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DEAN,R.J. Niagara Mohawk Power Corp.
MUELLER,J.H. Niagara Mohawk Power Corp.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 93-006-00:on 930916,determined charcoal filter adsorbers had potiential for common failure due to inadequate written communication in vendor manual.Added charcoal to safety related filter sy.W/931013 ltr.

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	REG FILE 02	1	1	RES/DSIR/EIB	1	1
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EXTERNAL:	EG&G BRYCE,J.H	2	2	L ST LOBBY WARD	1	1
	NRC PDR	1	1	NSIC MURPHY,G.A	1	1
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A04

NIAGARA MOHAWK

NINE MILE POINT—UNIT 2/P.O. BOX 63, LYCOMING, NY 13093

John H. Mueller
Plant Manager-Unit 2
Nuclear Generation

October 13, 1993
NMP89340

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

RE: Docket No. 50-410
LER 93-06

Gentlemen:

In accordance with 10CFR50.73 (a)(2)(vii), we are submitting LER 93-06, "Potential Common Mode Failure of Standby Gas Treatment System Charcoal Filter Adsorbers."

A telephone report of this event was conservatively made at 1831 hours on September 16, 1993, per 10CFR50.72 (b)(2)(iii)(C).

Very truly yours,

John H. Mueller
Plant Manager - NMP2

JHM/AZP/lmc
Attachment

xc: Mr. Thomas T. Martin, Regional Administrator, Region I
Mr. Barry S. Norris, Senior Resident Inspector

18006

IE22

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Nine Mile Point Unit 2	0 5 0 0 0 4 1 0	1 OF 0 5

TITLE (4)
Potential Common Mode Failure of Standby Gas Treatment System Charcoal Filter Adsorbers

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)
0 9	1 6	9 3	9 3	0 0 6	0 0	1 0	1 3	9 3	N/A	0 5 0 0 0
									N/A	0 5 0 0 0

OPERATING MODE (9): 1

POWER LEVEL (10): 1 0 0

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

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)	X 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)	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)
Mr. Raymond J. Dean, Manager Technical Support NMP2	3 1 5 3 4 9 - 4 2 4 0

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 September 16, 1993 at 1700 hours, with Nine Mile Point Unit 2 operating in Mode 1 at 100 percent power, it was determined that the charcoal filter adsorbers utilized as integral components of the Standby Gas Treatment System (GTS) had the potential for a common mode failure.

During routine surveillance testing on September 8, 1993, the Division II Standby Gas Treatment Filter GTS*FLT1B failed the bypass leakage criterion of less than 0.05 percent as specified in the Technical Specification. Visual inspection indicated that a significant area of the mesh portion of one of the six compartments was exposed.

As a result of this finding, Division I was also visually inspected on September 10, 1993. Although the Division I filter exhibited incipient indications of a similar degradation, the separator mesh was not exposed to the same extent as it had been in the other train. However, it was felt that Division I could have failed the Technical Specification criterion of 0.05 percent. Division I was declared inoperable, filled, tested satisfactory, and then declared operable.

The cause of the event has been determined to be inadequate written communication in the vendor manual. The analysis of the event determined that each filter train had sufficient efficiency to support the assumptions used to demonstrate compliance with 10CFR100 dose limits in the event of a design basis accident (DBA).

Corrective actions were to add charcoal to the safety related filter systems, to complete a satisfactory surveillance test on the GTS filters, and to initiate changes to the vendor manuals.

I. DESCRIPTION OF EVENT

On September 16, 1993 at 1700 hours, with Nine Mile Point Unit 2 (NMP2) operating in Mode 1 at 100 percent power, it was determined that the charcoal filter adsorbers, utilized as integral components of the Standby Gas Treatment System (GTS), had the potential for a common mode failure.

NMP2 has two divisions of the Standby Gas Treatment System. Each division has one charcoal filter adsorber. The charcoal filters are supplied by Mine Safety Appliances (MSA). The serial numbers are 560-314 for Division II and 560-214 for Division I. Division I GTS*FLT1A has a total of 2932 hours of use and Division II GTS*FLT1B has a total of 2651 hours of use. Approximately 1400 pounds of charcoal are required to fill each unit. The design flow for each unit is 4000 SCFM ±10 percent.

During routine surveillance testing on September 8, 1993, the Division II Standby Gas Treatment Filter GTS*FLT1B failed the bypass leakage criterion of less than 0.05 percent as specified in Technical Specification 4.6.5.3.b.1. The efficiency of the charcoal adsorber was found to be 98.87 percent. The test acceptance criteria is 99.95 percent. This type of failure is indicative of excessive bypass leakage around the charcoal bed. The failure of the surveillance leak test rendered Division II of the Standby Gas Treatment System inoperable.

The cover of the unit was removed on September 9, 1993. Visual inspection of the charcoal filter adsorber revealed that the mesh portion of one of the six compartment separators had 40 to 50 square inches exposed on both sides of the bed. The inspection also revealed that the overall level of the charcoal was low. The exposed portion of mesh was the source of the bypass leakage. This allowed an untreated air passage, causing the failed surveillance. The charcoal dislocated from the affected compartment was distributed in the filter's upper plenum in a pattern consistent with the expected air turbulence created by air flow leakage around the charcoal bed.

The charcoal filter adsorber was refilled with charcoal in accordance with updated vendor instructions. The surveillance test was repeated satisfactorily on September 9, 1993, and the Division II GTS was returned to operable status.

Because of the conditions noted in the Division II GTS filter, the Division I GTS filter (GTS*FLT1A) was visually inspected on September 10, 1993. The separator mesh of one of the charcoal filter adsorber compartments of the Division I filter had 4 to 5 square inches exposed on one side of one compartment, while the other side was completely covered. The charcoal was dislocated in a pattern consistent with that found in Division II. The condition of Division I was significantly better than that found in Division II. However, it was felt that Division I could have failed the Technical Specification bypass leakage criterion of 0.05 percent if it was tested. Therefore, Division I was declared inoperable.

Division I was refilled on September 10, 1993, and restored to an operable condition after successful testing on September 11, 1993.

II. CAUSE OF EVENT

In accordance with procedure NIP-ECA-02, "Root Cause Evaluations," the cause of this event was determined to be inadequate written communication.

The GTS charcoal filter adsorbers were initially filled in July of 1986. The fill process was performed in accordance with the vendor supplied documents and under the supervision of a Startup Engineer. The instructions for the fill mentioned maximum level requirements only. There were no minimum level requirements in the manual or the instructions supplied by the vendor. On September 9, 1993, the vendor supplied an updated recommendation for a minimum fill level of 4.67 inches above the top of the compartment separator.

On November 5, 1991, and on February 11, 1992, the Division I and Division II units, respectively, were opened to remove charcoal for the purpose of refilling test canisters. The amount of charcoal removed was negligible. At that time the testing contractor noted that the levels in the units appeared to be low. It is postulated that this low level eventually allowed air to break through the surface of the charcoal. This then initiated an erosion path which redistributed the charcoal. The Niagara Mohawk individuals involved took no action on the testing contractor's observation, because they believed the charcoal level to be adequate. Subsequent surveillance testing on February 11, 1992, and December 17, 1992, resulted in meeting the Technical Specification bypass leakage criterion of less than 0.05 percent.

The cause was determined to be:

Inadequate written communication

- Lack of vendor manual information for minimum fill heights.

Contributing factor:

- Failure to recognize low charcoal levels as a precursor to failure.

III. ANALYSIS OF EVENT

This event is reportable in accordance with 10CFR50.73 (a)(2)(vii) as a potential common mode failure since both filter divisions could have failed to meet design requirements. Additionally, as a conservative measure (since the cause was not known at the time), an event notification was made to the NRC Operations Center under 10CFR50.72 (b)(2)(iii)(C) on September 16, 1993.

The Standby Gas Treatment System is required in Modes 1, 2, 3 and during fuel handling activities. The bypass leakage criterion as specified in Technical Specification 4.6.5.3.b.1 is less than 0.05 percent or 99.95 percent efficiency. The UFSAR bases for efficiency is 99.00 percent as described in Table 15.6-13 of Chapter 15, "Accident Analysis."

III. ANALYSIS OF EVENT (cont.)

The as found test performed on Division II indicated 98.87 percent efficiency. Because the Division I filter showed a condition substantially less degraded than Division II, it is expected the actual efficiency would have been substantially better than the Division II test, and if tested, would have demonstrated an efficiency greater than 99.00 percent, thus meeting the minimum efficiency requirements of licensing design basis analyses for determining compliance with 10CFR100 dose limits. Should the Division I system have been required to perform its intended function during a DBA LOCA, the efficiency of the charcoal to adsorb would have been sufficient to meet the design basis value used to determine compliance with 10CFR100. Should the Division II system have been required in response to a DBA LOCA, the incremental amounts of effluents released due to efficiency being slightly below 99.00 percent would have been negligible and the resulting radiation doses would have remained under 10CFR100 dose limits. Therefore, at no time was the health, safety, and welfare of the general public or plant personnel placed in jeopardy.

IV. CORRECTIVE ACTIONS

1. Deviation Event Report (DER) #2-93-1998 was immediately initiated to analyze the event, to require root cause analysis, and to determine corrective and preventative measures deemed necessary.

2. The vendor representative was consulted to establish the minimum charcoal levels.

3. An inspection of other safety related charcoal filters at Nine Mile Point Unit 2 was performed to verify that charcoal levels met the requirements of the updated vendor instructions. The charcoal level in both divisions of the Control Room Special Filter Trains (HVC) was below recommended level, however, there was no exposed separator mesh, and no indication of displaced charcoal (HVC filters are also MSA models). Therefore, a bypass leakage flow path did not exist.

4. The GTS filters and HVC filters were filled to a level in accordance with updated vendor recommendations.

5. The vendor manual for the MSA charcoal filters is being revised to incorporate the information on minimum charcoal level. This information will be available by the fourth refuel outage when the charcoal is expected to be replaced.

6. Surveillance test procedures N2-RSP-GTS-R@001 and N2-RSP-HVC-R@001 for the GTS and HVC systems respectively, are being revised to include an inspection of charcoal level prior to periodic testing.

V. ADDITIONAL INFORMATION

A. Failed components: none.

B. Previous similar events: none.

C. Identification of components referred to in this LER:

COMPONENT	IEEE 803 FUNCTION	IEEE 805 SYSTEM ID
Filter	FLT	WF
Adsorber	ADS	BH
Vibrator	VBR	BH