



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**

REGION I  
2100 RENAISSANCE BLVD., SUITE 100  
KING OF PRUSSIA, PA 19406-2713

March 17, 2016

Mr. Brian Sullivan  
Site Vice President  
Entergy Nuclear Northeast  
James A. FitzPatrick Nuclear Power Plant  
P.O. Box 110  
Lycoming, NY 13093

SUBJECT: JAMES A. FITZPATRICK NUCLEAR POWER PLANT – COMPONENT DESIGN  
BASES (ENVIRONMENTAL QUALIFICATION PROGRAM) INSPECTION  
REPORT 05000333/2016008

Dear Mr. Sullivan:

On February 25, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the James A. FitzPatrick Nuclear Power Plant (FitzPatrick). The enclosed inspection report documents the inspection results, which were discussed on February 25, 2016, with you and other members of your staff.

NRC inspectors examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. In conducting the inspection, the team examined Entergy's implementation of the electrical equipment environmental qualification program required by Title 10, *Code of Federal Regulations* (10 CFR) 50.49 for maintaining the qualified status of equipment during the life of the plant. The inspection involved field walkdowns, examination of selected procedures, calculations and records, and interviews with station personnel.

No NRC-identified or self-revealing findings were identified during this inspection.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Docket Room or from the Publicly Available Records component of NRC's document system, 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/

Mandy K. Halter, Chief  
Engineering Branch 2  
Division of Reactor Safety

Mr. Brian Sullivan  
 Site Vice President  
 Entergy Nuclear Northeast  
 James A. FitzPatrick Nuclear Power Plant  
 P.O. Box 110  
 Lycoming, NY 13093

SUBJECT: JAMES A. FITZPATRICK NUCLEAR POWER PLANT – COMPONENT DESIGN BASES (ENVIRONMENTAL QUALIFICATION PROGRAM) INSPECTION REPORT 05000333/2016008

Dear Mr. Sullivan:

On February 25, 2016, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at the James A. FitzPatrick Nuclear Power Plant (FitzPatrick). The enclosed inspection report documents the inspection results, which were discussed on February 25, 2016, with you and other members of your staff.

NRC inspectors examined activities conducted under your license as they relate to safety and compliance with the Commission’s rules and regulations and with the conditions of your license. In conducting the inspection, the team examined Entergy’s implementation of the electrical equipment environmental qualification program required by Title 10, *Code of Federal Regulations* (10 CFR) 50.49 for maintaining the qualified status of equipment during the life of the plant. The inspection involved field walkdowns, examination of selected procedures, calculations and records, and interviews with station personnel.

No NRC-identified or self-revealing findings were identified during this inspection.

In accordance with 10 CFR 2.390 of the NRC’s “Rules of Practice,” a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the NRC Public Docket Room or from the Publicly Available Records component of NRC’s document system, 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/

Mandy K. Halter, Chief  
 Engineering Branch 2  
 Division of Reactor Safety

**DISTRIBUTION:** See Next Page

DOCUMENT NAME: G:\DRS\Engineering Branch 2\Pindale\Fitz CDBI Pilot EQ IR 2016008.docx

ADAMS ACCESSION NUMBER: ML16078A132

<input type="checkbox"/> SUNSI Review		<input type="checkbox"/> Non-Sensitive <input type="checkbox"/> Sensitive		<input type="checkbox"/> Publicly Available <input type="checkbox"/> Non-Publicly Available	
OFFICE	RI/DRS	RI/DRP	RI/DRS		
NAME	SPindale	ABurritt	MHalter		
DATE	3/15/16	3/15/16	3/17/16		

OFFICIAL RECORD COPY

B. Sullivan

-2-

Docket No. 50-333  
License No. DPR-59

Enclosure:  
Inspection Report 05000333/2016008  
w/Attachment: Supplemental Information

cc w/encl: Distribution via ListServ

B. Sullivan

-3-

Letter to Brian Sullivan from Mandy Halter

SUBJECT: JAMES A. FITZPATRICK NUCLEAR POWER PLANT – COMPONENT DESIGN  
BASES (ENVIRONMENTAL QUALIFICATION PROGRAM) INSPECTION  
REPORT 05000333/2016008

DISTRIBUTION:

DDorman, RA (R1ORAMAIL RESOURCE)  
DLew, DRA (R1ORAMAIL RESOURCE)  
MScott, DRP (R1DRPMAIL RESOURCE)  
RMcKinley, DRP (R1DRPMAIL RESOURCE)  
RLorson, DRS (R1DRSMAIL RESOURCE)  
BSmith, DRS (R1DRSMAIL RESOURCE)  
M. Halter, DRS  
S. Pindale, DRS  
ABurritt, DRP  
CBickett, DRP  
LCline, DRP  
BLin, DRP  
EKnutson, DRP, SRI  
BSienel, DRP, RI  
KMcKenzie, DRP, AA  
TClark, RI OEDO  
RidsNrrPMFitzPatrick Resource  
RidsNrrDorLp1-1 Resource  
ROPReports Resource

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket No: 50-333

License No: DPR-59

Report No: 05000333/2016008

Licensee: Entergy Nuclear Northeast (Entergy)

Facility: James A. FitzPatrick Nuclear Power Plant

Location: Scriba, NY

Inspection Period: February 22 - 25, 2016

Inspectors: S. Pindale, Senior Reactor Inspector, Division of Reactor Safety (DRS),  
Team Leader  
D. Orr, Senior Reactor Inspector, DRS  
J. Ayala, Reactor Inspector, DRS

Approved By: Mandy K. Halter, Chief  
Engineering Branch 2  
Division of Reactor Safety

## **SUMMARY OF FINDINGS**

IR 05000333/2016008; 2/22/2016 – 2/25/2016; James A. FitzPatrick Nuclear Power Plant; Component Design Bases Inspection (Programs).

The report covers the Component Design Bases Inspection (Programs) conducted by a team of three U.S. Nuclear Regulatory Commission (NRC) inspectors. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process." Cross-cutting aspects associated with findings are determined using IMC 0310, "Components Within the Cross-Cutting Areas." The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 5, dated February 2014.

No findings were identified.

## REPORT DETAILS

### 1. REACTOR SAFETY

#### **Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity**

#### 1R21 Component Design Bases Inspection (Programs) (IP 71111.21N – 8 samples)

##### .1 Inspection Sample Selection Process

The inspection team assessed the implementation of Entergy's Environmental Qualification (EQ) program, established to meet the requirements of Title 10, *Code of Federal Regulations* (CFR) 50.49, "Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants." The scope of this rule includes safety-related equipment relied upon to remain functional during and following design basis events, non-safety-related equipment whose failure under postulated environmental conditions could prevent safety-related equipment from performing design functions, and certain post-accident monitoring equipment. The team selected risk significant components for review using information contained in the James A. FitzPatrick Nuclear Power Plant (FitzPatrick) Probabilistic Risk Assessment (PRA) and the U.S. Nuclear Regulatory Commission's (NRC) Standardized Plant Analysis Risk (SPAR) model for FitzPatrick. Additionally, the team referenced the FitzPatrick Risk-Informed Inspection Notebook in the selection of potential components for review.

The NRC originally verified FitzPatrick's EQ program implementation through a series of onsite inspections in the 1980's. The EQ program at that time established measures to ensure EQ through the 40-year operating license period. Since that time, Entergy had renewed FitzPatrick's operating licenses for an additional 20 years. The team initially compiled a list of components based on the risk factors previously mentioned. The team then interviewed plant staff, and reviewed procurement, maintenance, and design records. Based on these additional reviews, the team focused the inspection on eight EQ program elements and components. The components that were selected included pump motors, motor-operated valves (MOV), solenoid valves, limit switches and flow/level transmitters located both inside and outside of containment. The team also evaluated the EQ of selected supporting sub-components, including seals and lubricants.

##### .2 Results of Detailed Reviews

###### a. Inspection Scope

The inspection was a pilot inspection, conducted as outlined in NRC Inspection Procedure (IP) 71111.21N. The team assessed Entergy's implementation of the EQ program as required by 10 CFR 50.49. The team evaluated whether Entergy staff properly maintained the EQ of electrical equipment important to safety through plant life (repair, replacement, modification, and plant life extension), established and maintained required EQ documentation records, and implemented an effective corrective action program to identify and correct EQ-related deficiencies and evaluate EQ-related industry operating experience.

Enclosure

This inspection effort included review of EQ program-related procedures, component EQ files, EQ test records, equipment maintenance and operating history, maintenance and operating procedures, vendor documents, design documents, and calculations. The team also interviewed plant staff knowledgeable with the design, maintenance, and operation of the selected components. Additionally, the team performed physical in-plant walkdowns (where accessible) to verify the installed equipment 1) was consistent with the EQ component documentation files, 2) was installed in their tested configuration, and 3) could be impacted by the failure of surrounding equipment. The team reviewed procurement records and inspected a sample of replacement parts stored in the warehouse to verify EQ parts approved for installation in the plant were properly identified and controlled; and that storage time and environmental conditions did not adversely affect the components' qualified life or service life. The team also reviewed Entergy's evaluation of applicable operating experience to determine whether industry EQ-related issues were understood and addressed through Entergy's corrective action program. Documents reviewed for this inspection are listed in the Attachment. Component samples selected for this inspection are listed below. Six of the eight components were qualified in accordance with 10 CFR 50.49; and two components, which are original plant equipment, were qualified in accordance with the NRC's Division of Operating Reactors (DOR) Guidelines, as indicated below.

- Main Steam Isolation Valve (MSIV) 'A' Inboard Solenoid Valve Cluster Assembly
- Safety/Relief Valve 'A' Pilot Solenoid Valve
- Residual Heat Removal System 'A' Pump Motor (*DOR*)
- High Pressure Coolant Injection (HPCI) System Inboard Isolation Valve 23MOV19
- Residual Heat Removal System 'D' Torus Isolation Valve 10MOV13D (*DOR*)
- HPCI/Reactor Core Isolation Cooling System Level Transmitter 02-3LT-72A
- MSIV 'A' Position Indication Limit Switches (Open, Closed, 85% Open)
- Residual Heat Removal System 'A' Flow Transmitter 10-FT-109A

b. Findings

No findings were identified.



#### 4. OTHER ACTIVITIES

##### 4OA2 Identification and Resolution of Problems (IP 71152)

###### a. Inspection Scope

The team reviewed a sample of problems that Entergy had previously identified and entered into the corrective action program. The team reviewed a sample of these issues to verify an appropriate threshold for identifying issues and to evaluate the effectiveness of corrective actions. The specific corrective action documents that were sampled and reviewed by the team are listed in the Attachment.

###### B Findings

No findings were identified.

##### 4OA6 Meetings, including Exit

On February 25, 2016, the team presented the inspection results to Mr. Brian Sullivan, Site Vice President, and other members of Entergy staff. The team reviewed proprietary information, which was returned to Entergy at the end of the inspection. The team verified that no proprietary information was documented in the report.

**ATTACHMENT**

**SUPPLEMENTAL INFORMATION**

**KEY POINTS OF CONTACT**

Entergy Personnel

V. Bacanskas, Director, Chief Engineer  
J. Eckman, Senior Design Engineer  
M. Hawes, Regulatory Compliance Engineer  
A. Lauzon, EQ Engineer

**LIST OF ITEMS OPENED, CLOSED, DISCUSSED, AND UPDATED**

None

**LIST OF DOCUMENTS REVIEWED**

EQ Files

QDR 03.01, Limitorque Model SMB and SB Motor-Operated Valves, Revision 12  
QDR 03.02, Limitorque Model SMB Motor-Operated Valves, Revision 13  
QDR 04.01, General Electric 4KV Series SK6339XC Motors, Revision 3  
QDR 08.03, Foxboro I Model N-EI 0 Series I Pressure Transmitters, Revision 2  
QDR 08.04, Rosemount 1153 Series B Transmitters and 353C Conduit Seals, Revision 3  
QDR 09.01, NAMCO Limit Switches Model EA740 Series, Revision 4  
QDR 34.03, NAMCO EC210 Series Receptacle and Connector/Cable Assemblies, Revision 4  
QDR 34.05, NAMCO Model EC290 Series Connector/Cable Assemblies, Revision 0  
QDR 35.07, Hiller Model SA-A111 MSIV Solenoid Valve Cluster Assemblies, Revision 4  
QDR 35.08, Target Rock Model ½ SMS-S-02-1 Solenoid Valve, Revision 4

Procedures

EN-MA-101-02, Control of Material Outside Facility Warehouse, Revision 6  
EN-NF-200, Special Nuclear Material Control, Revision 13  
EOP-4, Primary Containment Control, Revision 8  
IMP-G77, Replacement of Rosemount Pressure Transmitter Model 1153, Series B, Code R,  
with Conduit Seal 353\*, Revision 14  
MP-059-51, Limitorque Actuators Inspection and Lubrication, Revision 35  
MP-200.19, NAMCO Connectors Maintenance, Revision 10  
MP-200.20, MSIV Solenoid Valve Cluster Assembly Replacement, Revision 05

Drawings

FM-20A, Flow Diagram Residual Heat Removal System, Revision 72  
FM-20B, Flow Diagram Residual Heat Removal System, Revision 63

Design and Licensing Basis Documents

JAF-SE-96-016, Acceptability of Establishing a One Hour Post Accident Operating Time Requirement for the ADS System to Mitigate LOCA, Revision 4  
James A. FitzPatrick Nuclear Power Plant Updated Final Safety Analysis Report, April 2015  
Safety Evaluation for EQ of Safety-Related Electrical Equipment, 4/19/83

Miscellaneous

EQCL Report, 1/14/16  
Letter, Nutherm International, Inc. to NRC, Final Update on Potential 10 CFR 21 Issue Regarding Incorrect Industrial Irradiation Dose, 2/3/16  
Letter, Nutherm, International, Inc. to NRC, Update on Potential 10 CFR 21 Issue Regarding Incorrect Industrial Irradiation Dose, 8/31/15  
NRC 10 CFR Part 21 Report from Nutherm International, 8/1/14  
Nuclear Utility Group on Equipment Qualification, Clarification of Information Related to the EQ of Limitorque MOV, August 1989  
NUREG-0588, Interim Staff Position on EQ of Safety-Related Electrical Equipment, Revision 1 Operability Evaluation No. CR-JAF-2016-0050, 10 CFR 21 Issue Regarding Incorrect Industrial Irradiation Dose, dated 02/10/16  
PM Template 50047998-01, Stem Lube and Gearcase Grease Check per MP-0 59-51  
Pre-NRC CDBI EQ Snapshot Self-Assessment, 1/12/16  
Purchase Order S-96-82818, Torque Switch Assembly, 8/19/96  
Snapshot Self-Assessment EQ Program, 7/20/04

Vendor Documents

L200-0036, SMB Installation and Maintenance Manual, Revision 8  
N007-0123, Namco Limit Switch EA740 Series, Revision D  
R369-0030, Rosemount 1153 Series B Alphasine Nuclear Pressure Transmitter, Revision 7

Calculations and Engineering Evaluations

EC 0000014122, Modification to Improve SRV Reliability – Replace 02RV-71C, -71E and -71F with Target Rock Three-Stage Safety/Relief Valves (Model 0867F), Revision 0  
JAF-CALC-09-00016, Attachment 21  
JAF-RPT-MISC-04046, Environmental Qualification Service Conditions, Revision 0

Condition Reports

2003-03954	2012-01459	2013-03235
2011-04208	2012-01913	2014-01191
2011-05195	2012-01971	2015-03954
2011-05328	2012-02399	2016-00431
2012-00962	2012-02399	2016-00501
2012-01002	2013-03234	2016-00764*

\*Written as a result of this inspection

Work Orders

51122191	52085457	52258742
51569866	52115739	52467939
51569867	52169613	52475718
51569867	52182411	

**LIST OF ACRONYMS**

ADAMS	Agencywide Documents Access and Management System
CFR	Code of Federal Regulations
CR	Condition Report
DOR	Division of Operating Reactors
DRS	Division of Reactor Safety
EQ	Environmental Qualification
HPCI	High Pressure Coolant Injection
IMC	Inspection Manual Chapter
IP	Inspection Procedure
MOV	Motor-Operated Valve
MSIV	Main Steam Isolation Valve
NRC	Nuclear Regulatory Commission
PRA	Probabilistic Risk Assessment
SPAR	Standardized Plant Analysis Report
UFSAR	Updated Final Safety Analysis Report
WO	Work Order