



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION II  
SAM NUNN ATLANTA FEDERAL CENTER  
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ATLANTA, GEORGIA 30303-8931

March 8, 2000

Duke Energy Corporation  
ATTN: Mr. G. R. Peterson  
Site Vice President  
Catawba Nuclear Station  
4800 Concord Road  
York, SC 29745

SUBJECT: NRC INTEGRATED INSPECTION REPORT 50-413/00-01 AND 50-414/00-01

Dear Mr. Peterson:

This refers to the inspection conducted January 2 through February 12, 2000, at the Catawba Nuclear Station. The enclosed report presents the results of this inspection.

During the inspection period, your conduct of activities at the Catawba facility was generally characterized by safety-conscious operations, sound engineering and maintenance practices, and careful radiological work controls.

Based on the results of this inspection, the NRC has determined that four violations of NRC requirements occurred. These violations are being treated as Non-Cited Violations (NCVs), consistent with Section VII.B.I of the Enforcement Policy. These NCVs are described in the subject inspection report. If you contest the violations or severity level of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington DC 20555-0001, with copies to the Regional Administrator, Region II, the Resident Inspector at the Catawba Nuclear Station, and the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and any response will be placed in the NRC Public Document Room.

Sincerely,

**/RA/**

Charles R. Ogle, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

Docket Nos. 50-413 and 50-414  
License Nos. NPF-35 and NPF-52

Enclosure: NRC Inspection Report 50-413/00-01, 50-414/00-01

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket Nos: 50-413, 50-414

License Nos: NPF-35, NPF-52

Report Nos: 50-413/00-01, 50-414/00-01

Licensee: Duke Energy Corporation

Facility: Catawba Nuclear Station, Units 1 and 2

Location: 422 South Church Street  
Charlotte, NC 28242

Dates: January 2 - February 12, 2000

Inspectors: D. Roberts, Senior Resident Inspector  
R. Franovich, Resident Inspector  
M. Giles, Resident Inspector  
R. Carroll, Senior Project Engineer (Section M7.1)  
S. Freeman, Resident Inspector - Oconee (Section M7.1)  
S. Rudisail, Project Engineer (Section M7.1)  
G. Wiseman, Reactor Inspector (Section F2.1)

Approved by: C. Ogle, Chief  
Reactor Projects Branch 1  
Division of Reactor Projects

Enclosure

## EXECUTIVE SUMMARY

### Catawba Nuclear Station, Units 1 and 2 NRC Inspection Report 50-413/00-01, 50-414/00-01

This integrated inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a six-week period of resident inspection; as well as the results of two regional based inspections in the areas of fire protection and corrective actions. [Applicable template codes and the assessment for items inspected are provided below.]

#### Operations

- A non-cited violation was identified for using an inadequate procedure for performing preventive maintenance on control room ventilation system intake chlorine detectors. (Section O8.2; [NCV - 3C])
- A non-cited violation was identified for failure to comply with Technical Specifications 3.7.6 and 3.0.3 with the control room area ventilation system inoperable. (Section O8.3; [NCV - 1A, 4B])

#### Maintenance

- A non-cited violation with four examples was identified for failures to promptly correct conditions adverse to quality. The examples involved the resolution of two Generic Letter 96-01 testing issues; elimination of incorrect information from the licensee's Updated Final Safety Analysis Report tracking system that was available for use during 10 CFR 50.59 reviews; and resolution of non-conservative Technical Specification surveillance acceptance criteria associated with the auxiliary building filtered ventilation exhaust system. (Sections M7.1, M8.1; [NCV - 2B, 4C, 5C])
- Overall, the inspectors found the licensee's procedure focus initiative well planned and determined that its scope was adequate to accomplish the clarification of TS surveillance requirements and the resolution of "human factors-related" problems that have contributed to surveillance-related identified deficiencies. (Section M7.1; [POS - 2B, 5C])
- A potential shortcoming in the licensee's safety review group trending of surveillance procedure-related problems was identified. Specifically, due to the implication that the new procedure focus initiative is the resolution to surveillance procedure-related problems, a potential emerging trend in recent issues outside the scope of the initiative could be masked. (Section M7.1; [NEG - 5B])
- A non-cited violation was identified for failure to perform inservice testing on containment isolation valve 2NM-221A. (Section M8.2; [NCV - 2B, 4C])

#### Plant Support

- The scope of the fire barrier penetration seal plan for Catawba was in accordance with the guidance provided by NRC's Generic Letter 86-10. Seal problems identified during the configuration walkdowns and intrusive seal inspections were sufficiently documented in the licensee's corrective action program to assure that the corrective actions had been completed. (Section F2.1; [POS - 1C, 5C])

## Report Details

### Summary of Plant Status

Unit 1 operated at or near 100 percent power during the inspection period.

Unit 2 began the inspection period in Mode 3 due to a reactor trip that occurred on December 30, 1999, from a failed pin connector associated with the secondary electrical trip solenoid valve. A reactor startup was commenced on January 4, 2000, following troubleshooting and repair activities. The unit was synchronized to the electrical grid on January 5, 2000, and reactor power was increased to approximately 48 percent when nitrogen leaks were identified on 2CF-42, Steam Generator B Feedwater Containment Isolation Valve, and 2CF-60, Steam Generator D Feedwater Containment Isolation Valve. Reactor power was reduced to 16 percent to support repair activities and post-maintenance testing. A subsequent nitrogen leak was identified on 2CF-33, Steam Generator A Feedwater Containment Isolation Valve. Following repair and testing of this valve and implementation of a modification designed to prevent further nitrogen leaks associated with the steam generator feedwater containment isolation valves, a reactor power increase was initiated on January 7, 2000, to 85 percent to allow performance of the turbine control valve movement test. The unit reached 100 percent reactor power on January 8, 2000, and remained at 100 percent until January 20, 2000, when reactor power was reduced to approximately 93 percent to support steam generator pressure operated relief valve stroking and performance of the moderator temperature coefficient of reactivity measurement (end of life) test. Reactor power was increased to 100 percent on January 21, 2000, and remained at full power for the remainder of the inspection period.

## I. Operations

### **O1 Conduct of Operations**

#### **O1.1 General Comments (71707)**

The inspectors conducted frequent control room tours to verify proper staffing, operator attentiveness and effective communications, and adherence to approved procedures. The inspectors: (1) attended operations shift turnovers and site direction meetings to maintain awareness of overall plant status and operations; (2) reviewed operator logs to verify operational safety and compliance with Technical Specifications (TS); (3) periodically reviewed instrumentation, computer indications, and safety system lineups, along with equipment removal and restoration tagouts, to assess system availability; (4) reviewed the TS Action Item Log for both units daily for potential entries into limiting conditions for operation (LCO) action statements; (5) conducted plant tours to observe material condition and housekeeping; and (6) routinely reviewed Problem Identification Process reports (PIP) to ensure that potential safety concerns and equipment problems were resolved. The inspectors identified no major problems from the above reviews.

### **O8 Miscellaneous Operations Issues (90712, 92700, 92901)**

#### **O8.1 (Closed) Licensee Event Report (LER) 50-414/99-006-00: Reactor Trip Caused by an Electrical Ground in an Electrical Connector on the Turbine Electrical Trip Solenoid Valve**

This event and the associated NRC inspection results are documented in NRC Inspection Report 50-413,414/99-08. The licensee's corrective actions are being tracked to resolution in PIP C-99-5255. No violations were identified. This item is closed.

O8.2 (Closed) LER 50-413/99-006-(00, 01): Control Room Ventilation System Inoperability due to Spurious Closure of Intakes Resulting in an Entry into Technical Specification 3.0.3

This item was previously discussed in NRC Inspection Report 50-413,414/99-02. The inspectors questioned two aspects of this event: (1) why valve 2VC-6A was allowed to remain closed for over 13 hours after its spurious closure on April 8, 1999, and (2) why the licensee remained in TS 3.0.3 for an hour during the subsequent spurious closure of 1VC-5B on April 9, 1999. In both cases the inspectors noted that the licensee failed to return valve 2VC-6A to the required normal configuration in a timely manner after testing was performed that demonstrated that the valve was operable. The supplemental actions for an Intake Hi Chlorine alarm, contained in OP/1/B/6100/010P, Annunciator Response For Panel 1AD-18, Step 2, stated if the alarm is not valid, then determine and correct the cause of the invalid alarm. The licensee determined that the high chlorine alarm was not valid, but was unable to determine the cause of this event. Step 2 has subsequently been revised and directs control room operators to immediately realign the VC system to a normal lineup if the associated high chlorine alarm which accompanies a spurious closure is not valid. Although appropriate testing had been completed satisfactorily in response to the spurious closure of 2VC-6A, the licensee failed to return the valve to its normal configuration in an expeditious manner. When 1VC-5B spuriously closed, and TS 3.0.3 was entered, the licensee realized at that time that 2VC-6A should have already been returned to the required normal configuration. 2VC-6A was subsequently opened, and TS 3.0.3 was exited.

Revision 1 to this LER was submitted to the NRC on November 3, 1999. According to the revised LER, the root cause of the dual unit entry into LCO 3.0.3 on April 8, 1999, was failure of the maintenance technician to perform actions in the field under the guidance and control of a work order or procedure. A contributing root cause was inadequate communication between operations shift personnel and the maintenance technician. The root cause of the spurious high chlorine alarms and associated intake isolations on April 8 and 9, 1999, was inadequate cleaning of the electrode detectors. The licensee's corrective actions to address the human performance aspects of the event were documented in PIPs C-99-1252 and C-99-1255. According to these PIPs, the need for good communication techniques and use of repeat-backs were reviewed with the maintenance technicians and operations personnel, including those involved in the incident. Other administrative requirements (i.e., use of a governing procedure to perform maintenance) that should have been followed to prevent the incident were discussed with all maintenance personnel, including those involved in the incident. The licensee plans to address the inadequate cleaning by revising the maintenance procedure to specify ultrasonic cleaning in an isopropyl alcohol bath and implementing a work order twice yearly to perform extensive cleaning of the detectors, as documented in PIP C-99-1260. The licensee is evaluating long-term corrective actions to address the reliability of chlorine detectors through PIP C-99-3209.

The inspectors reviewed the chlorine detector vendor manual (CNM 1210.09-143). The inspectors noticed that there were discrepancies between the preventive maintenance activities recommended in the chlorine detector vendor manual and station procedure IP/0/A/3162/005, Control Room Ventilation (VC) System Chlorine Detectors, Revision 28, which provided procedural guidance for preventive maintenance. One of the discrepancies involved the method by which the detector electrodes were cleaned. The

inspector determined that the licensee's procedure did not specify steps for ensuring that any debris present on the electrode would be removed. (The vendor manual recommended using an abrasive cleaner when cleaning the electrode to ensure all debris was removed.) As such, since the root cause of the detector failures on April 8 and 9, 1999, was inadequate cleaning of the electrodes, the inspectors concluded that the licensee's procedure was inadequate. This Severity Level IV violation of TS 5.4.1.a (Regulatory Guide 1.33 recommended maintenance procedure) is being treated as a Non-Cited Violation (NCV), consistent with Section VII.B.1 of the NRC Enforcement Policy. It is identified as NCV 50-413,414/00-01-01: Inadequate Procedure for Performing Preventive Maintenance on Control Room Ventilation System Intake Chlorine Detectors. This violation is in the licensee's corrective action program as PIPs C-99-1252 and C-99-1260. Other discrepancies between the station maintenance procedure and the vendor manual that were identified by the inspector were documented in PIP C-99-3350 for resolution. This LER is closed.

O8.3 (Closed) Unresolved Item (URI) 50-413,414/98-01-01: Basis for Five-Minute Period of VC System Inoperability with Compensatory Actions

This item was opened pending the inspectors' receipt and review of information supporting a compensatory action used to maintain operability of the control room ventilation (VC) system during maintenance involving the VC system pressure boundary. In addition, the adequacy of post-maintenance testing of the B-train air handling unit, which was the source of a VC system pressure boundary breach that resulted in a brief dual-unit entry into TS 3.0.3 on February 4, 1998, was reviewed. The inspectors concluded that post-maintenance testing of the air handling unit was adequate. The licensee's reliance upon the compensatory action to maintain the VC system operable and comply with NRC requirements was discussed in NRC Inspection Report 50-413,414/99-03.

The licensee developed the control room pressure boundary compensatory action document to maintain the VC system operable during the performance of maintenance activities that compromised the control room pressure boundary. The compensatory action document specified that measures would be taken to restore the control room area pressure boundary within five minutes of a condition that could potentially challenge control room habitability. The document also established controls for ensuring that the compensatory measure could be performed if needed.

The NRC concluded that the licensee's reliance on the compensatory action (in lieu of declaring the VC system inoperable for being unable to meet TS surveillance acceptance criteria for control room pressurization) during the conduct of activities involving a breach of the control room pressure boundary constituted a violation of TS. (This position was communicated to the licensee in Task Interface Agreement (TIA) 98008 on July 1, 1999). As such, the licensee should have complied with TS 3.7.6, Action b (for a unit in Mode 5 or 6) to suspend core alterations and the movement of irradiated fuel assemblies, and entered LCO 3.0.3 (for a unit in Mode 1-4). The requirement of LCO 3.0.3 was to initiate action within one hour to place a unit in hot standby within the next six hours. The licensee initiated PIP C-99-3139 to document the NRC's position on TS compliance with the compensatory action in place. The licensee plans to develop a TS amendment request to allow the VC system to remain operable with a compromised pressure boundary during the conduct of maintenance activities for

up to 24 hours. The proposed TS change is similar to an exigent TS amendment request for the McGuire Nuclear Station that was granted by the NRC on September 22, 1999. The licensee is still developing the request package for submittal to NRC.

The inspectors determined that the compensatory action was last implemented on October 1, 1998, for three hours and ten minutes. The compensatory action also was used for extended periods of time during the Unit 1 and Unit 2 operator aid computer (OAC) replacements in 1996 and 1997, respectively. Contrary to TS 3.7.6, the inspectors determined that core alterations and fuel movement were in progress in March 1997 on Unit 2 while the VC system was inoperable. These activities were in progress for a total time of 22 hours while the VC system was inoperable.

Violations of LCO 3.0.3 also occurred (on the operating unit) during periods that the compensatory actions were implemented to support Unit 1 and 2 OAC replacements. For Unit 1, the longest duration that the VC system was inoperable was between 8:21 a.m. on July 11, 1996, and 4:00 a.m. on July 13, 1996, for a total time of 43 hours and 39 minutes. The system also was inoperable between 9:55 a.m. on July 5, 1996, and 2:40 a.m. on July 7, 1996, for a total time of 40 hours and 45 minutes. Several other shorter periods of VC system inoperability exceeded the shutdown requirements specified in LCO 3.0.3. For Unit 2, the longest duration that the VC system was inoperable was between 2:00 p.m. on March 24, 1997, and 11:30 p.m. on March 29, 1997, for a total of 129 hours and 40 minutes. Two other periods of VC system inoperability lasted in excess of 24 hours and 10 hours, respectively. The licensee failed to recognize that implementation of the compensatory action could not maintain the VC system operable in lieu of ensuring pressure boundary integrity. Continued core alterations, movement of irradiated fuel, and full power operation involved significant failures to comply with the action statement for TS 3.7.6 and 3.0.3, whereby the appropriate actions were not taken within the time required by the TS. However, the simplicity of the compensatory action, the specificity of the compensatory action document, and formal accountability of a designated maintenance technician to implement the compensatory action and a cognizant operations shift manager mitigated the safety-significance of the violations. This Severity Level IV violation is being treated as an NCV, consistent with Section VII.B.1 of the NRC Enforcement Policy and is identified as NCV 50-413,414/00-01-02: Failure to Comply with TS 3.7.6 and 3.0.3 with the Control Room Area Ventilation System Inoperable. This violation is in the licensee's corrective action program as PIP C-99-3139. This URI is closed.

## II. Maintenance

### **M1 Conduct of Maintenance**

#### **M1.1 General Comments on the Conduct of Maintenance and Surveillance Activities (62707, 61726)**

The inspectors observed all or portions of the following maintenance and surveillance activities:

Tagout ID O-2-0-0197

2NS-28: Rotate Per Modification CE-10445 (Work Order 98209766-01)

MP/0/A/7650/002, Revision 14	Lubrication of Station Equipment (Containment Spray Pump 2B Motor PM)
SI/0/A/5090/01, Revision 13	Tube Fitting and Tubing Installation (Containment Spray Pump 2B Vent Valve 2NS-28 Rotation)
PT/0/A/4150/012B, Revision 10	Moderator Temperature Coefficient of Reactivity Measurement (End of Life)
OP/0/A/6450/011, Revision 102	Control Room Area Ventilation/Chilled Water System (Control Room Differential Pressure Test)
PT/2/A/4350/002B, Revision 68	Diesel Generator 2B Operability Test

Maintenance and surveillance activities were performed using good workmanship, proper procedural adherence, and appropriate controls for using calibrated measuring and test equipment. Appropriate radiological practices were also observed where necessary.

## **M7 Quality Assurance in Maintenance**

### **M7.1 TS Surveillance-Related Deficiencies**

#### **a. Inspection Scope (40500)**

This inspection focused on the numerous TS surveillance-related deficiencies identified over the last two years (primarily missed surveillances), in order to assess the appropriateness of corrective actions taken and planned.

#### **b. Observations and Findings**

Following the significant auxiliary building ventilation (VA) event in March 1998 (see EA 98-208), the licensee performed a TS surveillance requirement review (May 1998), established a Ventilation Oversight Team (July 1998), and implemented a Ventilation Event Investigation Team (July 1998). Because the results of these efforts indicated that there may have been a broader surveillance problem, the licensee conducted an in-depth Improved TS/Selected Licensee Commitment review (ITS-2) from October 1998 through April 1999. The inspectors determined that these licensee efforts revealed many of the TS surveillance-related deficiencies identified over the last two years. In addition, these efforts resulted in numerous recommendations being made, which, for the most part, generated appropriate corrective actions.

The inspectors reviewed specific TS surveillance-related deficiencies that were identified in PIPs associated with the aforementioned efforts, as well as LERs, operational experience events, and enforcement issues. Aside from some minor corrective action discrepancies, the following examples of untimely corrective action were identified:

- PIP C-96-02064, opened as a result of the licensee's Generic Letter (GL) 96-01 review and addressed again during the ITS-2 review, identified that the 2-out-of-3 emergency low pit level actuation logic for the nuclear service water (RN) pump suction transfer was not fully tested. Specifically, the PIP indicated that

the TSs were inadequate, in that they did not require a logic test of the actuation circuitry. The level instruments have been calibrated every 18 months as required by TS, but testing of the suction transfer logic combinations had not been performed. This problem has existed since issuance of the original TS. Recently, engineering provided the required information to support development of the procedures to accomplish this testing. According to the PIP, a TS amendment requiring this logic testing will be submitted once the procedures are finalized. Considering four years have passed since the identification of this unresolved deficiency, this failure to promptly correct a condition adverse to quality is identified as a violation of 10 CFR 50, Appendix B, Criterion XVI.

- As part of the GL 96-01 review at McGuire Nuclear Station, the licensee found that interlocks between the diesel generator load sequencer and the hydrogen recombiners and igniters were not being tested. At Catawba Nuclear Station, the licensee addressed this issue by adding corrective actions to PIPs C-96-02911 and C-96-02932 to change Procedures PT/1,2/A/4200/009, Engineered Safety Features Actuation, to include the testing. The licensee implemented the changes to the Unit 1 procedure under Change 166F on June 24, 1999, and to the Unit 2 procedure under Change 129 on September 2, 1998. Because the problem was identified in 1996 and the Unit 1 procedure was not corrected until 1999, the inspectors questioned whether or not the interlocks had ever been tested. The interlock between the hydrogen recombiners and the diesel load sequencer in both units had been tested by Procedures PT/1,2/A/4200/009 since before the issue was identified in 1996. With respect to the interlock between the hydrogen igniters and the diesel load sequencer, Unit 2 was tested during the Fall 1998 outage. However, the inspectors found that no testing had been performed on the Unit 1 interlock, even though the licensee had performed Procedure PT/1/A/4200/009 twice (Fall 1997 and Spring 1999 Outages) since the problem had been identified in 1996. Accordingly, this failure to promptly correct a condition adverse to quality is identified as a violation of 10 CFR 50, Appendix B, Criterion XVI.
- In August 1999, the NRC identified three examples of inadequate procedures concerning the response times for the containment air return fans, the hydrogen skimmer (VX) fans, and the VX fan suction valves. These issues were captured in NCV 50-413,414/99-05-04 and the associated corrective actions were addressed in PIP C-99-03356. One of the corrective actions listed in PIP C-99-03356 that still remained open at the time of this inspection, was changing Updated Final Safety Analysis Report (UFSAR) Table 7-15 to correct a previous change request that inappropriately reflected non-conservative VX suction valve response times. Although the annual UFSAR update to the NRC containing this inappropriate change had not yet been made, Table 7-15 (with the non-conservative response times) had been incorporated into the licensee's UFSAR tracking system. Nuclear System Directive (NSD) 209, 10 CFR 50.59 Evaluation, Revision 8, requires that pending changes, listed in the UFSAR tracking system, be considered when performing reviews under 10 CFR 50.59. Consequently, the inappropriate change to Table 7-15 was available for use during 50.59 reviews for six months after being identified as incorrect. Considering the potential ramifications, this failure to promptly correct a condition adverse to quality is identified as a violation of 10 CFR 50, Appendix B, Criterion XVI.

The three Severity Level IV violations discussed above are being treated as NCVs, consistent with Section VII.B.1 of the NRC Enforcement Policy. Captured in the licensee's corrective action program as PIP C-00-00719, they are identified as the first three examples of NCV 50-413,414/00-01-03: Failure to Promptly Correct Conditions Adverse to Quality - Four Examples.

In addition to following up on specific TS surveillance-related identified deficiencies, corrective actions were assessed by the inspectors through grouping the identified deficiencies into apparent common areas (i.e., inadequate surveillance procedures, ventilation testing issues, inadequate TSs, inappropriate setpoints and/or acceptance criteria, and inadequate TS administrative controls). Through these groupings, the licensee's current procedure focus initiative was reviewed. This initiative (initiated fourth quarter 1999 with completion not scheduled until the end of 2000), was implemented to improve the quality of procedures (particularly surveillance procedures). It consists of procedure validation, assurance of surveillance acceptance criteria clarity and accuracy, inclusion of immediate actions if test acceptance criteria are not met, and an overall upgrade to ventilation and 7300 system procedures.

Reviews of selected procedures that had been through various phases of the licensee's new procedure focus initiative revealed that noteworthy findings for procedure quality enhancements have resulted. Overall, the inspectors found the procedure focus initiative well planned and determined that its scope was adequate to accomplish the clarification of TS surveillance requirements and the resolution of "human factors-related" problems that have contributed to surveillance-related identified deficiencies. However, it was apparent that recent "TS surveillance requirement versus procedure" type issues identified since ITS-2 (i.e., LER 50-413/99-13 [residual heat removal 31-day valve alignment verification], LER 50-413/99-11 [control room area ventilation logic testing], and PIP 00-0516 [component cooling water 31-day valve alignment check]) would not have been revealed by the new procedure focus initiative. These type of issues were considered by the licensee to have been encompassed in the scope of ITS-2; not the broader "human factors-related" scope of the new initiative. Subsequent review of the licensee's safety review group trending activities revealed that surveillance procedure-related problems were identified as an issue warranting attention. However, the documented adverse trend identification appeared to imply that the new procedure focus initiative was the resolution to the procedure-related problems. Consequently, the anticipated reduction in overall occurrences of procedure-related problems due to the new initiative could mask a potential emerging trend in recent "TS surveillance requirement versus procedure" type issues. In view of the aforementioned occurrences, the licensee acknowledged this potential trending shortcoming identified by the inspectors.

Several other post ITS-2 issues fell in the grouping of TS administrative controls. They all appeared to be unrelated or isolated occurrences, except for that reported in LER 50-414/99-05-00. This LER concerned a July 1999 missed TS surveillance requirement for verification of offsite power source availability due to inadequate administrative controls over RN-related effects on emergency diesel generator (EDG) operability and vice-versa. Further review into this issue by the inspectors revealed similar problems more recently (i.e., November 1999 [URI 50-413/99-07-02] and January 2000 [PIP C-00-0355]), as well as in the past (i.e., January 1995 [PIP C-95-0075] and June 1997 [PIP C-97-2009]). Based on planned and recently taken corrective actions (i.e., formation of a

multi-disciplined team to look at the interrelated aspects of RN/EDGs/offsite power and RN to auxiliary feedwater system flow testing), it appears this issue is finally getting the attention it warrants. Accordingly, further followup on this issue will be performed under URI 50-413/99-07-02.

c. Conclusions

Three examples of a non-cited violation were identified for failures to promptly correct conditions adverse to quality. These involved the resolution of two GL 96-01 testing issues and elimination of incorrect information from the licensee's UFSAR tracking system that was available for use during 10 CFR 50.59 reviews.

Overall, the inspectors found the licensee's procedure focus initiative well planned and determined that its scope was adequate to accomplish the clarification of TS surveillance requirements and the resolution of "human factors-related" problems that have contributed to surveillance-related identified deficiencies.

A potential shortcoming in the licensee's safety review group trending of surveillance procedure-related problems was identified. Specifically, due to the implication that the new procedure focus initiative is the resolution to surveillance procedure-related problems, a potential emerging trend in recent issues outside the scope of the initiative could be masked.

**M8 Miscellaneous Maintenance Issues (37551, 90712, 92902)**

**M8.1 (Closed) URI 50-413,414/98-15-01: Review of VA System Past Inoperability**

This issue involved a past operability determination of the VA system and administrative controls to compensate for non-conservative TS surveillance criteria. The licensee completed their evaluation and determined that the VA filter units were past operable even though the administrative limits associated with the non-conservative TS surveillance acceptance criteria were exceeded. The licensee based their conclusion on the results of Calculation CNC-1211.00-14-0010, which designated a conservative upper limit of 3.6 percent for filter unit carbon iodine penetration. The TS limit was 4 percent and the proposed administrative limit had been specified as 3 percent. Since the calculated limit of 3.6 percent iodine penetration had not been exceeded during previous tests, the licensee concluded that the system was past operable.

The inspectors determined that, although plant design basis was maintained, corrective actions to incorporate administrative controls for iodine penetration into station procedures were not completed. As such, controls during testing were not adequate to ensure that filter efficiency would be acceptable under accident and post-accident conditions assuming a failure of one train of the VA system. Furthermore, the licensee has relied (and continues to rely) on administrative controls since 1994 to ensure that acceptable filter efficiency is maintained. Corrective actions to incorporate administrative controls for iodine penetration and to correct the non-conservative TS limits (by changing the TS surveillance requirements) were not timely. These failures to promptly correct conditions adverse to quality are identified as a violation of 10 CFR 50, Appendix B, Criterion XVI. This Severity Level IV violation is being treated as a NCV, consistent with Section VII.B.1 of the NRC Enforcement Policy and is identified as an example of NCV 50-413,414/00-01-03: Failure to Promptly Correct Conditions Adverse

to Quality - Four Examples. This violation is in the licensee's corrective action program as PIPs C-98-4254 and C-98-2014.

The inspector reviewed station PIPs C-98-4254 and C-98-2014 to determine what actions the licensee plans to take to resolve the non-conservative TS surveillance criteria. The licensee concluded that a TS change will be necessary to continue to test the VA system in a dual train alignment. The licensee plans to submit a TS amendment request to the NRC to modify the surveillance acceptance criteria. Pending completion of the TS change, the licensee is applying appropriate administrative limits during surveillance tests. This URI is closed.

M8.2 (Closed) LER 50-414/99-004-(00, 01): Containment Isolation Valve 2NM-221A Returned to Service Without Testing due to Programmatic Deficiency Resulting in Violation of Technical Specification 3.6.3

This issue involved the licensee's failure to perform inservice testing of containment isolation valve 2NM-221A in accordance with TS surveillance requirement 3.6.3.5 and TS 5.5.8 (inservice testing program). The valve had been closed since November 3, 1998, because the associated inside containment isolation valve, 2NM-220B, was inoperable and could not be fully closed. The licensee declared valve 2NM-220B operable on June 8, 1999, without performing a stroke test. However, valve 2NM-220B had been stroked and timed during troubleshooting and documented in work order 98100849. Hence, the licensee took credit for the performance of a stroke time test.

The licensee returned valve 2NM-221A to service without demonstrating the valve's operability through the performance of a quarterly valve stroke test as required by the inservice testing program. On June 16, 1999, the licensee identified that the operability of valve 2NM-221A had not been adequately demonstrated, and immediately performed a stroke test on the valve; the test was successfully completed. This Severity Level IV violation of TS 3.6.3.5 is being treated as a NCV consistent with Section VII.B.1 of the NRC Enforcement Policy. It is identified as NCV 50-414/00-01-04: Failure to Perform Inservice Test on Containment Isolation Valve 2NM-221A. This violation is in the licensee's corrective action program as PIPs C-99-2406 and C-99-2483. The licensee concluded that the root cause of the violation involved a work management process that automatically credited valve stroke time tests during 7300 process relay testing. The work management process assumed that all the valves (including 2NM-221A) receiving signals from the associated relay had been stroked and timed. However, in this case, valve 2NM-221A was already shut when its associated relay was tested. The licensee provided training and revised Procedure PT/2/A/4200/009A, Auxiliary Safeguards Test Cabinet Periodic Test, to direct the control room operator to ensure that credit for valve testing is not taken for any valve that does not meet its acceptance criteria or is not stroked by disabling the automated feature. The licensee also reiterated the administrative requirement to log any operations surveillance procedure required to meet TS surveillance requirements that are not completed as scheduled (Item 3.3.H of Operations Management Procedure 2-29, Technical Specification Action Item Log). Additionally, administrative guidance was established to ensure that TS surveillances within five days of their due dates are tracked in the Technical Specification Action Item Log. This LER is closed.

#### IV. Plant Support

### **F2 Status of Fire Protection Facilities and Equipment**

#### **F2.1 Fire Barrier Penetration Seal Recovery Plan**

##### **a. Inspection Scope (64704)**

The inspectors reviewed a Duke Energy Corporation letter to the NRC dated August 4, 1998, "Fire Barrier Penetration Seals," that described the licensee's three-site plan and schedule to update penetration seal design-basis documentation and configuration information. This plan included the performance of inspections to document as-built penetration seal configurations and the development of design-basis documents to describe bounding tested configurations and engineering analysis.

##### **b. Observations and Findings**

The inspectors reviewed the scope and completion status of the penetration seal plan implementation. The inspector verified that the plan implementation was on schedule and followed the NRC technical penetration seal program guidance provided in NRC GL 86-10. The licensee's Phase I configuration walkdowns and inspection data gathering were completed during the Fall of 1999 for approximately 1800 plant penetrations. The licensee's intrusive seal inspections (removal of damming boards and inspections of internal seal material) are approximately 75 percent complete. These inspections are scheduled for completion by September 2000. The inspectors verified that the licensee's penetration seal design and installation parameter criteria (being verified during licensee configuration walkdowns) satisfied the guidance described in Sections 3.1 and 3.2 of NRC GL 86-10.

The inspectors noted that the licensee had identified a number of seal problems during the configuration walkdowns and intrusive seal inspections and had corrected those problems through the corrective action process. The inspectors reviewed nine completed PIPs associated with licensee identified penetration seal problems and found that plant personnel had properly documented in evaluations the causes of the penetration seal problems and their corrective actions to repair the penetration seals to their required design configurations.

The licensee's ongoing Phase II engineering activities include the development of a design database of configuration records and performance of design-basis engineering evaluations. These activities are ongoing and scheduled to be completed in 2000.

##### **c. Conclusions**

The inspectors concluded that the scope of the fire barrier penetration seal plan for Catawba was in accordance with the guidance provided by NRC's GL 86-10. Seal problems identified during the configuration walkdowns and intrusive seal inspections were sufficiently documented in the licensee's PIP corrective action program to assure that the corrective actions had been completed.

## V. Management Meetings

### X1 Exit Meeting Summary

The inspector presented the inspection results to members of licensee management at the conclusion of the inspection on February 17, 2000. The licensee acknowledged the findings presented. No proprietary information was identified.

### PARTIAL LIST OF PERSONS CONTACTED

#### Licensee

T. Beadle, Emergency Preparedness Manager  
 R. Beagles, Safety Review Group Manager  
 M. Boyle, Radiation Protection Manager  
 D. Caldwell, Civil Systems Engineering Supervisor  
 G. Gilbert, Regulatory Compliance Manager  
 R. Glover, Operations Superintendent  
 P. Grobusky, Human Resources Manager  
 P. Herran, Engineering Manager  
 M. Hogan, Fire Protection Engineer  
 R. Jones, Station Manager  
 R. Parker, Maintenance Superintendent  
 G. Peterson, Catawba Site Vice-President  
 M. Purser, Regulatory Compliance  
 F. Smith, Chemistry Manager  
 D. Sweigart, Safety Assurance Manager

### INSPECTION PROCEDURES USED

IP 37551: Onsite Engineering  
 IP 40500: Effectiveness of Licensee Process to Identify, Resolve, and Prevent Problems  
 IP 61726: Surveillance  
 IP 62707: Maintenance Observation  
 IP 64704: Fire Protection Program  
 IP 71707: Plant Operations  
 IP 71750: Plant Support  
 IP 90712: In-Office Review of Written Reports of Non-Routine Events  
 IP 92700: Onsite Review of Written Reports of Non-Routine Events  
 IP 92901: Followup - Operations  
 IP 92902: Followup - Maintenance

### ITEMS OPENED, CLOSED, AND DISCUSSED

#### Opened

50-413,414/00-01-01	NCV	Inadequate Procedure for Performing Preventive Maintenance on Control Room Ventilation System Intake Chlorine Detectors (Section O8.2)
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50-413,414/00-01-02	NCV	Failure to Comply with TS 3.7.6 and 3.0.3 with the Control Room Area Ventilation System Inoperable (Section O8.3)
50-413,414/00-01-03	NCV	Failure to Promptly Correct Conditions Adverse to Quality - Four Examples (Sections M7.1, M8.1)
50-414/00-01-04	NCV	Failure to Perform Inservice Test on Containment Isolation Valve 2NM-221A (Section M8.2)

Closed

50-414/99-006-00	LER	Reactor Trip Caused by an Electrical Ground in an Electrical Connector on the Turbine Electrical Trip Solenoid Valve (Section O8.1)
50-413/99-006-(00, 01)	LER	Control Room Ventilation System Inoperability due to Spurious Closure of Intakes Resulting in an Entry into Technical Specification 3.0.3. (Section O8.2)
50-413,414/98-01-01	URI	Basis for Five-Minute Period of VC System Inoperability with Compensatory Actions (Section O8.3)
50-413,414/98-15-01	URI	Review of VA System Past Inoperability (Section M8.1)
50-414/99-004-(00, 01)	LER	Containment Isolation Valve 2NM-221A Returned to Service Without Testing due to Programmatic Deficiency Resulting in Violation of Technical Specification 3.6.3. (Section M8.2)

Discussed

50-413/99-07-02	URI	1B EDG Inoperability Due to Successive Test Failures Following Maintenance - NOED 99-2-003 (Section M7.1)
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**LIST OF ACRONYMS USED**

CFR	-	Code of Federal Regulations
EDG	-	Emergency Diesel Generator
EOL	-	End Of Life
GL	-	Generic Letter
IP	-	Inspection Procedure
ITS-2	-	Improved Technical Specification/Selected Licensee Commitment Review (conducted from October 1998 through April 1999)
LCO	-	Limiting Conditions for Operation
LER	-	Licensee Event Report
NCV	-	Non-Cited Violation

NRC	-	Nuclear Regulatory Commission
NRR	-	Nuclear Reactor Regulation
NSD	-	Nuclear System Directive
OAC	-	Operator Aid Computer
PIP	-	Problem Identification Process
RN	-	Nuclear Service Water
TIA	-	Task Interface Agreement
TS	-	Technical Specification
TSAIL	-	Technical Specification Action Item Log
UFSAR	-	Updated Final Safety Analysis Report
URI	-	Unresolved Item
VA	-	Auxiliary Building Ventilation
VC	-	Control Room Ventilation
VX	-	Hydrogen Skimmer