

November 8, 2002

MEMORANDUM TO: Ledyard Marsh, Chair  
Petition Review Board

FROM: David H. Jaffe /RA/  
Petition Manager

SUBJECT: STAFF RESPONSE TO COMMENTS ON PROPOSED DIRECTOR'S  
DECISION

In a letter dated September 4, 2002, the U.S. Nuclear Regulatory Commission (NRC) solicited comments on its proposed Director's Decision from Union of Concerned Scientists, et. al. (Petitioners) regarding the reduction of risk from sabotage of irradiated fuel. The Petitioners replied by letter dated September 23, 2002.

This memorandum documents the NRC staff's response to the Petitioners' comments.

1. Consideration of Sabotage

PETITIONERS' COMMENT

The Petitioners state that the Nuclear Regulatory Commission (NRC), in this case, is being highly subjective in that the NRC denied the Petitioners' request in part because sabotage events have not proved to be a significant source of electric power grid unreliability, while at the same time requiring certain interim compensatory measures to be taken beyond those required by the current regulations to address the potential for sabotage.

NRC RESPONSE

NRC interim compensatory measures are aimed at protecting nuclear power facilities against acts of radiological sabotage. Electric power grid reliability is under the purview of the Department of Energy. The NRC statement regarding sabotage and the reliability of the electric power grid was not intended to represent the basis for denial of the petition. The denial of the petition is based upon the adequacy of current security measures and the robustness of the plants' electrical designs.

2. Quality of Licensee Safety Risk Assessments

PETITIONERS' COMMENT

The Petitioners cite an NRC Office of the Inspector General (OIG) report (OIG-02-A-15, "Review of NRC's Significance Determination Process," dated August 21, 2002) that criticizes the use of licensee safety risk assessments, also referred to as probabilistic risk assessments (PRAs), noting that there are no PRA standards, no requirements for PRAs to be updated or

accurate, and that the quality of the assessments varies considerably among licensees. The Petitioners then state that the licensing actions based on the PRAs are of uncertain and unverified quality, and that they provide an unsound foundation for safety decisions.

## NRC RESPONSE

The OIG report is focused on the use of risk information in the significance determination process (SDP) and explicitly states that the "NRC uses licensee PRA information in many of its regulatory activities, and agency staff ensure this information is of sufficient scope and technical quality for those activities. NRC determines, on an application-specific basis, whether licensee PRA information is of sufficient quality to support its use when making regulatory decisions. For example, NRC established a framework for using licensees' PRA information in licensing actions<sup>[1]</sup> and provided guidance for determining whether that risk information is acceptable to use for those actions. Such guidance helps ensure consistent, thorough, and disciplined regulation." It is precisely this framework that the OIG recommends for the SDP that is used in evaluating licensee requests to extend the allowable outage times (AOTs) for emergency diesel generators (EDGs).

These licensing actions are submitted in accordance with Regulatory Guide (RG) 1.177, "An Approach for Plant-Specific, Risk-Informed Decisionmaking: Technical Specifications," and RG 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," and reviewed by the NRC per the associated section of the Standard Review Plan, Section 16.1 and Chapter 19, respectively. All of these documents require the licensee to ensure that the quality of the PRA is compatible with the safety implications of the licensing action and the role that the PRA plays in justifying that action. Licensees typically rely on a peer review, certification program, and/or cross-comparison studies to ensure the quality of their PRA for a specific licensing action. The licensee's submittal must justify why the PRA is adequate for the particular licensing action in terms of quality, scope, and depth. The licensees document their process for ensuring that their PRA is adequate for the application and provide a summary of any pertinent review findings and their resolutions. That being said, this does not replace the staff review of PRA quality in its entirety. However, the more confidence the staff has in the review that has been performed on the licensee's PRA, the less depth the staff needs to apply to its review of the licensee's use of the PRA and can better focus on the specific areas related to the licensee's application.

In addition, as an outcome of the industry's and NRC's efforts to ensure and improve the quality of the PRAs, peer review process guidance and consensus PRA standards have been developed for internal initiating events at full power, and other standards are under development to address other initiators and operating modes. The NRC has recently issued a draft RG (DG-1122, "Determining the Technical Adequacy of PRA Results for Risk-Informed Activities") for public comment that provides guidance on determining the quality of the parts of a PRA that are used to support an application and the associated documentation that is sufficient to provide the appropriate level of confidence in the results used in the regulatory

---

<sup>[1]</sup>"Licensing actions" are licensee requests, such as license amendments or exemptions, that require review and approval by NRC staff before they may be implemented by the licensee. Some licensing actions use PRA information.

decision-making process. DG-1122 also endorses the industry peer review process guidance and consensus PRA standard.

Therefore, the staff concludes that the reviews of license applications requesting to extend the AOT for EDGs have specifically addressed the quality and validity of the licensee's PRA and have been determined to be appropriate for the specific license application. Further, these reviews have been and will continue to improve with the development, establishment, and endorsement of the consensus PRA standards and peer review guidance.

### 3. Exclusion of Sabotage/Terrorist Actions in Licensee Safety Risk Assessments

#### PETITIONERS' COMMENT

The Petitioners state that PRAs intentionally exclude sabotage and terrorist actions from consideration, and then state that the PRAs specifically assume a zero chance of sabotage or terrorist action.

#### NRC RESPONSE

The Petitioners are correct in stating that PRAs intentionally do not explicitly address sabotage and terrorist actions. These PRAs do not consider failures due to sabotage/terrorist actions, but they do address the reliability/availability (and failures) of civil and mechanical components and associated operator errors. The robustness and diversity of plant design, in conjunction with physical security measures imposed by NRC rules and orders, provide an acceptable level of protection against radiological sabotage. Accordingly, these events are considered to be outside the scope of the full power internal initiating events PRA, as are other contributors to plant risk (e.g., risks from external initiating events, risks during mode transitions, low power, and shutdown).

### 4. Shutdown Risk and Implications on Underlying Premise of the Technical Specifications (TS)

#### PETITIONERS' COMMENT

The Petitioners commented on the statement that an NRC Office of Research (RES) report, relied upon in the original petition, did not explicitly address EDG maintenance during shutdown operations or the risk tradeoffs between shutdown and full-power operations associated with performing this maintenance. The Petitioners state that the underlying premise of the TSs limiting conditions for operation (LCOs) and AOTs is that they specify the minimum conditions required for safe operation of the reactor and that if the LCO or AOT cannot be met for EDGs, the reactor is required to be promptly shut down. The Petitioners then state that if the NRC is implying that it is less safe to be shut down with a broken EDG than to operate with it, then the TSs need to be fixed because the underlying premise is flawed.

#### NRC RESPONSE

First, the NRC wanted to make it clear that the NRC RES report cited by the Petitioners did not explicitly address EDG maintenance during shutdown or the risk tradeoffs between shutdown

and full-power operations associated with performing this maintenance. This clarification was necessary because the Petitioners had stated in the predecision telephone conversation that it looked like the topic had been addressed and refuted by the information in this NRC RES report. In fact, the NRC RES report does not explicitly address EDG maintenance during shutdown or the risk tradeoffs between shutdown and full-power operations associated with performing this maintenance.

With regard to the TSs that provide the EDG AOTs, these TSs are based upon deterministic analyses and engineering judgement, which reflect equipment configurations, how these configurations are reflected in the accident analyses, and what might be a reasonable time for licensees to take remedial action, considering the numbers and types of alternating current (ac) sources that are inoperable. For a licensee to obtain an extended EDG AOT, the licensee must address deterministic and risk factors that are considered in RG 1.177 and RG 1.174, which the staff refers to as a "risk informed" licensing action. The risk factors may include transition risk (the risk associated with shutdown and restart of the facility) and shutdown risk. On balance, when all risk factors are considered, the risk of continued plant operation with an inoperable EDG (for an analyzed period of time) may involve less risk than performing the maintenance during plant shutdown.

#### 5. Consideration of Shutdown Risks

##### PETITIONERS' COMMENT

The Petitioners stated that the NRC statement regarding the potential for the overall plant risk profile to be lowered due to performing the EDG maintenance at-power instead of during shutdown is highly speculative and totally improper because plant owners do not conduct PRAs for shutdown conditions.

##### NRC RESPONSE

The Petitioners are correct in stating that most licensees have not performed PRAs for shutdown conditions. However, the NRC's statement was in the context of qualitatively recognizing that there is some risk benefit, albeit unquantified, due to not performing EDG maintenance during shutdown conditions. Further, if the licensee provides an additional source of ac power when the EDG is taken out of service during at-power conditions, then any adverse impact on risk will be mitigated. Under both of these conditions (i.e., no EDG maintenance during shutdown conditions and replacement ac power source provided during EDG maintenance at full power conditions), there will be a reduction in the overall risk profile of the plant.

and full-power operations associated with performing this maintenance. This clarification was necessary because the Petitioners had stated in the predecision telephone conversation that it looked like the topic had been addressed and refuted by the information in this NRC RES report. In fact, the NRC RES report does not explicitly address EDG maintenance during shutdown operations or the risk tradeoffs between shutdown and full-power operations associated with performing this maintenance.

With regard to the TSs that provide the EDG AOTs, these TSs are based upon deterministic analyses and engineering judgement, which reflect equipment configurations, how these configurations are reflected in the accident analyses, and what might be a reasonable time for licensees to take remedial action, considering the numbers and types of alternating current (ac) sources that are inoperable. For a licensee to obtain an extended EDG AOT, the licensee must address deterministic and risk factors that are considered in RG 1.177 and RG 1.174, which the staff refers to as a "risk informed" licensing action. The risk factors may include transition risk (the risk associated with shutdown and restart of the facility) and shutdown risk. On balance, when all risk factors are considered, the risk of continued plant operation with an inoperable EDG (for an analyzed period of time) may involve less risk than performing the maintenance during plant shutdown.

#### 5. Consideration of Shutdown Risks

#### PETITIONERS' COMMENT

The Petitioners stated that the NRC statement regarding the potential for the overall plant risk profile to be lowered due to performing the EDG maintenance at-power instead of during shutdown operations is highly speculative and totally improper because plant owners do not conduct PRAs for shutdown conditions.

#### NRC RESPONSE

The Petitioners are correct in stating that most licensees have not performed PRAs for shutdown conditions. However, the NRC's statement was in the context of qualitatively recognizing that there is some risk benefit, albeit unquantified, due to not performing EDG maintenance during shutdown conditions. Further, if the licensee provides an additional source of ac power when the EDG is taken out of service during at-power conditions, then any adverse impact on risk will be mitigated. Under both of these conditions (i.e., no EDG maintenance during shutdown conditions and replacement ac power source provided during EDG maintenance at full power conditions), there will be a reduction in the overall risk profile of the plant.

DISTRIBUTION: See next page

#### ACCESSION NO: ML023120485

\*See previous concurrence

OFFICE	PDIV-1/PM	PDIV-1/LA	PDIV-1/SC	PDIV/D
NAME	DJaffe:rkb	DJohnson	RGramm*	WRuland*
DATE	11/8/02	11/8/02	11/01/02	11/04/02

OFFICE	RORP/PD	NSIR/DNS	SPSB/BC	EEIB/BC	PRB/C
NAME	WBeckner*	GTracy*	MJohnson*	JCalvo*	LMarsh
DATE	10/28/02	11/01/02	10/09/02	10/29/02	11/8/02

DOCUMENT NAME: C:\ORPCheckout\FileNET\ML023120485.wpd

OFFICIAL RECORD COPY

DISTRIBUTION:

HARD COPY:

PUBLIC

PDIV-1 Reading

RidsEdoMailCenter (WTravers)

EMAIL:

RidsEdoMailCenter (WKane)

RidsEdoMailCenter (CPaperiello)

RidsEdoMailCenter (PNorry)

RidsEdoMailCenter (JCraig)

RidsNrrAdpt (SCollins / JJohnson)

RidsNrrAdpt (BSheron / JTsao)

RidsOgcRp

RidsOpaMail

RidsOcaMailCenter

RidsNrrWpcMail (NRR Mailroom GT #G20020142)

RidsNrrAdpt (KJohnson)

RidsNrrDlpm (JZwolinski / TMarsh)

RidsRidsNrrDlpmLpdiv (WRuland)

RidsRidsNrrDlpmLpdiv1 (RGramm)

RidsNrrPMDJaffe

RidsNrrPMRSubbaratnam

RidsNrrPMDSkay

RidsNrrLADJohnson

RidsRgn4MailCenter

WBeckner

HBerkow

JCalvo

DClarke

JGoldberg

MJohnson

SReiter

GTracy