Staff Assessment and Prioritization of Near-Term Task Force (NTTF) Recommendations

As directed by SRM-SECY-11-0093, the staff reviewed the NTTF recommendations within the context of the NRC's existing framework and considered the various regulatory vehicles available to the NRC to implement the recommendations. This review was conducted by a team consisting of NRC senior management representatives and technical experts.

The staff's prioritization and assessment process prioritized the NTTF recommendations into three tiers:

Tier 1. The first tier consists of those NTTF recommendations which the staff determined should be started without unnecessary delay and for which sufficient resource flexibility, including availability of critical skill sets, exists. This tier includes all the actions identified in SECY-11-0124 and two additional items. The additional items are the following: (1) the inclusion of Mark II containments in the staff's recommendation for reliable hardened vents associated with NTTF Recommendation 5.1 and (2) the implementation of spent fuel pool (SFP) instrumentation proposed in Recommendation 7.1. After submitting SECY-11-0124, the staff continued its review of these recommendations. This review led the staff to conclude that resolution of the reliable hardened vents issues for Mark I and II containments should be undertaken concurrently. The staff also concluded that installation of SFP instrumentation should be initiated without delay. Hence, the Tier 1 recommendations are the following:

2.1 Seismic and flood hazard reevaluations

2.3 Seismic and flood walkdowns

4.1 Station blackout regulatory actions

4.2 Equipment covered under Title 10 of the *Code of Federal Regulations* (10 CFR) 50.54(hh)(2)

5.1 Reliable hardened vents for Mark I and Mark II containments

7.1 Spent fuel pool instrumentation

8 Strengthening and integration of emergency operating procedures, severe accident management guidelines (SAMGs), and extensive damage mitigation guidelines

9.3 Emergency preparedness regulatory actions (staffing and communications)

Tier 2. The second tier consists of those NTTF recommendations which could not be initiated in the near term due to factors that include the need for further technical assessment and alignment, dependence on Tier 1 issues, or availability of critical skill sets. These actions do not require long term study and can be initiated when sufficient technical information and applicable resources become available. The Tier 2 recommendations are the following:

7 Spent fuel pool makeup capability (7.2, 7.3, 7.4, and 7.5)

9.3 Emergency preparedness regulatory actions (the remaining portions of Recommendation 9.3, with the exception of Emergency Response Data System (ERDS) capability addressed in Tier 3)

Tier 3. The third tier consists of those NTTF recommendations that require further staff study to support a regulatory action, have an associated shorter term action that needs to be completed to inform the longer term action, are dependent on the availability of critical skill sets, or are dependent on the resolution of NTTF Recommendation 1. The staff has focused its initial efforts on developing the schedules, milestones, and resources associated with Tier 1 and Tier 2 activities. Hence, information regarding the Tier 3 recommendations is not included in this enclosure. Once the staff has completed its evaluation of the resource impacts of the Tier 1 and Tier 2 recommendations, it will be able to more accurately address the Tier 3 recommendations.

The Tier 3 recommendations include all of the items identified for long-term evaluation in the NTTF report. In addition, the staff prioritized NTTF Recommendations 2.2, 9.1, 9.2, 9.3 (ERDS capability), and 12 into Tier 3. The Tier 3 recommendations and associated prioritization logic are as follows:

2.2 Ten-year confirmation of seismic and flooding hazards (dependent on Recommendation 2.1)

3 Potential enhancements to the capability to prevent or mitigate seismically induced fires and floods (long-term evaluation)

5.2 Reliable hardened vents for other containment designs (long-term evaluation)

6 Hydrogen control and mitigation inside containment or in other buildings (long-term evaluation)

9.1/9.2 Emergency preparedness (EP) enhancements for prolonged station blackout (SBO) and multiunit events (dependent on availability of critical skill sets)

9.3 ERDS capability (related to long-term evaluation Recommendation 10)

10 Additional EP topics for prolonged SBO and multiunit events (long-term evaluation)

11 EP topics for decision-making, radiation monitoring, and public education (long-term evaluation)

12.1 Reactor Oversight Process modifications to reflect the recommended defense-in-depth framework (dependent on Recommendation 1)

12.2 Staff training on severe accidents, resident inspector training on SAMGs (dependent on Recommendation 8)

This enclosure contains the assessments of the Tier 1 and Tier 2 NTTF recommendations in the order listed above. The title for each assessment clearly delineates whether it is Tier 1 or Tier 2. For each specific NTTF recommendation, this enclosure provides the staff's assessment and prioritization of the recommendations, including any unique challenges. Also provided are

the staff's resource estimates and supporting schedules and milestones including, where applicable, appropriate stakeholder engagement and involvement of the Advisory Committee for Reactor Safeguards (ACRS). The staff has not had sufficient time to fully integrate the actions assessed in this enclosure with the balance of the staff's ongoing work. Consequently, the enclosed schedules and milestones qualitatively reflect nominal schedules and any known interdependencies with other efforts. Finally, the assessments provide the identified critical skill sets and potentially impacted organizations.

Tier 1 - NTTF Recommendation 2.1

The Task Force recommends the NRC require licensees to reevaluate and upgrade as necessary the design-basis seismic and flooding protection of structures, systems, and components (SSCs) for each operating reactor.

2.1 Order licensees to reevaluate the seismic and flooding hazards at their sites against current NRC requirements and guidance, and if necessary, update the design basis and SSCs important to safety to protect against the updated hazards.

Regulations and Guidance

1. General Design Criterion (GDC) 2, "Design Bases for Protection Against Natural Phenomena," of Appendix A, "General Design Criteria for Nuclear Power Plants," to Title10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," requires, in part, that SSCs important to safety be designed to withstand the effects of natural phenomena such as floods, tsunami, and seiches without loss of capability to perform their safety functions. Plants that received construction permits before issuance of GDC 2 in 1971 meet the intent of the GDC.

2. 10 CFR Part 100, "Reactor Site Criteria," Appendix A, "Seismic and Geologic Siting Criteria for Nuclear Power Plants," was established to provide detailed criteria to evaluate the suitability of proposed sites and the suitability of the plant design basis established in consideration of the seismic and geologic characteristics of the proposed sites. Appendix A, which applies to stationary reactor site applications before January 11, 1997, provides a deterministic approach for developing the seismic plant design basis. In contrast, 10 CFR 100.23, which applies to applications on or after January 11, 1997, provides a detailed characterization of uncertainties and is being used by new reactor applicants to develop seismic design bases.

3. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-Water Reactor] Edition," Section 2.4.6, "Probable Maximum Tsunami Hazards," issued November 1975 and updated June 1978, July 1981, and March 2007.

4. Regulatory Guide (RG) 1.29, "Seismic Design Classification," issued June 1972 and updated August 1973, February 1976, September 1978, and March 2007.

5. RG 1.59, "Design Basis Floods for Nuclear Power Plants," issued August 1973 and updated April 1976 and August 1977.

6. RG 1.60, "Design Response Spectra for Seismic Design of Nuclear Power Plants," issued October 1973 and updated December 1973.

7. RG 1.102, "Flood Protection for Nuclear Power Plants," issued October 1975 and updated September 1976.

8. RG 1.125, "Physical Models for Design and Operation of Hydraulic Structures and Systems for Nuclear Power Plants," issued March 1977 and updated October 1978 and March 2009.

9. RG 1.208, “A Performance-Based Approach To Define the Site-Specific Earthquake Ground Motion,” issued March 2007.

Staff Assessment and Basis for Prioritization

The staff’s assessment of this recommendation indicates that plants may differ in the way they ensure safety against natural phenomena. The staff concluded that sufficient regulatory guidance currently exists to permit licensee reevaluations. However, the staff noted that results of inspections of SSCs at Fukushima Daiichi and Daini Nuclear Power Stations may help inform the implementation of this recommendation. To the extent practical, the new information on the events at Fukushima Daiichi and Daini should be incorporated into the reevaluations. The staff also noted that the implementation of this recommendation would require significant resources for both licensees and NRC, as well as specialized expertise to review licensee reevaluations and to document results of staff evaluations.

Seismic hazards. 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 important to safety will withstand a seismic event without loss of capability to perform their intended safety function. The staff notes that ongoing activities to resolve Generic Issue (GI) 199, “Implications of Updated Probabilistic Seismic Estimates in Central and Eastern United States on Existing Plants,” are directly related to this issue and will be considered in the resolution of Recommendation 2.1. Draft Generic Letter (GL) 2011-XX, “Seismic Risk Evaluations for Operating Reactors,” issued for public comment on September 1, 2011, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML111710783) provides detailed guidance for developing appropriate seismic hazards using the most recent models and methods and also for quantifying seismic risk to resolve GI-199. Currently, the draft generic letter allows for either seismic margin or probabilistic risk analyses for sites where the current seismic hazard exceeds the plant’s design basis. However, as part of the resolution of Recommendation 2.1, the staff is considering whether a probabilistic risk or a seismic margins analysis is more appropriate.

Flooding hazards. The assumptions and factors that were considered in flood protection at operating plants vary. In some cases, the design bases did not consider the effects from the local intense precipitation and related site drainage. In other cases, the probable maximum flood is calculated differently at units co-located at the same site, depending on the time of licensing, resulting in different design-basis flood protection. The NTTF and the staff noted that some plants rely on operator actions and temporary flood mitigation measures such as sandbagging, temporary flood walls and barriers, and portable equipment to perform safety functions. For several sites, the staff noted that all appropriate flooding hazards are not documented in the Updated Final Safety Analysis Report (UFSAR). The NTTF and the staff also noted that flooding risks are of concern because of a “cliff-edge” effect, in that the safety consequences of a flooding event may increase sharply with a small increase in the flooding level. Therefore, all licensees should confirm that SSCs important to safety are adequately protected from floods.

The staff concludes that this recommendation would improve safety. Since sufficient resource flexibility, including availability of critical skill sets, exists, the staff prioritized this action as a Tier 1 recommendation.

Staff Recommendations

The staff recommends that the NRC, as a near-term action, undertake regulatory activities to:

1. Continue stakeholder interactions to discuss the technical basis and acceptance criteria for conducting a reevaluation of site specific seismic hazards. This would include implementation considerations of the hazard and risk methodologies described in draft Generic Letter (GL) 2011-XX, "Seismic Risk Evaluations for Operating Reactors."

2. Interact with stakeholders to inform NRC's process for defining guidelines for the application of present-day regulatory guidance and methodologies being used for early site permit and combined license reviews to the reevaluation of flooding hazards at operating reactors.

3. Develop and issue a request for information to licensees pursuant to 10 CFR 50.54(f) to (1) reevaluate site-specific seismic hazards using the methodology discussed in item 1 above, and (2) identify actions that have been taken, or are planned, to address plant-specific issues associated with the updated seismic hazards (including potential changes to the licensing or design basis of a plant).

4. Develop and issue a request for information to licensees pursuant to 10 CFR 50.54(f) to (1) reevaluate site-specific flooding hazards using the methodology discussed in item 2 above, and (2) identify actions that have been taken or are planned to address plant-specific issues associated with the updated flooding hazards (including potential changes to the licensing or design basis of a plant).

5. Evaluate licensee responses and take appropriate regulatory action to resolve issues associated with updated site-specific hazards.

Unique Implementation Challenges

The staff recognizes that the NRC and industry have limited, specialized expertise (e.g., seismologist, hydrologists) to complete the actions associated with this recommendation.

Schedules and Milestones

Reevaluation of Seismic Hazards:

I. Issue 10 CFR 50.54(f) letter – 6 months

   a. Stakeholder interaction and technical development (e.g., methods, technical basis, acceptance criteria, etc.)

   b. Develop 10 CFR 50.54(f) letter

   c. Issue 10 CFR 50.54(f) letter

II. Evaluate licensee responses to 10 CFR 50.54(f) letter – Based on a timeline to be developed during the stakeholder interaction taking into account available resources.

   a. Write safety evaluation or NUREG to document staff conclusions

III. Issue orders to licensees (if needed) – 3 months following decision to issue orders

a. Develop regulatory basis and draft orders

b. Issue orders

IV. Inspection Activities – Schedule to be determined

a. Develop Temporary Instruction

b. Conduct inspections and document results

c. Update Standardized Plant Analysis Risk (SPAR) models

V. Issue letters to close out 10 CFR 50.54(f) letter and/or orders – 1 month after last inspection

Reevaluation of Flooding Hazards:

I. Develop 10 CFR 50.54(f) letter – 8 months

a. Stakeholder interaction and technical development (e.g., methods, technical basis, acceptance criteria, etc.)

b. Develop 10 CFR 50.54(f) letter

c. Issue 10 CFR 50.54(f) letter

II. Evaluate licensee responses to 10 CFR 50.54(f) letter – Based on a timeline to be developed during the stakeholder interaction taking into account available resources.

a. Write safety evaluation or NUREG to document staff conclusions

III. Issue orders to licensees (if needed) – 3 months following decision to issue orders

a. Develop regulatory basis and draft orders

b. Issue orders

IV. Inspection Activities – Schedule to be determined

a. Develop Temporary Instruction

b. Conduct inspections and document results

c. Update SPAR models

V. Issue letters to close out 10 CFR 50.54(f) letter and/or orders – 1 month after last inspection

Tier 1 - NTTF Recommendation 2.1

Schedule for Seismic Reevaluations

I. Develop 10 CFR 50.54(f) letter – 6 months
II. Evaluate licensee responses to 10 CFR 50.54(f) letter – Schedule to be determined
III. Issue orders to licensees (if needed) – 3 months following decision to issue orders
IV. Conduct inspection activities – Schedule to be determined
V. Issue letters to close out 10 CFR 50.54(f) letter and/or orders – 1 month after last inspection

Resources for Seismic Reevaluations

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
I. Develop 50.54(f) letter	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Seismology	0.5	NRO, RES, NMSS
		Structural Engineering	0.25	NRR, NRO, RES, NMSS
		Probabilistic Risk Assessment	0.25	NRR, NRO, RES
	Legal	Plant Licensing	0.25	OGC
II. Evaluate licensee responses to 50.54(f) letter	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Seismology	3.25	NRO, RES, NMSS
		Geotechnical Engineering	3.25	NRO, RES
		Probabilistic Risk Assessment	10.0	NRR, NRO, RES
		Structural Engineering	4.5	NRR, NRO, RES, NMSS
	Legal	Plant Licensing	0.25	OGC
III. Issue orders to licensees (if needed)	Project/Program Management	Plant Licensing	0.25	NRR
	Legal	Plant Licensing	0.25	OGC
	Technical	Seismology	0.3	NRO, RES, NMSS
		Structural Engineering	0.2	NRR, NRO, RES, NMSS
		Probabilistic Risk Assessment	0.1	NRR, NRO, RES

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
IV. Conduct inspection activities	Regional Inspection	Inspection	3.3	All Regions
	Project/Program Management	Inspection Program Management	0.25	NRR
	Technical	Seismology	0.1	NRO, RES, NMSS
		Structural Engineering	0.1	NRR, NRO, RES, NMSS
		Probabilistic Risk Assessment	2.0	NRR, NRO, RES
V. Issue letters to close out 50.54(f) letter and/or orders	Project/Program Management	Project Management	0.25	NRR
	Legal	Plant Licensing	0.25	OGC
Total FTE			**30.35**	

Notes:

1. Where appropriate and available, technical assistance dollars will be used to resolve this recommendation.

2. The timing and necessary resources for the activities associated with this NTTF recommendation will likely overlap with those needed for Recommendations 2.3. The implications of the competition for resources between these NTTF recommendations have not been fully investigated at this time.

Schedule for Flooding Reevaluations

I. Develop 10 CFR 50.54(f) letter – 8 months
II. Evaluate licensee responses to 10 CFR 50.54(f) letter – Schedule to be determined
III. Issue orders to licensees (if needed) – 3 months following decision to issue orders
IV. Conduct inspection activities – Schedule to be determined
V. Issue letters to close out 10 CFR 50.54(f) letter and/or orders – 1 month after last inspection

Resources for Flooding Reevaluations

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
I. Develop 50.54(f) letter	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Surface Water Hydrology	0.9	NRO, RES, NMSS, FSME
		Probabilistic Risk Assessment	0.1	NRR, NRO, RES
	Legal	Plant Licensing	0.25	OGC
II. Evaluate licensee responses to 50.54(f) letter	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Surface Water Hydrology	10.5	NRO, RES, NMSS, FSME
		Probabilistic Risk Assessment	0.5	NRR, NRO, RES
	Legal	Plant Licensing	0.25	OGC
III. Issue orders to licensees (if needed)	Project/Program Management	Plant Licensing	0.1	NRR
	Legal	Plant Licensing	0.25	OGC
	Technical	Surface Water Hydrology	0.4	NRO, RES, NMSS, FSME
		Probabilistic Risk Assessment	0.1	NRR, NRO, RES
IV. Conduct inspection activities	Regional inspection	Inspection	3.3	All Regions
	Project/Program Management	Inspection Program Management	0.25	NRR
	Technical	Surface Water Hydrology	0.1	NRO, RES, NMSS, FSME
		Probabilistic Risk Assessment	2.0	NRR, NRO, RES
V. Issue letters to close out 50.54(f) letter and/or orders	Project/Program Management	Plant Licensing	0.25	NRR
	Legal	Plant Licensing	0.25	OGC
Total FTE			**20.0**	

Notes:

1. Where appropriate and available, technical assistance dollars will be used to resolve this recommendation.

2. The timing and necessary resources for the activities associated with this NTTF recommendation will likely overlap with those needed for Recommendations 2.3. The implications of the competition for resources between these NTTF recommendations have not been fully investigated at this time.

Tier 1 - NTTF Recommendation 2.3

The Task Force recommends that the NRC require licensees to reevaluate and upgrade as necessary the design-basis seismic and flooding protection of SSCs for each operating reactor.

2.3 Order licensees to perform seismic and flood protection walkdowns to identify and address plant-specific vulnerabilities and verify the adequacy of monitoring and maintenance for protection features such as watertight barriers and seals in the interim period until longer-term actions are completed to update the design basis for external events.

Regulations and Guidance

1. GDC 2, "Design Bases for Protection Against Natural Phenomena," of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," requires, in part, that SSCs important to safety be designed to withstand the effects of natural phenomena such as floods, tsunami, and seiches without loss of capability to perform their safety functions.

2. 10 CFR Part 100, "Reactor Site Criteria," Appendix A, "Seismic and Geologic Siting Criteria for Nuclear Power Plants," was established to provide detailed criteria to evaluate the suitability of proposed sites and the suitability of the plant design basis established in consideration of the seismic and geologic characteristics of the proposed sites. Appendix A, which applies to stationary reactor site applications before January 11, 1997, provides a deterministic approach for developing the seismic plant design basis. In contrast, 10 CFR 100.23, which applies to applications on or after January 11, 1997, provides a detailed characterization of uncertainties and is being used by new reactor applicants to develop seismic design bases.

3. NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Section 2.4.6, "Probable Maximum Tsunami Hazards," issued November 1975 and updated June 1978, July 1981, and March 2007.

4. RG 1.29, "Seismic Design Classification," issued June 1972 and updated August 1973, February 1976, September 1978, and March 2007.

5. RG 1.59, "Design Basis Floods for Nuclear Power Plants," issued August 1973 and updated April 1976 and August 1977.

6. RG 1.60, "Design Response Spectra for Seismic Design of Nuclear Power Plants," issued October 1973 and updated December 1973.

7. RG 1.102, "Flood Protection for Nuclear Power Plants," issued October 1975 and updated September 1976.

8. RG 1.125, "Physical Models for Design and Operation of Hydraulic Structures and Systems for Nuclear Power Plants," issued March 1977 and updated October 1978 and March 2009.

Staff Assessment and Basis for Prioritization

The NRC should undertake regulatory activities to have licensees perform seismic and flood protection walkdowns to ensure that existing protection and mitigation measures are available, functional, and adequately maintained.

Seismic hazards. The staff's assessment of this recommendation indicates that some guidance for seismic protection walkdowns exists, such as Electric Power Research Institute (EPRI) report NP-6041-SL Revision 1, "A Methodology for Assessment of Nuclear Power Plant Seismic Margin", Seismic Qualification Utility Group procedure, "Generic Implementation Procedure (GIP) for Seismic Verification of Nuclear Plant Equipment," and International Atomic Energy Agency (IAEA) NS-G-2.13, "Evaluation of Seismic Safety for Existing Nuclear Installations." Recent plant inspections by staff in accordance with TI 2515/183, "Followup to the Fukushima Daiichi Nuclear Station Fuel Damage Event," and licensees' plant inspections in response to the Fukushima Daiichi accidents will help inform the implementation of this recommendation. In addition, the staff noted that results of ongoing inspections and evaluations of SSCs at Fukushima Daiichi and Daini Nuclear Power Stations may provide some insights for this recommendation. To the extent practical, the new information on the events at Fukushima Daiichi and Daini should be incorporated into the reevaluations. Evaluations of the recent earthquake near the North Anna Power Station on August 23, 2011, may also provide valuable insights.

Flooding hazards. With regard to flooding hazards, the Task Force and the staff have noted some plants rely on operator actions and temporary flood mitigation measures such as sandbagging, temporary flood walls and barriers, and portable equipment to perform safety functions. Results of staff's inspections at nuclear power sites in accordance with TI 2515/183 identified potential issues and observations regarding mitigation measures. Recent flooding at the Fort Calhoun site showed the importance of temporary flood mitigation measures.

The staff noted that guidance should be developed for both the seismic and flooding walkdowns with external stakeholder involvement to ensure consistency.

The staff concludes that this recommendation would improve safety. Since sufficient resource flexibility, including availability of critical skill sets, exists, the staff prioritized this action as a Tier 1 recommendation.

Staff Recommendations

The staff recommends that the NRC, as a near-term action, undertake regulatory activities to:

1. Engage stakeholders to inform development of a methodology and acceptance criteria for seismic and flooding walkdowns; and

2. Develop and issue a request for information to licensees pursuant to 10 CFR 50.54(f) to (1) perform seismic and flood protection walkdowns to identify and address plant-specific issues (through corrective action program) and verify the adequacy of monitoring and maintenance for protection features and (2) inform the NRC of the results of the walkdowns and corrective actions taken or planned.

Unique Implementation Challenges

The staff did not identify any unique challenges which would preclude moving forward in a timely manner.

Schedules and Milestones

Seismic Walkdowns:

I. Issue 10 CFR 50.54(f) letter – 6 months

   a. Stakeholder interaction and technical development (e.g., methods, technical basis, acceptance criteria, etc.)

   b. Develop 10 CFR 50.54(f) letter

   c. Issue 10 CFR 50.54(f) letter

II. Evaluate licensee responses to 10 CFR 50.54(f) letter – Based on a timeline to be developed during the stakeholder interaction taking into account available resources

   a. Write safety evaluation or NUREG to document staff conclusions

III. Issue orders to licensees (if needed) – 3 months following decision to issue orders

   a. Develop regulatory basis and draft orders

   b. Issue orders

IV. Conduct inspection activities – Schedule to be determined

   a. Develop Temporary Instruction

   b. Conduct inspections and document results

   c. Update SPAR models

V. Issue letters to close out 10 CFR 50.54(f) letter and/or orders – 1 month after last inspection

Flooding Walkdowns:

I. Issue 10 CFR 50.54(f) letter – 8 months

   a. Stakeholder interaction and technical development (e.g., methods, technical basis, acceptance criteria, etc.)

   b. Develop 10 CFR 50.54(f) letter

   c. Issue 10 CFR 50.54(f) letter

II. Evaluate licensee responses to 10 CFR 50.54(f) letter – Based on a timeline to be developed during the stakeholder interaction taking into account available resources.

a. Write safety evaluation or NUREG to document staff conclusions

III. Issue orders to licensees (if needed) – 3 months following decision to issue orders

a. Develop regulatory basis and draft orders

b. Issue orders

IV. Conduct inspection activities – Schedule to be determined

a. Develop Temporary Instruction

b. Conduct inspections and document results

c. Update SPAR models

V. Issue letters to close out 10 CFR 50.54(f) letter and/or orders – 1 month after last inspection

Tier 1 - NTTF Recommendation 2.3

Schedule Related to Seismic Walkdowns

I. Develop 10 CFR 50.54(f) letter – 6 months
II. Evaluate licensee responses to 10 CFR 50.54(f) letter – Schedule to be determined
III. Issue orders to licensees (if needed) – 3 months following decision to issue orders
IV. Conduct inspection activities – Schedule to be determined
V. Issue letters to close out 10 CFR 50.54(f) letter and/or orders – 1 month after last inspection

Resources Related to Seismic Walkdowns

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
I. Develop 10 CFR 50.54(f) letter	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Seismology	0.5	NRO, RES, NMSS
		Structural Engineering	0.1	NRR, NRO, RES, NMSS
		Mechanical Engineering	0.1	NRR, NRO, RES
		Instrumentation and Control/ Electrical Engineering	0.1	NRR, NRO, RES
		Probabilistic Risk Assessment	0.1	NRR, NRO, RES
	Legal	Plant Licensing	0.25	OGC
II. Evaluate licensee responses to 10 CFR 50.54(f) letter	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Seismology	1.0	NRO, RES, NMSS
		Structural Engineering	1.5	NRR, NRO, RES, NMSS
		Mechanical Engineering	1.5	NRR, NRO, RES
		Instrumentation and Control/ Electrical Engineering	1.5	NRR, NRO, RES
		Probabilistic Risk Assessment	0.5	NRR, NRO, RES
	Legal	Plant Licensing	0.25	OGC
III. Issue orders to licensees (if needed)	Project/Program Management	Plant Licensing	0.8	NRR
	Technical	Seismology	0.25	NRO, RES, NMSS
		Structural Engineering	0.25	NRR, NRO, RES, NMSS
		Mechanical Engineering	0.25	NRR, NRO, RES
		Instrumentation and Control/ Electrical Engineering	0.25	NRR, NRO, RES
		Probabilistic Risk Assessment	0.25	NRR, NRO, RES
	Legal	Plant Licensing	0.25	OGC

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
IV. Conduct inspection activities	Project/Program Management	Inspection Program Management	0.25	NRR
	Technical	Seismology	0.1	NRO, RES, NMSS
		Structural Engineering	0.1	NRR, NRO, RES, NMSS
		Mechanical Engineering	0.1	NRR, NRO, RES
		Instrumentation and Control/ Electrical Engineering	0.1	NRR, NRO, RES
		Probabilistic Risk Assessment	2.0	NRR, NRO, RES
	Regional Inspection	Inspection	3.3	All Regions
V. Issue letters to close out 10 CFR 50.54(f) letter and/or orders	Project/Program Management	Plant Licensing	0.25	NRR
	Legal	Plant Licensing	0.25	OGC
Total FTE			**16.65**	

Notes:

1. Where appropriate and available, technical assistance dollars will be used to resolve this recommendation.

2. The timing and necessary resources for the activities associated with this NTTF recommendation will likely overlap with those needed for Recommendations 2.1. The implications of the competition for resources between these NTTF recommendations have not been fully investigated at this time.

Schedule Related to Flooding Walkdowns

I. Develop 10 CFR 50.54(f) letter – 8 months
II. Evaluate licensee responses to 10 CFR 50.54(f) letter – Schedule to be determined
III. Issue orders to licensees (if needed) – 3 months following decision to issue orders
IV. Conduct inspection activities – Schedule to be determined
V. Issue letters to close out 10 CFR 50.54(f) letter and/or orders – 1 month after last inspection

Resources Related to Flooding Walkdowns

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
I. Develop 10 CFR 50.54(f) letter	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Surface Water Hydrology	0.2	NRO, RES, NMSS, FSME
		Mechanical Engineering	0.3	NRR, NRO, RES
		Structural Engineering	0.3	NRR, NRO, RES
		Probabilistic Risk Assessment	0.1	NRR, NRO, RES
		Instrumentation and Control/Electrical Engineering	0.3	NRR, NRO, RES
	Legal	Plant Licensing	0.25	OGC
II. Evaluate licensee responses to 10 CFR 50.54(f) letter	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Surface Water Hydrology	0.5	NRO, RES, NMSS, FSME
		Mechanical Engineering	1.5	NRR, NRO, RES
		Structural Engineering	1.5	NRR, NRO, RES
		Probabilistic Risk Assessment	0.5	NRR, NRO, RES
		Instrumentation and Control/Electrical Engineering	1.5	NRR, NRO, RES
	Legal	Plant Licensing	0.25	OGC
III. Issue orders to licensees (if needed)	Project/Program Management	Plant Licensing	0.8	NRR
	Technical	Surface Water Hydrology	0.25	NRO, RES
		Structural Engineering	0.25	NRR, NRO, RES
		Mechanical Engineering	0.25	NRR, NRO, RES
		Instrumentation and Control/Electrical Engineering	0.25	NRR, NRO, RES
		Probabilistic Risk Assessment	0.25	NRR, NRO, RES
	Legal	Plant Licensing	0.25	OGC

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
IV. Conduct inspection activities	Regional inspection	Inspection	3.3	All Regions
	Project/ Program Management	Program Management	0.25	NRR
	Technical	Mechanical Engineering	0.1	NRR, NRO, RES
		Structural Engineering	0.1	NRR, NRO, RES
		Instrumentation and Control/Electrical Engineering	0.1	NRR, NRO, RES
		Probabilistic Risk Assessment	2.0	NRR, NRO, RES
V. Issue letters to close out 10 CFR 50.54(f) letter and/or orders	Project/ Program Management	Plant Licensing	0.25	NRR
	Legal	Plant Licensing	0.25	OGC
Total FTE			**16.35**	

Notes:

1. Where appropriate and available, technical assistance dollars will be used to resolve this recommendation.

2. The timing and necessary resources for the activities associated with this NTTF recommendation will likely overlap with those needed for Recommendations 2.1. The implications of the competition for resources between these NTTF recommendations have not been fully investigated at this time.

Tier 1 - NTTF Recommendation 4.1

The Task Force recommends that the NRC strengthen station blackout (SBO) mitigation capability at all operating and new reactors for design-basis and beyond-design-basis external events.

4.1 Initiate rulemaking to revise 10 CFR 50.63 to require each operating and new reactor licensee to: (1) establish a minimum coping time of 8 hours for a loss of all alternating current (ac) power, (2) establish the equipment, procedures, and training necessary to implement an "extended loss of all ac" coping time of 72 hours for core and spent fuel pool cooling and for reactor coolant system and primary containment integrity as needed, and (3) preplan and prestage offsite resources to support uninterrupted core and spent fuel pool cooling, and reactor coolant system and containment integrity as needed, including the ability to deliver the equipment to the site in the time period allowed for extended coping, under conditions involving significant degradation of offsite transportation infrastructure associated with significant natural disasters.

Regulations and Guidance

1. 10 CFR 50.63, "Loss of All Alternating Current Power" (known as the "Station Blackout Rule"), requires that each nuclear power plant must be able to cool the reactor core and maintain containment integrity for a specified duration of an SBO.

2. RG 1.155, "Station Blackout," issued August 1988, describes an acceptable means to comply with 10 CFR 50.63.

Staff Assessment and Basis for Prioritization

The staff concludes that the regulatory solution for SBO mitigation is implementation of new requirements intended to strengthen SBO mitigation capability at all operating and new reactors to address prolonged SBO stemming from design-basis and beyond-design-basis external events to provide core and spent fuel pool cooling, reactor coolant system integrity, and containment integrity. This regulatory action would consider the need for SBO power source(s) and mitigating equipment to be diverse and protected from external events. This regulatory action would also examine whether there is a need to expand SBO mitigation requirements to require power reactors to mitigate an SBO event at a plant (each unit for multiunit site) until either the onsite or offsite power source is restored to bring the power reactor to a cold shutdown and to maintain spent fuel pool cooling. This rulemaking would primarily amend 10 CFR 50.63 and would impact both operating reactor licensees and new reactor applications.

The staff concludes that this recommendation would improve safety. Since sufficient resource flexibility, including availability of critical skill sets, exists, the staff prioritized this action as a Tier 1 recommendation. However, since the staff is proposing action on Recommendation 4.2 as an interim measure and no imminent hazard was identified, the staff recommends following its standard rulemaking process, which allows for appropriate stakeholder involvement consistent with the rulemaking process and schedule established in SECY-11-0032, "Consideration of Cumulative Effects of Regulation in the Rulemaking Process."

Staff Recommendation

The staff recommends that the NRC, as a near-term action, undertake regulatory activities to:

> Engage stakeholders in support of rulemaking activities to enhance the capability to maintain safety through a prolonged SBO. These activities will include the development of the regulatory basis, a proposed rule, and implementing guidance consistent with the rulemaking process and schedule established in SECY-11-0032, "Consideration of Cumulative Effects of Regulation in the Rulemaking Process."

Unique Implementation Challenges

While the staff determined that this is a highly complex rulemaking, it did not identify any unique challenges which would preclude moving forward in a timely manner.

Schedule and Milestones

I. Develop and issue final rule - 4.25 years

   a. Develop regulatory basis incorporating stakeholder feedback - nominally 13 months following initiation of the action

   b. Issue proposed rule and supporting guidance for comment - nominally additional 16 months following completion and acceptance of the regulatory basis (incorporates 4 months for Commission review and staff response to SRM)

   c. Meet with ACRS during the proposed rule stage (if requested by ACRS)

   d. Issue final rule and supporting guidance- nominally additional 22 months (accounts for 75 day public comment period, 4 months of Commission review and staff response to final rule SRM, 3 months for Office of Management and Budget (OMB) approval for final rule, and meet with ACRS)

II. Licensing activities – Schedule to be determined, dependent on rule requirements

   a. Licensee submittals

   b. Staff review and safety evaluation issuance

III. Inspection activities – Schedule to be determined, dependent on licensee modifications

   a. Incorporate inspection into Reactor Oversight Process (ROP), including updating Standardized Plant Analysis Risk (SPAR) models to support significance determination

   b. Conduct inspections and document results

   c. Update SPAR models

Tier 1 - NTTF Recommendation 4.1

Schedule

I. Develop and issue final rule - 4.25 years
II. Licensing activities – Schedule to be determined
III. Inspection activities – Schedule to be determined

Resources

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
I. Develop and issue final rule	Project/Program Management	Rulemaking	1.5	NRR, NRO, FSME
	Technical	Electrical Engineering	2.5	NRR, NRO, RES
		Mechanical Engineering	1.5	NRR, NRO, RES
		Probabilistic Risk Assessment	0.5	NRR, NRO, RES
	Legal	Rulemaking	0.5	OGC
II. Licensing activities	Project/Program Management	Plant Licensing	2.0	NRR
	Technical	Electrical Engineering	6.0	NRR, NRO, RES
		Mechanical Engineering	1.0	NRR, NRO, RES
		Probabilistic Risk Assessment	1.0	NRR, NRO, RES
	Legal	Plant Licensing	0.25	OGC
III. Inspection activities	Regional Inspection	Inspection	4.0	All Regions
	Project/Program Management	Inspection Program Management	0.5	NRR
	Technical	Probabilistic Risk Assessment	1.1	NRR, NRO, RES
Total FTE			**22.35**	

Notes:

1. Where appropriate and available, technical assistance dollars will be used to resolve this recommendation.

2. The timing and necessary resources for the activities associated with this NTTF recommendation will likely overlap with those needed for Recommendation 4.2. The implications of the competition for resources between these NTTF recommendations have not been fully investigated at this time. If resource limitations require prioritization between Recommendations 4.1 and 4.2, the staff will place a higher priority on completing 4.2 first.

Tier 1- NTTF Recommendation 4.2

The Task Force recommends that the NRC strengthen SBO mitigation capability at all operating and new reactors for design-basis and beyond-design-basis external events.

4.2 Order licensees to provide reasonable protection for equipment currently provided pursuant to 10 CFR 50.54(hh)(2) from the effects of design-basis external events and to add equipment as needed to address multiunit events while other requirements are being revised and implemented.

Regulations and Guidance

1. 10 CFR 50.54(hh)(2) requires licensees to develop and implement guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under circumstances associated with the loss of large areas of the plant due to explosions or fire.

2. The required strategies include firefighting, operations to mitigate fuel damage, and actions to minimize radiological release.

3. Nuclear Energy Institute (NEI) 06-12, Revision 2, "B.5.b Phase 2 & 3 Submittal Guidance," issued December 2006, provides guidance supporting 10 CFR 50.54(hh)(2).

4. The equipment procured and used to implement the strategies of 10 CFR 50.54(hh)(2) is controlled through the licensee's commitment management process (which follows NEI 99-04, "Guidelines for Managing NRC Commitment Changes," issued July 1999).

Staff Assessment and Basis for Prioritization

The staff concludes that equipment procured pursuant to 10 CFR 50.54(hh)(2) will provide, as an interim measure, some of the coping capability that is recommended for addressing the NTTF recommendations associated with prolonged SBO events. However, the staff notes the NTTF finding that the current guidance only addresses single unit capacity and storage of the equipment for security-related initiating events. Specifically, the guidance in the NRC-endorsed NEI 06-12, for equipment used to implement the strategies in 10 CFR 50.54(hh)(2) via the extensive damage mitigation guidelines (EDMGs), is silent on whether the equipment needs to be protected from the effects of external events. The staff agrees that there will be a benefit to reasonably protecting the mitigation equipment while still meeting the intended purpose for security-related events.

The staff also concludes that use of this 10 CFR 50.54(hh)(2) equipment, as envisioned by the NTTF, will likely require the equipment be supplemented to address a multiunit condition. In addition, consistent with the discussion in Regulatory Issue Summary (RIS) 2008-15, "NRC Staff Position on Crediting Mitigating Strategies Implemented in Response to Security Orders in Risk-Informed Licensing Actions and in the Significance Determination Process," to capture the potential safety benefit and credit the manual actions associated with using this equipment for mitigating a prolonged SBO, the actions must be proceduralized and training implemented in addition to the assessment of staffing needs under Recommendation 9.3.

Any regulatory action to direct licensees to reasonably protect this equipment will need to address what constitutes "reasonably protect." This will be framed to support licensees taking practical actions that increase the likelihood that the equipment will survive the effects of

external events while not reducing the availability of the equipment to function for its intended purpose, which is to support implementation of the strategies to mitigate the loss of large areas of the plant due to explosions and fires. Accordingly, "reasonably protect" would not necessarily mean locating the equipment in seismic Category I structures (unless that action is practical and does not adversely impact the mitigation of large fires and explosions). These issues need to be explored with stakeholders.

The staff concludes that this recommendation would improve safety. Since sufficient resource flexibility, including availability of critical skill sets, exists, the staff prioritized this action as a Tier 1 recommendation. In addition, action on this recommendation enhances defense-in-depth and supports following a standard rulemaking process for Recommendation 4.1.

Staff Recommendations

The staff recommends that the NRC, as a near-term action, undertake regulatory activities to:

1. Interact with stakeholders to do the following: (1) inform development of acceptance criteria for reasonable protection of 10 CFR 50.54(hh)(2) equipment from design-basis external hazards, (2) assess the need to supplement equipment to support multiunit event mitigation, and (3) discuss the need to develop and train on supporting strategies.

2. Order licensees to do the following: (1) provide reasonable protection of the equipment used to satisfy the requirements of 10 CFR 50.54(hh)(2) from the effects of external events, (2) establish and maintain sufficient capacity to mitigate multiunit events, and (3) develop, implement, and maintain strategies and associated training.

Unique Implementation Challenges

The staff did not identify any unique challenges which would preclude moving forward in a timely manner.

Schedule and Milestones

I. Develop and issue order – 6 months

   a. Interact with stakeholders to inform development of the regulatory basis and acceptance criteria for reasonable protection and capacity of equipment

   b. Issue order

II. Licensing activities – 4 months

   a. Licensee responses

   b. Staff review of licensee responses and staff safety evaluation

III. Inspection activities – Schedule to be determined, dependent on order implementation

   a. Develop Temporary Instruction

   b. Conduct inspections and document results

c. Update SPAR models

IV. Issue letters to close out order – 1 month after last inspection

Tier 1 - NTTF Recommendation 4.2

Schedule

I. Develop and issue order – 6 months
II. Licensing activities – 4 months
III. Inspection activities – Schedule to be determined
IV. Issue letters to close out order – 1 month after last inspection

Resources

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
I. Develop and issue order	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Fire Protection	1.0	NRR, NRO, RES
		Mechanical/Structural Engineering	1.0	NRR, NRO, RES, NMSS
	Legal	Plant Licensing	0.25	OGC
II. Licensing activities	Project/ Program Management	Plant Licensing	0.75	NRR
	Technical	Fire Protection	0.5	NRR, NRO, RES
		Mechanical/Structural Engineering	0.75	NRR, NRO, RES, NMSS
	Legal	Plant Licensing	0.25	OGC
III. Inspection activities	Regional inspection	Inspection	10.3	All Regions
	Project/Program Management	Inspection Program Management	0.5	NRR
	Technical	Fire Protection	0.1	NRR, NRO, RES
		Mechanical/Structural Engineering	0.1	NRR, NRO, RES, NMSS
		Probabilistic Risk Assessment	2.5	NRR, NRO, RES
IV. Issue letters to close out order	Project/Program Management	Plant Licensing	0.25	NRR
	Legal	Plant Licensing	0.25	OGC
Total FTE			**18.75**	

Notes:

1. Where appropriate and available, technical assistance dollars will be used to resolve this recommendation.

2. The timing and necessary resources for the activities associated with this NTTF recommendation will likely overlap with those needed for Recommendation 4.1. The implications of the competition for resources between these NTTF recommendations have not been fully investigated at this time. If resource limitations require prioritization between Recommendations 4.1 and 4.2, the staff will place a higher priority on completing 4.2 first.

Tier 1 - NTTF Recommendation 5.1

The Task Force recommends requiring reliable hardened vent designs in Boiling Water Reactor (BWR) reactor facilities with Mark I and Mark II containments.

5.1 Order licensees to include a reliable hardened vent in BWR Mark I and Mark II containments.

- This order should include performance objectives for the design of hardened vents to ensure reliable operation and ease of use (both opening and closing) during a prolonged SBO.

Regulations and Guidance

1. GDC 16 – Containment design. Reactor containment and associated systems shall be provided to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to assure that the containment design conditions important to safety are not exceeded for as long as postulated accident conditions require.

2. GL 89-16, “Installation of a Hardened Wetwell Vent,” was issued to licensees of nuclear plants with BWR Mark I primary containments requesting that they consider voluntary installation of hardened wetwell vents under the provisions of 10 CFR 50.59, “Changes, Tests and Experiments,” to provide assurance of pressure relief through a path with significant scrubbing of fission products should normal and design basis containment cooling systems not be available. Hardened wetwell airspace vents of varying designs, but all AC dependent, were installed in the currently operating units with Mark I containments primarily to avoid exceeding the primary containment pressure limit.

3. 10 CFR 50.54(hh)(2) requires licensees to develop and implement guidance and strategies to maintain or restore containment capabilities under the circumstances associated with loss of a large area of the plant due to explosions or fire; expectation B.2.e of the B.5.b Phase 1 Guidance Document dated February 25, 2002 (designated Safeguards Information) and Section 3.4.8 of the NRC-endorsed Phase 3 guidance in NEI 06-12, Revision 2, “B.5.b Phase 2 & 3 Submittal Guidance,” both specify that an acceptable means of meeting the 10 CFR 50.54(hh)(2) requirements includes the development of a procedure or strategy to allow venting primary containment to secondary containment, without AC power, as an alternate method to remove heat from the primary containment for BWR licensees. All currently operating BWR licensees, including those with BWR Mark I, Mark II, and Mark III containment designs, adopted this approach to meeting the requirements of 10 CFR 50.54(hh)(2). There are neither current NRC regulations that require this capability for other severe (beyond-design-basis) accidents, nor design criteria for the vent paths used in this strategy.

Staff Assessment and Basis for Prioritization

BWR Mark I primary containments should have a reliable hardened vent for mitigating beyond-design-basis events. The NTTF recommendation aligns with long-standing staff recommendations for the Mark I as documented in SECY 89-17, "Mark I Containment Performance Improvement Program," and GL 89-16. The Fukushima Daiichi accident highlighted the importance of the wetwell vent function, the accessibility of the valves and the capability for operation independent of AC power. All Mark I plants have installed a hardened vent. The degree to which the vent can be used during an extended SBO relies on actions taken to comply with 10 CFR 50.54(hh)(2). Further, these vents have not been designed to any standard governing "ease of use," comprising accessibility and operability under a range of conditions including SBO and high radiation fields.

The staff has also performed extensive studies of the safety benefits of containment venting for the Mark II containment design, which like the Mark I is an inerted pressure suppression design, although of larger volume. The Mark II was not included in the scope of GL 89-16 at the time it was written in part because the wetwell scrubbing of a fission product release from containment resulting from a beyond-design-basis accident was felt to be less certain than for the Mark I. In light of Fukushima Daiichi and the benefits of preserving the integrity of the containment in beyond-design-basis accidents, Mark II plants should have a reliable hardened vent either on the basis of either (1) more recent analysis that acceptably reduces the uncertainty of a scrubbed release, or (2) a design that reduces the uncertainty.

The staff concludes that it would be appropriate to redefine what level of protection of public health and safety should be regarded as adequate for venting of BWR Mark I and Mark II primary containments. In addition, the issue of containment vent filtration has been raised as an additional recommendation which is undergoing further staff review. The staff will need to develop a regulatory basis and acceptance criteria for the reliable hardened vent that encompasses prolonged SBO operation, vent capacity, accessibility, and safe hydrogen and fission product processing for both Mark I and Mark II containments.

The staff concludes that this recommendation would improve safety. Since sufficient resource flexibility, including availability of critical skill sets, exists, the staff prioritized this action as a Tier 1 recommendation.

Staff Recommendations

The staff recommends that the NRC, as a near-term action, undertake regulatory activities to:

1. Interact with stakeholders to inform development of the technical bases and acceptance criteria for suitable design expectations for reliable hardened vents.

2. Develop and issue orders to licensees with BWR Mark I and Mark II primary containment designs to take action to ensure reliable hardened wetwell vents.

Unique Implementation Challenges

The staff did not identify any unique challenges which would preclude moving forward in a timely manner.

Schedule and Milestones

I. Develop and issue order – 6 months

   a. Interact with stakeholders to inform the development of the regulatory basis and acceptance criteria for reliable hardened wetwell vents

   b. Issue order

II. Licensing activities – Schedule to be determined, dependent on design considerations

   a. Licensee responses

   b. Staff review of licensee responses and issue staff safety evaluation

III. Inspection activities – Schedule to be determined, dependent on order implementation

   a. Develop Temporary Instruction

   b. Conduct inspections and document inspection results

IV. Issue letters to close out order – 1 month after last inspection

Tier 1 - NTTF Recommendation 5.1

Schedule

I. Develop and issue order – 6 months
II. Licensing activities – 4 months
III. Inspection activities – Schedule to be determined
IV. Issue letters to close out order – 1 month after last inspection

Resources

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
I. Develop and issue order	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Nuclear Engineering	0.2	NRR, NRO, RES
		Mechanical Engineering	0.2	NRR, NRO, RES
		Instrumentation and Control/Electrical Engineering	0.1	NRR, NRO, RES
		Probabilistic Risk Assessment	0.1	NRR, NRO, RES
	Legal	Plant Licensing	0.25	OGC
II. Licensing activities	Project/Program Management	Plant Licensing	0.75	NRR
	Technical	Nuclear Engineering	0.2	NRR, NRO, RES
		Mechanical Engineering	0.75	NRR, NRO, RES
		Instrumentation and Control/Electrical Engineering	0.2	NRR, NRO, RES
		Probabilistic Risk Assessment	0.2	NRR, NRO, RES
	Legal	Plant Licensing	0.25	OGC
III. Inspection activities	Project/Program Management	Program Management	0.5	NRR
	Regional inspection	Inspection	3.7	All Regions
	Technical	Mechanical Engineering	0.1	NRR, NRO, RES
		Instrumentation and Control/Electrical Engineering	0.1	NRR, NRO, RES

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
IV. Issue letters to close out order	Project/Program Management	Plant Licensing	0.25	NRR
	Legal	Plant Licensing	0.25	OGC
Total FTE			**8.35**	

Note:

1. Where appropriate and available, technical assistance dollars will be used to resolve this recommendation.

Tier 1 - NTTF Recommendation 7.1

The Task Force recommends enhancing instrumentation for the spent fuel pool (SFP).

7.1 Order licensees to provide sufficient safety-related instrumentation, able to withstand design-basis natural phenomena, to monitor key SFP parameters (i.e., water level, temperature, and area radiation levels) from the control room.

Regulations and Guidance

1. General Design Criterion (GDC) 61, "Fuel storage and handling and radioactivity control," of Appendix A to 10 CFR Part 50 specifies that the SFP be designed to prevent a significant reduction in SFP coolant inventory under accident conditions.

2. GDC 63, "Monitoring fuel and waste storage," of Appendix A to 10 CFR Part 50 specifies that appropriate instrumentation be provided to (1) detect conditions that may result in a loss of residual heat removal capability and (2) initiate appropriate safety actions

Staff Assessment and Basis for Prioritization

The staff concludes that the existing SFP instrumentation requirements should be redefined. The staff recommends the enhancement of existing SFP instrumentation to reliably indicate SFP water level under conditions consistent with loss of forced cooling.

Current SFP instrumentation often is not designed to remain functional under accident conditions. Instrumentation with improved reliability and operating range would provide information to operators on SFP conditions during extended loss of forced cooling and loss of coolant inventory events. For the instrumentation to provide information necessary to support operator event response, the instrumentation must operate reliably in a harsh environment (SFP water at saturation conditions) and be provided with a reliable, potentially safety-related, supply of power.

The staff concludes that this recommendation would improve safety. Since sufficient resource flexibility, including availability of critical skill sets, exists, the staff prioritized this action as a Tier 1 recommendation. In addition, action on this recommendation enhances operator event response and supports following a standard rulemaking process for Recommendations 7.2, 7.3, 7.4, and 7.5.

Staff Recommendations

The staff recommends that the NRC, as a near-term action, undertake regulatory activities to:

1. Engage stakeholders to inform the determination of (1) what constitutes reliable (potentially safety-related) SFP instrumentation, (2) what conditions the instrumentation must withstand to fulfill its intended function, (3) which SFP parameters should be monitored (e.g., water level, temperature, and area radiation levels), (4) what makeup strategies could be implemented, and (5) where indications are needed (e.g., control room and/or remote location).

2. Develop and issue order to licensees to provide reliable SFP instrumentation.

Unique Implementation Challenges

The staff did not identify any unique challenges which would preclude moving forward in a timely manner.

Schedule and Milestones

I. Develop and issue order – 6 months

   a. Interact with stakeholders to determine instrumentation requirements

   b. Issue order

II. Licensing activities – 4 months

   a. Licensee responses

   b. Staff review of licensee responses and staff safety evaluation

III. Inspection activities – Schedule to be determined, dependent on order implementation

   a. Develop Temporary Instruction

   b. Conduct inspections and document results

IV. Issue letters to close out order – 1 month after last inspection

Tier 1 - NTTF Recommendation 7.1

Schedule

I. Develop and issue order – 6 months
II. Licensing activities – 4 months
III. Inspection activities – Schedule to be determined
IV. Issue letters to close out order – 1 month after last inspection

Resources

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
I. Develop and issue order	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Electrical Engineering/Instrumentation and Control	0.75	NRR, NRO, RES, NMSS
		Mechanical Engineering	0.75	NRR, NRO, RES, NMSS
	Legal	Plant Licensing	0.25	OGC
II. Licensing activities	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Electrical Engineering/Instrumentation and Control	0.5	NRR, NRO, NMSS
		Mechanical Engineering	0.5	NRR, NRO, NMSS
	Legal	Plant Licensing	0.25	OGC
III. Inspection activities	Regional Inspection	Inspection	4.2	All Regions
	Project/Program Management	Inspection Program Management	0.5	NRR
	Technical	Electrical Engineering/Instrumentation and Control	0.1	NRR, NRO, NMSS
		Mechanical Engineering	0.1	NRR, NRO, NMSS
IV. Issue letters to close out of order	Project/Program Management	Plant Licensing	0.1	NRR
	Legal	Plant Licensing	0.25	OGC
Total FTE			**8.75**	

Note:

1. Where appropriate and available, technical assistance dollars will be used to resolve this recommendation

Tier 1 - NTTF Recommendation 8

The Task Force recommends strengthening and integrating onsite emergency response capabilities such as emergency operating procedures (EOPs), severe accident management guidelines (SAMGs), and extensive damage mitigation guidelines (EDMGs).

8.1 Order licensees to modify the EOP technical guidelines (required by Supplement 1, "Requirements for Emergency Response Capability," to NUREG-0737, issued January 1983 (GL 82-33), to (1) include EOPs, SAMGs, and EDMGs in an integrated manner, (2) specify clear command and control strategies for their implementation, and (3) stipulate appropriate qualification and training for those who make decisions during emergencies.

- The Task Force strongly advises that the NRC encourage plant owners groups to undertake this activity rather than have each licensee develop its own approach. In addition, the Task Force encourages the use of the established NRC practice of publishing RGs (rather than NUREGs, supplements to NUREGs, or GLs) for endorsing any acceptable approaches submitted by the industry.

8.2 Modify Section 5.0, "Administrative Controls," of the Standard Technical Specifications for each operating reactor design to reference the approved EOP technical guidelines for that plant design.

8.3 Order licensees to modify each plant's technical specifications to conform to the above changes.

8.4 Initiate rulemaking to require more realistic, hands-on training and exercises on SAMGs and EDMGs for all staff expected to implement the strategies and those licensee staff expected to make decisions during emergencies, including emergency coordinators and emergency directors.

Regulations and Guidance

1. RG 1.33, Revision 2, "Quality Assurance Program Requirements (Operation)," Appendix A, issued February 1978, required EOPs as a subset of the applicable procedures recommended in Section 5.0, "Administrative Controls," of licensee technical specifications.

2. NUREG-0737, "Clarification of TMI [Three Mile Island] Action Plan Requirements," Supplement 1, "Requirements for Emergency Response Capability," issued January 1983 (GL 82-33), required the development and submittal for review and approval of EOP technical guidelines.

3. Licensees developed SAMGs as a voluntary program, and the SAMGs are documented as meeting regulatory commitments. There is neither a requirement for realistic, hands-on training or exercises on SAMGs, nor a requirement for integration of the SAMGs, EOPs, and EDMGs.

4. 10 CFR 50.54(hh)(2) requires that licensees develop guidance and strategies. "EDMG" is the generic term used by industry for the required guidance and strategies. Requirements for exercise of EDMGs are included in the final rulemaking described in

SECY-11-0053, “Final Rule: Enhancements to Emergency Preparedness Regulations (10 CFR Part 50 and 10 CFR Part 52),” dated April 8, 2011. There is no specific requirement for training on these guidance and strategies; the endorsed guidance on the subject in NEI 06-12, Revision 2, specifies training for 10 CFR 50.54(hh)(2).

Staff Assessment and Basis for Prioritization

EOPs, SAMGs, and EDMGs should be strengthened and integrated. Transition points, command and control, decision-making, and training should be clarified.

SAMGs should be required along with qualification and training for those licensee staff expected to make decisions during beyond-design-basis accident scenarios using either the SAMGs or EDMGs.

Finally the staff concludes that early interactions with stakeholders would be useful in determining the optimal mechanism for implementing these recommendations as requirements.

The staff concludes that this recommendation would improve safety. Since sufficient resource flexibility, including availability of critical skill sets, exists, the staff prioritized this action as a Tier 1 recommendation. However, since these procedures and guidelines already exist and are available for operator use and no imminent hazard was identified, the staff recommends following its standard rulemaking process, which allows for appropriate stakeholder involvement consistent with the rulemaking process and schedule established in SECY-11-0032.

Staff Recommendations

The staff recommends that the NRC, as a near-term action, undertake regulatory action to resolve NTTF Recommendations 8.1, 8.2, 8.3 and 8.4:

1. Issue an advanced notice of proposed rulemaking (ANPR) to engage stakeholders in rulemaking activities associated with the methodology for integration of onsite emergency response processes, procedures, training and exercises.

2. Interact with stakeholders to inform the modification of EOP generic technical guidelines to include guidance for SAMGs and EDMGs in an integrated manner and to clarify command and control issues as appropriate.

Unique Implementation Challenges

While the staff determined that this is a highly complex rulemaking, it did not identify any unique challenges which would preclude moving forward in a timely manner. An important consideration as the staff implements this recommendation will be to ensure that operator training requirements remain appropriately focused on the most risk-significant scenarios.

Schedule and Milestones

I. Develop and issue final rule - 4.25 years

a. Develop and issue an ANPR to obtain stakeholder input – 4 months

b. Develop regulatory basis incorporating stakeholder feedback - nominally 13 months following initiation of the action

c. Issue proposed rule and supporting guidance for comment - nominally additional 16 months following completion and acceptance of the regulatory basis (incorporates 4 months for Commission review and staff response to SRM)

d. Meet with ACRS during the proposed rule stage (if requested by ACRS)

e. Issue final rule and supporting guidance - nominally additional 22 months (accounts for 75 day public comment period, 4 months of Commission review and staff response to final rule SRM, 3 months for OMB approval for final rule, and meet with ACRS)

II. Licensing activities – Schedule to be determined, dependent on rule requirements

a. Licensee submittals

b. Staff review and safety evaluation issuance

III. Inspection activities – Schedule to be determined, dependent on licensee implementation timeframe

a. Incorporate inspection into ROP

b. Conduct inspections and document results

Tier 1 - NTTF Recommendation 8

Schedule

I. Develop and issue final rule - 4.25 years
II. Licensing activities – Schedule to be determined
III. Inspection activities – Schedule to be determined

Resources

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
I. Develop and issue final rule	Project/Program Management	Rulemaking	1.5	NRR, NRO, FSME
	Technical	Human Factors	1.5	NRR, NRO, RES
		Operator Licensing	1.5	NRR
		Incident Response/ Emergency Preparedness	1.5	NSIR
		Nuclear Engineering	0.5	NRR, NRO, RES
	Legal	Rulemaking	0.5	OGC
II. Licensing activities	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Human Factors	1.0	NRR, NRO, RES
		Operator Licensing	1.0	NRR
		Incident Response/ Emergency Preparedness	1.0	NSIR
		Nuclear Engineering	0.5	NRR, NRO, RES
	Legal	Plant Licensing	0.25	OGC
III. Inspection activities	Regional Inspection	Inspection	10.8	All Regions
	Project/Program Management	Inspection Program Management	2.0	NRR
Total FTE			**23.8**	

Notes:

1. Where appropriate and available, technical assistance dollars will be used to resolve this recommendation.

2. Inspection resources include an estimate for staff training, including headquarters staff, that would cover Recommendation 12.2.

Tier 1 - NTTF Recommendation 9.3 (Staffing and Communications)

The Task Force recommends that the NRC require that facility emergency plans address prolonged SBO and multiunit events.

9.3 Order licensees to do the following until rulemaking is complete:

- Determine and implement the required staff to fill all necessary positions for response to a multi-unit event

- Provide a means to power communications equipment needed to communicate onsite (e.g., radios for response teams and between facilities) and offsite (e.g., cellular telephones and satellite telephones) during a prolonged SBO.

Regulations and Guidance

1. 10 CFR 50.47, "Emergency Plans," includes the 16 planning standards of 10 CFR 50.47(b), and Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50 describes information needed to demonstrate compliance with EP requirements.

2. NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, issued November 1980, describes guidance and an acceptable means for demonstrating compliance with the Commission's regulations.

3. SECY-11-0053, "Final Rule: Enhancement to Emergency Preparedness Regulations (10 CFR Part 50 and 10 CFR Part 52)," dated April 8, 2011, codifies hostile-action-based enhancements, among others.

4. NUREG-0696, "Functional Criteria for Emergency Response Facilities," issued February 1981, describes the facilities and systems that licensees can use to improve emergency response to accidents, such as the technical support system, operational support center, and emergency offsite facility.

Staff Assessment and Basis for Prioritization

The staff's assessment of Recommendation 9.3 indicates that regulatory action should be initiated to determine the required staffing to fill all necessary positions for responding to a multiunit event. This would require both the NRC staff and licensees to reevaluate the current staffing assumptions and analysis for effectively responding to multiunit incidents, in addition to actions being taken to satisfy the requirements of the recently affirmed Emergency Preparedness Final Rule. The staff is focused on licensees completing the staffing analyses only so that they could be done along with the actions required by the impending rule.

The staff also concludes that there is a need to strengthen the requirements to provide a means to power communications equipment needed to communicate onsite (e.g., radios for response teams and between facilities) and offsite (e.g., cellular telephones and satellite telephones)

during a prolonged SBO. This would require additional guidance regarding what constitutes acceptable communications equipment that does not rely on the availability of facility AC power.

The staff concludes that this recommendation would improve safety. Since sufficient resource flexibility, including availability of critical skill sets, exists, the staff prioritized this action as a Tier 1 recommendation.

Staff Recommendations

The staff recommends that the NRC, as a near-term action, undertake regulatory activities to:

1. Engage stakeholders to (1) inform development of a methodology to perform a staffing study to determine the required staff to fill all necessary positions to respond to a multiunit event, and (2) discuss potential enhancements that could provide a means to power communications equipment necessary for licensee onsite and offsite communications during a prolonged SBO event,

2. Develop and issue a request for information to licensees pursuant to 10 CFR 50.54(f) to (1) perform a staffing study to determine the required staff to fill all necessary positions to respond to a multiunit event, (2) evaluate what enhancements would be needed to provide a means to power communications equipment necessary for licensee onsite and offsite communications during a prolonged SBO event, and (3) inform the NRC of the results of the staffing study and any actions taken or planned, along with their implementation schedules, to react to the staffing study results and to enhance the communications equipment, and

3. Evaluate licensee responses and take regulatory action to require implementation, as appropriate.

Unique Implementation Challenges

The staff is currently engaged in the implementation of the recently approved revision to the EP regulations. This is the most extensive revision since the EP regulations were promulgated in 1980 in response to the TMI accident. The staff has committed to a significant outreach effort to help ensure consistent licensee implementation and in response to requests from offsite response organizations. The development of technical information in support of Recommendation 9.3 will require significant effort from the staff and licensees and must be coordinated with the ongoing EP Rule implementation.

Schedule and Milestones

I. Issue 10 CFR 50.54(f) letter – 6 months following initiation of action

   a. Stakeholder interaction and technical development (e.g., methods, technical basis, acceptance criteria, etc.)

   b. Develop 10 CFR 50.54(f) letter

   c. Issue 10 CFR 50.54(f) letter

II. Evaluate licensee responses to 10 CFR 50.54(f) letter – Based on a timeline to be developed during the stakeholder interaction taking into account available resources.

a. Write safety evaluation or NUREG to document staff conclusions

III. Issue orders to licensees (if needed) – 3 months following decision to issue orders

a. Develop regulatory basis and draft orders

b. Issue orders

IV. Conduct inspection activities – Schedule to be determined

a. Develop Temporary Instruction

b. Conduct inspections and document results

V. Issue letters to close out 10 CFR 50.54(f) letter and/or orders – 1 month after last inspection

Tier 1 - NTTF Recommendation 9.3 (Staffing and Communications)

Schedule

I. Develop 10 CFR 50.54(f) letter – 6 months
II. Evaluate licensee responses to 10 CFR 50.54(f) letter – Schedule to be determined
III. Issue orders to licensees (if needed) – 3 months following decision to issue orders
IV. Conduct inspection activities – Schedule to be determined
V. Issue letters to close out 10 CFR 50.54(f) letter and/or orders – 1 month after last inspection

Resources

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
I. Develop 50.54(f) letter	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Emergency Preparedness	0.5	NSIR
	Legal	Plant Licensing	0.25	OGC
II. Evaluate licensee responses to 50.54(f) letter	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Emergency Preparedness	0.75	NSIR
	Legal	Plant Licensing	0.25	OGC
III. Issue orders to licensees (if needed)	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Emergency Preparedness	0.5	NSIR
	Legal	Plant Licensing	0.25	OGC
IV. Conduct inspection activities	Regional Inspection	Inspection	4.2	All Regions
	Project/Program Management	Inspection Program Management	0.5	NRR
	Technical	Emergency Preparedness	0.25	NSIR
V. Issue letters to close out 50.54(f) letter and/or orders	Project/Program Management	Project Management	0.25	NRR
	Legal	Plant Licensing	0.25	OGC
Total FTE			**8.7**	

Note:

1. Where appropriate and available, technical assistance dollars will be used to resolve this recommendation.

Tier 2 - NTTF Recommendations 7.2, 7.3, 7.4, and 7.5

The Task Force recommends enhancing SFP makeup capability and instrumentation.

7.2 Order licensees to provide safety-related AC electrical power for the SFP makeup system.

7.3 Order licensees to revise their technical specifications to address requirements to have one train of onsite emergency electrical power operable for SFP makeup and spent fuel pool instrumentation when there is irradiated fuel in the SFP, regardless of the operational mode of the reactor.

7.4 Order licensees to have an installed seismically qualified means to spray water into the spent fuel pools, including an easily accessible connection to supply the water (e.g., using a portable pump or pumper truck) at grade outside the building.

7.5 Initiate rulemaking or licensing activities or both to require the actions related to the SFP described in Recommendations 7.1-7.4.

Regulations and Guidance

1. General Design Criterion (GDC) 61, "Fuel storage and handling and radioactivity control," of Appendix A to 10 CFR Part 50 specifies that the SFP be designed to prevent a significant reduction in SFP coolant inventory under accident conditions.

2. GDC 63, "Monitoring fuel and waste storage," of Appendix A to 10 CFR Part 50 specifies that appropriate instrumentation be provided to (1) detect conditions that may result in a loss of residual heat removal capability and (2) initiate appropriate safety actions

3. 10 CFR 50.54(hh)(2) requires licensees to develop and implement guidance and strategies intended to maintain or restore core cooling, containment, and spent fuel pool cooling capabilities under circumstances associated with the loss of large areas of the plant due to explosions or fire.

4. Nuclear Energy Institute (NEI) 06-12, Revision 2, "B.5.b Phase 2 & 3 Submittal Guidance," issued December 2006, provides guidance supporting 10 CFR 50.54(hh)(2).

Staff Assessment and Basis for Prioritization

As a follow-on activity to the completion of Recommendation 7.1, the staff concludes that the existing SFP instrumentation and makeup requirements should be enhanced through rulemaking. The staff recommends the enhancement of existing SFP instrumentation to reliably indicate SFP conditions consistent with loss of forced cooling. The staff recognizes that the equipment procured pursuant to 10 CFR 50.54(hh)(2) has enhanced SFP makeup capability, but the associated guidance does not address reliability of the makeup function with respect to access and equipment availability.

The enhanced capabilities should consider risk insights for the SFP. Risk is higher during and immediately after refueling due to the following: (1) increased heat load from recently discharged fuel; (2) increased number of potential drain paths (more connected non-seismic

structures and systems); (3) increased potential to drain to a lower elevation (the fuel transfer path typically is the lowest SFP penetration); and, (4) fewer controls on the availability of makeup water systems (e.g., essential service water provides safety-related makeup at many sites, but all trains may be removed from service for maintenance when all irradiated fuel has been transferred to the SFP).

Recommendations 7.2, 7.3, and 7.4 all relate to the reliability of SFP makeup. Recommendations 7.2 and 7.3 relate to makeup capability using permanently installed makeup systems and address the quality and availability of onsite AC power to support that function. Makeup capability at all operating reactors currently requires manual operator actions outside the control room. Recommendation 7.4 would require a method of supplying makeup or spray via a seismically qualified flow path, where the system's reliability would be based upon the reliability of the pumping system and water source employed. Recommendation 7.4 would allow initiation of makeup from outside the structure housing the SFP, for scenarios when the SFP deck is inaccessible, and enhances defense-in-depth by incorporating a spray capability for mitigation of beyond-design-basis events.

The staff concludes that this recommendation would improve safety. Since the staff is proposing to initiate action on Recommendations 4.2 and 7.1 to enhance defense-in-depth and operator event response, the staff has concluded that it is appropriate to initiate this rulemaking after consideration of insights from Tier 1 Recommendations 2.1, 4.1, and 4.2. As such, the staff has prioritized this action as a Tier 2 recommendation. This rulemaking can be initiated when sufficient technical information becomes available.

Staff Recommendation

Once sufficient technical information is available, the staff recommends that the NRC undertake regulatory activities to:

> Engage stakeholders in support of rulemaking activities to provide reliable SFP instrumentation and makeup capabilities. These activities will include the development of the regulatory basis, a proposed rule, and implementing guidance consistent with the rulemaking process and schedule established in SECY-11-0032.

Unique Implementation Challenges

The staff did not identify any unique challenges with this rulemaking.

Schedule and Milestones

I. Develop and issue final rule - 4.25 years following initiation of action

   a. Develop regulatory basis incorporating stakeholder feedback - nominally 13 months following initiation of the action

   b. Issue proposed rule and supporting guidance for comment - nominally additional 16 months following completion and acceptance of the regulatory basis (incorporates 4 months for Commission review and staff response to SRM)

   c. Meet with ACRS during the proposed rule stage (if requested by ACRS)

d. Issue final SFP rule and supporting guidance - nominally additional 22 months (accounts for 75 day public comment period, 4 months of Commission review and staff response to final rule SRM, 3 months for OMB approval for final rule, and meet with ACRS).

II. Licensing activities – Schedule to be determined, dependent on rule requirements

a. Licensee submittals

b. Staff review and safety evaluation issuance

III. Inspection activities – Schedule to be determined, dependent on licensee modifications

a. Incorporate inspection into the ROP

b. Conduct inspections and document results

Tier 2 - NTTF Recommendations 7.2, 7.3. 7.4, and 7.5

Schedule

I. Develop and issue final rule - 4.25 years following initiation of action
II. Licensing activities – Schedule to be determined
III. Inspection activities – Schedule to be determined

Resources

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
I. Develop and issue final rule	Project/Program Management	Rulemaking	1.5	NRR, NRO, FSME
	Technical	Electrical Engineering/Instrumentation and Control	1.5	NRR, NRO, RES, NMSS
		Mechanical Engineering	1.5	NRR, NRO, RES, NMSS
	Legal	Rulemaking	0.5	OGC
II. Licensing activities	Project/Program Management	Plant Licensing	0.75	NRR
	Technical	Electrical Engineering/Instrumentation and Control	2.0	NRR, NRO, RES, NMSS
		Mechanical Engineering	2.0	NRR, NRO, RES, NMSS
	Legal	Plant Licensing	0.25	OGC
III. Inspection activities	Regional Inspection	Inspection	10.8	All Regions
	Project/Program Management	Inspection Program Management	0.5	NRR
	Technical	Electrical Engineering/Instrumentation and Control	0.2	NRR, NRO, RES, NMSS
		Mechanical Engineering	0.2	NRR, NRO, RES, NMSS
Total FTE			**21.7**	

Note:

1. Where appropriate and available, technical assistance dollars will be used to resolve this recommendation

Tier 2 - NTTF Recommendation 9.3 (Remaining Actions, Except ERDS Capability)

The Task Force recommends that the NRC require that facility emergency plans address prolonged SBO and multiunit events.

9.3 Order licensees to do the following until rulemaking is complete:

- Add guidance to the emergency plan that documents how to perform a multiunit dose assessment (including releases from spent fuel pools) using the licensee's site-specific dose assessment software and approach.
- Conduct periodic training and exercises for multiunit and prolonged SBO scenarios. Practice (simulate) the identification and acquisition of offsite resources, to the extent possible.
- Ensure that EP equipment and facilities are sufficient for dealing with multiunit and prolonged SBO scenarios.

Regulations and Guidance

1. 10 CFR 50.47, "Emergency Plans," includes the 16 planning standards of 10 CFR 50.47(b), and Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities," to 10 CFR Part 50 describes information needed to demonstrate compliance with EP requirements.

2. NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, issued November 1980, describes guidance and an acceptable means for demonstrating compliance with the Commission's regulations.

3. SECY-11-0053, "Final Rule: Enhancement to Emergency Preparedness Regulations (10 CFR Part 50 and 10 CFR Part 52)," dated April 8, 2011, codifies hostile-action-based enhancements, among others.

4. Section IV of Appendix E to 10 CFR Part 50 codifies the requirements for the NRC's ERDS.

5. NUREG-0696, "Functional Criteria for Emergency Response Facilities," issued February 1981, describes the facilities and systems that licensees can use to improve emergency response to accidents, such as the technical support system, operational support center, and emergency offsite facility.

Staff Assessment and Basis for Prioritization

The NTTF report describes the relationship between Recommendation 9.3 and EP planning standards as follows: staffing, 10 CFR 50.47(b)(2) (identified in Tier 1 response); equipment and facilities, 10 CFR 50.47(b)(8); radiological assessment, 10 CFR 50.47(b)(9); training, 10 CFR 50.47(b)(15); exercises, 10 CFR 50.47(b)(14); offsite resources, 10 CFR 50.47(b)(3); and communications, 10 CFR 50.47(b)(6) (identified in Tier 1 response). The staff's guidance used to determine compliance with these planning standards did not envision multiunit or prolonged

SBO events. The staff reviewed the remaining planning standards of 10 CFR 50.47(b) to determine if there were other areas that may be impacted by these scenarios and found that the scope of Recommendation 9.3 is complete in identifying the planning standard related area that should be upgraded to address SBO and multiunit events.

The staff will engage external stakeholders to inform the development of boundary conditions, implementation details, and acceptance criteria for licensees to perform acceptable analyses of each of these planning elements with respect to multiunit and SBO events. After stakeholder engagement, the staff will issue an order to require reanalysis and implementation of the results for each of the planning elements, as appropriate. The rulemaking envisioned in response to Recommendations 9.1 and 9.2 would make order requirements generically applicable.

The statements of consideration for the original ERDS Rule (56 FR 40178) specifically noted that ERDS is not a safety system; therefore, licensees have not been required to address the need to supply emergency power to the equipment and systems used to collect and transmit data to the NRC. In addition, as part of the ERDS modernization initiative, the staff selected a data transmission method (VPN, virtual private network) which utilizes licensees' non-safety related corporate computer networks and the internet to provide connectivity to the NRC's ERDS servers. Implementation of an ERDS capable of functioning during a prolonged SBO will likely require an extensive, if not complete, redesign of the licensees' current systems, as well as a reevaluation of the data transmission solution selected by the NRC.

ERDS is a system that provides for the transmission of data to assist NRC and the States in monitoring plant conditions during events at classifications of Alert and above. While ERDS is a current regulatory requirement, it is a supplement to other methods that exist in licensee, NRC and State incident response plans and procedures (e.g., NRC site teams, Emergency Notification System, and communication protocols between licensees and the States). The ERDS modernization initiative currently underway substantially improves the reliability of the data transmission path during an accident. However, prolonged loss of power may present a challenge not only to data transmission, but also to the sources of ERDS data (the plant process computer, safety-related and non-safety-related instrument loops, etc.). Given its supplementary nature and the need to consider this recommendation in a more deliberate, integrated manner, the staff recommends that the issuance of any new ERDS related requirements to licensees be deferred until a comprehensive set of requirements can be developed by the staff as part of the Tier 3 long term study of NTTF Recommendation 10.3.

Upon completion of the ERDS VPN transition, licensees will have the capability to transmit ERDS data to the NRC from all units simultaneously.

The staff has prioritized regulatory actions related to the portions of NTTF Recommendation 9.3 identified above in Tier 2. Staff with critical skill sets necessary for the resolution of these portions of Recommendation 9.3 are currently involved in implementation of the recently issued EP Rule. These actions do not require long term study and can be initiated when sufficient resources become available.

Staff Recommendations

Once sufficient staff with critical skill sets are available, the staff recommends that the NRC undertake regulatory activities to:

1. Engage stakeholders to inform the development of acceptance criteria for the licensee examination of planning standard elements related to the recommendations, and

2. Develop and issue an order to address those changes necessary in emergency plans to ensure adequate response to SBO and multiunit events specific to (1) adding guidance to the emergency plan that documents how to perform a multiunit dose assessment, (2) conduct periodic training and exercises for multiunit and prolonged SBO scenarios, (3) practice (simulate) the identification and acquisition of offsite resources, to the extent possible, and (4) ensure that EP equipment and facilities are sufficient for dealing with multiunit and prolonged SBO scenarios.

Unique Implementation Challenges

The staff is currently engaged in the implementation of the recently approved revision to the EP regulations. This is the most extensive revision since the EP regulations were promulgated in 1980 in response to the TMI accident. The staff has committed to a significant outreach effort to help ensure consistent licensee implementation and in response to requests from offsite response organizations. The development of technical information in support of Recommendation 9.3 will require significant effort from the staff and licensees and must be coordinated with the ongoing EP Rule implementation. The staff plans to initiate this action by mid-2012.

Schedule and Milestones

I. Develop and issue order – 6 months following initiation of action

   a. Interact with stakeholders to inform the development of the regulatory basis and acceptance criteria

   b. Issue order

II. Licensing activities - Schedule to be determined

   a. Licensee response

   b. Review of licensee emergency plans and issue staff safety evaluations

III. Inspection Activities – Schedule to be determined, dependent on order implementation

   a. Develop Temporary Instruction

   b. Conduct inspections and document inspection results

IV. Issue letters to close out order – 1 month after last inspection

Tier 2 - NTTF Recommendation 9.3 (Remaining Actions, Except ERDS Capability)

Schedule

I. Develop and issue order – 6 months following initiation of action
II. Licensing activities – Schedule to be determined
III. Inspection activities – Schedule to be determined
IV. Issue letters to close out order – 1 month after last inspection

Resources

Activity	Resource Category	Specific Expertise Needed	Estimated FTE	Locations of Most Applicable Expertise within NRC
I. Develop and issue order	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Emergency Preparedness	2.0	NSIR
	Legal	Plant Licensing	0.25	OGC
II. Licensing activities	Project/Program Management	Plant Licensing	0.25	NRR
	Technical	Emergency Preparedness	1.0	NSIR
	Legal	Plant Licensing	0.25	OGC
III. Inspection Activities	Regional Inspection	Inspection	4.2	All Regions
	Project/Program Management	Program Management	0.5	NRR
	Technical	Emergency Preparedness	0.1	NSIR
IV. Issue letters to close out order	Project/Program Management	Plant Licensing	0.25	NRR
	Legal	Plant Licensing	0.25	OGC
Total FTE			**9.3**	

Note:

1. Where appropriate and available, technical assistance dollars will be used to resolve this recommendation.