February 27, 2001

Mr. Mike Mulligan
P. O. Box 161
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Dear Mr. Mulligan:

This letter responds to questions you raised during our telephone conversation on Friday, January 12, 2001 and your e-mail (enclosed) dated January 23, 2001. You raised two basic issues to which I would like to respond.

The first question was what actions, if any, are being taken by the NRC in anticipation of potential problems at nuclear power plants caused by global warming in the coming decades. In relation to this question, you referred me to the national assessment of climate changes that is being carried out under the U.S. Global Change Research Program (USGCRP). You expressed concern that climate changes might put plants outside their design bases, forcing the plants to shut down at a time when their power would be badly needed. You were particularly concerned about plants in the Southeastern United States.

The mission of the NRC is to is to regulate the nation's civilian use of nuclear materials to ensure adequate protection of public health and safety, to promote the common defense and security, and to protect the environment. For commercial nuclear reactors, this mission includes ensuring that the plants are operated safely and that radiological effluents from the plants are maintained within limits. However, the NRC's mission does not include ensuring that electrical power is available to residential and commercial customers. That responsibility lies with others, including the utilities, the state public utility commissions (or equivalent), and the Federal Energy Regulatory Commission. That is not to say that the NRC is not concerned about issues related to the reliability of electrical power -- we are. But we do not have any regulatory authority in that arena.

However, some of the staff's activities within our regulatory authority may alleviate your concerns. Each nuclear power plant is licensed to operate within its design basis. As I mentioned in my previous letter, if changes (e.g., climate changes) placed the plant outside its design basis, the licensee would have to evaluate the problem and take action to correct it. In addition, on July 18, 1989, the staff issued Generic Letter 89-13, "Service Water System Problems Affecting Safety-Related Equipment." Among other things, this generic letter requested licensees to develop a program to periodically test the capacity of the systems used to transfer heat from safety-related loads to the ultimate heat sink.

While this program would ensure that safety-related loads can be cooled, it does not ensure that the plants can operate at full power when summer heat raises the temperature of the non-safety-related cooling systems for the main condenser. However, since global warming is a gradual process, licensees should have adequate time to take actions to mitigate the effects of the climate changes. For example, the licensee for the Dresden nuclear plants recently added cooling towers in response to problems it encountered due to higher temperatures in the canal

that returns the cooling water to the cooling pond. In addition, I contacted the USGCRP to determine if any review had been performed or was planned in this area. Although the impacts of global warming on the energy sector were not included in the current reviews, they are being considered as a future review sector. You may want to express your concerns to USGCRP on their web site (www.usgcrp.gov).

Your second question concerned the testing of plant equipment. In particular you asked why the NRC does not require licensees to test all of their equipment under worst-case conditions. As an example, you questioned why emergency diesel generators are not tested at the maximum outside air temperatures used in the design.

Plant safety equipment is designed to operate under a certain range of conditions. The NRC requires licensees to design this equipment based on the design conditions and to periodically test active components (as opposed to passive components such as static piping supports). While it is desirable to test this equipment under design basis conditions, that is not possible in many cases. For instance, using your example, if the diesel generator is designed to operate at up to 100°F but the outside temperature never actually gets that high, it would be unreasonable to require the licensee to test it at that temperature. Instead, the NRC relies on component designs that include margins, in combination with periodic testing of the equipment at ambient conditions. For the emergency diesel generators, licensees are generally required to run tests on a monthly basis, ensuring that some of the tests will be run during the hottest and coldest months of the year. The staff believes that this approach provides adequate assurance that the equipment will function as-designed if it is called upon in a real event.

I hope that this information addresses your immediate concerns. If you have additional questions, please do not hesitate to contact me at 301-415-2828.

Sincerely,
/RA/Signed By: AKugler

Andrew Kugler, Senior Project Manager
Generic Issues, Environmental, Financial,
and Rulemaking Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket Numbers: 50-321, 50-366

Enclosure: As stated

cc: See attached page

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/RA/Signed By: AKugler

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and Rulemaking Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

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cc: See attached page

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DATE:	02/27/01	02/27/01	02/05/01	

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From: "Michael Mulligan" <steamshovel685@earthlink.net>
To: "David N. Pyles" <dnpyles@acousticmusic.com>, <jak...
Date: Tue, Jan 23, 2001 5:01 PM
Subject: Re: Response to your questions

Andy

The implications of this on our electrical infrastructure is staggering with its interaction to the heat sinks; maybe more so the non nuc resourses. Fundamentally we will just have to have more capacity (power and transmission), and excess designed plant cooling capacity to compensate for the extremes of summer, winter droughts and floods- mostly in standby and wasted money- than we've had in the past. It's noted that nation wide grid excess capacity margins and maintenance budgets have been declining for a decade now. The interaction with Deregulation and GW is called insanity. According to NOAA's National Ocean Service new report titled, "The Potential Impacts of Climate Change on Coastal and Marine Resources," which speaks of the intercoastal heat up of the Ocean. Of course we've had Oyster Creek, Millstone, Pilgrim, and Vermont Yankee with creeping heat sink temps, low levels and low flows, with teck spec changes that occurred in response to Global Warming already. The NRC has had many documented examples of subtle cooling water component failures and degradation in the peaks of these extremes that have placed plants in an unanalyzed state, and even more of concern it has threatened regional grid reliability. Does it mean we need a higher level of quality of the cooling water systems when we operate near the plant design limits? It's a crying shame, and I've been asking for it for the past few years, that the NRC perform a study on plant events and potential events that have already occurred in the weather extremes. Like at a power ascension program, if the heat sink inlet is at the historic high temp or parameter, how is the public assured that the component would operate with adequate safety margins besides using engineering calculations.? Does the industry have a testing program such that they capture equipment operation at the peak parameters? I thought testing components at its operating limits is the bed rock of public safety. All of the International and National assessments indicated our water resources are going to change drastically within GW Will we be prepared??

Thanks, mike

Evidence of Rapid Global Warming Accepted by 99 Nations

SHANGHAI, China, January 22, 2001 (ENS) - The scientific basis for the reality of rapid global warming is clear, a comprehensive new United Nations report reveals. Snow cover has decreased, the duration of lake and river ice cover is shorter, and the atmospheric concentration of heat trapping carbon dioxide has increased by a third since 1750, climate scientists say.

The new assessment by the Intergovernmental Panel on Climate Change projects a "potentially devastating" global warming of 1.4 to 5.8 degrees Celsius (2.52 to 10.44 degrees Fahrenheit) over the coming century. This forecast is for higher temperatures than an assessment by the same panel five years ago.

ENCLOSURE

----- Original Message -----
From: "Andrew Kugler" <AJK1@nrc.gov>
To: <steamshovel685@earthlink.net>
Cc: "Cynthia Sochor" <CSS3.owf4_po.OWFN_DO@nrc.gov>
Sent: Tuesday, January 23, 2001 7:38 AM
Subject: Response to your questions

> Mike,
>
> I'm working on the response to the questions you raised during our phone call on Friday, January 12. As I did the last time, I plan to send the answers as a letter from the NRC so that it is available to the public. I'll get it out to you as soon as possible.
>
> Andy

Southern Nuclear Operating Company
Edwin I. Hatch Nuclear Plant Units 1 and 2

Docket Nos.: 50-321, 50-366

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