UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
1600 E. LAMAR BLVD.
ARLINGTON, TX 76011-4511

December 22, 2017

Mr. G. T. Powell
Executive Vice President and CNO
STP Nuclear Operating Company
P.O. Box 289
Wadsworth, TX 77483

SUBJECT: SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION, UNITS 1 AND 2 – INSPECTION OF THE IMPLEMENTATION OF MITIGATION STRATEGIES AND SPENT FUEL POOL INSTRUMENTATION ORDERS AND EMERGENCY PREPAREDNESS COMMUNICATION/ STAFFING/MULTI-UNIT DOSE ASSESSMENT PLANS – INSPECTION REPORT 05000498/2017008; 05000499/2017008

Dear Mr. Powell:

On October 27, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed the onsite portion of an inspection at the South Texas Project Electric Generating Station. On December 20, 2017, the NRC inspectors discussed the results of this inspection with you and other members of your staff. Inspectors documented the results of this inspection in the enclosed inspection report.

The inspection examined activities conducted under your license as they relate to the implementation of mitigation strategies and spent fuel pool instrumentation orders (EA-12-049 and EA-12-051) and Emergency Preparedness Communication, Staffing, and Multi-Unit Dose Assessment Plans, your compliance with the Commission's rules and regulations, and with the conditions of your operating license. Within these areas, the inspection involved examination of selected procedures and records, observation of activities, and interviews with station personnel.

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

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 2.390, "Public Inspections, Exemptions, Requests for Withholding," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC's Public

Document Room or from the Publicly Available Records (PARS) component of the NRC's Agencywide Documents 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).

Sincerely,

/RA/

Nicholas H. Taylor, Branch Chief
Project Branch B
Division of Reactor Projects

Dockets: 50-498; 50-499
Licenses: NPF-76; NPF-80

Enclosure:
Inspection Report 05000498/2017008;
and 05000499/2017008

w/ Attachment: Supplemental Information

cc w/ encl: Electronic Distribution

U.S. NUCLEAR REGULATORY COMMISSION

REGION IV

Docket:	05000498, 05000499
License:	NPF-76, NPF-80
Report:	05000498/2017008 and 05000499/2017008
Licensee:	STP Nuclear Operating Company
Facility:	South Texas Project Electric Generating Station, Units 1 and 2
Location:	FM 521 - 8 miles west of Wadsworth Wadsworth, Texas 77483
Dates:	October 23 – December 20, 2017
Inspectors:	R. Alexander, Sr. Project Engineer (Team Leader) S. Anderson, Health Physicist N. Hernandez, Resident Inspector – South Texas Project M. Stafford, Resident Inspector – Cooper
Approved By:	Nicholas H. Taylor Chief, Project Branch B Division of Reactor Projects

SUMMARY

IR 05000498/2017008, 05000499/2017008; 10/23/2017 – 12/20/2017; South Texas Project Electric Generating Station, Units 1 and 2; Temporary Instruction 2515/191, Inspection of the Implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans, issued December 23, 2015.

The inspection covered a one week inspection onsite by the resident inspector and three inspectors from the Region IV office. No findings were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," dated July 2016.

A. NRC-Identified and Self-Revealing Findings

None

B. Licensee-Identified Violations

None

REPORT DETAILS

4. Other Activities

4OA5 Other Activities (TI 2515/191)

The objective of Temporary Instruction (TI) 2515/191 "Inspection of the Implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans" is to verify that licensees have adequately implemented the mitigation strategies as described in the licensee's Final Integrated Plan (ADAMS Accession Nos. ML16067A088 and ML17062A303) and the NRC's plant safety evaluation (ADAMS Accession No. ML16340A009) and to verify that the licensees installed reliable water-level measurement instrumentation in their spent fuel pools. The purpose of this TI is also to verify the licensees have implemented Emergency Preparedness (EP) enhancements as described in their site-specific submittals and NRC safety assessments, including multi-unit dose assessment capability and enhancements to ensure that staffing is sufficient and communications can be maintained during such an event.

The inspection verified that plans for complying with NRC Orders EA-12-049, Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (ADAMS Accession No. ML12229A174) and EA-12-051, Order Modifying Licenses With Regard to Reliable Spent Fuel Pool Instrumentation (ADAMS Accession No. ML12056A044) are in place and are being implemented by the licensee. Additionally, the inspection verified implementation of staffing and communications information provided in response to the March 12, 2012 request for information letter and multiunit dose assessment information provided per COMSECY-13-0010, Schedule and Plans for Tier 2 Order on Emergency Preparedness for Japan Lessons Learned, dated March 27, 2013 (ADAMS Accession No. ML12339A262).

The team discussed the plans and strategies with plant staff, reviewed documentation, and where appropriate, performed plant walk downs to verify that the strategies could be implemented as stated in the licensee's submittals and the NRC staff-prepared safety evaluation. For most strategies, this included verification that the strategy was feasible, procedures and/or guidance had been developed, training had been provided to plant staff, and required equipment had been identified and staged. Specific details of the team's inspection activities are described in the following sections.

1. Mitigation Strategies for Beyond-Design-Basis External Events

a. Inspection Scope

The team examined the licensee's established guidelines and implementing procedures for the beyond-design-basis mitigation strategies. The team assessed how the licensee coordinated and documented the interface/transition between existing off-normal and Emergency Operating Procedures with the newly developed mitigation strategies. The

team selected a number of mitigation strategies and conducted plant walk downs with licensed operators and responsible plant staff to assess: the adequacy and completeness of the procedures; familiarity of operators with the procedure objectives and specific guidance; staging and compatibility of equipment; and the practicality of the operator actions prescribed by the procedures, consistent with the postulated scenarios.

The team verified that a preventive maintenance program had been established for the FLEX portable equipment and that periodic equipment inventories were in place and being conducted. Additionally, the team examined the introductory and planned periodic/refresher training provided to the Operations and other station staff most likely to be tasked with implementation of the FLEX mitigation strategies. The team also reviewed the introductory and planned periodic training provided to the Emergency Response Organization personnel.

b. Assessment

Based on samples selected for review, the inspectors verified that the licensee satisfactorily implemented appropriate elements of the FLEX strategy as described in the plant specific submittals and the associated safety evaluation and determined that the licensee is generally in compliance with NRC Order EA-12-049. The inspectors verified that the licensee satisfactorily:

- Developed and issued FLEX Support Guidelines (FSGs) to implement the FLEX strategies for postulated external events;

- Integrated their FSGs into their existing plant procedures such that entry into and departure from the FSGs are clear when using existing plant procedures;

- Protected FLEX equipment from site-specific hazards;

- Developed and implemented adequate testing and maintenance of FLEX equipment to ensure their availability and capability;

- Trained their staff to assure personnel proficiency in the mitigation of beyond-design-basis events; and

- Developed means to ensure that the necessary off-site FLEX equipment will be available from off-site locations.

The inspectors verified that any non-compliances with current licensing requirements, and other issues identified during the inspection were entered into the licensee's corrective action program.

c. Findings

No findings identified.

2. Spent Fuel Pool (SFP) Instrumentation

a. Inspection Scope

The team examined the licensee's newly installed spent fuel pool instrumentation. Specifically, the inspectors verified the sensors were installed as described in the plant specific submittals and the associated safety evaluation, and that the cabling for the power supplies and the indications for each channel are physically and electrically separated. Additionally, environmental conditions and accessibility of the instruments were evaluated. Documents reviewed are listed in the attachment.

b. Assessment

Based on samples selected for review, the inspectors determined that the licensee satisfactorily installed and established control of the SFP instrumentation as described in the plant specific submittals and the associated safety evaluation and determined that the licensee is generally in compliance with NRC Order EA-12-051. The inspectors verified that the licensee satisfactorily:

- Installed the SFP instrumentation sensors, cabling and power supplies to provide physical and electrical separation as described in the plant specific submittal and safety evaluation;

- Installed the SFP instrumentation display in the location, environmental conditions and accessibility as described in the plant specific submittals; and

- Trained their staff to assure personnel proficiency with the maintenance, testing, and use of the SFP instrumentation.

The inspectors verified that any non-compliances with current licensing requirements, and other issues identified during the inspection were entered into the licensee's corrective action program.

c. Findings

No findings identified.

3. Staffing and Communication Request for Information

a. Inspection Scope

Through discussions with plant staff, review of documentation and plant walk downs, the team verified that the licensee has implemented required changes to staffing, communications equipment and facilities to support an extended loss of all AC power (ELAP) scenario as described in the licensee's staffing assessment and the NRC safety assessment. The team also verified that the licensee has implemented dose assessment (including releases from spent fuel pools) capability using the licensee's

site-specific dose assessment software and approach as described in the licensee's dose assessment submittal. Documents reviewed are listed in the attachment.

b. Assessment

The inspectors reviewed information provided in the licensee's multi-unit dose submittal and in response to the NRC's March 12, 2012, request for information letter and verified that the licensee satisfactorily implemented enhancements pertaining to Near-Term Task Force Recommendation 9.3 response to a large scale natural emergency event that results in an extended loss of all ac power to the site and impedes access to the site.

The inspectors verified the following:

- Licensee satisfactorily implemented required staffing change(s) to support an ELAP scenario;
- Emergency preparedness communications equipment and facilities are sufficient for dealing with an ELAP scenario; and
- Implemented dose assessment capabilities (including releases from spent fuel pools) using the licensee's site-specific dose assessment software and approach.

The inspectors verified that any non-compliances with current licensing requirements, and other issues identified during the inspection were entered into the licensee's corrective action program.

c. Findings

No findings identified.

4OA6 Exit

Exit Meeting Summary

On October 27, 2017, the inspectors presented the on-site inspection results in a management debrief with Mr. G.T. Powell, Chief Nuclear Officer, and other members of the site staff. The inspectors confirmed that proprietary information examined during the inspection had been returned. The inspectors completed an exit meeting conducted with Mr. G.T. Powell, Chief Nuclear Officer, and other members of the site staff, via telephone on December 20, 2017, to discuss the final results of the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel
R. Aguilera, Manager, Plant Protection/Emergency Response
P. Alier, Operations Performance Analysis & Investigations
W. Brost, Senior Engineer, Licensing
K. Brune, Plant Operator
A. Capristo, Executive VP & Chief Administrative Officer
J. Connolly, Site Vice President
M. Coughlin, Operations Support, Procedures
K. Elliott, Plant Operator
G. Ferrigno, General Supervisor, Health Physics
Z. Mielscht, Plant Operator
M. Murray, Manager, Regulatory Affairs/Licensing
G. Powell, Chief Nuclear Officer
S. Rodgers, Supervisor, Emergency Response
M. Ruvalcaba, Manager, Beyond Design Basis Response
M. Schaefer, Plant General Manager
T. White, Electrician

NRC Personnel
A. Sanchez, Senior Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

2515/191	TI	Inspection of the Implementation of Mitigation Strategies and Spent Fuel Pool Instrumentation Orders and Emergency Preparedness Communication/Staffing/Multi-Unit Dose Assessment Plans, issued December 23, 2015

LIST OF DOCUMENTS REVIEWED

Section 4OA5: Other Activities

Corrective Action Documents

2012-11658, Action 111	2012-11658, Action 547	2012-12320, Action 32	2012-12320, Action 90
2014-13084	2014-16065	2015-02513	2015-03238
2015-07745	2015-09561	2015-10251	2015-10731
2015-10732	2015-10801	2015-11016	2015-11017
2015-11161	2015-11172	2015-12085	2015-16311
2015-21140	2015-22393	2015-24648	2015-24899
2015-26727	2016-05077	2016-05083	2016-05796
2016-07339	2016-09278	2016-09785	2016-15370, Action 6
2017-15976	2017-17538	2017-19034	2017-19908
2017-20925	2017-20926	*2017-22544	*2017-22586
*2017-22589	*2017-22590	*2017-22592	*2017-22613
*2017-22640			

* - indicates corrective action document written by the licensee as a result of the NRC inspection

Drawings

Number	Title	Revision
00001E0FRAA #1	Single Line Diagram Unit 1 FLEX Onsite Auxiliary Power 480V FR Load Distribution Panel DP1000	2
00002E0FRAA #1	Single Line Diagram Unit 2 FLEX Onsite Auxiliary Power 480V FR Load Distribution Panel DP1000	1
00009E0DAAB #1	Single Line Diagram 125 V DC Distribution Panels PL125C, PL125G, (MAB) PL125D, PL125H, (EAB)	26
00009E0DAAE #1	Single Line Diagram 125 V DC Power Distribution Swbd 1B (EAB)	14
3M15-9-C-34004	Concrete Mechanical and Electrical Aux. Bldg. Isolation Valve Cubicle Section A	10
819-M-27286	MTU Onsite Energy: AC Diagram for FLEX Diesel Generators	April 14, 2014

Procedures

Number	Title	Revision
0ERP01-ZV-TP01	Offsite Dose Calculations	27
0PEP01-ZE-0003	Core Reload Design Process Reload Safety Evaluation	18
0PGP03-ZO-0056	FLEX Equipment Functionality Program	2
0PGP03-ZO-FLEX	FLEX Support Guideline Program	1
0PGP03-ZT-0139	Emergency Preparedness Training Program	23
0PGP05-ZV-0003	Emergency Response Organization	19
0PGP05-ZV-0009	Emergency Facility Inventories and Inspections	18
0PGP05-ZV-0014	Emergency Response Activities	16
0POP01-ZA-0001	Plant Operations Department Administrative Guidelines	50
0POP01-ZA-0001	Plant Operations Department Administrative Guidelines	50
0POP04-AE-0007	Loss of All AC Power While on Shutdown Cooling	1
0POP04-FC-0001	Loss of Spent Fuel Pool Level or Cooling	36
0POP04-ZO-0002	Natural or Destructive Phenomena Guidelines	54
0POP04-ZO-0004	Extreme Cold Weather Guidelines	37
0POP05-EO-EC00	Loss of All AC Power	29
0POP05-EO-EC00	Loss of All AC Power	30
0POP07-FR-0006	FLEX Diesel Generator Performance Test	7
0POP12-ZO-FSG01	Long Term RCS Inventory Control	2
0POP12-ZO-FSG03	Alternate Low Pressure Feedwater	4
0POP12-ZO-FSG04	ELAP DC Bus Load Shed/Management	1
0POP12-ZO-FSG05	Initial Assessment and FLEX Equipment Staging	3
0POP12-ZO-FSG06	Alternate AFWST Makeup	2
0POP12-ZO-FSG08	Alternate RCS Boration	2
0POP12-ZO-FSG09	Low Decay Heat Temperature Control	1
0POP12-ZO-FSG10	RCS Accumulator Injection Isolation	1
0POP12-ZO-FSG11	Alternate SFP Makeup and Cooling	1
0POP12-ZO-FSG12	Alternate Containment Cooling	1
0POP12-ZO-FSG13	Transition from FLEX Equipment	3

Procedures

Number	Title	Revision
0POP12-ZO-FSG14	Shutdown RCS Makeup	1
0POP12-ZO-FSG17	Portable Pump Fill of RWST	2
0POP12-ZO-FSG19	480V Flex Diesel Generator Operation	1
0POP12-ZO-FSG21	NSRC Turbine Generator	1
FLEX-0002	Final Integrated Plan	0
IMT-0001	Integrated Maintenance Team Guideline	3
Security Instruction 1007	Security Severe Weather Plan	7
ZV-0001	Emergency Response Desktop Guide Instruction: STAMPEDE User's Manual	8
ZV-0028	Emergency Response Desktop Guide Instruction: SAFER Response Plan	0

Parent/Model Work Orders

Number	Title	Revision / Date
14000140	Portable Diesel Driven Pump Inspect/Lubricate	0
14000141	Portable Diesel Driven Pump Inspect/Lubricate	0
14000142	Portable Diesel Driven Pump Inspect/Lubricate	1
14000143	Portable Diesel Driven Pump Flow Test	1
14000144	FLEX Emergency Portable Diesel Driven Pump	0
14000145	Portable Diesel Driven Pump Flow Test	0
15000127	Unit 2 Calibrate SFPI	0
15000130	Perform Mechanical Inspection, Lubrication, and Function Testing of the FLEX Tractor	1
15000133	FLEX RCS Makeup Pump 26 Hand Rotation/Inspect	2
15000141	FLEX RCS Makeup Pump 23 Clean/Lubricate/Inspect	0
15000143	FLEX RCS Makeup Pump 24 Clean/Lubricate/Inspect	1
15000144	FLEX RCS Makeup Pump 26 Clean/Lubricate/Inspect	1
15000169	Replace Drive Coupling for FLEX Steam Generator Makeup Pump #22	0
15000181	FLEX Diesel Generator #22 Clean/Inspect/Test	0
15000186	FLEX RCS Makeup Pump 13 Pump Bearing Oil Change	0

Parent/Model Work Orders

Number	Title	Revision / Date
15000213	Unit 2 Replace SFPI Back Up Power Supply Batteries	0
15000253	Unit 2 Replace SFPLI Sensor (Model Work Order)	0
15000437	Hand Rotate and Visually Inspect FLEX Steam Generator Makeup Pump #11	2
15000445	Change Pump Bearing Oil and Replace Drive Coupling for FLEX Steam Generator Makeup Pump #11	0
15000447	Clean, Inspect, Lubricate and Run FLEX Steam Generator Makeup Pump #12	1
15000451	Replace all hoses for FLEX Steam Generator Makeup	0
15000597	Inspect/Inventory FLEX Storage Boxes (Unit 2)	0
15000776	FLEX RCS Makeup Pump 16 Clean/Lubricate/Inspect	2
15000787	FLEX RCS Makeup Pump 14 Pump Bearing Oil Change	0
15000861	FLEX Diesel Generator #11 Output Breaker	0
15000944	Unit 1 Replace SFPI Back Up Power Supply Batteries	0
15000946	Unit 1 Calibrate SFPI	0
15000948	Unit 1 Replace SFPLI Sensor (Model Work Order)	0
15000949	FLEX SFP Makeup Pump #15	2
15000985	FLEX Diesel Generator #11 Vibration Data Collection	0
15000993	Inspect/Inventory FLEX Storage Boxes (Unit 1)	0

Calculations

15-FR-014 15-FR-020

Miscellaneous Documents/Reports

Number	Title	Revision / Date
	South Texas Project Units 1 and 2 Flood Analysis	0
	EC00 Validations from 4-30-15, 11-9-15 and 10-25-16	{None}
12-11658-741	Condition Report Engineering Evaluation (CREE)	0
EMC 151.02	Electrical Maintenance Continuing Training: FLEX Modification Familiarization	0
ICC 151.02	I&C 2015 Cycle Continuing Training: FLEX	0
IMT 303.01	I&C Training and Qualifications: Level Measurement Fundamentals	7

Miscellaneous Documents/Reports

Number	Title	Revision / Date
LOR-POR 145.01	FLEX Strategies for ELAP	{None}
LOT 508.01	FLEX Guidelines Presentation	0
MMC 151.04	Mechanical Maintenance Continuing Training: FLEX Mods and MM	0
NOC-AE-14003189	Insights from the Fukushima Dai-ichi Accident – Phase 2 Staffing Assessment	November 25, 2014
NOC-AE-150003255	Supplement to Insights from the Fukushima Dai-ichi Accident – Phase 2 Staffing Assessment	July 2, 2015
NOC-AE-16003328	Second Supplement to Insights from the Fukushima Dai-ichi Accident – Phase 2 Staffing Assessment	June 30, 2016
NOC-AE-16003421	Supplemental Information – Final Integrated Plan	February 20, 2017
POR 145.07	Plant Operator FLEX Training Presentation	01
ST-UB-NOC-17003573	STPNOC Cycle 21 Redesign Final Reload Evaluation	1
U1C21-1	Unit 1 Cycle 21 Reload Safety Evaluation and Core Operating Limits Report	1
VTD-C970-0001	Vendor Technical Document: CASE Hi Agriculture Operator's Manual	0
XC-16003-N-R-001	Compliance Matrix Report	000

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION, UNITS 1 AND 2 – INSPECTION OF THE IMPLEMENTATION OF MITIGATION STRATEGIES AND SPENT FUEL POOL INSTRUMENTATION ORDERS AND EMERGENCY PREPAREDNESS COMMUNICATION/ STAFFING/MULTI-UNIT DOSE ASSESSMENT PLANS – INSPECTION REPORT 05000498/2017008; 05000499/2017008 DATED DECEMBER 22, 2017

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