UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 26, 2017

Mr. David A. Lochbaum
Director, Nuclear Safety Project
Union of Concerned Scientists
P.O. Box 15316
Chattanooga, TN 37415

Dear Mr. Lochbaum:

On June 30, 2017,[1] you sent a letter to the U.S. Nuclear Regulatory Commission (NRC or the Commission) in which you discussed regulatory decisions that the NRC has recently completed related to a loss-of-coolant accident (LOCA) coincident with a loss of offsite power (LOOP). Specifically, you referenced the NRC's decisions regarding the following:

1) the issuance of Amendment No. 200[2] for Palo Verde Nuclear Generating Station, Unit 3 (Palo Verde) to extend the allowed outage time for an emergency diesel generator (EDG) (Palo Verde EDG amendment)

2) the termination of the proposed rulemaking to decouple LOOP from LOCA[3] in accident analyses (LOOP/LOCA rulemaking)

3) an amendment request for Donald C. Cook Nuclear Plant, Unit No. 1 (D.C. Cook) to extend the allowed outage time for an EDG[4] (D.C. Cook EDG amendment)

You stated that, due to ambiguous NRC guidance, these decisions were contradictory. You recommended that the Commission direct the NRC staff to identify and correct guidance shortcomings. In response to your letter, NRC Chairman Kristine Svinicki sent you a letter, dated September 8, 2017,[5] and indicated that the NRC staff would send an additional letter with more information to address your specific concerns. I appreciate your perspectives and share your interest in ensuring that the staff makes sound regulatory decisions based on clear guidance.

As you are aware, the NRC has a risk-informed regulatory framework[6] that considers defense-in-depth, risk insights, and safety margins. The NRC requires licensees to include

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1 Available in the Agencywide Documents Access and Management System (ADAMS) under Accession No. ML17181A348.

2 The NRC issued Amendment No. 200 at Palo Verde on January 4, 2017 (ADAMS Accession No. ML17004A020).

3 The Commission approved the discontinuation of the LOOP/LOCA rule in the Staff Requirements Memorandum to SECY-17-0013, dated April 21, 2017 (ADAMS Accession No. ML17110A512).

4 The licensee submitted the license amendment request for D.C. Cook on May 28, 2015 (ADAMS Accession No. ML15149A412).

5 Available in ADAMS under Accession No. ML17200D011.

6 Examples of guidance that implements this framework include 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" (ADAMS Accession No. ML100910006); RG 1.177, Revision 1, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications" (ADAMS Accession No. ML100910008); and RG 1.200, Revision 2, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities" (ADAMS Accession No. ML090410014).

principal design criteria as part of an application for a construction permit.[7] The general design criteria (GDC) in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants," or a plant-specific equivalent, as incorporated into the current licensing bases of the plant, establish minimum requirements for the principal design criteria for a proposed facility. These criteria establish the necessary design, fabrication, construction, testing, and performance requirements for structures, systems, and components important to safety; that is, structures, systems, and components that provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the public. The NRC also requires plants to be able to safely withstand a set of design basis accidents that are described in each plant's Updated Final Safety Analysis Report (e.g., a LOCA coincident with a LOOP with the assumption of a single failure). Further, the NRC approved the technical specifications (TSs) for each plant, which established the limiting conditions for operation (LCOs)—the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a component described in the TSs is inoperable, the licensee enters the action statement and is required to take action in a certain amount of time (i.e., the allowed outage time). The licensee can request an extension to the allowed outage time based upon an evaluation of plant-specific defense-in-depth, risk insights, and safety margins. Generic Letter (GL) 80-30, "Clarification of the Term 'Operable' as it Applies to Single Failure Criterion for Safety Systems Required by TS," clarifies that the allowed outage time is a temporary relaxation of the single failure criterion. As a result, when in a TS action statement, single failures of the remaining operable components are not required to be postulated. This is the regulatory framework that the NRC uses to evaluate license amendment requests for proposed revisions to the allowed outage time in TSs.

With regards to the Palo Verde EDG amendment decision, you stated that the NRC failed to properly consider a single failure, as required by GDC 34, "Residual heat removal," and GDC 35, "Emergency core cooling," of Appendix A to 10 CFR Part 50, along with a LOCA and a LOOP. When the Palo Verde Unit 3 Train B EDG failed and the licensee entered the associated TS LCO, the licensee requested an extension to the allowed outage time to repair the EDG. As discussed in GL 80-30, single failure of the operable Unit 3 Train A EDG is not required to be met while in the TS action statement for the Unit 3 Train B EDG. The NRC staff considered the extent to which the licensee could mitigate a design basis accident coincident with a single failure of the Unit 3 Train A EDG in order to ensure that defense-in-depth and safety margins are maintained, commensurate with the expected frequency and consequences of challenges to the system, in accordance with RG 1.177. Further, the NRC staff assessed the impacts of the proposed change on GDC 34 and GDC 35 during its review, but acknowledges that it could have been more clearly documented in the safety evaluation. Nevertheless, the NRC staff did describe several of the key factors leading to its decision in the Palo Verde case in the safety evaluation, including:

1) the identification of the root cause of the EDG failure

2) the determination that the mode of failure was not common to the other EDGs

3) the determination that a LOCA was not a significant contributor to the increase in risk and that the risk assessment met the acceptance criteria in RG 1.177

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[7] Similar requirements exist for combined licenses, design certifications, standard design approvals, and manufacturing licenses issued under 10 CFR Part 52.

Additionally, the licensee proposed a significant number of compensatory measures (e.g., deployment of three portable diesel generators, use of one diesel generator-driven flexible coping strategies (FLEX) makeup pump, suspension of discretionary maintenance and protection of key equipment, and use of other administrative controls) that provided additional assurance that defense-in-depth and safety margins were maintained. Based on these key factors, and in recognition that single failure criterion need not be addressed during this temporary situation for the Unit 3 Train A EDG, the NRC staff approved the one-time extension of the allowed outage time for the Unit 3 Train B EDG.

Your letter compared the D.C. Cook amendment request, which was withdrawn by the licensee,[8] with the NRC staff's approval of the Palo Verde EDG amendment. You stated that a lack of clear guidance resulted in the NRC staff reaching contradictory decisions without objective factors leading to a consistent and repeatable decision. In a draft safety evaluation dated July 8, 2015,[9] the NRC staff documented the basis for the planned denial[10] of the D.C. Cook EDG amendment request. In the draft safety evaluation, the NRC staff concluded that several key factors led to the decision to deny the D.C. Cook EDG amendment request, including:

1) the licensee's inability to identify the root cause of the EDG failure

2) the licensee's inability to eliminate the possibility of a common cause failure on the other EDG

3) uncertainty as to whether the risk acceptance criteria of RG 1.177 were met, in part because the licensee had not established the technical acceptability of its probabilistic risk assessment model in accordance with RG 1.200

These key factors were sufficient for the NRC staff to deny the D.C. Cook request. During the course of the review, the NRC staff appropriately engaged the licensee in a discussion of the licensee's ability to mitigate the consequences of several events, including a LOCA coincident with a LOOP, assuming a single failure of the operable EDG. The NRC staff mistakenly documented the failure to meet this accident sequence (a LOCA coincident with a LOOP, assuming a single failure of the operable EDG) as a basis for denial in the draft safety evaluation. As discussed earlier, the licensee is not required to protect against a design-basis accident assuming single failure of the operable EDG in accordance with GL 80-30. While the NRC staff may have misapplied the single failure criterion in the draft safety evaluation as a basis for denial, the staff appropriately denied the D.C. Cook EDG amendment request based on failure to meet the other key criteria.

As discussed above, the NRC staff consistently evaluated key factors to reach decisions for the Palo Verde and the D.C. Cook requests. Additionally, plant-specific design differences, as well as utilization and capabilities of temporary equipment, were factors in the decisions. Thus, the NRC staff pointed to objective factors that resulted in different outcomes for similar licensee requests.

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[8] The NRC acknowledged the withdrawal of a license amendment request at D.C. Cook (ADAMS Accession No. ML15156A915).

[9] Available in ADAMS under Accession No. ML15150A035.

[10] The NRC staff informed the licensee in a teleconference on May 30, 2015, of its intention to deny the D.C. Cook EDG amendment request. The NRC offered the licensee an opportunity to withdraw the amendment request and the licensee formally withdrew the amendment request by letter dated June 1, 2015 (ADAMS Accession No. ML15154B045).

You also discussed the Commission's termination of the proposed LOOP/LOCA rulemaking as an example of the NRC staff's inconsistent decisions in considering LOOP and LOCA events. The proposed LOOP/LOCA rulemaking was not terminated because of safety concerns. The NRC published a *Federal Register* (FR) notice on June 20, 2017 (82 FR 28017), notifying the public that the LOOP/LOCA rulemaking had been discontinued because the current regulations (i.e., emergency core cooling system functional criteria) provide adequate protection of public health and safety. During the review of the proposed rulemaking, the NRC staff determined that plant-specific risk insights were necessary in order to proceed with this rulemaking, and the staff did not agree with an industry proposal for a generic risk assessment. The industry then stated the proposed rule would be too costly to implement. With no plans for the industry to implement the rulemaking on a large scale and given the NRC staff's conclusion that safety would be maintained, the Commission approved termination of the proposed LOOP/LOCA rulemaking.

The NRC has guidance in place for each of the processes described above (i.e., rulemaking, license amendments, risk-informed decisionmaking) to address scope, purpose, regulatory framework, extent of public participation, use of risk information, and other factors. In addition, the NRC staff periodically reviews the adequacy of existing guidance as well as decisions that involve significant resources and/or differing staff views to determine whether updates to NRC guidance are necessary. The NRC staff believes that additional effort is needed to both clarify risk-informed guidance and enhance staff knowledge and use of that guidance. The NRC staff is in the process of responding to Commission direction[11] to update the Commission on the staff's use of risk information in decisionmaking activities. In this paper, the NRC staff plans to include a discussion of staff actions, and will ensure that the paper highlights the steps taken to ensure risk-informed requests to extend TS allowed outage times meet clear risk criteria with appropriate consideration of safety margin and defense-in-depth. In addition, as a result of two differing professional opinions (DPOs)[12] filed by NRC staff regarding the Palo Verde EDG amendments and ongoing staff discussions, the Office of Nuclear Reactor Regulation is taking several actions that had been recommended by the DPO review panel, as described in a risk-informed decisionmaking Action Plan[13]. This Action Plan, which will be updated periodically, focuses staff on ensuring clear and consistent application and documentation on the use of risk insights. The actions include evaluating guidance to determine if clarification is required for: (1) acceptability of long-duration completion times for one-time extensions, (2) maximum allowed outage times, even when supported with risk information, to limit the amount of time operation without single failure protection is permitted, and (3) the appropriate use of large early release frequency in licensing and oversight. Also, the staff will determine if clarification is needed for other guidance documents (e.g., NUREG-0800, "Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants: LWR [Light-water Reactor] Edition," including Branch Technical Position (BTP) 8-8, "Onsite (Emergency Diesel Generators) and Offsite Power Sources Allowed Outage Time Extensions.")[14]

NRC approvals to extend the TS allowed outage times increase the amount of time when a plant does not fully meet single failure protection. The question is not whether the NRC process should allow this, but to what extent it should be allowed. Early versions of TS, with more limited operating experience and less advanced risk insights, conservatively held equipment allowed outage times to shorter timeframes (e.g., 72 hours for an EDG). One would expect that with greater risk-informed knowledge and more plant-specific operating experience, the NRC is

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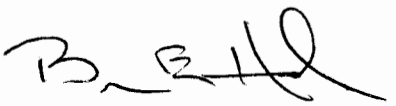
11 Available in ADAMS under Accession No. ML17177A397.
12 DPO Case File for DPO-2017-001 and DPO-2017-002 (ADAMS Accession No. ML17202G468).
13 "Action Plan: Risk-Informed Decision-Making in Licensing Reviews," dated August 11, 2017 (ADAMS Accession No. ML17219A346)
14 Available in ADAMS under Accession Nos. ML070810350 and ML113640138, respectively.

now better able to estimate a reasonable period of time for equipment to be allowed to be out of service. Moving in that direction, the NRC recently issued amendments[15] for Vogtle Electric Generating Plant, Units 1 and 2, that modify the TS requirements to permit the use of risk-informed completion times, in accordance with Nuclear Energy Institute 06-09, Revision 0-A, "Risk-Informed Technical Specifications Initiative 4b, Risk-Managed Technical Specifications (RMTS) Guidelines."[16] These amendments allow the licensee to extend certain completion times based on the total risk presented by the current plant configuration and actions that may be needed to respond to emergent conditions. The NRC is in the process of reviewing several similar risk-informed completion time amendments for other plants, including Palo Verde. The staff will continue to consider defense-in-depth and safety margins in completing the NRC's risk-informed safety reviews and determining whether a requested allowed outage time is too long. These principles, regarding appropriate use of risk insights, apply not only to the NRC's licensing reviews but also to oversight programs, including the inspection and assessment of plant performance.

Thank you for providing your perspectives on these recent LOOP/LOCA-related NRC decisions. I note that you have also provided additional, related views on the Palo Verde and D.C. Cook EDG amendments in several recent blog posts, which the NRC staff will further evaluate. Again, I appreciate and value your views on these matters and I agree that it is important for NRC guidance to be clear enough to result in predictable and consistent outcomes. Likewise, I agree that it is important for NRC staff to clearly document its safety decisions. I expect that the NRC staff's implementation of the risk-informed decisionmaking Action Plan in response to the DPO Panel recommendations and the Commission's recent direction will yield improvements in the regulatory processes and guidance that you seek in your letter.

Sincerely,



Brian E. Holian, Acting Director
Office of Nuclear Reactor Regulation

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[15] Available in ADAMS at Accession No. ML15127A669.
[16] Available in ADAMS at Accession No. ML122860402.

SUBJECT: DAVID LOCHBAUM, DIRECTOR, NUCLEAR SAFETY PROJECT, UNION OF CONCERNED SCIENTISTS, LETTER RE: TWO DECISIONS ISSUED BY THE NRC STAFF REGARDING THE LICENSING BASIS FOR LOSS-OF-COOLANT ACCIDENT AND A CONCURRENT LOSS OF OFFSITE POWER DATED SEPTEMBER 26, 2017

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ADAMS Accession Nos.:
PKG ML17181A349
Incoming: ML17181A348
Response: Chairman Letter ML17200D011;
NRR Letter ML17214A703
****Non-Concurrence: NCP-2017-012 ML17269A048** *via email

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