10 CFR 50.54(q)(5) Summary for 0PEP-03.7.7, Revision 6

In accordance with 10 CFR 50.54(q)(5), Duke Energy Progress, LLC, is providing a summary of the revised Radiological Emergency Response Plan implementing procedure being submitted with this letter. Radiological Emergency Response Plan implementing procedure 0PEP-03.7.7, *Onsite Radiological Controls*, Revision 6, a copy of which is provided in Enclosure 2 of this letter, became effective on February 13, 2017.

The changes to the Radiological Emergency Response Plan implementing procedure are limited to format realignment and administrative updates to references that have been superseded by new fleet procedures.

Reference: EREG AR Number 2095666

Copy of
0PEP-03.7.7, Revision 6,
Onsite Radiological Controls

DUKE ENERGY®

Reference Use

BRUNSWICK UNIT 0

PLANT EMERGENCY PROCEDURE

0PEP-03.7.7

ONSITE RADIOLOGICAL CONTROLS

REVISION 6

REVISION SUMMARY
PRR 608209
DESCRIPTION
Rev 006: Upgraded to PAS format and Writer's Manual requirements. PRR 608209 modified Step 6.5.3 third bullet. PRRs 617918, 730467, 1964424, 1965025 and 2079843 updated all references to superseded procedures: • 0E&RC-0230, which is superseded by AD-RP-ALL-2000 • 0E&RC-0100, which is superseded by AD-RP-ALL-9004 • 0E&RC-0120, which is superseded by AD-RP-ALL-2001 • DOS-NGGC-0002, which is superseded by AD-RP-ALL-4014 • HPS-NGGC-0014, which is superseded by AD-RP-ALL-2000 PRR 719690 replaced PASSPORT with Sentinel and pocket dosimeter with ED or electronic dosimeter.

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1.0 PURPOSE

1. The purpose of this procedure is to provide direction and guidance for Radiological Controls implemented following activation of the Radiological Emergency Response Plan.

2.0 SCOPE

1. This procedure is applicable to the Emergency Response Organization (ERO) personnel who staff the OSC Missions and Environmental Monitoring Teams and functions of the EOF/TSC facility in support of Radiological Emergency Response Plan (0ERP) requirements.

3.0 PRECAUTIONS AND LIMITATIONS

1. Emergency situations transcend normal radiation exposure limits; but, every reasonable effort should be used to ensure that emergency response personnel do not exceed the established regulatory (10CFR20) limits.

2. Administrative limits and approval processes for Radiation Exposure Control imposed during normal operations are suspended for activities associated with implementation of the radiological emergency response plan to minimize unnecessary restrictions or delays in an emergency response.

4.0 GENERAL INFORMATION

4.1 The Radiological Controls Director and Radiological Controls Manager

1. Are responsible for directing the implementation of applicable portions of this procedure in support of Onsite and Offsite Radiological Control activities associated with a radiological emergency response.

5.0 PREREQUISITES

None

6.0 INSTRUCTIONS

6.1 Emergency Radiation Work Permits (RWP)

NOTE

Exposure Controls during declared radiological emergencies are implemented through Plant Emergency Procedures (PEPs) and are continuously monitored and evaluated by the Emergency Response Organization using established ALARA principles and regulatory (10CFR20) limits.

1. Radiological Controls Director (RCD) and E&RC Coordinator initiate an emergency Radiation Work Permit (RWP) and implement during declared emergencies to track and control radiation exposures received as a result of activities associated with an emergency response.

2. Radiological Controls Director and Manager ensure all RWP requirements are addressed in the mission authorization brief for OSC Missions and Environmental Monitoring Teams. These include but are not limited to:

   a. Along with the E&RC Coordinator, consider if issuing electronic dosimetry is needed for high dose jobs.

   b. Full briefing on duties and actions to be taken, expected dose rates, expected contamination levels, air activity, stay time, and hazards.

   c. Personnel protection equipment requirements and proper use (clothing, respirator, etc.).

   d. Appropriate dosimetry and proper use (high range, extremities, etc.)

   e. Full debrief of personnel following completion of tasks and missions.

   f. Recording and evaluation of personnel radiation exposures (before and after a mission).

6.2 Radiological Monitoring and Surveys

1. Verification of the radiologically safe condition of plant evacuation assembly areas is first priority.

2. For conditions where off-site releases are known or expected to have occurred and resources are limited, off-site monitoring near the site boundary in order to confirm initial dose projections is generally of higher priority than building entry whose sole purpose is to determine the radiological environment.

6.2 Radiological Monitoring and Surveys (continued)

3. On-site/In-plant radiological monitoring and surveys are performed by radiological teams/missions dispatched from the OSC by the E&RC Coordinator and under the direction of the Health Physics Lead.

4. Offsite radiological monitoring and surveys are performed by Environmental Monitoring Teams under the direction of the Environmental Monitoring Team Leader.

5. The Radiological Controls Director and E&RC Coordinator ensure that plant monitoring teams:

   a. Obtain survey supplies and equipment from emergency kits stored in the Main Control Room, Technical Support Center/Emergency Operations Facility, Operational Support Center, or from routine-use equipment stocks and perform the applicable equipment instrument checks:

      - Physical check
      - Calibration check (current sticker)
      - Battery check
      - Response check

   b. Identify equipment problems.

   c. Establish readiness to perform radiological sampling and surveys.

   d. Obtain necessary communications equipment, verify operability, and establish communications.

6. Ensure other team members are properly outfitted with protective gear and dosimetry.

7. Conduct continuous radiation monitoring while proceeding to directed locations; identifying unanticipated high radiation levels and location, with time and date of survey. Communicate abnormally high readings as identified.

8. Conduct airborne, smear, and radiation surveys and record (or communicate) pertinent data for each location.

9. Collect particulate filters and iodine cartridges from in-plant fixed samplers.

6.2 Radiological Monitoring and Surveys (continued)

10. Perform and document airborne, radiological monitoring and smear surveys in the plant in accordance with the normal practices established in AD-RP-ALL-2001, Taking, Counting, and Recording Surveys, and 0E&RC-0101, Performance and Tracking of Routine Surveillances. (Survey maps are available in the Radiological Emergency Kits.)

6.3 Habitability Surveys

1. Conduct manual radiological monitoring and surveys for the Control Room, OSC, TSC, and EOF (hourly) and document to ensure habitability for continued use whenever the emergency facilities are activated.

   - In emergency situations where radiological conditions are not of primary concern the periodicity of habitability surveys is at the discretion of each facility Senior Radiological Controls position to allow more efficient use of personnel resources.

2. Monitor additional areas (i.e., Chemistry Lab, Counting Room, SPA, Decon facilities in the Service Building, etc.). Monitoring is based on the need for continued occupation to conduct emergency response activities as determined by the Radiological Controls Director and E&RC Coordinator.

3. Unless otherwise directed by the Radiological Controls Director, or Manager, the criteria for continuous habitability are:

   a. Less than 5 mrem/hr direct

   b. Less than 1000 dpm/100 cm^2 β-γ contamination

   c. Less than 0.30 DAC airborne

4. Habitability technicians assigned to the EOF/TSC are responsible to the Radiological Controls Director in the TSC. They are responsible to the E&RC Coordinator for activities in all other locations.

5. Habitability technicians assigned or appointed to an emergency facility shall:

   a. Sign-in on the facility organization board.

   b. Obtain survey supplies and equipment from the emergency kits stored in the Main Control Room, Technical Support Center/Emergency Operations Facility, or Operational Support Center, and perform the applicable instrument checks:

      (1) Physical check

6.3 Habitability Surveys (continued)

(2) Calibration check (current sticker)

(3) Battery check

(4) Response check

c. Identify equipment problems and establish readiness to perform habitability checks.

d. Obtain approval from the RCD or E&RC Coordinator before exiting the EOF/TSC building for any reason.

e. Verify operation of the Building Ventilation System, positioning and proper operation of the CAMs in the TSC and EOF.

6. Perform and document airborne, radiological monitoring and smear surveys in accordance with the normal practices established in AD-RP-ALL-2001 and 0E&RC-0101 radiation survey methods. (Facility specific survey maps or alternate materials should be available in the Radiological Emergency Kits.)

7. Establish and maintain a personnel monitoring and facility contamination control point when directed.

8. Cease from performing habitability surveys when directed and perform the following:

a. Return equipment and restock supplies as necessary.

b. Report equipment or supply deficiencies to the Supervisor - Emergency Preparedness.

c. Compile and submit all records generated during the emergency.

6.4 <u>Dosimetry</u>

1. The E&RC Coordinator ensures that the following dosimetry is issued:

a. Establish a dosimetry area in the Operational Support Center (OSC) or other readily accessible location containing the following items:

- TLDs
- EDs
- Special dosimetry (high range, extremity, etc.)

6.4 Dosimetry (continued)

NOTE

If Sentinel is not available in the OSC, then the information must be recorded on either Attachment 1, Special Dosimetry Log or Attachment 3, Dosimetry Issue Data Sheet, for later entry. The RCD, RCM or E&RC Coordinator should consider issuing Electronic Dosimetry for high dose jobs.

2. Issue proper dosimetry to OSC personnel and ENSURE personal dosimetry information is documented on Attachment 3, Dosimetry Issue Data Sheet.

3. Issue special dosimetry (i.e., high range, extremity, etc.) and ensure personal dosimetry information is document on Attachment 1, Special Dosimetry Log.

   - Label extremity badges with the individual's security badge number or other readily identifiable marker.

4. Provide special dosimetry based on the following criteria:

   a. Provide high range dosimetry for radiation fields of unknown intensity or when greater than or equal to 10 rem/hr.

   b. Provide extremity badges when handling radioactive materials with greater than or equal to 100 rem/hr or systems/equipment with greater than or equal to 25 rem/hr extremity dose rates.

5. Provide and document dosimetry for the following personnel in on-site areas located outside the protected area.

NOTE

If Sentinel is not available in the EOF/TSC, then the information must be recorded on either Attachment 1, Special Dosimetry Log or Attachment 3, Dosimetry Issue Data Sheet.

   - Personnel stationed in the EOF/TSC.

   - Personnel such as security guards patrolling outside the protected area.

   - Personnel who remain behind after the evacuation (i.e., security guards, etc.) should be supplied with high-range electronic dosimeters.

6. Collect specimens and bioassay or Whole Body Count personnel suspected of having internal contamination.

7. Retain the results of body counts and bioassay results not immediately stored in the Sentinel, for future entry, as time and conditions permit.

6.4 Dosimetry (continued)

8. Place TLDs in various locations within the exclusion area, as time permits and resources become available, to assess the radiological impact on personnel.

   a. Record location of TLDs on Attachment 2, TLD Location and Log Sheet.

   b. Replace TLDs periodically and record readings obtained from removed TLDs on Attachment 2, TLD Location and Log Sheet.

6.5 Protective Gear

1. Determine protective gear requirements for OSC Mission Team personnel within the process of OSC Mission Authorization and dispatch for each specific mission.

NOTE

Protective clothing and respiratory protection equipment is available in the Control Room, TSC/EOF, and OSC for emergency use (located in emergency kits).

2. Determine protective gear requirements for personnel not performing functions controlled from the OSC on a case-by-case basis. This is determined by the Radiological Controls Manager or Radiological Controls Director for the EOF and TSC respectively.

3. The E&RC Coordinator ensures that a personnel monitoring station and a contamination control point is established for OSC Missions returning from the field.

   - The preferred location for the control point is in the Service Building Personnel Decon Area.

   - Containers or areas should be designated at egress points for depositing contaminated protective gear to minimize the potential of the spread of contamination and to facilitate decontamination and disposal.

   - If conditions make the preferred location inappropriate, then established a radiological control point to reduce the spread of contamination into the OSC, or move the OSC to the Alternate OSC location and establish a radiological control for that location to limit the spread of contamination.

4. Radiological Controls Manager and Radiological Controls Director determine the appropriate locations for personnel monitoring and contamination control points for personnel returning to their respective facility (TSC or EOF).

6.6 Vehicle Monitoring And Decontamination

NOTE

A significant airborne release of radioactive material may result in vehicle contamination. If contaminated vehicles exit the BNP parking lot for off-site destinations, then members of the general public may become contaminated from direct or indirect contact with the vehicle.

1. If a radiological release has occurred, then E&RC Coordinator:

   a. Determine a proper location and establish a vehicle monitoring point. (background levels should be less than 200 CPM.)

   b. Dispatch personnel to:

   - Monitor and, if necessary, decontaminate vehicles.
   - Establish a vehicle decontamination area using the Vehicle Decon Kits located in the LLRW Building.

NOTE

Monitoring and decontamination of vehicles is not conducted if a significant release of radioactive materials is in progress that affects the monitoring and decontamination area.

2. If a significant release of radioactive materials is **NOT** in progress that affects the monitoring and decontamination area, then monitor vehicles for contamination:

   a. Document survey results identifying the vehicles by license plate number using Attachment 4, Vehicle Monitoring Data Sheet.

   b. Take representative smears from major flat exposed surface areas, floorboards, mats, steering wheel and tires.

   c. Perform monitoring by direct frisking methods.

   d. If survey results are less than 100 CPM above background, then vehicle(s) is not contaminated and may be released.

   e. If survey results are greater than 100 CPM above background then decontamination of the vehicle(s) is necessary prior to release per Section 6.6 Step 3.

   f. Limit decontaminating a vehicle outside the LLRW Building to wiping exposed surface areas of the vehicle with massolin wipes, damp cloths, or equivalent.

6.6 Vehicle Monitoring And Decontamination (continued)

g. Decontaminating a vehicle inside the LLRW Building may also include wet water wash with decontamination solution and water.

NOTE

The two sumps located in the center of the LLRW Building Floor have a combined capacity of 1500 gallons.

h. Perform decontamination of vehicle from areas of lower to areas of higher contamination.

3. Re-surveyed decontaminated vehicles and release if the results are below the specified limits in Section 6.6 Step 2.

4. If a vehicle is above the limits in Section 6.6 Step 2, then perform additional decontamination until it is determined that the vehicle is not contaminated or that it cannot be decontaminated under current emergency conditions.

   a. If it is determined that a vehicle cannot be decontaminated then, inform the driver that the vehicle cannot be released offsite and will be decontaminated at a later date. Record this on Attachment 4, Vehicle Monitoring Data Sheet.

6.7 Documentation

1. Compile and forward completed documents to the Radiological Controls Director or Manager for review.

7.0 RECORDS

1. Documentation generated from implementation of this procedure should be forwarded to the Supervisor – Emergency Preparedness for submittal to Document Services for retention.

8.0 REFERENCES

8.1 Commitments

None

8.2 Procedures

1. 0E&RC-0101, Performance and Tracking of Routine Surveillances
2. AD-RP-ALL-2000, Preparation and Management of Radiation Work Permits (RWP)
3. AD-RP-ALL-2001, Taking, Counting, and Recording Surveys
4. AD-RP-ALL-4014, Dosimetry Management
5. AD-RP-ALL-9004, Standard Radiation Field Monitoring and Characterization Program

8.3 Miscellaneous Documents

1. 10CFR20, Code of Federal Regulations – Standards for Protection Against Radiation

<< Special Dosimetry Log >>

Name	Dosimetry Type	Dosimetry Number

ATTACHMENT 2
Page 1 of 1

<< TLD Location and Log Sheet >>

TLD Location	TLD No.	Time/Date Placed	Time/Date Retrieved	Reading

<< Dosimetry Issue Data Sheet >>

SSN	Global RWP #	RWP Ref. #	RWP Task #	Print Name Sign Name [Note 1]	Dosimeter Number	Dose In	Date /Time In	Dose Out	Date /Time Out

Note 1: My signature above indicates that I have read and understand the RWP.

ATTACHMENT 4
Page 1 of 1

<< Vehicle Monitoring Data Sheet >>

	Pre-Decon Results		Post-Decon Results		
Vehicle License Plate Number	Smear Survey Results in dpm/100 cm^2	Rad Survey Results in CPM	Smear Survey Results in dpm/100 cm^2	Rad Survey Results in CPM	Can Vehicle Be Released Y/N