

August 2, 1999

EA 98-477

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

SUBJECT: NRC INTEGRATED INSPECTION REPORT NOS. 50-413, 414/98-13 AND
50-413, 414/98-16, AND NRC SPECIAL INSPECTION REPORT NOS.
50-413, 414/99-11

Dear Mr. Peterson:

This refers to inspections conducted by the Nuclear Regulatory Commission (NRC) between August 1998 and May 1999 at the Catawba facility, to review various aspects of the Unit 1 and 2 ice condensers. The inspections were specifically conducted to review maintenance and surveillance testing of the Unit 1 and 2 ice condensers. The NRC reviewed these issues after your identification of problems with the Unit 1 ice condenser program, which resulted in your decision to shut down Unit 1 in August 1998. In addition, an Office of Investigations (OI) investigation was initiated on October 13, 1998, to determine if a licensee employee willfully failed to identify and take corrective actions regarding blocked steam flow passages in the Catawba Unit 1 ice condenser. The synopsis of OI Report 2-1998-020 was provided to Duke Energy Corporation (DEC) by letter dated June 8, 1999.

An open, predecisional enforcement conference was conducted in the Region II office on July 20, 1999, with you and members of your staff to discuss the apparent violations, the root causes, and corrective actions to preclude recurrence. A list of conference attendees and copies of the NRC's and your presentation materials are enclosed.

Based on the information developed during the inspections, the OI investigation, and the information you provided during the conference, we have concluded that six violations of NRC requirements occurred. These violations are: (1) the failure to promptly identify and correct a condition adverse to quality in accordance with 10 CFR 50, Appendix B, Criterion XVI. The adverse condition was ice blockage of steam flow passages in Unit 1, Bay 5 of the ice condenser in excess of the Technical Surveillance (TS) Requirement 4.6.5.b.2 from June 1996 until August 1998; (2) the failure to adequately conduct TS Surveillance Requirement 4.5.2.c for Unit 1 and Unit 2 ice condensers as evidenced by the discovery of a substantial amount of debris in both condensers during an August 1998 outage in Unit 1 and a September 1998 outage in Unit 2; (3) the failure to maintain Unit 1 and Unit 2 ice condenser lower inlet doors operable while the Units were operating in Modes 1-4 as required by TS (TS 3.6.13 for Unit 1 and TS 3.6.5.3 for Unit 2). The doors were found to be inoperable due to their being impaired from opening fully by ice buildup, but capable of performing their safety function; (4) the failure to promptly identify and correct a condition adverse to quality in accordance with 10 CFR 50, Appendix B, Criterion XVI. The adverse condition was damage, such as denting and buckling, of a number of Unit 1 and Unit 2 ice condenser baskets. This damage exceeded vendor supplied acceptance criteria as found during August and September 1998 outages in Unit 1 and

9908100058 990802
PDR ADOCK 05000413
G PDR

IEDI /

Unit 2, respectively; (5) the failure to adhere to the requirements of 10 CFR 50, Appendix B, Criterion V, involving the as-installed intermediate deck door bolting and structural beam bolting not being in accordance with design requirements as defined by construction drawings, and as discovered in Unit 1 during the August 1998 outage; (6) three examples of failure to satisfy the requirements of 10 CFR 50, Appendix B, Criterion III, in that design changes and/or field changes were made to Unit 1 and Unit 2 ice condensers without being subjected to design control measures commensurate with those applied to the original design and which were not verified for adequacy of design until the August 1998 and September 1998 outages.

The NRC has determined that each of the six violations should be classified individually in accordance with the "General Statement of Policy and Procedures for NRC Enforcement Actions" (Enforcement Policy), NUREG-1600, at Severity Level IV. The basis for our determination stems from our review of the actual and potential safety consequences and the associated risk of nuclear fuel damage or release of radioactive material to the environment for each violation. Had an actual or potential event requiring system operation occurred during the time frame of the violations, the ice condenser system was capable of performing its intended safety function. In addition, the containment sump (part of an emergency core cooling system) could have performed its safety function even with the accumulation of debris in the sump area of each ice condenser. In each instance, the safety system remained degraded but operable, and the increase in risk was determined to be negligible.

As indicated in our June 8, 1999 letter, the results of our inspections and investigation indicate inadequate control or oversight of the surveillance, maintenance and correction of problems associated with the ice condenser. At the conference, you stated that the root causes and contributing factors which led to the violations included a lack of procedural guidance to perform post maintenance inspection and testing to verify ice condenser flow passage operability, inadequate ice basket inspection techniques, inadequate questioning attitude and follow up of deficient conditions by individuals responsible for performing maintenance and engineering activities associated with your ice condenser program, an inadequate understanding of the Technical Specification surveillance requirements by maintenance personnel who performed the ice condenser surveillances, and inadequate interface or communication between the maintenance and engineering groups who oversaw ice condenser operations. As a result of these findings, you also concluded that the root causes and contributing factors stemmed from inadequate oversight of ice condenser maintenance and engineering activities.

As a result of the violations, most of which were identified by DEC staff, you implemented prompt and comprehensive corrective actions. These included an extensive review of the root causes, management controls and processes related to other passive safety systems at the Catawba site in order to identify similar problems or deficiencies. Based on this review, DEC concluded that the oversight deficiencies were limited to the ice condenser program. Other corrective actions included improved surveillance procedures and the development of criteria for taking action on surveillance results, changes in accountability in the ice condenser oversight organization, shutting down Unit 1 until the Bay 5 condition was corrected, examining both Unit 1 and Unit 2 for extent of condition of problems found, required audits of the ice condenser program by both maintenance and engineering representatives, the use of a job sponsor for contractor oversight, correction of examples where the ice condenser design was inappropriately modified, and establishment of a review session with appropriate workers prior to each outage to discuss the criteria for action based on post maintenance and surveillance test results.

Discussions were also held at the enforcement conference regarding whether DEC employees or management willfully violated regulatory requirements. Based on these discussions and review of OI Report 2-1998-020, the NRC concluded that the violations as discussed above were not willful, but rather were due to the root causes and contributing factors as described above.

Based on our review of your corrective actions, the safety significance of each violation, and the lack of willfulness associated with each violation as discussed in this letter, we have determined that these six violations should be treated individually as Non-Cited Violations, consistent with Appendix C of the NRC Enforcement Policy. Therefore, you are not required to respond to this letter, unless the description therein does not adequately reflect your corrective actions or your position.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and any response will be placed in the NRC Public Document Room (PDR). To the extent possible, your response should not include any personal privacy, proprietary, or safeguards information so that it can be placed in the PDR without redaction.

If you have any questions regarding this letter, please contact Bruce Mallett, Director, Division of Reactor Safety, at (404) 562-4601.

Sincerely,

Original signed by LAR

Luis A. Reyes
Regional Administrator

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

Enclosures: 1. List of Conference Attendees
2. NRC Presentation Material
3. DEC Presentation Material

cc w/encls:

Regulatory Compliance Manager
Duke Energy Corporation
4800 Concord Road
York, SC 29745-9635

Lisa Vaughn
Legal Department (PB05E)
Duke Energy Corporation
422 South Church Street
Charlotte, NC 28242

Anne Cottingham
Winston and Strawn
1400 L Street, NW
Washington, D. C. 20005

North Carolina MPA-1
Suite 600
P. O. Box 29513
Raleigh, NC 27626-0513

Virgil R. Autry, Director
Div. of Radioactive Waste Mgmt.
S. C. Department of Health
and Environmental Control
2600 Bull Street
Columbia, SC 29201

Richard P. Wilson, Esq.
Assistant Attorney General
S. C. Attorney General's Office
P. O. Box 11549
Columbia, SC 29211

Elaine Chan
Federal Emergency Management Agency
500 C Street, SW, Room 840
Washington, D. C. 20472

North Carolina Electric
Membership Corporation
P. O. Box 27306
Raleigh, NC 27611

Peggy Force
Assistant Attorney General
N. C. Department of Justice
P. Box 629
Raleigh, NC 27602

County Manager of York County
York County Courthouse
York, SC 29745

Piedmont Municipal Power Agency
121 Village Drive
Greer, SC 29651

Manager (EC05O)
Nuclear Regulatory Licensing
Duke Energy Corporation
526 S. Church Street
Charlotte, NC 28201-0006

Distribution w/encls:

WTravers, EDO
 FMiraglia, DEDO
 MKnapp, DEDE
 DDarnby, OGC
 CPaperiello, NMSS
 DCool, NMSS
 BSmith, NMSS
 EJulian, SECY
 BKeeling, OCA
 Enforcement Coordinators
 RI, RII, RIV
 JLieberman, OE
 EHayden, OPA
 GCaputo, OI
 HBell, OIG
 CEvans, RII
 KClark, RII
 BMallett, RII
 LPlisco, RII
 COgle, RII
 RCarroll, RII
 MSatorius, OEDO
 SSparks, RII
 PTam, NRR
 DNelson, OE
 OE:EA File (BSummers, OE)(2 letterhead)
 PUBLIC

NRC Resident Inspector
 U.S. Nuclear Regulator Commission
 4830 Concord Road
 York, SC 29745

*Concurrence provided by
 J. Canady for Bill
 Barkhoff via telephone
 on 8/2/99*

SEND TO PUBLIC DOCUMENT ROOM? <input checked="" type="checkbox"/> YES							
OFFICE	RII:DRS	RII:DRP	RII:EICS	RII:ORA	OE		RII:ORA
Signature	<i>Bm</i>	<i>pl</i>	<i>S Sparks</i>	<i>NLO</i>	<i>ye</i>		<i>J.</i>
NAME	BMALLETT	LPLISCO	SSPARKS	CEVANS	JLIEBERMAN		J.Johnson
DATE	7/27/99	7/27/99	8/2/99	7/27/99	8/2/99	1/99	8/2/99
COPY?	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO

PUBLIC

100026

LIST OF CONFERENCE ATTENDEES

Nuclear Regulatory Commission

L. Reyes, Regional Administrator, Region II (RII)
J. Johnson, Deputy Regional Administrator, RII
B. Mallett, Director, Division of Reactor Safety (DRS), RII
W. Borchardt, Deputy Director, Office of Enforcement
S. Sparks, Acting Enforcement Officer, RII
C. Ogle, Chief, Branch 1, Division of Reactor Projects (DRP), RII
S. Shaeffer, Senior Resident Inspector - McGuire, DRP, RII
C. Evans, Regional Counsel, RII
R. Emch, Office of Nuclear Reactor Regulation
W. Rogers, Senior Reactor Analyst, DRS, RII
F. Fredrickson, Chief, Branch 6, DRP, RII
A. Belisle, Chief, Maintenance Branch, DRS, RII
K. Clark, Senior Public Affairs Officer, RII

Duke Energy Corporation (DEC)

G. Peterson, Vice President, Catawba Nuclear Station (CNS)
R. Jones, Station Manager, CNS
P. Herran, Engineering Manager, CNS
S. Bradshaw, Safety Assurance Manager, CNS
R. Parker, Maintenance Superintendent, CNS
G. Gilbert, Regulatory Compliance Manager, CNS
D. Kulla, Engineering Supervisor, Mechanical Systems Engineer (CNS)
R. Cummings, Communications Specialist CNS
L. Vaughn, Assistant General Counsel, DEC

Members of the Public

Four members of the public attended the predecisional enforcement conference.

**OPEN PREDECISIONAL ENFORCEMENT CONFERENCE AGENDA
CATAWBA NUCLEAR STATION**

**JULY 20, 1999, 1:00 P.M.
NRC REGION II OFFICE, ATLANTA, GEORGIA**

- I. OPENING REMARKS AND INTRODUCTIONS
L. Reyes, Regional Administrator
- II. NRC ENFORCEMENT POLICY
S. Sparks, Acting Enforcement Officer
Enforcement and Investigations Coordination Staff
- III. SUMMARY OF THE ISSUES
L. Reyes, Regional Administrator
- IV. STATEMENTS OF CONCERNS / APPARENT VIOLATIONS
B. Mallett, Director, Division of Reactor Safety
- V. LICENSEE PRESENTATION
- VI. BREAK / NRC CAUCUS
- Vii. NRC FOLLOWUP QUESTIONS
- VIII. CLOSING REMARKS
L. Reyes, Regional Administrator

STATEMENT OF APPARENT VIOLATIONS

The failure to promptly identify and correct a condition adverse to quality in accordance with 10 CFR 50, Appendix B, Criterion XVI, involving excessive ice condenser flow blockage in Unit 1, Bay 5 which did not meet Technical Specification Requirement 4.6.5.b.2. (EEI 50-413/98-13-01).

The failure to adequately conduct Technical Specification Surveillance Requirement 4.5.2.c for Units 1 and 2 ice condensers as evidenced by the identification of a substantial amount of loose debris in both containment buildings (EEI 50-413/98-13-03 and 50-414/98-16-03).

The failure to maintain the Unit 1 and Unit 2 ice condenser inlet doors operable in Modes 1-4 as required by Technical Specifications (TS 3.6.13 for Unit 1; TS 3.6.5.3 for Unit 2) due to the fact that the inlet doors were impaired by ice and frost buildup (EEI 50-413/99-11-01 and 50-414/98-16-04).

The failure to promptly identify and correct a condition adverse to quality in accordance with 10 CFR 50, Appendix B, Criterion XVI, involving damage, such as denting and buckling, to a number of Unit 1 and 2 ice condenser baskets which exceeded vendor supplied acceptance criteria (EEI 50-413/98-13-05 and 50-414/98-16-01).

Note: The apparent violations discussed in this PREDECISIONAL enforcement conference are subject to further review and are subject to change prior to any resulting enforcement action.

STATEMENT OF APPARENT VIOLATIONS

The failure to adhere to the requirements of 10 CFR 50, Appendix B, Criterion V, when the Unit 1 ice condenser intermediate deck door bolting and structural beam bolting requirements as defined by construction drawings were not implemented in accordance with these drawings (EEI 50-413, 414/98-13-07).

The failure to satisfy the requirements of 10 CFR 50, Appendix B, Criterion III, in that the design changes and/or field changes had been made to Unit 1 and Unit 2 ice condensers without being subject to design control measures commensurate with those applied to the original design and which were not verified for adequacy of design (EEI 50-413, 414/98-13-08).

A synopsis of Office of Investigations investigation Report No. 2-1998-020 states that based on the evidence obtained during this investigation, it was not possible to identify the person who allowed the blocked air flow passages to be returned to service. Consequently, it was not possible to determine whether the responsible party deliberately left air flow passages in a degraded condition.

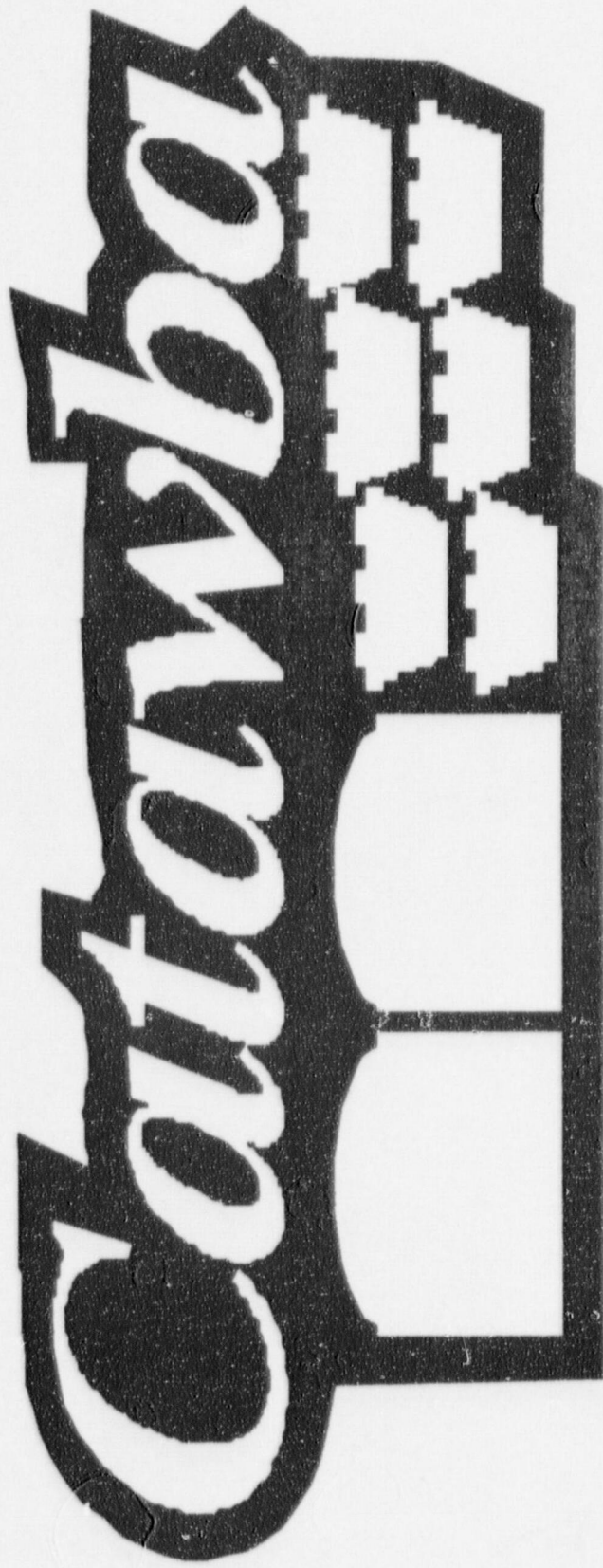
Note: The apparent violations discussed in this PREDECISIONAL enforcement conference are subject to further review and are subject to change prior to any resulting enforcement action.

Catawba Nuclear Station

Predecisional Enforcement Conference

Ice Condenser Issues

July 20, 1999



Agenda

- **Opening Remarks** Gary Peterson
- **Background Perspective** Ron Jones
- **Sequence of Events** Ron Jones
- **Apparent Violations** Pete Herran
- **Initial Management Actions** Ron Jones
- **Subsequent Management Actions** Ron Jones
- **Safety Significance** Ron Jones
- **Closing Remarks** Gary Peterson

Background Perspective

Pre-1998 Ice Condenser

Basis for confidence

- Low problem identification
- No concerns identified by oversight programs
- Confidence in strong system engineering
- Benchmarking

Background Perspective

Pre-1998 Ice Condenser

Contributing factors:

- **ICEMAN program development**
- **Minimization of stuck ice baskets**
- **Aggressive research and development program**
Ice condenser training facility
- **Proactive industry involvement**

Background Perspective

Pre-1998 Ice Condenser

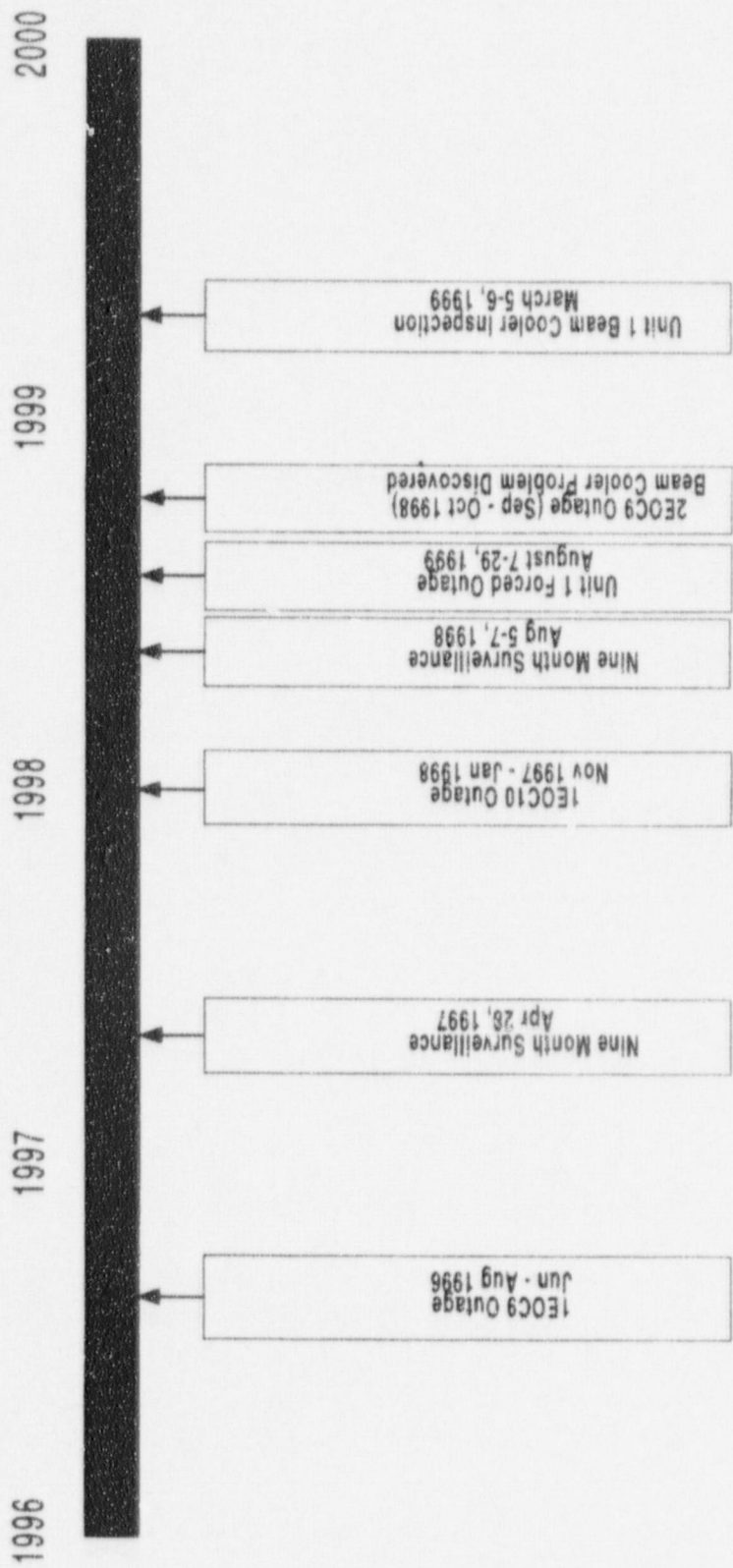
Masked Weaknesses:

- **Inappropriate use of a surveillance procedure as a post maintenance closeout procedure**
- **Unclear accountability, roles, and responsibilities**
- **Insufficient procedural controls**

Some activities not covered by procedures

Some existing procedures lacked specifics

Summary Sequence of Events



Sequence of Events

1EOC9 Refueling Outage (June through August 1996)

- **Installed block ice machine above bay 5 in the unit 1 Ice Condenser**
- **Discovered ice accumulation in bay 5**
 - Attributed to leakage from block ice machine
- **Performed flow channel cleaning**
- **Performed nine month interval Tech Spec Surveillance 4.6.5.1.b.3**

Two randomly selected flow passages in each bay were satisfactory

Sequence of Events

April 28, 1997

- Completed nine month on-line performance of TS Surveillance 4.6.5.1.b.3.
Two randomly selected passages in each bay were satisfactory

November 1997 - January 1998
(1EOC10 Refueling Outage)

- Discovered stuck ice baskets in Bay 5.
Attributed to the ice machine problem from the 1EOC9 outage.
Again, this was not reported in the corrective action program
Baskets were exempted from weighing per established criteria
- Completed nine month interval TS Surveillance 4.6.5.1.b.3
Two randomly selected flow passages in each bay were satisfactory.

Sequence of Events

February - July 1998

- **NRC Inspection at another Ice Condenser plant revealed extensive problems**
- **Duke Power reviewed industry information about those problems**
 - ① Issues were dispositioned through the corrective action program
 - Identified 16 potential enhancements to be completed by the end of 1999
 - Determined that Catawba had no operability concerns
- **Met with NRC in Region II office and described our Ice Condenser maintenance program.**

Sequence of Events

August 5-8, 1998

- Performed nine month on-line tech spec surveillance 4.6.5.1.b.3
- Identified unacceptable ice accumulation and foreign material in bays 13, 20, 23 which led to 100% inspection of Ice Condenser
- Inspection revealed significant flow channel blockage in bay 5
- Declared Unit 1 Ice Condenser inoperable
- Unit 1 was shutdown
- Initiated event investigation team
- Formed a team to confirm compliance with tech specs
- Unit 1 remained shutdown until all Ice Condenser restart issues were resolved
- Initiated inspection of unit 2 for similar problems and none were found
- Discussed interpretation of tech spec surveillance requirements on inspection of flow passages with vendor.

Sequence of Events

August 29, 1998

- Completed work on the unit 1 Ice Condenser
- Declared unit 1 Ice Condenser operable
- NRC inspections during and after declaration of operability

August 31, 1998 - September 3, 1998

- Unit 1 returned to power operation
- As found inspection of Unit 2 verified no significant flow channel blockage.

Sequence of Events

September 4 - 11, 1998

- Informed of a vendor interpretation at another utility concerning the definition of a flow channel
- Obtained a copy of the interpretation from the utility and immediately entered the problem into the Corrective Action Program
- Engineering evaluation of information contained in vendor interpretation and subsequent inspection determined that the Unit 1 Ice Condenser did not exceed the 15% design blockage criteria
- The unit 1 Ice Condenser was determined to be operable but degraded per NRC generic letter 91-18.

Sequence of Events

September 6, 1998

- During the unit 2 refueling outage which began on 9/5/98, inspection of the Ice Condenser revealed frost/ice buildup on support beam coolers
- The ice buildup would have impaired full opening of 46 of the 48 lower inlet doors
- Beam coolers were subsequently insulated to solve the problem.
(Beam cooler insulation was original design at McGuire but not at Catawba)
- Evaluated applicability to unit 1 and committed to inspection prior to the next outage

March 5-6, 1999

- Inspection of Unit 1 beam coolers revealed that eight (of 48) lower inlet doors were obstructed from opening fully
- Beam coolers were insulated to solve the problem at the next outage.

Apparent Violations

Overview of Violations

Procedure-Related Violations

1. Flow blockage (EEI 50-413/98-13-01)
2. Foreign material (EEI 50-413/98-13-03, EEI 50-414/98-16-03)
3. Basket damage (EEI 50-413/98-13-05, EEI 50-414/98-16-01)
4. Intermediate deck door bolting (EEI 50-413/98-13-07)

Design-Related Violations

5. Inadequate design control measures (EEI 50-413/98-13-08)

Armaflex insulation on top deck vent curtain

Wire mesh on air handling unit

Top deck blankets

6. Beam cooler (EEI 50-413/99-11-01, EEI 50-414/98-16-04).

Apparent Violations

1. Failure to identify and correct significant Ice Condenser flow blockage EEI 50-413/98-13-01 (Unit 1)

Root Cause: Lack of procedural guidance to perform post maintenance inspection and testing to verify ice condenser flow channel operability

Contributing Causes:

- **Inadequate questioning attitude by engineering regarding the conditions in Unit 1 bay 5 following the block ice machine leak**
- **Inadequate understanding of Ice Condenser tech spec requirements and lack of questioning attitude by maintenance.**

Apparent Violations

1. Failure to identify and correct significant Ice Condenser flow blockage EEI 50-413/98-13-01 (Unit 1) (continued)

Corrective Actions:

- Implemented procedures to verify ice condenser flow channel operability after loading and unloading of ice in the Ice Condenser
- Clarified expectations for System Engineer
- Provided the necessary training and familiarization to ensure appropriate maintenance supervisors have an adequate understanding of Ice Condenser tech spec requirements
- Reinforced the expectation for maintenance supervisors and crews to maintain a questioning attitude in conducting their responsibilities
- Ice Condenser job sponsor provides initial pre job briefing for Ice Condenser vendor workforce at the beginning of each outage.
- Supervisor gives daily shift pre job briefs

Apparent Violations

2. Failure to maintain adequate control of foreign material
EEI 50-413/98-13-03 (Unit 1) and EEI 50-414/98-16-03 (Unit 2)

Root Cause: Poor work practices allowed foreign materials to go undetected. Inadequate foreign material controls were in place during ice condenser outage maintenance

Corrective Action:

- All accessible foreign materials were removed
- Inaccessible foreign material was evaluated and found to be acceptable
- A foreign material inspection procedure has been implemented
- Improved work practices.

Apparent Violations

3. Failure to promptly identify and correct Ice Condenser basket material condition problems.

EEI 50-413/98-13-05 (Unit 1) and EEI 50-413/98-16-01 (Unit 2)

Root Cause: Inadequate inspections to identify ice basket damage caused by pre-operational or maintenance activities

Corrective Actions:

- Performed a baseline inspection of both units and made appropriate repairs
- Implemented post maintenance testing procedures to verify ice condenser baskets are free from damage, including dents, after unloading of ice in the ice condenser.

Apparent Violations

4. Failure to properly install Ice Condenser deck door bolting hardware EEI 50-413/98-13-07 (Unit 1)

Root Cause: Lack of procedural guidance to perform post maintenance inspection and testing to verify proper installation of deck doors

Corrective Action: Implemented procedures to provide adequate instructions for deck door installation
Performed baseline inspection and repair of all deck door bolting issues.

Apparent Violations

5. Inadequate design control measures within the Unit 1 Ice Condenser EEI 50-413/98-13-08 (Unit 1)

Root Cause: Two of the cited examples (wire mesh and armaflex insulation) were original construction

The other cited example (improper repair of top deck blankets) was caused by lack of procedural guidance.

Apparent Violations

5. Inadequate design control measures within the Unit 1 Ice Condenser EEI 50-413/98-13-08 (Unit 1) (continued)

Corrective Actions:

- A modification was completed to document the armaflex insulation to restore agreement between the plant and design drawings
- The wire mesh was removed
- A procedure was developed for inspection and installation of top deck blankets.

Apparent Violations

6. Failure to maintain the Unit 1 and Unit 2 Ice Condenser inlet doors operable in Modes 1-4 as required by tech spec EEI 50-413/99-11-01 (Unit 1) and EEI 50-414/98-16-04 (Unit 2)

Root Cause: Inadequate design that allowed frost to accumulate and impede inlet door opening

Corrective Action: Insulated beam coolers on unit 1 and unit 2.

Initial Management Actions

(Unit 1 Forced Outage Aug. 7-29, 1998)

Formed an Event Investigation Team

Chartered to investigate the following:

- 1. Flow channel blockage (ice accumulation and plastic bags)**
- 2. Door bolting discrepancies**
- 3. Blanket damage and taping**
- 4. Damaged ice baskets**

Instructed by management to consider possible wrongdoing due to the unusual nature of the event.

Initial Management Actions

(Unit 1 Forced Outage Aug. 7-29, 1998)

Basic findings of the Event Investigation Team:

- Root causes were:
 1. Lack of procedural guidance
 2. Inadequate inspections for basket damage
- Contributing factors were:
 1. Inadequate questioning attitude and followup
 2. Inadequate tech spec understanding
 3. Inadequate maintenance - engineering interface
- Management oversight of Ice Condenser activities was identified as a weakness
- No evidence of wrongdoing was found.

Initial Management Actions

(Unit 1 Forced Outage Aug. 7-29, 1998)

Management directed a team to be formed to verify compliance with
Ice Condenser tech specs

- Verified surveillance procedures adequately address tech spec requirements
- Obtained NOED for the turning vane issue.

Initial Management Actions

(Unit 1 Forced Outage Aug. 7-29, 1998)

Initial work scope was limited to

- Restoring flow passages
- Removal of foreign material
- Compliance with tech spec surveillance requirements

Work Scope continued to expand due to

- Continuing identification of other problems
- NRC identification of additional problems

Appointed project manager for unit 2 outage.

Subsequent Management Actions

Ice Condenser Program Improvements

- Improved processes and procedures
- Clarified roles and responsibilities and established clear accountability
- Changed the Ice Condenser organization
 1. New system engineer
 2. Maintenance job sponsor
 3. Dedicated maintenance supervisor and crew
- Improved oversight
 1. Maintenance job sponsor
 2. Project manager
 3. Outage backshift senior management coverage
 4. Scheduled assessment of the Ice Condenser program effectiveness

Subsequent Management Actions

Generic Implications

- Reviewed effectiveness of the corrective action program for other operationally unobservable systems
- Reviewed oversight program for other operationally unobservable systems

Conclusion: These reviews concluded that there were no generic implications

Safety Significance

Operability evaluations concluded that the Ice Condensers of both units could have performed their safety function with the as found conditions.