

## CHAIRMAN Resource

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**From:** PIETRANGELO, Tony <arp@nei.org>  
**Sent:** Tuesday, November 04, 2014 4:16 PM  
**To:** CHAIRMAN Resource  
**Cc:** CMRSVINICKI Resource; CMROSTENDORFF Resource; CMRBARAN Resource; Satorius, Mark; Johnson, Michael; Dean, Bill; Davis, Jack; Tracy, Glenn; Holahan, Gary; Flanders, Scott  
**Subject:** Integration of Mitigating Strategies with Reevaluated External Hazards Information  
**Attachments:** 11-04-14\_Chairman Macfarlane.pdf

November 4, 2014

The Hon. Allison M. Macfarlane  
Chairman  
U.S. Nuclear Regulatory Commission  
11555 Rockville Pike  
Mail Stop 016 G4  
Rockville, MD 20852-2738

**Subject:** Integration of Mitigating Strategies with Reevaluated External Hazards Information

**Project number: 689**

Dear Chairman Macfarlane:

It has been over three years since the events at Fukushima Daiichi, and both the NRC and the industry have been focused on the entire suite of Tier I safety enhancements approved by the Commission. Significant progress has been made on the development of mitigating strategies, including the purchase of portable backup equipment by each site and the establishment of national response centers in Memphis and Phoenix. Up to now, the major focus of activities have been responses to the NRC orders and the work associated with the NRC requests for information on external hazards, with the NRC staff thoroughly engaged in the review and disposition of those efforts. The intent of this letter is to provide an industry perspective on what we believe to be the next major activity, which is the integration of the migrating strategies with the reevaluated external hazards information developed for each site. This activity will complete our country's principal response to the Fukushima accident through a focused approach that will continue to assure public health and safety.

After extensive NRC staff and stakeholder review and comment on the recommendations in NRC's Near-Term Task Force report, the Commission approved several regulatory actions that were categorized as Tier I, II and III activities. The Tier I actions were launched in March 2012. The Commission issued orders on mitigating strategies for beyond design bases external events and spent fuel pool instrumentation for all nuclear power plants, and on hardened vents for reactors with BWR Mark I or II containment designs. In addition, the Commission requested licensees to reevaluate seismic and flooding hazards using current regulatory guidance (i.e., that which was used for new plant licensing), and requested information on several other aspects of emergency preparedness.

It is important to note that the mitigating strategies orders were issued one year before the first group of site flood reevaluations were due to be completed and submitted to NRC, and two years before the submittal of reevaluated seismic hazards for sites in the central and eastern United States. Thus, in order to move forward with implementation of the mitigating strategies orders in 2012, the industry and NRC staff agreed on the following assumptions:

- For development of the mitigating strategies, a consequence-based approach was chosen, i.e. assume loss of all AC power and loss of capability to access water from the ultimate heat sink, as the initial conditions resulting from an unspecified beyond-design-basis external event.
- While a company could not take credit for any normal or emergency AC power sources or the plant cooling capability from the ultimate heat sink, credit could be taken for other installed systems or components that were designed to meet the design basis external hazards.
- Companies would use the facility's design bases for external hazards in developing their mitigating strategies (e.g., for connections, storage locations, etc.), recognizing that these assumptions and strategies may not provide the optimum plant-specific response in consideration of the revised hazard information.

In March 2013, all companies submitted to NRC their plans for implementing mitigating strategies at U.S. reactors. Further, the industry is on track and expects to have all plants substantially complete with implementation by the end of 2016, the target date for completion consistent with the NRC order.

The next step would be to review the impact of the reevaluated external hazard information on the mitigating strategies that have been developed. The objective is to assure that either the strategies can still provide defense-in-depth of the key safety functions, i.e. core cooling, spent fuel pool cooling and containment integrity, in light of the new hazard information developed using current NRC guidance and methods, or to develop a new mitigating strategy for the specific external event.

An assessment of the impact of the reevaluated hazard information on the existing mitigating strategies would be conducted by each licensee. In some cases, the assessment could be quite simple: If the new hazard information is bounded by the facility's design bases, then the mitigating strategies would be unaffected and the assessment is complete. If not, the assessment would expand to include the mitigating strategies in place to determine if implementation is still viable. This would include consideration of whether there is sufficient warning time for the hazard that would allow the licensee to adapt the mitigating strategy to be successful, or whether the mitigating strategy could be revised to ensure continuity of key safety functions, or to determine if a new mitigating strategy is needed to address a specific hazard. In some cases, the new strategy may vary significantly from the existing strategies or rely upon other acceptable methods of evaluation such as those used in risk-informed applications.

A key difference between this assessment and the development of the response to the mitigating strategies order is the initial conditions assumed. As stated earlier, the existing mitigating strategies assumed loss of AC power and the ultimate heat sink at time zero and was disassociated from what caused these consequences. With the hazard reevaluations, each site now has specific conditions that can be assessed against key equipment in the plant to determine the impact. This assessment would also determine what permanent plant equipment would be available for a new hazard-specific mitigating strategy, if needed.

We also note that the NRC staff is developing a consolidated rule package that we believe should capture the assessment described above and include NRC review of the results. In addition, this assessment process would be

useful in the consideration of any new hazard information in the future, and thus would serve to address recommendation 2.2 of the Near-Term Task Force report, which is as a Tier III activity.

In summary, by utilizing the reevaluated hazard information in a focused manner to validate or strengthen the existing mitigating strategies or to develop a new hazard-specific strategy, the industry will be able to deliver meaningful, timely safety improvements. The industry believes that implementation of mitigating strategies, integrated with the results of the reevaluated hazard information through the assessment described herein, represents a comprehensive, technically-based set of actions that should be codified by the consolidated rule under development by NRC staff. Together, these actions will provide a durable regulatory framework for addressing beyond design bases external hazards that will directly address the principal lessons learned from Fukushima and enhance the protection of public health and safety.

Sincerely,

Anthony R. Pietrangelo  
Senior Vice President and Chief Nuclear Officer

Nuclear Energy Institute  
1201 F Street NW, Suite 1100  
Washington, DC 20004  
[www.nei.org](http://www.nei.org)

P: 202.739.8081  
M: 202.439.2511  
E: [arp@nei.org](mailto:arp@nei.org)

c: The Honorable Kristine Svinicki  
The Honorable William Ostendorff  
The Honorable Jeff Baran  
Mark Satorius, NRC EDO  
Michael Johnson, NRC DEDO  
William Dean, NRC NRR  
Jack Davis, NRC NRR  
Glenn Tracy, NRC NRO  
Gary Holahan, NRC NRO  
Scott Flanders, NRC NRO



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**ANTHONY R. PIETRANGELO**  
*Senior Vice President and Chief Nuclear Officer*  
*Nuclear Generation*

1201 F Street, NW, Suite 1100  
Washington, DC 20004  
P: 202.739.8081  
[arp@nei.org](mailto:arp@nei.org)  
[nei.org](http://nei.org)



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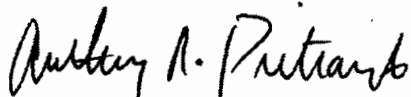
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