COMMITTEES

NATURAL RESOURCES
RANKING DEMOCRAT

ENERGY AND COMMERCE

EDWARD J. MARKEY
7TH DISTRICT, MASSACHUSETTS

2108 RAYBURN HOUSE OFFICE BUILDING
WASHINGTON, DC 20515–2107
(202) 225–2836

DISTRICT OFFICES:

5 HIGH STREET, SUITE 101
MEDFORD, MA 02155
(781) 396–2900

188 CONCORD STREET, SUITE 102
FRAMINGHAM, MA 01702
(508) 875–2900

http://markey.house.gov

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

March 11, 2011

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

Dear Chairman Jaczko:

I write to request information related to the potential impacts of the devastating earthquake in Japan on that country's nuclear facilities, as well as on the implications for our own domestic industry.

The 8.9 magnitude earthquake has caused some serious damage at two nuclear facilities in Japan. The Japanese government declared an "atomic power emergency."[1] Fukushima Daiichi nuclear power plant has experienced a failure associated with its emergency diesel generators, preventing the flow of water into its cooling system. To reduce rising pressure inside the Fukushiima reactor, slightly radioactive vapor is being released.[2] Residents within a 3 km radius of Fukushima have been evacuated.[3] The United States Air Force also reportedly delivered equipment that could be used to cool the reactor.[4] The International Atomic Energy Agency (IAEA) is seeking information about whether the flow of cooling water has been restored, and about other nuclear power plants and research reactors in Japan.[5] Nuclear fuel requires continued cooling even after a plant has shut down. Failure of the cooling system for many hours is what resulted in a partial core melt at Three Mile Island in 1979.[6] There was also a fire in a turbine building at the Onagawa nuclear facility; Japanese authorities reported to the IAEA that it had been extinguished.[7]

The earthquake and tsunami pose threats to nuclear facilities in the United States. Your staff has informed mine that the Diablo Canyon nuclear power plant in San Luis Obispo, California has declared an 'unusual event' because of the tsunami warnings that have been issued. Taiwan, which has six nuclear reactors, issued a tsunami alert.

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[1] http://www.nytimes.com/2011/03/12/world/asia/12nuclear.html
[2] http://www.msnbc.msn.com/id/42025882/ns/world_news-asia-pacific/
[3] http://www.reuters.com/article/2011/03/11/us-quake-japan-iaea-statement-idUSTRE72A2F820110311
[4] http://www.reuters.com/article/2011/03/11/japan-quake-reactor-idUSL3E7EB2AH20110311
[5] http://www.iaea.org/newscenter/news/2011/tsunamiupdate.html
[6] http://www.nytimes.com/2011/03/12/world/asia/12nuclear.html
[7] http://www.reuters.com/article/2011/03/11/us-quake-japan-iaea-statement-idUSTRE72A2F820110311

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This disaster serves to highlight both the fragility of nuclear power plants and the potential consequences associated with a radiological release caused by earthquake-related damage. We must ensure that America's nuclear power plants can withstand a catastrophic event and abide by the absolute highest standards for safety. Last year, I requested a GAO investigation[8] into the adequacy of Commission regulations associated with seismic safety. Earlier this week, I wrote[9] you regarding the Commission's pending approval of the design for the AP1000 nuclear reactor, in light of concerns raised by one of the Commission's most long-serving staff that there is a risk that an earthquake at the AP1000 could result in a catastrophic core meltdown. According to this individual:

- The AP1000 shield building failed tests because it is brittle, and could shatter "like a glass cup". About 60 percent of the shield building would consist of a building material that "failed miserably" in a physical test of its ability to withstand out-of-plane shear, one of the forces caused by an earthquake.
- Weak and inadequate computer simulations were used to "prove" the reactor shield is "strong enough".
- Earthquake forces may have been underestimated by Westinghouse.

My concerns about the vulnerabilities of the AP1000 reactor design are only heightened by the reports of the effect of the Japanese quake on their reactors.

I request your prompt attention to the questions raised in my earlier letter. In addition, I request that you provide me with responses to the following questions:

1) Please provide me with a detailed description of the earthquake and tsunami-related damage experienced by the nuclear facilities in Japan. If earthquake and tsunami-related damages are reported at other nuclear facilities, please also provide me with a detailed description of these damages. Please ensure that your response includes:
    a. a description of each specific failure that occurred
    b. the cause of each specific failure
    c. whether any radiological release occurred because of the failure
    d. whether each specific failure could have caused a radiological release if not promptly mitigated and
    e. how long each specific failure will take to fully repair
2) Please also indicate in your response whether you believe each nuclear power plant design a) that is currently in operation in this country, or b) a license for which has been submitted for approval to the Commission for eventual construction and operation in this country can withstand an earthquake or tsunami that is comparable in strength to the one experienced in Japan.
3) Please inform me whether you believe that what happened at the Japanese reactors as a result of the earthquake suggests any need for safety improvements at any U.S. reactor, and if so, what actions the Commission is taking to ensure such improvements are made.

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[8] http://markey.house.gov/docs/gaoinspection.pdf
[9] http://markey.house.gov/docs/3-7-11.ejmtonrc.pdf

4) Please inform me whether the events in Japan indicate any need for changes to the emergency response plans of U.S. nuclear power plants. Would these plans be adequate in a situation where emergency responders and other resources are needed to deal with many problems simultaneously?
5) Please indicate whether NRC regulations require nuclear reactor operators to have emergency backup power for long enough to maintain safe conditions through a crisis such as that occurring in Japan, where power may not come back online for days?[10]

Please provide your response no later than close of business on Friday April 8, 2011. If you have any questions or concerns, please have your staff contact Dr. Michal Freedhoff or Dr. Ilya Fischhoff of my staff at 202-225-2836.

Sincerely,

Edward J. Markey

Edward J. Markey

[10] http://www.nrc.gov/reading-rm/doc-collections/cfr/part050/part050-0063.html