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

October 15, 2004

Duke Energy Corporation
ATTN: Mr. D. M. Jamil
Site Vice President
Catawba Nuclear Station
4800 Concord Road
York, SC 29745

SUBJECT: CATAWBA NUCLEAR STATION - NRC INTEGRATED INSPECTION REPORT 05000413/2004005 AND 05000414/2004005

Dear Mr. Jamil:

On September 18, 2004, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Catawba Nuclear Station. The enclosed integrated inspection report documents the inspection findings, which were discussed on September 28, 2004, with you and members of your staff.

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

No findings of significance were identified.

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

Robert Haag, 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 05000413/2004005 and 05000414/2004005
w/Attachment: Supplemental Information

cc w/encl:
Lee Keller (CNS)
Regulatory Compliance Manager
Duke Energy Corporation
Electronic Mail Distribution

Lisa Vaughn
Legal Department (PB05E)
Duke Energy Corporation
422 South Church Street
P. O. Box 1244
Charlotte, NC 28201-1244

Anne Cottingham
Winston and Strawn
Electronic Mail Distribution

North Carolina MPA-1
Electronic Mail Distribution

Henry J. Porter, Assistant Director
Div. of Radioactive Waste Mgmt.
S. C. Department of Health
and Environmental Control
Electronic Mail Distribution

R. Mike Gandy
Division of Radioactive Waste Mgmt.
S. C. Department of Health and
Environmental Control
Electronic Mail Distribution

Elizabeth McMahon
Assistant Attorney General
S. C. Attorney General's Office
Electronic Mail Distribution

Vanessa Quinn
Federal Emergency Management Agency
Electronic Mail Distribution

North Carolina Electric
Membership Corporation
Electronic Mail Distribution

Peggy Force
Assistant Attorney General
N. C. Department of Justice
Electronic Mail Distribution

County Manager of York County, SC
Electronic Mail Distribution

Piedmont Municipal Power Agency
Electronic Mail Distribution

R. L. Gill, Jr., Manager
Regulatory Issues & Affairs
Duke Energy Corporation
526 S. Church Street
Charlotte, NC 28201-0006

Distribution w/encl:
S. Peters, NRR
L. Slack, RII
T. Sullivan, NRR
RIDSRIDSNRRDIPMLIPB
PUBLIC

OFFICE	RII:DRP	RII:DRP	RII:DRP	RII:DRS	RII:DRS	RII:DRS	RII:DRS
SIGNATURE	GXG	ATS1	GXG for	GTH1	GWL1	REC	MXM3
NAME	EGuthrie	ASabisch	MShannon	GHopper	GLaska	RCortes	MMaymi
DATE	10/15/2004	10/15/2004	10/15/2004	10/14/2004	10/14/2004	10/14/2004	10/14/2004
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO
PUBLIC	YES NO						

OFFICE	RII:DRS						
SIGNATURE	REC1 for						
NAME	SVias						
DATE	10/15/2004						
E-MAIL COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO
PUBLIC DOCUMENT	YES NO						

OFFICIAL RECORD COPY DOCUMENT NAME: E:\Filenet\ML042890416.wpd

U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos:	50-413, 50-414
License Nos:	NPF-35, NPF-52
Report No:	05000413/2004005, 05000414/2004005
Licensee:	Duke Energy Corporation
Facility:	Catawba Nuclear Station, Units 1 and 2
Location:	4800 Concord Road York, SC 29745
Dates:	June 20, 2004 - September 18, 2004
Inspectors:	E. Guthrie, Senior Resident Inspector A. Sabisch, Resident Inspector M. Shannon, Senior Resident Inspector - Oconee G. Hopper, Senior Operations Engineer (Section 1R11.2) G. Laska, Operations Engineer (Section 1R11.2) R. Cortes, Reactor Inspector (Sections 1R02 and 1R17) M. Maymi, Reactor Inspector (Sections 1R02 and 1R17) S. Vias, Senior Reactor Inspector (Sections 1R02 and 1R17)
Approved by:	R. Haag, Chief Reactor Projects Branch 1 Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000413/2004005, IR 05000414/2004005; 6/20/2004 - 9/18/2004; Catawba Nuclear Station, Units 1 and 2; Quarterly Integrated Inspection Report.

The report covered a three month period of inspection by two resident inspectors, one operations engineer, one senior operations engineer, one visiting senior resident inspector, two reactor inspectors, and one senior reactor inspector. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, “Reactor Oversight Process,” Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealing Findings

None

B. Licensee-identified Violations

None

REPORT DETAILS

Summary of Plant Status:

Unit 1 began the inspection period operating at 100 percent Rated Thermal Power (RTP). On August 26, 2004, power was reduced to 40 percent to repair a leak in the 'B' low pressure service water supply header and the 1A1 low pressure feedwater heater relief valve that lifted spuriously and failed to reseat. The Unit was returned to 100 percent RTP on August 28, 2004, and remained there for the remainder of the inspection period.

Unit 2 began the inspection period at 100 percent RTP. On September 7, 2004, power was gradually reduced in accordance with Reactor Engineering instructions as part of the reactor coolant average temperature coastdown associated with the Unit 2 end-of-cycle (EOC) 13 refueling outage. The Unit was removed from service on September 11, 2004, for refueling and maintenance activities.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

Adverse Weather Condition

a. Inspection Scope

The inspectors performed two separate reviews of the effectiveness of the licensee's severe weather protection program pertaining to the actual and projected adverse weather conditions associated with the following two adverse weather conditions:

- Hurricane Charley during the period of August 13 - 14, 2004
- Hurricane Frances during the period of September 3 - 6, 2004

These reviews included field walkdowns to identify items that could become potential missiles and the status of drainage measures in outside locations, including the areas surrounding the main transformers, the reactor, auxiliary and turbine buildings, cooling towers, and main switchyard. The inspectors discussed with licensed operators, the specific measures to be taken during the periods when high winds and flooding were experienced and conducted a walkdown of control room and in-plant equipment related to protection from these conditions. The inspectors met with Emergency Planning personnel to discuss activities taken to ensure the site was prepared for the expected wind and rain conditions and reviewed the completed attachments to the station Response Procedure to Severe Weather. Documents reviewed/generated during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R02 Evaluations of Changes, Tests or Experiments

a. Inspection Scope

The inspectors reviewed selected samples of evaluations to confirm that the licensee had appropriately considered the conditions under which changes to the facility or procedures may be made, and tests conducted, without prior NRC approval. The inspectors reviewed evaluations for various design and procedure changes. The inspectors reviewed additional information, such as calculations, supporting analyses and drawings to determine if the licensee had appropriately concluded that the changes could be accomplished without obtaining a license amendment. The eight evaluations reviewed are listed in the Attachment to this report.

The inspectors also reviewed samples of design/engineering packages and procedure changes for which the licensee had determined that evaluations were not required, to verify that the licensee's conclusions to "screen out" these changes were correct and consistent with 10 CFR 50.59. The fourteen "screened out" changes reviewed are listed in the Attachment to this report.

The inspectors reviewed the licensee's corrective action program and self-assessments of the 50.59 process to confirm that the licensee was identifying 10 CFR 50.59 issues, entering issues into the corrective action program, and resolving concerns.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors verified the critical portions of equipment alignments for selected trains that remained operable while the redundant trains were inoperable. The inspectors reviewed plant documents to determine the correct system and power alignments, and the required positions of select valves and breakers. The inspectors verified that the licensee had properly identified and resolved equipment alignment problems that could cause initiating events or impact mitigating system availability. The inspectors verified the following five partial system alignments and reviewed the associated listed documents:

- Unit 1 / 2 'B' train of nuclear service water (RN) with the Unit 1 / 2 'A' train of RN out of service for planned maintenance (Technical Specification Action Item Log entry C0-0401648 and work orders (WOs) 98633007, 98614943, 986383006, 98650865 and 98668372)

- Unit 1 'A' control area chilled water (YC) chiller with the Unit 2 'B' YC chiller out of service for cooler cleaning and inspection (WO 98688168 and MP/0/A/7450/021, Cleaning condenser or cooling tubes for YC chiller)

- 1A containment spray (NS) with the 1B train of NS out of service for maintenance and testing (PT/1/A/4400/006B, NS heat exchanger (HX) 1B heat capacity test and PT/1/A/4200/004C, Pump Inservice Test (IWP) NS pump 1B)

- 2A diesel generator (DG) with the 2B DG out of service (WO 98677560, 2B diesel generator slow to stop)

- 2B RN with the 2A RN train out of service for unplanned maintenance (WO 98659925, Replace Relays In 2EATC10 and WO 98678682, Perform Complete Limitorque Preventive Maintenance and Motor Operated Valve Test)

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors conducted one detailed walkdown/review of the alignment and condition of the Unit 2 residual heat removal (ND) system. The inspectors utilized licensee procedures, as well as licensing and design documents to verify that the system (i.e., pump, valve, and electrical) alignment was correct. During the walkdowns, the inspectors also verified that: valves and pumps did not exhibit leakage that would impact their function; major portions of the system and components were correctly labeled; hangers and supports were correctly installed and functional; and essential support systems were operational. In addition, pending design and equipment issues were reviewed to determine if the identified deficiencies significantly impacted the system's functions. Items included in this review were the operator workaround list, the temporary modification list, system Health Reports, and outstanding maintenance work requests/WOs. A review of open Problem Identification Process reports (PIPs) was also performed to verify that the licensee had appropriately characterized and prioritized ND related equipment problems for resolution in the corrective action program. Documents reviewed/generated during this inspection are listed in the Attachment to this report.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

Fire Protection Walkdowns

a. Inspection Scope

The inspectors walked down accessible portions of the plant 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, based on sensitivity studies for fire related core damage accident sequences, and summary statements related to the licensee's 1992 Initial Plant Examination for External Events submittal to the NRC. Documents reviewed/generated during this inspection are listed in the Attachment to this report. The inspectors toured the following eight areas important to reactor safety:

- Unit 1, turbine driven auxiliary feedwater pump pit
- Unit 2, switchgear room, auxiliary building, 594 foot elevation
- Unit 2, interior doghouse
- Unit 2, exterior doghouse
- Unit 2, A ND pump room
- Unit 2, B ND pump room
- Unit 2, mechanical penetration room, auxiliary building, 543 foot elevation
- standby shutdown facility (SSF)

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance

a. Inspection Scope

The inspectors performed an inspection of the heat sink performance for the 1A diesel generator jacket water cooler (KD) heat exchanger. The inspectors observed PT/1/A/4400/006E, Diesel Generator Cooling KD HX 1A Heat Capacity Test, and evaluated test data for acceptable performance. The inspectors also conducted discussions with engineering personnel concerning system configuration and heat load requirements, the methodology used in calculating heat exchanger performance, and the method for tracking the status of tube plugging used in the computer calculation program.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification

.1 Observed Simulator Session

a. Inspection Scope

The inspectors observed a simulator session conducted on July 7, 2004, to assess the performance of licensed operators. The session utilized Task Requirement Guide OP-CN-PTRQ-S-04, which included three scenarios involving a loss of residual heat removal capabilities with the unit shutdown under various configurations and decay heat loads. The inspection focused on high-risk operator actions performed during implementation of the abnormal operating procedures, emergency plan implementation

and classification, and the incorporation of lessons learned from previous plant events and simulator sessions. Through observations of the critique conducted by training instructors following the exam session, the inspectors assessed whether appropriate feedback was provided to the licensed operators regarding identified weaknesses.

b. Findings

No findings of significance were identified.

.2 Program Review

a. Inspection Scope

The inspectors reviewed the facility operating history and associated documents in preparation for this inspection. During the week of August 30 - September 3, 2004, the inspectors reviewed documentation, interviewed licensee personnel, and observed the administration of operating tests associated with the licensee's operator requalification program. Each of the activities performed by the inspectors was done to assess the effectiveness of the licensee in implementing requalification requirements identified in 10 CFR Part 55, Operators' Licenses. The evaluations were also performed to determine if the licensee effectively implemented operator requalification guidelines established in NUREG 1021, Operator Licensing Examination Standards for Power Reactors, and Inspection Procedure 71111.11, Licensed Operator Requalification Program. The inspectors also evaluated the licensee's simulation facility for adequacy for use in operator licensing examinations using ANSI/ANS-3.5-1998. The inspectors observed four crews during the performance of the operating tests. Documentation reviewed included written examinations, Job Performance Measures (JPMs), simulator scenarios, licensee procedures, on-shift records, licensed operator qualification records, watchstanding and medical records, simulator modification request records and performance test records, the feedback process, and remediation plans. The records were inspected using the criteria listed in Procedure 71111.11. Documents reviewed during the inspection are listed in the Attachment to this report.

Following the completion of the annual operating tests, which ended on September 3, 2004, the inspectors reviewed the overall pass/fail results of the biennial written examination, the individual JPM operating tests, and the simulator operating tests administered by the licensee during the operator licensing requalification cycle. These results were compared to the thresholds established in Manual Chapter 609, Appendix I, Operator Requalification Human Performance Significance Determination Process.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors reviewed the licensee's effectiveness in performing routine maintenance activities. This review included an assessment of the licensee's practices pertaining to

the identification, scope, and handling of degraded equipment conditions, as well as common cause failure evaluations and the resolution of historical equipment problems. For those systems, structures, and components scoped in the maintenance rule per 10 CFR 50.65, the inspectors verified that reliability and unavailability were properly monitored, and that 10 CFR 50.65 (a)(1) and (a)(2) classifications were justified in light of the reviewed degraded equipment condition. The inspectors conducted this inspection for the degraded equipment conditions associated with the two items listed below. Documents reviewed are listed in the Attachment to this report.

- Monitoring of boron deposition in the Unit 2 lower containment ventilation unit enclosures. It was subsequently determined that boron deposits in the ventilation unit were not accumulating but remained at the same levels.
- Troubleshooting activities associated with 1B diesel generator lube oil heater control circuit

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed the licensee's assessments concerning the risk impact of removing from service those components associated with the five emergent and planned work items listed below. This review primarily focused on activities determined to be risk significant within the maintenance rule. The inspectors also assessed the adequacy of the licensee's identification and resolution of problems associated with maintenance risk assessments and emergent work activities. The inspectors reviewed Nuclear System Directive 415, Operational Risk Management (Modes 1-3), for appropriate guidance to comply with 10 CFR 50.65 (a)(4).

- Unit 1 / 2 'A' RN train removed from service for planned maintenance activities
- Assessment of work week 31 planned maintenance and surveillance activities at Catawba with Orange grid status due to Oconee station switchyard issues
- Assessment of work week 34 planned maintenance and surveillance activities at Catawba with Orange grid status due to unexpected trip of Belews Creek Unit 1
- Repair activities associated with valve 1RN-004B (RN suction from the nuclear service water pond pit) - (WO 98685878)
- 2B DG work - (WO 98677560, Inspect and Repair 2B Diesel Generator Slow to Stop)

b. Findings

No findings of significance were identified.

1R14 Personnel Performance During Nonroutine Plant Evolutions

a. Inspection Scope

On September 10 and 11, 2004, the inspectors observed operator performance during the shutdown of Unit 2 for the 2EOC-13 Refueling Outage. The inspectors observed licensed operators use of procedures, control room pre-evolution briefings, and plant equipment manipulations during the power reduction, manual reactor trip, and portions of the subsequent plant cooldown.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed operability evaluations to verify that the operability of systems important to safety were properly established, that the affected components or systems remained capable of performing their intended safety function, and that no unrecognized increase in plant or public risk occurred. Operability evaluations were reviewed for the twelve issues listed below. Documents reviewed are listed in the attachment to this report.

- Valve body on Unit 2 'A' component cooling water (KC) HX outlet throttle valve 2RN291 found to have three locations where wall thickness was below the American Society of Mechanical Engineers code minimum required wall thickness (PIP C-04-02965)
- 10 CFR Part 21 Notification pertaining to Rotork valve actuator switch mechanisms (PIP C-04-02668)
- Required boration flow from the standby makeup pump to account for xenon decay following a reactor trip during a postulated event requiring the use of the SSF (PIP C-04-03179)
- Stem leakage on valve 2NS-018A, NS pump A suction from emergency core cooling system (ECCS) containment sump valve (PIP C-04-4234)
- Unit 1 and 2 RN response to a low low 'B' train RN pit level signal generated during installation of temporary modification CNTM-0158 (PIP C-04-04060)
- Inactive through-wall leak on Unit 2 boric acid tank number 2 (PIP C-04-4262)
- Unit 1 main turbine valve movement test obtained unexpected response with temporary station modification CNTM-0157 in place (PIP C-04-03849)
- Units 1 and 2 accident analysis when main steam isolation valve poppet valve remains open after closure of MSIV (PIP C-04-03801)
- Unit 1 RN through-wall leak in circumferential weld 0RN57-8 (PIP C-04-03420)
- 2B DG did not stop as expected during operability test (PIP C-04-03409)
- Valve 2ND-61 would not open when aligning the system for auxiliary safeguards testing (PIP C-04-3396)
- Fluctuations on Unit 2 refueling water storage tank channel 3 level instrument (PIP C-04-03380)

b. Findings

No findings of significance were identified.

1R16 Operator Workarounds

a. Inspection Scope

The inspectors performed an in-depth review of the following operator workaround. This review assessed: (1) the impact on the reliability, availability and potential for mis-operation of the identified system(s); (2) potential for increased initiating event frequency; and (3) impact on the ability of the operator to respond in a correct and timely manner to a plant transient and accident. Documents reviewed are listed in the Attachment to this report.

- Manual reactor coolant system background leakage calculations required due to internal leakage of 2NV172A, “3-way divert valve to the Volume Control Tank/Recycle Holdup Tank”

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors evaluated design change packages for 11 modifications, in two cornerstone areas, to verify that the modifications did not affect system availability, reliability, or functional capability. The inspectors reviewed inspection procedure attributes, such as: energy requirements could be supplied by supporting systems; materials and replacement components were compatible with physical interfaces; replacement components were seismically qualified for application; Code and safety classification of replacement system, structures, and components were consistent with design bases; modification design assumptions were appropriate; post-modification testing established operability; failure modes introduced by the modification were bounded by existing analyses; and appropriate procedures or procedure changes had been initiated. For selected modification packages, the inspectors verified that the as-built configuration accurately reflected the design documentation.

Documents reviewed included procedures, engineering calculations, modifications, work orders, site drawings, corrective action documents, applicable sections of the Updated Final Safety Analysis Report (UFSAR), supporting analyses, Technical Specifications (TSs), and design basis documentation. Applicable documents are listed in the report attachment. The inspectors also reviewed the results of the licensee’s recent self-assessments of the design change process.

The following plant modifications and associated attributes were reviewed:

- CNTM 0093 - Install temporary pump in Aux. Bldg. at 577' elev. that will be connected to take suction from the RN nonessential header and connect to nearby fire protection piping at valve 1RFA056 (Mitigating Systems):
  - Electrical Energy Needs
  - Seismic Consideration
  - Appendix R Considerations
  - Flowpaths
  - Process Medium - fluid flowrates & pressures

- CNCE 21410 - Boric acid tank (BAT) transfer pumps mini-flow line installation & discharge line reroute (Mitigating Systems):
  - Seismic Consideration
  - Functionality Properties
  - Fluid Flowrates
  - Licensing Basis & Testing Review
  - Updating Review

- CNCE 61688 - Addition of drain connection to the 2A safety injection (NI) pump oil system (Mitigating Systems):
  - Testing Review
  - Updating Review
  - Functional Properties
  - Licensing Basis
  - Seismic Consideration
  - PIP Review

- CNCE 72911 - Revise supports 1-R-SC-2047, 1-R-SP-2053, 1-R-SP-2054, and 1-R-SP-2055 to add bolted splice plates (Barrier Integrity):
  - Seismic Consideration
  - Structural Integrity Consideration

- CNCE 70974 - Install current limiting resistor in 1LCCP1 (Mitigating Systems):
  - Electrical Energy Needs
  - Functional Properties
  - Currents
  - Licensing basis
  - Failure modes

- CNCE 72848 - Add interposing relay to energize main contractor (M coil) for 1D SSF pressurizer heater control circuit (Mitigating Systems):
  - Electrical Energy Needs
  - Functional Properties
  - Currents
  - Licensing basis
  - Testing documents

- CNCE 72137 - Replace SMB-000-2, 3400 rpm motor in valve 2RN40B with available SMB-000-2, 1800 rpm motor (Mitigating Systems):

- Electrical Energy Needs
- Functional Properties
- Voltage
- Licensing basis
- Response time

C CNCE 71779 - Remove MOV's ½ VY015B, 017A and 018B (containment isolation valves) from the GL89-10 program (Barrier Integrity):
- Engineering justification for removal
- Licensee Commitments

C CNCE 71765 - Redesign support 1-C-WC-7070 so it will not wear the pipe surface due to system vibration and movement. Redesign supports 1-R-CS-2024 and -2025 to eliminate contact with WP pipe (Barrier Integrity):
- Seismic Consideration
- Structural Integrity Consideration

C CNCE 62047 - Revise valve arrangement to resolve issue of hydrogen bubbles interfering with flow management (Barrier Integrity):
- Material Functional Properties
- Timing Sequence
- Control Signals

C CN 21417 - Rewire relay logic in the AFWP Turbine Control Panel to fail (de-energize) to the Remote mode of control (Mitigating Systems):
- Electrical Energy Needs
- Control Signals Initiation and Control
- Operations

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors witnessed and/or reviewed post-maintenance testing procedures and/or test activities, as appropriate, for selected risk significant systems to verify whether: (1) testing was adequate for the maintenance performed; (2) acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing basis documents; (3) test instrumentation had current calibrations, range, and accuracy consistent with the application; (4) tests were performed as written with applicable prerequisites satisfied; and (5) equipment was returned to the status required to perform its safety function. The five tests reviewed are listed below. Documents reviewed are listed in the Attachment to this report.

- IP/1/A/3222/076D, Calibration Procedure for Delta T/Tavg Protection Circuitry (failure of the Unit 1 reactor coolant system (NC) loop ‘D’ delta-temperature transmitter)

- PT/1/A/4200/007C; Unit 1 Standby Makeup Pump Performance Test (performed following preventive maintenance and inspection activities)
- PT/2/A/4350/002B, 2B Diesel Generator Operability Test (repair of shutdown cylinder shuttle valve)
- IP/1/A/3222/078C, 1C Steam Generator Steam Line Pressure Protection Channel 1 Loop Calibration (replacement of 7300 series protection cabinet card C1-621)
- PT/0/A/4200/13, 1RN-004B Valve Performance Test (repair of valve due to binding)

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities

a. Inspection Scope

The inspectors evaluated Unit 2 outage activities to ensure that the licensee: considered risk in developing outage schedules; adhered to administrative risk reduction methodologies developed to control plant configuration; developed mitigation strategies for losses of key safety functions; and adhered to operating license and TS requirements that ensure defense-in-depth. The following specific areas were reviewed:

- Review of Outage Plan - Prior to the outage, the inspectors reviewed the licensee's outage risk control plan, attended risk briefings, and verified that the licensee appropriately considered risk, industry experience, and previous site specific problems. The inspectors reviewed the licensee's contingency actions for losses of key safety functions, and verified that the licensee maintained key safety function status and controls throughout the portion of the outage in this inspection period. The inspectors reviewed the Unit 2 outage risk assessment CN-04-049, 2EOC-13-IRT Pre-Outage Review Shutdown Risk Assessment.

- Outage Configuration Management - The inspectors assessed the licensee's management of configuration control and the risk associated with outage activities by reviewing the licensee's implementation of Site Directive 3.1.30, Unit Shutdown Configuration Control (Modes 4, 5, 6 or No Mode), and NSD 403, Shutdown Risk Management (Modes 4, 5, 6 or No Mode) against the requirements of 10CFR50.65(a)(4). This assessment included verification that the licensee maintained defense-in-depth commensurate with the outage risk control plan for key safety functions and applicable TS when risk significant equipment was removed from service. The inspectors also assessed whether configuration changes due to emergent work and unexpected conditions were controlled in accordance with the outage risk control plan, and if control room operators were cognizant of plant configuration.

- Monitoring of Shutdown Activities - The inspectors reviewed NSD 304, Reactivity Management, and the implementation of OP/2/A/6100/003, Controlling Procedure for Unit Operations, and OP/2/A/6100/002, Controlling Procedure For Unit Shutdown, through control room observations during unit shutdown.

PT/2/A/4600/017, Surveillance Requirements For Unit 2 Shutdown, was reviewed to ensure cool down rates while cooling down the reactor coolant system were in accordance with TS 3.4.3, Reactor Coolant System Pressure and Temperature Limits. Plant Engineering Procedure 2.5, Operational Guidance for the Unit 2 EOC Shutdown was reviewed and its implementation observed during the power reduction and reactor shutdown. The inspectors also reviewed the following documents and their implementation:

- OP/2/B/6300/001, Turbine-Generator; Enclosure 4.4, Turbine Generator Shutdown
- IP/2/A/3240/011, Nuclear Instrumentation System Power Range Calibration at Power

- Electrical Power - The inspectors reviewed the status and configurations of electrical systems for compliance with TS requirements and the licensee's outage risk control plan. The inspectors verified that switchyard activities were controlled commensurate with safety and were consistent with the licensee's outage risk control plan. The inspectors reviewed Site Directive 3.1.30, Unit Shutdown, and CN-04-049, 2EOC-13-IRT Pre-Outage Review Shutdown Risk Assessment.

- Reactivity Control - The inspectors reviewed reactivity control to verify that proper control was maintained in accordance with the TS and Site Directive 3.1.30, Unit Shutdown Configuration Control (Modes 4,5,6 or No Mode), and NSD 403, Shutdown Risk Management (Modes 4, 5, 6 or No Mode). Potential reactivity changes were identified in the outage risk plan, CN-04-049, 2EOC-13-IRT Pre-Outage Review Shutdown Risk Assessment, and were reviewed to verify proper controls.

- Containment Closure - The inspectors verified that the licensee controlled containment penetrations in accordance with the refueling operations TS, and that containment closure could be achieved when needed. The inspectors reviewed the following documents and their implementation:

  - PT/2/A/4200/002C, Containment Closure Verification (Part I)
  - PT/2/A/4200/002I, Containment Closure Verification (Part II)
  - PT/2/A/4200/002J, Containment Closure Verification Penetration Status Change
  - OP/0/A/6100/014, Penetration Control for Modes 5 and 6

- Refueling Activities - The inspectors reviewed fuel handling operations to verify they were performed in accordance with fuel handling procedures. Specifically, the inspectors observed new fuel receipt inspection, verified the positions of randomly selected new fuel assemblies, and verified that these assemblies were tracked and placed in the correct position and orientation during movement from the new fuel vault area into the spent fuel pool. The inspectors also observed the coordination and movement of several fuel assemblies from the reactor vessel to the spent fuel pool during core offload. The inspectors reviewed the following documents and their implementation:

- PT/0/A/4150/037, Fuel / Component Movement Accounting
- OP/2/A/6550/006, Transferring Fuel with the Spent Fuel Manipulator Crane
- PT/0/A/4150/017, Total Core Offloading
- OP/2/A/6550/007, Reactor Building Manipulator Crane Operation
- MP/0/B/7150/012, Refueling Canal Cleanliness

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed and/or reviewed the surveillance tests listed below to verify that TS surveillance requirements and/or Selected Licensee Commitment requirements were properly complied with, and that test acceptance criteria were properly specified. The inspectors verified that proper test conditions were established as specified in the procedures, that no equipment preconditioning activities occurred, and that acceptance criteria had been met. Additionally, the inspectors also verified that equipment was properly returned to service and that proper testing was specified and conducted to ensure that the equipment could perform its intended safety function following maintenance or as part of surveillance testing. Additional documents reviewed during this inspection are listed in the Attachment to this report. The following four activities were reviewed:

In-Service Test:

- PT/1/A/4200/021A, 1KC-C37A, Train A Miniflow Valve Inservice Test

Surveillance Tests:

- PT/1/A/4400/003A, Unit 1 A1 KC pump performance test
- IP/1/A/3222/000H, Unit 1 Fueling Water Storage Tank Channel 3 Operability Test
- IP/1/A/3222/078C, 1C Steam Generator Steam Line Pressure, Protection Channel 1, Loop 1SMPT5140 (PT-534) Calibration

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed four selected temporary station modifications to determine whether: the modification was properly installed; the modification did not affect system operability, drawings and procedures were appropriately updated; and post-modification testing was satisfactorily performed. Documents reviewed are listed in the Attachment to this report. The following four temporary station modifications were reviewed:

- Unit 1 stop valve number 2 fast acting solenoid
- Removal of test switch from Solid State Protection System circuitry
- Nuclear Service Water Pond pit level instrumentation
- 1RN-004B Removal and Repair

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

.1 Mitigating Systems Cornerstone

a. Inspection Scope

The inspectors sampled licensee submittals for the performance indicators (PIs) listed below for the period from June 2003 through May 2004. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in Nuclear Energy Institute (NEI) 99-02, “Regulatory Assessment Performance Indicator Guideline,” Rev. 2, were used to verify the basis in reporting for each data element.

- Auxiliary Feedwater System Safety System Unavailability, Unit 1
- Auxiliary Feedwater System Safety System Unavailability, Unit 2

The inspectors reviewed a selection of Licensee Event Reports, portions of Unit 1 and Unit 2 operator log entries, PIP descriptions, monthly operating reports, and PI data sheets to verify that the licensee had adequately identified the number of unavailability hours and safety system functional failures. These numbers were compared to the numbers reported for the PIs.

b. Findings

No findings of significance were identified.

.2 Barrier Integrity Cornerstone

a. Inspection Scope

The inspectors sampled licensee submittals for the PI listed below for the period from June 2003 through May 2004. To verify the accuracy of the PI data reported during that period, PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," Rev. 2, were used to verify the basis in reporting for each data element.

- Reactor Coolant System Identified Leakage, Unit 1
- Reactor Coolant System Identified Leakage, Unit 2

The inspectors reviewed a selection of Unit 1 and Unit 2 operator log entries compiled from the reactor coolant leakage calculation performed on a daily basis. The inspectors verified that the reported reactor coolant leakage performance indicator data was conservative and accurate.

b. Findings

No findings of significance were identified.

4OA2 Problem Identification and Resolution

.1 Daily Screening of Items Entered Into the Corrective Action Program

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 a daily screening of items entered into the licensee's corrective action program. This review was accomplished by reviewing copies of PIPs, attending some daily screening meetings, and accessing the licensee's computerized database.

.2 Annual Sample Review

a. Inspection Scope

The inspectors selected two PIP documents for detailed review. PIP C-03-6458 identified an adverse trend associated with foreign material exclusion. The second PIP, C-03-6007, involved a seal failure on the 1A ND pump. Both documents involved root cause investigations that were reviewed to ensure that the full extent of the issues were identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. The inspectors evaluated the PIP documents against the requirements of the licensee's corrective action program, Nuclear System Directive 208, Problem Investigation Process, and 10 CFR 50 Appendix B.

b. Findings

No findings of significance were identified.

4OA5 Other Activities

(Closed) Temporary Instruction (TI) 2515/152, Inspection of Reactor Pressure Vessel Lower Head Penetration Nozzles

The inspectors verified that qualified and knowledgeable licensee individuals performed the inspection of the Unit 2 lower vessel head penetration nozzles. These individuals were qualified VT-2 Level II examiners. The inspectors verified that the inspection was performed in accordance with the licensee's approved procedure. This procedure was written to be able to identify, disposition, and resolve deficiencies and any pressure boundary leakage. The inspection of the vessel penetrations was performed by 360 degree visual inspection with the appropriate lighting and mirrors. The inspection did not identify any deficiencies or pressure boundary leakage. There were slight boric acid deposits at the interface of the vessel and nozzle penetrations at six (6) penetrations. In addition, there was some surface streaming boric acid residue on the reactor vessel outer surface. Samples were taken from all six penetrations with surrounding boric acid deposits, as well as some of the surface residue, and analyzed by the licensee to confirm the origination of the boric acid. The licensee analysis followed the Electric Power Research Institute boric acid aging recommendations and compared the ratio of cobalt 58 and cobalt 60. The analysis indicated that the boric acid deposits and residue were the result of previous reactor cavity seal leakage. The inspectors' independent review of the lower vessel head penetrations and licensee documentation of surface samples found no evidence of material deficiencies. The inspectors verified through a review of the 2EOC-13 refueling outage schedule that washing of the bottom head area and documentation of the as-left condition will be completed prior to the Unit 2 restart. Bare metal examinations have been performed for both Unit 1 and Unit 2 lower vessels and penetration nozzles and the inspections associated with this TI have been completed. Documents reviewed during this inspection are listed in the Attachment to this report.

4OA6 Meetings

Exit Meeting Summary

On September 28, 2004, the resident inspectors presented the inspection results to Mr. D. Jamil, Site Vice President, and other members of licensee management, who acknowledged the findings. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

K. Adams, Human Performance Manager
E. Beadle, Emergency Planning Manager
W. Byers, Security Manager
T. Daniels, Emergency Planning/Fire Protection
B. Dolan, Engineering Manager
J. Foster, Radiation Protection Manager
R. Glover, Station Manager
W. Green, Reactor and Electrical Systems Manager
G. Hamilton, Operations Training Manager
G. Hamrick, Mechanical, Civil Engineering Manager
P. Ivey, Human Resources Manager
D. Jamil, Catawba Site Vice President
L. Keller, Regulatory Compliance Manager
R. Kimray, LOR Training Supervisor
A. Lindsay, Training Manager
P. McIntyre, Acting Safety Assurance Manager
M. Patrick, Work Control Superintendent
J. Pitesa, Operations Superintendent
F. Smith, Chemistry Manager
G. Strickland, Regulatory Compliance Specialist
J. Thrasher, Modifications Manager
C. Trezise, Maintenance Superintendent

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

None

Previous Items Closed

2515/152	TI	Reactor Pressure Vessel Lower Head Penetration Nozzles - Units 1 and 2 (Section 40A5)

Items Discussed

None

LIST OF DOCUMENTS REVIEWED

(Section 1R01: Adverse Weather Protection)

RP/0/B/5000/030, Severe Weather Preparations (Procedure and completed attachments)
PIP C-04-3918; During performance of RP/0/B/5000/030, all four turbine building ground water drainage sump pumps (two per unit) were found with overload circuits tripped.
Operator Aid Computer points:
C1A0017; Lower wind speed (mph)
C1A1040; Lower wind direction (degrees)
C1A1034; Upper wind speed (mph)
C1A0022; Upper wind direction (degrees)
C2A1380; Lower wind speed (mph)
C2A1386; Lower wind direction (degrees)
C2A1368; Upper wind speed (mph)
C2A1374; Upper wind direction (degrees)
Duke Energy Weather Server updates and reports (August 12 - 14, 2004)
Duke Energy Weather Server updates and reports (September 3 - 6, 2004)

PIPs generated as a result of this inspection

PIP C-04-4028; Review of procedure and actions taken during the implementation of RP/0/B/5000/030, Severe Weather Preparations
PIP C-04-4245; Large amount of standing water noted near the north end of the Unit 2 turbine building indicating the storm drain basin was not functioning properly
PIP C-04-4326; Temporary power cables laying in yard with bare conductors exposed and no markings to say they are de-energized
PIP C-04-4327; RP/30, Severe Weather Preparations, needs criteria to define potential hazards in severe weather and what actions are required

(Section 1R02: Evaluations of Changes, Tests or Experiments)

10CFR50.59 Evaluations
SLC 16.9-7 & 16.9-9, Boration Systems Flow Paths Shutdown
Nuclear Station Modification CN-I 1415/00, Addition of Vital Swing Inverters.
Nuclear Station Modification CN 11392/00, Abandon Positive Displacement Pump No. 1
Nuclear Station Modification CN-11413/00, De-energize the hydraulic solenoids on the Main Feedwater Isolation Valves
Procedure OP/0/A/6400/006F Revision 36C "Nuclear Service Water System Flush Procedure, Enclosure 4.22
Minor Modification CE-61594 (Revision I), Add Switches in Auxiliary Safeguards Cabinets to Bypass P-12 Interlock in Mode 4 for Extended Cooldown on Condenser Steam Dump Valves
Nuclear Station Modification CN-21417/0, Rewire relay logic in CA System AFWP Turbine Control Panel to fail to the Remote mode of control
SLC 16.7-13, Change to UFSAR Section 10.3.2 and 10.4.9.2 to address AFW Pump Turbine Steam Supply Piping Heat Trace and Temperature Monitoring Instrumentation

<u>'Screened Out' Safety Evaluations</u>

CNCE 71765, Redesign support 1-C-WC-7070 so it will not wear the pipe surface due to system vibration and movement. Redesign supports 1-R-CS-2024 and -2025 to eliminate contact with WP pipe

CNCE 72911, Revise supports 1-R-SC-2047, 1-R-SP-2053, 1-R-SP-2054, and 1-R-SP-2055 to add bolted splice plates

CNTM 00093, Install temporary pump in Aux. Bldg. at 577' elev. will be connected to take suction from the RN nonessential header and connect to nearby fire protection piping at valve 1RFA056

CNCE 21410, Boric acid tank (BAT) transfer pumps mini-flow line installation & discharge line reroute

CNCE 61688, Addition of drain connection to the 2A Safety Injection (NI) pump oil system

CNCE 70974, Install current limiting resistor in 1LCCP1

CNCE 72848, Add interposing relay to energize main contactor (M coil) for 1D SSF pressurizer heater control circuit

CNCE 72137, Replace SMB-000-2, 3400 rpm motor in 2RN40B with available SMB-000-2, 1800 rpm motor

CNCE 71779, Remove MOV's 1/2 VY015B, 017A and 018B (containment isolation valves) from the GL89-10 program

CNCE 62047, Revise valve arrangement to resolve issue of hydrogen bubbles interfering with flow management

CNCE 61727, Replace Selected RL Isolation Valves

CNCE 72855, Revise valve outline drawing for item 02D-227 to allow tack welding the disc nut pin and hinge pin following installation

CNCE 62108, Provide RN Pumps Driver Stand Drain Lines

CNCE 61710, Modify RN strainer DP Instrumentation

(Section 1R04.2: Equipment Alignment)

CN-2561-1.0, flow diagram of residual heat removal system (ND), A train

CN-2561-1.1, flow diagram of residual heat removal system (ND), B train

OP/2/A/6200/004M, Residual Heat Removal System Drain, Fill and Vent

OP/2/A/6200/004, Residual Heat Removal

PT/2/A/4200/006B, ECCS Valve Lineup Verification

PT/2/A/4200/006D, ECCS Throttle Valve Mechanical Stop Position Verification

PIP C-03-1334; 2B ND pump recirculation valve would not open when required

PIP C-03-1626; 2ND-32A stroke times from open to closed and back were not within allowable tolerances

PIP C-04-0673; ND, NV, NI and KF pumps have small amounts of boron crystals on them

PIP C-04-1732; 2ND-7 shows locked closed on flow diagram and just closed in the system procedures

Residual heat removal system health report for periods 2003T3 and 2004T1

<u>PIPs/Work Requests generated as a result of this inspection</u>:

PIP C-04-3568; Configuration management issues with absent pipe caps or, in some cases, pipe caps installed where drawings to do not show them

WO 98318834 - Boron Residue on 2ND121

WO 98318835 - Boron Residue on 2ND122

WO 98318836 - Boron Residue on 2ND120

WO 98318837 - Boron Residue on 2ND124

(Section 1R05: Fire Protection)

Pre-Fire Plan for Area 19, Unit 2 switchgear, Room 563
Pre-Fire Plan for Area 40, Unit 1 auxiliary feedwater turbine driven pump pit, Room 254
Pre-Fire Plan for Area 48, Unit 2 interior doghouse
Pre-Fire Plan for Area 50, Unit 2 exterior doghouse
Pre-Fire Plan AW, Standby Shutdown Facility, 594 foot elevation
Pre-Fire Plan AX, Standby Shutdown Facility, 611 foot elevation
Pre-Fire Plan for Area 1; Auxiliary Building, 522 foot elevation
Pre-Fire Plan for Area 4; Auxiliary Building, 543' elevation

PIPs generated as a result of this inspection

PIP C-04-3809; Doghouse temperature sensors and alarms on Unit 1 do not exist on Unit 2

(Section 1R11.2: Licensed Operator Requalification-Program Review)

2003 Annual LOR Exam Assessment
Scenarios ASE-25, ASE-26, ASE-27
Reactivation Records: Appendix B.512
Badge Access Transaction Reports
Licensed Operator Medical Records
Remedial Training Records: One LOR0415DRO Exam failure remedial, One Scenario failure remedial, and One JPM (Walk Through) failure remedial
Written Exams:LOR0415ERO, LOR0415DSO, LOR0415DRO
Simulator Fidelity Documents
Simulator Malfunction Periodic Test Procedures:
Transient # 5 Single NC Pump Trip Rev 01/02/03.
Transient # 7 Loss of All Feed Water Rev 01/02/03.
Transient # 9 Load Rejection Rev 01/02/03.
Transient # 13 Feed Water Line Break Rev 01/02/03.
Transient # 14 Loss of CF ATWS Rev 01/02/03.
Transient # 16 Hot Leg LOCA Rev 01/02/03.

Simulator Work Requests

DSG-040
CAS-027
CFW-094
CFW-091

(Section 1R12: Maintenance Effectiveness)

PIP C-04-2955; White powdery substance removed from LCVU-2B
PIP C-04-2904, White powdery substance discovered on the floor of LCVU-2B
PIP C-04-1804; White substance (boron) found in Unit 1 LCVU
PIP C-04-0317; Boron deposits found inside of fan room during Unit 2 semi-annual PM inspection

PIP C-03-3999; Boron deposits found on the floor of the Unit 2 B LCVU in front of the coil
PIP C-03-0364; Light dusting of what appears to be boron on the Unit 1 A LCVU floor and belts
WO 98666953; Inspection of LCVU-2D on July 12, 2004
PIP C-04-3514; 1B diesel generator lube oil temperature dropped below 140 degrees following operability run
PIP C-04-3512; Work request written on 1B diesel generator lube oil temperature heater control switch
WR 98319904; Troubleshoot 1B DG lube oil temperature switch
WO 98678837; Replace contacts for 1B DG lube oil heater controller
Catawba Tagout 04-01845, Diesel generator engine lube oil system

(Section 1R13: Maintenance Risk Assessments and Emergent Work Evaluation)

WO 98685878 Critical evolution plan for 1RN4B repair
Risk management assessment for 1RN4B removal and replacement plan
Critical maintenance plan for 1RN-4B alignment of operating RN train to lake

(Section 1R15: Operability Evaluations)

PIP C-04-02965; Ultrasonic testing data taken on the valve body of 2RN291 is less than the minimum required thickness
PIP C-04-02668; Part 21 Notification received from Rotork Controls, Inc. on valve actuator switch mechanisms
PIP C-04-02568; Part 21 Notification on Rotork valve actuator switch mechanisms
Certificate of Engineering Calculation, CNC-1205.19-00-0170; Operability Evaluation of Rotork Part 21 for switch mechanisms
PIP C-04-03179; Boration flow from the standby makeup pump during a postulated SSF event to account for xenon decay following a reactor trip
PIP C-04-4234; Stem leakage on valve 2NS-018A, NS pump A suction from ECCS containment sump valve
PIP C-04-03420; A through wall leak has developed in the toe of circumferential weld 0RN57-8
PIP C-04-03409; The 2B DG did not stop as quickly as expected during shutdown following the operability test on 7/13/04
PIP C-04-03396; 2ND-61 would not open while aligning for Auxiliary Safeguards testing
PIP C-04-2965; UT data taken on the valve body of 2RN291 is less than the minimum required thickness
PIP C-04-03801, Evaluation of the Updated Final Safety Analysis Report accident analysis conclusions to determine if they remain bounding
PIP C-04-03849, WO 98685144-01 to place RPS channels in tripped condition was issued as an E1 due to an unexpected response while performing TSM CNTM-0157
PIP C-04-04060, RN swapped to the SNSWP during TSM 158 work on WO 98686671
PIP C-04-4262, A through wall leak has been identified on the Unit 2 Boric Acid Tank #2 at a Weld joint at the base of the tank
PIP C-04-03380, Fluctuations on Unit 2 FWST channel 3, level

(Section 1R16: Operator Workarounds)

PIP C-04-3496; 2NV172A is leaking by affecting background leakage measurements
Nuclear System Directive 506, Operator Workarounds

(1R17: Permanent Plant Modifications)

Procedures
NSD 209, 10CFR50.59 Process, Rev. 9
NSD 301, Nuclear Station Modifications, Rev. 12
PT/2/A/4200/011, Emergency Boration Flow Rate Verification, Rev. 9
PT/2/A/4200/005A, Safety Injection Pump 2A Performance Test, Rev. 33
OP/1/A/6350/008, 125VDC/120VAC Vital Instrument and Control Power System, Rev. 49
OP/0/A/6400/006F, Nuclear Service Water System Flush Procedure, Rev. 36

Program and Self-Assessment Documents
2003 Engineering Functional Area Assessment SA-03-03

Other Documents
2003 10CFR50.59 Report, April 5, 2004
2002 10CFR50.59 Report, April 1, 2003
CN-1705-01.01, One line diagram 125VDC Vital Instrumentation and Control Power System (EPL)
CN-1705-01.02, One line diagram 120VAC Vital Instrumentation and Control Power System (EPG)
GL89-10 Motor Operated List Rev. 4

(Section 1R19: Post-Maintenance Testing)

PIP C-04-03128, Inspect and repair 1NC5540, Unit 1NC loop delta-temperature transmitter
PIP C-04-03129, Unexpected entry into Tech Specs due to 1NCP5540 failing low
Work Order 98674800; Inspect and repair 1NC5540, Unit 1 NC loop delta-temperature transmitter
IP/1/A/3222/076D, Calibration procedure for Delta T/T-AVG protection circuitry
OP/1/A/6200/001, Placing the standby makeup pump in recirculation
PT/2/A/4350/002B, Diesel Generator 2B operability Test
MOV traces for 1RN1A, 1RN2B, 1RN4B, 1RN5A, and 1RN6B
WO98630889-01, 1NM424, I/R check valve would not pass flow
WO98583581-11, 1NM003A, Evaluate new stroke time
WO98579538, PT/1/A/4200/25, Inservice test for valve 1NM006A
WO98579532, 1NM007B, perform comprehensive limitorque preventive maintenance

(Section 1R22: Surveillance Testing)

PT/1/A/4400/003A; Component Cooling (KC) Train A1 Performance Test
Written Pre-Job Brief for KC pump IWP
PT/1/A/4200/021A, KC Valve Inservice Testing (Quarterly), Enclosure 13.17, 1KC-C37A, Train A miniflow valve
Written Pre-Job Brief for 1KC-C37A IWV
WO98676954-01, Perform channel operations test for FWST level
WO98674552-01, Calibrate steam pressure loop C Channel 1

(Section 1R23: Temporary Plant Modifications)
PT/1/A/4250/002B, Main Turbine Stop Valve Movement Test
Risk Assessment for I/R test switch S828 in 3ESFA

CNTM - 154, Open sliding link T-45 in 2DATC7 to remove test switch S828 from circuit
CNTM - 158, Increase the LO setpoints for RN pump train B intake instruments
CNTM - 159, 1RN-4B; remove 48" BF valve and actuator for repair
PIP C-04-04056, RN swapped to the SNSWP during TSM 158 work on WO 98686671
PIP C-04-04057, An inadvertent pod swap signal was received when a fuse was blown during work for TSM to change B RN pit pond swap setpoints

(Section 4OA5: Other Activities)

MP/0/A/7150/042E; Reactor Vessel Bottom Head Visual Penetration Inspection
CNM-2201.01-0074-002; Unit 2 Reactor Vessel Instrumentation Penetration Coordinates and Elevation
Selected Licensee Committment 16.5-8; Reactor Pressure Vessel Head Inspection

LIST OF ACRONYMS USED

BAT	-	Boric Acid Tank
CFR	-	Code of Federal Regulations
CNS	-	Catawba Nuclear Station
DG	-	Diesel Generator
ECCS	-	Emergency Core Cooling System
EOC	-	End-of-Cycle
FWST	-	Refueling Water Storage Tank
HX	-	Heat Exchanger
IRT	-	Independent Review Team
IWP	-	Pump Inservice Test
IWV	-	Valve Inservice Test
JPM	-	Job Performance Measures
KC	-	Component Cooling Water
KD	-	Diesel Generator Cooling
KF	-	Spent Fuel Pool Cooling
NC	-	Reactor Coolant System
ND	-	Residual Heat Removal
NEI	-	Nuclear Energy Institute
NI	-	Safety Injection
NRC	-	Nuclear Regulatory Commission
NRR	-	Nuclear Reactor Regulation
NS	-	Containment Spray
NSD	-	Nuclear Site Directive
NV	-	Chemical and Volume Control
OP	-	Operating Procedure
PI	-	Performance Indicator
PIP	-	Problem Investigation Process (report)
PT	-	Periodic Test
RN	-	Nuclear Service Water
RP	-	Response Procedure
RTP	-	Rated Thermal Power
SDP	-	Significance Determination Process
SNSWP	-	Standby Nuclear Service Water Pond

SSF	-	Standby Shutdown Facility
TS	-	Technical Specification
TSM	-	Temporary Station Modification
WO	-	Work Order
YC	-	Control Area Chilled Water