August 13, 2010

JAMES A. FITZPATRICK NUCLEAR POWER PLANT - NRC COMPONENT DESIGN BASE INSPECTION REPORT 05000333/2010006

ADAMS ACCESSION NO. Part 1: ML102250122 ADAMS ACCESSION NO. Part 2: ML102250115

## ATTACHMENT

## SUPPLEMENTAL INFORMATION

# **KEY POINTS OF CONTACT**

# Licensee Personnel

P. Dietrich	Site Vice President
B. Sullivan	General Manager Plant Operations
M. Woodby	Engineering Director
V. Bacanskas	Manager, Design Engineering
D. Johnson	Manager, System Engineering
D. Poulin	Assistant Operations Manager
D. Ruddy	Supervisor, Electrical Design
M. Alvi	Supervisor, Mechanical Design
D. Burch	Senior Design Engineer
J. O'Farrill	Licensing Engineer
K. Schoales	Operations Support
G. Dorman	Senior Licensing Engineer

# LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

# Opened and Closed

NCV	05000333/2010006-01	Failure to Use Largest Load During EDG Reject Surveillance Test
NCV	05000333/2010006-02	Calculations for Offsite Power Availability
NCV	05000333/2010006-03	Inadequate Corrective Action on RHRSW Strainer Housing Wall Degradation

## Attachment

#### A-1

### LIST OF DOCUMENTS REVIEWED

Audits and Self-Assessments

Cornerstone Rollup of MOV Program 1<sup>st</sup> quarter 2010

- CR-JAF-2010-00588, Operations Watch Team Preparation and Performance Transient Snap Shot Assessment, performed February 2010
- CR-JAFLO-2009-00061, CDBI Focused Self-Assessment, June 2010
- LO-JAFLO-2007-00022, Simulator Configuration and Fidelity JAF Focused Self-Assessment Report, performed February 2007
- LO-JAFLO-2008-00056, Nuclear Plant Operator (NPO) Training JAF Operations Focused Assessment Report, performed August 2008
- QA-12/18-2010-JAF-1, Operations/Technical Specifications Quality Assurance Audit Report, performed February 2010
- QA-12-2009-JAF-1, Operations Quality Assurance Audit Report, performed February 2009 QA-9-2009-JAF-1, Fire Protection Quality Assurance Audit Report, performed February 2009 Two Year Roll up of MOV Condition Reports May 2007 through May 2009, dated May 2009

<u>Calculations</u>

10-13, RHR Service Water Pumps – Required Head, Rev. 0

10-3, RHR Service Water System Pipe Size, Rev. 0

11825-CALC-101, Voltage Profile Essential Buses, dated 9/16/76

12966-81-E-1, Safety Load Terminal Voltage Calculations JAFNPP, Rev. 0

12966-E-81-3, Motor Starting Voltage Profile – Emergency Buses, Rev. 0

13-1, RCIC Line Size Check, Rev. 0

14620-9016-2, 2<sup>nd</sup> LvI Degraded Grid Undervoltage Relay Set Point, Rev. 0

14620-E-9013-4, Transients Torques and Stresses Produced in Motors Due to an Automatic Fast Transfer, Rev. 0

33-16, Condensate Storage Tank Capacity, Rev. 0

93179-C-37, Valve Thrust Assessment for 13MOV-21, Rev. 1

93719-C-55, Valve Thrust Assessment 10MOV-66B, Rev. 1

9663-JAF-CALC-0001, Motor Operated Valve Thermal Overload Sizing, Rev. 1

98-019, Emergency Core Cooling and Reactor Core Isolation System Pump Suppression Pool NPSH, Rev. D

- DRN-0601171 to Calculation JAF-CALC-05-00117, Add Circuit Voltage Drop Calculation for 72FN-31A(M) and 01-125MOV11, dated 5/10/06
- E-43B, 10P-1B RHR Service Water Pump Motor, Rev. 0

E-81, Under Voltage Study of Class 1E Equipments MCC Control Ckts., Rev. 0

- EC 10591 to Calculation JAF-CALC-05-00117, Add Circuit Voltage Drop Calculation for 71MCC-156-OD1(MC), dated 9/25/08
- EC 16705 to Calculation JAF-CALC-05-00117, Add Circuit Voltage Drop Calculation for 71MCC-262-OD3(MC), dated 8/20/09
- EC 19659 to Calculation JAF-CALC-05-00117, Add Circuit Voltage Drop Calculation for 71MCC-262-OG3(MC), dated 1/26/10
- ER JAF-05026853, Perform 600 Volt MCC Control Circuit Voltage Drop Calculation to Verify the Minimum Pickup Voltage for Selected Contactor Coils, dated 3/6/07

JAF-91-076, Vortex Situations in Condensate Storage Tanks, Rev. 0

JAF-ANAL-MISC-02469, JAF Eval of Increase in Max Lake Temperature for Balance of Plant Systems, Rev. 0

JAF-CALC-05-00117, Perform 600 volt MCC Control Circuit Voltage Drop Calculation to Verify the Minimum Pickup Voltage for Selected Contactor Circuits, Rev. 2

JAF-CALC-07-00032, Required Level to Prevent Air-entraining Vortices at HPCI & RCIC CST Suctions, Rev. 0

JAF-CALC-08-00001, Motor Starting Calculation for Standby Liquid Control (SLC) Pumps 11P-2A(M) and 11P-2B(M), Rev. 0

JAF-CALC-08-00007, SBO Room Heat-up Analysis, Rev. 0

JAF-CALC-09-00003, Station Battery Complex Mixed Train Ventilation, Rev. 0

JAF-CALC-09-0001, Station Battery Charger Room Temperature w/o Ventilation, Rev. 0

JAF-CALC-09-00016, JAF Auxiliary Power System Analysis, Rev. 0

JAF-CALC-CAS-02771, ADS Accumulator Pressure Determination, Rev. 0

JAF-CALC-EDG-03358, JAF - Single EDG Loading Calculation, dated 08/14/99

JAF-CALC-ELEC-02609, 125V DC Station Battery A Sizing & Voltage Drop, Rev. 2

JAF-CALC-ELEC-04343, Calculations for the JAF Plant Going from the Full Load Trip with Estimated LOCA and Operator Action, Rev. 0

JAF-CALC-HPCI-00840, Vortexing Concerns in the CST during HPCI Operation, Rev. 1 JAF-CALC-RCIC-01955, Reduced Voltage Analysis for 13MOV-21, Rev. 3

JAF-CALC-RCIC-02121, Thrust and Torque Limits Calculation for 13MOV-21, Rev. 6

JAF-CALC-RHR-01716, Thrust and Torque Limits Calculation for 10MOV-66B, Rev. 2

JAF-CALC-RHR-01716, Thrust and Torque Limits Calculation for 10MOV-66B, Rev. 3

JAF-CALC-RHR-03210, Reduced Voltage Analysis for 10MOV-66B, Rev. 0

JAF-CALC-RHR-03210, Reduced Voltage Analysis for 10MOV-66B, Rev. 3

JAF-CALCULATION-08-00002, Available Voltage Calculation at Motor Terminal for 46P-2A(M) and 46P-2B(M) During Motor Starting, Rev. 0

JAF-CALCULATION-ELEC-01488, 4kV Emergency Bus Loss of Voltage, Degraded Voltage and Time Delay Uncertainty and Set-point Calculation, Rev. 6

JAF-CRVE-ELEC-00880, Electric Coordination Curves for 13MOV-21, Rev. 0

JAF-CRVE-ELEC-00909, Electric Coordination Curves for ADS Logic & Valve Circuits, Rev. 0

JAF-CRVE-ELEC-00924, Electric Coordination Curves for Alternate Power to ADS Logic & Valve Circuits, Rev. 0

JAF-CRVE-ELEC-CC-H05&6-10P-1AC&BD, Electric Coordination Curves for 10P-1A,C,B,D Service Water Pumps, Rev. 0

JAF-ECAF-H03-BUSCOORD, 4160V Electrical Distribution System Coordination Adequacy Form, dated 2/10/95

JAF-ECAF-H05 & H06-Bus Coord, 4160V Electrical Distribution System Coordination Adequacy Form, Rev. 0

JAF-ECAF-H06-L16&L26, 4160V Electrical Distribution System Coordination Adequacy Form, Rev. 0

JAF-ECAF-Station Grounding, 4160V Electrical Distribution System Coordination Adequacy Form, Rev. 0

JAF-RPT-05-00078, JAF Minimum 115kV Voltage to Support 4kV Emergency Buses, Rev. 0

JAF-RPT-05-00079, JAF NPP Impact of Transmission Conditions on 115kV Supply Voltage, Rev. 2

JAF-RPT-MULTI-00746, RCIC Pump Discharge to Reactor Inboard Isolation Valve (13MOV-21) - Differential Pressure (DP) Calculations, Rev. 1

MCC to 14620-9016-2, Second Level (Degraded Grid) Undervoltage Relay Set Point Determination for Emergency Buses, Rev. 1

NYPA-10MOV-66B, RHRHX "B" Bypass Valve 10MOV-66B, Differential Pressure Calculation, Rev. 0

Functional, Surveillance and Modification Acceptance Testing

FPP-3.57, East Diesel Fire Pump 76P-4 Operational Check, performed 4/28/10

ISP-90-1, 4kV Emergency Bus (Buses 10500 and 10600) Undervoltage Relay (Degraded Voltage) Calibration, performed 10/25/06

- ISP-90-1, 4kV Emergency Bus (Buses 10500 and 10600) Undervoltage Relay (Degraded Voltage) Calibration, performed 9/23/08
- SESP-33.001, East Diesel Fire Pump 76P-4 Operational Check, performed 1/17/10
- ST-22B, Manual Safety Relief Valve Operation and Valve Monitoring System Functional Test (IST), performed 11/4/06, 11/9/08, and 10/10/08

ST-22C, ADS Logic System Functional Test, performed 4/13/10

- ST-24A, RCIC Monthly Operability Test, performed 9/17/09, 10/18/09, 12/12/09, 1/9/10, 3/7/10, & 4/3/10
- ST-24E, RCIC Logic System Functional and Simulated Automatic Actuation Test, performed 02/11/06

ST-2AM, RHR Loop B Quarterly Operability Test (IST), dated 3/19/10

ST-2AN, RHR Loop A Monthly Operability Test, dated 4/01/10

- ST-2AO, RHR Loop B Monthly Operability Test, dated 2/25/10
- ST-2HB, LPCI Initiation Logic System B and RPV Low Pressure Permissive Logic Systems A and B Functional Test, performed 09/29/08
- ST-2XA, RHR Service Water Loop A Comprehensive Pump Test (IST), dated 2/04/10
- ST-2XA, RHR Service Water Loop A Quarterly Operability Test (IST), dated 5/27/10
- ST-2XB, RHR Service Water Loop B Comprehensive Pump Test (IST), dated 1/28/10
- ST-39M, Leak Rate Test of ADS Pneumatic Supply Check Valves, performed 10/3/08, 10/26/06, and 10/29/06

ST-40D, Daily Surveillance and Channel Check, performed 1/3/10 - 1/10/10 & 5/3/10 - 5/10/10 ST-50, Floor Drain Flow Test, performed 10/12/09

- ST-76AC, East Diesel Fire Pump 76P-4 Operational Check, performed 1/3/09
- ST-76B, Electric Fire Pump 76P-2 Operational Check, performed 5/14/10

ST-76C, West Diesel Fire Pump 76P-1 Operational Check, performed 5/7/10

- ST-9BA, EDG A and C Full Load Test and ESW Pump Operability Test, performed 11/16/09, 12/7/09, 1/4/10, 2/1/10, 3/1/10, and 3/29/10
- ST-9BB, EDG B and D Full Load Test and ESW Pump Operability Test, performed 10/10/09, 10/26/09, 11/24/09, 12/21/09, 2/16/10, 3/16/10, 4/12/10, and 5/10/10
- ST-9C, Emergency AC Power Load Sequencing Test and 4KV Emergency Power System Voltage Relays Instrument Functional Test, performed 10/02/08
- ST-9EB, LOCA Bypass of EDG B & D Shutdown Logic Functional Test, performed 09/27/08
- ST-9P, Functional Test of Breakers 10514 and 10614 EDG Logic Auxiliary Stationary Contacts, performed 09/28/08

ST-9QA, EDG A and C Full Load Test (8 Hour Run), performed 5/1/06, 2/4/08, and 6/10/09

ST-9QB, EDG B and D Full Load Test (8 Hour Run), performed 4/16/06, 1/21/08, and 1/18/10

ST-9R, EDG System Quick-Start Operability Test and Offsite Circuit Verification, performed 4/27/10

ST-SXB, RHR Service Water Loop B Quarterly Operability Test (IST), dated 06/11/10

T-19AB, Battery Room B Ventilation Equipment Operability Test, performed 11/6/09, 9/20/08, and 7/12/07

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1997-00097	2007-03284	2009-01365	2010-01226	2010-03391*
1999-01470	2007-03321	2009-01439	2010-01227	2010-03394*
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2003-05453	2007-04021	2009-02149	2010-02341	2010-03429*
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2004-00367	2008-00206	2009-02259	2010-02984	2010-03432*
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2005-03906	2008-02869	2009-03454	2010-03144*	2010-03504*
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2007-02306	2008-03907	2009-04436	2010-03179*	2010-03624*
2007-02392	2008-04099	2009-04591	2010-03209*	2010-03625*
2007-02408	2008-04668	2010-00467	2010-03216*	2010-03638*
2007-02480	2009-00241	2010-00477	2010-03246*	2010-03662*
2007-02487	2009-00671	2010-00523	2010-03328*	2010-03685*
2007-02503	2009-00712	2010-00588	2010-03329*	2010-03686*
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2007-02575	2009-01093	2010-00836	2010-03375	
2007-03202	2009-01127	2010-01007	2010-03389*	

\*Initiated as a result of this inspection

#### Design & Licensing Bases

Entergy Letter JAF-06-0057, Response to Generic Letter 2006-02, Grid Reliability and Impact on Plant Risk and the Operability of Offsite Power, dated 3/30/2006

DBD-010, Residual Heat Removal System, Rev. 12

DBD-013, Reactor Core Isolation Cooling System, Rev. 11

DBD-034, Condensate/Feedwater and Feedwater Control Systems, Rev. 9

DBD-046, Normal Service Water, Emergency Service Water, and RHR Service Water, Rev. 17 DBD-071, Electrical Distribution Systems 4160V and 600V AC Power Systems, Rev. 6

DBD-072, Administration Building HVAC Systems, Rev. 12

- JAFP-07-0139, Licensee Event Report: LER-07-002-01 Manual Reactor Scram due to Blocked Circulating Water Intake Screens, dated 12/18/07
- JAFP-90-0834, Licensee Event Report: 90-023-00 Manual Scram Blocked Intake Screens, dated 11/19/90
- JAFP-98-0186, Response to Safety Evaluation Joint Owners' Group Program on Periodic Verification of Motor-Operated Valves (in response to Generic Letter 96-05), dated 06/02/98
- JAF-SE-96-048, Revision to FSAR to Raise Maximum Allowable Lake Temperature from 82 to 85 Degrees Fahrenheit, Rev. 2
- JPN-95-040, Generic Letter 89-10 Safety Related MOV Testing and Surveillance Program Closure Notification Letter, dated 08/24/95
- JPN-96-044, NRC Generic Letter 96-05: Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves, dated 11/15/96
- JPN-97-011, 180 Day Response to Generic Letter 96-05: Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves, dated 3/17/97
- QDR 35.08, Qualification Document Report for Target Rock Model 1/2 SMS-S-02-1 Solenoid Valve, Rev. 4

James A. FitzPatrick Updated Final Safety Analysis Report, dated April 2009

#### **Drawings**

1.13-15, Outline RHR Service Water Pump Motor, Rev. 6

1.17-63, Sht. 2, MOV Torque Switch Setting, Rev. 24

- 1.83-38, Sht. 2, Elem. Diagram Auto Depressurization System, Rev. Q
- 1.83-39, Sht. 1, Elem. Diagram Auto Depressurization System, Rev. M
- 11825-320-7, Condensate Storage Tanks, Rev. B

11825-FV-16A, Condensate Storage Tanks, Rev. 6

16.10-10, RHR Process Diagram, Rev. L

2.02-13, RCIC Turbine Longitudinal Section, Rev. A

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6.32-79, Air Operator High Pneumatic Pressure (Alternate Configuration), Rev. 2

6.32-80, Sht. 1, Model 7567 6 x 10 Relief Valve (Alternate Configuration), Rev. 2

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6.37-32, Motor Operated Globe Valve 10MOV-66A&B, Rev. J

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6.38-98, ADS Pneumatic Accumulator Check Valves, Rev. 2

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6.60-8, Basket Details for Pipeline Strainers 10S-5A and 5B, Rev. D

791E453, Sht. 2, Elem Diag. Auto Depressurization Sys, Rev. Q

791E464, Sht. 1, Elem Diag. RCIC Sys, Rev. 16

791E464, Sht. 1A, Elem Diag. RCIC Sys, Rev. J

791E464, Sht. 6, Elem Diag. RCIC Sys, Rev. F

B-16404, 5 Stage Single Suction Double Volute Pump Type MSD, Rev. 0

C-1268 Revised, Model 27-17-1750 Series 1000 Joy Axivane Fan Performance Curve, Rev. 0.

DSK-10AE, Packing Gland Assembly for RHR Service Water Strainer 10S-5B, Rev. 1

DWG B-16404, 5 Stage Single Suction Double Volute Pump Type MSD, Rev. 0

ESK-11AS, Elem Diag 125VDC Ckts for MOV RCIC Sys, Rev. 14

ESK-11BK, Sht. 1, Elementary Diagram Emer. Diesel Generator EDGB Control, Rev. 27

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ESK-5BN, DC Elementary Diagram 4160V Ckt 600V Emergency Swgr to T14 & T16, Rev. 15 ESK-5BP, DC Elementary Diagram 4160V Ckt Core Spray Pump 14-P-1B, Rev. 24 ESK-5BR, DC Elementary Diagram 4160V Ckt RHR Service Water Pump 10-P-1D, Rev. 15 ESK-5BT, DC Elementary Diagram 4160v Ckt Emer. Bus 10600 UV Operation, Rev. 24 ESK-5BW, DC Elementary Diagram 4160V Ckt RHR Pump 10-P-3C, Rev. 22

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ESK-5BZ, DC Elementary Diagram 4160V Ckt Emergency Bus 10600 Undervoltage, Rev. 6 ESK-5J, DC Elementary Diagram Fast Xfr Blocking Ckt Bkrs 10112, 10212, 10312, and 10412, Rev. 4

ESK-6AK. DC Elementary Diagram 600v Swgr. Ckts CRH Drain Water Pumps, Rev. 11 ESK-6H, DC Elementary Diagram 600V Supply ACB's Buses 11600 & 12600, Rev. 13 ESK-6MY, Elem Diagram – 600V Ckts MOV HX Shell Side Bypass VV's 10-MOV-66A&B,

Rev. 15

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FP-19B, Condensate Lines – Yard, Rev. 22

FP-67E, Sht. 5, Steam Lines HPCI & RCIC Pump Turbines, Rev. 18

FV-16A, Condensate Storage Tanks 33TK-12A&B, Rev. 6

LP-33-209, Condensate Storage Tanks 33TK-12A&B Level, Rev. 3

Engineering Evaluations

36-SG-7-1, Seismic Study - Sluice Gates, dated 2/5/78

930195, Torque Spring Pack Relaxation, dated 08/13/1993

CR-JAF-2007-03202, Intake Cooling Water Blockage Root Cause Analysis Report, dated 11/27/07

CR-JAF-2009-03303, Apparent Cause Evaluation Report, dated 10/22/09

DER No. 93-0252, Root Cause Analysis Report, dated 5/1/93

EC 0000006276, Evaluate Motor Being Transferred from NMP for use on 10MOV-66A(OP) and 10MOV-66B(OP), Rev. 0

EC 0000012623, Evaluate a Larger Hold Down Bolt for Internal Basket at 10S-5A1, Rev. 0

EN-MA-133 Attachment 9.5, Scaffold Log No. 10-019 Engineering Evaluation Control of Scaffolding, dated 6/11/10

EN-MA-133 Attachment 9.5, Scaffold Log No. 10-041 Engineering Evaluation Control of Scaffolding, dated 6/15/10

FTL Report No. 3971, Cooling Water Intake at the J. A. FitzPatrick Nuclear Power Plant: A Study on the Potential for Blockage by Frazil, Grease Ice and Slush, January 1993

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TEARs: JAF-2010-794\* & JAF-2010-795\*

\* TEAR written as a result of this inspection

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00150483 01	50054545 01	51515194 01	JAF-06-16007
00164764 01	51101487	51553347 01	JAFP-91-0624
00206576 01	51101809 01	52025091-01	JF-010585600
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50048471 01	51192994 01	95-02278-00	JF-021048100
50048538 03	51193444 01	95-03776-00	JF-030078300
50048538 04	51194141 01	JAF-03-27493	JF-030270700
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50051199 01	51207127-01	JAF-04-36900	
50054544 01	51207128-01	JAF-04-37046	

#### LIST OF ACRONYMS

AC	Alternating Current
ADAMS	Agencywide Documents Access and Management System
ADS	Automatic Depressurization System
BHP	Brake Horsepower
CDBI	Component Design Bases Inspection
CFR	Code of Federal Regulations
CR	Condition Report
CST	Condensate Storage Tank
DBD	Design Basis Document
ECCS	Emergency Core Cooling System
EDG	Emergency Diesel Generator
Entergy	Entergy Nuclear Northeast

EPRI **Electric Power Research Institute** GL Generic Letter HPCI **High Pressure Coolant Injection** HX Heat Exchanger IMC **Inspection Manual Chapter** IN Information Notice IP Inspection Procedure IST In-service Testing JPM Job Performance Measure kV kilo-Volts LER Licensee Event Report LOCA Loss of Coolant Accident MOV Motor Operated Valve NCV Non-cited Violation NPSH **Net Positive Suction Head** NRC **Nuclear Regulatory Commission** OE **Operating Experience** OP **Operating Procedure** PM **Preventive Maintenance** PSA Probabilistic Safety Assessment RAW **Risk Achievement Worth** RCIC Reactor Core Isolation Cooling RHR **Residual Heat Removal** RHRSW **Residual Heat Removal Service Water** RRW **Risk Reduction Worth** SDP Significance Determination Process SPAR Standardized Plant Analysis Risk SR Surveillance Requirement SRV Safety Relief Valve SSC Structure, System, and Component TEAR **Training Evaluation Action Request** TS **Technical Specification UFSAR** Updated Final Safety Analysis Report UT Ultrasonic Test Vac Volts, Alternating Current WO Work Order