NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
MONTICELLO NUCLEAR GENERATING PLANT	05000 263	1 OF 11

TITLE (4): Potential Emergency Filter Train System Inoperability Due to Interaction with Non-Safety Related Equipment

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
11	18	91	93	-- 90-001 --	05	04	14	93	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
POWER LEVEL (10)	100%	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v) X	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER
		20.405(a)(1)(iii)	50.73(a)(2)(i) X	50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (include Area Code)
Anne Ward, Superintendent Reactor Systems Engineering	(612) 295-1256

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	NO X				

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

This is Revision 5 of a Licensee Event Report originally submitted on April 12, 1990. The supplemental report concerns the discovery of an additional system design deficiency.

On March 13, 1990, design deficiencies in the Emergency Filter Train (EFT) system, and systems which interact with the Emergency Filter Train system were discovered during a special test. Immediate corrective actions were taken to isolate and secure various ventilation units and ductwork to prevent Safety Related/Non-Safety Related systems interaction and ensure operability of the Emergency Filter Train system. An evaluation was completed for the 250 VDC battery for elevated air temperatures and a modification was completed to provide a redundant method to block air flow to the battery room from the EFT.

On March 15,1993, it was determined that the "B" train of the Control Room Emergency Filtration system could not supply adequate pressurizing flow when operated just above the low flow trip set point. This was caused by a design deficiency. Administrative controls have been initiated to maintain the "B" Filtration train flow controller in manual and the "B" train of the Control Room Emergency Filtration system in lag with the "A" Filtration train in lead. An alternate method of measuring system flow though the "B" Filtration train of the Control Room Ventilation EFT system has been implemented and surveillance procedures have been revised.

NRC FORM 366 (5-92)

Description

On March 13, 1990, with the plant operating at 100% power, Special Procedure #8878 "Emergency Filter Train Filter Fan Low Flow Logic Test" was performed. The purpose of the test was to assess whether operability of the Emergency Filter Train system (EIIS System Code : VI) had been compromised by a former design deficiency (currently eliminated) in the system logic. The test showed that the previous logic design deficiency had no adverse impact on Emergency Filter Train system operability.

However, the test disclosed a previously unidentified interaction between one of the Administration Building ventilation units (V-AC-14) (EIIS System Code : UD) (a Non-Safety Related system) and the Emergency Filter Train. With the outside air temperature between 40 and 70°F, the ventilation unit supplies a significant amount of outside air, resulting in pressurization of portions of the administration building. During the test, outdoor air temperature was 49-50°F (The 'worst case' temperature for maximum building pressurization, as subsequently identified by the ventilation unit's manufacturer). The test showed that the "B" train of the Emergency Filter Train, when operating alone, was unable to maintain a positive differential pressure between the Main Control Room (EIIS System Code : NA) and the Administration building (EIIS System Code : MA) as required by Technical Specification 4.17.B.2.b(3). The "A" train of the Emergency Filter Train was able to maintain the required positive differential pressure. Currently, the Emergency Filter Train actuation logic does not automatically trip ventilation unit V-AC-14. V-AC-14 was immediately tripped and secured to ensure Emergency Filter Train operability.

On March 30, 1990 during subsequent investigation of the Emergency Filter Train system design, engineers determined that administration building ventilation supply units V-AC-11 and S-1 (see Figure 1, Simplified Administration Building Ventilation system drawing), may not trip in the event of an Emergency Filter Train High Radiation Mode automatic initiation. The signal for these ventilation units is initiated by a single Non-Safety Related relay and associated Non-Safety Related switchgear. This is contrary to the design basis for the Emergency Filter Train system which requires all equipment related to Control Room habitability to be single failure proof and Safety Grade. Failure of these ventilation units to trip during a High Radiation event could potentially pressurize the Administration Building and degrade the Emergency Filter Train's ability to maintain a positive differential pressure between the Control Room and the Administration Building. The ventilation units were immediately tripped and secured to ensure Emergency Filter Train operability.

NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
MONTICELLO NUCLEAR GENERATING PLANT	05000 263	1 OF 11

TITLE (4) Potential Emergency Filter Train System Inoperability Due to Interaction with Non-Safety Related Equipment

EVENT DATE (5)			LER NUMBER (6)			REPORT NUMBER (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
11	18	91	93	-- 90-001 --	05	04	14	93	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	N	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)			
POWER LEVEL (10)	100%	20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)	50.73(a)(2)(v) X	73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)	50.73(a)(2)(vii)	OTHER
		20.405(a)(1)(iii)	50.73(a)(2)(i) X	50.73(a)(2)(viii)(A)	(Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
		20.405(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(x)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Anne Ward, Superintendent Reactor Systems Engineering	(612) 295-1256

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)	NO X	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

This is Revision 5 of a Licensee Event Report originally submitted on April 12, 1990. The supplemental report concerns the discovery of an additional system design deficiency.

On March 13, 1990, design deficiencies in the Emergency Filter Train (EFT) system, and systems which interact with the Emergency Filter Train system were discovered during a special test. Immediate corrective actions were taken to isolate and secure various ventilation units and ductwork to prevent Safety Related/Non-Safety Related systems interaction and ensure operability of the Emergency Filter Train system. An evaluation was completed for the 250 VDC battery for elevated air temperatures and a modification was completed to provide a redundant method to block air flow to the battery room from the EFT.

On March 15,1993, it was determined that the "B" train of the Control Room Emergency Filtration system could not supply adequate pressurizing flow when operated just above the low flow trip set point. This was caused by a design deficiency. Administrative controls have been initiated to maintain the "B" Filtration train flow controller in manual and the "B" train of the Control Room Emergency Filtration system in lag with the "A" Filtration train in lead. An alternate method of measuring system flow though the "B" Filtration train of the Control Room Ventilation EFT system has been implemented and surveillance procedures have been revised.

REQUIRED NUMBER OF DIGITS/CHARACTERS
FOR EACH BLOCK

BLOCK NUMBER	NUMBER OF DIGITS/CHARACTERS	TITLE
1	UP TO 46	FACILITY NAME
2	8 TOTAL 3 IN ADDITION TO 05000	DOCKET NUMBER
3	VARIES	PAGE NUMBER
4	UP TO 76	TITLE
5	6 TOTAL 2 PER BLOCK	EVENT DATE
6	7 TOTAL 2 FOR YEAR 3 FOR SEQUENTIAL NUMBER 2 FOR REVISION NUMBER	LER NUMBER
7	6 TOTAL 2 PER BLOCK	REPORT DATE
8	UP TO 18 -- FACILITY NAME 8 TOTAL -- DOCKET NUMBER 3 IN ADDITION TO 05000	OTHER FACILITIES INVOLVED
9	1	OPERATING MODE
10	3	POWER LEVEL
11	1 CHECK BOX THAT APPLIES	REQUIREMENTS OF 10 CFR
12	UP TO 50 FOR NAME 14 FOR TELEPHONE	LICENSEE CONTACT
13	CAUSE VARIES 2 FOR SYSTEM 4 FOR COMPONENT 4 FOR MANUFACTURER NPRDS VARIES	EACH COMPONENT FAILURE
14	1 CHECK BOX THAT APPLIES	SUPPLEMENTAL REPORT EXPECTED
15	6 TOTAL 2 PER BLOCK	EXPECTED SUBMISSION DATE

Description

On March 13, 1990, with the plant operating at 100% power, Special Procedure #8878 "Emergency Filter Train Filter Fan Low Flow Logic Test" was performed. The purpose of the test was to assess whether operability of the Emergency Filter Train system (EIIS System Code : VI) had been compromised by a former design deficiency (currently eliminated) in the system logic. The test showed that the previous logic design deficiency had no adverse impact on Emergency Filter Train system operability.

However, the test disclosed a previously unidentified interaction between one of the Administration Building ventilation units (V-AC-14) (EIIS System Code : UD) (a Non-Safety Related system) and the Emergency Filter Train. With the outside air temperature between 40 and 70°F, the ventilation unit supplies a significant amount of outside air, resulting in pressurization of portions of the administration building. During the test, outdoor air temperature was 49-50°F (The 'worst case' temperature for maximum building pressurization, as subsequently identified by the ventilation unit's manufacturer). The test showed that the "B" train of the Emergency Filter Train, when operating alone, was unable to maintain a positive differential pressure between the Main Control Room (EIIS System Code : NA) and the Administration building (EIIS System Code : MA) as required by Technical Specification 4.17.B.2.b(3). The "A" train of the Emergency Filter Train was able to maintain the required positive differential pressure. Currently, the Emergency Filter Train actuation logic does not automatically trip ventilation unit V-AC-14. V-AC-14 was immediately tripped and secured to ensure Emergency Filter Train operability.

On March 30, 1990 during subsequent investigation of the Emergency Filter Train system design, engineers determined that administration building ventilation supply units V-AC-11 and S-1 (see Figure 1, Simplified Administration Building Ventilation system drawing), may not trip in the event of an Emergency Filter Train High Radiation Mode automatic initiation. The signal for these ventilation units is initiated by a single Non-Safety Related relay and associated Non-Safety Related switchgear. This is contrary to the design basis for the Emergency Filter Train system which requires all equipment related to Control Room habitability to be single failure proof and Safety Grade. Failure of these ventilation units to trip during a High Radiation event could potentially pressurize the Administration Building and degrade the Emergency Filter Train's ability to maintain a positive differential pressure between the Control Room and the Administration Building. The ventilation units were immediately tripped and secured to ensure Emergency Filter Train operability.

This same design deficiency exists with the Control Room kitchen and lavatory exhaust fan (V-EF-36). This fan exhausts air out of the Control Room. It is possible that if the fan does not trip as designed in the event of an Emergency Filter Train High Radiation emergency, it could exhaust enough air from the Control Room keeping it from being pressurized. The fan was immediately tripped and secured pending further investigation and testing.

Further investigation has revealed a potential concern involving interaction between the Turbine Building Ventilation Units V-AH-1, V-AH-2, V-MZ-1, V-MZ-4, V-MZ-5, and V-MZ-6 (EIIS System Code : VD) and the Emergency Filter Train System. The Control Room is adjacent to the Turbine Building at the Turbine Operating Floor level. The Turbine Building Ventilation Units (supply fans) are not automatically tripped upon Emergency Filter Train High Radiation mode initiation and failure of non-safety-related Reactor Building Exhaust fans, which also exhaust from the Turbine Building, could result in pressurization of the turbine building relative to the control room. Procedures are in place to instruct operators to trip the turbine building ventilation units as needed in a High Radiation event to assure the Control Room remains at a positive pressure with respect to the Turbine Building.

On April 6, 1990, further review of the Emergency Filter Train design determined that a passive break in the Non-Safety Grade portions of the Emergency Filter Train system ducting (EIIS Component Code : DUCT) serving the Emergency Response Facilities (EIIS System Code : NC) may divert pressurizing air from the Control Room to the duct break. Detailed review of the postulated ductwork failure has revealed that a potential problem does exist if one Emergency Filter Train Ventilation unit fails. The dampers supplying pressurizing air to the Emergency Response Facilities have been secured closed. Other ductwork and non-Safety-related equipment failures in the Administration Building have been postulated which may allow contamination to enter the Control Room. For this reason, the non-Safety Related ductwork from the Emergency Filter Train to the Emergency Response Facilities and a return register which is in the B Emergency Filter Train room were blocked.

As part of the corrective actions initiated by the event, a Design Basis/Configuration Management review was initiated. On November 18, 1991 at 0845 it was discovered, through this review, that a single failure of damper VD-9212B, Battery Room Supply Damper, could prevent the Emergency Filter Train from performing its design function. If the above damper failed to close it could prevent the Control Room from pressurizing during a radiation release event which is inconsistent with the Emergency Filter Train design basis.

On March 15,1993, with the plant in cold shutdown, while investigating concerns identified as part of the Design Basis Document Review Program, plant engineering identified that the "B" train of the Control Room Emergency Filtration system could not supply adequate pressurizing flow to the Control Room when operated just above the low flow trip set point. Contrary to this, the "A" train of the Control Room Emergency Filtration system was able to pressurize the Control Room when operated just above the low flow set point. An investigation was initiated to determine the reason for the difference. It was determined that the flow element which provides the input to the flow controller (EIIS Component: FCO) was not providing accurate flow indication causing the flow control damper, VD-9111B, (EIIS Component: DMP) to operate at almost the closed position. This resulted in low pressurizing air flow to the Control Room when in the High Radiation mode. The flow controller was placed in manual and positioned to maintain the supply damper at the 75% open position when the "B" filtration train is operating. Testing has confirmed that this will supply adequate flow to pressurize the Control Room during all conditions. Administrative controls have been initiated to maintain the "B" Filtration train flow controller in manual and at 75% and the "B" train of the Control Room Emergency Filtration system in "Lag" with the "A" Filtration train in "Lead".

The March 15, 1993 event was a condition prohibited by Technical Specifications and is reportable per 10 CFR 50.73(a)(2)(i).

Cause

The root cause of the potential Emergency Filter Train inoperability identified prior to the March 15, 1993 event was design inadequacy.

The Emergency Filter Train was installed in response to the Three Mile Island Action Plan. The system was designed to enhance Control Room habitability following a Loss of Coolant event. During the final stages of the Emergency Filter Train construction, a second addition to the plant Administration Building was constructed (see Figure 1). The potential for the second Administration Building addition's Non-Safety Related ventilation system (V-AC-14) to interact with the Emergency Filter Train system was never considered in the design of V-AC-14. No direct Safety Related trips from the Emergency Filter Train were included in the design of V-AC-14.

The design of ventilation systems for the original Administration Building and its first addition took into account the need to provide a level of protection for the facilities during a High Radiation Event. With this in mind, Administration Building ventilation units were provided with an automatic trip upon initiation of the Emergency Filter Train High Radiation Mode. Since the ventilation systems serving these areas are not required to be single failure proof, the automatic trips and associated ductwork were designed and installed utilizing Non-Safety Related components. Also, redundant isolation between safety and non-Safety Related portions of the ductwork was never installed. The design did not take into account the potential interactions with the Safety Related Emergency Filter Train system, and the Non-Safety Related ventilation systems and non-Safety-Related ductwork.

The cause of the March 15, 1993 event was a design deficiency. The flow element was located next to a bend in the duct. The proper location of the element should have been in a straight run of duct work. This resulted in a high turbulent air flow and improper flow indications. Also, the vendor of the flow element has indicated that an improper flow straight was used for this application.

Analysis

The original design of the Emergency Filter Train system resulted in conditions where a failure of the Non-Safety Related ventilation units to trip could have potentially resulted in pressurization of portions of the Administration Building or Turbine Building and degradation of the Emergency Filter Train system's ability to maintain a positive differential pressure between the Control Room and the Administration Building or Turbine Building. A failure of the ductwork could have degraded the Emergency Filter Train System's ability to pressurize the Control Room, or have allowed unfiltered airborne activity to be brought into the Control Room. These deficiencies had the potential to adversely affect the habitability of the Main Control Room. The dose received by operators in the Main Control Room has been shown by previous design reviews to be the most limiting plant condition during events which release gaseous radiation to the environment (reference Licensee Event Reports 89-29 and 89-40). Analyses have shown thyroid dose to be the limiting Control Room dose condition. Self Contained Breathing Apparatus are available to protect Control Room operators during a release of gaseous radioactivity.

An analysis has been performed to determine the effect of the Administration Building or Turbine Building pressurizing and the resulting dose received by a Control Room Operator. This analysis assumed that a Loss of Coolant Accident resulting in core damage has taken place, that the Primary Containment (EIIS System Code : NH) leaks at its Technical Specification limit of 1.2 percent per day, on a weight basis, and that the Main Steam Isolation Valves leak at their Technical Specification limit. The analysis showed that Control Room operator dose does not exceed the limits of 10 CFR Part 100 if the Reactor Building Plenum, Turbine Building, and Administration Building fans are tripped within 33 minutes. Therefore, sufficient time is available for operators to take manual action to assure Control Room habitability in the event of a release of gaseous radioactivity due to core damage.

A probabilistic analysis was performed to determine the probability of the Non-Safety Related breakers associated with the Administration Building or Turbine Building ventilation system not opening. This analysis assumed a Loss of Coolant Accident leading to core damage had taken place. The analysis showed that the probability of a Non-Safety Related breaker failing to open, together with a Loss of Coolant event was extremely small (less than 7×10^{-7} per year).

The ductwork for pressurizing air from the Emergency Filter Train system to the Emergency Response Facilities has been blocked. This assures that the Emergency Filter Train will be able to pressurize the Control Room in the High Radiation mode of operation as required if the ductwork in the Emergency Response Facilities fails. This is acceptable because it does not affect the ability of the Emergency Filter Train system to pressurize the Control Room if one or both Emergency Filter Train ventilation units is available. In this configuration, pressurizing air is supplied to the Emergency Response Facilities providing both Emergency Filter Train ventilation units are operable. Upon failure of one Emergency Filter Train ventilation unit, no ventilation or pressurizing air is supplied to the Emergency Response Facilities, however, the Emergency Response Facilities ventilation is not required to be single failure proof per NUREG 0696.

All ductwork connecting the Emergency Response Facilities to the Emergency Filter Train system has been blocked because of the possibility of contamination migrating from the Emergency Response Facilities to the Control Room through common ductwork. The ductwork has been blocked in a manner so that it may be restored as needed, and procedures have been issued for restoration of ventilation to the Emergency Response Facilities. This restoration will occur only if both Emergency Filter Train ventilation units are available, all Administration Building Ventilation units have been

verified tripped, and the ductwork has been verified to be intact, thus assuring that neither Emergency Filter Train unit operability is affected. Manual action for Emergency Response Facilities Emergency ventilation was verified to be acceptable per NUREG 0696 (the boundary for the Emergency Response Facilities is already manually initiated).
Blocking of the return register from the B Emergency Filter Train room to the suction of the A Emergency Filter Train ventilation unit is acceptable because return air from the B train room is not required in the normal or emergency modes of Emergency Filter Train operation. The flow through the register is minimal (400 CFM <10% of unit ventilation flow), so it will have a negligible effect on either the A or B Emergency Filter Train ventilation unit.

During normal operation the Battery Room receives ventilation from the Emergency Filter Train system, but is isolated from the Emergency Filter Train system upon a high radiation signal. If the damper failed to close during emergency isolation condition, air from the Emergency Filter Train system used for pressurizing the Control Room could be diverted through the Battery Room thus reducing the Control Room pressurization and possibly resulting in increased operator dose. This postulated failure is unlikely as the damper is safety related and is designed to fail closed. However, the damper was secured in the closed position to eliminate any potential for diverting pressurizing air. This was an acceptable interim corrective action since an additional air supply to the Battery Room with an in line duct heater exists to maintain room temperature during the winter months. A remaining concern was the operation of the battery during warmer months with no cooling except outside air. An evaluation of the 250 VDC battery was completed for battery operation at a room temperature of 107F, the extreme maximum outside air temperature listed in the Updated Safety Analysis Report. The evaluation concluded the battery would meet its load profile objectives at this elevated temperature.

Since the effect of diverting pressurizing air from the Control Room is to lower the differential pressure between the Control Room and the Administration and Turbine Buildings, the analysis of operator dose resulting from a failure of Non-Safety related administration building ventilation units to trip off during a radiation release event (previously discussed in this report) is bounding. As discussed previously, this analysis indicates time exists for operators to take manual action to secure VD-9212B closed. Procedures are in place that require operators to verify VD-9212 is closed following detection of radiation in the outside air. Since the capacity of the battery room exhaust fan is less than the pressurizing air fan, some pressurization capability may still exist even following a failure of VD-9212 to close.

There were no consequences to the health and safety of the public because the postulated event did not occur. Even in the unlikely event that the damper were to fail concurrent with a radiation release, Control Room habitability could be maintained by operator action.

During performance of surveillance procedures required by Technical Specifications, the "B" Filtration train has demonstrated the ability to pressurize the Main Control Room with an indicated flow of 1000 CFM as controlled by the inaccurate flow element (this corresponds to an actual flow of about 600 CFM). Furthermore, it has been demonstrated that an actual minimum flow of 600 CFM is needed to maintain a positive pressure in the Control Room. This corresponds to the low flow trip set point for the "B" Filtration train. During an accident condition, the ability of the "B" Filtration system to pressurize the Control Room would degrade over the long term due to filter clogging. Since the inaccurate flow element causes the flow controller to sense higher than actual flow, the Control Room Ventilation EFT system would not have auto-transferred to the "A" Filtration train prior to the "B" Filtration train flow decreasing below that required to maintain pressurization of the control room. Therefore, pressurization of the Control Room would not have been assured. Since Control Room pressure and filter d/p is monitored during a long term accident by operations personnel, this condition would be detected and corrective action would have been taken to place the "A" Filtration system in operation.

Placing the damper at 75 % ensures nearly maximum attainable flow is achieved (to account for filter plugging) while providing margin to the upper flow limit to ensure compliance with Technical Specifications and design bases. Therefore, the March 15, 1993 event had no consequences to the health and safety of the public.

Corrective Actions

1. The breakers for all ventilation units which could potentially degrade the Emergency Filter Train due to a Safety Related/Non-Safety Related interaction were immediately secured opened.

   An analysis (using the Commercial Grade Dedication process) was completed to show that the Administration Building ventilation unit (V-AC-11, V-AC-14, and S-1) breakers, motor contractors, and relay trip logic would be able to perform their intended functions in the event of an accident. Analysis of the Turbine Building ventilation unit (V-AH-1, V-AH-2, V-MZ-1, V-MZ-4, V-MZ-5, V-MZ-6) breakers was also completed,

showing that the breakers are able to perform their intended functions in the event of an accident. In the most limiting case, the ventilation units are required to trip in a Design Basis Loss of Coolant Accident (Analysis does not have to be made for a simultaneous seismic event per Generic Letter 87-02).

Two independent methods to trip each unit were identified and evaluated. Procedures that specify the required manual actions were issued. It was physically verified that the units could be tripped in time to assure that 10CFR50 guidelines are not exceeded.

The Administration Building ventilation breakers were returned to service following completion of a 10 CFR 50.59 safety evaluation.

2. The Control Room kitchen and lavatory exhaust fan remains secured until modifications can be made to allow fan to operate without affecting Emergency Filter Train operability.

3. Procedures have been issued to trip Turbine Building Ventilation Units as needed during a radioactive release to keep the Control Room at a positive pressure with respect to the Turbine Building. A 10 CFR 50.59 evaluation was completed to justify these actions.

4. Ductwork has been blocked to assure separation of the Safety Related and Non-Safety Related portions of the Emergency Filter Train ducting.

5. Procedures have been issued to restore the ventilation to the Emergency Response Facilities, if needed, in a manner which does not affect Emergency Filter Train system operability. A 10 CFR 50.59 review was completed and documented for these procedures.

6. The ductwork connecting the A Emergency Filter Train ventilation unit with the B Emergency Filter Train room has been blocked and sealed closed to prevent system interactions. A 10 CFR 50.59 review was completed and documented for this change.

7. A Design Basis/Configuration Management review of the Emergency Filter Train system has been completed.

8. A modification was completed which installed a redundant method of terminating air flow to the 250 VDC battery room in the event Damper VD-9212B failed to close.

9. The 250 VDC battery was evaluated for operation at 107F. The evaluation determined the battery could meet the load profile objectives at this elevated temperature.

10. Corrective actions are being developed to eliminate operator actions.

11. The flow controller for damper VD-9111B has been placed in manual and set at 75%.

12. An alternate method of measuring system flow though the "B" Filtration train to meet Technical Specification requirements of the CRV-EFT system has been implemented.

13. Surveillance procedures have been revised.

14. Administrative Controls have been initiated to maintain the "A" Filtration train in "Lead" with the "B" Filtration train in "Lag".

15. Technical Specifications require freon and DOP testing be performed at 1000 CFM (+-10 %). These surveillance procedures have been re-performed using the alternate method of measuring air flow to verify the required 1000 CFM (+-10%) air flow.

ADDITIONAL INFORMATION

Failed Component Identification

None

Previous Similar Events

None

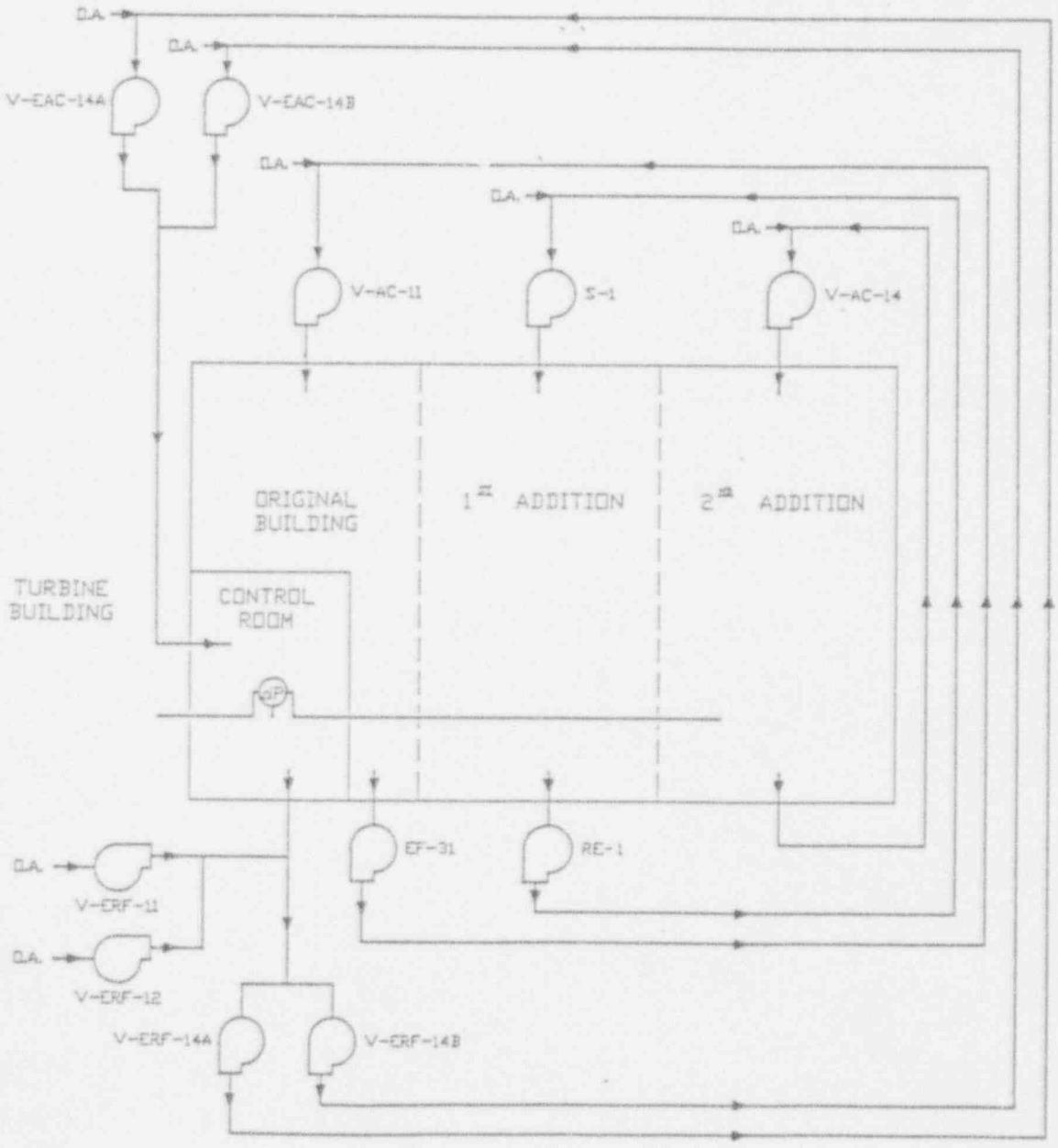

FIGURE 1 SIMPLIFIED ADMINISTRATION BUILDING VENTILATION