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Congress of the United States
House of Representatives
Washington, DC 20515–2107

August 26, 2011

The Honorable Greg Jaczko, Chairman
Nuclear Regulatory Commission
11555 Rockville Pike
Rockville, MD 20852

Dear Chairman Jaczko:

I write to ask whether the strength of the August 23 earthquake exceeded the seismic safety specifications with which Virginia's North Anna reactors were built to comply. I also urge the NRC to immediately move to adopt the recommendation of NRC's Near-Term Task Force Report[1] on Fukushima to require the re-evaluation of seismic and flooding hazards every 10 years and address any new and significant information to ensure that nuclear power plants are protected against these hazards.

On August 25, the NRC released a "For The Record" document (Attachment 1) that stated, "the NRC requires U.S. reactors to withstand a predicted level of ground motion, or acceleration, specific to a given site." It went on to state that "the NRC's requirements call for a nuclear power plant's design to account for ground acceleration that is appropriate for its location, given the possible earthquake sources that may affect the site and the makeup of nearby faults, etc. Existing U.S. plants were designed on a 'deterministic' or 'scenario earthquake' basis. In other words, examination of an area's seismological history provides an understanding of the largest earthquake and associated ground acceleration expected at a plant site."

What this document did not state was a) whether the earthquake experienced earlier this week exceeded the plant's design requirements and b) whether the requirements for the North Anna nuclear power plant had incorporated modern geologic information into the safety margins for the facility. I ask that you provide me with answers to these questions, as well as any calculations or analysis used to reach these answers, no later than close of business Monday August 29, 2011.

In May, I released a report entitled "Fukushima Fallout"[2] that found that "the NRC has not factored modern geologic information into seismic safety requirements for nuclear power plants, and has not incorporated its technical staff's recommendation to do so even though the new information indicates a much higher probability of core damage caused by an earthquake than previously believed." The NRC's July 12 Task Force report agreed with this finding, stating that:

[1] http://pbadupws.nrc.gov/docs/ML1118/ML111861807.pdf
[2] http://markey.house.gov/index.php?option=com_content&task=view&id=4352&Itemid=141

"with regard to seismic hazards, as discussed above, available seismic data and models show increased seismic hazard estimates for some operating nuclear power plant sites. The state of knowledge of seismic hazards within the United States has evolved to the point that it would be appropriate for licensees to reevaluate the designs of existing nuclear power reactors to ensure that SSCs [structures, systems and components] important to safety will withstand a seismic event without loss of capability to perform their intended safety function. As seismic knowledge continues to increase, new seismic hazard data and models will be produced. Thus, the need to evaluate the implications of updated seismic hazards on operating reactors will recur and need to be reevaluated at appropriate intervals."

I urge the Commission to quickly move to adopt this important recommendation to ensure that sound and up-to-date science is used to inform nuclear reactor safety requirements.

Thank you very much for your consideration of this important matter. If you have any questions or concerns, please have your staff contact Dr. Michal Freedhoff of my staff at 202-225-2836.

Sincerely,

Edward J. Markey

Edward J. Markey

ATTACHMENT 1

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 25, 2011

****FOR THE RECORD****

NRC CLARIFIES EARTHQUAKE MEASUREMENTS AND DESIGN CRITERIA

This year has seen a dramatic increase in a question people regularly ask the Nuclear Regulatory Commission: "What magnitude earthquakes are U.S. nuclear power plants designed to withstand?" The answer, however, does not include a specific "magnitude."

The NRC requires U.S. reactors to withstand a predicted level of ground motion, or acceleration, specific to a given site. Ground acceleration is measured in relation to "g," the acceleration caused by Earth's gravity.

An earthquake's magnitude, often described on the Richter scale, is an expression of how much energy the quake released. It's not possible to transform a given magnitude alone to ground acceleration at a site. Several important factors affect the relationship between an earthquake's magnitude and associated ground acceleration, including the distance from the earthquake, the depth of the quake and the site's local geology (i.e., hard rock or soil). A small earthquake close to a site could therefore generate the same peak ground acceleration as a large earthquake farther away.

The NRC's requirements call for a nuclear power plant's design to account for ground acceleration that is appropriate for its location, given the possible earthquake sources that may affect the site and the makeup of nearby faults, etc. Existing U.S. plants were designed on a "deterministic" or "scenario earthquake" basis. In other words, examination of an area's seismological history provides an understanding of the largest earthquake and associated ground acceleration expected at a plant site.

Later this year, the agency expects to provide existing plants a seismic analysis tool based on work related to applications for new plants, along with the latest information on earthquake sources, so that the plants can perform an updated review. Applications for new nuclear power plants have taken a "probabilistic" approach to determining seismic hazards, looking at a wide range of possible quakes from sources that could affect a given site. The NRC has spent several years examining how these newer techniques can be used to re-evaluate existing nuclear power plant sites.