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### EPIC

Number	Title
RA-EP-02410	OPERATIONS SUPPORT CENTER ACTIVATION AND RESPONSE
RA-EP-02420	SEARCH AND RESCUE
RA-EP-02510	EMERGENCY SECURITY ORGANIZATION ACTIVATION AND RESPONSE
RA-EP-02520	ASSEMBLY AND ACCOUNTABILITY
RA-EP-02530	EVACUATION
RA-EP-02550	OFFSITE PERSONNEL AND VEHICLE MONITORING AND DECONTAMINATION
RA-EP-02610	EMERGENCY RADIATION PROTECTION ORGANIZATION ACTIVATION AND RESPONSE
RA-EP-02620	EMERGENCY DOSE CONTROL AND POTASSIUM IODIDE DISTRIBUTION
RA-EP-02640	STATION RADIOLOGICAL SURVEYS AND CONTROLS DURING EMERGENCIES
RA-EP-02710	REENTRY
RA-EP-02720	RECOVERY ORGANIZATION

Davis-Besse Nuclear Power Station

EMERGENCY PLAN IMPLEMENTING PROCEDURE

RA-EP-02550

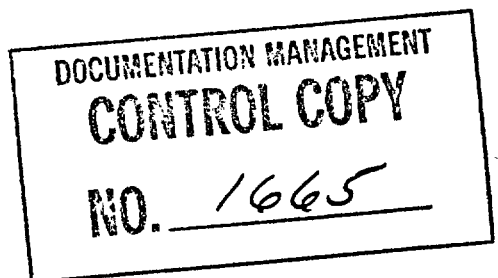
(Supersedes HS-EP-02550, R1)

OFFSITE PERSONNEL AND VEHICLE  
MONITORING AND DECONTAMINATION

REVISION 00

Prepared by: Paul F. Timmerman

Procedure Owner: Manager - Security



Effective Date: DEC 12 2002

Procedure Classification:

- ☒ Safety Related  
☐ Quality Related  
☐ Non-Quality Related

LEVEL OF USE:  
**IN-FIELD REFERENCE**

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## 1.0 PURPOSE

This procedure outlines the steps to be taken at the Lindsey Service Center, the Radiological Testing Laboratory (RTL), or any other designated offsite assembly area should it become necessary to monitor for radioactive contamination or decontaminate evacuated personnel or vehicles from the Davis-Besse Nuclear Power Station (DBNPS).

## 2.0 REFERENCES

### 2.1 Developmental

#### 2.1.1 Davis-Besse Emergency Plan

### 2.2 Implementation

#### 2.2.1 DB-HP-01701, Personnel Contamination Evaluation and Decontamination

#### 2.2.2 DB-HP-01602, Area and Equipment Decontamination

#### 2.2.3 RA-EP-02250, Radiation Monitoring Team Surveys

#### 2.2.4 RA-EP-02520, Assembly and Accountability

### 2.3 Manuals

Davis-Besse Emergency Plan Telephone Directory

## 3.0 DEFINITIONS

3.1 Designated Offsite Decontamination Facility - The small equipment bay and/or the large equipment bay at the Lindsey Service Center depending on requirements. Other locations may be selected as required.

3.2 General Evacuation - The orderly process whereby personnel are directed to leave the Davis-Besse Nuclear Power Station, and report to a designated offsite assembly area.

3.3 Offsite Assembly Area Coordinator - A person who is designated to take charge at the Offsite Assembly Areas. This person is the Training Center 2nd Floor Assembly Area Coordinator as identified in the Emergency Plan Telephone Directory, or as assigned by the Emergency Director.

## 4.0 RESPONSIBILITIES

4.1 The Emergency Radiation Protection (RP) Manager or his designee is responsible for implementing this procedure, and shall:

4.1.1 Send an RP Tester to direct the monitoring of personnel and equipment.

4.1.2 Authorize and direct personnel decontamination efforts above the minimum levels of this procedure.

4.1.3 Ensure that the offsite decontamination facility is returned to its pre-use condition.

4.1.4 Review and the sign Offsite Personnel Decontamination Worksheet, DBEP-059.

- 4.1.5 Ensure whole body counts are conducted at the earliest opportunity on individuals who were contaminated in the nose, mouth, eyes, ears or open wounds.
- 4.2 The assigned Radiation Protection (RP) Tester shall:
  - 4.2.1 Monitor evacuees for radioactive contamination.
  - 4.2.2 Direct decontamination in accordance with this procedure.
  - 4.2.3 Bring decontamination equipment from Davis-Besse to the offsite assembly area.
  - 4.2.4 Control radioactive contaminated waste, and where possible, return it to DBNPS after decontamination is completed.
  - 4.2.5 Return the offsite decontamination facility to its pre-use condition.
- 4.3 The Emergency Offsite Manager shall advise the Emergency Director and the Offsite Assembly Area Coordinator of the potential contamination of evacuated personnel and vehicles.
- 4.4 The Offsite Assembly Area Coordinator shall call the Emergency Offsite Manager and discuss the need for personnel decontamination following the evacuation of personnel to the offsite assembly area.
- 4.5 The Dose Assessment Coordinator shall dispatch available Radiation Monitoring Team (RMT) members to assist in personnel monitoring and decontamination of personnel and equipment, when needed.
- 4.6 RMT members shall assist the RP tester with monitoring and decontamination in accordance with this procedure.
- 4.7 All personnel at the offsite assembly area shall follow the directions of RP personnel when monitoring and decontamination is being conducted.

## 5.0 INITIATING CONDITIONS

- 5.1 Personnel and vehicles have been evacuated from DBNPS to an offsite assembly area.
- 5.2 Monitoring/decontamination of personnel is required at the Radiological Testing Lab (RTL).
- 5.3 Monitoring/decontamination are required at the offsite assembly area.

**6.0 PROCEDURE****6.1 Activation****6.1.1 The Offsite Assembly Area Coordinator shall:**

- a. Isolate personnel known or suspected to be contaminated until they are monitored and decontaminated, as necessary.
- b. Control the entrance of personnel into the service center office building/change room complex during personnel monitoring and decontamination. See Attachment 1, Lindsey Service Center.
- c. Notify the Emergency Offsite Manager of the need for decontamination.

**6.1.2 The Emergency Offsite Manager shall:**

- a. Determine actions to be taken to prevent any additional contamination of other nonessential personnel/equipment evacuated to the designated offsite assembly area.
- b. Request assistance from the Emergency RP Manager for RP personnel to direct and perform the monitoring and decontamination of personnel and equipment in accordance with this procedure.
- c. Direct the Dose Assessment Coordinator to send RMT members to the assembly area, as required, to assist RP personnel in monitoring and decontaminating personnel and equipment.

**6.1.3 The Emergency RP Manager shall assure that RP or RMT personnel who are to direct or perform monitoring and decontamination of personnel and equipment are briefed. The need for equipment, supplies, protective clothing, transportation, location of offsite assembly area, etc., should be included in the briefing.**



6.2 Personnel Monitoring and DecontaminationCAUTION 6 2.1

DB-HP-1701, Personnel Contamination Evaluation and Decontamination provides additional personnel monitoring and decontamination instructions. This procedure shall be used only under the direction of an RP Tester or RP Management.

## 6.2.1 Personnel Monitoring

- a. Use a frisker or equivalent survey meter with HP-260 or HP-210 (thin window pancake detector) or equivalent probe operationally checked in accordance with RA-EP-02250, Radiation Monitoring Surveys.
- b. Survey the hands and feet of each evacuated person using the following techniques:
  1. Obtain a current background reading on the frisker and record.
  2. Set the meter on the lowest useable scale.
  3. Use the audible if available on the meter.
  4. Survey with the detector window toward the surface to be surveyed, and at a distance of 1/4 to 1/2 inch.
  5. Move the detector at a speed of no more than 2 inches per second.
  6. Continually observe meter movement.
  7. Hold probe over any suspected higher meter movement.
- c. Completely survey any individual with contamination readings greater than or equal to 100 cpm above background.
- d. Record the readings and personal information on, the Offsite Personnel Decontamination Worksheet, DBEP-059.
  1. Record the contamination levels in CPM and the body location on the Offsite Personnel Decontamination Worksheet, DBEP-059, prior to decontamination.
  2. Record contamination levels after each decontamination attempt.

- e. Offsite Personnel Decontamination Worksheets, DBEP-059, are to be transmitted to the Emergency RP Manager after decontamination is conducted.

#### 6.2.2 Preparation for Decontamination

- a. When establishing a decontamination area at the offsite facility:
  - 1. Use a clean side/dirty side approach to minimize spread of contamination.
  - 2. Use as much equipment and consumables as needed but do not generate unnecessary radioactive waste.
  - 3. When decontaminating personnel at the Lindsey Service Center, be aware that the drains (i.e. sink, shower) go to a separator and then a drying field. Ensure the separator and the drying field are posted as "potentially contaminated" prior to decontamination.
  - 4. When decontaminating vehicles at the Lindsey Service Center, be aware that the floor drains go to a ditch outside the building. Seal off the culverts in this ditch to confine the waste water.
  - 5. Post the confined area as "potentially contaminated" before decontaminating vehicles.
- b. If some area other than Lindsey is used, consider the drain paths involved and post them accordingly.
- c. Isolate an area within the offsite assembly area to conduct personnel decontamination. See Attachment 1, Lindsey Service Center.
- d. Set up receptacles to receive used decontamination materials and contaminated personal items.
- e. Personnel conducting decontamination shall don protective clothing.

#### 6.2.3 Skin Decontamination

- a. Guidelines
  - 1. Minimize the potential for internal contamination by exercising caution when decontaminating to prevent breaking the skin.
  - 2. Use tepid water for washing. Water that is too warm will open the body pores which may absorb contamination, and water that is too cold closes the body pores trapping contamination.

3. Decontamination shall be performed in a manner to prevent spreading contamination from areas of higher contamination to areas of lower contamination.
4. It is important to determine whether the contamination is a point source (particle) or a plane source. A point source giving the same instrument response as a plane source will give a significantly higher skin dose.

b. Point Source vs. Plane Source Determination

Use the following steps together with visual observation to make a judgment as to whether the contamination is a point source (particle) or a plane source, and record on the Offsite Personnel Decontamination Worksheet, DBEP-059.

1. If the reading with the G-M probe changes rapidly when it is moved about 2 inches in any direction from the highest point of contamination, then the contamination may be a point source.
2. If the contamination can be removed by using tape on one small area in one attempt, then the contamination may be a point source.
3. All contaminations that are not shown to be a point source shall be considered a plane source.
4. Any contamination less than 1,000 cpm shall be considered a plane source.

NOTE 6.2.3.b.5

Point sources (small particles) may be microscopic.

5. If it is determined that there is fixed skin contamination levels greater than 1,000 cpm, notify the Emergency RP Manager to obtain medical assistance.

c. Routine Skin Decontamination

1. Attempt to remove particulate contamination using masking tape.
2. IF the contamination is located in and around the finger nails, THEN clip or trim the finger nails as much as possible.
3. Using damp towelettes or masslin cloth, gently wipe the contaminated areas. Deposit towels or cloths in radwaste.

4. Thoroughly wash the contaminated areas with mild soap and tepid water for 2-3 minutes.
5. When washing the hands pay particular attention to finger nails and areas between the fingers.
6. Wash areas using a method that will ensure contamination is not spread from high to low contamination areas.
7. Rinse thoroughly with clean tepid water and pat dry.
8. Monitor the area with the survey instrument and record on the Offsite Personnel Decontamination Worksheet, DBEP-059.
9. When monitoring for contamination, be sure to check areas where contamination may be hidden, such as fingernails.
10. Surrounding areas not previously contaminated shall be surveyed to ensure contamination has not been spread to those areas. If necessary, decontaminate additional areas.
11. If contamination levels exist greater than background, repeat steps 1 through 8 two more times using fresh tepid water for each wash and rinse.
12. Decontamination is complete when the area has no detectable contamination level above background when monitored with an RM-14 or equivalent with a HP 260 or HP 210 probe.
13. If contamination persists, then proceed to section 6.2.3.d.

d. Nonroutine Skin Decontamination

The following skin decontamination steps shall be performed at the offsite assembly area only with specific Emergency RP Manager authorization and only by qualified RP Testers. Decontaminate the most highly contaminated persons first and proceed to lesser contaminated personnel as facilities are available.

1. Cleanse the area with special decontamination soap, such as Turco's "Decon Hand Soap". Use soft brush and light pressure to create heavy lather. Wash the area for 2 minutes using care not to erode or scratch the skin.
2. Pat dry the area and survey.
3. Repeat these steps until contamination levels are not detectable above background or until there is no decrease in the level of contamination.

4. If contamination persists and continued application of Turco is ineffective, then repeat decontamination washing sequence using undiluted Phisoex or equivalent, and perform the following:

WARNING 6.2.3.d.4.a

This decontamination mixture is very abrasive and extreme care should be taken not to abrade the skin excessively. Do NOT repeat this step more than three times.

- a) For persistent contamination on the palms, elbows, knees or callused skin, wash with a mixture of Tide, corn meal and tepid water, then rinse.
- b) Blot dry, survey and record results.

WARNING 6.2.3.d.5

Prevent any Clorox or Hydrogen Peroxide from entering wounds or body openings.

5. For persistent contamination on small localized areas, try gentle application of Clorox or hydrogen peroxide using a Q-tip applicator or gauze pad and the following:
  - a) Rinse thoroughly with water.
  - b) Blot dry, survey and record results.
  - c) Repeat steps a and b for a maximum of 2 additional attempts until contamination levels are less not detectable.
6. If the preceding steps do not remove all of the contamination, then the RP Tester shall contact the Emergency RP Manager for direction.
7. Further decontamination efforts shall be determined by the Emergency RP Manager or a Medical professional.
8. The RP Tester shall perform a skin dose calculation in accordance with section 6.2.10 Skin Dose Calculation. A whole body count will be conducted at the earliest possible time for personnel suspected of an intake.

## 6.2.4 Hair Decontamination

- a. Use tepid water for washing. Water that is too warm will open the body pores which may absorb contamination, and water that is too cold closes the body pores trapping the contamination.
- b. Decontamination shall be performed in a manner to prevent spreading contamination from areas of higher contamination to areas of lower contamination.
- c. IF the contamination is present only in a small area, THEN trim the hair from the contaminated area with scissors.
- d. IF washing is required, THEN the hair should be washed with a mild shampoo, as follows:
  - 1. Place the individual in a position that will prevent the spread of contamination to other parts of the body.
  - 2. Have the individual place cotton in their ears and towels around their neck and over their face.
  - 3. While bending over sink, apply shampoo and work up a heavy lather and massage for several minutes.
  - 4. Rinse and dry the hair.
    - a) The hair must be dry to avoid shielding the contamination.
- e. Survey for contamination.
- f. Repeat Step d. above until contamination levels are not detectable above background or until there is no decrease in the level of contamination.
- g. IF the preceding steps do not remove all of the contamination, THEN the Emergency RP Manager shall be notified.
- h. Further decontamination efforts (see Attachment 2) shall be determined by the Emergency RP Manager or a medical professional.
- i. Perform skin dose calculations in accordance with section 6.2.10.

### 6.2.5 Ear Decontamination

- a. Use tepid water for washing. Water that is too warm will open the body pores which may absorb contamination, and water that is too cold closes the body pores trapping the contamination.
- b. Decontamination shall be performed in a manner to prevent spreading contamination from areas of higher contamination to areas of lower contamination.
- c. Place cotton in the ear opening.

**WARNING 6.2.5.d.**

Use care not to get any water in the inner ear.  
Do NOT flush ear with water or any other liquid.

- d. Tilt the head so that the contaminated ear is down.
- e. Decontaminate the skin surrounding the ear in accordance with section 6.2.3.
- f. IF contamination is in the outer ear,  
THEN decontaminate the outer ear with soap and tepid water on a damp cotton-tipped swab.
- g. Repeat Step e two more times if required.
- h. IF the preceding steps do not remove all of the contamination or the contamination is in the inner ear,  
THEN the RP Tester shall contact the Emergency RP Manager.
- i. Further decontamination efforts shall be determined by the Emergency RP Manager or a medical professional.
- j. Individuals shall have a whole body count as soon as possible.
- k. Perform skin dose calculation in accordance with section 6.2.10.

### 6.2.6 Eye Decontamination

- a. Use tepid water for washing. Water that is too warm will open the body pores which may absorb contamination, and water that is too cold closes the body pores trapping the contamination.
- b. Decontaminate the skin surrounding the eyes in accordance with section 6.2.3.

- c. Hold the HP-210 or HP-260 or equivalent probe in front of the contaminated eye.
- d. Instruct the individual to close the eyelid for several seconds and then open it.
- e. If the count rate is the same with the eyelid open and closed, the contamination is on the eyelid.
- f. If the count rate is higher with the eyelid open than closed, the contamination is in the eye.
- g. If contamination is in the eye, immediately flush the eye with tepid water unless particle may be embedded in the eye or the eye has been cut or burned. Obtain medical assistance as needed for particles in the eye.
- h. Attempt to remove contamination from an eyelid with sterile cotton balls slightly moistened (not dripping) with water.
- i. IF contamination is not removed in three attempts, THEN the RP Tester shall contact the Emergency RP Manager for direction.
- j. All personnel who are found to have been contaminated in or on the nose, mouth, eyes or open wound shall have a whole body count performed at the earliest possible time.

#### 6.2.7 Mouth Decontamination

##### WARNING 6.2.7.a

Warn the individual being decontaminated to refrain from swallowing.

- a. Use tepid water for washing. Water that is too warm will open the body pores which may absorb contamination, and water that is too cold closes the body pores trapping the contamination.
- b. Decontamination shall be performed in a manner to prevent spreading contamination from areas of higher contamination to areas of lower contamination.
- c. IF the contamination is in the mouth, THEN flush with tepid water.
- d. When flushing the mouth, bend the individual over the sink to prevent swallowing of the water.



- e. IF contamination is not removed in three attempts, THEN the RP Tester shall contact the Emergency RP Manager for direction.
- f. Further decontamination efforts shall be determined by the Emergency RP Manager or a medical professional.
- g. All personnel who are found to have been contaminated in or on the nose, mouth, eyes or open wound shall have a whole body count performed at the earliest possible time.

#### 6.2.8 Nose Decontamination

- a. Minimize the potential for internal contamination by exercising caution when decontaminating to prevent breaking the skin.
- b. Decontamination shall be performed in a manner to prevent spreading contamination from areas of higher contamination to areas of lower contamination.
- c. Decontaminate the skin surrounding the nose in accordance with section 6.2.3.
- d. Have the contaminated individual blow his nose into a facial tissue or paper towel.
- e. Check the paper for contamination.
- f. Check the nose for remaining contamination.
- g. IF contamination remains, THEN a damp cotton swab may be used for decontamination.
- h. Have the contaminated individual perform the following steps:

##### CAUTION 6.2.8.h.1

Be careful not to damage the membrane in the nostril as the possibility of inhaling the contamination would increase.

1. Insert a damp swab into the nostril approximately 3/8". Exercise caution so that the swab does not touch the sides of the nostril during insertion.
2. Press the swab lightly against the sides of the nostril and withdraw in a circular motion so all sides of the nostril are wiped.
3. Check swab for contamination.

- i. Repeat Steps c through h until contamination levels are not detectable above background and are no longer decreasing, or the nostril becomes tender.
- j. IF the above steps do not remove all of the contamination, THEN the RP Tester shall notify the Emergency RP Manager for direction.
- k. Further decontamination efforts shall be determined by the Emergency RP Manager or a medical professional.
- l. All personnel who are found to have been contaminated in or on the nose, mouth, eyes, or open wound shall have a whole body count performed at the earliest possible time.

#### 6.2.9 Clothing Decontamination

- a. IF contamination is found on clothing, THEN monitoring shall be performed to ensure there is no skin contamination.
- b. IF contamination is detected on shoes or other personal clothing, THEN use masking tape to initially remove any loose particulate contamination.
- c. IF the contamination cannot be removed using masking tape, THEN use the following techniques:
  1. Shoes - Remove and bag shoes. Provide shoe covers for individual.
  2. Clothing - Remove and bag clothing. Provide paper suit to individual, if necessary.
  3. Tag clothing or shoes for identification and later decontamination at DBNPS.

#### 6.2.10 Skin Dose Calculation

- a. Perform a skin dose calculation for all skin and personal clothing contaminations (except shoe contamination).
- b. Skin Contamination:  
$$\text{Dose (mrem)} = 1.92\text{E-}3 (\text{_____cpm}) (\text{_____hrs.})$$
  
Personal Clothing Contamination:  
$$\text{Dose (mrem)} = 8.54\text{E-}4 (\text{_____cpm}) (\text{_____hrs.})$$
- c. Record skin dose on the Offsite Personnel Decontamination Worksheet, DBEP-059.

## 6.2.11 Documentation

- a. The completed Offsite Personnel Decontamination Worksheet, DBEP-059, shall be signed by the RP Tester performing the decontamination and survey.
- b. The completed Offsite Personnel Decontamination Worksheet, DBEP-059, shall be forwarded to the Emergency RP Manager for review and signature.
- c. Completed forms shall then be forwarded to the RP Supervisor for tracking and whole body count scheduling.

**CAUTION 6.3**

DB-HP-01602, Area and Equipment Decontamination provides additional decontamination instructions. This procedure shall be used only under the direction of an RP Tester.

6.3 Equipment Monitoring and Decontamination

## 6.3.1 Vehicle Monitoring

- a. Use a RM-14 or equivalent survey meter with a HP-260 or HP-210 or equivalent probe operationally checked in accordance with RA-EP-02250, Radiation Monitoring Team Surveys.
- b. Survey the air cleaner, wheel wells, and driver's seat of each suspected contaminated vehicle using the following techniques:
  - 1. Set the meter on the lowest scale.
  - 2. Survey with the detector window toward the surface surveyed, and at a distance of 1/4 to 1/2 inch.
  - 3. Move the detector at a speed of no more than 2 inches per second.
  - 4. A smear survey may be conducted of vehicles at the direction of the RP Tester.
- c. IF the wheel wells or air cleaner or driver's seat is contaminated THEN proceed with section 6.3.2. AND survey the whole vehicle.

### 6.3.2 Equipment Decontamination Guidelines

a. Survey the area.

b. Consider the following:

1. Desirability to decontaminate (ALARA Review) and desired decontamination factor (D.F.).

2. Compatibility of materials to be decontaminated with decontamination method.

3. Quantity and characteristics of contamination present:

- a) Level of contamination present
- b) Loose, readily removable
- c) Caused by liquid spray or leakage
- d) Fixed in oxide film
- e) Embedded on surface
- f) Soluble; water or special solvent required.

4. Surface condition:

- a) Porous:
- b) Non-porous: metal, vinyl, sealed, painted
- c) Rough: cast iron, rusted metal
- d) Smooth: metal, glass.

5. Area Status:

- a) Location: outside environment, inside building
- b) Environment: hot, freezing, weather conditions
- c) Effect on adjacent work in progress
- d) Delicate equipment: electrical, shock restrictions
- e) Wet: drainage problems.

c. Routine Decontamination Methods

The following manual cleaning methods are effective for removal of low to medium levels of contamination from non-porous surfaces:

1. Hand wiping:

Use of a dampened cloth or towel to decon small areas or items.

2. Wet or dry mopping:
  - a) Use a standard household mop or masslin mop.
  - b) This is more effective than hand wiping for large surfaces.
3. Scrubbing, brushing and scraping:
  - a) May be used to remove stubborn deposits or to clean porous surfaces.
  - b) These methods are generally used with other methods such as flushing, squeezing or vacuuming.
4. Low pressure spray with water:
  - a) This method is used for the gross decontamination of large areas or surfaces containing numerous protrusions.
  - b) This method is effective in removing loosely bound crud and chemical dissolution, but will not remove the oxide layer.
5. Detergents and Degreasers:
  - a) Approved detergents may be used to enhance manual cleaning methods.
  - b) Degreasers will remove a grease or oil film and increase the decontamination effectiveness. A degreaser may be employed before or included with the decontamination process.
6. Chemical Cleaning:

Concentrated solutions have proven effective for dipping and soaking components. Decontamination factors greater than 25 have been obtained.
7. Vacuuming:

Vacuuming is effective for the removal of loose dust and for irregular shaped objects, and is the preferred technique for items, which cannot come into contact with water.

## 6.3.3 Routine Vehicle Decontamination

NOTE 6.3.3.a

The Emergency RP Manager should be contacted to determine if the vehicle should be impounded allowing radionuclide decay to further reduce contamination levels.

- a. Set up a contamination barricade around the contaminated vehicle.
- b. At the Lindsey Service Center the water drains into a ditch alongside the road. Seal off the culverts in this ditch to confine the waste water.
- c. Post the confinement areas as "potentially contaminated" before decontaminating vehicles.
- d. IF normal decontamination does not reduce contamination levels to less than minimum detectable activity.  
THEN the contamination should be considered to be fixed.
- e. Personnel conducting decontamination shall put on protective clothing.
- f. First perform dry decontamination using a combination of tape, vacuuming, masslin cloth, and mild abrasives.
- g. IF dry decontamination does not reduce contamination levels below 100 cpm above background,  
THEN:
  1. Consider the following when beginning a decontamination task:
    - a) Work from areas of lower to areas of higher contamination.
    - b) Begin decontamination on upper surfaces and work toward lower surfaces.
    - c) Work from an access point toward higher contamination levels.
    - d) Work from outer areas toward a floor drain.
    - e) Work toward ventilation suction points whenever possible.

- f) When more than one decontamination technique is to be employed, the Emergency RP Manager will specify the order of use.
2. Wipe painted surfaces and vinyl upholstery. Re-survey and go to section 6.3.4 if contamination is still above 100 cpm above background.
3. Ensure floor drain outlets have been capped and the outlets posted as potentially contaminated before allowing any water to drain through floor drains.
4. Minimize the use of water in vehicle decontamination.
5. Clean painted surfaces with minimum water.
6. Re-survey and go to section 6.3.4 if contamination is not below 100 cpm above background.
7. Scrub painted and unpainted surfaces with an industrial grade cleaner, brush, and damp wipe to clean the cleaner from the vehicle.

#### 6.3.4 Non-routine Vehicle Decontamination

- a. IF routine decontamination methods are ineffective or specific applications warrant more aggressive techniques, THEN the Emergency RP Manager shall select such techniques. This approval shall include the following:
  1. Emergency RP Manager direction.
  2. The technique to be used and associated limitations and precautions.
  3. An evaluation of the need for specific written instructions.

#### 6.4 Deactivation

##### 6.4.1 The Emergency RP Manager or his designated alternate shall:

- a. Determine when the decontaminated personnel or equipment can be released from the designated offsite assembly area.
- b. Have all radioactive waste generated at the decontamination facility bagged, tagged, and returned to DBNPS for disposal.
- c. Have all decontamination materials returned to DBNPS.
- d. Make arrangements to return the facility to its pre-emergency condition.

- e. Notify the Emergency Offsite Manager when the Offsite Decontamination Facility is cleaned up and returned to normal.

6.4.2 The Offsite Assembly Area Coordinator shall report the release of assembled personnel to the Emergency Offsite Manager.

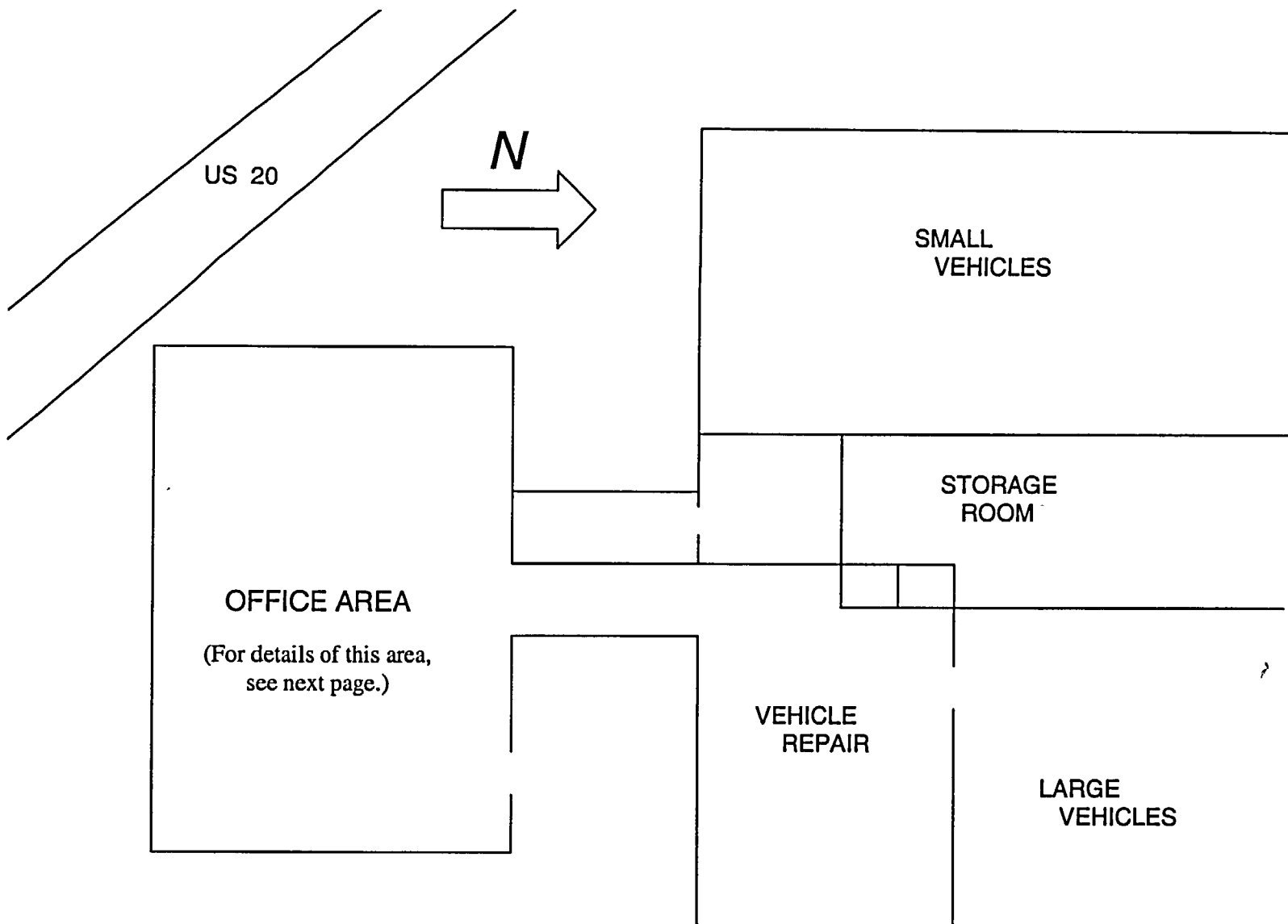
## 7.0 FINAL CONDITIONS

- 7.1 There is no longer any need for offsite personnel and equipment monitoring and decontamination.
- 7.2 The facility has been surveyed and declared clean.
- 7.3 All contaminated material has been returned to DBNPS.
- 7.4 The offsite decontamination facility has been restored to its ready condition.

## 8.0 RECORDS

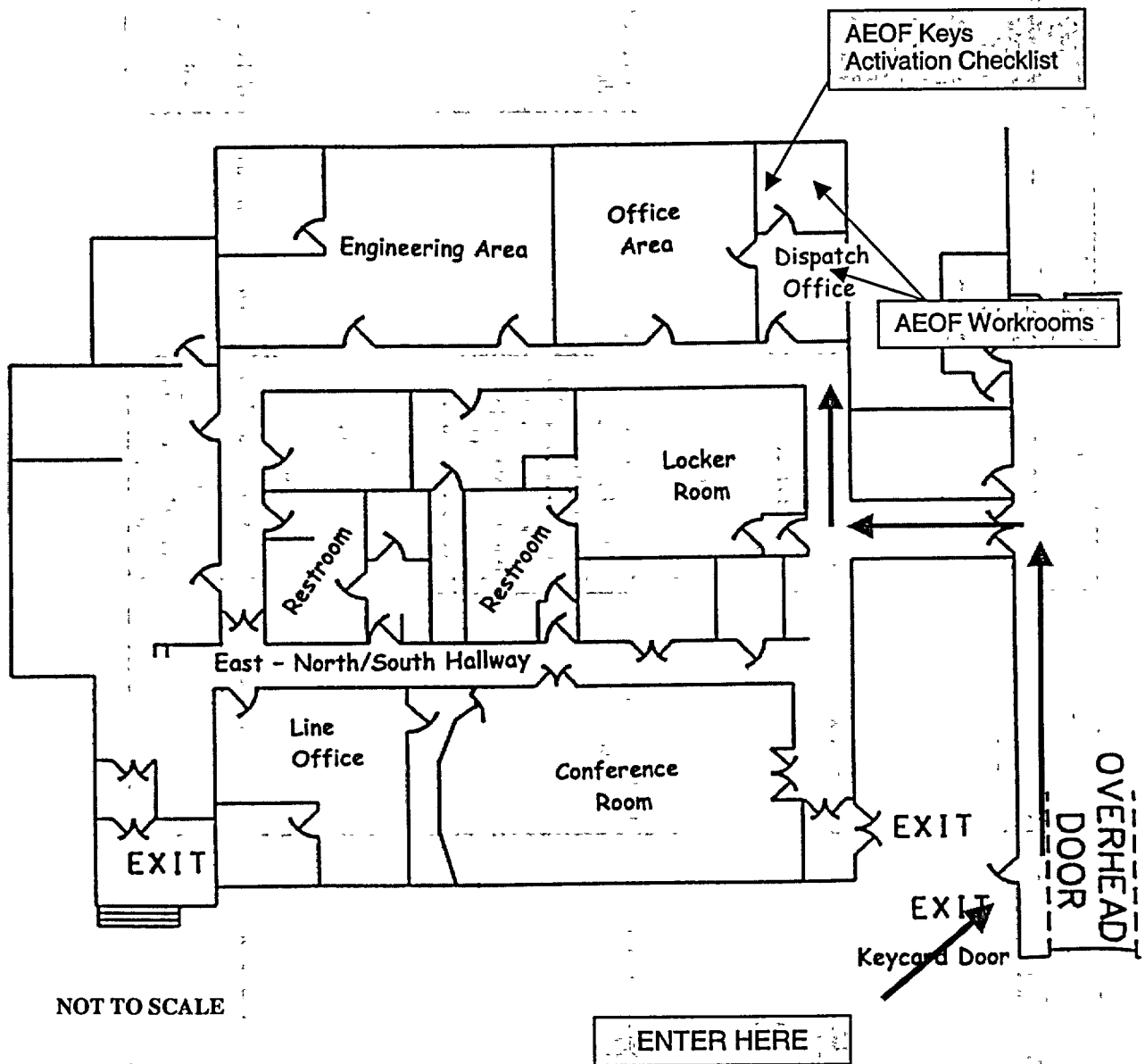
- 8.1 The Quality Assurance records generated by this procedure shall be listed on the Nuclear Records List by Nuclear Records Management. The Non-Quality Assurance Records generated by this procedure may be listed on the Nuclear Records List according to NG-NA-00106, Nuclear Records Management, at the discretion of the Division Director with record copy responsibility. All records shall be captured and submitted to Nuclear Records Management by the transmitting organization according to NG-NA-00106, Nuclear Records Management.
  - 8.1.1 Quality Assurance Records generated by this procedure are as follows:
    - None
  - 8.1.2 Non-Quality Assurance Records generated by this procedure are as follows:
    - a. Offsite Personnel Decontamination Worksheet, DBEP-059.





ATTACHMENT 1: LINDSEY SERVICE CENTER

Page 2 of 2

OFFICE AREA DETAIL

PARKING LOT

ATTACHMENT 2: PERSONNEL DECONTAMINATION METHODS  
Page 1 of 4

<u>Method*</u>	<u>Surface</u>	<u>Action</u>	<u>Technique</u>	<u>Advantages</u>	<u>Disadvantages</u>
Soap and water.	Skin and hands.	Emulsifies and dissolves contaminate.	Wash 2-3 minutes and monitor. Do not wash more than 3-4 times.	Readily available and effective for most radioactive contamination.	Continued washing will defat the skin. Indiscriminate washing of other than affected parts may spread contamination.
Soap and water.	Hair.	Same as above.	Wash several times. If contamination is not lowered to acceptable levels, shave the head and apply skin decontamination methods.		
Lava soap, soft brush, and water.	Skin and hands.	Emulsifies, dissolves and erodes.	Use light pressure with heavy lather. Wash for 2 minutes, 3 times. Rinse and monitor. Use care not to scratch or erode the skin. Apply lanolin or hand cream to prevent chapping.	Same as above.	Continued washing will abrade the skin.
Tide or other detergent (plain).	Same as above.	Same as above.	make into a paste. Use with additional water with a mild scrubbing action. Use care not to erode the skin.	Slightly more effective than washing with soap.	Will defat and abrade skin and must be used with care.
Mixture of 50% Tide and 50% cornmeal.	Skin and hands.	Emulsifies, dissolves, and erodes.	Make into a paste. Use with additional water with a mild scrubbing action. Use care not to erode the skin.	Slightly more effective than washing with soap.	Will defat and abrade skin and must be used with care.

\*Begins with the first listed method and then proceed step by step to the more severe methods, as necessary.

<u>Method*</u>	<u>Surface</u>	<u>Action</u>	<u>Technique</u>	<u>Advantages</u>	<u>Disadvantages</u>
5% water solution of a mixture of 30% Tide, 65% Calgon, 5% Carbose (carboxymethyl cellulose).	Same as above.	Same as above.	Use with water. Rub for a minute and rinse.	Same as above.	Same as above.
A preparation of 8% Carbose, 3% Tide, 1% Versene, and 88% water homogenized into a cream.	Same as above.	Same as above.	Use with additional water. Rub for 1 minute and wipe off. Follow with lanolin or hand cream.	Same as above.	Same as above.
Titanium dioxide paste. Prepare paste by mixing precipitation titanium dioxide (a very thick slurry, never permitted to dry) with a small amount of lanolin. If not successful, go on to next step.	Skin, hands, and extremities. Do not use near face or other body openings.	Same as above.	Work the paste into the affected area for 2 minutes. Rinse and wash with soap and warm water. Monitor.	Removes contamination lodged under scaly surface of skin. Good for heavy surface contamination of skin.	If left on too long will remove skin.
Mix equal volumes of a saturated solution of potassium permanganate and 0.2 N sulfuric acid. (Saturated solution of $\text{KMnO}_4$ is 6.4 grams per 100 ml of $\text{H}_2\text{O}$ .) Continue with next step.	Skin, hands, and extremities. Do not use near face or other body openings.	Dissolves contaminant absorbed in the epidermis.	Pour over wet hands, rubbing the surface and using hand brush for not more than 2 minutes. Rinse with water.	Superior for skin contamination. May be used in conjunction with titanium oxide.	Will remove a layer of skin if in contact with the skin for more than 2 minutes.

\*Begins with the first listed method and then proceed step by step to the more severe methods, as necessary.

<u>Method*</u>	<u>Surface</u>	<u>Action</u>	<u>Technique</u>	<u>Advantages</u>	<u>Disadvantages</u>
Apply a freshly prepared 5% solution of sodium acid sulfite. (Solution made by dissolving 5 gm of NaHSO <sub>3</sub> crystals in 100 ml distilled water.)	Same as above.	Removes the permanganate stain.	Apply in same manner as above. Apply for not more than 2 minutes. The above procedure may be repeated. Apply lanolin or hand cream when complete.		Same as above.
Flushing.	Eyes, ears, nose and mouth.	Physical removal by flushing.	Roll back the eyelids as far as possible, flush with large amounts of water. If isotonic irrigants are available, obtain them without delay. Apply to eye continually and then flush with large amounts of water.  (Isotonic irrigant [0.9% NaCl solution]: 9 grams NaCl in beaker, fill to 1000 cc with water.) Can be purchased from drug suppliers, etc.  Further decontamination should be done under medical supervision.	If used immediately, will remove contamination. May also be used for ears, nose, and throat.	When using for nose and mouth, contaminated individual should be warned not to swallow the rinses.

\*Begins with the first listed method and then proceed step by step to the more severe methods, as necessary.

<u>Method*</u>	<u>Surface</u>	<u>Action</u>	<u>Technique</u>	<u>Advantages</u>	<u>Disadvantages</u>
Flushing.	Wounds - Very minor only.	Physical removal by flushing.	Wash wound with large amounts of water and spread edges to stimulate bleeding, if not profuse. If profuse, stop bleeding first, clean edges of wound, bandage, and if any contamination remains, it may be removed by normal cleaning methods, as above.	Quick and efficient if wound is not severe.	May spread contamination to other areas of body if not done carefully.
Sweating.	Skin of hands and feet.	Physical removal by sweating.	Place hand or foot in plastic glove or booty. Tape shut. Place near a source of heat for 10-14 minutes or until hand or foot is sweating profusely. Remove glove and then wash using standard techniques. Or gloves can be work for several hours using only body heat.	Cleansing action is from inside out. Hand does not dry out.	If glove or booty is not removed shortly after profuse sweating starts and part washed with soap and water immediately, contamination may seep into pores.

\*Begins with the first listed method and then proceed step by step to the more severe methods, as necessary.

COMMITMENTS

<u>Section</u>	<u>Reference</u>	<u>Comments</u>
None	None	None

Davis-Besse Nuclear Power Station

EMERGENCY PLAN IMPLEMENTING PROCEDURE

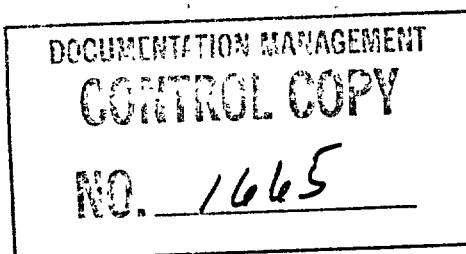
RA-EP-02610

EMERGENCY RADIATION PROTECTION ORGANIZATION  
ACTIVATION AND RESPONSE

REVISION 02

Prepared by: Paul F Timmerman

Procedure Owner: Manager - Security



Effective Date: DEC 12 2002

Procedure Classification:

☒ Safety Related  
☐ Quality Related  
☐ Non-Quality Related

LEVEL OF USE:  
IN-FIELD REFERENCE



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## 1.0 PURPOSE

This procedure outlines the steps necessary for activation, operation and deactivation of the Emergency Radiation Protection (RP) Organization.

## 2.0 REFERENCES

### 2.1 Developmental

2.1.1 Federal Register (Vol. 45, No. 37) Friday, February 22, 1980

2.1.2 Federal Register, Food & Drug Administration, 21 CFR Part 1090, December 15, 1978, "Potassium Iodide as a Thyroid Blocking Agent in a Radiation Emergency"

2.1.3 NCRP Report 55, "Protection of the Thyroid Gland in the Event of Releases of Radioiodine"

2.1.4 Blahd, William M.D.; Nuclear Medicine, McGraw-Hill Book Company, New York, New York, 1971

### 2.2 Implementation

2.2.1 DB-CH-06000, Post Accident Sampling System Operation & Analysis

2.2.2 DB-CH-06001, Emergency Containment Atmosphere Grab Sampling System Operation & Analysis

2.2.3 DB-CH-00007, Post Accident Radiological Sampling and Analysis

2.2.4 DB-HP-04007, Emergency Supply Checklists

2.2.5 RA-EP-00600, Emergency Facilities and Equipment Maintenance Program

2.2.6 RA-EP-02320, Emergency Technical Assessment

2.2.7 RA-EP-02410, OSC Activation and Response

2.2.8 RA-EP-02420, Search and Rescue

2.2.9 RA-EP-02520, Assembly and Accountability

2.2.10 RA-EP-02530, Evacuation

2.2.11 HS-EP-02620, Emergency Exposure Controls and Potassium Iodide Distribution

2.2.12 RA-EP-02800, Transport of Contaminated Injured Personnel

2.2.13 RA-EP-02640, Station Radiological Surveys and Controls During Emergencies

2.2.14 RA-EP-02710, Reentry

### 3.0 DEFINITIONS

3.1 EMERGENCY RADIATION PROTECTION (RP) ORGANIZATION - Comprised of RP personnel who provide the necessary radiological support during emergency situations.

3.2 POST ACCIDENT SAMPLING SYSTEM (PASS) - A system designed to obtain highly radioactive samples from Containment Building atmosphere, pressurizer liquid space, letdown system, decay heat loops 1 and 2, and a Reactor Coolant System cold leg.

### 4.0 RESPONSIBILITIES

4.1 The Emergency Radiation Protection(RP) Manager shall be responsible for:

4.1.1 Ensuring that dosimetry is issued to all personnel in the Protected Area when a Site Area Emergency or General Emergency has been declared.

4.1.2 Ensuring that radiological assessments are conducted within the Protected Area.

4.1.3 Coordinating plant protective measures and RP support.

4.1.4 Providing the Emergency Plant Manager with recommendations for:

a. Emergency personnel exposure

b. Issuance of potassium iodide (KI) to plant personnel

c. PASS sampling

4.1.5 Reporting to the Emergency Plant Manager and cooperating with the following:

a. Operations Support Center (OSC) Manager

b. Dose Assessment Coordinator

4.1.6 Providing the Technical Support Center (TSC) personnel with Protected Area radiological updates as required.

- 4.2 The OSC RP Coordinator shall be responsible for:
  - 4.2.1 Answering to the OSC Manager.
  - 4.2.2 Informing and receiving advisement from the Emergency RP Manager on radiological conditions, and corrective actions.
  - 4.2.3 Interfacing with the Assistant OSC Manager.
  - 4.2.4 Supervising and directing RP activities and supporting OSC activities.
- 4.3 The RP Senior Onshift Person shall assume the duties of the OSC RP Coordinator during the activation of the Emergency RP Organization until relieved.
- 4.4 RP personnel shall be responsible for:
  - 4.4.1 Performing radiological and habitability surveys as directed by the OSC RP Coordinator to support OSC activities in accordance with RA-EP-02640, Station Radiological Surveys and Controls During Emergencies.
  - 4.4.2 Providing RP support, as necessary, for emergency response teams to keep exposure As Low As Reasonably Achievable (ALARA).

## 5.0 INITIATING CONDITIONS

- 5.1 This procedure shall be activated:
  - 5.1.1 At the discretion of the Emergency Director.
  - 5.1.2 At the declaration of an Alert or higher classification.

## 6.0 PROCEDURE

### 6.1 Emergency RP Manager

#### 6.1.1 Activation

The Emergency RP Manager shall:

- a. Report to the TSC and sign in on the status board.
- b. Notify the Emergency Plant Manager of arrival at the TSC and receive a briefing.
- c. Obtain a briefing from the RP Senior Onshift Person.
- d. Request a Rad Loop communicator from the OSC RP Coordinator when needed.

#### 6.1.2 Operation

The Emergency RP Manager shall:

- a. Discuss the following with the OSC RP Coordinator:
  1. Current plant radiological status.
  2. Appropriate and adequate RP response.
  3. Evaluate the need for additional RP support.
- b. Promptly review all radiation monitoring readings which have been faxed to the TSC, and ensure the transfer of data to the dose assessment area.
- c. Provide plant radiological assessments to the Emergency Plant Manager.
- d. Based on periodic radiological surveys, make recommendations to the Emergency Plant Manager concerning Protected Area habitability according to Emergency Habitability Criteria, Attachment 1.
- e. Maintain radiological conditions necessary to keep personnel exposure ALARA.
- f. Evaluate personnel exposures with the changing radiological conditions in accordance with HS-EP-02620, Emergency Exposure Control and Potassium Iodide Distribution.
- g. Ensure that the OSC RP Coordinator oversees distribution of dosimetry to all personnel in the Protected Area when a Site Area Emergency or General Emergency has been declared.

- h. Ensure the OSC RP Coordinator dispatches RP personnel during radiologically related emergencies to:
  - 1. Accompany security personnel and conduct direct radiation measurements in accordance with RA-EP-02520, Assembly and Accountability and RA-EP-02530, Evacuation.
  - 2. Accompany Search and Rescue Teams to provide RP coverage in accordance with HS-EP-02420, Search and Rescue.
  - 3. Accompany First Aid Teams to provide RP coverage in accordance with RA-EP-02800, Preparation and Transportation of Contaminated Injured Personnel.
  - 4. Assist contaminated personnel at the Personnel Processing Facility exit during the accountability or evacuation processing in accordance with RA-EP-02520, Assembly and Accountability and RA-EP-02530, Evacuation.
  - 5. Direct and conduct the monitoring and decontamination of personnel and equipment at the designated offsite assembly area when requested by the Emergency Offsite Manager in accordance with RA-EP-02520, Assembly and Accountability.
- i. Report any problems or unusual occurrences to the Emergency Plant Manager.
- j. Provide the TSC personnel with radiological updates as required.
- k. Advise the Emergency Plant Manager on the use of the Post Accident Sampling System (PASS) based on a completed PASS Checklist, Attachment 2.

#### 6.1.3 Deactivation

The Emergency RP Manager shall:

- a. When directed by the Emergency Plant Manager, return the RP section to normal operation.
- b. Review records created during the emergency for completeness and forward to the Supervisor - Emergency Preparedness.
- c. Document and report any deficiencies in emergency planning equipment or procedures to the Supervisor - Emergency Preparedness.

## 6.2 RP Senior Onshift Person

The RP Senior Onshift Person shall:

6.2.1 Contact the Shift Supervisor to provide RP coverage for immediate corrective actions.

6.2.2 Assume the responsibilities of the OSC RP Coordinator until relieved.

## 6.3 OSC RP Coordinator

### 6.3.1 Activation

The OSC RP Coordinator shall:

- a. Report to the OSC Manager and supervise RP support activities.
- b. Receive a briefing by the RP Senior Onshift Person, OSC Manager, and the Emergency RP Manager on radiological conditions, actions that have been taken, and actions that need to be taken.
- c. Assign a Rad Loop Communicator to the TSC to assist the Emergency RP Manager, as needed.
- d. Relocate RP operations to the OSC, as necessary.
- e. Contact the Supervisor - Security Shift to ensure dosimetry is issued to all security personnel in the Protected Area when an Alert or higher classification has been declared.
- f. Ensure dosimetry is issued to all personnel in the Control Room, OSC, and Protected Area when a Site Area Emergency or General Emergency has been declared.
- g. Assess radiological conditions in occupied areas to determine habitability and ALARA routes to work locations.
- h. Suspend Radiation Work Permits (RWPs) if emergency radiological conditions exist.
- i. Use the DBNPS Emergency Plan Telephone Directory (Section 3) to meet the following minimum staffing requirements:
  1. One RP Tester shall respond immediately.

2. A total of two RP Testers shall respond within 30 minutes during normal working hours (60 minutes off-hours).
  3. A total of five RP Testers shall respond within 1 to 2 hours.
- j. Notify the OSC Manager and the Emergency RP Manager that the Emergency RP organization is activated. The minimum staffing requirement for activating the Emergency RP organization shall be:
1. One OSC RP Coordinator.
  2. Two RP Testers.
- k. Refer to DB-HP-04007, Emergency Supply Checklists to obtain RP emergency equipment locations, and verify equipment operability.
- l. Ensure that the Emergency RP Organization has access to appropriate emergency radiological equipment.
- m. Assign a Rad Loop Communicator to assist the OSC RP Coordinator.
- n. Assign a RP Tester to observe the Radiation Monitoring System (RMS) in the Control Room and transmit readings to the OSC and TSC.
- o. Assign an RP Log/Status Board Keeper in the OSC to record ongoing activities and update the RP status boards.

NOTE 6.3.1.p

The RP Briefer/Debriefing and the OSC Briefer/Debriefing should conduct briefings together for corrective actions that are impacted by radiological conditions.

- p. Assign an OSC RP Briefer/Debriefing to brief and debrief Emergency Response Survey Teams and Emergency Response Teams on radiological conditions.

### 6.3.2 Operation

The OSC RP Coordinator shall:

- a. Maintain sufficient staffing to support the radiological activities for the emergency. This support shall:



1. Provide the necessary RP support to OSC personnel (fire brigade, emergency repair, first aid teams; etc.) during the emergency in accordance with RA-EP-02410, OSC Activation and Response.
  2. Monitor plant conditions for determining the emergency status.
  3. Ensure dosimetry has been issued to all personnel within the Protected Area when a Site Area Emergency or General Emergency has been declared.
  4. Conduct periodic airborne, contamination and radiation surveys of the OSC, Control Room and other facilities within the Protected Area.
  5. Review survey results and refer to the Emergency Habitability Criteria, Attachment 1.
- b. Ensure the OSC Manager and Emergency RP Manager are periodically updated on the following in the Protected Area:
1. Radiological Conditions
  2. Actions that have been taken to protect station personnel
- c. Inform the OSC Manager and Emergency RP Manager of conditions that may require following protective actions according to the habitability criteria listed in Attachment 1:
1. Sheltering
  2. Administering KI
  3. Evacuating or relocating
- d. Ensure that the RP Status Boards are current.
- e. Maintain exposure records of all emergency response workers.
- f. Use the survey maps in the OSC to determine ALARA routes to work or Emergency Response locations.
- g. Brief emergency response teams on required radiological actions in accordance with RA-EP-02410, OSC Activation and Response, Emergency Team Briefing Sheet.

- h. Dispatch RP personnel during radiological emergencies to:
  - 1. Accompany security personnel and conduct direct radiation measurements during sweeps and announcements in accordance with RA-EP-02520, Assembly and Accountability and RA-EP-02530, Evacuation.
  - 2. Accompany Search and Rescue Teams to provide RP coverage in accordance with RA-EP-02420, Search and Rescue.
  - 3. Accompany First Aid Teams to provide RP coverage in accordance with RA-EP-02800, Preparation and Transportation of Contaminated Injured Personnel.
  - 4. Assist contaminated personnel at the Personnel Processing Facility Exit during the accountability or evacuation processing in accordance with RA-EP-02520 and RA-EP-02530.
  - 5. Direct and conduct the monitoring and decontamination of personnel and equipment at the designated offsite assembly area when requested by the Emergency Offsite Manager in accordance with RA-EP-02520, Assembly and Accountability.
- i. Refer to the PASS Checklist, Attachment 2 if the TSC Engineering Staff requests information on a containment atmosphere or RCS liquid sample.
- j. Refer to RA-EP-02710, Reentry, for guidelines and techniques when reentry is authorized by the Emergency Plant Manager and directed by the OSC Manager.

### 6.3.3 Deactivation

The OSC RP Coordinator shall:

- a. Deactivate the Emergency RP Organization when directed by the OSC Manager.
- b. Return all emergency equipment to its proper storage location and inventory in accordance with RA-EP-00600, Emergency Facilities and Equipment Maintenance Program.
- c. Forward all records generated during the emergency to the Emergency RP Manager.
- d. Document and report any procedural or equipment deficiencies to the Supervisor - Emergency Preparedness.

## 7.0 FINAL CONDITIONS

This procedure shall be deactivated when:

- 7.1 The entire Emergency RP Organization has been relieved of duties for emergency operations of the plant.
- 7.2 Records generated during the emergency are forwarded to the Supervisor - Emergency Preparedness by the Emergency RP Manager.
- 7.3 Emergency equipment has been inventoried and deficiencies identified and reported to the Supervisor - Emergency Preparedness.
- 7.4 Procedural deficiencies have been identified and reported to the Supervisor - Emergency Preparedness.
- 7.5 Individuals who have received excessive exposures are identified for evaluation and reported using the corrective action process.

## 8.0 RECORDS

- 8.1 The following quality assurance records are completed by this procedure and shall be listed on the Nuclear Records List, captured, and submitted to Nuclear Records Management in accordance with NG-PS-00106:
  - 8.1.1 None
- 8.2 The following non-quality assurance records are completed by this procedure and may be captured and submitted to Nuclear Records Management, in accordance with NG-NA-00106:
  - 8.2.1 PASS Checklist, Attachment 2

ATTACHMENT 1: EMERGENCY HABITABILITY CRITERIA

Page 1 of 2

Area Direct RadiationNOTE

For evacuation criteria refer to HS-EP-02530, Evacuation.

Nonessential Personnel Limits:

- I. The Total Effective Dose Equivalent (TEDE) shall not exceed 100 mrem in a year.
- II. Areas shall not be occupied where the dose rate exceeds 2.0 mrem/hr.

Essential Personnel Limits:Sustained Level<sup>1</sup>Action

- |   |   |
|---|---|
| I. (>5 but <25) mrem/hr for <24 hours.                                  | <ol style="list-style-type: none"> <li>1. Increased radiation surveys, identify and terminate source.</li> <li>2. Continue to man all emergency response centers to support the emergency.</li> </ol> |
| II. (>5 but <25) mrem/hr for >24 hours. Source reduction not projected. | <ol style="list-style-type: none"> <li>1. Planned evacuation of the area within 24 hours.</li> <li>2. Essential OSC personnel report to habitable areas as directed.</li> </ol>                       |
| III. (>25 but <100) mrem/hr for >1 hour.                                | <ol style="list-style-type: none"> <li>1. Evacuate the area within 4 hours.</li> <li>2. Essential OSC personnel report to habitable areas as directed.</li> </ol>                                     |
| IV. (>100 but <1000) mrem/hr.   | <ol style="list-style-type: none"> <li>1. Evacuate the area within 1 hour.</li> <li>2. Essential OSC personnel report to habitable areas as directed.</li> </ol>                                      |
| V. >1000 mrem/hr.   | <ol style="list-style-type: none"> <li>1. Immediate evacuation as directed.</li> </ol>  |

<sup>1</sup>Based on 12 hours per day occupancy for 30 days.

ATTACHMENT 1: EMERGENCY HABITABILITY CRITERIA

Page 2 of 2

Airborne Iodine 131NOTE

For Potassium Iodide Criteria refer to HS -EP-02620,  
Emergency Exposure Controllers KI Distribution.

<u>Iodine 131 Concentration</u>	<u>Equivalent I-131 Exposure for Accident Duration</u>	<u>Equivalent I-131 Thyroid Dose for Accident Duration<sup>2</sup></u>	<u>Action</u>
I. <sup>1</sup> >6.0E-09 $\mu\text{Ci/cc}$ but <1.0E-08 $\mu\text{Ci/cc}$	110 DAC-Hours  320 DAC Hours	3 rem  8 rem	1. Increased radiological surveillance 2. Identify and terminate source
II. <sup>1</sup> >1.0E-08 $\mu\text{Ci/cc}$ but <3.0E-08 $\mu\text{Ci/cc}$	320 DAC Hours  540 DAC Hours	8 rem  14 rem	1. Use respiratory protection only if this will result in TEDE being ALARA. 2. Consider recommending KI if source reduction is not expected within 24 hours.
III. <sup>1</sup> >3.0E-08 $\mu\text{Ci/cc}$	540 DAC Hours	14 rem	1. Recommend KI if source reduction is not expected within 6 hours. 2. Evacuate non-essential personnel within 12 hours if unable to reduce or terminate the source within 24 hours. 3. Essential OSC personnel report to habitable areas as directed.
IV. $\geq 2.0\text{E-}5$ $\mu\text{Ci/cc}$ for one hour or $2.0\text{E-}6$ $\mu\text{Ci/cc}$ for ten hours	1000 DAC Hours	25 rem	1. Recommend KI

<sup>1</sup>Based on 12 hours per day occupancy for 30 days.<sup>2</sup>Committed Dose Equivalent (CDE)

ATTACHMENT 2: PASS CHECKLIST

Page 1 of 5

Checklist for PASS Liquid SampleNOTE

Refer to HS-EP-02620, Emergency Exposure control and KI Distribution, if the decision to take the sample results in operator exposure  $\geq 1250$  mRem.

The TSC shall determine the radiological hazards associated with obtaining a PASS liquid sample in accordance with DB-CH-06000, Post Accident Sampling System Operation and Analysis and DB-CH-00007, Post Accident Radiological Sampling and Analysis, by:

1. Requesting the OSC to obtain current radiological conditions in appropriate areas.
2. Performing an evaluation based on projected dose rates after sampling.
3. Determination of operator dose shall be made as follows:

Activity	Area Dose Rate (mRem/hr)	Time (hrs)	Calc. Dose (mRem)
a. Dress out in preparation for obtaining the liquid PASS samples, including briefing.	____(x)	0.50	_____
b. Transit to PASS skid from Chem. Lab.	____(x)	0.04	_____
c. Initial PASS system checkout and lineup	____(x)	0.57	_____
d. PASS System sample purge up to sample cave isolation.	____(x)	0.17	_____
e. Degas sample, collect gaseous and liquid samples in vials and put vials in transport containers.	____(x)	0.17	_____
f. Demineralized water flush of sample cave and sample needles.	____(x)	0.20	_____

ATTACHMENT 2: PASS CHECKLIST

Page 2 of 5

Checklist For Pass Liquid Sample (Continued)

	<u>Activity</u>	<u>Area Dose Rate (mRem/hr)</u>	<u>Time (hrs)</u>	<u>Calc. Dose (mRem)</u>
g.	PASS skid and mimic board sample valve lineup check.	_____ (x)	0.03	_____
h.	Transit to lab with transport container.	_____ (x)	0.07	_____
i.	Preparation of liquid and gaseous gamma spectroscopy samples.	_____ (x)	0.07	_____
j.	Gamma spectroscopy samples analysis.	_____ (x)	0.17	_____
k.	Boron analysis.	_____ (x)	0.83	_____
l.	Store remaining samples and waste.	_____ (x)	0.03	_____

Total \_\_\_\_\_ mRem

If the total projected calculated dose to the operator from area dose rates is less than 1250 mRem, recommend a sample be taken and obtain the Emergency Plant Manager's approval to draw the sample.

If the projected calculated dose exceeds 1250 mRem, recommend a sample not be taken until the dose rates are reduced.

ATTACHMENT 2: PASS CHECKLIST

Page 3 of 5

Checklist For Pass Containment Atmospheric SampleNOTE

Refer to HS-EP-02620, Emergency Exposure Control and KI Distribution, if the decision to take the sample will result in operator exposure  $\geq 1250$  mRem.

CAUTION

Containment (CTMT) Gas Grab Sampling should be the initial method for obtaining a CTMT air PASS Sample.

If a measurable iodine concentration exists in the previous containment air grab sample, an iodine cartridge sample should not be necessary. Iodine cartridge samples during subsequent sampling should be requested only after the evaluation of radiological hazards associated with the handling of the Iodine cartridge and the effect of iodine present in the sampling on the gas analysis.

CAUTION

Expect Auxiliary Building Train Bay radiation levels to increase when placing the Post Accident Gas Sample Pump (P218) in service.

When containment pressure is greater than Auxiliary Building pressure, and aligned to this pump, the open end seal is a secondary containment leakage pathway.

The TSC shall determine the radiological hazards associated with obtaining a containment atmosphere grab sample utilizing DB-CH-00007, Post Accident Radiological Sampling and Analysis, and DB-CH-06001, Emergency Containment Atmosphere Grab Sampling System Operation and Analysis by:

1. Requesting the OSC to obtain current radiological conditions in appropriate areas.
2. Performing an evaluation based on projected dose rates after sampling.



ATTACHMENT 2: PASS CHECKLIST

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Checklist For Pass Containment Atmospheric Sample

3. Determination of operator dose shall be made as follows:

		Area	Time	Calc. Dose
<u>Activity</u>		<u>Dose Rate</u>	<u>(hrs)</u>	<u>(mRem)</u>
		<u>(mRem/hr)</u>		
a.	Dress out area in preparation for sampling	_____ (x)	0.33 (=)	_____
b.	Transit To Grab Sampling Station	_____ (x)	0.10 (=)	_____
c.	Containment Air Grab Sampling Station (Rm. 300)	_____ (x)	0.20 (=)	_____
d.	Doorway leading to #3 and #4 MPR Hallway (Door 303)	_____ (x)	0.03 (=)	_____
e.	Lowest background area in Train Bay	_____ (x)	0.25 (=)	_____
f.	Chemistry Hot Lab	_____ (x)	0.5 (=)	_____
g.	Counting Room	_____ (x)	0.5 (=)	_____
Total				_____mRem

Radiological hazards associated with  
Iodine Cartridge Samples evaluated:

YES

NO

Brief Description of Radiological Hazards:

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4. If the calculated dose exceeds 1250 mRem, recommend a sample not be taken.

ATTACHMENT 2: PASS CHECKLIST

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Checklist For Pass Containment Atmospheric SampleOTHER CONSIDERATIONS FOR PASS SAMPLING

5. The following items shall be considered prior to obtaining a PASS liquid or a containment atmosphere grab sample:
  - a. Is there adequate power at the PASS?
  - b. Is the Ventilation System functioning at the PASS and labs? If not, SCBAs shall be required.
  - c. Are the sample lines' isolation valves open?
  - d. Is the Component Cooling Water restored if it has been isolated?
  - e. Is the Demineralized Water restored if it had been isolated?
  - f. Is there adequate lighting at the PASS and the labs?
  - g. Is the containment atmosphere grab sample to include Iodine? If not, ensure that a blank cartridge holder is used in the sampler.
6. If the total calculated dose to the operator from area dose rates is less than 1250 mRem, recommend a sample to be taken and obtain the Emergency Plant Manager's approval to draw the sample.

COMMITMENTS

<u>Section</u>	<u>Reference</u>	<u>Comments</u>
6.0	TERMS Q 03111	Entire Procedure
6.1.1.d 6.3.2.b 6.3.2.c	TERMS O 14984	Improve TSC and OSC Radio- logical Control's information sharing capability
6.1.2.g 6.3.1.e 6.3.1.f 6.3.2.a.3	TERMS O 15207	Emergency personnel exposure monitoring
6.3.2.a.4	TERMS O 15155	OSC Habitability Surveys should include air and swipe samples
6.3.2.a.4	TERMS O 15156	Greater emphasis on habitability criteria for relocation of the OSC
Attachment 2	TERMS O 06882	SCBAs shall be used for PASS sampling if the ventilation system is not available.
Attachment 2	PCAQR 96-0510 PCAQR 96-0704	Potential leak path through the atmospheric sample pump.