

2005 JUN 14 AM 9:09



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June 13, 2005

Chief, Rules and Directives Branch
Division of Administrative Services
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Alexander Marion
SENIOR DIRECTOR, ENGINEERING
NUCLEAR GENERATION DIVISION

4/12/05

40 FR 19125

(5)

SUBJECT: Proposed Generic Communication; *Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power* (70 Fed. Reg. 19125, April 12, 2005)

The Nuclear Energy Institute (NEI)¹ submits the following comments on the Nuclear Regulatory Commission's proposed generic communication that is intended as a request to obtain information in the following areas:

1. Use of nuclear power plant/transmission system operator protocols and real time contingency analysis programs to monitor grid conditions to determine operability of offsite power systems under plant technical specification,
2. Use of nuclear power plant/transmission system operator protocols and real time contingency analysis programs to monitor grid conditions for consideration in maintenance risk assessments,
3. Offsite power restoration procedures in accordance with Section 2 of Regulatory Guide 1.155, "Station Blackout," and
4. Loss of offsite power caused by grid failures at a frequency of ≥ 20 years in accordance with Regulatory Guide 1.155.

The stated purpose for this proposed communication is to determine if compliance is being maintained with NRC regulatory requirements.

NEI offers general comments on this proposed generic communication and further detailed comments are provided in the Enclosure.

¹ NEI is the organization responsible for establishing unified nuclear industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all utilities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel fabrication facilities, materials licensees, and other organizations and individuals involved in the nuclear energy industry.

SISP Review Complete

E-RIDS = ADM-03

CC = A. Markley (AWM)
J. B. Lamb (JBL)

Template = ADM-013

Jose CAVALO (JACT)

The Industry recognizes the importance of effective coordination and interaction between the nuclear plant owner/operator and the transmission system operator. A number of improvements are underway by the various stakeholders involved in operating and maintaining the electric transmission system. A common shared objective is to reduce the number of grid disturbances to assure a reliable transmission system. As a result, these integrated and coordinated actions will reduce the losses of offsite power.

On April 26, 2005, representatives from the Federal Energy Regulatory Commission (FERC), National Association of Regulatory Utility Commissioners (NARUC), PJM Interconnection, North American Electric Reliability Council (NERC), and industry briefed the Commission on their respective activities related to grid stability and offsite power issues. Extensive efforts are being undertaken by the various entities involved at the state, regional, national, and federal levels to assure a secure and reliable transmission grid. FERC is addressing cost recovery for capital investment for transmission system improvements and the oversight of grid reliability standards and their subsequent enforcement. NERC is conducting readiness audits and developing standards governing the planning and operation of the transmission system. One specific standard that is under development addresses the transmission system support for nuclear plants' voltage, frequency, and stability requirements. This standard is expected to be finalized by the end of this year. NARUC is encouraging the states to make the NERC standards and regional reliability council criteria mandatory for jurisdictional utilities. PJM Interconnection is implementing actions to improve communication and coordination between the generating plant owner/operator and transmission system operator.

In December 2004, the World Association of Nuclear Operators (WANO) issued Significant Operating Experience Report (SOER) 99-1, "Loss of Grid – Addendum." This document contains several recommendations dealing with interfaces between nuclear power plant and grid operators, procedures for loss of the electric grid, preventive maintenance, reliability and stability design requirements, operator training, compliance with national and regional grid authorities criteria, and enhancement of the communication of related operating experience. All nuclear utilities in the U.S. are members of the Institute of Nuclear Power Operations (INPO) and they are expected to take actions to address the recommendations contained in this SOER. INPO evaluates implementation of SOER recommendations as part of their evaluation and assessment process. Additionally, INPO has initiated a review visit program for station switchyards and transformers. These reviews are being conducted by an INPO team that consists of an INPO evaluator and industry peers from nuclear and transmission organizations. These reviews are in progress and the results are being shared with INPO member organizations. A workshop sponsored by the Electric Power

Research Institute (EPRI), INPO, NEI, and NERC was held this past February to promote the important dialogue, interaction, and coordination across the various entities involved in reliable operation of the transmission system.

Integration and coordination of all of the activities at state, regional, and national levels is extremely important so that we can avoid unnecessary duplication and unintended consequences. Activities being conducted by FERC, INPO, NARUC, NERC, and NEI address the issues raised by the NRC in the proposed generic communication. For example, NEI formed a Grid Reliability Task Force to coordinate industry activities related to the NERC standards development process. NEI submitted an authorization request to NERC requesting the development of a standard to establish the requirements for interactions between nuclear plant owner/operator and transmission system operator to ensure the unique requirements of nuclear plants are addressed. This is the standard that was highlighted during the Commission briefing held this past April.

The proposed generic communication refers to NRC issues associated with the August 14, 2003, blackout. The nuclear plant response to this power outage was as expected: eight plants safely shutdown, maintained safe shutdown, and returned to safe operation when offsite power was restored. This was due to the robust designs of the plant systems, defense-in-depth features unique to nuclear power plants, and highly trained plant operations personnel.

Corrective actions are being taken by those responsible for transmission system planning and operations to address the contributing causes of that event. These industry-wide actions, including the development of NERC standards for the planning and operation of the transmission grid, address overall improvements in grid reliability. The proposed generic letter will not enhance these activities.

Reference is made several times to the data collected by NRC regional inspectors using Temporary Instruction (TI) 2515/156 suggesting "...a good deal of variability..." in the data collected. Unfortunately, this data has not been made publicly available, so its veracity cannot be evaluated. As a result, it is inappropriate to use what is apparently a compilation of subjective observations as a basis for taking additional regulatory actions.

In 2004, NEI conducted a survey to assess the impacts of loss of offsite power events on plant licensing bases and how the underlying assumptions previously made are evaluated given these events. The survey focused on licensing bases in the following areas:

- 10 CFR 50.63, *Loss of All Alternating Current Power*;

- 10 CFR 50.65, *Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants*; and
- Extensions of plant Technical Specification Emergency Diesel Generating Allowed Outage Times (AOT)

The results of this survey were shared with the NRC in May 2004 and indicated that utility licensees are evaluating the licensing basis assumptions as the result of loss of offsite power events.

The U.S. – Canada Power System Outage Task Force that investigated the August 14, 2003, power system blackout published its findings and recommendations. The following points were made regarding the performance of U.S. nuclear power plants:

- “The affected nuclear power plants did not trigger the power outage or inappropriately contribute to its spread.
- The nuclear plants responded to the grid conditions in a manner consistent with the plant designs.
- The nuclear plants were maintained in a safe condition until conditions were met to permit the nuclear plants to resume supplying electrical power to the grid.

The licensees’ return to power operation followed a deliberate process controlled by plant procedures and regulations.”

The NRC has not provided a sound basis to support the need for additional information to determine if regulatory compliance is being maintained.

Simply stated, utilities are in compliance with NRC regulations associated with onsite and offsite electric power system. The current plants were evaluated during original plant licensing reviews for compliance with General Design Criterion 17 and subsequently as part of the electrical distribution system functional inspections. Assessment of losses of offsite power, coupled with loss of onsite alternating current (ac) power, was reviewed during the station blackout rule implementation inspections.

Additionally, NRC conducted an evaluation of the effectiveness of 10 CFR 50.63, "Regulatory Effectiveness of the Station Blackout Rule," in August 2000. This report states that "These SBO rule outcomes provide additional defense-in-depth to compensate for increased risk due to potential degradation of the ac offsite power system that may result from deregulation of the electric power industry as explained in SECY-99-129, "Effects of Electric Power Industry Deregulation on Electric Grid Reliability and Reactor Safety," a publicly available NRC technical report, "The Effects of Deregulation of the Electric Power Industry on the Nuclear Plant Offsite Power System; An Evaluation," dated June 30, 1999 a recent Information Notice 200-06, 'Offsite Power Voltage Inadequacies,' March 27, 2000, and Information Notice 98-07, 'Offsite Power Reliability Challenges From Industry Deregulation,' February 27, 1998."

Again, there is not a clear basis for NRC requesting additional information to determine if compliance is maintained. The U.S. nuclear power plants that shutdown as designed as the result of the August 14, 2003, blackout responded to unstable grid conditions in full compliance with NRC regulations and plant technical specifications.

There should be a reason for NRC seeking information, e.g., an emergent issue that legitimately calls into question the licensing basis of one or more licensees. Such information gathering should be based upon the significance of the requested information relative to NRC decision making that may result in further regulatory action. The information "requested" in the proposed generic letter focuses on nuclear power plant operator/transmission system operator protocols and real time contingency analysis programs. These protocols and analysis programs are not part of the plant licensing basis; therefore, it is inappropriate to request such information under the provisions of 50.54(f).

The current use of the provisions of 10 CFR 50.54(f) in generic communications results in a legally binding requirement on licensees to respond under oath or affirmation that, in effect, pressures licensees to take the actions that the NRC "requests." For example, if a generic communication "requests" licensees to submit the results of a new analysis, licensees are expected to perform the analysis. The use of 50.54(f) should be clear in limiting the use of this provision to requests for existing information, consistent with the intent of the rule when it was adopted. Further, consistent with the explicit terms of 50.54(f), its use should be reserved only for those issues that reach the threshold of information needed to determine if potential regulatory action should be considered that would result in modification, suspension, or revocation of an operating license. This would be consistent with the language in 50.54(f) as well as the underlying statutory provision in Section 182 of the Atomic Energy Act.

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There is no evidence that such a situation exists. Thus, this proposed generic communication should not be issued.

If you have any question related to the content of this letter, please contact me at 202.739.8080, am@nei.org.

Sincerely,



Alexander Marion

Enclosure

c: Dr. Brian W. Sheron, NRR
Mr. Bruce A Boger, NRR
Mr. Michael E. Mayfield, NRR
Mr. Christopher I. Grimes, NRR

bcc: Grid Reliability Task Force

Mail Envelope Properties (42ADEB10.4F4 : 9 : 17652)

Subject: Proposed Generic Communication; Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power (70 Fed. Reg. 19125, April 12, 2005)
Creation Date: 6/13/05 4:21PM
From: "MARION, Alex" <am@nei.org>
Created By: am@nei.org

Recipients

nrc.gov

twf4_po.TWFN_DO
MTL (Michael Lesar)

nrc.gov

twf5_po.TWFN_DO
MEM2 (Michael Mayfield)

nrc.gov

owf4_po.OWFN_DO
CIG (Christopher Grimes)
BWS (Brian Sheron)

nrc.gov

OWGWPO01.HQGWDO01
BAB2 (Bruce Boger)

nei.org

gac CC (Gordon CLEFTON)
am CC (Alex MARION)
msf CC (Marvin FERTEL)**Post Office**twf4_po.TWFN_DO
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06/13/05 04:21PM

06-13-05_Proposed Generic Communication, Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power.pdf 164059

Mime.822 236773

Options

Expiration Date: None
Priority: Standard
Reply Requested: No
Return Notification: None

Concealed Subject: No
Security: Standard

Applicable Regulatory Requirements

GDC17 and Plant Technical Specifications (TSs)

Compliance with General Design Criterion 17 was established when the plants were originally licensed, during NRC Electric Distribution System Functional Inspections, and with compliance inspections for implementation of 10 CFR 50.63.

The proposed generic communication fails to draw the distinction between design and operational issues. Regulatory Guide 1.93 states, "GDC-17 specifies design requirements, not operating requirements; it therefore does not stipulate operational restrictions based upon the loss of power sources." The suggestion that formal agreements are necessary for compliance with GDC 17 is not founded.

Plant modifications to onsite ac power systems and modification to the transmission system in the vicinity of the plant may possibly impact the plant licensing bases. Such changes are controlled by 10 CFR 50.59 and 50.71(e) to demonstrate continuing compliance.

Nuclear plants are operated consistent with plant technical specifications. Nuclear plant owner/operators should not be placed in a condition of assessing the "...capability of offsite power." The transmission system operator has the responsibility to apprise the generator owner/operator of grid conditions and the potential for system disturbance that may impact the plant. The plant operator should be aware of the range of acceptable parameters which support plant operation within the plant technical specifications.

10 CFR 50.65

Grid reliability evaluations are not required for compliance with this regulation. Nuclear plant owners/operators notify the transmission system operator, when the plant is scheduled for refueling outages and maintenance activities involving safety significant equipment.

Qualitative considerations are used when conditions are imminent or have the probability of occurring during planned out of service durations. Licensees can use qualitative consideration for the availability of offsite power, e.g., pending severe weather.

Discussion

Use of Nuclear Power Plant/Transmission System Operator Protocols and real Time Contingency Analysis Programs To Monitor Grid Conditions To Determine Operability of Offsite Power Systems Under Plant Technical Specifications

It is inappropriate to refer to TI 2515/156 responses, since the information that was gathered was not made publicly available.

The plant owner/operator cannot be solely responsible to assess the operability of something that is not the responsibility of the plant owner/operator. The U.S. utility owners/operators of nuclear power plants rely on NERC to assure reliability of the electric transmission system. That reliance extends to the transmission system operator to provide information to plant owner/operators on potential instability or upset conditions.

Use of Nuclear Power Plant/Transmission System Operator Protocols To Monitor Grid Conditions for Consideration in Maintenance Risk Assessments

It is inappropriate to refer to TI 2515/156 responses, since the information that was gathered was not made publicly available.

Monitoring grid conditions is the responsibility of stakeholders involved in assuring reliable transmission of electricity. This responsibility rests with the transmission system operators, energy control centers, and regional reliability councils as administered by NERC.

Nuclear plant owners/operators notify the transmission system operator when the plant is scheduled for refueling outages and maintenance activities involving safety significant equipment.

Losses of Offsite Power Caused by Grid Failures at a Frequency of ≥ 20 Years in Accordance With Regulatory Guide 1.155

It is inappropriate to refer to TI 2515/156 response, since the information that was gathered was not made publicly available.

The NEI survey conducted in 2004 addresses NRC concerns with operability determinations for compliance with technical specifications, the maintenance rule and station blackout rule. Additionally, the Industry comments submitted by NEI and the Electric Power Research Institute on NRC two draft reports, "Evaluation of Offsite Power Events at Nuclear Power Plants; 1986 – 2003," October 2004, and "Station Blackout Risk Evaluation for Nuclear Plants," provide discussion as to

why the August 14, 2003, blackout should not be included in both studies. Including this event leads to the false conclusion that the grid has become less reliable during the 1997 – 2003 time period and unnecessarily dominates the seasonal risk evaluation. Of the ten grid-related losses of offsite power (LOOP) events identified in the 1997 – 2003 period, eight were associated with the August 14 blackout. This suggests the overall LOOP frequency increased from 0.02 per reactor critical year to 0.0333.

There were multiple causes to this blackout that clearly suggest it was very unique and unusual. Additionally, other plants were affected by this event but did not shutdown. NEI believes that including this event on an industry-wide basis can be misleading. Separate activities are underway by the various stakeholders, at local, regional, and national levels to address the 44 recommendations made by the U.S. – Canada Power System Outage Task Force to prevent and mitigate such events in the future. Thus, the August 14 event should not be considered in further industry wide evaluations.

Utilities have demonstrated the ability to cope with a station blackout as required by 10 CFR 50.63. Arbitrarily requiring licensees to change coping duration appears to be reactive and premature. NRC should conduct an evaluation of the underlying assumptions that form the foundation of NRC regulatory requirements and expectations as related to loss of offsite power coupled with loss of onsite ac power.

Requested Information

Use of Nuclear Power Plant/Transmission System Operator Protocols and Real Time Contingency Analysis Programs to Monitor Grid Conditions in Accordance with GDC 17 and To Determine Operability of Offsite Power Systems Under Plant Technical Specifications

1. The NRC request for information related to formal agreements between the nuclear plant operator and transmission system operator are not necessary to determine compliance with GDC 17. Such agreements are not part of the plant licensing basis. WANO SOER 99-01 Addendum explicitly addresses the need to establish formal agreements between plant operators and transmission system operators. INPO evaluations assure that the recommendations contained in SOER are implemented.
2. The use of the real time contingency analysis (RTCA) program provides a useful tool to aid in the evaluation of the acceptability of the plant offsite sources. Nevertheless, it is only one tool and not necessarily the only tool available to the transmission system operator to evaluate the acceptability of offsite power sources. Bounding studies incorporating the specific requirements of the

nuclear plant have been performed historically to ascertain the acceptability of the design of the plant offsite power sources. The bases for the nuclear plant compliance with GDC 17 are these bounding studies, periodically updated to ensure changing grid configurations and operations are considered. The RTCA program provides a useful tool to assess the offsite source acceptability; however, it is a new tool with respect to that purpose. The RTCA program has been used historically by some transmission operators to ascertain grid reliability; however, the accuracy of the contingency voltage calculation to fulfill that objective may not be fully consistent with that typically expected for nuclear plant operability determinations. In addition, the use of an RTCA program can potentially provide a false sense of security if bounding studies are not performed to analyze the acceptability of the GDC 17 sources over a wide range of conditions. For example, two years of monitoring by an RTCA program in which no post trip contingency voltage alarms are identified may not provide a valid assessment of the robustness of the GDC 17 source design if during that time period the grid was not stressed to its bounding conditions.

Compliance with the design requirements of GDC 17 should be based on the tools utilized during the licensing of the plant and which provide for the bounding design bases of the GDC 17 offsite sources. The RTCA program is not part of the plant licensing basis.

The RTCA program is beyond the control of the nuclear plant operator and should not in and of itself be a basis for offsite source operability. The nuclear plant must rely on the transmission system operator to maintain the reliability of the grid utilizing available tools. This may or may not include a RTCA program. The operability of the offsite sources should be based on the transmission system operator's evaluation of the current grid conditions and not solely on a single tool available to the system operator.

One of the questions asks, "Is the NPP notified of periods when the RTCA program is unavailable to the TSO, and does the NPP conduct an offsite power system operability determination when such a notification is received?"

This question should not imply that during a period when the RTCA program is unavailable the plant operator should declare the offsite sources inoperable. During a period when the RTCA is unavailable, the transmission system operator strives to maintain a consistent and stable grid configuration. With the loss of the RTCA program, the intent is to maintain the grid conditions within the bounds of offline studies. During this period, grid perturbations caused by premature removal of nuclear power plants from the grid would further challenge the transmission system operator's ability to maintaining grid stability. It would be expected during this period, there would be

communications between the plant and the grid operator to allow for a discussion of the reliability of the offsite sources.

3. One of the questions states, "If onsite safety-related equipment (e.g., emergency diesel generators or safety-related motors) are lost and incapable of performing their required safety functions as a result of responding to an emergency actuation signal during this condition, are they declared inoperable as well?"

The meaning of this question is unclear. This appears to imply that emergency diesel generators may become inoperable as a result of low post-trip voltages. This is not normally the case, since if actual low post-trip offsite voltage were to occur, the degraded grid relay scheme, with definite time delays, would initiate an emergency bus transfer, removing the offsite feed to the emergency buses and allowing the emergency diesel generators to supply the emergency buses. Safety-related motors would not be declared inoperable unless there was no operable source of power. This question requires clarification.

4. The nuclear power plant operator cannot ensure that the offsite power system is operable without direct information and support from the transmission system operator. Contingency analyses maintained by the transmission system operator determine the impact of a nuclear plant trip on the offsite power system.

Use of Nuclear Power Plant/Transmission System Operator Protocols To Monitor Grid Conditions for Consideration in Maintenance Risk Assessments Required by 10 CFR 50.65.

5. One of the questions asks, "Are seasonal variations in the probability of a LOOP at your plant site considered in the evaluation?"

We recommend this question be removed. The risk assessment required by 10 CFR 50.65 is typically performed both quantitatively and qualitatively by licensees. This is consistent with guidance endorsed by the NRC that allows for a combination of qualitative and quantitative assessment of risk. Licensee probabilistic risk assessments typically do not contain a seasonal variation in LOOP probability. As a result, licensees typically assess any factors that could immediately affect grid reliability in a qualitative manner, e.g., pending severe weather.

6. Coordination between the transmission system operator and plant owner/operator is an area for improvement. This is explicitly addressed in WANO SOER Addendum discussed earlier.

Offsite Power Restoration Procedures in Accordance with 10 CFR 50.63 as Developed in Section 2 of Regulatory Guide 1.155

7. The third paragraph of this section states, "If you have not established an agreement with your plant's TSO that identifies local power sources and transmission paths that could be made available to resupply your plant following a LOOP event, describe why you believe you comply with the provisions of 10 CFR 50.63."

Such agreements are not part of the plant licensing basis and as such are not required for compliance with 50.63. Typical power restoration agreements with transmission system operators do not provide specific resupply sources and paths, as these will vary greatly depending on the nature of the event. The transmission system operators restoration procedures should clearly identify the importance of and give priority to the restoration of an offsite power source to each affected NPP; however, as stated above, the restoration method will be dependent on the nature of the grid disturbance.

8. The second paragraph of this section requests information regarding plant experience and potential re-classification of the plant in accordance with RG 1.155, Table 4.

The projected LOOP frequency for a plant is a statistical measure. Occurrence of a single LOOP does not necessarily invalidate the assumed frequency of a LOOP.

Categorization of grid disturbances and their causes are the subject of continuing discussion between the industry and NRC. Consistency in the treatment of these events must be achieved before such information is requested from licensees.

A number of plants have demonstrated the availability of an independent alternate AC power source to allow the plant to effectively respond to a station blackout event. Changes in coping duration should not affect these plants.

Actions to Ensure Compliance

9. As stated previously licensees are in compliance with NRC regulations and plant technical specifications as they relate to onsite and offsite power systems. Formal agreements between plant operator/owners, transmission system operators, and RTCA programs are not part of the plant licensing basis; therefore, no actions are needed to restore compliance with NRC regulatory requirements.