

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8712020363 DOC. DATE: 87/11/24 NOTARIZED: NO DOCKET # 05000410
 FACIL: 50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha
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 RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 87-070-00: on 871027, mfg deficiency discovered in operating mechanism of primary containment emergency escape airlock. Caused by missing shear keys in equalizing valve keyways. Valve cams adjusted & design modified. W/871124 ltr.

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 TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES: 21

05000410

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AEOD/DOA	1 1	AEOD/DSP/NAS	1 1
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NRR/DLPQ/QAB	1 1	NRR/DOEA/EAB	1 1
NRR/DREP/RAB	1 1	NRR/DREP/RPB	2 2
NRR/DREP/SIB	1 1	NRR/PMAS/ILRB	1 1
REG FILE 02	1 1	RES DEPY GI	1 1
RES TELFORD, J	1 1	RES/DE/EIB	1 1
RGN1 FILE 01	1 1		
EXTERNAL: EG&G GROH, M	5 5	H ST LOBBY WARD	1 1
LPDR	1 1	NRC PDR	1 1
NSIC HARRIS, J	1 1	NSIC MAYS, G	1 1

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Nine Mile Point Unit 2										DOCKET NUMBER (2) 0 5 0 0 0 410				PAGE (3) 1 OF 06		
TITLE (4) Manufacturing Deficiency Results in an Inoperable Airlock Door and Technical Specification Violation																
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)			
10	27	87	87	070	00	11	24	87	Not Applicable (N/A)				0 5 0 0 0			
										N/A				0 5 0 0 0		
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)														
4		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)		
POWER LEVEL (10)		000				20.405(a)(1)(i)				50.73(a)(2)(v)				73.71(c)		
		20.405(a)(1)(iii)				50.36(c)(2)				50.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)		
		20.405(a)(1)(iii)				X 50.73(a)(2)(ii)				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)(ix)						
LICENSEE CONTACT FOR THIS LER (12)																
NAME Robert G. Randall, Supervisor Technical Support										TELEPHONE NUMBER						
										AREA CODE 315		349-2445				
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
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)												<input checked="" type="checkbox"/> NO				

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

While in cold shutdown on October 26, 1987 at approximately 1630 hours, a manufacturing deficiency was discovered in the operating mechanism of the primary containment emergency escape airlock. This deficiency was discovered after Instrument and Control (I&C) technicians noticed air leaking through the outer door equalizing valve during performance of the overall airlock leakage test. The manufacturing deficiency caused the doors and their equalizing valves to operate out of sequence with the handwheel position indication and may have rendered the outer door inoperable at various times since installation.

On October 27, 1987 the technical staff determined that the Limiting Conditions for Operation (LCO) of Technical Specification 3.6.1.3 may have been exceeded during various times between initial criticality and discovery of the deficiency. Immediate corrective actions were to adjust the equalizing valves' operating mechanism and to correct the deficiency by modifying the design of the operating mechanism to prevent valve cam rotation.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

I. DESCRIPTION OF EVENT

While in cold shutdown (Operating Mode 4) on October 26, 1987 at approximately 1630 hours, a manufacturing deficiency was discovered in the operating mechanism of the primary containment emergency escape airlock. The reactor was at ambient pressure, and coolant temperature was 120°F. Primary containment integrity was not in effect, since it is not required during cold shutdown. Investigation revealed that this deficiency may have rendered the outer emergency airlock door inoperable at various times since installation. Therefore, the site technical staff concluded after further investigation on October 27, 1987 that the Limiting Condition for Operation (LCO) of the primary containment airlocks may have been exceeded during various times between initial criticality (May 23, 1987) and discovery of the deficiency.

Technical Specification (TS) 3.6.1.3 requires both primary containment airlock doors operable when in Operating Modes 1 (Run), 2 (Startup), and 3 (Hot Shutdown). When one door is inoperable, the inoperable door must be restored to an operable status within 24 hours, or the operable door must be locked closed. Operation may then continue until performance of the next required overall airlock leakage test provided that the operable airlock door is verified to be locked closed at least once per 31 days.

Prior to the discovery, the last primary containment emergency escape airlock overall leakage test was performed on September 26, 1987. For this test, the airlock is pressurized between the doors to 40 psig, testing the door seals and equalizing valves. During this test, Niagara Mohawk Instrument and Control (I&C) technicians noticed that the outer door was leaking air through its equalizing valve when the position indicator was at the 12:00 position. With the indicator in this position, both doors and equalizing valves should have been closed. (Refer to Attachment 1 for a sketch of the emergency escape airlock door and the position indicating plate.) Due to procedural inadequacies, the technicians did not have clear direction on where to position the indicator for proper closure of both doors and equalizing valves. Therefore, they positioned the indicator so that air leakage was no longer detected in order to satisfactorily complete the test. This was accomplished at approximately the 11:30 position. (Refer to Attachment 1.) The technicians believed this indicator adjustment was within the allowable span for closure, since there were no other positive means of closure indication. After completing the test, they informed their supervision of the procedural deficiency, but did not mention the leakage problem experienced during the test. As forementioned, they did not believe anything unusual occurred when the indicator was positioned at 11:30. In addition, this was the first time these individuals had performed this particular test.

On October 26, 1987 these same technicians were to perform the door seal leakage test for the emergency escape airlock. For this test, the door seals are pressurized to 10 psig between the seals. Prior to performing this test, they noted the same procedural deficiency as in the previous test procedure. Therefore, they requested their supervision to revise this procedure as well. At this time they related their experience with performance of the previous test, during which they noted air leakage when the indicator indicated both doors and equalizing valves closed. Thus, I&C supervision and others of the site technical staff began investigating the incident.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES: 8/31/88

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On October 26, 1987 at approximately 1530 hours, troubleshooting by I&C and Engineering personnel demonstrated that when the position indicator was placed at 12:00, both doors and the inner door equalizing valve were closed, but the outer door equalizing valve remained open. Sequencing for opening and closing airlock doors is accomplished by rotation of the handwheel, which in turn causes the equalizing valve cams to open the valves and the airlock unlatch cams to unlatch the doors. The valve cams are split with two screws to attach the halves together. Further troubleshooting revealed that both equalizing valves were missing shear keys on their respective cams. The shear keys are used to align the cams into the main shaft of the operating mechanism so that the equalizing valves will operate at the proper time during opening and closing of the respective airlock door. A lack of shear keys may permit rotation of the cams on the shaft, thereby inhibiting the correct sequencing for opening and closing both doors and valves. This deficiency may have permitted the equalizing valve cams to move, allowing the outer door equalizing valve to remain open when it should have been closed.

Subsequently, the site technical staff determined on October 27, 1987 that this deficiency may have potentially rendered the outer door inoperable during various times since initial criticality. Several technicians have performed both the overall airlock and the door seal leakage tests, but the majority were not aware of the position indication problem. Most technicians would place the indicator at the 12:00 position for both tests. However, the door seal test does not test overall leakage in the airlock. Thus, an open equalizing valve would go undetected. Due to the uncertainty that the outer door equalizing valve may have been open at various times when primary containment integrity was required, the site technical staff determined that the action statements of TS 3.6.1.3 were not adhered to prior to discovery of the deficiency.

Immediate corrective actions were to request the Maintenance Department to adjust the operating mechanism and to request Engineering to provide a design change that would correct the deficiency. The deficiency has been corrected and both leakage tests were satisfactorily performed to restore the inoperable outer door to operable status on October 27, 1987.

II. CAUSE OF EVENT

The root cause of the event is a manufacturing deficiency. The vendor design drawings required that shear keys be installed in the equalizing valve keyways to prevent rotation of the cams on the shaft. Contrary to this, these shear keys were missing when the equalizing valve cams were examined during the investigation. Additionally, it was observed during adjustment of the operating mechanism that the equalizing valves operated in proper sequence with their cam keyways offset with respect to the shaft keyways. After proper adjustment, the inner cam keyways were offset by approximately 85° and the outer cam keyways were offset by approximately 10°. This appears to indicate that the shear keys were not able to be installed as the design drawings specified. This may also indicate that the shaft keyways were not positioned correctly with respect to the cam keyways during fabrication. This operating mechanism is shipped as a complete unit from the vendor. Thus, this deficiency has been traced back to the vendor's fabrication process.

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

III. ANALYSIS OF EVENT

There were no adverse safety consequences to this event. Primary containment integrity was maintained, even though the outer door equalizing valve may have been open at various times when primary containment was in effect. The inner door always remained fully operable, as subsequent investigation has demonstrated. The operable door, in conjunction with other engineered safeguards, still had the ability to limit leakage that may be experienced during a design basis Loss of Coolant Accident (LOCA) so that offsite doses would not exceed the design values set forth in 10CFR100. This conforms to the design basis for the containment structure described in Final Safety Analysis Report (FSAR) Sections 6.2.1.1 and 3.8.1.

The inoperable emergency escape airlock door was restored to operable status within 24 hours of the discovery of the deficiency. The Technical Specification violation occurred during Modes 1, 2 and 3 between May 23, 1987 and October 27, 1987.

IV. CORRECTIVE ACTIONS

Immediate corrective actions were to request the Maintenance Department to adjust the operating mechanism and to request Engineering to provide a design change that would correct the deficiency. Further corrective actions are as follows:

1. The equalizing valve cams were adjusted so that the equalizing valves will operate at the proper time during opening and closing of the respective airlock door.
2. Engineering issued a design change that will prevent the equalizing valve cam from rotating on its shaft. This design change requires that the screws that attach the two halves of the cams together be torqued to 10 Ft-lbs to provide proper clamping. Thus, the cam screws were torqued and the deficiency was corrected on October 27, 1987.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

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

V. ADDITIONAL INFORMATION

A. Identification of Components Referred to in this LER

Component	EIIS Funct	System ID
Emergency Airlock	AL	NH
Equalizing Valve	V	NH
Cam	N/A	NH
Primary Containment	N/A	NH

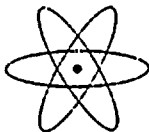
B. Previous Similar Event - LER 87-28 discusses a TS 3.6.1.3 violation due to an inoperable primary containment personnel airlock door. However, the root cause and corrective actions are not related to this event. Therefore, the two events are not considered to be similar.

C. Failed components - none

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VRC FORM 366A
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NIAGARA MOHAWK POWER CORPORATION

NIAGARA  MOHAWK

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THOMAS E. LEMPGES
VICE PRESIDENT—NUCLEAR GENERATION

November 24, 1987

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

RE: Docket No. 50-410
LER 87-70

Gentlemen:

In accordance with 10 CFR 50.73, we hereby submit the following Licensee Event Report:

LER 87-70 Which is being submitted in accordance with 10 CFR 50.73
(a) (2) (i) (B), "Any operation or condition prohibited by
the plant's Technical Specifications."

This report was completed in the format designated in NUREG-1022,
Supplement No. 2, dated September 1985.

Very truly yours,

Thomas E. Lempges
Vice President
Nuclear Generation

TEL/PB/mjd

Attachments

cc: Regional Administrator, Region 1
Sr. Resident Inspector, W. A. Cook

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