

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HOURS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS 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.

FACILITY NAME (1)

CRYSTAL RIVER UNIT 3 (CR-3)

DOCKET NUMBER (2)

0 5 0 0 0 3 0 2 1 OF 0 7

PAGE (3)

TITLE (4)  
Technical Support Center Air Flow Deviates From Acceptable Flow Resulting In Operation Outside The Design Basis

EVENT DATE (6)			LER NUMBER (8)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (6)			
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)		
0	8	18	95	014	011	0	1	95	N/A	0 5 0 0 0		
OPERATING MODE (9) 1 POWER LEVEL (10) 0 9 5 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (CHECK ONE OR MORE OF THE FOLLOWING) (11)												
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)			73.71(c)			
20.405(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vii)			X OTHER (Specify in Abstract below and in Text, NRC Form 366A)			
20.405(a)(1)(iii)			50.73(a)(2)(i)			50.73(a)(2)(viii)(A)						
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
J. A. Frijouf, Nuclear Regulatory Specialist	AREA CODE 9 0 4 5 6 3 - 4 7 5 4

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE 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)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR

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

On August 18, 1995, Florida Power Corporation's (FPC) Crystal River Unit 3 (CR-3) was in MODE ONE (POWER OPERATION), operating at 95% reactor power and generating 825 megawatts. During the performance of a Work Request, FPC determined that ventilation air flow within the Technical Support Center (TSC) when operating in the Emergency Recirculation Mode (Emergency) was outside the accepted air flow ranges and may have comprised operation outside the design basis of the plant.

During a document review FPC personnel determined that the emergency filter fan AHF-62 has a maximum design flow rate of 3000 cubic feet per minute (cfm). The 3000 cfm flow rate is designed to provide optimum flow through the filters. The "as-found" flow in the emergency configuration allowed about 4600 cfm through AHF-62. On August 19, 1995, the event was reported to the Nuclear Regulatory Commission (NRC) as a 1-hour Non-Emergency Report, and LER 95-014-00 was subsequently issued. The condition also resulted in the issuance of NRC Notice of Deviation (NOD) 50-302/95-16. Continuing effort resulted in a new corrective action plan, a determination that the condition was not reportable, and rescinding the 10 CFR 50.72 report and making LER 95-014-00 Voluntary. Further actions relative to this issue will be reported under responses to the NOD.

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TEXT CONTINUATION

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TEXT (If more space is required, Use additional NRC Form 366A's (17))

**EVENT DESCRIPTION:**

On August 18, 1995, Florida Power Corporation's (FPC) Crystal River Unit 3 (CR-3) was in MODE ONE (POWER OPERATION), operating at 95% reactor power and generating 825 megawatts. During the performance of Work Request 321590, FPC determined that ventilation air flow within the Technical Support Center (TSC) when operating in the Emergency Recirculation Mode (Emergency) was outside the accepted air flow ranges. Emergency flow mode is utilized during plant accidents involving radioactive releases.

At 2340, on the same day, during a subsequent review of the Enhanced Design Basis Document (EDBD) for the TSC air handling system, FPC personnel determined that the emergency filter fan AHF-62 [UF,FAN](AHF-62) has a maximum design flow rate of 3000 cubic feet per minute (cfm). The 3000 cfm flow rate is designed to provide optimum flow through the filters. The "as-found" flow in the emergency configuration allowed about 4600 cfm through AHF-62. At that time, FPC personnel determined that CR-3 was operating outside the design basis of the TSC ventilation system. An initial investigation indicated that the dampers [UF,DMP] may have been in the wrong position since the last performance of the flow balancing procedure in July, 1994.

Subsequently, at 0004 on August 19, 1995, the event was reported to the Nuclear Regulatory Commission (NRC) as a 1-hour Non-Emergency Report per the requirements of 10 CFR 50.72(b)(1)(ii)(B). The event was issued the NRC Event number 29218. Subsequently, LER 95-014-00 was submitted in accordance with 10 CFR 50.73(a)(2)(ii)(B).

On October 13, 1995, FPC received NRC Inspection Report 50-302/95-16 which included a Notice of Deviation (NOD) relating to this issue. The NOD cited NUREG-0737, Clarification of TMI Action Plan Requirements, Supplement 1, Item III.A.1.2, Upgrade Emergency Support Facilities and NUREG-0696, Functional Criteria for Emergency Response Facilities, Section 2.6, Habitability requirements for the TSC ventilation which FPC had committed to in an April 14, 1981 response to Generic Letter 81-10, Post TMI Requirements for Emergency Operating Facility.

On October 31, 1995, as a result of an extensive engineering effort undertaken to review the problems associated with the TSC ventilation system, a new comprehensive action plan was issued. The corrective actions included in this Supplement reflect the new action plan.

On November 9, 1995, FPC submitted its response to the NOD in letter 3F1195-14, which included the new action plan.

On November 14, 1995, FPC Licensing personnel concluded that "neither exceeding the maximum nor being unable to achieve the minimum outside air flow constitutes inoperability of the TSC or operation outside the design basis as referred to in

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TEXT // more space is required, Use additional NRC Form 366A's (17)

10 CFR 50.72 (ED. Note: and 10 CFR 50.73)." This conclusion is based on the fact that the TSC is not a system, structure, or component needed to prevent or mitigate a design basis accident from a design point of view. Therefore, FPC hereby rescinds the 10 CFR 50.72 report made to the NRC on August 9, 1995 and issued the event number 29218. Additionally, this Supplement rescinds LER 95-014-00 as a reportable event under the requirements of 10 CFR 50.73 and converts it to a voluntary LER submitted for information only.

Regardless of the status of reportability relative to this issue, FPC considers TSC ventilation issue to be an important issue. Any future changes in corrective actions or in information concerning this event will be provided to the NRC by means of revised responses to NRC Notice Of Deviation 50-302/95-16 NOD.

**EVENT EVALUATION**

The TSC air handling system fulfills two basic functional requirements: 1) it provides filtered, conditioned air to the TSC; and 2) it controls/limits the leakage of radioactivity into the building in the event of an accident resulting in a radioactive release. The TSC is not addressed in Improved Technical Specifications (ITS), however, NRC NUREG-0737, Supplement 1, Item III.A.1.2, places requirements on the TSC air handling system.

The TSC air handling system, operating in the emergency mode, is designed to maintain the occupied spaces habitable and provide equipment cooling in the event of a plant accident. The TSC air handling system accomplishes the habitability portion of this requirement by maintaining the TSC at a slight positive pressure, thus preventing unfiltered leakage into the building. Additionally, the relative humidity in the TSC must be maintained at less than 70% to ensure that filtering requirements are accomplished.

Damper AHD-119 [UF,DMP](AHD-119) limits makeup air to the filter banks when in the emergency mode. Along with damper AHD-118 [UF,DMP](AHD-118), AHD-119 limits total flow to the charcoal filter bank to 3000 cfm to optimize performance of the filter bank and to prevent overexposure of personnel in the TSC.

The consequence of an accident rendering the TSC uninhabitable has been addressed by emergency procedures. In the event that the TSC becomes uninhabitable, the TSC emergency staff is directed to relocate to a room located within the Control Complex [NA,] Habitability Envelope (HE), adjacent to the control room.

A challenge to the habitability of the TSC would occur during a substantial radioactive release. The CR-3 Probabilistic Safety Assessment (PSA) states that the risk of a core damage event resulting in an early containment failure is 3.0E-7 per year. This value closely approaches both the Individual Plant Evaluation (IPE)

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reporting cutoff of 1.0E-7 per year and the "non-risk-significant" region of the guidance given in the draft Nuclear Energy Institute (NEI) PSA Applications Guide.

Based on the low probability of occurrence of a postulated event and the availability of the alternate TSC location, FPC has concluded that this event did not create a safety concern, and the health and safety of the general public was not compromised.

CAUSE

Two mechanical factors have been identified which adversely affected the system flows:

1. Fan performance substantially exceeded design flow requirements. This required throttling of system dampers to a point where slight changes had significant affects on system flows. Fan speed has been reduced to correct this problem.
2. Motorized dampers were used to balance system flows. In conjunction with the excessive fan performance, repeatability of damper position when the system was cycled could have affected flows. This problem has been corrected by removing power from the dampers and setting them to a fixed position.

This problem has also been attributed to lack of proper identification of design requirements. Design Change Notice (DCN) 92-534 was issued to provide setpoints for damper flow balance. The design drawing incorrectly indicated an outside air requirement of 500 CFM (instead of the calculation range of 375 to 509 CFM) and recirculation flow of 2,500 CFM. Unless otherwise stated on the design drawing, the flow balancing procedure MP-217 provides a flow tolerance of +/- 10% of the design number. This tolerance was used to balance the system, causing the 509 CFM limit specified in the dose calculation to be exceeded. The minimum outside air requirement of 375 CFM specified in the design calculations was not affected since it fell within the 500 +/- 10% band.

The DCN failed to adequately specify the required flow range.

IMMEDIATE CORRECTIVE ACTION

1. Upon discovery of this condition, a Problem Report (PR-95-0154) was issued which documented the deficiency.
2. Work was initiated to properly balance TSC emergency air flow.

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ADDITIONAL CORRECTIVE ACTION

- As noted in items 1 and 2 above (in Cause Section), work was initiated to properly balance TSC emergency air flow. Fan speed has been reduced, and power has been removed from the dampers, and they are now set in a fixed position.
- An extensive engineering effort was undertaken to review the problems associated with the TSC ventilation system. This effort resulted in a comprehensive action plan which was issued on October 31, 1995.

ACTION TO PREVENT RECURRENCE

- Procedures will be revised to provide lineup and test points for the ventilation system emergency mode of operation. These revisions will be completed by December 15, 1995.
- The minimum TSC staffing level required to support emergency operations is being evaluated to determine the impact on TSC ventilation design and testing, if any. If no modifications to the ventilation system are required, this will be completed by December 15, 1995 and any additional flow balancing will be completed by January 15, 1996.

If modifications are required, the corrective action plan will be revised and new completion dates will be provided. Formal notification to the NRC will be made by means of revised responses to NRC Notice Of Deviation 50-302/95-16 NOD.

PREVIOUS SIMILAR EVENTS

There have been no previous reportable events involving TSC flow balancing or deficiencies.

ATTACHMENT

ATTACHMENT 1 - Abbreviations, Acronyms and Definitions

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ATTACHMENT 1 - ABBREVIATIONS, ACRONYMS AND DEFINITIONS

- AHD-118 Inlet Damper
- AHD-119 Inlet Damper (filer bank)
- AHF-62 Fan
- CFM Cubic Feet per Minute
- CR-3 Crystal River Unit 3
- DCN Design Change Notice
- EDBD Enhanced Design Basis Document
- EIIS Energy Industry Identification System
- FPC Florida Power Corporation
- HE Control Complex Habitability Envelope
- HVAC Heating, Ventilating Air Conditioning
- IPE Individual Plant Evaluation
- ITS Improved Technical Specifications
- MODE ONE Power Operation
- NEI Nuclear Energy Institute
- NOD NRC Notice of Deviation
- NRC Nuclear Regulatory Commission
- NUREG-0696 Functional Criteria for Emergency Response Facilities
- NUREG-0737 Clarification of TMI Action Plan Requirements
- PSA Probabilistic Safety Assessment
- TSC Technical Support Center

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3F1195-14 Letter FPC to NRC Notice of Violation (NRC Inspection report No. 50-302/95-16)

NOTES: Improved Technical Specifications (ITS) defined terms appear capitalized in LER text (e.g. MODE ONE)

Defined terms/acronyms/abbreviations appear in parenthesis when first used (e.g. Reactor Building (RB) ).

EIIS codes appear in square brackets (e.g. Makeup Tank [CB,TK] )