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DUKE POWER

June 5, 1996

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

Subject: Catawba Nuclear Station
Docket No. 50-413
LER 413/96-004

Gentlemen:

Attached is Licensee Event Report **Standby Shutdown System Found Outside Design Basis Due To Misinterpretation Of Information.**

This event is considered to be of no significance with respect to the health and safety of the public.

Very truly yours,

Mark E. Patrick for

W. R. McCollum, Jr.

Attachment

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NSRB Staff	EC05N
NC MPA-1	
NCEMC	
PMPA	
SREC	

J. W. Glenn	CN01SR (with Enclosures)
K. E. Nicholson	CN01RC (with Enclosures)
SRG File	CN01SR (with Enclosures)
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Master File	CN02DC CN-815.04 (with Enclosures)

NRC FORM 366 (4-95) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES: 04/30/98
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)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Catawba Nuclear Station	05000413	1 of 5

TITLE (4)
Standby Shutdown System found outside design basis due to misinterpretation of information

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 NAME	DOCKET NUMBER(S)
											Catawba Nuclear Station	05000414
05	06	96	96	-	004	-	00	06	05	96		05000

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)	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)	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	
	AREA CODE	
D. P. Kimball, Safety Review Group Manager	(803)	831-3743

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)

Event Description: On May 6, 1996, Engineering determined the volume of water assumed available for the Standby Shutdown System (SSS) to supply steam generators with a nonsafety, noncondensate quality source during security events was outside the design basis. Engineering recalculated the volumes of floodwater available during various security event scenarios. The new calculations used more conservative yet credible assumptions. The results indicated that without Security compensatory measures, the required volume of water for 72 hours at Hot Standby would not be available. The SSS was declared inoperable and Technical Specification 3.7.13, Standby Shutdown System, was entered. Security developed and implemented compensatory measures to ensure that the required volume of water would be available, and the SSS was declared operable.

Event Cause: The root cause of this event is the misinterpretation of information used during the development of design basis documentation for the SSS prior to commercial operation. A calculation, valid to ensure that safety related structures would not be affected by flooding of the turbine building basement was used. However, this calculation was not intended to be used as a justification for the water available for the SSS during security events.

Corrective Actions: Planned corrective actions include changing the design basis document based on corrected calculations and the implementation of a modification to ensure water availability.

BACKGROUND

The primary function of the Condenser Circulating Water [EIIS:KE](RC)System is to provide cooling water to the main condenser [EIIS:COND] and main feedwater [EIIS:SJ] pumps'[EIIS:P] condensers for exhaust steam condensing. As a result of the large volume of water contained within the system's embedded piping, the system can provide a source of nonsafety, noncondensate quality water for use by the Turbine Driven Auxiliary Feedwater Pump [EIIS:BA](TDCAP) to feed the steam generators [EIIS:SG](SG).

The Turbine Building [EIIS:NM] is not divided into two separate structures. The designation of Unit 1 and Unit 2 Turbine Building is for purposes of unit distinction only. Between the two Turbine Buildings is located the Service Building. The Service Building [EIIS:MF] contains shared components and systems. Flooding of either Turbine Building basement from the RC System will result in the accumulation of floodwater in all three basement locations. One wall of the Service Building basement is adjacent to the Auxiliary Building [EIIS:NF], which is a Nuclear Safety Related structure.

Flooding of the Catawba Turbine Building resulting from a breach of the RC piping is a licensing basis event. An approved engineering calculation, "CNC-1109.04-6, Service Building Foundation Material," was initially performed in 1974 and subsequently revised in 1977 and finally in 1985 to determine the maximum volume of floodwater that could exist in the lowest elevation of the combined Turbine and Service Buildings of the Catawba site, if a saboteur were to cause a breach of the RC System piping. This calculation shows that the existing design precludes flooding of Nuclear Safety Related structures from this source.

Revision 3, dated 2 December 1991, of the Design Basis Document for the Standby Shutdown System (SSS) states in part that, unless located in a vital area, all equipment and piping are assumed subject to sabotage events. During a sabotage event, the SSS provides an alternate and independent means to achieve and maintain a Hot Standby condition for one or both units. Capability to maintain Hot Standby in both units for a conservative period of three days without damage control measures is provided. This was based on the floodwater volume determined in, "CNC-1109.04-6, Service Building Foundation Material". Based on a constant Emergency Feedwater flowrate of 500 GPM, this volume translates to a 7 day supply of water available in the embedded condenser circulating water pipe.

The TDCAP provides the secondary side inventory requirements necessary to maintain two SG as decay heat removal heat sinks while in Hot Standby at the SSS. A nonsafety, noncondensate quality water source that is adequately protected from damage during fire and security events is required to supply water for Hot Standby operation.

The NRC requires that the plant be capable of achieving Cold Shutdown within 72 hours for fire events when shutdown can be accomplished from the Control Room or SSF. While there is currently no corresponding time requirement for security events, 72 hours is used for security scenarios as well, to maintain Hot Standby from the SSS.

EVENT DESCRIPTION

On 6 May, 1996, a discrepancy was discovered in the assumed volume of available water in the embedded RC piping needed to maintain Mode 3, Hot Standby, from the SSS during a postulated security event. Engineering discovered that the results of the floodwater volume calculation done for the worst case flooding scenario for the Turbine/Service Building was used as the assumed volume of RC water available for the TDCAP during a security event that required the SSS to be used to mitigate the event. Engineering determined this to be an erroneous assumption. Using more conservative assumptions within the bounds of a credible security event, a minimum floodwater volume was calculated. The result was a value that is greater than the minimum required for 72 hours, but due to the assumptions used, only a volume equivalent to about 4 hours would be available unless Security compensatory measures were implemented to preserve the structural integrity of the RC piping identified in this newly discovered credible security scenario. Since no such compensatory measures existed at the time, the SSS was declared inoperable and Technical Specification (T/S)3.7.13 was entered. With engineering's assistance, Security developed and implemented compensatory measures to ensure that the required volume of water would be available, and the SSS was declared operable.

CONCLUSION

The root cause of this event is the misinterpretation of information during the development of design basis documentation for the SSS prior to commercial operation.

The assumed available volume of RC water used to ensure SSS operability during a security event was taken from a calculation for worst case flooding of the Turbine/Service Building basement following a security event. The worst case flooding of the Turbine/Service Building provided assurance that Nuclear Safety Related structures would not be effected by the event. This was the only reason for performing the calculation. It was not intended to be used as a justification for the water available for the SSS during security events.

However, as a result of the use of this calculation, all floodwater was assumed to be available. Based on this, there were no security issues identified that required the development and implementation of any Security compensatory measures for the embedded RC piping.

The May 6, 1996 calculation, using more conservative but still credible assumptions, indicated that the volume of available water without Security compensatory measures to preserve the integrity of the piping was determined to be less than 72 hours, but sufficient volume would be contained in the basement in locations that are accessible for transfer.

A review of reportable events for the two year period preceeding this event of 6 May, 1996 indicated that there have been no events with the root cause being identified as misinterpretation of information used during the development of documents which describe system design bases. Therefore this event is not recurring.

CORRECTIVE ACTIONS

IMMEDIATE

1) Entered T/S 3.7.13, STANDBY SHUTDOWN SYSTEM, Action a., due to less than the required volume of RC water being available.

SUBSEQUENT

1) Security developed and implemented Security compensatory measures to ensure that the required volume of RC water would be available.

2) Exited T/S 3.7.13 upon implementation of the Security compensatory measures.

PLANNED

1) Engineering will review and revise as necessary the Design Basis Documents for the SSS and Auxiliary Feedwater System as a result of this event.

2) The site will implement a modification to provide assurance that the required volume of RC water for security events will be available.

3) Security will evaluate their Security Plan interpretation.

SAFETY ANALYSIS

The physical security of the Catawba site is maintained in accordance with 10CFR73, Physical protection of materials and plants. Even though specific measures were not in place to ensure the physical integrity of the RC piping that could be damaged and thereby result in less than an adequate volume of nonsafety, noncondensate quality water, the security force would have been fully capable of executing plans to restore the physical security of the Protected Area in time to allow site personnel to assess system capabilities and implement any necessary damage control measures prior to depletion of the available water source.

Following restoration of the physical security of the Protected Area, the Emergency Response Organization would have assessed the availability of water sources. Included in the assessment would have been the condensate grade water from the Condenser Hotwell. This source of water can be made available whether the hotwell is intact or not. Intact, the TDCAP would take a suction on the Hotwell through its normal embedded suction piping connected to the discharge header of the Hotwell Pumps, located in the Hotwell Pump pit. Not intact, water spilled from a damaged Hotwell or the exposed piping in the Hotwell Pump pit are below the Turbine Building Basement floor elevation. This is an open reservoir of water that can be utilized directly via the same embedded suction piping or the water would be transferred to a location where suction by the TDCAP could occur.

Other contained sources of water that would be transferred include noncondensate quality floodwater in the RC Pump pits, located outside of and adjacent to the Turbine Building. Air operated sump pumps, available on site, and driven by diesel powered air compressors, would be used to transfer water. Motor driven sump pumps, with temporary power from the SSS would also be utilized to transfer water.

Based on the ability of the Security force to restore physical security to the Protected Area and the ability of the Emergency Response Organization to assess and implement measures necessary to ensure the required volume of water for 72 hours at Hot Standby from the SSS, the health and safety of the public would not have been affected had the postulated event described in this LER occurred.