



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

January 11, 1993

Docket Nos. 50-325  
and 50-324

LICENSEE: Carolina Power & Light Company  
FACILITY: Brunswick Steam Electric Plant, Units 1 and 2  
SUBJECT: SUMMARY OF MEETING HELD TO DISCUSS POSSIBLE CONCERNS WITH THE  
BRUNSWICK STEAM ELECTRIC PLANT, UNITS 1 AND 2, CONTROL BUILDING  
EMERGENCY AIR FILTRATION SYSTEM CHLORINE DETECTION LOGIC

On Thursday, December 17, 1992, the staff met with Carolina Power & Light Company (CP&L, the licensee) to discuss possible concerns with the Brunswick Steam Electric Plant (BSEP), Units 1 and 2, Control Building Emergency Air Filtration (CBEAF) System chlorine detection logic. The meeting was held at the request of the licensee in order to expedite informing the Nuclear Regulatory Commission staff about the licensee's further response to BSEP Unit 1 Licensee Event Report (LER) 1-92-018, "Failure of the CBEAF System to Meet Single Failure Criteria for Radiation and Fire Events," dated September 11, 1992.

On August 12, 1992, while reviewing the Nuclear Network Operating Experience (OE) Report #5366 concerning "Preferred/Standby" switch arrangements on the Standby Gas Treatment (SBGT) Systems at Quad Cities, the CP&L/BSEP SBGT system engineer determined that the OE was applicable to the CBEAF system. A review of the CBEAF system was performed and single failures within the start logic were identified. Adverse Condition Report (ACR) B92-642 was then generated and a Special Procedure was performed on August 14, 1992, which demonstrated that system operation was in accordance with ACR B92-642. The licensee reported this condition to the staff on September 11, 1992, in LER 1-92-018.

The licensee prepared an Engineering Evaluation Report (EER 92-0352) which proposed a resolution to the CBEAF concern via a two-phase approach. A 10 CFR 50.59 review was then performed by CP&L, which determined that Phase 1, which included the resolution of logic failures, could be accomplished without NRC staff review. The second phase was determined to require changes to the BSEP Technical Specifications (TS) and would thus require NRC review. The licensee expects to submit a formal request for amendment to the TS by January 8, 1993.

The staff requested that copies of the 10 CFR 50.59 evaluations be sent to the project manager for review. The staff also requested that the licensee include in the formal submittal, at a minimum, the following:

1. A discussion on the separation of the various instrument trains indicating which portions are IE and non-IE.
2. A discussion on how the system meets the single-failure criteria.

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3. A discussion on how the system meets the requirements of IEEE Standard 297.
4. The final design documentation.
5. What, if any compensatory measures (e.g., potassium iodine pills, self-contained breathing apparatus, training provided to the operators,) will be in place.
6. A discussion of the maintenance history of the present system.

Enclosed are the list of attendees and the licensee's presentation slides.

ORIGINAL SIGNED BY:

C. E. Carpenter, Jr., Project Engineer  
Project Directorate II-1  
Division of Reactor Projects - I/II  
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Enclosures:

1. Attendance List
2. Slides

cc w/enclosures:

See next page

DISTRIBUTION:

Docket File

NRC/Local PDRs  
PD II-1 Reading  
T. Murley 12-G-18  
F. Miraglia 12-G-18  
J. Partlow 12-G-18  
S. Varga 14-E-4  
G. Lainas 14-H-3  
E. Adensam 14-B-20  
C. E. Carpenter 14-B-20  
R. H. Lo 14-B-20  
S. Little 14-B-20

OGC

E. Jordan MNBB 2701  
P. Milano 14-E-21  
R. Architzel 8-D-1  
I. Moghissi 8-D-1  
J. Mauck 3-D-23  
P. Loeser 8-H-7  
J. Wing 10-E-4  
R. L. Prevatte  
ACRS (10)  
L. Plisco, EDO 10-A-19  
E. Merschoff, R-II

cc: Licensee & Service List

130009

OFC	LA:PD21:DRPE	PE:PD21:DRPE	PM:PD21:DRPE	D:PD21-DRPE	
NAME	SLittle <i>CE</i>	CECarpenter:tms	PDMilano <i>pm</i>	l'Adensam	
DATE	01/ 7 /93	01/ 7 /93 <i>CE</i>	01/ 07 /93	01/ 11 /93	

Document Name: BRN85143.MTS

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## MEETING ATTENDEES

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Rex Allen	CP&L/NED/BESS/I&C	919-546-2414

\* Participated via telephone from site.

**NRC TECHNICAL PRESENTATION**

**BRUNSWICK NUCLEAR PLANT  
CBHVAC SINGLE FAILURE CONCERNS**

**DECEMBER 17, 1992**

## AGENDA

- CURRENT SYSTEM CONFIGURATION / SINGLE FAILURE CONCERNS
- PLANNED MODIFICATIONS
- TECHNICAL SPECIFICATION CHANGES
- MODIFICATION IMPACT ON CURRENT STARTUP SCHEDULE
- SUMMARY

## **CBEAF PROBLEM IDENTIFICATION**

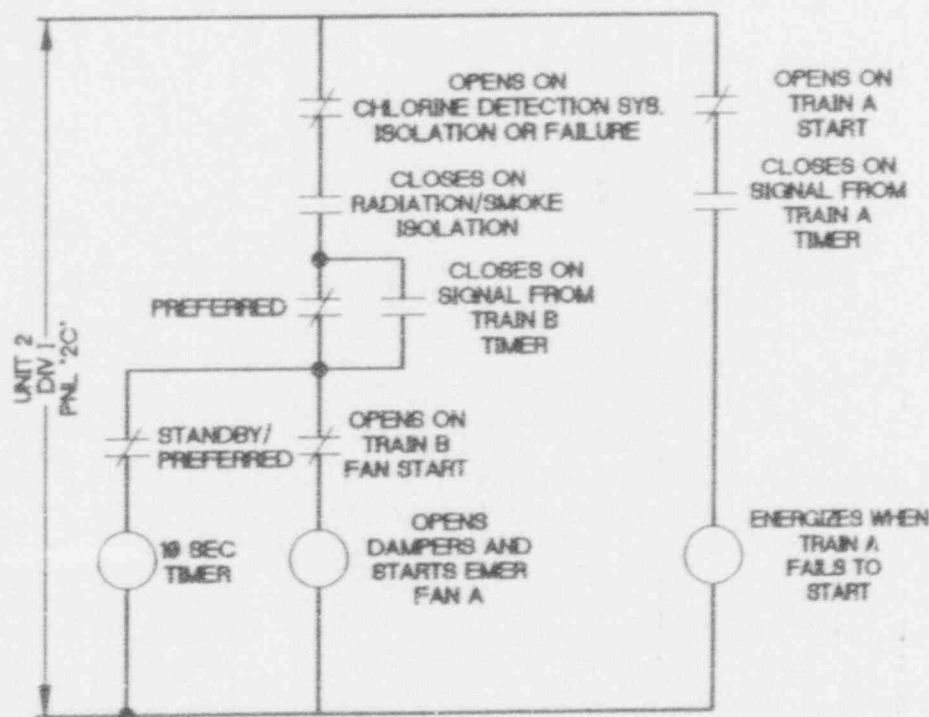
- Operating Experience Report (OE) #5366 concerning "Preferred/Standby" switch arrangements on the Standby Gas Treatment Systems is entered on the Nuclear Network: 6/17/92
- OE is reviewed by SBGT system engineer. Although the OE was not applicable to BNP, engineer suspects OE may apply to CBEAF: 8/12/92
- CBEAF System is reviewed and single failures within the start logic are identified. Adverse Condition Report B92-642 is generated: 8/12/92
- A Special Procedure (TCF #92-0048) is prepared which will demonstrate system operation agrees with that stated in the ACR: 8/13/92
- Special procedure is performed and Chlorine Detection Failure is identified: 8/14/92
- CBEAF problem identified in Licensee Event Report (LER) 1-92-018: 9/11/92



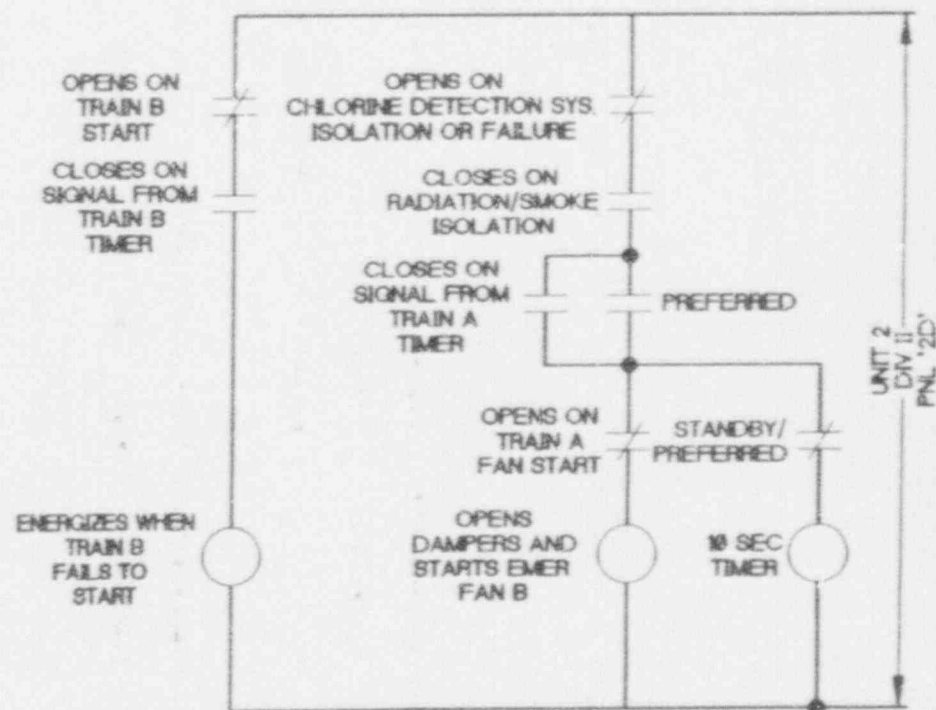
# CONTROL BUILDING EMERGENCY AIR FILTRATION SYSTEM - SINGLE FAILURE 1

(CONTACTS SHOWN IN "NORMAL" OPERATING POSITION)

## TRAIN A LOGIC (PREFERRED)

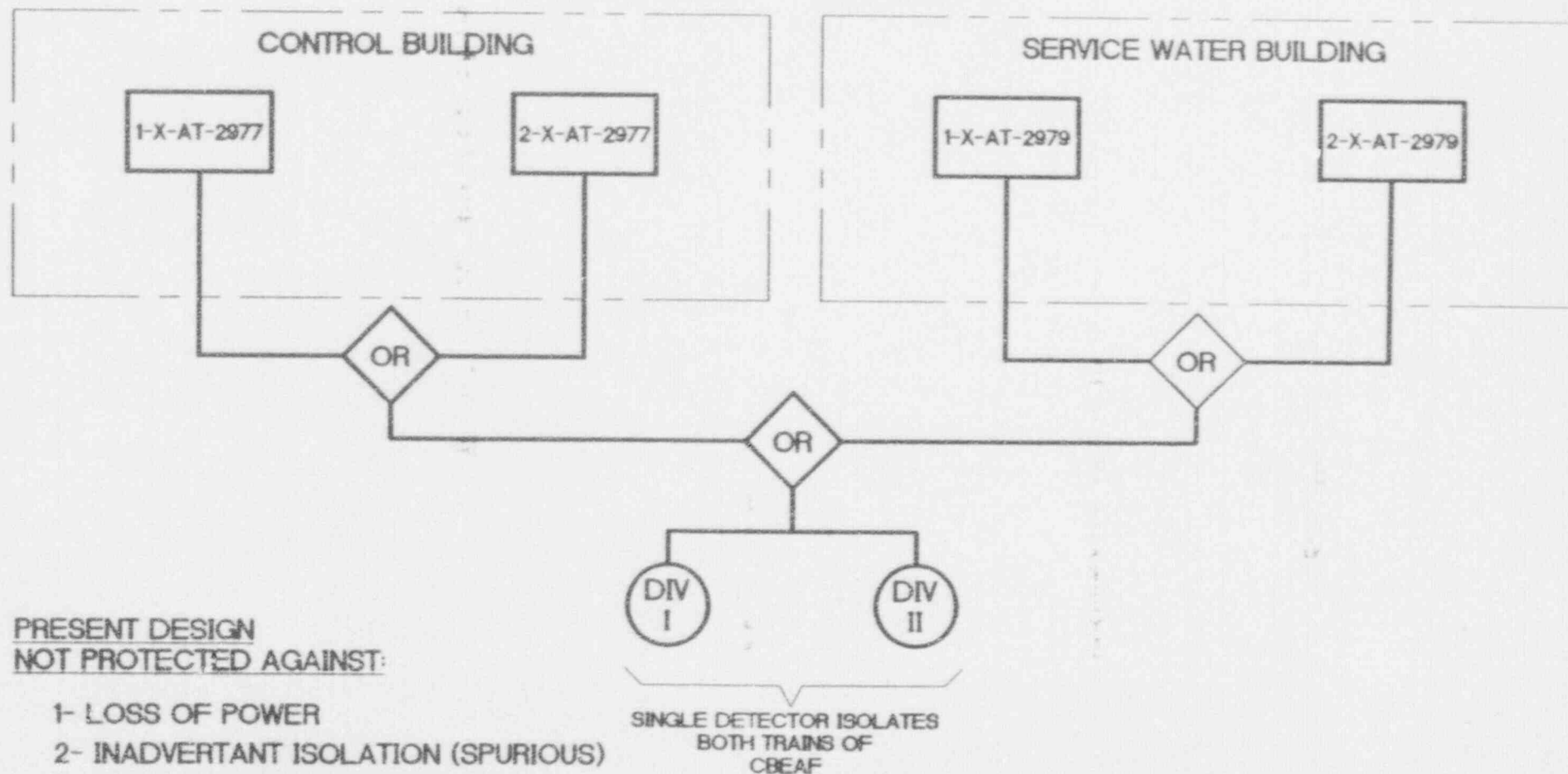


## TRAIN B LOGIC (STANDBY)





# CONTROL BUILDING EMERGENCY AIR FILTRATION SYSTEM EXISTING CONFIGURATION

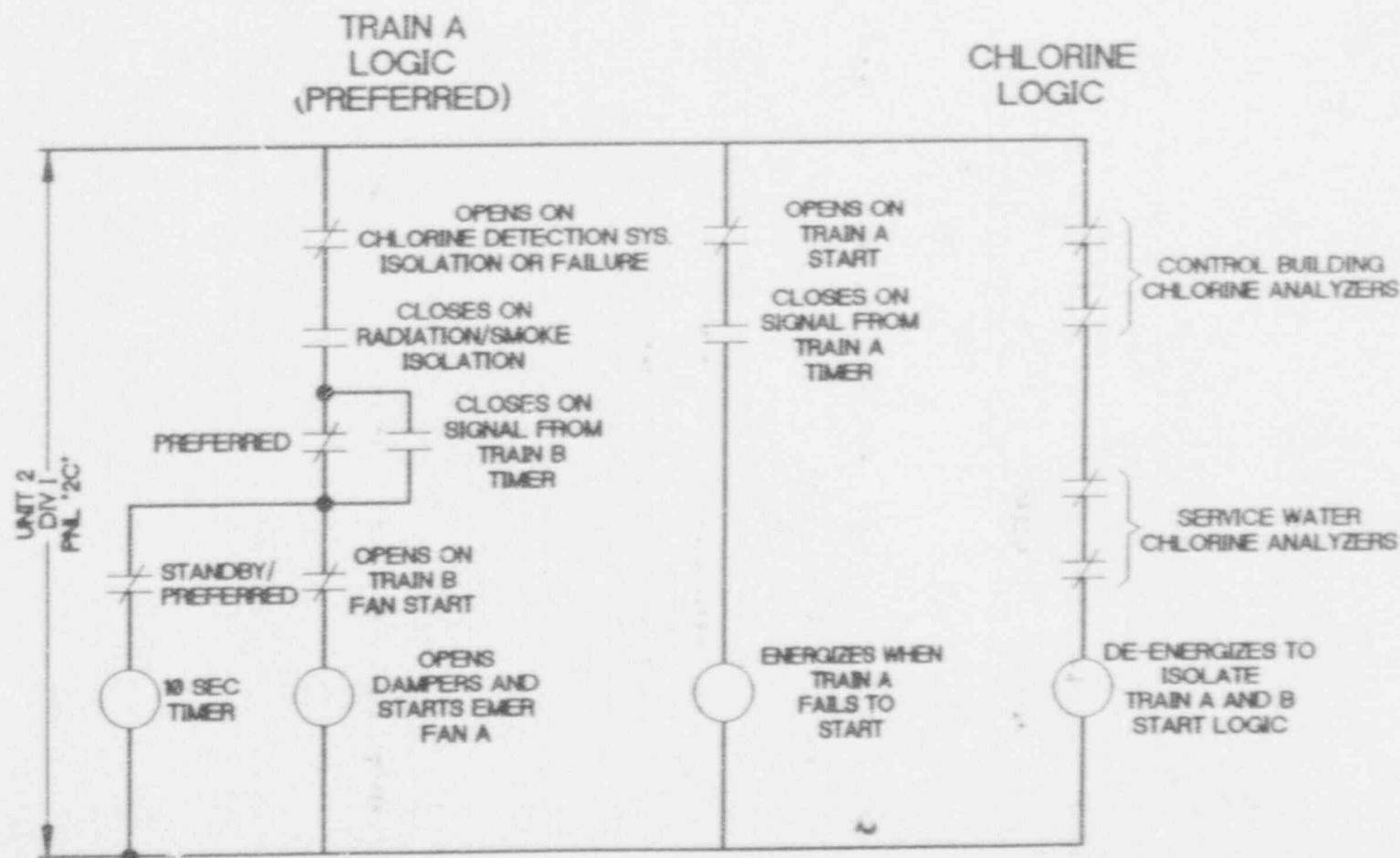


PRESENT DESIGN  
NOT PROTECTED AGAINST:

- 1- LOSS OF POWER
- 2- INADVERTANT ISOLATION (SPURIOUS)
- 3- SINGLE COMPONENT FAILURE

# CONTROL BUILDING EMERGENCY AIR FILTRATION SYSTEM - SINGLE FAILURE 2

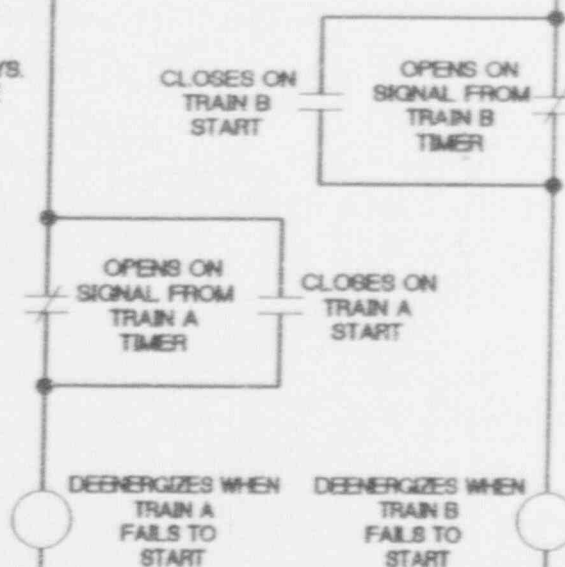
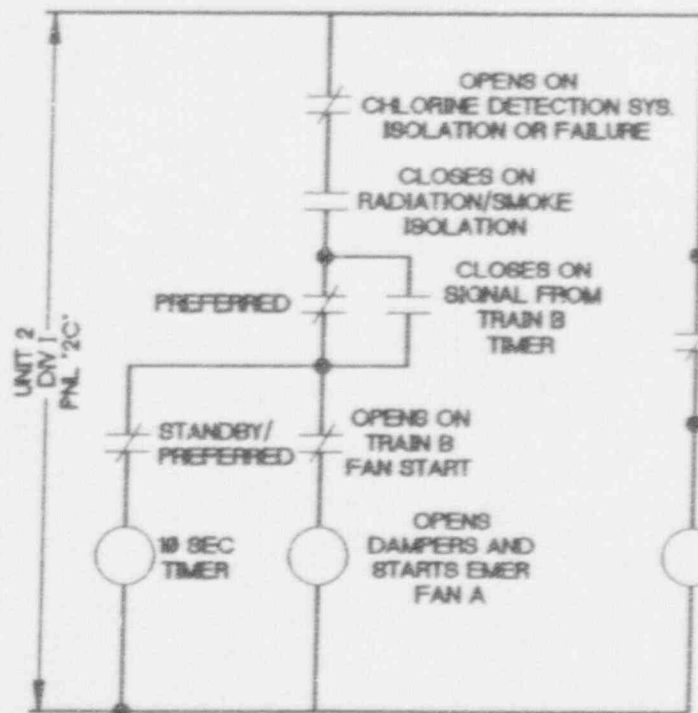
(CONTACTS SHOWN IN "NORMAL" OPERATING POSITION)



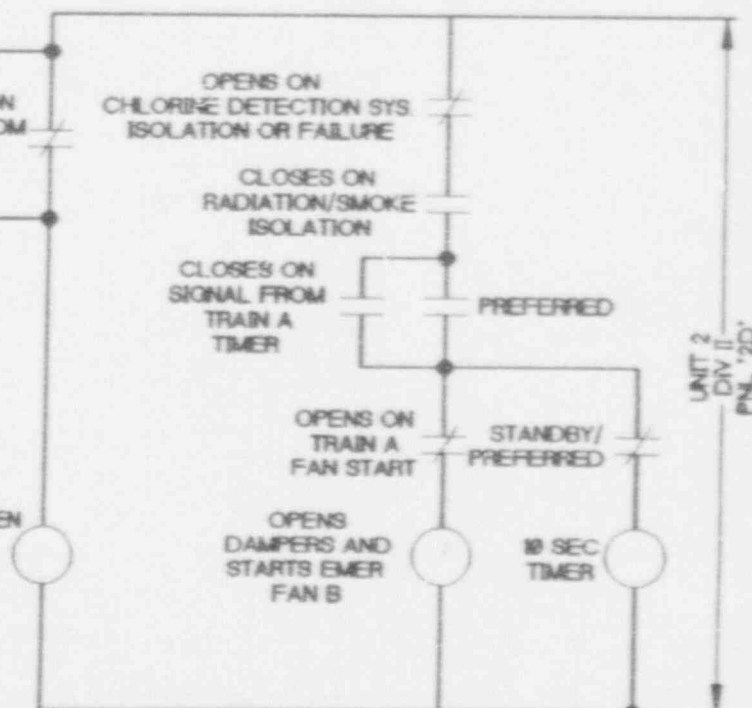
# CONTROL BUILDING EMERGENCY AIR FILTRATION SYSTEM - PHASE I

(CONTACTS SHOWN IN "NORMAL" OPERATING POSITION)

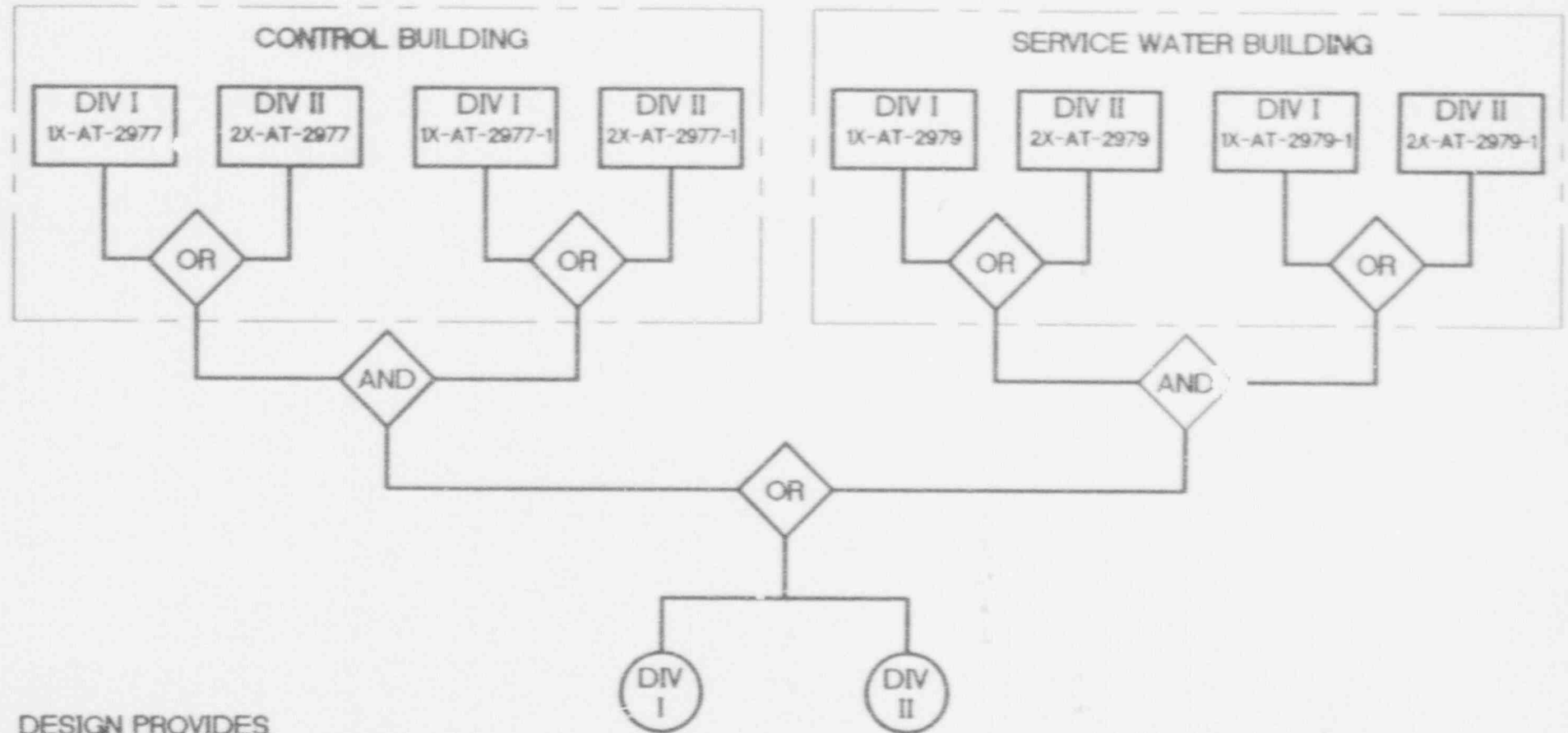
## TRAIN A LOGIC (PREFERRED)



## TRAIN B LOGIC (STANDBY)



# CONTROL BUILDING EMERGENCY AIR FILTRATION SYSTEM PROPOSED CHANGE



DESIGN PROVIDES  
PROTECTION AGAINST:

- 1- LOSS OF DIVISIONAL POWER
- 2- INADVERTANT ISOLATION (SPURIOUS)
- 3- SINGLE COMPONENT FAILURE
- 4- FAILURE TO DETECT CL<sub>2</sub>

EACH ISOLATES  
BOTH TRAINS OF  
CBEAF

## **CBEAF MODIFICATION MILESTONES**

- CBEAF problem identified in Licensee Event Report (LER) 1-92-018: 9/11/92
- Prepare and approve Engineering Evaluation Report 92-0352 outlining plan to resolve CBEAF issues in a two phase approach: 10/15/92
- Prepare and issue Phase I which included the resolution of the start/timer logic failures: 10/30/92
- Prepare and issue specification for Chlorine Detectors (purchase orders were placed shortly thereafter): 11/25/92
- Partial issue of Phase II (raceway design): 12/18/92 - In progress
- Prepare and issue balance of Phase II which includes the resolution of the Chlorine Detection System input to the CBEAF: 1/6/93 - In progress
- Testing and Delivery of new Chlorine Detectors required to support design: 1/30/93 - In progress
- Projected modification installation completion date: 3/25/93 - In progress

# TECHNICAL SPECIFICATION CHANGES

- MODIFICATION RELATED CHANGES

1. SPEC. 3.3.5.5 ACTION STATEMENT
2. SPEC. 4.7.2.d.3 SURVEILLANCE REQUIREMENT

- ELIMINATION OF TSI

1. SPEC. 3.7.2 APPLICABILITY ENHANCEMENT
2. SPEC. 3.7.2 ACTION STATEMENT REVISIONS
3. SPEC. 3.7.2 LCO REVISION
4. BASES UPGRADE OF SPECS. 3/4.7.2 AND 3/4.3.5.5

- INSTRUMENTATION ADDITION

1. ADD RAD. AND FP INST. TO SPEC. 3/4.3.5.5
2. REVISE SPEC. 3.3.5.5 LCO AND ACTION STATEMENT
3. REVISE 3/4.3.5.5 TO TABLE FORMAT

- TSC REQUEST TO BE SUBMITTED BY 1/8/93



## **MODIFICATION STARTUP IMPACT**

### **AREAS OF CONCERN:**

- **CURRENT MODIFICATION OPERABLE DATE ONE MONTH AFTER PLANNED WORK COMPLETION DATE *4/01***
- **EXISTING SPARE CABLES REQUIRED FOR INSTALLATION FOUND UNACCEPTABLE**
- **DELAYS IN DELIVERY OF SEISMICALLY QUALIFIED CHLORINE DETECTORS**
- **NEW SCOPE IDENTIFIED IN PROCESS OF DESIGN**
- **WORK TO INSTALL NEW CABLE RACEWAYS EXTENDS BEYOND PRESENT SCHEDULE**
- **DIFFICULTIES IN OBTAINING BALANCE OF MATERIAL REQUIRED TO COMPLETE INSTALLATION**

# MODIFICATION STARTUP IMPACT

- REVIEW/APPROVAL OF TS CHANGE REQUEST
- POTENTIAL NEED FOR EITHER:
  1. AUTHORIZATION TO OPERATE (JCO)
  2. TS WAIVER OF COMPLIANCE
- BASIS FOR REQUEST
  1. CALCULATED DOSES STILL WITHIN GDC-19 CRITERIA
  2. PRA --  $1.1 \times 10^{-7}$
  3. CALCULATION CONSERVATISM
    - CLOUD SHAPE
    - TOTAL STEAM LINE BREAK RELEASE (FSAR VS. TS)
    - PUFF RELEASE ASSUMED (TURBINE BUILDING FAILURE)
    - NO ATMOSPHERIC DILUTION ASSUMED
  4. SHORT DURATION REQUESTED (FOUR MONTHS)

## SUMMARY

- SINGLE FAILURE CONCERNS IDENTIFIED BY PROACTIVE TECHNICAL SUPPORT SYSTEM ENGINEERS
- MODIFICATIONS TO RESOLVE SINGLE FAILURE CONCERNS ALSO SUBSTANTIALLY REDUCES POSSIBILITY OF INADVERTENT CHLORINE ACTUATIONS
- TECHNICAL SPECIFICATION CHANGES REQUIRED FOR MOD AND TO ELIMINATE TSI *ATC 1007*
  - AMENDMENTS NEEDED PRIOR TO STARTUP
  - 3/15/93 REQUEST DATE FOR ISSUANCE
- MODIFICATION DELAYS MAY RESULT IN REQUEST FOR AUTHORIZATION TO OPERATE
  - REQUEST TO BE SUBMITTED CONCURRENT WITH TSC
  - 3/1/93 REQUEST DATE FOR ISSUANCE