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NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

UNIT II OPERATIONS

02-LOT-006-344-02-12 Revision 3 J. 12/3/90

TITLE: EMERGENCY OPERATING PROCEDURES

RADIOACTIVITY RELEASE CONTROL (RR)

	SIGNATURE	DATE
PREPARER		12-4-90
TRAINING SUPPORT SUPERVISOR	J. Fryd for J. LaClair	12-4-90
TRAINING AREA SUPERVISOR	J Kaminski	12-5-90
PLANT SUPERVISOR/ USER GROUP SUPERVISOR	for D. Topley	12/10/90

Summary of Pages

(Effective Date: 12/10/90)

Number of Pages: 7

Date	Pages
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TRAINING DEPARTMENT RECORDS ADMINISTRATION ONLY

VERIFICATION: _____

DATA ENTRY: _____

RECORDS: _____

9/5/272

ATTACHMENT 6
LESSON PLAN TEMPORARY/PUBLICATION/ADDENDUM CHANGE FORM

The attached change was made to:

Lesson plan title: Emergency Operating Procedures Radioactivity Release Control (RR)

Lesson plan number: 02-LOT-0006-344-2-13

Name of instructor initiating change: D. Penfield

Reason for the change: Change Revision # To Rev. 3 due to typographical error

Type of change:

1. Temporary change ____
2. Publication change X
3. Addendum change ____

Disposition:

X 1. Incorporate this change during the next scheduled revision.

____ 2. Begin revising the lesson plan immediately. Supervisor initiate the process.

____ 3. To be used one time only.

Approvals:

Instructor: [signature] /Date 12-12-90

Training Area Supervisor (or designee): J Kaminski /Date 12-13-90

I. TRAINING DESCRIPTION

A. Title of Lesson: Emergency Operating Procedures, Radioactivity Release Control (RR)

B. Lesson Description: This lesson plan discusses the actions taken to control offsite radioactive releases.

C. Estimate of the Duration of the Lesson: 1 Hour

D. Method of Evaluation, Grade Format, and Standard of Evaluation: Written Examination with 80% minimum passing grade.

E. Method and Setting of Instruction: Classroom Lecture

F. Prerequisites:

1. Instructor:
   a. Certified in accordance with NTP-16.
2. Trainee:
   a. Certified in accordance with NTP-10.

G. References:

1. BWROG Emergency Procedure Guidelines, Rev. 4
2. Plant Procedure N2-EOP-RR, Rev. 4

II. REQUIREMENTS

A. AP-9, Administration of Training

B. NTP-10, Training of Licensed Operator Candidates

III. TRAINING MATERIALS

A. Instructor Materials:

1. Transparencies Package
2. Overhead Projector
3. Whiteboard and Felt Tip Markers
4. EOP Flowchart for RR
5. Training Record

B. Trainee Materials:

1. EOP Flowchart for RR
2. Course Evaluation Form

IV. EXAM AND MASTER ANSWER KEYS

Will be generated and administered as necessary. They will be on permanent file in the Records Room.

V. LEARNING OBJECTIVES

Upon completion of this training, the trainee will have gained the knowledge to perform the following:

A. Terminal Objectives:

TO-1.0 Given conditions requiring the use of the Emergency Operating Procedure, use the procedure to place the plant in a stable condition as prescribed in the procedure.

TO-2.0 (SRO ONLY) Direct the actions required per N2-EOP-RR. (3449490603)

TO-3.0 Perform the actions required for a steam line rupture. (2000400501)

B. Enabling Objectives:

EO-1.0 State the purpose of the Radioactivity Release Control Procedure.

EO-2.0 State the entry conditions for the Radioactivity Release Control Procedure.

EO-3.0 Given the procedural step, discuss the technical basis for that step.

LESSON CONTENT	DELIVERY NOTES	OBJECTIVES/ NOTES
I. INTRODUCTION	Preliminary Activities: 1. Introduce self to class (if unfamiliar). 2. Distribute TR for completion. 3. Distribute Course Evaluation Forms and describe their use. 4. Discuss Method of Evaluation. Review Learning Objectives with the class.	
A. Student Learning Objectives B. Purpose Provides necessary actions to limit radioactivity release into areas outside the Primary and Secondary Containments.		EO-1.0
II. DETAILED DESCRIPTION A. Entry Conditions 1. Setpoints a. The entry condition for this procedure is: 1) Stack GEMS - exceeds the alarm setpoint. (P882) 2) Vent GEMS - exceeds the alarm setpoint. (P882) 3) DRMS Liquid Effluent Monitor - exceeds the alert setpoint (yellow) • SWP*RE146A/B • CWS-RE157 • LWS-RE206	NOTE: TP's may be used to highlight points of interest on flowchart; use TP's to show procedural steps if flowchart not used.	EO-2.0

2. Setpoint Bases

   a. This value selected corresponds directly to an action level in the emergency plan and thus provides the vehicle for coordinating the execution of the EOP's and the emergency plan.

   b. It is sufficiently high that it is not expected to occur during normal operation but sufficiently low that it does not by itself threaten the health and safety of the public.

Note: This is an Unusual Event action level.

B. Procedural Steps

1. Activate the emergency plan, if required, IAW EAP-1.

   • It is appropriate to activate the E-Plan, if plant conditions are at the action levels.

EO-3.0

2. While executing the following step:

   IF

   Turbine Building HVAC is shut down

   THEN

   Restart Turbine Building HVAC (OP-55 Section E.1)

   • Restarting T.B. HVAC is appropriate for the following reasons:

EO-3.0

- The T.B. is not an airtight structure, which may permit an unmonitored, ground level release.
- Radioactive Release inside the T.B. may limit personnel access.

3. Isolate all Primary Systems that are discharging into areas outside the Primary and Secondary Containments <u>except</u> systems required to:
   a. assure adequate core cooling
      OR
   b. shutdown the reactor
      - Isolating Primary Systems discharging outside containment is the most direct action to terminate the release.
      - Since the inability to assure adequate core cooling or shutdown the reactor may ultimately result in large radioactivity releases, these systems are not isolated.

Q: What is the definition of a "Primary System"?

A: The pipes, valves, and other equipment which connect directly to the RPV such that a reduction in RPV pressure will decrease the steam or water being discharged through an unisolated break in the system.

EO-3.0

EO-3.0

4. IF
The off-site radioactivity release rate approaches or exceeds the Emergency Plant "General Emergency" Level (as determined by chemistry)
AND
A Primary System is discharging into an area outside the Primary and Secondary Containments
THEN
Emergency RPV Depressurization is required; enter RPV Control and execute it concurrently with this procedure.

- Depressurizing the RPV reduces the driving head and therefore the flow from the Primary Systems that are discharging outside the Primary and Secondary Containments.

EO-3.0

- Flags are provided referencing EOP-RP, C3, or C5 since they, as appropriate, contain the guidance to enter EOP-C2 to execute the emergency depressurization.

EO-3.0

Q: What is the purpose of EOP-RR?
A: Provides necessary actions to limit radioactivity release into areas outside the Primary and Secondary Containments.

Q: What are the entry conditions of EOP-RR?

A:
- Stack GEMS - exceeds the alarm setpoint. (P882)
- Vent GEMS - exceeds the alarm setpoint. (P882)
- DRMS Liquid Effluent Monitor - exceeds the alert setpoint (yellow)
  - SWP*RE146A/B
  - CWS-RE157
  - LWS-RE206

III. WRAP-UP

A. Summary

The Radioactivity Release Control procedure establishes the basis for isolating systems and controlling RPV pressure to minimize the off-site release of radioactivity in an emergency. Discharge from Primary Systems to areas outside of the Primary and Secondary Containment are isolated (if possible) to terminate or minimize any release.

Depressurization of the RPV is required if the radioactivity release rate cannot be controlled below the release rate which requires a General Emergency.

NIAGARA MOHAWK POWER CORPORATION

NINE MILE POINT NUCLEAR STATION

UNIT II OPERATIONS

02-LOT-006-344-2-11 Revision 2

TITLE: MSIV LEAKAGE CONTROL (MSL)

	SIGNATURE	DATE
PREPARER.		12-4-90
TRAINING SUPPORT SUPERVISOR	J. Lynch for J. LeClair	12-4-90
TRAINING AREA SUPERVISOR	J Kaminski	12-6-90
PLANT SUPERVISOR/ USER GROUP SUPERVISOR		12/10/90

Summary of Pages

(Effective Date: 12/10/90)

Number of Pages: 10

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THIS LESSON PLAN IS A GENERAL REWRITE

TRAINING DEPARTMENT RECORDS ADMINISTRATION ONLY:

VERIFICATION:

DATA ENTRY:

RECORDS:

11

5/3/269

I. TRAINING DESCRIPTION [illegible]

A. Title of Lesson: MSIV Leakage Control (MSLC) [illegible]

B. Lesson Description: This lesson discusses the actions taken to control [illegible] leakage [illegible] the MSIVs

C. Estimated Duration of this lesson: [illegible] hour

D. Method of Evaluation, Grading Format and Standard of Evaluation: Written examination, 80% minimum passing grade.

E. Method and Setting of Instruction: Classroom lecture

F. [illegible]

Instructor: [illegible]

Certified in accordance with NTP-[illegible]

[illegible] in accordance with NTP-[illegible]

G. References:

[illegible] Emergency Procedure Guidelines, Rev. 4

[illegible]

II. REQUIREMENTS

A. [illegible] Administration of Training

B. NTP-[illegible], Training of Licensed Operator Candidate

III. TRAINING MATERIALS

Instructor Materials:

1. [illegible] Lesson Package
2. Overhead Projector
3. Whiteboard and [illegible] Markers
4. [illegible] Flowchart for [illegible]
5. [illegible] Training Record

Trainee Materials:

1. [illegible] Flowchart for MSLC
2. [illegible] Evaluation Form

IV. EXAMINATION AND ANSWER KEYS

[illegible] administered as necessary [illegible] will be on permanent [illegible] Records Room.

I. TRAINING DESCRIPTION

A. Title of Lesson: MSIV Leakage Control (MSL)

B. Lesson Description: This lesson discusses the actions taken to control radioactive release through the MSL's.

C. Estimate of the Duration of the Lesson: 1 hour

D. Method of Evaluation, Grade Format, and Standard of Evaluation: Written Examination with 80% minimum passing grade.

E. Method and Setting of Instruction: Classroom lecture

F. Prerequisites:

1. Instructor:
   a. Certified in accordance with NTP-16.
2. Trainee:
   a. Certified in accordance with NTP-10.

G. References:

1. BWROG Emergency Procedure Guidelines, Rev. 4
2. Plant Procedure N2-EOP-MSL, Rev. 4

II. REQUIREMENTS

A. AP-9, Administration of Training

B. NTP-10, Training of Licensed Operator Candidates

III. TRAINING MATERIALS

A. Instructor Materials:

1. Transparencies Package
2. Overhead Projector
3. Whiteboard and Felt Tip Markers
4. EOP Flowchart for MSL
5. Training Record

B. Trainee Materials:

1. EOP Flowchart for MSL
2. Course Evaluation Form

IV. EXAM AND MASTER ANSWER KEYS

Will be generated and administered as necessary. They will be on permanent file in the Records Room.

Reporting Duties

Unless otherwise provided in the agreement, trustees will have no duty to render any accounting to the settlor or to any beneficiary.

V. LEARNING OBJECTIVES

Upon completion of this training, the trainee will have gained the knowledge to perform the following:

A. Terminal Objectives:

TO-1.0 Given conditions requiring the use of the Emergency Operating Procedures, use the procedure to place the plant in a stable condition as prescribed in the procedure.

TO-2.0 (SRO ONLY) Direct the actions required per EOP-MSL. (3449500603)

TO-3.0 (SRO ONLY) Direct the actions for a fuel clad failure or a high activity in the reactor coolant or offgas. (3449750403)

TO-4.0 Operate the Offgas System during a fuel clad failure or a high activity in the reactor coolant. (2719070101)

TO-5.0 Perform the actions required during a high airborne activity or a high radiation in a local area. (2009170601)

TO-6.0 Perform the actions required during a high airborne activity or a high radiation in a general area. (2009180601)

TO-7.0 Perform the actions required for a steam line rupture. (2000400501)

TO-8.0 Perform the actions required for a fuel cladding failure. (2009060501)

TO-9.0 Backfill the MSLs between the MSIVs. (2399170101)

B. Enabling Objectives:

Mastery of terminal objectives above will be shown by completion of the following enabling objectives:

EO-1.0 State the purpose of the MSIV Leakage Control Procedure.

EO-2.0 State the entry conditions for the MSIV Leakage Control Procedure.

EO-3.0 Given the procedural step, discuss the technical basis for that step.

TABLE OF CONTENTS

LESSON CONTENT	DELIVERY NOTES	OBJECTIVES/ NOTES
I. INTRODUCTION	Preliminary Activities: 1. Introduce self to class (if unfamiliar). 2. Distribute TR for completion. 3. Distribute Course Evaluation Forms and describe their use. 4. Discuss Method of Evaluation. Review Learning Objectives with the class.	
A. Student Learning Objectives B. Purpose Provides actions to control, treat and limit excessive leakage through the MSIVs.		EO-1.0
II. DETAILED DESCRIPTION	NOTE: TP's may be used to highlight points of interest on flowchart; use TP's to show procedural steps if flowchart not used.	
A. Entry Conditions 1. Setpoints • A condition which requires an MSIV isolation <u>AND</u> • An MSL High-High Radiation Level <u>AND</u> • Any of the following: • Turbine building HVAC radiation (HVT-RE206) above the "Alert" level (yellow) or cannot be determined, <u>OR</u>		EO-2.0
	Discuss: Entry conditions	

- Offgas pretreatment radiation (OFG-RE13A/B) above the "Alert" level (yellow) or cannot be determined, OR
- Stack or vent GEMs exceed the alarm setpoint (P882).

2. Setpoint Bases

Discuss: Bases

EO-3.0

a. The entry conditions are based on an incident that involves fuel failure and MSIV leakage. The values are the associated Trip (MSL High-High Radiation) or Alert (Alert Status on DRMS) levels.

b. Values are below the initial conditions which require action, and are intended to increase operator awareness of specific parameters.

B. Procedural Steps

1. MSL 1

IF while executing the following steps, Turbine Building exhaust radiation levels exceed the Turbine Building Release Limit (Figure MSL-1) or cannot be determined, THEN verify the Turbine Building HVAC is operating in the unisolated mode, if available (N2-OP-55).

Discuss: Step 1

Show: TP of Figure MSL-1.
Discuss: MSL-1

LESSON CONTENT	DELIVERY NOTES	OBJECTIVES/ NOTES
a. Turbine Building HVAC activity is indicative of leakage. MSIVs are a probable source. TB vent in operation assures a monitored release, and keeps activity levels down (lower doses to operators).	Discuss: Basis	EO-3.0
2. MSL 2 IF while executing the following steps, Control Building HVAC radiation level cannot be maintained below 5.92×10^6 uCi/ml, (HVC*RE18A-D) THEN confirm or manually initiate the Control Building HVAC pressurization mode (N2-OP 53A, Section H.6).	Discuss: Step 2	
a. Control Building special filter trains minimize radiation dose to Control Room operators.	Discuss: Basis	EO-3.0
3. MSL 3 Confirm or initiate an MSIV isolation.	Discuss: Step 3	
a. This reinforces entry condition.	Discuss: Basis	EO-3.0
4. MSL 4 Wait until MSL radiation is above the MSL Radiation Limit (Figure MSL-2) or cannot be determined,	Discuss: Step 4 Show TP of Figure MSL-2.	

AND

Turbine Building HVAC radiation level is above the Turbine Building Release Limit (Figure MSL-1) or cannot be determined,

Show TP of Figure MSL-3.

OR

Offgas pretreatment radiation level is above the Offgas Release Limit (Figure MSL-3)or cannot be determined,

OR

Offsite radiation release rate exceeds the Emergency Plan "Alert" level (as determined by Chemistry).

THEN operate available SJAE through the Offgas System (EOP-6, ATT 16).

Discuss: Bases

EO-3.0

a. MSL radiation is indicative of high activity in the Coolant/Containment.
b. Turbine Building activity is indicative of leakage from containment. MSIVs are a probable source.
c. Offgas activity (with MSIVs shut) is an indication of high activity leakage through the MSIVs.
d. Offsite release means leakage from containment MSIVs are a possible source.

CONTR

e. Processing leakage through the offgas system takes advantage of increased holdup, condensation of steam, filtering of particulates, the charcoal filter absorption and elevated release.

5. MSL 5

IF the SJAE and Offgas Systems become unavailable,

AND

IF the Turbine Building HVAC radiation level approaches or exceeds the Turbine Building release rate (Figure MSL-1).

Discuss: Step 5

THEN

5.1 Shut the following valves:

- Main Turbine Stop Valves
- Main Turbine Control Valves
- Main Turbine Bypass Valves
- 2ARC-MOV5A
- 2ARC-MOV5B
- 2ARC-MOV5C
- 2MSS-AOV92A
- 2MSS-AOV92B
- 2TME-AOV121
- 2ARC-AOV105
- 2ARC-MOV15A
- 2ARC-MOV15B

5.2 Establish Main Turbine Seals (OP-25, Section F.4).

5.3 Start all circulating water pumps (OP-10A, Sections E2.0-5.0).

5.4 Fill the main steam lines between the MSIVs with water (EOP-6, Att. 7).

a. With offgas not available, and indication of leakage still present, close off MSLs and condenser, and minimize leakage.

b. Closing valves and establishing seals are intended to "bottle up" to the extent possible the MSLs and Condenser to increase hold up time.

c. Running circulating water pumps promotes condensation of any steam in the leakage.

d. Backfilling the MSIVs provides a water seal on the outboard valve.

Discuss: Bases

EO-3.0

6. MSL 6

IF Off-site radioactivity release rate cannot be maintained below the Emergency Plan "General Emergency" level (as determined by Chemistry) AND A Primary System is discharging into an area outside the primary and secondary containments.
THEN Emergency Depressurization is required, enter RPV control and execute concurrently with this procedure.

a. Depressurizing the RPV reduces the driving head and therefore the flow from the primary systems that are discharging outside the primary and secondary containments.

b. Entering EOP-RL, RP and RQ provide the mechanism by which the Emergency Depressurization procedure is reached.

Discuss: Step 6

Discuss: Bases

EO-3.0

Q: What is the purpose of EOP-MSL?

A: To provide the actions necessary to control, treat and limit excessive leakage through the MSIV's.

III. WRAP-UP

This procedure provides the action necessary to control, treat and limit excessive leakage through the MSIV's. This procedure attempts to control and monitor the radioactive release by using the normal filtered and elevated release paths of the Turbine and Control Building HVAC and Offgas Systems. If conditions worsen and release rates cannot be controlled, Emergency RPV Depressurization may be required. The MSIV Leakage Control procedure, N2-EOP-MSL, provides a response to a fuel failure incident concurrent with MSIV leakage. The procedure is designed to compliment the actions addressed in the Secondary Containment Control and Radioactivity Release Control procedures.

Q: What are the entry conditions of EOP-MSL?

A:
- A condition which requires an MSIV isolation, AND
- A MSL high-high radiation level, AND
- Any of the following conditions:
  - Turbine building HVAC radiation (HVT-RE206) above the "Alert" level (yellow) or cannot be determined, OR
  - Offgas pretreatment radiation (OFG-RE13A/B) above the "Alert" level (yellow) or cannot be determined, OR
  - Stack or vent GEMs exceed the alarm setpoint (P882).