

UNITED STATES NUCLEAR REGULATORY COMMISSION

REGION II

SAM NUNN ATLANTA FEDERAL CENTER 61 FORSYTH STREET SW SUITE 23T85 ATLANTA, GEORGIA 30303-8931

April 23, 2004

Carolina Power and Light Company
ATTN: Mr. James Scarola
Vice President - Harris Plant
Shearon Harris Nuclear Power Plant
P. O. Box 165, Mail Code: Zone 1
New Hill, North Carolina 27562-0165

SUBJECT: SHEARON HARRIS NUCLEAR POWER PLANT - NRC INTEGRATED

INSPECTION REPORT 05000400/2004002

Dear Mr. Scarola:

On March 27, the US Nuclear Regulatory Commission (NRC) completed an inspection at your Shearon Harris reactor facility. The enclosed integrated inspection report documents the inspection findings, which were discussed on April 12, with you and other members of your staff.

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

Based on the results of this inspection, no findings of significance were identified. However, a licensee-identified violation, which was determined to be of very low safety significance, is listed in Section 40A7 of this report. If you contest this non-cited violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN.: Document Control Desk, Washington DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Shearon Harris facility.

CP&L 2

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Sincerely,

/RA/

Paul E. Fredrickson, Chief Reactor Projects Branch 4 Division of Reactor Projects

Docket No.: 50-400 License No.: NPF-63

Enclosure: NRC Inspection Report 05000400/2004004-02

w/Attachment: Supplemental Information

cc w/encl: (See page 3)

CP&L 3

cc w/encl:
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CP&L 4

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U. S. NUCLEAR REGULATORY COMMISSION REGION II

Docket No: 50-400

License No: NPF-63

Report No: 05000400/2004002

Licensee: Carolina Power and Light Company

Facility: Shearon Harris Nuclear Power Plant, Unit 1

Location: 5413 Shearon Harris Road

New Hill, NC 27562

Dates: December 28, 2003 - March 27, 2004

Inspectors: R. Musser, Senior Resident Inspector

P. O'Bryan, Resident Inspector

G. MacDonald, Senior Project Engineer, (Sections 1R12 and

1R15)

Approved by: P. Fredrickson, Chief

Reactor Projects Branch 4 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000400/2004-002; 12/28/2003 - 03/27/2004; Shearon Harris Nuclear Power Plant, Unit 1; routine integrated report.

The report covered a three-month period of inspection by resident inspectors and a senior project engineer. 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. Inspector-Identified and Self-Revealing Findings

None

B. <u>Licensee-Identified Violations</u>

A violation of very low safety significance, which was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. This violation is listed in Section 40A7.

REPORT DETAILS

Summary of Plant Status

The unit began the inspection period at rated thermal power, and operated at or near rated power for the entire inspection period.

REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather Protection

a. <u>Inspection Scope</u>

After the licensee completed preparations for seasonal low temperature, the inspectors walked down the emergency service water system, the emergency AC diesel generator systems, and the emergency AC diesel generator fuel oil storage system on January 10 and 17, 2004 (1 preparation sample of 3 systems). These systems were selected because their safety related functions could be affected by adverse weather. The inspectors reviewed Final Safety Analysis Report (FSAR) Sections 9.4.0 and 9.4.5, Technical Specification (TS) 3/4.7.5, and the documents listed in the Attachment. The inspectors also observed plant conditions, and evaluated those conditions using criteria documented in Procedure AP-301, "Adverse Weather."

The inspectors reviewed the following action requests (ARs) associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- 81940 "ESW Electric Unit Heaters"
- 81979 "EDG, ESW, ESWIS, and DFOS Low Temperature Limits"
- 99607 "AP-301 Freeze Protection Improvement"

b. <u>Findings</u>

No findings of significance were identified.

1R04 Equipment Alignment

a. Inspection Scope

Partial System Walkdowns:

The inspectors performed the following three partial system walkdowns, while the indicated SSCs were out-of-service (OOS) for maintenance and testing:

- "A" train of the auxiliary feed water system following restoration of the system after maintenance on January 5, 2004
- "B" train of the residual heat removal system with the "A" train of the residual heat

- removal system OOS on January 14, 2004
- "A" emergency diesel generator with "B" emergency diesel generator OOS on February 18, 2004

To evaluate the operability of the selected trains or systems under these conditions, the inspectors reviewed valve and power alignments by comparing observed positions of valves, switches, and electrical power breakers to the procedures and drawings listed in the Attachment.

b. <u>Findings</u>

No findings of significance were identified.

1R05 Fire Protection

a. Inspection Scope

For the seven areas identified below, the inspectors reviewed the licensee's control of transient combustible material and ignition sources, fire detection and suppression capabilities, fire barriers, and any related compensatory measures, to verify that those items were consistent with FSAR Section 9.5.1, Fire Protection System, and FSAR Appendix 9.5.A, Fire Hazards Analysis. The inspectors walked down accessible portions of each area to verify that conditions in these areas were consistent with descriptions of the areas in the FSAR. Documents reviewed are listed in the Attachment.

- Switchgear room A (1-A SWBRA)
- Switchgear room B (1-A-SWGRB)
- Computer room, process instrument control cabinets, and control-rod-drive circuit cabinets (12-A-CRC1)
- 236' auxiliary feedwater and component cooling water pump area (1-A-3-PB)
- 261' chiller area (1-A-4-CHLR)
- Emergency diesel generator room A (1-D-DGA)
- Emergency diesel generator room B (1-D-DGB)

b. <u>Findings</u>

No findings of significance were identified.

1R11 Licensed Operator Requalification

a. <u>Inspection Scope</u>

On March 2, 2004, the inspectors observed licensed-operator performance during requalification simulator examination, to verify that operator performance was consistent with expected operator performance, as described in Licensed Operator Continuing

Training Simulator Examination Scenario DSS-038. This examination tested the operators' ability to respond to the failure of a nuclear instrumentation channel, the loss of a feedwater train, grid instability, and the loss of all feedwater. The inspectors focused on clarity and formality of communication, the use of procedures, alarm response, control board manipulations, group dynamics and supervisory oversight.

The inspectors reviewed the post-exercise critique, to verify that the licensee identified deficiencies and discrepancies that occurred during the simulator examination. The inspectors also reviewed AR 120192 Simulator Training Materials Using Wrong Malfunction, to verify that the licensee had entered the deficency into the corrective action program.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness

a. <u>Inspection Scope</u>

The inspectors reviewed two degraded structures, systems or components (SSC) / functional performance problems or conditions, to verify the licensee's handling of these performance deficiencies in accordance with 10CFR50, Appendix B, Criterion XVI, Corrective Action, and 10CFR50.65, Maintenance Rule. Documents reviewed are listed in the Attachment

- Intermittent grounds in the 125 VDC electrical distribution systems.
- A residual heat removal (RHR) pump breaker failure

The inspectors focused on the following attributes:

- Appropriate work practices
- Identifying and addressing common cause failures
- Scoping in accordance with 10 CFR 50.65(b)
- Characterizing reliability issues (performance)
- Charging unavailability (performance)
- Trending key parameters (condition monitoring)
- 10 CFR 50.65(a)(1) or (a)(2) classification and reclassification, and
- Appropriateness of performance criteria for SSCs/functions classified (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified (a)(1)

The inspectors reviewed the following ARs associated with this area to verify that the licensee had identified and implemented appropriate corrective actions:

- AR 109745, 125 VDC Safety Bus 1A-SA Ground
- AR 94803, Ground on the 125 VDC NNS System

- AR 115432, A RHR Pump Breaker Failure
- AR 103705 480 VAC Distribution System Failure Monitoring

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

a. <u>Inspection Scope</u>

The inspectors reviewed the licensee's risk assessments and the risk management actions used by the licensee to manage risk for the plant configurations associated with the four activities listed below. The inspectors verified that the licensee performed adequate risk assessments, and implemented appropriate risk management actions when required by 10CFR50.65(a)(4). For emergent work, the inspectors also verified that any increase in risk was promptly assessed, and that appropriate risk management actions were promptly implemented.

- The failure of the A emergency services chilled water unit with the C air compressor OOS for maintenance
- The failure of the C air compressor with the A emergency services chilled water unit OOS for corrective maintenance
- The emergent corrective maintenance on the safety inverter number 1
- The work week of March 15, including having the C air compressor OOS for maintenance.

b. Findings

No findings of significance were identified.

1R14 Operator Performance During Non-Routine Evolutions and Events

a. Inspection Scope

During the non-routine evolutions identified below, the inspectors observed plant instruments and operator performance to verify that the operators performed in accordance with the associated procedures and training.

- On February 24, during the de-energization of vital bus 1
- On February 24, during the re-energization of vital bus 1

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed three operability determinations addressed in the ARs listed below. The inspectors assessed the accuracy of the evaluations, the use and control of any necessary compensatory measures, and compliance with the TS. The inspectors verified that the operability determinations were made as specified by procedure AP-618, "Operability Determinations." Documents reviewed are listed in the Attachment. The inspectors compared the justifications made in the determination to the requirements from the TS, the FSAR, and associated design-basis documents, to verify that operability was properly justified and the subject component or system remained available, such that no unrecognized increase in risk occurred:

- ARs 115156 and 115772, A ESCW chiller after failures of the VMS-2 limit switch on 1/16/03 and 1/19/03
- AR 113051, EDG A overspeed trip governor
- AR 108272, S1 safety inverter output slowly drifting high

The inspectors reviewed the following ARs associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- 114010: A ESCW chiller inoperable due to VMS-2
- 80506: A ESCW inoperable with hot gas bypass valve full open

b. <u>Findings</u>

No findings of significance were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

For the seven post-maintenance tests listed below, the inspectors witnessed the test and/or reviewed the test data to verify that test results adequately demonstrated restoration of the affected safety functions described in the FSAR and TS.

- OP-156.02, AC Electrical Distribution: testing of circuit breaker 101 after replacement on January 13, 2004.
- OST-1008, 1A-SA RHR Pump Operability Quarterly Interval Modes 1-2-3: testing following preventive maintenance on the A RHR pump breaker,
- OPT-1512, Essential Chilled Water Turbopak Units Quarterly Inspection/Checks Modes 1-6: testing of A ESCW chiller after replacement of VMS-2 switch on January 20,
- OP-156.02, AC Electrical Distribution: following replacement of synchronization switch121/127 following replacement on January 23,
- OST 1073, 1B-SB Emergency Diesel Generator Operability Test Monthly Interval

- Modes 1-2-3-4-5-6: for functional testing of B Fuel Oil Day Tank level switch after replacement on February 18.
- OP-104, Rod Control System: functional testing of the A reactor trip bypass breaker following replacement of the breaker on February 10,
- CM-E0020, Replace Oil Filled and Electrolytic Capacitors and/or Ferro-Resonant Transformer Assembly and Tune Westinghouse 7.5 kVA Static Inverters: following maintenance on the S1 inverter.

The inspectors reviewed ARs 115156 and 115772 (A ESCW Chiller failures resulting exceeding maintenance rule performance goals) associated with this area to verify that the licensee identified and implemented appropriate corrective actions.

b. <u>Findings</u>

No findings of significance were identified.

1R22 Surveillance Testing

a. <u>Inspection Scope</u>

For the four surveillance tests identified below, the inspectors witnessed testing and/or reviewed test data, to verify that the systems, structures, and components involved in these tests satisfied the requirements described in the TS and the FSAR, and that the tests demonstrated that the SSCs were capable of performing their intended safety functions.

- OST-1211*, Auxiliary Feedwater Pump 1A-SA Operability Test Quarterly Interval Modes 1-4
- OST-1411, Auxiliary Feedwater Pump 1X-SAB Operability Test Quarterly Interval Modes 1, 2, 3
- OST-1073, 1B-SB Emergency Diesel Generator Operability Test Monthly Interval Modes 1,2,3,4,5,6
- EPT-033, Emergency Safeguards Sequencer System Test

b. <u>Findings</u>

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 <u>Drill Evaluation</u>

a. Inspection Scope

The inspectors observed an operations simulator examination conducted on March 9 to

Enclosure

^{*}This procedure included inservice testing requirements.

verify licensee self-assessment of classification, notification, and protective action recommendation development in accordance with 10CFR50, Appendix E.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

a. Inspection Scope

For the performance indicators (PIs) listed below, the inspectors sampled licensee submittals for the period from January 1, 2003 through January 1, 2004. To verify the accuracy of the PI data reported during that period, the inspectors compared the licensee's basis in reporting each data element to the PI definitions and guidance contained in NEI 99-02, "Regulatory Assessment Indicator Guideline," Rev. 2.

Mitigating Systems Cornerstone

- Safety System Unavailability, High Pressure Safety Injection
- Safety System Unavailability, Residual Heat Removal

The inspectors reviewed operators logs, licensee event reports, records of inoperable equipment, and Maintenance Rule records to verify that the licensee had adequately accounted for unavailability hours that the subject systems had experienced during the previous four quarters. The inspectors also reviewed the number of hours those systems were required to be available and the licensee's basis for identifying unavailability hours. In addition, the inspectors interviewed licensee personnel associated with the PI data collection, evaluation, and distribution.

Barrier Integrity Cornerstone

• For the Reactor Coolant System Specific Activity PI, the inspectors observed licensee sampling and analysis of reactor coolant system samples, and compared the licensee-reported PI data with records developed by the licensee while analyzing previous samples.

The inspectors reviewed the following ARs associated with this area to verify that the licensee identified and implemented appropriate corrective actions:

- 83589 (ESCW Maintenance Rule Repetitive Failures)
- 82935 (Missed HHSI Unavailability Hours for NRC KPI)
- 104679 (Unplanned LCO Entry, A CSIP)
- 91691 (Corrosion of Decking Material in Recirculating Sumps A and B)
- 92443 (Incorrect Lead Lifted in PIC-19 Disabling RHR FCV)

b. <u>Findings</u>

No findings of significance were identified.

4OA3 Event Followup

(Closed) Licensee Event Report (LER) 05000400/2003006-00, Main Control Room Emergency Filtration System Degradation

On October 17, 2003, during the performance of TS surveillance testing required by TS 4.7.6.d.3., the licensee was unable to demonstrate that the control room emergency filtration system could maintain the control room at a positive pressure of greater than or equal to 1/8 inch water gauge relative to all adjacent areas during system operation. Further investigation by the licensee revealed that both trains of the Main Control Room (MCR) Emergency Filtration System were inoperable for greater than the time period allowed by Technical Specification 3.7.6 due to two previously unidentified boundary leakage paths. In 1992, a configuration change created a leak path through the MCR boundary via air recirculation unit drains. The second leak path was identified to be a porous wall within the control pressure boundary adjacent to a pipe chase leading to the Reactor Auxiliary Building (RAB). Furthermore, operational tests to satisfy Surveillance Requirement 4.7.6.d.3 were inadequate between 1992 and October, 2003 because they did not detect the boundary leakage. Corrective actions included revising the surveillance test and sealing the previously unidentified boundary leakage paths. This finding is greater than minor because it affected the barrier integrity cornerstone objective of providing reasonable assurance that physical design barriers provide protection from radionuclide releases and other hazards caused by accidents or events. The enforcement aspects of this finding are discussed in Section 4OA7. This LER is closed.

4OA5 Other - Spent Fuel Material Control and Accounting

a. Inspection Scope

The inspectors completed Phase I and Phase II of Temporary Instruction 2515/154, "Spent Fuel Material Control and Accounting at Nuclear Power Plants".

b. <u>Findings</u>

No findings of significance were identified.

4OA6 Meetings, Including Exit

On April 12, 2004, the resident inspectors presented the inspection results to Mr. Scarola and other members of his staff. The inspectors confirmed that proprietary information was not provided or examined during the inspection.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements which meets the criteria of Section VI of the NRC Enforcement Policy, NUREG-1600, for being dispositioned as a non-cited violation.

TS 4.7.6.d.3. requires that the MCR emergency filtration system maintain the control room at a positive pressure of greater than or equal to 1/8 inch water gauge relative to all adjacent areas during system operation. Contrary to this requirement, both trains of the MCR emergency filtration system were inoperable for greater than the time period allowed by TS 3.7.6 due to two previously unidentified boundary leakage paths. Furthermore, operational tests to satisfy TS 4.7.6.d.3 were inadequate between 1992 and October 2003, because they did not detect the boundary leakage. In 1992, a configuration change created a leak path through the MCR boundary via air recirculation unit drains. This leakage path was not detected until October 2003. Also, a second leak path was identified through a porous wall adjacent to a pipe chase leading to the RAB. This item is in the licensee's corrective action program as AR 108027. A phase 3 significance determination process analysis was performed to determine the risk associated with the finding. With the MCR ventilation in certain alignments RAB fires could create a smoke hazard for the MCR. The dominant risk sequences were fully developed RAB fires coupled with failure of RAB ventilation isolation and operator failure to successfully implement MCR smoke purge and failure to evacuate MCR and implement remote shutdown. The risk from the event was determined to be 3E-8, a condition of very low safety significance (Green).

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee personnel

- D. Braund, Superintendent, Security
- J. Briggs, HNP, Superintendent, Environmental and Chemical
- J. Caves, Supervisor Licensing/Regulatory Programs
- F. Diya, Manager Engineering
- R. Duncan, Director Site Operations
- W. Gurganious, Manager Nuclear Assessment
- E. McCartney, Training Manager
- G. Miller, Maintenance Manager
- T. Morton, Manager Support Services
- T. Natale, Manager -Outage and Scheduling
- T. Pilo, Supervisor Emergency Preparedness
- J. Scarola, Vice President Harris Plant
- G. Simmons, Superintendent Radiation Control
- E. Wills, Operations Manager
- B. Waldrep, General Manager Harris Plant
- M. Wallace, Licensing Specialist

NRC personnel

None

P. Fredrickson, Chief, Reactor Projects Branch 4

LIST OF I	TEMS OP	ENED, CLOSED, AND DISCUSSED
<u>Opened</u>		
None		
<u>Closed</u>		
05000400/2003006-00	LER	Main Control Room Emergency Filtration System Degradation (Section 4OA3)
<u>Discussed</u>		

LIST OF DOCUMENTS REVIEWED

Section 1R01: Adverse Weather Protection

Procedures:

OP-155, "Diesel Generator Emergency Power System"

OP-139, "Service Water System"

AP-301, "Seasonal Weather Preparation and Monitoring"

Section 1R04: Equipment Alignment

Partial System Walkdown

Residual Heat Removal System

Procedure OP-111, "Residual Heat Removal System," Revision 23
Drawing 2165-S-1324, "Simplified Flow Diagram Residual Heat Removal System", Revision 11

Auxiliary Feedwater System

Procedure OP-137, "Auxiliary Feedwater System," Revision 22 Drawing 2165-S-0544, "Simplified Flow Diagram Feedwater Systems, Revision 39

Emergency Diesel Generator System

Procedure OP-155, "Emergency Diesel Generator System," Revision 34

Drawing 2165-S-0633 S01, "Simplified Flow Diagram Emergency Diesel Generator Lube Oil and Air Intake & Exhaust System, Revision 10

Drawing 2165-S-0633 S02, "Simplified Flow Diagram Emergency Diesel Generator Jacket Water System, Revision 10

Drawing 2165-S-0633 S03, "Simplified Flow Diagram Emergency Diesel Generator Fuel Oil and Drainage Systems, Revision 7

Drawing 2165-S-0633 S04, "Simplified Flow Diagram Emergency Diesel Generator Starting Air System, Revision 19

Section 1R05: Fire Protection

Other Documents

Fire Preplan A34-6-286-0639

Fire Preplan A35-6-286-0641

Fire Preplan A50-7-305-0202

Fire Preplan A55-7-305-0212

Fire Preplan A53-7-305-0208

Fire Preplan A19-5-261-0602

Fire Preplan A09-4-236-0483

Fire Preplan D03-12-261-0254

Fire Preplan D08-12-261-0260

Section 1R12: Maintenance Effectiveness

Intermittent 125 VDC Electrical Distribution System Grounds

IEEE Standard 450-2002, Vented Lead-Acid Batteries for Stationary Applications
Plant Electrical Distribution System Description, SD-156
HNP Maintenance Rule Scoping Document for system 5245, 125VDC Distribution (non-class 1E)

A RHR Pump Breaker Failure

Procedures

PM-E0044, 480 VAC Siemens Type RLNF Load Center Breakers and Cubicles PM PM-E0012, 480 VAC ABB Type LK Load Center Breaker and Cubicle PM MST-E0072, 480 VAC Siemens Type RLNF Load Center Breaker and Cubicle Test MPT-E0005, Westinghouse Model DS-416 Reactor Trip/MG Set Breakers

Miscellaneous Documents

AR 103705, 480 VAC Distribution System Failure Monitoring
AR 115432, A RHR Pump Breaker Failure
Assessment 85375, Maintenance Rule Cycle 11 Periodic a(3) Assessment
Work Order 506592
Vendor Manual OJZ, Siemens Type RLN Low Voltage Circuit Breaker
Maintenance Rule (MR) Database (MR Event Log Report for Systems, 2085, 5175, and
Miscellaneous)
System Scoping Document for System 5175, 480 VAC Distribution
System Scoping Document for System 2085, Low Head Safety Injection

Section 1R15: Operability Evaluations

S1 Inverter

MCR Logs for 10/9/03 - 10/21/03 Westinghouse letter PGN 03-079, Safety System Operability Determination Report, dated December 8, 2003

Plant Computer data traces of inverter output voltage for S1, S2, S3, and S4 inverters dated March 3, 2004

Design Basis Document (DBD) 202, Plant Electrical Distribution System TS Section 3/4. 8.3 FSAR Section 8.3

AR 108272, S1 Safety Inverter Output Slowly Drifting High

A EDG

AR 113051, EDG A Overspeed Trip Governor
DBD-201, Emergency Diesel Generator System
Work Orders 369098901, 369098903
Vendor Manual OVQ, Woodward Governor SG Overspeed Sensing Device
Procedure CM-M0168, Corrective Maintenance emergency Diesel Generator Mechanical

Overspeed Trip Adjustment/Replacement

Cooper Energy Services - Service Information Memo R4/RV4 Preventative Maintenance Program (PMP) For Nuclear Standby Applications

Cooper Enterprise Owners Group Information Bulletin CE-IB 03-39, Mechanical Overspeed Trip Testing

Drawing, 1364-16463 R4, Emergency Diesel Generator Pneumatic Schematic Emergency Diesel Generator Vendor Manual MBO

Section 4OA1: Performance Indicator Verification

NEI 99-02, "Regulatory Assessment Performance Indicator Guideline", Revision 2

Section 4OA5: Other Activities

LER 05000400/2003006-00: Main Control Room Emergency Filtration System Degradation AR 108027