

19-Oct-2021

XE00-R-R1ZZ-RDZZ-L-002281  
2021-XE-NRC-014U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001**Submission of X Energy, LLC (X-energy) Comments on Trial Use Regulatory Guide 1.247, "Acceptability of Probabilistic Risk Assessment Results for Advanced Non-Light Water Reactor Risk-Informed Activities"**

References: (1) Trial Use Regulatory Guide 1.247, "Acceptability of Probabilistic Risk Assessment Results for Advanced Non-Light Water Reactor Risk-Informed Activities."

(2) U.S. Nuclear Regulatory Commission (NRC), "Use of Probabilistic Risk Assessment Methods in Nuclear Activities: Final Policy Statement," Federal Register, Volume 60, No. 158: pp. 42622, (60 FR 42622), Washington, DC, August 16, 1995.

(3) American Society of Mechanical Engineers (ASME)/American Nuclear Society (ANS) Standard ASME/ANS RA-S-1.4-2020, "Probabilistic Risk Assessment Standard for Advanced Non-Light Water Reactor Nuclear Power Plants," January 2021.

The U.S. Nuclear Regulatory Commission (NRC) issued for public comment the trial use Regulatory Guide 1.247 (Reference 1), with a public meeting November 3, 2021.

The attachment to this letter provides comments on behalf of X-energy.

This letter contains no commitments. If you have any questions or require additional information, please contact Jon Facemire, Licensing Engineer, at [jfacemire@x-energy.com](mailto:jfacemire@x-energy.com) or 410-474-7893.

Sincerely,



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ENCLOSURE:

**ATTACHMENT 1** – X Energy, LLC Comments on U.S. Nuclear Regulatory Commission Trial Use Regulatory Guide 1.247, “Acceptability of Probabilistic Risk Assessment Results for Advanced Non-Light Water Reactor Risk-Informed Activities”

**ATTACHMENT 1**

X Energy, LLC Comments on U.S. Nuclear Regulatory Commission Trial Use Regulatory Guide 1.247,  
“Acceptability of Probabilistic Risk Assessment Results for Advanced Non-Light Water Reactor Risk-  
Informed Activities”

No.	Page/Section	Comment	Proposed Resolution
1	A-105, CC-E1	The clarification on CC-E1 belongs in an implementation Reg Guide for specific applications. Some, but not all, risk-informed decisions should be revisited following a PRA update and that assessment should be complete on an application-specific basis.	Delete clarification for the PRA Standard. Consider for specific Risk-Informed Applications.
2	A-6, POS-A1	The clarification on POS-A1 belongs in an implementation Reg Guide for specific applications. PRA can provide valuable insight for risk-informed decisions that only impact full power operation and the Standard should support PRA development that supports at power, risk-informed decision-making.	Maintain original standard language. Consider POS requirements in Application-Specific Regulatory Guides.
3	A-17, HLR-HR-E & A-19, HR-E4	The clarifications on HLR-HR-E and HR-E4 are not consistent with the current PRA State of practice and represents a new requirement above and beyond the requirement for the current operating fleet. Errors of commission are already captured in FHR-A1 at CC-II for fires where operating experience supports consideration of spurious signals. Note that the Reg Guide 1.247 position on HR-E4 requiring EOC at CC-1 is not internally consistent with the Reg Guide position on FHR-A1 requiring EOC only at CC-II. For non-Fire Hazards spurious signals should occur with low frequency and would require significant operator error due to the redundancy of information available to the operator.	This requirement should be removed from HR-E4 (and the HLR-E) or be considered for inclusion at CC-II.

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4	A-4, Feasibility	The proposed definition of feasible may be appropriate for HRA but the term feasible is used for Data as well and the proposed NRC definition is not applicable there.	Suggest leaving out this definition, practitioners can reasonably define feasible in the context of the requirement.
5	A-6,A-7 POS-A8	POS-A8 suggests POS review by operations personnel even for early pre-operational PRAs. Some PRA developers may not have operations personnel available at earlier phases in the design process.	Retain POS-A8 wording in the original PRA Standard.
6	A-18, HR-D4	The clarification on HR-D4 may be appropriate for operating plants but not for plants in the early design phase where procedures may not be fully developed.	Retain “when available” to allow pre-operational PRAs to meet CC-II.
7	A-40, SHA-B5	The clarification on SHA-B5 is redundant, if there is an existing SHA it will need to be reviewed and updated to meet other SRs to support the PRA. If the updated catalog of earthquakes invalidates any of the old analysis, the SRs already documented in the standard (see SHA-B2, SHA-C4, SHA-C5) would not be met.	Remove clarification for SHA-B5.
8	A-65, WFR-I1	The clarification on WFR-I1 is redundant to item b) of WFR-I1.	Remove clarification of WFR-I1.
9	A-79, OPR-A4	The clarification on OPR-A4 is out of line with the requirements for all other hazards. There is no justification	Remove clarification of OPR-A4.

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		for a stricter requirement for other hazards versus all other external hazards.	
10	A-108, Section 7.1	Any newly developed methods used prior to the initial peer review will be reviewed under the appropriate SRs during the initial Peer Review to establish acceptability in line with the Standard. The original Standard wording for NDM requirements applying after the initial Peer Review remains appropriate.	Remove clarification on Section 7.1.