Document Reviewed: ISG-013 Assessing the Consequences of an Accidental Release of Radioactive Materials from Liquid Waste Tanks for COL Applications. Resolution of ISG-014 comments are addressed separately.

Comment No.	NEI Comments of May 4, 2010 and May 29, 2010	NRC Response to NEI Comments
1	Applicability: ISG-013 applicability should be for initial applications received after date ISG is approved.	The NRC staff agrees with the comment. ISG-013 has been revised to make that distinction clear for currently licensed entities under 10 CFR Part 50 and Part 52, and for applicants that have committed in their applications to use the current guidance before the effective date of the revision. (See Section in ISG-013 on Applicability).
2	General: The use of terminology should be consistent and technically correct related to hydrogeologic versus hydrological, hydro geologic properties versus hydrogeological characteristics Hydro geologic characteristics	The NRC staff agrees with the comment. The inconsistent use of terminology has been addressed and corrected.
3	ISG-13 has expanded applicability of requirement for assessing Accidental Releases of Radioactive Materials From Liquid Waste Tanks to evaluating ' vessels or tanks', tanks and vessels'. Vessels is added and not defined.	The NRC staff agrees with the comment. The term "vessel" has been removed from ISG-13.
4	General: ISG 13 and BTP 11-6 states, 'The reviewer will evaluate the proposed technical specification limiting the radioactivity content (becquerel, curie) of liquid-containing tanks to ensure that the technical specification is consistent with the safety evaluation.' I am familiar with a TS (actually relocated to ORM or TRM), limiting Curie content in outside tanks that are not diked, but do not recall limits for tanks inside buildings. a. Does this statement in the ISG overstate the TS for inside tanks, or is it addressed someplace that I am overlooking? b. There is no surveillance test for inside tank radioactivity concentration.	Note that NUREG-0133, Section 4.4, (1st para.) includes a provision noting that indoor tanks be evaluated as well, and be included if the analysis reveals that nearest existing or future water supplies could be affected. Note that approach and requirements described in NUREG-0133 have been incorporated in this revision of ISG-013. See Section 7 on "Specification on Tank Waste Radioactivity Concentration Levels," and Attachment B to ISG-013, "Specifications of the Contents of Radioactivity in Liquid-Containing Tanks." The relocation of this provision from NUREG-0133 to ISG-013 does not change the related technical specifications identified in Chapter 16 of the SRP and FSAR. Chapter 16, Section 5.5, "Programs and Manuals," of the FSAR addresses this commitment in COL applications and is complementary to NUREG-0133 (Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants).

5	General: The ISG should clearly state as a goal that the site-specific conceptual model for accident release and transport should accurately represent site-specific conditions with reasonable and defensible inputs that produce credible results useful for decision making.	The staff agrees with the comment. Based on the information provided by the applicant, the staff will confirm the appropriateness of the proposed scenario and acceptability of underlying assumptions used in the consequence analysis and information obtained from the results of a land-use census, if available, or information gleaned from Federal, State, and local or regional sources. If the staff determines that the information is incomplete or inconsistent with the staff's understanding of site-specific conditions, the staff will request that the applicant provides the necessary clarifications and supporting information. See Section 5 in ISG-013 on "Exposure Scenarios and Acceptance Criteria."
6	Page 2 – third paragraph: The author cites GDC 60 and 61 which applies during normal operations or anticipated operational occurrences and then implies that the acceptance criteria for these events will not result in potable water concentrations exceeding the limits specified in Appendix B to 10 CFR Part 20. Historically, the application of Appendix B to 10 CFR Part 20 to the nearest potable water source is for gross failure of a radwaste tank and not during normal operations or anticipated operational occurrences. NOTE: The author needs to explain that for normal operation and anticipated operational occurrences, the acceptance criteria is that the concentrations of radioactive materials in liquid effluents released to unrestricted area should not exceed the concentration limits in Table 2, Column 2, of Appendix B, to 10 CFR Part 20	In draft ISG-013, liquid effluent concentration limits of Appendix B to Part 20 were applied as acceptance criteria only for the purpose of assessing the acceptability of the results of the consequence analysis and not as a determination of literal compliance with Appendix B to Part 20. However, the final ISG-013 uses instead a dose-based acceptance criteria (100 mrem, 1 mSv) taking into account various uses of water and associated exposure scenarios. The final guidance presents a graded approach where the applicant would start with simpler screening models and progress to more complex and realistic scenarios until compliance is demonstrated with the acceptance criteria. See Section 5 on "Exposure Scenarios and Acceptance Criteria," and Section 6 on "SRP Acceptance Criteria," and for details.

7	Page 3, Section labeled “Issue”: The premise established in the 1st paragraph is that “SRP Sections 2.4.13 and 11.2 with BTP 11-6” are poorly integrated and confusing. Under item 1, it is inferred that SRP Section 11.2 and BTP 11-6 do not apply conservative assumptions to the same extent as SRP Section 2.4.13. This characterization is overstated. Also, SPR Section 2.4.13 quoted phrases such as “extreme events,” or “the most severe of natural phenomena” are taken out of context in drawing comparisons to SRP Sections 11.2 with BTP 11-6. BTP-11-6 establishes conservative assumptions for radioactive liquid-containing tank failure analysis. Although outdoor radioactive liquid containing tank radionuclide concentrations used in tank failure analyses are typically calculated assuming some degree of in-plant processing, they are controlled by technical specifications. Indoors radioactive liquid containing tank radionuclide concentrations are calculated for the bounding tank assuming expected maximum liquid concentrations and spill volume. Whereas it is appropriate to apply “extreme” or “most severe” assumptions for facility design input such as flooding or seismic events, parameters pertinent to ground or surface water dilution are calculated based on reasonable and defensible inputs and assumptions comparable to those applied in SRP Sections 11.2. Historical site-specific environmental data is used to establish conservative, but not “most severe” assumptions related to environmental parameters important in the evaluation of dose consequences from liquid tank spills. For example, assuming the worst-case 10-yr. minimum average, or 95th percentile statistically derived worst-case minimum dilution flow is reasonably conservative and defensible for the purposes of radioactive tank spill consequence evaluation, but should not be characterized as “most severe”.	The final ISG-013 guidance presents a graded approach where the applicant would start with simpler screening models and progress to more complex and realistic scenarios until compliance is demonstrated with the dose-based acceptance criteria. With respect to the development of the radiological source term, the guidance has been expanded and provides more information than in the draft guidance in assigning the tank’s inventory of radioactivity, see Section 3 on "Radioactive Source Term." In either ISG-013 or ISG-014, the objective is to make the level of applied conservatism generally consistent in both aspects of the consequence analysis in light of the technical alignment between review responsibilities of the health physics and hydrology staff. For the descriptions of shared responsibilities - see discussion in ISG-013 on "Overview of Interim Staff Guidance." In addition, see ISG-014 and SRP Sections 2.4.12 and 2.4.13 for details on the type of information and site-specific data that would be evaluated by the hydrology staff.
8	Page 3, Section labeled “Issue” Last sentence of Item 1 requires explanation. Why should it be required to use “more conservative analysis and assumptions” than specified by the guidance for demonstrating compliance with acceptance criteria? Acceptance criteria should be established consistent with the expected probability of the event being evaluated. Analysis methods and assumptions should not be arbitrarily made more conservative without a commensurate adjustment in the acceptance criteria to account for lower overall probability of event occurrence as analyzed. Furthermore, the 10 CFR 20 Appendix B, Table 2, Column 2 concentration limits specified as an acceptance criteria in BTP 11.6 corresponds to a normal operation limit, which appears well balanced with the level of conservatism provided by the evaluation guidelines provided in the document.	The draft and final versions of ISG-013 do not specify that more conservative analysis and assumptions be used. Note that the beginning of that sentence states: "Also, it does not require ..." (emphasis added here). In ISG-013, the discussion on issues is a staff summary of the inconsistent guidance currently contained in SRP Sections 2.4.13 and 11.2 and BTP 11-6. As such, the summary does not present the revised guidance and supporting rationale. The staff's discussion and revised guidance are contained in the following major sections of ISG-013: "Rationale for Revision," "Overview of Interim Staff Guidance," "Interim Staff Guidance on Accidental Releases," "Final Resolution," and "Applicability." See these sections for technical details.
9	Page 3, Section labeled “Issue” Item 2 summarizes scope of SRP 11.2 and BTP-11-6. It’s not clear how Item 2 identifies “major differences” between SRP Section 2.4.13 and 11.2 with BTP-11-6 as implied by the introductory sentence to items 1 and 2. What point is Item 2 making?	Similar comment as Question 8 above. See response to Comment 8 for details.

10	Page 5 -Issue No 1 Failure Mechanism and Radioactivity Releases The LWMS is typically non-safety related and should not 'require a re-evaluation o the LWMS with limiting conditions and controls for operation based on more conservative analysis and assumptions' as given in the bases of this change. The use of an ISG to 'implement more rigorous design codes, standard, or quality assurance measures' as stated is contrary to providing 'acceptable methods of compliance with NRC regulations and the applicants 'applying a graded approach to considering each type of event, radioactive source terms, design features, and potential offsite impacts as also stated in the ISG.	As revised, ISG-013 breaks out the guidance on failure mechanisms and radioactivity releases (Section 1) and application of mitigating design features (Section 2). While the consequence analysis would obviously consider both in determining the amounts of radioactivity that is released beyond the boundary of the building where a tank is located, the separation of these two topics was chosen to differentiate among topics of the analysis dealing with systems and components versus those that are related to structures and design features that could mitigate the impact of a release. This approach should focus the technical review more specifically on plant systems and structural engineering. The guidance does not necessitate a reevaluation of the LWMS. The applicant should consider the impact of a sudden release of radioactivity and assess the impact given specific-plant design features and site-specific conditions using a graded approach. If the consequence analysis shows that the SRP acceptance cannot be met, the applicant should specify a limit on the total amount of radioactive materials in the tank shown to have failed the acceptance criteria.
11	Page 5 -Issue No 1 Failure Mechanism and Radioactivity Releases • What is consequence analysis relative to tank failure? • Where are 'durable and passive' mitigation features defined/design features?	Similar comment as Question 10 above. See response to Comment 10 for details.
12	Page 6 – Issue #2 Mitigating Design Features • The HP staff is listed as determining 'whether the proposed design is capable of retaining the liquid inventory of failed component. Will this review be in addition to or in place of system engineering reviews?	The staff agrees with the comment. The review of plant systems will be done as part of the same effort for the technical review of the LWMS. The review will rely on regulatory requirements and guidance already identified in SRP Section 11.2 and RG 1.206. This section of ISG-013 has been expanded to include the review of balance-of-plant and associated systems, and structural engineering, as appropriate, along with that of health physics.
13	Page 6- Mitigating Design Features: Application of the following proposed guidance is not clear. "In cases where mitigating design features of tanks and vessels meet the acceptance criteria, the staff might waive the need for a consequence analysis in the context of SRP Section 11.2. However, this provision does not change the requirements of SRP Section 2.4.13 that relate to demonstrating the adequacy of the site's hydro geologic properties, via a consequence analysis that uses combined literature data and site data characterizing transport mechanisms, such as aquifer materials, hydraulic conductivity, porosity, etc." What would be applicable and appropriate acceptance criteria to demonstrate "the adequacy of the site's hydro geologic properties" if mitigating design features are not considered? Limiting tank size and isotopic content would be mitigating design features.	The staff agrees with the comment. If the staff determines that mitigating design features were used and found to be acceptable in meeting the acceptance criteria, then no SRP 11.2 consequence analysis would be required in such a case. However, this conclusion does not void compliance with the requirements of 10 CFR Part 100 and review process described in SRP 2.4.13. See related discussion in ISG-014 and coordination of staff review responsibilities between hydrology and health physics.

14	Page 6 includes the following proposed interim staff guidance: In cases where mitigating design features of tanks and vessels meet the acceptance criteria, the staff might waive the need for a consequence analysis in the context of SRP Section 11.2. However, this provision does not change the requirements of SRP Section 2.4.13 that relate to demonstrating the adequacy of the site's hydro geologic properties, via a consequence analysis that uses combined literature data and site data characterizing transport mechanisms, such as aquifer materials, hydraulic conductivity, porosity, etc.	Similar comment as Question 13 above. See response to Comment 13 for details.
15	Page 6 -Item #3 Radioactive Source Term • The source terms that must be considered listed in Attachment A but not included in ANSI/ANS 18.1 1999 or 1984 should be removed (Tc-99)	Environmentally mobile and long-lived radionuclides have been added to the listing of radionuclides that should be considered in the consequence analysis. Among others, I-129 and Tc-99 are included because they are fission products, can be present in reactor coolant and, when released into the environment, move readily with groundwater, with little retardation and radiological decay. Tritium has been added in light of recent operating experience and the results of the NRC task force report on liquid radioactive releases, dated September 2006. An applicant should provide a justification for excluding these and other radionuclides. The staff will evaluate the applicant's justification for the deletion of any radionuclide and, if needed, may request technical clarifications. For details, see ISG-013, Section 3 on "Radioactive Source Term" and Table 1 of Attachment A.
16	Page 7-Item #4 Calculations of Transport Capabilities in Ground Water or Surface Water • The Proposed Interim Staff Guidance on Page 4 states that this item (fourth step) 'Is addressed in SRP Section 2.4.13'. This step is the only item that the Hydrological Engineering staff is designated to perform. • Please clarify whether step #4 provides the guidance for meeting SRP 2.4.13.	The staff agrees with the comment. The guidance on hydrology and ground and surface water modeling has been revised in the final version of ISG-013. The revision eliminates the summary and refers to ISG-014 for specific details. This approach was used to avoid an inconsistent interpretation of the summary with the more detailed information provided in ISG-014. For the purpose of conducting the review, the technical alignment between health physics and hydrology staff has been clarified in ISG-013 and ISG-014. For the descriptions of shared responsibilities, see "Overview of Interim Staff Guidance." In addition, see ISG-014 and SRP Sections 2.4.12 and 2.4.13 for details on the type of information and site-specific data that would be evaluated by the hydrology staff.
17	Page 7, Calculations of Transport Capabilities in Ground Water or Surface Water: The location to apply the ECLs identified in 10 CFR Part 20, Appendix B, Table 2, Column 2 is not clear. Is it the "nearest [existing or future] potable water supply", the "point of entry in an unrestricted area", regardless of actual or "known future users?"	The discussion in ISG-013 has been expanded and clarified in light of the comment. For the purpose of the consequence analysis, the compliance location is the point of entry in unrestricted areas beyond the site boundary where the applicant has no administrative controls. See Section 5 on "Exposure Scenarios and Acceptance Criteria" in ISG-013. Also, see related discussion in ISG-014 and SRP Sections 2.4.12 and 2.4.13 for details on the type of supporting information and site-specific data that would be evaluated by the hydrology staff.

18	Page 7 includes the following proposed interim staff guidance: For example, the staff may apply simplified calculation procedures and models, such as those contained in RG 1.113 and NUREG/CR-3332 using demonstrably conservative coefficients and assumptions and physical conditions (such as lowest recorded river flow) likely to give the most adverse dispersion of liquid effluents. [Emphasis added] The staff will compare the applicant's model, assumptions, and results with its own to assure that the results are comparably conservative. RAIs on several ESP/COL applications have requested that applicants use worst-case coefficients, assumptions, and physical conditions in assessing accidental releases. In a groundwater analysis for example, the request might require the use of the maximum observed hydraulic conductivity in combination with the minimum observed distribution coefficient while taking no credit for acceptable design features in mitigating an LWMS release. While demonstratively conservative, combining multiple worst-case coefficients, assumptions and physical conditions results in a scenario that has a very low probability of occurrence. Acknowledging the need to be conservative in the interest of public safety, combining worst-case coefficients, assumptions and physical conditions can nevertheless lead to unrealistic outcomes. More definitive staff guidance, other than use of worst-case coefficients, assumptions and physical conditions, should be provided to better quantify what constitutes an acceptable level of conservatism. This would benefit both NRC staff and applicants as much of the dialogue through the RAI process has focused on what constitutes acceptable conservatism in assigning parameter values. Given the uncertainty inherent to groundwater transport analysis, a path forward might be to adopt a probabilistic framework for assessing regulatory compliance	As revised, the guidance presents a graded approach where the applicant would start with simpler screening models and progress to more complex and realistic scenarios until compliance is demonstrated with the dose-based acceptance criteria. With respect to the development of the radiological source term, the guidance has been expanded and provides more information than in the draft guidance in assigning the tank's inventory of radioactivity. The objective is to make the level of conservatism applied in ISG-013 and ISG-014 generally consistent in both aspects of the consequence analysis. In ISG-013, see discussion in "Overview of Interim Staff Guidance." Also, see related discussion in ISG-014 and SRP Sections 2.4.12 and 2.4.13 for details on the type of groundwater and surface water modeling methods and supporting information that would be evaluated by the hydrology staff.
19	Page 8 - Item #5 Exposure Scenarios and Acceptance Criteria • Include in discussion of radionuclide concentrations in surface or ground water that acceptance is based on levels at unrestricted area.	The acceptance criteria have been revised and no longer rely on liquid effluent concentration limits given in Part 20, Appendix B, Table 2, Column 2. Instead, the acceptance criteria are based on a maximum dose of 100 mrem (1 mSv) and defined uses of water and associated exposure scenarios. The scenarios consider the direct consumption of water, and indirect and combined uses of water. In ISG-013, see Section 5 on "Exposure Scenarios and Acceptance Criteria," and Section 6 on "SRP Acceptance Criteria," and for details.
20	Pg. 8, Exposure Scenarios and Acceptance Criteria: "The basis for acceptance is that the staff's review shows that the postulated event would not result in radionuclide concentrations in surface or ground water exceeding the ECLs of 10 CFR Part 20, Appendix B, Table 2, Column 2; or in a maximum water concentration that when consumed on an annual basis will not exceed a dose limit of 1 mSv (100 mrem) from all relevant pathways." Does this require the applicant to demonstrate compliance with both the ECL limit as well as the annual dose limit, or may the applicant demonstrate compliance with either the ECL limit or the dose limit.	As described in the current version of SRP Section 11.2 and BTP 11-6, the acceptance criteria state that the postulated release should not result in radionuclide concentrations in usable surface water or groundwater exceeding the ECLs of 10 CFR Part 20, Appendix B, Table 2, Column 2. While ECLs are a reasonable standard for direct consumption of water, their use is not as obvious or practical for indirect or combined uses of water and for the consumption of impacted food products. As a result, a dose-based limit (100 mrem, 1 mSv) is applied instead in ISG-013 as it provides the most flexibility in assessing compliance, regardless of the postulated uses of water and exposure scenarios. See clarification in Section 5 on "Exposure Scenarios and Acceptance Criteria," and Section 6 on "SRP Acceptance Criteria."

21	Pg. 8, Section labeled “Proposed Interim Staff Guidance”, Item 5 – Exposure Scenarios and Acceptance Criteria: The section should be re-written to rely more heavily on existing NRC guidance establishing site-specific exposure pathways, dose assessment methodology, and provide more definitive acceptance criteria. Outdoor tank radiological releases postulated to be transported to unrestricted areas over surface pathways (e.g., to surface waters via yard drains) occur over relatively short periods of time. The current BTP 11.6 evaluation guidance and concentration-based limits appear appropriate for such a postulated event. For the purposes of outdoor liquid tank failure consequence analysis, 10 CFR 20 Appendix B, Table 2, Column 2 concentration limits are typically applied as a peak instantaneous limit rather than an annual average. The adoption of a more complex dose assessment methodology for postulated outdoors storage tank spill evaluation is not warranted and would likely be much less protective than the current BTP-11.2 practice. Maintaining outdoor storage tank inventories in compliance with limits imposed by the existing BTP 11.2 methodology has not been a burden on existing reactors and is not anticipated as a burden for new reactor applications. Therefore, it is concluded that there is no obvious benefit from adopting a more complex model and less protective standard for outdoor storage tank radiological release consequence assessment concluded that there is no obvious benefit from adopting a more complex model and less protective standard for outdoor storage tank radiological release consequence assessment. Unlike outdoor tank spills, indoor tank radiological releases are postulated to be transported to unrestricted areas by groundwater and occur over relatively long periods of time. Consideration of a more complex dose assessment methodology for postulated indoors storage tank spill evaluation might be warranted to ensure all dose pathways is considered. A long-term release model and acceptance criteria as suggested by the draft ISG may be more suitable than guidance provided in the current BTP 11.6. However, the ISG should clearly identify BTP-11.6 as an appropriate basis for determining maximum tank radionuclide source term, and provide more focused guidance regarding a groundwater transport and liquid pathway dose modeling assumptions. Groundwater transport and dose analysis modeling assumptions should be in balance with the non-mechanistic accident spill and release assumptions currently provided in BTP-11.6. The specification of the 10 CFR 20 Appendix B, Table 2, Column 2 equivalent annual dose criteria (i.e., 1.0 mSv/yr) should also be reconsidered. The dose acceptance criteria for postulated indoor tank radiological releases transported to unrestricted areas by groundwater should be selected consistent with use of a reasonable dose assessment models based on RG 1.113 surface water dilution models (for groundwater to surface water release scenarios), and RG 1.109 for assessment of doses to man from all applicable site specific pathways. 10 CFR 50 Appendix I liquid pathway dose objectives may be: a. More appropriate when applying physically accurate representation of the natural systems similar to existing practice for routine release dose assessment, and b. more consistent with limits established for postulated outdoor storage tank releases that are apply 10 CFR 20 Appendix B, Table 2, Column 2 concentration limits as a peak instantaneous concentration limit.	The guidance on models and assumptions has been revised to offer more flexibility in light of the comment. The acceptance criteria were changed from a strict interpretation of Part 20, Appendix B liquid effluent concentration limits of Table 2 to a dose limit (100 mrem or 1 mSv). The guidance now presents a graded approach where the applicant would start with simpler screening models and progress to more complex and realistic scenarios until compliance is demonstrated. For the radiological source term, the guidance provides more information than the draft guidance in assigning the tank’s inventory of radioactivity. The objective is to make the level of conservatism applied in ISG-013 and ISG-014 generally consistent in both aspects of the consequence analysis. An applicant may structure a consequence analysis using variances on the current guidance, as warranted by site-specific conditions. If so, the staff will evaluate the alternative approach and confirm independently that the method is consistent with the objectives of the SRP and meet the acceptance criteria. See discussion in ISG-014 on SRP Sections 2.4.12 and 2.4.13 and supporting information that would be evaluated by the hydrology staff. See Section 5 on "Exposure Scenarios and Acceptance Criteria," and Section 6 on "SRP Acceptance Criteria."
22	Page 8, Section labeled “Proposed Interim Staff Guidance”, Item 5 – Exposure Scenarios and Acceptance Criteria Items a and b; Consider revising the guidance to require maximum individual dose evaluations performed consistent with RG 1.109 utilizing site specific dilution parameters and applicable pathway assumptions. By splitting the requirement into items a and b, it implies that separate evaluations are performed for each “exposure pathway case”, and it is not clear whether results are combined before comparison to the annual dose limit or not. Depending on the site and location being evaluated, drinking water, fish and recreational pathways may all exit at the same location, or not. The guidance should be written more generically and take advantage of existing regulatory guidance through reference.	Similar comments as that of Questions No. 18, 20, and 21. See staff response to NEI No. Questions 18, 20 and 21 on exposure scenarios and acceptance criteria.
23	Page 9 - Item #6 Specifications on Tank Waste Radioactivity Concentrations • Delete vessel from discussion of liquid containing tans and technical specifications.	The NRC staff agrees with the comment. The term "vessel" has been deleted from this revision of ISG-013.

24	Pg. 9, Section labeled “Proposed Interim Staff Guidance”, Item 6 – Specifications on Tank Waste Radioactivity Concentration Levels – Item 6 should be revised to acknowledge that not all radioactive liquid containing tanks would require technical specification limits. Although outdoor radioactive liquid containing tanks typically require technical specifications controls to ensure concentrations are maintained below offsite dose analysis assumptions, indoor radioactive liquid containing tank radionuclide concentrations are calculated based on maximum expected liquid concentrations and spill volume. Technical specifications are not required to ensure concentrations are maintained below offsite dose analysis assumptions for tanks analyzed using conservative maximum expected liquid concentrations and spill volume.	The final version of ISG-013 presents a clarification and expanded guidance on this aspect in light of the comment. Also note that the expanded guidance imports the corresponding aspects described in Section 4.4 of NUREG-0133 and consolidates all of it in Attachment B of ISG-013. The clarification describes necessary steps when technical specifications would be exceeded, see Section 7 "Specifications on Tank Waste Radioactivity Concentration Levels." If the results of site-specific analyses do not demonstrate compliance with the SRP acceptance criteria, as described in Section 7 (Specifications on Tank Waste Radioactivity Concentration Levels) of ISG-013 and in Attachment B to this ISG, the applicant is expected to propose technical specifications limiting the total amount of radioactivity in such tanks, based on site-specific conditions evaluated against the acceptance criteria identified in ISG-013. See Section 5 on "Exposure Scenarios and Acceptance Criteria, and Section 6 on "SRP Acceptance Criteria."
25	Page 9 -Item #7 Evaluation Findings for Combined License Reviews • Specify that the Health Physics and Hydrological Engineering staff as the ‘staff’ that will document the results of evaluation.	The technical alignment between branches (health physics and hydrology) assigned for their respective reviews has been clarified in ISG-013. For the descriptions of shared responsibilities, see: "Overview of Interim Staff Guidance." In addition, see ISG-014 and SRP Sections 2.4.12 and 2.4.13 for details on the type of information and site-specific data that would be evaluated by the hydrology staff.
26	Page 10 – paragraph e The paragraph is confusing due to the postulated tank failure having to meet the requirements of GDC 60 and 61. These requirements are applicable during normal operations or anticipated operational occurrences.	The NRC staff agrees with the comment. The descriptions of the conclusions and findings of the staff's evaluation have been revised in ISG-013. See revised evaluation findings presented in Section 8 on "Evaluation Findings for Reviews of Part 52 COL and Other Applications."

27	Page 10 provides the following proposed interim staff guidance: For either case [presumably with and without mitigating design features], the staff concludes that the postulated failure of a tank and its associated components has been evaluated and the design is acceptable and meets the requirements of GDC 60 and 61 for the control of releases of radioactive materials to the environment and provides an adequate level of safety during normal reactor operation, including anticipated operational occurrences. Such a release will not result in radionuclide concentrations in surface or ground water exceeding the ECLs of 10 CFR Part 20, Appendix B, Table 2, Column 2; or in a maximum water concentration that when consumed on an annual basis will not exceed a dose limit of 1 mSv (100 mrem) from all relevant pathways, at the nearest source of potable water, as described in the application. The proposed interim staff guidance restated above suggests that inconsistencies between SRP 2.4.13, SRP 11.2, and BTP 11-6 are not resolved. On one hand, there is acceptance of passive and durable design features in mitigating an accidental release. On the other hand, an applicant that might use such acceptable design features must nevertheless ignore these features, postulate a tank failure, and demonstrate that radionuclide concentrations meet 10 CFR Part 20 or the 100 mrem limit as applicable. Therefore, the possibility exists that an applicant could use acceptable design features, but potentially fail to comply with the concentration/dose limits because no credit can be taken for design features in mitigating the release. The interim staff guidance should be more explicit in defining the NRC's position on this issue (i.e., credit can be taken for design features mitigating a release or not).	Several aspects of ISG-013 have been revised to address the concerns identified in this question. The approach applied in considering the use and credit for mitigating design features has been clarified. If the results of site-specific analyses do not demonstrate compliance with the SRP acceptance criteria, as described here and in Attachment B to this ISG, the applicant should propose technical specifications limiting the total amount of radioactivity in such tanks, based on a site-specific conditions evaluated against the acceptance criteria identified in ISG-013. See Section 2 on "Mitigating Design Features." The acceptance criteria were changed from a strict interpretation of Part 20, Appendix B liquid effluent concentration limits of Table 2 to a dose limit (100 mrem or 1 mSv). See discussions and clarification in Section 5 on "Exposure Scenarios and Acceptance Criteria," and Section 6 on "SRP Acceptance Criteria." The conclusions and evaluation findings for the evaluation and confirmatory analyses conducted by the health physics staff have been revised in ISG-013. See Section 8 on "Evaluation Findings for Reviews of Part 52 COL and Other Applications."
28	ATT A. -Reference to ANSI /ANS 18.1-1999 radionuclide's, in addition the Table in ISG adds I-129 and TC-99. Existing COL applicants (AP-1000) reference 1984 version of ANSI. The current evaluations may not include I-129 and Tc-99 in the list of source terms. Will a new calculation be required? NOTE: The author needs to determine a graded acceptance criteria depending upon whether the event is normal operation, anticipated operational occurrence or a postulated gross fail of a radwaste tank.	In response to the comments, ISG-013 has been revised and now includes more details. Environmentally mobile and long-lived radionuclides have been added to the listing of radionuclides that should be considered in the consequence analysis. Among others, I-129 and Tc-99 are included because they are fission products, can be present in reactor coolant and, when released into the environment, move readily with groundwater, with little retardation and radiological decay. Tritium has been added in light of recent operating experience and the results of the NRC task force report on liquid radioactive releases, dated September 2006. An applicant should provide the justification for excluding these and other radionuclides. The staff will evaluate the applicant's justification for the deletion of any radionuclide and, if needed, the staff may request technical clarifications. For details, see ISG-013 Section 3 on "Radioactive Source Term" and Table 1 of Attachment A.
29	Editorial: Page 1 Should the title be 'Assessing the Consequences of an Accidental Release of Radioactive Materials from Liquid Tanks and Vessels'?	The NRC staff agrees with the comment. The title to ISG-013 has been changed to remove "vessels".

30	Editorial: Page 2 Consider revising third paragraph 2nd and 3rd sentence to – A single failure of one of these tanks could release radioactive liquids to surface or ground water and potentially endanger the public. Meeting these criteria provides assurance that during normal operations or anticipated operational occurrences releases of radioactive materials due to a single failure of a liquid –containing tank outside containment or outdoors will not result in potable water concentrations exceeding the limits specified in Appendix B to 10 CFR Part 20.	The NRC staff disagrees with the comment on using "potable water" only in demonstrating compliance with the acceptance criteria. In recognition of the potential confusion on the various uses of water, the issue has been clarified in finalizing ISG-013. The term "usable water" has been retained since ISG-013 considers exposure pathways other than just drinking water, such as crop irrigation and livestock watering. As a result, a dose-based limit (100 mrem, 1 mSv) is applied instead in ISG-013 as it provides the most flexibility in assessing compliance, regardless of the postulated uses of water and exposure scenarios. See clarification in Section 5 on "Exposure Scenarios and Acceptance Criteria," and Section 6 on "SRP Acceptance Criteria."
31	Editorial: Page 2 last paragraph – Add ‘s’ to consequence in first sentence. In third sentence insert ‘the’ before NRC’s public dose limit.	The NRC staff agrees with the comments. The text was corrected in finalizing ISG-013.
32	Editorial: Page 3 Rational section item #2- Consider changing may to ‘will’.	The NRC staff agrees with the comment. The text was corrected in finalizing ISG-013.
33	Editorial: Page 4 item #4 – Consider revising ‘likely future water users’. This sounds like a prediction.	The NRC staff disagrees with the comment. The staff has retained "likely future water users" since the language is consistent with associated technical specifications and prior guidance of NUREG-0133, Section 4.4. Note that based on the results of the yearly land-use census, licensees should identify whether there is a need to update exposure scenarios and pathways in plant environs in assessing radiological impacts to members of the public.
34	Editorial: Page 5 Item #1 – □ In first paragraph first sentence revise ‘into’ too “to the environment’ □ Remove the word ‘both’ in fifth bullet, □ Revise ‘offsite users’ to “members of the public’	The NRC staff agrees with the comments. The text was corrected in finalizing ISG-013.
35	Editorial: Page 6 Item 2 and 3- □ The first paragraph introduce a new terminology ‘waste collector tanks or sample tanks’ □ Use the term equipment consistently for example ‘ failed equipment is used one time and in the next time ‘failure of a tank and its components’ is used.□ In the last paragraph what does ‘ both types of water’ refer too?	With respect to terminology, the NRC staff agrees with the comments. The text was corrected in finalizing ISG-013. With respect to types of water, the draft ISG referred to surface water and groundwater in recognition that both could be impacted by a single tank failure. This section of ISG-13 has been revised and note that it now refers to ISG-014 for specific details when there is a need to consider both surface water and groundwater.

36	Editorial: Page 7 Items 3 and 4 □ What is meant by 'type of scenario' in first paragraph? □ In first sentence should 'usable' water be revised to potable?	In response to the observations, the staff has revised the associated text for clarification. In determining which exposure scenarios should be considered in the applicant's analysis, ISG-013 has been revised and now presents more specific details in assessing doses to members of the public. While ISG-013 identifies specific exposure scenarios, it is the applicant's responsibility to assign either a bounding scenario or define scenarios that reflect the results of local land-use census. The NRC staff disagrees with the suggestion on using potable water only in demonstrating compliance with the acceptance criteria. The term "usable water" has been retained since ISG-013 considers exposure pathways other than just drinking water, such as crop irrigation and livestock watering. As a result, a dose-based limit (100 mrem, 1 mSv) is applied instead in ISG-013 as it provides the most flexibility in assessing compliance, regardless of the postulated uses of water and exposure scenarios. See clarification in Section 5 on "Exposure Scenarios and Acceptance Criteria," and Section 6 on "SRP Acceptance Criteria."
37	Editorial: Page 7 Item 4- □ In the first paragraph fourth sentence the statement: 'generated subsequently during ground water transport' needs clarification. Is this in reference to transport because of time or interaction with ground water?□ In last sentence use lower case for 'confirmatory'	The NRC staff agrees with the comments. The text was corrected in finalizing ISG-013. Note that ISG-013 now refers to ISG-014 for specific details on hydrology.
38	Editorial: Page 9 item 7- Revise the second sentence to remove 'whether' which is typically used with "OR" statements instead of "AND" statements.	The NRC staff agrees with the comment. The text was corrected in finalizing ISG-013.
39	Editorial: Page 11 Reference #10-Revise 10 CFR 50.34(a) to read "10 CFR 50.34a"	The NRC staff agrees with the comment. The text was corrected in finalizing ISG-013.
40	Editorial: Page 12 Reference 12 – Clarify reference and title, is it 10 CFR 50.36(a) "Technical Specifications" or 10 CFR 50.36a "Technical Specifications on Effluents from Nuclear Power Plants"?	The NRC staff agrees with the comment. The text was corrected in finalizing ISG-013.