Enclosure 2

White papers and presentations discussed during the

August 7, 2013 ROP WG Public Meeting

White Paper on "Additional Failures" for MS05

Date of White Paper: March 28, 2013
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Performance Indicator: MS05, Safety System Functional Failures

NEI 99-02 Guidance needing interpretation: Page 29, lines 22-25 discussion on Additional Failures. Current guidance states:

*22 **Additional failures:** a failure leading to an evaluation in which additional failures are found is*
23 only counted as one failure; new problems found during the evaluation are not counted, even if
24 the causes or failure modes are different. The intent is to not count additional events when
25 problems are discovered while resolving the original problem.

Response Section:

This section of the guidance doesn't clearly define the types of evaluations that can be considered when grouping additional failures into a single Performance Indicator occurrence. Causal Evaluations undertaken in response to an original issue that discover additional failures will result in grouping all those SSFFs into a single PI occurrence. However, evaluations undertaken while performing Design Basis reconstitutions or large scale transitions to new programs, such as NFPA-805, should also result in a single SSFF PI occurrence.

IMC-0305, OPERATING REACTOR ASSESSMENT PROGRAM, Definition 4.18 of an Old Design Issue:

An inspection finding involving a past design related problem in the engineering calculations or analyses, the associated operating procedure, or installation of plant equipment that does not reflect a performance deficiency associated with existing licensee programs, policy, or procedures.

Section 11.05, Treatment of Items Associated with Enforcement Discretion, goes on to state that:

The intent of this section is to establish ROP guidance that supports the objective of enforcement discretion, which is to encourage licensee initiatives to identify and resolve problems, especially those subtle issues that are not likely to be identified by routine efforts.

The purpose of this approach is to place a premium on licensees initiating efforts to identify and correct safety-significant issues which are not likely to be identified by routine efforts, before degraded safety systems are called upon to work. The assessment program evaluates present performance issues, and this approach excludes old design issues from consideration of overall licensee performance in the Action Matrix.

IMC-0305 clearly encourages licensee program reviews or changes that uncover old design issues which, if left unresolved, could challenge safety systems. Additional failures discovered during programmatic reviews, design basis reconstitutions or transitions to new engineering programs such as NFPA-805, should have Safety System Functional Failures discovered during these reviews grouped into a single PI occurrence to align with the existing guidance in IMC-0305 and to encourage licensee identification and resolution of problems.

White Paper on "Additional Failures" for MS05

Recommend the following clarifications to the definition of Additional Failures in NEI 99-02:

*22 **Additional failures:** a failure leading to an evaluation in which additional failures are found is*
23 only counted as one failure; new problems found during the evaluation are not counted, even if 24 the causes or failure modes are different. The intent is to not count additional events when
25 problems are discovered while resolving the original problem. Evaluation types ~~which may discover these additional failures~~ include Causal Evaluation Extent of Condition or Extent of Cause reviews that are undertaken as a result of a discrete event reported in an LER as a SSFF. Additional failures discovered during these reviews would not count as separate SSFF PI occurrences. ~~Additional failures discovered during design basis reconstitutions or evaluations conducted during significant programmatic engineering changes (e.g., NFPA-805 transition) where possible, should be treated as Old Design Issues as discussed in IMC-0305, Operating Reactor Assessment Program, and reported as a single SSFF PI occurrence if the error was introduced within three years of the time of discovery. If the Old Design error was introduced more than three years prior to the time of discovery, no SSFF PI Occurrence shall be counted, even if the error impacts currently active calculations, documents or equipment.~~

A comment should be added to the publicly viewable quarterly CDE submittal file explaining that newly discovered additional failures, even if reported under a new LER number, only count as a single SSFF PI occurrence. ~~if the original error was introduced within the three year reporting window. If the error was introduced outside the three year reporting window, no SSFF PI occurrence shall be counted even if the event was reported under 10 CFR 50.73(a)(2)(v).~~

PRA Technical Adequacy for MSPI

Introduction/Background

NEI 99-02 (Reference 1), Appendix G contains guidance regarding methods by which the licensee can establish the technical adequacy of their probabilistic risk assessment (PRA) to support the Mitigating System Performance Index (MSPI). This guidance has not been updated to reflect the latest approved versions of the ASME/ANS PRA Standard (Reference 2). In addition, questions have recently arisen regarding the need for guidance on the maintenance and update of PRA models used to support MSPI. This paper explores some of the issues raised and provides recommended approaches for resolving each issue. A proposed revision of NEI 99-02 Appendix G incorporating the proposed changes is included as an attachment.

Summary of Issues

In addition to general update of NEI 99-02 Appendix G to reflect current references, several technical issues have been raised concerning PRA technical adequacy for MSPI. These issues may be grouped into the following categories:

- Characteristics and Attributes for the PRA Maintenance and Upgrade Process Applicable to MSPI
  - Should thresholds for a PRA model update based on impact on the MSPI resulting from pending model changes be established?
  - Should a recommended frequency and scope for PRA data updates be established?
  - Should guidance be provided concerning the frequency and scope of PRA model updates (e.g., incorporation of credit for alternate portable equipment, incorporation of consensus methods)?
- Treatment of Outstanding Peer Review Findings
  - Is the current guidance requiring use of a modified Birnbaum value equal to a factor of three times the median Birnbaum value from the associated cross comparison group for pumps/diesels and three times the plant values for valves/breakers technically sound?
  - What constitutes adequate resolution of a Peer Review Finding
- Assessment of PRA Model Maintenance and Upgrade
  - Is a peer review of upgraded methodologies required prior to use of PRA results in MSPI?

Each of these issues is discussed in detail in the remainder of this paper.

Characteristics and Attributes for the PRA Configuration Control Program Applicable to MSPI

The characteristics and attributes of a PRA Configuration Control program are described in ASME/ANS Standard Section 1-5 (Reference 2). The industry peer review process described in

NEI 00-02 (Reference 3) includes a Maintenance and Update (MU) checklist that can be used as a guide to indicate specific items that should be considered with respect to the PRA Configuration Control program. NEI05-04 (Reference 4) references use of this checklist as a means to determine that a utility PRA Configuration Control program satisfies the requirements of ASME/ANS PRA Standard Section 1-5. It is expected that a PRA Configuration Control program that has been peer reviewed and found to be consistent with the guidance of the ASME/ANS PRA Standard Section 1-5 will generally maintain the technical adequacy of the PRA model to a sufficient level to support MSPI. However, there are some clarifications that may be needed with respect to MSPI.

ASME/ANS PRA Standard paragraph 1-5.2(b) states that the PRA Configuration Control program shall include "a process that maintains and upgrades the PRA to be consistent with the as-built, as operated plant." ASME/ANS PRA Standard paragraph 1-5.2(c) states that the PRA Configuration Control program shall include "a process that ensures that the cumulative impact of pending changes is considered when applying the PRA." Taken together, it is recommended that the PRA Configuration Control program consider the cumulative impact of pending changes on the indicators for MSPI monitored systems to determine whether a PRA model update is needed. Pending model changes related to plant design changes, credit for alternate portable equipment, peer review findings, and other changes to the PRA model to correct identified issues are expected to be tracked as pending changes. This will ensure that the PRA model is maintained sufficiently consistent with the as-built, as-operated plant for the MSPI application.

Analysis of data trends documented in NUREG/CR-5750 (Reference 5), NUREG/CR-6928 (Reference 6), and NUREG/CR-6890 (Reference 7) indicate that there are no statistically significant trends in either initiating event frequency or generic component reliability data over periods of five to ten years. Therefore, update of this data on a frequency of at least once per 10 years is considered adequate for PRA models supporting MSPI. The recommendations of the MSPI PRA Quality Task Group (Reference 8) noted that the MSPI pilot program did not find that parameter values were a significant source of concern for MSPI sensitivity. However, the data maintenance process shall be consistent with the above guidance for the PRA Configuration Control program and supporting requirements in the ASME/ANS PRA Standard Initiating Event Analysis (IE), Data Analysis (DA), and Human Reliability Analysis (HR) technical elements.

The recommendations of the MSPI PRA Quality Task Group (Reference 8) also include the Task Group's assessment of the ASME standard capability categories required to support the MSPI application. NEI 99-02 Table G 5 incorporated part of this assessment by detailing those supporting requirements requiring additional self-assessment to address differences between the criteria used to review the PRA using the NEI-00-02 process to support MSPI implementation. Table 3-1 in Reference 8 included the recommended capability category for each supporting requirement considered applicable to MSPI based on ASME PRA Standard RA-Sa-2003. To clarify the applicable supporting requirements and the required capability category for each applicable supporting requirement, Table G 5 should be updated to include the current ASME/ANS PRA Standard supporting requirements corresponding to Reference 8 Table 3-1 with applicable capability categories and clarifying notes. The revised Table G 5 will

then provide a basis for determination of which peer review F&Os need to be assessed for impact on MSPI. Prior to updating Table G.5 of NEI 99-02, the previous conclusions of the MSPI PRA Quality Task Group should be reviewed to determine if the conclusions are applicable to the current post-implementation status of MSPI.

The industry has established practices to ensure that the PRA is sufficient to be used for regulatory decisions. The configuration control program supporting the MSPI program should meet the following requirements~~These methods include~~:

- Use of personnel qualified for the analysis.
- Use of procedures that ensure control of documentation, including revisions, and provide for technical review, verification, or checking of calculations and information used in the analyses.
- Provision for documentation and maintenance of records.
- Use of procedures that ensure that appropriate actions are taken in accordance with established plant practices if assumptions, analyses, or information used in previous decision-making are changed (e.g., licensee voluntary action) or determined to be in error.

The following clarifications are applicable.

a) Pending model changes to be considered for MSPI are those related to implemented plant design and operational changes, identified errors in the PRA model, and F&Os characterized as findings related to those supporting requirements identified in Table G 5. NEI 05-04 defines a finding as an observation (an issue or discrepancy) that is necessary to address to ensure: 1) the technical adequacy of the PRA (relative to a Capability Category), 2) the capability/robustness of the PRA update process, or 3) the process for evaluating the necessary capability of the PRA technical elements (to support applications). Note that F&Os characterized as findings related to model changes required to meet Capability Category II are not considered pending model changes for MSPI if Table G 5 indicates that Capability Category I is sufficient.
b) The evaluation process for pending PRA model changes should include consideration of the impact on MSPI inputs in determining the need for a PRA model update.
c) The PRA supporting the MSPI program should be developed and reviewed by qualified personnel.
d) The PRA model and any supplemental analyses supporting the MSPI program should be subject to a technical review covering both the inputs and results of the analyses prior to their use.

~~Based on these factors, the following conclusions are reached with regard to the PRA Configuration Control program for support of MSPI:~~

~~a) Pending model changes to be considered for MSPI are those related to implemented plant design and operational changes, identified errors in the PRA model, and finding level F&Os related to those supporting requirements identified in Table G 5 of NEI 99-~~

~~02. Note that finding level F&Os related to changes required to meet Capability Category II are not considered pending model changes for MSPI if Table G-5 indicates that Capability Category I is sufficient.~~

~~b) The evaluation process for pending PRA model changes should include consideration of the consider the cumulative impact of pending changes on MSPI inputs in determining the need for a PRA model update (FAQ 477).~~

~~c) Update of the initiating event frequencies, component reliability and unavailability data, and the human reliability analysis should be performed on a frequency sufficient to ensure that the data represents the as-built, as-operated plant.~~

~~d) PRA changes should be performed consistent with the ASME/ANS PRA Standard.~~

~~e) Personnel that develop and review the PRA supporting the MSPI program should be qualified for the analysis in accordance with the applicable utility processes for personnel qualification.~~

~~f) The PRA model and any supplementary analyses supporting the MSPI program should be subject to an technical review covering both the inputs and results of the analyses prior to their use.~~

Treatment of Open Peer Review Findings

The current guidance in NEI 99-02 states the following with respect to the treatment of peer review findings:

> Resolve the peer review Facts and Observations (F&Os) for the plant PRA that are classified as being in category A or B, or document the basis for a determination that any open A or B F&Os will not significantly impact the MSPI calculation. Open A or B F&Os are significant if collectively their resolution impacts any Birnbaum values used in MSPI by more than a factor of 3. Appropriate sensitivity studies may be performed to quantify the impact. If an open A or B F&O cannot be resolved by April 1, 2006 and significantly impacts the MSPI calculation, a modified Birnbaum value equal to a factor of 3 times the median Birnbaum value from the associated cross comparison group for pumps/diesels and 3 times the plant values for valves/breakers should be used in the MSPI calculation at the index, system or component level, as appropriate, until the F&O is resolved.

This guidance was developed to support initial implementation of MSPI and has several problems with respect to the current implementation status of MSPI.

Reviews of several PRA models indicate that a modified Birnbaum value based on three times the median Birnbaum value reported in WCAP-16464 (Reference 8) may actually be lower than the plant-specific Birnbaum value for one or more pump groups. This indicates that the use of the current guidance may not produce consistent impact for all plants.

The use of modified Birnbaum values based on plant-specific sensitivity results used to determine the impact of open peer review findings or based on two times the plant-specific Birnbaum values for all monitored components affected by the finding will provide a more

consistent adjustment. However, this also may not be appropriate for all peer review findings. For example, if the peer review finding is associated with deficiencies in the common cause failure modeling, a restriction on the use of plant-specific CCF adjustment factors lower than the generic values until the issue is resolved may be more appropriate.

Therefore, it is recommended that the fixed adjustment value be eliminated and that any modified Birnbaum values applied for open finding level F&Os (equivalent to NEI 00-02 categories A and B) be based on plant-specific ~~sensitivity analysis~~evaluation of the potential impact of model changes required to address the finding.

To ensure that Peer Review findings are appropriately incorporated in a model revision, a review of the actions taken to address the finding should be provided by a technically qualified individual. If the review determines that the finding was appropriately addressed, that finding can be considered closed with respect to MSPI.

Assessment of PRA Model Maintenance and Upgrades

The ASME/ANS PRA Standard defines a PRA upgrade as "the incorporation into a PRA model of a new methodology or significant changes in scope or capability that impact the significant accident sequences or the significant accident progression sequences." For MSPI, the PRA maintenance and upgrade activities of concern are those that impact the scope of the PRA model used for developing MSPI inputs. This excludes PRA maintenance and upgrades related only to analysis of internal flooding, Level 2/LERF, fire, seismic, and other external events.

For MSPI, inputs from PRA maintenance (e.g., updates of reliability and unavailability data, incorporation of procedure changes in the HRA, etc.) or upgrade may be used as long as an internal technical review has been completed under the utility's PRA Configuration Control program. However, those changes classified as upgrades should be included in the scope of any subsequent peer review scheduled for another reason. Any findings resulting from that subsequent peer review will be addressed as pending model changes and treated consistent with the above guidance for treatment of open peer review findings.

References

1. NEI 99-02, *Regulatory Assessment Performance Indicator Guideline*, Revision 6, Nuclear Energy Institute, October 2009.
2. ASME/ANS RA-Sa-2009, *Addenda to ASME/ANS RA-S-2008 Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications*, American Society of Mechanical Engineers, New York, NY, February 2009.
3. NEI 00-02, *Probabilistic Risk Assessment (PRA) Peer Review Process Guidance*, Revision A3, Nuclear Energy Institute, March 2000.
4. NEI 05-04, *Process for Performing Internal Events PRA Peer Reviews Using the ASME/ANS PRA Standard*, Revision 2, Nuclear Energy Institute, November 2008.
5. NUREG/CR-5750, *Rates of Initiating Events at US Commercial Nuclear Power Plants: 1987-1995*, U.S. Nuclear Regulatory Commission, February 1999.

6. NUREG/CR-6928, *Industry-Average Performance for Components and Initiating Events at U.S. Commercial Nuclear Power Plants*, U.S. Nuclear Regulatory Commission, February 2007.
7. NUREG/CR-6890, Volume 1, *Reevaluation of Station Blackout Risk at Nuclear Power Plants Analysis of Loss of Offsite Power Events: 1986-2004*, U.S. Nuclear Regulatory Commission, December 2005.
8. Recommendations of the MSPI PRA Quality Task Group, ML043510095, December 16, 2004.
9. WCAP-16464-NP, *Westinghouse Owner's Group Mitigating Systems Performance Index Cross Comparison (PA-RMSC-0209)*, Revision 0, Westinghouse Electric Company LLC, August 2005.

APPENDIX G

MSPI Basis Document Development

To implement the Mitigating Systems Performance Index (MSPI), Licensees will develop a plant specific basis document that documents the information and assumptions used to calculate the Reactor Oversight Program (ROP) MSPI. This basis document is necessary to support the NRC inspection process, and to record the assumptions and data used in developing the MSPI on each site. A summary of any changes to the basis document are noted in the comment section of the quarterly data submission to the NRC.

The Basis document will have two major sections. The first described below will document the information used in developing the MSPI. The second section will document the conformance of the plant specific PRA to the requirements that are outlined in this appendix.

G 1. MSPI Data

The basis document provides a separate section for each monitored system as defined in Section 2.2 of NEI 99-02. The section for each monitored system contains the following subsections:

G 1.1 System Boundaries

This section contains a description of the boundaries for each train of the monitored system. A plant drawing or figure (training type figure) should be included and marked adequately (i.e., highlighted trains) to show the boundaries. The guidance for determining the boundaries is provided in Appendix F, Section 1.1 of NEI 99-02.

G 1.2 Risk Significant Functions

This section lists the risk significant functions for each train of the monitored system. Risk Significant Functions are defined in section 2.2 of NEI 99-02. Additional detail is given in Appendix F, Section 1.1.1 and Section 5 “Additional Guidance for Specific Systems”. A single list for the system may be used as long as any differences between trains are clearly identified. This section may also be combined with the section on Success Criteria if a combination of

information into a table format is desired. If none of the functions for the system are considered risk significant, identify the monitored function as defined in section F 1.1.1

G 1.3 Success Criteria

This section documents the success criteria as defined in Section 2.2 of NEI 99-02 for each of the identified monitored functions for the system. Additional detail is given in Appendix F, Section 2.1.1. **The criteria used are the documented PRA success criteria.**

- If the licensee has chosen to use design basis success criteria in the PRA, then provide a statement in this section that states the PRA uses design basis success criteria.
- If success criteria from the PRA are different from the design basis, then the specific differences from the design basis success criteria shall be documented in this section. Provide the actual values used to characterize success such as: *The time required in the PRA for the EDG to successfully reach rated speed and voltage is 15 seconds.*

Where there are different success criteria for different monitored functions or different success criteria for different initiators within a monitored function, all should be recorded and the most restrictive shown as the one used, with the exception of ATWS related success criteria which are not in the scope of MSPI.

G 1.4 Mission Time

This section documents the risk significant mission time, as defined in Section 2.3.6 of Appendix F, for each of the identified monitored functions identified for the system. The following specific information should be included in support of the EDG mission time if a value less than 24 hours is used:

- EDG Mission Time with highest Birnbaum
- Basic Event and Description (basis for Birnbaum)
- Other Emergency Power Failure to Run Basic Events, Descriptions, mission time and Birnbaums (those not selected)
- Method for reduced mission time (e.g., Convolution, Multiple Discrete LOOP (Loss of Offsite Power) Initiating Events, Other)
- Loss of Offsite Power (LOOP) Initiating Events, Description and Frequency
- Basis for LOOP Frequency (Industry/NRC Reference)
- Basis for LOOP Non-recovery Failure (Industry/NRC Reference)
- Credit for Emergency Power Repair (Yes/No)
- If repair credited, failure probability of repair and basis

G 1.5 Monitored Components

This section documents the selection of monitored components as defined in Appendix F, Section 2.1.2 of NEI 99-02 in each train of the monitored system. A listing of all monitored pumps, breakers and emergency power generators should be included in this section. A listing of AOVs, HOVs , SOVs and MOVs that change state to achieve the monitored functions should be provided as potential monitored components. The basis for excluding valves and breakers in this list from monitoring should be provided. Component boundaries as described in Appendix F, Section 2.1.3 of NEI 99-02 should be included where appropriate.

G 1.6 Basis for Demands/Run Hours (estimate or actual)

The determination of reliability largely relies on the values of demands, run hours and failures of components to develop a failure rate. This section documents how the licensee will determine the demands on a component. Several methods may be used.

- Actual counting of demands/run hours during the reporting period
- An estimate of demands/run hours based on the number of times a procedure or other activities are performed plus either actual ESF demands/run hours or "zero" ESF demands/run hours
- An estimate based on historical data over a year or more averaged for a quarterly average plus either actual ESF demands/run hours or "zero" ESF demands/run hours

The method used, either actual or estimated values, shall be stated. If estimates are used for test or operational demands or run hours then the process used for developing the estimates shall be described and estimated values documented. If the estimates are based on performance of procedures, list the procedures and the frequencies of performance that were used to develop the estimates.

G 1.7 Short Duration Unavailability

This section provides a list of any periodic surveillances or evolutions of less than 15 minutes of unavailability that the licensee does not include in train unavailability. The intent is to minimize unnecessary burden of data collection, documentation, and verification because these short durations have insignificant risk impact.

G 1.8 PRA Information used in the MSPI

G 1.8.1 Unavailability FV and UA

This section includes a table or spreadsheet that lists the basic events for unavailability for each train of the monitored systems. This listing should include the probability, FV, and FV/probability ratio and text description of the basic event or component ID. An example format is provided as Table 1 at the end of this appendix. If the event chosen to represent the train is not the event that results in the largest ratio, provide information that describes the basis for the choice of the specific event that was used.

G 1.8.1.1 Unavailability Baseline Data

This section includes the baseline unavailability data by train for each monitored system. The discussion should include the basis for the baseline values used. The detailed basis for the baseline data may be included in an appendix to the MSPI Basis Document if desired.

The basis document should include the specific values for the planned and unplanned unavailability baseline values that are used for each train or segment in the system.

G 1.8.1.2 Treatment of Support System Initiator(s)

This section documents whether the cooling water systems are an initiator or not. This section provides a description of how the plant will include the support system initiator(s) as described in Appendix F of NEI 99-02. If an analysis is performed for a plant specific value, the calculation must be documented in accordance with plant processes and referred to here. The results should also be included in this section. A sample table format for presenting the results of a plant specific calculation for those plants that do not explicitly model the effect on the initiating event contribution to risk is shown in Table 4 at the end of this appendix.

G 1.8.2 Unreliability FV and UR

There are two options described in Appendix F for the selection of FV and UR values, the selected option should be identified in this section. This section also includes a table or spreadsheet that lists the PRA information for each monitored component. This listing should include the Component ID, event probability, FV, the common cause adjustment factor and

FV/probability ratio and text description of the basic event or component ID. An example format is provided as Table 2 at the end of this appendix. If individual failure mode ratios (vice the maximum ratio) will be used in the calculation of MSPI, then each failure mode for each component will be listed in the table.

A separate table should be provided in an appendix to the basis document that provides the complete set of basic events for each component. An example of this for one component is shown in Table 3 at the end of this appendix. Only the basic event chosen for the MSPI calculation requires completion of all table entries.

G 1.8.2.1 Treatment of Support System Initiator(s)

This section documents whether the cooling water systems are an initiator or not. This section provides a description of how the plant will include the support system initiator(s) as described in Appendix F of NEI 99-02. If an analysis is performed for a plant specific value, the calculation must be documented in accordance with plant processes and referred to here. The results should also be included in this section. A sample table format for presenting the results of a plant specific calculation for those plants that do not explicitly model the effect on the initiating event contribution to risk is shown in Table 4 at the end of this appendix.

G 1.8.2.2 Calculation of Common Cause Factor

This section contains the description of how the plant will determine the common cause factor as described in Appendix F of NEI 99-02. If an analysis is performed for a plant specific value, the calculation must be documented in accordance with plant processes and referred to here. The results should also be included in this section.

G 1.9 Assumptions

This section documents any specific assumptions made in determination of the MSPI information that may need to be documented. Causes for documentation in this section could be special methods of counting hours or runtimes based on plant specific designs or processes, or other instances not clearly covered by the guidance in NEI 99-02.

G 2. PRA Requirements

G 2.1 Discussion

The MSPI application can be considered a Phase 2 application under the NRC's phased approach to PRA quality. A Phase 2 application refers to an application where the baseline PRA that supports the application meets the applicable consensus PRA standards. The MSPI is an index that is based on internal initiating events, full-power PRA, for which the ASME/ANS PRA Standard has been written.

Licensees should assure that their PRA is of sufficient technical adequacy to support the MSPI application as follows:

G 2.1.1 PRA Model Scope and Level of Detail

The PRA supporting the MSPI program should meet the following requirements:

a) The scope of the PRA to be used for MSPI is a Level 1 internal events model covering full power operation. Level 2/LERF, internal floods and fires are excluded from the internal events scope for MSPI.
b) The PRA should be of sufficient detail to support the development of plant-specific Birnbaum importance measures for the components and trains/segments within the scope of MSPI.
c) The PRA should be of sufficient detail to ensure the impacts of designed-in dependencies (e.g., support system dependencies, functional dependencies, and dependencies on operator actions) are correctly captured.

G 2.1.2 Characteristics and Attributes of the PRA Configuration Control Program

The characteristics and attributes of a PRA Configuration Control program are described in ASME/ANS Standard Section 1-5. The configuration control program supporting the MSPI program should meet the following requirements~~These attributes include~~:

a) a process for monitoring PRA inputs and collecting new information
b) a process that maintains and upgrades the PRA to be consistent with the as-built, as operated plant

c) a process that ensures that the cumulative impact of pending changes is considered when applying the PRA
d) a process that maintains configuration control of computer codes used to support PRA quantification
e) documentation of the PRA Maintenance and Upgrade process

~~For use in MSPI, the plant PRA shall be under a PRA Configuration Control program consistent with the attributes specified above and t~~The following clarifications are applicable.

~~a)~~e) Pending model changes to be considered for MSPI are those related to implemented plant design and operational changes, identified errors in the PRA model, and ~~finding level~~ F&Os characterized as findings related to those supporting requirements identified in Table G 5. NEI 05-04 defines a finding as an observation (an issue or discrepancy) that is necessary to address to ensure: 1) the technical adequacy of the PRA (relative to a Capability Category), 2) the capability/robustness of the PRA update process, or 3) the process for evaluating the necessary capability of the PRA technical elements (to support applications). Note that ~~finding level~~ F&Os characterized as findings related to model changes required to meet Capability Category II are not considered pending model changes for MSPI if Table G 5 indicates that Capability Category I is sufficient.

~~b)~~f) The evaluation process for pending PRA model changes should ~~consider~~ include consideration of the ~~cumulative impact of pending changes~~impact on MSPI inputs in determining the need for a PRA model update.

~~c) Update of the initiating event frequencies, component reliability and unavailability data, and the human reliability analysis should be performed on a frequency sufficient to ensure that the data represents the as-built, as-operated plant.~~

~~d) PRA changes should be performed consistent with the ASME/ANS PRA Standard Supporting Requirements applicable to MSP, which are identified in Table G 5.~~

~~e)~~g) ~~Personnel that develop and review t~~The PRA supporting the MSPI program should be developed and reviewed by qualified personnel~~qualified for the analysis in accordance with the applicable utility processes for personnel qualification~~.

~~f)~~h) The PRA model and any ~~supplementary~~supplemental analyses supporting the MSPI program should be subject to a technical review covering both the inputs and results of the analyses prior to their use.

G 2.1.3 Treatment of Pending Model Changes

To ensure that Peer Review findings are appropriately incorporated in a model revision, a review of the actions taken to address the finding should be provided by a technically qualified individual. If the review determines that the finding was appropriately addressed, that finding can be considered resolved with respect to MSPI.

Pending model changes that cannot be incorporated into a revision to the site PRA of record prior to the next reporting quarter should be assessed consistent with the PRA Configuration Control program.

If ~~analysis~~ an evaluation of the cumulative impact of proposed resolutions for the pending model changes results in greater than or equal to a predicted factor of three change in the corrected Birnbaum value of an MSPI monitored train or component, the ~~following shall be performed:~~

~~The~~ MSPI basis document should be updated to ~~calculate~~include revised CDE inputs ~~using an updated PRA model~~ the quarter following identification of the increased impact~~Supplementary analysis should be performed and documented to demonstrate that the pending change(s) have no significant impact on the MSPI results (i.e., there is no change in the calculated indicator colors), or~~

~~A modified Birnbaum value equal to the value calculated in the applicable supplementary analysis or a factor of two times the current value for affected trains or components (whichever is greater) should be used in the MSPI calculation at the index, system or component level, as appropriate, until the pending model change(s) is incorporated in a new site PRA of record~~. ~~Note that the~~ The use of supplemental analysis to estimate the revised MSPI inputs is allowed ~~as an interim alternative~~ until the site PRA of record is revised. This may be the analysis used to determine the need for the change or a more refined model.

If ~~analysis~~an evaluation of the cumulative impact of proposed resolutions for the pending model changes results in less than a predicted factor of three change in the corrected Birnbaum value of an MSPI monitored train or component, the ~~Supplementary analysis~~evaluation should be ~~performed and~~ documented to demonstrate that the pending change(s) have no significant impact on the MSPI results (i.e., there is no change in the calculated indicator colors). ~~or~~

If the ~~analysis~~ an evaluation of pending changes indicate that the Birnbaum value for a component previously excluded from monitoring will be greater than 1.0E-06, the MSPI basis document should be updated to reflect the new Birnbaum values the quarter following identification of the increased impact. ~~Note that t~~The use of supplemental analysis to estimate the revised MSPI inputs is allowed ~~as an interim alternative~~ until the site PRA of record is revised. This may be the analysis used to determine the need for the change or a more refined model.

G 2.1.4 Assessment of PRA Model Maintenance and Upgrades

The ASME/ANS PRA Standard defines a PRA upgrade as "the incorporation into a PRA model of a new methodology or significant changes in scope or capability that impact the significant accident sequences or the significant accident progression sequences." For MSPI, the PRA maintenance and upgrade activities of concern are those that impact the scope of the PRA model used for developing MSPI inputs. This excludes PRA maintenance and upgrades related only to analysis of internal flooding, Level 2/LERF, fire, seismic, and other external events.

The differentiation between PRA maintenance and upgrades is further discussed in Non-mandatory Appendix 1-A, *PRA Maintenance, PRA Upgrade, and the Advisability of Peer Review.* For MSPI, inputs from PRA maintenance (e.g., updates of reliability and unavailability data, incorporation of procedure changes in the HRA, etc.) or upgrade may be used as long as an internal technical review has been completed under the utility's PRA Configuration Control program. However, those changes classified as upgrades should be included in the scope of any subsequent peer review scheduled for another reason. Any findings resulting from that subsequent peer review will be identified as pending PRA model changes as described in Section G 2.1.2 and evaluated as described in Section G 2.1.3.

G 2.2 PRA MSPI Documentation Requirements

A. Licensees should provide a summary of their PRA models to include the following:

1. Approved version and date of the site PRA of record used to develop MSPI data
2. Plant base CDF for MSPI
3. Truncation level used to develop MSPI data

B. Licensees should document the technical adequacy of their PRA models, including:

1. Description of the PRA Configuration Control program and identification of applicable procedures.
2. Description of the process used to qualify personnel involved in the preparation and technical review of the PRA analyses supporting MSPI.
3. Justification for any open finding level F&Os associated with those SRs identified in Table G5 that are determined to have no impact on the use of the PRA model for MSPI.
4. Justification for the determination that any pending PRA model changes do not impact the MSPI results and/or justification for The basis of the adjusted Birnbaum values applied to reflect pending model changes as an interim alternative until the site PRA of record is revised(e.g., supplemental analysis or penalty factor).

C. Licensees should document in their PRA archival documentation:

1. A description of the resolution of the finding level F&Os identified by the peer review team.
2. Results of supplementary supplemental analysis used to assess the impact of pending PRA model changes on MSPI monitored trains or components.
3. Documentation of internal technical reviews of PRA model updates and/or supplementarysupplemental analyses performed to support the MSPI program.
4. Technical bases for the PRA.

G 3. TABLES

Table G 1 Unavailability Data HPSI (one table per system)

Train	Basic Event Name	Basic Event Description	Basic Event Probability (UAP)	Basic Event FVUAP [1]	FVUAP/UAP
A	1SIAP02----MP6CM	HPSI Pump A Unavailable Due to Mntc	3.20E-03	3.19E-03	9.97E-01
B	1SIBP02----MP6CM	HPSI Pump B Unavailable Due to Mntc	3.20E-03	3.85E-03	1.20E+00

1. Adjusted for IEF correction if used

Table G 2 – AFW System Monitored Component PRA Information

Component	Basic Event	Description	Basic Event Probability (URPC)	Basic Event FVURC	[FV/UR]*ind*	CC Adjustment Factor (A)	CC Adjustment Used	Adjusted Birnbaum
1MAFAP01	1AFASYS----AFACM	Train A Auxiliary Feedwater Pump Fails to Start	2.75E-03	2.33E-02	8.49E+00	1	Generic	1.1E-04
1MAFBP01	1AFBP01----MPAFS	Train B Auxiliary Feedwater Pump Fails to Start	6.73E-04	4.44E-02	6.59E+01	1.25	Generic	1.1E-03
1MAFNP01	1AFNSYS----AFNCM	Train N Auxiliary Feedwater Pump Fails to Start	1.05E-03	1.10E-02	1.05E+01	1.25	Generic	1.7E-04
1JCTAHV0001	1CTAHV001--MV-FO	CST to AFW Pump N Supply Valve HV1 Fails to Open (Local Fault)	3.17E-03	2.48E-02	7.83E+00	2	Generic	2.0E-04
1JCTAHV0004	1CTAHV004--MV-FO	CST to AFW Pump N Supply Valve HV4 Fails to Open (Local Fault)	3.17E-03	2.48E-02	7.83E+00	2	Generic	2.0E-04

Table G 3 - Unreliability Data (one table per monitored component)

Component Name and ID: HPSI Pump B - 1SIBP02

Basic Event Name	Basic Event Description	Basic Event Probability (URPC)	Basic Event FVURC [1]	[FV/UR]*ind*	Common Cause Adjustment Factor (CCF)	Common Cause Adjustment Generic or Plant Specific	Adjusted Birnbaum
1SIBP02---XCYXOR	HPSI Pump B Fails to Start Due to Override Contact Failure	6.81E-04	7.71E-04	1.13E+00	3.0	Generic	5.0E-05
1SIBP02----MPAFS	HPSI Pump B Fails to Start (Local Fault)	6.73E-04	7.62E-04	1.13E+00			
1SIBP02----MP-FR	HPSI Pump B Fails to Run	4.80E-04	5.33E-04	1.11E+00			
1SABHP-K125RXAFT	HPSI Pump B Fails to Start Due to K125 Failure	3.27E-04	3.56E-04	1.09E+00			
1SIBP02----CB0CM	HPSI Pump B Circuit Breaker (PBB-S04E) Unavailable Due to Mntc	2.20E-04	2.32E-04	1.05E+00			
1SIBP02----CBBFT	HPSI Pump B Circuit Breaker (PBB-S04E) Fails to Close (Local Fault)	2.04E-04	2.14E-04	1.05E+00			

1. Adjusted for IEF correction if used

Table G 4 Cooling Water Support System FV Calculation Results (one table per train/component/failure mode)

FV*a (or FVc)*	**FV*ie***	**FV*sa (orFVsc)***	**UA (or UR)**	**Calculated FV (per appendix F)** ***(result is put in Basic Event column of table 1 or table 2 as appropriate)***

TABLE G 5. ASME/ANS PRA Standard Supporting Requirements Requiring Self-Assessment ~~(Note: Revision of this table to represent the full scope of SRs applicable to MSPI will be addressed following review of Table 3-1 of the MSPI PRA Quality Task Group report.)~~		
Supporting Requirement[1]	**Required Capability ~~Category[1]~~Category[2]**	**Comments**
IE-A1	MET	
IE-A2	MET	
IE-A3	MET	
IE-A4	I/II	
IE-A5	~~II~~I	~~Focus on plant specific initiators and special initiators, especially loss of DC bus, Loss of AC bus, or Loss of room cooling type initiators~~
IE-A6	I	
IE-A7	MET	
IE-A8	I	
IE-A9	I	~~Category I in general. However, precursors to losses of cooling water systems in particular, e.g., from fouling of intake structures, may indicate potential failure mechanisms to be taken into account in the system analysis (IE-C8, 11)~~
IE-A10	MET	
IE-B1	MET	
IE-B2	MET	
IE-B3	I	
IE-B4	MET	
IE-B5	MET	
IE-C1	MET	~~Focus on loss of offsite power (LOOP) frequency as a function of duration~~
IE-C2	MET	
IE-C3	N/A	Not crediting recovery actions is conservative with respect to MSPI. If recovery actions are credited, IE-C3 must be MET.

TABLE G 5. ASME/ANS PRA Standard Supporting Requirements Requiring Self-Assessment ~~(Note: Revision of this table to represent the full scope of SRs applicable to MSPI will be addressed following review of Table 3-1 of the MSPI PRA Quality Task Group report.)~~		
Supporting Requirement[1]	**Required Capability ~~Category[1]~~Category[2]**	**Comments**
IE-C4	~~II~~Met	~~Focus on LOOP and medium and small LOCA frequencies including stuck open PORVs~~
IE-C5	I/II	
IE-C6	MET	
IE-C7	I/II	
IE-C8	MET	~~For plants that choose fault trees for support systems, pay attention to modeling of loss of cooling systems initiators.~~
IE-C9	MET	
IE-C10	MET	
IE-C11	MET	
IE-~~C11~~C12	MET	For plants that choose fault trees for support systems, pay attention to initiating event frequencies that are substantially (i.e., more than 3 times) below generic values
IE-C13	I/II	
IE-C14	N/A	Should not impact the Birnbaum importance measure for MSPI monitored components/trains/segments.
IE-C15	N/A	Characterization of uncertainty is only required in this SR for the calculation of mean initiating event frequencies. For the level of accuracy required for MSPI, the use of point estimate values as opposed to mean values for initiating event frequencies is unlikely to make a significant difference.
IE-D1	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.
IE-D2	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.

TABLE G 5. ASME/ANS PRA Standard Supporting Requirements Requiring Self-Assessment ~~(Note: Revision of this table to represent the full scope of SRs applicable to MSPI will be addressed following review of Table 3-1 of the MSPI PRA Quality Task Group report.)~~		
Supporting Requirement[1]	**Required Capability ~~Category[1]~~Category[2]**	**Comments**
IE-D3	N/A	Documentation of uncertainty is not germane to MSPI.
AS-A1	MET	Item b is not required to be met for MSPI.
AS-A2	MET	
AS-A3	MET	~~Focus on credit for alternate sources, e.g., gas turbines, CRD, fire water, SW cross-tie, recovery of FW~~
AS-A4	MET	~~Focus on credit for alternate sources, e.g., gas turbines, CRD, fire water, SW cross-tie, recovery of FW~~
AS-A5	MET	~~Focus on credit for alternate sources, e.g., gas turbines, CRD, fire water, SW cross-tie, recovery of FW~~
AS-A6	MET	
AS-A7	I/II	
AS-A8	MET	
AS-A9	~~II~~I	Category I, provided that the generic thermal-hydraulic analysis is conservative. ~~Category II for MSPI systems and components and for systems such as CRD, fire water, SW cross-tie, recovery of FW~~
AS-A10	~~II~~I	Meeting CC I provides a bounding approach that should result in conservative results for MSPI.~~Category II in particular for alternate systems where the operator actions may be significantly different, e.g., more complex, more time limited.~~
AS-A11	MET	
AS-B1	MET	
AS-B2	MET	
AS-B3	MET	~~Focus on credit for injection post-venting (NPSH issues, environmental survivability, etc.)~~

TABLE G 5. ASME/ANS PRA Standard Supporting Requirements Requiring Self-Assessment ~~(Note: Revision of this table to represent the full scope of SRs applicable to MSPI will be addressed following review of Table 3-1 of the MSPI PRA Quality Task Group report.)~~		
Supporting Requirement[1]	**Required Capability** ~~Category~~[1]**Category**[2]	**Comments**
AS-B4	MET	
AS-B5	MET	
AS-B6	MET	
AS-B7	MET	~~Focus on (a) time phasing in LOOP/SBO sequences, including battery depletion, and (c) adequacy of CRD as an adequate injection source.~~
AS-C1	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.
AS-C2	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.
AS-C3	N/A	Documentation of uncertainty is not germane to MSPI.
SC-A1	MET	
SC-A2	I	
SC-A3	MET	
SC-A4	MET	
SC-A5	I	
SC-A6	MET	
SC-B1	I	
SC-B2	I	
SC-B3	MET	
SC-B4	MET	~~Focus on proper application of the computer codes for T/H calculations, especially for LOCA, IORV, SORV, and F&B scenarios.~~

TABLE G 5. ASME/ANS PRA Standard Supporting Requirements Requiring Self-Assessment ~~(Note: Revision of this table to represent the full scope of SRs applicable to MSPI will be addressed following review of Table 3-1 of the MSPI PRA Quality Task Group report.)~~		
Supporting Requirement[1]	**Required Capability ~~Category[1]~~Category[2]**	**Comments**
SC-B5	MET	
SC-C1	N/A~~MET~~	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.
SC-C2	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.
SC-C3	N/A	Documentation of uncertainty is not germane to MSPI.
SY-A1	MET	
SY-A2	MET	
SY-A3	MET	
SY-A4	~~II/III~~I	~~Category II/III for MSPI systems and components~~
SY-A5	MET	
SY-A6	MET	
SY-A7	I/II	
SY-A8	MET	For MSPI, SY-A8 is limited to the modeling of shared components. To be consistant with DA-A2, mismatch between component and data boundaries are not expected to have a significant impact on MSPI results.
SY-A9	MET	
SY-A10	MET	~~Focus on (d) modeling of shared systems~~
SY-A11	MET	
SY-A12	MET	
SY-A13	MET	
SY-A14	MET	

TABLE G 5. ASME/ANS PRA Standard Supporting Requirements Requiring Self-Assessment ~~(Note: Revision of this table to represent the full scope of SRs applicable to MSPI will be addressed following review of Table 3-1 of the MSPI PRA Quality Task Group report.)~~		
Supporting Requirement[1]	**Required Capability ~~Category[1]~~Category[2]**	**Comments**
SY-A15	MET	
SY-A16	I/II	
SY-A17	MET	
SY-A18	MET	
SY-A19	MET	
SY-A20	MET	
SY-A21	MET	
SY-A22	~~II~~I	~~Focus on credit for alternate injection systems, alternate seal cooling~~
SY-A23	MET	
SY-A24	MET	
SY-B1	I	~~Should include EDG, AFW, HPI, RHR CCFs~~
SY-B2	I/II	
SY-B3	MET	
SY-B4	MET	
SY-B5	MET	~~Focus on dependencies of support systems (especially cooling water systems) to the initiating events~~
SY-B6	MET	
SY-B7	I	
SY-B8	MET	
SY-B9	MET	~~Focus on credit post-venting (NPSH issues, environmental survivability, etc.).~~
SY-B10	I	

TABLE G 5. ASME/ANS PRA Standard Supporting Requirements Requiring Self-Assessment ~~(Note: Revision of this table to represent the full scope of SRs applicable to MSPI will be addressed following review of Table 3-1 of the MSPI PRA Quality Task Group report.)~~		
Supporting Requirement[1]	**Required Capability ~~Category[1]~~Category[2]**	**Comments**
SY-B11	MET	
SY-B12	MET	
SY-B13	MET	
SY-B14	MET	~~Focus on credit for injection post-venting (NPSH issues, environmental survivability, etc.)~~
SY-B15	MET	
SY-C1	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.
SY-C2	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.
SY-C3	N/A	Documentation of uncertainty is not germane to MSPI.
HR-A1	MET	
HR-A2	MET	
HR-A3	MET	
HR-B1	I	For the level of accuracy required for MSPI, contributions from failures to restore following maintenance or test are unlikely to make a significant difference.
HR-B2	MET	
HR-C1	MET	
HR-C2	I	For the level of accuracy required for MSPI, contributions from failures to restore following maintenance or test are unlikely to make a significant difference.
HR-C3	MET	

TABLE G 5. ASME/ANS PRA Standard Supporting Requirements Requiring Self-Assessment ~~(Note: Revision of this table to represent the full scope of SRs applicable to MSPI will be addressed following review of Table 3-1 of the MSPI PRA Quality Task Group report.)~~		
Supporting Requirement[1]	**Required Capability ~~Category[1]~~Category[2]**	**Comments**
HR-D1	MET	
HR-D2	I	For the level of accuracy required for MSPI, the use of screening values for pre-initiator HEPs is unlikely to make a significant difference.
HR-D3	I	For the level of accuracy required for MSPI, the use of screening values for pre-initiator HEPs is unlikely to make a significant difference.
HR-D4	MET	
HR-D5	MET	
HR-D6	N/A	For the level of accuracy required for MSPI, the use of mean values for pre-initiator HEPs is unlikely to make a significant difference.
HR-D7	I/II	
HR-E1	MET	~~Focus on credit for cross ties, depressurization, use of alternate sources, venting, core cooling recovery, initiation of F&B~~
HR-E2	MET	~~See comment on HR-E1.~~
HR-E3	II/III	For MSPI purposes a detailed talkthrough with operations OR training personnel is sufficient.
HR-E4	II/III	
HR-F1	I/II	
HR-F2	II	Category II ensures that the complexity of the task if fully understood.
HR-G1	~~II~~I	~~However,~~ Category I for the critical HEPs would produce a more sensitive MSPI (i.e., fewer failures to change a color).
HR-G2	MET	~~Focus on credit for cross ties, depressurization, use of alternate sources, venting, core cooling recovery, initiation of F&B~~

TABLE G 5. ASME/ANS PRA Standard Supporting Requirements Requiring Self-Assessment ~~(Note: Revision of this table to represent the full scope of SRs applicable to MSPI will be addressed following review of Table 3-1 of the MSPI PRA Quality Task Group report.)~~		
Supporting Requirement[1]	**Required Capability ~~Category[1]~~Category[2]**	**Comments**
HR-G3	I	~~Category I. See comment on HR-G1. Pay attention to credit for cross ties, depressurization, use of alternate sources, venting, core cooling recovery, initiation of F&B~~Meeting Category I requires consideration of some measure of scenario-induced stress. The PSFs listed in Category II/III should not have a significant impact on the final HEP. Therefore, Category I is sufficient for MSPI.
HR-G4	I	
HR-G5	II	~~See comment on HR-G1.~~
HR-G6	MET	
HR-G7	MET	
HR-G8	N/A	For the level of accuracy required for MSPI, the use of mean values for post-initiator HEPs is unlikely to make a significant difference.
HR-H1	N/A	Not crediting recovery actions is conservative with respect to MSPI.
HR-H2	N/A~~MET~~	Not crediting recovery actions is conservative with respect to MSPI.~~Focus on credit for cross ties, depressurization, use of alternate sources, venting, core cooling recovery, initiation of F&B~~ If recovery actions are credited, HR-H3 must be MET.
HR-H3	MET~~MET~~	If recovery actions are credited, then HR-H3 must be MET.~~The use of some systems may be treated as a recovery action in a PRA, even though the system may be addressed in the same procedure as a human action modeled in the accident sequence model (e.g., recovery of feedwater may be addressed in the same procedure as feed and bleed). Neglecting the cognitive dependency can significantly decrease the significance of the sequence.~~

TABLE G 5. ASME/ANS PRA Standard Supporting Requirements Requiring Self-Assessment ~~(Note: Revision of this table to represent the full scope of SRs applicable to MSPI will be addressed following review of Table 3-1 of the MSPI PRA Quality Task Group report.)~~		
Supporting Requirement[1]	**Required Capability ~~Category[1]~~Category[2]**	**Comments**
HR-I1	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.
HR-I2	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.
HR-I3	N/A	Documentation of uncertainty is not germane to MSPI.
DA-A1	MET	
DA-A2	N/A	Mismatch between component and data boundaries are not expected to have a significant impact on MSPI results.
DA-A3	MET	
DA-A4	MET	
DA-B1	I	~~Focus on service condition (clean vs. untreated water) for SW systems~~
DA-B2	I/II	
DA-C1	MET	To be consistent with DA-A2, mismatch between component and data boundaries are not expected to have a significant impact on MSPI results. ~~Focus on LOOP recovery~~
DA-C2	N/A	The MSPI pilot program did not find plant-specific data to be significant sources of concern for MSPI sensitivity.
DA-C3	MET	Required only if plant-specific data is used.
DA-C4	MET	Required only if plant-specific data is used.
DA-C5	MET	Required only if plant-specific data is used.
DA-C6	MET	Required only if plant-specific data is used.
DA-C7	I	

TABLE G 5. ASME/ANS PRA Standard Supporting Requirements Requiring Self-Assessment ~~(Note: Revision of this table to represent the full scope of SRs applicable to MSPI will be addressed following review of Table 3-1 of the MSPI PRA Quality Task Group report.)~~		
Supporting Requirement[1]	**Required Capability ~~Category[1]~~Category[2]**	**Comments**
DA-C8	I	
DA-C9	I/II	
DA-C10	I	
DA-C11	MET	
DA-C12	MET	
DA-C13	I	
DA-C14	MET	
DA-C15	MET	
DA-C16	MET	~~Focus on recovery from LOSP and loss of SW events~~
DA-D1	I	~~For BWRs with isolation condenser, focus on the likelihood of a stuck open SRV~~
DA-D2	MET	
DA-D3	N/A	Characterization of uncertainty is only required in this SR for the calculation of mean basic event probabilities. For the level of accuracy required for MSPI, the use of point estimate values as opposed to mean values for basic event probabilities is unlikely to make a significant difference.
DA-D4	I, II/III	If a Bayesian approach is used, its validity should be examined at CC II/III.
DA-D5	I	
DA-D6	I	
DA-D7	MET	
DA-D8	I	

TABLE G 5. ASME/ANS PRA Standard Supporting Requirements Requiring Self-Assessment ~~(Note: Revision of this table to represent the full scope of SRs applicable to MSPI will be addressed following review of Table 3-1 of the MSPI PRA Quality Task Group report.)~~		
Supporting Requirement[1]	**Required Capability ~~Category[1]~~Category[2]**	**Comments**
DA-E1	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.
DA-E2	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.
DA-E3	N/A	Documentation of uncertainty is not germane to MSPI.
QU-A1	MET	
QU-A2	MET	
QU-A3	I	It is judged that performing a point estimate calculation, rather than using a formal propagation of uncertainty, will not have significant impact on the accident sequences and cutsets involving the MSPI systems.
QU-A4	MET	
QU-A5	N/A	Not crediting recovery actions is conservative with respect to MSPI.
QU-B1	MET	
QU-B2	N/A~~MET~~	Truncation requirements specific to MSPI are already established.~~Truncation limits should be chosen to be appropriate for F-V calculations.~~
QU-B3	N/A~~MET~~	Truncation requirements specific to MSPI are already established.~~This is an MSPI implementation concern and should be addressed in the guidance document. Truncation limits should be chosen to be appropriate for F-V calculations.~~
QU-B4	MET	
QU-B5	MET	

TABLE G 5. ASME/ANS PRA Standard Supporting Requirements Requiring Self-Assessment ~~(Note: Revision of this table to represent the full scope of SRs applicable to MSPI will be addressed following review of Table 3-1 of the MSPI PRA Quality Task Group report.)~~		
Supporting Requirement[1]	**Required Capability ~~Category[1]~~Category[2]**	**Comments**
QU-B6	N/A	Accounting for successes is only important for accident sequence determination. As MSPI focuses on overall CDF and does not consider LERF, the accident sequences have no impact on MSPI. Therefore, this SR is not applicable for MSPI.
QU-B7	MET	
QU-B8	MET	
QU-B9	N/A	For MSPI, not setting flags to TRUE is conservative.
QU-B10	MET	
QU-C1	MET	
QU-C2	MET	
QU-C3	MET	
QU-D1	MET	
QU-D2	MET	
QU-D3	MET	
QU-D4	I~~II~~	For MSPI, it is not expected that comparison with other plants would yield significant changes to the PRA.~~Understanding the differences between plant models, particularly as they affect the MSPI, is important for the proposed approach to the identification of outliers recommended by the task group.~~
QU-D5	MET	
QU-D6	N/A~~II/III~~	Identification of risk insights is not required for MSPI.~~Category II/III for those who have used fault tree models to address support system initiators.~~
QU-D7	MET	
QU-E1	N/A	Uncertainty characterization does not play a role in MSPI.

TABLE G 5. ASME/ANS PRA Standard Supporting Requirements Requiring Self-Assessment ~~(Note: Revision of this table to represent the full scope of SRs applicable to MSPI will be addressed following review of Table 3-1 of the MSPI PRA Quality Task Group report.)~~		
Supporting Requirement[1]	**Required Capability ~~Category~~[1]Category**[2]	**Comments**
QU-E2	N/A	Uncertainty characterization does not play a role in MSPI.
QU-E3	N/A	Uncertainty characterization does not play a role in MSPI.
QU-E4	N/A~~MET~~	Uncertainty characterization does not play a role in MSPI.~~MET for the issues that directly affect the MSPI.~~
QU-F1	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.
QU-F2	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.
QU-F3	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.
QU-F4	N/A	Documentation of uncertainty is not germane to MSPI.
QU-F5	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.
QU-F6	N/A	Technical issues will be addressed in the appropriate non-documentation SR. Documentation issues will not impact MSPI results.

1. LERF and internal flood are outside the scope of MSPI; therefore, all SRs related to LERF and internal flood are N/A and are not included in the table.

~~1.~~2. The Required Capability Category for Supporting Requirements where the action statement spans all three categories is designated as "MET" consistent with the guidance of NEI 05-04, Revision 2, Table 1.