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**Craver, Patti**

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**From:** Julie Crocker [julie.crocker@noaa.gov] *NOAA*  
**Sent:** Wednesday, April 11, 2012 8:52 AM  
**To:** Balsam, Briana  
**Subject:** Re: Pilgrim - A few clarification questions

thanks - this is helpful!

On Tue, Apr 10, 2012 at 2:17 PM, Balsam, Briana <[Briana.Balsam@nrc.gov](mailto:Briana.Balsam@nrc.gov)> wrote: *BBR*

Julie,

I attached our partial responses to your questions as well as the 2010 impingement and entrainment monitoring reports for Pilgrim, which my responses reference.

The questions that I have yet to answer concern the thermal plume. I am still tracking down the reference that the NRC used in the SEIS to be able to provide you with a more complete description of the plume. I have noted those items for which I still owe you an answer in the attached document.

Briana

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Briana A. Balsam

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*B/12*

**From:** Julie Crocker [mailto:[julie.crocker@noaa.gov](mailto:julie.crocker@noaa.gov)]  
**Sent:** Monday, April 09, 2012 3:51 PM  
**To:** Balsam, Briana; Logan, Dennis  
**Subject:** Pilgrim - A few clarification questions

Hi Briana and Dennis -

As we continue to work on the Pilgrim consultation, several questions have come up that I am hoping you can answer or help point me to sources of this information. If it is easier to talk through this over the phone, let me know. I am around tomorrow afternoon and most of the day Wednesday. Most of these questions seek to clarify our understanding of information you have provided to date.

1. Are there any in-water acoustic impacts of the Pilgrim facility? Have any in-water measurements of underwater noise been taken here or at similar plants? The EIS states that "noise has not been found to be a problem at operating plants and is not expected to be a problem at any plant during the license renewal term. The staff has not identified any new and significant information during its independent review of the PNPS ER, the site visit, the scoping process, evaluation of other available information, or consideration of public comments. Therefore, the staff concludes that there would be no impacts of noise during the license renewal term beyond those discussed in the GEIS." This statement makes it unclear whether there is underwater noise associated with Pilgrim, but it would not rise to the level of being a concern, or whether there is not actually any underwater noise associated with operations. Could you clarify?
2. The dimensions of the thermal plume appear to be described in terms of delta T. Is the 1C delta T the extent change that is detectable? We are trying to use the size of the thermal plume as part of the description of the action area.
3. Section 4.1.3 discusses the 1974 thermal plume study that characterized the surface plume. It states, "For example, water with a delta T of 3C (37.4F) covered approximately 216 acres (ac) in August when the ambient temperature was 17.0C (62.6F), but only 14 ac in November when the ambient temperature was 8.5C (47.3F)." The first part of that sentence is confusing, do you mean that the 216 acre area had water that was 3C greater than ambient or 37.4F greater than ambient or something else?? Also, can you provide the description of the size of the area that had a delta T of 1C at the surface (later text in the EIS describes that area for the bottom)?
4. I also have a question about this statement -- "At the bottom, similar to the surface, the smallest temperature increment measured (1C or 33.8F) covered the largest area (up to 1.2 ac), and water with higher temperatures relative to ambient covered much smaller areas. For example, the highest delta T measured, 9C

(48.2°F), covered less than 0.13 ac of the bottom" (in 4.1.3) Did that heated area (1.2 acres) have temperatures that were 1C above ambient or 33.8F above ambient, because those would be two very different scenarios!

5. Thermal backwash - Can you describe the size of the plume? The EIS says it is thin and only lasts a few hours but can you describe how far from the discharge canal it extends and its temperature profile (e.g., the size of area with delta T of 3C, 1C etc.)

3. Have there been any jellyfish (leatherback turtle prey) impinged or entrained at Pilgrim? I do not see any listed on table 4-3 on the EIS but it is not clear to me if that table includes invertebrates. Is there a list of the invertebrates that have been impinged or entrained? If it is in the EIS I am having trouble finding it.

4. Zooplankton -- As you know, right whales feed on copepods (mostly *Calanus* spp.). The EIS states , "Entrainment of phytoplankton and zooplankton has not been found to be a problem

at operating nuclear power plants and is not expected to be a problem during the license renewal term." Does this mean that no zooplankton is entrained at Pilgrim? And if it is entrained, are there estimates of the annual loss? Also, the EIS refers to studies to characterize the zooplankton in the area conducted in the 1970s (2.2.5.3.3). Have there been similar studies carried out since Pilgrim became operational? Could you clarify what evidence was reviewed to make this determination.... "However, based upon the review conducted by the NRC staff, there is no evidence that the operation of the PNPS cooling system has had an impact on phytoplankton or zooplankton communities, or any resultant effects on the aquatic food web, in Cape Cod Bay." (from 4.8.1 Cumulative Impacts)

5. Crabs - The EIS states that cancer crabs (*Cancer* spp.) were the second most impinged invertebrate. Can you provide information on the number of crabs impinged per year?

6. Atlantic herring: The EIS states, "and based on the 2005 Pilgrim monitoring data, the loss to the stock due to entrainment by PNPS appears to be significantly less than 1 percent (Normandeau 2006a)." Was an actual percentage provided in Normandeau 2006a?

7. sand lance - Has there been an assessment of the effects of removal of sand lance like there is for some of the other fish species (i.e., less than 1% of the population or similar types of conclusions?).

Thank you!

Julie

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