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

June 13, 2002

EA-02-067

Carolina Power & 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: FINAL SIGNIFICANCE DETERMINATION FOR A WHITE FINDING AND NOTICE OF VIOLATION (NRC INSPECTION REPORT 50-400/02-09, SHEARON HARRIS NUCLEAR POWER PLANT)

Dear Mr. Scarola:

The purpose of this letter is to provide you with the final results of our significance determination for the preliminary White finding identified in NRC Inspection Report 50-400/02-07, and discussed in NRC Inspection Report 50-400/01-05. The inspection finding was assessed under the significance determination process and was preliminarily characterized as White, i.e., an issue of low to moderate safety significance, which may require additional NRC inspection. The finding involved a failure of foreign material exclusion controls, identified by your staff, when several pieces of foreign material were discovered in the containment sump suction piping to the A Residual Heat Removal (RHR) pump.

At Carolina Power & Light Company's (CP&L) request, an open regulatory conference was conducted with members of your staff on June 4, 2002, to discuss CP&L's position on this issue. The enclosures to this letter include the list of attendees at the regulatory conference, and copies of the material presented by CP&L and the NRC at the regulatory conference. During the conference, you agreed with the NRC's estimate that the finding resulted in an incremental increase in core damage frequency of approximately 6×10^{-6}/year, and with the NRC's characterization of the finding as a violation of regulatory requirements. In addition, you provided information regarding the discovery of the rubber material in the RHR pump suction piping, CP&L's investigation into the cause of the problem, corrective actions, and the current Foreign Material Exclusion Program at the Harris Nuclear Plant.

At the conference, you requested the NRC to consider the finding as an old design issue in accordance with Inspection Manual Chapter (IMC) 0305, Operating Reactor Assessment Program. Consideration of the finding as an old design issue could cause the NRC to refrain from including this finding in the assessment program. The basis for your request stemmed from your belief that the finding satisfied the IMC's definition of an old design issue, and that your actions and other circumstances satisfied the four criteria listed in IMC 0305.

After considering the information developed during the inspection and the information CP&L provided at the conference, the NRC has concluded that the final inspection finding is appropriately characterized as White. This determination was based on our review of the relevant risk information during and after our inspection. In addition, the NRC concluded that the finding could not be appropriately considered an old design issue in accordance with IMC 0305. Specifically, the NRC concluded that this finding did not satisfy the definition of an old design issue, in that it did not constitute an engineering calculation or analysis, an associated operating procedure, or installation of plant equipment. This definition is intended to capture those types of issues associated with past deficiencies or inconsistencies in the integrated engineering and design process, which includes design analysis, operating procedures associated with the design, and installation of the plant equipment. In this case, the NRC concluded that the finding was associated with the failure to properly implement the requirements of a maintenance related procedure involving cleanliness and housekeeping. The NRC also determined that the criteria for identification was not satisfied in that the discovery of the foreign material was not a result of a voluntary initiative on the part of CP&L, but in fact was a result of a maintenance activity on an RHR system isolation valve and resulting corrective action and extent of condition reviews by the CP&L staff. The NRC, however, recognizes your staff's efforts to identify and promptly correct this matter. Based on your comments at the conference, however, the NRC may consider clarifying the information contained in IMC 0305 regarding old design issues to preclude future misinterpretations.

You have ten business days from the date of this letter to appeal the staff's determination of significance for the identified White finding. Such appeals will be considered to have merit only if they meet the criteria given in NRC Inspection Manual Chapter 0609, Supplement 3.

The NRC also determined that a violation occurred involving Technical Specification (TS) 6.8, Procedures and Programs. Specifically, CP&L failed to properly implement the requirements of Maintenance Management Manual Procedure MMM-011, Cleanliness and Housekeeping, which contains requirements to prevent the entry of foreign objects into plant systems and components. Adequate foreign material exclusion controls were not implemented for the RHR system when on October 8, 2001, foreign material of a size to affect pump performance (greater than the containment sump screen openings) was identified in the containment sump suction piping to the A RHR pump. As a result, during the operating cycle from April 15, 2000, to September 22, 2001, Unit 1 was operating in Modes 1, 2 and 3 on numerous occasions with the A RHR pump inoperable for greater than 72 hours without satisfying the action requirements of TS 3/4.5.2, Emergency Core Cooling Subsystems. The NRC concluded that the TS 3/4.5.2 violation is a result of CP&L's failure to promptly implement foreign material exclusion control procedural requirements, and as such the failure to meet these requirements has been cited as one violation in the enclosed Notice of Violation (Notice). The circumstances surrounding the violation is described in detail in the subject inspection report. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the Notice is considered escalated enforcement action because it is associated with a White finding.

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence, and the date when full compliance was achieved is adequately addressed on the docket in NRC Inspection Report 50-400/02-07 and in the information presented by Carolina Power and Light Company at the

regulatory conference (Enclosure 4). Therefore, you are not required to respond to this letter unless the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to provide additional information, you should follow the instructions specified in the enclosed Notice.

Because plant performance for this issue has been determined to result in increased regulatory response, we will use the NRC Action Matrix to determine the most appropriate NRC response for this finding. We will notify you, by separate correspondence, of that determination.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures, and your response, will be available electronically for public inspection in the NRC Public Document Room (PDR) or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). 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 and PARS without redaction.

For administrative tracking purposes, this letter is issued as a separate NRC Inspection Report, No. 50-400/02-09.

Should you have any questions regarding this letter, please contact Loren Plisco, Director, Division of Reactor Projects, at 404-562-4501.

Sincerely,

Luis A. Reyes
Regional Administrator

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

Enclosures: 1. Notice of Violation
2. List of Attendees
3. Material presented by NRC
4. Material presented by CP&L

cc w/encls: (see page 4)

cc w/encls:
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Performance Evaluation and
Regulatory Affairs CPB 9
Carolina Power & Light Company
Electronic Mail Distribution

Robert J. Duncan II
Director of Site Operations
Carolina Power & Light Company
Shearon Harris Nuclear Power Plant
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Ben Waldrep
Plant General Manager--Harris Plant
Carolina Power & Light Company
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John R. Caves, Supervisor
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Enforcement Coordinators
RI, RIII, RIV
E. Hayden, OPA
G. Caputo, OI
H. Bell, OIG
W. Dean, NRR
M. Johnson, NRR
L. Dudes, NRR
J. Goshen, NRR
S. Rosenberg, OEDO
F. Congel, OE
C. Christensen, RII
L. Plisco, RII
W. Rogers, RII
B. Bonser, RII
S. Sparks, RII
J. Brady, RII
C. Evans, RII
G. MacDonald, RII
R. Hannah, RII
K. Clark, RII
PUBLIC
OEMAIL
OEWEB

S Sparks for

P Nelson via email/telephone for

via email

OFFICE	RII:DRP	RII:EICS			OE	NRR
SIGNATURE						
NAME	LPLISCO	CEVANS			FCONGEL	LDUDES
DATE	6/11/02	6/11/2			6/6/2	6/6/2

OFFICIAL RECORD COPY DOCUMENT NAME: M:\ENFORCE\02cases\067Harris RHR FME\Harris FME final.wpd

NOTICE OF VIOLATION

Carolina Power and Light Company
Shearon Harris Nuclear Power Plant
Unit 1

Docket Nos.: 50-400
License Nos.: NPF-63
EA-02-067

During an NRC inspection completed on April 25, 2002, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," (Enforcement Policy), the violation is listed below:

> Technical Specification (TS) 6.8, Procedures and Programs, Section 6.8.1, requires that written procedures be established implemented and maintained covering the activities recommended in Appendix A of Regulatory Guide (RG) 1.33, Revision 2, February 1978, which includes Section 9.0, Procedures for Performing Maintenance. Licensee Maintenance Management Manual (MMM) Procedure MMM-011, "Cleanliness and Housekeeping," Revision 4, section 5.3," Preventing Contamination During Maintenance," contains the requirements for preventing foreign object entry into plant systems and components.
>
> TS 3/4.5.2 requires two operable Residual Heat Removal (RHR) pumps when in Modes 1-3, with operation with one pump allowed for a period of 72 hours.
>
> Contrary to the above, adequate foreign material exclusion controls were not implemented for the RHR System when on October 8, 2001, foreign material of a size to affect pump performance was identified in the containment sump suction piping to the A RHR pump. As a result, during the operating cycle prior to refueling outage 10 (from April 15, 2000, to September 22, 2001), Unit 1 was operating in Modes 1-3 on numerous occasions and the A RHR Pump was inoperable for a time greater than 72 hours and the licensee did not satisfy the requirements of TS 3/4.5.2.

This violation is associated with a White SDP finding.

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence and the date when full compliance was achieved is already adequately addressed on the docket in NRC Inspection Report 50-400/02-07 and in the information presented by Carolina Power and Light Company at the regulatory conference. However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation," and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555 with a copy to the Regional Administrator, Region RII, within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001.

Enclosure 1

If you choose to respond, your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC web site at http://www.nrc.gov/reading-rm/ADAMS.html (the Public Electronic Reading Room). Therefore, to the extent possible, the response should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the Public without redaction.

In accordance with 10 CFR 19.11, you may be required to post this Notice within two working days.

Dated this 13th day of June 2002

LIST OF REGULATORY CONFERENCE AND
PREDECISIONAL ENFORCEMENT CONFERENCE ATTENDEES

NUCLEAR REGULATORY COMMISSION:
L. Reyes, Regional Administrator, Region II (RII)
L. Plisco, Director, Division of Reactor Projects (DRP), RII
B. Bonser, Chief, Branch 4, DRP, RII
J. Brady, Senior Resident Inspector, Harris Nuclear Plant, RII
C. Evans, Enforcement Officer, RII
G. MacDonald, Harris Project Engineer, DRP, RII
W. Rogers, Senior Reactor Analyst, Division of Reactor Safety, (DRS), RII
S. Sparks, Senior Enforcement Specialist, RII
R. Musser, Acting Chief, Branch 3, DRP, RII
R. Cortes, Nuclear Safety Intern, DRS, RII
K. Harper, Technical Intern, RII
S. Belcher, Technical Intern, RII
R. Taylor, Nuclear Safety Intern, DRS, RII
C. Fong, Co-operative Engineer, RII
L. Dudes, Senior Enforcement Coordinator, NRR (teleconference)
J. Goshen, Project Manager, NRR (teleconference)
D. Nelson, Senior Enforcement Specialist, Office of Enforcement (OE) (teleconference)
B. Pascarelli, NRR, IIPB (teleconference)

PROGRESS ENERGY/CAROLINA POWER AND LIGHT COMPANY (CP&L):

J. Scarola, Site Vice President, Harris Nuclear Plant (HNP)
B. Waldrep, Plant General Manager, HNP
A. Khanpour, Acting Manager Engineering Support Services, HNP
A. Barbee, Supervisor Operations Training, HNP
J. Caves, Supervisor Licensing/Regulatory Programs, HNP
J. Laque, Maintenance Manager, HNP
S. Laur, Superintendent Probabilistic Safety Assessment, HNP

OPEN REGULATORY CONFERENCE

SHEARON HARRIS NUCLEAR POWER PLANT

JUNE 4, 2002
NRC REGION II OFFICE, ATLANTA, GA.

I. OPENING REMARKS, INTRODUCTIONS AND MEETING INTENT
L. Reyes, Regional Administrator

II. NRC REGULATORY CONFERENCE POLICY
L. Plisco, Director, Division of Reactor Projects

III. STATEMENT OF THE ISSUE WITH RISK PERSPECTIVES
L. Plisco, Director, Division of Reactor Projects

IV. SUMMARY OF APPARENT VIOLATION
L. Plisco, Director, Division of Reactor Projects

V. LICENSEE RISK PERSPECTIVE PRESENTATION

VI. LICENSEE RESPONSE TO APPARENT VIOLATION

VII. BREAK / NRC CAUCUS
L. Reyes, Regional Administrator

VIII. CLOSING REMARKS
L. Reyes, Regional Administrator

Enclosure 3

Draft Apparent Violation

Note: The apparent violation discussed at this Regulatory Conference is subject to further review and subject to change prior to any resulting enforcement action.

Technical Specification (TS) 6.8, Procedures and Programs, section 6.8.1 requires that written procedures be established implemented and maintained covering the activities recommended in Appendix A of Regulatory Guide (RG) 1.33, Revision 2, February 1978 which includes section 9.0, Procedures for Performing Maintenance. Licensee Maintenance Management Manual (MMM) Procedure MMM-011, "Cleanliness and Housekeeping," Revision 4, section 5.3," Preventing Contamination During Maintenance," contains the requirements to prevent foreign object entry into plant systems and components.

TS 3/4.5.2 requires 2 operable RHR pumps when in Modes 1-3 with operation with one pump allowed for a period of 72 hours.

Adequate foreign material exclusion controls were not implemented for the RHR System when on October 8, 2001, foreign material of a size to affect pump performance (greater than the containment sump screen openings) was identified in the containment sump suction piping to the A RHR pump. As a result, during the operating cycle prior to refueling outage 10 (from April 15, 2000, to September 22, 2001), Unit 1 was operating in Modes 1-3 on numerous occasions and the A RHR Pump was inoperable for a time greater than 72 hours and the licensee did not satisfy the requirements of TS 3/4.5.2.

Harris Nuclear Plant

Regulatory Conference
Preliminary White Finding
Foreign Material in RHR System

CP&L

A **Progress Energy** Company

HNP Attendees

- Jim Scarola – Site Vice President
- Ben Waldrep – Plant General Manager
- Abdy Khanpour – Engineering Manager
- Jason Laque – Maintenance Manager
- Andy Barbee – Operations Training Superintendent , Root Cause Team Lead
- Steve Laur – PSA Supervisor
- John Caves – Licensing Supervisor

CP&L

Agenda

- Background
- Discovery/Investigation
- Corrective Actions
- HNP Foreign Material Exclusion Program
- Conclusions

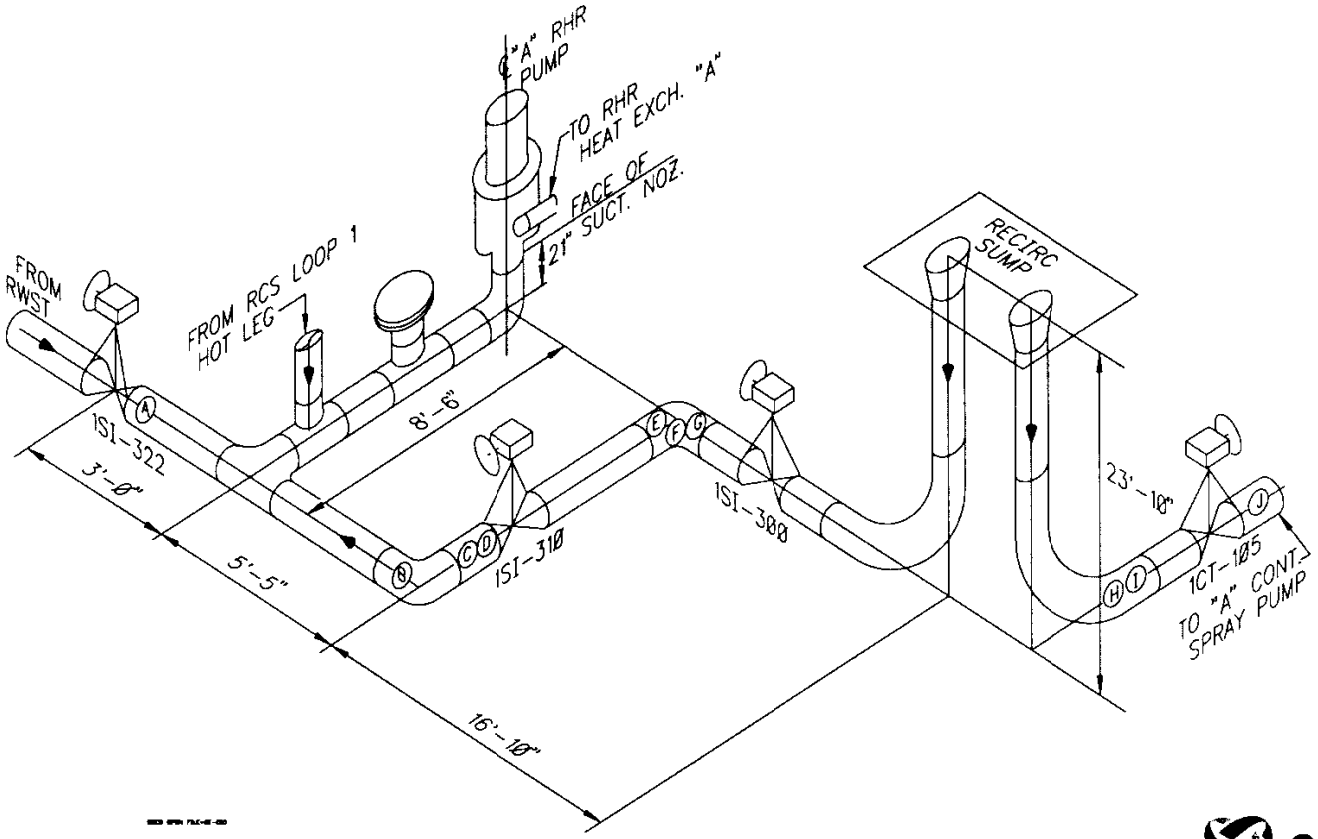
CP&L

Background

- HNP admits violation
- HNP accepts NRC conclusion of significance: White finding – Low to moderate importance to safety
- Request NRC to consider the issue be treated as Old Design Issue in Assessment Program

CP&L

Discovery of Foreign Material



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Foreign Material

CP&L

Initial Discovery

- Found during maintenance on Cont. Sump to "A" RHR Pump Isolation Valve
- Discovered by mechanics when valve was disassembled
- Minor debris discovered in valve body
- Unexpected debris prompted aggressive investigation using inspection mirrors and flashlight
- Debris was removed
- Debris discovery immediately reported to management

CP&L

Root Cause Investigation

- Multidiscipline team
- Concluded additional invasive inspections needed
- Expanded to 9 additional internal locations in SI and Cont. Spray (CT)
  - Utilized high-resolution inspection camera
- Root Cause: Substandard work practices
- Corrective Action to Prevent Recurrence
  - Validated ***CURRENT*** FME Program effectiveness

CP&L

Additional Inspections

- "A" RHR-found additional rubber-type debris and sediment
- "B" RHR-no material found
- "A" CT-found two small metal objects
- "B" CT-no material found
- RWST-no material found

CP&L

Consequences

- "A" CT determined to be operable
- "A" RHR determined to be inoperable when on recirc. to the sump
  - Material unlikely to migrate into pump suction during low flow conditions such as SBLOCA
  - Large rubber pieces potentially "clog" the impeller eye reducing pump performance in high flow conditions

CP&L

Results of Investigation

- Validated "as left" cleanliness of safety systems
- Restored confidence in system performance
- Validated strength of FME culture at HNP

CP&L

FME Program Evolution

- Prior to 1995 the industry maintained cleanliness in fluid systems in accordance with ANSI N45.2.1
- SOER 95-01 defined FME as an industry concern.
- Harris developed the site FME program as a response to SOER 95-01

CP&L

SOER 95-01 Reducing Events Resulting From Foreign Material Intrusion

- Uncontrolled material entering systems and components during maintenance activities
- Foreign Material Events Had Increased Between 1993 and 1995
  - Fuel Cladding Damage
  - Major Equipment Damage
  - Heat Transfer Capability Degradation
  - System Flow Characteristics Degradation

CP&L

Pilgrim

- Main generator fault causes a load rejection results in reactor scram
- Cause - Overheating of stator bar, cooling water blocked by gasket material left from work performed four years earlier

CP&L

Biblis A

- Fire in a reactor coolant pump motor as a result of a short circuit
- Cause - Chisel found in motor

CP&L

FME Program Evolution

- Improvements utilized benchmarking and operating experience
  - Flange and pipe covers identify FME barriers
  - NGG-wide procedure
  - Integration of FME principles into broad scope of training
  - FME training required prior to entry into FME area
- Recent discovery and prompt resolution of FME in RHR system indicative of strong culture

"No Fault" and Reward Environment

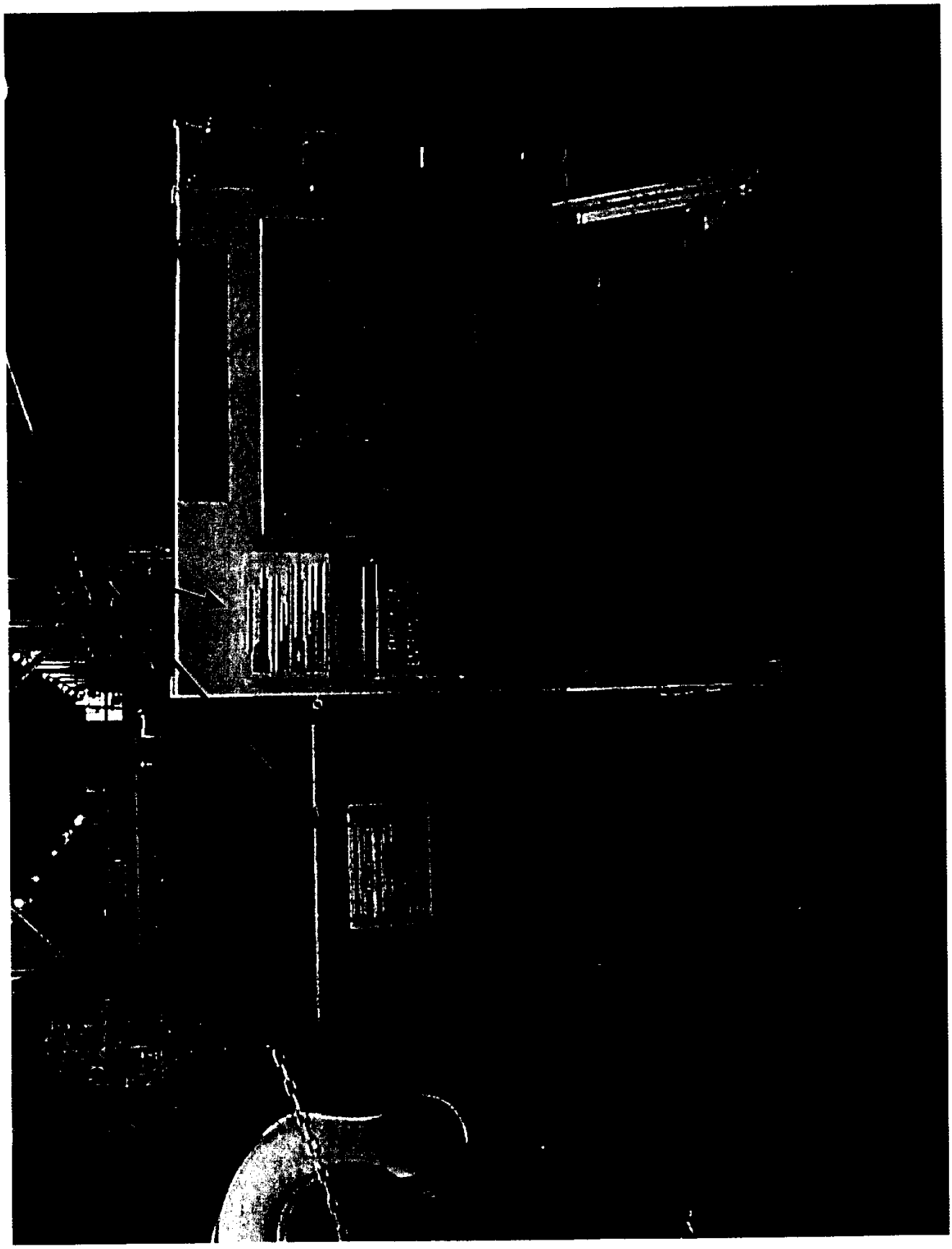
- "No-Fault" policy is established to encourage the employee to self-identify any FME issues without adverse consequences.
- Employees are rewarded for identifying and correcting FME concerns.
- An example of this is where a contract employee accidentally removed an FME Barrier, corrected the condition and identified the condition with an Condition Report.

CP&L

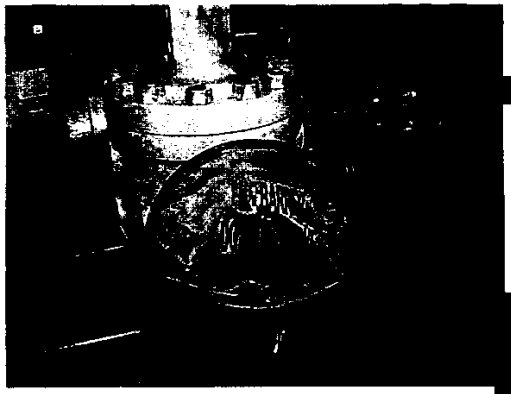
Levels of FME Control

- FME Levels prioritized based on nuclear safety and commercial risk factors.
- Factors include:
  - Potential for foreign material intrusion
  - Ease of identification and removal
  - The potential consequences from foreign material left in the system.
- Plant Observation Program specifically calls out for a review of FME practices.

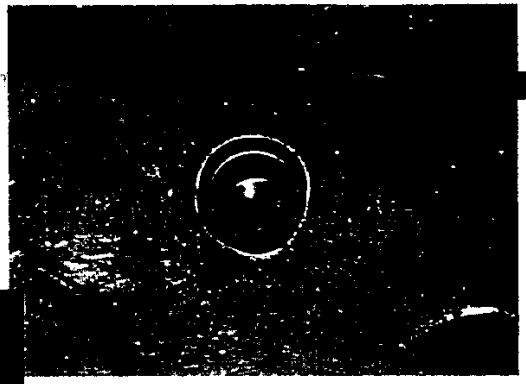
CP&L



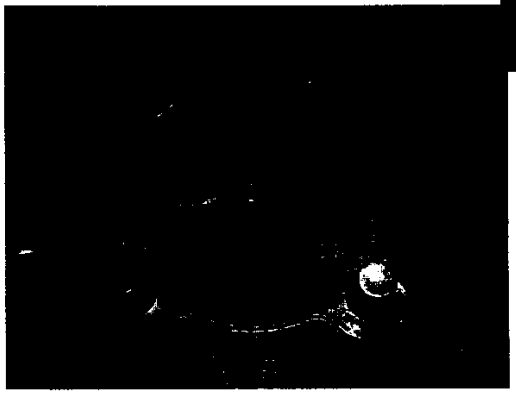
FME Cover Examples



Bag Style Covers

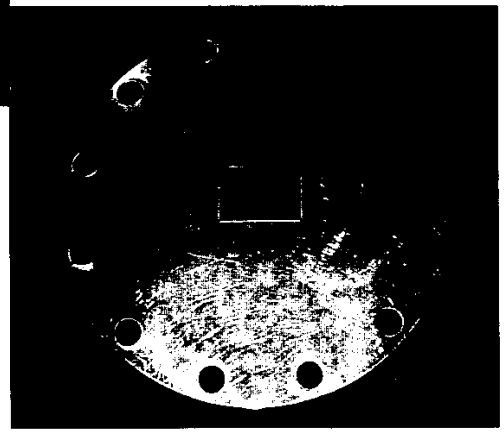


Small Diameter Pipe Covers



Flange Cover – Comes in varying sizes

FME Sticker



Fabricated Covers

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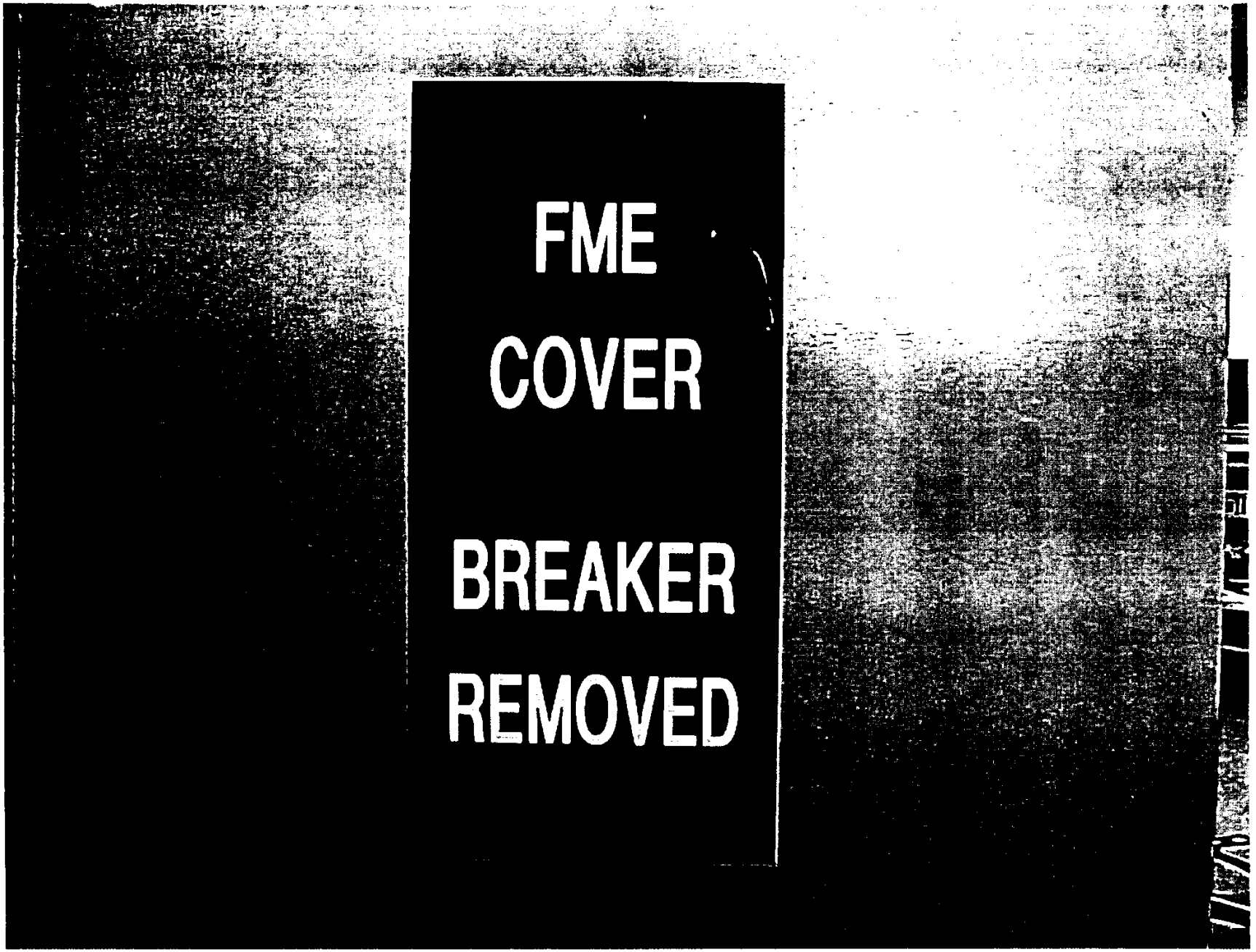
FME
COVER
BREAKER
REMOVED

What is next?

- Continuous Improvement Culture
  - Corrective Action Program
  - Self Assessments
  - Benchmarking
- Current Business Plan includes an initiative for in-process quality enhancement

CP&L

Old Design Issues

- Inspection Manual:
  - Definition: A finding involving a past problem in the engineering calculations or analysis, associated operating procedure, or installation of plant equipment that does not reflect a performance deficiency associated with existing licensee programs, policy, or procedure. As discussed in section 06.06.a, some old design issues may not be considered in the assessment program.

Inspection Manual 0305, Sect. 04.07

CP&L

Criteria for Exclusion

- Licensee identified
  - Voluntary initiative after minor debris discovered by mechanics
  - After minor debris removed, used mirrors to find piece of rubber outside line of sight
  - Mechanics immediately informed management of problem

CP&L

Criteria for Exclusion

- Corrected in a timely fashion
  - Problem discovered during outage
  - Extent of condition investigation completed before startup
  - Root cause corrected several years prior to discovery
  - Discovery and subsequent actions demonstrate current program is effective

CP&L

Criteria for Exclusion

- Not Likely to be identified by routine licensee efforts
  - Water never flows through stagnant pipe
  - No surveillance requirements
  - Rubber was outside of line-of-sight
  - No opportunity for recent QC activities to identify risk-significant condition

CP&L

Criteria for Exclusion

- Does not reflect a current performance deficiency
  - Current FME Program would have prevented occurrence

CP&L

Conclusions

- Large rubber piece most probably introduced in 1991
- Debris found by aggressive investigation – we have a strong find and fix culture
- Continuous improvements in FME program since debris introduced in RHR system
- High confidence that there are no other foreign material problems in stagnant piping systems

CP&L

HNP Request

- HNP believes criteria satisfied to exclude this finding from action matrix impact
- Respectfully request that NRC consider discretion allowed by MC 0305

CP&L