

BWR OWNERS' GROUP

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1/25/02
67 FR 3743
(4)

Attn: Rules and Directives Branch
Office of Administration

Subject: BWR Owners' Group Comments to Draft Regulatory Guide (DG-1113),
"Methods and Assumptions for Evaluating Radiological Consequences of
Design Basis Accidents at Light-Water Nuclear Power Plants"

BWROG Project Number 691

Encl: BWR Owners' Group Comments to Draft Regulatory Guide (DG-1113),
dated April 2002

Attached is the BWR Owners' Group's (BWROG) comments on the subject Draft
Regulatory Guide in accordance with instructions provided in the Draft Guide.

It should be noted that, while these comments have been endorsed by a substantial
number of the members of the BWROG, it should not be interpreted as representing
any individual utility member. Each BWROG member utility must formally provide their
own individual comments in order for those comments to represent that member utility.

Any questions can be directed to the undersigned or to Tom Mscisz (Exelon Nuclear),
BWROG Control Room Habitability Committee Chairman at (610) 765-5971.

Sincerely,



JA Gray, Jr., Chairman
BWROG Owners' Group

cc: K Putnam, BWROG Vice Chairman
BWROG EOC
BWROG Primary Representatives
BWROG CRH Committee
WM Blumberg, USNRC

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Template = ADM-013

E-RFDS = ADM-03
Att. = A. Beranek (AFB)
W.M. Blumberg (WMBI)

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DG-1113 REFERENCE	COMMENT	RECOMMENDED CHANGE
Section B (Discussion)	This Section contains the following statement: "The design basis accidents (DBAs) were not intended to be actual event sequences, but rather, were intended to be surrogates to enable deterministic evaluation of the response of a facility's engineered safety features. These accident analyses are intentionally conservative in order to compensate for known uncertainties in accident progression, fission product transport, and atmospheric dispersion."	Clarify the quoted statements. Consider use of qualitative considerations, engineering judgment, sensitivity analyses, or risk-based insights as alternative methods for demonstrating that uncertainties have been considered.
Section C (Regulatory Position), Subsection 1.1	This Subsection states "The proposed uses of this guide and the associated proposed facility modifications and changes to procedures should be evaluated to determine whether the proposed changes are consistent with the principle that sufficient safety margins are maintained, including a margin to account for analysis uncertainties."	Clarify the quoted statements. Consider use of qualitative considerations, engineering judgment, sensitivity analyses, or risk-based insights as alternative methods for demonstrating that uncertainties have been considered.

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<p>Section C (Regulatory Position), Subsection 1.2</p>	<p>This Subsection states: "Consistency with the defense-in-depth philosophy is maintained if system redundancy, independence, and diversity are preserved commensurate with the expected frequency, consequences of challenges to the system, and uncertainties." The scenario is already conservative to account for uncertainties. The evaluations are then required to be conservative to account for uncertainties and the system design for defense in depth must also be conservative to account for uncertainties. This appears to be overkill, effectively triple-dipping to account for uncertainties.</p>	<p>Clarify the statements so that uncertainties are addressed once. Consider use of qualitative considerations, engineering judgment, sensitivity analyses, or risk-based insights as alternative methods for demonstrating that uncertainties have been considered.</p>
<p>Section C (Regulatory Position), Subsection 1.3.1</p>	<p>The first sentence states: "A fundamental commitment required for application of the methodology in this guide is to perform an <u>assessment</u> of each applicable accident. The <u>analyses</u> should include accidents mentioned in this guide, supplemented by those in the FSAR and other license documents as appropriate." The words "analysis" and "assessment" are used interchangeably in this section.</p>	<p>If there is a difference between "assessment" and "analyses", it should be stated. If no difference, they should use the same word.</p>
<p>Section C (Regulatory Position), Subsection 1.3.1</p>	<p>Environmental Qualification is listed, but no direct guidance is provided for deriving equipment dose.</p>	<p>If EQ reevaluations are to be performed in accordance with this guide, provide a specific reference.</p>

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Section C (Regulatory Position), Subsection 1.3.1	Emergency Response Facility Habitability is listed. Is it the intent of NRC that ERF's also need to be reevaluated as part of the CRH effort?	Provide clarification.
Section C (Regulatory Position), Subsection 1.3.2	This draft guide is being issued as part of regulatory guidance for assessing control room habitability. The last sentence of this paragraph appears to call for reanalysis of all areas in Section 1.3.1, including areas unrelated to control room habitability such as EQ, and Accident Monitoring Instrumentation.	Clarify this Section and state that selective implementation of the Guide is acceptable.
Section C (Regulatory Position), Subsection 2.1	The last sentence states that "This section describes the general equations used to model ..."	Replace the word "the" with "one acceptable set of"
Section C (Regulatory Position), Subsections 2.2 through 2.8	(General Equations)	These equations should be put into an Appendix
Section C (Regulatory Position), Subsections 2.2 through 2.8	The symbol for X/Q (Chi over Q) varies from one equation to another.	Use a consistent symbol.
Section C (Regulatory Position), Subsection 3.1	The first paragraph does not specifically mention use of ORIGEN-S	ORIGEN-S should also be referenced.

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Section C (Regulatory Position), Subsection 3.1	This Section speaks about “radial peaking factors” which do not appear to be applicable for determining the inventory of damaged rods.	This Section should be amended to clarify “radial peaking factors from the facility’s core operating limits report (COLR) or Technical Specification”. If the requirement is actually meant to use the linear heat generation rates or pin power for determining the inventory of damaged rods, then this should be explicitly stated.
Section C (Regulatory Position), Subsection 3.2 (pages 11 &12)	Footnotes 5 & 7 state that the release fractions are acceptable for use with LWR fuel with a peak rod burn up up to 62000 MWD/MTU. Future licensing amendments may request an increase to this limit.	To reduce regulatory burden, guidance should be provided to address release fractions for higher peak rod burn up limits.
Section C (Regulatory Position), Subsection 3.2 (page 12)	The first full sentence states, in part, “For non-LOCA DBAs when fuel melt in postulated, ...” This refers to Table 2 (Non-LOCA Fraction of Fission Product Inventory in Gap). The inventory in the gap is released upon clad damage, not fuel melt.	Change the words “fuel melt” to read “clad damage”
Section C (Regulatory Position), Subsection 3.2 (page 12)	Table 1, Table 2, and Table 3 refer to “halogens”	Replace “halogens” with “iodines”
Section C (Regulatory Position), Subsection 3.2 (page 15)	Table 4 refers to a “Pre-incident” spike”. Appendices E, D, and F refer to “pre-accident spike”. This Table 4 is also placed in the middle of an unrelated section.	Use consistent terminology, and relocate this table for better flow.

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<p>Section C (Regulatory Position), Subsection 4.2.4</p>	<p>This Subsection states that “Several aspects of RMs can delay the control room isolation, including the delay for activity to build up to concentrations equivalent to the alarm setpoint and the effects of different radionuclide accident isotopic mixes on monitor response.”</p> <p>This guidance is inconsistent with the assumption of instantaneous releases. The delays from a realistic accident are in large part due to transport time and would include decay and holdup in buildings, which are not credited in the guidance. Since the dose rate to personnel and equipment in a realistic accident would also see this same sort of time response, this guidance seems to be overly restrictive.</p>	<p>Clarify guidance on decay and hold-up considerations.</p>
<p>Section C (Regulatory Position), Subsection 4.2.6</p>	<p>This Section presents a breathing rate for an individual in the control room envelope. This breathing rate was compared to the recommended breathing rates presented in ICRP 66 and was found to be different. No reference is provided in the draft regulatory guide for the breathing rate.</p>	<p>A reference from a recognized radiation protection study should be provided for breathing rates.</p>
<p>Section C (Regulatory Position), Subsection 4.2.8 (page 17)</p>	<p>This should be included in section 4.2.7 as a follow-on to the discussion of dose conversion factors.</p>	<p>Include in 4.2.7</p>

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Section C (Regulatory Position), Subsection 4.4 (page 17)	This section makes reference to another Draft Guide (DG-1074). It is assumed that this reference will be either ultimately inked to an approved and issued RG, or changed as appropriate, should the aspects of DG-1074, once finalized, no longer be applicable to DG-1113..	The application of this reference in this potential RG needs to be validated/coordinated against the final version of DG-1074, and these RGs should be issued together.
Section C (Regulatory Position), Subsection 4.5 (page 17)	"Beta or skin" dose is stated as 30 rem. This 30 rem dose should be treated in the same way as the thyroid dose was (increased to 50 rem). 75 rem is implied in SRP 6.4.	Increase the allowable skin dose consistent with the increase in thyroid dose (e.g., ratio of 50/30 or 5/3).
Section C (Regulatory Position), Subsection 4.5 (page 17)	This Section provides dose guidelines that may be used in lieu of the SRP 6.4 dose guidelines. The SRP dose guidelines allow a skin dose of 75 rem if the licensee commits to control room envelope personnel donning protective clothing.	Guidance should be presented in the draft regulatory guide if this is still acceptable.
Section C (Regulatory Position), Subsection 5.1.2	This Section suggests that a delayed Loss of Offsite Power be considered for radiological consequence analysis. This is contrary to the design basis of simultaneous LOCA/LOOP of many BWRs.	The wording in this section should be changed to clarify the requirement.
Appendix A, Section 2.8	This Section requires that the postulated doses from the purge system need to be summed with other postulated doses from other release paths if the primary containment is "routinely" purged.	A definition of "routinely" should be provided.

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Appendix A, Section 3.3	This Section 3.3 requires the effects of high wind speeds on the ability of the secondary containment to maintain a negative pressure to be evaluated. No guidance is provided.	Provide guidance on how the analysis should be performed or, if the secondary containment is not able to maintain a negative pressure under these conditions, how the dose consequences are evaluated (e.g. are new χ/Q values allowed since the wind speed has changed?).
Appendix B, Section 1.2	"halogens" are specified.	Replace with "iodines"
Appendix B, Section 1.3	"inorganic" iodine is mentioned.	Replace with "elemental"
Appendix. B, Section 2	NUREG-1754 A New Comparative Analysis of LWR Fuel Designs appears to show that the 1200 psi rod internal pressure is primarily a PWR fuel issue for exposures less than about 65 GWD/t and linear heat rates up to 11 KW/ft.	Consider making this a PWR-specific consideration or provide heat rate and exposure limits where this issue needs to be evaluated for other reactor types.
Appendix. B, Section 3	This Section deals with noble gases. However, the second sentence refers to "particulate" radionuclides.	Remove the second sentence.
Appendix. B, Section 5.2	This Section states that no radiological consequences need to be analyzed if containment isolation occurs before radioactivity is released to the environment. Isolation is further clarified by Footnote 1.	This section needs to be clarified to state if no radiological consequences need to be calculated or if no radiological consequences need to be calculated for the isolation timeframe

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Appendix. D	This Appendix does not provide guidance on acceptable analytical methodologies for determining burst release (or puff release) χ/Q values to be associated with line rupture phenomena.	Provide such guidance.
Appendix E, (page E-1)	This is Appendix F in RG-1.183.	Reverse Appencices E & F to better match RG 1.183.
Appendix. F, (page F-1)	This is Appendix E in RG-1.183.	Reverse Appencices E & F to better match RG 1.183.
GENERAL	Ensure that references that provide additional methodology guidance are available in electronic form in ADAMS (e.g. Ref B-1)	Add references to ADAMS