



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

August 28, 2012

EA-12-132

Mr. George Hamrick
Vice President
Carolina Power & Light Company
Shearon Harris Nuclear Plant
P.O. Box 165, Mail Zone 1
New Hill, NC 27562-0165

**SUBJECT: MEETING SUMMARY – CATEGORY 1 PUBLIC MEETING – REGULATORY
CONFERENCE AND PREDECISIONAL ENFORCEMENT CONFERENCE,
DOCKET NO. 50-400**

Dear Mr. Hamrick:

This refers to the Regulatory Conference and Pre-decisional Enforcement Conference meeting conducted at the NRC Region II Office on August 24, 2012, at 8:00 a.m. The meeting's purpose was for you to present to the NRC your perspectives on the facts and assumptions used by the NRC to arrive at the findings listed in inspection report 05000400/2012007 and their significance, the opportunity to provide your perspective on the apparent violations and any other information you believe the NRC should take into consideration before making an enforcement decision.

The topics discussed included Duke Energy's position with regard to preliminary White findings and preliminary Severity Level III traditional enforcement violation documented in integrated inspection report 05000400/2012007. Enclosed are a list of attendees (Enclosure 1) and the presentation handouts (Enclosure 2).

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room (PDR) or from the Publicly Available Records (PARS) component of NRC's Agencywide Document Access and Management System (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Should you have any questions concerning this meeting, please contact me at (404) 997-4603.

Sincerely,

/RA/

Randall A. Musser, Chief
Reactor Projects Branch 4
Division of Reactor Projects

Docket No.: 50-400
License No.: NPF-63

Enclosures: As stated

cc w/Encls: (See page 2)

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G. Hamrick

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(cc w/encls continued next page)

G. Hamrick

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(cc w/encls continued)

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G. Hamrick

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Letter to G. Hamrick from R. Musser dated August 28, 2012

SUBJECT: MEETING SUMMARY – CATEGORY 1 PUBLIC MEETING – REGULATORY
CONFERENCE AND PREDECISIONAL ENFORCEMENT CONFERENCE,
DOCKET NO. 50-400

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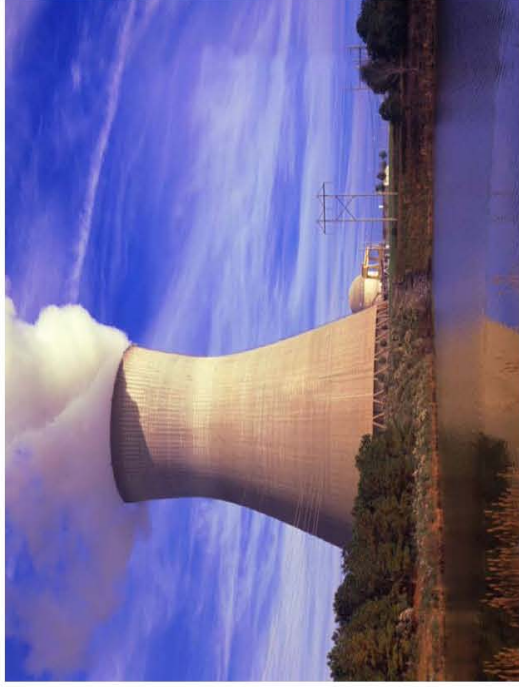
**UNITED STATES
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245 PEACHTREE CENTER AVENUE NE SUITE 1200
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**Duke Energy Public Meeting
Shearon Harris Nuclear Power Plant
Regulatory and Pre-Decisional Enforcement Conference
August 24, 2012**

NAME	TITLE AND ORGANIZATION
DUKE ENERGY	
Jim Harrell	Consultant, Numerical Applications
Lewis Wp, 113	Lead Engineer, Duke
ERNEST KAPOPOULOS	PLANT MANAGER, HARRIS
John Oufner	Harris Engineering Director
George Hamrick	Harris Site Vice President
Bob DUNCAN	SR VP NUCLEAR OPS
SEAN O'CONNOR	MGR ORG EFFECTIVENESS
Mike Austin	Fleet Emergency Preparedness CFAM
CITRIS NULAN	Duke Energy, REGULATORY AFFAIRS
Dave Corlett	Supervisor, Licensing, Harris
NRC	
STEPHEN LAVIS	NSIR/BPR/IRIB
William B. Jones	RD/DRP/DPD
Vicki McCree	RD/IRB
Richard Crotan	RD/DRP/DI
Bethany Cecere	NSIR/DRP/IRIB
BRIAN BONSER	RI/DRS/RSB1
Jason Zargle	RI/DRS/RSB-1
Michael White	RI/DRP/RPB2
Christy Evans	RI/ORA/EIS
Janette Worosilo	RI/DRP/RPB4
RANDY MUSSEY	RI/DRP/RPB4
Joe Austin	RII Harris SRI
Jim Dodson	RII/DRP/RPB4
TERRENCE REIS	RII/DRS
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M. SPECK	NRC
D. Berkshire	NRC
L. Casey	NRC
J. Lepford	NRC
S. Vaughn	NRC



Harris Nuclear Plant Regulatory & Enforcement Conference



**Technical Support Center and
Emergency Operations Facility
Apparent Violations**

*NRC Region II Headquarters
Atlanta, GA
August 24, 2012*



Duke Participants

▪ Bob Duncan	Senior Vice President, Nuclear Operations
▪ George Hamrick	Site Vice President
▪ Ernie Kapopoulos	Plant Manager
▪ John Dufner	Director of Engineering
▪ Sean O'Connor	Organizational Effectiveness Manager
▪ Dave Corlett	Licensing Supervisor
▪ Chris Nolan	Director of Regulatory Affairs
▪ Mike Austin	Fleet Emergency Preparedness Manager
▪ Lewis Wells	Lead Engineer, Nuclear Fuels
▪ Jim Harrell	General Manager, Numerical Applications, Inc



Agenda

- | | |
|--|------------------|
| ▪ Introductions and Opening Remarks | George Hamrick |
| ▪ Overview | Ernie Kapopoulos |
| ▪ Technical Support Center (TSC) | John Dufner |
| ▪ Emergency Operations Facility (EOF) | John Dufner |
| ▪ Significance Determination | Dave Corlett |
| ▪ Root Cause & Organizational Learning | Sean O'Connor |
| ▪ Closing Remarks | George Hamrick |



Overview

Ernie Kapopoulos
Plant Manager



Overview

- Harris Agrees that Deficiencies Occurred – Came to Different Conclusion Regarding the Significance
- Investigation
 - Root cause evaluation team
 - Extent of condition & Organizational learning
- Technical Support Center
 - Test data confirmed design assumption
- Emergency Operations Facility
 - EOF was functional with exception of 3 periods, each shorter than 7 days
- Fleet and Industry Reach-Out
 - Duke fleet, NEI, INPO



Technical Support Center

John Dufner
Director of Engineering



TSC In-leakage Assumption Introduction

- Apparent Violation Summary

The inspectors identified an AV of 10 CFR 50.54(q) for the licensee's failure to provide a defensible technical basis for unfiltered air in-leakage, supported by sufficient experimental and empirical data for an input to a calculation used as the basis for TSC functionality. The licensee's failure to provide a defensible technical basis supported by sufficient experimental and empirical data for an input to the Alternate Source Term (AST) calculation, which was the basis for TSC functionality, was a performance deficiency. This failure resulted in the licensee being unable to meet the TSC habitability requirements as specified in the Harris Emergency Plan, PLP-201, Revision 57, section 3.3.1. Specifically, the ERO performance attribute was affected during the times when the TSC was not functional, and it did not meet 10 CFR 50.47(b)(8) Planning Standard program elements.



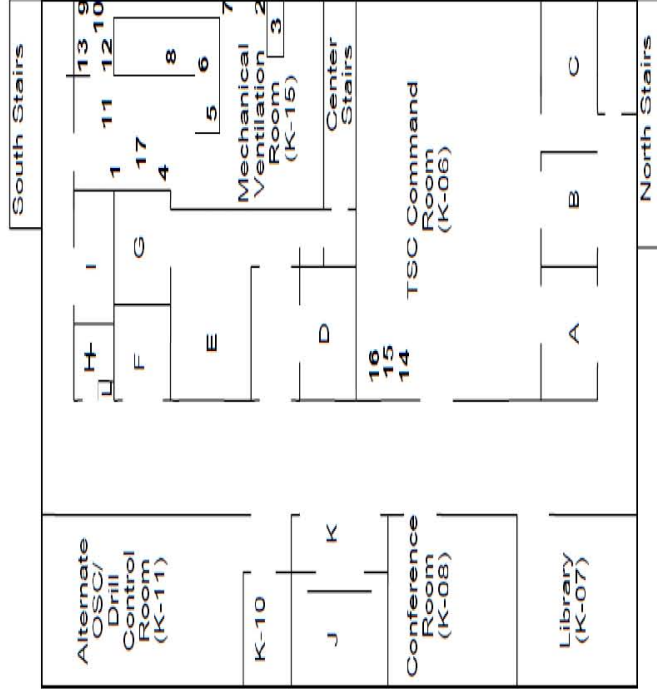
TSC In-leakage Assumption Introduction

- Harris Agrees with Lack of Experimental of Empirical Data Supporting In-leakage Assumption of 60 CFM at Time of Inspection
- Harris Believes 10 CFR 50.47(b)(8) Planning Standard Elements Were Fully Met
- TSC Discussion Points
 - Overview of facility
 - New information obtained by testing the TSC ventilation boundary
 - Conclusion





Equipment in TSC Mechanical Ventilation Room



EQUIPMENT IN TSC MECHANICAL VENTILATION ROOM (Drawing is not to scale)

1. Emergency Filtration Control Switch for MUF-1 (1TSC-F021)
2. OA-2 Motor Starter Switch (1TSC-E0012-002) and Disconnect Switch for OA 2 (DS 1TSC F003)
3. OA-2 Outside Air Fan
4. Disconnect Switch for MUF-1 (DS-1TSC-E001)
5. TSC Area 1 HVAC-Makeup Emer Recirculation Fan (MUF-1)(1TSC-E001)
6. TSC Area 1 HVAC-Makeup Emer Recirculation Fan (MUF-1)(1TSC-E006)
7. Disconnect switch for DH-1 (DS-1TSC-E006) to heater DH 1
8. Damper (D-6)(1TSC-E009)
9. Toilet Exhaust Damper (D-3)(1TSC-E007)
10. Descon Exhaust Damper (D-4)(1TSC-E008)
11. Descon Exhaust Fan (PF-2)(1TSC-E004)(overhead)
12. Descon Exhaust Fan (EF 3)(1TSC-E005)(overhead)
13. Disconnect switch for EF-3 (DS-1TSC-E005)
14. Area Radiation Monitor Panels (1TS-3653A, B, C)

EQUIPMENT IN TSC COMMAND ROOM

14. Outside Air Intake Manual Override Switch
15. Alarm Inside Control Switch
16. TSC Outside Air Intake Fan (PDL-01TS-4011) gauge and Outside Air Intake Fan OA-2 Flow Ind (FI-01TS-4000) gauge

ROOM DESIGNATIONS

A	Accident Assessment Team (K-04)
B	ARC Communication Room (K-03)
C	Sanitary (K-02)
D	Food Prep/Kitchen Area (K-25)
E	HP Decontamination Equipment Rm (K-22)
F	Communications Room (K 20)
G	Decontamination Sink/Shower Facility
H	Women's Restroom
I	Men's Restroom
J	Elevator
K	Vestibule (K-09)
L	Closet (Chemical Storage Location)



TSC In-Leakage Assumption Confirmatory Actions

- Routine Positive Pressure Testing is Performed
- Testing the TSC Ventilation Boundary
 - Test methodology – tracer gas as used in the control room
 - ASTM E741-00
 - Test acceptance criteria
 - Test results
- Test Preparations



TSC In-Leakage Assumption Test Results

▪ Measured In-leakage	15 CFM
▪ Impact of Maintenance on Boundary	10 CFM
▪ Assumed Ingress / Egress	<u>10 CFM</u>
▪ Total	35 CFM
▪ Design In-Leakage Value	60 CFM

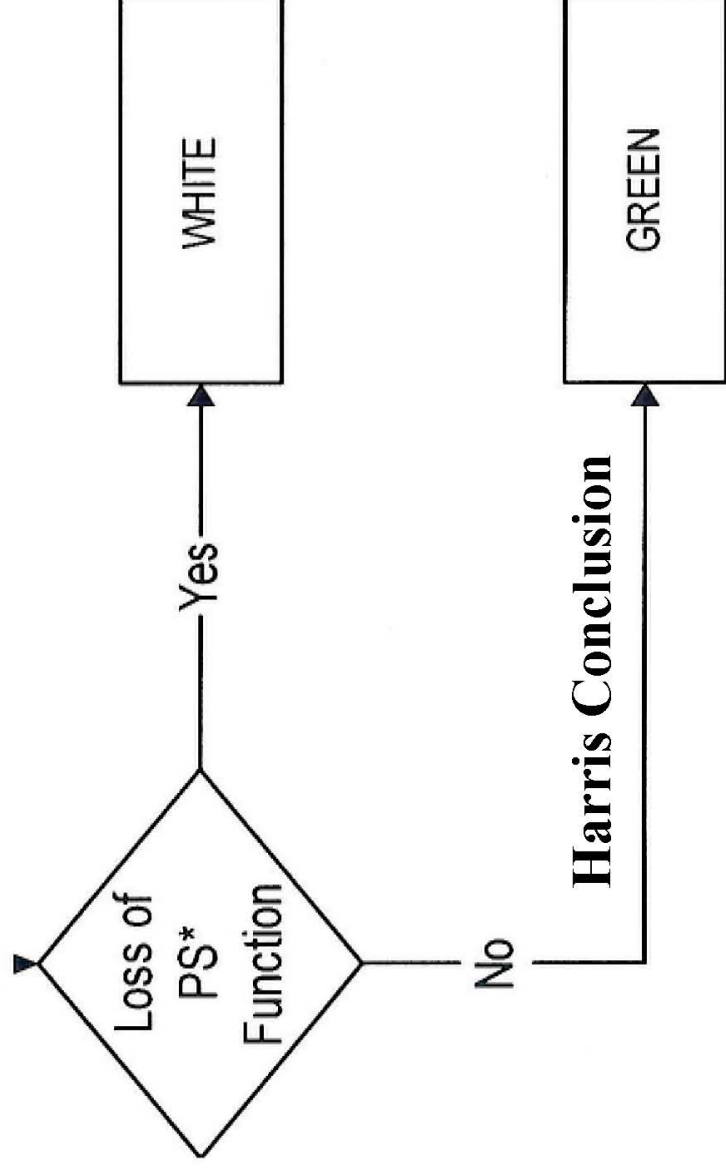


TSC In-Leakage Assumption Conclusions

- Conclusion
 - Design input confirmed as valid
 - Ventilation boundary was not compromised
 - Planning standard function was met
- Future Periodic Testing



TSC In-Leakage Assumption Significance





Emergency Operations Facility

John Dufner
Director of Engineering



EOF Overview

- Apparent Violation – Facility Availability

The inspectors identified multiple examples of an Apparent Violation (AV) of 10 CFR 50.54(q) for the lack of facility oversight and control, coupled with component failures and removal of the Emergency Operations Facility (EOF) ventilation system from service (without adequate compensatory measures) which rendered the EOF non-functional on several occasions. Specifically, the licensee failed to ensure that adequate emergency response facilities and equipment were available as required by the Harris Nuclear Plant Emergency Plan, Section 3.1, revision 57, and 10 CFR 50.47(b)(8).



Apparent Violation Facility Availability

- Harris Acknowledges the Performance Deficiencies with Facility Oversight and Maintenance Controls
- New Information Will be Presented
 - Calculations have been revised to address NRC's concerns
 - Multi-Disciplined Team Looked at Extent of Condition



Apparent Violation Facility Availability

- Three Periods Listed in the Inspection Report
 - June 9, 2010 – December 22, 2010
 - January 5, 2010 – January 13, 2010
 - August 4, 2009 – January 5, 2010
- Engineering Calculations Were Performed To Determine Functional Status of the EOF
 - Calculations were performed with the identified equipment deficiencies
 - Calculations were performed without favorable atmospheric conditions



Apparent Violation Facility Availability

- **Calculation Results – Worst Case Summer**
 - Bounding high temperature scenario for equipment deficiencies
 - Degraded flows due to undersized duct work
 - Air handling unit fan motor undersized
 - Zone damper (VAV-2) operating in reverse
 - Maximum staffing of 59 people
 - Design basis outside temperature of 94 degrees F (normal diurnal cycle)

- Command Room 87 Degrees F
- PABX Cabinet 82 Degrees F (recommended range < 86)



Apparent Violation Facility Availability

- **Calculation Results – Worst Case Winter**
 - Bounding low temperature scenario for all equipment deficiencies
 - Degraded flows due to undersized duct work
 - Air handling unit fan motor undersized
 - Duct heater failures
 - Minimum staffing of 23 people
 - Design basis outside temperature of 16 degrees F (normal diurnal cycle)

- Command Room 57 Degrees F
- PABX Cabinet 64 Degrees F (limit > 50)



Apparent Violation Facility Availability

- June 9, 2010 – December 22, 2010
 - Equipment Deficiencies
 - Air handling unit, condensing unit, ventilation zone dampers
 - Undersized duct work and fan motor
 - Conclusion – Deficiencies did not cause loss of functional EOF
- January 5, 2010 – January 13, 2010
 - Equipment Deficiencies
 - Duct heaters out of service
 - Air dampers, flex ducting, controllers and thermostats
 - Conclusion – Deficiencies did not cause loss of functional EOF
- August 2009 – January 5, 2010
 - Equipment Deficiencies
 - Degraded flows due to undersized duct work and fan motor
 - Zone damper VAV-2 operating in reverse
 - Conclusion – Deficiencies did not cause loss of functional EOF



Apparent Violation Facility Availability

- EOF dose calculation re-performed
 - Addresses entire time period in inspection report
 - Performed with equipment deficiency on HEPA/ Charcoal filter inlet damper (D-3)
 - Performed for three scenarios
 - Dose inside EOF with sluggish D3 response (actual condition)
 - Dose inside EOF with D3 failure
 - Dose for an individual standing outside the EOF
 - Calculation Details
 - Updated X/Q values
 - Accepted computer codes



Apparent Violation Facility Availability

Calculation Results

▪ Inside EOF with slow D3 response	0.29 Rem
▪ Inside EOF with D3 failure	0.40 Rem
▪ Outside EOF	4.1 Rem
▪ Inside EOF Original Analysis of Record	1.4 Rem
▪ Regulatory Limit	5 Rem



EOF Apparent Violation Reporting

- Apparent Violation - Reporting

The inspectors identified an AV of 10 CFR Part 50.72(b)(3)(xiii), for the failure to report the loss of emergency assessment capability in the EOF. Specifically, the EOF was unavailable to perform its intended function for periods greater than seven days on several occasions from August 2009 to November 2011.

- Examples Listed in Inspection Report
 - Calculations show that those deficiencies did not cause loss of functional status
- Performed the Extent of Condition Review



EOF Apparent Violation Reporting

- Multi-Disciplined Team Looked at Extent of Condition
- 3 Examples of Equipment Issues Causing Non-Functional Status
 - Condenser & fan replacement 4/30/09 – 5/1/09 (36 hours)
 - Damper & ductwork replacement 1/14/10 – 1/18/10 (96 hours)
 - Compressor failure 11/17/10 – 11/19/10 (72 hours)
- Associated Event Reports Have Since Been Submitted
- Each Example of a Non-Functional Period Was Shorter Than 7 Days
 - Different examples from the inspection report
 - Harris agrees the failure to report the 3 examples above is a performance deficiency



EOF Apparent Violation Conclusion

- EOF Temperature Calculations
 - Equipment was fully functional
 - Personnel capabilities were not inhibited
- EOF Dose Calculations
 - Calculated doses were below limits
- EOC identified 3 periods where the EOF was nonfunctional
 - Periods were less than 7 days
 - No loss of planning standard function for greater than 7 days



Significance Determination

Dave Corlett
Licensing Supervisor



EOF Significance Guidance Documents

- IMC 609 Appendix B Section 5.8

10 CFR 50.47(b)(8), Emergency Facilities and Equipment

PLANNING STANDARD: Adequate emergency facilities and equipment to support the emergency response are provided and maintained.

PS FUNCTIONS: 1. Adequate facilities are maintained to support emergency response.
2. Adequate equipment is maintained to support emergency response.



EOF Significance Guidance Documents

- IMC 609 Appendix B Table 5.8-1

LOSS OF PS FUNCTION White FINDING

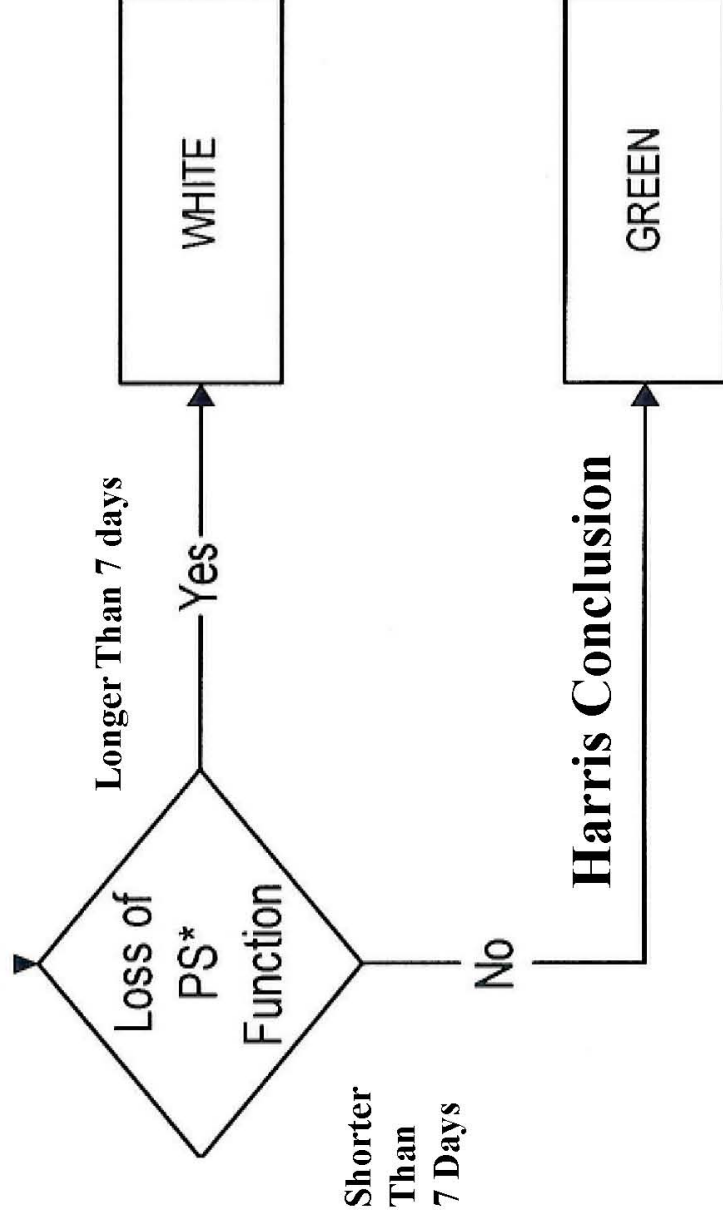
The OSC, TSC, or EOF is not functional for a period of longer than 7 days from the TIME OF DISCOVERY, to the extent that any key ERO member could not perform his/her assigned E-plan functions, in the absence of COMPENSATORY MEASURES

DEGRAD. PS FUNC. Green FINDING

The OSC, TSC, or EOF is not functional for a period of longer than 24 hours from the TIME OF DISCOVERY, to the extent that any key ERO member could not perform his/her assigned E-plan functions, in the absence of COMPENSATORY MEASURES



EOF Significance Analysis





EOF Significance Conclusion

- Thorough Assessment of EOF Functions Was Performed
- Harris Believes That EOF Supported ERO Functions
 - Based on evidence found and evaluated during investigation
 - Planning standard function available for periods longer than 7 Days
- Harris Believes That EOF AV is Most Appropriately Characterized as Having a Very Low Safety Significance
- Harris Offers This Information for NRC Consideration of Significance / Severity Level of the 2 AVs



Root Cause Evaluation & Organizational Learning

Sean O'Connor
Organizational Effectiveness Manager



Root Cause Evaluation Lessons Learned

- Root Cause Identified Lessons in 5 Areas
 - HNP had not consistently applied our facilities change process for changes at the EOF
 - HNP did not perform adequate reportability reviews
 - HNP relied upon informal communication processes when performing maintenance at the EOF and TSC facilities
 - HNP did not provide adequate oversight for contract maintenance performed outside the work management process at the EOF
 - Emergency preparedness and engineering did not historically establish the design bases for all components which affect the functionality of the EOF and TSC. For some components where the design bases were established, the bases were not fully validated



Root Cause Evaluation Summary of Root Cause

Processes and procedures to ensure the functionality and reportability requirements for the ERFs did not meet the standards established for the rest of the plant.



Root Cause Evaluation Corrective Actions To Prevent Recurrence

Document the technical requirements and administrative controls needed for the EOF and TSC to ensure performance of design and licensing basis functions

- Design review and documentation
- Procedures
- Line ownership



Root Cause Evaluation Event Communications

- Key Messages Shared
 - Awareness of the in-leakage assumption issue
 - Review of surveillances to confirm facility functional status
 - HVAC system performance impact on facility functional status
 - Emergency facilities design basis documentation
 - Control of facility maintenance activities
 - Control room operator awareness and information tools



Closing Remarks

George Hamrick
Site Vice President