PMTurkeyCOLPEm Resource

From: Comar, Manny
Sent: Thursday, June 02, 2011 10:14 AM
To: TurkeyCOL Resource
Subject: Turkey Point reactor application

This e-mail captures the public version of the e-mail to be added in the Hearing file. The rest of the conversation is between the NRC staff and is saved under the non-public version of the hearing file.

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From: David Enfield [mailto:denfield@earthlink.net]
Sent: Wednesday, May 04, 2011 2:47 PM
To: Rich, Daniel
Cc: Peter Harlem; Hal Wanless; John Vanleer
Subject: Turkey Point reactor application

Daniel Rich (NRC)
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Mr. Rich,

I enjoyed talking to you before the NRC event in Homestead yesterday. If I was too harsh in my followup comments ("NRC culture"), I apologize. It's just that I didn't feel that most of the answers to people's concerns were satisfactory and I perceive that this is at least partly a result of how you all view your mission. I understand that your day-to-day regulatory functions must address the nuts and bolts of normal operations at the plant in the context of present and past conditions. But I feel that when it comes to reviewing a license application for future plants that will still be here when most of us are gone and buried, the present and past context (environment) and NRC experience must be overlaid by reasonable expectations for the future environment of the plant. With that in mind, the NRC must challenge the utility to demonstrate that their plans adequately address the panoply of future environmental outcomes. The most important of those are the probable future sea level rise (SLR) and the possibility of large storm surge accompanying a major hurricane landfall. I have seen no evidence that this is part of the NRC review process, and yesterday's Q&A did nothing to alleviate that concern.

The reality of geophysics is that the environment is not static, or as statisticians would say, nonstationary, and that from an engineering point of view, the exceedance curves for environmental stresses are not constant, but that they change over time. This is especially true in this time of greenhouse warming and climate change, so the review of the Turkey Point application must bring in outside expertise to advise on the likely future environmental outcomes for the factors that can stress plant operations.

Without going into detail, the four counties of SE Florida, after much consultation and debate, have settled on a projection that puts sea level at 2-5 feet higher by the end of the century. This is in general agreement with most of the published (refereed) research of the last 5 years. Many experts are inclined toward the upper end of that range, based

on what is happening with land-based ice in both polar regions. Miami-Dade inundation maps based on LIDAR surveys indicate that with only 2 feet of SLR, Turkey Point will be an island surrounded by salt water (Biscayne Bay) connected only by a causeway to the westward receding coastline. Two feet will most likely occur sometime in the second half of the century, within the expected lifetime of the proposed nuclear plants. This will have a number of consequences for plant operation including (1) reduction of reactor height above mean low water (MLW); (2) salinification of the aquifer, which along with an expected decrease in rainfall will stress the fresh water supply; (3) physical complications for cooling water canals, access road, communications and other infrastructure, etc.

On the hurricane side, I can say that FPL's favorite refrain about Turkey Point having weathered a cat-5 hurricane (Andrew) and accompanying 16-foot storm surge is self-serving pap. The surge at the plant was only 2-3 feet above high tide because the plant was on the south (weak) side of the storm center. The winds were only cat-4 at Turkey Point (<155 mph) and yet caused extensive damage, cutting off access and communications, and causing plant shutdown. More disconcerting is that Andrew was not typical for a major hurricane because it was compact and fast-moving and therefore had a smaller surge than is typical. If you go to <http://www.nhc.noaa.gov/ssurge/ssurge_overview.shtml> you will see a list of notable historical surge events associated with major hurricane landfalls. Andrew is not even on the list and the SLOSH model animations show that these storms typically had maximum surges of 5-8 meters (16' to 26') above mean higher high water (MHHW). It is true that the continental margin deepens steeply offshore of the Florida east coast and that this will in general result in a less severe surge. But it is also true that when a surge of any kind enters Biscayne Bay, the Bay will in all probability amplify the surge. If you subtract from the present reactor base height (20 ft/MLW) the difference in reference level (2 feet) between MHHW and MLW, and the minimum future SLR of 2 feet, a future storm surge can easily inundate the base of those reactors. And what will happen with the spent fuel ponds? What will happen to the emergency generators and their fuel supply? Or any number of other items that only engineers like yourself would know about?

If these projections don't raise red flags, they should. I recommend that you forward these concerns to the appropriate people at NRC headquarters, who are charged with the TP review. If they want the names of experts on SLR, Miami-Dade inundation levels or hurricanes and surges, I can provide names and contacts.

Sincerely,
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