NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
CRYSTAL RIVER UNIT 3	0 5 0 0 0 3 0 2	1 OF 0 5

TITLE (4) Fire Barrier Deficiency Caused by Construction Personnel Failing to Build Masonry Fire Barriers in Accordance With All Design Requirements

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)
									N/A	0 5 0 0 0
0 2	0 2	8 9	8 9	— 0 0 5	— 0 0	0 3	0 6	8 9	N/A	0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 7 0	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)	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)	X 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
L. W. MOFFATT, NUCLEAR SAFETY SUPERVISOR	AREA CODE 9 0 4 7 9 5 - 6 4 8 6

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)	X NO				

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

On November 10, 1988 Crystal River Unit 3 was in MODE 1 (POWER OPERATION) and operating at 99% Rated Thermal Power. On this date small cracks in a masonry fire barrier were identified. The cause could not be conclusively determined and a Field Problem Report (FPR) was generated. The FPR evaluation determined one other penetration was also involved and provided data and information indicating the fire barriers were not constructed in accordance with specified design requirements and did not meet the required three hour fire rating. On February 2, 1989 the plant Risk Assessment Team determined the event to be a design basis issue and a one hour verbal report was made in accordance with 10 CFR 50.72.b.ii.b.

Affected barriers will be modified to meet the required 3 hour rating criteria and affected documentation will be updated and corrected. Programmatic aspects for modifying plant systems and documenting the design have been improved since original construction when these doors were installed.

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

EVENT DESCRIPTION

BACKGROUND

The following is a brief background description regarding the affected fire barriers and penetrations.

Each penetration [PEN] barrier consists of a set of double doors and its surrounding masonry block barrier. Each is located on the 95 foot plant elevation; one (involving door # C-124) provides a 3 hour barrier between the Auxiliary Building (AB) [NF] and the Control Complex (CC) [NA] and the other (involving door # C-105) provides the same between the Turbine Building (TB) [NM] and the CC. Except for these penetration barriers the major portion of the overall barrier consists of a 3 hour rated concrete wall. The event only involves the design and construction of the masonry barriers surrounding the double fire doors; it does not involve the double fire doors themselves or the concrete wall.

During plant construction these extra large penetrations (without doors and masonry barriers) were used for passage of major equipment and components. Consequently they were not finished until near the end of construction. The circumstances of the event appear to date back to the time of final construction and the final work on these penetrations.

DESCRIPTION

On November 10, 1988 Crystal River Unit 3 was in MODE 1 (POWER OPERATION) and operating at 99% Rated Thermal Power. On this date a Nonconforming Operations Report (NCOR) identified what appeared to be small cracks in the masonry barrier above door C-124 and raised concerns regarding the design and construction of the masonry barrier. As an immediate action a fire penetration breach permit/report was issued.

On December 30, 1988 the NCOR evaluation was completed but the cause of the cracking could not be conclusively determined. As corrective action a Field Problem Report (FPR) was assigned to engineering to determine the following:

1) if the wall was designed adequately;
2) if it presented a design basis issue; and,
3) if the concern applied to other masonry block barriers.

During the FPR evaluation an engineering review determined that door C-105 was surrounded by a masonry fire barrier. In addition, the review determined these were the only 3 hour fire barriers constructed of masonry blocks. The barrier for door C-105 was subsequently inspected and on January 20, 198[illegible] other NCOR was written to document similar design and construction concerns [illegible]rding the fire barrier surrounding door C-105.

On January 31, 1989 the FPR evaluation was completed and on February 2, 1989 the plant Risk Assessment Team was convened to consider the event as a Design Basis Issue. Based upon the FPR evaluation, the Risk Assessment Team determined the masonry fire barriers surrounding doors C-124 and C-105 were not constructed in accordance with specified design requirements and did not meet the 3 hour fire rating requirements. Therefore, the event was determined to be a design basis issue. This determination was further documented by issuing a third NCOR and making a one hour verbal report in accordance with 10 CFR 50.72.b.ii.b.

CAUSE

The cause of the event was failure of construction personnel to build the referenced fire barriers in accordance with all design specifications.

The root cause appears to be inadequate and unclear communication of detailed design requirements to construction personnel which resulted in a deficient installation of a required 3 hour fire barrier.

An engineering review of documentation found that during initial construction the original construction drawings did not address or indicate how these affected passages or penetrations were to be finished. At the time, the issue was raised to the Architect/Engineer (AE) in a Field Change Notice and the AE responded by supplying additional design drawings for the masonry walls. The supplied drawings specified an eight inch (width) masonry block but did not specify the thickness of the exterior coating of plaster. Although the drawings did not specifically reference other specifications, it appears the builders were expected to utilize or follow the general construction specification for Lath and Plaster. This specification requires a minimum plaster thickness of 1/2 inch on both sides of the masonry barrier thus increasing the rating to 3 hours. However, these intended specifications were not met when the affected barriers were constructed.

The review also identified other related drawings which specified a one inch thick plaster coating with 6 inch masonry blocks; however, this arrangement would not have provided the necessary 3 hour fire barrier rating. Utilization of these drawings may have confused the situation and are therefore considered to be a contributing factor to the cause of the event.

EVENT ANALYSIS

The affected penetrations and the associated doors are the designated entry and exit points for the Radiation Control Area (RCA) and the RCA entry control point. Personnel entering or exiting the RCA are required to pass through both of the affected doors and penetrations.

Since 1985 CR-3 has maintained an hourly Roving Fire Watch with an assigned patrol route. The established route included specific fire areas located in both the RCA and balance of plant, i.e. turbine building. The established route was frequently augmented to include current or open Fire Penetration Breach Permits/Reports.

The Roving Fire Watch is required to walk the established route within one hour and observe for fires. If a fire is observed the watch is to report immediately and extinguish fires if in the incipient stage. Where appropriate the patrolling activities of the Roving Fire Watch are routinely monitored or recorded by the security key-card entry system.

Since 1) the established patrol route included both the RCA and balance of plant areas and 2) the affected penetrations and doors are the only (for the fire watch) entry and exit points between the RCA and balance of plant, then it follows that the intent and purpose of the Roving Fire Watch has been unknowingly, but appropriately and correctly, applied since its establishment in 1985. In addition, the operability of fire detectors on at least one side of each fire barrier has been maintained and monitored.

The supplemental safety aspects derived from the compensatory responsibilities of the Roving Fire Watch and the maintenance of operable fire detectors has maintained an adequate level of safety; therefore, this event did not create any undue risk to the safety of the public.

CORRECTIVE ACTION

For the affected penetration barriers the required actions of Technical Specifications 3.7.12 have been implemented and will be maintained until the barriers' rating can be upgraded to meet the required 3 hour criteria.

The affected barriers will be modified to ensure they meet the required 3 hour rating criteria. All affected documentation will be updated and corrected to ensure field conditions and documentation completely agree.

With regard to the apparent root cause and its relative time frame, programmatic aspects for modifying plant systems and design have been improved. Current procedures ensure complete and detailed documentation and communication of required design specifications.

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PREVIOUS SIMILAR EVENTS

Based upon a general cause of 'Improper Installation & Design Misinformation', a review of LERs identified four previous events which are similar. The LERs are 78-054, 83-23, 88-13 and 89-01 and for all of them the actual time frame of the activity and cause is early in plant life. Subsequently, deficiencies have been recognized and the modification program improved.

Florida Power
CORPORATION

March 6, 1989
3F0389-03

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D. C. 20555

Subject: Crystal River Unit 3
Docket No. 50-302
Operating License No. DPR-72
Licensee Event Report No. 89-005

Dear Sir:

Enclosed is Licensee Event Report (LER) 89-005 which is submitted in accordance with 10 CFR 50.73.

Should there be any questions, please contact this office.

Yours very truly,

Rolf C. Widell
Director, Nuclear Operations Site Support

WLR:mag

Enclosure

xc: Regional Administrator, Region II
Senior Resident Inspector

IE22
1/1