFR 50.65(a)(2), such monitoring is not required where it has been demonstrated that the performance or condition of an SSC is being effectively controlled through performance of appropriate preventive maintenance. NEI 07-02 states that SSCs are initially classified as 10 CFR 50.65(a)(2), unless they are determined to be classified as 10 CFR 50.65(a)(1) for some reason, for example, the SSC failed during start-up testing. The SSC performance criteria are established at the plant, system, train, or component level commensurate with safety, risk significance and SSC function. The performance criteria are used to monitor the effectiveness of the maintenance performed on the SSCs. The performance criteria selected are technically appropriate, measurable and reasonable. This helps to ensure the timely identification of degrading SSCs. D-RAP identified risk-significant SSCs will have performance criteria that are consistent with the reliability and availability assumptions which are used in the PRA.

Meeting the performance criteria demonstrates that the performance or condition is being effectively controlled by appropriate preventive maintenance and that monitoring under paragraph (a)(1) is not necessary.

If the performance criteria are not met, appropriate corrective actions are identified and the SSCs are then evaluated for 10 CFR 50.65(a)(1) classification in accordance with the MR Program, including review by an expert panel (in accordance with NUMARC 93-01). This expert panel could conclude that the SSC should be moved to 10 CFR 50.65(a)(1) status or have the SSC remain in 10 CFR 50.65(a)(2) status with the appropriate technical justification. SSCs

3.4 Maintenance Rule Program Relationship With Industry Operating Experience Activities

The MR Program utilizes IOE, where appropriate, for scoping, performance/condition criteria development, monitoring, goal-setting, corrective action, training, program assessment and maintenance and procurement activities. This IOE data is collected from several sources including reactor vendors, safety-related equipment suppliers, the NRC, the Institute for Nuclear Power Operations (INPO), and the Electric Power Research Institute (EPRI).

3.5 Maintenance Rule Program Implementation

The NEI 07-02 template specifies that the MR Program documents will be developed and maintained and the MR Program implemented by the time that fuel load is authorized (i.e., by the time the Commission makes the finding required in 10 CFR 52.103(g)). The NRC staff's position is that implementation of an acceptable MR Program may occur in advance of the Commission's 10 CFR 52.103(g) finding, with components being monitored or tracked as they become available.

4.0 ANALYSIS

A direct comparison of the criteria for the MRPD, as provided in the review documents identified in Section 2.0, above was made to NEI 07-02. NEI 07-02 was found to closely correspond to the organization and text of RG 1.206 and found to be in compliance with the specific criteria presented in the SRP with one clarification. As identified in NUREG-0800, Section 17.6, III.1, Scoping for 50.65(b), the MRPD scope "should identify that additional SSC functions may be added to or subtracted from the MR scope prior to fuel load, as appropriate, as additional information is developed." This criterion has been covered in NEI 07-02 under two sections (17.X.1.1.b and 17.X.1.1.c). Section 17.X.1.1b states, "All SSCs identified as risk significant via the Reliability Assurance Program for the design phase (DRAP – see FSAR Section 17.Y) are included within the initial MR scope as HSS [high safety significant] SSCs." This section encompasses the HSS SSCs. The remaining SSCs will be scoped into the program by the formation of the expert panel, prior to fuel load, NEI Section 17.X.1.1.c. This section states, "The expert panel is established in accordance with NUMARC 93-01 prior to fuel load authorization and utilizes operating, maintenance and systems expertise, PRA insights, and other applicable information to update and maintain the MR scope and SSC classification." This panel will also scope SSCs into and out of the program as additional information is developed (e.g., emergency operating procedures (EOPs)) after the license is issued.

4.1 Conditions: Maintenance Rule Program Implementation

Paragraph 50.65(a) states, in part, that holders of COLs under 10 CFR Part 52 shall monitor the performance or condition of SSCs (as defined in 10 CFR 50.65(b)) after the Commission makes its finding in accordance with 10 CFR 52.103(g). Paragraph 52.103(g) states that COL holders shall not operate the facility until the Commission makes a finding that the acceptance criteria in the COL are met. Therefore, with regard to MR Program implementation, licensees must implement the requirements of 10 CFR 50.65 by the time that the Commission makes its finding that the acceptance criteria in the COL are met.

5.0 CONCLUSION

The NRC staff used the regulations and regulatory guidance identified in Section 2.0 above as the basis for evaluating the acceptability of NEI 07-02, Revision 3. On the basis of the NRC staff's review of the MR Program template, the staff concludes that the template, as conditioned above, provides adequate guidance for an applicant to describe the following:

- scoping process of SSCs
- classification of SSCs
- determination of performance criteria for 10 CFR 50.65(a)(2) SSCs
- goal setting for 10 CFR 50.65(a)(1) SSCs
- periodic evaluation of monitoring and preventive maintenance
- risk assessments and risk management
- training and qualification
- MR Program relationship with reliability assurance activities
- MR Program relationship with IOE
- MR Program implementation

Further, based on the above evaluation, the staff finds that incorporation of NEI 07-02 by reference in a COL application will provide an acceptable method for (1) complying with the requirement in 10 CFR 52.79(a)(15) that FSARs contain a description of the program, and its implementation, for monitoring the effectiveness of maintenance to meet the requirements of Section 50.65 and (2) satisfying the acceptance criteria of SRP 17.6.

Operational Programs Inspection Scheduling

COL applicants/licensees should note that, as described in RG 1.206, Section C.IV.4, the NRC staff intends to inspect operational programs and their implementation as they are developed and put into place. Implementation of the MR Program will be inspected in accordance with NRC Inspection Manual Chapter IMC-2504, "Construction Inspection Program – Non-ITAAC Inspections."

In accordance with the SRM for SECY-05-0197, each COL will contain a license condition regarding operational programs that will require the licensee to make available to the NRC staff a schedule 12 months after issuance of a COL that supports planning for and conduct of NRC inspections of the operational programs listed in the operational program FSAR table. The condition will also require that the schedule be updated every 6 months until 12 months before scheduled fuel load, and every month thereafter until either the operational programs listed in the FSAR table have been fully implemented or the plant has been placed in commercial service, whichever comes first.

Principal Contributors: G. Gulla
S. Alexander

Date:

APPENDIX 2 –
NRC REQUEST FOR ADDITIONAL INFORMATION AND NEI RESPONSES

August 23, 2007

Mr. Adrian P. Heymer, Senior Director
New Plant Deployment
Nuclear Generation Division
Nuclear Energy Institute
1776 I Street, NW, Suite 400
Washington, DC 20006-3708

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING TOPICAL REPORT NEI 07-02, "GENERIC FSAR TEMPLATE GUIDANCE FOR MAINTENANCE RULE PROGRAM DESCRIPTION FOR PLANTS LICENSED UNDER 10 CFR PART 52," REVISION 1

Dear Mr. Heymer:

By letter dated February 2, 2007 the Nuclear Energy Institute (NEI) submitted for U.S. Nuclear Regulatory Commission (NRC) staff review, its proposed "Generic FSAR Template Guidance for Maintenance Rule Program Description," Revision 0 (ADAMS Accession Number ML070610363). In response to issuance of Regulatory Guide 1.206, Revision 0 of this Technical Report was withdrawn, and by letter dated July 2, 2007, the Nuclear Energy Institute (NEI) submitted the revised "Generic FSAR Template Guidance for Maintenance Rule Program Description," Revision 1 (ADAMS Accession Number ML072140499).

The NRC staff performed an acceptance review of NEI 07-02, Revision 1, and found the material presented sufficient to begin our comprehensive review. The staff has also determined that additional information is necessary to complete this review.

On August 2, 2007, an electronic draft copy of the enclosed request for additional information (RAI) was transmitted to NEI's staff and discussed via telephone call. The NRC staff expects to issue its safety evaluation report by October 19, 2007, based on a 30 day response time for NEI on these questions. The staff estimates that this review will require approximately 160 staff hours including project management time. These review schedule milestones and estimated costs were discussed in a telephone call with NEI's staff on July 20, 2007, wherein, it was agreed that NEI would respond to the staff's RAIs in less than 30 days, barring complications.

If you have any questions or comments regarding this matter, I may be reached at (301) 415-0737, or by e-mail, mac6@nrc.gov.

Sincerely,

/RA/
Michael A. Canova, Project Manager
EPR Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Project No. 689
Enclosure: RAI Questions

cc w/encl: See Next page

cc:

Ms. Michele Boyd
Legislative Director
Energy Program
Public Citizens Critical Mass Energy
and Environmental Program
215 Pennsylvania Avenue, SE
Washington, DC 20003

Mr. Marvin Fertel
Senior Vice President
and Chief Nuclear Officer
Nuclear Energy Institute
1776 I Street, NW
Suite 400
Washington, DC 20006-3708

Ms. Leslie Compton Kass
Senior Project Manager
Nuclear Energy Institute
1776 I Street, N.W.
Suite 400
Washington, DC 20006-3708

Dr. Gail H. Marcus
U.S. Department of Energy
Room 5A-143
1000 Independence Avenue, SW
Washington, DC 20585

Mr. Brian Smith
Nuclear Energy Institute
1776 I Street, NW, Suite 400
Washington, DC 20006

Mr. Ed Wallace
General Manager
Projects
PBMR Pty LTD
P.O. Box 9396
Centurion 0046
Republic of South Africa

Edward G. Wallace
Sr. General Manager
U.S. Programs
PBMR Pty. Ltd.
PO Box 16789
Chattanooga, TN 37416

Mr. Gary Wright
Director
Division of Nuclear Facility Safety
Illinois Emergency Management Agency
1035 Outer Park Drive
Springfield, IL 62704

Email

APH@NEI.org (Adrian Heymer)
awc@nei.org (Anne W. Cottingham)
bennettS2@bv.com (Steve A. Bennett)
BrinkmCB@westinghouse.com (Charles Brinkman)
chris.maslak@ge.com (Chris Maslak)
cwaltman@roe.com (C. Waltman)
david.lewis@pillsburylaw.com (David Lewis)
dlochbaum@UCSUSA.org (David Lochbaum)
frankq@hursttech.com (Frank Quinn)
greshaja@westinghouse.com (James Gresham)
jgutierrez@morganlewis.com (Jay M. Gutierrez)
jim.riccio@wdc.greenpeace.org (James Riccio)
JJNesrsta@cpsenergy.com (James J. Nesrsta)
john.o'neil@pillsburylaw.com (John O'Neil)
Joseph.savage@ge.com (Joseph Savage)
Joseph_Hegner@dom.com (Joseph Hegner)
KSutton@morganlewis.com (Kathryn M. Sutton)
kwaugh@impact-net.org (Kenneth O. Waugh)
lynchs@gao.gov (Sarah Lynch - Meeting Notices Only)
maria.webb@pillsburylaw.com (Maria Webb)
mark.beaumont@wsms.com (Mark Beaumont)
matias.travieso-diaz@pillsburylaw.com (Matias Travieso-Diaz)
media@nei.org (Scott Peterson)
mike_moran@fpl.com (Mike Moran)
nirsnet@nirs.org (Michael Mariotte)
patriciaL.campbell@ge.com (Patricia L. Campbell)
paul.gaukler@pillsburylaw.com (Paul Gaukler)
Paul@beyondnuclear.org (Paul Gunter)
phinnen@entergy.com (Paul Hinnenkamp)
pshastings@duke-energy.com (Peter Hastings)
RJB@NEI.org (Russell Bell)
RKTemple@cpsenergy.com (R.K. Temple)
roberta.swain@ge.com (Roberta Swain)
ronald.hagen@eia.doe.gov (Ronald Hagen)
sandra.sloan@areva.com (Sandra Sloan)
sfrantz@morganlewis.com (Stephen P. Frantz)
waraksre@westinghouse.com (Rosemarie E. Waraks)

REQUEST FOR ADDITIONAL INFORMATION REGARDING NEI 07-02, "GENERIC FSAR TEMPLATE GUIDANCE FOR MAINTENANCE RULE PROGRAM DESCRIPTION FOR PLANTS LICENSED UNDER 10 CFR PART 52," REVISION 1 (PROJECT NO. 689)

1. A significant time gap exists from the point of time when this document may be used with a Combined Operating License (COL) until the time that an expert panel is formed. During this period, the program will identify additional System, Structure or Component (SSC) functions that may be added or removed from the Maintenance Rule scope prior to the fuel load. One such example of SSCs that will need to be added are SSCs associated with the facility Emergency Operating Procedures (EOPs). Therefore, there should be a statement that ensures that late-identified SSCs will be addressed (as described in Section 17.X.1, "Maintenance Rule Program Description.")

2. Section 17.X.1.3 "Preventive maintenance per 10 CFR 50.65(a)(2)," describes how to determine which of the SSCs within the scope of the rule will be tracked in accordance with 50.65(a)(2). However, it does not cover the process for SSCs which are categorized in a Run-to-Failure status. Please explain your reasoning as to why Run to Failure considerations do not require treatment in this Topical Report.

3. In Section 17.X.1.4, "Periodic evaluation of monitoring and preventive maintenance per 10 CFR 50.65(a)(3)," the bulleted section contents appear to be taken out of NUREG 0800, the Standard Review Plan (SRP) 17.6 Maintenance Rule, with the exception of "Review of 50.65(a)(1) goals and 50.65(a)(2) performance criteria, condition monitoring criteria, SSC performance and condition history and effectiveness of corrective action." Without additional information, the staff believes this should be included in this section.

4. The first paragraph sentence of Section 17.X.3, "Maintenance Rule Program Relationship With Reliability Assurance Activities," fails to include corrective maintenance as a related Maintenance Rule-related program. Either corrective maintenance should be included in the list of programs identified in this section or the broader category of simply "maintenance programs" should be used. Please explain your intentions if the corrective maintenance program was omitted on purpose.

Enclosure

NUCLEAR ENERGY INSTITUTE

Russell J. Bell
DIRECTOR, NEW PLANT LICENSING
NUCLEAR GENERATION DIVISION

August 31, 2007

NRC Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20005-0001

Subject: Response to August 23, 2007, Request for Additional Information Regarding NEI 07-02, Revision 1, "*Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed under 10 CFR Part 52.*

Project Number: 689

This letter provides our response to the subject Request for Additional Information (RAI). Enclosure 1 contains specific responses to the four questions contained in the RAI.

Enclosure 2A provides Revision 2 of NEI 07-02, including changes to reflect our responses to the RAI, as described in Enclosure 1. Enclosure 2B is a mark-up version of NEI 07-02, Revision 2, in a "line-in/line-out" format, to help facilitate your review of the changes made to the document as a result of our response to the RAI.

We discussed these responses and revisions with the NRC staff in a conference call on August 23 and the enclosures are consistent with those discussions. As agreed during that call, the questions raised in the RAI are relatively few and minor. Also, we understand that the NRC will endeavor to expedite issuance of this SER in September as opposed to October 2007 in order to support near-term COL application submittals.

1776 I Street, NW | Suite 400 | Washington, DC | 20006-3708 | P: 202.739.8087 | F: 202.533.0105 | rjb@nei.org | www.nei.org

If you have any questions regarding this response, please contact me at 202-739-8087; rjb@nei.org.

Sincerely,

Russell J. Bell

Enclosures

c: Mr. Patrick M. Madden, NRC
Mr. Michael A. Canova, NRC
Mr. Gerald J. Gulla, NRC
Mr. Stephen D. Alexander, NRC
Mr. William D. Reckley, NRC

Nuclear Energy Institute (NEI) Response to
August 23, 2007, NRC Request for Additional Information (RAI) Regarding
Nuclear Energy Institute Topical Report NEI 07-02, Revision 1,
"Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed under 10 CFR Part 52"

1.) A significant time gap exists from the point of time when this document may be used with a Combined Operating License (COL) until the time that an expert panel is formed. During this period, the program will identify additional System, Structure or Component (SSC) functions that may be added or removed from the Maintenance Rule scope prior to the fuel load. One such example of SSCs that will need to be added are SSCs associated with the facility Emergency Operating Procedures (EOPs). Therefore, there should be a statement that ensures that late-identified SSCs will be addressed (as described in Section 17.X.1, "Maintenance Rule Program Description.")

NEI Response

We agree that SSC functions may be added or removed from the Maintenance Rule scope prior to fuel load. During the period from COL application (or even before) until the plant-specific design is complete and the Maintenance Rule Program takes effect, the COL applicant/holder is responsible for implementing the later phases of the Design Reliability Assurance Program (DRAP), as described in Section 17.4 of the DCD/FSAR. The COL applicant/holder will evaluate SSCs associated with the facility EOP's and other plant-specific SSCs based on DRAP criteria, and risk significant SSCs will be included in DRAP. Plant-specific SSCs identified as risk significant via the DRAP will automatically be included in the initial MR scope as high safety significance SSCs, as described in NEI 07-02, Section 17.X.1.1.b.

We have modified Section 17.X.1.1.b to clarify that the risk significant DRAP SSCs (i.e., MR HSS SSCs) may be identified as part of the design certification phase or follow-on COL applicant/holder phases of DRAP. Because plant-specific risk significant DRAP SSCs will already be considered within the initial MR scope as HSS SSCs when the Expert Panel is established, we have also modified Section 17.x.1.1.c to reflect that and to describe more broadly the role of the Expert Panel. These changes are as follows:

> 17.X.1.1.b ...All SSCs identified as risk-significant via the Reliability Assurance Program for the design phase (DRAP – see FSAR Section 17.Y) are included within the initial MR scope as HSS SSCs. This includes risk-significant SSCs identified as part of the design certification phase or follow-on COL applicant/holder (plant-specific) phases of DRAP.
>
> 17.X.1.1.c The expert panel is established in accordance with NUMARC 93-01 prior to fuel load authorization and utilizes operating, maintenance and systems expertise, PRA insights, and other applicable information to update and maintain the MR scope and SSC classifications ~~the list of HSS SSCs, including the addition of plant-specific risk-significant SSCs, as appropriate, for monitoring during the operational phase~~.

2). Section 17.X.1.3 "Preventive maintenance per 10 CFR 50.65(a)(2)," describes how to determine which of the SSCs within the scope of the rule will be tracked in accordance with 50.65(a)(2). However, it does not cover the process for SSCs which are categorized in a Run-to-Failure status. Please explain your reasoning as to why Run to Failure considerations do not require treatment in this Topical Report.

NEI Response:

SSCs that provide little or no contribution to system safety function and SSCs that can be allowed to run to failure due to an acceptable risk may be evaluated and assigned a "run-to-failure" status, consistent with NUMARC 93-01 (i.e., corrective maintenance will be performed, rather than preventive maintenance). The details of that evaluation are beyond the level of detail required for the FSAR, but are appropriate for the MR Program implementation procedures.

The following sentence has been added to NEI 07-02, Section 17.X.1.3:

> SSCs that provide little or no contribution to system safety function and SSCs that can be allowed to run to failure due to an acceptable risk may be evaluated and assigned a "run-to-failure" status, consistent with NUMARC 93-01.

3). In Section 17.X.1.4, "Periodic evaluation of monitoring and preventive maintenance per 10 CFR 50.65(a)(3)," the bulleted section contents appear to be taken out of NUREG 0800, the Standard Review Plan (SRP) 17.6 Maintenance Rule, with the exception of "Review of 50.65(a)(1) goals and 50.65(a)(2) performance criteria, condition monitoring criteria, SSC performance and condition history and effectiveness of corrective action." Without additional information, the staff believes this should be included in this section.

NEI Response:

The bulleted list in NEI 07-02 is based on RG 1.206, not the SRP. However, we have no objection to the additional bullet in the SRP and have added it to NEI 07-02.

4). The first paragraph sentence of Section 17.X.3, "Maintenance Rule Program Relationship With Reliability Assurance Activities," fails to include corrective maintenance as a related Maintenance Rule-related program. Either corrective maintenance should be included in the list of programs identified in this section or the broader category of simply "maintenance programs" should be used. Please explain your intentions if the corrective maintenance program was omitted on purpose.

NEI Response:

Agree. The first sentence of section 17.X.3 will be revised to state:

> "Reliability during the operations phase is assured through the implementation of the following programs: the MR program, the Quality Assurance Program, inservice inspection and testing programs, the Technical Specifications surveillance test program and ~~the preventive~~ maintenance program<u>s</u>."

Email

APH@NEI.org (Adrian Heymer)
awc@nei.org (Anne W. Cottingham)
bennettS2@bv.com (Steve A. Bennett)
BrinkmCB@westinghouse.com (Charles Brinkman)
chris.maslak@ge.com (Chris Maslak)
cwaltman@roe.com (C. Waltman)
david.lewis@pillsburylaw.com (David Lewis)
dlochbaum@UCSUSA.org (David Lochbaum)
frankq@hursttech.com (Frank Quinn)
greshaja@westinghouse.com (James Gresham)
jgutierrez@morganlewis.com (Jay M. Gutierrez)
jim.riccio@wdc.greenpeace.org (James Riccio)
JJNesrsta@cpsenergy.com (James J. Nesrsta)
john.o'neil@pillsburylaw.com (John O'Neil)
Joseph.savage@ge.com (Joseph Savage)
Joseph_Hegner@dom.com (Joseph Hegner)
KSutton@morganlewis.com (Kathryn M. Sutton)
kwaugh@impact-net.org (Kenneth O. Waugh)
lynchs@gao.gov (Sarah Lynch - Meeting Notices Only)
maria.webb@pillsburylaw.com (Maria Webb)
mark.beaumont@wsms.com (Mark Beaumont)
matias.travieso-diaz@pillsburylaw.com (Matias Travieso-Diaz)
media@nei.org (Scott Peterson)
mike_moran@fpl.com (Mike Moran)
nirsnet@nirs.org (Michael Mariotte)
patriciaL.campbell@ge.com (Patricia L. Campbell)
paul.gaukler@pillsburylaw.com (Paul Gaukler)
Paul@beyondnuclear.org (Paul Gunter)
phinnen@entergy.com (Paul Hinnenkamp)
pshastings@duke-energy.com (Peter Hastings)
RJB@NEI.org (Russell Bell)
RKTemple@cpsenergy.com (R.K. Temple)
roberta.swain@ge.com (Roberta Swain)
ronald.hagen@eia.doe.gov (Ronald Hagen)
sandra.sloan@areva.com (Sandra Sloan)
sfrantz@morganlewis.com (Stephen P. Frantz)
VictorB@bv.com (Bill Victor)
waraksre@westinghouse.com (Rosemarie E. Waraks)

September 21, 2007

Mr. Adrian P. Heymer, Senior Director
New Plant Deployment
Nuclear Generation Division
Nuclear Energy Institute
1776 I Street, NW, Suite 400
Washington, DC 20006-3708

SUBJECT: SECOND REQUEST FOR ADDITIONAL INFORMATION REGARDING TOPICAL REPORT NEI 07-02, "GENERIC FSAR TEMPLATE GUIDANCE FOR MAINTENANCE RULE PROGRAM DESCRIPTION FOR PLANTS LICENSED UNDER 10 CFR PART 52," REVISION 2

Dear Mr. Heymer:

By letter dated February 2, 2007, the Nuclear Energy Institute (NEI) submitted for U.S. Nuclear Regulatory Commission (NRC) staff's review, its proposed "Generic FSAR Template Guidance for Maintenance Rule Program Description," Revision 0, (ADAMS Accession Number ML070610363). In response to issuance of Regulatory Guide 1.206, Revision 0, NEI's Topical Report was withdrawn, and by letter dated July 2, 2007, NEI submitted the revised "Generic FSAR Template Guidance for Maintenance Rule Program Description," Revision 1, (ADAMS Accession Number ML072140499).

On August 23, 2007, a Request for Additional Information (RAI) was issued to NEI (ADAMS Accession Number ML072150417). NEI's response to this request and "Generic FSAR Template Guidance for Maintenance Rule Program Description," Revision 2," was received by letter dated August 31, 2007. As a result of the NRC's review associated with the development of the Safety Evaluation for this report, two additional issues were identified, which requires the NRC to request additional information in order to resolve these issues. These RAIs are provided in the enclosure. An expeditious response is requested in order to proceed on the previously identified schedule.

If you have any questions or comments regarding this matter, I may be reached at (301) 415-0737, or by e-mail, mac6@nrc.gov.

Sincerely,

/RA/

Michael A. Canova, Project Manager
EPR Projects Branch
Division of New Reactor Licensing
Office of New Reactors

Project No. 689

Enclosure: RAI Questions

cc w/encl: See Next page

SECOND REQUEST FOR ADDITIONAL INFORMATION REGARDING NEI 07-02, "GENERIC FSAR TEMPLATE GUIDANCE FOR MAINTENANCE RULE PROGRAM DESCRIPTION FOR PLANTS LICENSED UNDER 10 CFR PART 52," REVISION 1 PROJECT NO. 689

RAI 1. Section 17.X.2 "Maintenance Rule [MR] Training and Qualification" states that "The MR Program is supported by appropriate training and qualification for designated personnel, commensurate with their involvement in MR activities." The COL applicant is expected to provide a description of the MR training and qualification program per Regulatory Guide 1.206 "Combined License Applications for Nuclear Power Plants." Briefly describe how the applicant will meet this expectation.

RAI 2. Section 17.X.5 "Maintenance Rule Program Implementation" states that the "MR Program documents will be developed, maintained and operational..." Clarify that the MR Program will be implemented by the time that initial fuel loading has been authorized.

Enclosure

cc:

Ms. Michele Boyd
Legislative Director
Energy Program
Public Citizens Critical Mass Energy
and Environmental Program
215 Pennsylvania Avenue, SE
Washington, DC 20003

Mr. Marvin Fertel
Senior Vice President
and Chief Nuclear Officer
Nuclear Energy Institute
1776 I Street, NW
Suite 400
Washington, DC 20006-3708

Ms. Leslie Compton Kass
Senior Project Manager
Nuclear Energy Institute
1776 I Street, N.W.
Suite 400
Washington, DC 20006-3708

Mr. Brian Smith
Nuclear Energy Institute
1776 I Street, NW, Suite 400
Washington, DC 20006

Mr. Ed Wallace
General Manager - Projects
PBMR Pty LTD
P. O. Box 9396
Centurion 0046
Republic of South Africa

Edward G. Wallace
Sr. General Manager
U.S. Programs
PBMR Pty. Ltd.
PO Box 16789
Chattanooga, TN 37416

Mr. Gary Wright, Director
Division of Nuclear Facility Safety
Illinois Emergency Management Agency
1035 Outer Park Drive
Springfield, IL 62704

Email

APH@NEI.org (Adrian Heymer)
awc@nei.org (Anne W. Cottingham)
bennettS2@bv.com (Steve A. Bennett)
BrinkmCB@westinghouse.com (Charles Brinkman)
chris.maslak@ge.com (Chris Maslak)
cwaltman@roe.com (C. Waltman)
david.lewis@pillsburylaw.com (David Lewis)
dlochbaum@UCSUSA.org (David Lochbaum)
frankq@hursttech.com (Frank Quinn)
greshaja@westinghouse.com (James Gresham)
jgutierrez@morganlewis.com (Jay M. Gutierrez)
jim.riccio@wdc.greenpeace.org (James Riccio)
JJNesrsta@cpsenergy.com (James J. Nesrsta)
john.o'neil@pillsburylaw.com (John O'Neil)
Joseph.savage@ge.com (Joseph Savage)
Joseph_Hegner@dom.com (Joseph Hegner)
KSutton@morganlewis.com (Kathryn M. Sutton)
kwaugh@impact-net.org (Kenneth O. Waugh)
lynchs@gao.gov (Sarah Lynch - Meeting Notices Only)
maria.webb@pillsburylaw.com (Maria Webb)
mark.beaumont@wsms.com (Mark Beaumont)
matias.travieso-diaz@pillsburylaw.com (Matias Travieso-Diaz)
media@nei.org (Scott Peterson)
mike_moran@fpl.com (Mike Moran)
nirsnet@nirs.org (Michael Mariotte)
patriciaL.campbell@ge.com (Patricia L. Campbell)
paul.gaukler@pillsburylaw.com (Paul Gaukler)
Paul@beyondnuclear.org (Paul Gunter)
phinnen@entergy.com (Paul Hinnenkamp)
pshastings@duke-energy.com (Peter Hastings)
RJB@NEI.org (Russell Bell)
RKTemple@cpsenergy.com (R.K. Temple)
roberta.swain@ge.com (Roberta Swain)
ronald.hagen@eia.doe.gov (Ronald Hagen)
sandra.sloan@areva.com (Sandra Sloan)
sfrantz@morganlewis.com (Stephen P. Frantz)
VictorB@bv.com (Bill Victor)
waraksre@westinghouse.com (Rosemarie E. Waraks)

NUCLEAR ENERGY INSTITUTE

Russell J. Bell
DIRECTOR, NEW PLANT LICENSING
NUCLEAR GENERATION DIVISION

September 25, 2007

NRC Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Response to September 21, 2007, Second Request for Additional Information Regarding NEI 07-02, Revision 2, "*Generic FSAR Template Guidance for Maintenance Rule Program Description for Plants Licensed under 10 CFR Part 52*"

Project Number: 689

This letter provides our response to the subject second Request for Additional Information (RAI). Enclosure 1 contains specific responses to the two questions contained in the RAI.

Enclosure 2 provides Revision 3 of NEI 07-02, including changes to Sections 17.X.2 and 17.X.5 of NEI 07-02 to reflect our responses to the RAIs presented in Enclosure 1. We believe these changes are responsive to the two additional issues raised by the staff. Revision 3 also reflects our August 31 responses to the initial set of RAIs on NEI 07-02.

We request the earliest possible issuance of this SER in order to support near-term COL applications. If you have any questions regarding this response, please contact me at (202) 739-8087; rjb@nei.org.

Sincerely,

Russell J. Bell

Enclosures

c: Mr. Patrick M. Madden, NRC
Mr. Michael A. Canova, NRC
Mr. Gerald J. Gulla, NRC
Mr. Stephen D. Alexander, NRC
Mr. William D. Reckley, NRC

1776 I Street, NW | Suite 400 | Washington, DC | 20006-3708 | P: 202.739.8087 | F: 202.533.0105 | rjb@nei.org | www.nei.org

SECOND REQUEST FOR ADDITIONAL INFORMATION REGARDING NEI 07-02, "GENERIC FSAR TEMPLATE GUIDANCE FOR MAINTENANCE RULE PROGRAM DESCRIPTION FOR PLANTS LICENSED UNDER 10 CFR PART 52," REVISION 1 (PROJECT NO. 689)

RAI 1. Section 17.X.2 "Maintenance Rule Training and Qualification" states that the MR Program is supported by appropriate training and qualification for designated personnel, commensurate with their involvement in MR activities". The COL applicant is expected to provide a description of the MR training and qualification program per Regulatory Guide 1.206 "Combined License Applications for Nuclear Power Plants." Briefly describe how the applicant will meet this expectation.

NEI Response:

Section 17.X.2 of NEI 07-02 has been clarified as follows:

The MR program is supported by appropriate training and qualification for designated personnel. Training is commensurate with ~~their involvement in~~ MR responsibilities ~~activities~~, including MR program administration, the expert panel process, operations, engineering, maintenance, licensing, and plant management, as appropriate. Maintenance Rule Program training and qualification materials are based on regulatory requirements and guidance, and training records are maintained in accordance with plant procedures.

RAI 2. Section 17.X.5 "Maintenance Rule Program Implementation" states that the MR Program documents will be developed, maintained and operational. Clarify that the MR Program will be implemented by the time that initial fuel loading has been authorized.

NEI Response:

Section 17.X.5 of NEI 07-02 has been clarified as follows:

MR Program documents will be developed and maintained, and the MR program will be implemented ~~operational~~ by the time that initial fuel loading has been authorized.

[End]