Niagara Mohawk®

May 22, 2000
NMP2L 1964

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

RE: Docket No. 50-410
Licensee Event Report 00-09

Gentlemen:

In accordance with 10CFR50.73(a)(2)(i)(B) we are submitting Licensee Event Report 00-09, "Violation of Technical Specification Due To Design Deficiency Of Off Gas Grab Sample System."

Very truly yours,

Michael F. Peckham
Plant Manager - NMP2

MFP/KLE/tmk
Attachment

cc: Mr. H. J. Miller, NRC Regional Administrator, Region I
Mr. G. K. Hunegs, NRC Senior Resident Inspector
Records Management

RGN-001

IE22

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104
EXPIRES:

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, 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)
Nine Mile Point Unit 2	05000410	01 OF 05

TITLE (4) Violation of Technical Specification Due to Design Deficiency of Off Gas Grab Sample System

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)
04	20	00	00		09	00	05	22	00	N/A	
										N/A	

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): 020

- ☐ 20.2201(b)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(I)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(3)(I)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)
- ☐ 50.36(c)(2)
- ☒ 50.73(a)(2)(i)
- ☐ 50.73(a)(2)(ii)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)
- ☐ 50.73(a)(2)(v)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71
- ☐ OTHER *(Specify in Abstract below and in Text, NRC Form 366A)*

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Mary H. Miller, Manager Chemistry - Unit 2	(315) 349 - 2566

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

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	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 fifteen single space typewritten lines)* (16)

Off gas grab samples taken on April 20, 2000 through 0056 on April 21, 2000, during plant startup from a refueling outage, were not representative of conditions in the off gas stream. Grab samples were being taken to satisfy Technical Specification 3.3.7.10 action requirements, because installed off gas radiation monitors and hydrogen monitors were inoperable. By procedure grab samples could be collected using either the grab sample pump and the radiation monitor sample pump in parallel or by using the grab sample pump alone. These samples were being collected using only the grab sample pump.

After reviewing sample analyses, chemistry concluded that grab samples collected with the grab sample pump alone were not representative of the off gas process stream and therefore, did not satisfy the Technical Specification requirement.

The cause was that the original design validation calculation for pressure drop through the system incorrectly left out the smaller diameter tubing associated with Grab Sample Skid 2OFG-SMPV13. A contributing cause was inadequate post modification testing.

Corrective actions include verifying the capability of the off gas grab sample system, modifying the grab sample procedure and reviewing other sampling procedures for adequacy.

I. DESCRIPTION OF EVENT

Off gas grab samples taken on April 20, 2000 through 0056 on April 21, 2000, during plant startup from a refueling outage were not representative of conditions in the off gas stream. Grab samples were being taken to satisfy Technical Specification 3.3.7.10 action requirements, because installed off gas radiation monitors and hydrogen monitors were inoperable.

When the off gas system was placed in service, Technical Specification 3.3.7.10 required off gas radiation and hydrogen monitoring. The installed radiation and hydrogen monitors were not operable at this time, so grab samples were being collected as required by Technical Specification 3.3.7.10.

Off gas grab samples for both hydrogen and radiation monitoring are collected at Sampling Skid 2OFG-SMPV13. Skid 2OFG-SMPV13 utilizes its own vacuum pump to draw a sample from the suction of one of the sample pumps that supply the two installed Off Gas Radiation Monitors 2OFG-RE13A or 2OFG-RE13B. The approved procedure for collecting off gas grab samples provided directions for obtaining the sample by running the grab sample pump, on Skid 2OFG-SMPV13, in parallel with one of sample pumps of the installed radiation monitors or running the grab sample pump alone. Documented past practice had been to collect grab samples with the pumps in a parallel configuration.

At 1257 with the plant at approximately 21 percent power, an off gas grab sample was collected at skid 2OFG-SMPV13 using only the skid sample pump. No hydrogen or activity was found in the sample. A grab sample taken by a different technician at 2025, with the plant at approximately 21 percent power, found no hydrogen and no activity. This technician questioned the activity results. The sample pathway was verified and technicians pursued having operations place a radiation monitor sample pump in service. At 0036 on April 21, 2000, with the plant at approximately 21 percent power, an off gas grab sample was collected with the grab sample pump running but without an installed radiation monitor sample pump running. Sample results indicated no detectable hydrogen and an activity level of 5.04 E-6 microcuries/milliliter (μCi/ml). At 0056 on April 21, 2000, with the plant at approximately 21 percent power, an off gas grab sample was collected with a radiation monitor sample pump running. This sample indicated no detectable hydrogen but an activity level of 5.43 E-4 μCi/ml. Based on samples results, chemistry concluded that the grab samples taken without a radiation monitor sample pump running were not representative of the off gas stream.

Until the grab sample procedure was modified, administrative controls directed the technicians to use only the section of the off gas grab sample procedure that utilized the grab sample pump and a radiation monitor sample pump running in a parallel configuration. On April 23, 2000, the procedure for collecting grab samples was changed to require a radiation monitor sample pump running with a grab sample pump whenever grab samples are taken.

I. DESCRIPTION OF EVENT (Cont'd)

The off gas grab sample skid was installed in 1987 and built per the original General Electric design. The calculation for the pressure drop due to piping configuration erroneously assumed all the sample piping was ¾ inch and did not account for sections of ⅛ inch tubing and ¼ inch tubing which was in the design. The smaller diameter tubing created a larger pressure drop that prevented the grab sample pump from being able to draw a sample from the off gas process stream. Additionally the post installation testing of the grab sample system did not verify flow through the grab sample pump with the radiation monitor pumps shut down. The procedure for collecting off gas grab samples was written based on the erroneous evaluation and inadequate testing of the grab sample system in 1987. If this calculation had been done correctly, the larger pressure drop would have been calculated and collection of grab samples using only the grab sample pump would not have been approved. A review of the current system design by engineering concluded that grab samples taken with a radiation monitor sample pump running in parallel with the grab sample pump were representative of the off gas process stream.

II. CAUSE OF EVENT

The cause was that the original design validation calculation for pressure drop through the system incorrectly left out the smaller diameter tubing associated with Grab Sample Skid 2OFG-SMPV13.

A contributing cause was inadequate post modification testing. The post modification test of grab sampling skid did not adequately test the ability of the grab sample pump to collect a sample when running alone.

III. ANALYSIS OF EVENT

This event is reportable in accordance with 10CFR50.73(a)(2)(i)(B), "Any operation or condition prohibited by the plants Technical Specifications." With the installed off gas radiation monitors inoperable, grab samples were required to be "...taken at least once per 12 hours..." by Technical Specification 3.3.7.10. With the installed off gas hydrogen monitors inoperable, grab samples were required to be "...collected at least once per 4 hours..." by Technical Specification 3.3.7.10. At 0147 on April 20, 2000, Chemistry was notified that grab samples were required. A representative sample was not collected until 0056 on April 21, 2000, exceeding the time allowed by the associated Limiting Condition for Operation.

A review of main stack release rate data shows that neither alarm or alert values were exceeded during the period when non-representative off gas samples were collected. Activity and hydrogen analyses results were within expected levels for the sample collected at 0056. Additionally, the hydrogen recombiners were in service.

A probabilistic assessment of the failure to obtain and analyze off gas samples for hydrogen and noble gas concluded that the event was non-risk significant.

Based on the above this event did not pose a threat to the health and safety of the public or plant personnel.

IV. CORRECTIVE ACTIONS

1. Engineering evaluated the off gas grab sample system and concluded that grab samples collected with a radiation monitor sample pump operating are representative of conditions in the off gas process stream.

2. Chemistry reviewed all sampling procedures and determined that all other alternate sampling methods listed in the procedures are valid.

3. The procedure for collecting grab samples was changed to require a radiation monitor sample pump running whenever grab samples are taken.

4. The Niagara Mohawk Power Company engineering design change and design change review process has been substantively enhanced since 1995 with the completion of specific training on design document checking and review, and significant enhancements to the project management process.

VI. ADDITIONAL INFORMATION

A. Failed components: none

B. Previous similar events:
Licensee Event Reports 00-07, "Plant Outside Design Basis due to Single Failure Susceptibility of Service Water and Emergency Core Cooling Systems," 98-23, "Potential Standby Gas Treatment System Inoperable Due to Original Design Deficiency," 98-17 "Control Room Ventilation Inoperable Due to Original Design Deficiency," 96-10 "Inoperability of Redundant Safety-Related Chillers Caused by Design Analysis Deficiency" and 95-02 "Technical Specification Required Shutdown, Operation Outside of the Design Basis, and Potential Common Cause Failure of the Emergency Diesel Generators Caused by a Design Deficiency" have similar root causes, inadequate original design or design analysis. Since the Grab Sample Skid was installed in 1987 the corrective actions associated with these reports could not have prevented the condition described in this report. The extent of condition reviews were limited to systems discussed in these reports and would not have identified a calculation deficiency in the off gas Grab Sample System.

VI. ADDITIONAL INFORMATION (Cont'd)

C. Identification of components referred to in this LER:

Component	IEEE 803A Function	IEEE 805 System ID
Off Gas System	N/A	WF
Radiation Monitoring System	N/A	IL
Pump	P	IL
Monitor	MON	WF, IL
Recombiner	RCB	WF