



Serial: RNP-RA/01-0159

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United States Nuclear Regulatory Commission
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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

TRANSMITTAL OF EMERGENCY PROCEDURE REVISIONS

Ladies and Gentlemen:

In accordance with 10 CFR 50.4(b)(5) and Appendix E to 10 CFR 50, Carolina Power & Light (CP&L) Company is transmitting revisions to the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, Emergency Implementing Procedures. A list of the procedure revisions and the effective dates is provided in Attachment I.

Descriptions of the procedure changes are provided on the "Summary of Changes" page for each emergency procedure. Please replace the superseded procedures with the attached revisions.

If you have any questions concerning this matter, please contact Mr. H. K. Chernoff.

Sincerely,

B. L. Fletcher III
Manager - Regulatory Affairs

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Attachments:

- I. List of Procedure Revisions and Effective Dates
 - II. EPEOF-01, "Emergency Response Manager"
 - III. EPOSC-03, "Environmental and Radiation Control Team"
 - IV. EPOSC-04, "Emergency Work Control"
- c: B. S. Mallett, NRC, Region II (2 copies)
NRC Resident Inspector, HBRSEP
A. G. Hansen, NRC, NRR (w/o Attachments)

List of Procedure Revisions and Effective Dates

Procedure	Revision No.	Effective Date
EPEOF-01, "Emergency Response Manager"	4	10/22/2001
EPOSC-03, "Environmental and Radiation Control Team"	4	10/17/2001
EPOSC-04, "Emergency Work Control"	4	10/17/2001

United States Nuclear Regulatory Commission
Attachment II to Serial RNP-RA/01-0159
13 Pages

EPEOF-01
EMERGENCY RESPONSE MANAGER
Revision 4

CAROLINA POWER & LIGHT COMPANY
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2
PART 5

EMERGENCY PROCEDURE

EPEOF-01
EMERGENCY RESPONSE MANAGER

REVISION 4

SUMMARY OF CHANGES

STEP #	REVISION COMMENTS
Turnover Checklist part B1	Added guidance to suspend the turnover if plant conditions change that could impact the classification, notification or the PARs
Turnover Checklist part D4	Added guidance addressing the CR-SEC responsibility for monitoring the plant conditions affecting classifications and informing the TSC.

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EMERGENCY RESPONSE MANAGER (ERM) QUICK START GUIDE

NOTE: Blanks are provided for place keeping ✓'s only, logs are the official record. This is a summary level guide and does not replace the procedure steps.

1. Sign in on the facility sign-in board/roster. Log on to the Electronic Display System (EDS). _____
2. If dialogic was used for callout, upon arrival at the Facility, notify Dialogic at X 1777. _____
3. Verify EOF staffing and resources available to prepare for facility activation. _____

_____ AERM	_____ S/C EC	_____ POA
_____ ERM Admin Asst	_____ PI EC	_____ ALM
_____ EC	_____ RCM	_____ EnMon TL
	_____ TAM	_____ DPTL
4. Review Emergency Notification Forms and press releases issued. _____
5. Direct the EOF staff to prepare for initial plant status briefing. _____
6. Obtain initial plant status briefing from the Control Room (CR) or the Technical Support Center (TSC). _____
– Use Attachment 8.1.5.1 for guidance.
7. Request TSC support for EOF areas not prepared to assume emergency response role. This does not include offsite communications. _____
8. Activate EOF as soon as possible. A minimum of the Emergency Response Manager (ERM) and the Emergency Communicator (EC) shall be available. _____
9. Refer to procedure steps. _____

8.1 EMERGENCY RESPONSE MANAGER (ERM)

8.1.1 PURPOSE

1. This procedure describes the functional responsibilities and procedure steps for the Emergency Response Manager (ERM).

8.1.2 RESPONSIBILITIES

1. Maintain overall command and control of the company's response to the emergency and the Emergency Operations Facility (EOF).
2. Maintain unilateral authority to commit company resources to the emergency response.
3. Maintain communications regarding the emergency with internal and external contacts.
4. Approve Emergency Notification Forms and press releases.
5. Recommend Protective Actions to the offsite agencies.
6. Manage the company's offsite radiological monitoring and dose projection.

8.1.3 INSTRUCTIONS

NOTE: The non-delegable duties to:

1. Notify Off-site authorities, and
2. Formulate Protective Actions Recommendations (PAR) transfer to the ERM upon activation of the EOF.

1. Upon notification of an emergency, the ERM shall interface with the Site Emergency Coordinator (SEC)-CR or Technical Support Center (TSC) to determine if the EOF shall be activated.
 - a. EOF activation is required at an Alert or higher emergency classification level but will normally activate simultaneously with the TSC.

8.1.3 (Continued)

2. Determine if conditions exist which would prevent immediate occupancy of the EOF.
3. Determine if the EOF Alternate Assembly Area, located at the Darlington County National Guard Armory, shall be a preferable assembling location.
4. The EOF shall relieve the CR or the TSC of offsite communications as soon as possible.
 - a. To accomplish this, the EOF can activate with the presence of the ERM and the Emergency Communicator (EC).
5. Direct the EOF staff to prepare for activation.
6. Complete Attachment 8.1.5.1, Turnover Checklist.
7. Brief the EOF staff regarding the information from the turnover if not completed as a group on the speaker phone.
8. Advise EOF staff regarding eating and drinking requirements.
9. Schedule subsequent facility briefings. (30-60 minute time frame)
10. Approve Emergency Notification Forms.
 - a. Notification is required within 15 minutes for initial classification.
 - b. Follow-up notifications are required every 30-60 minutes or for any event which significantly impacts the health and safety of the public.

8.1.3 (Continued)

11. Approve press releases.
 - a. Following the activation of the EOF, press releases should be available for issue to the news media following:
 - A change of an emergency classification, or
 - A radiological release as a result of the emergency, or
 - Other significant events provided to the offsite agencies via an Emergency Notification Form.
12. Confer with Joint Information Center (JIC) personnel upon their arrival at the JIC. The Public Information Emergency Communicator (PI-EC) and the JIC Emergency Response Organization (ERO) beepered positions shall maintain public/media response to the emergency until the JIC is appropriately staffed.
13. Review and maintain awareness of dose projection and environmental field monitoring activities.
 - a. This includes administration of Potassium Iodine (KI), dosimeter correction factor, and expanded environmental monitoring.
14. Formulate and communicate PARs to the State and Counties.
15. Ensure the Assistant to the Emergency Response Manager (AERM) is maintaining contact with Unit 1 and the Darlington County Plant. Habitability screening may be necessary if personnel remain in the area.
16. Notify state and counties to provide "heads-up" information as necessary. Provide assistance as requested. Refer to the Emergency Response Organization (ERO) Telephone Directory for telephone numbers.
17. Notify Corporate Senior Management periodically regarding plant status updates. Refer to the ERO Telephone Directory for telephone numbers.

8.1.3 (Continued)

18. Determine the need for and request assistance from neighboring utilities. Refer to the ERO Telephone Directory for telephone numbers.
19. Confer with the SEC periodically to ensure continuity of operations and response.
20. Initiate necessary action per Attachment 8.1.5.2, Recovery Consideration Guidance.
 - a. Recovery operations should not interfere with emergency response.
 - b. Consider use of outage organization to begin recovery planning in parallel with emergency response.

8.1.4 **RECORDS**

N/A

8.1.5 **ATTACHMENTS**

- 8.1.5.1 Turnover Checklist
- 8.1.5.2 Recovery Consideration Guidance

ATTACHMENT 8.1.5.1
Page 1 of 3
TURNOVER CHECKLIST

This checklist is guidance for turning over the Site Emergency Coordinator responsibilities from the Control Room to the Technical Support Center, for turning over offsite responsibilities from the Site Emergency Coordinator to the Emergency Response Manager, or for assuming or relinquishing the SEC or ERM position.

NOTE: Blanks are provided for place keeping ✓'s only, logs are the official record. This is a summary level guide and does not replace the procedure steps.

A. SYNCHRONIZE CLOCKS to ERFIS/EDS TIME _____

B. ONSITE SITUATION

1. Review Emergency Classification, basis for declaration, and mitigating actions. Suspend turnover if plant conditions exist that change the classification, notification, or PARs. _____

- a. Review status of safety equipment and systems.
- b. Review status of fission product barriers.
- c. Review condition/stability of reactor.
- d. Review any Emergency Action Levels exceeded.
- e. Review cause, history, initiating events leading to declaration of emergency.

2. Review onsite protective actions taken. _____

- a. Assembly
- b. Shelter
- c. Evacuations (Local, Protected Area, Site, Exclusion Area)

NOTE: If there is a Site Evacuation, Unit 1 may need to continue operating.

- d. Potassium Iodide Administration
- e. Complete PLP-015 Overtime Form for ERO as appropriate.

ATTACHMENT 8.1.5.1
Page 2 of 3
TURNOVER CHECKLIST

3. Review status of offsite assistance requested for the site. _____
- a. Fire Department
 - b. Rescue Squad
 - c. Local Law Enforcement Agency

C. OFFSITE SITUATION

1. Review Status of Offsite Notifications. _____
- State and County initial and any follow-up messages
 - NRC
 - Other: Westinghouse, Ebasco, INPO
 - Any needed notifications that have not been made
2. Review Protective Action Recommendations made and notifications made to the State and Counties. _____
3. Review any communications received from the State or Counties regarding activation, readiness, protective actions, or requests for information. _____
4. Review data on any projected or actual radiological releases. _____
5. Review the time and content of any press releases or media briefing. _____

ATTACHMENT 8.1.5.1
Page 3 of 3
TURNOVER CHECKLIST

D. EMERGENCY RESPONSE

1. Review status of Emergency Response Organization Activation. _____
 - Notifications made to off-duty and offsite personnel. _____
 - Emergency Response Facilities that are activated. _____
 - Emergency Response Facilities that will be activated. _____
 - Other notifications needed. _____
2. Review outside organizations requested to mobilize. _____
3. Review assistance needed. _____
4. After the TSC-SEC assumes responsibilities for the event declaration, the CR-SEC maintains responsibility to keep the TSC updated of changing conditions and the urgency of declaring events based on the changing conditions. _____

E. TURNOVER COMPLETED _____

RECOVERY CONSIDERATION GUIDANCE

1. Identify personnel to assume the positions required for the Recovery Organization. See PLP-007, Robinson Emergency Plan.
2. In conjunction with the Site Emergency Communicator, develop a recovery plan.
3. Identify resources needed to complete the recovery.
4. Obtain any services and equipment necessary to complete the needed repair.
5. Conduct post accident evaluations of the causes and consequences of the incident.
6. Assess and determine the overall damage.
7. Obtain all necessary licenses, or amendments to licenses, required for repair of the unit and disposal of waste products.
8. Coordinate with local and state agencies to keep them informed of onsite activities on a timely basis and provide support for any offsite protective actions required during the recovery phase.
9. Maintain security for the plant and associated facilities.
10. Coordinate NRC activities at the site in an effort to avoid duplication and minimize impact on the plant staff.
11. Control personnel exposure during reentry and recovery.
12. Consult with the Corporate legal staff.
13. Review PLP-037, "Conduct of Infrequently Performed Test or Evolutions,".

United States Nuclear Regulatory Commission
Attachment III to Serial RNP-RA/01-0159
9 Pages

EPOSC-03
ENVIRONMENTAL AND RADIATION CONTROL TEAM
Revision 4



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Reference
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CAROLINA POWER & LIGHT COMPANY
H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

PLANT OPERATING MANUAL

VOLUME 2
PART 5

EMERGENCY PROCEDURE

EPOSC-03

ENVIRONMENTAL AND RADIATION CONTROL TEAM

REVISION 4

SUMMARY OF CHANGES
DCF 2001P1466

STEP/SECTION	REVISION	REASON FOR REVISION
8.3.3.1	Change "Communicator" to "Coordinator".	Correct typo to match actual SEC title.
8.3.3.2.f	Change "RIMS" to "an approved database".	To avoid specifically identifying the computer program and allow use of whatever "approved" database is in use at the time since RIMS is being replaced.
8.3.3.2.g	Change "SPRD" to "SRPD".	Correct typo.

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ENVIRONMENTAL AND RADIATION CONTROL TEAM QUICK START GUIDE

NOTE: Blanks are provided for place keeping ✓'s only, logs are the official record. This is a summary level guide and does not replace the procedure steps.

1. If Dialogic was used for callout, upon arrival at the Facility, notify Dialogic at X 1777. _____
2. Upon arrival at the Operational Support Center (OSC) establish communications with the Radiation Control Director (RCD) in the Technical Support Center (TSC). _____
3. Prepare the E&RC work area in the OSC. _____
4. Assure that adequate E&RC staffing is available. _____
5. Monitor OSC habitability. _____
6. Report the E&RC Personnel readiness to the OSC Leader. _____
7. Obtain respirator qualification printout for use during respirator issue. _____
8. If necessary, refer to Attachment 8.3.5.1, E&RC Team Activity Priorities. _____
9. Refer to procedure. _____

8.3 ENVIRONMENTAL AND RADIATION CONTROL TEAM

8.3.1 PURPOSE

1. The purpose of this procedure is to provide the guidelines to be used by the OSC Leader or, if available, an E&RC Supervisor from the RC Technician staff in the OSC.

8.3.2 RESPONSIBILITIES

1. The E&RC Team is responsible to the OSC Leader for general Radiation Control, Plant Monitoring, ALARA, Personnel Protection and Mission Support.
2. An E&RC Supervisor, assigned lead technician, or the OSC Leader is responsible for providing information to the RCD pertaining to the execution of radiation protection and in-plant and on-site radiation monitoring activities during an emergency.
3. An E&RC Supervisor, assigned lead technician, or the OSC Leader is also responsible for ensuring that Emergency Worker Dose Limits are correctly implemented and approved by Management.

8.3.3 INSTRUCTIONS

1. E&RC personnel assigned to the OSC shall report to the facility at the declaration of an ALERT or higher emergency classification or when requested to activate by the Site Emergency Coordinator (SEC).
2. Upon arriving at the OSC, an available E&RC Supervisor or assigned team member will perform the following:
 - a. Establish communications with the RCD in the TSC.
 - b. Prepare the E&RC work area in the OSC in conjunction with the OSC Leader.
 - c. Assure that adequate E&RC staffing is available as indicated on the appropriate sections of the OSC tag board.

8.3.3.2 (Continued)

- d. Establish and monitor the habitability of the OSC.
 - e. Report the E&RC Personnel accountability and state of readiness to the OSC Leader.
 - f. Assure that a respirator qualification printout or an approved database is available and used by E&RC personnel issuing respirators.
 - g. Ensure a sufficient number of TLDs and self reading dosimeters are available for use (SRPD or Electronic Dosimeters).
 - h. Prioritize activities.
 - Attachment 8.3.5.1, E&RC Team Activity Priorities, presents a general outline of task priorities developed to address emergency situations.
3. Assign, brief, direct, and debrief any teams dispatched, as well as the personnel assigned to Plant Access Points, and Assembly Areas.
- a. These briefings may be done by ALARA Personnel, Specialists, Supervisors, or Lead Technicians.
 - b. For each monitoring assignment, brief the team members on the following:
 - Monitoring and sample collection location(s);
 - Required data;
 - Anticipated radiological conditions;
 - Required protective gear and dosimetry;
 - Primary and alternate ingress/egress routes;
 - Maximum stay times and radiation field limitations requiring special authorization.

8.3.3 (Continued)

4. Assign and dispatch personnel to the TSC/EOF to conduct dosimetry and habitability activities.
5. Sign any necessary OSC documents on behalf of the RCD.
6. If the OSC must be evacuated, and the back-up OSC established, assure that the E&RC status board, records, and necessary radiation monitoring and personnel protection equipment and supplies are available in the back-up OSC as described in EPOSC-01, Operational Support Center Leader.
7. If decontamination of personnel vehicles is needed outside the Protected Area, a special plan for this activity will be developed in conjunction with the RCD.

8.3.4 RECORDS

N/A

8.3.5 ATTACHMENTS

8.3.5.1 E&RC Team Activity Priorities

ATTACHMENT 8.3.5.1
Page 1 of 1
E&RC TEAM ACTIVITY PRIORITIES (*)

1. Assign personnel to accompany Search and Rescue and First Aid: Life Saving Only
 2. Set up OSC, including Fax machine
 3. Assure habitability and badging of Emergency Response Facilities
 4. In-plant surveys to calculate Initial Source Term
 5. Provide personnel to accompany initial Damage Control Team and Support Operations
 6. Provide personnel to monitor at the Access Control Point for Radiation/Contaminated Areas
 7. Assign personnel to accompany emergency first aid and decontamination mission: not Life-saving
 8. Provide personnel to accompany follow-up reentry teams
 9. Personnel exposure control routine dosimetry assurance and completion of Special Radiation Work Permits
 10. Place badges on fenceline
 11. Release vehicles at plant entrances
 12. Follow-up in-plant/onsite monitoring and sample collection
 13. Sample analysis
 14. Assign personnel to accompany minor First Aid and Decontamination
- (*) This list of activity priorities is sequenced in a "likely order" for a fast breaking radiological emergency when personnel resources may be limited. Personnel assignments should be made as needed by the specific plant and personnel requirements.

United States Nuclear Regulatory Commission
Attachment IV to Serial RNP-RA/01-0159
30 Pages

EPOSC-04
EMERGENCY WORK CONTROL
Revision 4



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PLANT OPERATING MANUAL

VOLUME 2
PART 5

EMERGENCY PROCEDURE

EPOSC-04
EMERGENCY WORK CONTROL

REVISION 4

**SUMMARY OF CHANGES
DCF 2001P1467**

STEP	REVISION	REASON FOR REVISION
8.4.3.1.b	Changed "Radiological Information Management System (RIMS)" to "approved qualification database(s)".	To allow use of whatever approved database is in use during/after transition from RIMS.
8.4.3.1.g	Changed "RIMS (automated system)" and "RIMS electronic dosimetry automated access system" to "electronic access system".	To allow use of whatever system is in effect at the time.
8.4.3.2.g	Changed "RIMS" to "the electronic access system" and added "or similar form" following "Attachment 8.4.5.2, Emergency Work Permit".	To allow use of whatever system is in effect at the time and to allow substituting a similar form for the specific form provided in this procedure.
8.4.3.3.a	Added "or similar form" following "EWP".	To allow substituting a similar form for the specific form provided in this procedure.
Attachment 8.4.5.2	Removed "SPECIMAN" from the headers, removed "General/Special" check boxes, "MOD #", "WRA #", "(X) As Posted", "Employers:", and "Crew IDs" from the forms.	The text of the procedure allows use of a similar form. It is no longer necessary to imply this on the form. The items being deleted are form entry items that add no value.

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8.4 EMERGENCY WORK CONTROL

8.4.1 PURPOSE

1. The purpose of this procedure is to define the guidelines for ensuring that the dose received by emergency workers is maintained As Low As Reasonably Achievable (ALARA) and to provide the requirements for the issuance and use of protective gear.

8.4.2 RESPONSIBILITIES

1. The OSC Leader is responsible to the Site Emergency Coordinator (SEC) and/or the Radiological Control Director (RCD) for ensuring that:
 - a. Personnel are briefed prior to entering a known or potential radiation area regarding possible health effects and ALARA considerations.
 - b. The need for protective gear (e.g., respirators, Anti-C's) is determined for all team members.
2. The Radiation Control Teams are responsible to the OSC Leader or alternately an available E&RC Supervisor for:
 - a. Issuing personnel protection gear to qualified individuals.
 - b. Assuring such gear is properly used.
3. Individual workers and team leaders are responsible to the OSC Leader for:
 - a. The proper use of protective gear.
 - b. Meeting the prerequisite requirements prior to using the protective gear.
 - c. Ensuring that emergency worker doses are maintained within the guidelines of this procedure and ALARA to the extent practical.

8.4.3 INSTRUCTIONS

1. Members of the Radiation Control Team as designated by the OSC Leader or available E&RC Supervisor, shall perform the following actions:
 - a. Issue protective gear at the Operational Support Center (OSC), or other area(s) specified by the OSC Leader or available E&RC Supervisor.
 - b. When issuing emergency use devices, such as Self Contained Breathing Apparatus (SCBAs), the respiratory protection qualifications for individuals will be checked using information obtained from approved qualification database(s), or by relying on the individual only in situations where the information is not readily available.
 - c. Place Attachment 8.4.5.1, A Full Set of Anti-C's, which indicates the minimum of protective clothing required for entry, near the issue point.
 - d. However, deviations from a "Full" set of Anti-C's may be approved by the Radiation Control Director (RCD) or the E&RC Supervisor, based on nuclear safety and maintaining the Total Effective Dose Equivalent ALARA.

8.4.3.1 (Continued)

- e. Specify a "Full" set of Anti-C's for the following actions/missions during a radiological emergency:
 - Sampling Reactor Coolant System fluids.
 - Sampling of radioactive wastes (liquids, gases, etc.).
 - Clean-up of radioactive spills or contamination.
 - Entering an area of greater than 10 times the Derived Air Concentrations (DAC) value listed in Appendix B of 10CFR20.
 - Entering an area of unknown radiation intensity or contamination.
 - Entering the Containment Vessel.
 - Initial entries in to any radiation area.
 - As conditions warrant.
- f. Notify OSC Leader if supplies of protective gear become low.
- g. Set up a Radiation Work Permit (RWP)/dosimetry area in the OSC (or where designated by the OSC Leader) with the following items:
 - Electronic access system.
 - A supply of self-reading dosimeters.
 - Equipment necessary to allow individuals to obtain access to the RCA by using the electronic access system.

8.4.3.1 (Continued)

- h. Place TLDs in various areas, both inside and outside the Restricted Area, as specified by the E&RC Supervisor, assigned Lead Technician or OSC Leader and perform the following:
 - Record the location of TLDs on Attachment 8.4.5.4, "Area" Dosimetry Log Sheet.
 - Periodically replace TLDs and record readings obtained from removed TLDs on Attachment 8.4.5.4, "Area" Dosimetry Log Sheet.
- 2. Personnel entering the Radiation Control Area (RCA) shall:
 - a. Obtain the required protective gear (i.e., Anti-C's, survey meters capable of reading anticipated radiation levels, respiratory protection equipment, etc.).
 - b. If, during the mission, survey meters are not capable of reading the existing radiation levels then leave the area and contact the OSC Leader or available E&RC Supervisor and, unless otherwise instructed, remain in a low dose area until additional direction or equipment is obtained.
 - c. Properly use whatever protective gear is indicated on the Special Radiation Work Permit, or verbally required by the Entry Team leader, E&RC Supervisor, or the RCD.
 - d. Remove protective gear in such a manner as to minimize the spread of contamination when exiting a radiation control area.
 - e. Deposit contaminated protective gear in containers and/or areas designated by Radiation Control Teams to minimize the spread of contamination and facilitate decontamination/disposal efforts during recovery from the emergency.

8.4.3.2 (Continued)

- f. Frisk upon the return to the designated facility and contact Radiation Control (RC) personnel for frisking technique assistance, if necessary.

NOTE: Individuals assigned to the facilities (TSC/EOF/OSC) are not required to have RWP/Dosimetry if the facility becomes a Radiation Area. Their exposure can be assigned from the area dosimetry that is placed in the facility from the onset of the emergency.

- g. If the electronic access system is not available to allow automated access to the RCA manually perform the following:
 - Complete RWP(s) in accordance with HPP-006, Radiation Work Permits (Attachment 8.4.5.2, Emergency Work Permit, or similar form may be used for performing this task).
 - Issue dosimetry for personnel in accordance with radiological controls and dosimetry procedures as time and conditions permit.
 - Attachment 8.4.5.3, Dosimetry Issue Instructions, may be used as general instruction when issuing dosimetry manually.
 - Issue special dosimetry (e.g., high range dosimeters, extremity badges) in accordance with health physics and radiological controls procedures.
- h. As applicable, collect personnel exposure record sheets and TLDs for exposure data control.

8.4.3.2 (Continued)

- i. Collect specimens and perform a bioassay or whole body count for personnel suspected of having internal contamination. The following are guidelines for suspected internal contamination:
 - Contamination present in the hair or on the face.
 - Unremovable contamination on the body.
 - Respirator filters show contamination of 100 mRem/hr on contact.
 - As indicated by risk situation, (e.g., respirator not working properly, retrospective recognition of airborne hazard).
 - j. Complete the appropriate documentation for personnel exiting the plant who bypassed the normal documentation due to emergency conditions.
3. Personnel who are required to enter a Radiation Area shall:
- a. Attend a pre-job briefing and sign in on an Emergency Work Permit (EWP or similar form) or RWP prior to entry. See Attachment 8.4.5.2, Emergency Work Permit, for details.
 - b. Obtain a high range dosimeter when:
 - Entering a radiation field equal to or greater than 10 Rem/hr.
 - Entering a radiation field of unknown intensity.

8.4.3.3 (Continued)

- c. Obtain extremity badges when:
 - Handling radioactive material where expected extremity dose rate is greater than 100 Rem/hr,
 - Working on pipes or equipment where expected extremity dose rate is greater than 25 Rem/hr.
 - d. Obtain authorization for the EWP from the Plant General Manager, or the RCD; or the SEC in their absence, when doses resulting from emergency exposures are expected to exceed 5 Rem (TEDE).
4. The SEC, RCD or the E&RC Supervisor (as available) may, at his discretion and as conditions warrant:
- a. Waive requirements for an EWP, or portions thereof, prior to entry into a radiation area and give his authorization verbally.
 - b. Utilize the normal RWP process to control work in lieu of the activation of EWP when there is evidence of little or no radiological consequences (e.g., toxic gas release in a RCA).
 - c. Require an EWP to be completed by the RC Team for individuals making a verbally authorized entry, as soon as practical, after the entry.
5. Any person that has received a whole body dose totaling 5 Rem TEDE for the year shall not be permitted to enter a radiation control area without approval of the Plant General Manager, or the RCD; or the SEC in their absence.

8.4.3 (Continued)

6. Emergency Teams that must enter areas where they might be expected to receive higher than normal doses are required to meet the following:
 - a. Be fully briefed on their duties and actions while in the area.
 - b. Be fully briefed as to expected dose rates, stay time, and other hazards.
 - c. Each team will include at least one member from the plant monitoring team, or other person adequately trained in radiation control, to provide instructions of a radiological nature.
 - d. Team members will use protective clothing, dosimeters, respiratory devices, and other protective devices as specified by the RCD.
 - e. Each team will be instructed not to deviate from the planned route unless required by unanticipated conditions, such as rescue or performing an operation that would minimize the emergency condition.
 - f. If the monitored dose rates or stay times encountered during the entry exceed the limits set forth for the operations, then the team will immediately communicate with the Plant General Manager, or the RCD; or the SEC in their absence, or will return to the area from which they were dispatched.
 - g. Once the operation has been completed, the team will follow established monitoring and personnel decontamination procedures or as specified by the RCD.

8.4.3 (Continued)

7. Emergency worker exposure guidelines:

- a. Although an emergency situation transcends the normal requirements for limiting Total Effective Dose Equivalent (TEDE) to workers, guideline levels are established for doses that may be acceptable in emergencies. The (TEDE) received by any worker should not exceed established regulatory limits, to the extent practical. Every reasonable effort will be used to ensure that an emergency is handled in such a manner that no worker exceeds these limits, including the administering of radioprotective drugs.
- b. To assure adequate protection of minors and the unborn, the performance of emergency services should be limited to nonpregnant (pregnancy undeclared) adults.
- c. During emergencies, doses (TEDE) to workers should be limited to 5 Rem.
 - Justification for receiving higher exposures must include the presence of conditions that prevent the rotation of workers or other commonly-used dose reduction methods.
 - Except as noted below, the dose resulting from such emergency exposure should be limited to 10 Rem for protecting valuable property, and to 25 Rem for lifesaving activities and the protection of large populations.
 - In this context, the exposure incurred by workers to protect large populations may be considered justified when the collective dose avoided by the emergency operation is significantly larger than that incurred by the workers involved.

8.4.3.7 (Continued)

- d. Situations may occur when a dose (TEDE) in excess of 25 Rem would be unavoidable in order to carry out a lifesaving operation or to avoid extensive exposure of large populations. It is not possible to prejudge the risk that one should be allowed to take to save the lives of others. However, persons undertaking any emergency operation in which the dose will exceed 25 Rem to the whole body should do so only on a voluntary basis and with full awareness of the risks involved, including the numerical levels of dose at which acute effects of radiation will be incurred and numerical estimates of the risk of delayed effects.
 - See Attachment 8.4.5.5, Risk Associated With Radiation Exposure, for details.
- e. For workers performing services during an emergency, the dose to the lens of the eye should be limited to three times the applicable guideline value for TEDE, and doses to any other organ (including skin and extremities) should be limited to ten times the applicable guideline value for TEDE.
- f. Offsite personnel involved in emergency response to a nuclear plant accident shall not be considered members of the public with respect to radiation dose limits. Such personnel may include, but are not limited to, personnel employed in law enforcement, fire fighting, radiation protection, civil defense, traffic control, health services, environmental monitoring, transportation services, and animal care.
 - The radiation dose received by offsite personnel in the course of assigned emergency response duties shall be considered occupational dose.

8.4.3.7 (Continued)

- g. All occupational doses, including emergency lifesaving doses, shall be included in the exposure histories of individuals.
 - If a worker receives a TEDE greater than 5 Rem, then the worker shall not be allowed to receive any more occupational dose for the remainder of the current year, and the additional dose shall be included in the individual's planned special exposure account.
- h. An EWP is a special radiation work permit to be utilized during emergency conditions to control personnel radiation exposure.
- i. Regulatory limits shall be observed for planned radiation exposures to emergency workers unless the Plant General Manager, RCD, or the SEC in their absence authorizes the individual to exceed 5 Rem TEDE in a year.
- j. Prior to dispatching emergency organization members, any dose on the facility area dosimeter should be added to the individuals total received exposure to account for all personnel exposure.
- k. The Total Effective Dose Equivalent ALARA Evaluation form in HPP-006, Radiation Work Permits, can be used to determine when the use of respiratory protection and contamination controls would not be ALARA.
 - This form should be used at the discretion of the RCD or an E&RC Supervisor.

8.4.3 (Continued)

8. Emergency worker dose limits

- a. The table shown below identifies the Emergency worker dose limits. In addition to the categories listed in the table doses should be limited as follows:

- The lens of the eye should be limited to three times the stated TEDE value
- Any other organ (including skin and body extremities) should be limited to ten times the stated TEDE value.

Dose Limit	Activity	Condition
5 REM	All	
10 REM	Repair and reentry efforts	Lower dose not practicable
25 REM	Lifesaving or protection of large populations	Lower dose not practicable
>25 REM	Lifesaving or protection of large populations	Only on a voluntary basis to persons fully aware of the risks involved

- b. There may be situations where saving a life is not the issue, and it is necessary to enter a hazardous area under repair/reentry efforts, to protect valuable installations, or to make the facility more secure against events which could lead to radioactivity releases (e.g., assessment actions, entry of damage repair parties who are to repair valve leaks, or add iodine-fixing chemicals to spilled liquids).

8.4.3.8 (Continued)

- c. In emergency situations that require personnel to search for and remove injured persons or entry to prevent conditions that would probably injure numbers of people, a planned dose should not exceed 25 Rem as specified in guidelines above.
- d. During planned entries where the expected dose will be less than 25 REM the following additional criteria should also be considered:
 - Declared pregnant women shall not take part in these actions.
 - Internal exposures should be minimized by respiratory protection and contamination controlled by the use of protective clothing (consistent with maintaining the total effective dose equivalent ALARA).
 - Each emergency worker entering a high radiation area shall be provided instrumentation, and self-reading dosimetry, capable of measuring the anticipated radiation levels and expected exposure.

8.4.3.8 (Continued)

- e. If a planned entry has an expected exposure greater than 25 Rem the following criteria, in addition to that stated above, should also be considered:
 - Rescue Personnel shall be instructed about the risks involved, including the numerical levels of dose at which acute effects due to radiation will be incurred and numerical estimates of the risk of delayed effects. See Attachment 8.4.5.5, Risk Associated With Radiation Exposure, for details.
 - Volunteers above the age of 45 should be selected whenever possible for the purpose of avoiding unnecessary genetic effects.
 - Exposure under these conditions should be limited to once in a lifetime, and shall be included when calculating the future lifetime permissible exposures.
- f. Entry into radiation fields of greater than 100 Rem/Hour shall not be permitted unless specifically authorized by the Plant General Manager or RCD; or in their absence, the SEC.
- g. Persons receiving doses as indicated above should be counseled to avoid procreation for a period up to a few months.

8.4.4 RECORDS

N/A

8.4.5 ATTACHMENTS

- 8.4.5.1 A "Full" Set of Anti-C's
- 8.4.5.2 Emergency Work Permit
- 8.4.5.3 Dosimetry Issue Instructions
- 8.4.5.4 "Area" Dosimetry Log Sheet
- 8.4.5.5 Risk Associated With Radiation Exposure

ATTACHMENT 8.4.5.1
Page 1 of 1
A "FULL" SET OF ANTI-C'S

- Cloth or paper coveralls
- Rubber gloves
- Cloth shoe covers (booties)
- Rubber shoe covers
- Head cover

This is the minimum (per HPP-006) of protective clothing to be worn by emergency entry personnel when "Full" Anti-C's are specified. Deviations from this shall be approved by the RCD or E&RC Supervisor, based on nuclear safety and maintaining the TEDE ALARA.

ATTACHMENT 8.4.5.2
Page 1 of 6
EMERGENCY WORK PERMIT

Radiation Work Permit #: _____ Revision: _____

Date: ____/____/____ Time: _____ Valid Through: ____/____/____

Location: All areas inside the RCA and Restricted Areas except CV

Work Description: Health Physics Surveillance and Sampling

-RADIOLOGICAL CONDITIONS-

	Dose Rates-	Contamination Levels-	Airborne Activity-
General Area:	_____ mRem/hr	_____ dpm/100cm ² _____ mRad/hr	Particulate: _____ uCi/cc _____ % DAC
Work Area:	_____ mRem/hr	_____ dpm/100cm ² _____ mRad/hr	Iodine: _____ uCi/cc _____ % DAC
Maximum:	_____ mRem/hr	_____ dpm/100cm ² _____ mRad/hr	Gaseous: _____ uCi/cc _____ % DAC
Neutron:	_____ mRem/hr		
Beta:	_____ mRad/hr		

Recommended Dose: 1000 mRem

-Recommended Dosimetry-				-Protective Clothing-	
	TLD	SRPD	Range		
Whole Body:				<input type="checkbox"/> Dress as Posted For Area	
Chest	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> _____ Surgeons Gloves	<input type="checkbox"/> _____ Rubber Gloves
Head	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> _____ Paper Coveralls	<input type="checkbox"/> _____ Paper Shoecovers
Gonads	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> _____ Cloth Coveralls	<input type="checkbox"/> _____ Cloth Shoecovers
Back	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> _____ Rain Suit	<input type="checkbox"/> _____ Rubber Shoecovers
Upper Arms	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> One Piece	
Upper Legs	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> Bottom Only	<input type="checkbox"/> _____ Cloth Hat
Extremities:				<input type="checkbox"/> Top Only	<input type="checkbox"/> _____ Cloth Hood
Upper	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> Top and Bottom	
Lower	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> _____ Lab Coat	

S = Single D = Double T = Triple

-Respiratory Protection-

☐ Full Face Air Purifying ☐ Full Face Air Supplied ☐ Hood ☐ SCBA ☐ None Required

-Instructions-

- ☐ Radiation Control coverage required at work start.
- ☐ Radiological conditions subject to change.
- ☐ Electronic Dosimeter Required.
- ☐ Survey instrument required.
- ☐ Notify Radiation Control prior to start of work.
- ☐ Continuous RC coverage required.
- ☐ If unexpected dose rates > 1 Rem/hr are found, leave.

RESPIRATORY PROTECTION, DRESS REQUIREMENTS, AND RECOMMENDED DOSIMETRY AS PER THE E&RC SUPERVISOR OR THE RADIOLOGICAL CONTROL DIRECTOR'S DISCRETION. EMERGENCY TEAMS THAT MUST MAKE A RE-ENTRY SHALL BE BRIEFED ON JOB DUTIES, DOSE RATES, STAY TIMES, AND OTHER HAZARDS.

Completed By: _____ Date: ____/____/____ Responsible Person: _____

Approved By: _____ Date: ____/____/____ Time: _____

Reason for Termination: ☐ Revised ☐ End of Year ☐ Job Complete

Terminated By: _____ Term Date: ____/____/____ Time: _____

ATTACHMENT 8.4.5.2
Page 2 of 6
EMERGENCY WORK PERMIT

Radiation Work Permit #: _____ Revision: _____

Date: ____/____/____ Time: _____ Valid Through: ____/____/____

Location: All areas inside the RCA and Restricted Areas except CV

Work Description: Perform Valve Operations and Visual Inspections

-RADIOLOGICAL CONDITIONS-

	Dose Rates-	Contamination Levels-	Airborne Activity-
General Area:	_____ mRem/hr	_____ dpm/100cm ² _____ mRad/hr	Particulate: _____ uCi/cc _____ % DAC
Work Area:	_____ mRem/hr	_____ dpm/100cm ² _____ mRad/hr	Iodine: _____ uCi/cc _____ % DAC
Maximum:	_____ mRem/hr	_____ dpm/100cm ² _____ mRad/hr	Gaseous: _____ uCi/cc _____ % DAC
Neutron:	_____ mRem/hr		
Beta:	_____ mRad/hr		

Recommended Dose: 1000 mRem

-Recommended Dosimetry-

	TLD	SRPD	Range
Whole Body:			
Chest	<input type="checkbox"/>	<input type="checkbox"/>	_____
Head	<input type="checkbox"/>	<input type="checkbox"/>	_____
Gonads	<input type="checkbox"/>	<input type="checkbox"/>	_____
Back	<input type="checkbox"/>	<input type="checkbox"/>	_____
Upper Arms	<input type="checkbox"/>	<input type="checkbox"/>	_____
Upper Legs	<input type="checkbox"/>	<input type="checkbox"/>	_____
Extremities:			
Upper	<input type="checkbox"/>	<input type="checkbox"/>	_____
Lower	<input type="checkbox"/>	<input type="checkbox"/>	_____

-Protective Clothing-

<input type="checkbox"/> Dress as Posted For Area	
<input type="checkbox"/> _____ Surgeons Gloves	<input type="checkbox"/> _____ Rubber Gloves
<input type="checkbox"/> _____ Paper Coveralls	<input type="checkbox"/> _____ Paper Shoecovers
<input type="checkbox"/> _____ Cloth Coveralls	<input type="checkbox"/> _____ Cloth Shoecovers
<input type="checkbox"/> _____ Rain Suit	<input type="checkbox"/> _____ Rubber Shoecovers
<input type="checkbox"/> One Piece	
<input type="checkbox"/> Bottom Only	<input type="checkbox"/> _____ Cloth Hat
<input type="checkbox"/> Top Only	<input type="checkbox"/> _____ Cloth Hood
<input type="checkbox"/> Top and Bottom	
<input type="checkbox"/> _____ Lab Coat	

S = Single D = Double T = Triple

-Respiratory Protection-

☐ Full Face Air Purifying ☐ Full Face Air Supplied ☐ Hood ☐ SCBA ☐ None Required

-Instructions-

- ☐ Radiation Control coverage required at work start.
- ☐ Radiological conditions subject to change.
- ☐ Electronic Dosimeter Required.
- ☐ Survey instrument required.
- ☐ Notify Radiation Control prior to start of work.
- ☐ Continuous RC coverage required.
- ☐ If unexpected dose rates > 1 Rem/hr are found, leave.

RESPIRATORY PROTECTION, DRESS REQUIREMENTS, AND RECOMMENDED DOSIMETRY AS PER THE E&RC SUPERVISOR OR THE RADIOLOGICAL CONTROL DIRECTOR'S DISCRETION. EMERGENCY TEAMS THAT MUST MAKE A RE-ENTRY SHALL BE BRIEFED ON JOB DUTIES, DOSE RATES, STAY TIMES, AND OTHER HAZARDS.

STIPULATION TO THE ABOVE REQUIREMENTS: *EXTREMITY DOSIMETRY REQUIRED WHEN WORKING ON PIPES/VALVES/EQUIPMENT WITH CONTACT DOSE RATES > 25 REM/HR.

Completed By: _____ Date: ____/____/____ Responsible Person: _____

Approved By: _____ Date: ____/____/____ Time: _____

Reason for Termination: ☐ Revised ☐ End of Year ☐ Job Complete

Terminated By: _____ Term Date: ____/____/____ Time: _____

ATTACHMENT 8.4.5.2
Page 3 of 6
EMERGENCY WORK PERMIT

Radiation Work Permit #: _____ Revision: _____

Date: ____/____/____ Time: _____ Valid Through: ____/____/____

Location: All areas inside the RCA and Restricted Areas except CV

Work Description: Obtain samples from the PASS, Primary/Secondary Systems. Perform sample analysis in the Radiochemistry Lab/Counting Room.
To include all associated work activities required to complete this task.

-RADIOLOGICAL CONDITIONS-

Dose Rates-	Contamination Levels-	Airborne Activity-
General Area: _____ mRem/hr	_____ dpm/100cm ² _____ mRad/hr	Particulate: _____ uCi/cc _____ % DAC
Work Area: _____ mRem/hr	_____ dpm/100cm ² _____ mRad/hr	Iodine: _____ uCi/cc _____ % DAC
Maximum: _____ mRem/hr	_____ dpm/100cm ² _____ mRad/hr	Gaseous: _____ uCi/cc _____ % DAC
Neutron: _____ mRem/hr		
Beta: _____ mRad/hr		

Recommended Dose: 1000 mRem

-Recommended Dosimetry-

	TLD	SRPD	Range
Whole Body:			
Chest	<input type="checkbox"/>	<input type="checkbox"/>	_____
Head	<input type="checkbox"/>	<input type="checkbox"/>	_____
Gonads	<input type="checkbox"/>	<input type="checkbox"/>	_____
Back	<input type="checkbox"/>	<input type="checkbox"/>	_____
Upper Arms	<input type="checkbox"/>	<input type="checkbox"/>	_____
Upper Legs	<input type="checkbox"/>	<input type="checkbox"/>	_____
Extremities:			
Upper	<input type="checkbox"/>	<input type="checkbox"/>	_____
Lower	<input type="checkbox"/>	<input type="checkbox"/>	_____

-Protective Clothing-

<input type="checkbox"/> Dress as Posted For Area	
<input type="checkbox"/> ___ Surgeons Gloves	<input type="checkbox"/> ___ Rubber Gloves
<input type="checkbox"/> ___ Paper Coveralls	<input type="checkbox"/> ___ Paper Shoecovers
<input type="checkbox"/> ___ Cloth Coveralls	<input type="checkbox"/> ___ Cloth Shoecovers
<input type="checkbox"/> ___ Rain Suit	<input type="checkbox"/> ___ Rubber Shoecovers
<input type="checkbox"/> One Piece	
<input type="checkbox"/> Bottom Only	<input type="checkbox"/> ___ Cloth Hat
<input type="checkbox"/> Top Only	<input type="checkbox"/> ___ Cloth Hood
<input type="checkbox"/> Top and Bottom	
<input type="checkbox"/> ___ Lab Coat	

S = Single D = Double T = Triple

-Respiratory Protection-

☐ Full Face Air Purifying ☐ Full Face Air Supplied ☐ Hood ☐ SCBA ☐ None Required

-Instructions-

- ☐ Radiation Control coverage required at work start.
- ☐ Radiological conditions subject to change.
- ☐ Electronic Dosimeter Required.
- ☐ Survey instrument required.
- ☐ Notify Radiation Control prior to start of work.
- ☐ Continuous RC coverage required.
- ☐ If unexpected dose rates > 1 Rem/hr are found, leave.

RESPIRATORY PROTECTION, DRESS REQUIREMENTS, AND RECOMMENDED DOSIMETRY AS PER THE E&RC SUPERVISOR OR THE RADIOLOGICAL CONTROL DIRECTOR'S DISCRETION. ALL PERSONNEL ASSOCIATED WITH THE PASS SHALL BE BRIEFED ON JOB DUTIES, DOSE RATES, STAY TIMES, AND OTHER HAZARDS. STIPULATIONS TO BE ABOVE REQUIREMENTS: *UPPER EXTREMITY DOSIMETRY REQUIRED DURING COLLECTION/ANALYSIS OF PASS SAMPLES. THE RECOMMENDED ALLOWED DOSE FOR EXTREMITIES IS 3000 mREM.

Completed By: _____ Date: ____/____/____ Responsible Person: _____

Approved By: _____ Date: ____/____/____ Time: _____

Reason for Termination: ☐ Revised ☐ End of Year ☐ Job Complete

Terminated By: _____ Term Date: ____/____/____ Time: _____

ATTACHMENT 8.4.5.2
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EMERGENCY WORK PERMIT

Radiation Work Permit #: _____ Revision: _____

Date: ____/____/____ Time: _____ Valid Through: ____/____/____

Location: All areas inside the RCA and Restricted Areas except CV

Work Description: Conduct Search and Rescue Mission. To include all associated work activities required to completed this task.

-RADIOLOGICAL CONDITIONS-

	Dose Rates-	Contamination Levels-	Airborne Activity-
General Area:	_____mRem/hr	_____dpm/100cm ² _____mRad/hr	Particulate: _____uCi/cc _____% DAC
Work Area:	_____mRem/hr	_____dpm/100cm ² _____mRad/hr	Iodine: _____uCi/cc _____% DAC
Maximum:	_____mRem/hr	_____dpm/100cm ² _____mRad/hr	Gaseous: _____uCi/cc _____% DAC
Neutron:	_____mRem/hr		
Beta:	_____mRad/hr		

Recommended Dose: 1000 mRem

-Recommended Dosimetry-

	TLD	SRPD	Range
Whole Body:			
Chest	<input type="checkbox"/>	<input type="checkbox"/>	_____
Head	<input type="checkbox"/>	<input type="checkbox"/>	_____
Gonads	<input type="checkbox"/>	<input type="checkbox"/>	_____
Back	<input type="checkbox"/>	<input type="checkbox"/>	_____
Upper Arms	<input type="checkbox"/>	<input type="checkbox"/>	_____
Upper Legs	<input type="checkbox"/>	<input type="checkbox"/>	_____
Extremities:			
Upper	<input type="checkbox"/>	<input type="checkbox"/>	_____
Lower	<input type="checkbox"/>	<input type="checkbox"/>	_____

-Protective Clothing-

- | | |
|---|--|
| <input type="checkbox"/> Dress as Posted For Area | |
| <input type="checkbox"/> ___ Surgeons Gloves | <input type="checkbox"/> ___ Rubber Gloves |
| <input type="checkbox"/> ___ Paper Coveralls | <input type="checkbox"/> ___ Paper Shoecovers |
| <input type="checkbox"/> ___ Cloth Coveralls | <input type="checkbox"/> ___ Cloth Shoecovers |
| <input type="checkbox"/> ___ Rain Suit | <input type="checkbox"/> ___ Rubber Shoecovers |
| <input type="checkbox"/> One Piece | |
| <input type="checkbox"/> Bottom Only | <input type="checkbox"/> ___ Cloth Hat |
| <input type="checkbox"/> Top Only | <input type="checkbox"/> ___ Cloth Hood |
| <input type="checkbox"/> Top and Bottom | |
| <input type="checkbox"/> ___ Lab Coat | |

S = Single D = Double T = Triple

-Respiratory Protection-

- ☐ Full Face Air Purifying ☐ Full Face Air Supplied ☐ Hood ☐ SCBA ☐ None Required

-Instructions-

- ☐ Radiation Control coverage required at work start.
- ☐ Radiological conditions subject to change.
- ☐ Electronic Dosimeter Required.
- ☐ Survey instrument required.
- ☐ Notify Radiation Control prior to start of work.
- ☐ Continuous RC coverage required.
- ☐ If unexpected dose rates > 1 Rem/hr are found, leave.

RESPIRATORY PROTECTION, DRESS REQUIREMENTS, AND RECOMMENDED DOSIMETRY AS PER THE E&RC SUPERVISOR OR THE RADIOLOGICAL CONTROL DIRECTOR'S DISCRETION. EMERGENCY TEAMS THAT MUST MAKE A RE-ENTRY SHALL BE BRIEFED ON JOB DUTIES, DOSE RATES, STAY TIMES, AND OTHER HAZARDS.

Completed By: _____ Date: ____/____/____ Responsible Person: _____

Approved By : _____ Date: ____/____/____ Time: _____

Reason for Termination: ☐ Revised ☐ End of Year ☐ Job Complete

ATTACHMENT 8.4.5.2
Page 5 of 6
EMERGENCY WORK PERMIT

Radiation Work Permit #: _____ Revision: _____

Date: ____/____/____ Time: _____ Valid Through: ____/____/____

Location: All areas inside the RCA and Restricted Areas except CV

Work Description: Inspect and Repair Miscellaneous Equipment. To include all associated work activities required to complete this task.

-RADIOLOGICAL CONDITIONS-

	Dose Rates-	Contamination Levels-	Airborne Activity-
General Area:	_____mRem/hr	_____dpm/100cm ² _____mRad/hr	Particulate: _____uCi/cc _____% DAC
Work Area:	_____mRem/hr	_____dpm/100cm ² _____mRad/hr	Iodine: _____uCi/cc _____% DAC
Maximum:	_____mRem/hr	_____dpm/100cm ² _____mRad/hr	Gaseous: _____uCi/cc _____% DAC
Neutron:	_____mRem/hr		
Beta:	_____mRad/hr		

Recommended Dose: 1000 mRem

-Recommended Dosimetry-

	TLD	SRPD	Range
Whole Body:			
Chest	<input type="checkbox"/>	<input type="checkbox"/>	_____
Head	<input type="checkbox"/>	<input type="checkbox"/>	_____
Gonads	<input type="checkbox"/>	<input type="checkbox"/>	_____
Back	<input type="checkbox"/>	<input type="checkbox"/>	_____
Upper Arms	<input type="checkbox"/>	<input type="checkbox"/>	_____
Upper Legs	<input type="checkbox"/>	<input type="checkbox"/>	_____
Extremities:			
Upper	<input type="checkbox"/>	<input type="checkbox"/>	_____
Lower	<input type="checkbox"/>	<input type="checkbox"/>	_____

-Protective Clothing-

- | | |
|---|--|
| <input type="checkbox"/> Dress as Posted For Area | |
| <input type="checkbox"/> ___ Surgeons Gloves | <input type="checkbox"/> ___ Rubber Gloves |
| <input type="checkbox"/> ___ Paper Coveralls | <input type="checkbox"/> ___ Paper Shoecovers |
| <input type="checkbox"/> ___ Cloth Coveralls | <input type="checkbox"/> ___ Cloth Shoecovers |
| <input type="checkbox"/> ___ Rain Suit | <input type="checkbox"/> ___ Rubber Shoecovers |
| <input type="checkbox"/> One Piece | |
| <input type="checkbox"/> Bottom Only | <input type="checkbox"/> ___ Cloth Hat |
| <input type="checkbox"/> Top Only | <input type="checkbox"/> ___ Cloth Hood |
| <input type="checkbox"/> Top and Bottom | |
| <input type="checkbox"/> ___ Lab Coat | |

S = Single D = Double T = Triple

-Respiratory Protection-

- ☐ Full Face Air Purifying ☐ Full Face Air Supplied ☐ Hood ☐ SCBA ☐ None Required

-Instructions-

- ☐ Radiation Control coverage required at work start.
- ☐ Radiological conditions subject to change.
- ☐ Electronic Dosimeter Required.
- ☐ Survey instrument required.
- ☐ Notify Radiation Control prior to start of work.
- ☐ Continuous RC coverage required.
- ☐ If unexpected dose rates > 1 Rem/hr are found, leave.

RESPIRATORY PROTECTION, DRESS REQUIREMENTS, AND RECOMMENDED DOSIMETRY AS PER THE E&RC SUPERVISOR OR THE RADIOLOGICAL CONTROL DIRECTOR'S DISCRETION. EMERGENCY TEAMS THAT MUST MAKE A RE-ENTRY SHALL BE BRIEFED ON JOB DUTIES, DOSE RATES, STAY TIMES, AND OTHER HAZARDS. STIPULATION TO THE ABOVE REQUIREMENTS: *EXTREMITY DOSIMETRY REQUIRED WHEN WORKING ON PIPES/VALVES/EQUIPMENT WITH CONTACT DOSE RATES > 25 REM/HR.

Completed By: _____ Date: ____/____/____ Responsible Person: _____

Approved By: _____ Date: ____/____/____ Time: _____

Reason for Termination: ☐ Revised ☐ End of Year ☐ Job Complete

Terminated By: _____ Term Date: ____/____/____ Time: _____

ATTACHMENT 8.4.5.2
Page 6 of 6
EMERGENCY WORK PERMIT

Radiation Work Permit #: _____ Revision: _____

Date: ____/____/____ Time: _____ Valid Through: ____/____/____

Location: All areas inside the RCA and Restricted Areas except CV

Work Description: Perform Fire Protection Inspections/Extinguish Fires. To include all associated work activities required to complete this task.

-RADIOLOGICAL CONDITIONS-

	Dose Rates-	Contamination Levels-	Airborne Activity-
General Area:	_____ mRem/hr	_____ dpm/100cm ² _____ mRad/hr	Particulate: _____ uCi/cc _____ % DAC
Work Area:	_____ mRem/hr	_____ dpm/100cm ² _____ mRad/hr	Iodine: _____ uCi/cc _____ % DAC
Maximum:	_____ mRem/hr	_____ dpm/100cm ² _____ mRad/hr	Gaseous: _____ uCi/cc _____ % DAC
Neutron:	_____ mRem/hr		
Beta:	_____ mRad/hr		

Recommended Dose: 1000 mRem

-Recommended Dosimetry-				-Protective Clothing-	
	TLD	SRPD	Range		
Whole Body:				<input type="checkbox"/> Dress as Posted For Area	
Chest	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> _____ Surgeons Gloves	<input type="checkbox"/> _____ Rubber Gloves
Head	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> _____ Paper Coveralls	<input type="checkbox"/> _____ Paper Shoecovers
Gonads	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> _____ Cloth Coveralls	<input type="checkbox"/> _____ Cloth Shoecovers
Back	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> _____ Rain Suit	<input type="checkbox"/> _____ Rubber Shoecovers
Upper Arms	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> One Piece	
Upper Legs	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> Bottom Only	<input type="checkbox"/> _____ Cloth Hat
Extremities:				<input type="checkbox"/> Top Only	<input type="checkbox"/> _____ Cloth Hood
Upper	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> Top and Bottom	
Lower	<input type="checkbox"/>	<input type="checkbox"/>	_____	<input type="checkbox"/> _____ Lab Coat	

S = Single D = Double T = Triple

-Respiratory Protection-

☐ Full Face Air Purifying ☐ Full Face Air Supplied ☐ Hood ☐ SCBA ☐ None Required

-Instructions-

- ☐ Radiation Control coverage required at work start.
- ☐ Radiological conditions subject to change.
- ☐ Electronic Dosimeter Required.
- ☐ Survey instrument required.
- ☐ Notify Radiation Control prior to start of work.
- ☐ Continuous RC coverage required.
- ☐ If unexpected dose rates > 1 Rem/hr are found, leave.

RESPIRATORY PROTECTION, DRESS REQUIREMENTS, AND RECOMMENDED DOSIMETRY AS PER THE E&RC SUPERVISOR OR THE RADIOLOGICAL CONTROL DIRECTOR'S DISCRETION. EMERGENCY TEAMS THAT MUST MAKE A RE-ENTRY SHALL BE BRIEFED ON JOB DUTIES, DOSE RATES, STAY TIMES, AND OTHER HAZARDS

Completed By: _____ Date: ____/____/____ Responsible Person: _____

Approved By: _____ Date: ____/____/____ Time: _____

Reason for Termination: ☐ Revised ☐ End of Year ☐ Job Complete

Terminated By: _____ Term Date: ____/____/____ Time: _____

ATTACHMENT 8.4.5.3
Page 1 of 1
DOSIMETRY ISSUE INSTRUCTIONS

- FILL OUT, as completely as possible, an exposure record sheet (DP-003, Exposure Tracking, Attachment 11.1) with, as a minimum, the individual's name, social security number, and authorized exposure.
- ISSUE the appropriate dosimetry. (TLDs, Electronic Alarming Dosimeters, or Self Reading Pocket Dosimeters)
- RECORD the dosimetry number as applicable in the spaces provided on the forms.
- INSTRUCT the individual to wear whole body dosimetry between waist AND shoulders on outside of clothing AND if applicable, where extremity dosimetry should be worn.
- INSTRUCT the individual to turn in dosimetry at the location specified by the E&RC Supervisor, Lead Technician or OSC Leader when exiting the Restricted Area OR plant site.
- INSTRUCT the individual to perform a whole body frisk AND frisk items upon returning to the OSC.

ATTACHMENT 8.4.5.4
Page 1 of 1
"AREA" DOSIMETRY LOG SHEET

[illegible]

RISK ASSOCIATED WITH RADIATION EXPOSURE**APPROXIMATE CANCER RISK TO AVERAGE INDIVIDUALS FROM 25 REM
EFFECTIVE DOSE EQUIVALENT DELIVERED PROMPTLY**

Age at Exposure (Years)	Appropriate Risk of Premature Death(deaths per 1,000 persons exposed)	Average Years of Life Lost if Premature Death Occurs(Years)
20 to 30	9.1	24
30 to 40	7.2	19
40 to 50	5.3	15
50 to 60	3.5	11

AVERAGE RISK OF DELAYED HEALTH EFFECTS DUE TO ONE REM EXPOSURE

	<u>Whole Body (TEDE)</u>	<u>Thyroid (CDE)</u>
Fatal Cancer	2.8	0.36
Non-Fatal Cancer	2.4	3.2
Genetic Disorders (all generations)	1	-

Effects per Person-Rem per 1000 People

**HEALTH EFFECTS ASSOCIATED WITH WHOLE-BODY ABSORBED DOSES
RECEIVED WITHIN A FEW HOURS^a**

Whole Body Absorbed Dose(Rad)	Early Fatalities ^b (percent)	Whole Body Absorbed Dose (Rad)	Prodromal Effects ^c (percent affected)
140	5	50	2
200	15	100	15
300	50	150	50
400	85	200	85
460	95	250	98

^aRisks will be lower for protracted exposure periods.^bSupportive medical treatment may increase the dose at which these frequencies occur by approximately 50 percent.^cForewarning symptoms of more serious health effects associated with large doses of radiation.

RISK ASSOCIATED WITH RADIATION EXPOSURE

Organ	Volume or Area of Exposure	Risk of Injury in Five Years		Type of Injury	Layman Term Meaning, or Results of Injury
		5 percent (Rad)	50 percent (Rad)		
Bone marrow	whole	250	450	aplasia and pancytopenia	low white blood cells
Liver	segment whole	3000 2500	4000 4000	acute and chronic hepatitis	liver infection
Stomach	100 cm ²	4500	5500	ulcer	break in mucous membrane and blood from stomach
Intestine	400 cm ² 100 cm ²	4500 5000	5500 6500	ulcer	break in mucous membrane and blood from intestine/ bloody stool
Lung	whole 100 cm ²	1500 3000	2500 3500	acute and chronic pneumonitis	pneumonia
Kidney	whole	2000	2500	acute and chronic nephrosclerosis	kidney failure
Brain	whole	6000	7000	infarction, necrosis	death of tissue and infection
Spinal cord	10 cm	4500	5500	infarction, necrosis	death of tissue and infection
Heart	60 percent	4500	5500	pericarditis and pancarditis	infection of heart tissue
Skin	unspecified	5500	7000	ulcers	radiation "burn"
Fetus	whole	200	400	death	-----
Lens of eye	whole	500	1200	cataracts	-----
Ovary	whole	200-300	625-1200	permanent sterilization	death of the cells
Testes	whole	500-1500	2000	permanent sterilization	death of the cells