Indian Point 3
Nuclear Power Plant
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NewYorkPower Authority

Robert J. Barrett
Site Executive Officer

April 27, 2000
IPN-00-035

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

SUBJECT: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
License No. DPR-64
Licensee Event Report # 2000-002-00
Plant Outside Design Basis Due to Routing of Component Cooling Water Piping Within the Fuel Storage Building Which was not Designed for Tornado Effects During Original Plant Design

Dear Sir:

The attached Licensee Event Report (LER) 2000-002-00 is hereby submitted as required by 10 CFR 50.73. This event is of the type defined in 10 CFR 50.73 (a)(2)(ii)(B) for a condition recorded in the New York Power Authority's (NYPA) corrective action process as Deviation Event Report DER 00-00765.

NYPA is making no new commitments in this LER.

Very truly yours,

Robert J. Barrett
Site Executive Officer
Indian Point 3 Nuclear Power Plant

cc: See next page

IE22

cc: Mr. Hubert J. Miller
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U. S. Nuclear Regulatory Commission
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U.S. Nuclear Regulatory Commission
Resident Inspectors' Office
Indian Point 3 Nuclear Power Plant

NRC FORM 366 (6-1998) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

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

APPROVED BY OMB NO. 3150-0104 EXPIRES 06/30/2001
Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), 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. If an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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TITLE (4)
Plant Outside Design Basis Due to Routing of Component Cooling Water Piping Within the Fuel Storage Building Which was not Designed for Tornado Effects During Original Plant Design

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
03	30	2000	2000	-- 002 --	00	04	27	2000		05000
									FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	N
POWER LEVEL (10)	100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

	20.2201(b)		20.2203(a)(2)(v)		50.73(a)(2)(i)		50.73(a)(2)(viii)
	20.2203(a)(1)		20.2203(a)(3)(i)	✓	50.73(a)(2)(ii)		50.73(a)(2)(x)
	20.2203(a)(2)(i)		20.2203(a)(3)(ii)		50.73(a)(2)(iii)		73.71
	20.2203(a)(2)(ii)		20.2203(a)(4)		50.73(a)(2)(iv)		OTHER
	20.2203(a)(2)(iii)		50.36(c)(1)		50.73(a)(2)(v)		Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iv)		50.36(c)(2)		50.73(a)(2)(vii)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Richard Drake, Supervisor Civil/Structural Engineering	914-788-2090

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

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

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

On March 30, 2000, the plant was determined to be outside design basis after Engineering determined that one loop of the Component Cooling Water (CCW) system piping located in the Spent Fuel Storage Building (FSB) was not in compliance with FSAR design criteria. During review for the 10CFR50.54(f) program the discrepancy of the CCW piping design was identified. The FSAR indicates that CCW is protected from tornadoes and tornado generated missiles by structures designed for the effects of tornado loads. After further investigation Engineering determined the CCW piping located in the FSB is not protected from the effects of tornadoes by the FSB. Initially the issue was not considered reportable because protection of CCW piping from the effects of tornado missiles can be provided by the redundancy of the CCW system. An evaluation concluded that CCW system can sustain damage from a tornado missile and with manual operator action there is no loss of function. The evaluation credited operator action in existing procedures to initiate makeup water to the CCW system. The plant continued operation based on a Reasonable Expectation of Operability, and a Reasonable Assurance of Safety (RAS). The corrective action will be preparation of a submittal to the NRC for revision of the CCW design basis. There was no effect on public health and safety.

TEXT *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

Note: The Energy Industry identification system Codes are identified within the brackets {}

DESCRIPTION OF EVENT

On March 30, 2000, at approximately 0850 hours, with steady state reactor power at approximately 100 percent, the plant was determined to be outside design basis after Engineering determined that one loop of the Component Cooling Water (CCW) system {CC} piping located in the Spent Fuel Storage Building (FSB) {ND} was not in compliance with the design basis as stated in the current FSAR. This event was reported when the CCW system could not be shown to be in accordance with the FSAR design basis for the protection of CCW from the effects of tornadoes and therefore outside plant design basis. The plant continued operation based on a reasonable expectation of operability (REO) and subsequently a reasonable assurance of safety (RAS). The condition was recorded in deviation event report (DER 00-00765) and corrective actions initiated.

FSAR Section 9.3.3 states that the entire CCW system is seismic class I and is housed in structures of the same classification. FSAR Section 16.2.1 states the plant is safeguarded from tornadoes by the combined use of buildings and structures designed to withstand tornadoes, and by redundancy of components. The FSAR further states that all Class I structures were designed to withstand tornado design loads and that equipment and systems contained within tornado-proof structures are protected from tornadoes and tornado missiles. Contrary to the FSAR, Engineering discovered CCW piping and components which serve the heat exchanger {HX} for the Spent Fuel Pool Cooling (SFPC) system {DA} are located in the seismic Class III FSB.

The acceptability of having CCW piping, which is a seismic class I system, routed in the FSB, which is a seismic class III building, was a deficiency initially identified during review for the 10CFR50.54(f) program and recorded in DER 98-00873. Operations concluded the CCW system was operable based on system redundancy and existing procedural guidance and training to respond to a leak. Design Engineering (DE) determined that the issue was identified to address NRC IE Bulletin 80-11 (Block Wall Study), but had been improperly dispositioned. DE analyzed the block walls and concluded that they will not fail due to a seismic event, however, it was determined that they could not withstand the effects of a tornado.

DE evaluated the effects of a tornado on CCW piping routed in the FSB and determined that the CCW outlet piping (line 325) and two 3/4 inch branch lines are not protected from the effects of tornadoes. A tornado missile will not cause a break in the CCW outlet line, but either of the two associated 3/4 inch branch lines could break due to a tornado missile hit. The loss of CCW from the break is within the capacity of the Primary Makeup Water System (PMWS) {KJ}. Because of separation, the PMWS would be available if the tornado missile damaged CCW piping. The evaluation credited operator action per existing procedures to initiate makeup water to the CCW system. It is therefore concluded that CCW can still perform its design function.

TEXT *(If more space is required, use additional copies of NRC Form 366A)* **(17)**

Since the CCW system could not be shown to be in accordance with the FSAR design basis, the condition could place the plant outside design basis, therefore the issue was determined to be reportable.

CAUSE OF EVENT

The cause of the event was personnel error during the original design and licensing process. The error and the reason(s) for this error have not been identified due to the passage of time.

CORRECTIVE ACTIONS

The following corrective actions have been or will be performed under the Authority's corrective action program to address the event:

- A Reasonable Expectation of Operability (REO), and subsequently a RAS (RAS 00-3-036 CC-SFPC) were developed to document the basis for continued plant operation.

- A revision to the design basis of the CCW system will be developed and submitted to the NRC for review and approval as an FSAR change. The design change submittal is scheduled for August 31, 2000.

ANALYSIS OF EVENT

The event is reportable under 10 CFR 50.73 (a) (2) (ii) (B). The licensee shall report any operation or condition that resulted in the plant being in a condition that was outside the design basis of the plant.

This event meets the reporting criteria because one loop of CCW system piping located in the FSB was not in compliance with the design basis as stated in the current FSAR. FSAR 9.3.3 states that the entire CCW system is seismic class I and is housed in structures of the same classification.

Contrary to the FSAR, Engineering discovered that CCW piping and components which serve the Spent Fuel Pool heat exchanger are located in the seismic Class III FSB. The condition was reported as a one hour non-emergency notification for the plant outside design basis under 10CFR50.72(b)(1)(ii)(B) (ENS Log No. 36844).

Licensee Event Reports (LER) for the previous two years were reviewed to identify conditions where the plant was outside design basis due to errors during original plant design. LER 1999-006 reported the plant outside design basis due to routing of CCW piping inside the missile shield wall in containment as a result of an original plant design error. An extent of condition corrective action for LER 1999-006, that referenced the 10CFR50.54(f) review program, identified the reported condition.

SAFETY SIGNIFICANCE

This event had no effect on the health and safety of the public. There were no actual safety consequences for the condition because there was no tornado event or condition that required mitigation.

Review of this event against the guidelines of NEI 99-02 Rev. 0, "Regulatory Assessment Performance Indicator Guideline," concluded it was not a safety system functional failure (SSFF). The condition did not meet the definition of a SSFF defined as identical to 10CFR50.73(a)(2)(v). No event or condition alone could have prevented fulfillment of the safety function of the CCW system. In accordance with NUREG-1022, "Event Reporting Guidelines 10CFR50.72 and 10CFR50.73," it is not necessary to assume an additional random single failure in that system. There was no failed condition for the CCW system and the CCW system was capable of performing its safety function when considering the effects of tornadoes and tornado missiles, therefore the event is not a SSFF.

There were no potential safety consequences of the event under reasonable and credible alternative conditions. The following are the results of a deterministic and probabilistic assessment.

Deterministic Assessment

The deterministic assessment concluded that the Indian Point 3 CCW system could have performed its safety functions after considering the effects of a tornado based on the following: The CCW system includes three CCW pumps {P}, two heat exchangers (HX), four auxiliary CCW pumps, and two independent supply and return piping pathways with surge tanks {TK} on the pump suction side. Cross connections with isolation valves {ISV} are provided at the CCW pump suction and discharge, and at the CCW heat exchanger discharge header for splitting the CCW into two independent loops.

During normal operation the headers are cross connected. Each accident mitigating equipment train is supplied by a CCW loop in such a manner that either header can provide adequate cooling to the respective accident mitigating equipment. One CCW HX is aligned to the Essential Service Water (SW) {BI} header and the other to the Non-Essential SW header {KG}. This arrangement allows the CCW system to be aligned to accommodate a passive or active failure following a Design Basis Accident (DBA), with manual operator action required to assure no loss of function. One surge tank is connected to each header on the CCW pump suction side of the header. The surge tanks accommodate system volume changes to provide suction head to the CCW pumps and allow for operator reaction time to changes in volume. Existing Off-Normal Operating Procedure (ONOP-CC-1) directs an operator to identify the leak and isolate the leaking component. If a tornado missile causes damage to a 3/4 inch CCW branch line in the FSB with the CCW headers tied, Alarm Response Procedure (ARP-10) directs the operators to establish makeup to the tanks.

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The source of makeup water to the surge tanks is the Primary Makeup Water Storage Tank, which is a class I component designed for seismic class I loads and tornado wind loads. Adequate time exists for operator action because the operators are required to shut off the CCW pumps on surge tank low-low level. Plant shutdown following a tornado does not require immediate availability of CCW as noted in FSAR Section 16.5. Makeup can be established, or CCW restored to allow shutdown. Unavailability of CCW following a loss of coolant accident (LOCA) is not postulated during the 30 days that an accident is evaluated. After that time operators have time to establish makeup, restore CCW, and repair the damaged line due to the reduced heat load in containment.

Probabalistic Assessment

An assessment of risk was performed relative to the Indian Point 3 Individual Plant Examination of External Events (IPEEE). The probability of any tornado striking Indian Point 3 based on the IPEEE is 1.59E-4 per year. In accordance with the IPEEE, the probability that a tornado would be classified as a F3 is 1.4E-2. Therefore, the frequency of an F3 or higher tornado striking Indian Point 3 is 2.23E-6/ year. For tornadoes with wind speeds in excess of 180 mph, the tornado strike frequency decreases to 8.62E-7/ year, which falls below the 1E-6/year screening criterion for high winds and tornadoes suggested in NUREG-1407. The FSAR design basis tornado is defined as tornado winds corresponding to 300 mph tangential velocities, traverse velocities of 60 mph, and a differential pressure drop of 3 psi in 3 seconds which corresponds to an F5. For tornadoes with wind speeds exceeding 300 mph, the tornado strike frequency decreases to 1.02E-9/year. The frequency of large, intermediate, and small break LOCAs is 2.31E-3/yr. The probability of an F3 or greater tornado striking Indian Point 3 during a 30 day period following a LOCA is 4.23E-10, which is below the probability of 1E-6, and therefore not risk significant.