NEI

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SUBJECT: Comments on Draft Regulatory Guide DG-1113, *Methods and Assumptions for Evaluating Radiological Consequences of Design Basis Accidents at Light-Water Nuclear Power Reactors* (67 *Fed. Reg.* 3743)

PROJECT NUMBER: 689

On behalf of the commercial nuclear industry, the Nuclear Energy Institute[1] submits the enclosed comments on Draft Regulatory Guide DG-1113, *Methods and Assumptions for Evaluating Radiological Consequences of Design Basis Accidents at Light-Water Nuclear Power Reactors.*

The NRC staff has prepared four related draft regulatory guides to address management of control room habitability. DG-1113 was the second of these to be issued for public comment. NEI has submitted comments to the NRC on DG-1111, *Atmospheric Relative Concentrations for Control Room Habitability Assessments at Nuclear Power Plants* and is preparing comments on DG-1114, *Control Room Habitability at Nuclear Power Reactors*, and DG-1115, *Demonstrating Control Room Envelope Integrity at Nuclear Power Reactors.*

In addition to providing comments on the four individual guides, we are comparing them to one another to determine if there are interdependent comments. Additional comments resulting from this review will be provided to the NRC by June 28, 2002, the due date for comments on DG-1114 and DG-1115.

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[1] NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry

Template = ADM-013

E-RIDS = ADM-03
Add = A. Befanek (AFB)
W. M. Blumberg (WMB1)

Many of our comments reflect a concern with the level of unnecessary conservatism imposed on analysis performed in accordance with DG-1113. The draft regulatory guide may require licensees to revise existing analyses to satisfy the draft guide. This is elevated in significance by the position in Section D, *Implementation*, which states, "Except in those cases in which an applicant or licensee proposes an acceptable alternative method for complying with the specified portions of the NRC's regulations, the methods will be used in the evaluation of submittals in connection with radiological consequences at nuclear power plants."

The draft implementation guidance is different than the guidance presented on the cover of every NRC issued regulatory guide, which states:

> "Regulatory Guides are issued to describe and make available to the public methods acceptable to the NRC staff of implementing specific parts of the Commission's regulations, to delineate techniques used by the staff in evaluating specific problems or postulated accidents, or to provide guidance to applicants. Regulatory Guides are not substitutions for regulations, and compliance with them is not required. Methods and solutions different from those set out in the guides will be acceptable if they provide a basis for the findings requisite to the issuance or continuance of a permit or license by the Commission."

In contrast, the implementation text of the draft guide appears to establish the regulatory guide as the metric for evaluating alternate radiological analysis methods. Moreover, it does not recognize existing licensing bases.

The combination of the draft regulatory guide's unnecessary conservatisms, lack of recognition of accepted analyses and the existing licensing bases, and the establishment of the proposed guidance as the metric for compliance with the regulations makes the draft regulatory guide unacceptable in its current form. If the draft regulatory guide remains as written, we believe licensees will choose to selectively implement portions of the regulatory guide or not use it at all.

If the regulatory guide is modified as proposed by our comments, the guide will be much more useful.

If you have questions, please contact Kurt Cozens at 202-739-8085, koc@nei.org, or me.

Sincerely,

Alexander Marion

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KOC/maa
Enclosure

c: Mr. Mark F. Reinhart, U. S. Nuclear Regulatory Commission
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NEI COMMENTS ON DG-1113

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1.	2, 3, 4, 16	B, C.1.1, C.1.2 C.4.2.4	Various statements in DG-1113 demonstrate the substantial levels of conservatism that are layered into the design and evaluation process to accommodate uncertainties. This level of conservatism is unnecessary and could affect the ability for licensees to reach proper decisions regarding how resources are assigned to maintain and improve the facility. DG-1113 states: • DBA analyses are intentionally conservative in order to compensate for uncertainties in accident progression, fission product transport, and atmospheric dispersion (Section B, page 2) • Defense-in-depth is an effective means to account for uncertainties in equipment and human performance (Section B, pages 2-3) • System design should incorporate sufficient safety margin to account for analysis uncertainties (Section C.1.1 page 3) and the system design for defense-in-depth (system redundancy, independence and diversity) must also be conservative to account for uncertainties in accident progression and analysis data (Section C.1.2, page 4). • Delays in actuation due to hold up of radioactivity transport are imposed, but reduction in dose due to transport of activity from fuel to containment release is not credited (C.4.2.4) Realistic evaluations should be used to demonstrate the margin achieved by applying additional conservative assumptions. This new approach should use sensitivity analyses, engineering judgment, and risk-based insights as methods for demonstrating that uncertainties have been considered.	Develop a new approach that uses realistic evaluations to demonstrate the margin achieved by applying additional conservative assumptions at the conclusion of the analysis rather than on individual inputs.

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2.	4	C.1.2, 3rd	The last sentence should be clarified because the term "nonconservative results" is not defined and may be misinterpreted. The phrase "radiological and nonradiological" as a modifier to "safety analyses" by its nature encompasses all safety analyses and may be deleted.	Revise the sentence to read: "Radiological analyses generally should be based upon assumptions and input values that are consistent with those used for the correlated design basis safety analysis that provide their input conditions and forcing functions. This should include consistency in physical plant data, operating conditions, as well as event sequences, unless this approach would yield results that would be less severe than realistic evaluation results, or where the approach would become inconsistent with that specified in this guidance document."
3.	4	C.1.3.1, 1st	This paragraph imposes a new requirement that each applicable accident listed in regulatory guide, FSAR, or other licensing documents be evaluated whether or not the accident is part of the current licensing basis. In addition, the text infers that the licensee needs to analyze all listed accidents for each evaluation or plant modification. Traditional the NRC has accepted an analysis of the limiting accidents applicable to the proposed change.	Revise the first two sentences to read: "A fundamental commitment required for application of the methodology in this guide is to perform an assessment of each accident applicable to a licensee's licensing basis for the proposed change. The plant shall perform an analysis of those accidents applicable to the proposed change."
4.	4, 5	C.1.3.1, 2nd, 3rd	This document does not provide specific guidance regarding acceptable licensing evaluations in several for all the examples listed in this section. The examples appear to open the scope of the analyses applications beyond what the remainder of the document covers (or what it should be expected to cover). The scope and intent of this document should be clarified in relation to the examples. The types of analyses that may be performed to address each of these examples may differ widely, and the application of any portion of the guidance that is provided in DG-1113 varies depending on the reasons for and detail of the evaluation. Therefore, either a general acknowledgement of this variation	Modify the second paragraph to read: "There are several regulatory requirements for which compliance is demonstrated, in part, by the evaluation of the radiological consequences of design basis accidents. A plant's licensing basis may include, but not be limited to, the following." Modify the third paragraph to read: "There may be other areas in which the technical specification bases and various licensee commitments refer to specific evaluations. A plant's licensing basis may include, but are not limited to, the following from

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			in licensing or engineering analyses should be inserted, or a detailed description of staff expectations should be provided. The former approach would seem to be the most practical.	may include, but are not limited to, the following from Reference 2, NUREG-0737."
5.	5	C.1.3.2	DG-1111 (p.4) states: "Since the existing licensing basis methodology remains valid, a licensee may use the ARCON96 code and the other models addressed in this guide on a selective basis, that is, it is not necessary that all existing χ/Q values be updated at the same time." Similarly, it is appropriate to include the same provision in DG-1113. This will permit licensees to selectively adopt analysis methods features of DG-1113 applicable to the assessment. Other analyses that would not be significantly affected would continue to rely upon the current licensing basis methodology.	After the sentence: "The NRC staff expects licensees to evaluate all impacts of the proposed changes and to update the affected analyses and the design bases appropriately." Add the sentence: "Since the existing licensing basis methodology remains valid, a licensee may use the guidance in DG-1113 on an event basis selectively. It is not necessary that all the existing event based licensing analyses be updated for each application of the guide."
6.	5	C.1.3.2	The last sentence of this paragraph infers that a license amendment request is necessary for each reanalysis. This could become unnecessarily burdensome to the NRC staff. This regulatory guide should authorize some reanalysis changes without submittal to the NRC by evaluating proposed changes under 10CFR50.59. Two examples are: • Implementation of ICRP-30 dose conversion factors (Position 4.1), and • The Control Room (Dose) Acceptance Criteria (Position 4.5)	Add the following sentence: "Licensees may implement the ICRP-30 dose conversion factors (Position 4.1) and the Control Room (Dose) Acceptance Criteria (Position 4.5) that should be submitted to the NRC if required by 10 CFR 50.59."

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7.	5	C.1.3.2	The last sentence infers that reanalysis should be performed for all areas in Section C.1.3.1, including areas unrelated to control room habitability such as Equipment Qualification and Accident Monitoring Instrumentation. This is inappropriate. Provide for selective implementation of this regulatory guide as discussed in our comment on Section C.1.3.1, first paragraph. Delete this sentence, since implementation of this criteria will be burdensome to both the NRC staff and licensees without commensurate improvements in safety.	Delete the last sentence of Paragraph C.1.3.2
8.	7+	C.2	Section C.2.2 and C.2.4 show how to calculate the initial airborne activity, but neglect the contribution of daughter products (e.g. I-135 to Xe-135) due to the decay of parent isotopes. These parent isotopes are either airborne in the CRE or have been deposited on components within the CR boundary. Neglecting the decay of these parent isotopes results in underestimating the Noble Gas Concentration in the CRE. It is not clear from the equations and supporting text whether or not daughter product contribution needs to be a part of the DG 1113 methodology. Also Section C.2.8 implies that compartment doses are due only to the integrated activity calculated in Section 2.6. Section C.2.8 neglects the "shine" dose contribution from filters, containment, and an external radioactive cloud. However, bullets 3, 4, and 5 under Section C.4.2.1 state that consideration needs to be given to these "shine" dose contributors.	If the contribution from daughter products to the overall dose may be neglected, then make it clear in Section C.2.1 that this is the case. Otherwise, the equations developed in Sections C.2.2 and C.2.4 should be revised to reflect the relevance of the parent daughter decay chains. In Section C.2.8 state that the whole body dose contribution from external sources as listed in Section C.4.2.1 should be considered in conjunction with the contribution from the compartment airborne activity.
9.	10	C.2.8, Eq. 11	The constant, $352(V_k^{0.338})$, is presented with Vk, in terms of cubic meters. However, compartment volume is usually calculated in cubic feet. This could result in conversion errors. Include constant, $1173/(V_k^{0.338})$, when the free volume of the compartment is given in cubic feet.	Adopt the formulation provided in the comment.
10	11	C.3.1, 1st	ORIGEN-S should also be listed as an appropriate isotope generation and depletion computer code.	Add "ORIGEN-S" to the listing. Include the following reference:

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				"SCALE: A Modular Code System for Performing Standardized Computer Analyses for Licensing Evaluation," NUREG/CR-0200, Rev. 6 ORNL/ NUREG/CSD-2/R6, September 1998"
11	11	C.3.1, 1st	Not all licensees address radial peaking factors in the COLR or technical specifications. Some licensees calculate radial peaking factors with cycle-specific core design analysis.	Add "cycle-specific core design analysis" to the listing.
12	11	C.3.1.1, Footnote 4	Footnote 4 only addresses the reactor head drop accident. However, there are other accidents where multiple assemblies are postulated to be damaged. Therefore the footnote should be re-written to encompass these other accidents.	Rewrite Footnote 4 to read: "For accidents which involve several assemblies, it is appropriate to use the core average inventory."
13	11	C.3.2, Footnote 5	This footnote refers to the release fractions in Table 1, where all noble gases are presumed released and 50% of the iodines are assumed to be instantaneously released. Data and evaluation for MOX fuel support a conclusion that this value is conservative for MOX fuel application using this licensing approach. Since conservative release fraction values and timing assumptions are already specified for this application, the conditional statement regarding MOX fuel presented in the last sentence should be deleted.	Delete the last sentence of Footnote 5.
14	12	C.3.2, last	The definition of fuel melt and calculation of material release should be clearly specified, and the bases should be justified for non-LOCA events. Major fuel failure consequences are postulated for the DBA LBLOCA scenario and that is the condition for which Table 1 applies. Table 1 should be labeled as such. Table 2 is not for postulated "fuel melt". It is applicable to postulate cladding damage that results in a breach of cladding (e.g., using the DNB criterion, which in itself is generally very conservative). If Table 1 is the proper citation in the last sentence, then it	Re-title Table 1 for application to the DBA LOCA. Replace "fuel melt" with "cladding damage" in Table 2 references. Define "fuel damage" as terminology for a general characterization of fuel material effects; e.g., (fuel melting, fuel thermal induced changes), cladding perforation, or both.

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			creates a situation that introduces unnecessary conservatism, because for non-LOCA events, fuel rods that are calculated to experience incipient fuel melting temperatures should be conservatively assigned as fuel with cladding failure. Fission gas release fractions of 1.0 are normally assigned to fuel material that has melted, not to the surrounding fuel material at lower temperatures. For non-LOCA events the extent of fuel melting within a fuel rod should be considered in calculating isotopic release fractions from these failed fuel rods.	
15	12 13	C.3.2 & C.3.4 Tables 1, 2, & 3	Tables 1, 2 & 3 use Halogens as a generalized category of Radionuclide Groups. This term is not used in TID-14844, regulations or guidance documents that are based on and implement TID-14844, but is used in Regulatory Guide 1.183 and other Alternate Source Term documents. For example: • 10 CFR100.11 requires assessment of thyroid dose from iodines • Regulatory Guides 1.3 and 1.4 uses iodines and noble gases Use of the term Halogens may cause confusion over what isotopes must be considered. To be consistent with TID-14844 regulations and guidance documents, this category should be renamed to Iodines.	In Tables 1, and 3, replace "Halogens" with "Iodines". In Table 2 replace "Other Halogens" with "Other Iodines".
16	12	C.3.2 Footnote 6	The language of this footnote can be interpreted to imply instantaneous plate-out is incompatible with spray removal of iodine. While it is inappropriate to model both instantaneous plate-out of iodine and modeling of time-dependent deposition on walls by spray, removal of iodine from atmosphere by spray is allowed regardless of how plate-out is modeled. If not clarified, confusion and over-conservatism could result. Rev. 1 and Rev. 2 of SRP 6.5.2 allow for the calculation of two types of removal coefficients:	Revise Footnote 6 to read: "If wall deposition by containment sprays is not modeled mechanistically, such as in Revision 2 of Standard Review Plan (Ref. 14) Section 6.5.2, one-half of the equilibrium radioactive iodine inventory released into the containment atmosphere may be assumed to be deposited on the walls of the containment. The net value of core inventory available for release from containment would, therefore, be 0.25 for a nonmechanistic spray representation. Please note that Revision 2 of SRP Section 6.5.2 erroneously implied that 25% of the equilibrium radioactive iodine inventory

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			• the first-order removal of iodine from the containment atmosphere by spray, (called λ_S for elemental iodine in Rev. 2 of SRP 6.5.2), and • the first-order removal of iodine by wall deposition (called λ_W for elemental iodine in Rev. 2 of SRP 6.5.2). Other than a limitation on the magnitude of λ_S recommended by WASH-1329 and ANSI/ANS-56.5-1979 and Rev. 0 of the SRP 6.5.2, λ_S is independent of the plate-out modeling method. Confusion can arises when credit for plate-out is modeled as both an instantaneous process and as a time-dependent process through λ_W. Potentially this could be done for elemental, organic or particulate iodine.	developed from maximum full-power operation of the core should be assumed to be immediately available for the leakage from the primary reactor system. This value should be 50% of the equilibrium radioactive iodine inventory when time-dependent wall deposition by spray is implemented to avoid accounting twice for the iodine deposited on the wall of the containment."
17	12	C.3.2 Footnote 7	Footnote 7, states that "fission gas release calculations performed using NRC-approved methodologies may be considered on a case-by-case basis", should be applicable to both low enriched uranium fuel and MOX fuel analyses, presuming that the fuel design is approved by the NRC Staff and the provisions of power history modeling are followed as prescribed.	Revise the sentence to read: "As an alternative, fission gas release calculations performed for either low enriched uranium fuel or MOX fuel using NRC-approved methodologies may be considered on a case-by-case basis."
18	14 15	C.4.2.1	This section lists potential "sources of radiation that will cause exposure to control room personnel … typically will include." Of these, only the first source, "*Contamination of the control room envelope atmosphere by the intake or infiltration of the radioactive material in the radioactive plume released from the facility,* is typically included in rigorous analyses of radiological consequences of design basis accidents. The remaining sources have been addressed in the past by design practice, qualitative engineering evaluations, or simple engineering estimates. Descriptions and expectations provided in the Standard Review Plan (SRP), especially SRP 6.4, Sections I.4, I.5, and III.3 through III.7 support these approaches.	Delete this guidance from DG-1113 and include a reference in DG-1114 to the modeling provided in DG-1113 for analysis of, "*Contamination of the control room envelope atmosphere by the intake or infiltration of the radioactive material in the radioactive plume released from the facility*," This may be appropriate either as an additional bulleted item in Section 1.1 or, alternatively, under Section 2.3.2. Also provide In DG-1114 direction to evaluate the remainder of the applicable sources in a manner consistence with previous regulatory guidance and NRC Staff endorsements and/or approvals as referenced in the SRP.

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			Requiring that these additional sources be included in analysis of radiological consequences of design basis accidents is a significant departure from these past practices approved by the NRC staff. In addition, models necessary to analyze these additional sources are not generally compatible with either the models presented in Section C.2 or similar models.	
19	16 17	C.4.2.7 C.4.2.8	Section C.4.2.7 states that FGR-12 combined beta and photon skin DCFs will give incorrect finite control room volume beta doses, and that the DOE/EH-0070 separate beta and photon DCFs should be used. Conversely, Section C.4.2.8 states that FGR-12 beta DCFs should be used. It is unnecessary since Section 4.2.7 addresses skin doses.	In Section C.4.2.7: Revise the sixth sentence to read: "The skin dose DCFs presented in column titled 'skin' of Table III.1 in_Federal Guidance Report 12..." Delete Section C.4.2.8.
20	16	C.4.2.6 Footnote 10	Occupancy factors have been misapplied in the past. Footnote 10 as worded could cause confusion because it does not specifically differentiate between the Murphy-Campe and ARCON 96 applications. The footnote should be expanded to explicitly identify the appropriate application.	Revise Footnote 10 to read: "These occupancy factors are already included in the determination of χ/Q values in the Murphy-Campe modeling (Ref. 18) and care should be taken not to credit these factors twice when using this modeling approach. However, the ARCON96 code (Ref. 23) does not incorporate these occupancy assumptions in the calculations of χ/Q values, so that using this modeling approach it is necessary to include these factors separately in the control room dose analysis.
21	17	C.4.4	The last sentence should be deleted from this section because the features regarding alternative repair criteria may be captured as a footnote to Table 4, using the same language and approach consistent with Regulatory Guide 1.183.	Delete the last sentence.
22	17	C.4.5	The dose category "Beta or skin" is antiquated, and inconsistent with other guidance in this document (e.g. section C.4.2.7), and could lead to confusion about whether skin dose from photons needs to be evaluated when assessing	In section C.4.5, Replace the term "Beta and skin" with the term "skin"

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			compliance with GDC-19. It is recommended that the category be changed to "Skin".	
23	17	C.4.5	Section C.4.5 has increased the thyroid dose guideline from 30 to 50 Rem, but leaves the skin dose limit at 30 Rem, and doesn't retain the alternate guideline of 75 Rem skin allowed in the SRP Section 6.4 for licensees who provide protective clothing and eye protection. The alternate limit for protective clothing and eye protection from the Standard Review Plan should be retained, especially if part of the Licensing Bases for a facility. Additionally the skin guideline without protective clothing or equipment should be increased from 30 Rem to 50 Rem consistent with the thyroid guideline. 10CFR20.1201limits skin dose to 50 rem annually. A weighting factor of 0.06 is specified for the skin in 10 CFR20.1003, so 83.5 Rem to the skin represents an equivalent whole body dose of 5 Rem. Therefore the same justification exists for an increase in the skin dose guidelines as exists for the increase in the thyroid dose guidelines from 30 Rem to 50 Rem. This will prevent arbitrarily making the skin dose the limiting consideration due to an inconsistent consideration of the GDC-19 criteria of 5 rem whole body, or its equivalent to any part of the body. The SRP section 6.4 guideline values of 30 Rem for the skin and thyroid were derived from previous annual occupational dose limits for the skin and thyroid in ICRP Publication 2. The new guideline values for the skin and thyroid should have a consistent basis. This is further justified when considering the low weighting factor of 0.01 recommended for the skin in ICRP-60.	Revise section C.4.5 to read: **4.5 Control Room Acceptance Criteria** The following guidelines may be used in lieu of those provided in SRP 6.4 (Ref. 14) when showing compliance with the dose guidelines in GDC-19 of Appendix A to 10 CFR Part 50. The following guidelines relax the thyroid and skin acceptance criteria from that given in SRP 6.4. This relaxation from 30 to 50 rem is based on a change to 0.03 in the thyroid organ dose weighting factor given in 10 CFR 20.1003, and 0.06 in the skin dose weighting factor. Although this change gives an equivalent thyroid dose of 167 rem-thyroid and 83 rem-skin, 10 CFR 20.1201 limits organ and skin dose to 50 rem annually. The release duration is specified in Table 4. The exposure period is 30 days for all accidents. The criterion in GDC-19 applies to all accidents. Whole body 5 rem Thyroid 50 rem Skin 50 rem* *Credit for the beta radiation shielding afforded by special protective clothing and eye protection is allowed if the applicant commits to their use during severe radiation releases. However, even though protective clothing is used, the calculated unprotected skin dose is not to exceed 75 rem. The skin and thyroid dose levels are to be used only for judging the acceptability of the design provisions for protecting control room operators under postulated design basis accident conditions. They are not to be interpreted as accept able emergency doses.
24	17	C.4.6, 1st	If the recommended skin dose limit proposed in the comment on C.4.5, is adopted, the sentence should be expanded to	Revise the sentence to be consistent.

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			include "thyroid and skin dose limits".	
25	17	C.4.6, 2nd	No compelling reason exists for a licensee to revise its basic design criteria. Therefore, a sentence should be added to affirm that these current licensing basis commitments remain acceptable. DG-1113 has defined the scope of its application to those general design criteria (GDC) specified in Section A, Introduction. Therefore, the regulatory guide does not apply to plants that do not have the specified GDCs as part of its licensing basis. The regulatory guide should be modified to define the scope of plants designed to criteria other than the GDCs or the regulatory guide should acknowledge that it is only applicable to plants designed to the GDCs listed in Section A.	Revise the sentence to read: "Although these commitments may be different from GDC-19, the continued use of these current licensing bases remain acceptable" Modify Section A to include the scope of plants designed to criteria other than the GDCs or indicate that the guide is only applicable to plants designed to the GDCs listed in Section A.
26	18	C.5.1.2	The design basis and current license bases for some plants may allow credit for some non safety-related equipment in the analyses of radiological of DBAs at these plants. Two examples are given. • The calculation of radiation doses for the "Break of a Small Line Carrying Reactor Coolant Outside of Containment (SRP 15.6.2, "small line break") by some licensees includes credit implicitly taken for non safety-related instruments to detect the small line break. If, for example, the break is in the letdown line, credit may be taken for radiation monitors in the area or level instrumentation for the Volume Control Tank of the Chemical and Volume Control System, all of which may be non safety-related. • Some radiological consequence evaluations for DB Steam Generator Tube Rupture (SGTR) take the position that two systems or components should be available for each action required to limit the activity releases following the DB SGTR, but that one of the two systems or components may be non safety-related.	Rewrite this section to allow for continuation of credit for non safety-related equipment as permitted in various plant license bases.

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			This section should be written so as to allow the continuation of credit for non safety-related equipment as allowed in the current license bases for individual nuclear plants.	
27	18 E-2 F-3 G-2	C.5.1.2 Appendices E.2.4, F.2.5, G.2.4	The following sentence is inconsistent with licensing basis of some plants, where loss-of-offsite-power is not considered or assumed to occur co-incident with the analyzed event: "Assumptions regarding the occurrence and timing of a loss of offsite power should be selected with the objective of maximizing the postulated radiological consequences." This sentence should be changed to reflect the current licensing basis for plants regarding the assumptions and occurrence of loss-of-offsite power. This comment is applicable to Appendices E, F, and G. The same changes should be made to these appendices.	In Section C and Appendices E, F and G change the sentence to read: "Assumptions regarding the occurrence and timing of a loss of offsite power should be selected based on current licensing basis requirements"
28	18	C.5.1.3	Once the course of an accident sequence is set, it does not change. Therefore, to modify a sequence to continually present a "worse case" set of conditions in the evaluation is unnecessarily conservative. However, accident sequence and plant system response assumptions should remain consistent for the entire set or series of analyses that provide input to and comprise all elements of the radiological dose analyses. The guidance as written will present an intractable, unbounded licensing analysis task, seeking sets of conditions that may provide more conservative results. One set of consistent analysis assumptions should be used throughout the analysis of a given event sequence.	Prior to the sentence: "Sensitivity analyses may ...", insert the following sentence: "Consistent modeling of performance of engineered safety features' operation should be used for the course of an accident sequence and for the entire set or series of analyses that provide input to and comprise all elements of the radiological dose analyses." In that next sentence replace "appropriate values to use" with "the consistent set of accident sequence and equipment performance, modeling assumptions, and values that will result in an appropriately conservative licensing basis evaluation method".
29	19	C.5.2 1st	This paragraph limits application of DG-1113 to accidents involving damage only to irradiated fuel. No guidance is provided for accidents with source terms that are not associated with fuel or cladding damage.	Delete the second, third and fourth sentences from the first paragraph of C.5.2 and replace them with the following sentence: "Licensees should review their license basis document

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			This apparently is not the intent. Positions are taken pertaining to the pre-accident iodine spike and accident initiated iodine spike in the absence of any fuel damage for the DB SGTR and the DB Main Steam Line Break (MSLB). In addition, limits on offsite radiation doses for these DBAs with these iodine spikes are prescribed in Table 4. This contradicts the statements in the 1st paragraph of Section C.5.2. Several other Appendices pose the possibility that no fuel damage would occur during the postulated event.	for guidance pertaining to the analysis of radiological consequences of other design basis accidents."
30	2019 20	C.5.3 C.5.3	The last sentence states: "All changes in χ/Q analysis methodology should be reviewed by the NRC staff." DG-1113 should establish a minimal threshold for when the NRC staff does not need to see a change. An examples of this is the inclusion of more recent weather data, but using the same method (for instance Murphy-Campe) qualify as a change in χ/Q methodology. Requiring that all changes to χ/Q methodology be submitted to the NRC is in conflict with 10 CFR 50.59, since the 50.59 process permits NRC accepted methods to be used by other plants without NRC prior approval. Furthermore, Section 4.1.1 of NEI 96-07, *Applicability to Licensee Activities,* which is endorsed by the NRC staff in RG 1.187, states that: "10 CFR 50.59 is applicable [...] to changes to the facility or procedures as described in the Updated Final Safety Analysis Report, including changes made in response to new requirements or generic communications". DG-1111 (p.4) states that "holders of operating licenses may continue to use χ/Q values determined with methodologies	Remove the sentence: "All changes in χ/Q analysis methodology should be reviewed by the NRC staff". Modify this section to be consistent with DG-1111.

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			previously approved by the NRC staff and documented in the facility's FSAR to the extent that these values are appropriate for the application for which they are being used. Licensees may also continue to use the licensing basis methodology for determining χ/Q values for newly identified source-receptor combinations or re-generating the approved χ/Q values using more recently collected meteorological data sets." DG-1113 states that: "Atmospheric dispersion values (χ/Q) for the EAB, the LPZ, and the control room that were approved by the staff during initial facility licensing or in subsequent licensing proceedings may be used in performing the radiological analyses identified by this guide provided such values remain relevant to the particular accident, its release points, and receptor location. ... References 18 (Murphy-Campe) and 26 (ARCON96) should be used if the FSAR χ/Q values are to be revised or if values are to be determined for new release points or receptor differences." These two positions are not consistent. It is recommended that consistency be established by adopting the position presented in DG-1111.	
31	20	D, 2nd	The second sentence of the second paragraph reads: "Except in those cases in which an applicant or licensee proposes an acceptable alternative method for complying with specified portions of the NRC's regulations, the methods to be described in the final guide reflecting public comments will be used in the evaluation of submittals in connection with radiological consequences at nuclear power reactors." This statement exceeds the guidance presented on the cover of every regulatory guide issued by the NRC staff. The standard statement is:	Replace this sentence with: "Regulatory Guides are issued to describe and make available to the public methods acceptable to the NRC staff of implementing specific parts of the Commission's regulations, to delineate techniques used by the staff in evaluation specific problems or postulated accidents, or to provide guidance to applicants. Regulatory Guides are not substitutions for regulations, and compliance with them is not required. Methods and solutions different from those set out in the guides will be acceptable if they provide a basis for the findings

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			"Regulatory Guides are issued to describe and make available to the public methods acceptable to the NRC staff of implementing specific parts of the Commission's regulations, to delineate techniques used by the staff in evaluation specific problems or postulated accidents, or to provide guidance to applicants. Regulatory Guides are not substitutions for regulations, and compliance with them is not required. Methods and solutions different from those set out in the guides will be acceptable if they provide a basis for the findings requisite to the issuance or continuance of a permit or license by the Commission." Furthermore the 2nd sentence of the 2nd paragraph in Section D establishes DG-1113 as a de-facto regulation, rather than one acceptable method to satisfy the regulations. This sentence infers that final version of DG-1113 will be used as a metric for comparing all other acceptable methods in lieu of the regulations. In addition, the implementation section does not address how the regulatory guide is to be used in conjunction with the licensee's existing licensing basis. Section B acknowledges that the guidance contained in DG-1113 … "will supercede corresponding radiological analysis assumptions provided in other guides when used in conjunction with guidance… DG-1114". Then it is stated "The affected guides will not be withdrawn as they may still be used at the options of the licensees." However, the current DG-1113 Section D statement imposes guidance that constitutes backfitting per 10 CFR 50.109 because Section D established this regulatory guide as a metric for comparison of all other acceptable methods. Paragraph (a)(1) of the backfitting rule states: "(a)(1) Backfitting is defined as the modification … procedures … which may result from a new or amended … regulatory staff position interpreting the Commission rules that is either new or different from a previous staff position …"	requisite to the issuance or continuance of a permit or license by the Commission."

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			This becomes particularly evident since DG-1113 is implemented through conformance to DG-1114, which states 'The application of this regulatory guide may involve ... change to the licensing basis of the facility." Since regulatory guides are not substitutions for regulations, and compliance with them is not required, Section D should be revised to reflect the official text placed on the cover of each NRC staff issued regulatory guide.	
32	A-1	Appendix A.2.2	Footnote 6 of section C.3.2 allows either instantaneous plate-out assumptions OR mechanistic modeling of time-dependent wall deposition, but footnote 1 in Appendix A addresses only mechanistic modeling of wall deposition of iodine by sprays. This inconsistency could result in confusion. Additionally, if the option of instantaneous plate-out is chosen, there are limitations upon the magnitude of the elemental spray removal coefficients that should be specified consistent with WASH-1329 and ANSI/ANS-56.5-1979.	Revise Footnote 1 to read: "If wall deposition by containment sprays is not modeled mechanistically, such as in Revision 2 of Standard Review Plan Section 6.5.2, one-half of the equilibrium radioactive iodine inventory released into the containment atmosphere may be assumed to be deposited on the walls of the containment. The net value of core inventory available for release from containment would, therefore, be 0.25 for a nonmechanistic spray representation. If an assumption of instantaneous wall plate-out of elemental iodine is employed, a limitation of 10 hr^{-1} should be imposed on the elemental spray lambda, consistent with the guidance of WASH-1329 and ANSI/ANS-56.5-1979. Please note that Revision 2 of SRP Section 6.5.2 erroneously implied that 25% of the equilibrium radioactive iodine inventory developed from maximum full-power operation of the core should be assumed to be immediately available for the leakage from the primary reactor system. This value should be 50% of the equilibrium radioactive iodine inventory when time-dependent wall deposition by spray is implemented to avoid accounting twice for the iodine deposited on the wall of the containment."

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33	A-2	Appendices A.2.3 2nd para 1st sentence	The definition of DF in Section A.2.3 should be clarified. Changes have occurred in the definition of C_0 subsequent to the reference documents for Rev. 0 of SRP 6.5.2, which could result in confusion and double credit for elemental plate-out. WASH-1329 defined C_0 as a puff release of 25% of the core inventory of iodine that includes a plate-out factor of two, and limited the maximum elemental DF to 100 for sodium hydroxide additive systems. In Equation 8.3.7-1 of ANSI/ANS-56.5-1979, the definition of C_0 was changed to the initial concentration of elemental iodine prior to application of plate-out model, and the maximum DF was increased to 200 for sodium hydroxide additive systems. These are equivalent, but the potential exists to assume 50% plate-out, and calculate C_0 as a puff release of 25% of the core inventory of iodine, and then credit a maximum elemental DF of 200, which effectively double credits elemental plate-out. It is recommended that C_0 be explicitly defined as the initial concentration of elemental iodine prior to application of the plate-out model, consistent with ANSI/ANS-56.5-1979. Then a maximum elemental DF of 200 would be appropriate regardless of the plate-out modeling.	Revise the first sentence of the 2nd paragraph to read: "The maximum decontamination factor (DF) for elemental iodine is based on the maximum iodine activity in the primary containment atmosphere when the sprays actuate (prior to application of the plate-out model), divided by the activity of iodine in the containment atmosphere remaining in equilibrium with the dissolved iodine in the containment water."
34	A-2	Appendix A.2.3, 3rd	The sentence. "The SRP also states that the particulate iodine removal rate should be reduced by a factor of 10 when a DF of 50 is reached," could lead to confusion about whether it applies to spray or wall deposition removal rates. To eliminate this potential confusion, the sentence should be modified to explicitly state that the particulate iodine spray removal rate is reduced.	Revise the last sentence of the 3rd paragraph to read: "The SRP also states that the particulate iodine spray removal rate should be reduced by a factor of 10 when a DF of 50 is reached. "
35	A-5	Appendix A.6	The NRC is in the process of revising 10 CFR 50.44 to allow reclassification of some equipment; it is not clear how the requirements listed here will be implemented in light of the pending changes. The evaluation to be performed in response	The guidance should allow credit for this reclassified equipment, presuming that appropriate functionality has been assured through maintenance practices.

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			to Section A6 should be designed to take credit for this reclassified equipment.	
36	B-1	Appendix B.1.2	The section states that radionuclide that should be considered include xenons, kryptons, and halogens. The term "halogens" is not used in TID-14844 and in Regulations and guidance documents that are based on and implement TID-14844, but is used in Regulatory Guide 1.183 and other Alternate Source Term documents. For example, 10 CFR100.11 requires assessment of thyroid dose from iodines. Use of the term "halogens" may cause confusion over what isotopes must be considered. To be consistent with TID-14844 and Regulations and guidance documents, the term "halogens" should be replaced with "iodines".	Revise last sentence to read: "Radionuclides that should be considered include xenons, kryptons, and iodines."
37	B-1	Appendix B.1.3	Section B.1.3 gives the composition of the iodine gap inventory in terms of inorganic species and organic species, but section B.2 uses the terms elemental and organic iodine species. Section B.1.3 is the only use of the term inorganic in DG-1113. To eliminate the potential for confusion, it is recommended that the categories elemental and organic iodine species be used consistently throughout this Appendix.	Revise B.1.3 to read "The iodine gap inventory is composed of elemental (99.75%) and organic species (0.25%)."
38	B-1	Appendix B.2, 1st	The values provided in this paragraph do not form a consistent set of calculation results. This may lead to confusion and misuse of this guidance. In fact, the inconsistent factors and composition percentages would result in more organic iodines above the pool than had actually been released from the fuel cladding gap in this accident (suggesting that the pool is adding organic iodines). The only specific pool DFs compatible with the regulatory positions (effective DF = 200 and composition fractions for iodine in the fuel pin gaps and leaving the pool) are 448.9 for elemental iodine and 0.9 for organic iodine. An organic iodine DF of 0.9 is equivalent to postulating some elemental iodine converting to organic iodine compounds before it leaves the	Revise the first portion of this paragraph to read: "If the depth of water above the damaged fuel is 23 feet or greater, the decontamination factors (DF) for the elemental and organic species are 500 and 1, respectively, giving an overall effective decontamination factor of 222. This difference in decontamination factors for elemental (99.75%) and organic iodine (0.25%) species results in the iodine above the water being composed of 44% elemental and 56% organic species. If the depth of water is not 23 feet, the decontamination factor will have to be determined on a case-by-case method (Ref. B-1)."

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			converting to organic iodine compounds before it leaves the pool. The recommended formulation assigns the specific iodine DFs to 500 and 1, and assigns the composition fractions for iodine in the gap to 99.75% elemental and 0.25% organic. This yields an overall effective decontamination factor of 222. The mixture of species released from the pool matches that of the draft guidance, 44% elemental and 56% organic species.	
39	B-2	Appendix B.3	The second sentence states: "Particulate radionuclides are assumed to be retained by the water in the fuel pool or reactor cavity (i.e., infinite DF)." This sentence is not applicable to the TID source term. Therefore, it should be deleted to eliminate confusion.	Delete sentence.
40	B-2, B-3	Appendices B.4.1 B.5.3	No specific guidance on the time dependent profile for release is provided. Since the release is stated to be from a building (containment or fuel building), the underlying mechanism appears to be holdup and release from a constant volume.	Add the following sentence to B.4.1 and B.5.3: "The release rate is a function of the plant configuration, but is generally assumed to be a linear or exponential function over this time period."
41	B-3	Appendix B.5.3, Footnote 3	Technical Specifications at many plants include administrative controls to close the personnel airlock or the equipment hatch if the containment is permitted to be open during fuel movement. However, the last sentence of the footnote indicates that the manual actions to achieve containment closure after a fuel handling accident should not be credited in the radiological analyses. The footnote has the effect of prohibiting future implementation of similar Technical Specification for plants that do not have the administrative controls. It also seems to invalidate the Licensing Bases of plants that currently have such controls and include credit for manual closure.	Add to the footnote: • An explanation as to why the radiological analyses should not credit manual isolation of the containment. • An acknowledgement that deviation from this expectation may be justified on a plant specific basis in accordance with the 10 CFR 50.59 process.

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42	C-1 H-1	Appendices C.1 H.1	The last sentence describes fission product release from fuel that has reached fuel melting temperature. The term: "the fraction of the fuel" is used twice in the sentence and should have two distinct meanings. These are "fraction of the fuel rods that have failed or breached cladding" or "fraction of the fuel material that has melted in a rod. The sentence should be revised to clarify that the distinction between these meanings and so that licensees will provide a better prediction of fission products released from melted fuel. These comments, with a modification on the assumed percentages of iodine that is released, also apply to Appendix H as noted.	Rewrite the sentence as follows: "The release attributed to fuel melting should be based upon the fraction of the fuel rods that have breached cladding due to incipient fuel melting, combined with volumetric fraction of fuel material that has melted wherein it is assumed that 100% of the noble gases and 50% of the iodines are released to the reactor coolant." Add the sentence: "The option of using other criteria to determine fuel cladding failure, such as fuel centerline or planar average energy deposition, is also acceptable."
43	E-1 F-1	Appendices E.1.1.1 F.1.1.1	The assumption of a 60 μCi/gm DE I-131 is typically used for analysis of maximum power operations. However, the Technical Specification maximum primary coolant iodine concentration may be greater than 60 μCi/gm DE I-131 at less than full power conditions. The provision needs to be revised to be consistent.	Revise E.1.1.1 and F.1.1.1 to read: "... permitted by the Technical Specifications at full power operation (i.e., a pre-accident....".
44	E-2, E-3, F-3	Appendix E.2.5 E.2.6	The descriptions of leakage flashing are confusing and the modeling expectations regarding flashing are unclear. EPRI TR-107621, Revision1, Appendix K (Radiological Assessment Guidelines) provides details that would more appropriately address this issue, as shown in the following report quoted: "Note that the iodine released due to flashed break flow is not a consequence of uncovery of the tube bundle, as this flashed fraction is released even when the break site is below the top of the water level (Here we are referring to large leak rates such as with steam generator tube rupture flow rate. Small leaks such as would be the case with technical specification limits on primary to secondary leak rate will mix with boiler water if and only if the tube bundle is covered, that is, credit may be	Sections E2.5.1 through E2.5.4 should be reorganized and revised as follows: E.2.5.1 A portion of the primary-to-secondary leakage will flash to vapor, based on the thermodynamic conditions in the reactor and secondary coolant. E.2.5.2 During periods of total submergence of the tubes in the affected steam generator, the primary-to-secondary break flow that immediately flashes to vapor will rise through the bulk water of the steam generator and enter the steam space. Credit may be taken for scrubbing in the generator, using the models of NUREG-0409, "Iodine behavior in a PWR Cooling

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			assumed for small leaks which are covered by water). Existence of water over the top of the break site indicates that credit may be taken for partial scrubbing of the iodine contained in the flashed flow. Models for scrubbing credit may be found in work that has been performed by Postma and Tam, although the specific applicability of this credit should be evaluated by each licensee prior to use." The transport model should recognize: • Flashed flow occurs even with the tube bundle being covered. • The existence of water over the tube bundle means only that credit may be taken for scrubbing of the flashed flow. The discussion on primary bypass indicates that during periods of uncovery, small leaks entirely escape (i.e., flashed flow + primary bypass = unity). • Small leaks will mix with boiler water "if and only if the tube bundle is covered." In summary, during periods when the tube bundle is covered, large leaks such as with the SGTR flash, but do not entrain primary bypass, and during this period, credit may be taken for partial scrubbing of the flashed flow, depending upon the applicability of the scrubbing model. During periods when the tube bundle is uncovered and still for large leaks, primary bypass is entrained within the flashed flow. For small leaks during periods when the tube bundle is covered, the small leak will mix with the bulk water, so that there is only steaming, and no flashing or primary bypass. For small leaks with tube bundle uncovery, flashing + primary bypass = unity.	System Following a Postulated Steam Generator Tube Rupture Accident" (Ref. E-1). E.2.5.3 When the steam generator tubes are covered, the primary-to-secondary leakage that does not immediately flash is assumed to mix with the bulk water. Leakage that has been apportioned to the affected steam generator, as described in Section 2.1, will mix with the bulk water, so that there is only steaming, and no flashing or primary bypass. Likewise, during periods of total submergence of the tubes in the unaffected steam generators used for plant cooldown, apportioned leakage will mix with the bulk water. E.2.5.4 The radioactivity in the bulk water is assumed to become vapor at a rate that is the function of the steaming rate and the partition coefficient.[3] A partition coefficient for iodine of 100 may be assumed. E.2.5.5 Under conditions of tube uncovery, the transport model parameters should be evaluated to include consideration of both the flashed vapor and the primary bypass that is entrained within the flashed flow. This would apply to both the break flow and leakage flow in the affected steam generator and to the leakage flow in the unaffected steam generators if either region experiences conditions of tube uncovery.
45	E-2, E-3	Appendices E.2.5.4, E.1.4	The guidance of E2.5.4 and E1.4 provided conflicting guidance on the treatment of transport of particulate radionuclides. Section E2.5.4 includes the statement from RG 1.183 that: "The retention of particulate radionuclides in the steam generators is limited by the moisture carryover from the steam	Delete the last sentence from Section E2.5.4.

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			generators." Section E1.4 states that: "Iodine releases from the steam generators to the environment should be assumed to be 97% elemental and 3% organic". Delete the sentence from Section E2.5.4.	
46	F-1	Appendix Introduction	PWR MSLB failure inside containment yield less severe radiological consequences than PWR MSLB failure outside containment. Appendix F should state that it apples to the consequence of a MSLB failure outside containment.	Revise the first sentence to read: "... radiological consequences of a main steam line failure outside containment ..."
47	F-2 G-1	Appendices F.1.4 G.1.3	Sections F.1.4 (PWR MSLB) and G.1.3 (PWR Locked Rotor) indicate the chemical form of radioiodine released from the fuel to the reactor coolant should be assumed to be: • 5% particulate iodine, • 91% elemental iodine, and • 4% organic iodide. Releases from the steam generators to the environment should be: • 97% elemental iodine and • 3% organic iodide. The text states that these fractions apply to iodine released as a result of fuel damage and to iodine released during normal operations, including iodine spiking. One text interpretation is that the chemical form of radioiodine in the reactor coolant due to fuel damage and normal operations is 5% particulate iodine, 91% elemental iodine, and 4% organic iodide, and that the chemical form of radioiodine released from the steam generators to the environment is 97% elemental iodine and 3% organic iodide.	Delete the first sentence in Sections F.1.4 and G.1.3.

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			If the chemical form of radioiodine released from the steam generators is specified, then there is no need to model the chemical form of radioiodine released from the fuel into the primary coolant and leaking into the steam generators. A second text interpretation is that the chemical form of radioiodine released from the steam generators to the environment due to fuel damage is 5% particulate iodine, 91% elemental iodine, and 4% organic iodide. Correspondingly, the chemical form of radioiodine released from the steam generators to the environment due to normal operations (including spiking) is 97% elemental iodine and 3% organic iodide. It appears that the first interpretation is correct, because the second interpretations will produce inconstancies.	
48	H-1	Appendix H.1, 1st	The last sentence describes fission product release from fuel that has reached fuel melting temperature. The term:" the fraction of the fuel" is used twice in the sentence and should have two distinct meanings. These are "fraction of the fuel rods that have failed or breached cladding" or "fraction of the fuel material that has melted in a rod." The sentence should be revised to clarify that the distinction between these meanings and so that licensees will provide a better prediction of fission products released from melted fuel. Additionally, the fraction of the fuel material that is calculated to have melted in the rod is subject to the radioactive isotope release fractions specified for melted fuel material. The licensee should have the option to evaluate the core damage consequences due to fuel failures attributed to fuel melting in fuel rods in more detail.	Revise the third and fourth sentences to read: "The release attributed to fuel melting is based on the fraction of the fuel material that reaches or exceeds fuel melting temperature. For this fuel material fraction, the assumption is that 100% of the noble gases and 25% of the iodines contained in that fraction are available for release from containment. For the secondary system release pathway, 100% of the noble gases and 50% of the iodines contained in that fuel material fraction are released to the reactor coolant." Add the sentence: "The option of using other criteria to determine fuel cladding failure, such as fuel centerline or planar average energy deposition, is also acceptable."
49	H-2	Appendix H.2.2	This section establishes the containment leak rate assumption for the Rod Ejection accident. DG-1113 identifies the leak rate as equivalent to a LB LOCA, even though the calculated	Provide a footnote to 2.2 stating: "Licensee may propose modification of the

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			containment response for a rod ejection is less severe. Use of a more realistic containment leak rate for a rod ejection accident is appropriate because the transient and peak containment pressure, and timing of the containment response will be much less severe than a LB LOCA, which assumes a double-ended pipe break of a larger pipe.	containment release rate on a plant specific basis, since, the containment leak rate associated with the PWR rod ejection accident is less severe than that associated with a LB LOCA."

EDITORIAL COMMENTS

50	6	C.1.4	Editorial: 2nd sentence: 'affect' should be 'effect'	Change 'affect' to 'effect'
51	8	C.2.3 and C.2.4, Eq. 3 & Eq. 4	The variables "f" and "F" are defined in Equations 3 and 4 as the "filter removal efficiency fraction" and the "filter non-removal fraction" (that is, [1 – f]), respectively. To avoid confusion and errors in application, it is recommended that these equations be formulated with one chosen variable symbol. This will minimize further confusion since "F" is also a designation as a subscript to indicate filtered flow in Equation 3.	Choose the same variable, e.g., f, and [1 – f], to use in both equations.
52	11	Footnote 5	To avoid confusion, the footnote should be moved to a reference on the title "Table 1" to match the footnote reference on the title "Table 2".	Move notation for Footnote 4 to the title.
53	15 D-1 E-1 F-1	Table 4 D1.1.1 E1.1.1 F1.1.1	Table 4 refers to a "pre-incident" spike three times, while appendices E and F refer to a "pre-accident" spike. Other instances of this conflicting terminology may exist in DG-1113.	Revise the text to refer only to the term "pre-accident.".
54	12	Table 2	Editorial. Table 2 title font is not bolded.	Use bold font for Table 2 title.

55	17	C.4.6	The title is inconsistent with the content of this section.	Change the title to: "Other Dose Consequences Acceptance Criteria"
56	D-1	Title	Change Title to match SRP 15.6.4	"Assumptions for evaluating the Radiological consequences of main steam line failure outside containment of a BWR"
57	F-1	Title	Change Title to match SRP 15.1.5 Appendix A	"Assumptions for evaluating the Radiological consequences of main steam line failure outside containment of a PWR"
58	13 14 17	C.4.1 C.4.2 C.4.4	Table 4 lists EAB and LPZ dose criteria that would be better placed in Section 4.1 on offsite dose consequences or Section C.4.4 on offsite acceptance criteria. Currently, it is located in the middle of section C.4.2 on CR dose consequences.	Relocate Table 4 to Section 4.1
59	9	C.2.7 C.2.8	Use a consistent way present (χ/Q) in equations 7 and 8. horizontal vs. diagonal line for χ/Q.	Revise the format for χ/Q to be consistent throughout DG-1113.
60	RA-5	IV.5, 2nd	In this section it appears that some of the text from DG-1111 was used in DG-1113 with out appropriate revisions to the test. The mistransferred text states: "...most advantageous approach to addressing the need for additional regulatory guidance on performing assessments of control room atmospheric dispersion." This should be modified to relate to "evaluating radiological consequences of design basis accidents at light-water nuclear power reactors."	Revise the sentence to read: "...most advantageous approach to addressing the need for additional regulatory guidance on evaluating radiological consequences of design basis accidents at light-water nuclear power reactors."