



**ONE COLUMN
NOZZLE DAM JUST-IN-TIME TRAINING**

SITE: PBNP

LP #: HPC04LP203 **Rev. #:** 0

PROGRAM: Radiation Protection Technologist Training Program

#: HP-TP

COURSE: Just-In-Time Training

#: N/A

PRESENTATION +	OTHER +	EXAM =	TOTAL TIME
1.0	3.0	N/A	4.0

Developed by:	<div style="display: flex; justify-content: space-between;"> <i>Instructor</i> <i>Date</i> </div>
Reviewed by:	<div style="display: flex; justify-content: space-between;"> <i>Instructor (Instructional Review- see QF-1030-08)</i> <i>Date</i> </div>
Reviewed by:	<div style="display: flex; justify-content: space-between;"> <i>SME (Technical Review- see QF-1030-09)</i> <i>Date</i> </div>
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Lesson Plan Requirements

Goal of Training:

The purpose of this training is to provide both contract and permanent individuals the opportunity to practice working with nozzle dams using available RP materials, equipment and supplies in an environment that simulates actual conditions in the field.

In addition, it is extremely important for each group to understand each others roles, responsibilities and expectations during this evolution. This training will help establish this understanding.

Learning Objectives:

Upon completion of the Just-In-Time Training, Radiation Protection personnel will demonstrate the ability to:

- Properly dress personnel for entry into the simulated Steam Generator using HPIP 4.58, Issuance of Respiratory Equipment and the guidance in the appropriate RWP. (HPC.04.LP203.001)
- Maintain proper airline respirator controls using HPIP 4.58, Issuance of Respiratory Equipment. (Permanent WE Energies personnel only) (HPC.04.LP203.002)
- Properly undress personnel exiting from the simulated Steam Generator. (HPC.04.LP203.003)
- Provide proper radiological controls for personnel entering and exiting the simulated Steam Generator using the guidance in the appropriate RWP. (HPC.04.LP203.004)

Upon completion of the Just-In-Time Training, contractor personnel (for nozzle dams) will demonstrate the ability to:

- Properly wear and utilize protective clothing, including respiratory protection equipment, while entering, working in and exiting the simulated Steam Generator using the guidance in the appropriate RWP. (HPC.04.LP203.005)
 - Properly install/remove a nozzle dam while complying with the appropriate RWP and Work Order. (As applicable) (HPC.04.LP203.006)
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Prerequisites:

- RPTs must be either qualified per HP-TP (permanent) or N-RP-C-TP (contractor)
 - Candidates must be qualified as radiation workers and respirator users prior to being allowed to wear a bubble hood.
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- Training Resources:**
- S/G Mock-up
 - Air supplying compressor, air manifolds, airlines, and bubble hoods
 - Protective clothing including plastics
 - Radiological Postings
 - FME Materials and forms
 - Various RP related procedures and forms
 - Remote controlled survey instruments (if needed)
 - Televue Dosimetry (if available)
 - Telex communication system (or equivalent)
 - Multi-badge Jump Vests
 - Various dosimetry packets (if available)
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- References:**
- RWP 04-141, Nozzle Dam Install/Remove
 - WO 0400042, "A" Steam Generator Nozzle Dam Removal
 - HPIP 4.58, Issuance of Respiratory Equipment.
 - HP 2.5, Radiation Work Permits
 - NP 8.4.9, Hose Control
 - PBF 4234 Respirator Issue Record
 - PBF 4107a Bubble Hood Air Supply Pressure Record
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Commitments: RCE 253, Industrial Safety Issues and Poor Worker Practices During Nozzle Dam Installation.

Evaluation Method: Satisfactory completion will be through participation during the planned exercises.

Individuals who either do not attend this training or who cannot successfully complete their applicable portions will not be allowed to participate in the actual job performance regarding nozzle dam installation or removal.

- Operating Experience:**
- OE 18109, Radiological Conditions Encountered During Steam Generator Primary Side Maintenance Activities
 - OE 48685, Two separate Incidents Where Loss of Breathing Air to Air-Supplied Respirator
 - SER 03-02, Workers Exit Site With Detectable Contamination – RP Techs Assumed Frisker and Portal Monitor Alarms Were Caused by Internal Rather Than External Contamination.
 - RCE 253, Industrial Safety Issues and Poor Worker Practices During Nozzle Dam Installation.
 - SEN 233, Recurring Event – Personnel Exposure exceeds Electronic Dosimeter Alarm Setpoint
 - SER 20-82, Failure to Remove Steam Generator Nozzle Cover Following Inspection Hinge Parts Were Accidentally Left In.
 - CAP 055527, Individual Experience Low Air Pressure to Bubble Hood.
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Historical Record: Revision 0: Initial development of training materials to support upcoming nozzle dam installation/removal.

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Handouts:	Identifying Number	Description
	*HO-1	Appropriate RWP
	*HO-2	Radiological Survey Maps of A & B S/G Manway platform and S/G Bowls
	HO-3	JITT Objectives
	*HO-4	Appropriate Work Order Package

Exercises:	Identifying Number	Description
	EX-1	Preparation for Entry (in body of LP)
	EX-2	Nozzle Dam Installation (in body of LP)
	EX-3	Nozzle Dam Removal (in body of LP)

Power Point:	Identifying Number	Description
	N/A	N/A

Transparencies:	Identifying Number	Description
	N/A	N/A

Other	Identifying Number	Description

* Obtain current revision at time of instruction.

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I. General Introduction

A. Introduce self and/or guest(s)

1. Take Attendance
2. Handout trainee feedback forms
3. Introduce Topic / Goal
 - a. The purpose of this training is to provide both contract and permanent individuals the opportunity to practice working with nozzle dams using available RP materials, equipment and supplies in an environment that simulates actual conditions in the field.
 - b. In addition, it is extremely important for each group to understand each others roles, responsibilities and expectations during this evolution. This training will help establish this understanding.

4. Learning Objectives

- a. Upon completion of the Just-In-Time Training, Radiation Protection personnel will demonstrate the ability to:
 - Properly dress personnel for entry into the simulated Steam Generator using HPIP 4.58, Issuance of Respiratory Equipment and the guidance in the appropriate RWP.
 - Maintain proper airline respirator controls using HPIP 4.58, Issuance of Respiratory Equipment. **(Permanent WE Energies personnel only)**
 - Properly undress personnel exiting from the simulated Steam Generator.
 - Provide proper radiological controls for personnel entering and exiting the simulated Steam Generator using the guidance in the appropriate RWP.
- b. Upon completion of the Just-In-Time Training, contractor personnel (for nozzle dams) will demonstrate the ability to:
 - Properly wear and utilize protective clothing, including respiratory protection equipment, while entering, working in and exiting the simulated Steam Generator using the guidance in the appropriate RWP.
 - Properly install/remove a nozzle dam while complying with the appropriate RWP and Work Order. **(As applicable)**

5. Description of how class will be conducted

- a. Brief overview of lessons learned during nozzle dam installation
- b. Brief overview of initial plant conditions for removing nozzle dams
- c. RP Preparations (practice)
- d. Nozzle dam installation (practice)
- e. Nozzle dam removal (practice)
- f. RP Emergency Actions

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6. Evaluation Method

- a. Satisfactory completion will be through participation during the planned exercises.

7. What's In It For Me? (WII-FM)

- a. The use of nozzle dams is intended to save critical path time during outages. It should be recognized that personnel could install a dam in about 2 minutes and remove the same dam in about 1 minute.
- b. There are multiple industrial and radiological hazards associated with the use of dams. This training is an integral contributor to the ACEMAN concept:
 - 1) Accident Free – practicing the task, utilizing OE and identifying potential accidents minimize the possibility of causing an injury.
 - 2) Control Dose – practicing this task will significantly reduce exposure because of improvements in both effectiveness and efficiency.
 - 3) Event Free – following all procedures, work orders and administrative requirements will reduce the potential of having an event occur.
 - 4) Meet Schedule – in order to meet the schedule all players must understand their specific roles and responsibilities.
 - 5) Attend Training – we are meeting this concept by conducting the JITT.
 - 6) No Rework – we need to be able to identify any potential pitfalls, JITT will help do this which will reduce the possibility of any rework.

Job Planning/preparation and verifying we have qualified workers are two barriers we will have in place to ensure we will have a successful evolution.

- c. This training is intended to familiarize personnel with using these dams and to ensure everyone associated with the evolution is aware of the requirements and can safely perform their function. Remember, teamwork, partnership, safety and learning are all key attributes that this JITT session will be promoting.

II. Presentation

A. Lessons Learned From Nozzle Dam Installation

- 1. Breathing air system inadequacies
 - a. Procedure was not used during nozzle dam installation
 - b. Pressure set points for regulators were not known nor followed
 - c. Unclear results regarding actual scfm at hood
 - d. Fittings used were not adequate, had potential to come unhooked easily
- 2. Stopping work when unsure
 - a. Less than adequate, if unusual conditions or events occur that were not anticipated, the job should be stopped
 - b. If the job is stopped, all workers will exit containment to evaluate the situation. Workers will be re-briefed on changes and job will recommence.
- 3. Communications

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- a. Use of three-way communication outside the Manway is required during directions or following the work plan. Informational communications need not be 3-way.
- b. Upon receipt of a "GO" from the OCC, all communications will be completed using headsets.
- c. The RP at the desk will be controlling the evolution once the workers are entering the channel head.
- d. The only personnel that should be speaking are the RP at the desk, the jumpers, the helper on the platform, the RP on the platform and the individual providing direction to the jumpers. All others can be listening (as desired) but should not interrupt the evolution.
- e. To stop the job, it is imperative that the words "STOP, STOP, STOP" be used.

B. Required Initial Conditions

1. Nozzle Dam Installation

- a. Confined space permit established
- b. Hot Leg vent path established
- c. RCS level at $\frac{3}{4}$ pipe
- d. Manway platforms prepped
- e. Manways/diaphragms removed
- f. HEPA Ventilation established
- g. Grade D air samples taken
- h. Emergency rescue responsibilities established
- i. OCC permission to start

2. Nozzle dam removal

- a. Confined space permit established
- b. Hot Leg vent path established
- c. RCS level at $\frac{3}{4}$ pipe
- d. Nozzle dams declassified (as protected equipment)
- e. Disconnect Nozzle dam control panels

Review OE regarding extremely high dose rates associated with activated foreign debris (specified on RWP)
Review SER 20-82, Failure to Remove Steam Generator Nozzle Cover Following Inspection Hinge Parts Were Accidentally Left In.
Reinforce FME expectations regarding entering a Zone 1 FME area and the importance of proper FME controls.

- f. FME check of channelheads
- g. Cameras out of bowl
- h. Manway platforms prepped

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- i. Manways/diaphragms removed
- j. HEPA Ventilation established
- k. Grade D air samples taken
- l. Emergency rescue responsibilities established
- m. OCC permission to start

C. Preparation For Entry

Instructor to verify all individuals are qualified to wear respiratory protection prior to allowing an individual to be issued/wear a bubble hood.

EX-1

Exercise 1 includes:

- 1. Each jumper/helper will dress in single PCs
- 2. RP will setup and maintain breathing air/communications in preps for bubble hood use.
- 3. Each jumper/helper will be dressed in plastics with a bubble hood by RP and demonstrate ability to use plastics with a bubble hood.
- 4. Each jumper/helper will demonstrate ability to properly communicate with RP.

Participants are to use the appropriate RWP with input from RP to complete each of the above items. Individuals are allowed to complete the item more than once to gain familiarity and confidence.

LO 001, LO 002 and LO 005

- 1. Observe/evaluate/discuss the following during the practice sessions:
 - a. Single PCs properly worn
 - b. Airline setup verified
 - c. Grade D sample verified
 - d. PBF-4232 accurately completed for bubble hood issuance
 - e. PBF-4107 completed for airline checks
 - f. HPIP 4.58 used during bubble hood dressout
 - g. Multi-badging properly used
 - h. 3-way communications established and utilized

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Review OE 48685, Two separate Incidents Where Loss of Breathing Air to Air-Supplied Respirator.

The use of the CJEN connections has effectively reduced the possibility of airlines being disconnected.

The platforms have been arranged such that the stairs allowing access to the manway openings can be used for both S/Gs. It is not acceptable to use another means that could result in pinching or cutting an airline.

- i. CJEN connections properly used
- j. Bubble hood properly worn
- k. Dosimetry location discussed
- l. Work Order properly controlled and maintained

D. Nozzle Dam Installation

This section only applies for Nozzle dam installation and is not required to be completed if evolution is nozzle dam removal.

EX-2

Exercise 2 includes:

1. As dressed during exercise 1, participants are to jump the Steam Generator and install the nozzle dam with help from the designated helper.
2. RP will maintain breathing air/communications during bubble hood use.
3. RP will properly cut individuals out of their plastics and bubble hoods upon exit from channel head.

Participants are to use the appropriate RWP/WO with input from RP to complete each of the above items. Individuals are allowed to complete the item more than once to gain familiarity, confidence and efficiency.

RP will cutout individual after last "jump"

LO 002, LO 003, LO 004, LO 005 and LO 006

1. Observe/evaluate/discuss the following during the practice sessions:
 - a. PBF-4107 periodically checked
 - b. Airline hose is swapped out

Review SEN 233, Recurring Event – Personnel Exposure exceeds Electronic Dosimeter Alarm Setpoint.

RP's manning the headsets (while monitoring dose and dose rates) should communicate cumulative exposure and rates frequently while workers are entering/working in the channel head. This allows the worker to know the radiological conditions without taking the time to read their own dosimetry.

- c. Stay times are calculated prior to entry

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- d. Stay times are tracked
- e. Jump sheets properly maintained
- f. RWP requirements are met
- g. Individual capable of entering S/G w/ little to no assistance
- h. Claustrophobia not observed
- i. Nozzle dam hoses are brought/verified outside the bowl
- j. FME controls are established and maintained
- k. Hot Particle checks are completed
- l. Proper RP removal of bubble hood is observed
- m. Work Order properly controlled and maintained

E. Nozzle Dam Removal

This section only applies for Nozzle dam removal and is not required to be completed if evolution is nozzle dam installation.

EX-3

Exercise 3 includes:

1. As dressed during exercise 1, participants are to jump the Steam Generator and remove the nozzle dam.
2. RP will maintain breathing air/communications during bubble hood use.
3. RP will properly cut individuals out of their plastics and bubble hoods upon exit from channel head.

Participants are to use the appropriate RWP/VO with input from RP to complete each of the above items. Individuals are allowed to complete the item more than once to gain familiarity, confidence and efficiency.

RP will cutout individual after last "jump"

LO 002, LO 003, LO 004, LO 005 and LO 006

Review OE 18109, Radiological Conditions Encountered During Steam Generator Primary Side Maintenance Activities.

After ECT, it is not uncommon to change the conditions both inside the S/G and on the platform. At PBNP, an activity exists requiring the platforms to be decontaminated between ECT and other work with the S/G. Radiological conditions inside the channel head will need to be determined to verify adequacy of the RWP.

1. Observe/evaluate/discuss the following during the practice sessions:
 - a. PBF-4107 periodically checked
 - b. Airline hose is swapped out

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- c. Stay times are calculated prior to entry
- d. Stay times are tracked
- e. Jump sheets properly maintained
- f. RWP requirements are met
- g. FME controls are established and maintained
- h. Individual capable of entering S/G w/ little to no assistance
- i. Claustrophobia not observed
- j. Hot Particle checks are completed
- k. Proper RP removal of bubble hood is observed
- l. Work Order properly controlled and maintained

F. Emergency Actions

Review SER 03-02, Workers Exit Site With Detectable Contamination – RP Techs Assumed Frisker and Portal Monitor Alarms Were Caused by Internal Rather Than External Contamination.

At Davis Besse, RPTs allowed workers to exit the RCA and leave site without verifying whether the contamination was internal or external. PBNP has provisions in place that assist us in determining the actual source of the contamination alarm.

- 1. Loss of Breathing Air
 - a. Indications of low or loss of air
 - 1) Communication from worker
 - 2) Fogging inside bubble hood
 - 3) Collapsed bubble hood
 - b. Discuss emergency responder roles
 - c. Discuss acceptable methods for ensuring adequate air supply to individual when removing bubble hood
- 2. Worker Distress
 - a. Claustrophobia can cause workers to become disoriented
 - b. Work efficiency becomes non-existent
 - c. RP/Safety will be monitoring for this
 - d. Immediate actions will be to get individual out of channel head and remove the bubble hood
- 3. Contamination Detected
 - a. Discuss determination of internal vs. external
 - b. Discuss documentation requirements
 - 1) PBF-4039 - ≤ 100 ncpm

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- 2) PBF-4039a - > 100 ncpm
- 3) PBF-4207 - > 10,000 ncpm
- 4) PBF-4039e – if facial contamination detected or suspected

III. Summary

- A. Review Objectives and lesson topics

IV. Evaluation

- A. Describe evaluation method
- B. Administer evaluation
- C. Collect evaluation
- D. Review evaluation with trainees
- E. Collect feedback