

Indian Point 3
Nuclear Power Plant
P.O. Box 215
Buchanan, New York 10511
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**New York Power
Authority**

John H. Garrity
Resident Manager

October 15, 1993
IPN-93- 123

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop PI-137
Washington, D.C. 20555

SUBJECT: Indian Point 3 Nuclear Power Plant
Docket No. 50-286
License Event Report # 93-036-00
"Improper Seismic Mounting of Damper
Actuators in the Central Control Room
Ventilation System Resulted in a Condition
Prohibited by Technical Specifications Due to
Personnel Error"

Dear Sir:

The attached Licensee Event Report (LER) 93-036-00 is hereby submitted in accordance with the requirements of 10CFR50.73. This event is of the type defined in the requirements pursuant to 10CFR50.73(a)(2)(i)(B). Also attached are the commitments made by the Authority in this LER.

Very truly yours,

A handwritten signature in cursive script that reads "John Garrity".

John H. Garrity
Resident Manager
Indian Point 3 Nuclear Power Plant

JHG/FP/vjm

cc: See Next Page

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Mr. Thomas T. Martin
Regional Administrator
Region 1
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406

INPO Records Center
700 Galleria Parkway
Atlanta, Georgia 30339-5957

U.S. NRC Resident Inspector's Office
Indian Point 3

Attachment
List of Commitments

Number	Commitment	Due Date
IPN-93-123-01	An ongoing search is being conducted by the Technical Services department to locate the documentation showing the seismic qualification of the actuators. If this search is unsuccessful the seismic qualification of the actuator will be evaluated through testing prior to startup. If the conclusions presented in this LER are invalidated by the results of these efforts, the Authority will provide a supplement to this LER 30 days after the results are received.	Prior to startup and if necessary a supplementary LER 30 days after test results are received
IPN-93-123-02	The Site Engineering department will complete a modification to seismically mount the appropriate CCR HVAC damper actuators prior to plant startup.	Prior to startup
IPN-93-123-03	The Nuclear Engineering and Design (NED) department will perform a random sampling of the work performed under specification 9321-05-45-24 to determine if further field installation deficiencies exist.	Prior to startup

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TITLE (4) Improper Seismic Mounting of Damper Actuators in the Central Control Room Ventilation System Resulted in a Condition Prohibited by Technical Specifications Due to Personnel Error

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											
09	15	93	93	-- 036 --	00	10	15	93	FACILITY NAME	DOCKET NUMBER 05000											
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td colspan="10">FACILITY NAME</td> <td>DOCKET NUMBER 05000</td> </tr> </table>											FACILITY NAME										DOCKET NUMBER 05000
FACILITY NAME										DOCKET NUMBER 05000											

OPERATING MODE (9) N	POWER LEVEL (10) 000	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)																				
		<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 20.405(a)(1)(v)	<input type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	<input type="checkbox"/> 50.73(a)(2)(x)	<input type="checkbox"/> 73.71(b)	<input type="checkbox"/> 73.71(c)	OTHER
		(Specify in Abstract below and in Text, NRC Form A)																				

LICENSEE CONTACT FOR THIS LER (12)

NAME William Stanton, System Engineer	TELEPHONE NUMBER (Include Area Code) (914) 736-8332
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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
				N					

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)		
YES (If yes, complete EXPECTED SUBMISSION DATE).	<input checked="" type="checkbox"/>	NO				

ABSTRACT

On September 15, 1993, at approximately 1630 hours, with the plant in a cold shutdown condition and in response to a Nuclear Regulatory Commission inspector's questions, the Heating, Ventilating and Air Conditioning (HVAC) system engineer concluded that the Central Control Room (CCR) ventilation system damper actuators were not seismically mounted. This event resulted in a condition prohibited by technical specifications which requires the CCR ventilation system to be operable when containment integrity is required. This event was caused by personnel error in that the seismic design requirements of a specification were not translated into the installation. Corrective action includes assuring the seismic qualification of the damper actuators, implementing a modification to appropriately mount actuators, counseling personnel responsible for testing the system and sampling the work performed under the specification to determine if further deficiencies exist. Prior to startup the CCR HVAC system will be restored to operable.

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DESCRIPTION OF EVENT

On September 15, 1993, at approximately 1000 hours with the plant in a cold shutdown condition (reactor power level at 15 cps, reactor coolant temperature at 110°F, reactor coolant pressure at atmospheric and pressurizer level at 26%) a Nuclear Regulatory Commission inspector posed questions regarding the stop nuts on damper (DMP) actuators in the Central Control Room (CCR) ventilation system (VI). The inspector also questioned the proper mounting of damper actuators. At approximately 1630 hours, in response to the inspector's questions, the Heating, Ventilating and Air Conditioning (HVAC) system engineer documented that the damper actuators were inadequately mounted to meet seismic qualification. The CCR HVAC system design requires that the system withstand seismic events. The system engineer has determined that the inadequate seismic mounting of the damper actuators has existed since initial criticality which took place on April 6, 1976.

The system engineer and seismic engineer inspected the mounting of the damper actuators and the setting of the stop nuts on the actuators in the CCR Ventilation System. The stop nuts on damper actuators B, C, D2, F1 and F2 (see attached figure) were found to be loose. The engineers determined that the mounting of damper actuators A, B, C, D1, D2, F1 and F2 appeared not to be seismically mounted and required detailed evaluation.

During the review of plant records the engineers were unable to locate documentation illustrating the proper seismic mounting of the damper actuators or any documentation on the seismic qualification of the actuators. The search for proof that damper actuators are seismically qualified is actively being pursued and addressed by a corrective action below.

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A detailed evaluation was performed for the A, B, C, D1, D2, F1 and F2 damper actuator mountings. This evaluation concluded that damper actuators A, B, D1 and D2 were adequately mounted so that the damper actuators would have been operable following a seismic event. This conclusion is based on the assumption that the damper actuators are seismically qualified. An ongoing search is being conducted to locate the documentation showing the seismic qualification of the actuators. If this search is unsuccessful the seismic qualification of the actuator will be evaluated through testing. If the conclusions presented here are invalidated by the results of these efforts, the Authority will provide a supplement to this LER. Although damper actuators A and D2 would have been operable following a seismic event, the mounting of the damper actuators are going to be improved. Damper actuators B and D1 are not going to be modified in any way. Damper actuators C, F1 and F2 require mounting improvements.

The fact that damper actuators A and B would have been operable following a seismic event is important in that it bounds the safety significance of this event by limiting the amount of outside air that would enter the return air stream from the CCR to 400 cubic feet per minute.

Dampers A, B, C, F1 and F2 are required to operate automatically following a Safety Injection signal or high radiation signal. The dampers can also be operated by manually switching the system's operating mode. If the stop nuts on damper actuators B and C are not set at the correct location, the flow through the filtration unit would not be as designed, the air would not be adequately filtered and as a result the operators would not be properly protected from radiation exposure. Damper actuator F1 is required to open to create a flow path to number 31 filtration unit booster fan (FAN) in the incident condition. In the event that number 31 booster fan fails to start, number 32 booster fan will start after a predetermined time delay and the damper actuator F2 would be required to open. Improper stop nut locations can prevent the damper actuators from performing required actions. The damper actuators are manufactured by Powers Regulator (Model 331-0240).

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On September 16, 1993 technicians tested the flows controlled by the B and C dampers and determined no adjustments were necessary. The B and C damper actuator stop nuts positions were acceptable as found. The stop nuts on damper actuators B and C were tightened into place. On September 17, 1993 mechanics were sent out to adjust and tighten, as necessary, the stop nuts on damper actuators D2, F1 and F2. All dampers were capable of opening and closing fully in the as found conditions. The stop nuts were found to be in a position which would have allowed the actuator to stroke further than necessary. However, this condition would have caused the dampers to close tightly without damage to the damper. The stop nuts on damper actuators D2, F1 and F2 were adjusted and tightened into place.

CAUSE OF THE EVENT

This event was caused by personnel error due to inadequate design control during initial installation of the dampers. Specification 9321-05-45-24, "Specification for Plant Heating, Ventilating and Air Conditioning Systems" required that the dampers satisfy seismic design criteria. However, this requirement was not met in the installation. Whether this was due to a design or installation error can not be determined because installation drawings are not available.

The cause for the loose stop nuts is personnel error, inattention to detail, during the performance of surveillance test 3PT-R032C, "Control Room Filtration System Functional". The test contains steps for adjusting the dampers. Although steps for the tightening of the stop nuts used in the adjustments are not included in the procedure, personnel are expected to address a situation such as loose stop nuts.

CORRECTIVE ACTIONS

The Authority's Modification Control Manual (MCM) program procedures require the responsible engineering department to specify installation instructions. These instructions include incorporating seismic design criteria and walkdown of installations prior to system acceptance. The MCM program was not in place at the time of this event. Adherence to this MCM program assures that this event will not occur in the future.

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The following corrective actions will be performed in order to address the deficiencies identified during the investigation of this event:

1. An ongoing search is being conducted by the Technical Services department to locate the documentation showing the seismic qualification of the actuators. If this search is unsuccessful the seismic qualification of the actuator will be evaluated through testing prior to startup. If the conclusions presented in this LER are invalidated by the results of these efforts, the Authority will provide a supplement to this LER 30 days after the results are received.
2. The Site Engineering department will complete a modification to seismically mount the appropriate CCR HVAC damper actuators prior to plant startup.
3. The Performance department has counseled the technicians who perform surveillance test 3PT-R032C in order to assure that they address deficiencies such as the loose stop nuts.
4. Prior to startup, the Nuclear Engineering and Design (NED) department will perform a random sampling of the work performed under specification 9321-05-45-24 to determine if further field installation deficiencies exist.

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ANALYSIS OF THE EVENT

Damper actuators C, F1 and F2, were in a state of degraded operability during a period of intermittent plant operation above cold shutdown from initial criticality through March 7, 1993 when the plant was brought to cold shutdown. This condition is prohibited by Technical Specifications 3.3.H which requires the CCR ventilation system to be operable when containment integrity is required. During this period, while the plant was operating, there was the possibility that these damper actuators may have failed to perform their required function during or following a seismic event.

Licensee Event Report LER 93-035-00 reported a similar event in that the original engineering design was inadequate.

SAFETY SIGNIFICANCE

This event did not affect the health and safety of the public. However, in the scenario which postulates a radiological accident concurrent with a seismic event the thyroid exposure limits for the control room operators would have been exceeded.

- The postulated worse case event is a seismic event with a loss of coolant accident (LOCA). Following this event the CCR HVAC system would automatically switch to the ten percent incident mode. Damper actuators A, B, D1 and D2 would have been operable following a seismic event. The A damper would close and the B, C, F1 and F2 would open. Assuming the C, F1 and F2 damper actuators fail and the dampers do not open, the filtration unit would not be operable. The 400 cubic feet per minute of outside air that would normally be drawn through the open B damper and filtration unit by the booster fans would back-flow through the C damper into the return air stream from the CCR. This flow rate would continue for up to 20 minutes until an operator investigating a failure to complete the switch to 10 percent incident mode would close the manual outside air damper as instructed in Emergency Operating Procedure EOP E-0, "Reactor Trip or Safety Injection." For the duration of the accident, a 130 cubic feet per minute infiltration rate through the door cracks was calculated.

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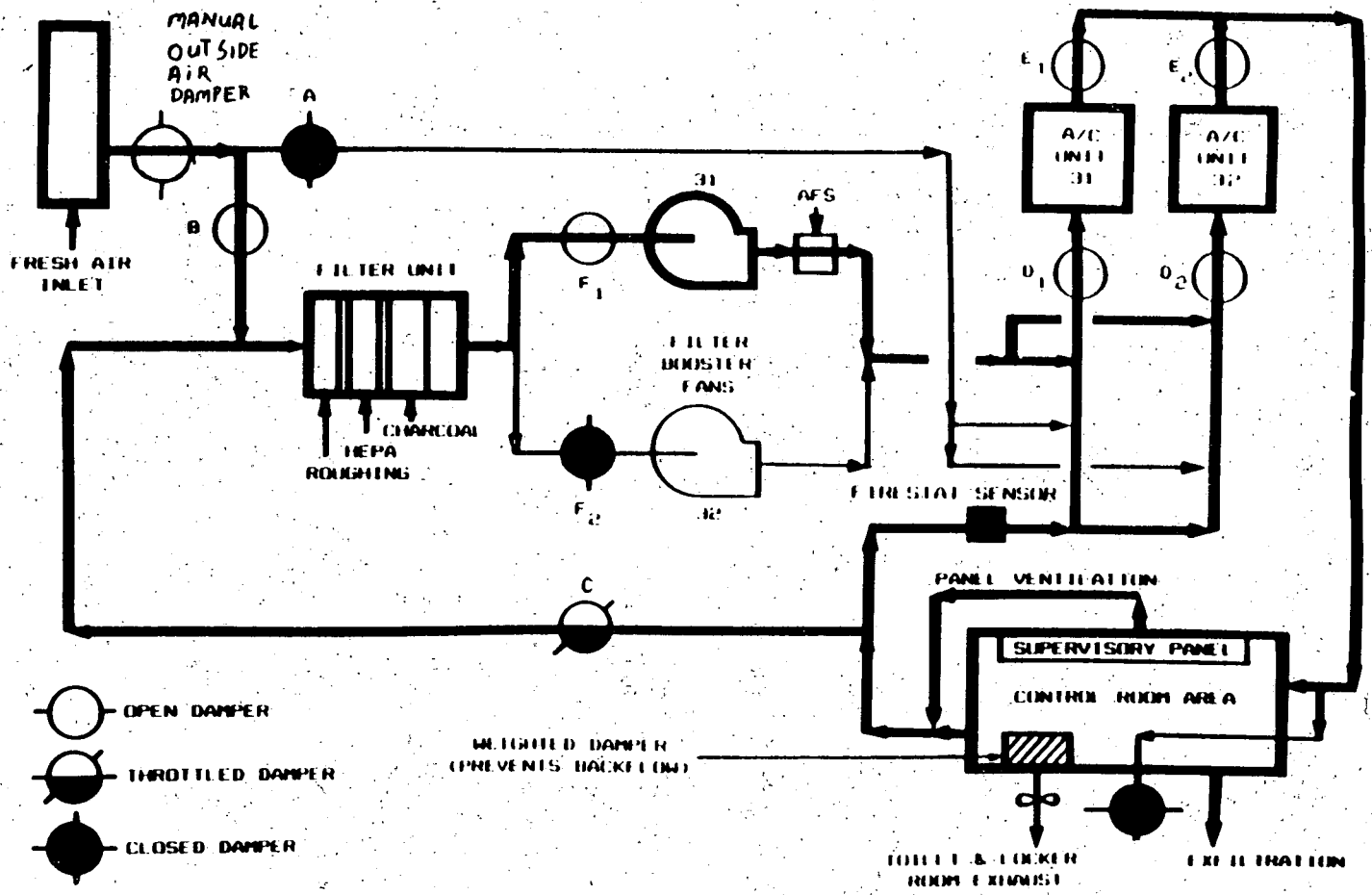
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- The effects would not have had any increase on the exposure to the general public but the 10 CFR 50, General Design Criteria 19 exposure limit for the control room operators would have been exceeded. Of particular concern is that the thyroid exposure to CCR personnel would have been exceeded. Had such an event occurred, actions would have been taken to reduce the thyroid exposure to CCR personnel. These actions include limiting CCR occupancy, using respiratory equipment, administering potassium iodide tablets and purging the CCR atmosphere. The radiation doses indicated for the evaluated failure mode are in excess of the design criteria for thyroid dose but would not prohibit the operators from performing safety related functions.

For all other events or accidents which do not involve a seismic event, the CCR HVAC system (including the damper actuators) would have been capable of performing its design functions.

The extent of condition of this event is being addressed by the corrective action which serves to sample the work performed under specification 9321-05-45-24. This corrective action serves to determine if further seismic deficiencies exist.

FIGURE 1
**CONTROL ROOM VENTILATION SYSTEM
 PARTIAL RECIRCULATION
 (CONTROL ROOM PRESSURIZED)**



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