ACCELERATED DISTRIBUTION DEMONSTRATION SYSTEM

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:9007230048 DOC.DATE: 90/07/16 NOTARIZED: NO DOCKET #
FACIL:50-263 Monticello Nuclear Generating Plant, Northern States 05000263
AUTH.NAME AUTHOR AFFILIATION
ELIASON,L.R. Northern States Power Co.
RECIP.NAME RECIPIENT AFFILIATION
CLAYTON,B. Region 3, Ofc of the Director

SUBJECT: Responds to NRC 900614 ltr re violations noted in Insp Rept 50-263/90-09.

DISTRIBUTION CODE: IE01D COPIES RECEIVED:LTR 1 ENCL 0 SIZE: 6
TITLE: General (50 Dkt)-Insp Rept/Notice of Violation Response

NOTES:NRR/LONG,W. 05000263

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD3-1 PD	1	1	LONG,B.	1	1
INTERNAL:	AEOD	1	1	AEOD/DEIIB	1	1
	AEOD/TPAD	1	1	DEDRO	1	1
	NRR MORISSEAU,D	1	1	NRR SHANKMAN,S	1	1
	NRR/DLPQ/LPEB10	1	1	NRR/DOEA DIR 11	1	1
	NRR/DREP/PEPB9D	1	1	NRR/DRIS/DIR	1	1
	NRR/DST/DIR 8E2	1	1	NRR/PMAS/ILRB12	1	1
	NUDOCS-ABSTRACT	1	1	OE DIR	1	1
	OGC/HDS1	1	1	REG FILE 02	1	1
	RGN3 FILE 01	1	1			
EXTERNAL:	LPDR	1	1	NRC PDR	1	1
	NSIC	1	1			

NOTE TO ALL "RIDS" RECIPIENTS:

PLEASE HELP US TO REDUCE WASTE! CONTACT THE DOCUMENT CONTROL DESK, ROOM P1-37 (EXT. 20079) TO ELIMINATE YOUR NAME FROM DISTRIBUTION LISTS FOR DOCUMENTS YOU DON'T NEED!

TOTAL NUMBER OF COPIES REQUIRED: LTTR 22 ENCL ~~22~~ 0

RIDS/ADDS

RIDS/ADDS

Northern States Power Company

414 Nicollet Mall
Minneapolis, Minnesota 55401-1927
Telephone (612) 330-5500

July 16, 1990

10 CFR Part 2.201

Mr Brent Clayton, Chief
Nuclear Regulatory Commission, Region III
799 Roosevelt Road
Glen Ellyn, IL 60137

MONTICELLO NUCLEAR GENERATING PLANT
Docket No. 50-263 License No. DPR-22

Reply to Notice of Violation
NRC Inspection Report No. 263/90009 (DRP)
Emergency Filtration Train Operability

In response to your letter dated June I4, 1990, which transmitted Inspection Report 263/90009 and a Notice of Violation, the following information is offered.

Violation:

Technical Specification 3.17.B.1 for the Emergency Filtration Train (EFT) states: Two control room emergency filtration system filter trains shall be operable whenever irradiated fuel is in the reactor vessel and reactor coolant temperature is greater than 212 degrees F.

Technical Specification Surveillance Requirement 4.17.B.1.b for the EFT states: When both filter trains of the control room emergency filtration system are inoperable, restore one train to operable status within 24 hours or be in hot shutdown within the next 12 hours following the 24 hours and reduce the reactor coolant water temperature to below 212 degrees F within the following 24 hours.

Technical Specification Surveillance Requirement 4.17.B.2.b.(3) for the EFT states that upon receipt of a simulated high radiation signal, the train switches to the pressurization mode of operation and the control room is maintained at a positive pressure with respect to adjacent areas at the design flow rate of 1000 scfm.

Contrary to the above, a condition has existed on an intermittent basis since the installation of the EFT system on July 29, 1983, where the control room could not be maintained at a positive pressure with respect to the administration building (which is an adjacent area to the control room) upon a receipt of a high radiation signal, thus rendering the system inoperable, and the reactor was not taken to hot shutdown. As specific examples of this, the following dates in 1985 are given to

demonstrate periods where the reactor was at power operation greater than 24 hours, when the outside air temperature remained between 45 and 55 degrees F. Within this temperature band, the administration building fan that remained in operation would have supplied a sufficient amount of outside air that would have resulted in the administration building being at a higher pressure than the control room envelope with a single failure of the normal EFT fan.

- 09/21/85, 1000 hours to 09/22/85, I100 hours, a 25 hour period;
- 10/11/85, 1300 hours to 10/12/85, 2400 hours, a 35 hour period;
- 10/20/85, 2000 hours to 10/22/85, 0900 hours, a 37 hour period.

Response

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. It was determined during this test that one of the Administration Building ventilation units (V-AC-14), a non-safety related system, had a previously unidentified interaction with the EFT. With the outside air temperature between 40° and 70°F, this ventilation unit supplies outside air to the Administration Building. With the outside air temperature between 45° and 55°F, a significant amount of outside air is supplied resulting in pressurizing portions of the Administration Building with respect to the Control Room. During the test conducted on March 13, 1990, the outdoor air temperature was approximately 50°F. Performance of the test showed that the B train of the EFT was unable to maintain a positive differential pressure between the Main Control Room and the Administration Building as required by Technical Specification 4.17.B.2.b(3). The A train of the EFT was able to maintain the required positive differential pressure.

During subsequent investigations of the EFT system design, engineers identified additional design deficiencies:

V-AC-11 and S-1

It was determined that several other Administration Building ventilation supply units (V-AC-11 and S-1) may not trip in the event of an EFT High Radiation Mode automatic initiation since 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 EFT 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 also potentially pressurize the Administration Building and degrade the ability of the EFT to maintain a positive differential pressure between the Control Room and the Administration Building.

V-EF-36

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. If this fan does not trip as designed in the event of an EFT High Radiation signal, it could exhaust enough air from the Control Room to keep it from being pressurized.

V-AH-1 and V-AH-2

Similarly, the Turbine Operating Floor Ventilation Units (V-AH-1 and V-AH-2) supply outside air to the Turbine Operating Floor level which is adjacent to the Control Room. V-AH-1 and V-AH-2 are not automatically tripped upon EFT High Radiation mode initiation and could potentially pressurize the operating level thus preventing the EFT from maintaining a positive differential pressure between the Control Room and the Turbine Building Operating level.

Potential Passive Break in Ductwork

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 serving the Emergency Response Facilities 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. Other ductwork and Non-Safety Related equipment failures in the administration Building have also been identified which may allow contamination to enter the Control Room. For these reasons, 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.

Control Room Ventilation Handswitch Contacts

During this system design review, it was also determined that the handswitch configuration for the Control Room Ventilation and Filter units could result in a failure of these units to auto-start following a loss-of-offsite power. Normally, the handswitches for the operating Control Room Ventilation units are in the "AUTO-AFTER-START" position while the handswitches for the standby train of Control Room Ventilation are in the "AUTO-AFTER-STOP" position. Following a loss-of-offsite power, the standby ventilation train will auto-start with the handswitch in the "AUTO-AFTER-STOP" position providing the associated bus is powered by the Emergency Diesel Generator. The train that was previously operating will not restart upon bus re-energization as a result of the contact configuration for the handswitch in the "AUTO-AFTER-START" position. If the Emergency Diesel Generator

associated with the essential bus supplying the standby train of Control Room Ventilation fails to start or run, no ventilation would be available to the Control Room.

The cause of each of these events was design deficiency. During the final stages of the Emergency Filter Train construction, a second addition to the plant Administration Building was constructed and, as a result, the potential for V-AC-14 to interact with the Emergency Filter Train system was never considered. No direct safety related trips from the EFT were included in the design of V-AC-14.

The design of the remaining administration building ventilation systems took into account the need to provide a level of protection for the Emergency Response Facilities (not including the control room) during a High Radiation Event and the ventilation units were therefore provided with an automatic trip upon initiation of the High Radiation mode. However, since the ventilation systems serving the Emergency Response Facility are not required to be single failure proof, the automatic trips and associated ductwork were designed and installed utilizing non-safety related components. The potential for interaction between the non-safety related ventilation systems and the safety related Control Room ventilation system was not recognized during initial design. Similarly, the potential for interaction between the non-safety related Turbine Building Operating Floor Ventilation units and the safety related Control Room Ventilation system was not considered during the original design of the EFT system.

It was known that the EFT system must be capable of operating during a loss-of-offsite power event and the system was provided with automatic loading capability onto the Emergency Diesel Generators. However, the effect of handswitch configuration on the ability of the system to perform its function assuming a single active failure was apparently not considered during the original design of the EFT system.

These EFT design deficiencies have the potential to adversely affect the habitability of the Main Control Room by providing an additional mechanism for radioactivity to enter the Control Room. An analysis has been performed to determine the effect of a failure of the Administration Building ventilation systems to trip along with delayed tripping of the Reactor Building Plenum fans (required manual action to assure no bypass flow from Secondary Containment as discussed in LER 89-029), on the dose received by a Control Room Operator. This analysis assumes that a Loss of Coolant Accident resulting in core damage has taken place. It further assumes the Primary Containment leaks at its Technical Specification limit of 1.2 percent per day, on a weight basis. The analysis shows that Control Room operator dose does not exceed the limits of 10 CFR Part 100 if the Reactor Building Plenum and Administration Building fans are tripped within 39 minutes. This analysis shows that sufficient time is available for operators to take manual action to assure Control Room habitability in the event of a release of gaseous radioactivity.

Corrective Action Taken and Results Achieved

1. The breakers for all ventilation units which could potentially degrade the EFT due to a safety related/non-safety related interaction were immediately secured open. This action ensured the pressurization mode of the EFT would be operable under all conditions.

2. A dose analysis was completed showing Control Room operator dose does not exceed the limits of 10 CFR Part 100 if the Reactor Building Plenum and Administration Building fans are tripped within 39 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.

3. An evaluation of the Administration Building Ventilation unit (V-AC-11, V-AC-14 and S-1) breakers, motor contactors, and relay trip logic was performed to verify these components would be 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. 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 10 CFR 100 guidelines are not exceeded.

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

4. The Control Room kitchen and lavatory exhaust fan, and the Turbine Operating Floor ventilation units remain secured pending further investigation. They will be restarted when a determination has been made that they may be operated in a manner that will not affect the operability of the EFT system.

5. Ductwork has been blocked to assure separation of the safety related and non-safety related portions of the Emergency Filter Train ducting. 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. The handswitches for both the operating and standby ventilation units of the EFT system are kept in "AUTO-AFTER-STOP" position to ensure Control Room Ventilation following a loss-of offsite power event and a single active failure.

Corrective Action to be Taken to Avoid Further Violations

Adequate corrective actions have been taken to assure the EFT system is operable as required by the Technical Specifications and will perform its function as described in the design basis.

1. As an enhancement to the completed corrective actions, a Design Basis/Configuration Management review of the EFT system will be initiated in August 1990 and is scheduled for completion by December 31, 1991.

2. As an enhancement to the completed corrective actions, a permanent modification to automatically trip the Administration Building ventilation units from safety related components is being considered to eliminate the need for operator action to ensure equipment functions as required. Evaluation of the desirability and feasibility of this modification will be completed by January 1, 1991.

Date When Full Compliance Will be Achieved

Full compliance has been achieved.

Please contact us, if you have questions or wish further information concerning this matter.

Leon R Eliason
Vice President
Nuclear Generation

c: Regional Administrator, Region III, NRC
Senior Resident Inspector, NRC
NRR Project Manager, NRC
G Charnoff