UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET, SW, SUITE 23T85
ATLANTA, GEORGIA 30303-8931

June 25, 2009

Mr. Bruce H. Hamilton
Vice President
Duke Power Company, LLC
d/b/a Duke Energy Carolinas, LLC
McGuire Nuclear Station
12700 Hagers Ferry Road
Huntersville, NC 28078-8985

SUBJECT: MCGUIRE NUCLEAR STATION - NRC TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000369/2009007 AND 05000370/2009007 AND EXERCISE OF ENFORCEMENT DISCRETION

Dear Mr. Hamilton:

On March 27, 2009, the US Nuclear Regulatory Commission (NRC) completed a triennial fire protection inspection at your McGuire Nuclear Station. The enclosed report documents the inspection findings which were discussed at an exit meeting on that date, with you and members of your staff. Following completion of additional review in the Region II office, another exit meeting was held by telephone with you and other members of your staff on May 14, 2009, to provide an update on changes to the preliminary inspection findings.

The inspection examined activities conducted under your licenses as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your licenses. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

This report documents two findings of very low safety significance (Green) which were determined to be violations of NRC requirements. However, because of the very low safety significance, and because they were entered into your corrective action program, the NRC is treating these NRC-identified findings as non-cited violations (NCVs) consistent with Section VI.A of the NRC Enforcement Policy. Additionally, the enclosed report documents two noncompliances that were identified for which the NRC is exercising enforcement discretion. The NRC is not taking any enforcement action for these noncompliances because they meet the criteria of the NRC Enforcement Policy, "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)." If you contest any NCV in this report, you should provide a written response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, D.C. 20555-0001; and the NRC Resident Inspector at the McGuire facility. In accordance with

10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure and your response (if any) will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

Rebecca L. Nease, Chief,
Engineering Branch 2
Division of Reactor Safety

Docket Nos.: 50-369, 50-370
License Nos.: NPF-9, NPF-17

Enclosure: NRC Triennial Fire Protection Inspection Report 05000369/2009007 and 05000370/2009007 w/Attachment - Supplemental Information

cc w/encl: (See page 3)

cc w/encl:

Steven D. Capps
Engineering Manager
Duke Power Company, LLC
d/b/a Duke Energy Carolinas, LLC
Electronic Mail Distribution

Scotty L. Bradshaw
Training Manager
Duke Power Company, LLC
d/b/a Duke Energy Carolinas, LLC
Electronic Mail Distribution

Kenneth L. Ashe
Regulatory Compliance Manager
Duke Power Company, LLC
d/b/a Duke Energy Carolinas, LLC
Electronic Mail Distribution

R. L. Gill, Jr.
Manager
Nuclear Regulatory Issues & Industry Affairs
Duke Power Company, LLC
d/b/a Duke Energy Carolinas, LLC
Electronic Mail Distribution

Lisa F. Vaughn
Associate General Counsel
Duke Energy Corporation
526 South Church Street-EC07H
Charlotte, NC 28202

Kathryn B. Nolan
Senior Counsel
Duke Energy Corporation
526 South Church Street-EC07H
Charlotte, NC 28202

David A. Repka
Winston Strawn LLP
Electronic Mail Distribution

County Manager of Mecklenburg County
720 East Fourth Street
Charlotte, NC 28202

Beverly O. Hall
Chief, Radiation Protection Section
Department of Environmental Health
N.C. Department of Environmental
Commerce & Natural Resources
Electronic Mail Distribution

Dhiaa M. Jamil
Group Executive and Chief Nuclear Officer
Duke Energy Carolinas, LLC
Electronic Mail Distribution

Letter to Bruce H. Hamilton from Rebecca L. Nease dated June 25, 2009.

SUBJECT: MCGUIRE NUCLEAR STATION - NRC TRIENNIAL FIRE PROTECTION INSPECTION REPORT 05000369/2009007 AND 05000370/2009007 AND EXERCISE OF ENFORCEMENT DISCRETION

Distribution w/encl:
RIDSNRRDIRS
PUBLIC
RidsNrrPMMcGuire Resource

X PUBLICLY AVAILABLE ☐ NON-PUBLICLY AVAILABLE ☐ SENSITIVE X NON-SENSITIVE

ADAMS: X Yes ACCESSION NUMBER:_____ X SUNSI REVIEW COMPLETE

OFFICE	RII:DRS	RII:DRP	RII:DRS	RII:DRS	RII:DRS	RII:DRS	RII:DRS	
SIGNATURE	RA	RA	RA	RA	RA	RA	RA	
NAME	RNease	JBartley	SWalker	PFillion	RFanner	PBraxton	GWiseman	
DATE	6/23/09	6/23/09	6/23/09	06/4/09	5/22/09	6/28/09	5/21/09	
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	

OFFICIAL RECORD COPY DOCUMENT NAME: S:\DRS\ENG BRANCH 2\REPORTS\MCGUIRE\INSPECTION REPORT\MCGUIRE 2009007 FINAL INSPECTION REPORT(BRAXTON).DOC

U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.:	50-369, 50-370
License Nos.:	NPF-9, NPF-17
Report Nos.:	05000369/2009007 and 05000370/2009007
Licensee:	Duke Energy Company (DEC)
Facility:	McGuire Nuclear Station, Units 1 & 2
Location:	12700 Hagers Ferry Road Huntersville, NC 28078
Dates:	March 9 - 13 (Week 1) March 23 - 27, 2008 (Week 2)
Inspectors:	S. Walker, Senior Reactor Inspector (Lead Inspector) R. Fanner, Reactor Inspector P. Fillion, Senior Reactor Inspector G. Wiseman, Senior Reactor Inspector
Accompanying Personnel:	P. Braxton, Reactor Inspector (In-Training) N. Karlovich, Reactor Inspector (In-Training)
Approved by:	Rebecca Nease, Chief Engineering Branch 2 Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000369/2009007, 05000370/2009007; 3/09 - 13/2009 and 3/23 - 27/2009; McGuire Nuclear Station, Units 1 & 2; Triennial Fire Protection Inspection.

This report covers an announced two-week triennial fire protection inspection (TFPI) by a team of six regional inspectors. Two findings of significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green: The inspectors identified a non-cited violation of McGuire Unit 2 Operating License Condition 2.C.4 for failure to implement and maintain their Fire Protection Program as described in design basis document MCS-1465.00-00-008, "Plant Design Basis Specification for Fire Protection." Specifically, the licensee failed to take prompt, adequate corrective action to ensure installation of an emergency light for a local operator manual action at Breaker 2EMXB-2A. The licensee entered the issue into the corrective action program and issued a night order informing Operations staff to carry flashlights until the light can be installed.

  This finding is more than minor because it is associated with the reactor safety Mitigating Systems cornerstone attribute of protection against external factors (i.e., fire) and it affects the objective of ensuring reliability and capability of systems that respond to initiating events. The inspectors determined the finding was of very low safety significance (Green) based on the high likelihood of operators completing the task using flashlights. This finding has a cross-cutting aspect of Human Performance in the area of Resources [H.2.c], because the licensee failed to ensure the modification package was accurate to reflect the correct breaker that required an emergency light as described in the corrective action. (Section 1R05.01)

- Green: The inspectors identified a non-cited violation of Unit 2 Operating License Condition 2.C.4 and the Fire Protection Program as contained in design basis document MCS-1465.00-00-008, "Plant Design Basis Specification for Fire Protection." Specifically, the licensee implemented a deficient fire pre-plan strategy in fire areas 10/12 which failed to provide pertinent information and guidance on alternate available communications to assist the fire brigade for a fire within the area as required by the licensing basis. The licensee entered the problem into their corrective action program and issued a night order informing Operations staff of the potential inability to use radios in fire areas 10/12.

  The finding is greater than minor because it affected the ability of the licensee to maintain communications for a fire in fire areas 10/12 and is associated with the Mitigating Systems cornerstone and respective attribute of protection against external factors, i.e. fire. The safety significance of the deficient fire pre-plan strategy

was determined to be very low because the fire pre-plan strategy would not impede the fire brigade's ability to extinguish a fire in the specified fire areas. This finding has a cross-cutting aspect in the area of Problem Identification & Resolution for the Corrective Action Program component [P.1c] because the licensee failed to thoroughly evaluate the previously identified problems associated with the fire pre-plans to ensure that the corrective actions were effective in identifying and correcting issues with the communications availability for the fire brigade. (Section 1R05.08)

B . Licensee Identified Violations

None

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R05 Fire Protection

This report presents the results of a triennial fire protection inspection conducted in accordance with NRC Inspection Procedure (IP) 71111.05TTP, "Fire Protection – NFPA 805 Transition Period (Triennial)," dated May 9, 2006. The objective of the inspection was to review the McGuire Nuclear Station (MNS) Units 1 and 2 fire protection program (FPP). The team selected four fire areas (FAs) for detailed review to examine the licensee's implementation of the FPP. The four FAs chosen for review were selected based on available risk information as analyzed onsite by a Senior Reactor Analyst from Region II, data obtained in plant walkdowns regarding potential ignition sources, location and characteristics of combustibles and location of equipment needed to achieve and maintain safe shutdown (SSD) of the reactor. Other considerations for selecting the FAs were the relative complexity of the post-fire SSD procedure, information contained in FPP documents, insights from the licensee's transition to National Fire Protection Association (NFPA) 805, and results of prior NRC triennial fire protection inspections. Section 71111.05-05 of the IP specifies a minimum sample size of three fire areas. Detailed inspection of these four fire areas fulfills the procedure completion criteria. The four areas chosen were:

1. **Unit 2 FA 3:** Elev. 716, Motor Driven Auxiliary Feedwater Pump Room, (Alternate Safe Shutdown (ASSD) outside Main Control Room (MCR) from Standby Shutdown System (SSS))

2. **Unit 2 FA 3A:** Elev. 716, Turbine Driven Auxiliary Feedwater Pump Room, (SSD using Train B)

3. **Unit 2 FA 10:** Elev. 733**,** Train B Electrical Penetration Room (SSD using Train A)

4. **Unit 2 FA 12:** Elev. 733, Train B Switchgear Room (SSD using Train A)

The team evaluated the licensee's FPP against applicable requirements, including McGuire Operating License Condition 2.C.4 and documents referenced therein; Title 10 of the Code of Federal Regulations (CFR), Part 50, Appendix R; 10 CFR 50.48; related NRC safety evaluation reports (SERs); and plant Technical Specifications. The team reviewed related FPP requirements, as described in the Updated Final Safety Analysis Report (UFSAR), Section 9.5.1, Fire Protection System. The team reviewed other applicable documents including design basis documents for the Safe Shutdown Analysis (SSA), the FPP and the Appendix R Program. The team evaluated all areas of this inspection, as documented below, against these requirements. Specific licensing basis documents reviewed are listed in the Attachment.

.01 Post-Fire Safe Shutdown From Main Control Room (Normal Shutdown)

a. Inspection Scope

The team reviewed the licensee's ability to implement a shutdown strategy for the fire areas chosen. The team reviewed the Design Basis Specification for the Appendix R SSA, MCS-1465.00-00-0022, Revision 8; abnormal operating procedures (APs); piping and instrumentation drawings (P&IDs); electrical drawings; UFSAR; and other supporting documents for postulated fires in FA-3A, FA-10, and FA-12. The review postulated shutdown from the main control room (MCR) with and without the availability of offsite power. Plant walkdowns were performed to verify that the plant configuration was consistent with the attributes detailed in the credited fire hazard analysis and SSA. The team reviewed the systems and components credited for use during this shutdown method to verify that they would remain free from fire damage.

The team reviewed the training lesson plans for licensed and non-licensed operators to verify that training reinforced the shutdown methodology in the SSA and APs for the selected FAs. The team reviewed shift turnover logs and shift-manning records to verify an adequate amount of personnel were present as required to implement SSD using the alternative shutdown systems.

The team conducted interviews of operations staff, exclusive of those assigned as fire brigade members, to evaluate their response to procedures credited for fire mitigation purposes and ensured procedures were available onsite.

The team reviewed the adequacy of procedures utilized for post-fire SSD, performed a walkdown of various procedure actions to measure the licensee staff's implementation, and evaluated the human factor adequacy of the procedure. The team also verified whether operators could reasonably perform the specific actions within the time required to maintain plant parameters within specified limits.

- AP/0/A/5500/045, Plant Fire, Enclosure 8, Rev. 6, Step 3 & 4
- AP/0/A/5500/045, Plant Fire, Enclosure 16, Rev. 16, Step 3

The team reviewed in some instances, time critical local operator manual actions (OMAs) outside the main control room to ensure the actions could be implemented in accordance with plant procedures, within the times specified in the SSA, and consistency with NRC guidance for these types of actions. This review checked that:

- The procedures were available for immediate use;
- The operators could reasonably be expected to perform the procedures including local manual operator actions within applicable shutdown time requirements;
- The local manual operator actions in place for III.G.2 fire areas met the feasibility criteria listed in IP 71111.05;
- The training program for operators included local manual operator actions relied on for SSD from MCR or from hot shutdown panels;
- The personnel required to achieve and maintain the plant in hot standby following a fire could be provided from normal onsite staff, exclusive of the fire brigade;

- The licensee conducted periodic operational tests of the alternate shutdown transfer capability and instrumentation and control functions

The team reviewed Problem Investigation Process (PIP) corrective action document 05-04859, Appendix R Manual Actions, to verify the licensee had identified operator manual actions for post-fire SSD in III.G.2 areas and had plans in place to keep PIP 05-04859 open to assess and track resolution of the manual actions issue as part of the plant-wide risk evaluation for transition to NFPA 805.

b. Findings

Failure to Take Adequate Corrective Action for Emergency Light Installed for Operator Manual Actions

Introduction: A Green NCV of McGuire Unit 2 Operating License Condition 2.C.4 was identified by the inspectors for failure to maintain the current FPP. Specifically, the licensee failed to take prompt, adequate corrective action to ensure installation of an emergency light for a local OMA at Breaker 2EMXB-2A.

Description: During a walkdown of the plant fire procedure for FA 3A, the inspectors found an emergency lighting unit (ELU) was not installed to support actions at Breaker 2EMXB-2A, which is located on the 733 ft. elevation of the Auxiliary Building in the 2EMXB room. Upon recognition of a fire and identification that the location is FA 3A, licensee staff in the MCR direct a Non-Licensed Operator (NLO) to open Breaker 2EMXB-2A, breaker for 2CA-9B, 2B CA Pump Suction valve, in accordance with Enclosure 8, Step 4 of procedure AP/0/A/5500/45, Plant Fire, Rev. 6. This time critical action requires a NLO to locally remove the power to the valve at the Motor Control Center. The licensee previously initiated PIP M-04-04928 which identified various ELU deficiencies and listed locations that required installation of ELUs to support actions listed in the plant fire procedure; these areas included the 2EMXB room and the 2CA-9B breaker. A modification package was developed, MD200746, to install ELUs in the 2EMXB room; however, none of the lights installed illuminated Breaker 2EMXB-2A, the breaker needed for successful completion of Step 4. The Engineering Change Request associated with the modification package specified that an ELU was required for Breaker 2EMXB1-2A vice 2EMXB-2A. Consequently, an ELU was installed for Breaker 2EMXB1-2A instead of 2EMXB-2A. The initial corrective action was subsequently not verified as having been satisfied. The licensee entered the issue into the corrective action program and issued Operations Special Order 09-17 informing Operations staff to carry flashlights until the light can be installed.

Analysis: Failure to take prompt, adequate corrective action to ensure installation of the emergency light is a performance deficiency and is more than minor because it is associated with the reactor safety Mitigating Systems cornerstone attribute of protection against external factors (i.e., fire) and it affects the objective of ensuring reliability and capability of systems that respond to initiating events. The inspectors determined the finding was of very low safety significance (Green) based on the high likelihood of completing the task using flashlights. This finding has a cross-cutting aspect of human performance in the area of Resources [H.2.c], because the licensee failed to ensure the modification package was accurate to reflect the correct breaker that required an ELU as described in the corrective action.

Enforcement: McGuire Unit 2 Operating License Condition 2.C.4 states that the licensee shall implement and maintain in effect all provisions of the approved FPP as described in the UFSAR for the facility and as approved in the SER dated March 1978 and Supplements 2, 5 and 6 dated March 1979, April 1981, February 1983, respectively, and the SE dated May 1989. McGuire UFSAR Section 9.5.1 states in part, that the McGuire FPP is contained in design basis document MCS-1465.00-00-008, "Design Basis Specification for Fire Protection." This document states that measures should be established to assure that conditions adverse to fire protection are promptly identified, reported, and corrected. The licensee's approved FPP commits to 10 CFR 50, Appendix R, Sections III.G, J, L and O of 10 CFR 50, Appendix R. 10 CFR 50, Appendix R, Section III.J, "Emergency Lighting," states in part, that ELUs with at least an 8-hour battery supply shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto.

Contrary to the above requirements, on March 23, 2009, it was identified that the corrective actions required to be taken in PIP M-04-04928 did not correct the adverse condition of no Appendix R ELU for the credited procedure action at Breaker 2EMXB-2A. This adverse condition has existed for several years. Because the violation was of very low safety significance and the licensee entered the finding into their corrective action program (PIPs M-09-1633 & M-09-1652), this violation is being treated as a non-cited violation consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000370/2009007-01, Failure to Take Adequate Corrective Action for Appendix R Emergency Lighting Credited for Operator Action.

.02 Protection of Safe Shutdown Capabilities

a. Inspection Scope

For each of the selected FAs, the team reviewed the fire suppression system, fire detection system, and fire barriers provided in those areas as well as the location of cables important to SSD to determine whether the SSD capability was protected in accordance with the requirements of 10 CFR 50, Appendix R, Section III.G. The team performed inspection activity aimed at verifying that cable routing throughout the plant satisfied the physical separation requirements of Section III.G. During plant walkdowns, the team recorded raceway identification codes and the FAs in which those raceways traversed and compared them with the corresponding information in the licensee's analysis. The comparison provided a check on whether the analysis correctly pinpointed which cables were in a given FA. Over 113 cable trays containing cables important to SSD were checked in this manner.

b. Findings

No findings of significance were identified.

.03 Passive Fire Protection

a. Inspection Scope

The team inspected the material condition and as–built configuration of accessible passive fire barriers surrounding and within the FAs selected for review to evaluate the adequacy of the fire resistance in accordance with the requirements of 10 CFR 50, Appendix R, Section III.G, and Appendix A of BTP APCSB 9.5-1. Fire barriers in use included masonry block walls, poured walls, ceilings, floors, mechanical and electrical penetration seals, doors, and dampers. The as-built configuration of these fire barriers was compared to their tested or approved configuration. For example, fire doors were examined for attributes such as material condition, tightness, proper operation, Underwriter's Laboratories label on door, frame, and latch, and method of attachment to the wall. Construction detail drawings were reviewed as necessary. Other types of fire barriers were inspected in a similar detail. Fire endurance test data were reviewed as necessary to verify the qualified fire resistance ratings of the selected fire barriers. In cases where the qualification of a fire barrier depended on engineering evaluations by the licensee in lieu of testing, the team requested the licensee to provide those evaluations for review. Fire model calculations were generated by the team as appropriate using NRC recommended computer codes to evaluate the selected barrier's effectiveness to contain potential fires. The overall criterion applied to this element of the inspection procedure was that the passive fire barriers had the capability to contain fires for one hour or three hours as applicable. The passive fire protection features included in the review are listed in the Attachment.

b. Findings

No findings of significance were identified.

.04 Active Fire Suppression

a. Inspection Scope

The team's review of active fire suppression included the fire detection systems, fire protection water supply system, automatic fire suppression systems, and manual fire fighting fire hose and standpipe systems. The inspection of fire detection systems included a review and walkdown of the as-built configuration of the systems as compared to the applicable National Fire Protection Association (NFPA) standard. The testing and maintenance program and its implementation for the fire detection system were reviewed. The team reviewed and walked-down operational aspects of the fire detection system, such as location of panels and alarms, to determine the capability to rapidly pinpoint the location of any detected fires.

The team inspected the material condition, operational lineup (i.e., position of valves), design, and testing of the sprinkler system in the Motor Driven Auxiliary Feedwater Pump Room (FA-3). The Electrical Penetration Room (FA-10) and 2ETB Switchgear Room (FA-12) did not have fixed fire suppression systems. Hydraulic calculations which demonstrated the fire pumps and piping had the capacity and capability to deliver proper flow and pressure were reviewed. The most recent flow and pressure test data were also reviewed. The locations of sprinkler heads were observed to check for obstructions. The redundancy of fire protection water sources and fire pumps to fulfill their fire

protection function to provide adequate flow and pressure to hose stations and automatic suppression systems were reviewed as compared to licensing basis requirements. Additionally, the automatic Halon fire suppression system within the Turbine Driven Auxiliary Feedwater Pump Room (FA-3A) was reviewed for adequacy of the design and installation. This review included Halon fire suppression system controls to assure accessibility and functionality of the system, as well as associated ventilation system fire/Halon isolation dampers. The team also examined licensee design calculations, vendor certifications, and pre-operational test data to verify the required concentration of Halon for the area was available.

The team reviewed the manual standpipe and fire hose system to verify adequate design and installation in the selected FAs. During plant tours, team members observed interior fire hose nozzle types, fire brigade nozzles, and the placement of the fire hose stations to verify they were not blocked and were consistent with the fire fighting strategies and FPP documents. The team also examined design calculations, installation specifications, installation drawings, hydraulic calculations, surveillance procedures, and NFPA 14, "Standard for the Installation of Standpipe and Hose Systems-1976 Edition," to verify that sufficient pressure and flow volume was available to produce electrically safe and effective fire hose operation within the nozzle manufacturer's specified flow range. Additionally, the team checked a sample of fire hose lengths to confirm they could reach potential fire affected equipment and components within the selected FAs in support of manual fire brigade fire fighting efforts.

All aspects of fire brigade readiness were reviewed, including but not limited to, personal protective and smoke control equipment availability and condition, training, fire drills, daily staffing levels of fire brigade personnel, hose station locations, nozzle types, pre-fire strategies, emergency lighting, and fitness for fire fighting duty of brigade members. In general, the acceptance criteria applied to active fire suppression systems were contained in applicable codes and standards listed in the Attachment as modified by the design basis documents. Documents included in the review are listed in the Attachment.

b. Findings

No findings of significance were identified.

.05 Protection from Damage from Fire Suppression Activities

a. Inspection Scope

The team evaluated whether the automatic fixed sprinkler systems or manual fire fighting activities could adversely affect the credited SSD equipment, inhibit access to alternate shutdown equipment, and/or adversely affect the local operator actions required for SSD in the selected fire areas. With regard to the fixed automatic sprinkler system in the Motor Driven Auxiliary Feedwater Pump Room (FA-3), the team considered consequences of a pipe break and inadvertent system actuation. The team also checked that sprinkler system water would either be contained in the fire affected area or be safely drained off. In cases where the licensee's analysis of these concerns took credit for drains, the team evaluated the adequacy and condition of floor drains and sumps to ascertain whether the drains were maintained open through periodic cleaning and inspections.

The team also addressed the possibility that a fire in one FA could lead to activation of an automatic suppression system in another FA through the migration of smoke or hot gases, and thereby adversely affect SSD. The team reviewed air flow paths out of the selected FAs to verify that inter-area migration of smoke or hot gases would not inhibit necessary operator actions. This portion of the inspection was carried out through a combination of walkdowns, drawing review, and records review.

b. Findings

No findings of significance were identified.

.06 Methodology and Operational Implementation for Alternate Shutdown

a. Inspection Scope

Methodology

The team reviewed the licensee's ability to implement an alternative shutdown strategy for the FAs chosen. The team selected a sample list of credited components, which are listed below. The team evaluated if the components credited would be impacted by a fire in the chosen areas and rendered inoperable. The team reviewed P&IDs, one-line electrical diagrams, and electronic cable routing data to assess the accuracy of the licensee in identifying components and power sources.

The team also inspected a sample of control and instrumentation circuits associated with alternate shutdown for the attribute that these circuits were physically and electrically independent from the FAs for which alternate shutdown would be used or could be made independent through the use of isolation/transfer switches. Diagrams for the following circuits were reviewed:

- Unit 2 Trains A & B charging pumps,
- Valve 0RN4AC, component cooling water supply B shutoff,
- Unit 2 steam generator level indication,
- Unit 2 turbine driven auxiliary feedwater pump automatic start circuit,
- Unit 2 valve 2CA162C in the auxiliary feedwater system

Operational Implementation

The team assessed whether time critical operator actions specified in the post-fire shutdown procedures could be accomplished in the time frame consistent with the dictates of expected plant conditions. The inspectors verified the licensee personnel credited for procedure implementation had procedures available, were trained on implementation, and were available in the event a fire occurred. The team verified the licensee staff performed drills to incorporate training. The team walked through applicable steps in the licensee's procedures to verify the steps could be completed consistent with the licensee's SSA.

The team reviewed the training lesson plans for licensed and non-licensed operators to verify that training reinforced the shutdown methodology in the SSA and APs for the selected FAs. The team reviewed shift turnover logs and shift-manning records to verify an adequate amount of personnel were present as required to implement SSD using the alternative shutdown systems.

The team conducted interviews of operations staff, exclusive of those assigned as fire brigade members, to evaluate their response to procedures credited for fire mitigation purposes and ensured procedures were available onsite.

The team reviewed the adequacy of procedures utilized for post-fire SSD, performed a walkdown of various procedure actions to measure licensee staff implementation, and evaluate the human factor adequacy of the procedure. The team also verified whether operators could reasonably perform the specific actions within the time required to maintain plant parameters within specified limits.

Specific time critical actions were evaluated in the following procedures

- AP/0/A/5500/045, Plant Fire, Enclosure 6, Rev. 6
- AP/2/A/5500/024, Loss of Plant Control Due to Fire or Sabotage, Rev. 25

The team reviewed the periodic operational test program being implemented by the licensee to help ensure that the SSS would function as designed whenever needed to bring the plant to hot standby conditions. Copies of data sheets for the below listed tests were reviewed. Procedure numbers and completion date for these are listed in the Attachment.

- Unit 2 SSF system integrated test (includes transfer/isolation devices),
- Unit 1 & 2 standby makeup pump flow test,
- SSF operability test (includes diesel generator start and run),
- Test of solenoid valve for SSF start of turbine driven auxiliary feedwater pump,
- Preventive maintenance on the SSF diesel generator,
- SSF steam generator level instrument loop calibration,
- 125/250 V SSF battery quarterly inspection

b. Findings

No findings of significance were identified.

.07 Circuit Analysis

a. Inspection Scope

This section is suspended for plants in transition, since a more detailed review of cable routing and circuit analysis will be conducted as part of the fire protection program transition to NFPA 805. However, the team did review routing information for credited active fire protection components (i.e., fire detection, electric motor-driven fire pumps, fire protection water distribution system deluge valve controls, and manual fire brigade smoke removal) to determine if a fire in the chosen areas would impact them. If there

was a potential for components to be impacted by fire, the team performed additional analysis and reviewed licensee credited resolutions. The individual circuit analysis review consisted of identifying the impacted cable, determining the purpose of the impacted cable, and verifying the licensee action to resolve the condition. The circuitry associated with the electric motor-driven fire pumps control and automatic functions was reviewed to check that it implemented the desired start logic and would not be vulnerable to fire damage. This portion of the inspection was carried out through document review supplemented by in-plant inspection as appropriate. The components reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

.08 Communications

a. Inspection Scope

The team inspected the plant communications systems that would be relied upon to support safe shutdown, fire event notification, and fire brigade fire fighting activities. Attributes of the plant communications systems important to post-fire safe shutdown were addressed by the team, such as availability at designated locations, reliability ensured through periodic testing, batteries maintained sufficiently charged, good reception in all required areas of the plant, and vulnerability to fire damage. The team reviewed selected fire brigade drill summary/critique reports to assess proper operation and effectiveness of the fire brigade command post portable radio communications during fire drills and identify any history of operational or performance problems with radio communications during fire drills. In addition, the team reviewed the radio battery usage ratings for the fire brigade radios stored and maintained on charging stations to verify their availability.

b. Findings

Pertinent Fire Brigade Information and Guidance Not Identified in Fire Fighting Strategies

Introduction: The team identified a Green NCV of McGuire Unit 2 Operating License Condition 2.C.4 for the licensee's failure to include pertinent communications information and guidance in the fire fighting pre-plan strategies for a postulated fire in FAs 10/12 as required by the licensing basis. Specifically, the use of portable radios may be lost for these fire areas and an alternate means of communication was not identified in the pre-plan strategies.

Description: The team identified on March 26, 2009, that the McGuire fire pre-plan strategies for fire areas 10/12 did not provide pertinent information and guidance on available communications to assist the fire brigade to be better prepared for fire fighting within the area. Fire strategies 10 and 12 were judged to be deficient because they did not identify that a primary radio communications antenna was located in the area and subject to fire damage, as well as, providing appropriate information and guidance for accessing the nearest safe location of alternative available communications best suited for communicating with the control room and communicating command control of the fire brigade members applying the extinguishant to the fire. Information on communicating with the control room and command control of the fire brigade members applying the

extinguishant to the fire are subjects required to be covered in the pre-fire strategy plans as described in the licensee's FPP, MCS-1465.00-0008, "Design Basis Specification for Fire Protection," Appendix B, Section 5.d. Incomplete fire fighting strategies could increase the time response of the brigade in putting out the fire, resulting in an increase in fire damage. These licensing basis requirements were not being met by the licensee. The licensee had previously initiated PIP M-06-00576 to revise the fire pre-plan strategies to be in full compliance with McGuire's licensing basis. The corrective actions were not effective in identifying and correcting the communications deficiency discovered for FAs 10/12. The licensee initiated PIP M-09-01648 to address this issue, which included documented issuance of a control room Operations Special Order 09-17 to provide alternate means of communications (i.e. telephone and runners) in the event of a fire in FAs 10/12.

Analysis: The lack of pertinent information related to the availability of operable communications equipment in the pre-fire strategy plans was considered a performance deficiency. This performance deficiency affects the Mitigating Systems cornerstone objectives of protection from external factors including fire and procedure quality. Consequently, the finding is greater than minor. The team assessed this finding for significance in accordance with IMC 0609, Appendix F, "Fire Protection Significance Determination Process," Phase 1 and determined that it was of very low safety significance (Green), since the performance deficiency only minimally diminished manual suppression effectiveness without affecting the fire ignition frequency within the areas or the previously established safe shutdown strategy for a fully developed active fire within the applicable area. Additionally, this finding has a cross-cutting aspect in the area of Problem Identification & Resolution for the Corrective Action Program component [P.1(c)] because the licensee failed to thoroughly evaluate the previously identified problems associated with the fire pre-plans to ensure that the corrective actions were effective in identifying and correcting issues with the communications availability for the fire brigade in a fire event.

Enforcement: McGuire Unit 2 License Condition 2.C.4 states that the licensee shall implement and maintain in effect all provisions of the approved FPP as described in the UFSAR for the facility and as approved in the SER dated March 1978 and Supplements 2, 5 and 6 dated March 1979, April 1981, February 1983, respectively, and the SE dated May 1989. McGuire UFSAR Section 9.5.1 states in part, that the McGuire FPP is contained in design basis document MCS-1465.00-00-0008, "Plant Design Basis Specification for Fire Protection." The FPP states, in Appendix B.5, "Fire Fighting Procedures," that fire fighting procedures would identify the strategies established for fighting fires in all safety-related areas and areas presenting a hazard to safety-related equipment. The strategies should cover specific subjects including fire brigade communication with the control room, and command control of the fire brigade members as well as the location of the nearest safe location of alternative available communications best suited for use during the fire event.

Contrary to the above, prior to March 26, 2009, fire fighting pre-plan strategies for fire areas 10/12 did not identify appropriate information and guidance for accessing the nearest safe location of alternative available communications best suited for use during the fire event fire. The failure to include pertinent communications information and guidance in fire fighting pre-plan strategies for postulated fire in fire areas 10/12 as required by the licensing basis was of very low safety significance and has been entered into the corrective action program as PIP M-09-01648; this finding is being treated as a

Green NCV consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000370/200907-02, Pertinent Fire Brigade Information and Guidance Not Identified in Fire Fighting Strategies.

.09 Emergency Lighting

a. Inspection Scope

The team inspected the placement and aiming of ELUs installed to provide illumination for operators carrying out the SSD procedures for the four selected fire areas. The team reviewed the design, maintenance and testing of ELUs throughout the plant to confirm they would illuminate for an 8-hour period following interruption of normal power to the battery chargers. Copies of data sheets from recent past surveillance tests on the ELUs were reviewed. Refer to the Attachment to this report for procedure titles and dates of completion. In cases where an ELU failed the surveillance test, the team followed up to confirm the corrective action and programmatic treatment.

The team also observed whether emergency exit lighting was provided for personnel evacuation pathways to the outside as identified in NFPA 101, Life Safety Code, and the Occupational Safety and Health Administration, Part 1910, Occupational Safety and Health Standards. This review also included examination of whether backup emergency lighting was provided for the primary and secondary fire emergency equipment storage locker locations and dress-out areas in support of fire brigade operations should power fail during a fire emergency.

b. Findings

Introduction: A noncompliance was identified with McGuire Unit 2 Operating License Condition 2.C.4 for failure to have available and functional fixed emergency lighting in fire areas where OMAs were required to support post-fire SSD procedures. The violation meets the criteria for enforcement discretion contained in NRC Enforcement Policy, “Interim Enforcement Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48).”

Description: The team found that a number of deficiencies existed with the ELU’s. A total of 150 ELU’s were installed in McGuire Unit 2 with battery supplies from 1 to 5 lamps. During walkdowns, the team requested the accompanying licensee person to depress the functional test switch on 21 ELU’s. In 8 of the 21 functional tests one or more of the lamps failed to illuminate. It was determined that the problem was with the lamp itself and not the battery. In light of these results, the licensee tested 100 percent of the ELU’s (a functional test) and they reported no additional failures.

Maintenance records as described in the scope section did not indicate any failure of ELU lamps, but apparently only battery failures were recorded. The team concluded that 5.3 percent failures 8/150 seen about 1 month after the maintenance had been performed indicated a problem with the maintenance program. Work orders were written to replace the lamps and PIP’s M-09-01161 and M09-01649 were written to address the issue.

Light EML#105, which was credited for operator actions at the SSF control panel as described in AP/0/A/5500/045, as well as AP/0/A/5500/024, Loss of Plant Control Due

to Fire or Sabotage, Rev. 25, was obstructed by polyurethane mesh attached to scaffolding resulting in reduced lumen level. According to MNS UFSAR Chapter 9, Rev. 14, Section 9.5.3.4.

Additionally, the licensee issued a control room Operations Special Order 09-17 to inform staff they must carry flashlights until the reliability of the emergency lighting system could be corrected.

The information gathering trip identified specific FA's to be inspected. Subsequent to that, a walkdown was performed by the licensee and it was acknowledged that 10 CFR 50 Appendix R lighting was not installed to support operator actions at three breakers in the Turbine Building Basement as dispatched by Step 17b in AP/0/A/5500/024, Loss of Plant Control Due to Fire or Sabotage. The missing lights were not considered licensee identified since they were not identified through the licensee's routine programs, but as a result of the NRC inspections.

Analysis: This issue is a performance deficiency because the licensee did not ensure emergency lighting was installed or functional to support OMAs while performing post-fire safe shutdown actions dictated by procedures credited for implementation of the approved FPP. This finding is more than minor because it is associated with the reactor safety Mitigating Systems cornerstone attribute of protection against external factors (i.e. fire) and it affects the objective of ensuring reliability and capability of systems that respond to initiating events. The team determined that this finding was of very low safety significance (Green) because the operators had a high likelihood of completing the task using flashlights.

Enforcement: McGuire Unit 2 License Condition 2.C.4 states that the licensee shall implement and maintain in effect all provisions of the approved FPP as described in the UFSAR for the facility and as approved in the SER dated March 1978 and Supplements 2, 5 and 6 dated March 1979, April 1981, February 1983, respectively, and the SE dated May 1989. McGuire UFSAR Section 9.5.1 states in part that the McGuire FPP is contained in design basis document MCS-1465.00-00-0008, Plant Design Basis Specification for Fire Protection. This document states in Appendix C, Section C3, "Appendix R," that the McGuire FPP is required to comply with Sections III.G, J, L, and O of 10 CFR 50, Appendix R. Specifically, 10 CFR 50, Appendix R, Section III.J, "Emergency Lighting," states in part that ELUs with at least 8-hour battery supply shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto.

Contrary to the above, the inspectors identified 12 ELUs which were either not provided or not fully functional in areas needed for operation of safe shutdown equipment and in access and egress routes thereto.

Pursuant to the Commission's Enforcement Policy and NRC Manual Chapter 0305, under certain conditions fire protection findings at nuclear power plants that transition their licensing bases to 10 CFR 50.48(c) are eligible for enforcement and ROP discretion. The Enforcement Policy and ROP also state the finding must not be evaluated as Red significance.

Because the licensee committed prior to December 31, 2005, to adopt NFPA 805 and change their fire protection licensing basis to comply with 10 CFR 50.48(c), the NRC is

exercising enforcement discretion for this issue in accordance with the NRC Enforcement Policy, "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)." Specifically, this issue would have been identified and addressed during the licensee's transition to NFPA 805, was entered into the licensee's corrective action program and will be corrected, was not willful, and was not associated with a finding of high safety significance. The licensee entered this issue in their corrective action program as PIPs M-09-01161 and M-09-01649.

10. Cold Shutdown Repairs

a. Inspection Scope

10 CFR 50, Appendix R, III.G.1(b) allows repairs to be made to equipment needed to achieve and maintain cold shutdown that was damaged by a fire provided that such equipment can be repaired within 72 hours of the fire. Section III.L.5 requires that material for such repairs shall be readily available on site and procedures shall be in effect to implement such repairs. The team reviewed the need for cold shutdown repairs in relation to the selected fire areas and the licensee's compliance with these requirements. The team reviewed procedure IP/0/A/3090/23, "Fire Damage Control Procedure", Rev. 4D, dated February 26, 2009, which was the cold shutdown repair procedure. The procedure was reviewed for completeness and clarity. Refer to Section 4OA5.02 for additional details on cold shutdown repairs.

b. Findings

No findings of significance were identified.

11. Compensatory Measures

a. Inspection Scope

The team reviewed the administrative controls for out-of-service, degraded, and/or inoperable, fire protection features (e.g., detection and suppression systems and equipment, passive fire barriers, or pumps, valves or electrical devices providing post-fire safe shutdown functions or capabilities). A sample of records of recent fire protection features impairments were compared to the programmatic requirements described in FPP administrative procedures Nuclear Station Directive 316, "Fire Protection Impairment and Surveillance." The team also reviewed a sample of items listed in Fire Protection Program Health Report (2008Q4) and compared them with the FAs selected for inspection. The compensatory measures that had been established in these areas were compared to those specified in the applicable fire protection Selected Licensee Commitments to verify that the risk associated with removing fire protection from service was properly assessed and adequate compensatory measures were implemented in accordance with the approved FPP and Nuclear Station Directive 316, "Fire Protection Impairment and Surveillance".

b. Findings

No findings of significance were identified.

12. Control of Combustibles and Ignition Sources

a. Inspection Scope

For the selected FAs, the team evaluated the fire event history, the potential for fires or explosions, the combustible fire load characteristics, and the potential exposure fire severity. The team reviewed the licensee's transient fire load procedures; scaffold procedures; selected fire emergency reports; generic fire protection training; and selected portions of the FPP administrative procedures, to determine if adequate controls were in place to control the handling of in-situ and transient combustibles in the plant. The team walked down numerous areas in the plant, including the selected plant FAs, to ensure that the licensee had properly evaluated in-situ combustible fire loads, limited transient fire hazards, and maintained general housekeeping consistent with the UFSAR, administrative procedures, and other FPP procedures. There were no hot work activities ongoing within the selected FAs during the inspection, thus observation of this activity could not be performed.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA2 Identification and Resolution of Problems

a. Inspection Scope

The team also reviewed corrective action program documents, including completed corrective actions documented in selected PIPs and operating experience program documents, to ascertain whether industry-identified fire protection problems actually or potentially affecting McGuire were appropriately entered into, and resolved by, the corrective action program process. Items included in the operating experience program effectiveness review were NRC Information Notices, industry or vendor-generated reports of defects and non-compliances submitted pursuant to 10 CFR 21, and vendor information letters. The team evaluated the effectiveness of the corrective actions for the identified issues. The documents reviewed are listed in the Attachment.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

.01 (Closed) URI 05000369, 370/2000009-02, Potential for Pressurizer PORV Actuations

a. Inspection Scope

The team reviewed the facts of the subject unresolved item (URI) as well as evaluations and corrective actions taken by the licensee.

b. Findings

Introduction: The team identified a noncompliance of Technical Specification 5.4.1 for an inadequate post-fire safe shutdown procedure. Specifically, the procedure omitted steps to offset the consequences of a pressurizer power operated relief valve (PORV) spuriously opening due to fire damage. The violation meets the criteria for enforcement discretion contained in NRC Enforcement Policy, "Interim Enforcement Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)."

Description: There are three PORVs on the reactor coolant system pressurizer identified as NC32B, NC34A and NC36B. The team established that the analytical approach implemented by the licensee to address the potential for spurious opening of a pressurizer PORV would be to close the associated block valve. For fire areas which contained cables for a PORV only and not the associated block valve, closing of the block valve would be accomplished by following AP/1,2/A/5500/11, Pressurizer Pressure Anomalies. This procedure is not a fire response procedure, but rather a procedure which applies to any pressurizer pressure abnormality. For FAs which contained cables for both a PORV and its associated block valve, closing of the block valve must be accomplished within a certain time period following a fire and not merely as a response to system conditions. For these areas, closing the block valve would be accomplished by following AP/0/A/5500/045, Plant Fire. This procedure has an attachment specific to each FA. Moreover, if the FA is designated III.G.3 (ASSD) and contains cables for a PORV, the attachment for that FA directs the operator to close the corresponding pressurizer PORV block valves just prior to transitioning control of plant shutdown to the SSS.

For the four FAs selected for this inspection, the team reviewed the available cable routing information for the pressurizer PORVs and block valves, and checked that operator instructions were included in the appropriate operating procedures. The licensee had two sets of cable routing information for safe shutdown cables: one set formed the basis for the existing procedures and the second set was recently created to support the transition to 10 CFR 50.48 (c). The team identified one problem during this review. Procedure AP/0/A/5500/045, Enclosure 6, "Auxiliary Building Elevation 716 Unit 2 Motor-Driven Auxiliary Feedwater Pump Room Fire Unit 2 Actions," Step 8, directed the operator to close two of the three pressurizer PORV block valves just prior to transitioning to SSS plant control. This was consistent with the above stated analysis except the new cable routing information indicated that cables for all three pressurizer PORVs ran in this room (FA-3). Once this was identified, the licensee confirmed that cables for all three PORVs run in FA-3 and that fire induced spurious opening of all three PORVs would be credible. PIP M-09-01554 was initiated to add closure of block valve 2NC35A to Step 8 of the above stated procedure and promptly initiate a fire watch in the area until the procedure had been revised.

Analysis: Failure to include pressurizer block valve 2NC35A in AP/0/A/5500/045, Enclosure 6, "Auxiliary Building Elevation 716 Unit 2 Motor-Driven Auxiliary Feedwater Pump Room Fire Unit 2 Actions," Step 8, was determined to be a performance deficiency because it could have had an adverse impact on safe shutdown had a fire occurred in FA-3. It conceivably could have resulted in a pressurizer PORV being open for up to ten minutes immediately before control of plant shutdown was transferred to SSS. Moreover, since the SSS has limited reactor coolant system (RCS) makeup capability, the shutdown would be more complicated than the design intended. It was determined

to be of more than minor safety significance because it is associated with the procedure quality attribute of the mitigating systems cornerstone and affects the cornerstone objective of reliability and capability of systems that respond to initiating events to prevent undesirable consequences. The finding was of very low safety significance because the omission of the procedure step had a minimal impact on operator response to the event. The event could be mitigated by following AP/1,2/A/5500/11, Pressurizer Pressure Anomalies. This would not be precluded because the MCR would remain habitable during a fire in FA-3 and operator familiarity of the procedures and their experience would direct them to close the corresponding block valve, even if the spurious opening occurred during the brief time period of transition from main control room to SSS control. Additionally, if spurious opening of pressurizer PORV 2NC36B did occur as postulated; the PORV would automatically close once transfer to the SSF was complete, within 10 minutes.

Enforcement: Technical Specification 5.4.1.a requires written procedures to be established, implemented and maintained in accordance with Regulatory Guide 1.33. Regulatory Guide 1.33 requires procedures adequately established for plant fires. Contrary to this requirement, AP/0/A/5500/045, Enclosure 6, "Auxiliary Building Elevation 716 Unit 2 Motor-Driven Auxiliary Feedwater Pump Room Fire Unit 2 Actions," Step 8, which applies to FA-3, did not contain guidance for the operator to close block valve 2NC35A for Pressurizer PORV 2NC36B immediately prior to transition to the SSS for plant shutdown. However, the Commission's Enforcement Policy and NRC Manual Chapter 0305, "Operating Reactor Assessment", state that, under certain conditions, fire protection findings at nuclear power plants that transition their licensing basis to 10 CFR 50.48 (c) are eligible for enforcement and ROP discretion. The conditions for discretion were met as follows. The licensee would have identified the violation during their formal transition period to 10 CFR 50.48 (c). This statement is based on the fact that cables for PORV 2NC36B were identified as being in FA-3 by the licensee as part of the 10 CFR 50.48 (c) transition work. The situation was that the NRC inspection team identified the problem before the licensee had completed its analysis of the new cable routing data. The problem was entered into their corrective action program as PIP M-09-01554 and adequate interim compensatory measures were put in place. The violation was not willful nor was it of high safety significance. Other criteria in the Enforcement Policy and Manual Chapter were met. Therefore, discretion was granted. URI 05000369, 370/2000009-02 is closed.

.02 (Discussed) URI 05000369, 370/2000009-03, Availability of Charging Pumps for Fire Damage to the VCT Outlet Valves

a. Inspection scope

The team reviewed the facts of the subject unresolved item as well as evaluations and corrective actions taken by the licensee.

b. Findings

No findings of significance were identified. This URI was concerned with whether the plant could meet the commitment to ensure availability of a charging pump to backup the 26 gpm standby makeup pump for scenarios involving post-fire shutdown by the SSS. The URI states that the commitment to ensure availability of a charging pump as a backup to the standby makeup pump was made in a letter from McGuire to NRC, dated

January 5, 1983. The concept was that the RCS could experience a fire induced inventory loss of a magnitude that could not be readily restored by the makeup pump. This was a general concern, and no specific mechanism for this inventory loss was mentioned in the correspondence on this matter. The TFPI in 2000 found that damage to a charging pump through spurious closure of a volume control tank outlet valve was credible. The report does not describe how a second charging pump would be damaged in such a scenario. Since the time of the 2000 TFPI, the licensee attempted to resolve the concern and their conclusions are contained in PIP M-00-04481. The licensee concluded that the only potential mechanisms for a fire induced large RCS inventory loss are long term opening of a pressurizer PORV or RCS pump seal damage. Since these concerns have been analyzed in terms of specific cable damage on a fire area by fire area basis and operating procedures have been put in place to preclude the inventory loss, a charging pump will never be needed to maintain hot shutdown when shutdown is being controlled from the SSS. Essentially, the licensee desires to withdraw the commitment on the basis that the underlying concern expressed by NRC at the time of FPP review has been shown to be no longer a credible concern.

There is no detailed analysis showing that a charging pump would be immediately available to function at all times in all fire scenarios in the same manner as the safe shutdown equipment discussed in 10 CFR 50, Appendix R. PIP M-00-04481 also concludes that the only fire scenario in which two charging pumps could become damaged would be spurious closure of a VCT outlet valve resulting in damage to the running charging pump through loss of pump suction followed by a total loss of offsite power which would result in automatic starting of the second charging pump (assuming power is restored by the emergency diesel generator) while the suction source remains isolated. In the context of the PIP discussion, the total loss of offsite power was not necessarily credible, but was postulated because 10 CFR 50, Appendix R, Section III.G.3 requires that shutdown should be possible with or without offsite power. The licensee determined that as long as the pumps themselves are not damaged by fire, they could be made available on a delayed basis. It is not clear whether that determination fulfills the intent of the original commitment. In addition, the plant has a non-safety related, non-emergency power backed, positive displacement pump which must be taken into consideration when discussing this matter.

In reviewing this URI, the team learned of a separate but related issue which was that a charging pump is needed to achieve cold shutdown within 72 hours. This is because the SSS-credited standby makeup pump does not have the capacity (in terms of gallons per minute) to makeup for the RCS shrinkage associated with RCS cooldown and meet the 72 hour requirement. 10 CFR 50, Appendix R, allows that repairs may be made to damaged equipment if necessary to achieve and maintain cold shutdown. This means that if cables to both charging pumps were damaged by fire in a FA designated III.G.3, those cables could be replaced. However, if the charging pumps themselves were damaged, due to loss of suction head for example, that could create a problem with reaching cold shutdown within 72 hours as required by 10 CFR 50, Appendix R.

The conclusion from inspection of this URI is that there is no immediate or significant safety issue involved. There are licensing basis and regulatory issues that are yet to be resolved. These issues should be resolved in the process of transition to 10 CFR 50.48 (c). For these reasons the URI remains open.

4OA6 Meetings, Including Exit

On March 27, 2009, the lead inspector presented the preliminary inspection results to Mr. B. Hamilton, Vice President, McGuire Nuclear Station, and other members of the licensee's staff. The license acknowledged the results. A re-exit was held by telephone on May 14, 2009, to discuss the final results of the inspection with Mr. B. Hamilton. Proprietary information is not included in this report.

SUPPLEMENTAL INFORMATION

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000370/2009007-01	NCV	Failure to Take Adequate Corrective Action for Appendix R Emergency Lighting Credited for Operator Action (Section 1R05.01)
05000370/2009007-02	NCV	Pertinent Fire Brigade Information and Guidance Not Identified in Fire Fighting Strategies (Section 1R05.08)

Closed

05000369,370/2000009-02	URI	Potential for Pressurizer PORV Actuations (Section 4OA5.01)

Discussed

05000369,370/2000009-03	URI	Availability of Charging Pumps for Fire Damage to the VCT Outlet Valves (Section 4OA5.02)

KEY POINTS OF CONTACT

Licensee

Brewer, D., Manager, Safety Assurance
Bryant, J., Regulatory Compliance
Capps, S., Manager, Engineering
Fairchild, R., Fire Protection Engineer
Gibson, R., Emergency Services Coordinator
Hamilton, B. Site Vice President, McGuire Nuclear Station
Hunt, M., Supervisor, Civil Engineering
Kirskey, S., Supervisor, Power Engineering
Johansen, R., Appendix R Engineer
Lukowski, J., Safe Shutdown Engineer
Marrow, B., Manager, Operations Support Group
Murray, K., Manager, Emergency Planning
Nolin, J., Manager, Mechanical and Civil Engineering
Oldham, J., Corporate Fire Protection Engineer
Snider, S., Manager, Reactor and Electrical Systems Engineering
Thompson, P., Operations Liaison

NRC personnel

R. Bernhard, Senior Reactor Analyst
J. Brady, Senior Resident Inspector, McGuire
R. Eul, Resident Inspector, McGuire
R. Nease, Branch Chief, Engineering Branch 2

LIST OF FIRE BARRIER FEATURES INSPECTED
(Refer Report Section 1RO5.03- Passive Fire Barriers)

Fire Wall Identification	Description
Masonry Block Wall	FA-3A [Room 601B] and FA-3 [Room 601] along column line 60 at AA-BB
Poured Wall	FA-12 [Room 716] and AC Equipment Room [Room 716A] along column line 59

Fire Door Identification	Description
Door 601C	FA-3A to FA-3
Door 601A	FA-3 to Stair-Well Unit 2 Room 601A
Door 701D	FA-3 to Stair-Well Unit 2 Room 701B
Door PD-2	FA-12 to Turbine Building

Fire Damper Identification	Description
2-716-105.1.2	FA-3A [Room 601B] and FA-3 [Room 601]
2-716-127.1-8	FA-3A [Room 601B] and FA-3 [Room 601]

Fire Barrier Penetration Seal Identification	Description
2-716-105.1-1	FA-3A [Room 601B] and FA-3 [Room 601]
2-716-106.1-2	FA-3A [Room 601B] and FA-3 [Room 601]
2-716-128.1-12	FA-3A [Room 601B] and FA-3 [Room 601]
2-716-107.3-1	FA-3 to Stair-Well Unit 2 Room 601A
2-716-107.3-3	FA-3 to Stair-Well Unit 2 Room 601A
2-733-155.0-1	FA-12 to FA-18 [Room 805]

LIST OF COMPONENTS REVIEWED
(Refer to Report Section 1R05.07 – Circuit Analysis)

0RN VA0004AC, Train 1B & 2B RC Supply
2ENAP 9110, Incore T/C Ref Junction Temperature Deviation
2ENBP 9511, Post Accident Full Range Neutron Flux In
2CA VA0007A, Unit 2 TD CA Pump Isolation Valve
2CA VA0161C, Unit 2 CA Pumps Suction Header from U2 RN Header Isolation Valve
2CA VA0162C, Unit 2 CA Pumps Suction Header from U2 RN Header Isolation Valve
2CA PU0001, Unit 2 MD CA Pump 1
2CA PU0002, Unit 2 MD CA Pump 2
2CF P 6080, SG# A Wide Range Level
2CF P 6090, SG# B Wide Range Level
2CF P 6100, SG# C Wide Range Level
2CF P 6110, SG# D Wide Range Level
2NC P 5153, Pressurizer Level
2NC P 5861, Loop A Cold Leg Wide Range Temp Indication
2NC P 5931, D CL WR temp
2NC VA0031B, Pressurizer PORV Isolation Valve

2NV P 6420, Standby Makeup Pump Flow Valve
2NV PU0015, 2A NV Pump
2NV PU0016, 2B NV Pump
2NV VA0842AC, Standby Makeup Pump Inlet Valve
2NV VA0849AC, Standby Makeup Pump C/I Outside Valve
2NV VA0094AC, Chemical and Volume Control Containment Isolation Valve
2NV VA1013C, Standby Makeup Pump to NC Pumps Seals Isolation Valve

LIST OF DOCUMENTS REVIEWED

Procedures

AP/1/A/5500/11, Pressurizer Pressure Anomalies, Rev. 10
AP/2/A/5500/008, Malfunction of NC Pump, Rev. 11
AP/2/A/5500/12, Loss of Letdown, Charging, or Seal Injection, Rev. 21
AP/2/A/5500/21, Loss of KC or KC System Leakage, Rev. 7
AP/2/A/5500/024, Loss of Plant Control Due to Fire or Sabotage, Rev. 23
AP/2/A/5500/024, Loss of Plant Control Due to Fire or Sabotage, Rev. 24
AP/2/A/5500/024, Loss of Plant Control Due to Fire or Sabotage, Rev. 25
AP/0/A/5500/045, Plant Fire, Rev. 4
AP/0/A/5500/045, Plant Fire, Rev. 5
AP/0/A/5500/045, Plant Fire, Rev. 6
EDM-210, Engineering Responsibilities for the Maintenance Rule, Rev. 9
EDM-201, Engineering Support Program, Rev. 12
IP/0/A/3090/23, Fire Damage Control Procedure, Rev. 4D
IP/2/B/3260/028, SSS Emergency Lighting Battery Discharge Test, Rev. 3
MP/0/B/7400/102, Safe Shutdown Facility (SSF) Cummins Diesel Generator Preventive Maintenance, Rev. 7
NSD 104, Materiel Condition,/Housekeeping, Foreign Material Exclusion and Seismic Concerns, Rev. 29
NSD 112, Fire Brigade Organization, Training, and Responsibilities, Rev. 8
NSD 209, 10 CFR 50.59 Process, Rev. 13
NSD 228, Applicability Determination, Rev. 4
NSD 310, Requirements for the Maintenance Rule, Rev. 9
NSD 313, Control of Combustible and Flammable Material, Rev. 6
NSD 314, Hot Work Authorization, Rev. 7
NSD 315, Temporary Structures, Rev. 2
NSD 316, Fire Protection Impairment and Surveillance, Rev. 7
NSD 320, Guidance for Performing Licensing Review of Proposed Changes to the Fire Protection Program, Rev. 1
OP/0/A/6400/002C, Fire Detection System, Rev. 44
OP/0/A/6100/020, Operational Guidelines Following a Fire in Auxiliary Building or Vital Area, Rev. 21
OP/0/A/6100/021, Shutdown Outside The Control Room Following a Fire, Rev. 19
OP/1/A/6100/010 Y, Annunciator Response for Panel AD-4, Rev. 9
OP/1/A/6100/010 Z, Annunciator Response for Panel AD-5 (Fire Protection System), Rev. 18
OP/1/A/6400/002A, Fire Protection System, Rev. 134
OP/1/A/6400/002B, Halon Fire Protection System, Rev. 15
PT/0/A/4250/004, Fire Barrier Inspection, Rev. 28
PT/0/B/4600/118, Fire Brigade Qualification Verification, Rev. 1
PT/2/A/4700/043, SLC Fire Hose Valve Operability Test, Rev. 5
RP/0/A/5700/025, Fire Brigade Response, Rev. 14

Calculations, Evaluations, & Specifications

MCC-1201.01-00-0053, MNS Units 1 & 2 Reactor Coolant Response to Loss of Seal Cooling, Rev. 0
MCC-1201.01-00-0055, MNS RCP & NV Seal Leakoff Piping Delayed Response to Loss of Seal Cooling, Revision 0

MCC-1223.49-00-0038, McGuire RF/RY System Auxiliary Building Flow Test, Rev. 14
MCC-1381.05-00-0094, Protective Relay Setting Calculation for Essential Switchgear, Rev. 23
MCC-1435.00-00-0006, McGuire Penetration Seals Design, Detail E-9, Rev. 2
MCC-1435.03-00-0004, McGuire Supports for Cable Tray Penetrating Fire Barriers, Rev. 0
MCC-1435.03-00-0010, McGuire Fire Barrier Penetration Seals Safety Analysis, Rev. 0
MCC-1435.03-00-0012, McGuire Penetration Seals Database and 86-10 Evaluations, Rev. 0
MCC-1435.03-00-0013, McGuire Fire Protection Code Deviations, Rev. 3
MCC-1435.00-00-0016, McGuire Transient Fire Load Basis Calculation, Rev. 0
MCS-1465.00-00-0008, Unit 1&2 Fire Area SSD Train Designation for Fire Areas 3, 3A, 9, and 10, Rev. 8
MCM-1205.14-0040, Kennedy Valve Mfg., Specification for valve 1RF938, dated 10/10/1980
MCM-1206.09-0054, Notifier Company, Specification for Water-Flow Detector 0RFFS5750, dated 10/19/1982
MCM-2206.07-0001.001, Calculation Unit 2 Aux. Feed Pump Rm. Halon System (Chemetron Job FR-19028), dated 01/12/1982,
MCM-2206.07-0020, McNeary Insurance Consulting Services, Hydrualic Calculations, AFW Pumps Unit #2, El. 716' + 0, dated 12/01/1980
MCM-2206.07-0021, McNeary Insurance Consulting Services, Piping Installation Details, AFW Pumps Unit #2, El. 716' + 0, dated 07/07/1983
MCRS-0212-02.03, Overcurrent Relay Setting Sheet, Rev. 1
MCRS-0212-02.16, Overcurrent Relay Setting Sheet, Rev. 1
MCRS-0212-02.17, Overcurrent Relay Setting Sheet, Rev. 1
MCRS-0212-02.40, Overcurrent Relay Setting Sheet, Rev. 1
MCRS-0212-02.42, Overcurrent Relay Setting Sheet, Rev. 0
MCS-1465.00-00-0008, Design Basis Specification for Fire Protection, Rev. 8
MCS-1465.00-00-0022, Design Basis Specification for the Appendix R Safe Shutdown Analysis, Rev. 8, Rev. 9

Drawings

Lighting & Communication

MC-1831-06.00, Communications P.A. & Telephone System Auxiliary Building, Elevation 716.0, Rev. 40
MC-1831-06.00, Communications P.A. & Telephone System Reactor Building, Elevation 725.0, Rev. 40
MC-1831-11.00, Turbine Building Roof Antenna, Rev. 15
MC-1831-09.00, Communications P.A. & Telephone Systems Auxiliary Building, Elevation 767.6 & 767.0, Rev. 63
MC-1831-07.00, Communications P.A. & Telephone System Auxiliary Building, Elevation 733.0, Rev. 33
MC-1831-07.00, Communications P.A. & Telephone System Reactor Building, Elevation 738.3, Rev. 33
MC-1831-09.00, Communications P.A. & Telephone Systems reactor Building, Elevation 760.0, Rev. 63
MC-1832-04, P.A. System Power Distribution Reactor, Auxiliary, & Turbine Buildings, Rev. 9
MC-1837-07.00, Communications P.A. & Telephone System Auxiliary Building, Elevation 733.0, Rev. 2
MC-1837-07.00, Communications P.A. & Telephone System Reactor Building, Elevation 738.3, Rev. 2
MC-1839-01, Turbine Building Lighting Plan Below Elevation 786.0, Rev. 11
MC-1845-13.00, Unit 1 Lighting Hot Standby Emergency Battery Lights Schedule, Rev. 4

MC-1845-14.00, Unit 2 Lighting Hot Standby Emergency Battery Lights Schedule, Rev. 6
MC-1845-02.00, Lighting Auxiliary Feedwater Pump Room Unit 2, Elevation 716.0, Rev. 22
MC-1845-08.00, Lighting Penetration Room Unit 2, Elevation 767, Rev. 20
MC-1845-06.00, Lighting Switchgear Room Unit 2, Elevation 750, Rev. 24
MC-1845-04.00, Lighting Switchgear Room Unit 2, Elevation 733, Rev. 22
MC-1845-07.00, Lighting Penetration Room Unit 1, Elevation 767.0, Rev. 21
MC-1857-04.00, Lighting Standby Shutdown Facility, Rev. 12
MC-1888-01, Auxiliary Building Unit 1 Station Grounding, Elevation 767, Rev. 0
MC-1913-01.00, Auxiliary Building Electrical Penetration Room Electrical Equipment Layout, Elevation 784.0, Rev. 33
MC-2840-01, Lighting Turbine Building Unit 2, Mezzanine Floor, Elevation 760.6, Rev. 10

Fire Protection

MC-1201-04, Auxiliary Building Architectural, Aux Feedwater Pump Room Plan, Rev. 20
MC-1208-01.01, Auxiliary Building Architectural Door Schedule, Rev. 50
MC-1220-19, Auxiliary Building Floor Drain Layout, El. 716' + 0, Rev. 13
MC-1315-01.02-004, Fire, Flood, & HVAC Boundaries Arrangement, Elevation 716.0, Rev 0
MC-1315-01.02-105, Fire, Flood, & HVAC Boundaries Arrangement, Elevation 716.0, Rev 0
MC-1315-01.03-005, Fire, Flood, & HVAC Boundaries Arrangement, Elevation 733.0, Rev 3
MC-1315-01.05-005, Fire, Flood, & HVAC Boundaries Arrangement, Elevation 750.0, Rev 1
MC-1315-05.01-005, Penetration Seal Configuration , Electrical Penetration Seal Firestop Design Details E-9, Rev. 0
MC-1384-07.13-01, Fire Plan Auxiliary Building Elev. 716, Rev. 9
MC-1384-07.14-01, Fire Plan Auxiliary Building Elev. 733, Rev. 10
MC-1762-01.00-03, Fire Detection System, Detector Location, El 733'+0 & 739' + 0
MCFD-1599-02.02, Flow Diagram of Fire Protection System (RF), Rev. 9
MCFD-1599-02.03, Flow Diagram of Fire Protection System (RF), Rev. 6
MCFD-1599-04.00, Flow Diagram of Fire Protection System, Rev. 3

Electrical

MC-1710-04.10, Cable Routing Battery Room Junction Points, Rev. 20
MC-1710-04.11, Cable Routing Battery Room Junction Points, Rev. 24
MC-1710-04.13, Cable Routing Battery Room Junction Points, Rev. 25
MC-1710-04.14, Cable Routing Battery Room Junction Points, Rev. 24
MC-1522-01.43-00, Auxiliary Building Duct Layout, El. 716' + 0, Rev. 12
MC-1705-02.00, One Line Diagram 125 VDC – 240/120 VAC Auxiliary Control Power, Rev.126
MC-1846-08.00, One Line Diagram 250VDC Auxiliary Power System, Rev. 8
MC-2901-02.01, Computer Cable Routing Auxiliary Building Plan El. 733, Rev. 37
MC-2901-02.XX, Computer Cable Routing Auxiliary Building Plan El. 750, Rev. 24
MCEE-0247-20.00, Elementary Diagram Aux. Feedwater System Suction Valve 2CA0007A, Rev. 0
MCEE-0247-32.00, Elementary Diagram Aux. Feedwater System D.C. Motor Operate Valve 2CA0161C, Rev. 1
MCEE-0247-33.00, Elementary Diagram Aux. Feedwater System D.C. Motor Operate Valve 2CA0162C, Rev. 1
MCCD-1700-00.00, One Line Diagram Essential Power System, Rev. 4
MCCD-1702-02.00, One Line Diagram 4160 V Essential Auxiliary, Rev. 7
MCEE-138-00.01, Elementary Diagram CCW Supply B Shutoff Valve 0RN4A, C, Rev. 5
MCEE-138-00.02, Elementary Diagram CCW Supply B Shutoff Valve 0RN4A, C, Rev. 5

MCEE-138-00.04, Elementary Diagram CCW Supply B Shutoff Valve 0RN4A, C, Rev. 11
MCEE-215-00.06, Elementary Diagram Centrifugal Charging Pump Motor 2A, Rev. 5
MCEE-215-00.06-01, Elementary Diagram Centrifugal Charging Pump Motor 2A, Rev. 3
MCEE-215-00.06-02, Elementary Diagram Centrifugal Charging Pump Motor 2A, Rev. 4
MCEE-215-00.35, Elementary Diagram 4160 V SWGR 2ETB Normal Incoming Breaker, Rev. 11
MCEE-244-02.01, Standby Shutdown Facility Control panel Instruments, Rev.8
MCEE-247-13.00, Elementary Diagram Auxiliary Feedwater Sys. Turbine Start Circuit, Rev. 4
MCEE-247-33.00, Elementary Diagram Auxiliary Feedwater System Valve 2CA162C, Rev. 1
MCEE-250-00.04, Elementary Diagram RCS Pressurizer Power Operated Relief 2NC36B, Rev.11
MCEE-250-00.04-01, Elementary Diagram RCS Pressurizer Power Operated Relief 2NC36B, Rev.4

Cable Wiring Diagrams

Cable Block Diagram for 2ENAP 9110
Cable Block Diagram for 2NV P 6420
Cable Block Diagram for 2CF P 6080
Cable Block Diagram for 2CF P 6090
Cable Block Diagram for 2CF P 6100
Cable Block Diagram for 2CF P 6110
Cable Block Diagram for 2NC P 5121
Cable Block Diagram for 2NC P 5153
Cable Block Diagram for 2NC P 5861
Cable Block Diagram for 2ENBP 9511
Cable Block Diagram for 2NC P 5931
Cable Block Diagram for 2NV PU0046
Cable Block Diagram for 2NV VA0094AC
Cable Block Diagram for 2NV VA0842AC
Cable Block Diagram for 2NV VA0849AC
Cable Block Diagram for 2NV VA1013C
Cable Block Diagram for 2CA VA0162C
Cable Block Diagram for 2CA VA0161C
Cable Block Diagram for 2CA VA0007A
Cable Block Diagram for ORN VA0004AC
Cable Block Diagram for 2NC VA0031B
Cable Installation Data for Cable 2*NC 758
Cable Block Diagram for 2CA PU0002
Cable Block Diagram for 2CA PU0001

Fire Strategies

Strategy Number 3, Aux-U2-AFWP-Room, Elevation 716, Rev. 3/1/2007
Strategy Number 10, Aux-U2- Electric Pen. Room, Elevation 733, Rev. 3/1/2007
Strategy Number 12, Aux-U2-2ETB Switchgear Room, Elevation 733, Rev. 3/1/2007

Completed Surveillance Procedures & Test Records

Fire Protection System Walkdown, 4th Quarter 2007, dated 01/22/2008
Fire Protection System Walkdown, 1st Quarter 2008, dated 05/05/2008
Fire Protection System Walkdown, 3rd Quarter 2008, dated 12/16/2008
IP/2/B/3252/001, Standby Shutdown Facility (SSF) Steam Generator Level Calibration, completed, S/G A & D, completed March 18, 2008
IP/2/B/3252/001, Standby Shutdown Facility (SSF) Steam Generator Level Calibration, completed, S/G B & C, completed March 19, 2008
PT/0/A/4200/002, Standby Shutdown Facility Operability Test, completed March 12, 2009
PT/2/A/4200/041, Unit 2 SSF System Integrated Test, completed March 17, 2005
PT/2/A/4200/041, Unit 2 SSF System Integrated Test, completed April 4, 2005
PT/2/A/4200/041, Unit 2 SSF System Integrated Test, completed May 12, 2005
PT/1/A/4209/001C, Standby makeup Pump Flow Test, completed February 12, 2009
PT/2/A/4209/001C, Standby makeup Pump Flow Test, completed January 21, 2009
PT/2/A/4252/007, CA System Turbine Driven Train Performance Test, April 10, 2008

PT/0/B/4350/035B, 125/250 Volt SSF Battery Quarterly Inspection, completed March 4, 2009
PT/0/A/4400/0089, Monthly Test of ERO Communication Equipment and Supplies, completed 02/10/2009
PT/0/A/4400/0089, Monthly Test of ERO Communication Equipment and Supplies, completed 01/13/2009
TP/0/A/1200/041, Auxiliary Building Flow Test, completed 04/06/1998
WO# 01822056-01, IP/2/B/3260/028, SSS Emergency Lighting Battery Discharge Test, completed 02/12/2009
WO# 01761895-01, IP/2/B/3260/028, SSS Emergency Lighting Battery Discharge Test, completed 01/14/2008
WO# 01702587-01, IP/2/B/3260/028, SSS Emergency Lighting Battery Discharge Test, completed 02/05/2007
WO# 98739553-01, IP/2/B/3260/028, SSS Emergency Lighting Battery Discharge Test, completed 01/05/2006
WO# 01810370-01, IP/0/B/3260/031, SSS Emergency Lighting Quarterly Test, completed 07/29/2008
WO# 01791074-01, PT/0/A/4400/001A, Fire Protection System Periodic Test, completed 07/18/2008
WO# 01841207-01, PT/0/A/4400/001C, Fire Protection System Monthly Test, completed 12/04/2008
WO# 01752938-01, PT/0/A/4250/004, Fire Barrier Inspection, completed 01/17/2008
WO# 01854959-01, PT/0/A/4400/001C, Fire Protection System Monthly Test, completed 03/01/2009
WO# 01794532-01, PT/0/A/4400/001T, Fire Protection Auxiliary Building Flush and Flow Test, completed 02/24/2009
WO# 01814416-01, PT/0/A/4600/016A, Fire Detection System Operational Tests, completed 01/14/2009
WO# 01809551-01, PT/0/A/4600/016A, , Fire Detection System Operational Tests, completed 11/20/2008
WO# 01810361-01, PT/0/A/4600/016A, , Fire Detection System Operational Tests, completed 12/01/2008
WO# 01814021-01, PT/0/A/4400/015, Fire Protection System Annunciator Functional Test, completed 11/24/2008
WO# 01800622-01,PM/2/WMPiping, Inspect Floor Drains in U-2 CA Pump Room, , completed 08/25/2008

Applicable Codes & Standards

NFPA 10 - 1978, Standard for Portable Fire Extinguishers
NFPA 12A - 1977, Standard on Halon 1301 Fire Extinguishing Systems
NFPA 13 - 1978, Standard for the Installation of Sprinkler Systems
NFPA 14 - 1976, Standard for the Installation of Standpipes and Hose Systems
NFPA 15 - 1977, Standard for Water Spray Fixed Systems for Fire Protection
NFPA 27 - 1975, Private Fire Brigades
NFPA 30 - 1977, Flammable and Combustible Liquids Code
NFPA 72E-1974, Standard on Automatic Fire Detection
NUREG-1552, Supplement 1, Fire Barrier Penetration Seals in Nuclear Power Plants, dated January 1999
OSHA Standard 29 CFR 1910, Occupational Safety and Health Standards
Underwriters Laboratory Standard 555, Standard for Fire Dampers and Ceiling Dampers, dated May, 14, 1979

Steel Door Institute, SDI 100, Recommended Specifications for Standard Steel Fire Doors and Frames, Revision 11/2003
Steel Door Institute, SDI 118-01, Basis Fire Door Requirements, Revision 2001
Steel Door Institute, SDI 122-07, Installation and Troubleshooting Guide for Standard Steel Doors and Frames, Revision 2007
ANSI A250.11-2001, Recommended Erection Instructions for Steel Frames, Revision 3/2001

Technical Manuals & Vendor Information

Data Sheet Angus Redskin 500 Fire Hose, dated 2005
Data Sheet Akron Turbojet Fire Hose Nozzles, 1715E,1720E, and1763, dated 2006
Data Sheet ICI Aerospace Electrically Actuated Frangible Link Assembly, Model 630, dated 10/19/1993
Data Sheet Douglas Randall Model E135C Fire Detection Thermostats, dated 04/78
Data Sheet Honeywell Ionization Smoke Detector Model TC100A & TC805C, dated 02/76
Data Sheet Siemens Thermal Fire Detectors, Model DT-135CS, dated 10/1999
Data Sheet P200S SuperVac Smoke Ventilator
Data Sheet Hoover Treated Wood Products, Exterior Fire-X and Plywall Fire Retardant Lumber and Plywood, dated 2005
Data Sheet Light Alarms Series S12E, S24E, dated 08/08/2000
Data Sheet Thomas& Betts Emergi-Lite Series LC, LSC, LSE, & LSM, dated 08/07
Data Sheet Emerge-Lite Series LS, LSE & LC
Data Sheet Dekron Wire and Cable 300 Volt Thermoplastic PVC, dated 08/06
Data Sheet Motorola HT 750 Portable Radio, dated 03/05
Material Safety Data Sheet, Exterior Fire-X Treated Wood, dated 10/25/2005
Scaffold Manual, dated 03/06
Shelby Concrete Products Co. Order A-41846-2/15, Fire Rated Masonry Units for McGuire Nuclear Station, dated 2/12/1973
SuperVac Smoke Ventilation Training Manual for Smoke Ventilators, dated 8/28/1998
Thomas & Betts Emergency Lighting General Test Procedure
Ventilator Users Guide for SuperVac Smoke Ventilators, dated 8/28/98

Audits & Self-Assessments

Fire Protection System Health Report, 2007Q4
Fire Protection System Health Report, 2008Q4
Duke Energy Company Assessment Report, GO-07-18, 2007 Triennial Fire Protection Audit, McGuire Nuclear Station 10/01/07 through 10/11/2007

License Basis Documents

McGuire Operating License Conditions 2.C.4, Fire Protection Program, for Units 1 and 2, respectively
McGuire UFSAR Chapter 9, Section 9.5.1, Fire Protection System
McGuire UFSAR Chapter 9, Section 9.5.2, Communication Systems
McGuire UFSAR Chapter 16, Fire Protection Selected Licensee Commitments
Title 10 of the Code of Federal Regulations, Part 50 (10 CFR 50), Appendix R, Sections III.G, J, L, and O
10 CFR 50.48, Fire Protection
Appendix A to Branch Technical Position Auxiliary and Power Conversion Systems Branch 9.5-1, Guidelines for Fire Protection for Nuclear Power Plants

NRC Memo Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls and Quality Assurance, R. Ferguson & P. Matthews to D. Eisenhut, dated June 20, 1977
McGuire Safety Evaluation Report, NUREG-0422, dated March 01, 1978
Letter Duke Power Company to NRC, Responses to NRC Positions on Fire Protection Transmitted by Letter of September 6, 1978
McGuire Safety Evaluation Report, Supplement 2 to NUREG-0422, dated March 01, 1979
McGuire Safety Evaluation Report, Supplement 5 to NUREG-0422, dated April 01, 1981
McGuire Safety Evaluation Report, Supplement 6 to NUREG-0422, dated February 01, 1983
Letter NRC to McGuire Nuclear Station, Fire Protection Deviations, dated May 15, 1989
Letter McGuire Nuclear Station to NRC, Fire Protection Review, dated September 1, 1977
Letter McGuire Nuclear Station to NRC, Fire Protection Review, dated August 1, 1978
Letter McGuire Nuclear Station to NRC, Fire Protection for Appendix R to 10 CFR 50, dated January 9, 1981
Letter McGuire Nuclear Station to NRC, Appendix R Deviations, dated January 30, 1987
Letter McGuire Nuclear Station to NRC, Technical Specification Amendment, Relocation of Fire Protection Requirements to the McGuire FSAR, dated March 9, 1987
Letter McGuire Nuclear Station to NRC, Technical Specification Amendment, Relocation of Fire
Protection Requirements to the McGuire FSAR, NRC Generic Letter Nos. 86-10 and 88-12, dated March 20, 1989
Letter McGuire Nuclear Station to NRC, Revision (5) to the McGuire Fire Protection Review
Manual, dated March 20, 1989
Letter NRC to McGuire Nuclear Station, Safety Evaluation Regarding Appendix R Fire Protection Deviations, dated May 15, 1989
Letter McGuire Nuclear Station to NRC, Revision/Supplement to Technical Specification Amendment, Relocation of Fire Protection Requirements to the McGuire FSAR, dated May 19, 1989
Letter McGuire Nuclear Station to NRC, Relocation of Fire Protection Requirements to the McGuire FSAR, Proposed Technical Specification/License Condition/FSAR SLC Changes, dated May 23, 1989
Letter McGuire Nuclear Station to NRC, Revision (7) to the McGuire Fire Protection Review
Manual, dated May 23, 1991
Letter Duke Energy Company to NRC, Letter of Intent to Adopt NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants, 2001 Edition, dated 2/28/2005

Other Documents

10 CFR 50.59 Screen for AP/0/A/5500/045 - Plant Fire, Rev. 5
10 CFR 50.59 Screen for AP/2/A/5500/024 – Loss of Plant Control Due to Fire or sabotage, Rev. 23
10 CFR 50.59 Screen for AP/2/A/5500/024 – Loss of Plant Control Due to Fire or sabotage, Rev. 24
AP/1&2/A/5500/011, Background Document for Pressurizer Pressure Anomalies, Rev. 6
AP/1&2/A/5500/012, Background Document for Loss of Letdown, Charging, or Seal Injection, Rev. 8
AP/1&2/A/5500/017, Background Document for Loss of Control Room, Rev. 3
AP/1&2/A/5500/024, Background Document for Loss of Plant Control Due to Fire or Sabotage, Rev. 7
Applicability Determination Form for AP/0/A/5500/45 for Rev 005
Applicability Determination Form for AP/0/A/5500/45 for Rev 006
Applicability Determination Form for AP/2/A/5500/024 for Rev 024

Applicability Determination Form for AP/2/A/5500/024 for Rev 025
Appendix B. Fire Protection Program Change Review Form for AP/0/A/5500/045 - Plant Fire, Rev. 6
Background Document for AP/0/5500/045 (Plant Fire)
Background Document for AP/1 & 2/A/5500/024 (Loss of Plant Control Due to Fire or Sabotage)
Control Room Supervisor Turnover Checklist, Minimum Shift Crew Composition for both shifts on 12/24/2008, 11/15/2008, 12/20/2008, 08/15/2008, 02/17/2009, 12/25/2008, and 02/13/2009
Consumer Products Safety Commission (CPSC) Release #07-136, Digital Security Controls recalls smoke detectors that could fail to warn of a fire
Duke Memorandum to File, Circuit Protection for Fire Pump C Controls, File MC-1435.00, dated 11/9/1984
Emergency Planning Group Manual Section 1.8, Development of Site Fire Drills and Processing, Rev. 5
Federal Register/Vol. 70, No. 10/Friday, January 14, 2005/Notices, Pages 2662 thru 2664, NRC Enforcement Policy; Extension of Enforcement Discretion of Interim Policy Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)
Fire Drill Summary Reports for Fire Brigade Drills Conducted in 2006, 2007, and 2008
Fire Compartment Ignition Source Data Sheet (ISDS) for Fire Area 3 and 10/12
Fire Protection Lesson Training Plans
JPM-OP-CP-AD:126T, Transfer of Control to SSF – 1ETA Room Actions
JPM-OP-MC-AP-AP:263T, Complete Time Critical Dispatches as Directed by AP-45 (Plant Fire)
JPM-OP-MC-CP-AD:129T, Transfer Control of Unit 2 to SSF – SSF Building Actions
JPM-OP-MC-AP-AP-264T, Open Breakers for 2CA-7A and 0RN-4AC
JPM-OP-MC-AP-AP-266T, Open Breakers for 0RN-12 as Directed by AP-45 (Plant Fire)
JPM-OP-MC-AP-AP-265T, Open 2CA-161C and 2CA-162C at SSF as Directed by AP-45
JPM-OP-MC-AP-AP-263T, Complete Time Critical Dispatches as Directed by AP-45 (Plant Fire)
McGuire Fire Protection and Compensatory Measures Forms (Appendix A of NSD 316 for selected Fire Areas) for the Period 2008 through February 2009
McGuire Fire Protection System (RF/RY) Engineering Support Document, Rev. 4
Minor Design Change No. MD200746, Add 8 Hour Emergency Lights
NUREG-1805, Volumes 1 & 2, Fire Dynamics Tools (FDT's) Quantitative Fire Hazard Analysis, dated 12/2004
NRC URI: RCP seal response on loss of all seal cooling- Talking Points
Operations Special Order 09-17, Fire Brigade interim actions for alternate means of communication
OEDB 06-043376, Evaluation of NRC RIS 2006-10, Regulatory Expectations with Appendix R Paragraph III.G.2 Operator Manual Actions, dated 07/18/2006
OEDB 07-046016, Evaluation of NRC IN 2007-17, Fires at Nuclear Power Plants Involving Inadequate Fire Protection Administrative and Design Controls, dated 05/15/2007
OEDB 07-046813, Evaluation of NRC IN 2007-26, Combustibility of Epoxy Floor Coatings at Commercial Nuclear Power Plants, dated 08/22/2007
OEDB 08-048628, Evaluation of NRC IN 2008-04, Counterfeit Parts Supplied to Nuclear Power Plants, dated 04/15/2008
OP-MC-JPM-CP-AD:239T, Establish NC Pump Seal Injection from the SSF During a Security Event
OP-MC-CP-AD:127T, Transfer of Control of Unit 1 to SSF – SSF Building Actions
OP-MC-CP-AD, Standby Shutdown Facility (AD) Lesson Plan, Rev. 32
OP-MC-CF-CA, Auxiliary Feedwater System (CA) Lesson Plan, Rev. 39
OP-MC-PS-NC, Reactor Coolant System (NC) Lesson Plan, Rev. 29
OP-MC-PS-NV, Chemical and Volume Control (NV) Lesson Plan, Rev. 53

ST2140 Employee History Report for Employee 121784
ST2122 Multiple Assigned Job Status Report as of 3/16/22009
W/O 01862574, Replace Bulb in Unit 1 TB EL 760
W/R No. 00976850, Replace Bulb in Unit 1 TB EL 760

LIST OF PROBLEM INVESTIGATION REPORTS (PIP) REVIEWED DURING INSPECTION

G-07-00137, Evaluate if reviews for Equivalent change process defined in NSD301 and EDM 601 meet NEI 96-07 requirements
M-00-04481, App. R analysis needs to show availability of either NV charging pump
M-00-04491, NRC App. R inspection determined potential for NC PORV and block valve actuations
M-04-02983, The Unit 2 ELD System Requires Classification As A(1) Statue Due to Exceeding ELD.02 Performance Criteria
M-04-04928, Fire Audit observation on Appendix R 8 hour Emergency lighting
M-04-04930, Fire audit observation concerning no detection system in any doghouse
M-04-05218, GO-04-046(NPA)(TFP)(MNS) McGuire Triennial Fire Protection Audit
M-05-04589, Appendix R Manual Action Rule NRC Public Meeting (CNS PIP M-05-6055)
M-06-00235, Battery Assembly S/C# 502083 with a 12 month shelf life allocated and not used
M-06-00576, PIP initiated to track additional corrective actions to revise fire plans/strategies
M-06-01505, Document Engineering Evaluation of temperature effects of Emergency Light Battery Life
M-06-02881, Burned Out Emergency Lights
M-06-05645, Evaluate Potential Enhancements Needed to Revise Fire Plan/Strategies in the DG and Cable Spreading Rooms
M-06-05656, NRC inspector questioned response of AP-45 in dealing with CA assured source to TDCA pump
M-06-05730, Potential concern in how committed actions are tracked by McGuire
M-06-05803, NRC TFPI noted cables for PORV 1SV19AB were routed through 1A DG room
M-06-05841, Potential failure to fully meet the current licensing basis for fire brigade drills
M-06-05900, NRC question raised during TFPI on potential problem with failure of two specific pressure switches
M-07-00293, Questions related to Appendix R events
M-07-00424, DC Emergency Light #76 Failed Test
M-07-03606, Lights Failed SSS Emergency Quarterly Test
M-07-05568, Verification of Appendix R Lighting (GO-07-18)
M-07-05568, Appendix R Emergency Lights Not Illuminating Required Equipment and/or Pathways
M-08-01100, Battery Assembly for ELD System Purchased and Not Used
M-08-02274, Maintenance Rule Evaluation Needed For Degraded Emergency Light Fixtures
M-08-02876, Emergency Light 107 failed in SSF
M-08-04597, INOS review
M-09-01161, Walkdown identifying location of Appendix R lighting
M-09-01334, Questions raised during 2009 Fire Protection Inspection

LIST OF PIPS GENERATED AS A RESULT OF THIS INSPECTION

M-09-01161, Engineering noted several components require App. R 8 hour emergency lights
M-09-01286, 1RY-114 does not have a label to identify which access door the trip valve is located
M-09-01306, Scaffolding in SSF installed between emergency lighting and SSF control panel

M-09-01312, No documented PM for the Fire Brigade gasoline powered generator
M-09-01314, OPS and Fire Brigade radios battery duration during a 12 hour shift
M-09-01334, Appendix R DBD might not be in compliance with AP-45
M-09-01339, Inconsistent Pass/Fail criteria for Fire Drills
M-09-01353, Evaluate statement in MCS-1465.00-00-0008, Design Basis Specification for Fire Protection, Section 5.d require revision
M-09-01360, NRC team evaluating Ops implementation of AP-45 in Fire Detection Zone 87
M-09-01483, Editorial change needed to drawing showing emergency lights
M-09-01503, Ops 2009 first quarter drill- Corrective Action #2
M-09-01554, Add closure of 2NC35B to AP-45 actions for FA3 after step 8
M-09-01576, PIP corrective action with previous NRC identified non-compliance has not been completed
M-09-01606, Operator unable to transmit/receive via radio from lower elevation Unit 2 Interior Doghouse
M-06-01611, Time Critical wording in AP-24 note needs revision
M-06-01616, Fire Plans for areas 19 &20 needs fire damper on drawing
M-06-01617, Question regarding if 1 ½" hose station can supply two hose lines
M-09-01623, Control of combustibles program treatment of plastics and fire retardant wood
M-09-01625, Consider enhancements to Ops fire response training
M-09-01633, NRC question regarding with manual operator action assessment and feasibility updating
M-09-01648, Potential loss of communications while fighting fire in the Unit 2 Electrical Penetration Room and adjacent Switchgear Room
M-09-01649, Evaluate emergency light bulb failures
M-09-01652, MD200746 added emergency lights to 2EMXB room. Typographical error led to wrong breaker being illuminated
M-09-01654, Question regarding response during AP-45 transition to SSS
M-09-01791, Junction points not located
M-09-01857, Basis for NC Seal related actions not time critical

LIST OF ACRONYMS AND ABBREVIATIONS

AB	Auxiliary Building
ANSI	American National Standards Institute
AP	Abnormal Procedure
APCSB	Auxiliary and Power Conversion Systems Branch
ASSD	Alternate Safe Shutdown
BTP	Branch Technical Position
CA	Auxiliary Feedwater
CF	Main Feedwater
CFR	Code of Federal Regulations
ELU	Emergency Lighting Unit
ERFBS	Electrical Raceway Fire Barrier System
FA	Fire Area
FPP	Fire Protection Program
IR	Inspection Report
IP	Inspection Procedure
LOSP	Loss of Off Site Power
MNS	McGuire Nuclear Station
NC	Reactor Coolant System
NFPA	National Fire Protection Association
NLO	Non-Licensed Operator
NRC	Nuclear Regulatory Commission
NUREG	An explanatory document published by the NRC
NV	Chemical Volume & Control System
OMA	Operator Manual Action
OSHA	Occupational Safety and Health Administration
PID	Piping & Instrumentation Drawing
PIP	Problem Investigation Report
PORV	Power Operated Relief Valve
RCS	Reactor Coolant System
Rev	Revision
RN	Service Water System
SE	Safety Evaluation
SER	Safety Evaluation Report
SDP	Significance Determination Process
SSA	Safe Shutdown Analysis
SSD	Safe Shutdown
SSF	Safe Shutdown Facility
SSS	Standby Shutdown System
TFPI	Triennial Fire Protection Inspection
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
VCT	Volume Control Tank