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

November 20, 2009

Mr. J. R. Morris
Site Vice President
Duke Power Company, LLC
d/b/a Duke Energy Carolinas, LLC
Catawba Nuclear Station
4800 Concord Road
York, SC 29745-9635

SUBJECT: CATAWBA NUCLEAR STATION - NRC COMPONENT DESIGN BASES INSPECTION - INSPECTION REPORT 05000413/2009006 AND 05000414/2009006

Dear Mr. Morris:

On August 27, 2009, U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your Catawba Nuclear Station Units 1 and 2. The enclosed inspection report documents the inspection results, which were discussed on August 27, 2009, with Mr. Tom Ray and other members of your staff. A re-exit was conducted by telephone on October 15, 2009 with Mr. Randy Hart and other members of your staff.

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

This report documents one NRC-identified finding of very low safety significance (Green) which was determined to be a violation of NRC requirements. However, because of the very low safety significance and because it is entered into your corrective action program, the NRC is treating the finding as a non-cited violation (NCV) consistent with Section VI.A.1 of the NRC Enforcement Policy. If you contest this NCV, you should provide a 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 DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC resident inspector at the Catawba Nuclear Plant. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region II, and the NRC resident inspector at the Catawba Nuclear Plant. The information you provide will be considered in accordance with Inspection Manual Chapter 0305.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any) will be available electronically for public inspection in the

NRC Public 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 http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

David A. Jones, Acting Chief
Engineering Branch 1
Division of Reactor Safety

Docket Nos.: 50-413, 50-414
License Nos.: NPF-35, NPF-52

Enclosure:
Inspection Report 05000413/2009006,
05000414/2009006 w/Attachment:
Supplemental Information

cc w/encl: (See page 3)

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 http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Sincerely,

/RA/

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Letter to J. R. Morris from David Jones dated November 20, 2009.

SUBJECT: CATAWBA NUCLEAR STATION - NRC COMPONENT DESIGN BASES INSPECTION - INSPECTION REPORT 05000413/2009006 AND 05000414/2009006

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos.: 50-413, 50-414

License Nos.: NPF-35, NPF-52

Report Nos.: 05000413/2009006, 05000414/2009006

Licensee: Duke Energy Carolinas, LLC

Facility: Catawba Nuclear Station, Units 1 and 2

Location: York, SC 29745

Dates: July 27 – August 27, 2009

Inspectors: R. Lewis, Senior Reactor Inspector (Lead)
R. Berryman, Senior Reactor Inspector
D. Mas-Peñaranda, Reactor Inspector
R. Patterson, Reactor Inspector
A. Allen, Reactor Inspector (Trainee)
O. Mazzoni, Contractor
C. Edwards, Contractor

Approved by: David Jones, Acting Chief
Engineering Branch 1
Division of Reactor Safety

Enclosure

SUMMARY OF FINDINGS

IR 05000413/2009006, 05000414/2009006; 7/27/2009 – 08/27/2009; Catawba Nuclear Station, Units 1 and 2; Component Design Basis Inspection.

This inspection was conducted by a team of four NRC inspectors from the Region II office, one trainee, and two NRC contract inspectors. One finding of very low safety significance (i.e. Green) was identified during this inspection. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using 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," (ROP) Revision 4, dated December 2006.

Cornerstone: Mitigating Systems

Green: The team identified a non-cited violation of 10 CFR 50.65(a)(1) for the licensee's failure to monitor the turbine-driven auxiliary feedwater pump (CAPT) sump valves for Units 1 and 2. PIPs C-09-05020 and C-09-04390 initiated immediate corrective actions, including testing of the subject valves during the inspection, wherein valve 1WL848 failed to stroke. Additionally, the licensee increased the maintenance category of the affected components and made procedural modifications to provide positive valve position controls.

The team determined that the licensee's failure to monitor the performance and condition of Valve 1WL848 was a performance deficiency. This finding is more than minor because it is associated with equipment performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to perform periodic testing or preventative maintenance resulted in a lack of reasonable assurance that the valves would perform their function of protecting CAPT. The team determined that the finding is of very low safety significance (Green) using the SDP because the finding did not represent an actual loss of safety function. This finding was reviewed for cross-cutting aspects and none were identified since the performance deficiency was not indicative of current licensee performance. (Section 1R21.2.5)

REPORT DETAILS

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R21 Component Design Bases Inspection (71111.21)

.1 Inspection Sample Selection Process

The team selected risk significant components and operator actions for review using information contained in the licensee's Probabilistic Risk Assessment (PRA). In general, this included components and operator actions that had a risk achievement worth factor greater than 1.3 or Birnbaum value greater than 1 $X10^{-6}$. The components selected were generally located within the following systems: Component Cooling, Auxiliary Feedwater, Service Water, Residual Heat Removal, Charging, Safety Injection, 4kV Distribution, Hydrogen Mitigation, and Standby Shutdown Facility. The sample included 19 components, 3 operating experience items, and 5 operator actions.

The team performed a margin assessment and detailed review of the selected risk-significant components to verify that the design bases had been correctly implemented and maintained. This design margin assessment considered original design issues, margin reductions due to modifications, or margin reductions identified as a result of material condition issues. Equipment reliability issues were also considered in the selection of components for detailed review. These reliability issues included items related to failed performance test results, significant corrective action, repeated maintenance, maintenance rule (a)1 status, RIS 05-020 (formerly GL 91-18) conditions, NRC resident inspector input of problem equipment, System Health Reports, industry operating experience and licensee problem equipment lists. Consideration was also given to the uniqueness and complexity of the design, operating experience, and the available defense in depth margins. An overall summary of the reviews performed and the specific inspection findings identified is included in the following sections of the report.

.2 Results of Detailed Reviews

.2.1 2KCPUA1, 2A1 Component Cooling Pump

a. Inspection Scope

The inspectors reviewed the plant technical specifications (TS), updated final safety analysis (UFSAR), design basis documents (DBDs) and associated system lesson plans to establish an overall understanding of the design bases of the component. Design calculations (i.e. net positive suction head (NPSH), total dynamic head (TDH), pump curves, vortex, seismic qualification, component cooling system flow distribution) and site procedures were reviewed against these bases to verify design assumptions have been appropriately translated into these documents. The team requested and reviewed system modifications over the life of the component to verify that the subject modifications did not serve to degrade the component's performance capability and were

appropriately incorporated into relevant drawings and procedures. Equipment ratings and specifications were reviewed against design basis requirements to ensure that the equipment qualification is suitable for all expected conditions. A component walkdown was conducted to verify that the installed configuration will support design basis function under accident/event conditions and have been maintained to be consistent with design assumptions. Test procedures and more recent test results were reviewed against design basis documents to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that individual tests and/or analyses validated component operation under accident/event conditions. Vendor documentation, system health reports, preventive and corrective maintenance history, and corrective action system documents were reviewed in order to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life. The team reviewed the licensee's response to BL 88-04, Potential Safety-Related Pump Loss, in order to verify that applicable insights from operating experience have been applied to the selected components.

b. Findings

No findings of significance were identified.

.2.2 1RNPUB, 1B Nuclear Service Water Pump

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Design calculations (i.e., CNC 1223.24-00-0027 and CNC 1223.24-00-0058) and site procedures were reviewed against these bases to verify design assumptions have been appropriately translated into these documents. The team requested and reviewed system modifications over the life of the component to verify that the subject modifications did not serve to degrade the component's performance capability and were appropriately incorporated into relevant drawings and procedures. Equipment ratings and specifications were reviewed against design basis requirements to ensure that the equipment qualification was suitable for all expected conditions. A component walkdown was conducted to verify that the installed configuration would support design basis function under accident/event conditions and had been maintained to be consistent with design assumptions. Test procedures and more recent test results were reviewed against design basis documents to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that individual tests and/or analyses validated component operation under accident/event conditions. Vendor documentation, system health reports, preventive and corrective maintenance history, and corrective action system documents were reviewed in order to verify that potential degradation was monitored or prevented and the component replacement was consistent with in-service/equipment qualification life.

b. Findings

No findings of significance were identified.

.2.3 2CAPUA, 2A Motor-Driven Auxiliary Feedwater Pump

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Design calculations (i.e. minimum flow and test acceptance) and site procedures were reviewed against these bases to verify design assumptions have been appropriately translated into these documents. The team requested and reviewed system modifications over the life of the component to verify that the subject modifications did not serve to degrade the component's performance capability and were appropriately incorporated into relevant drawings and procedures. A component walkdown was conducted to verify that the installed configuration would support design basis function under accident/event conditions and have been maintained to be consistent with design assumptions. Control panel indicators were observed and operating procedures reviewed to verify that component operation and alignments were consistent with design and licensing basis assumptions. Additionally, the inspectors reviewed time critical operator actions where those actions supported design basis assumptions or conclusions. Alternate flow paths and water sources, as well as possible diversion paths, were reviewed to verify that the process medium would be available and unimpeded during an accident. Test procedures and more recent test results were reviewed against design basis documents to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that individual tests and/or analyses validated component operation under accident/event conditions. Vendor documentation, system health reports, preventive and corrective maintenance history, and corrective action system documents were reviewed in order to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life.

b. Findings

No findings of significance were identified.

.2.4 2KDHXA, Emergency Diesel Generator Jacket Cooling Water Heat Exchanger

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Design calculations (i.e., CNC 1223.59-01-0005) and site procedures were reviewed against these bases to verify design assumptions have been appropriately translated into these documents. The team requested and reviewed system modifications over the life of the component to verify that the subject modifications did not serve to degrade the component's performance capability and were appropriately incorporated into relevant

drawings and procedures. A component walkdown was conducted to verify that the installed configuration would support design basis function under accident/event conditions and had been maintained to be consistent with design assumptions. External event analyses were reviewed against design specifications and requirements in order to verify that the equipment was adequately protected. Test procedures and more recent test results were reviewed against design basis documents to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that individual tests and/or analyses validated component operation under accident/event conditions. Vendor documentation, system health reports, preventive and corrective maintenance history, and corrective action system documents were reviewed in order to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life.

b. Findings

No findings of significance were identified.

.2.5 1WL848, Floor Drain Sump D Discharge to Turbine Bldg Sump Air-Operated Valve

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Design calculations (i.e., site flooding analysis) and site procedures were reviewed against these bases to verify design assumptions have been appropriately translated into these documents. The team requested and reviewed system modifications over the life of the component to verify that the subject modifications did not serve to degrade the component's performance capability and were appropriately incorporated into relevant drawings and procedures. A component walkdown was conducted to verify that the installed configuration would support design basis function under accident/event conditions and have been maintained to be consistent with design assumptions. Control panel indicators were observed and operating procedures reviewed to verify that component operation and alignments were consistent with design and licensing basis assumptions. Where manual actions were credited, the inspector's review included the availability of any necessary tools or accessibility aids. Additionally, the inspectors reviewed time critical operator actions where those actions supported design basis assumptions or conclusions. Test procedures and more recent test results were reviewed against design basis documents to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that individual tests and/or analyses validated component operation under accident/event conditions. Vendor documentation, system health reports, preventive and corrective maintenance history, and corrective action system documents were reviewed in order to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life.

b. Findings

Introduction: The team identified a Green non-cited violation of 10 CFR 50.65(a)(1) for the licensee's failure to monitor, in accordance with established criteria, the performance and condition of the turbine-driven auxiliary feedwater pump (CAPT) sump valves for Units 1 and 2.

Description: Valve 1/2WL848 is a normally open, fail as-is, locally controlled, plug valve with a pneumatic operator and a packless stem. The valve is located in the common discharge header from the auxiliary feedwater (CA) pump pit sumps.

Valve 1/2WL848, when open, permits the discharge of the CAPT sumps to the turbine building sump when less than pre-determined levels of radiation are sensed by radiation monitor 1/2EMF52. Valve 1/2WL848 closes upon receipt of a high radiation signal so that effluent from floor drain sump D would not be discharged to the turbine building sump. To ensure that any release to the environment would be kept as low as reasonably achievable (ALARA), the closure of valve 1/2WL848 results in the diversion of this potentially contaminated stream to the residual heat removal (ND) and containment spray (NS) pump rooms sump through valve 1/2WL847, a normally closed valve of the same type which opens upon the high radiation signal.

Valve 1/2WL848, if failed closed, could result in the overflow of the CAPT sump and eventually affect the continued operation of the CAPT. The CAPT, a safety-related component, requires a small amount of cooling flow (typically less than 15gpm) which creates a constant input to the CAPT pit sump. The conservative estimate of the time for increased water level to impact CAPT operation was 86.8 minutes following failure of the sump system.

The team noted that since plant start-up the licensee failed to inspect, test or perform preventative maintenance on 1/2WL848 and 1/2WL847. During the inspection, the licensee performed performance test (PT/1/A/4700/020) and Valve 1WL848 failed to stroke closed. When the closed pushbutton was pressed, the valve remained in the full open position and air was leaking from both above and below the valve's air actuator. In several attempts, the valve would not move from the full open position. The licensee also tested valve 1WL847; it stroked successfully open and closed. 1/2WL847 is normally closed to isolate the flow path to the ND/NS auxiliary building sump.

The team determined that the licensee failed to provide reasonable assurance that valve 1WL848 was capable of fulfilling its intended function. During the inspection the licensee repaired the 1WL848 actuator and retested it satisfactorily. Also the licensee re-categorized the valves in the discharge flow path from risk category C (run-to-failure) to risk category A (highly risk-significant) and enhanced procedural guidance to ensure a flow path will always be available from the CAPT pit sump.

Analysis: The team determined that the licensee's failure to monitor the performance and condition of valve 1/2WL848 was a performance deficiency. This finding was more than minor because it was associated with equipment performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective to

ensure the availability, reliability and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the failure to perform periodic testing or preventative maintenance resulted in a lack of reasonable assurance that the valves would perform their safety important function in protecting the CAPT. Using Inspection Manual Chapter 0609, "Significance Determination Process," Phase 1 Worksheet, the team determined that the finding is of very low safety significance (Green) because the finding did not represent an actual loss of safety function. This finding was reviewed for cross-cutting aspects and none were identified since the performance deficiency was not indicative of current licensee performance.

Enforcement: 10 CFR 50.65(a)(1) states, in part, that licensees shall monitor the performance or condition of structures, systems and components (SSCs) within the scope of the rule as defined by 10 CFR 50.65(b), against license established goals, in a manner sufficient to provide reasonable assurance that such SSCs are capable of fulfilling their intended function. 10 CFR 50.65(a)(2) states that monitoring as specified in paragraph (a)(1)… is not required where it has been demonstrated that the performance or condition of a SSC is being effectively controlled through the performance of appropriate preventative maintenance, such that the SSC remains capable of performing its intended function. Contrary to the above, the licensee failed to demonstrate that the performance or condition of the CAPT pit sump discharge valve had been effectively controlled through the performance of appropriate preventive maintenance, testing or inspection and did not monitor against licensee established goals. Specifically, since plant start-up the licensee failed to monitor the performance and condition of Valve 1/2WL848, an expectation which was enacted by regulation effective July 10, 1996. Because this finding is of very low safety significance and because it was entered into the licensee's corrective action program as PIP C-09-05020 and PIP C-09-04390, this violation is being treated as an NCV, consistent with the NRC Enforcement Policy: NCV 05000413, 414/2009006-001, Failure to monitor the turbine-driven auxiliary feedwater pump sump valves for units 1 and 2.

.2.6 2ND28A, ND Supply to NV and 2A NI Pumps Motor-Operated Valve

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Design calculations (i.e., CNC 1205.19-00-0060) and site procedures were reviewed against these bases to verify design assumptions have been appropriately translated into these documents. The inspector reviewed the calculations for the degraded voltage at the motor-operated valve (MOV) terminals, to ensure the proper voltage was utilized in the team's review of MOV torque calculations. The team requested and reviewed system modifications over the life of the component to verify that the subject modifications did not serve to degrade the component's performance capability and were appropriately incorporated into relevant drawings and procedures. A component walkdown was conducted to verify that the installed configuration would support design basis function under accident/event conditions and had been maintained to be consistent with design assumptions. Control room indicators were observed and

operating procedures reviewed to verify that component operation and alignments were consistent with design and licensing basis assumptions. Additionally, the inspectors reviewed time critical operator actions where those actions supported design basis assumptions or conclusions. Test procedures and more recent test results were reviewed against design basis documents to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that individual tests and/or analyses validated component operation under accident/event conditions. Vendor documents, system health reports, preventive and corrective maintenance history, and corrective action system documents were reviewed in order to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life.

b. Findings

No findings of significance were identified.

.2.7 2NI136B, ND Supply to NI Pump 2B Motor-Operated Valve

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Design calculations (i.e., CNC 1205.19-00-0021) and site procedures were reviewed against these bases to verify design assumptions have been appropriately translated into these documents. The inspector reviewed the calculations for the degraded voltage at the MOV terminals, to ensure the proper voltage was utilized in the team's review of MOV torque calculations. The team requested and reviewed system modifications over the life of the component to verify that the subject modifications did not serve to degrade the component's performance capability and were appropriately incorporated into relevant drawings and procedures. A component walkdown was conducted to verify that the installed configuration would support design basis function under accident/event conditions and had been maintained to be consistent with design assumptions. Control room indicators were observed and operating procedures reviewed to verify that component operation and alignments were consistent with design and licensing basis assumptions. Additionally, the inspectors reviewed time critical operator actions where those actions supported design basis assumptions or conclusions. Test procedures and more recent test results were reviewed against design basis documents to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that individual tests and/or analyses validated component operation under accident/event conditions. Vendor documents, system health reports, preventive and corrective maintenance history, and corrective action system documents were reviewed in order to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life.

b. Findings

No findings of significance were identified.

.2.8 1NV865, Standby M/U Pump Suction from Transfer Tube Motor-Operated Valve

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Design calculations (i.e., operating parameters and MOV calculations) and site procedures were reviewed against these bases to verify design assumptions have been appropriately translated into these documents. The inspector reviewed the calculations for the degraded voltage at the MOV terminals, to ensure the proper voltage was utilized in the team's review of MOV torque calculations. The team requested and reviewed system modifications over the life of the component to verify that the subject modifications did not serve to degrade the component's performance capability and were appropriately incorporated into relevant drawings and procedures. A component walkdown was conducted to verify that the installed configuration would support design basis function under accident/event conditions and have been maintained to be consistent with design assumptions. Test procedures and more recent test results were reviewed against design basis documents to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that individual tests and/or analyses validated component operation under accident/event conditions. Vendor documents, system health reports, preventive and corrective maintenance history, and corrective action system documents were reviewed in order to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life.

b. Findings

No findings of significance were identified.

.2.9 1NV872A, Standby M/U Pump Filter Outlet Motor-Operated Valve

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Design calculations (i.e., operating parameters and MOV calculations) and site testing procedures were reviewed against these bases to verify design assumptions have been appropriately translated into these documents. The inspector reviewed the calculations for the degraded voltage at the MOV terminals, to ensure the proper voltage was utilized in the team's review of MOV torque calculations. The team requested and reviewed system modifications over the life of the component to verify that the subject modifications did not serve to degrade the component's performance capability and were appropriately incorporated into relevant drawings and procedures. A component walkdown was conducted to verify that the installed configuration would support design basis function under accident/event conditions and have been maintained to be consistent with design assumptions. Test procedures and more recent test results were

reviewed against design basis documents to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that individual tests and/or analyses validated component operation under accident/event conditions. Vendor documentation, system health reports, preventive and corrective maintenance history, and corrective action system documents were reviewed in order to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life.

b. Findings

No findings of significance were identified.

.2.10 1NV813, ND Pump Discharge to NI Pump Suction Check Valve

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Site procedures were reviewed against these bases to verify design assumptions have been appropriately translated into these documents. A component walkdown was conducted to verify that the installed configuration would support design basis function under accident/event conditions and had been maintained to be consistent with design assumptions. External event analyses were reviewed against design specifications and requirements in order to verify that the equipment was adequately protected. Test procedures and more recent test results were reviewed against design basis documents to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that individual tests and/or analyses validated component operation under accident/event conditions. Vendor documentation, system health reports, preventive and corrective maintenance history, and corrective action system documents were reviewed in order to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life.

b. Findings

No findings of significance were identified.

.2.11 1WL850, CA Pump Room Sump Discharge Header Check Valve

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Design calculations, site testing procedures and vendor documentation were reviewed against these bases to verify design assumptions have been appropriately translated into these documents. The team requested and reviewed system modifications over the life of the component to verify that the subject modifications did not serve to degrade the component's performance capability and were appropriately incorporated into relevant

drawings and procedures. A component walkdown was conducted to verify that the installed configuration would support design basis function under accident/event conditions and have been maintained to be consistent with design assumptions. Test procedures and more recent test results were reviewed against design basis documents to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that individual tests and/or analyses validated component operation under accident/event conditions. System health reports, preventive and corrective maintenance history, and corrective action system documents were reviewed in order to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life.

b. Findings

No findings of significance were identified.

.2.12 2ETA, 4160VAC Essential Power Switchgear

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Voltage and short circuit calculations, as well as switchgear test, maintenance and operational procedures were reviewed to verify that design bases and design assumptions have been appropriately translated into design calculations and procedures. Testing procedures and recent results were reviewed to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents to ensure that design and licensing bases were met and to verify that individual tests and/or analyses validated component operation under accident/event conditions. The inspectors conducted a walkdown of the switchgear, reviewed vendor manuals and construction drawings, and performed alignment verifications to verify that the component's installed configuration would support its design basis function under accident/event conditions and that the equipment was properly protected. Control wiring diagrams and DC loading calculations were reviewed to verify that component inputs and outputs were suitable for application and would be acceptable under accident/event conditions. System health reports, component maintenance history and licensee corrective action program reports were reviewed to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life. Environmental qualification documents and procurement specifications were reviewed to verify that equipment qualification was suitable for the environment expected under all conditions.

b. Findings

No findings of significance were identified.

.2.13 1ETA06, 1A1 KC Pump Motor Power Supply Breaker

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Coordination and motor starting curves were reviewed, along with short circuit calculations, and maintenance and testing procedures, to verify that design bases and design assumptions have been appropriately translated into design calculations and procedures. Control wiring diagrams and DC loading calculations were reviewed to verify that component inputs and outputs were suitable for application and would be acceptable under accident/event conditions. System health reports, component maintenance history and licensee corrective action program reports were reviewed to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life. Environmental qualification documents and procurement specifications were reviewed to verify that equipment qualification was suitable for the environment expected under all conditions.

b. Findings

No findings of significance were identified.

.2.14 1EBA, 1A Essential Battery Bank

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Battery sizing, loading, and voltage calculations were reviewed, as were maintenance and operational procedures, in order to verify that design bases and design assumptions have been appropriately translated into design calculations and procedures. Test procedures and recent testing results were reviewed in order to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents to ensure that design and licensing bases were met and that individual tests and or analyses validated component operation under accident/event conditions. Battery room temperature evaluations were reviewed to verify that the equipment qualification was suitable for the environment expected under all conditions. The inspectors conducted a walkdown of the batteries and their associated chargers, reviewed vendor manuals and construction drawings, and performed focused field inspections to verify that the component's installed configuration would support its design basis function under accident/event conditions and that the equipment was properly protected. Interviews with system engineers and maintenance personnel were conducted, system health reports, component maintenance history and licensee corrective action program reports were reviewed to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life.

b. Findings

No findings of significance were identified.

.2.15 Standby Shutdown Facility (SSF) Aux Diesel

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Loading, voltage drop, and short circuit calculations were reviewed, as were maintenance and operational procedures, in order to verify that design bases and design assumptions have been appropriately translated into design calculations and procedures. Coordination capability was not specifically addressed. Test procedures and recent testing results were reviewed in order to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents to ensure that design and licensing bases were met and that individual tests and or analyses validated component operation under accident/event conditions. The inspectors conducted a walkdown of the engine and associated support systems and distribution, reviewed vendor manuals and construction drawings, and performed focused field inspections to verify that the component's installed configuration would support its design basis function under accident/event conditions and that the equipment was properly protected. Interviews with system engineers and maintenance personnel were conducted, system health reports, component maintenance history and licensee corrective action program reports were reviewed to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life.

b. Findings

No findings of significance were identified.

.2.16 EHM, Hydrogen Mitigation System

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. System one line diagrams and control circuit drawings were reviewed to develop an understanding of system architecture. Test procedures and recent testing results were reviewed in order to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents to ensure that design and licensing bases were met and that individual tests and or analyses validated component operation under accident/event conditions. The inspectors conducted a walkdown of the system, reviewed vendor manuals and construction drawings, and performed focused field inspections to verify that the component's installed configuration would support its design basis function under accident/event conditions and that the equipment was properly protected. Interviews with system engineers and maintenance personnel were

conducted, system health reports, component maintenance history and licensee corrective action program reports were reviewed to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life.

b. Findings

No findings of significance were identified.

.2.17 1NC31B, Unit 1 Pressurizer PORV Isolation

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. System one line diagrams and control circuit drawings were reviewed to develop an understanding of system architecture. Test procedures and recent testing results were reviewed in order to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents to ensure that design and licensing bases were met and that individual tests and or analyses validated component operation under accident/event conditions. The inspectors conducted a walkdown of the system, reviewed vendor manuals and construction drawings, and performed focused field inspections to verify that the component's installed configuration would support its design basis function under accident/event conditions and that the equipment was properly protected. Interviews with system engineers and maintenance personnel were conducted, system health reports, component maintenance history and licensee corrective action program reports were reviewed to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life.

b. Findings

No findings of significance were identified.

.2.18 1NDPG5040/5050, ND Pump Minimum Flow

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Instrument control drawings, setpoint and loop uncertainty calculations were reviewed to verify that design bases and design assumptions have been appropriately translated. Instrument modifications were reviewed to verify that the performance capability of the component had not been degraded. Calibration procedures and testing results were reviewed to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that individual tests and or analyses validated component operation under accident/event conditions. The inspectors conducted a walkdown of the instrument, reviewed vendor manuals and construction

drawings, and performed alignment verifications to verify that the component's installed configuration would support its design basis function under accident/event conditions and that the equipment was properly protected. Interviews with system engineers and maintenance personnel were conducted, system health reports, component maintenance history and licensee corrective action program reports were reviewed to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life.

b. Findings

No findings of significance were identified.

.2.19 1NVLT5760/5761, Volume Control Tank Level

a. Inspection Scope

The inspectors reviewed the plant TS, UFSAR, DBDs and associated system lesson plans to establish an overall understanding of the design bases of the component. Instrument control drawings, setpoint and loop uncertainty calculations were reviewed to verify that design bases and design assumptions have been appropriately translated. Instrument modifications were reviewed to verify that the performance capability of the component had not been degraded. Calibration procedures and testing results were reviewed to verify that acceptance criteria for tested parameters were supported by calculations or other engineering documents and that individual tests and or analyses validated component operation under accident/event conditions. The inspectors conducted a walkdown of the instrument, reviewed vendor manuals and construction drawings, and performed alignment verifications to verify that the component's installed configuration would support its design basis function under accident/event conditions and that the equipment was properly protected. Interviews with system engineers and maintenance personnel were conducted, system health reports, component maintenance history and licensee corrective action program reports were reviewed to verify that potential degradation was monitored or prevented and the component replacement was consistent with in service/equipment qualification life.

b. Findings

No findings of significance were identified.

.3 Review of Low Margin Operator Actions

a. Inspection Scope

The team performed a margin assessment and detailed review of five risk significant and time critical operator actions. Where possible, margins were determined by the review of the assumed design basis and UFSAR response times and performance times documented by job performance measures (JPMs). For the selected components and operator actions, the team performed an assessment of the Emergency Procedures (EPs), Abnormal Procedures (APs), control room alarm response procedures, and other

operations procedures to determine the adequacy of the procedures and availability of equipment required to complete the actions. Operator actions were observed on the plant simulator and during plant walk downs.

The following operator actions were observed on the licensee's operator training simulator:

- EP actions to establish high pressure recirculation flow per EP/1/A/5000/ES-1.3, Transfer to Cold Leg Recirculation
- EP actions to energize hydrogen igniters per EP/1/A/5000/E-0, Reactor Trip or Safety Injection
- EP actions to recognize and close the block valve in the event of a stuck open pressurizer PORV per EP/1/A/5000/E-0, Reactor Trip or Safety Injection
- Recover from a loss of nuclear service water (RN) due to the failure of an RN pump discharge valve to open per OP/1/A/6100/010M, Panel 1AD-12, A/1, RN Pump A Flow Hi/Lo and OP/0/A/6400/006C, Nuclear Service Water System.

Additionally, the team walked down, "table-topped" and investigated the following operational scenario:

- AP actions to align back-up cooling to the 1A NV pump per AP/1/A/5500/021, Loss of Component Cooling, Enclosure 4

b. Findings

No findings of significance were identified.

.4 Review of Industry Operating Experience

a. Inspection Scope

The team reviewed selected operating experience issues that had occurred at domestic and foreign nuclear facilities for applicability at the Catawba Nuclear Plant. The team performed an independent applicability review for issues that were identified as applicable to the Catawba Nuclear Plant and were selected for a detailed review. The issues that received a detailed review by the team included:

- IN 86-37, Degradation of Station Batteries
- IN 06-15, Vibration-Induced Degradation and Failure of Safety-Related Valves
- IN 07-05, Vertical Deep Draft Pump Shaft and Coupling Failures

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA6 Meetings, Including Exit

On August 27, 2009, the team presented the inspection results to Mr. Tom Ray and other members of the licensee staff. A re-exit was conducted by telephone on October 15, 2009, with Mr. Randy Hart and other members of the licensee staff, following the successful isochronous testing of your standby shutdown facility (SSF) emergency diesel generator and the team's review of circumstances surrounding your SSF coordination calculations. No proprietary information was reviewed as part of the inspection.

ATTACHMENT: SUPPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel:

T. Brooks, Operations Requalification Supervisor
W. Smith, Operations Instructor
R. Hart, Licensing Manager
T. Ray, Engineering Manager
M. Perry, Power Supervisor, RES

NRC personnel

A. Sabich, Former Senior Resident Inspector
A. Hutto, Senior Resident Inspector

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000413, 414/2009006-01	NCV	Failure to monitor the turbine-driven auxiliary feedwater pump sump valves for units 1 and 2 (Section 1R21.2.5)

LIST OF DOCUMENTS REVIEWED

Licensing Documents

TS, Current
UFSAR, Current
SER and Supplements

Design Basis Documents (Functional System Descriptions)

CNS-0165.EHM-00-0001, **Error! Reference source not found.Error! Reference source not found.**, Rev. 8
CNS-115.01-EPC-0001, 4.16KV Essential Auxiliary Power System (EPC) and Class 1E DG Protective Relaying and Metering System (ERN), Rev. 9
CNS-1554.NV-00-0001 Chemical and Volume Control (NV) System, Rev. 36
CNS-1560.SS-00-0001, SSF, Standby Shutdown Facility Aux Diesel System, Rev. 25
CNS-1561.ND-00-0001, Residual Heat Removal (ND) System, Rev. 29
CNS-1562.NI-00-0001, Design basis Specification for Safety Injection System, Rev. 39
CNS-1565.WL-00-0001 Liquid Waste System, Rev. 34, 04/25/2009
CNS-1573.KC-00-0001, Design Basis Specification for the Component Cooling System (KC), Rev. 34

CNS-1574.RN-00-0001, Nuclear Service Water System (RN), Rev. 52
CNS-1592.CA-00-0001, Auxiliary Feedwater (CA) System, Rev. 37
CNS-1605.VI-00-0001, Instrument Air (VI) System, Rev. 21

Drawings

CN-1499-CA.07-00, Instrument Detail Motor Driven Auxiliary Feedwater Pump to Steam Generator Flow Control, Rev. 11CN-1554-1.6, Flow Diagram of Chemical and Volume Control System (NV), Rev. 20
CN-1499-ND.01.04-01, Catawba Nuclear Station Unit 1 Instrument Location auxiliary Building EL. 543'-0", Rev. 86
CN-1499-ND.01-00, Instrument detail RHR Pump Minimum Flow Control, Rev. 8
CN-1550-1.0, Symbols for Diagrams, Rev. 23
CN-1550-1.1, Symbols for Diagrams, Rev. 14
CN-1550-2.0, Symbols for Diagrams, Rev. 14
CN-1553-1.1, Flow Diagram of Reactor Coolant System (NC), Rev. 21
CN-1554-1.7, Flow Diagram of Chemical and Volume Control System (NV), Rev. 28
CN-1554-1.8, Flow Diagram of Chemical & Volume Control System(NV), Rev.8, 06/19/07
CN-1561-1.0, Flow Diagram of Residual Heat Removal System (ND), Rev. 30
CN-1561-1.1, Flow Diagram of Residual Heat Removal System (ND), Rev. 24
CN-1562-1.2, Flow Diagram of Safety Injection System (NI), Rev. 30
CN-1562-1.3, Flow Diagram of Safety Injection System (NI), Rev. 16
CN-1565-2.2, Liquid Radwaste System Flow Diagram, Rev.36, 01/30/08
CN-1571-1.0, Flow Diagram of Refueling Water System (FW), Rev. 29
CN-1573-2.2, Flow Diagram of Component Cooling System (KC), Rev. 7
CN-1574-1.0, Flow Diagram of Nuclear Service Water System (RN), Rev. 52
CN-1574-1.2, Flow Diagram of Nuclear Service Water System (RN), Rev. 49
CN-1601-2.1, Flow Diagram of Drinking Water System (YD), Rev. 27
CN-1601-2.2, Flow Diagram of Drinking Water System (YD), Rev. 6
CN-1601-2.3, Flow Diagram of Drinking Water System (YD), Rev. 22
CN-1601-2.4, Flow Diagram of Drinking Water System (YD), Rev. 9
CN-1703-03.24, One Line Diagram, 600V Non Essential Load Center #1SLXG Standby Shutdown facility, Rev. 3
CN-1703-08.01, Three Line Diagram, 250/125VDC Aux. Power System (ETM) Standby Shutdown, Rev. 13
CN-1703-08.02, One Line Diagram, 250/125VDC and 120VAC Aux. Power System/ETM and ETL, Rev. 15
CN-1938-01.01, Computer Cable Routing Outdoor Area General Plan, Rev. 64
CN-1938-06.01, Computer Cable Routing Outdoor Area Sections & Detail, Rev. 9
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CN-2573-1.3, Flow Diagram of Component Cooling (KC) System, Rev. 11
CN-2573-1.4, Flow Diagram of Component Cooling (KC) System, Rev. 12
CN-2573-1.5, Flow Diagram of Component Cooling (KC) System, Rev. 11
CN-2573-1.7, Flow Diagram of Component Cooling (KC) System, Rev. 12
CN-2573-2.0, Flow Diagram of Component Cooling (KC) System, Rev. 7
CN-2573-2.1, Flow Diagram of Component Cooling (KC) System, Rev. 7
CN-2573-2.2, Flow Diagram of Component Cooling (KC) System, Rev. 4
CN-2573-2.3, Flow Diagram of Component Cooling (KC) System, Rev. 6
CN-2592-1.1, Flow Diagram of Auxiliary Feedwater System (CA), Rev. 30
CN-2605-1.12, Flow Diagram of Instrument Air System (VI), Rev. 14
CN-2609-1.0, Flow Diagram of Diesel Generator Engine Cooling Water System (KD), Rev. 16
CNEE-0111-02.39, Elementary Diagram 600V Non Essential Load Center No. 1SLXG, compt 4A, 4B incoming bkr., P.T. & Synch. Ckts., Rev. 6
CNEE-0111-02.43, Elementary Diagram 600V Non-Essential Load Center No. 1SLXG, Cpt.5B Diesel Generator “S”, Fdr. Bkr., Rev. 7
CNEE-0111-02.44, Elementary Diagram 600V Non-Essential Load Center No. 1SLXG, Cpt.5B Diesel Generator “S”, Fdr. Bkr., Rev. 6
CNEE-01114-00.10, Elementary Diagram Diesel Generator No. 1A Load sequencer (Part 8) committed & accelerated sequence circuits, Rev.10
CNEE-0115-01.06, Elementary diagram 4160V switchgear 2ETA Unit 6 Component Cooling Water PMP MTR. 1A1, Rev. 8
CNEE-0115-01.13, Elementary Diagram Nuclear Service Water System (RN) RN Pump B Discharge Isolation Valve 1RN038B, Rev. 11
CNEE-0115-01.20, Elementary Diagram 4160V Switchgear 1ETA Breaker Failure, Mode Selector and Degraded Bus Voltage Circuit, Rev. 17
CNEE-0115-01.34, Elementary Diagram 4160V Switchgear Unit #14 Nuclear Service Water Pump Motor 1B (1PMTR0156), Rev. 8
CNEE-0115-01.40, Elementary Diagram 4160V Switchgear 1ETB Breaker Failure, Mode Selector and Degraded Bus Voltage Circuit, Rev. 16
CNEE-0115-01.41, Elementary Diagram 4KV Switchgear 1ETA and 1ETB Breaker Internal Controls, Rev, 0
CNEE-0141-01.04, Elementary Diagram Residual Heat Removal System (ND) ND pump 1A Miniflow Valve 1ND025A, Rev. 9
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CNEE-0144-01.01, Elementary Diagram SSF Diesel Controls and Instrumentation Sys (EQD) Misc. Diesel Controls and Alarms, Rev. 10
CNEE-0150-01.10, Elementary Diagram Reactor Coolant System (NC) PZR Power Operated Relief Isolation Valve 1NC031B, Rev. 15
CNEE-0151-01.31, Elementary Diagram Safety Injection System (NI) Containment Sump Line 1A Isolation Valve 1NI185A, Rev. 16
CNEE-0157-03.13, Elementary Diagram Chemical & Volume Control Sys (NV) Solenoid Valves – Aux. Bldg. 1NV153A, 1NV172A, Rev. 13

CNEE-0160-02.30-02, WL Solenoid Valves 1WL847&1WL848, Rev.7, 01/16/85
CNEE-0165-02.01, Elementary Diagram Hydrogen Mitigation System (EHM) Ignitor Box Group "A" Alternate Source, Rev. 6
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CNEE-0215-01.04-01, Elementary diagram 4160V switchgear 2ETA Unit 4 STD-BY INC. BKR. Transf. SATA, Rev. 5
CNEE-0215-01.06, Elementary diagram 4160V switchgear 2ETA Unit 6 Component Cooling Water PMP MTR. 2A1, Rev. 5
CNEE-0215-01.13, Elementary diagram 4160V switchgear 2ETA Unit 13 Auxiliary Feedwater PMP MTR. 2A, Rev. 5
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CNEE-0215-01.20, Elementary Diagram 4160V Switchgear 2ETA Breaker Failure, Mode Selector and Degraded Bus Voltage Circuit, Rev. 10
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CNEE-0241-01.01, Elementary Diagram (ND) Residual Heat Removal System NC Loop 2 Supply to ND Train 2B Isolation Valve 2 ND001B, Rev. 13
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CNEE-0251-01.07, Elementary Diagram Residual Heat Removal System (ND) Supply to Safety Injection Sys (NI) Pumps 2B Valve 2 NI136B, Rev. 10
CNEE-0251-01.10, Elementary Diagram Safety Injection System (NI) Safety Injection Pump Miniflow Header to F.W. Valve 2NI147B, Rev. 7
CNEE-0251-01.28, Elementary Diagram Safety Injection System (NI) Safety Injection Pump 2B Miniflow Line Isolation Valve 2NI144A, Rev. 4
CNEE-0255-02.08, Elementary Diagram Refueling Water System (FW) ND Pump 2A Suction From FWST Valve 2 FW027A, Rev. 10
CNEE-0259-01.05, Elementary Diagram Containment Spray System (NS) Safety Injection Spray Isolation Valve 2NS043A, Rev. 6
CNEE-0265-02.01, Elementary Diagram Hydrogen Mitigation System (EHM) Ignitor Box Group "A" Normal Source, Rev. 7
CNEE-0265-02.01-01, Elementary Diagram Hydrogen Mitigation System (EHM) Ignitor Box Group "A" Alternate Source, Rev. 0
CN-FSAR-FIG.08-001, Onsite Power System, Rev. 2
CN-FSAR-FIG.08-021, Essential and Blackout Auxiliary Power Systems, Rev. 3
CN-FSAR-FIG.08-19, Non-Class 1E AC Power Systems, Rev. 1
CN-FSAR-FIG.6-136.01, ECCS Process Flow Diagram (NV) System, Rev. 0

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CN-FSAR-FIG.6-136.03, ECCS Process Flow Diagram (ND) System, Rev. 0
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CNM-1205.00-0152 001, Valve Assembly, 8 Inch, 300 lb, Swing Check Valve, Rev. A
CNM-1205.00-0207 001, Valve Assembly, 8 Inch, 600 lb, Gate Valve, 11/6/07
CNM-1205-00-1652, Borg-Warner Seismic Report NSR 76130, 1/27/83
CNM-1301.00-0237 006, Diesel Generator Instruction Manual, 12/8/98
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CNM-1301.02-0016, sh 1, DC schematics 700kW, 346/600V, 60 Hz Generator Control Panel, Rev. D4
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CNM-2201.05-0045, MDAFW Pump Curves Document, Rev.0, 05/14/80
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CNTC-2573-KC.P002-01, KC Minimum Flow Lines, Rev. 2
CNTC-2573-KC.P003-01, Component Cooling Pump Matching, Rev 0
CNTC-2573-KC.S001-01, KC System Nonessential Header Flow Balance, Rev 0
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CNTC-2592-CA-V001-02 CA Test Acceptance Criteria, Rev.2, 03/26/93
Fisher Controls Drawing 54A7671, 657-ET Diaphragm Actuated Control Valve, Rev. DJ

Corrective Action Documents (PIPs)

C-03-01608, KD HX 2B ECT identified crack-like indications on 8 tubes, 3/13/03
C-03-04625, RN pump 1A UBOC flow long term declining trend, 8/20/03
C-04-01569, KD HX trends indicate potential degraded thermal performance, 3/31/04
C-07-01547 CA Discharge MOV Failure to Re-Open after Testing, 05/01/2007
C-07-02443, 2A1 KC pump Outboard seal though has a 65 dpm leak, 05/16/07
C-07-02475, Problems were found with breaker 1ETB14 in the performance of its PM on 17MAY07 by crew 462, 05/17/2007
C-07-04311, 2A1 KC Pump Outboard Bearing Seal Leakage is at 60 DPM, 08/19/07
C-07-06881, Observation of data for SWGDT-B pressure, 11/10/2007
C-07-06890, Discovered loose test tee on 2NVLT5761 (VCT level), 11/11/2007
C-07-07610, KC pump 2A1 outboard seal leak rate observed as approx 50 dpm, 12/22/07
C-08-00284, KC pump 2A1 outboard seal leakage is transitioning from drops per minute and approaching a small steady stream, 02/18/2008
C-08-00356, Leakage on 2A1 KC pump OB bearing has doubled since last night shift from about 88 dpm to about 190 dpm, 01/20/08
C-08-00487, 2B NV pump balance line pressure above rounds limit of 80 psig, 01/26/2008
C-08-00562, Acceptance Criteria not met, 2B ND pump Flow reading was high, 01/31/2008
C-08-00880, 1ETA 18 Breaker Racked in Indication failed to operate when OPS racked breaker into cubicle, 02/13/2008

C-08-01465, Found during performance of Unit 1, Channel 1 18 month Channel Calibration, 03/11/2008
C-08-03245, Black substance/coating found in water box & on tube sheet of 1A KD HX, 5/26/08
C-08-03729, Perform cal under W/O 1723634, 06/12/2008
C-08-04289, Unplanned entry into Tech Specs 3.7.8 for loss of 1B RN pump, 7/12/08
C-08-04393, RN flow to B YC chiller exceeded Hi alarm setpoint of 2000 gpm for approximately 2 minutes while throttling flow for 1B RN Head Curve Testing. Maximum flow per OAC was 2049.1 gpm, 07/18/2008
C-08-04399, Need to establish new baseline values for 1B RN pump, 7/19/08
C-08-04691, Unit 1 VCT level indication is failing low, 08/04/2008
C-08-04906, Invlt5761 remote bellows isolation valves and bellows not labeled, 08/14/2008
C-08-05074, During performance of 2A ND IWP the 2A ND pump failed to start, 08/22/2008
C-08-05137, Breaker 1ETA 17 failed as found minimum DC voltage testing for a close operation, 08/26/2008
C-08-05147, 1A RN pump motor vibration is noticeable different than the other pumps when in service. NLO's need some INFO as to how much vibration is acceptable when performing rounds, 08/27/2008
C-08-05937, The Catawba Vital I&C Battery system is nearing the end of its available load growth capacity for future load additions, 10/06/2008
C-08-06130, Results of RN Lake Discharge Pipe UT Examination, 109/16/08
C-08-06329, 1B2 KC Pump Outboard seal leakage >30gpm upon pump start, 10/29/2008
C-08-06396, Unit 2 dilutions and blended makeups show unexpected VCT level changes, 11/02/2008
C-08-06840, the capacity margin for loads growth seems to run out on the 125 Volts DC Vital I&C Battery System, 12/02/2008
C-09-01380, 2 ETA-2 Breaker has cracked arc chutes, discovered during PM inspection, 03/08/2009
C-09-01902, PT/2/A/4400/003 A KC Train 2A Performance Test was aborted due to no local flow indication on 2A1 KC Pump start with 2KC-6 "2A1 KC Pump Discharge" throttle 90% CLOSED per procedure, 3/24/2009
C-09-01903, Performed IWP on 2A1 KC pump after pump maintenance. The data taken is considered new baseline values, 03/22/2009
C-09-02770, Excessive noise on suction of 2A1 KC Pump. 04/22/2009
C-09-03784 , The inboard oil bubbler on the 2A1 KC Pump is discolored and appears milky, 06/21/2009
C-09-03910, KC pump 2B1 4160V feeder has damaged armor cable with exposed insulation, 06/27/2009
C-09-04390 WL Sump Pump Check Valve Inservice Test & PM Changes, 07/23/2009
C-09-04844, Determine if any operator actions are credited to control AFW flow during LOOP
C-09-04847- SSF Load and Voltage Calculation, minor clarifications and elimination of inconsistencies -CDBI items 266, and 369, 8/14/09
C-09-05020 1WL 848 AOV Failed to stroke closed during PT, 08/21/2009
C-09-05061- (SSF Load Center Breaker Coordination and Diesel Generator Relay Setting Calculation) - CDBI item 367, 8/25/09
C-09-05073- SSF D/G Testing Issue (Load Bank Testing and Power Factor value) -CDBI items 293, 294, 370, and 371, 8/25/09
C-93-00703, KC Pump Calculation uses incorrect pump performance data, 08/25/1993

C-99-01308, Review of CNC-1223.24-00-0017, CNC-1223.24-00-0018 & CNC-1223.24-00-0019, 4/13/99
G-06-00154, Bussmann – Vendor Notification # 42021. Potential Part 21, 04/04/2006
G-07-00269, Three Site Response to IN 2007-05, Vertical Deep Draft Pump Shaft and Coupling Failures, 3/22/07
G-08-00341, IN08-2 Findings Identified during the Component Design Bases Inspections, 04/07/2008
M-06-3978 Valve Working Group to access IN 06-15, 12/07/06

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01707459, 1EPC – Routine Test 1ETB SWGR Relays, 05/16/2007
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C-09-05020, Valve 1WL848 failed to stroke closed, 8/21/09
C-09-05061, SSF Load Center Breaker Coordination and Diesel Generator Relay Setting Calculation concerns, 8/24/09
C-09-05073, SSF D/G Testing Issue Load Bank Testing and Power Factor value concerns, 8/25/09
C-09-05125, Revision of the horsepower (hp) used in CNM 1201.05-0272, Rev 6, to determine the shaft torque, 8/26/09
C-09-05132, CNC-1223.24-00-0058 & CNC-1223.24-00-0060 need to demonstrate that pump curves used are bounded by IST limits, 8/27/09
C-09-05137, Convective heat losses from KD HX not included in determination of maximum heat load for fouling and tube plugging limits, 8/27/09
C-09-05142, In reference to pump failure documented in C-08-4289, Part 21 notification to pump vendor been may not have been provided, 8/27/09
C-09-05144, Clarification of the Basis for Aux Bldg Room Temperatures, 8/27/09
C-09-05146, Apparent non-conservative (low) weight used in seismic analysis for 1(2) ND028A & 1(2) NI0136B, 8/27/09
C-09-05147, CNC-1223.24-00-0027 does not confirm that throttle valve positions calculated match up with actual field settings, 8/27/09