



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
REGION II

245 PEACHTREE CENTER AVENUE NE, SUITE 1200  
ATLANTA, GEORGIA 30303-1257

August 17, 2017

Mr. Daniel Stoddard  
Senior Vice President and Chief Nuclear Officer  
Innsbrook Technical Center  
5000 Dominion Boulevard  
Glen Allen, VA 23060-6711

SUBJECT: SURRY POWER STATION – U.S. NUCLEAR REGULATORY  
COMMISSION EMERGENCY PREPAREDNESS INSPECTION REPORT  
05000280/2017502 AND 05000281/2017502

Dear Mr. Stoddard:

On July 27, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Surry Power Station, Units 1 and 2. On July 27, 2017, the NRC inspectors, discussed the results of this inspection with Mr. F. Mladen and other members of your staff. The results of this inspection are documented in the enclosed report.

The NRC inspectors did not identify any findings or violations of more than minor significance.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <https://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA: Adam Nielson for/

Brian R. Bonser, Chief  
Plant Support Branch 1  
Division of Reactor Safety

Docket Nos. 50-280 and 50-281  
License Nos. DPR-32 and DPR-37

Enclosure:  
IR 05000280, 281/2017502  
w/Attachment: Supplemental Information

cc: Distribution via Listserve

SUBJECT: SURRY POWER STATION – U.S. NUCLEAR REGULATORY  
 COMMISSION EMERGENCY PREPAREDNESS INSPECTION REPORT  
 05000280/2017502 AND 05000281/2017502 Dated August 17, 2017

**DISTRIBUTION:**

- A. Masters, RII, DRP
- S. Ninh, RII, SPE
- A. Wilson, RII, PE
- P. McKenna, RII, SRI
- C. Jones, RII, RI
- R. Price, RII, ORA/RC
- K. Sloan, RII, EICS
- RIDSNRRDIRS
- PUBLIC

\* See previous page for concurrence

PUBLICLY AVAILABLE     NON-PUBLICLY AVAILABLE     SENSITIVE     NON-SENSITIVE  
 ADAMS:  Yes    ACCESSION NUMBER: \_\_\_\_\_     SUNSI REVIEW COMPLETE     FORM 665 ATTACHED

OFFICE	RII:DRS/PSB1	RII:DRS/PSB1	RII:DRS/PSB1	RIV:DRS/PSB2	NSIR:DPR/POB EPS1	RII:DRP/RPB5 ADM2	RII:DRS/PSB1 AND for BRB1
SIGNATURE	SPS	CAF2	JDH9	PJE	E. Schrader	A Masters	B. Bonser
NAME	S. Sanchez	C. Fontana	J. Hickman	P. Elkmann	8/15/2017	8/17/2017	8/17/2017
DATE	8/15/2017	8/16/2017	8/15/2017	8/15/2017	YES    NO	YES    NO	YES    NO
EMAIL COPY	YES    NO	YES    NO	YES    NO	YES    NO	YES    NO	YES    NO	YES    NO

OFFICIAL RECORD COPY DOCUMENT NAME: G:\DRS\PSB1\INSPECTION REPORTS (EP)\2017\SUR EP IR 2017-502.DOCX

**U.S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket Nos: 05000280 and 05000281

License Nos: DPR-32 and DPR-37

Report Nos: 05000280/2017502 and 05000281/2017502

Licensee: Virginia Electric and Power Company (VEPCO)

Facility: Surry Power Station, Units 1 and 2

Location: Surry, VA

Dates: July 24–27, 2017

Inspectors: Steven Sanchez, Senior Emergency Preparedness Inspector  
Paul Elkmann, Senior Emergency Preparedness Inspector (R-IV)  
Christopher Fontana, Emergency Preparedness Inspector  
John Hickman, Emergency Preparedness Inspector  
Eric Schrader, Emergency Preparedness Specialist (NSIR)

Approved by: Brian R. Bonser, Chief  
Plant Support Branch 1  
Division of Reactor Safety

Enclosure

## **SUMMARY**

Inspection Report (IR) 05000280/2017502; 05000281/2017502; 07/24/2017–07/27/2017; Surry Power Station, Units 1 and 2; Emergency Preparedness Exercise and Baseline Inspection.

This report covers an announced inspection by four emergency preparedness inspectors and one emergency preparedness specialist. The U.S. Nuclear Regulatory Commission's (NRC) program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 6.

The NRC inspectors did not identify any findings or violations of more than minor significance.

## REPORT DETAILS

### 1. REACTOR SAFETY

Cornerstone: Emergency Preparedness

#### 1EP1 Exercise Evaluation

##### a. Inspection Scope

The onsite inspection consisted of the following review and assessment:

- The adequacy of the licensee's performance in the biennial exercise, conducted on July 25, 2017, was reviewed and assessed regarding the implementation of the Risk Significant Planning Standards in 10 CFR 50.47(b)(4), (5), (9), and (10); which address emergency classification, offsite notification, radiological assessment, and protective action recommendations, respectively.
- The overall adequacy of the licensee's emergency response facilities were assessed against the licensee's Emergency Plan commitments. The facilities assessed were the Control Room Simulator, Technical Support Center, Operations Support Center, and the local Emergency Operations Facility.
- Other performance areas, such as the emergency response organization's (ERO) recognition of abnormal plant conditions; command and control, intra- and inter-facility communications; prioritization of mitigation activities; utilization of repair and field monitoring teams; interface with offsite agencies; and the overall implementation of the emergency plan and its implementing procedures.
- Past performance issues from NRC inspection reports and Federal Emergency Management Agency (FEMA)/Department of Homeland Security (DHS) exercise reports to determine the effectiveness of corrective actions as demonstrated during this exercise to ensure compliance with 10 CFR 50.47(b)(14).
- The post-exercise critique process and the presentation to the licensee's senior management conducted on July 27, 2017, to evaluate the licensee's self-assessment of its ERO performance during the exercise, and to ensure compliance with 10 CFR Part 50, Appendix E, Subsection IV.F.2.g.

The inspectors reviewed various documents, which are listed in the Attachment. The inspectors also attended the FEMA-sponsored public meeting on July 28, 2017. This inspection activity satisfied one inspection sample for the exercise evaluation on a biennial basis.

##### b. Findings

No findings were identified.

#### 1EP4 Emergency Action Level and Emergency Plan Changes

a. Inspection Scope

Since the last NRC inspection of this program area, one revision to the emergency plan and several revisions to emergency plan implementing procedures had been made. The licensee determined that, in accordance with 10 CFR 50.54(q), the emergency plan continued to meet the requirements of 10 CFR 50.47(b), and Appendix E to 10 CFR Part 50. The inspectors reviewed the revisions, and sampled implementing procedure changes to evaluate potential reductions in the effectiveness of the Plan. As this review was not documented in a Safety Evaluation Report, and does not constitute formal NRC approval of the changes, these changes remain subject to future NRC inspection in their entirety.

The inspection was conducted in accordance with NRC Inspection Procedure (IP) 71114, Attachment 04, Emergency Action Level and Emergency Plan Changes. The applicable planning standards of 10 CFR 50.47(b), and its related requirements in 10 CFR Part 50, Appendix E, were used as reference criteria. The inspectors reviewed various documents, which are listed in the Attachment to this report. This inspection activity satisfied one inspection sample for the emergency action level and emergency plan changes on an annual basis.

b. Findings

No findings were identified.

1EP8 Exercise Evaluation – Scenario Review

a. Inspection Scope

Prior to the inspection activity, the inspectors conducted an in-office review of the exercise objectives and scenario submitted to the NRC using IP 71114.08, “Exercise Evaluation - Scenario Review,” to determine if the exercise would test major elements of the emergency plan, as required by 10 CFR 50.47(b)(14). The inspectors reviewed various documents, which are listed in the Attachment. This inspection activity satisfied one inspection sample for the exercise evaluation on a biennial basis.

b. Findings

No findings were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

a. Inspection Scope

The inspectors sampled licensee submittals relative to the performance indicators (PIs) listed below for the period July 1, 2016, through March 31, 2017. To verify the accuracy of the PI data reported during that period, PI definitions and guidance

contained in Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 7, was used to confirm the reporting basis for each data element.

#### Emergency Preparedness Cornerstone

- Drill/Exercise Performance (DEP)
- Emergency Response Organization (ERO) Readiness
- Alert and Notification System (ANS) Reliability

For the specified review period, the inspectors examined data reported to the NRC, procedural guidance for reporting PI information, and records used by the licensee to identify potential PI occurrences. The inspectors evaluated the accuracy of the PIs for ERO and DEP through review of a sample of drill and event records. The inspectors reviewed selected training records to verify the accuracy of the PI for ERO drill participation for personnel assigned to key positions in the ERO. The inspectors evaluated the accuracy of the PI for ANS reliability through review of a sample of the licensee's records of periodic system tests. The inspectors also interviewed the licensee personnel who were responsible for collecting and evaluating the PI data. Licensee procedures, records, and other documents reviewed within this inspection area are listed in the Attachment. This inspection satisfied three inspection samples for PI verification on an annual basis.

#### b. Findings

No findings were identified.

#### 4OA6 Meetings, Including Exit

On July 27, 2017, the inspection team presented the inspection results to Mr. F. Mladen and other members of the plant staff. The inspectors confirmed that no proprietary information was provided during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### Licensee Personnel

L. Black, Supervisor, Outage & Planning  
S. Brawl, Emergency Preparedness Instructor  
E. Collins, Manager, Fleet Emergency Preparedness  
J. Costello, Fleet Emergency Preparedness Specialist  
T. Cuthriell, Licensing Engineer  
B. Garber, Manager, Station Licensing  
D. Godwin, Manager, Emergency Preparedness  
J. Grau, Manager, Nuclear Site Services  
J. Henderson, Director, Engineering  
R. Herbert, Manager, Design Engineering  
J. Holloway, Manager, Site Engineering  
L. Jones, Manager, Protection Services  
K. Longston, Emergency Preparedness Specialist  
F. Mladen, Site Vice President  
L. Ragland, Manager, Radiological Protection and Chemistry  
B. Rickert, Emergency Preparedness Specialist  
J. Rosenberger, Director, Nuclear Safety & Licensing  
J. Shell, Assistant Operations Manager  
R. Simmons, Plant Manager  
T. Swearingen, Emergency Preparedness Specialist  
M. True, Emergency Preparedness Specialist  
D. Wilson, Manager, Maintenance

### **LIST OF DOCUMENTS REVIEWED**

#### 1EP1 Exercise Evaluation

##### Procedures

Surry Power Station Emergency Plan, Rev. 63  
CPIP-3.1, CERC and CEOF Activation, Rev. 29  
CPIP-3.3, Surry LEOF Activation, Rev. 21  
CPIP-6.0, LEOF Recovery Manager Guidance, Rev. 14  
CPIP-6.2, Radiological Assessment Coordinator, Rev. 15  
EP-AA-100, Maintaining Emergency Preparedness, Rev. 6  
EP-AA-303, Equipment Important to Emergency Response, Rev. 16  
EP-AA-400, Drill and Exercise Program, Rev. 10  
EPIP-1.01, Emergency Manager Controlling Procedure, Rev. 58  
EPIP-1.03, Response to Alert, Rev. 23  
EPIP-1.04, Response to Site Area Emergency, Rev. 23  
EPIP-1.05, Response to General Emergency, Rev. 25  
EPIP-1.06, Protective Action Recommendations, Rev. 12  
EPIP-2.01, Notification of State & Local Governments, Rev. 44  
EPIP-2.02, Notification of NRC, Rev. 23



EPIP-3.02, Activation of the Technical Support Center, Rev. 35  
EPIP-3.03, Activation of the Operations Support Center, Rev. 22  
EPIP-3.05, Augmentation of Emergency Response Organization, Rev. 12  
EPIP-4.03, Dose Assessment Team Controlling Procedure, Rev. 20  
EPIP-4.07, Protective Measures, Rev. 18  
EPIP 4.17, Monitoring of Emergency Response Facilities, Rev. 13  
PI-AA-200, Corrective Action, Rev. 33

#### Records and Data

Surry Power Station Emergency Preparedness 2017 Biennial Exercise Scenario, dated 7/25/17  
Simulator Control Room, Technical Support Center, Operations Support Center, and the Local  
Emergency Operations Facility documentation packages (logs, event notification forms,  
Protective Action Recommendations, Media releases, and Radiological Dose Assessments)  
EP-AA-400, Drill and Exercise Program Documents, Attach. 3, Drill/Exercise Objectives,  
Rev. 10  
0-OP-VS-007, Technical Support Center Ventilation, Rev. 13  
0-OCP-EP-200, 4160 Volt Breaker Operations, Rev. 7

#### Corrective Action Program Documents (Condition Reports)

CR 1010345, Impact of CA 300179 primary MET tower instrument height changes on  
atmospheric dispersion factors  
CR 1037230, Evaluate required S/G level to ensure fission product scrubbing  
CR 1041840, TSC AC unit not working  
CR 1045188, TSC AC unit not running  
CR 1049158, Emergency Accountability System failed test  
CR 1053729, TSC Local Area RM in alarm  
CR 1055786, Drill confidential material distributed to key ERO members prior to drill  
CR 1059708, Meteorological monitoring panel delta-T indication has failed  
CR 1060458, Discrepancy in the minimum staffing requirements of E-plan and OP-AA-100  
CR 1061082, Inaccurate information identified in EPIP 5.09 and the Emergency Personnel  
Notification List (EPNL)  
CR 1071654, Primary MET tower A/C not working  
CR 1072477, Objective 8 met with problems overall  
CR 1074320, Some pagers did not activate during the EP Exercise on 7/25/17  
CR 1074324, Some batteries appeared dead for ERO radios in OSC  
CR 1074327, TSC communication equipment issues  
CR 1074331, TSC NRC ENS cordless phone issues  
CR 1074336, LEOF instaphone not functioning properly  
CR 1074339, ARCOS activation notifications received 12 minutes after declaration of Alert  
CR 1074372, RP instrumentation issues during 7/25/17 drill exercise  
CR 1074433, Offsite responders arrived at the LEOF after the NEDS communicated habitability  
requirements  
CR 1074436, ERDS data from simulator not visible to NRC  
CR 1074468, VDEM observations from LEOF during Exercise  
CR 1074472, Question on habitability  
CR 1074484, Potential challenges for VDEM with making PADs  
CR 1074531, Objective 20 was graded as NOT MET overall for the Exercise  
CR 1074534, Lessons learned from Exercise  
CR 1074537, 50.72 reporting when in continuous NRC communications (NRC-identified)  
CR 1074790, NRC comments for 2017 inspection (NRC-identified)

CR 1074753, Exercise scenario package did not contain demonstration criteria for Semi-Annual Radiological Monitoring Drill (NRC-identified)

#### 1EP4 Emergency Action Levels and Emergency Plan Changes

##### Procedures

Surry Power Station (SPS) Emergency Plan, Rev. 62 & 63  
 EP-AA-101, 10 CFR 50.54(q) Change Evaluation, Rev. 7  
 EP-AA-102, Revision & Control of Emergency Plan, Emergency Action Levels (Technical Basis and Matrix) & Reference Manual, Rev. 8  
 EPIP-1.06, Protective Action Recommendations, Rev. 11 & 12  
 EPIP-4.03, Dose Assessment Team Controlling Procedure, Rev. 19 & 20  
 EPIP 4.07, Protective Measures, Rev. 17 & 18

##### Change Packages

SU-14-021, 50.54(q)(3) Screening/Evaluation of EPIP-2.01 "Notification of State and Local Governments," Rev. 44  
 SU-14-022, 50.54(q)(3) Screening/Evaluation of EPIP-2.01 "Notification of State and Local Governments," Rev. 44  
 SU-16-001, 50.54(q)(3) Screening/Evaluation for EPIP-1.06 Rev. 12, dated 10/6/16  
 SU-16-002, 50.54(q)(3) Screening/Evaluation for EPIP-1.06 Rev. 12, dated 10/6/16  
 SU-16-003, 50.54(q)(3) Screening/Evaluation for EPIP-1.06 Rev. 12, dated 10/6/16  
 SU-16-01, 50.54(q)(3) Screening/Evaluation for EPIP -4.07 Rev. 18, dated 10/6/16  
 SU-16-05, 50.54(q)(3) Screening/Evaluation for EPIP -4.07 Rev. 18, dated 10/6/16  
 SU-16-09, 50.54(q)(3) Screening/Evaluation for EPIP -4.07 Rev. 18, dated 10/6/16  
 SU-16-10, 50.54(q)(3) Screening/Evaluation for EPIP -4.07 Rev. 18, dated 10/6/16  
 SU-16-11, 50.54(q)(3) Screening/Evaluation for EPIP -4.07 Rev. 18, dated 10/6/16  
 SU-16-12, 50.54(q)(3) Screening/Evaluation for EPIP -4.07 Rev. 18, dated 10/6/16  
 SU-16-01, 50.54(q)(3) Screening/Evaluation for SPS Emergency Plan Rev. 63, dated 1/12/17  
 SU-16-02, 50.54(q)(3) Screening/Evaluation for App. 10.1, Letters of Agreement, dated 1/12/17  
 SU-16-03, 50.54(q)(3) Screening/Evaluation for Section 6.4.2, dated 1/12/17  
 SU-16-04, 50.54(q)(3) Screening/Evaluation for Section 6.4.1, dated 1/12/17  
 SU-16-05, 50.54(q)(3) Screening/Evaluation for Section 6.3.3.3, dated 1/12/17  
 SU-16-08, 50.54(q)(3) Screening/Evaluation for Title Changes, dated 1/12/17  
 SU-16-09, 50.54(q)(3) Screening/Evaluation for Sections 6.3.2 & 6.4.1.1, dated 1/12/17  
 SU-16-10, 50.54(q)(3) Screening/Evaluation for Sections 5.3.1, 5.3.3, 6.1, 6.3.1, 6.4.2, 7.2, & 9.0, dated 1/12/17  
 SU-16-11, 50.54(q)(3) Screening/Evaluation for Sections 5.2.1.1, 5.2.1.17, 5.2.1.18, 5.3.1, 5.3.1.5, & 7.3.3, dated 1/12/17  
 SU-16-12, 50.54(q)(3) Screening/Evaluation for Sections 7.2.1.1, dated 1/12/17

##### Corrective Action Program Documents

CR 1027899, EAL review was not signed by Commonwealth of Virginia representative  
 CR 1028317, Approver was not qualified to approve 10 CFR 50.54(q) Evaluations  
 CR 1028735, EP organization changes were made without performing a 50.54(a) evaluation  
 CR 1031616, EP documentation discrepancies identified  
 CR 1038104, EP did not follow the SAT process when implementing a change  
 CR 1061820, Current posted/available versions of EPIP-4.16 & 4.34 have inconsistent information contained in EPIP-4.03 & 4.07

CR 1064316, Initiating condition limit for RA1 & RU1a do not match EAL criteria for RA1.1 & RU1.1

CR 1074400, Wrong revision numbers referenced in procedure package (NRC-identified)

#### 1EP8 Exercise Evaluation - Scenario Review

##### Procedures

EP-AA-400, Drill & Exercise Program, Rev. 10

##### Records and Data

Completed Scenario Review Checklist

FEMA After Action Report/Improvement Plan, dated 4/27/15

SJUN16FS Management Critique for SPS Full Scale Drill, dated 7/2016

SMAR17FS Management Critique for SPS Full Scale Drill, dated 4/19/17

SDEC16FS Management Critique for SPS Full Scale Drill, dated 1/5/17

SJUN16FS Management Critique for SPS Full Scale Drill, dated 7/20/16

SMAY16FS Management Critique for SPS Full Scale Drill, dated 6/9/16

SFEB16FS Management Critique for SPS Full Scale Drill, dated 3/29/16

Surry 8-Year EAL Matrix

##### Corrective Action Program Documents

CR 1028053, TSC primary MIDAS computer failed during EP drill training exercise

CR 1028679, Inappropriate controller coaching was observed in two instances in the OSC

CR 1035040, EP baseline inspection NRC observations

CR 1037165, Objective 4, Criterion 3, offsite notification not met

CR 1040589, CERC dose assessment did not adequately compare field data to MIDAS during drill

CR 1042754, SJUN16FS – Objective 20 met with problems

CR 1069966, MIDAS not working properly

#### 4OA1 Performance Indicator Verification

##### Procedures

EP-AA-103, Emergency Preparedness Performance Indicators, Rev. 4

0-LSP-EW-002, Early Warning System Siren Activation Monitoring, Rev. 11, 12, & 13

PI-AA-200, Corrective Action, Rev. 33

##### Records and Data

DEP opportunities documentation for first, second, third, and fourth quarters 2016; and first quarter 2017

Siren test data for first, second, third, and fourth quarters 2016; and first quarter 2017

Drill and exercise participation records of ERO personnel for first, second, third, and fourth quarters 2016; and first quarter 2017

##### Corrective Action Program Documents

CR 0569153, Corp ERO availability 2-deep standard not met

CR 1022666, 0-LSP-EW-001 was not completed within grace

CR 1034931, EP ANS KPI values inaccurate for August 2015

CR 1035025, Potential trend for SPS EWS #51

CR 1037901, Minimum qualification guidance for damage control team members in Electrical & Mechanical maintenance

CR 1043941, SPS EWS Siren Polling Test  
 CR 1047402, Corporate ERO availability 2-deep minimum standard not met 9/18-10/1/16  
 CR 1047822, Adverse trend in corporate ERO availability  
 CR 1055371, Siren 41 did not respond as expected during conduct of 0-LS-EW-007  
 CR 1061531, Corp ERO availability 2-deep standard not met  
 CR 1061887, Siren 42 did not activate  
 CR 1072399, Potential for ERO PAR variability based on EPIP-4.03, NE-GL-0035S

### **LIST OF ACRONYMS USED**

ANS	Alert and Notification System
CAP	Corrective Action Program
CFR	Code of Federal Regulations
CR	Condition Reports
DEP	Drill and Exercise Performance
DHS	Department of Homeland Security
EAL	Emergency Action Level
EITER	Equipment Important to Emergency Preparedness
EOF	Emergency Operations Facility
EP	Emergency Preparedness
ERO	Emergency Response Organization
FEMA	Federal Emergency Management Agency
IP	Inspection Procedure
IR	Inspection Report
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OSC	Operations Support Center
PIs	Performance Indicators
ROP	Reactor Oversight Program
RSPS	Risk Significant Planning Standard
TSC	Technical Support Center