

Attachment 3

**APPENDIX B
NRC REGULATORY POSITION
ON NEI 00-02**

APPENDIX B: NRC REGULATORY POSITION (***PRELIMINARY***) ON NEI 00-02

The staff has reviewed has reviewed NEI 00-02 against the ASME PRA standard and compared its findings to NEI's "delta document."

The staff preliminary position is noted in the attached table. The staff will also revisit its review based on NEI's proposed "self assessment," how industry proposes to resolve the differences and discrepancies between NEI 00-02 and the ASME PRA standard.

NOTE:

This is still a work in progress and only reflects staff preliminary views. The staff regulatory position may change, description of the issues not necessarily optimally written or may change, and proposed resolution may change.

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
Initiating Event Analysis				
IE-A1	YES	IE-7, IE-8, IE-9, IE-10		Agree with NEI assessment
IE-A2	PARTIALLY	IE-5, IE-7, IE-9, IE-10	Exception is internal flooding, not addressed adequately in NEI 00-02	NEI 00-02 also does not explicitly mention human-induced initiators; IE-7 is the applicable NEI 00-02 element
IE-A3	YES	IE-8, IE-9		Agree with NEI assessment; IE-8 is the applicable NEI 00-02 element
IE-A4	PARTIALLY	IE-5, IE-7, IE-9, IE-10	Exception is initiating events resulting from multiple failure, if equipment failures result from a common cause not addressed in NEI 00-02	Agree with NEI assessment; IE-10 is the applicable NEI 00-02 element; it does not address the additional requirement identified in the clarification of IE-A4 in Appendix A
IE-A5	PARTIALLY	IE-8	Exception is identification of low power and shutdown events in NEI 00-02	It is not apparent that any of the requirements in IE-A5 are explicitly addressed in NEI 00-02
IE-A6	PARTIALLY	IE-16	Exception is specifying plant operations, etc review and participation in NEI 00-02	It is not apparent that any of the requirements in IE-A6 are explicitly addressed in NEI 00-02
IE-A7	N/A	N/A	No Cat II requirement in ASME Std	The NEI comment is incorrect; there is a Cat II requirement in the ASME Std. IE-10 contains requirements for identifying precursors but there is no explicit requirement in NEI 00-02 to utilize the information in IE quantification (however, IE-16 requires use of plant-specific information).
IE-A8	NO			The subject matter in IE-A8 is covered in NEI 00-02 in IE-10
IE-A9	YES	IE-5, IE-10		Agree with NEI assessment; IE-5 is the applicable NEI 00-02 element
IE-A10	YES	IE-6		Agree with NEI assessment
IE-B1	YES	AS-4, IE-4		Agree with NEI assessment
IE-B2	YES	IE-4		Agree with NEI assessment; IE-4 & IE-7 are the applicable NEI 00-02 elements
IE-B3	YES	IE-4, IE-12		Agree with NEI assessment

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
IE-B4	YES	IE-4		Agree with NEI assessment
IE-C1	YES	IE-13, IE-15, IE-16, IE-17		Agree with NEI assessment; IE-16 is the applicable NEI 00-02 element; appropriate justification for crediting recovery actions are provided in the clarification of IE-C1 provided in Appendix A
IE-C2	YES	IE-13		The subject matter in IE-C2 is covered in NEI 00-02 in IE-16
IE-C3	NO			Agree with NEI assessment
IE-C4	NO	IE-9		The criteria in IE-9 require the bases for exclusion of initiating events be discussed. However, no criteria are given as to what can appropriately be excluded. Acceptable criteria for dismissing IEs are listed in IE-C4 in the ASME PRA Standard.
IE-C5	N/A	N/A	No Cat II requirement in ASME Std	Agree with NEI assessment; the ASME PRA Standard only requires time trend analysis for a Cat III PRA
IE-C6	YES	IE-15, IE-17		Agree with NEI assessment with stipulation that any fault tree analysis used to quantify IEs should meet the appropriate systems analysis requirements
IE-C7	NO			Agree with NEI assessment
IE-C8	NO			Agree with NEI assessment
IE-C9	YES	IE-15, IE-16		Agree with NEI that the requirements in IE-15 should be interpreted as applicable to the fault tree assessment of IEs; recovery events included in the IE fault trees should meet the appropriate recovery analysis requirements
IE-C10	NO			The subject matter in IE-C10 may be covered in NEI 00-02 in IE-13

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
IE-C11	YES	IE-12, IE-13		The subject matter in IE-C1 is covered in NEI 00-02 in IE-15; the expert elicitation requirements in the ASME PRA Standard should be used when expert judgement is applied to quantifying extremely rare events
IE-C12	YES	IE-14		Agree with NEI assessment; consistent with the clarification in Appendix A on IE-C12, the features listed for a Grade 4 PRA must also be considered for a Grade 3 PRA
IE-D1	PARTIALLY	IE-18, IE-19	Not all documentation items addressed in NEI 00-02	Agree with NEI assessment
IE-D2	PARTIALLY	IE-9, IE-20	Not all documentation items addressed in NEI 00-02	Agree with NEI assessment
IE-D3	PARTIALLY	IE-9, IE-18, IE-19	Not all documentation items addressed in NEI 00-02	Agree with NEI assessment
IE-D4	PARTIALLY	AS-4, DE-5, SY-21	Not all interfaces addressed in NEI 00-02	Agree with NEI assessment
Accident Sequence Analysis				
AS-A1	YES	AS-4, AS-8		Agree with NEI assessment
AS-A2	YES	AS-6, AS-7, AS-8, AS-9, AS-17		Agree with NEI assessment; AS-6 is the applicable NEI 00-02 element
AS-A3	YES	AS-7, SY-17		Agree with NEI assessment; AS-17 is the applicable NEI 00-02 element
AS-A4	YES	AS-19, SY-5		Agree with NEI assessment; AS-19 is the applicable NEI 00-02 element
AS-A5	YES	AS-5, AS-18, AS-19, SY-5		Agree with NEI assessment with stipulation that the "training input" referred to in AS-19 is interpreted as simulator exercises
AS-A6	YES	AS-8, AS-13		The subject matter in AS-A6 is not explicitly addressed but appears to be covered in NEI 00-02 in AS-4
AS-A7	YES	AS-4, AS-5, AS-6, AS-7, AS-8, AS-9		Agree with NEI assessment
AS-A8	PARTIALLY	AS-21, AS-22, AS-23	No explicit requirement for steady state condition for end state in NEI 00-02	The subject matter in AS-A8 is covered in NEI 00-02 in AS-20
AS-A9	YES	AS-18, TH-4		Agree with NEI assessment; AS-18 is the applicable NEI 00-02 element

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
AS-A10	YES	AS-4, AS-5, AS-6, AS-7, AS-8, AS-9, AS-19, SY-5, SY-8, HR-23		Agree with NEI assessment; AS-4 and AS-7 are the applicable NEI 00-02 elements.
AS-A11	YES	AS-8, AS-10, AS-15, DE-6		Agree with NEI assessment; AS-8, AS-15, and QU-20 are the applicable NEI 00-02 elements. AS-8 and AS-15 are inconsistent. AS-8 states that transfers may be treated quantitatively or qualitatively while AS-15 states that transfers between event trees should be explicitly treated in the quantification. The Staff believes the guidance in AS-15 must be followed.
AS-B1	YES	IE-4, IE-5, IE-10, AS-4, AS-5, AS-6, AS-7, AS-8, AS-9, AS-10, AS-11, DE-5		Agree with NEI assessment; AS-4 is the applicable NEI 00-02 element
AS-B2	YES	AS-10, AS-11, DE-4, DE-5, DE-6		Agree with NEI assessment; AS-10 and AS-11 are the applicable NEI 00-02 elements
AS-B3	YES	DE-10, SY-11, TH-8		Agree with NEI assessment; AS-10 and SY-11 are the applicable NEI 00-02 elements
AS-B4	YES	AS-8, AS-9, AS-10, AS-11		It is not apparent that any of the requirements in AS-B4 are explicitly addressed in NEI 00-02
AS-B5	YES	DE-4, DE-5, DE-6, AS-10, AS-11		Agree with NEI assessment; AS-10, AS-11, DE-6, QU-25 are the applicable NEI 00-02 elements; however, explicit discussion of flag settings is not provided
AS-B6	YES	AS-13		Agree with NEI assessment; time-phased dependencies must also be examined for a Grade 2 PRA
AS-C1	YES	AS-24, AS-25		Agree with NEI assessment
AS-C2	YES	AS-24, AS-25		Agree with NEI assessment; AS-26 is the applicable NEI 00-02 element

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
AS-C3	PARTIALLY	AS-11, AS-17, AS-20, AS-24, TH-5, DE-6	Not all documentation items addressed in NEI 00-02	Agree with NEI assessment
AS-C4	PARTIALLY	AS-11, AS-24	Not all documentation items addressed in NEI 00-02	Agree with NEI assessment
Success Criteria				
SC-A1	YES	AS-20, AS-22, AS FOOTNOTE 4		Agree with NEI assessment
SC-A2	YES	TH-4, TH-5, TH-7, AS-22, AS FOOTNOTE 4		Agree with NEI assessment
SC-A3	YES	AS-6, AS-7, AS-17, AS-20		Agree with NEI assessment; AS-6 is the applicable NEI 00-02 element
SC-A4	YES	AS-7, AS-17, AS-18, SY-17, TH-9		There is no explicit requirement in NEI 00-02 that mitigating systems shared between units be identified.
SC-A5	PARTIALLY	AS-21, AS-23	NEI 00-02 does not address safe, stable state at end of mission time	AS-23 does not provide an adequate discussion on mission time selection; AS-20 provides requirements on end state definitions
SC-A6	YES	AS-5, AS-18, AS-19, TH-4, TH-5, TH-6, TH-8, ST-4, ST-5, ST-7, ST-9, SY-5		Agree with NEI assessment; TH-5 is the applicable NEI 00-02 element
SC-B1	YES	AS-18, SY-17, TH-4, TH-6, TH-7		Agree with NEI assessment
SC-B2	NO	TH-4, TH-8	NEI 00-02 does not address use of expert judgment	Agree with NEI assessment
SC-B3	YES	AS-18, TH-4, TH-5, TH-6, TH-7		Agree with NEI assessment
SC-B4	YES	AS-18, TH-4, TH-6, TH-7		Agree with NEI assessment
SC-B5	YES	TH-9		The subject matter in SC-B5 is covered in NEI 00-02 in TH-7
SC-B6	YES	QU-27, QU-28		Agree with NEI assessment

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
SC-C1	YES	ST-13, SY-10, SY-17, SY-27, TH-8, TH-9, TH-10, AS-17, AS-18		Agree with NEI assessment; TH-9 and TH-10 are the applicable NEI 00-02 elements
SC-C2	NO	TH-10	NEI 00-02 does not address use of expert judgment	Agree with NEI assessment
SC-C3	YES	AS-12, AS-13, TH-9, TH-10		Agree with NEI assessment; TH-10 is the applicable NEI 00-02 element
SC-C4	YES	AS-24, SY-27, TH-9, TH-10, HR-30		It is not apparent that all of the documentation requirements in SC-C4 are explicitly identified in NEI 00-02
Systems Analysis				
SY-A1	YES	SY-4, SY-19		Agree with NEI assessment; SY-19 is the applicable NEI 00-02 element
SY-A2	YES	AS-19, SY-5, SY-13		Agree with NEI assessment; SY-5 and SY-16 are the applicable NEI 00-02 elements
SY-A3	YES	SY-5, SY-6, SY-8, SY-12, SY-14		Although there are no explicit requirements in NEI 00-02 that match SY-A3, performance of the systems analysis would require a review of plant-specific information sources
SY-A4	PARTIALLY	DE-11, SY-10, SY FOOTNOTE 5	NEI 00-02 does not address interviews with system engineers and plant operators to confirm that the model reflects the as-built, as-operated plant.	Agree with NEI assessment
SY-A5	YES	QU-12, QU-13, SY-8, SY-11		NEI 00-02 does not explicitly address inclusion of both normal and abnormal system alignments
SY-A6	YES	SY-7, SY-8, SY-12, SY-13, SY-14		Agree with NEI assessment
SY-A7	YES	SY-6, SY-7, SY-8, SY-9, SY-19		Agree with NEI assessment; however, the requirements for simplified system modeling in SY-A7 are not explicitly addressed in NEI 00-02

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
SY-A8	PARTIALLY	SY-9	NEI 00-02 does not address component boundaries except for EDGs.	SY-9 has no connection to SY-A8; SY-6 indicates component boundaries in system models must match boundaries used in data analysis; there is no explicit requirement that addresses modeling shared portions of a component boundary
SY-A9	YES	QU-12, QU-13, SY-6, SY-19		Agree with NEI assessment; SY-6 is the applicable NEI 00-02 element
SY-A10	PARTIALLY	SY-9	NEI 00-02 does not address all aspects of modularization.	Agree with NEI assessment
SY-A11	YES	AS-10, AS-13, AS-16, AS-17, AS-18, SY-12, SY-13, SY-17, SY-23		It is not apparent that incorporation of variable success criteria into the systems analysis is explicitly addressed in NEI 00-02
SY-A12	PARTIALLY	SY-6, SY-7, SY-8, SY-9, SY-12, SY-13, SY-14	NEI 00-02 does not address the exclusion of beneficial failures	Agree with NEI assessment. The criteria in SY-7 states that passive components should be included in a Grade 4 PRA if they influence the CDF or LERF. No definition of the word influence is provided. Consistent with subelement SY-A12 of the ASME PRA Standard, critical passive components whose failure affect system operability must be included in system models regardless of the grade of PRA. The criteria in subelement SY-A14 of the ASME PRA Standard are acceptable for excluding passive and active components and specific failure modes from a fault tree.
SY-A13	YES	DA-4, SY-15, SY-16		Agree with NEI assessment
SY-A14	NO			Agree with NEI assessment
SY-A15	YES	SY-8, HR-4, HR-5, HR-7		Agree with NEI assessment; SY-8 and HR-4 are the applicable NEI 00-02 elements
SY-A16	YES	SY-8, HR-8, HR-9, HR-10		Agree with NEI assessment; SY-8 and HR-8 are the applicable NEI 00-02 elements
SY-A17	YES	AS-13, SY-10, SY-11, SY-13		NEI 00-02 does not explicitly address including conditions that cause a system to isolate or trip.

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
SY-A18	YES	DA-7, SY-8, SY-22		Agree with NEI assessment; DA-7 is the applicable NEI 00-02 element
SY-A19	YES	AS-18, DE-10, SY-11, SY-13, SY-17, TH-8		NEI 00-02 does not address what to do when there are engineering analyses available. SY-A19, as qualified in Appendix A, requires that the system be assumed to fail with a probability of 1.0.
SY-A20	PARTIALLY	AS-19, SY-5, SY-11, SY-13, SY-22, TH-8	NEI 00-02 does not explicitly address requirement to check for crediting components beyond their design basis.	The subject matter in SY-A20 is covered in NEI 00-02 in SY-11
SY-A21	YES	SY-18		There is no requirement in NEI 00-02 for a consistent system model nomenclature for a Grade 3 PRA
SY-A22	YES	DE-4, DE-5, DE-6, AS-10, AS-11, SY-12, SY-18		Agree with NEI assessment; SY-12 is the applicable NEI 00-02 element (wording in this element is vague and may not be interpreted as addressing support states)
SY-A23	YES	SY-24		NEI 00-02 does not explicitly stress that hardware faults should not be included unless supported by data or a recovery analysis (subject matter also covered in DA-15)
SY-B1	YES	DA-8, DA-14, DE-8, DE-9, SY-8		Agree with NEI assessment
SY-B2	N/A	N/A	No Cat II requirement	Agree with NEI assessment
SY-B3	YES	DE-8, DE-9, DA-10, DA-12		Agree with NEI assessment
SY-B4	YES	DA-10, DA-11, DA-12, DA-13, DA-14, DE-8, DE-9, QU-9, SY-8		The subject matter in SY-B4 is covered in NEI 00-02 in DA-8
SY-B5	YES	DE-4, DE-5, DE-6, SY-12, SY-19		Agree with NEI assessment (SY-19 does not address the subject matter)

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
SY-B6	YES	SY-12, SY-13		It is not apparent that NEI 00-02 explicitly requires that the support system success criteria reflect the variability in the conditions that may be present during postulated.
SY-B7	YES	AS-18, SY-13, SY-17		Agree with NEI assessment; subject matter also addressed in TH-7 and TH-8
SY-B8	YES	DE-11, SY-10		Agree with NEI assessment; SY-10 is the applicable NEI 00-02 element
SY-B9	YES	AS-20, L2-8, L2-9, L2-11, L2-13		The subject matter in SY-B9 is covered in NEI 00-02 in SY-10
SY-B10	YES	SY-12, SY-13		Agree with NEI assessment; the support systems listed in SY-B10 must be considered
SY-B11	PARTIALLY	SY-8, SY-12, SY-13,	NEI 00-02 does not address permissives and control logic.	It is not apparent that any of the requirements in SY-B11 are explicitly addressed in NEI 00-02
SY-B12	YES	SY-13		Agree with NEI assessment
SY-B13	NO			Agree with NEI assessment
SY-B14	YES	SY-5, SY-7		It is not apparent that the requirement in SY-B14 is explicitly addressed in NEI 00-02
SY-B15	YES	SY-11		Agree with NEI assessment
SY-B16	YES	SY-8		Agree with NEI assessment
SY-C1	PARTIALLY	SY-23, SY-25, SY-26, SY-27	NEI 00-02 does not address all documentation items.	Agree with NEI assessment
SY-C2	YES	SY-5, SY-6, SY-9, SY-27		Agree with NEI assessment
SY-C3	YES	SY-18, SY-27		There is no explicit requirement in NEI 00-02 for documenting the systems analysis nomenclature; there is no requirement for a consistent nomenclature for a Grade 3 PRA
Human Reliability Analysis				
HR-A1	YES	HR-4, HR-5		Agree with NEI assessment if HR-5 is interpreted to include failure to restore equipment following test or maintenance
HR-A2	YES	HR-4, HR-5		Agree with NEI assessment
HR-A3	YES	DE-7, HR-5		Agree with NEI assessment

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
HR-B1	YES	HR-5		The subject matter in HR-B1 is covered in NEI 00-02 in HR-6
HR-B2	YES	HR-5, HR-7, DA-5, DA-6		The screening rules in HR-6 do not preclude screening of activities that can affect multiple trains of a system.
HR-C1	YES	HR-27, SY-8, SY-9		Agree with NEI assessment
HR-C2	YES	HR-27, SY-8, SY-9		NEI 00-02 does not identify the types of pre-initiator HFEs that should be included in the system models. HR-7 requires that all pre-initiators that adversely impact CDF or LERF be included in the model. Criteria for what would constitute an adverse impact on the baseline CDF or LERF are not provided. The criteria in subelement SY-A14 in the ASME PRA Standard should be followed in this regard.
HR-C3	YES	HR-27, SY-8, SY-9		Addressed in HR-5 but not explicitly for standby systems.
HR-D1	YES	HR-6		NEI 00-02 does provide guidance on the quantification of pre-initiator HEPs.
HR-D2	YES	HR-6		Agree with NEI assessment
HR-D3	NO			Agree with NEI assessment; there is no discussion of performance shaping factors (PSFs) for pre-initiator HFEs in NEI 00-02
HR-D4	NO			Agree with NEI assessment
HR-D5	YES	DE-7, HR-26, HR-27		Agree with NEI assessment; HR-26 is the applicable NEI 00-02 element
HR-D6	NO			Agree with NEI assessment
HR-D7	NO			Agree with NEI assessment
HR-E1	YES	AS-19, HR-9, HR-10, HR-16, SY-5		Agree with NEI assessment; the example process in HR-9 for a Grade 3 PRA (i.e., identify those operator actions identified by others) is not good practice and contrary to HR-10 which is the recommended process in HR-E1
HR-E2	YES	HR-9, HR-10, HR-21, HR-22, HR-23		Agree with NEI assessment (HR-9 and HR-10 do not appear to match subject matter but HR-8 does)

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
HR-E3	PARTIALLY	HR-10, HR-14, HR-20	NEI 00-02 does not address talk-throughs with plant operation or training personnel	Agree with NEI assessment
HR-E4	PARTIALLY	HR-14, HR-16	NEI 00-02 does not address simulator observations or talk-throughs with operators.	Agree with NEI assessment
HR-F1	YES	AS-19, HR-16, SY-5		Agree with NEI assessment
HR-F2	PARTIALLY	AS-19, HR-11, HR-16, HR-17, HR-19, HR-20, SY-5	NEI 00-02 does not address indication for detection and evaluation	Agree with NEI assessment
HR-G1	YES	HR-15, HR-17, HR-18		Agree with NEI assessment
HR-G2	NO	HR-17		Agree with NEI assessment; HR-17 should also include detection, as well as diagnosis and manipulation (execution) as a contributor to the total HEP
HR-G3	PARTIALLY	HR-17, HR-18	NEI 00-02 does not address all the performance shaping factors	Agree with NEI assessment
HR-G4	PARTIALLY	AS-13, HR-18, HR-19, HR-20	NEI 00-02 does not specify point in time at which operators are expected to receive relevant indications	Agree with NEI assessment; HR-19 is the applicable NEI 00-02 element and agrees with the clarification of HR-G4 provided in Appendix A
HR-G5	PARTIALLY	HR-20	NEI 00-02 does not address observation or operations staff input for time required	NEI 00-02 does not explicitly address walkthroughs or talk-throughs with operations staff or simulator observations
HR-G6	YES	HR-12		HR-12 does not identify any items that should be addressed in the consistency review

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
HR-G7	YES	DE-7, HR-26		NEI 00-02 does not provide explicit criteria that address the degree of dependence between HFES that appear in the same accident sequence cutset. Factors that are typically assumed to lead to dependence include: use of common indications and/or cues to alert control room staff to need for action; a common procedural direction that leads to the actions; the same staff member is responsible for detection, diagnosis, or execution; and closeness in time of required responses.
HR-G8	NO			Agree with NEI assessment; the lower bound combined HEP of 1E-06 suggested in HR-27 is probably too low and would require considerable justification
HR-G9	NO			Agree with NEI assessment
HR-H1	YES	HR-21, HR-22, HR-23		Agree with NEI assessment; HR-21 is the applicable NEI 00-02 element
HR-H2	YES	HR-22, HR-23		The additional requirements specified in the staff's qualification of HR-H2, provided in Appendix A, are not covered in NEI 00-02
HR-H3	YES	HR-26		Agree with NEI assessment
HR-I1	PARTIALLY	HR-28, HR-30	NEI 00-02 does not address all the detailed documentation requirements	Agree with NEI assessment
Data Analysis				
DA-A1	PARTIALLY	DA-15, SY-8, SY-14	NEI 00-02 does not address component boundaries with the exception of EDGs	The subject matter in DA-A1 is covered in NEI 00-02 in DA-4 and DA-5.
DA-A2	NO			Agree with NEI assessment
DA-A3	YES	DA-4, DA-5, DA-6, DA-7, SY-8		The subject matter in DA-A3 is not explicitly addressed in NEI 00-02 (not a critical requirement since identification of the needed parameters would be a natural part of the data analysis)
DA-B1	YES	DA-5		Agree with NEI assessment

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
DA-B2	YES	DA-5, DA-6		Agree with NEI assessment; however, the grouping criteria listed in DA-5 should be supplemented with a caution to look for unique components and/or operating conditions and to avoid grouping them
DA-C1	YES	DA-4, DA-7, DA-9, DA-19, DA-20		Agree with NEI assessment
DA-C2	YES	DA-4, DA-5, DA-6, DA-7, DA-14, DA-15, DA-19, DA-20, MU-5		Agree with NEI assessment
DA-C3	PARTIALLY	DA-4, DA-5, DA-6, DA-7, MU-5	NEI 00-02 not as explicit	Agree with NEI assessment. DA-5 to DA-7 deal with interpretation of plant records in very general terms. The criteria do not get into specific details such as what is acceptable as far as counting the number of successes and what constitutes a failure. These can be very important factors that if done incorrectly, can result in misleading component failure rates.
DA-C4	NO			Agree with NEI assessment; see comment on DA-C3
DA-C5	NO			Agree with NEI assessment; see comment on DA-C3
DA-C6	YES	DA-6, DA-7		NEI 00-02 only addresses data needs when the standby failure model is used for demands. There are no criteria for the demand failure model
DA-C7	NO			The subject matter in DA-C7 is covered in NEI 00-02 in DA-6 and DA-7.
DA-C8	NO			Agree with NEI assessment
DA-C9	YES	DA-7		Disagree with NEI assessment; DA- 6 and DA-7 address unavailability where as DA-C9 addresses running time estimates
DA-C10	NO			Agree with NEI assessment
DA-C11	NO			Agree with NEI assessment
DA-C12	NO			Agree with NEI assessment
DA-C13	NO			Agree with NEI assessment

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
DA-C14	YES	DA-15, AS-16, SY-24		Agree with NEI assessment; DA-15 agrees with clarification of DA-C14 provided in Appendix A
DA-C15	YES	IE-15, AS-16, DA-15, SY-24, QU-18		The issue of recovery is identified in IE-13, IE-15, IE-16, AS-16, SY-24 and recovery quantification is discussed in DA-15. Although generic guidance is provided, there are no specific references for generic data sources, and there is no specific guidance for a reviewer on the estimation process. Recovery is generally applied only in specific cases, for example, recovery of offsite power, where data exists to support the estimation of non-recovery probabilities. It is relatively rare to see credit taken for repair of failed equipment in PRAs, except in modeling of support system initiating events. Any credit taken for repair should be well justified, based on ease of diagnosis, the feasibility of repair, ease of repair, and availability of resources.

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
DA-D1	NO			<p>Agree with NEI assessment. Bayesian updating is not called out in the subtier criteria with the exception of an oblique reference in DA-5 and DA-8 to Bayesian methods. IE-16 and DA-4 address the use of plant specific experience to some extent. IE-16 specifically mentions Bayesian updating for Grades 3 and 4 but DA-4 does not. In fact, DA-4 seems rather to suggest that either plant-specific experience or generic data is used. Therefore, there appears to be inconsistent treatment in the data requirements between the initiating event task and the data task. The clarification, provided in Appendix A, of the requirements in subelement DA-D1 of the ASME PRA Standard specifies the Staff position on when Bayesian analysis should be used to calculate parameter estimates for important components.</p> <p>Contrary to DA-4, plant-specific data should be collected for all the components and failure modes included in the system models. Selection of only components in a Grade 3 PRA that have relatively high Fussell-Vesely importance measures is misguided. A component with a plant-specific failure rate significantly higher than a generic failure rate could have a significantly higher Fussell-Vesely importance. One cannot know if the component failure rate was higher for a component until the data are collected, reviewed, and used to generate the plant-specific failure rates. If importance measures are to be used to select components for plant-specific data analysis,</p>

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
DA-D2	NO			Agree with NEI assessment
DA-D3	YES	QU-30		A requirement for establishing the parameter distributions is not in the data analysis section but could be inferred from QU-30. QU-30 does not provide guidance on which events to include in the uncertainty analysis. The guidance in the qualification of DA-D3 provided in Appendix A must be followed.
DA-D4	NO	DA-1, DA-4, DA-5		None of the requirements in DA-D4 are addressed in any NEI 00-02 element
DA-D5	YES	DA-8, DA-9, DA-10, DA-11, DA-12	NEI 00-02 elements DA-13 & DA-14 only apply to Grade 4	Disagree with NEI assessment; NEI 00-02 does not identify acceptable common cause failure models for use in a Grade 3 PRA
DA-D6	YES	DA-8, DA-9, DA-10, DA-11, DA-12	NEI 00-02 elements DA-13 & DA-14 only apply to Grade 4	Disagree with NEI assessment; NEI 00-02 does require plant-specific screening of generic common cause failure data for a Grade 3 PRA; in DA-14, the full intent of NUREG/CR-4780 must also be included for a Grade 3 PRA if realistic values are to be obtained
DA-D7	PARTIALLY	SY-5, MU-5, MU-8	NEI 00-02 does not specifically address data	None of the requirements in DA-D7 is explicitly addressed in NEI 00-02
DA-E1	PARTIALLY	DA-1, DA-19, DA-20	NEI 00-02 does not address all detailed documentation requirements	Agree with NEI assessment; most of the documentation requirements in DA-E1 are not explicitly specified in NEI 00-02
Internal Flooding				
IF-A1	NO	DE-10, DE-11, SY-10, ST-10		Agree with NEI assessment
IF-A2	NO			The subject matter in IF-A2 is covered in NEI 00-02 in element DE-10
IF-A3	NO			Agree with NEI assessment
IF-A4	NO			Agree with NEI assessment; DE-11 addresses plant walkdown but does not explicitly address flooding concerns

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
IF-B1	NO			Agree with NEI assessment; identification of flood sources is inadequately addressed in DE-10
IF-B2	NO			Agree with NEI assessment; identification of flood sources is inadequately addressed in DE-10
IF-B3	NO			Agree with NEI assessment
IF-B4	NO			Agree with NEI assessment
IF-C1	NO			Agree with NEI assessment; identification of flood propagation is inadequately addressed in ST-10 and DE-10
IF-C2	NO			Agree with NEI assessment
IF-C3	NO			Agree with NEI assessment
IF-C4	NO			Agree with NEI assessment; identification of flood scenarios is inadequately addressed in DE-10
IF-C5	NO			Agree with NEI assessment
IF-C6	NO			Agree with NEI assessment
IF-D1	NO			Agree with NEI assessment
IF-D2	NO			Agree with NEI assessment
IF-D3	NO			Agree with NEI assessment
IF-D4	NO			Agree with NEI assessment
IF-D5	NO			Agree with NEI assessment
IF-E1	NO			Agree with NEI assessment
IF-E2	NO			Agree with NEI assessment
IF-E3	NO			Agree with NEI assessment
IF-E4	NO			Agree with NEI assessment
IF-E5	NO			Agree with NEI assessment
IF-E6	NO			Agree with NEI assessment
IF-E7	NO			Agree with NEI assessment
IF-F1	NO			Agree with NEI assessment
IF-F2	NO			Agree with NEI assessment
Quantification				
QU-A1	YES	AS-4, AS-5, AS-6, AS-7, AS-8, AS-9, AS-10, AS-19		Agree with NEI assessment; the requirement in QU-A1 is not explicitly stated in any element but is achieved by compliance with other NEI 00-02 elements
QU-A2	YES	QU-8		Agree with NEI assessment

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
QU-A3	YES	QU-4, QU-8, QU-9, QU-10, QU-11, QU- 12, QU-13		Agree with NEI assessment; the requirement in QU-A3 is not explicitly stated in any element but is achieved by compliance with other NEI 00-02 elements
QU-A4	YES	QU-18, QU-19		Agree with NEI assessment
QU-B1	YES	QU-4, QU-5, QU-6		Agree with NEI assessment except QU-5 and portions of QU-4 are not pertinent to the requirements in QU-B1
QU-B2	YES	QU-21, QU-22, QU- 23, QU-24		Agree with NEI assessment; QU-21 and QU-23 are the relevant elements that addresses the requirements in QU-B2 while the remaining NEI 00-02 elements provide additional guidance on truncation. It is not clear what events and failure modes are being addressed in QU-22. If the element is referring to a cutset truncation limit, then the values presented are reasonable.
QU-B3	YES	QU-19, QU-22, QU- 24		NEI 00-02 only addresses convergence towards a stable result in QU-24 (the example limits provided in QU-22 are not pertinent to addressing QU-B3). The staff interprets the criteria as referring to the selection of the final truncation limit such that the resulting CDF, LERF, or system unavailability does not increase by reducing the truncation limit. NEI 00-02 does not specify that truncation effects be evaluated both before and after recovery actions are applied. QU-19 is not applicable for consideration of truncation.

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
QU-B4	NO			The subject matter in QU-B4 is covered in NEI 00-02 in element QU-4. Although the stated purpose of the criterion for QU-4 is to verify that "the base computer code and its inputs have been tested and demonstrated to produce reasonable results", the sub-tier criteria do not address this criterion, but instead provides some do's and don'ts for quantification.
QU-B5	YES	QU-14		Agree with NEI assessment
QU-B6	YES	AS-8, AS-9, QU-4, QU-20, QU-25		QU-4, QU-20, and QU-25 deal with requirements for including system success in the quantification (AS-8 and AS-9 deal with modeling successes). QU-25 implies that use of software that manipulates complimentary logic would not be acceptable. The criteria should state that at a minimum, a delete term approximation should be used to account for system successes. Such a criteria should also be applied to a Grade 2 PRA since this is a function of software and not modeling.
QU-B7	YES	QU-26		Agree with NEI assessment
QU-B8	NO			Agree with NEI assessment; there are no criteria pertaining to how to correctly set flag events.
QU-B9	YES	SY-9		SY-9 addresses the traceability of basic events in modules but does not address the correct formulation of modules that are truly independent. The warnings in SY-A10 must be considered in the modularization process.
QU-C1	YES	QU-10, QU-17, HR-26		Agree with NEI assessment; the requirement in QU-C1, as clarified in Appendix A, is achieved by compliance with these NEI 00-02 elements and HR-27
QU-C2	PARTIALLY	QU-10, QU-17	NEI 00-02 does not address cognitive aspects	Agree with NEI assessment

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
QU-C3	YES	QU-20		QU-20 does not explicitly require that the critical characteristic, no just the frequency, be transferred
QU-D1	YES	QU-8, QU-9, QU-10, QU-11, QU-12, QU-13, QU-14, QU-15, QU-16, QU-17		Agree with NEI assessment; the requirements in QU-D1 are addressed primarily in QU-8. The requirements in QU-9, QU-10, QU-14, QU-16, and QU-17 appear to be focused on modeling and not interpretation of results. As such, they are redundant to elements in the data, dependent failure, and HRA sections.
QU-D2	PARTIALLY	QU-27, QU-28, SY-22	NEI 00-02 does not explicitly address modeling assumptions that drive results	The identified NEI 00-02 elements also do not address the consistency of the human actions with the procedures and the range of conditions modeled in the PRA
QU-D3	YES	QU-11		Agree with NEI assessment; consistency with other PRA results is also addressed in QU-8 and QU-31
QU-D4	YES	QU-15		Agree with NEI assessment
QU-D5	YES	QU-8, QU-31		The subject matter in QU-5 is partially addressed in NEI 00-02 in element QU-31 (QU-8 checks the reasonableness of the results). The contributions from IEs, component failures, common cause failures, and human errors is not addressed.
QU-E1	YES	QU-30		QU-30 does not provide guidance consistent with DA-D3 on which events to include in the uncertainty analysis. The guidance in the qualification of DA-D3 provided in Appendix A must be followed.
QU-E2	YES	QU-27, QU-28		QU-27 and QU-28 focus on the unusual sources of uncertainty but it is not clear what an "unusual" source of uncertainty is. Consideration must be given to all sources of uncertainty that can have a significant impact on the results.

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
QU-E3	YES	QU-30		In QU-30, there are three choices for quantifying uncertainties in a Grade 3 PRA, but they are all approximate and will not give an understanding of the impact of uncertainties on specific PRA results. A propagation of parameter uncertainty is not explicitly called for, although it is one of the options in Grade 2. Parameter uncertainty should be propagated for a Grade 3 and 4 PRA. An estimate of the overall uncertainty interval is required for all grades of PRA.
QU-E4	YES	QU-28, QU-29		NEI 00-02 does not explicitly specify that sensitivity studies of logical combinations of assumptions and parameters be evaluated
QU-F1	PARTIALLY	QU-31, QU-32, QU-34	NEI 00-02 does not address all the documentation requirements	Agree with NEI assessment
QU-F2	YES	QU-31		Agree with NEI assessment
QU-F3	N/A	N/A	No CAT II requirement in ASME Std	The staff, in a qualification to QU-F3 in Appendix A, believes that important assumptions and causes of uncertainty must be addressed for all categories of PRAs. No element in NEI 00-02 requires documentation of assumptions and uncertainties (QU-27 and QU-28 requires their identification).
QU-F4	YES	QU-12, QU-13		Agree with NEI assessment
QU-F5	YES	QU-4		QU-4 does not require any documentation of computer code capabilities (in fact it does not address this issue).
QU-F6	NO			Agree with NEI assessment
LERF Analysis				

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
LE-A1	YES	AS-20, AS-21, AS-22, AS-23, L2-7, L2-8, L2-22		NEI 00-02 does not address the requirements in LE-A1. AS-14 and AS-21 state that LERF should be able to be determined from the Level 1 end states, but no criteria are given for the grouping into PDSs, i.e., there are no criteria provided as to what information has to be transferred from the Level 1 to the Level 2 analysis. L2-7 states the transfer from Level 1 to Level 2 should be done to maximize the transfer of relevant information, but does not identify the type of information that must be transferred. The other listed NEI 00-02 elements are not pertinent to level 1 physical characteristics needed for the LERF analysis.
LE-A2	YES	L2-7, L2-8, AS-21		See comment for LE-A1
LE-A3	YES	L2-7, L2-21		Agree with NEI assessment except L2-21 is not pertinent to the subject matter in LE-A3 and specific methods for transferring Level 1 information to the LERF analysis are not identified.
LE-A4	YES	AS-20, AS-21, L2-7, L2-21		Agree with NEI assessment except AS-20 and L2-21 are not pertinent to the subject matter in LE-A3 and specific methods for transferring Level 1 information to the LERF analysis are not identified.
LE-A5	YES	AS-20		AS-20 appears to be addressing the definition of core damage and not the definition of the PDSs.
LE-B1	YES	L2-8, L2-10, L2-15, L2-16, L2-17, L2-19		It appears that the intent of the requirements of LE-B1 are met by the identified elements
LE-B2	YES	L2-13, L2-14		Agree with NEI assessment

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
LE-B3	YES	ST-4, L2-14, L2-15		NEI 00-02 does specify that plant-specific thermal-hydraulic analyses be performed to evaluate the containment and RPV under severe accident conditions July 11, 2002
LE-C1	YES	L2-24, L2-28		Agree with NEI assessment except L2-28 does not appear pertinent to the requirements in LE-C1
LE-C2	YES	L2-9, L2-12, L2-25		Agree with NEI assessment except NEI 00-02 does not address equipment repair. The guidance provided in the clarification of LE-C2 in Appendix A should be followed for any repair consideration.
LE-C3	YES	L2-8, L2-24, L2-25		L2-25 provides general requirements that may cover those in LE-C3 (see the clarification of LE-C3 provided in Appendix A).
LE-C4	YES	L2-4, L2-5, L2-6		Agree with NEI assessment
LE-C5	YES	AS-20, AS-21, L2-7, L2-11, L2-25		Agree with NEI assessment except that L2-11 appears to be the only relevant element that addresses the requirements in LE-C5
LE-C6	YES	L2-12, L2-24, L2-25		Agree with NEI assessment except that L2-12 appears to be the relevant element that addresses the requirements in LE-C6
LE-C7	YES	AS-20, AS-21, L2-7, L2-24		The cited elements do not appear to address the requirement in LE-C7.
LE-C8	YES	L2-11, L2-12, L2-14		Agree with NEI assessment except that L2-14 is not relevant in addressing the requirements in LE-C8
LE-C9	PARTIALLY	AS-20, L2-16, L2-24, L2-25	NEI 00-02 is not as explicit	The subject matter appears to be addressed in L2-11 and L2-12 except that these elements do not differentiate between containment harsh environments and containment failure effects on systems and operators.
LE-C10	NO			Agree with NEI assessment
LE-D1	YES	L2-14, L2-15, L2-16, L2-17, L2-18, L2-19, L2-20, ST-5, ST-6		Agree with NEI assessment

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
LE-D2	NO			Agree with NEI assessment
LE-D3	YES	IE-14, ST-9		The guidance provided in NEI 00-02 does not explicitly address the requirements in LE-D3
LE-D4	NO			Agree with NEI assessment
LE-D5	NO			Agree with NEI assessment
LE-D6	YES	L2-18, L2-19, L2-24, L2-25		The guidance provided in NEI 00-02 does not explicitly address the requirements in LE-D6
LE-E1	YES	L2-5, L2-11, L2-12		NEI 00-02 does not address data requirements for the LERF analysis. L2-5 is not applicable to the requirement in LE-E1
LE-E2	YES	DA-4, HR-15, L2-12, L2-13, L2-17, L2-18, L2-19, L2-20		Agree with NEI assessment
LE-E3	YES	L2-27, ALL QU ELEMENTS		L2-27 is not pertinent to the requirement in LE-E3. NEI 00-02 does not state that the quantification requirements are applicable for the LERF evaluation.
LE-F1	YES	QU-8, QU-9, QU-10, QU-11, QU-31		The requirement in LE-F1 appears to be addressed in L2-26
LE-F2	NO	QU-27		Agree with NEI assessment; QU-27 does not address uncertainty in the LERF evaluation
LE-G1	PARTIALLY	L2-26, L2-27, L2-28	NEI 00-02 does not address all documentation requirements	Agree with NEI assessment
LE-G2	PARTIALLY	L2-26, L2-27, L2-28	NEI 00-02 does not address all documentation requirements	Agree with NEI assessment
LE-G3	PARTIALLY	L2-26, L2-27, L2-28	NEI 00-02 does not address all documentation requirements	Agree with NEI assessment
LE-G4	PARTIALLY	L2-26, L2-27, L2-28	NEI 00-02 does not address all documentation requirements	Agree with NEI assessment
LE-G5	PARTIALLY	L2-26, L2-27, L2-28	NEI 00-02 does not address all documentation requirements	Agree with NEI assessment
LE-G6	PARTIALLY	L2-26, L2-27, L2-28	NEI 00-02 does not address all documentation requirements	Agree with NEI assessment

NEI ASSESSMENT				NRC COMMENTS ON NEI ASSESSMENT
ASME STD SR	ADDRESSED BY NEI 00-02?	APPLICABLE NEI 00-02 ELEMENTS	NEI COMMENTS	
LE-G7	PARTIALLY	L2-26, L2-27, L2-28	NEI 00-02 does not address all documentation requirements	Agree with NEI assessment
LE-G8	PARTIALLY	L2-26, L2-27, L2-28	NEI 00-02 does not address all documentation requirements	Agree with NEI assessment

Notes:

1. Only Category II of ASME PRA Std compared with Grade 3 of NEI 00-02. Comparisons of other ASME PRA Categories with other NEI 00-02 grades are not of significant interest to most licensees at this time.