BellBendCOLPEm Resource

From: Harvey, Brad
Sent: Monday, April 06, 2009 4:31 PM
To: Mazaika, Michael; Temple, Jeffrey
Cc: Charles Cox; Canova, Michael; Imboden, Stacey; Barss, Dan; BellBendCOL Resource
Subject: RE: Susquehanna/Bell Bend Met Tower

Mike et al:

If a natural draft cooling tower is at least five times its width from the meteorological tower, the staff has previously concluded that the cooling tower will not adversely affect the met tower measurements. See the write-up from the Vogtle ESP SER below.

Brad
415-4118

The 10-building-height distance of separation is typically applied to square or rectangular structures, whereas rounded and sloping structures such as hyperbolic natural draft cooling towers can be expected to produce a smaller wake zone. According to the applicant, the preliminary design for the natural draft cooling towers calls for them to be about 600 feet high, with a base diameter of 550 feet and a top diameter of 330 feet. In RAI 2.3.3-2, the staff asked the applicant to include the proposed natural draft cooling tower height and width as part of SSAR Table 1-1, which lists postulated design parameters, since this information is used to determine the potential wake effects from these towers. The applicant complied with this request.

Section 123 of the Clean Air Act as amended in 1990 defines good engineering practice stack height as the height necessary to ensure that emissions from a stack do not result in excessive concentrations of any air pollutant in the immediate vicinity of a source as a result of atmospheric downwash, eddies, and wakes which may be created by the source itself, by nearby structures, or by nearby terrain obstacles. The EPA defines “nearby structures” in its regulations (40 CFR 51.100(jj)(1)) as that distance up to five times the lesser of the height or the width dimension of a structure; that is, the downwind distance in which a structure is presumed to have a significant influence as a result of downwash, eddies, and wakes extends downwind approximately five times either the height or width (whichever is less) of the structure. The EPA regulatory guidance document for determining good engineering practice stack heights (EPA-450-4/80/023R, June 1985) also states that this area of influence becomes significantly smaller as the height to width ratio of a structure increases. Based on the EPA guidance for this type of structure, which will have a maximum width of 550 feet, the outermost boundary of influence exerted by the proposed cooling towers is estimated to be no more than 2750 feet. Since this distance is shorter than the 3025-foot separation between the proposed cooling towers and the primary meteorological tower, the staff concludes that the proposed natural draft cooling towers will not adversely affect measurements made at the primary meteorological tower. The staff calculated a larger area that may be affected by cooling tower wake because the updated 1985 EPA guidance used by the staff recommends using the maximum width of the structure, whereas the 1981 EPA guidance used by the applicant recommended using the width at the top of the structure for calculating potential wake influences.

From: Michael Mazaika
Sent: Thursday, April 02, 2009 11:47 AM
To: Jeffrey Temple
Cc: Brad Harvey; Charles Cox; Michael Canova; Stacey Imboden; Dan Barss; BellBendCOL Resource
Subject: RE: Susquehanna/Bell Bend Met Tower

Jeff:

COL FSAR Section 2.3.3 addresses both the pre-application / pre-operational phase meteorological monitoring program (which provided the data used for the dispersion analyses elsewhere in Section 2.3) as well as the operational phase monitoring program. The former appears to correspond to measurements made at the SSES meteorological tower; the latter to measurements that are (or will be) made at a separate tower for the

BBNPP facility. I presume that for the BBNPP emergency plan (EP), your focus will be on the BBNPP meteorological tower. Please confirm.

Section 2.3.3 acknowledges that both towers do not conform to one or more aspects of relevant regulatory guidance (i.e, the current revision (Rev. 1) of Reg. Guide 1.23 issued in March 2007, or its predecessor proposed revisions or the parent Safety Guide 23). With respect to the SSES tower, the discussions indicate that:

- the tower location does not conform to the guidance on distance of separation from potential obstructions to airflow (Second Proposed Revision 1 to Reg Guide 1.23;
- the existing sensors (I presume on the SSES tower) do not meet the measurement resolution criteria given in Rev. 1 of Reg Guide 1.23 (don't believe that that lack of conformance is applicable, which I need to confirm); and
- the inspection intervals applicable to the tower structure, guy wires, and anchors do not meet the criteria given in Rev. 1 of Reg Guide 1.23 (again, I don't believe that that lack of conformance is applicable).

The discussion of the BBNPP tower likewise indicates that the guidance on distance of separation from potential obstructions to airflow is not met, but, in this case, with respect to Rev. 1 of Reg Guide 1.23. The discussion of the operational phase monitoring program in Section 2.3.3 is silent with respect to the measurement resolution of the instrumentation or inspection intervals for the tower and its supports.

More importantly, however, Section 2.3.3 is written as if the BBNPP tower has been commissioned and is already operating, but other information suggests that might not be the case. These and other related issues will be addressed during the upcoming environmental site audit (April 28-May 1) and subsequent RAI questions including the applicant's reference to a study (no citation given) that presumably demonstrates that the cooling towers at SSES Units 1 and 2 have no significant effect on the wind measurements at the SSES meteorological tower. By extension (because of the SSES cooling towers additional distance from the BBNPP meteorological tower) the applicant has also concluded that there should be little or no affect on wind measurments at the BBNPP meteorological tower due to the exisitng SSES and proposed BBNPP cooling towers. Submission of that report will be requested during the audit and for docketing via RAI.

My sense of it is, based on the info that I've looked at so far, that representativeness of the meteorological data from the BBNPP tower during the operations phase will not be an issue due to either the indicated or perceived deviations from Reg Guide 1.23 or its predecessors. Nevertheless, I will keep you posted as issues develop or are resolved.

Please give me a call if you have any questions.

Thanks,

Mike Mazaika.

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From: Brad Harvey
Sent: Tuesday, March 31, 2009 9:11 AM
To: Jeffrey Temple
Cc: Dan Barss; Michael Mazaika
Subject: RE: Susquehanna/Bell Bend Met Tower

Jeff:

I believe Mike Mazaika is the lead staff meteorological reviewer for Bell Bend. He is the best individual to answer your questions. I have cc'd Mike on this email.

Brad

From: Jeffrey Temple
Sent: Tuesday, March 31, 2009 8:16 AM
To: Brad Harvey
Cc: Dan Barss
Subject: Susquehanna/Bell Bend Met Tower

Hi Brad

In reviewing the proposed Bell Bend Nuclear Power Plant (BBNPP) Emergency Plan, submitted as a part of their COLA, the applicant states that the current met tower at SSES, where the BBNPP will be sited, does not meet RG 1.23 standards. Are you familiar with the met program at SSES, and do they in fact have a met tower and system that is satisfactory to us? Do they have an exemption that you are aware of for their met tower?

thanks….any light you can shed on this statement in the BBNPP emergency plan would be appreciated.

Jeff Temple
415-0156

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From: Harvey, Brad

Created By: Brad.Harvey@nrc.gov

Recipients:
"Charles Cox" <>
Tracking Status: None
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