

Detailed Comments on NRC Tier 3 Fukushima Lessons Learned

NRC Near-Term Task Force Recommendation 2.2: Ten-Year Confirmation of Seismic and Flooding Hazards.

The industry acknowledges the benefit and importance of updating plants based on new information. Yet it is not clear that a ten-year update is the correct interval and no information has been provided as to the basis for a ten-year periodicity.

The NRC updates regulations and implementing guidance on an on-going basis. In addition, the industry has implemented plant improvements beyond those mandated by the NRC over the past 30 years. These activities have resulted in a five-fold improvement in safety, as indicated by probabilistic risk assessments. These improvements have been initiated by operational experience and new technical information and have been focused appropriately on preventing core damage.

The industry believes that action should be taken as new information is identified and recognized as being significant. The industry does not support a mandated periodic review possibly followed by an update of specific hazards or design. We believe such an approach would result in a delay in assessing new and significant information and implementing safety improvements to facilities. A better approach would be to develop a process to identify when new information is significant, as identified by a recognized technical organization of subject matter experts, such as a national consensus standards committee. Alternatively, the process could be founded on the new and significant information standard for determining when National Environmental Policy Act (NEPA) re-evaluations should be performed. No matter the case, the new and significant standard should be linked to a change in a conclusion in a plant's licensing basis.

The industry is willing to work with the NRC to develop the criteria that would provide a more definitive decision point for determining when new information should be acted upon and when evaluations should be performed on an on-going basis.

NRC Near-Term Task Force Recommendation 3: Capability to Prevent or Mitigate Seismically Induced Fires and Floods

This issue is not directly related to Fukushima Dai-ichi. The events referenced in the NRC Near-Term Task Force report were at Kashiwazaki-Kariwa, not Fukushima Dai-ichi. The events at Kashiwazaki-Kariwa did not affect the safe shutdown capability.

The issues related to this recommendation were assessed qualitatively during the IPEEE and are being reviewed as part of the Tier 1 seismic walkdowns. In addition, the FLEX guidance, NEI 12-06, already includes consideration of seismic-induced external floods as part of the coping strategy.

Operating experience does not indicate that seismic-induced fires present a significant safety hazard at commercial nuclear facilities.

The NRC and the industry had already initiated work prior to the Fukushima events to better understand and address these issues. We agree that this work should continue, outside of Fukushima related activities. The events at Fukushima do not support expediting or including this issue in the myriad of NRC Fukushima related regulatory actions. The industry recommends that the issue of seismic-induced fires and floods be removed from the list of Fukushima related actions. It should be addressed in the same manner as other non-Fukushima related issues that involve a detailed evaluation and, where necessary, development of a solution or methodology, which in this case, should be based on risk-informed principles.

NRC Near-Term Task Force Recommendation 5.2: Reliable Hardened Containment Vents for Other Designs

The industry agrees that the need for hardened containment vents for designs other than BWR plants with Mark I and BWR Mark II containments should be the subject of further long-term evaluations. However, this is not as high a priority issue as the Tier 1 issues. These long-term Tier 3 evaluations should not be performed in isolation from NRC Near-Term Task Force Recommendation 6, Hydrogen Control inside Containment or in Other Buildings adjacent to the containment.

There are numerous issues, plant features and plant management processes that can influence containment venting evaluations. These issues need to be evaluated in an integrated manner and be fully understood before a final conclusion on proceeding with imposing additional licensee actions is made.

Evaluation of the need to install filtered containment vents for BWR Mark I and Mark II containments is the subject of a separate NEI letter.

NRC Near-Term Task Force Recommendation 6: Hydrogen Control and Mitigation in Containment or Other Buildings

Hydrogen leakage into the reactor building that encloses primary containment was clearly an issue at Fukushima Dai-ichi. In addition, leakage into other units through common inter-unit systems was an issue, as shown by the explosion in Fukushima Dai-ichi, Unit 4.

This issue cannot be evaluated in isolation to the other Fukushima related issues. It should be evaluated along with the hardened containment vent issue for non-BWR Mark I and Mark II designs. Again, this is a long-term activity that needs further public discussion and evaluation. There are several dependencies and assumptions that could impact a conclusion to implement enhancements that would limit hydrogen production and enhance hydrogen control.

An integrated, risk-informed assessment that includes the benefits of implementing the Tier 1 actions needs to be performed before reaching a decision on whether to implement enhancements in this area.

NRC Near-Term Task Force Recommendation 9: Emergency Preparedness Enhancements for Multi-Unit Events

Emergency Preparedness (EP) has been the subject of intensive regulatory activity over the past few years, especially with the recent rulemaking that is now being implemented. The two main issues at Fukushima are being addressed as part of Tier 1: onsite and offsite communications with a loss of communication infrastructure and emergency response staffing for multi-unit casualty scenarios.

It is clear from discussions with Japanese utilities and government organizations that U.S. EP activities are more comprehensive than those in Japan with U.S. EP drills and exercises involving state and local government authorities. Even so, the Japanese authorities evacuated and relocated over 80,000 people using rudimentary EP programs with no immediate health impact to the public.

It is unclear whether there is any additional safety benefit from the implementing these other recommendations beyond Tier 1 and the new EP rule. The industry recommends that no further action be taken until the effects of implementing enhancements from the recent rulemaking and the Tier 1 actions have been assessed.

NRC Near-Term Task Force Recommendation 10: Additional EP topics for prolonged SBO and multi-unit events

Same comments as for NRC Near-Term Task Force Recommendation 9

NRC Near-Term Task Force Recommendation 11: EP Topics for Decision-Making, Radiation Monitoring, and Public Education

Radiation monitoring: The industry believes that additional monitoring capability is not needed for onsite activities beyond what is being provided under the Tier 1 action in relation to emergency response staffing for multi-unit casualty events.

For offsite activities, a monitoring capability is already provided. The progression of the Fukushima reactor accidents demonstrated that even rudimentary EP, radiation monitoring and reporting programs are effective in ensuring safe public health and safety through sheltering and evacuation.

There appears to be negligible safety benefit beyond what is being proposed in Tier 1. However, if pursued, we recommend that the development of additional radiological monitoring capabilities and reporting should be made part of a national program for all nuclear facilities involving the industry and government, with contingency for expansion to take into account other nuclear related events that could contaminate public areas. Such a program should be developed in conjunction with the Departments of Energy, Defense and Homeland Security. This is a long-term issue and any enhancements should not solely be focused on one specific sector of the commercial nuclear industry, nuclear power plants.

Public education: The industry agrees that there would be benefit in improved public understanding of radiation and radiation protection. The industry is ready to work with the NRC on developing

programs to further improve public understanding on radiation. As in the case of radiation monitoring, we believe that such programs should be of a national nature, developed in conjunction with not only the NRC but also with the Departments of Energy, Defense and Homeland Security. This should be an on-going and long-term activity, with resource priorities being given to topics that are directly related to the events at Fukushima and that have public safety benefit. This issue, while important, has negligible safety benefit.

NRC Near-Term Task Force Recommendation 12.1: Reactor Oversight Process (ROP)

The actions being implemented in response to the lessons learned from the Fukushima accidents are associated with re-establishing the design basis, increasing the capability of equipment and actions associated with design basis events or mitigating beyond design basis events. Some Fukushima related enhancements may be amenable to inclusion in the ROP, such as the FLEX equipment. Yet others, such as measures to protect and mitigate severe natural phenomena are not amenable to realistic risk assessments. A significance determination process based only on defense-in-depth, without consideration of the likelihood of the conditions, has significant potential for causing unnecessary actions and unnecessary regulatory interactions.

There is no significant safety benefit associated with this recommendation. Additional public dialogue and information is necessary to better define the assumptions and approach before a decision can be made to proceed with the development of enhancements to the ROP for Fukushima related plant modifications. This dialogue should be deferred until the NRC begins to develop commission papers on Recommendation 1 of the NRC Near-term Task Force Report: The Establishment of a Logical, Systematic, and Coherent Regulatory Framework.

NRC Near-Term Task Force Recommendation 12.2: NRC Staff Training on Severe Accidents and Guidelines

There is no additional safety benefit associated with implementing this recommendation. Yet, the industry agrees that a common set of industry-NRC staff training documents would be beneficial in assisting in the development of a common understanding on severe accidents and severe accident management guidelines. This would improve regulatory efficiency because a common understanding should reduce the potential for misinterpretation and misunderstandings that are often the cause of unnecessary and protracted regulatory interactions.

We wish to note that while training in severe accident management is useful, it is more important to ensure that training is focused on the more probable, core damage prevention activities and design aspects rather than post-core damage actions. For severe accidents, the level of understanding of plant operators and NRC inspectors should be one of awareness and general familiarity rather than in-depth detailed knowledge.