Table 6-6. Comparison of SPID Guidance to ASME/ANS PRA Standard Supporting Requirements: Element SPR

Standard Element	Requirements from Addendum A	Requirements from Addendum B	Relevant Intent of Guidance in SPID
HLR-SPR-A	The seismic-PRA systems model SHALL include seismic-caused initiating events and other failures including seismic-induced SSC failures, non-seismic-induced unavailabilities, and human errors that give rise to significant accident sequences and/or significant accident progression sequences.		
SPR-A1	ENSURE that earthquake-caused initiating events that give rise to significant accident sequences and/or significant accident progression sequences are included in the seismic-PRA system model using a systematic process. *CC I–II-III*	No change from Addendum A to Addendum B.	The SPID does not provide explicit guidance regarding the general nature of the SPRA model, but it would be expected that the SPRA would satisfy this requirement.
SPR-A2	In the initiating-event selection process, DEVELOP a hierarchy to ensure that every earthquake greater than a certain defined size produces a plant shutdown within the systems model. *CC I-II-III*	No change from Addendum A to Addendum B.	The SPID does not provide explicit guidance relative to this aspect of the SPRA model, but it would be expected that the SPRA would satisfy this requirement.
SPR-A3	USE the event trees and fault trees from the internal-event full-power PRA model as the basis for the seismic event trees. *CC I-II-III*	USE the accident sequences and the systems logic model from the internal-event full-power PRA model as the basis for the seismic PRA model. *CC I-II-III*	The change from Addendum A to Addendum B makes the reference to the type of models used more general. The SPID does not provide explicit guidance, but it is expected that any SPRA would build on the existing models from the internal-events PRA.

Table 6-6. Comparison of SPID Guidance to ASME/ANS PRA Standard Supporting Requirements: Element SPR

Standard Element	Requirements from Addendum A	Requirements from Addendum B	Relevant Intent of Guidance in SPID
SPR-A4 (Add. A) **SPR-A5 (Add. B)**	ENSURE that the PRA systems models reflect earthquake-caused failures and nonseismically induced unavailabilities and human errors that give rise to significant accident sequences or significant accident progression sequences. *CC I-II-III*	***Becomes SPR-A5 in Addendum B.*** ENSURE that the PRA systems models reflect earthquake-caused failures and nonseismically induced unavailabilities and human errors that give rise to significant accident sequences or significant accident progression sequences. *CC I-II-III*	There is no change in the supporting requirement from Addendum A to Addendum B, except that the insertion of a new SPR-A4 in Addendum B changes the number for this requirement. The SPID does not provide explicit guidance, but it is expected that any SPRA would build appropriately incorporate both seismic and non-seismic failures in the PRA model.
SPR-A4 (Add. B)	This supporting requirement is new to Addendum B and not included in Addendum A.	***New SPR-A4 in Addendum B.*** Under special circumstances based on the judgment of the analyst, DEVELOP an *ad hoc* systems model tailored especially to the seismic-PRA configurations or issues being modeled, instead of starting with the internal-events model and adapting it, as in SPR-A3. If this approach is used, ENSURE that the resulting model is consistent with the internal-events systems model regarding plant response and the cause-effect relationships of the failures. *CC I-II-III*	This supporting requirement was added for Addendum B. The SPID does not provide explicit guidance, but it is expected that any SPRA would employ an appropriate approach, consistent with this requirement, in applying any *ad hoc* models.
HLR-SPR-B	The seismic-PRA systems model shall be adapted to incorporate seismic-analysis aspects that are different from corresponding aspects found in the at-power full power, internal-events PRA systems model.		

Table 6-6. Comparison of SPID Guidance to ASME/ANS PRA Standard Supporting Requirements: Element SPR

Standard Element	Requirements from Addendum A	Requirements from Addendum B	Relevant Intent of Guidance in SPID
SPR-B1	In each of the following aspects of the seismic-PRA systems-analysis work, SATISFY the corresponding requirements in Part 2, except where they are not applicable or where this Part includes additional requirements. DEVELOP a defined basis to support the claimed nonapplicability of any exceptions. The aspects governed by this requirement are (1) initiating-event analysis; (2) accident-sequence analysis; (3) success-criteria analysis; (4) systems analysis; (5) data analysis; (6) human-reliability analysis; (7) use of expert judgment. When the Part 2 requirements are used, USE the Capability Category designations in Part 2, and for consistency USE the same Capability Category in this analysis. *CC I–II-III*	In each of the following aspects of the seismic-PRA systems-analysis work, SATISFY the corresponding requirements in Part 2, except where they are not applicable or where this Part includes additional requirements. SPECIFY a basis to support the claimed nonapplicability of any exceptions. The aspects governed by this requirement are (1) initiating-event analysis; (2) accident-sequence analysis; (3) success-criteria analysis; (4) systems analysis; (5) data analysis; (6) human-reliability analysis; (7) use of expert judgment. When the Part 2 requirements are used, USE the Capability Category designations in Part 2, and for consistency USE the same Capability Category in this analysis. *CC I–II-III*	There was a small wording change to remove “defined” basis and to indicate the need to “specify” the basis rather than to “develop” it. The SPID does not provide explicit guidance regarding following relevant elements of the PRA Standard for internal initiating events, but it would be expected that the SPRA would satisfy these requirements.

Table 6-6. Comparison of SPID Guidance to ASME/ANS PRA Standard Supporting Requirements: Element SPR

Standard Element	Requirements from Addendum A	Requirements from Addendum B	Relevant Intent of Guidance in SPID
SPR-B2	In the human reliability analysis (HRA) aspect, EXAMINE additional postearthquake stresses that can increase the likelihood of human errors or inattention, compared to the likelihood assigned in the internal-events HRA when the same activities are undertaken in nonearthquake accident sequences. Whether or not increases in error probabilities are used, JUSTIFY the basis for this decision about what error rates to use. *CC I–II-III*	INCLUDE the following seismic impacts on Performance Shaping Factors (PSFs) for the control room and ex-control room post-initiator actions as appropriate to the Human Reliability Analysis (HRA) methodology used: (a) Additional post earthquake workload and stress that can increase the likelihood of human errors or inattention (b) Seismic failures that impact access (c) Cue availability The use of scaling factors applied to internal events HRA based HEPs is acceptable (as it also is for any new human failure actions developed for the seismic PRA). *CC I–II*	The requirement related to HRA has been completely re-written for Addendum B (including defining a separate requirement for Capability Category III). The updated requirement clarifies what is expected of the seismic HRA. The SPID does not provide explicit guidance regarding the conduct of the HRA for the seismic PRA, but it would be expected that the SPRA would satisfy this requirement.
SPR-B3 (Add. A) **SPR-B4a (Add. B)**	If any screening is performed, PERFORM it using defined criteria that are documented in the PRA. *CC I–II-III*	If screening out on the basis of seismic capacity is performed in the systems model, PERFORM the screening on a documented basis. *CC I-II-III*	This requirement has been deleted in Addendum B because it is covered by Supporting Requirement SPR-B5. Acceptable screening criteria are provided in Section 6.4.3 of the SPID.

Table 6-6. Comparison of SPID Guidance to ASME/ANS PRA Standard Supporting Requirements: Element SPR

Standard Element	Requirements from Addendum A	Requirements from Addendum B	Relevant Intent of Guidance in SPID
SPR-B4 (Add. A) **SPR-B3 (Add. B)**	PERFORM an analysis of seismic-caused dependencies and correlations in a way so that any screening of SSCs appropriately accounts for those dependencies and correlations. USE bounding or generic correlation values and PROVIDE the basis for such use. *CC I-II*	PERFORM an analysis of seismic-caused correlations in a way so that any screening of SSCs appropriately accounts for those correlations. USE bounding or generic correlation values and PROVIDE the basis for such use. *CC I-II*	A relatively minor change in Addendum B was to delete the phrase "dependencies and" in two places. The intent of the requirement did not change. The SPID does not provide explicit guidance regarding the treatment of seismic correlations. The SPRA would be expected to satisfy this requirement.
SPR-B5 (Add. A) **SPR-B4a (Add. B)**	ENSURE that any screening of human-error basic events and non-seismic failure basic events does not significantly affect the PRA results. *CC I-II-III*	If screening out on the basis of seismic capacity is performed in the systems model, PERFORM the screening on a documented basis. *CC I-II-III*	The requirement related to screening of non-seismic failures has been deleted, and a new requirement was added in Addendum B related to screening based on seismic capacity. The SPID provides acceptable guidance regarding screening based on seismic capacity in Section 6.4.3.
SPR-B4b (Add. B)	Not included in Addendum A.	If post-earthquake recovery actions are included in the systems model, INCLUDE them on a documented basis. *CC I-II-III*	This is a new requirement in Addendum B. The SPID does not provide explicit guidance regarding the treatment of recovery, but it is expected that any recovery actions would be appropriate documented in the SPRA.
SPR-B6 (Add. A) **SPR-B4 (Add. B)**	EXAMINE the effects of the chatter of relays and similar devices. *CC II-III*	INCLUDE the effects of the chatter of relays and similar devices in the systems model. *CC I-II-III*	Section 6.4.2 of the SPID provides acceptable guidance for the treatment of chattering due to high frequency ground motions.

Table 6-6. Comparison of SPID Guidance to ASME/ANS PRA Standard Supporting Requirements: Element SPR

Standard Element	Requirements from Addendum A	Requirements from Addendum B	Relevant Intent of Guidance in SPID
SPR-B7 (Add. A) **SPR-B5 (Add. B)**	In the systems-analysis models, for each basic event that represents a seismically caused failure, INCLUDE the complementary "success" state where applicable to a particular SSC. *CC I-II-III*	In the systems-analysis models, for each basic event that represents a significant seismically caused failure, INCLUDE the complementary "success" state where applicable to a particular SSC. *CC I-II*	The supporting requirement from Addendum A was retained in Addendum B for Capability Category III, with the word "significant" added for Capability Categories I and II in Addendum B. The SPID does not present explicit guidance relative to this aspect of the systems models; it is expected that a SPRA would satisfy this requirement.
SPR-B8 (Add. A) **SPR-B6 (Add. B)**	EXAMINE the possibility that a large earthquake can cause damage that blocks personnel access to safety equipment or controls, thereby inhibiting operator actions that might otherwise be credited. *CC I-II-III*	EVALUATE the possibility that a large earthquake can cause damage that blocks personnel access to safety equipment or controls, thereby inhibiting operator actions that might otherwise be credited. *CC I-II-III*	The only change from Addendum A to Addendum B was the change in action verb. The SPID does not present explicit guidance relative to this aspect of the treatment of operator response; it is expected that a SPRA would satisfy this requirement.
SPR-B9 (Add. A) **SPR-B7 (Add. B)**	EXAMINE the likelihood that system recoveries modeled in the internal-events PRA may be more complex or even not possible after a large earthquake, and ADJUST the recovery models accordingly. *CC II-III*	EVALUATE the likelihood that system recoveries modeled in the internal-events PRA may be more complex or even not possible after a large earthquake, and ADJUST the recovery models accordingly. It is acceptable to use conservative recovery values. *CC II*	The action verb was changed from Addendum A to Addendum B. Also, the acceptability of using conservative values was added for Capability Category II. The SPID does not present explicit guidance relative to this aspect of the treatment of recovery; it is expected that a SPRA would satisfy this requirement.

Table 6-6. Comparison of SPID Guidance to ASME/ANS PRA Standard Supporting Requirements: Element SPR

Standard Element	Requirements from Addendum A	Requirements from Addendum B	Relevant Intent of Guidance in SPID
SPR-B10 (Add. A) **SPR-B8 (Add. B)**	EXAMINE the effect of including an earthquake-caused "small-small loss-of coolant accident" as an additional fault within each sequence in the seismic-PRA model. *CC I-II-III*	ASSUME the existence of an earthquake-caused "very small loss-of-coolant accident" as an additional fault within each sequence in the seismic-PRA model. *CC I-II*	The requirement was made more definitive in Addendum B. The SPID does not yet present explicit guidance relative to this aspect of the plant model, but it is being considered (TBD).
SPR-B11 (Add. A) **SPR-B9 (Add. B)**	In the seismic PRA walkdown, INCLUDE the potential for seismically induced fires and flooding following the guidance given in NUREG-1407. *CC I-II-III*	In the seismic PRA walkdown, INCLUDE the potential for seismically induced fires and flooding following the guidance given in NUREG-1407. *CC I-II-III*	The action verb was changed from Addendum A to Addendum B. The SPID does not present explicit guidance relative to this aspect of the treatment of recovery; it is expected that the walkdowns would include consideration of seismically induced fire and flooding. Any detailed analyses of scenarios associated with such consequential events would, however, be performed in a later assessment.
HLR-SPR-C	The seismic-PRA systems model shall reflect the as-built and as-operated plant being analyzed.		
SPR-C1	To ensure that the systems-analysis model reflects the as-built, as-operated plant, JUSTIFY any conservatisms or other distortions introduced by demonstrating that the seismic-PRA's validity for applications is maintained. *CC I-II-III*	To ensure that the systems-analysis model reflects the as-built, as-operated plant, JUSTIFY any conservatisms or other distortions that do not adequately reflect the as-built, as-operated plant by demonstrating that the seismic-PRA's validity for applications is maintained. *CC I-II-III*	The language has been clarified in Addendum B. The SPID does not provide explicit guidance, but it would be expected that the SPRA would satisfy this requirement.

Table 6-6. Comparison of SPID Guidance to ASME/ANS PRA Standard Supporting Requirements: Element SPR

Standard Element	Requirements from Addendum A	Requirements from Addendum B	Relevant Intent of Guidance in SPID
HLR-SPR-D	The list of SSCs selected for seismic-fragility analysis shall include the all SSCs that participate in accident sequences included in the seismic-PRA systems model.		
SPR-D1	USE the seismic PRA systems model as the basis for developing the seismic equipment list, which is the list of all SSCs to be considered by the subsequent seismic-fragility evaluation task. *CC I-II-III*	USE the seismic PRA systems model as the basis for developing the seismic equipment list, which is the list of the SSCs to be considered by the subsequent seismic-fragility evaluation task. *CC I-II-III*	"All" was deleted in Addendum B. The SPID does not provide explicit guidance for developing the SEL, but it would be expected that the SPRA would satisfy this requirement.
HLR-SPR-E	The analysis to quantify core damage frequency and large early release frequency shall appropriately integrate the seismic hazard, the seismic fragilities, and the systems-analysis aspects.		
SPR-E1	In the quantification of core damage frequency and large early release frequency, PERFORM the integration using the seismic hazard, fragility, and systems analyses. *CC I-II-III*	No change in Addendum B.	The SPID does not provide explicit guidance for performing the quantification, but this integration is a typical task in SPRA, and the SPRA would be expected to satisfy this requirement.
SPR-E2	In quantifying core damage frequency and large early release frequency, PERFORM the quantification on a cut-set-by-cut-set or accident-sequence-by-accident-sequence basis (or for defined groups of these), as well as on a comprehensive/integrated basis. It is acceptable to use broad groupings. *CC I-II*	PERFORM the quantification in accordance with the applicable requirements described in subsection 2.2.7. It is acceptable to use broad groupings. *CC I-II*	The language was revised in Addendum B to refer to guidance in the internal-events portion of the Standard. The SPID does not provide explicit guidance for performing the quantification, but this integration is a typical task in SPRA, and the SPRA would be expected to satisfy this requirement.

Table 6-6. Comparison of SPID Guidance to ASME/ANS PRA Standard Supporting Requirements: Element SPR

Standard Element	Requirements from Addendum A	Requirements from Addendum B	Relevant Intent of Guidance in SPID
SPR-E3	In the analysis, USE the quantification process to ensure that any screening of SSCs does not affect the results, taking into account the various uncertainties. *CC I-II-III*	USE the quantification process to confirm that screening of SSCs does not affect the results. *CC I-II-III*	The language was clarified in Addendum B. The SPID provides acceptable guidance for the screening process, and the validity of the screening should be confirmed during the quantification.
SPR-E4	In the integration/quantification analysis, ACCOUNT for all significant dependencies and correlations that affect the results. It is acceptable to use generic correlation values. If used, PROVIDE the basis for such use. *CC I-II*	In the integration/quantification analysis, INCLUDE the significant dependencies and correlations that affect the results. It is acceptable to use generic correlation values. If used, PROVIDE the basis for such use. *CC I-II*	The language was clarified in Addendum B. The SPID does not provide explicit guidance for treating correlations. The SPRA would be expected to satisfy this requirement.
SPR-E5	USE the mean hazard, composite fragilities, and the systems analysis to generate point estimates for core damage frequency (CDF) and large early release frequency (LERF). ESTIMATE the uncertainties in overall CDF and LERF. *CC I-II*	In the integration/quantification analysis, analysis, INCLUDE the uncertainties in core damage frequency and large early release frequency results that arise from each of the several inputs (the seismic hazard, the seismic fragilities, and the systems-analysis aspects). *CC II*	The requirement was re-written for Addendum B, and separate requirements are provided for each of the three capability categories. The SPID does not provide explicit guidance for assessing uncertainty in the results, but the SPRA would be expected to satisfy this requirement.
SPR-E6	PERFORM appropriate sensitivity studies to illuminate the sensitivity of the core damage frequency and large early release frequency results to the assumptions used about dependencies and correlations. *CC I-II-III*	PERFORM appropriate sensitivity studies to illuminate the sensitivity of the core damage frequency and large early release frequency results to various attributes of the analysis. *CC I-II-III*	The requirement made more general for Addendum B. The SPID does not provide explicit guidance for sensitivity studies for the integrated model. The SPRA would be expected to satisfy this requirement.

Table 6-6. Comparison of SPID Guidance to ASME/ANS PRA Standard Supporting Requirements: Element SPR

Standard Element	Requirements from Addendum A	Requirements from Addendum B	Relevant Intent of Guidance in SPID
SPR-E7	New requirement in Addendum B.	In the analysis of LERF, SATISFY the LERF requirements in the internal-initiators section (Part 2, Section 2.2.8), where applicable. *CC I-II-III*	This requirement is entirely new for Addendum B. The SPID provides some guidance for assessment of LERF in Section 6.5.1.
HLR-SPR-F	The seismic-PRA analysis shall be documented in a manner that facilitates applying the PRA and updating it and that enables peer review.		
SPR-F1	DOCUMENT the seismic plant response analysis and quantification in a manner that facilitates PRA applications, upgrades, and peer review. *CC I-II-III*	No change in Addendum B.	The SPID provides guidance for documentation of some aspects of the seismic PRA. The SPRA would be expected to satisfy this requirement.
SPR-F2	Error in Addendum A corrected in the supporting requirement in Addendum B.	DOCUMENT the process used in the seismic plant response analysis and quantification. *CC I-II-III*	The SPID provides guidance for documentation of some aspects of the seismic PRA. The SPRA would be expected to satisfy this requirement.
SPR-F3	DOCUMENT the sources of model uncertainty and related assumptions associated with the seismic plant response model development. *CC I-II-III*	No change in Addendum B.	The SPID provides guidance for documentation of some aspects of the seismic PRA. The SPRA would be expected to satisfy this requirement.