

May 25, 2000

MEMORANDUM TO: Cynthia A. Carpenter, Chief
Generic Issues, Environmental, Financial
and Rulemaking Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

FROM: Peter C. Wen, Project Manager /RA Signed by P. Wen/
Generic Issues, Environmental, Financial
and Rulemaking Branch
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF MAY 18, 2000, MEETING WITH THE NUCLEAR
ENERGY INSTITUTE REGARDING GRID VOLTAGE ADEQUACY
ISSUES

On May 18, 2000, a public meeting was held at the Nuclear Regulatory Commission (NRC) offices in Rockville, Maryland. The participants included members of the NRC staff and representatives from the Nuclear Energy Institute (NEI), the Institute of Nuclear Power Operations (INPO), PJM Interconnection Nuclear Generation Owners/Operators, and licensees. Attachment 1 lists attendees at the meeting, and Attachment 2 contains a copy of the material presented at the meeting.

As a result of a low switchyard voltage event that occurred at Callaway on August 11, 1999, the staff sent on March 2, 2000 a letter to NEI requesting the industry's assistance in addressing the low switchyard voltage issues as an industry voluntary initiative. This meeting was a follow-up to that letter to discuss the related grid voltage adequacy issues and to hear the status of industry efforts in this area.

NEI discussed the regulatory requirements and their understanding of the issues involving grid voltage adequacy for nuclear power plants. Representatives from Callaway, PJM Interconnection Nuclear Generation Owners/Operators User Group, Southern California Edison (SCE) and INPO presented discussions on their initiatives and experience related to ensuring adequate grid voltage to nuclear plants. Their discussions are summarized as follows:

- Callaway Experience - Since the August 11, 1999 Callaway low switchyard voltage event, Ameren Services has developed a transmission provider agreement, that clarifies the responsibilities of plant and transmission operators. Ameren Services also enhanced its real-time contingency analysis computer to better monitor switchyard voltage. The enhanced computer has the capability to alarm when low voltage is predicted. The licensee of Callaway also provided refresher training to its plant and transmission operators for handling this type of condition.

- PJM Interconnection Nuclear Generation Owners/Operations User Group - The nuclear operating license holders within the Pennsylvania-New Jersey-Maryland (PJM) control area formed a user group in 1997. The group defines and implements the required relationship among the independent system operators, North American Electric Reliability Council/Mid-Atlantic Area Council, nuclear operating license holders and transmission owner and local control centers. The representatives from PJM also indicated that they have a real-time emergency management system (computer software) to monitor system voltage, which would provide action recommendations to PJM to reconfigure system based on the analysis results.
- California Model - There is a transmission control agreement (TCA) between SCE, SDG&E, PG&E, and the independent system operators. The San Onofre and Diablo Canyon "grid specifications" have been incorporated into the TCA. A highest possible priority will be given to restoring power to the nuclear generating units, if degraded grid conditions arise.
- INPO - The INPO issued a Significant Operating Experience Report (SOER) 99-1, "Loss of Grid," to its members and provided several recommendations to help ensure barriers that protect nuclear power plants from grid loss or degradation are in place. INPO plans to follow up the SOER with evaluations at nuclear power plants starting in June 2000.

The staff complimented NEI and the industry participants for their initial responsiveness on the subject issue. However, the staff expressed concern regarding how all of the facilities (e.g., nuclear power plants and load dispatch centers) are addressing this subject. Further, the staff discussed in detail its concerns regarding the grid voltage adequacy issue. The staff indicated that maintaining plant operation in a region of adequate offsite voltage is especially important because licensees may not have evaluated their plant safety systems for the degraded voltage/double sequencing scenario that could occur given a plant event under such circumstances. The staff proposed that NEI, under the framework of industry voluntary initiative, take the following steps:

- Provide guidance to utilities on the need for and acceptable techniques available to ensure adequate post-trip voltages;
- Establish provisions to log and evaluate unplanned post-trip switchyard voltages to help verify and validate that the intent stated in Item (1) is met;
- Determine plant-specific risks of degraded voltage/double sequencing scenarios.

Finally, the staff urged NEI to move expeditiously on the staff request for a schedule for issue resolution and to establish milestones. NEI stated that they will provide a response to the request contained in the NRC letter dated March 2, 2000, on this subject and the staff concerns raised during this meeting in a 2-4 week time frame.

Attachments: As stated
cc w/atts: See next page

- PJM Interconnection Nuclear Generation Owners/Operations User Group - The nuclear operating license holders within the Pennsylvania-New Jersey-Maryland (PJM) control area formed a user group in 1997. The group defines and implements the required relationship among the independent system operators, North American Electric Reliability Council/Mid-Atlantic Area Council, nuclear operating license holders and transmission owner and local control centers. The representatives from PJM also indicated that they have a real-time emergency management system (computer software) to monitor system voltage, which would provide action recommendations to PJM to reconfigure system based on the analysis results.
- California Model - There is a transmission control agreement (TCA) between SCE, SDG&E, PG&E, and the independent system operators. The San Onofre and Diablo Canyon "grid specifications" have been incorporated into the TCA. A highest possible priority will be given to restoring power to the nuclear generating units, if degraded grid conditions arise.
- INPO - The INPO issued a Significant Operating Experience Report (SOER) 99-1, "Loss of Grid," to its members and provided several recommendations to help ensure barriers that protect nuclear power plants from grid loss or degradation are in place. INPO plans to follow up the SOER with evaluations at nuclear power plants starting in June 2000.

The staff complimented NEI and the industry participants for their initial responsiveness on the subject issue. However, the staff expressed concern regarding how all of the facilities (e.g., nuclear power plants and load dispatch centers) are addressing this subject. Further, the staff discussed in detail its concerns regarding the grid voltage adequacy issue. The staff indicated that maintaining plant operation in a region of adequate offsite voltage is especially important because licensees may not have evaluated their plant safety systems for the degraded voltage/double sequencing scenario that could occur given a plant event under such circumstances. The staff proposed that NEI, under the framework of industry voluntary initiative, take the following steps:

- Provide guidance to utilities on the need for and acceptable techniques available to ensure adequate post-trip voltages;
- Establish provisions to log and evaluate unplanned post-trip switchyard voltages to help verify and validate that the intent stated in Item (1) is met;
- Determine plant-specific risks of degraded voltage/double sequencing scenarios.

Finally, the staff urged NEI to move expeditiously on the staff request for a schedule for issue resolution and to establish milestones. NEI stated that they will provide a response to the request contained in the NRC letter dated March 2, 2000, on this subject and the staff concerns raised during this meeting in a 2-4 week time frame.

Attachments: As stated
cc w/atts: See next page
DISTRIBUTION: See attached page
*See previous concurrence

Package Accession No.: ML003722320
Memo & Attachment 1: ML003722318
Template NRR-106
Attachment 2: ML003721360
Template NRR-106

Document Name: g:\pxw\msum0518.wpd

OFFICE	*PM:RGEB:DRIP	*BC:EEIB:DE	*SC:RGEB
NAME	PWen	JCalvo	SWest
DATE	05/24/2000	05/24/2000	05/25/2000

OFFICIAL OFFICE COPY

cc: Mr. Ralph Beedle
Senior Vice President
and Chief Nuclear Officer
Nuclear Energy Institute
Suite 400
1776 I Street, NW
Washington, DC 20006-3708

Ms. Lynnette Hendricks, Director
Plant Support
Nuclear Energy Institute
Suite 400
1776 I Street, NW
Washington, DC 20006-3708

Mr. Alex Marion, Director
Programs
Nuclear Energy Institute
Suite 400
1776 I Street, NW
Washington, DC 20006-3708

Mr. Charles B. Brinkman, Director
Washington Operations
ABB-Combustion Engineering, Inc.
12300 Twinbrook Parkway, Suite 330
Rockville, Maryland 20852

Mr. David Modeen, Director
Engineering
Nuclear Energy Institute
Suite 400
1776 I Street, NW
Washington, DC 20006-3708

Mr. H. A. Sepp, Manager
Regulatory and Licensing Engineering
Westinghouse Electric Company
P.O. Box 355
Pittsburgh, Pennsylvania 15230-0355

Mr. Anthony Pietrangelo, Director
Licensing
Nuclear Energy Institute
Suite 400
1776 I Street, NW
Washington, DC 20006-3708

Mr. Jim Davis, Director
Operations
Nuclear Energy Institute
Suite 400
1776 I Street, NW
Washington, DC 20006-3708

DISTRIBUTION: MTG. SUMMARY w/NEI Re Grid Voltage issues Dated 05/25/00

Hard Copy

Central File

PUBLIC

RGEB r/f

OGC

ACRS

PWen

EMail

SCollins/RZimmerman

BSheron

JJohnson

DMatthews/SNewberry

CCarpenter

SWest

JStrosnider

RWessman

JCalvo

DThatcher

RJenkins

PGill

JLazevnick

WRaughley, RES

GLanik, RES

JRosenthal, RES

JBirmingham

M Tschiltz, OEDO

OPA

**NRC/NEI GRID VOLTAGE MEETING
LIST OF ATTENDEES
May 18, 2000**

<u>NAME</u>	<u>ORGANIZATION</u>
Jack Strosnider	NRR/DE
Dick Wessman	NRR/DE
Jose Calvo	NRR/DE/EEIB
Ronaldo Jenkins	NRR/DE/EEIB
Paul Gill	NRR/DE/EEIB
James Lazevnick	NRR/DE/EEIB
Peter Wen	NRR/DRIP/RGEB
Gregory Suber	NRR/DRIP/RGEB
Bill Raughley	RES/DSARE/REAHFB
George Lanik	RES/DSARE/REAHFB
Dave Modeen	NEI
John Butler	NEI
John Macicjewski	INPO
Joe Willson	PJM
Carla Pettus	PJM
Stephen Lurie	CE Nuclear Power
Paul Nauert	Ameren Services
Al Passwater	Ameren UE
Jenny Weil	McGraw Hill
Nancy Chpman	Serch/Bechtel
Doug Stickney	Southern California Edison
Glenn Miller	PPL