Enclosure 3
Staff Responses to Public Comments on Draft Regulatory Guide DG-1164, "Meteorological Monitoring Programs for Nuclear Power Plants" (Proposed Revision 1 of Regulatory Guide 1.23)

Sources for Comments

ABS: Comments from ABS Consulting, Inc. (ML063340451)

DUK: Comments from Duke Power Company (ML063450128)

NEI: Comments from Nuclear Energy Institute (ML063340441)

NMG: Comments from Nuclear Utility Meteorological Data Users Group (ML063450099)

SRNL: Comments from Savannah River National Laboratory (ML063340446)

TVA: Comments from Tennessee Valley Authority (ML063380293)

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
1 ✔	NEI	General	**Comment:** There is an opportunity for the NRC to further enhance the proposed regulatory guide to better recognize the context of the guidance with licensing and/or emergency planning purposes. While emergency planning application of the proposed guidance is recognized in this document, the guidance is more focused on licensing support issues. **Recommendation:** NEI encourages the NRC to consider all the applications and audiences that will rely on this guidance and to provide clarification throughout the guidance to ensure the context is clearly identified.	**Response:** The staff of the U.S. Nuclear Regulatory Commission (NRC) agrees with the comment. **Disposition:** The staff has provided clarification throughout the guidance to better define preoperational, operational, and emergency response monitoring criteria.
2 ✔	NMG: G-1 DUK: 10b	General	**Comment:** Footnotes are used extensively in the document to provide supplemental information or to clarify guidance. While this improves the readability and flow of the document, important information may be overlooked because it is in a footnote and not the document body. **Recommendation:** Reduce the number of footnotes and move the relevant information to the body of the document.	**Response:** The staff agrees with the comment. **Disposition:** The staff has deleted several footnotes and moved their content into the body of the document.

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
3 ✔	NMG: G-2 DUK: 10a	General	**Comment:** Discussions about individual meteorological variables are often grouped together into single paragraphs. This makes readability difficult and makes it difficult to isolate guidance applicable to a specific variable. **Recommendation:** Divide discussion of each meteorological variable into subsections or at least separate paragraphs. Move information from footnotes into the main text to improve readability.	**Response:** The staff agrees with the comment. **Disposition:** The staff has revised Regulatory Position C.2, "Meteorological Parameters," to include subsections for each meteorological variable.
4 ✔	ABS: G	General	**Comment:** The draft regulatory guide is taken mostly from ANSI/ANS 3.11. We do not feel as discussed in Section 3.2 that the endorsement of ANSI/ANS 3.11 would place unnecessary regulatory burden on NRC applicants. While ANSI/ANS 3.11 was written to be applied to DOE facilities as well as commercial nuclear plants, it was written with nuclear power plants specifically in mind. It is a comprehensive guide that was written to handle all situations. It includes important details that are not included in this new guidance. The appendixes of ANSI/ANS 3.11 should not be required of new applicants.	**Response:** American National Standards Institute (ANSI)/American Nuclear Society (ANS)-3.11-2005 has an expanded scope that includes nuclear installations at Federal sites, ranges, and reservations (e.g., U.S. Department of Energy and U.S. Department of Defense facilities). Because the nature and extent of the radiological and hazardous chemical materials present at Federal sites can differ significantly from similar materials present at commercial nuclear power plants, ANSI/ANS-3.11-2005 provides additional guidance beyond what the NRC considers to be basic meteorological monitoring program criteria applicable to commercial nuclear power plants (e.g., barometric pressure, mixing height, soil temperature, and moisture). Consequently, wholesale NRC endorsement of ANSI/ANS-3.11-2005 would place unnecessary regulatory burden on NRC applicants and licensees and partial endorsement of ANSI/ANS-3.11-2005 would be confusing. **Disposition:** No changes.

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
5 ✔	SRNL	General	From a scientific perspective, the meteorological community must ensure that the measurement and modeling capabilities of any operating nuclear plant utilize systems that provide the information necessary to assess present or climatic conditions. Fundamentally, the science identifies the equations of motion (see ANSI/ANS 3.11, Appendix C, "Overview") that are the basis for designing the monitoring system, and thus regulatory guidance is designed to ensure that acceptable measurements are made. As monitoring technologies improve, the measurements that can be taken also improve, thereby enabling measurements that can better quantify the components of the equations of motion. In previous decades, meteorological instrumentation was limited in function, but as electronic components improved, the means by which to build a better instrument have proliferated. Obviously, these types of improvements extend to all types of measurement systems at any given operating nuclear power plant, and these improvements are incorporated many times over during the operating lifetime of the power plant. In many, if not nearly all, cases, the improved systems result in better performance, less maintenance, and decreased operating costs for the plant. In order to address improvements in meteorological monitoring and modeling technologies, the NRC should include a statement or statements that address these changes and improvements. This is especially true for cases where a meteorological monitoring or modeling system is being "upgraded" due to age or when any change to the system is warranted, including the expansion of the system to include additional power plant sites. A review of appropriate new technologies should be undertaken by trained meteorologists (or other appropriate personnel) when upgrades and changes are warranted. This practice should be encouraged by the NRC in much the same way that it is encouraged within ANSI/ANS 3.11 (see the Foreword). The goals of such encouragement are to ensure that the meteorological monitoring and modeling systems used will utilize up-to-date technologies that provide improved and, likely, cost effective data sources. This encouragement need not be prescriptive since technologies can and do change faster than regulatory guidance documents can be issued. Just the same,	**Response:** The staff agrees with the comment. **Disposition:** The staff has added a statement to Section B, "Discussion," expressing that when a meteorological monitoring system is upgraded because of age or when any change to the system is warranted, a review of appropriate new technologies should be undertaken to consider whether the meteorological monitoring system should use up-to-date technologies that may provide improved data sources.

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
6 ✔	NEI: B.1	B	**Comment:** The proposed revision allows for a single set of instruments to obtain the basic data needed for the specified assessments. **Recommendation:** After TMI, NUREG-0654 called for the use of backup towers at all commercial nuclear plants. Most plants have installed backup towers following issuance of this regulatory guidance. In some cases, rather than put in backup towers, plants have put in redundant instrumentation. In either case, the use of these "backup" data has been very useful in attaining the 90% data recoverability for all parameters required in ANSI 3.11 as well as in the proposed new guidance. The use of backup towers or redundant instrumentation could be continued in the future and discussed in the new guidance as a way to attain high data recoverability.	**Response:** Section 6.1.c of Supplement 1 to NUREG-0737, "Clarification of TMI Action Plan Requirements," dated June 15, 1982, essentially states that backup towers are not necessary if the primary tower has historically provided a reliable indication of the wind direction, wind speed, and atmospheric stability that are representative of meteorological conditions in the vicinity (up to about 10 miles) of the plant site. Section 5 of this regulatory guide already states that the use of redundant sensors and/or recorders is an acceptable approach to achieve the 90% data recovery goal. However, the use of backup towers to achieve the 90% data recovery goal is discouraged; Section 6.3 of ANSI/ANS-3.11-2005 states that except when data come directly from the primary tower location, data from alternative sources should not be substituted in the site database. **Disposition:** No changes.
	ABS: S-4	C.5	**Comment:** Backup Instrumentation. After the accident at TMI, NUREG-0654 called for the use of backup towers at all commercial nuclear plants. Most plants have put in backup towers in the years after this regulatory guidance came out. In some cases, rather than put in backup towers, plants have put in redundant instrumentation. In either case, the use of these "backup" data has been very useful in attaining the 90% data recoverability for all parameters required in ANSI/ANS 3.11 as well as in the proposed new guidance. **Recommendation:** The use of backup towers or redundant instrumentation should be continued in the future and discussed in the new guidance as a good engineering practice in order to attain high data recoverability.	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
7 ✔	NEI: B.2	B	**Comment:** The minimum amount of meteorological data needed at docketing for an ESP or COL is a representative consecutive 24-month period, including the most recent 1-year period.	
			Comment: Industry would prefer to submit a representative 12-month period, including the most recent 1-year period at docketing of an ESP or COL for a greenfield site. **Recommendation:** Industry recognizes that the NRC has addressed similar comments in DG-1145 (C.I.2.3.3-1) and requests the response to those comments be incorporated in this regulatory guide as appropriate.	**Response:** The exception to the criterion to provide a 24-month period at docketing is best handled in Draft Regulatory Guide DG-1145 (Regulatory Guide 1.206), "COL Applications for Nuclear Power Plants." **Disposition:** No changes.
			Comment: Clarify "representative" and whether the term is in regards to time or locale. **Recommendation:** If "representative" refers to locale, then wording should specify using either onsite meteorological data or offsite data that may be shown, by comparison with onsite data or due to proximity of the measurement system to the site, to describe the meteorological conditions of the site.	**Response:** "Representative" refers to time, not local. The intent of this regulatory guide is to describe a suitable ***onsite*** measurement program. Providing justification for the use of offsite data in lieu of onsite data is beyond the scope of this guide. **Disposition:** No changes.
			Comment: Provide guidance or interpretation for "the most recent 1-year period." **Recommendation:** Consider changing the text to read "a consecutive 24-month period of data that is defendable, representative, and complete, but not older than 10 years from the date of docketing if existing onsite data are to be used."	**Response:** The staff agrees with the comment, except that 10 CFR 50.34(b)(1) requires the operating licensee final safety analysis report to include "all current information, such as the results of environmental and meteorological monitoring programs, which has been developed since issuance of the construction permit, relating to environmental factors identified in part 100 of this chapter." **Disposition:** The staff has revised the last paragraph of Section B, in part, to read, "The minimum amount of onsite meteorological data to be provided at the time of application (1) for a construction permit is a representative consecutive 12-month period, (2) for an operating license is a representative consecutive 24-month period, including the most recent 1-year period, and (3) for an early site permit or a combined license that does not reference an early site permit is a consecutive 24-month period of data that is defendable, representative and complete, but not older than 10 years from the date of the application."

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
8 ✔	NEI: C.1.a NMG: S-1	C.1	**Comment:** Definitions, Dew Point. "Dew point" should be defined as "dew point temperature." **Recommendation:** Change "dew point" to "dew point temperature (often referred to only as dew point)."	**Response:** The staff agrees with the comment. **Disposition:** The staff has changed references to "dew point" to "dew point temperature" throughout the document.
9 ✔	DUK: 4	C.1	**Comment:** Definitions, Dew Point Temperature. For dew point, add to the explanation that "(T > Twet > Tdew)." This will aid the understanding of nonmeteorologists who use the regulatory guide.	**Response:** The requested explanation does not enhance the definition of dew point temperature. **Disposition:** No changes.

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
10 ✔	NEI: C.1.b NMG: S-2	C.1	**Comment:** Definitions, Pasquill Stability Class. The definition is incomplete because it does not state the methods that are preferred for determining stability class. **Recommendation:** State the preferred method (delta-T), but note that other methods can be justified by the applicant.	**Response:** The definition for "Pasquill stability class" need not state the preferred method(s) to be completed. **Disposition:** The discussion concerning vertical temperature difference (ΔT) as the preferred method for determining Pasquill stability classes has been moved from Footnote 6 into the text of Section C.2.2, "Vertical Temperature Difference," to convey the significance of this statement. The staff has also added text to Section C.2.2, stating that alternative methods may be appropriate for classifying atmospheric stability for emergency response purposes if the methods can be shown to be compatible with the plant's emergency response dose assessment methodology.
	DUK: 5		**Comment:** Definitions, Pasquill Stability Class. For Pasquill stability class, the NRC should state preferred methods, if any. Alternatively, the NRC could amend the use of stability class in lieu of other methods for turbulence characterization in the planetary boundary layer. In any case, it would be useful to include words to the effect that other methods for determining stability class or turbulence can be justified by the applicant, when appropriate.	
	DUK: 11c		**Comment:** Vertical Temperature Difference and Atmospheric Stability Class. It would be helpful if the main text indicated that other methods of determining stability class can be justified by the applicant, but use of an alternative method in modeling may require modifications to the models (i.e., as opposed to this information being implied or footnoted).	
11 ✔	NEI: C.1.c NMG: S-3	C.1	**Comment:** Definitions, System Accuracy. The definition is incomplete because it does not state how far the data channel extends for calculating display accuracy. Does "displays" refer to locally at the meteorological tower, in the control room, or to the final data set? **Recommendation:** Clarify the extent of the system which must be included in the accuracy evaluation.	**Response:** The definition for system accuracy states that "system accuracy encompasses all the components of the system, from sensors through processors, data recorders, and displays." The phrase "all the components of the system" is intended to include all displays, including those local at the meteorological tower, in the emergency response facilities, and in the final data set. **Disposition:** The staff has modified the second sentence in the second paragraph of Section C.5, "Instrument Maintenance and Servicing Schedules," to read, "System calibrations should encompass entire data channels, including all recorders and displays (e.g., those local at the meteorological tower and in the emergency response facilities as well as those used to compile the historical data set). System calibrations may be performed by a series of sequential, overlapping, or total channel steps such that each channel from sensors to recorders and displays is calibrated."
	DUK: 6		**Comment:** Definitions, System Accuracy. For "system accuracy," please clarify to what extent network-displayed meteorological data from a nuclear facility should be considered in the calculation of "display" accuracy (e.g., specify accuracy at the collection point/tower only, in the control room, at the location where quality-controlled data are archived, or at the general office or other location via the utility's computer network).	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
12 ✔	NEI: C.1.d NMG: S-4	C.1	**Comment:** Definitions, Temperature. The definition is not clear because there are many types of temperatures that might apply. **Recommendation:** Change "temperature" to "ambient temperature."	**Response:** The staff agrees with the comment. **Disposition:** The staff has changed references to either "temperature" or "air temperature" to "ambient temperature" throughout the document.
13 ✔	DUK: 7	C.1	**Comment:** Definitions, Temperature. For temperature, add to the explanation that (T > Twet > Tdew). This will aid the understanding of nonmeteorologists who use the regulatory guide.	**Response:** The requested explanation does not enhance the definition of ambient temperature. **Disposition:** No changes.
14 ✔	DUK: 8	C.1	**Comment:** Definitions, Vertical Temperature Difference. Please amend the wording from "…on the same tower" to "…typically on the same tower." Depending on tower size and arrangement, the lower-level temperatures sensor (e.g., 10 m) may in reality be on a separate, shorter tower, but still in the vicinity of (beside) a taller tower with a wide base, which would prohibit installation of a very long boom for the temperature sensor. In this case, delta-T should be considered as being from the same monitoring location, even though not quite on the same tower. Depending on the site's terrain, it is also possible that an overall stability class for an entire nuclear plant site could be determined from delta-T measurements using separate towers that are not co-located, but which are instead on different parts of the plant property. This could, in fact, be more representative of the vicinity than would just a standard delta-T measurement at the primary tower. For example, the delta-T at the taller, primary tower could be calculated, and also a delta-T for an adjacent valley below the plant grade using a shorter 10-m tower, combined with upper-level temperature data from the separate taller tower; thus deriving an indication of stability class in and over the valley.	**Response:** To achieve the desired vertical temperature difference system accuracy listed in Table 2 of this regulatory guide (i.e., ±0.1 °C), matched sensors must be connected to the same signal processing equipment (refer to the staff's response to Comment 45). This may not be feasible for delta-temperature sensors located on separate towers that are not near each other. **Disposition:** No changes.

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
15 ✔	NMG: S-5	C.1	**Comment:** Definitions, Wet-Bulb Temperature. The definition is not clear. **Recommendation:** Replace "of all its available moisture" with "until the air parcel is saturated." Remove "relatively" from the last sentence.	**Response:** The staff has replaced the previous definition of wet-bulb temperature with the definition from the online Second Edition to the American Meteorological Society's Glossary of Meteorology. **Disposition:** The staff has changed the definition of wet-bulb temperature to "the temperature an air parcel would have if cooled adiabatically to saturation at constant pressure by evaporation of water into it, all latent heat being supplied by the parcel."
	DUK: 9b		**Comment:** Definitions, Wet-Bulb Temperature. In the last sentence of the definition of wet-bulb temperature, delete the word "relatively" (i.e., "…the relatively drier air").	
16 ✔	DUK: 9a	C.1	**Comment:** Definitions, Wet-Bulb Temperature. For wet-bulb temperature, add to the explanation that (T > Twet > Tdew).	**Response:** The requested explanation does not enhance the definition of wet-bulb temperature. **Disposition:** No changes.
17 ✔	DUK: 9c	C.1	**Comment:** Definitions, Wet-Bulb Temperature. Please provide a preferred or standard equation (that can be automated) for calculating wet-bulb temperature from measurements of temperature, dew point temperature, and pressure.	**Response:** The staff has not adopted a position concerning a preferred methodology for calculating wet-bulb temperature from measurements of temperature, dew point temperature, and pressure. Such a methodology is not discussed in ANSI/ANS-3.11-2005 and is beyond the scope of this regulatory guide. **Disposition:** No changes.
18 ✔	NMG: S-6	C.1	**Comment:** Definitions, Wind Direction. The definition is consistent with ANSI/ANS-3.11-2005 and standard meteorological practice. However, it may not be consistent with applications that assume a different definition. For example, some applications may assume direction towards which the wind is blowing, report data in radians, or assign 0° to a direction other than north. **Recommendation:** State that, while wind direction may be defined differently in some applications, this is the preferred definition.	**Response:** Readers should implicitly understand that the wind direction definition provided in this regulatory guide is the definition to be used in related applications. The wind definition provided in this guide is consistent with those provided in ANSI/ANS-3.11-2005 and the online Second Edition of the American Meteorological Society's *Glossary of Meteorology*. **Disposition:** No changes.

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
19 ✔	NMG: S-7	C.2	**Comment:** Meteorological Parameters, second paragraph. It is indicated that a temperature measurement level above 60 meters is appropriate for examining conditions associated with "...release points significantly greater than 60 meters...." It is stated that the ΔT measured between the 10 meters and this higher level should be used for stability classification related to elevated releases. In cases where three levels of temperature are measured (10 meters, 60 meters, and an elevated layer), it might be more appropriate to use ΔT measured between the 60 meters and the higher level. **Recommendation:** Clearly state that an option exists for using an upper-layer ΔT to determine stability class. Indicate that the proper ΔT layers for determining stability classes should be selected based on the needs for the specific plant.	**Response:** Section C.2 of Revision 2 (issued July 1981) of Section 2.3.3, "Onsite Meteorological Measurements Programs," of NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," states that winds from near release height and ΔT between release height and the 10-meter level are used for stack releases. An applicant or licensee has the option to use a different methodology to model releases, if it provides appropriate justification. **Disposition:** No changes.
20 ✔	NEI: C.2.a NMG: S-7	C.2	**Comment:** Meteorological Parameters, second paragraph. "...release points significantly greater than 60 meters..." is not defined adequately. Specifically, what constitutes "significantly greater than"? **Recommendation:** Clarify "significantly greater than."	**Response:** The staff agrees with the comment. **Disposition:** The staff has revised Section C.2.1, "Wind Speed and Direction," and Section C.2.2 to state that an additional measurement height may be appropriate at a representative level for stack releases that are 85 meters (279 feet) or higher.
	DUK: 11a		**Comment:** Vertical temperature difference. For vertical temperature difference (Delta-T), please clarify what constitutes a release point height "...significantly greater than 60 m."	
21 ✔	NMG: S-8	C.2	**Comment:** Meteorological Parameters, second paragraph. The footnote states, "The 10-meter (33-foot) level is generally accepted throughout the world as a standard meteorological reference measurement level." While this applies to wind measurements, World Meteorological Organization Guide 8 states that temperature should be measured at a "... a height between 1.25 and 2.00 m above ground level." **Recommendation:** Clarify the standard reference measurement levels for all variables. Consider stating that the 10-m level is suitable for modeling applications, while a lower level, such as 2 m, is better for comparing site characteristics to nearby climate stations.	**Response:** The staff has deleted the discussion regarding standard reference measurement levels to avoid confusing this regulatory guide with other standards. Note that all previous versions of Regulatory Guide 1.23 (e.g., Revision 0 and the first and second proposed Revision 1) specify that ambient temperature should be monitored at 10 meters (m). Changing the specified ambient temperature measurement height could imply that a backfit to existing monitoring programs is necessary. **Disposition:** The staff has deleted the discussion in Footnote 5 regarding standard reference measurement levels.

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
22 ✔	NEI: C.2.b	C.2	**Comment:** Clarify the nature of the "releases at the 60-meter level" referred to in Footnote 5. **Recommendation:** Explicitly define whether the releases are routine, accidental, or both.	**Response:** The staff intended the statement to apply to both routine and accidental release pathways. Note that both proposed Revision 1 (issued September 1980) and the second proposed Revision 1 (issued April 1986) of Regulatory Guide 1.23 specify that wind and ΔT measurements should be taken at 60 meters (m) because the 60-m level generally coincides with the routine release level for light-water reactors (LWRs). The staff has revised this regulatory guide to remove the justifications for measurements at the 10- and 60-m levels. **Disposition:** The staff has deleted the discussion in Footnote 5 regarding the 60-m level generally coinciding with assumptions regarding releases from LWRs.
23 ✔	NEI: C.2.c	C.2	**Comment:** Footnote 5 contains significant guidance. **Recommendation:** Consider moving the contents of Footnote 5 into the text of the guidance to convey the significance of the statements.	**Response:** The staff agrees with the comment. **Disposition:** The staff has moved the following portion of Footnote 5 into Section C.2.2: "A (wind speed and direction) measurement height other than 60 meters (197 feet) may be appropriate for those plants where the most probable atmospheric release height is other than 60 meters (197 feet)." The staff has deleted the rest of the contents of Footnote 5, as discussed in the NRC comment resolution for Comments 21 and 22.

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
24 ✔	NEI: C.2.d	C.2	**Comment:** Footnote 6 does not make provision for the appropriate use of the sigma theta method for determining atmospheric stability. **Recommendation:** Recommend inserting wording at the end of the footnote, such as "In addition, alternate methods (e.g., sigma theta) may be used for classifying atmospheric stability for applications other than design-basis evaluations (e.g., emergency plan evaluations)."	**Response**: Methods other than ΔT may be appropriate for classifying atmospheric stability for emergency response purposes if the methods can be shown to be compatible with the plant's emergency response dose assessment methodology. Sigma theta is not explicitly mentioned but could be used, if appropriately justified. **Disposition:** The staff has added text to Section C.2.2, "Vertical Temperature Difference," stating that methods other than ΔT may be appropriate for classifying atmospheric stability for emergency response purposes if the methods can be shown to be compatible with the plant's emergency response dose assessment methodology.
	ABS: S-2		**Comment:** Sigma Theta. Many commercial nuclear plants currently use sigma theta as a backup method for determining stability class. The new guidance eliminates any method other than delta temperature for determining stability. While delta temperature has been the most widely used method in the past, ANSI/ANS 3.11 began the discussion of using other methods that most people in the scientific field believe are better. At this point we should at least leave open the idea that there are better ways of determining stability class. Also, many plants have in their emergency procedures the use of sigma theta as a backup method if delta temperature is not available. **Recommendation:** The use of sigma theta has been included in other proposed regulatory guides in the past and should be included in any new guidance.	
	NEI: A.2.a	Description of Changes	**Comment:** Proposed Change Number 6 states, "Delete the criterion for using standard deviation of horizontal wind direction as a basis for classifying atmospheric stability." **Recommendation:** Many commercial nuclear plants currently use sigma theta as a backup method for determining stability class in the context of emergency planning. The new guidance discourages the use of any method other than delta temperature for determining stability for design-basis evaluations. While delta temperature has been the most widely used method in the past, ANSI/ANS 3.11 recognizes the use of other methods. The proposed regulatory guide should allow additional options for determining stability class. The use of sigma theta has been included in other proposed regulatory guides in the past and should be included in any new guidance.	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
25 ✔	DUK: 2	C.2	**Comment:** Atmospheric Stability Class Methodology. If extreme conservatism is necessary to provide an upper bound on X/Q concentrations, then an assumption of G stability class and wind speed near the starting threshold (e.g., 0.5 mph) should just be made for all hours of meteorological data input. In cases where realistic results are more important, a site's meteorological data could be used, aided by a more accurate method for characterizing turbulence in the environment. Item (1) above [i.e., Comment 45 below] lends support to the need to advance the nuclear air dispersion models in the area of atmospheric stability classification. The NRC should consider models which utilize more accurate methods of stability categorization than the delta-T method for estimating atmospheric stability class. One option would be EPA's SRDT method. A second option would be to incorporate current boundary layer (BL) meteorological parameters to characterize atmospheric turbulence. The NRC should then also provide standard methods of calculating the BL parameters from commonly/easily measurable variables.	**Response:** Regulatory Guides 1.78, "Evaluating the Habitability of a Nuclear Power Plant Control Room During a Postulated Hazardous Chemical Release"; 1.145, "Atmospheric Dispersion Models for Potential Accident Consequence Assessments at Nuclear Power Plants"; and 1.194, "Atmospheric Relative Concentrations for Control Room Radiological Habitability Assessments at Nuclear Power Plants," describe methodologies for determining acceptable, conservatively bounding χ/Q values for use in evaluating design-basis accidents. These methodologies include empirically derived plume meander factors from field tracer studies that used ΔT measurements to classify atmospheric stability. In cases where realistic results may be more important, such as emergency response dose assessments, methods other than ΔT may be appropriate for classifying atmospheric stability for emergency response purposes if the methods can be shown to be compatible with the plant's emergency response dose assessment methodology. The staff has no plans to develop additional atmospheric dispersion models that may use other methods of estimating atmospheric stability. **Disposition:** The staff has added text to Section C.2.2, "Vertical Temperature Difference," stating that methods other than ΔT may be appropriate for classifying atmospheric stability for emergency response purposes if the methods can be shown to be compatible with the plant's emergency response dose assessment methodology.
	DUK: 11d		**Comment:** Vertical Temperature Difference and Atmospheric Stability Class. It would also be useful if the NRC would described the acceptability of any X/Q models or nonradiological models (e.g., toxic gas) that currently allow for stability class based on the SRDT method or boundary layer parameterizations of turbulence, whether any are being developed, or any other possible options as alternative models. Conservatism in modeling should be limited to design-basis items. Less conservative and more realistic modeling of impacts is also needed, with inherent error bounds identified. Recommendations and decisions, based on more realistic modeling, could then be made as conservatively as desired, in the situation at that time.	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
26 ✔	DUK: 11b	C.2	**Comment:** Atmospheric stability. Stability for the region and not just the site should be represented. Are offsite temperature soundings from NWS or other sources acceptable for greater heights above 60 m?	**Response:** National Weather Service (NWS) soundings are generally taken only twice daily at a limited number of heights (e.g., 1000 mb, 925 mb (~800 meters), 850 mb (~1500 meters)). In situ measurements from the primary tower are the preferred method for determining atmospheric stability, but NWS soundings may be appropriate as backup or supplementary sources of data. **Disposition:** No changes.
27 ✔	NEI: C.2.e	C.2	**Comment:** Footnote 6 contains significant guidance. **Recommendation:** Consider moving the contents of Footnote 6 into the text of the guidance to convey the significance of the statements.	**Response:** The staff agrees with the comment. **Disposition:** The staff has moved the contents of Footnote 6 into the text of Section C.2.2.
28 ✔	NMG: S-10	C.2	**Comment:** Meteorological Parameters, last paragraph. It is stated that "Precipitation should be measured at ground level...." In some cases, precipitation measurements are taken on the roof of instrument shelters in an attempt to reduce the impact of wildlife, debris, heavy snowfall, and drifting snow on precipitation collection (clogging or jamming the sensor). Also, moving the sensors from shelter height to ground level could have some impact on the data from a climatological standpoint. **Recommendation:** Clarify the requirement for placement of precipitation sensors. Possibly state, "Precipitation measurements should represent ground-level precipitation near the base of the mast or tower."	**Response:** ANSI/ANS-3.11-2005 does not provide guidance regarding siting considerations for precipitation measurements. The staff does not endorse placing rain gauges on the roofs of instrument shelters because such structures create turbulent eddies that may divert a significant portion of the precipitation away from the intake of the gauge. Section 4.4.1 of EPA-454/D-06-001, "EPA Quality Assurance Handbook for Air Pollution Measurement Systems," draft issued October 2006, states that rain gauges should be mounted a minimum of 30 centimeters (approximately 1 foot) above the ground and should be high enough that they will not be covered by snow. **Disposition:** The staff has revised Section C.2.4, "Precipitation," to state that precipitation should be measured near ground level near the base of the mast or tower.
	NEI: C.2.f		**Comment:** Measurement of precipitation at ground level may not be practical in some cases (e.g., at sites with heavy snowfall and drifting snow). **Recommendation:** Consider revising the text to state, "Precipitation measurements should represent ground-level precipitation near the base of the tower."	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
29 ✔	NEI: C.2.h	C.2	**Comment:** Footnote 7 states the importance of the amount of precipitation for severe accident dose consequence analysis using the MELCOR code that accounts for the efficient removal of particulate radionuclides from the plume by wet deposition. **Recommendation:** Clarify how the precipitation data are going to be used in the MELCOR code, which requires hourly input data for every hour of a year. What is the acceptable data recovery rate (e.g., 90%) for precipitation, and provide methodology for replacing the missing data?	**Response:** The preparation of input necessary to execute a specific atmospheric dispersion model is beyond the scope of this regulatory guide. **Disposition:** No changes.
30 ✔	NEI: C.2.i	C.2	**Comment:** Footnote 7 provides incomplete rationale for the collection of precipitation data. **Recommendation:** To complete the rationale, consider adding the following language to Footnote 7—"Many accident dispersion models use rain rate to determine the deposition velocity and transport of radionuclides. For emergency planning purposes, this can be an important factor in the dose rate, particularly near the plant."	**Response:** The staff agrees with the comment. **Disposition:** The contents of footnote 7 have been moved into Section C.2.4. In addition, the staff has added a statement to Section C.2.4, "Precipitation," stating that precipitation information can also be useful as an input to developing emergency response protective action recommendations by indicating the potential of increased ground contamination as a result of wet deposition.
	ABS: S-5		**Comment:** Precipitation Gauge. The instrumentation to be used at each site discusses the installation of a precipitation measuring device, including a wind shield, which is detail that is good to see. However, footnote 7 somewhat downplays the need for a precipitation gauge, basically saying that it is only needed for design-based accident assessment. In fact, at the present time, data from precipitation gauges are widely used in emergency planning accident models to adjust the deposition velocity of iodines and particulates. In addition, with recent ground water problems at some sites, the collection of accurate precipitation data has become very important. The need for this data will only become more important in the future. **Recommendation:** Footnote 7 should either be removed or reworded.	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
31 ✔	NEI: C.2.j	C.2	**Comment:** Footnote 7 contains significant guidance. **Recommendation:** Consider moving the contents of footnote 7 into the text of the guidance to convey the significance of the statements.	**Response:** The staff agrees with the comment. **Disposition:** The staff has moved the contents of Footnote 7 into Section C.2.4.
32 ✔	NMG: S-9	C.2	**Comment:** Meteorological Parameters, last paragraph. The phrase "potential for fogging or icing" needs clarification. As written, the possibility of a single occurrence during the lifetime of the plant is sufficient to require measuring humidity. **Recommendation:** Add a clarifying term (slight, moderate, etc.), define a threshold (such as an average of 2–3 episodes per year), or provide an explicit basis for determining when this requirement applies.	**Response:** The agency requires the collection of atmospheric moisture data at sites where large quantities of water vapor will be emitted to the atmosphere during plant operation because of the operation of cooling towers, cooling lakes and ponds, or spray ponds. These data are required to assess the physical and aesthetic impacts of vapor plumes from such heat dissipation facilities, including the length and frequency of elevated plumes, increases in ground-level humidity, frequency and extent of ground-level fogging and icing, drift deposition, cloud formation, cloud shadowing, and additional precipitation in the site vicinity, as discussed in Section 5.1.4 of Regulatory Guide 4.2, "Preparation of Environmental Reports for Nuclear Power Stations," and Section 5.3.3.1 of NUREG-1555, "Environmental Standard Review Plan." **Disposition:** The staff has revised Section C.2.5, "Atmospheric Moisture," to state that the preoperational monitoring program should include ambient temperature and atmospheric moisture measurements at sites using cooling towers, cooling lakes and ponds, or spray ponds as the plant's normal heat sink. Section C.2.5 also now states that these data are required to assess the physical and aesthetic impacts of vapor plumes from such heat dissipation facilities, including the length and frequency of elevated plumes, increases in ground-level humidity, frequency and extent of ground-level fogging and icing, drift deposition, cloud formation, cloud shadowing, and additional precipitation in the site vicinity as discussed in Section 5.1.4 of Regulatory Guide 4.2, "Preparation of Environmental Reports for Nuclear Power Stations," and Section 5.3.3.1 of NUREG-1555, "Environmental Standard Review Plan."
	NEI: C.2.g		**Comment:** The guidance suggests certain instrumentation should be provided at sites where there is a "potential for fogging or icing." **Recommendation:** Provide an explicit basis for determining when this requirement applies. Industry experience (including at fossil fuel plants) is that fogging and icing do not occur at sites that employ cooling ponds or towers.	
	NEI: C.2.k		**Comment:** Reasons for collecting humidity-related parameters (dew point or wet-bulb temperature) at heights representative of water-vapor release are not clear. **Recommendation:** Provide clarification for how the humidity data collected at the release height are to be used in assessing the environmental impact.	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
	NMG: S-11a		**Comment:** Meteorological Parameters, last paragraph. While instrumentation for measuring humidity is desired at heights representative of water-vapor release, this may not be practical. Since the data are being collected on a single tower, they will be useful only at times when the tower is downwind from the cooling facility and directly influenced by plant operations. This conflicts with requirements elsewhere in the guideline, where it is specifically stated that "humidity measurements should be made to avoid air modification by...moisture sources." **Recommendation:** Reconsider requirements for humidity sampling.	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
33 ✔	NEI: C.2.k	C.2	**Comment:** The guidance regarding measurements of humidity at height(s) representative of water-vapor release is not feasible as currently stated, in particular for sites with natural draft cooling towers. **Recommendation:** Provide clarification about the heights of humidity measurements. Consider the following language—"...instrumentation should be provided for measuring temperature and humidity...such that water-vapor release can be characterized."	**Response:** Section 6.4, "Meteorological Monitoring," of NUREG-0555, "Environmental Standard Review Plan," issued October 1999, states that temperature and atmospheric moisture instrumentation should be at height(s) representative of water-vapor release at sites at which large quantities of water vapor are emitted during plant operation. In the case of natural draft cooling towers, ambient temperature and atmospheric moisture measurements may be made at the highest measurement level on the tower. These measurements need not be continued during the operational monitoring program, unless specified by the plant's Environmental Protection Program pursuant to 10 CFR 50.36b or 10 CFR 51.50. **Disposition**: The staff has added the following to Section C.2.5, "Atmospheric Moisture": "In the case of natural draft cooling towers, ambient temperature and atmospheric moisture measurements may be made at the highest measurement level on the meteorological tower. These measurements need not be continued during the operational monitoring program, unless specified by the plant's environmental protection program pursuant to 10 CFR 50.36b or 10 CFR 51.50."
	NMG: S-11c		**Comment:** Meteorological Parameters, last paragraph. Since the water-vapor release height will often be elevated, this document will require the sampling unit to be elevated. Humidity samplers tend to be maintenance intensive, so this will require maintenance efforts that may not merit the information obtained. **Recommendation:** Reconsider requirements for humidity sampling.	
34 ✔	NEI: C.2.m	C.2	**Comment:** In addition, natural draft cooling towers have discharge points sufficiently high so as not to cause local fogging or icing. Humidity measurements at the elevation of the discharge are neither practical nor necessary. **Recommendation:** The parenthetical note should specify <u>mechanical</u> draft towers.	**Response:** See the staff's responses to Comments 32 and 33. **Disposition:** See the dispositions for Comments 32 and 33.
	ABS: S-3		**Comment:** Dew Point/Relative Humidity. It has been shown over the many years of using cooling towers or other cooling devices at both nuclear and fossil fuel plants that they have no effect on localized fogging or icing. Because they are harder to maintain properly, many plants have been removing or contemplating removing dew point temperatures. The new guidance should either remove this requirement entirely or at least state that the instrument can be located at the 10-m level, where it will be easier to service and closer to the areas of fogging or icing that people are interested in, near the ground. To put these measurements "at heights representative of water-vapor release" is not practical. There should also be some	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
35 ✔	NMG: S-11b	C.2	**Comment:** Meteorological Parameters, last paragraph. No guidance is provided concerning the height of dew point measurements with respect to the height of the cooling towers. **Recommendation:** Provide guidance about the heights of elevated dew point sampling.	**Response:** The last paragraph of Section C.2.5 states that instrumentation should be provided for measuring temperature and atmospheric humidity (e.g., dew point temperature) at heights representative of water-vapor release. **Disposition:** No changes.
36 ✔	DUK: 12	C.2	**Comment:** Dew Point vs. Cooling Towers. It would be helpful to indicate how much the measurement height for dew point temperature can vary from the cooling tower release height and still be representative of ambient conditions at that height.	**Response:** The staff agrees with the comment, but is not aware of any studies that either measure or predict dew point temperature changes with height. **Disposition:** No changes.
37 ✔	NEI: C.3.a	C.3	**Comment:** There are two criteria given for avoiding airflow modifications by obstructions—(1) with obstruction heights exceeding one-half the height of the wind instrument and (2) with 10 obstruction heights separation between the wind sensor and the obstruction. **Recommendation:** Provide an explicit basis for determining when each criterion applies. For example, if this is the intent, provide clarification such as "criterion (i) applies when the obstruction is within 10 obstruction heights from the tower."	**Response:** The staff agrees with the comment. **Disposition:** The staff has changed the second paragraph of Section C.3 to read, in part, "Whenever possible, wind measurements should be made at locations and heights that avoid airflow modifications by obstructions such as large structures, trees, and nearby terrain. The sensors should be located over level, open terrain at a distance of at least 10 times the height of any nearby obstruction if the height of the obstruction exceeds one-half the height of the wind measurement."
	NMG: S-12		**Comment:** Siting of Meteorological Parameters, second paragraph. It is stated that "The separation between the wind sensor and such obstructions should be 10 times the obstruction height." This could be interpreted to mean that only a specific distance-to-height ratio (10-to-1) is acceptable. **Recommendation:** Change "...should be 10 times the obstruction height..." to "...should be at least 10 times the obstruction height...."	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
38 ✔	NEI: C.3.b	C.3	**Comment:** "The tower should not be located on or near permanent manmade surfaces." **Recommendation:** Clarify or quantify "near."	**Response:** The tower should not be located on or near permanent manmade surfaces to avoid air modification by heat sources (e.g., sunlight heating an asphalt parking lot). Because each situation may have unique features to consider, the agency cannot give specific recommendations to cover all cases. **Disposition:** No changes.
39 ✔	NMG: S-13	C.3	**Comment:** Siting of Meteorological Parameters, last paragraph. It is stated that "Precipitation gauges should be equipped with wind shields to minimize the wind-caused loss of precipitation." While the quality of precipitation data will be improved, it is not certain that wind shields will be that useful for locations with little or no snowfall, since the wind-caused loss of precipitation in these cases may be as low as 1–2% (within the accuracy specification for precipitation). Wind shields may be appropriate for locations when significant amounts of precipitation are in the form of snow (the ASOS User's Guide states that wind shields should be installed "…where the snowfall is >20% of the annual precipitation accumulation"). **Recommendation:** Clarify the specific climatological conditions that are appropriate for use of a precipitation wind shield.	**Response:** The staff has noticed that some nuclear power plant sites report onsite precipitation totals that are 20–25% below those reported by nearby climatic stations. In addition, Section 3-9.2 of DOE/TIC-27601, "Atmospheric Science and Power Production," issued 1984, references a study citing that in strong winds an unsheltered gauge can produce deficiencies of 10–30% in the measured precipitation. To improve the quality of precipitation measurements, the staff believes that precipitation wind shields should be used at all monitoring locations. **Disposition:** No changes.
40 ✔	NMG: S-14a	C.4	**Comment:** Instrument Accuracy and Range, first paragraph. It is not clear what is required to "…meet the criteria listed in Table 2." Do the criteria represent absolute limits that cannot be exceeded, or is it sufficient that the accuracies can be rounded to meet the criteria? For example, for vertical temperature difference, 0.25 °F rounds to and meets the 0.1 °C value, but exceeds the "equivalent" value of 0.18 °F. **Recommendation:** Clarify the interpretation of how accuracy criteria are met.	**Response:** The staff has not adopted a position on this issue. According to a discussion on December 14, 2006, with the ANSI/ANS-3.11 working group co-chair, Mr. Carl Mazzola, the ANSI/ANS-3.11 working group also has not adopted a position on this issue. **Disposition:** No changes.

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
41 ✔	NMG: S-14b	C.4	**Comment:** Instrument Accuracy and Range, first paragraph. If the metric and nonmetric units for a variable are not exactly equal, it is not stated which variable is the criterion to be met. **Recommendation:** Clarify which units are to be met when metric and nonmetric values are not equivalent.	**Response:** The metric criteria should be meet if the instrumentation records and displays data in metric units, and the nonmetric criteria should be meet if the instrumentation records and displays data in nonmetric units. This concern applies only to wind speed; the units used in the remaining meteorological measurements (e.g., degrees for temperature, degrees for wind direction, and length for precipitation) have exact conversions. **Disposition:** No changes.
42 ✔	NEI: C.4 NMG: S-15 DUK: 13	C.4	**Comment:** Instrument Accuracy and Range, second paragraph. It is stated that "instrumentation should be capable of operating over the expected range of climatic conditions based on regional climatology." It is not clear if this refers to climatologically "normal" values or to historical extremes. For example, a wind speed sensor may be capable of a high range (0–90 mph) to record a extreme value, but may not meet accuracy criteria. A lower-range sensor (0–60 mph) will meet accuracy criteria, but may not operate during extreme conditions. **Recommendation:** Address the need to record extreme values and the acceptable system accuracy under such conditions.	**Response:** The staff has revised the statement in question to limit it to ambient temperature and atmospheric moisture instrumentation based on ambient air temperature criteria presented in Section 3.1.3 of ANSI/ANS-3.11-2005. The staff has not adopted a position concerning an appropriate range for wind speed instrumentation, but it does discuss this issue in Section C.8, "Special Considerations to Support Emergency Preparedness," with regard to monitoring onsite meteorological conditions as a basis for any of the emergency action levels. **Disposition:** The staff has changed Section C.4 to read, "The ambient temperature and atmospheric moisture instrumentation should be capable of operating over the range of expected climatic extremes based on regional climatology."
43 ✔	NMG: S-16	Table 2	**Comment:** The accuracy requirement for wind speed is discontinuous at 2.2 m/s. For 2.1 m/s, the error is ±10.5%. For 2.2 m/s (and above), the error is ±5%. **Recommendation:** State the accuracy as "±2.2 m/s or ±5% of observed speed, whichever is greater."	**Response:** The staff agrees that Table 2 of DG-1164 contained a discontinuity at 2.2 meters per second (m/s). Consequently, the staff has revised the wind speed accuracy requirements to be more consistent with the criterion presented in Table 1 of ANSI/ANS-3.11-2005. **Disposition:** The staff has revised the Table 2 system accuracy criterion for wind speed to read as follows: ±0.2 m/s (±0.45 mph) or 5% of observed wind speed

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
44 ✔	NMG: S-17	Table 2	**Comment:** The units and resolution for vertical temperature difference are not consistent with other parts of the document. Table 2 states the units should be °C/°F with a resolution of 0.01 °C/0.01 °F. Table 1 and Appendix A state the units should be °C/100 m with a resolution of 0.1 °C/100 m. **Recommendation:** Clarify the units and resolution for vertical temperature difference.	**Response:** Vertical temperature difference is typically displayed and recorded in °C (or °F) as measured (e.g., if the measurement heights are between 10 and 60 meters, the data are displayed in °C (or °F) per 50 meters. The measured ΔT values need to be converted to tenths of °C per 100 meters in order to determine a Pasquill stability class as indicated in Table 1. The Appendix A reporting format uses this same value of tenths of °C per 100 meters. **Disposition:** No changes.
	NMG: S-18b		**Comment:** The resolution criteria for vertical temperature difference from Table 2 do not match the resolution criteria for temperature difference in Table 1 or Appendix A. **Recommendation:** Clarify the resolution for vertical temperature difference.	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
45 ✔	NMG: S-18a	Table 2	**Comment:** The accuracy requirement for vertical temperature difference may not be possible in practice. Accepted meteorological practice precludes having a tighter accuracy specification for a variable than the instrumentation used to derive the data. The ±0.5 °C accuracy of two temperature probes used to determine the temperature difference is significantly greater than the ±0.1 °C specification for vertical temperature difference. Also, accepted meteorological practice requires calibrations of the sensors by a known physical constant or by a standard that is four times better in accuracy. For an accuracy specification of ±0.1 °C, this would require a standard of ±0.025 °C, which is not practical for a field calibration. **Recommendation:** Clarify how vertical temperature difference accuracy is determined. Indicate that the 0.1 °C accuracy requirement for temperature difference is a relative value. Each probe should meet [or be accurate within] 0.5 °C compared to an absolute measurement, and the paired difference should meet [or be accurate within] 0.1 °C.	**Response:** The vertical temperature difference system accuracy listed in Table 2 of this regulatory guide (i.e., ±0.1 °C) is compatible with the vertical temperature difference minimum system accuracy listed in Table 1 of ANSI/ANS-3.11-2005. This level of accuracy can be achieved using matched sensors and careful calibration. Through signal processing, the differential temperature measurement can be more accurate that absolute temperature measurement. One calibration technique is to place both delta-temperature sensors being calibrated in the same thermal environment (e.g., an insulated container filled with water), producing a known delta-temperature value of 0.0 °C. Details regarding the determination of any measurement accuracy (such as vertical temperature difference accuracy) are beyond the scope of this regulatory guide. **Disposition:** No changes.
	DUK: 1		**Comment:** System Accuracy of Vertical Temperature Difference and Atmospheric Stability Classes. The system accuracy specification for vertical temperature difference (delta-T) is ±0.10 °C. However, the system accuracy of the temperature probes used to determine the temperature difference is only ± 0.5 °C. Thus, the accuracy of ± 0.1 °C for delta-T cannot be met. In order to meet an accuracy specification of ± 0.1 °C, a field standard would have to be developed to an accuracy of ±0.025 °C (i.e., four times better in accuracy, per standard classes practice). Implications on atmospheric stability classification are apparent. Stability classes A and D-G could be estimated from a ±0.5 °C system accuracy for temperature. However, stability classes B and C might not be measurable. Overall accuracy of the stability classification would be within one to three stability classes, for a (60 m–10 m) delta-T.	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
46 ✔	NMG: S-19	Table 2	**Comment:** The parenthetical value of ±0.27 °F for dew point is incorrect. **Recommendation:** Change "±0.27 °F " to "±2.70 °F."	**Response:** The staff agrees with the comment. **Disposition:** The staff has changed the dew point temperature system accuracy criterion in Table 2 to read as follows: ±1.5 °C (±2.7 °F)
47 ✔	NMG: S-20	Table 2	**Comment:** Table 2 does not include solar radiation and visibility that are included in Appendix A, or barometric pressure (or other variables) that are measured at some sites (and can be included as "Other" in Appendix A). **Recommendation:** Add barometric pressure, with accuracy and resolution as stated in ANSI/ANS-3.11-2005. Add solar radiation, with accuracy and resolution as stated in ANSI/ANS-3.11-2005. Add other variables to Table 2 as appropriate.	**Response:** Atmospheric pressure, solar radiation, and visibility are not required meteorological parameters. Consequently, Table 2 need not provide the system accuracy and resolutions. Adding these parameters to Table 2 could confuse readers into thinking that they are required parameters. **Disposition:** No changes.
48 ✔	NMG: S-21	C.5	**Comment:** First paragraph. Meeting the 90% valid data recovery rate for precipitation measurement may be difficult during winter months in a climate with heavy snow and the potential for drifting snow, even with heated precipitation gauges and frequent site visits. While heated rain gauges may provide representative liquid precipitation totals, the gauge may not produce accurate hourly values (melting occurring after the snow has fallen, evaporation occurring before liquid amount can be measured, etc.). **Recommendation:** Consider an interpretation of the data recovery rate for precipitation to recognize that frozen precipitation may not be fully recorded or may be recorded at an incorrect time.	**Response:** As discussed in Section 3.1.4 of ANSI/ANS-3.11-2005, gauges may be equipped, where necessary, with heater devices to melt frozen precipitation or with an antifreeze (i.e., ethylene glycol) solution, using a system appropriate for the location, and operated to minimize underestimation attributable to evaporation caused by the heater device. Section 6.4 of ANSI/ANS-3.11-2005 also states that the data recovery rate for precipitation shall be at least 90% without an interpretation to recognize that frozen precipitation may not be fully recorded or may be recorded at an incorrect time. **Disposition:** The staff has revised the last sentence in the last paragraph of Section C.3 to read, "Where appropriate, precipitation gauges should also be equipped with heaters or with an antifreeze (i.e., ethylene glycol) to melt frozen precipitation. If heaters are used, they should be operated to minimize underestimation due to evaporation caused by the heater device."

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
49 ✔	NMG: S-22	C.5	**Comment:** Last paragraph. It is stated that "Channel operability checks shall be performed daily…." It is not clear what an operability check includes. Does this require an onsite visit to verify proper equipment operation or just verification that apparently "correct" data are being received by the users? Daily onsite visits will not be practical in many cases, but daily or once per shift review of the instantaneous data can verify operability. Daily data review is another method of a channel operability check (reviewing the hourly values for reasonableness). **Recommendation:** Clarify "channel operability checks."	**Response:** The staff has changed the term "channel operability checks" to "channel checks" and added a definition of channel check to Section C.1, "Definitions," based on the definition of channel check provided in Revision 3 of the Standard Technical Specifications for each of the five currently operating reactor types. The requirement for daily channel checks has been limited to operational monitoring programs to provide additional assurance that the monitoring program will be operational in the event of a radiological emergency at an operational plant. **Disposition:** The staff has added the following definition for channel check to Section C.1: "The qualitative assessment, by observation, of channel behavior during operation. This determination should include, where possible, comparison of the channel indication and status to other indications or status derived from independent instrument channels measuring the same parameter." In addition, the staff has changed the first sentence in the second paragraph of Section C.5 to read as follows: "Channel ~~operability~~ checks should be performed daily for operational monitoring programs and channel calibrations should be performed semiannually for both preoperational and operational monitoring programs, unless the operating history of the equipment indicates that either more- or less-frequent calibration is necessary."
	DUK: 3		**Comment:** Daily Channel Operability Checks. Please specify what is meant by "channel operability checks" in the statement, "Channel operability checks should be performed daily and channel calibrations should be performed semiannually, unless the operating history of the equipment indicates that either more or less frequent calibration is necessary." Remote zero and span of data processors can be done daily via a datalogger. This would be more practical than daily site visits to inspect the tower(s). However, the zero and span would not ensure that the tower instrumentation is operating properly; it only checks the viability of the processors in the equipment building.	
50 ✔	NEI: C.5 NMG: S-23	C.5	**Comment:** Last paragraph. The document specifies that "guyed wires and anchors…should be inspected annually." This differs with standard industry practice of tower manufacturers to inspect towers annually and foundations every 5 years. ANSI/TIA-222-G, "Structural Standard for Antenna Supporting Structures and Antennas," specifies a 3-year interval for guyed masts. The nature of the inspections is not clear. Do they consist of visual inspections, physical inspections that require excavation, or something in between? **Recommendation:** Recommend that this statement of tower inspections be clarified regarding the description and frequency of inspections and that it be more consistent with industry practices.	**Response:** The guyed wires should be inspected annually and the anchors should be inspected once every 3 years in accordance with industry standards (e.g., ANSI/Telecommunications Industry Association (TIA)-222-G). **Disposition:** The staff has changed the last sentence in the last paragraph of Section C.5 to read, "For guyed towers, guyed wires should be inspected annually and anchors should be inspected once every 3 years in accordance with industry standards."

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
51 ✔	NMG: S-24	C.6	**Comment:** Third Paragraph. The 60-second sampling interval (or 30-second sampling interval in Section 8) is not adequate to characterize wind. ASTM D5741, "Standard Practice for Characterizing Surface Wind using a Wind Vane and Rotating Anemometer," specifies the sampling interval for wind speed and wind direction to be 1 to 3 seconds (with all wind direction observations for speeds above the starting threshold). ASTM D5527, "Standard Practices for Measuring Surface Wind and Temperature by Acoustic Means," does not specify a sampling interval but indicates that the reported data should be based on a continuous sampling period of at least 10 minutes. **Recommendation:** Establish an appropriate sampling rate for wind.	**Response:** American Society for Testing and Materials (ASTM) D5741 suggests a sampling rate of 1–3 seconds in order to establish 10-minute average wind speeds and wind directions and standard deviations of the wind speed and wind direction samples about the 10-minute averages. The original sampling rate established in DG-1164 did not assume the compilation of wind speed and wind direction standard deviations. Nonetheless, it does not appear unreasonable that this regulatory guide should establish a sampling rate of intervals no longer than 5 seconds to establish 15-minute average wind speeds and directions and standard deviations of the wind speed and wind direction samples about the 15-minute averages. It also does not appear unreasonable to sample the remaining meteorological variables (e.g., temperature) at the same rate. For example, ASTM D6176, "Standard Practice for Measuring Surface Atmospheric Temperature with Electrical Resistance Temperature Sensors," states that temperature sensor output should be sampled at a rate commensurate with other meteorological measurements, such as sampling at least once every 3–5 seconds. **Disposition:** The staff has changed part of the third paragraph in Section C.6, "Data Reduction and Compilation," to read, "The digital sampling of data should be at least once every 5 seconds. The digital data should be (1) compiled as 15-minute average values for real-time display in the appropriate emergency response facilities (e.g., control room, technical support center, and emergency operations facility) and (2) compiled and archived as hourly values for use in historical climatic and dispersion analyses." In addition, the staff has deleted the following sentence from Section C.8: "The 15-minute averaged values should be calculated using at least 30 equally spaced samples."
	TVA: 1		**Comment:** Third Paragraph. The statement, "Digital hourly values should consist of a sampling of data at intervals no longer than 60 seconds," appears inconsistent with item 8 of Section C, "Special Considerations to Support Emergency Preparedness," which requires "15-minute averaged values.., using at least 30 equally spaced samples," or two samples per minute. To permit comparison of hourly and 15-minute periods, the data should be collected identically. **Recommendation:** Establish a single sampling rate to be used for all data collection (except wind). Hourly or 15-minute averaged values can then be determined from the relevant values in the accumulated data set. The sampling rate for wind will have to be much more frequent (~5 seconds) to obtain sufficient raw data for computing wind-related variables.	
	ABS: S-1		**Comment:** Sampling Frequency. The standard sampling frequency at most plants has been 180 samples in 15 minutes or sampling at 5-second intervals. This allows for a good representative sample of data to calculate 15-minute averages and other more statistically based parameters such as sigma theta calculations. With the new regulatory guide calling for the use of digital data recorders, collecting data at 5-second intervals will not be a problem. The new guidance calls for sampling rates of as much as 60 seconds or 15 samples per 15 minutes. This is not enough to properly calculate sigma theta	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
52 ✔	NMG: S-26	C.6	**Comment:** Third paragraph. In the discussion of sampling intervals, it is stated that "...mean values for the accumulated data should be determined...." It is not stated whether this refers to arithmetic mean or geometric mean. **Recommendation:** Clarify the type of "mean" that is to be used.	**Response:** The staff has replaced the term "mean" with the term "average." This terminology is consistent with the terminology used in ASTM D5741 to describe standard data output for archiving wind speed and direction values. **Disposition:** The staff has changed part of the third paragraph in Section C.6 to read, "The digital data should be (1) compiled as 15-minute average values for real-time display in the appropriate emergency response facilities (e.g., control room, technical support center, and emergency operations facility) and (2) compiled and archived as hourly values for use in historical climatic and dispersion analyses."
	DUK: 14		**Comment:** Digital Data Sampling Interval. In discussing the sampling interval and compilation of data, please clarify "mean" values as either an arithmetic mean interval (i.e., averages) or a geometric mean.	
53 ✔	TVA: 2	C.6	**Comment:** Third paragraph, third sentence states, "The hourly values may be generated by using one 15-minute value per hour (if the same...15-minute period is used each hour) or by averaging all of the 15-minute values recorded during the hour." It is not clear that an option exists to generate hourly values based on a 1-hour sampling period. **Recommendation:** Change the phrase "... hourly values may be generated by using one 15-minute value per hour (if the same 15- minute period is used each hour) or by averaging all of the 15-minute values recorded during the hour" to read "...hourly values may be generated from a 1-hour sample by using one 15-minute value per hour (if the same 15-minute period is used each hour) or by averaging all of the 15- minute values recorded during the hour."	**Response:** The staff agrees with the comment. **Disposition:** The staff has changed part of the third paragraph in Section C.6 to read, "The hourly values may be generated by (1) averaging all the samples taken during the hour, (2) using one 15-minute value per hour (if the same 15-minute period is used each hour), or (3) averaging all of the 15- minute values recorded during the hour."

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
54 ✔	NMG: S-27	C.6	**Comment:** Third paragraph. In the discussion of data averaging, it is not specified how wind speed and wind direction data calculations shall be performed. **Recommendation:** Identify the preferred method, scalar or vector averaging, to be used for wind data. Indicate that scalar wind direction needs to account for the circular distribution of wind data.	**Response:** The staff has not adopted a position concerning a preferred methodology for calculating wind speed and wind direction averages. For example, Section 6.2.1 of EPA-454/R-99-005, "Meteorological Monitoring Guidance for Regulatory Modeling Applications," issued February 2000, recommends using a scalar mean wind direction value, whereas Section 2.8.1 of EPA-454/D-66-001, "Quality Assurance Handbook for Air Pollution Measurement Systems," Volume IV, "Meteorological Measurements," draft issued October 2006, raises questions about the validity of the same scalar method. It is also the staff's impression that some sonic anemometers, doppler sonars, and radar wind profilers provide only vector average wind speed and direction values as output. **Disposition:** The staff has added a footnote to the third paragraph of Section C.6, which reads "The wind direction is a circular function with values between 0 and 360 degrees. The wind direction discontinuity at the beginning/end of the scale requires special processing to compute a valid average value."
	DUK: 15		**Comment:** Wind speed and Wind Direction. It would be helpful if the NRC were to include information on the preferred measurement of wind speed and wind direction, as either scalar or vector averages.	
55 ✔	NEI: C.6.a NMG: S-25	C.6	**Comment:** Third paragraph. Wind gust information is important to make the assessment on "natural phenomena being experienced or projected beyond usual levels (e.g., high winds)" noted in item 5 of the Discussion section. While it is stated that "Hourly maximum wind speed gust values may also be archived…," wind speed gust is not defined and no guidance is provided for how to collect such data. Both the wind loading standard (ASCE 7) and ASTM D5741 suggest gust be based on the 3-second average. **Recommendation:** Define "wind speed gust" and establish (or reference) an appropriate sampling methodology.	**Response:** The staff has deleted the discussion regarding the option to archive hourly maximum wind speed gusts. The staff had intended the definition of wind speed gust to be a 3-second gust, to be consistent with American Society of Civil Engineers (ASCE)/Structural Engineering Institute (SEI) 7-05, "Minimum Design Loads for Buildings and Other Structures." To be a useful measurement for analyzing the wind loading for the design of buildings and other structures, the wind speed gusts that occur during high wind speed events should be recorded and archived, and this requires a faster sampling frequency than once every 5 seconds as presented in Section C.6. As pointed out in Comment 42, instrumentation that is capable of a high range [0–90 miles per hour (mph)] may not meet the accuracy criteria in Table 2 of DG-1164. The most important monitoring criteria to meet are the Table 2 system accuracy criteria to ensure that adequate dispersion estimates can be made. In addition, onsite databases are not typically long enough to serve as an adequate basis for establishing design-basis building loads. **Disposition:** The staff has deleted the following sentence in the third paragraph of Section C.6: "Hourly maximum wind speed gust values may also be archived for use in the analysis of wind loading for the design of buildings and other structures."

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
56 ✔	NEI: C.6.b NMG: S-28	C.6	**Comment:** Fourth paragraph. The footnote for this paragraph discusses using more speed classes at lower speeds if there is a "high frequency of low speeds." No guidance is provided for what is considered "high frequency." **Recommendation:** Clarify the circumstances that would constitute a "high frequency of low wind speeds" and define how many additional wind speed categories are appropriate.	**Response:** The staff has deleted this footnote. The wind speed categories presented in Table 3 of this regulatory guide have enough low wind speed categories to handle this concern. **Disposition:** The staff has deleted Footnote 10.

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
57 ✔	NEI: C.6.c	C.6	**Comment:** It is not clear what and how joint frequency distributions of humidity data summaries should be developed and how these data will be used. **Recommendation:** Provide guidance about the methodology to be used.	**Response:** The staff has deleted the last paragraph in Section C.7 of DG -1164. DG- 1145 (Regulatory Guide 1.206) "Combined License Applications for Nuclear Power Plants," and Regulatory Guide 4.2 "Preparation of Environmental Reports for Nuclear Power Plants" describe the types of humidity data summaries that should be included in COL applications. **Disposition:** The staff has deleted the last paragraph in Section C
	NMG: S-29a		**Comment:** Last paragraph. It is not clear what and how joint frequency distributions of humidity data summaries should be developed and how these data will be useful. Comparison data will only be available when the meteorological tower is downwind from the humidity source. For all other directions, there will be no measurements on which to base comparisons. **Recommendation:** Reconsider the need for this information or provide guidance about the methodology to be used	
	NMG: S-29b		**Comment:** Last paragraph. Acceptable methods are not provided or discussed for determining joint frequencies for fogging and icing caused by plant operation only, and not due to ambient fogging and icing. The frequency of fogging (Ta = Tdew) or icing (T < 32 °F) may only indicate natural ambient conditions, not necessarily impacts from plant operation. **Recommendation:** If information is needed, provide guidance about methodology to be used.	
	DUK: 16		**Comment:** Fogging and Icing. It would be useful for the NRC to discuss/provide acceptable methods for determining joint frequencies for fogging and icing caused by plant operation only and not due to ambient fogging and icing. The frequency of (T = Tdew) or (T < 32 °F) would only indicate ambient, natural conditions, not necessarily due to the plant operation.	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
58 ✔	NMG: S-30 DUK: 17	C.7	**Comment:** Last paragraph. The footnote refers to "keyhole" protective action requirements, but this is undefined. **Recommendation:** Explain "keyhole" protective action requirements.	**Response:** The staff has revised the footnote to provide an example of a keyhole protective action recommendation. **Disposition:** The staff has changed the footnote for the last paragraph of Section C.7 to read, "For example, if the comparison of the primary and supplemental meteorological systems indicates convergence in a lake breeze setting, then a 'keyhole' protective action recommendation (e.g., evacuating a 2-mile radius and 5 miles downwind) may not be appropriate."

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
59 ✔	NMG: S-31	C.8	**Comment:** Second paragraph. The requirement for instruments to survive the extreme conditions upon which a facility's emergency action levels are based may not be needed, if the emergency action level (EAL) is based upon forecasted weather conditions, or upon the instrument overranging. For example, if a high wind EAL exists at 75 mph, then a station could implement the EAL when the anemometer peaks out at 60 mph (on a 0–60 mph scale). **Recommendation:** Relax the requirement for survival beyond conditions that would initiate an EAL. This is a more conservative approach.	**Response:** This regulatory guide states that if the basis for any of the EALs includes the monitoring of onsite meteorological conditions (e.g., the occurrence of measured hurricane-force winds onsite as a basis for declaring an Unusual Event), the tower and its instrumentation should be capable of surviving, monitoring, and displaying the meteorological condition. As an example, the Saffir-Simpson scale defines the lower threshold for a Category 1 hurricane as a 1-minute wind speed of 74 mph. One-minute hurricane force wind speeds of 74 mph could contain 3-second gusts up to 90 mph. If a plant's onsite monitoring system only reports 15-minute average wind speeds, a 15-minute average wind speed of 62 mph could contain 1-minute gusts up to 74 mph and 3-second gusts up to 90 mph. This means that if the initiating condition for an EAL is the onsite measurement of hurricane-force winds and the onsite monitoring system only displays 15-minute average wind speeds, the initiation condition should be defined as observing onsite 15-minute average wind speeds of 62 mph or higher. In order to adequately record a 15-minute average wind speed of 62 mph, the instrumentation should be able to sample 3-second gusts up to 90 mph. The staff agrees that if the EAL is based on forecasted weather conditions, the requirement for instruments to survive the extreme forecasted conditions is not needed because the initiating condition for the EAL does not include monitoring onsite meteorological conditions. However, if a station chose to implement a high wind EAL when the measured onsite 15-minute average wind reaches 60 mph, this becomes the initiating condition for the EAL, and the tower and its instrumentation should be capable of surviving and sampling wind speeds up to 90 mph. **Disposition:** No changes.
	DUK: 18		**Comment:** EALs vs. MET Sensors. It is not clear why the meteorological instruments must be able to survive the extreme conditions upon which a facility's emergency action levels are based. It would seem the EAL could be entered into sooner, based on loss or overranging of the sensor. Further, an EAL could be based on forecast conditions, and thus the actual measurements may not matter anyway. Note: On the Saffir-Simpson scale, Category 1 hurricane wind speeds are 74–95 mph. Example: If a high wind EAL exists at 75 mph, then a station could implement the EAL when the anemometer peaks out at 60 mph (when on a 0–60 mph scale). This is a more conservative approach and provides the best accuracy for the routinely lower wind speed measurements.	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
60 ✔	NMG: S-32	C.8	**Comment:** Third paragraph. It is stated that the computer collecting meteorological data should submit information to the NRC according to a specific data format. Display of data in the control room and emergency operations center, or on computers therein, provides current conditions, but formatting of data for model input is usually handled by preprocessors internal to or associated with the emergency response models. **Recommendation:** State that data streams that are not submitted to the NRC may be of a different format for other users.	**Response:** The staff has revised the sentence in question to clarify that all the meteorological channels required for manual input to the dose assessment models should be available and presented in a format compatible for input to the models. For example, if a dose assessment model requires wind speed input in units of m/sec, the wind speed channel display should be in units of m/sec in order to expedite use of the model and avoid potential errors in converting units. The intent is to avoid manual calculations as much as possible. **Disposition:** The staff has revised the second sentence in the first paragraph of Section C.8 to read, "All the meteorological channels required for manual input to the dose assessment models should be available and presented in a format compatible for input to the models (e.g., wind speed is displayed in the proper units; atmospheric stability is displayed as a ΔT value versus a Pasquill stability class, etc)."
			Comment: Third paragraph. Atmospheric stability may not be calculated on the plant computers. Instead, it is calculated either by the emergency dose model, or manually as part of the station procedure for the dose assessment groups. Therefore, since stability class is not a data point on the plant computer, only ΔT measurements would be displayed as an indicator of stability class. **Recommendation:** Clarify specific applications that will require stability class to be classified into Pasquill Class and not as ΔT.	
	DUK: 19		**Comment:** Display of MET DATA. Display of MET data in the control room and emergency operations center, or on computers therein, provides the current conditions, but formatting of data for model input is usually handled by preprocessors, internal to or associated with the emergency response models. The guidance should state that, while the parameters used should be displayed, they do not need to be in the same format as the model's input stream. If atmospheric stability is not calculated on plant computers, only delta-T measurements would be displayed as an indicator of stability class in the control room or in ERDS. Stability is calculated either by the emergency dose model, or manually as part of the station procedure for the dose assessment groups.	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
61 ✔	DUK: 20	C8	**Comment:** ERDS. At the June 2006 NEI EP and Communications Forum, Eric Leeds (NRC) stated that ERDS was going to be replaced with a better system. While ERDS is routinely tested and does work, it was created in the late 1980s and is a nonnetworked system. Many improvements could be made to facilitate the transfer/sharing of plant information and meteorological data during an emergency. Will a replacement for ERDS be available in time to be referenced in DG-1164? Note that all of the available meteorological data points for a particular facility might not be set up in ERDS. In addition, station emergency response procedures may require the use of upper-level wind direction with lower-level wind speeds in dose assessment models for conservatism. Thus, there is a chance for miscommunications between the NRC and a facility's emergency response organization (ERO) staff, depending on which information is available and which is used for dose assessment and plume tracking by the NRC versus ERO staff.	**Response:** The implementation of the upgrade to the Emergency Response Data System (ERDS), which began in September 2006 and is envisioned to be a 5-year process, will not affect this regulatory guide. This guide references only the regulatory requirement for the ERDS (i.e., Section VI of Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities") and does not address details of its implementation. The agency currently has no plans to change the regulatory requirement for the ERDS. **Disposition:** No changes.
62 ✔	NMG S-33	C.8	**Comment:** Last paragraph. It is not clear whether methods of determining stability class, other than ΔT, are acceptable when obtaining data from alternative data sources during an emergency. **Recommendation:** Verify if methods of determining stability class, other than ΔT, are acceptable.	**Response:** Backup methods for determining stability class other than ΔT are acceptable when obtaining data from alternative data sources during an emergency. As an example, several plants implemented onsite backup meteorological systems after the accident at Three Mile Island using only 10-meter towers and an alternative method for determining atmospheric stability. The staff has added guidance on the type of acceptable backup data based on the criteria presented in Section C.8 of Proposed Revision 1 to Regulatory Guide 1.23 (issued September 1980). **Disposition:** The staff has changed the last paragraph in Section C.8 to read, "The applicant should have provisions in place to obtain representative meteorological data (e.g., wind speed and direction representative of the 10-meter level and an estimate of atmospheric stability, which is not necessarily based on ΔT) from alternative sources during an emergency if the site meteorological monitoring system is unavailable."
	DUK: 21		**Comment:** Alternative MET data sources. When onsite delta-T data are not available, are other methods for determining stability class acceptable to the NRC during an emergency? Some possibilities may be the use of convective potential or helicity-related indices from NWS soundings or weather forecast models. Should the alternative MET data be input/substituted into ERDS? Current station emergency procedures include calling the local NWS office to obtain backup data verbally, if the onsite MET data are unavailable.	

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
63 ✔	NMG: S-34	References	**Comment:** ANSI/ANS-2.5-1984 was withdrawn in 2000, when ANSI-ANS-3.11-2000 was published. It is classified as an historical standard and should not be used as current guidance. **Recommendation:** Remove ANSI/ANS-2.5-1984 from the reference list. Any items in DG-1164 that are based on this reference should be eliminated or revised to be based on an active document.	**Response:** This regulatory guide does not use ANSI/ANS-2.5-1984 for regulatory guidance. This guide lists this document as a reference for historical purposes only, because the second proposed Revision 1 of Regulatory Guide 1.23 endorsed ANSI/ANS-2.5-1984 with some minor exceptions. **Disposition:** No changes.
64 ✔	NMG: S-35	References	**Comment:** The reference to the MACCS2 Code Manual is incorrect because two characters (9 and 5 are transposed in SAND97-*) are transposed. **Recommendation:** Change "SAND97-0594" to "SAND97-0954."	**Response:** The staff agrees with the comment, but notes that the recommendation should read "change SAND97-0954 to SAND97-0594." **Disposition:** The staff has changed the reference to the MACCS2 computer code to SAND97-0594.
65 ✔	NEI: A.1.a	Appendix A	**Comment:** The use of five integers (99999 and 77777) is not consistent with the format provided in the second paragraph (i.e., "the remaining records, one per hour, contain the meteorological data in the format A4, I4, I3, I4, 25F5.1, F5.2, 3F5.1"). The format specification provided in the third paragraph calls for 25F5.1. **Recommendation:** To be consistent with the above format, missing data and calm hour should be coded as 999.9 and 777.7, respectively, instead of 99999 and 77777.	**Response:** The use of decimal points in the data file is not required. **Disposition:** The staff has added the following statement to the second paragraph of Appendix A: "The use of decimal points in the database is not required."

Comments				NRC Comment Resolution
#	Originator	DG-1164 Section	Specific Comments and Recommendations	
66 ✔	NEI: A.1.b	Appendix A	**Comment:** In the second paragraph, the format for solar radiation is specified as F5.2; however, the format specified on page A-3 for solar radiation is F5.1. **Recommendation:** The format for solar radiation provided on page A-3 should be corrected to F5.2.	**Response:** The staff agrees with the comment. **Disposition:** The staff has changed the format for solar radiation provided on page A-3 to F5.2.
	NMG: S-36		**Comment:** Text on page A-1 states that solar radiation data should have two decimal places (which assumes an F5.2 format). Listing on page A-3 specifies an F5.1 format for solar radiation. **Recommendation:** Correct format specification on page A-3.	
67 ✔	NMG: S-37	Appendix A	**Comment:** Note on page A-1 states that "…moisture…[is not a] required measurement." This conflicts with Section 2, which states "At sites where there is a potential for fogging or icing from the release of water vapor by plant operations…instrumentation should be provided for measuring…humidity." **Recommendation:** Clarify the requirements for collecting and reporting humidity data.	**Response:** The staff agrees with the comment. **Disposition:** The staff has changed the note at the bottom of page A-1 to read, "The sigma theta, ~~moisture,~~ solar radiation, and visibility measurements listed in the following pages are not required measurements but should be provided if they are available. Ambient temperature and atmospheric moisture measurements should be provided at height(s) representative of water-vapor release for those sites utilizing either cooling towers, cooling lakes and ponds, or spray ponds as the plant's normal heat sink."
68 ✔	NEI: A.2.b	Description of Changes	**Comment:** Proposed Change Number 11 adds a criterion that an electronic copy of the hourly database should be submitted with the application. **Recommendation:** Current NRC electronic submittal guidance does not contemplate the submission of electronic files other than in Adobe Acrobat format as part of the application. The NRC staff must work together to acknowledge the many formats for which electronic information may be provided by a licensee or applicant.	**Response:** The NRC staff agrees with the comment, but this issue is beyond the scope of this regulatory guide. **Disposition:** No changes.