



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

April 24, 2008

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

**SUBJECT: CATAWBA NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT  
05000413/2008002 AND 05000414/2008002**

Dear Mr. Morris:

On March 31, 2008, the 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 April 16, 2008, with you and 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 was entered into your corrective action program, the NRC is treating this finding as a non-cited violation (NCV) consistent with Section VI.A of the NRC Enforcement Policy. If you contest the non-cited violation, 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 Catawba facility.

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In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, 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/**

Kathy Weaver, Acting Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

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

Enclosure: Integrated Inspection Report 05000413/2008002 and 05000414/2008002  
w/Attachment: Supplemental Information

cc w/encl: (See page 3)

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Letter to J. R. Morris from Kathy Weaver dated April 24, 2008

SUBJECT: CATAWBA NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT  
05000413/2008002 AND 05000414/2008002

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**U. S. NUCLEAR REGULATORY COMMISSION**

**REGION II**

Docket Nos.: 50-413, 50-414

License Nos.: NPF-35, NPF-52

Report No.: 05000413/2008002 and 05000414/2008002

Licensee: Duke Energy Carolinas, LLC

Facility: Catawba Nuclear Station, Units 1 and 2

Location: York, SC 29745

Dates: January 1 through March 31, 2008

Inspectors: A. Sabisch, Senior Resident Inspector  
G. Williams, Resident Inspector  
C. Peabody, Reactor Inspector  
J. Quiñones-Navarro, Reactor Inspector (Section 4OA3.3)

Approved by: Kathy Weaver, Acting Branch Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

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## SUMMARY OF FINDINGS

IR 05000413/2008002, 05000414/2008002; 1/1/2008 – 3/31/2008; Catawba Nuclear Station, Units 1 and 2; Identification and Resolution of Problems.

The report covered a three month period of inspection by two resident inspectors and two region based inspectors. One Green non-cited violation was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609, "Significance Determination Process." Findings for which the Significance Determination Process 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.

### A. NRC-Identified and Self-Revealing Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green non-cited violation of Technical Specification 5.4.1.a, for the failure to adequately establish and implement procedures required by Regulatory Guide 1.33, Appendix A, Section 1.b, Administrative Procedures. Specifically, the licensed operators in the main control room and work control center failed to identify that the "A" Control Room Area Chilled Water System (CRACWS) was inoperable prior to removing the remaining chiller from service for testing. This placed both Catawba units in Technical Specification 3.0.3 for approximately 110 minutes without any of the required actions being taken.

The finding was more than minor because it was associated with the Configuration Control attribute of the Barrier Integrity cornerstone and affected the cornerstone objective of providing reasonable assurance that physical design barriers provide protection from radionuclide releases caused by accidents or events. While the Control Room Area Ventilation System (CRAVS) would have remained operable in terms of filtering air in the areas it services, without chilled water providing cooling, operators would have had to bypass the filtered air paths using Abnormal Operating Procedure (AP) guidance in order to maintain area temperatures at values needed to ensure equipment in the areas remained operable over time. The inspectors determined the finding to be of very low safety significance using the Phase 1 Screening Worksheet of Inspection Manual 0609, "Maintenance Risk Assessment and Risk Significance Determination Process". The issue would only become evident if the 2A diesel generator failed to re-energize the 2A 4.16kV vital bus following a loss of offsite power (LOOP) event with the "A" chiller control power aligned to the 2A bus and the length of time available before the AP would have had to be entered and the filtered air flow paths bypassed.

The finding directly involved the cross-cutting area of Human Performance under the "Procedural Compliance" aspect of the "Work Practices" component, in that the

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licensee failed to effectively follow multiple station procedures to ensure redundant CRACWS chillers were not removed from service, resulting in a potential loss of chilled water cooling for areas supplied by the CRAVS [H.4.b]. This issue has been entered into the licensee's Corrective Action Program as Problem Investigation Process report (PIP) C-07-7073. (Section 4OA2.2(2))

B. Licensee-Identified Violations

None



## REPORT DETAILS

### Summary of Plant Status

Unit 1 operated at 100 percent Rated Thermal Power throughout the inspection period.

Unit 2 operated at 100 percent Rated Thermal Power throughout the inspection period.

### 1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

#### 1R01 Adverse Weather Protection

##### .1 Severe Weather Condition (Actual)

###### a. Inspection Scope

The inspectors reviewed the effectiveness of the licensee's cold weather protection program pertaining to the cold weather conditions experienced during the period of January 1 through January 4, 2008. This included field walkdowns to assess the risk significant freeze protection equipment associated with the Standby Shutdown Facility, Refueling Water Storage Tank, and Nuclear Service Water (RN) system. The inspectors discussed specific measures with operations, maintenance, and chemistry personnel to be taken when low ambient temperatures were experienced. The inspectors accompanied Chemistry technicians in their performance of supplemental freeze protection rounds in outside areas of the plant. A walkdown of control room equipment related to cold weather protection was performed. The inspectors attended the morning Site Direction Meeting where the station procedure for preparing for cold weather conditions was discussed and action items were assigned for completion prior to cold weather arriving on site. The documents reviewed during this inspection are listed in the Attachment to this report.

###### b. Findings

No findings of significance were identified.

##### .2 Protection from External Flooding

###### a. Inspection Scope

The inspectors reviewed the licensee's external flood protection features. The inspectors performed a walkdown of external site areas including designated Type I inlet catch basins on-site, which are part of the surface water drainage system that is designed to protect all safety-related facilities from flooding during a local probable maximum precipitation. This included observing that steel grating on four sides and top of the basins was intact, and to the extent possible, the inspectors visually observed

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basin and pipe cavity to determine that the area was free of debris accumulation and no significant blockage of the drains was apparent. The inspectors reviewed the corrective action program documents to ascertain that the licensee was identifying issues and resolving them. Documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

a. Inspection Scope

The inspectors performed partial system walkdowns during the following four activities to assess the operability of redundant or diverse trains and components when safety equipment was inoperable. The inspectors attempted to identify any discrepancies that could impact the function of the system, and, therefore, potentially increase risk. The inspectors reviewed applicable operating procedures, and walked down control system components, selected breakers, valves, and support equipment to determine if they were in the correct position to support system operation. The inspectors reviewed protected equipment sheets, maintenance plans, and system drawings to determine if the licensee had properly identified and resolved (within the corrective action program) equipment alignment problems that could cause initiating events or impact the capability of mitigating systems or barriers. The documents reviewed during this inspection are listed in the Attachment to this report.

- Protection of designated equipment during the period the 1B Chemical Volume Control System (NV) pump rotating element was replaced due to indications of a shaft failure
- Protection of designated equipment during the period the "A" Controlled Area Chilled Water (YC) chiller was removed from service for periodic maintenance
- Protection of designated equipment during the period the 1A Diesel Generator (DG) was removed from service for pre-outage inspections, maintenance and testing
- Protection of designated equipment during the period the 1B DG was removed from service for pre-outage inspections, maintenance and testing

b. Findings

No findings of significance were identified.

1R05 Fire Protection.1 Fire Protection Toursa. Inspection Scope

The inspectors walked down accessible portions of the following 8 plant areas to assess the licensee's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures. The inspectors observed the fire protection suppression and detection equipment to determine whether any conditions or deficiencies existed which could impair the operability of that equipment. The inspectors selected the areas based on a review of the licensee's safe shutdown analysis probabilistic risk assessment and sensitivity studies for fire related core damage accident sequences. The documents reviewed during this inspection are listed in the Attachment to this report.

- ISFSI Area
- Unit 2 Electrical Penetration Room, 577 foot elevation Aux Bldg
- Unit 1 Auxiliary Shutdown Panels
- Unit 1 Spent Fuel Pool Ventilation Area, Aux Bldg 594 foot elevation
- Unit 1 "A" and "B" Residual Heat Removal (ND) pump rooms, 522 foot elevation
- Unit 2 Main Transformer Yard Area
- Unit 2 Aux Bldg Ventilation Equipment, Aux Bldg 594 foot elevation
- Unit 2 "B" diesel generator room and sequencer hallway

b. Findings

No findings of significance were identified.

.2 Fire Drill Observationsa. Inspection Scope

The inspectors observed the following two fire drills conducted by the on-shift fire brigade members:

- February 29, 2008 - shift fire drill simulating a fire in the 1T1B transformer located in the Unit 1 Transformer yard outside of the Unit 1 turbine building.
- March 7, 2008 - shift fire drill simulating a fire in the 1A diesel generator room.

The purpose of these inspections was to monitor the fire brigade's use of protective gear and fire fighting equipment; determine that fire fighting pre-plan procedures and appropriate fire fighting techniques were used; that the directions of the fire brigade leader were thorough, clear and effective; and that control room personnel responded appropriately to the simulated fire events. The inspectors also attended the subsequent drill critiques to assess whether they were appropriately critical, included discussions of drill observations and identified any areas requiring corrective actions. The documents reviewed during this inspection are listed in the Attachment to this report.

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b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance - Annual Resident Inspection

a. Inspection Scope

The inspectors reviewed the performance of the Unit 2 "A" containment spray heat exchanger heat capacity test and evaluated the test data for acceptable performance of the nuclear service water and containment spray systems. The inspectors reviewed the system configuration associated with the test, heat load requirements, the methodology used in calculating heat exchanger performance, and the method for tracking the status of tube plugging activities via the data logger and computer processing equipment. The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed Active Simulator Exam ASE-25 to assess the performance of licensed operators during an evaluated simulator session. The exercise included the open failure of one pressurizer power operated relief valve, loss of main condenser vacuum and the failure of the main turbine to trip automatically, and the loss of the secondary heat sink due to the failure of all three auxiliary feedwater pumps to start. The scenario terminated once the operators established feed to the steam generators using the condensate system after depressurizing the secondary side using steam generator power operated relief valves. The inspection focused on high-risk operator actions performed during implementation of the abnormal and emergency operating procedures, and the incorporation of lessons-learned from previous plant and industry events. The classification and declaration of the Emergency Plan by the Shift Technical Advisor and Operations Shift Manager was also observed during the scenario. The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the four samples listed below for such maintenance effectiveness items as: (1) appropriate work practices; (2) identifying and addressing

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common cause failures; (3) scoping in accordance with 10 CFR 50.65(b) of the maintenance rule ; (4) characterizing reliability issues for performance; (5) trending key parameters for condition monitoring; (6) charging unavailability for performance; (7) classification and reclassification in accordance with 10 CFR 50.65(a)(1) or (a)(2); and (8) appropriateness of performance criteria for Structures, Systems, and Components (SSCs)/functions classified as (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified as (a)(1). For each item selected, the inspectors performed a detailed review of the problem history and surrounding circumstances, evaluated the extent of condition reviews as required, and reviewed the generic implications of the equipment and/or work practice problem. Documents reviewed during this inspection are listed in the Attachment to this report.

- Replacement and testing of the 1B NV pump rotating element
- Installation of blank cover plates and a flow restrictor orifice in the floor drains in the interior doghouses to reflect the intended as-built configuration
- Repair of the “E” Instrument Air dryer valves and replacement of the desiccant material
- Preventive Maintenance and instrument calibration work on the 1A Train of Safety Injection

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed the following nine activities to determine whether the appropriate risk assessments were performed prior to removing equipment for work. When emergent work was performed, the inspectors assured that the plant risk was promptly reassessed and managed. The inspectors reviewed the appropriate use of the licensee’s risk assessment tool and risk categories in accordance with Nuclear System Directive 415, Operational Risk Management (Modes 1-3), and Nuclear System Directive 403, Shutdown Risk Management (Modes 4,5,6, and No Mode), for appropriate guidance to comply with 10 CFR 50.65 (a)(4). The documents reviewed during this inspection are listed in the Attachment to this report.

- Planned work associated with the repair of the 1B NV pump and evaluation of both additional planned and emergent work for impact on overall station risk values
- Planned and in-progress work activities following discovery of missing flow restrictor plates on floor drains in the interior doghouses on both units which resulted in all Auxiliary Feedwater pumps being declared inoperable
- Scheduled work activities placed on hold following the decision to initiate a stand-down site-wide based on multiple issues related to work activities and the use of red tags

- Planned activities associated with cutting holes for the crossover piping in the wall separating the “A” and “B” RN pump pits and potential impact on other activities planned for Work Week #7
- Planned and emergent work during the period the 1A DG was unavailable while pre-outage inspections, maintenance and testing was being performed
- Planned and emergent work during the period the 1B DG was unavailable while pre-outage inspections, maintenance and testing was being performed
- Planned activities on Unit 2 following the failure of Shutdown Bank C to move properly during the performance of the Rod Control Cluster Assembly (RCCA) Movement test
- Maintenance plan and contingency actions for the hydrogen leak on the Unit 2 main generator
- The impact that the inoperable “A” train of the Unit 1 auxiliary building ventilation had on planned and emergent work activities at the station

b. Findings

No findings of significance were identified

1R15 Operability Evaluations

a. Inspection Scope

For the eight operability evaluations listed below, the inspectors evaluated the technical adequacy of the evaluations to ensure that Technical Specification (TS) operability was properly justified and the subject component or system remained available such that no unrecognized increase in risk occurred. The inspectors determined that the operability determinations were made as specified by Nuclear System Directive (NSD) 203, Operability. The inspectors reviewed the Updated Final Safety Analysis Report (UFSAR) to ensure that the system or component remained available to perform its intended function. In addition, the inspectors reviewed compensatory measures implemented to determine if the compensatory measures worked as stated and the measures were adequately controlled. The inspectors also reviewed a sampling of PIPs to determine whether the licensee was identifying and correcting any deficiencies associated with operability evaluations. The documents reviewed during this inspection are listed in the Attachment to this report.

- PIP C-08-00043, Prompt Determination of Operability (PDO) for the replacement of the 1B NV pump rotating element due to conditions required for performance testing not being available in Mode 1
- PIP C-08-0329, Unplanned Technical Specification Action Item Log (TSAIL) entry on Unit 2 due to the Auxiliary Building Filtered Ventilation Exhaust System being inoperable and failing to maintain a negative pressure in the 2A NV pump room
- PIP C-08-0284, Component Cooling Pump 2A1 outboard seal leakage is transitioning from drops per minute and approaching a steady stream, and PIP C-08-0356, Component Cooling Pump 2A1 outboard seal leakage has doubled from about 88 drops per minute to about 190 drops per minute

- PIP C-07-5359, Potential exists to exceed the design temperature of the feedwater piping and refueling water storage tank when transferring water from the refueling cavity to the refueling water storage tank
- PIP C-08-0487, 2B NV Pump balance line pressure found to be above the rounds limit of 80 psig
- PIP C-08-0562, 2B ND Pump failed the quarterly IWP on flow rate being greater than the acceptance limit
- PIP C-08-1234, Approximately 350 square feet of containment pipe chase floor coatings applied on Unit 1 during the Unit 1 end-of-cycle (EOC) 16 refueling outage were determined to be unacceptable
- PIP C-08-1465, While performing an 18-month calibration, technicians identified a voltage error induced by certain test equipment switch settings that had the potential to cause the channel to be calibrated incorrectly

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors reviewed the five post-maintenance tests listed below to determine if procedures and test activities ensured system operability and functional capability. The inspectors reviewed the licensee's test procedures to determine if the procedures adequately tested the safety function(s) that may have been affected by the maintenance activities, that the acceptance criteria in the procedures were consistent with information in the applicable licensing basis and/or design basis documents, and that the procedures had been properly reviewed and approved. The inspectors also witnessed the tests and/or reviewed the test data to determine if test results adequately demonstrated restoration of the affected safety function(s). The documents reviewed during this inspection are listed in the Attachment to this report.

- Operability test of the 2A DG following replacement of the Digital Reference Unit portion of the Woodward governor
- Post maintenance testing of the 1A Train of Safety Injection pump following inspection of the oil cooler and instrument replacement
- Operability test of the 1A DG following pre-outage maintenance activities, inspections and replacement of the Digital Reference Unit portion of the Woodward governor
- Movement testing of the Unit 2 RCCAs following issues arising during the performance of the quarterly operability test
- Operability test of the 1B DG following pre-outage maintenance activities, inspections and replacement of the Digital Reference Unit portion of the Woodward governor

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

For the 6 surveillance tests identified below, the inspectors witnessed testing and/or reviewed the test data, to determine if the SSCs involved in these tests satisfied the requirements described in the TSs, the UFSAR, and applicable licensee procedures, and that the tests demonstrated that the SSCs were capable of performing their intended safety functions. Additional documents reviewed during this inspection are listed in the Attachment to this report.

Surveillance Tests

- PT/0/A/4600/031; NAC-UMS Cask Surveillance, Rev. 000
- PT/2/A/4450/009A, Spent Fuel Ventilation System Train A Operability Test, Rev. 20
- IP/1/A/3200/001A, Solid State Protection System Train A Periodic Testing, Rev. 09 and 10
- IP/2/A/3200/001B, Solid State Protection System Train B Periodic Testing, Rev. 07
- OP/1/A/6200/011, Primary Sampling System, Enclosure 4.3, Reactor Coolant (NC) Loops A and C, Rev. 56

In-Service Tests

- PT/1/A/4200/007B; Centrifugal Charging Pump 1B Test, Rev. 059

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the two temporary modifications listed below and the associated 10 CFR 50.59 screening to determine that the modifications satisfied the requirements of 10CFR50, Appendix B, Criterion III, Design Control, and compared each against the UFSAR and TS to determine that the modification did not affect operability or availability of the associated system. The inspectors walked down portions of each modification to ensure they were installed in accordance with the modification documents and reviewed post-installation testing. The documents reviewed during this inspection are listed in the Attachment to this report.



- CD101656, Temporary Change due to Digital Rod Position Indication Rod G-3 Group B Data Failure
- CD101651, Temporary Change to Valves 1ISV-3 and 1ISV-5 open indication

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

a. Inspection Scope

The inspectors observed and evaluated the licensee's simulated control room and emergency planning performance during a drill conducted on March 13, 2008. The inspectors reviewed licensee activities that occurred in the simulator control room and observed activities that occurred in the Technical Support Center during a simulated event. The NRC's assessment focused on the timeliness and accuracy of the event classification, notification of offsite agencies, and the overall response of the personnel involved in the drill from an operations and emergency planning perspective. The performance of the emergency response organization was evaluated against applicable licensee procedures and regulatory requirements. The inspectors attended the post-exercise critique for the drill to evaluate the licensee's self-assessment process for identifying potential deficiencies relating to failures in classification and notification. The inspectors reviewed the completed critique developed by the licensee documenting the overall performance of the Emergency Response Organization. The documents reviewed during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

a. Inspection Scope

The inspectors sampled licensee data to confirm the accuracy of reported performance indicator (PI) data for the four indicators during periods listed below. To determine the accuracy of the reported PI elements, the reviewed data was assessed against PI definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, Regulatory Assessment Indicator Guideline, Rev. 5.

### Initiating Events Cornerstone

- Unplanned Scrams per 7000 Critical Hours, Unit 1
- Unplanned Scrams with Complications, Units 1
- Unplanned Scrams with Complications, Units 2

The inspector reviewed a selection of licensee event reports, operator log entries, daily reports (including the daily PIP descriptions), monthly operating reports, and PI data sheets to determine that the licensee had adequately identified the number of scrams and unplanned power changes greater than 20 percent that occurred during the previous four quarters. The inspectors compared this number to the number reported for the PI during the current quarter. The inspectors also reviewed the accuracy of the number of critical hours reported and the licensee's basis for crediting normal heat removal capability for each of the reported reactor scrams. In addition, the inspectors interviewed licensee personnel associated with the PI data collection, evaluation, and distribution. The documents reviewed during this inspection are listed in the Attachment to this report.

### Barrier Integrity Cornerstone

- Reactor Coolant System Specific Activity, Unit 2

The inspectors reviewed the Reactor Coolant System Specific Activity PI results for the period of January 1, 2005 through December 31, 2007, for Unit 2. The inspectors observed licensee sampling and analysis of reactor coolant system samples, and compared the licensee-reported PI data with records developed by the licensee while analyzing previous samples. The inspectors also reviewed the PIPs associated with this area to determine that the licensee identified and implemented appropriate corrective actions. The documents reviewed during this inspection are listed in the Attachment to this report.

#### a. Findings

No findings of significance were identified.

### 4OA2 Identification and Resolution of Problems

#### .1 Daily Review

As required by Inspection Procedure 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed screening of items entered into the licensee's corrective action program. This was accomplished by reviewing copies of PIPs, attending some daily screening meetings, and accessing the licensee's computerized database. The documents reviewed during this inspection are listed in the Attachment to this report.

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## .2 Annual Sample Review

### (1) Operator Workarounds

#### a. Inspection Scope

The inspectors reviewed the cumulative effects of deficiencies that constituted operator workarounds to determine whether or not they could: affect the reliability, availability, and potential for misoperation of a mitigating system; affect multiple mitigating systems; or affect the ability of operators to respond in a correct and timely manner to plant transients and accidents. The inspectors also assessed whether operator workarounds were being identified and entered into the licensee's corrective action program at an appropriate threshold. The documents reviewed during this inspection are listed in the Attachment to this report.

#### b. Findings

No findings of significance were identified.

### (2) Both Trains of CRACWS Rendered Inoperable

#### a. Inspection Scope

The inspectors reviewed PIPs associated with licensee actions taken in response to operations personnel inadvertently placing both units in TS 3.0.3 for having both trains of CRACWS inoperable at the same time on November 20, 2007. Inspectors reviewed corrective action documents that included a Level 2 root cause investigation that was conducted in response to this event. The Inspectors interviewed Operations personnel involved in the event. The documents reviewed during this inspection are listed in the Attachment to this report.

#### b. Findings

Introduction: The inspectors identified a Green non-cited violation of TS 5.4.1.a, for the failure to adequately establish and implement procedures required by Regulatory Guide 1.33, Appendix A, Section 1.b, Administrative Procedures. Specifically, the licensed operators in the main control room and work control center failed to identify that the "A" CRACWS chiller was inoperable prior to removing the remaining chiller from service for testing. This placed both Catawba units in Technical Specification Limiting Condition for Operation 3.0.3 for approximately 110 minutes without any of the required actions being taken.

Description: Catawba Units 1 and 2 share two CRACWS chillers that provide chilled water to maintain the areas cooled by the Control Room Area Ventilation System (CRAVS) below 90°F during all postulated conditions. Areas cooled include the shared main control room, cable spreading rooms, battery room, vital switchgear rooms, motor control center rooms, and the electrical penetration rooms.

During day shift on November 20, 2007, a heat capacity test was performed on the 1A DG cooling water heat exchanger. As part of this test, control power for the "A" CRACWS chiller was realigned to be supplied from Unit 2. This configuration, with chiller motor power supplied from Unit 1 and chiller control power from Unit 2, resulted in the "A" chiller being declared inoperable until both power supplies were fed from the same unit. This declaration was based on the potential adverse consequences of a LOOP where one unit's DG does not re-energize the vital bus and prevents the chiller from functioning.

This inoperability is identified in the test procedure and the operators were aware of the condition when the heat capacity test was conducted. The inoperability of the 1A DG was properly logged in the computerized Technical Specification tracking program (TSAIL); however, the inoperability of the "A" CRACWS chiller was added as a comment in the 1A DG entry and not as a separate TSAIL entry, as required by station procedures.

The 1A DG was declared operable at 5:03 pm, on November 20, 2007, and the associated TSAIL entry was cleared. The procedure that had aligned the "A" CRACWS chiller control power to Unit 2 was in-progress at shift turnover and steps to realign control power to Unit 1 had not yet been performed. Station procedures governing shift turnover contain requirements for the off-going and oncoming shifts to review all in-process procedures for potential impact on upcoming shift activities. However, the requirement to realign control power to Unit 1 was not discussed.

At 1:47 am, on November 21, 2007, the "B" CRACWS chiller was removed from service to support planned testing on the chiller motor. A review of TSAIL entries failed to identify any issues associated with the "A" CRACWS chiller since the entry had been cleared when the 1A DG was declared operable. Multiple steps in the test procedure associated with the "B" CRACWS chiller directed operators to determine that the "A" chiller was operable and review in-progress procedures for any potential impact. However, the control power alignment which made "A" CRACWS chiller inoperable was not identified. As a result, when the "B" CRACWS chiller was declared inoperable, both Catawba units entered Technical Specification 3.7.11, Action E, which directs that Technical Specification 3.0.3 be entered immediately. This was not identified by the operators.

The "B" CRACWS chiller was declared operable at 3:37 am, on November 21, 2007. Approximately 110 minutes had elapsed with both CRACWS chillers inoperable. During turnover, a review of activities conducted throughout the shift identified the missed entry into Technical Specification Limiting Condition for Operation 3.0.3, and a PIP was initiated.

Analysis: The inspectors determined that the licensee's failure to identify the inoperable CRACWS chiller prior to removing the remaining operable chiller for planned testing was a performance deficiency. The inadequate implementation of station procedures defining processes and expectations intended to ensure this condition did not occur were the primary contributors to the event.

The finding was more than minor because it was associated with the Configuration Control attribute of the Barrier Integrity cornerstone and affected the cornerstone objective of providing reasonable assurance that physical design barriers provide protection from radionuclide releases caused by accidents or events. While the CRAVS would have remained operable in terms of filtering air in the areas it services, without chilled water providing cooling, the operators would have had to bypass the filtered air paths using AP guidance in order to maintain area temperatures at values needed to ensure equipment in the areas remained operable.

The inspectors determined the finding to be of very low safety significance using the Phase 1 Screening Worksheet of Inspection Manual 0609, "Maintenance Risk Assessment and Risk Significance Determination Process". The issue would only become evident if the 2A DG failed to reenergize the 2A 4.16kV vital bus following a LOOP event with the "A" chiller control power aligned to the 2A bus, and the length of time available before the AP would have had to be entered and the filtered air flow paths bypassed.

The finding directly involved the cross-cutting area of Human Performance under the "Procedural Compliance" aspect of the "Work Practices" component, in that the licensee failed to effectively follow multiple station procedures to ensure redundant CRACWS chillers were not removed from service, resulting in a potential loss of chilled water cooling for areas supplied by the CRAVS (H.4.b). This issue has been entered into the licensee's Corrective Action Program as PIP C-07-7073.

### Enforcement

TS 5.4.1.a, "Procedures", states in part that written procedures shall be established, maintained and implemented to cover the applicable procedures recommended in Regulatory Guide 1.33, Quality Assurance Program Requirements.

Regulatory Guide 1.33, Revision 2, dated February 1978, Appendix A, Item 1.b states that administrative procedures covering the authorities and responsibilities for safe operation and shutdown shall be established and implemented.

Operations Management Procedure (OMP) 1-8, Authority and Responsibility of On-Shift Operations Personnel, defines the roles and responsibilities of on-shift operations personnel including reactor operators and senior reactor operators at the station. These include: (1) complying with TSs, Selected Licensee Commitments and other conditions specified in the facility's license; (2) organize, direct and control activities to ensure the plant is operated in compliance with TSs and operating procedures; (3) reviewing the impact of the removal of TS-related instruments and components from service; and (4) interfacing with work crews prior to the start of jobs to evaluate the work for TS impact.

OMP 2-29, Technical Specifications Action Item Log, Section 7.3 states in part that "when removing equipment from service, all Technical Specification affected by that removal shall be logged, to ensure all combinations of situations are evaluated."

OMP 2-22, Shift Turnover, defines the responsibilities of off-going and oncoming personnel during shift turnover, and includes detailed position-specific turnover sheets to be utilized during the shift turnover process. The turnover sheets used by each licensed operator position contain a requirement to review procedures in progress and ensure their impact is understood.

SOMP 04-02, Procedure Use and Adherence, Section 8, Preparation for Procedure Use, contains direction for the licensed operators to review any applicable in-progress procedures and determine that initial conditions and prerequisite conditions in the procedure to be performed to ensure the planned actions will not be adversely affected by other plant conditions.

Contrary to the above, on November 21, 2007, licensed operators in the main control room and work control center did not properly document the inoperable A train of CRACWS and then ensure it had been returned to service prior to removing the B train of CRACWS from service. This resulted in both Catawba units being unknowingly placed in TS 3.0.3 for a period of approximately 110 minutes.

Because this finding is of very low safety significance and has been entered into the corrective action program as PIP C-07-7073, this violation is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000413/2008002-01, Failure to Identify an Inoperable CRACWS Chiller Prior to Removing the Remaining Chiller from Service Placed Both Units in TS 3.0.3.

#### 4OA3 Event Follow-up

##### .1 Unexpected Closure of Two Combined Intermediate Valves Associated with the Unit 1 Low Pressure Turbines

###### a. Inspection Scope

On January 8, 2008, the #3 Combined Intermediate Valve (CIV) on the "A" low pressure turbine closed unexpectedly due to noise detected by a position indication circuit card in the main turbine control system. Following the closure of the #3 CIV, the #5 CIV also went closed based on the system's logic that ties pairs of CIVs together in a master-slave relationship. Operators reduced the reactor power level while troubleshooting and repairs were performed in order to mitigate the consequences of the valves unexpectedly reopening. The main turbine control system functioned as designed following the closure of the two CIVs and operators responded to the event in accordance with plant procedures. The Resident Inspectors observed the response of the operators to the event, as well as the troubleshooting activities conducted by maintenance personnel.

###### b. Findings

No findings of significance were identified

.2 Shaft Failure of the 1B NV Pump

a. Inspection Scope

On December 30, 2007, the balance line pressure on the 1B NV pump, which is routinely monitored by non-licensed operators, was found to be above the required action value. Other pump and motor parameters indicated an abnormal operating condition, and following concurrence by Engineering, the pump was removed from service and declared inoperable. Based on past station and industry operating experience, the cause of the degraded performance was initially presumed, and subsequently confirmed, to be the result of a circumferential crack that had developed in the pump shaft under the 11th stage impeller. In order to facilitate the necessary repairs (i.e., remove and replace the damaged pump shaft), a one-time extension of the applicable Technical Specification Action Completion time was requested by the licensee on January 1, 2008. The extension was granted and allowed the 1B NV pump to be inoperable for a maximum of 240 hours. This extension expired upon completion of the repairs and restoration of the pump to operable status. The pump was declared operable on January 7, 2008. The Resident Inspectors reviewed the licensee's response to the event and observed the maintenance activities associated with the shaft replacement, as well as the post maintenance testing conducted prior to declaring the 1B NV pump operable.

b. Findings

No findings of significance were identified

- .3 (Closed) Licensee Event Report (LER) 05000413/2007-001-01, Safe Shutdown Capability Potentially Challenged by Fire Protection Deficiencies Attributed to Design Oversight. The technical issue discussed in this LER revision was addressed and closed in NRC Inspection Report 0500413/2007007, and it met the criteria of NRC Enforcement Policy, "Interim Enforcement Policy Regarding Enforcement Discretion for Certain Fire Protection Issues (10 CFR 50.48)" for enforcement discretion. This current LER revision was submitted to provide the results of the risk assessment performed by the licensee. The results were reviewed by the inspectors, and it was determined that the event is of very low safety significance. No additional issues of significance were identified. This LER is closed.

4OA6 Meetings, Including Exit

On April 16, 2008, the resident inspectors presented the inspection results to Mr. G. Hamrick and other members of licensee management, who acknowledged the findings. The inspectors confirmed that any proprietary information provided or examined during the inspection period had been returned.

ATTACHMENT: SUPPLEMENTAL INFORMATION

Enclosure

## **SUPPLEMENTAL INFORMATION**

### **KEY POINTS OF CONTACT**

#### **Licensee Personnel**

E. Beadle, Emergency Planning Manager  
S. Beagles, Chemistry Manager  
W. Byers, Security Manager  
J. Caldwell, Modifications Engineering Manager  
S. Coy, Operations Training Manager  
B. Ferguson, Mechanical, Civil Engineering Manager  
J. Foster, Radiation Protection Manager  
P. Gillespie, Operations Superintendent  
G. Hamilton, Training Manager  
T. Hamilton, Safety Assurance Manager  
G. Hamrick, Engineering Manager  
R. Hart, Regulatory Compliance Manager  
T. Jenkins, Work Control Manager  
J. McConnell, Shift Operations Manager  
J. Morris, Catawba Site Vice President  
J. Pitesa, Station Manager  
T. Ray, Maintenance Manager  
M. Sawicki, Regulatory Compliance Engineer  
C. Trezise, Reactor and Electrical Systems Manager  
A. Young, Licensing Engineer

#### **NRC personnel**

J. Moorman, III, Chief, Reactor Projects Branch 1  
J. Stang, Project Manager, NRR  
K. Weaver, Acting Chief, Reactor Projects Branch 1

### **LIST OF ITEMS OPENED, CLOSED, AND REVIEWED**

#### **Opened and Closed**

05000413,414/2008002-01	NCV	Failure to Identify an Inoperable CRACWS Chiller Prior to Removing the Remaining Chiller from Service Placed Both Units in TS 3.0.3 for Approximately 110 minutes (Section 4OA2.2(2))
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#### **Closed**

05000413/2007-001-01	LER	Safe Shutdown Capability Potentially Challenged by Fire Protection Deficiencies Attributed to Design Oversight (Section 4OA3.3)
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## LIST OF DOCUMENTS REVIEWED

### Section 1R01: Adverse Weather Protection

PIP C-08-0087; Observation conducted by NRC inspector of Chemistry Cold Weather rounds  
PIP C-08-0095; Conduct of operator rounds in Chemistry are not being conducted in accordance with the rounds sheets and with limited focus on the sheet versus the surrounding areas  
PIP C-07-02224; NRC-identified issues associated with Type-I yard drainage catch basins  
PIP C-08-0605; Annual inspection of Type-I catch basins conducted by Engineering and observations made by NRC performing an independent inspection of the catch basins and drainage system  
Model Work Order 01786748-01; Inspect Type-I committed catch basins  
Work Request 0943213; Repairs of specific Type-I catch basins following the completion of the annual Engineering inspection and NRC inspection of the drainage system  
Work Request 0945050; Clean identified Type-I committed catch basins  
Design Engineering Calculation CNC-1114.00-00-0040, Rev.21,  
OAC alarm response procedure for points C1P0118 and C2P0118; Ambient Dry Bulb Temperature and C1P1821 and C2P1821, Ambient Wet Bulb Temperature  
Model Work Order 00912068, Inspect heat trace and heated boxes  
Chemistry Guideline 3.4.31; Chemistry Freeze Protection Plan, Rev. 2  
Chemistry Environmental Freeze Protection Rounds Sheet, Rev. 3  
Chemistry Secondary Freeze Protection Rounds Sheet, Rev. 0  
Catawba Unified Control Room Logs  
IP/0/B/3560/009, Operational Check for Winter Months and Extreme Cold Weather Surveillance of Freeze Protection Heat Trace and Instrument Box Heaters (EHT/EIB) Systems, Rev. 11  
NSD 317, Freeze Protection Program, Rev. 3  
PT/0/B/4700/038, Cold Weather Protection, Rev. 26  
CN-1022-17, Powerhouse Yard Area Drainage Layout, Rev. 8  
CN-1022-01, Powerhouse Yard Grading Plan, Rev. 77  
CN-1024-01, Yard Drainage Section Details and Schedules, Rev. 33  
CN-1024-02, Yard Drainage Section Details and Schedules, Rev. 42  
CN-1024-03, Yard Drainage Security Installations, Rev. 09  
Catawba USFSAR; Section 2.4; Hydrologic Engineering, dated April 24, 2006  
Catawba UFSAR, Section 2.4.2.3.3.1, Powerhouse Yard Drainage, dated April 24, 2006  
Catawba UFSAR, Section 3.4, Water Level (Flood) design, dated April 24, 2006

### Section 1R04: Equipment Alignment

PIP C-08-0005; PORC Meeting on the Critical Activity Plan to support the repair of the 1B NV pump  
PIP C-08-0012; Component identified on the Protected Equipment List for the 1B NV pump repair was shown as protected by a walkdown identified that it was not protected  
PIP C-08-0131; INOS observations of the 1B NV Pump repair activity  
SOMP 02-02; Operations Roles in the Risk Management Process; Rev. 1, Enclosure 13.1, Protected Train Posting, to support the 1B NV pump work under R&R 07-3386

Complex Activity Plan; Work activities scheduled to be performed on the 1A DG prior to 1EOC17

### **Section 1R05: Fire Protection**

Station Fire Impairment Log

Pre-Fire Plan for Fire Strategy Area BD-1, Dry Cask Pad ISFSI Structure

Pre-Fire Plan for Fire Strategy Area 34, Auxiliary Building 543 Level, Room 253, 1B Auxiliary Shutdown Panel

Pre-Fire Plan for Fire Strategy Area 32, Auxiliary Building 543 Level, Room 252, 1A Auxiliary Shutdown Panel

Pre-Fire Plan for Fire Strategy Area 12, Auxiliary Building 577 Level, Room 484, Electrical Penetration Room

Pre-Fire Plan for Fire Strategy Area 38, Auxiliary Building 631 Level, Room 801, Unit 1 Fuel Pool Purge Unit

Pre-Fire Plan for Fire Strategy Area 1, Auxiliary Building 522 Level, Rooms 100 through 112

Pre-Fire Plan for Fire Strategy Area 22, Auxiliary Building 594 Level

Pre-Fire Plan for Fire Strategy Area 28, Diesel Generator Building, Room 2B

Pre-Fire Plan for Fire Strategy Area 44, Diesel Generator Building, 2B Corridor

SLC Section 16.9-4; Fire Hose Stations

SLC Section 16.9-5; Fire rated Assemblies

NSD 313, Control of Combustible and Flammable Material, Rev. 6

NSD 314; Hot Work Authorization, Rev. 6

Pre-Fire Plan for Fire Strategy AZ, Transformer Yard Unit 2

Fire Drill Summary for shift drills conducted on 2/29/08 and 3/7/08

Fire Drill Scenario Guide 2008-1

PIP C-08-1248; CNS Fire Brigade Drill Critique for 2/29/08 drill

PIP C-08-1409; CNS Fire Brigade Drill Critique for 3/7/08 drill

Pre-Fire Plan for Fire Strategy Area AY, Transformer Yard, Unit 1

RP/0/B/5000/029, Fire Brigade Response, Rev. 17

RP/0/A/5000/001; Classification of an Emergency, Rev. 18

### **Section 1R07: Heat Sink Performance**

PT/2/A/4400/006A; Containment Spray Heat Exchanger 2A Heat Capacity Test, Rev. 036

### **Section 1R11: Licensed Operator Requalification**

OP-CN-ASE-25, Active Simulator Exam, Rev. 20

RP/0/A/5000/001; Classification of Emergency, Rev. 18

### **Section 1R12: Maintenance Effectiveness**

PIP C-08-00043 PDO for the replacement of the 1B NV pump rotating element.

PIP C-08-00006 Emergency Tech Spec. Change Request for failure of the 1B NV pump

PT/1/A/4200/007B; Centrifugal Charging Pump 1B Test, Rev. 059

MP/0/A/7150/016A; Centrifugal Charging Pump Corrective Maintenance, Rev. 050

IWP Performance Data for 1B NV Pump on September 12, 2007

IWP Performance Data for 1B NV Pump on December 5, 2007  
 ECCS Leakage Increased Surveillance requirements and documented results  
 Critical Activity Plan for Work Activities associated with 1B NV pump shaft replacement from December 31, 2007 through January 8, 2008  
 SOMP 02-02; Operations Roles in the Risk Management Process, Attachment 13.1; Protected Train Postings during the 1B NV pump shaft replacement  
 PIP C-08-00139 08W01 WWM critique following repairs of the 1B NV Pump  
 PIP C-08-00153 Critique of Maintenance activities associated with replacement of 1B NV pump rotating element  
 PIP C-08-0001 Operations Protected Equipment lacks direction for protected equipment needed for time critical evolutions  
 PIP C-08-0012 Incorrect placement of protected train posting  
 PIP C-08-0074 Increased dose and Radwaste generated due to increased surveillances for ECCS leakage  
 PIP C-08-0513; Interior doghouse floor drains do not match the WL system flow diagram  
 PIP C-08-0557; Documentation of actions taken in response to Auxiliary Feedwater pump inoperability resulting from open floor drains found in the interior doghouses

### **Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation**

PIP C-08-0006 Emergency Tech Spec. Change Request for failure of the 1B NV pump  
 PIP C-08-0043 PDO for the replacement of the 1B NV pump rotating element.  
 PIP C-08-0513; Interior doghouse drains do not match the WL flow diagram drawings  
 PIP C-08-0657; Stand Down for work activities requiring the use of red tags per the 2/5/08 Site Direction Meeting  
 PIP C-08-0672; Trend PIP for issues related to work requiring the use of Red Tags  
 ECCS Leakage Increased Surveillance requirements and documented results  
 Critical Activity Plan for Work Activities associated with 1B NV pump shaft replacement from December 31, 2007 through January 8, 2008  
 Complex Activity Plan for Phase 1 of the installation of modification CD50091, RN pump house crossover piping  
 Complex Activity Plan; Work activities scheduled to be performed on the 1A DG prior to 1EOC17  
 SOMP 02-02; Operations Roles in the Risk Management Process, Attachment 13.1; Protected Train Postings during the 1B NV pump shaft replacement  
 NSD-604; Stop Work, Rev. 5  
 Complex Activity Plan; Work activities scheduled to be performed on the 1BDG prior to 1EOC17  
 PT/2/A/4600/001; RCCA Movement Test, Rev. 30 and 31  
 PT/0/A/4150/30, RCCA Bank Repositioning, Rev. 24  
 Tailgate Briefing Package for PT/0/A/4150/30, RCCA Bank Repositioning  
 Unit Threat Status Reports associated with the Unit 2 Shutdown Bank C movement issue  
 Complex Activity Plan; Unit 2 Generator Hydrogen Leak Repair  
 ODMI associated with the Unit 2 main generator hydrogen leak

### **Section 1R15: Operability Evaluations**

PIP C-08-00043 PDO for the replacement of the 1B NV pump rotating element.  
 PIP C-08-0006 Emergency Tech Spec. Change Request for failure of the 1B NV pump  
 Attachment

PIP C-08-586; 2B ND Pump failed the IWP due to a high flow value  
 PT/1/A/4200/007B; Centrifugal Charging Pump 1B Test, Rev. 059  
 IWP Performance Data for 1B NV Pump on September 12, 2007  
 IWP Performance Data for 1B NV Pump on December 5, 2007  
 PT/0/A/4450/004A; Auxiliary Building Filtered Exhaust System Performance Test, Rev 56  
 Station Modification Package CD200717; Relocate duct interference for 2NV-272 reach rod  
 TS 3.7.12, Auxiliary Building Filtered Ventilation Exhaust System  
 OP/1(2)/A/6200/013; Filling, Draining, and Purification of the Refueling Cavity, Rev. 72  
 PT/2/A/4200/010B; Residual Heat Removal Pump 2B Performance Test, Rev. 48, performed  
 02/01/08  
 PT/2/A/4200/010B; Residual Heat Removal Pump 2B Performance Test, Rev. 47, performed  
 10/14/07, 08/16/07, 05/23/07 and 02/25/07  
 Digital photographs of the Unit 1 pipe chase floor coatings found to have disbanded from the  
 floor following installation during 1EOC16  
 IP/1/A/3222/076A, Calibration Procedure for Delta-T/Tavg Protection Channel I, Enclosure  
 11.3.6, Overtemperature Delta Temperature Channel 1, Rev, 98

### **Section 1R19: Post-Maintenance Testing**

PT/2/A/4350/002A; Diesel Generator 2A Operability Test, Rev 089  
 OP/2/A/6350/002; Diesel Generator Operation, Rev. 120, Enclosure 4.10, Diesel Generator 2A  
 Startup and Shutdown from Diesel Generator Room  
 PT/1/A/4200/005A, Safety Injection Pump 1A Performance test, Rev. 50  
 PT/1/A/4350/002A; Diesel Generator 2A Operability Test, Rev 117  
 PT/2/A/4600/001; RCCA Movement Test, Rev. 30 and 31  
 PT/0/A/4150/30, RCCA Bank Repositioning, Rev. 24  
 Tailgate Briefing Package for PT/0/A/4150/30, RCCA Bank Repositioning  
 Unit Threat Status Reports associated with the Unit 2 Shutdown Bank C movement issue  
 PT/1/A/4350/002B; Diesel Generator 1B Operability Test, Rev 115

### **Section 1R22: Surveillance Testing**

IWP Performance Data for 1B NV Pump on September 12, 2007  
 IWP Performance Data for 1B NV Pump on December 5, 2007

### **Section 1R23: Temporary Plant Modifications**

PIP C-08-0122; Unit 1 Turbine Intermediate Stop Valve ISV-3 position indication failure forces  
 Intercept Valves IV-3 and IV-5 to close  
 Work Order 1792013; Installation of Temp Mod CD101656  
 Work Order 1791226; Installation of Temp Mod CD101651

### **1EP6: Drill Evaluation**

Catawba Nuclear Site Critique Summary Report for Drill 08-1  
 PIP C-08-1601; Feedback from Emergency Planning Drill conducted on March 13, 2008  
 Emergency Response Organization Drill 08-1 Scenario Guide  
 Simulated Emergency Notification Forms associated with the March 13, 2008 Emergency Drill

Simulated Emergency Notification Forms associated with the March 13, 2008 Emergency Drill RP/0/A/5000/001; Classification of Emergency, Rev. 18

#### **40A1 : Performance Indicator Verification**

NSD 225, NRC Performance Indicators, Rev. 3

NEI 99-02, Regulatory Assessment Performance Indicator Guideline, Rev. 5

OP/2/A/6200/032, Primary sampling using a Rheodyne Model 7010 valve, Rev. 11

CP/0/B/8200/002, Determination of Gross Specific Activity and Xe-133 Equivalent Activity in Reactor Coolant, Rev. 019

CHEMDESK results for Dose Equivalent Iodine on Unit 2 covering January, 2007 through December 2007

#### **40A2: Identification and Resolution of Problems**

PIP C-07-7073; 1EMXG was aligned to 2ELXA with the chiller leads aligned to 1ETA which makes A YC inoperable. Subsequently both chillers were inoperable from 0137 to 0337 on 11/21/07

SOMP 04-02; Procedure Use and Adherence, Rev. 001

OMP 2-22; Shift Turnover, Rev. 075

OMP 2-29; Technical Specification Action Item Log; Rev. 047

OMP 1-8; Authority and Responsibility of On-Shift Operations Personnel, Rev. 051

Catawba Technical Specification 3.7.11, Control Room Area Chilled Water System (CRACWS)

NSD 506; Operator Workaround, Rev. 04

Operator Workaround List; March 2008

PIP C-07-07660; 1B NV Pump Seal Balance Pressure D/P was noted to be greater than acceptable.

PIP C-08-00005; PORC Meeting on 12/31/07 - Emergency Tech Spec Change for ECCS and VA following potential 1B NV pump shaft failure (TS 3.5.2 and 3.7.12)

PIP C-08-00006; On January 1, 2008, Catawba submitted to the NRC a request for an Emergency Technical Specification change for the 1B NV pump and both trains of VA on unit 1.

PIP C-08-00042; Action Items from 01/03/08 Emergent PORC Meeting

PIP C-08-00043; Replacement of the rotating element for NV Pump 1B requires an evaluation of the required post maintenance tests to be performed. NSD-408 requires that if the testing cannot be performed in the current mode that an operability evaluation (PDO) be performed to evaluate the acceptability of operating in the current mode. A Prompt Determination of Operability (PDO) is needed to document the evaluation and this PIP will be used for that purpose.

PIP C-08-00058; The FME zone established for the Unit 1 NV pump work does not appear to be in strict compliance with the NSD-104 requirements or, at a minimum, could be improved to strengthen the FME controls in the work area.

PIP C-08-00103; New baseline values required for 1B NV Pump

PIP C-08-00104; NV pump 1B phase reference vibration channel was not functional when pump was started.

PIP C-08-00109; Several issues identified during the 1B NV pump post maintenance IWP, Pre & Post Job Briefs

PIP C-08-00153; Critique of Maintenance activities associated with replacement of 1B NV pump rotating element

PIP C-08-00178; This PIP is being written to evaluate the impact of the replacement of the 1B NV Pump rotating element

Preliminary Determination of Operability for PIP C-08-00043, Failure of the 1B NV Pump Rotating Element

SOMP 02-02; Protected Train Posting for the 1A train components during the period work was being performed on the 1B NV pump

MP/0/A/7150/016A; Centrifugal Charging Pump Corrective Maintenance, Rev, 050  
Critical Activity Plan to replace the 1B NV pump shaft

#### **40A3: Event Followup**

PIP C-08-0122; Unit 1 turbine intermediate stop valve ISV-3 position indication failure forced intercept valves IV-3 and IV-5 to close

PIP C-07-7017; During power increase to 40% for AVR testing, at approximately 35% power valves IV3 and IV5 went closed

#### **LIST OF ACRONYMS USED**

AP	- Abnormal Operating Procedure
CFR	- Code of Federal Regulations
CIV	- Combined Intermediate Valve
CRACWS	- Control Room Area Chilled Water System
CRAVS	- Control Room Area Ventilation System
DG	- Diesel Generator
EOC	- End of Cycle
LER	Licensee Event Report
LOOP	- Loss of Offsite Power
NCV	- Non-Cited Violation
ND	- Residual Heat Removal
NRC	- Nuclear Regulatory Commission
NSD	- Nuclear System Directive
NV	- Chemical Volume Control System
OMP	- Operations Management Procedure
PDO	- Prompt Determination of Operability
PI	- Performance Indicator
PIP	- Problem Investigation Process (report)
PRA	- Probabilistic Risk Assessment
RCCA	- Rod Control Cluster Assembly
RN	- Nuclear Service Water system
SSCs	- Structures, Systems and Components
TS	- Technical Specification
TSAIL	- Technical Specification Action Item Log
UFSAR	- Updated Final Safety Analysis Report
YC	- Controlled Area Chilled Water