

NUCLEAR INDUSTRY STANDARD PROCESS
Radiological Protection

Level 3 - Information Use

Radiological Posting and Labeling

NISP-RP-004

Revision: 1

Industry Approval Date: 9/17/2018

This is an industry document for standardizing radiation protection processes. Standard processes and requirements are established to eliminate site-specific radiation protection procedures. The Institute for Nuclear Power Operations (INPO) maintains current procedures on the INPO website and has approval authority for revisions. Approval authority is granted by the industry contingent on a structured review and approval process by representatives of utility radiation protection organizations.

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1.0 Purpose

- 1.1 This procedure describes the processes and instructions to establish boundaries, barriers, postings, and labels necessary to inform workers on the radiological hazards in the work area. Instructions are also included for actions required to maintain the integrity of boundaries for High Radiation Areas, Locked High Radiation Areas, and Very High Radiation Areas.

2.0 Scope

- 2.1 Member utilities are expected to use this standard to enable supplemental workers to transition between nuclear power plants. Compliance with these instructions is expected without additional site requirements or process deviations being imposed that may require additional training or challenge the performance of supplemental workers.
- 2.2 The forms referenced by this procedure are examples used to describe the pertinent information that should be recorded for future reference. Plant procedures may specify the use of equivalent forms or the use of electronic media for the same purposes.
- 2.3 This procedure will be used to train and instruct supplemental radiological protection technicians. Member utilities will implement these process requirements in site procedures and update site procedures whenever requirements or process steps in this Nuclear Industry Standard Process (NISP) are revised. Current revisions are maintained on the INPO website.

3.0 Definitions

- 3.1 Terms, acronyms, and definitions are provided in NISP-RP-013, *Radiation Protection Standard Glossary of Terms*.

4.0 Responsibilities

- 4.1 Radiation protection is responsible for implementation of the requirements of this procedure per Efficiency Bulletin 17-01 and the Nuclear Industry Standard Process Initiative.
- 4.2 Radiation Protection Personnel are responsible for ensuring radiological postings are used and controlled properly in the RCA.
- 4.3 Personnel entering RCAs are responsible for reading and complying with associated postings and labels.

5.0 General Requirements

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- 5.1 Ensure radiological areas and boundaries are conspicuous to prevent inadvertent access and/or serve to notify plant personnel that an area is controlled for radiological purposes. The types of radiological hazards that are present and the entry requirements should be readily identifiable.
- 5.2 Use the shapes and colors for radiological postings as described below. The color of the trefoil may be magenta, purple, or black.
- 5.3 Use pocket inserts below signs as needed to post hazards and entry requirements with the following hierarchy from top to bottom:
- External hazards.
 - Airborne hazards.
 - Contamination hazards.
 - Other information.
- 5.4 Use the following signs to standardize radiological postings at US nuclear power plants.

- 5.4.1 Very High Radiation Area (VHRA) – Yellow letters with a magenta background.



- 5.4.2 Locked High Radiation Area (LHRA) – Magenta letters with a yellow background. Sign may state “Danger” instead of “Caution.”



- 5.4.3 High Radiation Area (HRA) – Magenta letters with a yellow background. Sign may state “Danger” instead of “Caution.”



5.4.4 Standard Radiation Sign – Magenta letters on a yellow background.

- a. Use this sign for posting areas and conditions that do not require unique signs as shown above.
- b. Examples include: Radiation Area, Airborne Area, Contaminated Area, etc.



5.4.5 Radiography Sign – Purple border with black and red letters.

- a. Use this sign in addition to the Radiation Area posting.



5.5 Use the signs as described below to provide workers information needed to maintain radiation exposures ALARA while in a work area.

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- 5.5.1 Hot Spot – Magenta letters and symbol on yellow background.
- a. Post at a localized source of radiation where contact dose rates are > 100 mrem/hour AND $> 5 X$ the general area dose rate at 30 cm except when:
- Foreign material exclusion and configuration controls prohibit the placement of signs.
 - Infrequent access to the area limits the value of the posting as determined by RP supervision.
- b. Record tracking numbers (T/N) on the sign per site procedures.



- 5.5.2 Elevated Dose Rates – White or black letters on a hot pink background
- a. Post in areas when determined by RP Supervision for ALARA purposes.
- b. Signs may also be used in High Radiation Areas for worker awareness to minimize dose.



- 5.5.3 Low Dose Waiting Area – White or black letters on a green background.



NOTE: Radiation rope has alternating colors of magenta and yellow and is the most common material used to demarcate radiological boundaries. Ribbon or chains may also be used provided there are alternating colors of magenta and yellow.

- 5.6 Use radiation rope for area boundaries adhering to the following restrictions:
 - 5.6.1 Ensure rope is in good condition and continuous between attachment points, i.e. rope should not be spliced or tied together between attachment points.
 - a. Firmly secure rope where it connects to stanchions, magnets, etc.
 - b. Cut off excess radiation rope to prevent the need to have excess rope wrapped around a stanchion or coiled on the floor.
 - c. Secure loose ends of knots using tie wraps, duct tape, or radiation tape. Braiding or twisting of radiation rope is not acceptable unless used in combination with tie wraps or tape. RP Supervision may approve other methods in FME areas.
 - 5.6.2 Secure the rope to or close enough to walls to block personnel access (gaps ≤ 6 "") by either of the following methods:
 - a. Attach the rope to a stanchion next to the wall with the stanchion as close to the wall as practical unless the area between the wall and stanchion will be used for access.
 - b. Attach the rope to a permanent structure such as an I-beam, handrail, support member, etc.
 - 5.6.3 Do not attach rope to conduit, electrical panel, operating equipment, or safety related equipment. Except when approved by plant engineering.
 - 5.6.4 Secure signs to the rope using only tie wraps, key rings, or hangars designed by the manufacturer.
 - 5.6.5 Attach signs to rope that are only for radiological protection purposes.
- 5.7 Exercise the following precautions for setting up boundaries:
 - 5.7.1 Postings and boundaries should be established such that workers may enter the area without having to "duck under", move or adjust a posting or barrier to enter the area. Exceptions include use of a swing gate, door, turnstile, etc.

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- 5.7.2 Ensure placement of materials such as rope, tape, and step-off-pads (SOP) comply with station requirements for fire protection and configuration control.
- 5.7.3 Place SOPs in areas with the lowest practicable dose rates with adequate space for clothing and trash receptacles as required for doffing protective clothing.
- 5.7.4 For areas posted as a contaminated area, the step off pad is considered the boundary. Avoid the use of rope, swing gates, or turnstiles as the barrier for those areas unless needed for other radiological conditions, such as high radiation area.
- 5.7.5 Minimize safety hazards at SOP locations such as the potential for falling objects, tripping hazards, overhead hazards, etc.
- 5.7.6 Size the area as needed to accommodate the lay down of materials, the number of workers expected in the area, the type of equipment that will be used, etc.
- 5.8 Place door postings in the approximate center of the door, or in a conspicuous location on a wall beside the door. Ensure the posting is sufficiently secure to prevent the posting from falling when the door is opened or closed.
 - 5.8.1 When the door is propped open obscuring the posting, move the posting to a conspicuous location or add a second posting.
- 5.9 Ensure entrances to High Radiation Areas are barricaded to obstruct entry except when personnel are entering and exiting.
 - 5.9.1 In lieu of a barricade, the entrance may be attended by an individual assigned to allow entry only by authorized personnel.
 - 5.9.2 Swing gates and turnstiles are examples of barricades that may be used to provide additional assurance that the barricade will return in place after individuals pass through.
 - 5.9.3 A step-off-pad is not considered a barricade.
 - 5.9.4 When used as a barricade, rope should be between 3 and 5 feet high and/or positioned to obstruct entry into the area.
- 5.10 Use a posting insert stating "RP Escort Required for Entry" for areas where dose rates may significantly increase from plant operation or areas that are not routinely surveyed due to high dose rates and infrequent access as determined by RP supervision.
- 5.11 Post ladder storage areas, staged ladders, portable power lifts, and teletowers with a sign stating "Contact RP Prior to Working or Climbing Above 7 Feet."

- 5.11.1 Place a posting on each side of power lifts and teletowers when in service to ensure the posting is conspicuous.
- 5.12 Use yellow material for catch containments to identify the contained leakage as contaminated.
 - 5.12.1 Ensure the catch containment and drain tubing is conspicuously labeled for containing contamination if the containment is located in a non-contaminated area.
- 5.13 Use labels stating “Possible Internal Contamination – Contact RP Prior to Opening” on equipment access locations (e.g. ventilation components) that are opened only during maintenance and internal surfaces may contain small or unknown amounts of contamination.

6.0 Process Instructions

- 6.0.1 The following tables define the requirements for posting and labeling radiological hazards. Requirements for area boundaries and the use of containers for radioactive material are also specified. Equivalent wording on inserts may be used except when the specific wording is required by 10 CFR 20.

6.1 Post External Radiation Hazards

- 6.1 The criteria for posting in the following table are established at 80% of the regulatory limits to maintain an administrative margin to compensate for potential variations in meter response, survey techniques, and/or minor system perturbations. The administrative criteria should be implemented with the following clarification:
 - 6.1.1 The criteria for procedure compliance shall remain the regulatory limits in 10 CFR 20 and plant Technical Specifications.
 - 6.1.2 The RPM or designee may approve deviations from the administrative criteria when dose rates are static, e.g. a resin liner in storage, and postings comply with regulatory requirements.
 - 6.1.3 Posting is not required for areas or rooms containing radioactive materials for periods of less than 8 hours if each of the following conditions is met:
 - a. The materials are constantly attended during these periods by an individual who takes the precautions necessary to prevent the exposure of individuals to radiation or radioactive materials in excess of 10 CFR 20 limits.

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- b. The area or room is subject to the licensee's control.

NOTE: Criteria and requirements for posting an RCA for temporary conditions are defined by site procedures.

NOTE: Access authorizations and key controls for access into a VHRA are more extensive than for a LHRA per NISP-RP-005.

NOTE: A "Radioactive Materials" insert with the RCA posting at the entrance to an RCA informs workers that they are entering an area with radioactive materials consistent with 10 CFR 20.1902(e). Individual areas or rooms within an RCA do not require additional posting for radioactive materials

NOTE: A secured access device requires an intentional act such as removing a lock, carabiner, clip, or pin prior to pushing open the barrier.

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<p>RCA Hazards Require Monitoring per 10 CFR 20</p>		<ul style="list-style-type: none"> • Boundary clearly marked. • Equipment and postings provided at entry and exit locations to ensure dose tracking and confinement of radioactive materials. 		<p>Standard Radiation Sign with the following:</p> <ul style="list-style-type: none"> • RADIOLOGICALLY CONTROLLED AREA • RADIOACTIVE MATERIALS • RWP REQUIRED FOR ENTRY • DOSIMETRY REQUIRED FOR ENTRY • NO EATING, DRINKING, OR SMOKING
<p>RADIATION AREA ≥ 4 & < 80 mrem/hour @ 30 cm</p>		<ul style="list-style-type: none"> • Posting must be conspicuous at entry point and external to the Radiation Area. • Boundary demarcation or barricades are not required. • Avoid a single posting for a very large area or room if most of the area or room is < 4 mrem/hour. In such conditions, post the discrete areas or rooms ≥ 4 mrem/hour. 		<p>Standard Radiation Sign with the following:</p> <ul style="list-style-type: none"> • RADIATION AREA
<p>HIGH RADIATION AREA ≥ 80 & < 800 mrem/hour @ 30 cm</p>		<ul style="list-style-type: none"> • A barricade or barrier is required for the boundary except while the area is accessed. A SOP is not considered as a barrier. • Barricades at access locations must be secured. • Refer to Attachments 1 and 2 for sample checklists typically used to post and down-post areas. • Attachment 1 may also be used for routine surveillance to verify the integrity of boundaries. • Post or label access points that require the removal of bolts and/or the use of lifting equipment. • Refer to NISP-RP-005 for access controls. 		<p>HRA Sign with the following:</p> <ul style="list-style-type: none"> • RP BRIEF REQUIRED FOR ENTRY <p>For bolted or plug access, an HRA sign is not required but the access must be labeled with a warning and:</p> <ul style="list-style-type: none"> • CONTACT RP PRIOR TO OPENING

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Hazard	→ Boundary Requirements	→ Posting
<p>LOCKED HIGH RADIATION AREA</p> <p>≥ 800 mrem/hour @ 30 cm</p>	<ul style="list-style-type: none"> • A barrier with a locked door is required for the boundary except while the area is accessed. • Refer to Attachments 1 and 2 for sample checklists typically used to post and down-post areas. • A flashing light and barricade may be used in lieu of a locked door as permitted by the plant Technical Specifications and as approved by the RPM. • Refer to Attachment 3 for a sample checklist typically used to set up flashing lights. • Attachment 1 may also be used for routine surveillance to verify the integrity of boundaries. • An Access Control Guard may be used while an area is being routinely accessed or additional time is required to establish controlled boundaries. Refer to Attachment 4 for a sample checklist typically used to brief Access Control Guards. • Ensure posting and locked access of areas that require the removal of bolts and/or the use of lifting equipment. • Refer to NISP-RP-005 for access controls. 	<p>LHRA Sign with the following:</p> <ul style="list-style-type: none"> • RP BRIEF REQUIRED FOR ENTRY <p>For bolted or plug access, an LHRA sign is not required but the access must be labeled with a warning and:</p> <ul style="list-style-type: none"> • CONTACT RP PRIOR TO OPENING

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<p>VERY HIGH RADIATION AREA</p> <p>≥ 500 rads/hour at 1 meter from any source or surface</p>	<ul style="list-style-type: none"> • A barrier with a locked door is required for the boundary except while the area is accessed. • An Access Control Guard may be used while an area is being routinely accessed or additional time is required to establish controlled boundaries. Refer to Attachment 4 for a sample checklist typically used to brief Access Control Guards. • Refer to Attachments 1 and 2 for sample checklists typically used to post and down-post areas. • Attachment 1 may also be used for routine surveillance to verify the integrity of boundaries. • Refer to NISP-RP-005 for access controls. 	<p>VHRA Sign</p>
<p>NEUTRON AREA</p> <p>$\dot{\Gamma} > 4$ mrem/hour General Area or @ 30 cm from a source</p>	<ul style="list-style-type: none"> • Post area commensurate with the criteria for Radiation Area, HRA, or LHRA • Refer to NISP-RP-005 for access controls. 	<p>Standard Radiation Sign with the following:</p> <ul style="list-style-type: none"> • RADIATION AREA • RP BRIEF REQUIRED FOR ENTRY • NEUTRON MONITORING REQUIRED
<p>RADIOGRAPHY</p>	<ul style="list-style-type: none"> • Setup of boundaries and barricades is a collaborative responsibility with the radiographer. • Radiographers must establish a restricted area boundary where the dose rate from source exposure is ≤ 2 mrem/hour. • Refer to NISP-RP-009, <i>Radiography</i> for boundary criteria and access controls. 	<p>Radiography Sign in addition to a Standard Radiation Sign with the following inserts:</p> <ul style="list-style-type: none"> • RADIOGRAPHY IN PROGRESS • AUTHORIZED PERSONNEL ONLY

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6.2 Post Areas With Smearable Contamination

Hazard → Boundary Requirements → Posting

Hazard	Boundary Requirements	Posting
<p style="text-align: center;">Contaminated Area</p> <p>≥ 1,000 & < 100,000 βγ OR ≥ 20 α dpm/100 cm²</p>	<ul style="list-style-type: none"> • Use radiation rope to establish boundaries with conspicuous postings. • Radiation tape may be used in lieu of radiation rope to establish a boundary for a small area such as a sample sink, tabletop, drain, pump basin, catch basin, tubing, etc. Radiation tape must be accompanied with the text "Contaminated Area." • Conspicuously posted physical barriers such as handrails and knee walls do not require the use of radiation rope or tape on the barrier. • Place a step-off-pad (SOP) if required for workers to exit and remove protective clothing. (Note: An SOP is not a substitute for an HRA barrier.) • Secure hoses, cables, cords, etc. crossing the boundary to prevent pulling the potentially contaminated item out of the Contaminated Area. • Setup friskers and/or contamination monitors in close proximity after exiting the area to: <ul style="list-style-type: none"> ○ Perform whole body monitoring OR ○ Perform hand and foot frisking prior to proceeding to the nearest whole body contamination monitor. 	<p>Standard Radiation Sign with the following:</p> <ul style="list-style-type: none"> • CONTAMINATED AREA

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Hazard	→ Boundary Requirements	→ Posting
<p style="text-align: center;">HIGH CONTAMINATION AREA</p> <p>$\geq 100,000 \beta\gamma$ dpm/100 cm²</p>	<ul style="list-style-type: none"> • Use radiation rope to establish boundaries with conspicuous postings. • If worker access is required, establish a double SOP arrangement with knee or curtain walls as needed to contain the high levels of contamination. 	<p>Standard Radiation Sign with the following:</p> <ul style="list-style-type: none"> • HIGH CONTAMINATION AREA • RP BRIEF REQUIRED FOR ENTRY
<p style="text-align: center;">DRP AREA</p> <p>DRPs > 500,000 dpm OR > 50,000 ncpm</p>	<ul style="list-style-type: none"> • Use radiation rope to establish boundaries with conspicuous postings. • Establish barriers as needed to prevent migration of particles across the boundary, e.g. a knee or curtain wall. • Establish a double SOP arrangement to maintain a buffer area to prevent particles from migrating to clean areas. 	<p>Standard Radiation Sign with the following:</p> <ul style="list-style-type: none"> • HIGH CONTAMINATION AREA • DISCRETE RADIOACTIVE PARTICLES PRESENT • RP BRIEF REQUIRED FOR ENTRY <p>Post the buffer area with Radiation Sign and the following inserts:</p> <ul style="list-style-type: none"> • CONTAMINATED AREA • DRP BUFFER AREA
<p style="text-align: center;">ALPHA 2 AREA</p> <p>$\beta\gamma/\alpha$ ratio = 300 - 30,000 AND α ≥ 20 dpm/100 cm²</p>	<ul style="list-style-type: none"> • Boundary controls are the same as for a Contaminated Area. 	<p>Standard Radiation Sign with the following:</p> <ul style="list-style-type: none"> • CONTAMINATED AREA • LEVEL 2 ALPHA AREA
<p style="text-align: center;">ALPHA 3 AREA</p> <p>$\beta\gamma/\alpha$ ratio <300 AND $\alpha \geq 20$ dpm/100 cm²</p>	<ul style="list-style-type: none"> • Boundary controls are the same as for a Contaminated Area. • If $\beta\gamma/\alpha$ ratio ≤ 50, setup a frisker capable of detecting alpha radiation in close proximity to the boundary 	<p>Standard Radiation Sign with the following:</p> <ul style="list-style-type: none"> • CONTAMINATED AREA • LEVEL 3 ALPHA AREA • RP BRIEF REQUIRED FOR ENTRY <p>If $\beta\gamma/\alpha$ ratio ≤ 50, add:</p> <ul style="list-style-type: none"> • ALPHA FRISKING/MONITORING REQUIRED UPON EXIT

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6.3 Post Airborne Radioactivity Areas

NOTE: See site specific procedures for Tritium sampling, calculation and dose assessment.

6.3.1 The hazards listed in the following table are based on measurements of airborne radioactivity as a fraction of the Derived Air Concentration (DAC).

Hazard	→ Boundary Requirements	→ Posting
<p>AIRBORNE RADIOACTIVITY AREA</p> <p>Particulates & Iodine \geq 0.3 DAC</p>	<ul style="list-style-type: none"> • Setup a rope boundary and posting if airborne levels are due to, or expected from, system leakage or work in high levels of contamination. • Install ventilation and/or containment devices as needed to encapsulate the airborne radioactivity within the boundary. 	<p>Standard Radiation Sign with the following:</p> <ul style="list-style-type: none"> • AIRBORNE RADIOACTIVITY AREA • RP BRIEF REQUIRED FOR ENTRY
<p>AIRBORNE RADIOACTIVITY AREA</p> <p>Summation of Particulate, Iodine, Noble Gas and Tritium greater than or equal to 1.0 DAC</p>	<ul style="list-style-type: none"> • Setup a rope boundary and posting when identified. 	<p>Standard Radiation Sign with the following:</p> <ul style="list-style-type: none"> • AIRBORNE RADIOACTIVITY AREA • RP BRIEF REQUIRED FOR ENTRY

6.4 Label Tools, Equipment, and Containers of Radioactive Material

NOTE: Precautionary information is provided to enable someone handling or opening a container to exercise precautions commensurate with the radiological hazards from the content(s). An example tag for recording precautionary information is shown in Attachment 5. Precautionary information may include:

- A brief description of contents.
- Highest smearable contamination levels in container.
- Highest contact dose rate on items in container.
- Additional hazards and precautions to open the container.

6.4.1 Label containers with radioactive material using a radiation symbol trefoil and the words "Caution Radioactive Material" as shown in Attachment 5. Add precautionary information for any of the following conditions:

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- a. Dose rates are ≥ 2 mrem/hour on contact with the contents in the container. Record the highest contact dose rate.
- b. Smearable contamination $\geq 1,000$ dpm/100 cm² is accessible if the container is opened. Record the highest contamination levels that may be encountered.
- c. Contents originated in a Level 3 Alpha Area. Record "Level 3 Alpha Area" on the tag or the bag.
- d. Contents contain discrete radioactive particles. Record "DRP Area" on the tag.

6.4.2 Containers are not required to be labeled under step 6.4.1 for any of the following conditions:

- a. Containers holding licensed material in quantities less than the quantities listed in 10 CFR 20, Appendix C.
- b. Containers holding licensed material in concentrations less than those specified in 10 CFR 20, Appendix B, Table 3.
- c. Containers attended by an individual who takes the precautions necessary to prevent the exposure of individuals in excess of the limits established by 10 CFR 20.
- d. Containers when they are in transport and packaged and labeled in accordance with the regulations of the Department of Transportation.
- e. Containers that are accessible only to individuals authorized to handle or use them, or to work in the vicinity of the containers, if the contents are identified to these individuals by a readily available written record (examples of containers of this type are containers in locations such as water-filled canals, storage vaults, or hot cells). The record must be retained as long as the containers are in use for the purpose indicated on the record.
- f. Installed manufacturing or process equipment, such as reactor components, piping, and tanks.
- g. Containers holding licensed material (other than sealed sources that are either specifically or generally licensed) that are within an RCA if the containers are:
 - Conspicuously marked (such as by providing a system of color coding of containers) commensurate with the radiological hazard;

- Accessible only to individuals who have sufficient instruction to minimize radiation exposure while handling or working in the vicinity of the containers; and
- Subject to plant procedures to ensure they are appropriately labeled before being removed from the posted area.

6.4.3 Print the surveyor's name and date of survey if precautionary information is provided.

NOTE: The value of net counts per minute is the count rate with background subtracted. Also referred to as corrected counts per minute (ccpm).

6.4.4 Decontaminate or dispose of hand tools with fixed contamination > 5,000 ncpm unless such actions are unreasonable based on the characteristics of the tool.

- a. Identify tools with fixed contamination > 5,000 ncpm with markings or labels.

6.4.5 Clarification of tagging and labeling requirements for specific items are listed below:

- a. A cabinet with multiple drawers may be considered as one container.
- b. Liquid containers require only the contact dose rate on the container if ≥ 2 mrem/hour.
- c. Bins of laundered protective clothing staged for use do not require tagging or labeling.
- d. Precautionary information is not required for trash and clothing receptacles while in use.
- e. Tag or label HEPA units and vacuum cleaners with the words "Possible Internal Contamination." Recording expected levels of smearable contamination is not required.
- f. Tag items tied off in a pool with expected contact dose rates on the item in the pool. Expected contamination levels are not required.

7.0 Records/Documentation

NONE

8.0 References

8.1 Commitments

NONE

8.2 General

8.2.1 10 CFR 20, "Standards for Protection against Radiation."

8.2.2 USNRC I.E. Information Notice 84-82, "Guidance for Posting Radiation Areas."

8.2.3 NUREG/CR-5569, "Health Physics Positions Data Base," HPPOS-027 and HPPOS-028.

8.2.4 NUREG/CR-6204, "Questions and Answers Based on Revised 10 CFR Part 20," Questions 127, 128, and 226 pertaining to labeling of containers.

8.2.5 INPO 05-008, Radiological Protection at Nuclear Power Plants

8.2.6 EPRI Alpha Monitoring and Control Guidelines for Operating Nuclear Power Stations, Revision 2.

8.2.7 NISP-RP-013, Radiological Protection Glossary

8.2.8 NISP-RP-005, Access Controls for Radiological Areas

8.2.9 NISP-RP-009, Radiography

8.2.10 NISP-RP-008, Use of HEPA Filtration Equipment

9.0 Attachments

9.1 Attachment 1 – "HRA, LHRA, and VHRA Posting Checklist – Sample"

9.2 Attachment 2 – "HRA, LHRA and VHRA Down-Posting Checklist – Sample"

9.3 Attachment 3 – "Use of Flashing Lights to Establish LHRA Checklist - - Sample"

9.4 Attachment 4 – "LHRA Access Guard Responsibilities Checklist – Sample"

9.5 Attachment 5 – "Radioactive Material Tag/Label – Sample"

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ATTACHMENT 1 HRA, LHRA, and VHRA Posting Checklist – Sample Page 1 of 2

Section 1		Section 2	
Date: _____ Time: _____		<p>YOU ARE PREPARING TO POST A (L)HRA OR VHRA. This is being performed to protect and inform Plant personnel of the radiological hazards. You must remain focused on the task to ensure error free performance.</p>	
Performed By: _____			
Prior to performing a HRA, LHRA, or VHRA posting change, the RP Technician(s) should review this checklist.		Checklist for Posting and Verifying a HRA:	
Area(s) Involved In Posting Change and Reason:		<input type="checkbox"/>	Stanchions and swing-gate secured in position as needed. (i.e., positive latching device)
		<input type="checkbox"/>	Swing-gate verified closed when moved into position
		<input type="checkbox"/>	Rad-rope, ribbon, or chain properly secured (do not use tape)
		<input type="checkbox"/>	Gaps in barrier. No gaps that would allow access of the whole body
Action To Be Taken	Type Of Area	<input type="checkbox"/>	No scaffold or ladders in area that would allow unauthorized access
<input type="checkbox"/> Posting	<input type="checkbox"/> HRA (High Rad Area)	<input type="checkbox"/>	All access points properly posted (stairwells, back doors, etc.)
	<input type="checkbox"/> LHRA (Locked High Rad)	<input type="checkbox"/>	Unauthorized personnel out of area. For authorized personnel verify correct RWP and correct task for work activity
	<input type="checkbox"/> VHRA (Very High Rad)	<input type="checkbox"/>	Verify correct RWP and correct task for work activity.
Review Topics		<input type="checkbox"/>	HRA postings attached with required inserts in place
What are the IMPORTANT steps associated with this task?		<input type="checkbox"/>	Are all postings consistent...Self-Check
<input type="checkbox"/>	Post area(s) correctly and consistently (think of the posting requirements applicable to the area)	<input type="checkbox"/>	Stop and Look...do the postings make sense?
<input type="checkbox"/>	Recognize conditions of the area (dose rate, contamination levels, etc.)	Checklist for Posting and Verifying a LHRA or VHRA	
<input type="checkbox"/>	Notifications (Ops, Security, RP Supervision, OCC, others as required) to access impact on time critical actions.	<input type="checkbox"/>	VHRA: Barrier completely enclose VHRA to thwart undetected circumvention of barrier.
<input type="checkbox"/>	Documentation (electronic RP log)	<input type="checkbox"/>	LHRA: If physical barrier is a metal fence or solid wall, then ensure the barrier is greater than or equal to 2 meters high. (Approximately 6 ft high per Reg Guide 8.38)
Error Likely situations?		<input type="checkbox"/>	Physical barrier has no gaps that would allow access
<input type="checkbox"/>	Ladders, scaffolding, doors leading into or out of area(s)	<input type="checkbox"/>	No adjacent scaffold or ladders that would allow access
<input type="checkbox"/>	Plant transients or power changes	<input type="checkbox"/>	No permanent plant equipment or temporarily stored material that would allow access
<input type="checkbox"/>	Transient dose potential (RAM movement, resin transfers, etc.)	<input type="checkbox"/>	All access points, such as stairwells or back doors, have been identified and controlled to prevent unauthorized access

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ATTACHMENT 1 HRA, LHRA, and VHRA Posting Checklist – Sample Page 2 of 2

What actions should ensure proper radiological controls?	<input type="checkbox"/>	Unauthorized personnel out of area. For authorized personnel verify correct RWP AND correct task for work activity.			
	<input type="checkbox"/>	LHRA or VHRA postings attached with required inserts			
	<input type="checkbox"/>	Are all postings consistent...Self-Check			
	<input type="checkbox"/>	STOP and LOOK...do the postings make sense			
	<input type="checkbox"/>	Challenge access point doors			
Field Notes:	All applicable areas have been:				
	<input type="checkbox"/>	Posted			
	<input type="checkbox"/>	RP Supervisor verify radiological survey information for all HRA, LHRA, VHRA posting			
	<input type="checkbox"/>	Area secured (HRA)			
	<input type="checkbox"/>	Area locked (LHRA, VHRA)			
	Logged into electronic RP log by:				
	Survey Number:				
Performed By (Signature):		Date and Time			
Supv.Verification (Signature)		Date and Time			

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ATTACHMENT 2 HRA, LHRA and VHRA Down-Posting Checklist – Sample Page 1 of 2

Section 1		Section 2	
Date: _____ Time: _____		<p>YOU ARE PREPARING TO DOWN POST A HRA, LHRA, or VHRA.</p> <p>This is being performed to protect and inform Plant personnel of the radiological hazards. You must remain focused on the task to ensure error free performance.</p>	
Performed By: _____			
Prior to performing a HRA, LHRA, or VHRA posting change, the RP Technician(s) should review this checklist.		Checklist for Down-Posting and Verifying a HRA:	
Area(s) Involved In Posting Change and Reason:		<input type="checkbox"/>	Stanchions or swing-gate removed or repositioned as needed
		<input type="checkbox"/>	Swing-gate verified closed when moved into position (if applicable)
		<input type="checkbox"/>	Rad-rope, ribbon, or chain removed or repositioned
Review Topics		<input type="checkbox"/>	Are all postings consistent...Self-Check
What are the IMPORTANT steps associated with this task?		<input type="checkbox"/>	Stop and Look...do the postings make sense
<input type="checkbox"/>	Down post area(s) correctly and consistently (think of the posting requirements applicable to the area)	Checklist for Down Posting and Verifying a LHRA or VHRA (for down-posting to LHRA from VHRA or HRA from LHRA, use Attachment 1, HRA, LHRA, and VHRA Posting Checklist)	
<input type="checkbox"/>	Recognize conditions of the area (dose rate, contamination levels, etc.)	<input type="checkbox"/>	Survey area to confirm radiation levels do not exceed criteria for down-posted conditions prior to worker access.
<input type="checkbox"/>	Notifications (Ops, Radwaste, RP Supervision, OCC, others as required) to assess impact on time critical actions.	<input type="checkbox"/>	Perform independent survey to verify radiation levels do not exceed criteria for down-posted conditions. If waived by RP supervision, record N/A.
<input type="checkbox"/>	Documentation (surveys, electronic RP log, turnover)	<input type="checkbox"/>	If LHRA physical barrier is a metal fence or solid wall, then ensure barrier is greater than or equal to two meters high.
<input type="checkbox"/>	Historical Information to verify plant conditions causing a Very High Radiation Area do not currently exist.	<input type="checkbox"/>	Remaining physical barrier has no gaps that would allow access
Error Likely situations?		<input type="checkbox"/>	No adjacent scaffold or ladders that would allow access (if applicable)
<input type="checkbox"/>	Ladders, scaffolding, doors leading into or out of area(s)	<input type="checkbox"/>	All access points, such as stairwells or back doors, have been identified and controlled to prevent unauthorized access
<input type="checkbox"/>	Plant transients or power changes		
<input type="checkbox"/>	Transient dose potential (RAM movement, resin transfers, etc.)	<input type="checkbox"/>	Are all postings consistent...Self-Check
<input type="checkbox"/>	Variations in Dose Rates	<input type="checkbox"/>	Stop and look...do the postings make sense
<input type="checkbox"/>	Discrete Radioactive Particles	<input type="checkbox"/>	Challenge access point doors
<input type="checkbox"/>	Streaming	Field Notes:	
What actions should ensure proper radiological controls?			

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ATTACHMENT 2 HRA, LHRA and VHRA Down-Posting Checklist – Sample Page 2 of 2

			All applicable areas have been:		
			<input type="checkbox"/> Down-Posted		
			<input type="checkbox"/> RP Supervisor verify radiological survey information for all HRA, LHRA, VHRA posting		
			Logged into electronic RP log by:		
			Survey Number:		
Performed By (Signature):		Date and Time:			
Supv. Verification (Signature):		Date and Time:			

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Attachment 3 Use of Flashing Lights to Establish LHRA Checklist – Sample Page 1 of 1

1.	Obtain RPM approval to establish LHRA with flashing light(s).
	RPM: _____ Date and Time: _____
	<input type="checkbox"/> Justification for allowance of Flashing Lights
2.	Establish LHRA with Tech. Spec. flashing light(s) by performing the following:
	<input type="checkbox"/> Install barricades to prevent inadvertent access
	<input type="checkbox"/> Post conspicuously
	<input type="checkbox"/> Position flashing light (s) so clearly visible when approached
	<input type="checkbox"/> Activate flashing light(s)
	<input type="checkbox"/> If using AC powered light(s), then ensure drop cords tagged at each connection and at each receptacle to prevent unauthorized de-energizing of the light(s)
	<input type="checkbox"/> Using DC (battery) powered lights
3.	Flashing Light installed by (signature): _____ Date and Time: _____
4.	ANSI qualified or Task Qualified RP Technician Peer check (signature): _____
	Performed by (signature): _____ Date and Time: _____
	RP Supervisor verification performed by (signature): _____ Date and Time: _____
5.	Log establishment and use of flashing light in electronic RP log.
	Log entry by: _____ Date and Time: _____
6.	RPM Approval (signature): _____ Date and Time: _____

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Attachment 4 LHRA Access Guard Responsibilities Checklist – Sample Page 1 of 1

(Required for all Personnel except ANSI qualified RP Personnel)	
Date: _____	Time: _____
Area to be guarded: _____	
<input type="checkbox"/>	Individual signing as the Access Control Guard reads, understands and accepts the following responsibilities:
<input type="checkbox"/>	Have the signed Attachment 4, LHRA Access Guard Responsibilities Checklist, present with them while performing duties as an Access Control Guard.
<input type="checkbox"/>	Wears the vest or garment as provided by RP, to identify the individual as a LHRA and VHRA Guard.
<input type="checkbox"/>	Has received a briefing on the LHRA boundary that he or she is guarding.
<input type="checkbox"/>	If the door controlling access to the LHRA is to be left open or cannot be secured or locked when entering or exiting, the Access Control Guard should remain stationed with a direct line-of-sight and control at the door until:
<input type="checkbox"/>	Access or barrier is secured or locked and verified by RP.
<input type="checkbox"/>	Relieved by ANSI qualified RP personnel.
<input type="checkbox"/>	Relieved by another briefed Access Control Guard.
<input type="checkbox"/>	Prevent unauthorized entry into the LHRA by performing the following actions for any individual requesting access to the area:
<input type="checkbox"/>	Obtain verbal or written acknowledgement from RP that the prospective entrant has permission from and is covered under the provisions of an RWP authorizing access to the LHRA for each individual entry.
<input type="checkbox"/>	If RP acknowledges permission for entry; permit entry to the area. Otherwise, DENY entry and instruct the individual to contact RP.
<input type="checkbox"/>	Ensure that personnel are able to exit the LHRA at any time and are not prevented from leaving the area by a locked or obstructed access.
<input type="checkbox"/>	If, at any point, you do not believe that access to the LHRA is being adequately controlled then contact RP personnel immediately.
<input type="checkbox"/>	When all individuals have exited the LHRA area and the Access Control Guard is no longer going to be present:
<input type="checkbox"/>	Ensure that access door is secured or locked by physically challenging the access or barrier and ensuring proper latching.
<input type="checkbox"/>	Notify the RP Technician that the initial check is complete and door(s) should be verified.
<input type="checkbox"/>	Remain at the door until the door is verified secured or locked by RP Personnel.
Access Control Guard Name: _____	
Access Control Guard (Signature): _____	Date: _____
RP Technician Performing Brief (Signature): _____	Date: _____

Attachment 5
Radioactive Material Tag/Label – Sample
Page 1 of 1

CAUTION



RADIOACTIVE MATERIAL

ACCOUNTABILITY NO. _____ OR NONE
REQUIRED

DESCRIPTION OF MATERIAL _____

REMOVABLE CONTAMINATION

BETA GAMMA _____ DPM/100 CM²
ALPHA _____ DPM/100 CM²

DOSE RATES

HIGHEST CONTACT _____ mrem/hr

NAME _____

DATE

TAG

CAUTION



**RADIOACTIVE
MATERIAL**

LABEL