



Action Plan
Risk-Informed Decision-Making in Licensing Reviews
Office of Nuclear Reactor Regulation

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INTRODUCTION

This action plan establishes the activities and schedule for completing the tasking directed by the Director of the Office of Nuclear Regulatory Regulation (NRR), U.S. Nuclear Regulatory Commission (NRC), in his memorandum dated June 29, 2017 (Reference 1). This action plan is a living document. The staff will update this plan as needed. The staff used LIC-502, Revision 3, "Procedure for Development, Implementation, and Management of Action Plans," (Reference 17) with variations to create this action plan.

During an executive leadership team (ET/LT) strategy meeting held on June 12, 2017, NRR staff decided that it should enhance how it integrates risk into its decision-making procedures and processes and increase the staff's understanding of risk and risk tools. The meeting attendees developed a vision statement: "Enhance the integration of risk information into the organization's decision-making practices and processes to improve the technical basis for regulatory activities, increase efficiency, and improve effectiveness." The supporting objectives for the vision statement are: (1) increase the staff's ability to understand and effectively apply risk information through education and training initiatives; (2) develop and refine applicable processes and procedures to integrate risk information in a manner that complements traditional regulatory approaches and supports the defense-in-depth philosophy; and (3) develop and implement a communication strategy that increases awareness of our plans and successes in using risk information.

The ET/LT strategy meeting attendees agreed that NRR will develop plans to complete the following tasks to accomplish the vision statement and supporting objectives, as directed in the NRR Office Director's memorandum dated June 29, 2017:

- NRR Task 1: Expand the use of license review teams consisting of technical staff and risk analysts.
- NRR Task 2: Broaden the definition of risk beyond just a quantitative value.
- NRR Task 3: Develop a graded approach for using risk information more broadly in licensing reviews.

The NRR Office Director also stated that the staff should address recommendations from a recently completed Differing Professional Opinion (DPO) Panel Report as follows (the Background section of this plan contains additional information about the DPO):

- NRR Task 4: Review Branch Technical Position (BTP) 8-8, "Onsite (Emergency Diesel Generators) and Offsite Power Sources Allowed Outage Time [AOT] Extensions," (Reference 2) to determine if clarification is needed for use of a 14-day backstop for deterministic evaluations; applicability of the guidance to one-time and permanent AOT extensions; and defense-in-depth considerations, particularly with respect to mitigating the consequences of a loss of offsite power (LOOP) coincident with a loss-of-coolant accident (LOCA) with a single failure.
- NRR Task 5: Evaluate DPO Panel Report Recommendations 5 and 6 and provide feedback on whether any actions would be appropriate to consider by July 31, 2017.

- NRR Task 6: Evaluate the guidance in the four pertinent documents discussed in DPO Panel Report Recommendation 7 to determine if better harmonization is appropriate, and provide recommendations on a path forward, if appropriate, by July 31, 2017.

BACKGROUND

By memorandum dated January 19, 2017 (Reference 3), a DPO Ad Hoc Review Panel (i.e., a DPO Panel) was appointed to review two DPOs (Reference 8) regarding two emergency license amendments issued on December 23, 2016, and January 4, 2017, for Palo Verde Nuclear Generating Station, Unit 3 involving diesel generator AOTs (References 4 and 5, respectively). The staff approved a one-time extension of a Technical Specification AOT from 10 days to 21 days to provide the licensee additional time to troubleshoot a failed diesel generator. The staff also approved a second one-time risk-informed extension of the AOT from 21 days to 62 days to provide the licensee sufficient time to restore the failed diesel generator to service and avoid a unit shutdown.

By memorandum dated June 5, 2017 (Reference 6), the DPO Panel sent the NRR Office Director the results of its review. The DPO Panel concluded that additional guidance is needed in several areas for reviewing emergency license amendment AOT extension requests for inoperable diesel generators, as well as guidance for deterministic license amendment requests (LARs) with supplemental risk information, how and whether precedents should be used, and how and whether independent verification using independent risk tools should be used. The DPO Panel provided NRR the following eight recommendations for consideration:

1. There may be opportunities to more effectively communicate with the public during emergency LARs, including the use of less formal communications tools. The staff should consider guidance and training in this area.
2. Because of inconsistent interpretations related to BTP 8-8 guidance, the staff should evaluate this guidance to determine if the following issues require clarification:
 - a. use of a 14-day backstop for deterministic evaluations,
 - b. applicability of the guidance to one-time and permanent AOT extensions, and
 - c. defense-in-depth consideration, particularly with respect to mitigating the consequences of a LOOP/LOCA with a single failure.
3. It was not clear how the staff considered the guidance in NRR Office Instruction LIC-101, "License Amendment Review Procedures" (Reference 7), that discourages resource-intensive reviews of risk-informed LARs submitted under emergency circumstances. Additional guidance appears to be warranted in this area.
4. The staff should evaluate the development of guidance for reviewing deterministic-based LARs with supplemental risk information provided to ensure these types of risk evaluations receive a minimally acceptable review for validity and consistency.
5. The staff should consider evaluation of whether a standardized method for using insights from independent risk tools (e.g., a Standardized Plant Analysis Risk (SPAR) model) to support the review of LARs to ensure an objective, consistent, and independent verification of the licensee's risk evaluation.

6. The staff should evaluate additional guidance that would require a critical lessons learned review be conducted after first-of-a-kind licensing actions to determine, in part, whether this application and/or safety evaluation should be used going forward as a precedent.
7. The staff should evaluate additional guidance on the conduct of probabilistic risk assessment (PRA) sensitivity studies.
8. Because of inconsistent interpretations, the staff should evaluate guidance to determine if the following issues require clarification:
 - a. acceptability of long duration AOTs for one-time extensions, and
 - b. maximum AOTs (i.e., a firm completion time backstop), even when supported with risk information, to limit the permitted amount of time operation without single failure protection.

By memorandum dated June 28, 2017 (Reference 8), the NRR Office Director provided the DPO submitter with a summary of the DPO Panel's findings, recommendations, and his decision on the DPOs and the DPO Panel's recommendations. The NRR Office Director also stated that he would task the staff to address his decision, which he did so by memorandum dated June 29, 2017. In addition to tasking the staff to expand the use of license review teams consisting of technical staff and risk analysts, broaden the definition of risk beyond just a quantitative value, and develop a graded approach for using risk information more broadly in licensing reviews, the NRR Office Director tasked the staff to address the DPO Panel's recommendations as follows.

- DPO Panel Recommendation 1: The NRR Office Director stated that the emergency amendment request process has been used successfully numerous times in the past. Given that the process is time-critical and is designed to provide opportunities for public comment after issuance of the emergency amendment, the NRR Office Director believed that the transparency of the current process is appropriate. While some minor improvements may be possible in certain unusual circumstances, given the current resource issues facing the agency, the NRR Office Director does not intend to have the staff take any actions regarding this recommendation.
- DPO Panel Recommendations 2 and 8: BTP 8-8 should be reviewed to determine if clarification is needed for use of a 14-day backstop for deterministic evaluations; applicability of the guidance to one-time and permanent AOT extensions; and defense-in-depth considerations, particularly with respect to mitigating the consequences of a LOOP/LOCA with a single failure (i.e., NRR Task 4).
- DPO Panel Recommendations 3 and 4: These will be addressed in NRR Task 3 of the NRR Office Director's memorandum dated June 29, 2017.
- DPO Panel Recommendations 5 and 6: The staff should evaluate these recommendations and provide feedback on whether any actions would be appropriate to consider by July 31, 2017 (i.e., NRR Task 5).
- DPO Panel Recommendation 7: The staff should evaluate the guidance in the four pertinent documents discussed in the recommendation to determine if better

harmonization is appropriate. Provide recommendations on a path forward, if appropriate, by July 31, 2017 (i.e., NRR Task 6).

In his memorandum dated June 29, 2017, the NRR Office Director stated that this tasking is very important for achieving NRR’s vision as it pertains to risk-informed decision-making. This effort will likely serve as part of the framework of the plan that the Commission requested of the staff in its Staff Requirements Memorandum (SRM) dated June 26, 2017 (Reference 9), as a result of the Commission meeting on risk-informed regulation, which was held on May 11, 2017. The Commission directed the staff to provide the Commission with an information paper by October 31, 2017, that discusses its plans for increasing staff capabilities to use risk information in decision-making activities; identifies challenges towards further progress in risk-informed decision-making and measures to overcome these challenges; and summarizes the current mandatory training requirements related to risk-informed decision-making for managers and staff.

The following table presents a mapping of the DPO Panel Recommendations to the NRR Office Director’s Tasking (i.e., the NRR Tasks).

DPO Panel Recommendation	NRR Office Director Tasking (NRR Task)
1. There may be opportunities to more effectively communicate with the public during emergency LARs, including the use of less formal communications tools. The staff should consider guidance and training in this area.	N/A. Current process is adequate.
2. Because of inconsistent interpretations related to BTP 8-8 guidance, the staff should evaluate this guidance to determine if it requires clarification.	NRR Task 4: Review BTP 8-8
3. It was not clear how the staff considered the guidance in NRR Office Instruction LIC-101 that discourages resource-intensive reviews of risk-informed LARs submitted under emergency circumstances. Additional guidance appears to be warranted in this area.	NRR Task 3: Develop a graded approach for using risk information more broadly in licensing reviews. NRR Tasks 1 and 2 are related to NRR Task 3.
4. The staff should evaluate the development of guidance for reviewing deterministic-based LARs with supplemental risk information provided to ensure these types of risk evaluations receive a minimally acceptable review for validity and consistency.	NRR Task 3: Develop a graded approach for using risk information more b roadly in licensing reviews. NRR Tasks 1 and 2 are related to NRR Task 3.
5. The staff should consider evaluation of whether a standardized method for using insights from independent risk tools (e.g., a Standardized Plant Analysis Risk (SPAR) model) to support the review of LARs to ensure an objective, consistent, and independent verification of the licensee’s risk evaluation.	NRR Task 5: Evaluate DPO Panel Recommendations 5 and 6 and provide feedback on whether any actions would be appropriate to consider.
6. The staff should evaluate additional guidance that would require a critical lessons learned review be conducted after first-of-a-kind licensing actions to determine, in part, whether this application and/or safety evaluation should be used going forward as a precedent.	NRR Task 5: Evaluate DPO Panel Recommendations 5 and 6 and provide feedback on whether any actions would be appropriate to consider.

7. The staff should evaluate additional guidance on the conduct of probabilistic risk assessment (PRA) sensitivity studies.	NRR Task 6: Evaluate the guidance in the four pertinent documents discussed in DPO Panel Recommendation 7 to determine if better harmonization is appropriate, and provide recommendations on a path forward, if appropriate.
8. Because of inconsistent interpretations, the staff should evaluate guidance to determine if the following issues require clarification: acceptability of long duration AOTs for one time extensions, and maximum AOTs (i.e., a firm completion time backstop), even when supported with risk information, to limit the permitted amount of time operation without single failure protection.	NRR Task 4: Review BTP 8-8

DESIRED OUTCOMES

The purpose of the NRR Office Director’s tasking is to enhance the integration of risk information into the organization’s decision-making practices and processes to improve the technical basis for regulatory activities, increase efficiency, and improve effectiveness and consistency with established processes. Supporting objectives include increasing the staff’s ability to understand and effectively apply risk information through education and training initiatives, developing and refining applicable processes and procedures to integrate risk information in a manner that complements traditional regulatory approaches and supports the defense-in-depth philosophy, and developing and implementing a communication strategy that increases awareness of our plans and successes in using risk information.

To accomplish these objectives and achieve the desired outcome, the staff will foster a commonly embraced approach to licensing reviews that would team up risk analysts with technical staff instead of relying on sequential or independent reviews. This would include joint conclusions and a safety evaluation developed by the team. This year, the staff has begun this effort with several licensing actions, such as the reviews of multiple 10 CFR 50.69 amendment requests and the Point Beach containment truss amendment request, and will continue to track the use of these enhanced teams. The staff will also broaden the definition of risk more transparently such that technical staff can see how their work embodies risk considerations beyond core damage frequency values. The staff will also develop a graded approach, framework and procedure for using risk in licensing work below the paradigm in NRC Regulatory Guide (RG) 1.174, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis,” and RG 1.200, “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities” (References 10 and 11, respectively), that exists for risk-informed LARs.

This tasking will also consider the objectives of the Agency Reform Plan to help improve the effectiveness and efficiency of the NRC’s regulatory process, including improved safety and reduction of unnecessary regulatory burden. The NRC is enhancing the integration of risk information into the agency’s decision-making practices and processes to improve the technical basis for regulatory activities, increase efficiency, and improve effectiveness, and better focus on safety significant issues.

PROJECT MANAGEMENT STRUCTURE

Staff:

Role	Name	Organization
NRR Executive Sponsor	Brian McDermott	NRR Deputy Director for Engineering
NRR Project Lead	Russ Felts	NRR/DRA/DD
SES Champions	Kathy Brock	NRR/DORL/DD
	Russ Felts	NRR/DRA/DD
	John Lubinski	NRR/DE/D
	Mary Jane Ross-Lee	NRR/DE/DD
Project Lead Branch Chief	Mike Markley	NRR/DORL/BC
Supporting Staff	See Attachment	

Project Attributes:

- The Senior Executive Service (SES) Champions will have periodic meetings to ensure actions are aligned and integrated and will periodically brief the ET of the action plan status.
- Each tasking will have its own team that will collaborate with the other teams.
- The success criteria for this project include the revision or creation of licensing processes, completion of training, and development of guidance.
- The staff will develop a communications strategy for internal and external stakeholders regarding the action plan and its tasks.
- Potential challenges include resolving differing views about the roles of risk and defense-in-depth philosophies in licensing reviews and the quality of available PRA information on which to base regulatory decisions.
- The staff intends to involve stakeholders for feedback.
- The staff will summarize its efforts and continuing actions in a final report to the NRR Office Director.
- This project will be considered complete when the action plan milestones are completed. Each task will have its own schedule per the Attachment.

ACTION PLAN FOR DIRECTED TASKING

The staff established the following high-level milestones for NRR Tasks 1 through 5 (the staff completed Task 6):

- Establish Team
- Clarification/ET Alignment on Tasking
- Information Collection
- Information Analysis and Evaluation
- Communication, Coordination, and Feedback from Stakeholders
- Report on Findings and Recommendations

The following sections describe the milestones in more detail; however, the Attachment to this Action Plan provides additional detail regarding specific activities, staff, schedules, and status.

NRR Task 1 Expanded Use of License Review Teams

Task Description:

In his memorandum dated June 29, 2017, the NRR Office Director tasked the staff with expanding the use of license review teams consisting of technical staff and risk analysts.

Supplemental Information:

The NRR staff has had some recent challenges related to several risk-informed initiatives, such as National Fire Protection Agency (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants, 2001 Edition," and Risk-informed Technical Specification Initiative 4.b (i.e., Technical Specification Task Force (TSTF) Traveler 505 (Reference 12) regarding risk-informed AOTs). The NFPA-805 reviews were voluminous technically complex reviews, for which the industry and the NRC worked together to pilot the application and develop guidance for subsequent applications. However, there were issues during the pilot reviews that were carried over into the bulk of the NFPA-805 reviews, such as how to address deviations from the guidance that was jointly developed by NRC and industry.

During the staff's review of the TSTF-505 LARs, the staff raised some safety concerns with the implementing guidance and how applicants were using that guidance. While NRR tried to address these issues in reviews of individual LARs, these efforts were not effective and resulted in NRR's withdrawal of support for TSTF-505. NRR has now worked through those issues on the pilot plant review, issued the safety evaluation on August 8, 2017 (Reference 13), and is proceeding with completing the other plants' reviews. These efforts will support NRR's work with industry to get the TSTF revised expeditiously to support efficient and effective reviews of future applications. However, some NRR staff continue to have issues with this initiative and used the DPO process.

A positive aspect of this experience is that the level of collaboration between the engineering staff and the PRA practitioners to work through the issues associated with risk-informed technical specifications has resulted in a greater shared understanding that will significantly help NRR review other risk-informed amendments in the future. The staff has leveraged this collaboration to coordinate the review of risk-informed Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.69 LARs. The NRC's Generic Safety Issue (GSI) 191 risk-informed pilot review for South Texas Project was another example of successful collaboration among project managers, risk analysts, and technical reviewers.

Desired Outcome:

The staff will develop additional guidance and training for project management and technical staff to integrate risk-informed and deterministic reviews.

Proposed Actions and Schedule:

Establish Team

- Kathy Brock is the SES Champion for this activity. The Attachment contains additional information.

Clarification/ET Alignment on Tasking

- The team will initially meet to ensure an understanding of the task and to identify any questions for the ET.
- The team will meet with the ET to align on tasking.

Information Collection

- Leverage paradigm from Risk-Informed Thinking Workshops.
- Interview staff with experience in processing risk-informed licensing actions.
- Identify spectrum of LARs and levels of risk information licensees might provide.
- Identify examples of success stories (e.g., GSI-191 reviews) and amendments for lessons learned.
- Identify guidance and workload management processes and tools that could be enhanced or revised.
- Identify progress made with NRR Tasks 2 through 5.

Information Analysis and Evaluation

- Evaluate guidance and example amendments.
- Develop attributes for LAR review team membership, attributes, knowledge, skills, and abilities.
- Evaluate need for a facilitator to lead the coordination of specialties.
- Leverage RRPS, planned submittals list, and workload planning to manage oversight.
- Integrate progress made from Tasks 2 through 5.
- Identify and evaluate results of a pilot review.

Communication, Coordination, and Feedback from Stakeholders

- Develop preliminary insights, observations, and recommendations.
- If appropriate, provide new or proposed changes to guidance.
- Share preliminary insights and obtain feedback from staff and LT.
- Engage the Office of the General Counsel on any legal issues.

Report on Findings and Recommendations

- Develop draft report on findings and report out to the ET.
- Issue final report to the ET.

NRR Task 2 Definition of Risk

Task Description:

In his memorandum dated June 29, 2017, the NRR Office Director tasked the staff with broadening the definition of risk beyond just a quantitative value.

Supplemental Information:

NRR has focused attention on improving its capability to use risk information in its decision-making. NRR can continue to make progress in this area by better communicating its vision and highlighting areas where NRR has successfully integrated risk, enhancing the training and education of NRR staff so that its understanding and comfort level in using risk information is increased, and refining or developing appropriate processes and procedures to better describe how risk information can and should be used in a wider variety of regulatory applications. NRR is imbedding risk into its processes so that it becomes part of the regulatory

fabric rather than a paradigm that is different or at odds with how NRR has traditionally reviewed applications.

Potential barriers to greater use of risk-informed thinking include a regulatory framework that is largely based on deterministic principles and experience operating in this framework. NRR has relied on engineering judgement as part of its decision-making process, and typically that involved some degree of conservatism in order to assure there is adequate defense-in-depth and safety margin. However, the use of engineering judgement is a form of risk-informed thinking. Training, education, and the use of updated risk tools and models can be leveraged to evaluate appropriate safety margins and defense-in-depth and to make decisions that provide reasonable assurance of public health and safety.

The NRC's GSI-191 risk-informed pilot review for South Texas Project is a recent example of a safety improvement resulting from insights gained from risk analysis. Licensees have removed fibrous insulation and have enlarged the surface areas of their strainers allowing them to operate with reduced head loss when challenged by debris. However, licensees using a risk-informed approach have identified additional safety improvements that were not as readily apparent as enlarged strainers or insulation removal. The risk-informed approach requires licensees to construct a three-dimensional model of containment that is used to evaluate thousands of small and medium break LOCA scenarios that, under the deterministic GSI-191 approach, are typically assumed to be bounded and, therefore, are not directly analyzed. Some licensees have discovered that relatively modest plant improvements can increase safety margins for these lower consequence but higher frequency scenarios. Examples include increased refueling water storage tank levels and shorter strainers that stay submerged even during smaller LOCAs. Deterministic approaches have served well and continue to play a critical role in protecting the public's health and safety. Risk-informed approaches, with their consideration of a broader set of challenges to plant safety can at times reveal potential safety improvements that are not readily obvious when using deterministic methods alone.

NRR determined that broadening the definition of risk more transparently would assist technical staff with embodying risk considerations beyond core damage frequency in its work. Broadening the definition of risk would also help the staff develop a greater understanding of a graded approach, framework, and procedure for using risk in licensing work below the RG 1.174 and RG 1.200 paradigm that exists for risk-informed LARs (Reference 11). Risk insights can be used to help determine the depth of LAR reviews. NRR is developing a screening tool (i.e., a decision flowchart) to help determine the appropriate level of review (e.g., none, concurrence only, limited review, typical, or complex review) based on the principles of risk-informed regulation.

Desired Outcome:

The staff will revise or issue NRC publications and guidance, if necessary, with an updated definition of risk beyond just a quantitative value.

Proposed Actions/Schedule:

Establish Team

- Mary Jane Ross-Lee is the SES Champion for this activity. Team members will include both technical staff and licensing staff. Additional information is in the Attachment.

Clarification/ET Alignment on Tasking

- The team will initially meet to ensure an understanding of the task and to identify any questions for the ET.
- The team, with the rest of the risk task teams, will meet with the ET to align.

Information Collection

- Leverage paradigm from Risk-Informed Thinking Workshops.
- Identify existing guidance with similar purposes.
- Interview staff involved in using risk in decision-making for ideas on broadening definition.
- Interview members of NRR leadership team.

Information Analysis and Evaluation

- Review results of interviews.
- Evaluate suggestions and develop ways to implement.
- Evaluate other guidance.
- Evaluate risk-informed decision-making (RIDM) direction.

Communication, Coordination, and Feedback from Stakeholders

- Develop preliminary insights, observations, and recommendations.
- Share preliminary insights and obtain feedback from staff and LT.

Report on Findings and Recommendations

- Develop draft report on findings and report out to the ET.
- Issue final report to the ET.

NRR Task 3 Graded Approach for Using Risk Information

Task Description:

In his memorandum dated June 29, 2017, the NRR Office Director tasked the staff with developing a graded approach for using risk information more broadly in licensing reviews.

Supplemental Information:

The DPO Panel Report documented the following recommendations:

3. It was not clear how the staff considered the guidance in LIC-101 that discourages resource-intensive reviews of risk-informed LARs submitted under emergency circumstances. Additional guidance appears to be warranted in this area.
4. The staff should evaluate the development of guidance for reviewing deterministic-based LARs with supplemental risk information provided to ensure these types of risk evaluations receive a minimally acceptable review for validity and consistency.

There are challenges to accomplishing this task. Probabilistic Risk Assessments are a voluntary initiative for the operating reactor fleet, and the fleet has an inconsistent treatment and approach to PRA. Given the inconsistent application by industry of NRC's standard for PRA quality (i.e., RG 1.200), it is difficult to develop generic regulatory approaches that would rely on a licensee's PRA as a basis for decision-making. This also results in NRR expending a lot of effort on assessing PRA quality on individual reviews when a licensee submits a risk-informed

LAR.. There are also differing views on the significance of certain issues. If industry was to enhance the fleet-wide quality of its PRA models, there could be a greater degree of efficiency in NRC's reviews activities.

In his memorandum dated June 28, 2017, the NRR Office Director stated that he did not support the use of SPAR models as an independent tool for review of LARs and that, in general, licensee PRA models are more current and accurate with respect to the facility and are therefore more appropriate for use in a risk-informed licensing decision. The Office Director stated that he would ask NRR staff to evaluate unique circumstances where using the SPAR model may be appropriate. He also stated that enhanced guidance is needed for the staff on how to use PRA models that are not compliant with RG 1.200.

Revision 5 of LIC-101 was issued on January 16, 2017 (Reference 14), and included the following two new paragraphs to the PRA section:

APLA [Probabilistic Risk Assessment Licensing Branch] may or may not be the lead TB for risk-informed reviews; however, APLA and deterministically-based TB staff should coordinate early in the review process to ensure that the scope of work is well defined (also discussed in Section 7.2.2 and 7.2.3 below). To facilitate this early coordination and to promote continued interactions throughout the review process, the PM should consider arranging a kick-off meeting for all pertinent technical staff.

If a risk-informed emergency amendment request is submitted, the PM should contact the APLA BC as soon as possible. As discussed in Section 7.2.3, a risk-informed amendment request must address the five principles of risk-informed regulation. APLA staff ensure these principles are met, in part, by confirming the technical acceptability of the licensee's probabilistic risk assessment (PRA). Evaluating the scope, level of detail, and technical adequacy (e.g., compliance with RG 1.200) of a PRA is a resource-intensive process that cannot generally be completed under the time constraints of an emergency amendment request. Therefore, the PM should prepare, in coordination with DORL and DRA management, for a possible discussion with the licensee regarding whether the review can be completed in time to support the request.

The second paragraph above provides the current LIC-101 guidance for processing risk-informed emergency amendments. In April 2017, NRR management discussed revising the LIC-101, Revision 5 language on the likelihood of issuing risk-informed emergency amendments. The NRR Office Director wanted the Division of Operating Reactor Licensing (DORL) to consider revising the guidance by listing the criteria for processing a risk-informed emergency LAR (e.g., having previous NRC review and acceptance of the technical adequacy of the PRA for the intended purpose, etc.) versus alluding to it being too difficult to accomplish. The DORL staff agreed to put this information in LIC-101, Revision 6. The second paragraph above would be the appropriate place to do so.

License amendment requests vary in the amount of risk information – for example, some LARs provide risk information even though the LAR is not intended to be a risk-informed submittal meeting the guidelines of NRC regulatory guides. NRR is developing a screening tool to help determine the appropriate level of review based on the principles of risk-informed regulation. The screening tool is intended to be a quick assessment at the beginning of a review to get stakeholder alignment (i.e., reviewer, branch chief, project manager) for the level of review.

Desired Outcome:

The staff will update guidance for processing licensing reviews (e.g., LIC-101) to clarify the use of risk information more broadly in licensing reviews. For example, the staff will clarify the use of a graded approach for using risk in licensing processes.

Proposed Actions/Schedule:

Establish Team

- Russ Felts is the SES Champion for this activity. The Division of Risk Assessment (DRA) has the lead for this task with DORL supporting. Additional information is in the Attachment.

Clarification/ET Alignment on Tasking

- The team will initially meet to ensure an understanding of the task and to identify any questions for the ET.
- The team, with the rest of the risk task teams, will meet with the ET to align.

Information Collection

- Identify existing guidance with similar purposes.
- Interview staff involved in using risk in decision-making for licensing reviews.
- Interview members of NRR leadership team.

Information Analysis and Evaluation

- Review results of interviews.
- Evaluate suggestions and develop ways to implement.
- Evaluate other guidance.
- Evaluate RIDM direction.

Communication, Coordination, and Feedback from Stakeholders

- Develop preliminary insights, observations, and recommendations.
- Share preliminary insights and obtain feedback from staff and LT.

Report on Findings and Recommendations

- Develop draft report on findings and report out to the ET
- Issue final report to the ET

NRR Task 4 Review of Branch Technical Position (BTP) 8-8

Task Description:

In his memorandum dated June 29, 2017, the NRR Office Director tasked the staff with reviewing BTP 8-8, "Onsite (Emergency Diesel Generators) and Offsite Power Sources Allowed Outage Time Extensions," to determine if clarification is needed for (1) use of a 14-day backstop for deterministic evaluations; (2) applicability of the guidance to one-time and permanent CT extensions; and (3) defense-in-depth considerations, particularly with respect to mitigating the consequences of a LOOP/LOCA with a single failure.

Supplemental Information:

Licenses submit LARs for one-time or permanent AOT extensions for emergency diesel generators and offsite power sources from current AOTs to up to 14 days to perform online maintenance of the generators and offsite power sources. Maintenance may include both planned and unplanned activities. The purpose of BTP 8-8 is to provide guidance from a deterministic perspective in reviewing such requests.

The DPO Panel Report provided the following recommendations:

2. Because of inconsistent interpretations related to BTP 8-8 guidance, the staff should evaluate this guidance to determine if the following issues require clarification:
 - a. use of a 14-day backstop for deterministic evaluations,
 - b. applicability of the guidance to one-time and permanent AOT extensions, and
 - c. defense-in-depth consideration, particularly with respect to mitigating the consequences of a LOOP/LOCA with a single failure.

8. Because of inconsistent interpretations, the staff should evaluate guidance to determine if the following issues require clarification:
 - a. acceptability of long duration AOTs for one-time extensions, and
 - b. maximum AOTs (i.e., a firm completion time backstop), even when supported with risk information, to limit the permitted amount of time operation without single failure protection.

Desired Outcome:

The staff will revise BTP 8-8 if appropriate.

Proposed Actions/Schedule:

Establish Team

- John Lubinski is the SES Champion for this activity. Additional information is provided in the Attachment.

Clarification/ET Alignment on Tasking

- The team will initially meet to ensure an understanding of the task and to identify any questions for the ET.
- The team will meet with the ET to align on tasking.

Information Collection

- Identify guidance with similar purposes and requirements.
- Interview staff involved in BTP and guidance development and implementation.
- Interview members of NRR leadership team.

Information Analysis and Evaluation

- Review DPO package.
- Evaluate BTP 8-8 and a sample of reviews performed in accordance with BTP 8-8.
- Evaluate other guidance and similar reviews.
- Evaluate RIDM direction.
- Interview applicants.

Communication, Coordination, and Feedback from Stakeholders

- Develop preliminary insights, observations, and recommendations.
- If appropriate, provide a redline version of recommended changes to BTP 8-8.
- Include recommendations for revisions to similar guidance documents.
- Share preliminary insights and obtain feedback from staff and LT.
- Engage the Office of the General Counsel on any legal issues.

Report on Findings and Recommendations

- Develop draft report on findings and report out to the ET.
- Issue final report to the ET.
- If appropriate, provide a redline version of recommended changes to BTP 8-8.

NRR Task 5 Evaluation of DPO Panel Report Recommendations 5 and 6

Task Description:

In his memorandum dated June 29, 2017, the NRR Office Director tasked the staff with evaluating DPO Panel Report recommendations 5 and 6 and providing feedback on whether any actions would be appropriate to consider by July 31, 2017.

Supplemental Information:

The DPO Panel Report provided the following Recommendations:

5. The staff should consider evaluation of whether a standardized method for using insights from independent risk tools (e.g., a Standardized Plant Analysis Risk (SPAR) model) to support the review of LARs to ensure an objective, consistent, and independent verification of the licensee's risk evaluation.
6. The staff should evaluate additional guidance that would require a critical lessons learned review be conducted after first-of-a-kind licensing actions to determine, in part, whether this application and/or safety evaluation should be used going forward as a precedent.

By email dated August 1, 2017, from Russell Felts to Trent Wertz, the staff responded to the NRR Office Director, as follows:

Regarding DPO Panel Report Recommendation 5:

This recommendation, while perhaps well-intended, would be detrimental to a well-established process for conducting risk-informed licensing reviews and would be contrary to the NRC's Principles of Good Regulation. The NRC and industry have relied on a well-established process for conducting risk-informed licensing reviews that emphasizes the need for PRA technical adequacy

commensurate with the regulatory decision that is being made. The NRC reviews the closure of the peer review facts and observations to ensure that there is reasonable assurance that the licensee's PRA model supports the regulatory decision that is being made. This recommendation would add another layer to the review that would undoubtedly lead to greater complexity, including a greater number of RAls, a much greater expenditure of resources, and lead to reviews that are more protracted and inefficient. In addition, it would divert unnecessary attention away from timely and predictable regulatory decision-making, and instead cause NRC reviewers and the licensee to debate the differences between assumptions and outputs of the SPAR models versus the licensee models.

It should be noted that reliability and risk analysts have at their disposal various tools, including SPAR [models], to assist them as they deem appropriate to help make a regulatory decision. However, due to the vast variability of requests and modeling limitations, not all tools are appropriate to be used for each case. Making the use of one (or more) available tools mandatory would prove to be potentially detrimental for the majority of LARs where the required tools need to be adapted to fit a particular case. This could result in excessive resource expenditure and would prove to be inimical to the principles of good regulation. **Therefore, it is strongly recommended to continue the practice of allowing NRC staff to use currently available tools at their discretion for efficient and effective LAR reviews.**

Regarding DPO Panel Report Recommendation 6:

DORL is developing guidance with criteria for when to conduct a lessons-learned review following a licensing action. Appropriate consideration is being given to precedent for first-of-a-kind reviews as compared to precedent that may emerge from routine licensing actions. **This ongoing activity addresses this recommendation.**

Desired Outcome:

The staff will continue the practice of allowing NRC staff to use currently available tools at their discretion for efficient and effective LAR reviews. DORL will issue guidance with criteria for when to conduct a lessons-learned review following a licensing action.

Proposed Actions/Schedule:

Establish Team

- Kathy Brock is the SES Champion for this activity. The Attachment contains additional information.

Clarification/ET Alignment on Tasking

- Ensure an understanding of the task and identify any questions for the ET.
- Meet with the ET to align on tasking.

Information Collection

- Acquire and compare lessons learned from precedents for first-of-a-kind reviews and routine licensing actions.

Information Analysis and Evaluation

- Review the lessons learned and develop criteria.
- Evaluate how to document and communicate the criteria.

Communication, Coordination, and Feedback from Stakeholders

- Develop preliminary insights, observations, and recommendations.

Report on Findings and Recommendations

- Develop draft report on findings and report out to the ET.
- Issue final report to the ET.

NRR Task 6 Evaluation of NRC's Risk Guidance Documents

Task Description:

In his memorandum dated June 29, 2017, the NRR Office Director tasked the staff with evaluating the guidance in the four pertinent documents discussed in DPO Panel Report Recommendation 7 to determine if better harmonization is appropriate and providing recommendations on a path forward, if appropriate, by July 31, 2017.

Supplemental Information:

The DPO Panel Report provided the following recommendation:

7. The staff should evaluate additional guidance on the conduct of probabilistic risk assessment (PRA) sensitivity studies.

By email dated August 1, 2017, from Russell Felts to Trent Wertz, the staff responded to the NRR Office Director, as follows:

Regulatory Guide (RG) 1.174, Revision 2, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," describes a risk-informed approach for assessing the impact of proposed licensing-basis changes by considering engineering issues and risk insights. RG 1.177, Revision 1, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications" [(Reference 15)], describes a risk-informed approach specifically for assessing proposed technical specification changes and is based on the methods and principles described in RG 1.174. PRA quality associated with risk assessments under RGs 1.174 and 1.177 is evaluated in accordance with RG 1.200, Revision 2, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities." In accordance with RGs 1.174, 1.177, and 1.200, when implementing risk-informed decision-making, the staff expects that risk assessments appropriately consider the impacts of uncertainties of the PRA and its results. These regulatory guides explicitly reference NUREG-1855, "Guidance on the Treatment of Uncertainties Associated with PRAs in Risk-Informed Decision-making" [(Reference 16)], for guidance on how to address and treat uncertainties associated with a PRA, including conducting sensitivity studies. The integration of these documents provide clear guidance for implementing risk-informed decision-making and is not contradictory. **Development of**

additional guidance for conducting sensitivity studies would be redundant and counterproductive by adding another layer of formalities that could lead to less effective and efficient reviews.

Desired Outcome:

The staff determined that additional harmonization of the guidance documents is not necessary.

Proposed Actions/Schedule:

No action necessary. The task is complete.

CONTACTS

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Audrey Klett, NRR/DORL/LPLII-1

REFERENCES

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2. U.S. Nuclear Regulatory Commission, NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR Edition," Branch Technical Position (BTP) 8-8, "Onsite (Emergency Diesel Generators) and Offsite Power Sources Allowed Outage Time Extensions," February 2012 (ADAMS Accession No. ML113640138).
3. Pedersen, R. M., memorandum to James Andersen, et al., U.S. Nuclear Regulatory Commission, "Ad Hoc Review Panel – Differing Professional Opinion on Approval of Emergency Amendments for Palo Verde Unit (DPO-2017-001 and DPO-2017-002)," dated January 19, 2017 (ADAMS Accession No. ML17019A278).
4. Lingam, S. P., U.S. Nuclear Regulatory Commission, letter to Robert S. Bement, Arizona Public Service Company, "Palo Verde Nuclear Generating Station, Unit 2 – Issuance of Amendments Re: Revision to Technical Specification 3.8.1, 'AC [Alternating Current] Sources – Operating,' (Emergency Circumstances) (CAC No. MF8961)," dated December 23, 2016 (ADAMS Accession No. ML16358A676).
5. Lingam, S. P., U.S. Nuclear Regulatory Commission, letter to Robert S. Bement, Arizona Public Service Company, "Palo Verde Nuclear Generating Station, Unit 2 – Issuance of Amendments Re: Revision to Technical Specification 3.8.1, 'AC [Alternating Current] Sources – Operating,' (Emergency Circumstances) (CAC No. MF9019)," dated January 4, 2017 (ADAMS Accession No. ML17004A020).
6. Anderson, James, et al., memorandum to William M. Dean, U.S. Nuclear Regulatory Commission, "Differing Professional Opinion Panel Report Regarding Two Emergency

- License Amendment Requests Related to Diesel Generator Allowed Outage Time (DPO-2017-001 and DPO-2017-002),” dated June 5, 2017 (ADAMS Accession No. ML17153A216).
7. U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation Office Instruction LIC-101, Revision 4, “License Amendment Review Procedures,” dated May 24, 2012 (ADAMS Accession No. ML113200053).
 8. Dean, W. M., U.S. Nuclear Regulatory Commission, memorandum to Tony Pruett, U.S. Nuclear Regulatory Commission, “Differing Professional Opinion Regarding Two Emergency License Amendment Requests Related to Diesel Generator Allowed Outage Time (DPO-2017-001 and DPO-2017-002),” dated June 28, 2017 (labeled as Document No. 5 in ADAMS Accession No. ML17202G468).
 9. Vietti-Cook, A., memorandum to Victor M. McCree, U.S. Nuclear Regulatory Commission, “Staff Requirements – Briefing on Risk-Informed Regulation, 9:00 a.m., Thursday, May 11, 2017, Commissioners’ Conference Room, One White Flint North, Rockville, Maryland (Open to Public Attendance),” SRM-M170511, dated June 26, 2017 (ADAMS Accession No. ML17177A397).
 10. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.174, Revision 2, “An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis,” May 2011 (ADAMS Accession No. ML 100910006).
 11. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.200, Revision 2, “An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities,” March 2009 (ADAMS Accession No. ML090410014).
 12. Technical Specifications Task Force, TSTF-505, Revision 1, “Provide Risk-Informed Extended Completion Times - RITSTF Initiative 4b,” dated June 14, 2011, and Model Application dated January 31, 2012 (ADAMS Package Accession No. ML120330410).
 13. Vogtle Electric Generating Plant, Units 1 and 2 - Issuance of Amendments Regarding Implementation of Topical Report Nuclear Energy Institute NEI 06-09, “Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specification (RMTS) Guidelines,” Revision 0-A (CAC Nos. ME9555 and ME9556),” dated August 8, 2017 (ADAMS Accession No. ML15127A669).
 14. U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation Office Instruction LIC-101, Revision 5, “License Amendment Review Procedures,” dated January 16, 2017 (ADAMS Accession No. ML16061A451).
 15. U.S. Nuclear Regulatory Commission, Regulatory Guide 1.177, Revision 1, “An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications,” May 2011 (ADAMS Accession No. ML 100910008).
 16. U.S. Nuclear Regulatory Commission, NUREG-1855, Volume 1, “Guidance on the Treatment of Uncertainties Associated with PRAs in Risk-Informed Decision Making,” March 2009 (ADAMS Accession No. ML090970525).

17. U.S. Nuclear Regulatory Commission, Office of NRR Office Instruction LIC-502, Revision 3, "Procedure for Development, Implementation, and Management of Action Plans," dated March 23, 2017 (ADAMS Accession No. ML16197A031).

Attachment:

Action Plan for Incorporating Risk-Informed
Decision-Making in Licensing Reviews