

November 10, 2004

MEMORANDUM TO: Jose A. Calvo, Branch Chief
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Division of Engineering
Office of Nuclear Reactor Regulation

FROM: John G. Lamb, Senior Project Manager (/RA by JGLamb)
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SUBJECT: SUMMARY OF MEETING HELD ON NOVEMBER 3, 2004, BETWEEN
THE NUCLEAR REGULATORY COMMISSION STAFF AND INDUSTRY
REPRESENTATIVES REGARDING ELECTRICAL GRID RELIABILITY

The Nuclear Regulatory Commission (NRC) staff met with industry representatives regarding electrical grid reliability at the NRC headquarters on November 3, 2004. A public meeting notice for the subject meeting was issued on October 1, 2004, and a copy of the meeting notice was posted on the NRC's external (public) web page (ADAMS Accession Number ML042780078). Attachment 1 contains the meeting attendees.

The purpose of the meeting was to inform stakeholders of the status of NRC and industry activities regarding electrical grid reliability. This was a Category 2 public meeting. The meeting consisted of introductions; presentations by the NRC Office of Nuclear Reactor Regulation (NRR), NRC Office of Nuclear Regulatory Research (RES), Nuclear Energy Institute (NEI), the Institute of Nuclear Power Operations (INPO), and North American Reliability Council (NERC); discussions; questions from the public; and closing remarks.

The Attachment 2 contains the presentation slides from NRC NRR, NRC RES, NEI, INPO, and NERC.

NRC NRR PRESENTATION

NRC NRR presented an overview of its approach to the electrical grid reliability issues. The NRC staff has divided the issues into three groups to be resolved. Group One contained 10 concerns that the staff determined needed to be addressed in the short-term. Group Two has 21 concerns which are beyond the statutory authority of the NRC and fall within the Federal Energy Regulatory Commission's (FERC's) and the North American Electric Reliability Council's (NERC's) purview. Group Three has 17 remaining concerns not addressed by the other two approaches.

The NRC staff consolidated the Group Three concerns into four topical areas: (1) Offsite Power System Availability, (2) Station Blackout Review, (3) Risk Insights, and (4) Interactions with External Stakeholders.

A brief description of the issues to be addressed in each of the four topical areas is as follows:

1. Offsite Power System Availability

The issues in this topical area concern (1) offsite power stability and reliability, (2) communication protocols between the nuclear power plant operator and its transmission system operator, (3) Technical Specifications limiting conditions for plant operation related to the operability of offsite power, (4) engineering assessment of offsite power assumptions in accident analyses, and (5) updating the licensing bases for offsite power systems.

2. Station Blackout (SBO) Review

The issues in this topical area concern (1) the underlying assumptions for assessing nuclear power plant's coping duration and recovery of offsite power, (2) unavailability of emergency diesel generators (EDGs), and (3) calculation of station blackout risk with updated Standardized Plant Analysis Risk (SPAR) models.

3. Risk Insights

The issues in this area primarily relate to (1) loss of offsite power (LOOP) probability, (2) allowed outage time extension for online EDG maintenance, (3) risk assessment of offsite power assumptions in accident analyses, (4) maintenance risk assessment before and during switchyard work, and (5) assessment of cumulative risk impacts of combined LOOP events at multiple units and sites. In addition, this topical area encompasses the effort to predict the likelihood of future blackout events using grid operational data obtained from the North American Electric Reliability Council (NERC).

4. Interactions with External Stakeholders

The issues in this area concern interactions with external stakeholders to address grid concerns such as (1) containment of cascading power blackout, (2) collection of grid operational data, and (3) cyber security.

In the Offsite Power System Availability and the Station Blackout Review topical areas, the NRC staff is considering a generic communication.

In the Risk Insights topical area, the NRC staff is reviewing the recent RES "Loss of Offsite Power Frequency and Duration Analyses." In the Risk Insights topical area, the staff will also review RES's "Status of the Investigation of Grid Operating Data for Signs of Change and Potential Vulnerabilities," and "Loss of Offsite Power Risk Analyses and Emergency Diesel Generator Reliability" scheduled in January 2005 to determine if regulatory action is warranted.

In the Interactions with External Stakeholders topical area, the staff will set up a process for NRC to receive NERC operational data and to interact with NERC during grid emergencies.

NRC RES PRESENTATIONS

NRC RES made two presentations (1) Overview of [Loss of Offsite Power] LOOP Frequency and Duration Update, and (2) Overview Draft Status of the Assessment of Grid Operating Data for Change and Potential Vulnerabilities.

In the "Overview of LOOP Frequency and Duration Update," NRC RES presented the following status:

- Accident Sequence Precursor analyses are being finalized for the eight nuclear power plants effected by the August 14, 2003, blackout,
- Frequency and duration analyses are nearing completion and the draft report will be issued for stakeholder review around the middle of November 2004, and
- Core damage frequency evaluations are starting and a draft report is anticipated to be issued for stakeholder review in early 2005.

In the "Overview Draft Status of the Assessment of Grid Operating Data for Change and Potential Vulnerabilities," NRC RES presented that it is developing indices and insights to gauge the impact of changes in transmission system loading and grid reliability based on 600 grid events from 1984 - 2003 and 7,000 transmission line records from 1997 - 2004. NRC RES will issue an interim report for stakeholder review in June 2005.

NEI PRESENTATION

NEI presented an overview of its actions since the last public meeting held on April 15, 2004. Refer to ADAMS Accession No. ML042660347 for the April 15, 2004, meeting summary. NEI also presented the on-going Electric Power Research Institute (EPRI), INPO, and NEI task force activities.

In addition, NEI mentioned it is hosting a workshop with INPO, EPRI, and NERC in Atlanta, Georgia on February 16 - 17, 2005. NEI invited the NRC to attend.

INPO PRESENTATION

INPO presented "Transformer, Switchyard/Grid Initiative." INPO stated that the trend regarding transformer-related events is not improving. INPO stressed the importance of monitoring, and predictive maintenance as well as preventive maintenance.

The results of recent INPO review visits found (1) weaknesses in operations understanding, and procedures related to operability of offsite power, and (2) insufficient and incomplete engineering analysis related to offsite power requirements.

The INPO topical report on transformer, switchyard, and grid events supports the need for an initiative.

INPO plans an addendum to SOER 99-1, "Loss of Grid." The addendum to SOER 99-01 plans to address the following:

- Highlight the need for coordination of emergency power maintenance and testing,
- Recommend binding agreements with reliability coordinator (Independent System Operator) and control area operators,
- Establish single point accountability for plant activities with the switchyard and grid,
- Review plant voltage needs against grid voltage predictions,
- Confirm that there are no changes in the plant's restoration time assumptions,
- Review designs and setpoints to minimize grid-related problems without sacrificing safety,
- Review plants' ability to respond to LOOP conditions to identify potential complications when non-essential power is lost for an extended time period,
- Ensure a clear definition and understanding of offsite power adequacy and operability,
- Ensure voltage regulator, governor control and load tap changers are maintained, and the configuration and setpoints are consistent with grid operator studies, and
- Ensure switchyard equipment preventive maintenance supports reliable offsite power.

INPO is also developing a review visit instruction and the visits will start in late 2004.

NERC PRESENTATION

NERC presented the Memorandum of Agreement (MOA) between the NRC and NERC, NERC Readiness Audits, and the new NERC standard.

The NRC - NERC MOA was signed on August 27, 2004 (ML042520329). The MOA reflects the desire for NRC and NERC to have a continuing and cooperative relationship in exchange of experience, information, and data related to reliability of the U.S. electricity supply system. The NRC and NERC will meet in late November 2004, to develop the following appendices of the MOA:

- Communications and information sharing during emergencies,
- Event analysis and follow-up reviews,
- Exchange of operational experience information and data, and
- NRC staff participation in NERC activities.

NERC initiated the Reliability Readiness Audit Program in March 2004 as a result of the August 14, 2003, blackout. The goal of the NERC Reliability Readiness Audit Program is to audit all reliability coordinators and control areas on a three-year cycle. This is similar in concept to INPO evaluations. To date, 48 audits are completed; 25 final audit reports are posted on the NERC web site (www.nerc.com). Several questions to the audit questionnaire were added at the request of the NRC staff to address the issue of coordination and communication between grid operators and the nuclear power plant operators.

NERC also presented the status of its new standard on offsite supply reliability for nuclear power plants. The purpose of the standard is to ensure the transmission system has the capacity and capability to support the safe operation of nuclear power plants. The electric transmission systems serving nuclear power plants must use the nuclear power plants specific licensing and design requirements as the transmission system performance standard in addition to other NERC reliability standards. These licensing requirements shall be specified in written agreements between the nuclear power plant and the transmission system operator.

The Standards Authorization Request has been submitted to NERC. The NERC Standards Authorization Committee will approve the standard for posting, followed by a 30-day comment period. The NERC Standard Drafting Team has been formed to draft the actual standard, followed by a 45-day comment period. The standard will be redrafted and reposted, as necessary for comment. Afterwards, a standard will be placed for ballot by the Standard Ballot Pool. If the standard passes, the standard will be adopted by NERC board. NERC anticipates that it could have a final standard in 6 - 9 months.

Attachment: 1. Attendees
2. Handouts

The Standards Authorization Request has been submitted to NERC. The NERC Standards Authorization Committee will approve the standard for posting, followed by a 30-day comment period. The NERC Standard Drafting Team has been formed to draft the actual standard, followed by a 45-day comment period. The standard will be redrafted and reposted, as necessary for comment. Afterwards, a standard will be placed for ballot by the Standard Ballot Pool. If the standard passes, the standard will be adopted by NERC board. NERC anticipates that it could have a final standard in 6 - 9 months.

- Attachment: 1. Attendees
2. Handouts

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ADAMS ACCESSION NUMBER: ML043200234

OFFICE	PM:EEIB	EEIB:NRR	SC:EEIB:NRR
NAME	JGLamb	BParham	RVJenkins
DATE	11/10/04	11/15/04	11/10/04

OFFICIAL RECORD COPY

**ELECTRICAL GRID RELIABILITY
MEETING ATTENDANCE
NOVEMBER 3, 2004**

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