

NIAGARA-MOHAWK POWER CORPORATION
NINE MILE POINT NUCLEAR STATION UNIT 2
SPECIAL OPERATING PROCEDURE

N2-SOP-17

REVISION 00

**FUEL FAILURE OR HIGH ACTIVITY IN
RX COOLANT OR OFFGAS**

TECHNICAL SPECIFICATION REQUIRED

Approved By:
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Manager Operations - Unit 2
SATELLITE MASTER COPY

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Date

THIS PROCEDURE PARTIALLY SUPERSEDES N2-OP-1 AND N2-OP-42

PERIODIC REVIEW, 06/22/98, NO CHANGE
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N2-SOP-17

FUEL FAILURE OR HIGH ACTIVITY IN

RX COOLANT OR OFFGAS

1.0 SYMPTOMS

- Any of the following annunciators in alarm:
 - 851253, PROCESS GAS RADN MONITOR ACTIVATED
 - 851326, OFFGAS RADIATION HIGH
 - 603133, MN STEAM LINE RADIATION HIGH
 - 603107, RPS A MN STM LINE RADN HIGH TRIP
 - 603407, RPS B MN STM LINE RADN HIGH TRIP

2.0 AUTOMATIC RESPONSES

- If High Offgas Radiation levels exist, the following automatic actions occur:
 - 20FG-AOV103, OFFGAS SYSTEM DISCH VALVE closes
 - 20FG-PIA/B, OFFGAS VACUUM PUMPS trip
- If a High Steam Line Radiation condition exists, the following automatic actions occur:
 - Reactor Scram
 - NSSS Group 1 isolation (MSIVs and MSL Drains)
 - NSSS Group 2 isolation (RCS Sample Valves)
 - Mechanical Vacuum Pumps trip
 - 2ARC-AOV105 isolates

3.0 IMMEDIATE ACTIONS

- 3.1 Monitor Main Steam Line AND Offgas System radiation levels.**
- 3.2 Notify Chemistry AND Radiation Protection Departments of increasing radiation levels.**
- 3.3 Per SSS direction, reduce Reactor power in accordance with N2-OP-101D OR N2-SOP-101D.**

4.0 SUBSEQUENT ACTIONS

4.1 General Actions

- Notify Chemistry, Radiation Protection and Rx Engineering Departments ()
- WHEN time permits, make an announcement to notify plant personnel of the event ()

4.2 Main Steam Line Radiation High (Annunciator 603133)

N/A, High Steam Line Radiation condition does NOT exist . . . ()

NOTE: This alarm is a warning of imminent Main Steam Line isolation and reactor scram.

- 4.2.1 Continue with Reactor power reduction per N2-OP-101D OR N2-SOP-101D to attempt to stabilize Main Steam Line radiation levels prior to MSIV isolation ()
- 4.2.2 Request Chemistry Department to obtain sample of Reactor Coolant to determine coolant activity ()
- 4.2.3 Verify Reactor Coolant sample taken ()
- 4.2.4 IF MSIV isolation occurs, enter N2-SOP-101C AND N2-EOP-MSL, AND exit this procedure ()
N/A, NO MSIV isolation occurred ()
- 4.2.5 IF it is suspected that resin intrusion is the cause of the high radiation, perform the following:
N/A, NO suspected resin intrusion ()
 - a. Request assistance from Radiation Protection and Chemistry to identify the source of resin leakage. ()
 - b. Maintain WCS filter demineralizers in operation. ()
 - c. WHEN the source of resin leakage is identified, isolate the source. ()
- 4.2.6 BEFORE steamline radiation levels reach the trip setpoint (3 x NFPB), Scram the Reactor per N2-SOP-101C ()

4.3 Offgas Radiation Alert (Annunciator 851253)

4.3.1 Request Chemistry Department to obtain grab samples on the Offgas System to determine actual OFG release rates ()

4.3.2 Verify Offgas sample taken ()

4.3.3 IF only one radiation monitor is alarming THEN verify proper radiation monitor valve lineups by verifying the following valves are open:

N/A, more than one radiation monitor alarming ()

• 20FG-V164 RE13A Inst. Root Isol Valve ()

• 20FG-V165 RE13A Inst. Root Isol Valve ()

• 20FG-V166 RE13B Inst. Root Isol Valve ()

• 20FG-V167 RE13B Inst. Root Isol Valve ()

NOTE: Reactor power should be lowered in anticipation of a possible OFG isolation. Power reduction should continue UNTIL radiation levels stabilize OR begin to lower.

4.3.4 Continue power reduction UNTIL offgas rad levels stabilize ()

4.3.5 IF Offgas System isolation occurs, THEN go to subsection 4.4 ()

N/A, NO offgas isolation has occurred ()

4.3.6 Request Chemistry Department to obtain Reactor Coolant samples to determine extent of fuel failure ()

4.3.7 Verify Reactor Coolant sample taken ()

4.3.8 IF BOTH radiation monitors are alarming AND OFG rad levels are rising THEN reduce Reactor power per N2-SOP-101D ()

N/A, only one monitor alarming OR radiation levels NOT increasing ()

4.4 Offgas Radiation High (Annunciator 851326)

NOTE: With the Offgas System isolated, Reactor power should be lowered as quickly as possible in anticipation of Condenser vacuum reduction.

4.4.1 Continue Reactor power reduction as quickly as possible UNTIL the high radiation signal has cleared AND the OFG system has been returned to service ()

4.4.2 Verify Chemistry Department obtains the following samples as required:

- a. Offgas System
 - Notification made ()
 - Sample taken ()
 - N/A, Offgas sample NOT required ()

- b. Main Stack
 - Notification made ()
 - Sample taken ()
 - N/A, Main Stack sample NOT required ()

- c. Reactor/Radwaste Vent
 - Notification made ()
 - Sample taken ()
 - N/A, Reactor/Radwaste Vent sample NOT required ()

- d. Reactor Coolant
 - Notification made ()
 - Sample taken ()
 - N/A, Reactor Coolant sample NOT required ()

4.4.3 BEFORE condenser vacuum reaches 22.1" Hg (Turbine-Trip), Scram the Reactor per N2-SOP-101C. ()

4.4.4 IF the high radiation signal clears evaluate returning the OFG System to service per N2-OP-42 AND exit this subsection ()

N/A, high radiation signal has NOT cleared ()

5.0 DISCUSSION

5.1 The loss of the Offgas System during power operation will result in a loss of Condenser vacuum. This will result in any or all of the following depending on the initial plant conditions:

- a. Turbine Trip (and possible reactor scram) at 22.1" Hg Vacuum.
- b. MSIV Isolation at 8.5" Hg Vacuum.
- c. Bypass Valve Closure at 7" Hg Vacuum.

5.1 (Cont)

The amount of time available for restoration of the Offgas System to service is dependent upon several factors including: 1) Reactor Power Level, 2) Condenser air inleakage, 3) Circulating Water Temperature, etc. Following a loss of the Offgas System, it is recommended that Reactor power be reduced as rapidly as possible per N2-OP-101D or N2-SOP-101D.

- 5.2 Intrusion of demineralizer resin into the reactor coolant will cause high reactor water conductivity and possible Main Steam Line high radiation.

6.0 REFERENCES AND COMMITMENTS

6.1 Technical Specifications

- Section 3.11.2.7, Gaseous Effluents - Main Condenser Offgas
- ITS 3.7.4, Main Condenser Offgas
- Section 3.11.2.4, Gaseous Radwaste Treatment System
- Section 3.3.7.10, Radioactive Gaseous Effluent Monitoring Instrumentation
- Section 3.4.5, Reactor Coolant System - Specific Activity
- ITS 3.4.8, RCS Specific Activity

6.2 Licensee Documentation

Updated Safety Analysis Report, USAR

- Section 11.3, Gaseous Waste Management Systems
- Section 12.2, Offgas System Sources

6.3 Policies, Programs and Procedures

- N2-OP-42, Offgas
- N2-OP-101D, Power Changes
- N2-OP-1, Main Steam System
- N2-OP-79, Radiation Monitoring
- N2-SOP-101C, Reactor Scram
- N2-SOP-101D, Rapid Power Reduction
- N2-OP-3, Condensate and Feedwater System
- N2-EOP-MSL, MSIV Leakage Control

6.4 Commitments

<u>Sequence Number</u>	<u>Commitment Number</u>	<u>Description</u>
None		