

September 30, 2005

MEMORANDUM TO: Jose A. Calvo, Branch Chief  
Electrical and Instrumentation & Controls Branch  
Division of Engineering  
Office of Nuclear Reactor Regulation

FROM: Matthew W. McConnell, Electrical Engineer */RA/*  
Electrical and Instrumentation & Controls Branch  
Division of Engineering  
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF MEETING HELD ON SEPTEMBER 16, 2005,  
REGARDING RESULTS OF TEMPORARY INSTRUCTION (TI)  
2515/163, "OPERATIONAL READINESS OF OFFSITE POWER"

The Nuclear Regulatory Commission (NRC) staff held a public meeting on September 16, 2005, to discuss the results of Temporary Instruction (TI) 2515/163, "Operational Readiness of Offsite Power." The purpose of conducting TI 2515/163 was to provide a snapshot of nuclear power plant (NPP) readiness for summer conditions (high temperatures, severe storms, increased electrical demand, etc.). Attachment 1 of this memorandum contains a list of meeting attendees, Attachment 2 contains the presentation slides, and Attachment 3 contains a table with the results of TI 2515/163.

The purpose of the meeting was to share the results of TI 2515/163 with interested stakeholders. The meeting consisted of two presentations given by Dr. Brian Sheron, Associate Director for Project Licensing and Technical Analysis, and Ronaldo Jenkins, Section Chief of the Electrical & Instrumentation and Controls Branch Section B. Each presentation was followed by a question and answer session.

During the opening presentation, Dr. Sheron stressed the NRC's concerns with grid reliability. The offsite power (OSP) that our nation's NPPs rely upon must have sufficient capacity and capability to ensure safety at the NPP. Based on recent experience, the NRC staff has observed events indicating potential problem areas including, but not limited to, emergency diesel generator testing during stressed grid periods and communication issues between the NPP and its transmission system operator (TSO). Any improvements in this area of NPP performance should be consistent with the messages conveyed by the staff during the 2005 Regulatory Information Conference and that industry efforts to improve the interface between NPPs and their respective TSO must be credible, timely, and comprehensive.

Ronaldo Jenkins presented the background information and results of TI 2515/163. The TI focused on the safety and regulatory requirements cited in Regulatory Information Summary 2004-05, "Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power." TI 2515/163 consisted of 8 questions in 3 areas: OSP operability, Maintenance Rule (MR) risk assessment, and station blackout. The NRC staff's observations for each area were presented during the slide presentation (see slides 11 through 16 in Attachment 2 for list of observations).

The attached table (Attachment 3) was also referenced to show the variability among the TI 2515/163 responses.

The conclusions for each presentation were consistent. The TI 2515/163 inspection results indicated considerable inconsistency and variability among NPPs. In addition, high quality information from licensees in response to the Generic Letter: "Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power" (to be issued in December 2005), will address staff concerns regarding the summer of 2006 operational readiness and other long-term issues.

The following questions/comments were made during the question and answer session.

Frank Raun                      EPRI                      The summer may not be the worst time of the year for grid reliability.

*NRC Response:*                      The staff understands that the summer may not be the worst time for grid stability issues at a NPP. However, the summer period tends to have more disturbances and storms than any other time of year.

Alex Marion                      NEI                      Have the results been communicated to the licensees?

*NRC Response:*                      Yes, during the period when the staff revisited the initial TI responses to credit any alternative means (outside of station procedures).

*Additional Response:* NRC                      Region IV went back to the licensees to discuss the results with their NPPs. (Troy Pruett NRC RIV Branch Chief)

Frank Raun                      EPRI                      Were there any changes to the draft grid stability Generic Letter as a result of the TI responses?

*NRC Response:*                      Any changes to the draft grid stability Generic Letter will be addressed in the response to public comments.

Bruce Poole                      FERC                      Does the TSO know the NPP limits?

*NRC Response:*                      Based on the information we have received, the answer is yes.

*Additional Response:* NERC                      NERC has a draft standard to codify NPP OSP requirements. (Bob Cummings)

Alex Marion                      NEI                      Will there be a public meeting to discuss the draft Generic Letter comments?

*NRC Response:*                      The upcoming ACRS meeting for the draft grid stability Generic Letter will be open to the public. Comments can be addressed at that time.



Alex Marion                      NEI                      NRC results differ from the 2004 NEI questionnaire.  
The purpose of the grid stability Generic Letter is to get  
formal response from licensees.

*NRC Response:*                      The NRC acknowledged and agreed with both comments.

John Garrett                      Exelon                      Mr. Garrett asked to repeat the definitions for the color  
code in the chart.

*NRC Response:*                      The definitions for the table (Attachment 2) color code  
were repeated.

- Attachments: 1. Attendees  
2. Presentation Slides  
3. TI 2515/163 Results Table

DISTRIBUTION:

NON-PUBLIC                      JDyer                      WBorchardt                      BWSheron                      MEMayfield  
CIGrimes                      JACalvo                      RVJenkins

**ADAMS ACCESSION NUMBERS:**

Package: ML052780573

Memo: ML052790704

Attachments: ML052770305

<b>OFC</b>	EEIB:NRR	EEIB:NRR	SC:EEIB
<b>NAME</b>	MWMcConnell	KACorp	RVJenkins
<b>DATE</b>	09/30/05	09/30/05	09/30/05

**OFFICIAL RECORD COPY**

**Results of Temporary Instruction (TI) 2515/163, "Operational Readiness of Offsite Power"**

**MEETING ATTENDANCE  
September 16, 2005**

<u>Name</u>	<u>Organization</u>	<u>Phone Number</u>
Gordon Cleifton	NEI	202-739-8086
Alex Marion	NEI	202-739-8080
Jeffrey Lamarca	TXU Power	254-897-6688
Altheia Wyche	Bechtel	301-228-6401
Stephen Chun	SCE	949-368-8126
Tony Harris	STARS Alliance	202-739-8058
John G. Lamb	NRC - ACRS Staff	301-415-6855
Tomoho Yamada	JNES	202-216-4372
Leslie Collins	Westinghouse	301-881-7040
Deann Raleigh	U.S. Scientech	240-626-9556
Russ Bywater	NRC - RIV	817-860-8182
Troy Pruett	NRC - RIV	817-860-8173
Larry Wilkerson	Duke Energy	864-885-4462
Wayne Johnson	EPRI	704-547-6051
George Anagnostopoulos	Duke Energy	803-831-3340
Bill Raughley	NRC - RES	301-415-7577
Ram Bhatia	NRC - RI	610-337-5262
John Gyath	Exelon	610-765-5692
Michael Korchynsky	Exelon	630-657-2400
Bob Cummings	NERC	609-452-8060
Matthew McConnell	NRC - NRR	301-415-1597
Roy Mathew	NRC - NRR	301-415-2965
Bruce Poole	FERC	202-502-8468
Frank Rahn	EPRI	650-855-2037

NEI - Nuclear Energy Institute  
SCE - Southern California Edison  
FERC - Federal Energy Regulatory Commission  
NERC - North American Electric Reliability Council  
NRC - Nuclear Regulatory Commission  
NRR - Office of Nuclear Reactor Regulation  
NSIR - Office of Nuclear Security & Incident Response  
ACRS - Advisory Committee on Reactor Safeguards  
STARS - Strategic Teaming and Resource Sharing  
JNES - Japan Nuclear Energy Safety Organization  
EPRI - Electric Power Research Institute  
RES - Nuclear Regulatory Research

## Public Meeting On TI 2515/163 Results

---



### “NRC PERSPECTIVES”

Presented By

**Dr. Brian W. Sheron**

Nuclear Regulatory Commission

Associate Director, Office of Nuclear Reactor Regulation

September 16, 2005



## Why Are We Concerned About Grid Reliability?

---

- Offsite Power must have the capacity and capability to ensure safety at the nuclear power plant (NPP)
- TI 2515/163, Operational Readiness of Offsite Power, was conducted to provide a snapshot of NPP readiness for summer conditions
- Events continue to indicate potential problem areas:
  - EDG preventative maintenance during stressed grid periods
  - Communication problems between the NPP and their transmission system operator (TSO)



## Staff Expectations

---

- NPP performance in this area should be consistent with the messages conveyed by the staff during the 2005 Regulatory Information Conference
- Industry efforts to improve the interface between NPP and TSO must be
  - Credible
  - Timely
  - Comprehensive



## Nuclear Regulatory Commission's Next Steps

---

- TI 2515/163 inspection results indicate considerable inconsistency and variability among NPPs in this area
- High quality information from licensees to the Grid Reliability Generic Letter (to be issued in 12/05) should address staff concerns regarding
  - Summer 2006 Operational Readiness
  - Long Term Issues

## Public Meeting On TI 2515/163 Results

---



### REPORT ON OPERATIONAL READINESS OF NPP OFFSITE POWER - SUMMER 2005 - September 16, 2005



## BACKGROUND

---

- Temporary Instruction (TI) 2515/163, “Operational Readiness of Offsite Power,” was issued on May 2, 2005
- TI focused on the safety and regulatory requirements cited in Regulatory Information Summary 2004-05, “Grid Reliability and the Impact on Plant Risk and the Operability of Offsite Power”



## ACROYOMS

---

- NPP = NUCLEAR POWER PLANT
- TSO = TRANSMISSION SYSTEM OPERATOR
- LOOP = LOSS OF OFFSITE POWER
- TI = TEMPORARY INSTRUCTION



## TI 2515/163

---

- Resident and Regional Inspectors gathered data and submitted results by June 1, 2005
- NRR staff reviewed and evaluated results
- NRC staff recently revisited initial TI responses to credit any alternative means (outside of station procedures) being used by NPPs



## TI 2515/163 (CONT'D)

---

### 8 QUESTIONS SOUGHT ATTRIBUTE VERIFICATION IN THREE AREAS

- Offsite Power (OPS) Operability - 3
- Maintenance Rule (MR) Risk Assessment - 4
- Station Blackout (SBO) Recovery- 1



## TI 2515/163 RESULTS

---

Refer to Chart

- Y = Yes; N = No
- PURPLE - Alternative Means exists that addresses attribute
- RED - No procedure found that addressed attribute



## OSP OBSERVATIONS

---

- While most sites had procedures that addressed the post-trip capability of the OSP system, at one site, the operators had not received training on those procedures



## OSP OBSERVATIONS (CONT'D)

---

- Some sites did not have any procedure to respond to a notification from their TSO that the TSO was not able to predict the post-trip voltage at the NPP
  - This was, in part, because the NPP did not believe loss of a real-time contingency analysis program was credible



## OSP OBSERVATIONS (CONT'D)

---

- Some sites did not have any procedure to respond to a notification from their TSO that the predicted post-trip voltage at the NPP would be inadequate
  - This was, in part, because the NPP did not have a notification agreement or the TSO did not have access to the results of a real-time contingency analysis program



## MAINTENANCE RULE OBSERVATIONS

---

- Coordination between some NPP sites and their TSOs were weak or non-existent during emergency diesel generator (EDG) and/or switchyard maintenance



## MAINTENANCE RULE OBSERVATIONS (CONT'D)

---

- Most sites did not inform their TSO when they took LOOP or SBO mitigating systems out of service for extended or emergent maintenance (other than the EDGs)



## MAINTENANCE RULE OBSERVATIONS (CONT'D)

---

- Some NPP sites assume that the OSP system is operable IF they have NOT been informed otherwise
- Some NPP sites do not consider the current status of the OSP in the maintenance rule risk management actions.



## CONCLUSIONS

---

- TI 2515/163 inspection results indicate considerable inconsistency and variability among NPPs in this area
- High quality information from licensees to the Grid Reliability Generic Letter (to be issued in 12/05) should address staff concerns regarding
  - Summer 2006 Operational Readiness
  - Long Term Issues

TI 2515/163 SUMMARY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
<b>Offsite Power Operability</b>																																	
1. Identify the required control room operator actions to take when notified by the TSO that post-trip voltage of the OSP at the NPP will not be acceptable to assure the continued operation of the safety-related loads without transferring to the onsite power supply.	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	N	Y	Y	Y	Y	
2. Identify the compensatory actions the control room operator is required to perform if the TSO is not able to predict the post-trip voltage at the NPP for the current grid conditions.	Y	N	N	Y	N	Y	N	Y	Y	Y	Y	Y	N	N	Y	N	Y	Y	Y	Y	N	N	N	Y	N	Y	N	N	N	N	Y	N	
3. Identify the notifications required by 10 CFR 50.72 for an inoperable offsite power system when the nuclear station is either informed by its TSO or when an actual degraded voltage condition is identified.	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	
<b>Maintenance Rule</b>																																	
<i>The procedures to ensure compliance with 10 CFR 50.65(a)(4) have the following attributes:</i>																																	
4. Direct the plant staff to perform grid reliability evaluations as part of the required maintenance risk assessment before taking a risk-significant piece of equipment out-of-service to do maintenance activities.	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y
5. Direct the plant staff to ensure that the current status of the OSP system has been included in the risk management actions and compensatory actions to reduce the risk when performing risk-significant maintenance activities or when LOOP or SBO mitigating equipment are taken out-of-service.	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y
6. Direct the control room staff to address degrading grid conditions that may emerge during a maintenance activity.	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
7. Direct the plant staff to notify the TSO of risk changes that emerge during ongoing maintenance at the nuclear power plant.	Y	Y	N	N	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	N	N	N	Y	Y
<b>SBO</b>																																	
<i>The procedures to ensure compliance with 10 CFR 50.63 have the following attribute:</i>																																	
8. Direct the control room operators on the steps to be taken to try to recover offsite power within the SBO coping time.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	

TI 2515/163 SUMMARY	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	
<b>Offsite Power Operability</b>																																		
1. Identify the required control room operator actions to take when notified by the TSO that post-trip voltage of the OSP at the NPP will not be acceptable to assure the continued operation of the safety-related loads without transferring to the onsite power supply.	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y
2. Identify the compensatory actions the control room operator is required to perform if the TSO is not able to predict the post-trip voltage at the NPP for the current grid conditions.	N	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	Y	Y	N	Y	N	Y	Y	Y	N
3. Identify the notifications required by 10 CFR 50.72 for an inoperable offsite power system when the nuclear station is either informed by its TSO or when an actual degraded voltage condition is identified.	Y	Y	Y	Y	N	Y	N	N	Y	N	N	Y	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	
<b>Maintenance Rule</b>																																		
<i>The procedures to ensure compliance with 10 CFR 50.65(a)(4) have the following attributes:</i>																																		
4. Direct the plant staff to perform grid reliability evaluations as part of the required maintenance risk assessment before taking a risk-significant piece of equipment out-of-service to do maintenance activities.	Y	Y	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
5. Direct the plant staff to ensure that the current status of the OSP system has been included in the risk management actions and compensatory actions to reduce the risk when performing risk-significant maintenance activities or when LOOP or SBO mitigating equipment are taken out-of-service.	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	
6. Direct the control room staff to address degrading grid conditions that may emerge during a maintenance activity.	Y	Y	Y	Y	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
7. Direct the plant staff to notify the TSO of risk changes that emerge during ongoing maintenance at the nuclear power plant.	N	Y	N	Y	N	Y	N	Y	Y	Y	N	Y	Y	Y	N	N	N	N	N	N	Y	N	Y	N	N	N	Y	Y	Y	Y	Y	Y	N	
<b>SBO</b>																																		
<i>The procedures to ensure compliance with 10 CFR 50.63 have the following attribute:</i>																																		
8. Direct the control room operators on the steps to be taken to try to recover offsite power within the SBO coping time.	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		

