

Table B-1 Initial Draft Database of Risk-Informed and Performance-Based Initiatives

Regulatory Arena - Responsible Office	Regulatory Functional Area	Initiative	Program or Project	Project Description and Major Activities	Major Project Activities	Status
Reactor (NRR)	Oversight	Reactor Oversight Process (ROP)	ROP	Develop a risk-informed assessment process for determining NRC actions based upon performance indicator and inspection information.	Implement process to monitor licensee performance with respect to reactor safety cornerstones and to monitor licensee activities using performance indicators. Depending on the assessment results, inspection resources may be expended to focus on licensees with degraded or declining performance.	Complete: The results and lessons learned from ROP implementation are documented in annual reports to the Commission.
					Implement Mitigating System Performance Index (MSPI) program. MSPI monitors risk associated with changes in performance of selected mitigating systems, accounting for plant-specific design and performance data.	Complete
Reactor (RES)	Oversight	Accident Sequence Precursor	Accident Sequence Precursor	Systematically review and evaluate operating experience to identify precursors to potential severe core damage sequences, documenting precursors, categorizing them by plant-specific and generic implications, and providing a measure of trends in nuclear plant core damage risk.	Determine the safety significance of events and their regulatory implications; provide feedback to improve probabilistic risk assessment (PRA) models; and provide NRC Strategic Plan performance measures and the ASP occurrence rate trending for the annual Performance and Accountability Report to Congress.	Complete: The results and lessons learned from Accident Sequence Precursor are documented in annual reports to the Commission and Congress.
Reactor (NRR)	Oversight	Risk-informed Decision-Making	Improve NRR risk-informed decision making	NRR Office Instruction for emergent issues	Revise LIC-504, "Integrated Risk-Informed Decision Making Process for Emergent Issues," to incorporate feedback from pilot application	Complete
				Training on use of risk in decision making	Develop course on modeling assumptions and uncertainty of risk models for technical reviewers.	In progress
					Develop course on uncertainties in risk-informed decision making for managers.	In progress
Reactor (RES)	Oversight	Maintenance of PRA Infrastructure	Logic Model Development	Develop SPAR models for each unique plant-specific design, as applicable; maintain models to support user needs	Develop Level 1 Rev. 3 SPAR Models	<a href="#">Link to plan</a>
					Develop External Event SPAR Models	<a href="#">Link to plan</a>
					Develop Low Power / Shutdown Models	<a href="#">Link to plan</a>
					Develop Level 2/LERF Models	<a href="#">Link to plan</a>
			SAPHIRE Code	Maintain SAPHIRE code and GEM interface to support user needs and new methods	Develop the SAPHIRE and GEM Interface and maintain them	<a href="#">Link to plan</a>

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Reactor (RES)	Oversight	Maintenance of PRA Infrastructure	Technical Guidance	Provide guidelines for analysis of events; maintain guidelines in support of revised methods and user needs	Provide integrated handbook for the analysis of internal, external, and low power/shutdown events, LERF, and Level 2	<a href="#">Link to plan</a>
					Provide revised methods and write tutorials for estimating CCF, equipment unavailability, independent failure probability, and initiating event frequency	<a href="#">Link to plan</a>
			Technical Support	Maintain analysis methods to support user needs; provide on-call technical assistance to senior reactor analysts and NRR	Provide event-specific methods and SPAR model modifications (MD 8.3, ROP, ASP)	<a href="#">Link to plan</a>
					Provide SDP analysis reviews, as requested	<a href="#">Link to plan</a>
					Provide support to RASP help desk (methods and models)	<a href="#">Link to plan</a>
Reactor (NRR)	Rulemaking	Special Treatment	Risk inform 10 CFR 50.69	Develop an alternative risk-informed approach to special treatment requirements in Part 50 to vary the treatment applied to structures, systems, and components (SSCs) on the basis of their safety significance, using a risk-informed categorization method. (NRR/ADRA/DRA)	Issue final rule for new § 50.69 to allow risk-informed approach to special treatment requirements.	Staff activities complete. Final rule issued. Awaiting industry implementation.
			Pilot Application	Industry proposing alternative approach to passive categorization aspects of 50.69.	Complete review of 50.69 implementation at 1 pilot plant.	Review initiated
		ECCS requirements	LOCA re-definition	Change technical requirements of 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light-Water Nuclear Power Reactors"	Issue final rule for revised 50.46 to redefine large LOCA	Resolving ACRS comments and soliciting Commission guidance
			LOCA/ LOOP	Remove requirement to consider LOOP in conjunction with large LOCA.	Complete safety evaluation of BWROG LOCA-LOOP topical report	Staff review continuing and on schedule
				Issue final rule to remove LOCA-LOOP requirement	Schedule may be impacted by delay in review of topical report due to re-submission by BWROG and use of alternative bases.	

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Reactor (NRR)	Rulemaking	H2 gas control	10 CFR 50.44	Change the requirements for combustible gas control.		Staff activities complete. Available for industry implementation	
		PTS	10 CFR 50.61a	Voluntary risk-informed alternative pressurized thermal shock limits.	Re-define Reference Transition Temperature	Draft rule under development	
		Risk-informed Part 50	10 CFR 53	Determine need for separate rule to risk-inform Part 50 (ANPR RIN 3150-AH81)	Receive and evaluate public comments on the ANPR.	Complete	
					Provide public comment summary and recommendation to the Commission (SECY)	SECY under development.	
Reactor (NRR)	Licensing	Risk-informed ASME Code Case	N-716	Alternative risk-informed in-service inspection methodology	Support ASME review and approval.	Under review	
					Review two pilot plant applications.	Under review	
			N-752	Alternative risk-informed repair and replacement of passive components	Support ASME review and approval.	Under review	
			OMN-3	Alternative to RG 1.175 risk-informed surveillance interval for IST	Support ASME review and approval.	Completed	
		N-751, 752, 753	Alternative to RG 1.178, risk-informed in-service inspection	Support ASME review and approval.	Under review		
		Topical Reports	WCAP-16168	Risk-informed extension of reactor vessel weld inspection from ten to twenty years	Review and approve topical.	Under review	
			EPRI TR-1009325 rev. 1	Risk-informed extension – permanent 15-year ILRT extension	Review and approve topical.	Under review	
Reactor (RES/NRR)	Licensing	Risk-related Reg Guides	RG 1.200	An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities	Issue Revision 1 endorsing ASME Standard on at power, internal events, Level 1 and LERF PRA.	Complete	
					Issue draft to Revision 2 endorsing PRA standards on external events, internal fires and low power/shut down.	<a href="#">Link to plan</a>	
		Risk-related Standard Review Plan Sections	Section 19.0	Probabilistic Risk Assessment and Severe Accident Evaluation.	Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities		Staff activities complete. Awaiting industry implementation
							In final revision to address Commission direction.
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Reactor (RES/NRR)	Licensing	Risk-related Standard Review Plan Sections	Section 19.2	Review of Risk-Information used to Support Permanent Plant-Specific Changes to the Licensing Basis: General Guidelines.	Revise and update. (Re-numbered from original SRP Chapter 19.)	In final revision to address Commission direction.
Reactor (NRO)	Licensing	<a href="#">Risk-Informing the Standard Review Plan (SRP)</a>		<p>Develop a reviewer's "desk guide" for NRO technical staff to apply risk insights to the review of new reactor license applications for those areas of the SRP that are amenable to being risk-informed.</p> <p>Specific objectives include:</p> <ul style="list-style-type: none"> <li>• Ensure effective review, identifying any non-conforming aspects or other issues that would be inimical to public health and safety.</li> <li>• Facilitate efficient review using a graded approach, in which the level of resources applied to a given review area is commensurate with the importance to assuring public health and safety.</li> </ul>	Form technical team to identify possible approaches to risk-inform the SRP to enhance new reactor review efficiency; obtain management approval of selected approach	Complete
					Identify SRP sections amenable to being risk-informed and develop a template to transmit risk insights for these sections	Complete
					Develop samples based on AP1000 design and present to management	<a href="#">Link to plan</a>
					Develop guidance document for transfer of plant-specific PRA information on SRP sections.	<a href="#">Link to plan</a>
					Develop and conduct training for staff who will review new reactor PRA submittals and contribute risk information to the desk guide	<a href="#">Link to plan</a>
					Conduct training for staff who will use the risk insights in the desk guide	<a href="#">Link to plan</a>
					Provide risk insights for each reactor type as they become available	<a href="#">Link to plan</a>
Reactor (NRR)	Licensing	RI-Tech Specs	Develop risk-informed improvements to the standard technical specifications (STS).	Initiative 1	Define the preferred end state for technical specification actions (usually hot shutdown for PWRs).	CE and GE – complete. Westinghouse and B&W - in progress.
				Initiative 2	Increase the time allowed to delay entering required actions when a surveillance is missed.	Complete
				Initiative 3	Modify the existing mode restraint logic to allow greater flexibility (i.e., use risk assessments for entry into higher mode limiting conditions for operation (LCOs) based on low risk).	Complete
				Initiative 4b	Modify the current system of fixed completion times to allow reliance on a configuration risk management program (CRMP) to determine risk-informed completion times	Draft industry guidance and pilot plant application under review
				Initiative 5	Optimize surveillance frequencies	Pilot plant approved STS Change for all Plant types in progress.

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Reactor (NRR)	Licensing	RI-Tech Specs		Initiative 6	Modify LCO 3.0.3 actions to allow a risk-informed evaluation to extend operating time prior to shut down	STS revision for CE plants being prepared
				Initiative 7	Define actions to be taken when equipment is not operable but is still functional	Snubbers and hazard barriers – complete. Industry currently preparing additional proposals.
				Initiative 8	Risk-inform the scope of 10 CFR 50.36.	Industry working on proposals
Reactor (NRR)	Licensing	Fire Protection	NFPA 805 Support	Fire protection for operating nuclear power plants	National Fire Protection Association Standard NFPA 805 Rule and Regulatory Guide 1.205.	Complete
				Pilot Application	Review NFPA-805 implementation at 2 pilot plants.	In progress
				Circuit Analysis	Post-Fire Safe-Shutdown Circuit Analysis Resolution Program.	In progress
Reactor (RES/NRR)	Licensing, Rulemaking, Oversight	Phased approach to PRA quality	PRA Standards	Develop standards and related guidance for appropriate PRA quality and the application of risk-informed, performance-based regulation in conjunction with national standards committees and industry organizations.	Develop at power, internal events, Level 1 and LERF PRA standard (ASME).	Complete
					Develop external events PRA standard (ANS).	Complete
					Develop internal fire PRA standard (ANS).	<a href="#">Link to plan</a>
					Develop low power/shutdown PRA standard (ANS).	<a href="#">Link to plan</a>
			RG 1.200	Provide guidance in 4 areas: (1) technically acceptable PRA; (2) NRC position on consensus standards and related industry guidance; (3) demonstration that PRA used in regulatory application is of sufficient technical adequacy; and (4) documentation to support regulatory submittal	Issue Revision 1 endorsing ASME Standard on at power, internal events, Level 1 and LERF PRA.	Complete
					Issue draft to Revision 2 endorsing PRA standards on external events, internal fires and low power/shut down.	<a href="#">Link to plan</a>
			Prioritization	Encourage industry to shift towards phases 2 and 3 of the phased approach to PRA quality	Develop a prioritization system for license amendments based on the phased approach to PRA quality.	Complete
Implement prioritization system for license amendment requests.	Revision to LIC-101, "License Amendment Review Procedures," in process.					

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Reactor (NRR/RES)	Licensing, Rulemaking, Oversight	Digital Systems PRA	Develop short term guidance on how to use risk-insights to assist in the resolution of key digital system issues	Develop short term guidance how to use risk-insights to assist in the resolution of key digital system issues	Issue a Regulatory Information Summary (RIS) that provides interim guidance, and acceptance criteria for licensing reviews of digital systems in operating reactors	Awaiting stakeholder input		
					Issue licensing guidance and acceptance criteria (Regulatory Guide or other appropriate guidance) and update Standard Review Plan (SRP)	In progress		
					Risk-inform digital systems reviews	Develop guidance for incorporation of risk-inform decisionmaking in licensing reviews of digital systems for current and future reactors	Complete research to identify or develop acceptable modeling methods, assess failure data, determine criteria for level of modeling detail, assess uncertainties and determine how to interface digital system models with the rest of the PRA, to support risk-informed decisionmaking for digital systems. Issue NUREG/CR's to provide needed technical bases	In progress Two NUREG/CRs on dynamic methods issued Another on quantification in development
					Issue Regulatory Guide on Risk-Informed decisionmaking review methods applicable to digital I&C systems	In development		
					Update NRC PRA data, models and tools to support NRC assessment of digital system risk and reliability	In progress		
					Update Standard Review Plan (SRP) and other NRC guidance (RG 1.200, etc.)	Awaiting completion of other tasks		
Reactor (NRR)	Licensing, Rulemaking, Oversight	Risk-Informed Environment		Broaden staff's knowledge and acceptance of risk in day-to-day activities.  Specific objectives include: • Improve individual employee priority on risk-informed regulation • Improve perception of risk-informed regulation's contribution to regulatory effectiveness • Increase management attention to processes, tools, and training that enable implementation of risk-informed regulation	Add units on risk-informed regulation to office qualification plans	complete		
					Increase risk knowledge among first-line supervisors through position criteria and training	<a href="#">Link to plan</a>		
					Provide formal training on risk-informed regulation to all NRR and NRO technical staff	<a href="#">Link to plan</a>		
					Develop informal web-based training on risk-informed regulation	<a href="#">Link to plan</a>		
					Create a web-based forum of expertise for knowledge transfer	Complete		

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Reactor (NRR)	Licensing, Rulemaking, Oversight	External Communications on PRA		Communicate the purpose and use of PRAs in NRC's reactor regulatory program more transparently to the public and stakeholders.	Update fact sheets on probabilistic risk assessment and nuclear reactor risk	Complete
					Redesign risk-related pages on the NRC public website	<a href="#">Link to plan</a>
					Develop a brochure on risk-informed regulation	<a href="#">Link to plan</a>
					Organize a broad-scope public meeting on risk-informed activities (if needed)	<a href="#">Link to plan</a>
Materials (NMSS)	Rulemaking		Part 40 Jurisdictional Working Group	Develop an approach to more clearly specify NRC's authority over source material to uranium and thorium that is extracted and/or purposely concentrated for the use of uranium and thorium.	Provide Recommendations/Legislative Package to Commission	<a href="#">Link to plan</a>
Materials (NMSS)	Rulemaking		Exemptions from licensing, general licenses, and distribution of byproduct material	Systematic re-evaluation of exemptions from licensing in 10 CFR Parts 30 and 40	Final Rule 1	<a href="#">Link to plan</a>
					Proposed Rule 2	<a href="#">Link to plan</a>
Materials and Waste (NMSS/FSME)	Licensing, Rulemaking, Oversight	Developing a framework for incorporating risk information in the NMSS regulatory process	Update Risk-Informed Decision-Making guidance document	Develop an approach to more clearly specify NRC's authority over source material to uranium and thorium that is extracted and/or purposely concentrated for the use of uranium and thorium.		Revised guidance scheduled for 9/2007
Materials (NMSS)	Licensing, Oversight	Implementation of Part 70 Revision	10CFR70 Interim Staff Guidance Development	Develop guidance to address issues encountered in implementing Subpart H (Integrated Safety Analysis).		Continuing
			Review Integrated Safety Analyses (ISA) for existing facilities	Through interaction with licensees address remaining ISA review issues.		Continuing
			Revise Inspection Procedures for Part 70	Risk-informed review procedures consistent with Subpart H		Continuing

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Materials (NMSS)	Licensing, Oversight	Incorporate Risk Information into the High Level Waste Regulatory Framework	Pre and Post Closure key technical issue resolution	Risk-Inform Pre and Post Closure key technical issue resolution		TBD
			Model Abstraction Review Team Strategies	Develop strategies using risk insights.		Completed 3/2007
			Total System Performance Assessment, TPA 5.1	Develop TPA code version 5.1		Scheduled 6/2007
Waste (FSME)	Licensing, Oversight	Risk-Informing Division of Spent Fuel Storage and Transportation Standard Review Plans for Storage and Incorporating Interim Staff Review Guidance-Purpose to save staff resources	Application of selected risk Methodology to revised storage SRP chapters	Proposed 3 methods, trial application on two SRP chapters, resulting in selection of methodology		Scheduled to be Completed 5/3/07
			Application of selected risk Methodology to revised storage SRP chapters	Combined efforts of NRC Staff and contractor to risk inform specific SRP chapters		Scheduled to be completed 1st quarter FY 2008. Competing priorities and resource needs may delay schedule.
Waste (FSME)	Licensing, Rulemaking	Probabilistic risk assessment of dry cask storage systems	Pilot PRA of dry cask storage facility	A pilot PRA of one specific dry cask storage facility was performed.		Completed