



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

May 22, 2018

Mr. Tom Vehec
Site Vice President
Southern Nuclear Operating Company, Inc.
Edwin I. Hatch Nuclear Plant
11028 Hatch Parkway North
Baxley, GA 31513

SUBJECT: EDWIN I. HATCH NUCLEAR PLANT – NRC DESIGN BASES ASSURANCE
INSPECTION (TEAM) REPORT 05000321/2018010 AND 05000366/2018010

Dear Mr. Vehec:

On April 26, 2018, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Edwin I. Hatch Nuclear Plant, Units 1 and 2, and the NRC inspectors discussed the results of this inspection with Mr. R. Spring and other members of your staff. Additional inspection results were discussed during a teleconference held on May 14, 2018, with Mr. C. Gamblin of your staff. The results of this inspection are documented in the enclosed report.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://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/

Marvin D. Sykes, Chief
Engineering Branch 1
Division of Reactor Safety

Docket Nos. 50-321, 50-366
License Nos. DPR-57, NPF-5

Enclosure:
NRC IR 05000321/2018010 and
05000366/2018010 w/ Attachment
Supplemental Info

cc: Distribution via ListServ

SUBJECT: EDWIN I. HATCH NUCLEAR PLANT – NRC DESIGN BASES ASSURANCE INSPECTION (TEAM) REPORT 05000321/2018010 AND 05000366/2018010 dated May 22, 2018

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- J. Robbins, RIII, EB3
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- A. Blamey, RII, DRP

* See previous page for concurrence

PUBLICLY AVAILABLE NON-PUBLICLY AVAILABLE SENSITIVE NON-SENSITIVE

ADAMS: Yes ACCESSION NUMBER: **ML 18141A687** SUNSI REVIEW COMPLETE FORM 665 ATTACHED

OFFICE	RII:DRS	RII:DRS	RII:DRS	RII:DRS	CONTRACTOR
SIGNATURE	RNP1	MES1	JSR1	BJD4	WBH1
NAME	R. PATTERSON	M. SCHWIEG	J. ROBBINS	B. DAVIS	W. HOPF
DATE	5/16/2018	5/14 /2018	5/16/2018	5/16/2018	5/14/2018
E-MAIL COPY?	YES NO	YES NO	YES NO	YES	YES NO
OFFICE	CONTRACTOR	RII: DRS			
SIGNATURE	WCS3	MDS1			
NAME	W. SHERBIN	M. SYKES			
DATE	5/ 16/2018	5/ 22 /2018			
E-MAIL COPY?	YES NO	YES NO			

OFFICIAL RECORD COPY DOCUMENT NAME: S:\DRS NEWENG BRANCH 1\BRANCH INSPECTION FILES\2017-2018-2019 CYCLE INSPECTION FOLDER FOR ALL SITES\DBAIS\HATCH\REPORT\2018 HATCH - DBAI INSPECTION REPORT FINAL.DOCX

**U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report**

Docket Numbers: 50-321, 50-366

License Numbers: DPR-57, NPF-5

Report Numbers: 05000321/2018010; and 05000366/2018010

Enterprise Identifier: I-2018-010-0008

Licensee: Southern Nuclear Operating Company, Inc.

Facility: Edwin I. Hatch Nuclear Plant, Units 1 and 2

Location: Baxley, GA 31513

Inspection Dates: April 9, 2018, to April 26, 2018

Inspectors: B. Davis, Senior Reactor Inspector (Lead)
R. Patterson, Reactor Inspector
J. Robbins, Reactor Inspector
M. Schwieg, Reactor Inspector
W. Hopf, Contractor
W. Sherbin, Contractor

Approved By: M. Sykes, Chief
Engineering Branch 1
Division of Reactor Safety

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring Southern Nuclear Operating Company's performance by conducting a Design Bases Assurance Inspection (Team) at Edwin I. Hatch Nuclear Plant, Units 1 and 2, in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. No findings of significance were identified.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedure (IP) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, performed walk downs, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

REACTOR SAFETY

71111.21M - Design Bases Assurance Inspection (Team)

The inspectors evaluated the following components, permanent modifications, and operating experience during the weeks of April 9 to April 13, 2018, and April 23 to April 26, 2018.

Component (4 Samples)

- (1) High Pressure Coolant Injection (HPCI) Valve, [2E41-006]
- (2) 600v Bus C, [1R23-S003]
- (3) Unit 1 Safety Relief Valves
- (4) Unit 2 Scram Pilot Valves

Component Large Early Release Frequency (LERF) (1 Sample)

- (1) Torus Purge Valve [1TF48-F318]

Permanent Modification (4 Samples)

- (1) SNC598529, Replace HPCI Valve 1E41-F0001
- (2) SNC489852, Unit 1 Degraded Grid Safety Related (1E) Bus Upgrade
- (3) SNC489864, Unit 2 Degraded Grid Startup Transformer (SAT) C and E Replacement
- (4) SNC858827, Replacement of Westinghouse Breakers with Cutler-Hammer Breakers

Operating Experience (2 Samples)

- (1) NRC Information Notice 2016-09: Recent Issues Identified When Using Reverse Engineering Techniques in the Procurement of Safety Related Components
- (2) NRC Information Notice 1991-29: Deficiencies Identified During Electrical Distribution System Functional Inspections

EXIT MEETINGS AND DEBRIEFS

The inspectors confirmed that proprietary information was controlled to protect from public disclosure.

On April 26, 2018, the inspectors presented the design bases assurance (team) inspection results to Mr. R. Spring, Plant Manager, and other members of the licensee staff. On May 14, 2018, additional inspection results were presented to Mr. C. Gamblin of the licensee's staff.

LIST OF DOCUMENTS REVIEWED

CALCULATIONS

53IT-TET-002-0, MOV Margin and Test Frequency Determination, Rev. 8.4
BH1-M-V0005-0005, Maximum Flood Height HPCI Room, Rev. 2
BH1-PD-2752, SRV Lines Stress Analysis, Rev. 2
BH2-M-0384, ADS Valve Accumulator Leakage, Rev. 1
BH2-M-0626, Containment Hardened Vent, Torus Pressure vs Decay Heat Thermal Power, Rev. 4
DCP 1031240101, 600 V Load Center Breaker Replacement, Rev. 2
DCP SNC476661, Unit 1 FLEX Alternate Power, Rev. 4
DCP SNC489852, Degraded Grid - U1 Safety Related (1 E) Bus Upgrade DCP, Rev. 3
DCP SNC581096, Replace U1 Vital AC Inverter (1R44-S001), Rev. 2
HNP-1E41-F001, Torque and Thrust Calculation, Rev. 1
HNP-2E41-F006, Torque and Thrust Calculation, Rev. 1
S44041, Main Steam Piping System Stress Calculation due to Revised Relief Valve Lift Loads, Rev. 0
S56409, Actuator Sizing and Weak Link Analysis and Cert. of Conformance, Rev. 1
S77346, Bus Brace Environmental Evaluation and Structural Analysis, Rev. 1
SENH-04-002, Degraded Grid (DGG) Alarm Setpoint Study, Rev. 3
SENH-13-007, Unit 1 Station Auxiliary System Study - Interim/Final, Rev. 3
SENH-13-010-3, Unit 2 Station Auxiliary System Study – Interim/Final, Rev. 4
SMNH-02-006, Design Bases Review of AOVs in the Purge and Inerting System, Rev. 0
SMNH-03-005, DC MOV Motor Performance Methodology, Rev. 3
SMNH-04-004, MOV Torque Switch Guide Setting, Rev. 15
SMNH-12-026, Unit 1 ADS Summary for Design Basis Retrieval, Rev. 1
SMNH-99-013, Pressure Locking and Thermal Binding Evaluation, Rev. 6
SMNH-97-002, Pipe Stress Analysis at Turbine Inlet, Rev. 3

DRAWINGS

10089C83, DHP Switchgear Potential Transformer Compartment Kit, 4200:120, Rev. 0
6-S-76772, HPCI Steam Supply Valve Weak Link Report, Rev. 1
7-S-75222, SMB-3 Actuator Assembly Drawing, Rev. 2
7-S-76720, HPCI Steam Supply Steam Isolation Valve, Rev. 9
H-13352, Single Line Diagram of Emergency Station Service, Rev. 23
H-13361, Single Line Diagram of 600V Bus 1C R23-S004, Rev. 49
H16024, Primary Containment Purge and Inerting System, Rev. 54
H16062, Nuclear Boiler System P&ID, Rev. 57
H16212, HPCI Room Floor Drainage System, Rev. 10
H-16286, No. 1 Drywell Pneumatic System P&ID Sht 1, Rev. 35
H-16299, Drywell Pneumatic System P&ID Sht 2, Rev. 8
H16332, HPCI System P&ID, Rev. 67
H16333, HPCI System P&ID, Rev. 46
H16869, HPCI Isometric Discharge Drawing, Rev. 11
H23124, 4160 STA SERV Cable Buses Proposed Arrgt-Sects, Rev. 6
H-26066, No. 2 Drywell Pneumatic System P&ID Sht. 1, Rev. 28
H-26078, Hatch Nuclear Plant No. 2 Standby Gas Treatment System P&ID, Rev. 35
S17853, Fisher Control, 18" Butterfly Valve Figure 9220, Rev. C
S-27131, Powell Gate Valve Drawing and Material Specification, Rev. 1
S-41139, Testing of Class 1E AC Motor Control Center Under Exposure to High Temperature / Humidity Environment and Pressure Pulse, dated November 19, 1980

S-44268, NLI Qualification Report for Westinghouse Motor Control Center Components & Buckets, Rev. 2
S-76258, DHP Switchgear Potential Transformer Compartment Kit Sheet 2, Rev. 3
S-76259, DHP Switchgear Potential Transformer Compartment Kit Sheet 4, Rev. 3
S-76644, DHP Switchgear Potential Transformer Compartment Kit Sheet 3, Rev. 3
SNC 489864E002, Sections & Details – Unit 2 Start. Sta. Service Transformers, Rev 2
SNC 489864E014, Single Line Diagram Emergency Station Service, Rev. 2
SNC 489864E092, Start-Up Transformer 2E Sections and Details, Rev. 2
SX19803, Valve Control for Actuator and Motor Drawing, Rev. B

PROCEDURES

31EO-EOP-010-1 Flowchart, RC RPV Control (NON-ATWS), Rev. 12
31EO-EOP-010-1, RC RPV Control (NON-ATWS), Rev. 12
31EO-EOP-010-2 Flowchart, RC RPV Control (NON-ATWS), Rev. 11
31EO-EOP-010-2, RC RPV Control (NON-ATWS), Rev. 11
31EO-EOP-012-1, PC Primary Containment Control, Rev. 7.1
31EO-EOP-014-2V12.SC-RR, Secondary Containment Control, Rev. 12
31EO-EOP-100-2, Miscellaneous Emergency Overrides, Rev. 8.3
31EO-EOP-101-1, Emergency Containment Venting, Rev. 5
31EO-FSG-003-2 Flowchart, FSG - ELAP (EXTENDED LOSS OF AC POWER), Rev. 12
31EO-OPS-001-0, EOP GENERAL INFORMATION, Rev. 1.9
34AB-R22-003-1, Station Blackout, Rev. 11
34SO-P70-001-2, DRYWELL PNEUMATIC SYSTEM, Rev. 11
34SV-X86-001-1, HCVS Remote Operating Station 1H21-P800 Operability, Rev. 1
42SV-TET-001-1, Primary Containment Type B and Type C Leak Rate Testing, Rev. 30
42SV-TET-001-1, Primary Containment Type B and Type C Leak Rate Testing, Rev. 30
52GM-R22-001-0, Installation of Bus Bracing for Hatch 4160VAC Switchgear Upgrade Project (Hatch Units 1 and 2), Rev. 3.2
52GM-R22-002-0, Installation of Potential Transformer Compartment for 4160V AC Switchgear Upgrade Project (Hatch Units 1 and 2), Rev. 3.2
ES-EPS-001, Seismic Design, Rev. 10
NMP-ES-0017-001-H, Hatch MOV Regulatory Scope Document, Rev. 2
NMP-ES-050-F01, Hatch Time Critical Actions, Rev. 2.0
NMP-ES-084-004, Equivalent Change Process, Rev. 1.3
NMP-MA-010, Erecting, Modifying and Disassembling Scaffolding, Rev. 8
NMP-OS-014, Time Critical Operator Action Program, Rev. 2
NMP-OS-014-002, HNP Time Critical Operator Action Program, Rev. 3
NMP-OS-019-262, Hatch Unit C SIG-2, 600V Alternate Power Division 1, Rev. 6.2
NMP-OS-019-266, Hatch Unit 1 SIG-6 Containment Integrity, Rev. 2.1
NMP-OS-019-282, Hatch Unit C SIG-2, 600V Alternate Power Division 2, Rev. 6.2
NMP-OS-019-286, Hatch Unit 2 SIG-6 Containment Integrity, Rev. 3.1
SCM-ENG-006, Accepting Commercial Grade Items for Use as Basic Components, Rev. 3

DESIGN BASIS DOCUMENTS

B-SS-20425, Electrical Design Criteria for the Edwin I. Hatch Nuclear Plant - Unit 1, Rev. 4
SS-2102-302, Technical Specification for Motor-Control Centers for the - Edwin I. Hatch Nuclear Plant Unit 2, Rev. 1

PLANT MODIFICATIONS

SNC1072724201, 3-Stage Target Rock SRV's, Rev. 4
SNC489852, Degraded Grid – U1 Safety Related (1E) Bus Upgrade DCP, Rev. 3

SNC489864, Degraded Grid – U2 SAT C and E Replacement, Rev. 2
 SNC489865, Degraded Grid – U2 Final Configuration, Rev. 3.2
 SNC515678, Replace SCRAM Solenoid Pilot Valve (SSPV) on HCU 14-23, 2/15/2015
 SNC598529, Replace HPCI Valve 1E41-F001, Rev. 3
 SNC692852, HCS-Unit 1 HVCS Wetwell Vent, Rev. 3
 SNC858827, HMCP050K2 Molded Case Circuit Breaker - Replacement of Westinghouse HFB3480ML and HFB3270ML Circuit Breakers for the following locations: 1R24-S011 Frame 19B, 1R24-S012 Frames 10C, 18A, and 19A, Rev. 1

MISCELLANEOUS DOCUMENTS

22A7615, GE Main Steam Design Specification, Rev. 0
 34SV-SUV-013-0, Weekly Breaker Alignment Checks, 3/8/18
 34SV-SUV-026-1, Primary Containment Isolation Valves LSFT, completed 01/26/18
 34SV-T48-002-1, Containment Purge Vent Valve Position Check, completed 02/20/28
 4160 Cable Bus Specification, Inquiry No. SS – 2123 – 14 Specification for 4160 – Volt Metal – Enclosed Cable Buses Edwin I. Hatch Nuclear Plant – Unit 2 Georgia Power Company
 42SV-TET-001-1, Primary Containment Type B and Type C Leak Rate Testing, Summary April 2017
 6-S-76768, Vendor Quality Control Procedure, Rev. 1
 9-S-76751, Design Seismic Report 1E41F001, Rev. 1
 DCPT 3 – 001 – 003, 4kV Breaker Replacements, 12/8/03
 Generic Letter 89-10 Hatch Response, 3/28/91
 HM-S-09-001, Spec. for Dual Function SRVs, Rev. 6
 HNP-FLEX-2016-09, Hatch Nuclear Plant FLEX Verification & Validation Report, 2/16/16
 NEDO-21888, Mark I Containment Load Definition Report, Rev. 2
 NMP-AD-028-F01, Completed TE 980131 Target Rock Part 21 Evaluation, Rev. 3
 NRC Component Design Bases Inspection Report 05000321/2011009 and 05000366/2011009, 5/25/11 (ML111450793)
 NRC Generic Letter 89-16, Installation of a Hardened Wetwell Vent, 9/1/89
 NWS Technologies, Safety Valve Lift Report, 1R27 Post-Test
 NWS Technologies, Safety Valve Lift Report, 1R27 Pre Test
 NWS Technologies, Safety Valve Lift Report, June 2017 tests
 NWS-T-91, NWS Test Procedure Hatch Nuclear Plant Target Rock 0867F 3 Stage Main Steam Safety Relief Valves, Rev. 5
 PEH724, Letter from Georgia Power Company to General Electric Company providing revised requirements for 600V Switchgear, August 20, 1985
 PM Template for 1R22-S005, 3/23/18
 PM Template for 1R22-S006, 3/23/18
 PM Template for 1R22-S007, 3/23/18
 PM Template for 1R23-S003, 3/23/18
 T-48, Primary Containment and Inerting System, First Quarter-2016
 B-21, Nuclear Boiler System, Third Quarter-2016
 S13603, (Vendor Manual) Instrument Transformers Butyl-Molded and Other Dry Types, GEH-230AB, Rev. 1
 S15175, GE Nuclear Boiler Design Spec., Rev. 6
 S55146, Gate Valve Thermal Binding Methodology, 1/27/99
 S64201, Tech. Manual, SRV Models 0867F-001, 09G-001, Rev. 2
 SE-DS-01-005, Technical Specification for Vacuum Type Replacement 4.16kV Circuit Breakers for E.I. Hatch Nuclear – Units 1 & 2, Rev. 1
 SNC 793654, Equivalency Determination: Valve, Solenoid – Evaluate a replacement for GE ASCO Solenoid P/N 107E6022P005, Rev. 1

SNC Equivalency Determination: HMCP050K2, Molded Case Circuit Breaker – Replacement of Westinghouse HFB3270MV Circuit Breaker for location 2R24 – S011 Frame 3C, Rev. 2
 SNC598529FCR001, Field Change Request for EC, Rev. 1.2
 SNG012707003, Teledyne Purchase Order and Calibration Date Report, 2/12/16
 SOER 84-007, Thermal Binding Evaluation Report, 3/29/88
 Specification HM-S-13-001, Hatch 3-Stage SRV Repair Specification, Rev. 2
 SX-15441, Instruction Manual for Continental Butterfly Valves, Rev. 2
 System Health Report for Unit 1, R23 - Emergency 600V Switchgear and Controls, 3/23/18
 Technical Evaluation 294582, Evaluate RIS 2011-12, 10/20/11
 Technical Evaluation 560282, Determine the bounding HNP design basis events and related time lines for DGV relay settings, 12/13/12
 Technical Evaluation 560296, Determine a basis for assumptions concerning the operation of automatic LTCs during a DBE, 12/13/12
 Technical Evaluation 732722, Interpret and clarify the RIS time delay requirement for use in evaluating DVR settings, 11/13/13
 Technical Evaluation 965178, NRC IN 2016-09: Recent Issues Identified When Using Reverse Engineering Techniques in the Procurement of Safety-Related Components
 TR-FSDB-14403-001-00, Target Rock As-Left SRV Test Report for Unit 1 2015 Installation, 1/8/15

CONDITION REPORTS

10178680	10468229	10437038	266218
10184403	10297719	10481786	901522
10191877	10189552	10251526	
10211593	10207459	10063015	
10411337	10005503	790551	

WORK ORDERS

598529	659791	111747	662914
841474	719660	768959	662900
485173	659792	103947	897974
401011	659789	554540	

CONDITION REPORTS WRITTEN DUE TO THE INSPECTION

10486672, NRC DBAI Documentation Issue in Calculation SMNH-99-013
 10481174, 1E41F001 Small Packing Leak
 10486117, MOV Documentation Discrepancy
 10485744, SRV Stroke Time Testing Question for Owner's Group
 10484583, Procedure Update to Reflect Valve Indication of 50 degree
 10483881, Work Orders Performed Without CR to Update EQ File
 10483492, HCVS Nitrogen Bottles Should be Tagged Open as Indicated by Drawings
 10481786, Update NMP-OS-019-286 to Reflect Valve Indication in MCR
 10481584, Discrepancy of Requirement for SRV Opening Time
 10481186, Water Observed Dripping from 1T41B005A HPCI Room Cooler Bracket
 10491353, Calculation BH2-M-0626 Potential Error