

NRC Staff Response to Public Comments on Proposed Interim Staff Guidance (ISG) DC/COL-ISG-024 “Implementation of Regulatory Guide 1.221 on Design-Basis Hurricane and Hurricane Missiles”

A notice that Proposed DC/COL-ISG-024 ([ML12132A512](#)) was available for public comment was published in the *Federal Register* on October 22, 2012 ([77 FR 64564](#)). The public comment period ended on November 21, 2012. Comments submissions were received from the following three organizations/individuals:

GEH: Patricia Campbell, ESBWR Design-Centered Working Group, GE Hitachi Nuclear Energy ([ML12328A012](#))
 JDS: John Stevenson, J.D. Stevenson Consulting Engineer ([ML12328A013](#))
 NEI: Russell J. Bell, Nuclear Energy Institute ([ML12332A223](#))

The NRC staff's resolutions of the public comments are provided in the following table:

Comment #	Commenter	ISG-024 Section	Comment	NRC Resolution
1	GEH	General and Page 1	<p>Comment: The title of DC/COL-ISG-024 refers specifically to RG 1.221. However, the guidance is also informed by RG 1.76 and RG 1.142 in order to effectively limit the need to report a design basis hurricane wind speed as a site characteristic.</p> <p>Suggested Resolution: At a minimum, explain in the purpose that the interim staff guidance explains how to apply RG 1.221, considering NRC regulatory guidance in RG 1.76 and RG 1.142. These two regulatory guides are discussed in detail in the "Issue Discussion" section. The "Staff Guidance" section is dependent upon guidance in all three regulatory guides to support the design basis hurricane wind speed equal to or exceeding 140 mi/hr (63 m/s).</p> <p>Add to the "Purpose" section on Page 1:</p> <p>As explained in detail below, application of RG 1.221 is in conjunction with and informed by guidance in applying RG 1.76, "Design-Basis Tornado and Tornado Missiles for Nuclear Power Plants," and RG 1.142, "Safety-Related Concrete Structures for Nuclear Power Plants (other than Reactor Vessels and Containments)."</p>	<p>Response: The NRC staff agrees with this comment that ISG-024 should be enhanced by explaining in the purpose section that the application of RG 1.221 is informed by guidance provided in RG 1.76 and RG 1.142.</p> <p>Disposition: The NRC staff has added the suggested sentence to the Purpose Section of ISG-024.</p>

Comment #	Commenter	ISG-024 Section	Comment	NRC Resolution
2	GEH NEI	"Staff Guidance" Section, Page 5, Paragraph 1	<p>Comment: This paragraph seems to be a statement of applicability (i.e., "those sites along the Gulf and Atlantic coasts"). However, "Staff Guidance, c. Combined License Applications," on page 6, and "Applicability," on page 8, do not appear to limit the scope to only the sites along the Gulf and Atlantic coasts. RG 1.221 states: "This guidance applies to the contiguous United States but does not address the determination of the design basis hurricane wind speed and hurricane generated missiles for sites located along the Pacific coast or in Alaska, Hawaii, or Puerto Rico; the NRC will evaluate such determinations on a case-by-case basis." It is not clear if the NRC intends all sites within the contiguous US to address the guidance in "Staff Guidance, c. Combined License Applications," or if sites that may be outside the hurricane contour lines need only state that the design-basis tornado is bounding for a site.</p> <p>Suggested Resolution: Because the scope is intended to apply only to certain sites in hurricane areas along the Gulf and Atlantic coasts, modify "Staff Guidance," a. "Early Site Permit Applications," and c. "Combined License Applications," on page 6 to explain that there is a group of sites in locations outside the hurricane contour lines for which design-bases hurricane winds are not applicable. The following changes are suggested:</p> <ol style="list-style-type: none"> An ESP applicant should use RG 1.221 to determine a site-specific design basis hurricane wind speed for its site. If the proposed site is interior to the 140 mi/hr (63 m/s) contour lines in RG 1.221 (Figures 1, 2, or 3), the ESP applicant should state that the design-basis tornado is bounding for the site; no further action with respect to hurricane wind loads is necessary. If the site-specific design basis hurricane wind speed equals or exceeds 140 mi/h (63 m/s), the ESP applicant should add a site characteristic value called "Design Basis Hurricane Wind Speed" to its lists of site characteristics in its site safety analysis report (SSAR).² [No change.] For each case below, a COL applicant should first use RG 1.221 (Figures 1, 2, and 3) to determine a 	<p>Response: The NRC staff agrees with this comment that ISG-024 should be clarified to state that no action is necessary for those sites located far from the Gulf and Atlantic coasts. In particular, sites located interior to the 140 mi/hr (63 m/s) contour lines in RG 1.221 need only to state that the design-basis tornado is considered to be bounding.</p> <p>Disposition: The NRC staff has revised Section "a" of the Staff Guidance portion of ISG-024 as follows:</p> <p>An ESP applicant should use RG 1.221 to determine a site-specific design basis hurricane wind speed for its site. If the proposed site is interior to the 140 mi/hr (63 m/s) contour lines in RG 1.221 (Figures 1, 2, or 3), the ESP applicant should state that the design-basis tornado is bounding for the site; no further action with respect to hurricane wind loads is necessary. If the site-specific design basis hurricane wind speed equals or exceeds 140 mi/h (63 m/s), the ESP applicant should add a site characteristic value called "Design Basis Hurricane Wind Speed" to its lists of site characteristics in its site safety analysis report (SSAR).²</p> <p>The NRC staff has also revised the first paragraph of Section "c" of the Staff Guidance portion of ISG-024 as follows:</p> <p>For each case below, a COL applicant should use RG 1.221 (Figures 1, 2, and 3) to determine a site-specific design basis hurricane wind speed and hurricane missile spectra (including</p>

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			<p>site-specific design basis hurricane wind speed and hurricane missile spectra (including missile mass and velocity) for its site. If the proposed site is interior to 140 mi/hr (63 m/s), then <u>no</u> further action is necessary. If the site-specific design basis hurricane wind speed equals or exceeds 140 mi/h (63 m/s), the COL applicant should <u>determine the design basis hurricane missile spectra (including missile mass and velocity) for its site and add these values to its lists of site characteristics in its COL Final Safety Analysis Report (FSAR).</u></p> <p>[No change to the cases in Item c that follow this introductory paragraph.]</p>	<p>missile mass and velocity for its site. If the proposed site is interior to the 140 mi/hr (63 m/s) contour lines in RG 1.221 (Figures 1, 2, or 3), the COL applicant should <u>state that the design-basis tornado is bounding for the site; no further action is then necessary. If the site-specific design basis hurricane wind speed equals or exceeds 140 mi/h (63 m/s), the COL applicant should determine the design basis hurricane wind speed and hurricane missile spectra (including missile mass and velocity) for its site and add these values to its lists of site characteristics in its COL Final Safety Analysis Report (FSAR).</u></p>
3	NEI	Staff Guidance, c. Combined License Applications, Page 6, and Applicability, Page 8	<p>Comment/Basis: Several new reactor applicants have previously responded to requests for additional information (RAIs) issued by the NRC to address hurricane missiles postulated by Regulatory Guide 1.221. These applicants have resolved the RAIs through interactions with the NRC staff, incorporated changes into their COL applications, and have submitted COLA revisions based on that resolution. "Staff Guidance, c. Combined License Applications," on page 6 of ISG-024 indicates the need for certain information to be incorporated in specific sections of the application, which may be different than the resolution agreed to with the NRC. Additional COLA changes may be required if the staff requires verbatim compliance with the ISG as currently worded.</p> <p>Recommendation: Add clarification under "Applicability," on page 8, that ISG-024 allows for other specific resolution established via applicant-specific interactions. Or specify that ISG-024 applies to reviews of COL applications where the resolution of the applicant's conformance with RG 1.221 has not already been achieved as of the effective date of the guidance.</p>	<p>Response: The NRC staff agrees that clarification should be added to ISG-024 stating that ISG-024 applies to reviews of ESP, DC, and COL applications when the resolution of the applicant's conformance with RG 1.221 has not already been achieved. This addresses the underlying concern articulated in the comment, as well as avoiding potential backfitting or issue finality concerns.</p> <p>Disposition: The NRC staff has added the following to the Purpose Section of ISG-024:</p> <p>This ISG applies to reviews of ESP, DC and COL applications where the NRC staff has not resolved the applicant's conformance with RG 1.221 as of the effective date of this guidance.</p>

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4	JDS	General Comment	I suggest the title of RG 1.221 be changed to, "Design-Basis Hurricane and Hurricane Missiles Applicable to Reactor and Spent Fuel Safety at Nuclear Power Plants." Reason: Nuclear power plants also include nuclear safety criteria for structures, systems and components associated with high level radioactive waste storage as defined and specified in RG 1.143 for which these hurricane winds and missiles specified in the RG 1.221 do not apply. (See wind based loading of Safety Class 2a, 2b and 2c of RG 1.143 as shown attached).	<p>Response: The NRC staff does not agree that a change to the title of RG 1.221 is necessary.</p> <p>RG 1.117 (ML003739346) currently identifies the SSCs that should be protected from the effects of the design-basis tornado. With the recent promulgation of RG 1.221, a future revision of RG 1.117 will also identify those SSCs that should be protected from the effects of the design-basis hurricane. Likewise, a future revision of RG 1.143 (ML013100305) will include hurricane design criteria for radwaste management facilities based on hurricane data presented in RG 1.221.</p> <p>Disposition: No changes.</p>
5	JDS	General Comment	It is my understanding that U.S. government agencies are required by Section 12(d) of Public Law 104-113 to use National Consensus Standards as applicable. On April 22, 2011 the American Nuclear Society an Accredited Standards Development Organization, SDO published the Standard, "Estimating Tornado, Hurricane and Extreme Straight Wind Characteristics at Nuclear Facility Sites," ANSI/ANS 2.3-2011. This standard used the same database references as the NRC has used in its Section B Discussion in RG 1.221 namely NUREG/CR-4461. Revision 2 even though it is slightly less conservative than the database developed at the Lawrence Livermore National Laboratory for the U.S. Department of Energy in 2000. In my opinion, consistent with Public Law 104-113, ANS Standard 2.3-2011 should have been the basis of the hurricane hazard with the U.S. NRC taking exception to the ANS/ANSI Standard where and if the U.S. NRC does not agree with the ANSI/ANS Consensus Industry Standard.	<p>Response: Revising RG 1.221 (ML110940300) to endorse ANSI/ANS-2.3-2011 is beyond the scope of promulgating ISG-024.</p> <p>In addition, the NRC staff notes that ANSI/ANS 2.3-2011, which was approved in April 2011, had not been issued by the time the draft of RG 1.221 (DG-1247, ML100480890) was issued for public comment in September 9, 2010 (75 FR 54918). No public comments were received that suggested that RG 1.221 should endorse the not-yet-approved ANSI/ANS-2.3-2011 (ML110940334). This is why RG 1.221 was issued without referencing ANSI/ANS 2.3-2011.</p> <p>Disposition: No changes.</p>