ANS Issues Clarification on ANSI/ANS-3.11-2000, "Determining Meteorological Information at Nuclear Facilities."
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Inquiry:

Having used ANSI/ANS-2.5-1984, "Standard for Determining Meteorological Information at Nuclear Power Sites," for many years, the requirement in ANSI/ANS-3.11-2000 for the accuracy of the "vertical air temperature difference" does not appear appropriate. In ANS-2.5 the measurement accuracy is a function of the vertical distance, namely ±0.15C/50 m. However, in ANS-3.11 the measurement accuracy is absolute, ±0.1C, and is not related to height.

I believe the accuracy must be related to vertical distance because the measurement is used to calculate the standard temperature difference for a height of 100 m. Therefore, the measurement accuracy should be specified as a function of vertical distance in order to achieve the desired accuracy for 100 m.

Please explain this difference between the two standards. Also, please explain the adequacy of the specification in ANS-3.11 or change ANS-3.11 to be consistent with ANS-2.5.

Response:

Regulatory Guide 1.23, when it was initially issued in 1972 as Safety Guide 23, specified an accuracy of ±0.1C but without any dependence on relative vertical measurement location. Proposed Revision 1 to this regulatory guide, issued in 1980, specifies an accuracy of ±0.15C/50 meters in height. This same accuracy, which was technically achievable at the time, is also given in ANSI/ANS-2.5-1984.

In 1990, the US Environmental Protection Agency (EPA) proposed an accuracy of 0.003C/meter for use over a vertical height difference of 2 to 10 meters above ground level, which may have been based on the ±0.15C/50 meters set forth in the documents discussed above. However, for such short heights, this accuracy is not achievable. It was therefore recommended that EPA specify an accuracy of ±0.1C/meter without any reference to differences in height. This accuracy can be achieved using conventional meteorological sensors and data logging equipment that are commercially available.

The EPA accepted this value of ±0.1C/meter, and it was incorporated into ANSI/ANS-3.11-2000. Therefore, this standard reflects the current state of the art and is consistent with existing regulations.

In addition, the ANS-3.11 working group believes the requirements for accuracy should be independent of the height of the tower used for meteorological monitoring and should be compatible with individual plant needs. This specification of the required accuracy meets these expectations.