



**Duke Energy Corporation**

McGuire Nuclear Station  
12700 Hagers Ferry Road  
Huntersville, NC 28078-9340

(704) 875-4800 OFFICE

(704) 875-4809 FAX

H. B. Barron  
Vice President

May 7, 2002

Document Control Desk  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Re: McGuire Nuclear Station Unit 1 Docket No. 50-369  
McGuire Nuclear Station Unit 2 Docket No. 50-370  
Changes to Emergency Plan Implementing Procedures

Attached to this letter are a revised Emergency Plan Implementing Procedure (EPIP) Index and a notice of revision to five (5) Emergency Plan Implementing Procedures. These procedure revisions were evaluated pursuant to the requirements of 10 CFR 50.54 (q). These changes do not constitute a reduction in the effectiveness of the emergency plan and the plan continues to meet the requirements of 10 CFR 50.47 (b) and 10 CFR 50 Appendix E. Duke implemented these changes on April 10, 2002. A copy of these changes is also being sent to the NRC Office of Nuclear Material Safety and Safeguards as per 10 CFR 72.44 (f). Revision bars within the procedures indicate the revisions. The following procedure index changes and procedure revisions have been implemented:

EPIP Index Page 1	Dated 4/10/2002
EPIP Index Page 2	Dated 4/10/2002
EPIP Index Page 3	Dated 4/10/2002

REVISION to the following procedures:

HP/0/B/1009/003	Dated 4/10/2002, Rev 004
HP/0/B/1009/006	Dated 4/10/2002, Rev 006
HP/0/B/1009/016	Dated 4/10/2002, Rev 003
HP/0/B/1009/024	Dated 4/10/2002, Rev 002
HP/0/B/1009/029	Dated 4/10/2002, Rev 006

There are no new regulatory commitments in this document. Duke is also supplying two copies of this submittal to the Regional Administrator of Region II. Questions on this document should be directed to Kevin Murray at (704) 875-4672.

Very truly yours,

H. B. Barron

Attachments

A045

U.S. Nuclear Regulatory Commission  
May 7, 2002  
Page 2

xc: (w/attachment)  
Mr. Luis Reyes,  
Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region II  
61 Forsyth St., SW, Suite 23T85  
Atlanta, Georgia 30303

(w/attachment)  
Mr. Martin J. Virgilio, Director  
Office of Nuclear Material Safety and Safeguards  
Mail Stop T-8A23  
Washington, D.C. 20555-0001

(w/o attachment)

R. E. Martin, USNRC  
U.S. Nuclear Regulatory Commission  
Office of Nuclear Reactor Regulation  
Washington, D.C. 20555

NRC Resident Inspector  
McGuire Nuclear Station

E.M. Kuhr (EC050)

M.T. Cash, Manager NRIA (EC050)

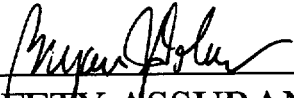
Electronic Licensing Library (EC050)

EP File 111

DUKE

McGUIRE NUCLEAR SITE

EMERGENCY PLAN IMPLEMENTING PROCEDURES

APPROVED:   
SAFETY ASSURANCE MANAGER

DATE APPROVED 5/1/02

EPIP Index Page 1  
EPIP Index Page 2  
EPIP Index Page 3

Dated 4/10/2002  
Dated 4/10/2002  
Dated 4/10/2002

HP/0/B/1009/003  
HP/0/B/1009/006  
HP/0/B/1009/016  
HP/0/B/1009/024  
HP/0/B/1009/029

Dated 4/10/2002, Rev 004  
Dated 4/10/2002, Rev 006  
Dated 4/10/2002, Rev 003  
Dated 4/10/2002, Rev 002  
Dated 4/10/2002, Rev 006

# EMERGENCY PLAN IMPLEMENTING PROCEDURES INDEX

<u>PROCEDURE #</u>	<u>TITLE</u>	<u>REVISION NUMBER</u>
RP/0/A/5700/000	Classification of Emergency	Rev. 008
RP/0/A/5700/001	Notification of Unusual Event	Rev. 016
RP/0/A/5700/002	Alert	Rev. 016
RP/0/A/5700/003	Site Area Emergency	Rev. 016
RP/0/A/5700/004	General Emergency	Rev. 016
RP/0/A/5700/05	Care and Transportation of Contaminated Injured Individual(s) From Site to Offsite Medical Facility	DELETE
RP/0/A/5700/006	Natural Disasters	Rev. 009
RP/0/A/5700/007	Earthquake	Rev. 007
RP/0/A/5700/008	Release of Toxic or Flammable Gases	Rev. 004
RP/0/A/5700/009	Collisions/Explosions	Rev. 002
RP/0/A/5700/010	NRC Immediate Notification Requirements	Rev. 013
RP/0/A/5700/011	Conducting a Site Assembly, Site Evacuation or Containment Evacuation	Rev. 005
RP/0/A/5700/012	Activation of the Technical Support Center (TSC)	Rev. 019
RP/0/A/5700/013	Activation of the Emergency Operations Facility (EOF)	DELETE
RP/0/A/5700/14	Emergency Telephone Directory	DELETE
RP/0/A/5700/015	Notifications to the State and Counties from the EOF	DELETE
RP/0/A/5700/16	EOF Commodities and Facilities Procedure	DELETE
RP/0/A/5700/17	Emergency Data Transmittal System Access	DELETE
RP/0/A/5700/018	Notifications to the State and Counties from the TSC	Rev. 011
RP/0/A/5700/019	Core Damage Assessment	Rev. 004
RP/0/A/5700/020	Activation of the Operations Support Center (OSC)	Rev. 011
RP/0/A/5700/21	EOF Access Control	DELETE
RP/0/A/5700/022	Spill Response Procedure	Rev. 009
RP/0/A/5700/024	Recovery and Reentry Procedure	Rev. 002
RP/0/A/5700/026	Operations/Engineering Technical Evaluations in the Technical Support Center (TSC)	Rev. 002
RP/0/B/5700/023	Community Relations Emergency Response Plan	Rev. 002
OP/0/B/6200/090	PALSS Operation for Accident Sampling	DELETED

# EMERGENCY PLAN IMPLEMENTING PROCEDURES INDEX

<u>PROCEDURE #</u>	<u>TITLE</u>	<u>REVISION NUMBER</u>
HP/0/B/1009/002	Alternative Method for Determining Dose Rate Within the Reactor Building	Rev. 002
HP/0/B/1009/003	Recovery Plan	Rev. 004
HP/0/B/1009/05	Initial Evaluation of Protective Action Guides Due to Abnormal Plant Conditions	DELETED
HP/0/B/1009/006	Procedure for Quantifying High Level Radioactivity Releases During Accident Conditions	Rev. 006
HP/0/B/1009/010	Releases of Radioactive Effluents Exceeding Selected Licensee Commitments	Rev. 006
HP/1/B/1009/015	Unit 1 Nuclear Post-Accident Containment Air Sampling System Operating Procedure	DELETED
HP/2/B/1009/015	Unit 2 Nuclear Post-Accident Containment Air Sampling System Operating Procedure	DELETED
HP/0/B/1009/016	Distribution of Potassium Iodide Tablets in the Event of a Radioiodine Release	Rev. 003
HP/0/B/1009/020	Manual Procedure for Offsite Dose Projections	DELETED
HP/0/B/1009/021	Estimating Food Chain Doses Under Post-Accident Conditions	Rev. 001
HP/0/B/1009/022	Accident and Emergency Response	Rev. 003
HP/0/B/1009/023	Environmental Monitoring for Emergency Conditions	Rev. 004
HP/0/B/1009/024	Personnel Monitoring for Emergency Conditions	Rev. 002
HP/0/B/1009/029	Initial Response On-Shift Dose Assessment	Rev. 006
SH/0/B/2005/001	Emergency Response Offsite Dose Projections	Rev. 001
SH/0/B/2005/002	Protocol for the Field Monitoring Coordinator During Emergency Conditions	Rev. 002
SR/0/B/2000/01	Standard Procedure for Public Affairs Response to the Emergency Operations Facility	Rev. 003
SR/0/B/2000/002	Standard Procedure for EOF Commodities and Facilities	Rev. 002
SR/0/B/2000/003	Activation of the Emergency Operations Facility	Rev. 009
SR/0/B/2000/004	Notification to States and Counties from the Emergency Operations Facility	Rev. 005

# EMERGENCY PLAN IMPLEMENTING PROCEDURES INDEX

<u>PROCEDURE #</u>	<u>TITLE</u>	<u>REVISION NUMBER</u>
McGuire Site Directive 280	Site Assembly/Accountability and Evacuation/Containment Evacuation	DELETED
EP Group Manual	Section 1.1      Emergency Organization	Rev. 017
MNS RP Manual:	Section 18.1    Accident and Emergency Response	DELETED
	Section 18.2    Environmental Monitoring for Emergency Conditions	DELETED
	Section 18.3    Personnel Monitoring for Emergency Conditions	DELETED
	Section 18.4    Planned Emergency Exposure	DELETED
PT/0/A/4600/088	Functional Check of Emergency Vehicle and Equipment	Rev. 007

# Duke Power Company

## PROCEDURE PROCESS RECORD (1)

ID No. HP/0/B/1009/003  
Revision No. 004

**PREPARATION**(2) Station McGuire Nuclear Station(3) Procedure Title Recovery Plan(4) Prepared By Grayton Cayton Date February 27, 2002

(5) Requires NSD 228 Applicability Determination?

- ☐ Yes (New procedure or revision with major changes)  
☒ No (Revision with minor changes)  
☐ No (To incorporate previously approved changes)

(6) Reviewed By Jay C. Carver (QR) Date 3/10/02Cross-Disciplinary Review By \_\_\_\_\_ (QR) NA gr Date 3/10/02Reactivity Mgmt. Review By \_\_\_\_\_ (QR) NA gr Date 3/10/02Mgmt. Involvement Review By \_\_\_\_\_ (OPS Supt.) NA gr Date 3/10/02

(7) Additional Reviews

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

(8) Temporary Approval (if necessary)

By \_\_\_\_\_ (OSM) Date \_\_\_\_\_

By \_\_\_\_\_ (QR) Date \_\_\_\_\_

(9) Approved By Carver E. Carver Date 04-10-02**PERFORMANCE** (Compare with Control Copy every 14 calendar days while work is being performed.)

(10) Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

(11) Date(s) Performed \_\_\_\_\_

Work Order Number (WO#) \_\_\_\_\_

**COMPLETION**

(12) Procedure Completion Verification

- ☐ Yes ☐ NA Check lists and/or blanks initialed, signed, dated, or filled in NA, as appropriate?  
☐ Yes ☐ NA Required enclosures attached?  
☐ Yes ☐ NA Data sheets attached, completed, dated and signed?  
☐ Yes ☐ NA Charts, graphs, etc. attached, dated, identified, and marked?  
☐ Yes ☐ NA Procedure requirements met?

Verified By \_\_\_\_\_ Date \_\_\_\_\_

(13) Procedure Completion Approved \_\_\_\_\_ Date \_\_\_\_\_

(14) Remarks (Attach additional pages, if necessary.)

Duke Power Company  
McGuire Nuclear Station

**Recovery Plan**

**Information Use**

Procedure No.

HP/0/B/1009/003

Revision No.

004

Electronic Reference No.

MC0045FW



Revision History (significant issues, limited to one page)

Rev 004 (04/03/02) For documentation. This revision allows procedure to be accessed via NEDL.

## **Recovery Plan**

### **1. Purpose**

- 1.1 To provide a plan for recovery from, and return to an operational status following a Notification of Unusual Event, Alert, Site Area Emergency, or a General Emergency
- 1.2 The level of use for this procedure is "Information Use".

### **2. References**

- 2.1 Radiation Protection Policy Manual Policy Number II-02, Planned Special Exposure and Emergency Dose Limits for Occupationally Exposed Personnel
- 2.2 Nuclear System Directive 201 - Reporting Requirements
- 2.3 SH/0/B/2000/005, Posting of Radiation Control Zones
- 2.4 SH/0/B/2000/004, Taking, Counting, and Recording Surveys

### **3. Limits and Precautions**

- 3.1 Normal respiratory protection guidelines shall be followed.
- 3.2 Normal Radiation Protection dosimetry procedures shall be followed.
- 3.3 Protective clothing shall be used whenever loose contamination exists or is suspected to be greater than 1000 dpm/100cm<sup>2</sup> Beta-Gamma or 20 dpm/100cm<sup>2</sup> Alpha.
- 3.4 Posting of radiation control zones shall follow guidelines in Reference 2.3.
- 3.5 Surveys shall be performed under guidelines in Reference 2.4.

### **4. Procedure**

- 4.1 In any plant emergency involving radioactive contamination, the immediate action is directed to limiting the consequences of the incident in a manner that affords maximum protection to the public. Once the immediate protective actions have established an effective control over the incident, the emergency actions shall shift into the recovery phase.

- 4.2 A recovery plan, from a practical standpoint, shall be flexible enough to adapt to existing conditions. It is not possible to anticipate in advance all of the conditions that may be encountered in an emergency situation, therefore this recovery plan is addressed to general principles that serve as a guide for developing a flexible plan of action. Comprehensive plans for recovery from any major emergency are formulated on agreements between Duke Power and the NRC, the Radiation Protection Branch of the North Carolina Department of Human Resources, the North Carolina Department of Crime Control and Public Safety, and the Mecklenburg County Health Department.
- 4.3 In the recovery phase all station actions shall be carefully planned by Duke Power Company management. In the period immediately following an incident, initial radiation monitoring functions shall involve only gross hazard evaluations and isolation of radiological problem areas. These immediate radiation surveys are intended to provide the basic information necessary for the recovery operation.
- 4.4 The initial re-entry into the affected area shall be conducted by Radiation Protection personnel to evaluate radiological hazards and contamination levels.
- 4.5 Subsequent to the initial entry and after the radiological hazards have been identified the recovery operation may proceed in accordance with the following case examples:
- 4.5.1 CASE "A" - Unusual Events or Alert conditions that may have resulted in the spread of contamination, unsafe conditions, and/or evacuation of an area due to noxious gases being present.
- 4.5.1.1 The Station Manager, Station RPM, Station Safety Manager and Station Chemist shall make decisions related to their areas of responsibility to recover and normalize any affected areas. Applicable paragraphs of CASE "C" may become pertinent in this case.
- 4.5.1.2 Follow all Limits and Precautions prescribed to ensure the safety of all recovery personnel.
- 4.5.2 CASE "B" - Site Area Emergencies that have resulted in the evacuation of a station area, the spread of contamination, and/or change in the operating status of the station.
- 4.5.2.1 The Station Manager, Group Superintendents and Station RPM shall make decisions related to their areas of responsibility to recover and normalize any affected areas. All paragraphs of CASE "C" may also be applicable.
- 4.5.2.2 Follow all Limits and Precautions prescribed to ensure the safety of all recovery personnel.

4.5.2.3 On completion of recovery operations ensure proper documentation of the accident and include all pertinent data involving the incident and the recovery operation.

4.5.3 CASE "C" - General emergencies that have resulted in the spread of contamination, evacuation of an area of the station, injured personnel, or a change in the operating status of the station.

4.5.3.1 The Station Manager, Station Group Superintendents, Station Radiation Protection Manager (RPM) and Staff, Emergency Operations Facility Director at the Emergency Operations Facility (EOF), and any other offsite agencies who may be involved shall decide what procedures and precautions shall be taken in the recovery plan.

4.5.3.2 Review all available radiation survey data. Determine station areas potentially affected by radiological hazards.

4.5.3.3 Review radiation exposure history of all personnel scheduled to participate in the recovery operations. Determine the need for additional personnel.

4.5.3.4 Review the adequacy of radiation survey equipment available. Determine the need for additional equipment and a source of procurement.

4.5.3.5 Pre-plan survey team activities, including areas to be surveyed, anticipated radiation levels, survey equipment required, protective clothing requirements, access control procedures, exposure control procedures, and communication capabilities.

4.5.3.6 Conduct a comprehensive radiation survey or surveys of station facilities and define all radiological problem areas.

4.5.3.7 Post all appropriate areas following the guidelines in Reference 2.3.

4.5.3.8 Perform visual inspection of station areas and equipment.

4.5.3.9 All radiological conditions discovered and existing in the facility as determined by the re-entry survey shall be evaluated by station management and EOF Personnel.

4.5.3.10 Upon evaluation of the radiological conditions, the EOF Director at the EOF shall determine what procedures are required to restore the site to a normal status.

- 4.5.3.11 Personnel radiation exposure shall be closely controlled and documented per Reference 2.1.
- 4.5.3.12 Recovery coordinators shall take appropriate actions to ensure that emergency personnel and equipment leaving the radiation control area are not contaminated, that radiological conditions at the scene of the emergency are properly defined, barricaded, and posted with appropriate signs.
- 4.5.3.13 The EOF Director, Station Manager, Station Group Superintendents, and Station RPM shall make all necessary decisions to return the unit to normal status and to prevent a recurring problem.

- 4.6 Formal reporting of the emergency and recovery shall be completed as required by NSD-201 - Reporting Requirements (Reference 2.2).

## **5. Enclosures**

N/A

Duke Power Company  
**PROCEDURE PROCESS RECORD** (1) ID No. HP/0/B/1009/006  
 Revision No. 006

**PREPARATION**(2) Station McGuire Nuclear Station(3) Procedure Title Procedure for Quantifying High Level Radioactivity Releases During Accident Conditions(4) Prepared By Grayton Cayton Date February 27, 2002

(5) Requires NSD 228 Applicability Determination?

- ☐ Yes (New procedure or revision with major changes)  
☒ No (Revision with minor changes)  
☐ No (To incorporate previously approved changes)

(6) Reviewed By Jay C. Connel (QR) Date 3/10/02  
 Cross-Disciplinary Review By \_\_\_\_\_ (QR) NA gr Date 3/10/02  
 Reactivity Mgmt. Review By \_\_\_\_\_ (QR) NA gr Date 3/10/02  
 Mgmt. Involvement Review By \_\_\_\_\_ (OPS Supt.) NA gr Date 3/10/02

(7) Additional Reviews

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_  
 Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

(8) Temporary Approval (if necessary)

By \_\_\_\_\_ (OSM) Date \_\_\_\_\_

By \_\_\_\_\_ (QR) Date \_\_\_\_\_

(9) Approved By James E. Loucks Date 04-10-02**PERFORMANCE** (Compare with Control Copy every 14 calendar days while work is being performed.)

(10) Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_  
 Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_  
 Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

(11) Date(s) Performed \_\_\_\_\_  
 Work Order Number (WO#) \_\_\_\_\_

**COMPLETION**

(12) Procedure Completion Verification

- ☐ Yes ☐ NA Check lists and/or blanks initialed, signed, dated, or filled in NA, as appropriate?  
☐ Yes ☐ NA Required enclosures attached?  
☐ Yes ☐ NA Data sheets attached, completed, dated and signed?  
☐ Yes ☐ NA Charts, graphs, etc. attached, dated, identified, and marked?  
☐ Yes ☐ NA Procedure requirements met?

Verified By \_\_\_\_\_ Date \_\_\_\_\_

(13) Procedure Completion Approved \_\_\_\_\_ Date \_\_\_\_\_

(14) Remarks (Attach additional pages, if necessary.)

<p>Duke Power Company McGuire Nuclear Station</p> <p><b>Procedure for Quantifying High Level Radioactivity Releases During Accident Conditions</b></p> <p><b>Multiple Use</b></p>	Procedure No.
	HP/0/B/1009/006
	Revision No. 006
	Electronic Reference No. MC0045FZ

**Revision History (significant issues, limited to one page)**

Rev 006 (04/03/02) For documentation. This revision allows procedure to be accessed via NEDL.



## Procedure for Quantifying High Level Radioactivity Releases During Accident Conditions

### 1. Purpose

This procedure describes methods for collecting samples and taking radiation measurements for estimating noble gas, particulates, and radioiodine concentrations if the existing effluent instrumentation goes offscale during accident conditions. Enclosure 5.1 through 5.6 are designated as: **REFERENCE USE**, and must be at the sample location at all times during sampling. The remaining portions of this procedure are designated as: **INFORMATION USE** and are not required to be at sample locations during sampling.

### 2. References

- 2.1 NUREG-0737, Table 2.F.1-2
- 2.2 Remote Unit Vent Sampler Activity Buildup and Dose Assessment Calculations  
MCC1229.00-33 and MCC1227.00-23
- 2.3 HP/0/B/1004/019, Preparation of Samples for Count Room Analysis
- 2.4 HP/0/B/1001/035, Operation of the Gamma Spectroscopy System
- 2.5 HP/0/B/1003/036, Unit Vent
- 2.6 SH/0/B/2000/004, Taking, Counting and Recording Surveys.

### 3. Limits and Precautions

- 3.1 This procedure is written for use under abnormal conditions, which could involve extremely high radiation levels. Individuals collecting the samples shall be aware of the possibility of airborne contamination and high radiation levels in sampling areas.
- 3.2 When taking samples, as much as practical, keep individual exposures < 5 rem Total Effective Dose Equivalent and extremities < 50 rem Shallow Dose Equivalent per year. Obtain dose extension through the OSC as appropriate.
- 3.3 Only the Station Radiation Protection Manager/designee shall authorize the use of this procedure when needed and shall ensure appropriate surveillance and control of people taking the samples.
- 3.4 All commitments are denoted at the end of the referenced section of this procedure by brackets { } with a number inside. They are specifically listed on Enclosure 5.8.

- 3.5 Unless otherwise directed by RP Supervisor, or qualified designee, follow all steps of this procedure. All deviations from this procedure shall meet the intent of this procedure.
- 3.6 Do not dispose of silver zeolite cartridges in radioactive waste. Contact RP Staff for disposal of used silver zeolite cartridges.

#### 4. Procedure

- 4.1 RWP 5020 is provided for performance of this task.
- Read and logon to RWP 5020.
  - Comply with all RWP requirements.
- 4.2 Obtain the following equipment necessary for remote Unit Vent sampling:
- 4.2.1 Survey instrument, preferably an Ion Chamber.
- 4.2.2 Sample train equipment:
- particulate holder with filter
  - iodine cartridge holder with silver zeolite cartridge
  - 95cc gas bomb with two sections of small gauge tygon tubing
- 4.3 Using Enclosure 5.1, set up remote vent sampling. {16}
- 4.3.1 The actions described on Enclosure 5.1, steps 1.1.1.1 -1.1.1.5, are an effort to place equipment in a maximum safe condition. It is not mandatory and should only be performed if dose rates and manpower permit. Check with the OSC and check EMF23 (Unit Vent Area Monitor) to determine appropriate actions and travel path. If the normal unit vent cannot be secured, proceed to Enclosure 5.1, step 1.1.2.
- 4.4 Using Enclosure 5.2, repeat sampling at 30 minute intervals or as directed by Station Radiation Protection Manager/designee. {16}
- 4.4.1 This interval will depend on the contact dose rates on the sample train and the severity of the accident.
- 4.4.2 If long term unit vent sampling using the remote sample train is to take place, consult supervision regarding channel checks, weekly requirements, inoperable requirements, etc.

- 4.5 When remote sampling is no longer required, resume normal vent sampling using Enclosure 5.3. {16}
- 4.6 After each sample, transfer applicable data from Enclosure 5.1, 5.2, or 5.3 to Dose Rate Logsheet (Enclosure 5.5).
- 4.7 With the individual sample holders separated, obtain closed window contact dose rates from each holder; particulate, iodine cartridge and gas bomb. Record on Dose Rate Logsheet.
- 4.8 If samples can be counted in the Count Room (i.e.  $< 10$  mr/hr), report analysis results to the TSC or EOF.
- 4.9 If samples cannot be counted in the Count Room, iodine, particulate, and noble gas concentrations will be determined by completion of Enclosure 5.6 as follows:
  - 4.9.1 Using Enclosure 5.4, select DCF for the time after Reactor shutdown for the most recent sample off time and record on Enclosure 5.6.
  - 4.9.2 Using Enclosure 5.5, subtract G/A readings from the return line readings and record on Enclosure 5.6 at DR(RL)-GA. Record the particulate housing reading, iodine housing reading, at DR(PH) and DR(IH) respectively.
  - 4.9.3 Complete the calculations on Enclosure 5.6.
- 4.10 Report results from the Unit Vent Effluent Worksheet to the TSC or EOF.
- 4.11 Gas bombs not analyzed shall be purged unless otherwise directed by TSC.
- 4.12 All particulate filters shall be saved for compositing.
  - If doserates  $> 100$  mr/hr at 12", store in a pig in the Source Room.
- 4.13 When remote sampling is terminated, assemble completed procedure package.

## 5. Enclosures

- 5.1 Unit Vent Normal to Remote Transfer
- 5.2 Unit Vent Remote Sampling
- 5.3 Unit Vent Remote to Normal Transfer
- 5.4 Dose Conversion Factors
- 5.5 Dose Rate Logsheet

- 5.6 Unit Vent Effluent Worksheet
- 5.7 Unit 1 & 2 Vent Sampling Schematics
- 5.8 Commitments for HP/0/B/1009/006

Enclosure 5.1  
Unit Vent Normal to Remote Transfer

HP/0/B/1009/006  
Page 1 of 2

COMPARED WITH CONTROL COPY BY \_\_\_\_\_ DATE: \_\_\_\_\_

- 1.1 Notify the affected Unit's Reactor Operator that they should receive a loss of flow alarm on the Unit Vent P&C sampling device while remote unit vent sampling takes place. {39}

**CAUTION:** Steps 11.1.1 through 1.1.1.5 may be eliminated if dose rates in the area of the normal vent sample point are prohibitive.

- 1.1.1 While monitoring general area and contact dose rates, secure normal unit vent continuous P&C as follows:
- 1.1.1.1 Locate the normal vent sample point. **Unit 1 or Unit 2** (circle affected unit).
  - 1.1.1.2 Record flowrate \_\_\_\_\_, and vacuum \_\_\_\_\_ on the sample bags.
  - 1.1.1.3 Turn off vacuum pump and record time \_\_\_\_\_ on the sample bags.
  - 1.1.1.4 Close **Sample Supply** valve located on column JJ-51 (Unit 1) or JJ-61 (Unit 2) (Enclosure 5.5). Leave the Sample Return valve open.
  - 1.1.1.5 Remove P&C filters and place in sample bags. Retain normal vent samples for Count Room analysis, if dose rates permit.
- 1.1.2 Locate Remote Vent sample point, 767 Elevation, Column HH-53 (Unit 1) or FF-58 (Unit 2). **Unit 1 or Unit 2** (circle affected unit).
- 1.1.3 Connect the sample train.
- 1.1.4 Verify gas bomb isolation valves open, if applicable
- 1.1.5 Close valve **From Normal Pump Discharge**. This will isolate the normal sample flow.
- 1.1.6 Open Vent Remote Supply valve
- 1.1.7 Open Vent Return valve
- 1.1.8 Start Remote sample pump and record start time. \_\_\_\_\_

**NOTE:** The sample volume used in the calculations on Enclosure 5.4 are derived from a 25 lpm flow rate at 5" Hg for 30 minutes. If you change these variables you will need to recalculate the volume.

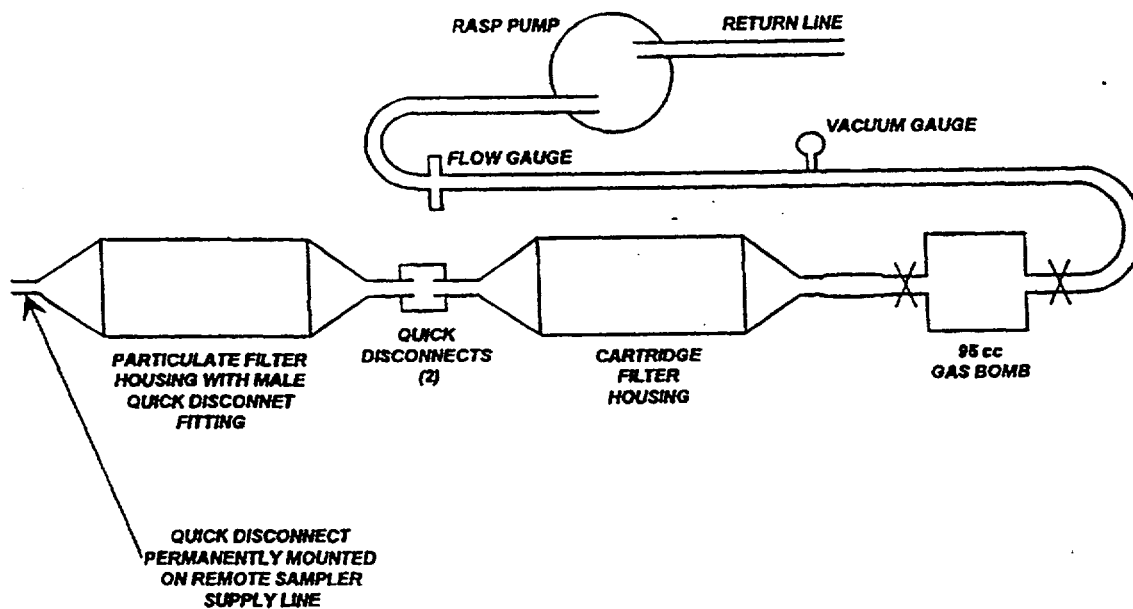
1.1.9 Adjust flowrate on sample pump to  $25 \pm 5$  lpm. Vacuum should read  $5 \pm 1$ " Hg. If vacuum gauge reading is less than required, verify that there is not a restriction in the flowpath (i.e., closed sample valves). {19}

1.1.9.1 Record flowrate \_\_\_\_\_ and vacuum \_\_\_\_\_.

1.1.10 Record "Sample Number" and Sample On Date/Time" on Dose Rate Logsheet (Enclosure 5.5).

Performed By \_\_\_\_\_ Date \_\_\_\_\_

### Unit 1 & 2 Remote Vent Sample Train Schematics



Unit Vent Remote Sampling  
767 Elev, HH-53 (U-1) FF-58 (U-2) Circle One

COMPARED WITH CONTROL COPY BY \_\_\_\_\_ DATE: \_\_\_\_\_

**WARNING:** High dose may be encountered on sample media.

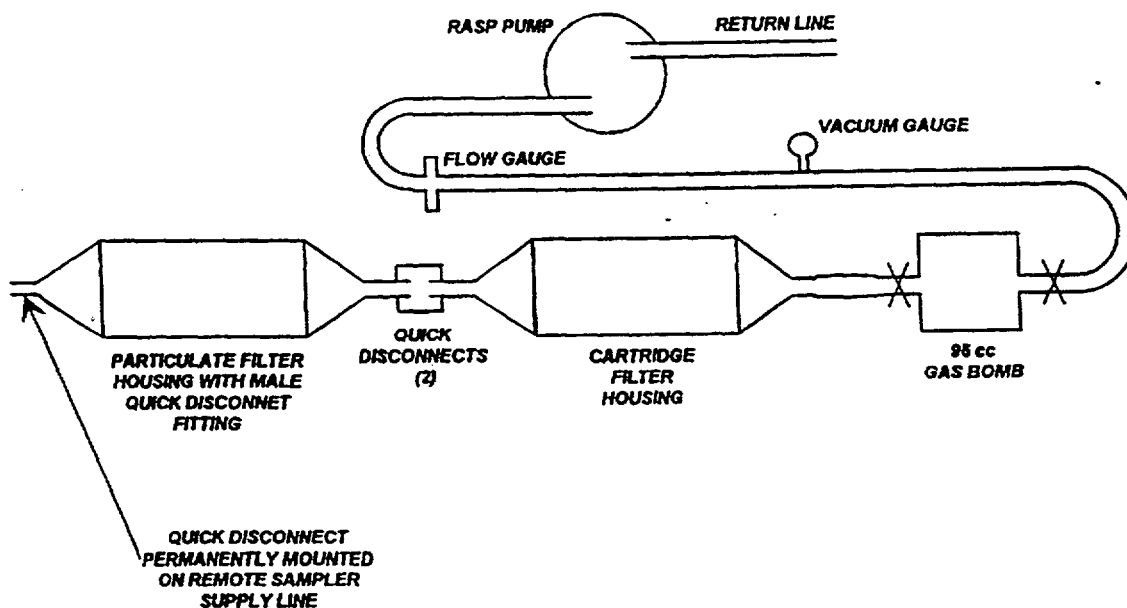
- 1.1 Transport shielded containers with initial sample collection and thereafter as needed.
- 1.2 Collect a 30 minute sample ( $\pm 6$  min) or as directed by the Station Radiation Protection Manager or qualified designee.
- 1.3 Turn Remote sample pump off, allow vacuum to return to 0.
- 1.4 Close Vent Remote Supply valve.
- 1.5 Close Vent Return valve.
- 1.6 Record off time \_\_\_\_\_.
- 1.7 Isolate gas bomb.
- 1.8 Disconnect sample train.
- 1.9 Set sample train away from sample lines to minimize dose and prevent interference with general area and return line dose rates.
  - Use of the shielded containers may be necessary.
- 1.10 Connect new sample train.
- 1.11 Verify gas bomb isolation valves open, if applicable.
- 1.12 Open Vent Remote Supply valve.
- 1.13 Open Vent Return valve.
- 1.14 Start Remote sample pump and record start time \_\_\_\_\_.
- 1.15 Adjust flowrate on sample pump to  $25 \pm 5$  lpm. Vacuum should read  $5 \pm 1$ " Hg.
- 1.16 If vacuum gauge reading is less than required, verify that there is not a restriction in the flowpath (i.e., closed sample valves). {19}
- 1.17 Record flowrate \_\_\_\_\_ and vacuum \_\_\_\_\_.

**Unit Vent Remote Sampling**  
**767 Elev, HH-53 (U-1) FF-58 (U-2) Circle One**

- 1.18 After a short purge time, obtain return line dose rates at point marked "**Return Line Sample Point**". Return line dose rate \_\_\_\_\_.
- 1.19 Obtain general area dose rate approximately three feet away from unit vent lines.
- General Area dose rate \_\_\_\_\_.
- 1.20 If contact dose rate on removed sample  $>100$  mr/hr, evaluate transporting sample back to the lab in shielded container(s).
- 1.21 Transport sample train to the Shift Lab, place under hood.
- 1.22 Go to step 4.6 in the body of this procedure.

Performed by \_\_\_\_\_ Date \_\_\_\_\_

**Unit 1 & 2 Remote Vent Sample Train Schematics**





## Unit Vent Remote to Normal Transfer

COMPARED WITH CONTROL COPY BY \_\_\_\_\_ DATE: \_\_\_\_\_

**WARNING:** High dose may be encountered on Remote *and* Normal sample media.Normal Vent Sample Point

- 1.1 If normal vent composite sampler was left running, evaluate condition of sample apparatus.
- Pump may be damaged.
  - Pump power source breakers may have tripped (Unit-1: Panel 1L11, breaker 25 / Unit-2: Panel 2L10, breaker 24).
  - Tygon may be contaminated.
  - Shielded containers may be needed for transport.
  - This list is not all inclusive.
- 1.1.1 Record flowrate \_\_\_\_\_, and vacuum \_\_\_\_\_.
- 1.1.2 Turn off the sample pump and record the time \_\_\_\_\_.
- 1.1.3 Close **Sample Supply** valve.
- 1.1.4 Remove the P&C filters.

Remote Vent Sample Point

- 1.2 Turn Remote sample pump off, allow vacuum to return to 0.
- 1.3 Close Vent Remote Supply valve.
- 1.4 Close Vent Return valve.
- 1.5 Open **From Normal Pump Discharge**.
- 1.6 Record off time \_\_\_\_\_.
- 1.7 Isolate gas bomb.
- 1.8 Disconnect sample train.
- Evaluate the need for transport in shielded container(s).

## Unit Vent Remote to Normal Transfer

Normal Vent Sample Point

- 1.9 Place new P&C in holder.
- 1.10 Open the **Sample Supply** valve.
- 1.11 Ensure Sample Return valve is open.
- 1.12 Start the sample pump.
- 1.13 Acquire a sample using the flowrate of  $\approx 20$  LPM.
- 1.14 Record the time \_\_\_\_\_, flowrate \_\_\_\_\_, and vacuum \_\_\_\_\_ on the P&C sample bags and leave the bags at the sample location.
- 1.15 If the vacuum gauge reading is  $> 4.5$  "Hg, verify that there is not a restriction in the flow path (i.e., closed sample valves, etc.) {19}
- 1.16 Notify the affected unit's Reactor Operator that remote sampling is complete and sample is in normal vent sampling configuration.
- 1.17 Verify loss of flow alarm cleared.
- 1.18 Transport sample(s) to the Shift Lab.
- 1.19 Go to 4.6 in the body of this procedure.

Performed by: \_\_\_\_\_ Date \_\_\_\_\_

**Enclosure 5.4**  
**Dose Conversion Factors**  
**(DCF)**

HP/0/B/1009/006  
Page 1 of 1

<b>Time (hrs)</b> <b>After</b> <b>Shutdown</b>	<b>Iodine Housing</b> $\left( \frac{\mu\text{Ci}}{\text{cc}} / \frac{\text{mR}}{\text{hr}} \right)$	<b>Particulate Housing</b> $\left( \frac{\mu\text{Ci}}{\text{cc}} / \frac{\text{mR}}{\text{hr}} \right)$	<b>Return Line</b> $\left( \frac{\mu\text{Ci}}{\text{cc}} / \frac{\text{mR}}{\text{hr}} \right)$
.0	5.9E-03	3.1E-2	5.20E-1
.25	6.4E-03	3.1E-2	5.20E-1
.5	7.0E-03	3.2E-2	5.20E-1
1	8.1E-03	3.3E-2	5.20E-1
1.5	9.3E-03	3.5E-2	5.20E-1
2	1.0E-02	3.7E-2	5.20E-1
3	1.2E-02	4.1E-2	5.20E-1
4	1.4E-02	4.3E-2	5.20E-1
5	1.6E-02	4.3E-2	5.20E-1
8	2.0E-02	4.4E-2	5.20E-1
12	2.5E-02	4.4E-2	5.20E-1
16	2.9E-02	4.4E-2	5.20E-1
24	3.7E-02	4.4E-2	5.20E-1
30	4.4E-02	4.7E-2	5.20E-1
50	6.3E-02	4.7E-2	5.20E-1
100	1.0E-01	4.8E-2	5.20E-1
250	1.2E-01	5.0E-2	5.20E-1
500	1.2E-01	5.5E-2	5.20E-1
720	1.2E-01	5.8E-2	5.20E-1

Use the higher DCF value for intervals between time after shutdown.

## Dose Rate Logsheets

Page 1 of 1

[illegible]

**Enclosure 5.6**  
**Unit Vent Effluent Worksheet**

HP/0/B/1009/006  
Page 1 of 1

DCF(IH) = Dose Conversion Factor for Iodine Housing  
DCF(PH) = Dose Conversion Factor for Particulate Housing  
DCF(RL) = Dose Conversion Factor for Return Line

DR(IH) = Dose Rate on Iodine Housing  
DR(PH) = Dose Rate on Particulate Housing  
DR(RL)-GA = Dose Rate on Return Line minus General Area

$$9.6E-5^* = \frac{\text{Collection Media Volume (65cc)}}{\text{Sampled Volume (6.8E5cc)}}$$

*\*Sampled Volume (6.8E5cc) is derived from 25 lpm flow rate at 5" Hg for 30 minutes.*

*If the flow rate, vacuum, and/or sampling time time varies, the sample volume must be corrected.*

**Unit Vent Concentration Calculations**

Time After Shutdown \_\_\_\_\_ (hrs)      Sample # \_\_\_\_\_

$$\text{Iodine Concentration } (\mu\text{Ci/cc}) = \frac{\text{_____}}{\text{DCF(IH)}} \times \frac{\mu\text{Ci}}{\text{cc}} \div \frac{mR}{hr} \times \frac{mR}{hr} \times 9.6E-5^* = \text{_____} \mu\text{Ci/cc}$$

$$\text{Particulate Concentration } (\mu\text{Ci/cc}) = \frac{\text{_____}}{\text{DCF(PH)}} \times \frac{\mu\text{Ci}}{\text{cc}} \div \frac{mR}{hr} \times \frac{mR}{hr} \times 9.6E-5^* = \text{_____} \mu\text{Ci/cc}$$

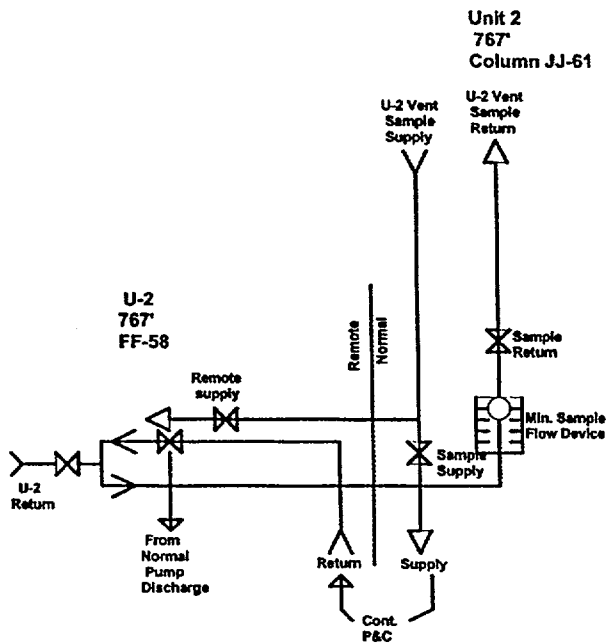
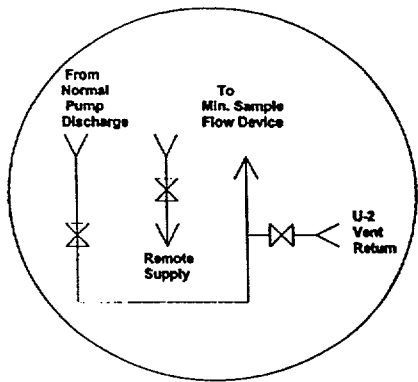
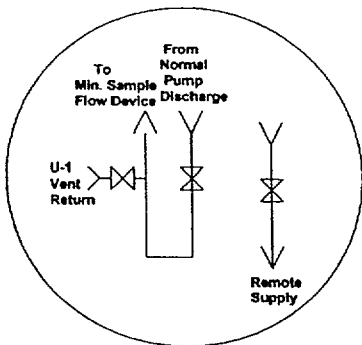
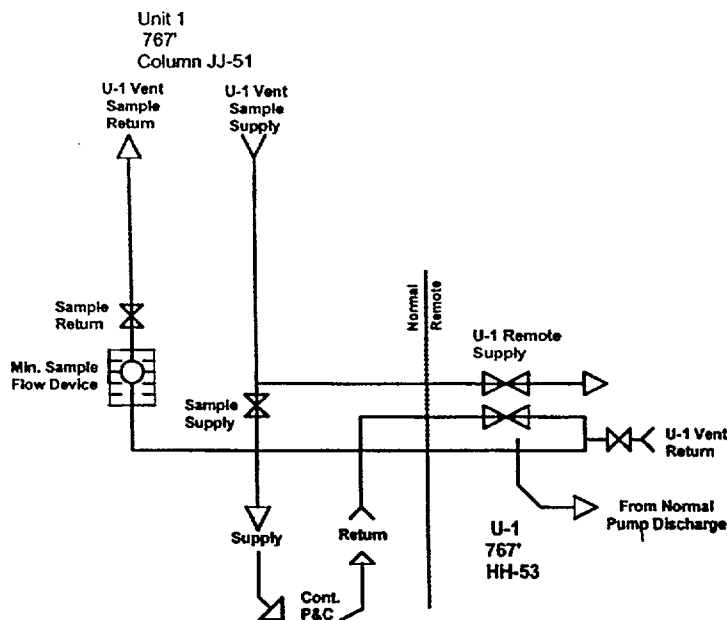
$$\text{Return Line Concentration } (\mu\text{Ci/cc}) = \frac{0.52}{\text{DCF(RL)}} \times \frac{\mu\text{Ci}}{\text{cc}} \div \frac{mR}{hr} \times \frac{mR}{hr} = \text{_____} \mu\text{Ci/cc}$$

For Noble Gas

**Unit Vent Activity Based on Count Room Analysis**

Grand Total Activity : Particulate = \_\_\_\_\_  $\mu\text{Ci/cc}$       Iodine = \_\_\_\_\_  $\mu\text{Ci/cc}$       Noble Gas = \_\_\_\_\_  $\mu\text{Ci/cc}$

Enclosure 5.7  
Unit 1 & 2 Vents Sampling Schematics



**Enclosure 5.8**  
**Commitments for HP/0/B/1009/006**

HP/0/B/1009/006  
Page 1 of 1

- |      |                |  |
|------|----------------|--|
| {16} | LER 369/90-03  | Sampling enclosures required in the field.   |
| {19} | LER 369/09-08  | Observe and correct higher than expected vacuum on sample trains.                        |
| {39} | PIR 1-M92-0506 | Notify U-1 and U-2 Control Room Operators separately for alarms during sample changeout. |

**Duke Power Company**  
**PROCEDURE PROCESS RECORD** (1) ID No. HP/0/B/1009/016  
Revision No. 003

**REPARATION**(2) Station McGuire Nuclear Station(3) Procedure Title Distribution of Potassium Iodide Tablets in the Event of a Radioiodine Release(4) Prepared By Grayton Cayton Date February 27, 2002

(5) Requires NSD 228 Applicability Determination?

- ☐ Yes (New procedure or revision with major changes)  
☒ No (Revision with minor changes)  
☐ No (To incorporate previously approved changes)

(6) Reviewed By Jay C. Conlee (QR) Date 3/10/02Cross-Disciplinary Review By \_\_\_\_\_ (QR) NA gr Date 3/10/02Reactivity Mgmt. Review By \_\_\_\_\_ (QR) NA gr Date 3/10/02Mgmt. Involvement Review By \_\_\_\_\_ (OPS Supt.) NA gr Date 3/10/02

(7) Additional Reviews

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

(8) Temporary Approval (if necessary)

By \_\_\_\_\_ (OSM) Date \_\_\_\_\_

By \_\_\_\_\_ (QR) Date \_\_\_\_\_

(9) Approved By Carroll Boultin Date 04-10-02**PERFORMANCE** (Compare with Control Copy every 14 calendar days while work is being performed.)

(10) Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

(11) Date(s) Performed \_\_\_\_\_

Work Order Number (WO#) \_\_\_\_\_

**COMPLETION**

(12) Procedure Completion Verification

☐ Yes ☐ NA Check lists and/or blanks initialed, signed, dated, or filled in NA, as appropriate?☐ Yes ☐ NA Required enclosures attached?☐ Yes ☐ NA Data sheets attached, completed, dated and signed?☐ Yes ☐ NA Charts, graphs, etc. attached, dated, identified, and marked?☐ Yes ☐ NA Procedure requirements met?

Verified By \_\_\_\_\_ Date \_\_\_\_\_

(13) Procedure Completion Approved \_\_\_\_\_ Date \_\_\_\_\_

(14) Remarks (Attach additional pages, if necessary.)



<b>Duke Power Company</b> <b>McGuire Nuclear Station</b>  <b>Distribution of Potassium Iodide Tablets</b> <b>in the Event of a Radioiodine Release</b>  <b>Reference Use</b>	Procedure No. <b>HP/0/B/1009/016</b>
	Revision No. 003
	Electronic Reference No. MC0045G9

Revision History (significant issues, limited to one page)

Rev 003 (04/03/02) For documentation. This revision allows procedure to be accessed via NEDL.

## **Distribution of Potassium Iodide Tablets in the Event of a Radioiodine Release**

### **1. Purpose**

- 1.1 This procedure provides information necessary to distribute Active Potassium Iodide (KI) tablets to personnel in the event of a release of radioiodine resulting from emergency conditions. Also, it outlines storage and supply information to assure sufficient quality and quantity of thyroid blocking material.
- 1.2 The level of use for this procedure is "Reference Use".

### **2. References**

- 2.1 NCRP Report No. 55; Protection of the Thyroid Gland in the Event of Releases of Radioiodine 1977
- 2.2 NCRP Report No. 65; Management of Persons Accidentally Contaminated with Radioiodine 1980
- 2.3 BRH Report; Recommendations of Thyroid Blocking EKI, HHS Pub. FDA 81-8158
- 2.4 SH/0/B/2001/001, Internal Dose Assessment

### **3. Limits and Precautions**

- 3.1 Persons who are known to be allergic to KI or iodine shall **NOT** receive these tablets.
- 3.2 Nursing mothers who receive KI tablets shall be advised to use nutrient substitutes (ex. milk or a formula) for children for the duration of the ten-day tablet use period.
- 3.3 Personnel shall be advised **NOT** to deviate from prescribed dosages and dosage rates.
- 3.4 Best results shall be achieved when KI tablets are administered prior to an exposure or immediately after an exposure (within 2 hours). Administration as late as 24 hours after the exposure is of less value but still significant enough to justify the administering.
- 3.5 Discolored or disfigured tablets and bottles of KI with loose tops shall be discarded.
- 3.6 Hands of personnel shall be free from contamination prior to taking KI tablets.

### **4. Procedure**

#### **4.1 Responsibilities for Distribution**

- 4.1.1 The Radiation Protection Manager, in conjunction with available medical advice, shall control the distribution of KI tablets.

- 4.1.2 Station personnel suspected of having been in the affected area prior to detection and during the release, personnel present in the affected area, and personnel who shall enter the area while radioiodine is present shall be instructed by the Radiation Protection Manager to report immediately and register at a KI distribution area.
- 4.1.3 KI shall be distributed only to prevent a significant uptake of radioiodine. A "significant uptake" is defined as follows:
  - 4.1.3.1 A significant amount of radioiodine exposure (both in-plant and off-site) is that amount taken into the body that would result in a Committed Dose Equivalent (CDE) of 25 rem or more to the thyroid. 25 rem CDE to the thyroid is equal to 1000 DAC-hrs of iodine exposure. Use Enclosure 5.4 to document expected DAC-hrs of exposure. **IF** it is expected that there will be 1000 DAC-hrs or greater, the use of KI is recommended.

## 4.2 Registration of Personnel Exposed to Radioiodine

- 4.2.1 **WHEN** personnel that have been notified by Radiation Protection arrive at a distribution area, record appropriate data per Enclosure 5.1.
- 4.2.2 The Radiation Protection Manager or his designee shall give one (1) tablet to each affected person and shall give instructions concerning the use of the tablets. Then, each affected person shall be issued one bottle containing nine (9) KI tablets along with the package insert which describes the use of the KI tablets (see Enclosure 5.2).
  - 4.2.2.1 A sufficient quantity of small sample bottles shall be in emergency kits to permit ample distribution of tablets.
  - 4.2.2.2 Tablets are to be taken only as directed. One (1) tablet per day for ten (10) days is the recommended dosage.
  - 4.2.2.3 After the initial dose of KI, subsequent doses shall be taken on a daily basis. Tablets shall be taken as close to a 24 hour time period as possible.
- 4.2.3 Tablets removed from full bottles of KI shall be stored in small plastic sample bottles. The expiration date on the bottle from which the tablets were taken and the name of the Radiation Protection representative shall be recorded on the small bottles. Tablets stored in small plastic sample bottles shall then be distributed to affected personnel.

#### 4.3 Thyroid Burden Analysis Following Radioiodine Exposure

4.3.1 All employees receiving KI tablets should receive a thyroid burden analysis. **IF** the number of people involved render this step impractical, then the Count Room Supervisor shall draw a representative sample of persons listed on Enclosure 5.1 who have received KI tablets.

4.3.1.1 Subsequent action involving thyroid burden analysis shall follow guidelines established in the System Radiation Protection Manual.

4.3.2 Records of thyroid burden analyses shall be maintained.

4.3.3 Thyroid burden analyses immediately after an accident could lengthen KI distribution time and cause confusion among personnel. Distribute KI before analyzing thyroid concentration.

#### 4.4 Storage Requirements for KI Tablets

4.4.1 There are three major storage requirements to be observed:

4.4.1.1 Store in a temperature range of 68 to 77 degrees F.

4.4.1.2 Store in a low humidity area (avoid direct exposure to liquids).

4.4.1.3 Store in an area protected from exposure to light.

4.4.2 Upon receiving a shipment of KI, boxes shall be opened as soon as possible and the bottles examined to ensure that an airtight seal has been maintained. Bottles shall be returned to the boxes, and the boxes shall be sealed shut so as to avoid exposure to light.

#### 4.5 Shelf Life and Changeout of KI Tablets

4.5.1 Thyro Block<sup>TM</sup> tablet bottles are labeled with an expiration date from the factory. As tablets reach the expiration dates, they shall be discarded, unless a shelf life extension is authorized by the FDA.

4.5.2 Replacement tablets shall be ordered at least three (3) months prior to the date of expiration listed on the bottles of KI.

4.5.3 Upon receiving a shipment of KI tablets, ensure that old tablets are used before new tablets.

4.5.4 After a radioiodine emergency, the tablets in the small plastic sample bottles that were **NOT** distributed shall be discarded.

## **5. Enclosures**

- 5.1 Potassium Iodide Tablet Distribution Data Sheet
- 5.2 Package Insert for Thyro-Block<sup>TM</sup> Tablets
- 5.3 KI Storage Location List and Distribution
- 5.4 DAC-Hour Determination

HP/0/B/1009/016  
Page 1 of 1

[illegible]

Enclosure 5.2  
Package Insert for Thyro-Block™ Tablets

HP/0/B/1009/016  
Page 1 of 2

Patent Package Insert For

THYRO-BLOCK™

(POTASSIUM IODIDE)

(pronounced poe-TASS-e-um EYE-oh-dyed)

(abbreviated: KI)

TABLETS U.S.P.

TAKE POTASSIUM IODIDE ONLY WHEN PUBLIC HEALTH OFFICIALS TELL YOU. IN A RADIATION EMERGENCY. RADIOACTIVE IODINE COULD BE RELEASED INTO THE AIR. POTASSIUM IODIDE (A FORM OF IODINE) CAN HELP PROTECT YOU.

IF YOU ARE TOLD TO TAKE THIS MEDICINE, TAKE IT ONE TIME EVERY 24 HOURS. DO **NOT** TAKE IT MORE OFTEN. MORE WILL **NOT** HELP YOU AND MAY INCREASE THE RISK OF SIDE EFFECTS. **DO NOT TAKE THIS DRUG IF YOU KNOW YOU ARE ALLERGIC TO IODIDE.** (SEE SIDE EFFECTS BELOW.)

INDICATIONS

THYROID BLOCKING IN A RADIATION EMERGENCY ONLY

DIRECTIONS FOR USE

Use only as directed by State or local public health authorities in the event of a radiation emergency.

DOSE

Tablets: ADULTS AND CHILDREN 1 YEAR OF AGE OR OLDER: One (1) tablet once a day. Crush for small children.

BABIES UNDER 1 YEAR OF AGE: One-half (1/2) tablet once a day. Crush first.

Take for 10 days unless directed otherwise by State or local public health authorities.

Store at controlled room temperature between 20° and 25°C (68°- 77°F). Keep container tightly closed and protect from light.

WARNING

*Potassium iodide should **NOT** be used by people allergic to iodide.*

Keep out of the reach of children. In case of overdose or allergic reaction, contact a physician or the public health authority.

DESCRIPTION

Each THYRO-BLOCK™ TABLET contains 130mg of potassium iodide.

Other ingredients:

Magnesium stearate, microcrystalline cellulose, silica gel, and sodium thiosulfate



**Enclosure 5.2**  
**Package Insert for Thyro-Block™ Tablets**

HP/0/B/1009/016  
Page 2 of 2

**HOW POTASSIUM IODIDE WORKS**

Certain forms of iodine help your thyroid gland work right. Most people get the iodine they need from foods, like iodized salts or fish. The thyroid can "store" or hold only a certain amount of iodine.

In a radiation emergency, radioactive iodine may be released in the air. This material may be breathed or swallowed. It may enter the thyroid gland and damage it. The damage would probably **NOT** show itself for years. Children are most likely to have thyroid damage.

**IF** you take potassium iodide, it will fill-up your thyroid gland. This reduces the chance that harmful radioactive iodine will enter the thyroid gland.

**WHO SHOULD NOT TAKE POTASSIUM IODIDE**

The only people who should **NOT** take potassium iodide are people who know they are allergic to iodide. You may take potassium iodide even if you are taking medicines for a thyroid problem (for example, a thyroid hormone or antithyroid drug). Pregnant and nursing women and babies and children may also take this drug.

**HOW AND WHEN TO TAKE POTASSIUM IODIDE**

Potassium Iodide should be taken as soon as possible after public health officials tell you. You should take one dose every 24 hours. More will **NOT** help you because the thyroid can "hold" only limited amounts of iodine. Larger doses will increase the risk of side effects. You will probably be told **NOT** to take the drug for more than 10 days.

**SIDE EFFECTS**

Usually, side effects of potassium iodide happen when people take higher doses for a long time. You should be careful **NOT** to take more than the recommended dose or take it for longer than you are told. Side effects are unlikely because of the low dose and the short time you will taking the drug.

Possible side effects include skin rashes, swelling of the salivary glands, and "iodism" (metallic taste, burning mouth and throat, sore teeth and gums, symptoms of a head cold, and sometimes stomach upset and diarrhea).

A few people have an allergic reaction with more serious symptoms. These could be fever and joint pains, or swelling of parts of the face and body and at times severe shortness of breath requiring immediate medical attention.

Taking iodide may rarely cause overactivity of the thyroid gland, underactivity of the thyroid gland, or enlargement of the thyroid gland (goiter).

**WHAT TO DO IF SIDE EFFECTS OCCUR**

**IF** the side effects are severe or if you have an allergic reaction, stop taking potassium iodide. Then, if possible, call a doctor or public health authority for instructions.

**HOW SUPPLIED**

THYRO-BLOCK™ TABLETS (Potassium Iodide, U.S.P) are white round tablets, one side scored, other debossed 472 Wallace, each containing 130 mg potassium iodide. Available in bottles of 14 tablets (NDC 0037-0472-20).

WALLACE LABORATORIES  
Division of  
CARTER-WALLACE, INC.  
Cranbury, New Jersey 08512

**Enclosure 5.3**  
**Potassium Iodine Location and Distribution**  
**List**

HP/0/B/1009/016

Page 1 of 1

(1)	Cowan's Ford Dam Recovery Kit	470 bottles
(2)	Cowan's Ford Dam Personnel Survey Kit	2 bottles
(3)	Control Room	150 bottles
(4)	Training & Technology Center Recovery Kit	150 bottles
(5)	Training & Technology Center Personnel Survey Kit	2 bottles
(6)	Environmental Survey Kits (4 kits)	4 bottles
(7)	RP Instrument Cal Lab	1 bottle
(8)	South PAP	150 bottles
(9)	Technical Support Center Kit	25 bottles
(10)	Operations Support Center Kit	25 bottles

**TOTAL:** 979 bottles

**Enclosure 5.4**  
**DAC-Hour Determination**

HP/0/B/1009/016  
Page 1 of 1

<u>Nuclide</u>	<u>Conc</u> <u>(<math>\mu</math>Ci/ml)</u>		<u>DAC</u> <u>(<math>\mu</math>Ci/ml)</u>		<u>Expected</u> <u>Exposure</u> <u>Time Hrs</u>		<u>DAC</u> <u>Hours</u>
I-131	_____	÷	2E-8	x	_____	=	_____
I-133	_____	÷	1E-7	x	_____	=	_____
I-135	_____	÷	7E-7	x	_____	=	_____
Total DAC-Hrs →							<div></div>

**IF** total DAC-hrs is 1000 or greater, the use of KI is recommended.

Duke Power Company  
**PROCEDURE PROCESS RECORD** (1) ID No. HP/0/B/1009/024  
 Revision No. 002

**PREPARATION**(2) Station McGuire Nuclear Station(3) Procedure Title Personnel Monitoring for Emergency Conditions(4) Prepared By Grayden Cayton Date February 28, 2002

(5) Requires NSD 228 Applicability Determination?

- ☐ Yes (New procedure or revision with major changes)  
☒ No (Revision with minor changes)  
☐ No (To incorporate previously approved changes)

(6) Reviewed By Jay C. Gervelle (QR) Date 3/7/02Cross-Disciplinary Review By \_\_\_\_\_ (QR) NA Date 3/7/02Reactivity Mgmt. Review By \_\_\_\_\_ (QR) NA Date 3/7/02Mgmt. Involvement Review By \_\_\_\_\_ (OPS Supt.) NA Date 3/7/02

(7) Additional Reviews

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

(8) Temporary Approval (if necessary)

By \_\_\_\_\_ (OSM) Date \_\_\_\_\_

By \_\_\_\_\_ (QR) Date \_\_\_\_\_

(9) Approved By Samuel E. Tucker Date 04-10-02**PERFORMANCE** (Compare with Control Copy every 14 calendar days while work is being performed.)

(10) Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

(11) Date(s) Performed \_\_\_\_\_

Work Order Number (WO#) \_\_\_\_\_

**COMPLETION**

(12) Procedure Completion Verification

- ☐ Yes ☐ NA Check lists and/or blanks initialed, signed, dated, or filled in NA, as appropriate?  
☐ Yes ☐ NA Required enclosures attached?  
☐ Yes ☐ NA Data sheets attached, completed, dated and signed?  
☐ Yes ☐ NA Charts, graphs, etc. attached, dated, identified, and marked?  
☐ Yes ☐ NA Procedure requirements met?

Verified By \_\_\_\_\_ Date \_\_\_\_\_

(13) Procedure Completion Approved \_\_\_\_\_ Date \_\_\_\_\_

(14) Remarks (Attach additional pages, if necessary.)

Duke Power Company  
McGuire Nuclear Station

**Personnel Monitoring for Emergency  
Conditions**

**Information Use**

Procedure No.

HP/0/B/1009/024

Revision No.

002

Electronic Reference No.

MC0095LZ

**Revision History (significant issues, limited to one page)**

Rev 002    (04/03/02) For documentation. This revision allows procedure to be accessed via NEDL.

## **Personnel Monitoring for Emergency Conditions**

### **1. Purpose**

- 1.1 To provide personnel monitoring during a Site Evacuation due to a radiological emergency.

### **2. References**

- 2.1 Nuclear System Directive 114, Site Assembly/Evacuation Process
- 2.2 HP/0/B/1009/016, Distribution of Potassium Iodide Tablets in the Event of a Radioiodine Release
- 2.3 SH/0/B/2001/003, Investigation of Skin and Clothing Contaminations
- 2.4 HP/0/B/1009/022, Accident and Emergency Response
- 2.5 SH/0/B/2000/004, Taking, Counting and Recording Surveys

### **3. Precautions and Limitations**

- 3.1 Survey teams can be advised to don appropriate respiratory equipment based on assessed conditions.
- 3.2 If survey teams are expected to be exposed to  $I^{131}$ , consult Reference 2.2 for a determination of whether the survey team should ingest Potassium Iodide Tablets.
- 3.3 Survey teams shall don protective clothing when contamination levels are expected to be  $> 1000 \text{ dpm}/100 \text{ cm}^2 \beta\gamma$ ,  $> 20 \text{ dpm}/100 \text{ cm}^2 \alpha$ .
- 3.4 Survey teams shall wear TLD's and ED's (electronic dosimeters).

### **4. Procedure**

- 4.1 Upon initiation of a Site Evacuation (Reference 2.1) due to a radiological emergency, Radiation Protection shall dispatch emergency personnel survey teams to the following locations.
  - 4.1.1 North VAP Area (as needed)
    - Emergency kit for the North VAP is located in the RP Instrument Lab.
  - 4.1.2 South PAP Area
    - Emergency kit for the South PAP is located in Room 158.

- 4.1.3 Evacuation Facility (Cowan's Ford Dam)
  - Emergency kits for Cowan's Ford Dam is located on the first level to the right in a room labeled "MNS Emergency kits".
- 4.1.4 Evacuation Facility (Tech. Training Center)
  - Emergency kits for the TTC are located on the first floor in the stairwell across from the canteen.
  - Both Evacuation Facilities will not necessarily be activated simultaneously.
- 4.2 Each location is equipped with an emergency kit containing the following (in addition to various miscellaneous items):
  - 4.2.1 One Eberline E-520 or E-120 with HP-260 probe or equivalent instrument (supplemental equipment is in service at each PAP).
  - 4.2.2 Four (4) particulate respirators.
  - 4.2.3 Electronic Dosimeters
  - 4.2.4 Six (6) sets of protective clothing.
  - 4.2.5 Radiation boundary ribbon or rope and cautions signs with inserts.
  - 4.2.6 Potassium Iodide tablets.
  - 4.2.7 A copy of SH/0/B/2001/003, Investigation of Skin and Clothing Contaminations (Reference 2.3).
  - 4.2.8 A copy of HP/0/B/1009/024, Personnel Monitoring for Emergency Conditions.
  - 4.2.9 A copy of HP/0/B/1009/022, Accident and Emergency Response (Reference 2.4).
  - 4.2.10 One (1) case of disposable coveralls at each of the four (4) locations.
- 4.3 Upon reaching their predesignated locations the survey teams shall verify communications with the Operation Support Center Radiation Protection Supervisor and maintain open communications.
- 4.4 The North VAP and South PAP Area survey teams shall monitor all personnel and vehicles leaving via this area to insure there is no spread of contamination outside of the protected area.



- 4.4.1 In the event that a vehicle and/or its passengers are found to be contaminated, the survey team shall:
  - 4.4.1.1 Notify the OSC RP Supervisor. The OSC RP Supervisor shall in turn notify the TSC Radiation Protection Manager.
  - 4.4.1.2 Dress the contaminated individual(s) in the appropriate protective clothing and isolate that individual(s) until proper decontamination can be accomplished.
  - 4.4.1.3 Escort the contaminated person(s) to the contaminated change room for decontamination. If unable to return to the station, proceed to the Evacuation Facility (Technical Training Center or Cowans Ford Dam) for decontamination. Personnel shall be decontaminated per Reference 2.3.
  - 4.4.1.4 Prevent movement of the vehicle especially from leaving the protected area.
  - 4.4.1.5 When all personnel have cleared the area notify the OSC RP Supervisor and await instructions, i.e., a) proceed to the evacuation facility to assist or b) report back to the OSC.
- 4.5 The Evacuation Facilities survey teams shall stand by at the designated evacuation facility in preparation for monitoring incoming personnel in the event of a subsequent Site Evacuation.
  - 4.5.1 In the event that an individual(s) or vehicle(s) is found to be contaminated, the survey team shall:
    - 4.5.1.1 Notify the OSC RP Supervisor. The OSC RP Supervisor shall in turn notify the TSC Radiation Protection Manager.
    - 4.5.1.2 Dress the contaminated individual(s) in the appropriate protective clothing and isolate that individual(s) until proper decontamination can be accomplished.
    - 4.5.1.3 Escort the contaminated person(s) to the contaminated change room at McGuire. If unable to return to the contaminated change room at McGuire, use the showers at the Evacuation Facility, i.e. Technical Training Center or Cowans Ford Dam. Personnel shall be decontaminated per Reference 2.3.
    - 4.5.1.4 Post a Radiation Control Zone around the contaminated vehicle.

4.5.1.5 Survey the area to determine the existence of further contamination.

4.5.1.6 Document all surveys per Reference 2.5.

4.6 Survey teams shall be supplemented, relieved, or secured as directed by the Radiation Protection Manager.

## **5. Enclosures**

N/A

Duke Power Company  
**PROCEDURE PROCESS RECORD** (1) ID No. HP/0/B/1009/029  
 Revision No. 006

**REPARATION**(2) Station McGuire Nuclear Station(3) Procedure Title Initial Response On-Shift Dose Assessment(4) Prepared By Grayden Cayton Date February 28, 2002

(5) Requires NSD 228 Applicability Determination?

- ☐ Yes (New procedure or revision with major changes)  
☒ No (Revision with minor changes)  
☐ No (To incorporate previously approved changes)

(6) Reviewed By [Signature] (QR) Date 4-15-02Cross-Disciplinary Review By \_\_\_\_\_ (QR) NA [Signature] Date 4-15-02Reactivity Mgmt. Review By \_\_\_\_\_ (QR) NA [Signature] Date 4-15-02Mgmt. Involvement Review By \_\_\_\_\_ (OPS Supt.) NA [Signature] Date 4-15-02

(7) Additional Reviews

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

Reviewed By \_\_\_\_\_ Date \_\_\_\_\_

(8) Temporary Approval (if necessary)

By \_\_\_\_\_ (OSM) Date \_\_\_\_\_

By \_\_\_\_\_ (QR) Date \_\_\_\_\_

(9) Approved By [Signature] Date 04-15-02**PERFORMANCE** (Compare with Control Copy every 14 calendar days while work is being performed.)

(10) Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

Compared with Control Copy \_\_\_\_\_ Date \_\_\_\_\_

(11) Date(s) Performed \_\_\_\_\_

Work Order Number (WO#) \_\_\_\_\_

**COMPLETION**

(12) Procedure Completion Verification

☐ Yes ☐ NA Check lists and/or blanks initialed, signed, dated, or filled in NA, as appropriate?☐ Yes ☐ NA Required enclosures attached?☐ Yes ☐ NA Data sheets attached, completed, dated and signed?☐ Yes ☐ NA Charts, graphs, etc. attached, dated, identified, and marked?☐ Yes ☐ NA Procedure requirements met?

Verified By \_\_\_\_\_ Date \_\_\_\_\_

(13) Procedure Completion Approved \_\_\_\_\_ Date \_\_\_\_\_

(14) Remarks (Attach additional pages, if necessary.)

Duke Power Company  
McGuire Nuclear Station

**Initial Response On-Shift Dose Assessment**

**Reference Use**

Procedure No.

HP/0/B/1009/029

Revision No.

006

Electronic Reference No.

MC0095KW

Revision History (significant issues, limited to one page)

Rev 006 (04/03/02) For documentation. This revision allows procedure to be accessed via NEDL.

## Initial Response On-Shift Dose Assessment

### 1. Purpose

The purpose of this procedure is to provide on-shift Radiation Protection personnel a method for determining offsite dose to the public, and completing items 11 through 15 on the Emergency notification form, using Raddose-V. {68}

The level of use for this procedure is "REFERENCE USE".

### 2. References

- 2.1 Earth Tech, Raddose-V Operator's Manual.

### 3. Limits and Precautions

- 3.1 This procedure shall be performed upon declaration of an emergency classification and at the request of the Operations Shift Manager / Emergency Coordinator.
- 3.2 Raddose-V considers all releases to be at ground level.
- 3.3 Dose projections should be performed within the time frame specified by the Operations Shift Manager / Emergency Coordinator in order to make the required emergency notification.
- 3.4 Raddose-V will print the Emergency Notification Form (green sheet) only after a Forecast dose projection has been completed.
- 3.5 Refer to Enclosure 5.2 concerning back-up method for performing dose assessment during a loss-of-power situation or a printer failure.
- 3.6 It is acceptable to perform steps 4.2, 4.3, 4.4, and 4.16 out of sequence to allow timely completion of Emergency Notification forms.
- 3.7 This procedure may be performed in the RP Shift Lab or the TSC as needed.

### 4. Procedure

- 4.1 Obtain the following relevant unit information from Operations, when it is available:
- 4.1.1 Affected unit: 1 / 2 (circle one).
- 4.1.2 Date and time of reactor trip (\_\_\_\_/\_\_\_\_).
- 4.1.3 Actual or best estimate of release start time (\_\_\_\_:\_\_\_\_).

- 4.1.4 **IF** leak in Auxiliary Building, affected unit VA exhaust filtration (on / off / NA) (circle one).
- If leak in containment or annulus, affected unit VE exhaust filtration (on / off / NA) (circle one).
- 4.1.5 **IF** S/G tube leak/rupture, affected S/G (partitioned / not partitioned) (circle one).
- This determination is made based on knowledge of the Steam Generator secondary side water level in relation to the top of the tube bundle.
- 4.1.5.1 Steam release in progress (yes / no).
- 4.1.5.2 Release duration \_\_\_\_\_. Use 1 hr. default if release duration is not available.
- Raddose-V will allow 0.5 hours as the minimum forecast time.
- 4.1.6 **IF** fuel assembly accident, record reactor shutdown date for that assembly. \_\_\_\_\_
- 4.1.7 Current emergency classification \_\_\_\_\_.
- 4.1.8 Next emergency notification due by \_\_\_\_\_ (date/time).
- 4.2 Obtain the following equipment:
- 4.2.1 **IF** needed, key #17 from Shift key box (TSC).
- 4.2.2 Calculator.
- 4.3 Verify operability of meteorological instrumentation through TSAIL prior to obtaining data from Control Room modules.
- 4.4 At the designated computers in the RP Shift Lab/TSC, power up the Raddose computer, monitor and Data Acquisition computer and monitor.
- 4.4.1 On the Data Acquisition computer, select the McGuire Desktop icon, select McGuire Process Data, then SDS, then Unit 1, Unit 2, or Simulator.
- 4.4.2 Type GD ERO-2. **IF** SDS data is not available or **IF** the data is suspect for any reason, obtain all necessary information on Enclosure 5.1 (average meteorological data and relevant source term data) from the Control Room. **IF** meteorological data is not available, use one of the following sources in order of sequence:
- DPC Meteorological Lab (8-594-0341)
  - National Weather Service (1-800-268-7785).
  - Catawba Nuclear Station Control Room (8-831-2338)

- 4.5 On the Raddose computer, select the **DAS/Raddose-V** icon. A dialog box will appear stating "DAS Workstation configuration" (EOF or TSC). Click on "OK" to access the DAS (Dose Assessment Software) desktop.
- 4.5.1 **IF** the workstation was not configured TSC:
- At the DAS Desktop, click on **FILE**.  
Click on **DAS Configuration**.  
Click on TSC for Work Station Type and Production Mode.  
Restart Raddose V for changes to take effect.
- 4.5.2 Select the icon for the affected unit.
- 4.5.3 Select **Accident Mode** (actual emergency) or **Drill Mode** (drills/exercises).
- 4.5.4 At the prompt, "Do you want to use automatic data from the network or manual data entry?", select **Auto**. **IF** **Manual** selected, Met and EMF data will be entered by performer.
- 4.6 At the Start-up Menu, select **Begin New Incident**. A pop-up message will display, "This erases all previous data. Click Yes to continue or No to abort." Select **Yes**.
- 4.7 At the Accident Scenario definition screen, edit the reactor trip and release times. Current date and time from the computer will appear as the reactor trip and release date and time.
- 4.7.1 Edit the reactor trip time, if known. **IF** a reactor trip has not occurred or the reactor trip time is not known, no editing of the time is required.
- 4.7.2 Edit the release time. **IF** the actual release time is not known, input a time 15 minutes previous to the current time. Example: the current time is 0800 hours. The correct input would be 0745.
- 4.7.3 Enter the operator's initials.
- 4.7.4 Select **Accept** to accept this data.
- 4.8 At the Main Menu screen, select **Enter/Edit Meteorological Data**.
- 4.8.1 The Meteorological Data Input screen will appear. **IF** **AUTO** was selected in step 4.5.4, data will be auto retrieved. **IF** **MANUAL** was selected in step 4.5.4, Raddose-V provides the following pop-up message: "No automatic meteorological data available. Enter data manually." Select **OK**.
- 4.8.2 **IF** **AUTO** was selected, use SDS to verify that the data on the Meteorological Input Screen is correct.
- 4.8.3 **IF** **AUTO** was selected, edit any fields which do not agree with SDS data. **IF** **MANUAL** was selected, enter Wind Speed, Wind Direction, Delta Temperature, Air Temperature and Precipitation from SDS or from Enclosure 5.1.



- 4.8.3.1 Select the data field with a single mouse click.
- 4.8.3.2 Ensure the field is highlighted, (selected field turns gray).
- 4.8.3.3 Type in the correct data.
- 4.8.3.4 Ensure mixing height is not zero.

Default Values are:
Dec, Jan, Feb - 1000
Mar, Apr, May - 1700
Jun, Jul, Aug - 1800
Sept, Oct, Nov - 1400

- 4.8.4 Verify the data in the time step is correct. When editing is complete, select **Accept** at the bottom of the screen.
- 4.9 At the Main Menu, select **Enter/Edit Source Term Data**.
  - 4.9.1 The Source Term Data Input screen will appear. **IF** **AUTO** was selected in step 4.6.4, data will be auto retrieved. **IF** **MANUAL** was selected in step 4.5.4, Raddose-V provides the following pop-up message: "No automatic source term data available. Enter data manually." Select **OK**.
  - 4.9.2 At the Source Term Data Input screen, select the **Accident Type** data field for Path 1. Click on the highlighted area to display the Accident Menu.
  - 4.9.3 Using Enclosure 5.3 determine the accident type and select by placing the cursor on the accident type and double clicking.
    - IF** **LOCA** selected, go to step 4.9.4
    - IF** **SGTR** selected, go to step 4.9.5
    - IF** **LOCO** selected, go to step 4.9.6
    - IF** **Fuel** selected, enter Fuel Assembly age (Days): go to step 4.9.7
  - 4.9.4 **LOCA (G) (M)**: Select the **NG Method** data field. Click on the highlighted area to display the Noble Gas Release Rate Method Menu.

- 4.9.4.1 Select unit vent EMF pathway from below with a double mouse click.
- EMF36L: Select UV1L or UV2L  
 EMF36H: Select UV1H or UV2H  
 EMF36HH: Select UV1HH or UV2HH
- 4.9.4.2 A pop-up message requesting Filter Status will appear ON/OFF. **IF** VE exhaust filter status is not known or phase B isolation not initiated, select **OFF**. Click on OK.
- 4.9.4.3 **IF AUTO** was selected, use SDS to verify that the data on the Source Term Data Input Screen is correct.
- 4.9.4.4 **IF AUTO** was selected, edit any fields which do not agree with SDS. **IF MANUAL** was selected, enter Monitor Reading and Unit Vent Flow Rate from SDS or from Enclosure 5.1.
- Select the data field with a single mouse click.  
 Ensure the field is highlighted, (selected field turns gray).  
 Type in the correct data.
- 4.9.4.5 For Path 2 select the **Accident Type** data field and click on the highlighted area to display the Accident Type Menu. Select the same accident type as Path 1.
- 4.9.4.6 Select the NG Method data field and click on the highlighted area to display the Noble Gas Release Rate Method Menu.
- A. Select containment EMF pathway from below with a double mouse click.
- EMF39L: Select CONL  
 EMF39H: Select CONH  
 EMF51A or 51B: Select CONHH (Use if 39L/39H is isolated)
- B. A pop-up screen will appear to determine containment leakage.
- Enter containment bypass fraction = 0.07  
 Select ice condenser = recirc  
 Select holdup time  $\leq$  24 hours  
 Select sprays ON/OFF = ON if >3 psi or phase B initiated.  
 Select "Containment Pressure and Hole Size"  
 Select "Design Basis Leakage (0.3%/day @ 15 psig)"  
 Enter containment pressure = \_\_\_\_\_  
 Use SDS to verify that containment pressure is correct.  
 Select **OK**.

- 4.9.4.7 **IF** IF **AUTO** was selected, edit any fields which do not agree with SDS. **IF** IF **MANUAL** was selected, enter Monitor Reading from SDS or from Enclosure 5.1.
- 4.9.4.8 Go to step 4.9.8.
- 4.9.5 **SGTR (G) (M)**: Select the **NG Method** data field and click on the highlighted area to display the Noble Gas Release Rate Method Menu.
- 4.9.5.1 Select the affected steamline monitor (1EMF-24, 25, 26, 27 or 2EMF-10, 11, 12, 13) using a double mouse click.
- 4.9.5.2 A pop-up message requesting Steam Generator partitioned/not partitioned will appear. **IF** partitioning status is not known, select **partitioned**. Select **OK**.
- 4.9.5.3 **IF** IF **AUTO** was selected, use SDS to verify that the data on the Source Term Data Input Screen is correct.
- A. **IF** IF **AUTO** was selected, edit any fields which do not agree with SDS. **IF** IF **MANUAL** was selected enter Monitor Reading and Flow Rate from SDS or from Enclosure 5.1.
- Select the data field with a single mouse click.  
Ensure the field is highlighted, (selected field turns gray).  
Type in the correct data.
- B. Ensure the flow rate is not zero. **IF** the flow rate is zero, manually input the default value of 2.09E5 pounds mass steam per hour.
- 4.9.5.4 For Path 2 select the **Accident Type** data field and click on the highlighted area to display the Accident Menu. Select the same accident type as Path 1.
- 4.9.5.5 Select the **NG Method** data field and click on the highlighted area to display the Noble Gas Release Rate Method Menu.
- A. Select unit vent EMF pathway from below
- EMF36L: Select UV1L or UV2L  
EMF36H: Select UV1H or UV2H  
EMF36HH: Select UV1HH or UV2HH
- B. A pop up message requesting Steam Generator partitioned/not partitioned will appear. **IF** partitioning status is not known select **Partitioned**. Select **OK**.

- C. **IF AUTO** was selected, use SDS to verify that the data on the Source Term Data Input Screen is correct.
- D. **IF AUTO** was selected, edit any fields which do not agree with SDS. **IF MANUAL** was selected, enter Monitor Reading and Flow Rate from SDS or from Enclosure 5.1.

Select the data field with a single mouse click.  
Ensure the field is highlighted, (selected field turns gray).  
Type in the correct data.

4.9.5.6 Go to step 4.9.8.

4.9.6 **LOCO (G) (M):** Select the **NG Method** data field and click on the highlighted field to display the Noble Gas Release Rate Menu.

4.9.6.1 Select unit vent EMF pathway from below by double click:

EMF36L: Select UV1L or UV2L

EMF36H: Select UV1H or UV2H

EMF36HH: Select UV1HH or UV2HH

4.9.6.2 A pop-up message requesting filter status will appear ON/OFF. **IF** VA exhaust filter status is not known, select **OFF**.

4.9.6.3 **IF AUTO** was selected, use SDS to verify that the data on the Source Term Data Input Screen is correct. **IF MANUAL** was selected in step 4.5.4, Raddose-V provides the following pop-up message: "No automatic monitor data available. Enter data manually." Select **OK**.

4.9.6.4 **IF AUTO** was selected, edit any fields which do not agree with SDS. **IF MANUAL** was selected, enter Monitor Reading and Flow Rate from SDS or from Enclosure 5.1.

Select the data field with a single mouse click.  
Ensure the field is highlighted, (selected field turns gray).  
Type in the correct data.

4.9.6.5 Go to step 4.9.8.

4.9.7 **FUEL:** A Fuel Assembly Age Box will appear requiring the user to enter the fuel assembly age in days. Enter the Fuel Assembly Age in days.

Select the **NG Method** data field and click on the highlighted area to display the Noble Gas Release Rate Menu.

- 4.9.7.1 Select unit vent EMF pathway from below.
  - EMF36L: Select UV1L or UV2L
  - EMF36H: Select UV1H or UV2H
  - EMF36HH: Select UV1HH or UV2HH
- 4.9.7.2 A pop-up screen will appear requesting filter status ON/OFF and pool scrubbing. Select filter "ON" unless the VF filters are known to be bypassed and select "POOL".
- 4.9.7.3 **IF** **AUTO** was selected, use SDS to verify that the data on the Source Term Data Input Screen is correct.
- 4.9.7.4 **IF** **AUTO** was selected, edit any fields which do not agree with SDS. **IF** **MANUAL** was selected, enter Monitor Reading and Flow Rate from SDS or from Enclosure 5.1.
  - Select the data field with a single mouse click.
  - Ensure the field is highlighted, (selected field turns gray).
  - Type in the correct data.
- 4.9.7.5 Go to step 4.9.8.
- 4.9.8 Review the data in the current time step. **IF** no fields require editing, or editing is complete, select **Accept** at the bottom of the screen.
- 4.10 At the Main Menu, select **Emergency Classification**.
  - 4.10.1 Select the appropriate emergency classification.
  - 4.10.2 Select **Continue**.
- 4.11 At the Main Menu, select **Perform Calculations**.
  - 4.11.1 A 10-mile EPZ Map screen will be displayed after Raddose-V calculates the data in the current time step. **IF** the Emergency Classification selected in 4.10.1 was General Emergency, select **GE PARs**.
  - 4.11.2 Select **Continue** at the bottom right of the screen.
- 4.12 At the Output Menu, select **Continue Calculations**.
- 4.13 At the Main Menu, select **Perform Forecast**.
  - 4.13.1 A Forecast Mode screen will appear.
    - 4.13.1.1 Select the applicable Status of the Emergency Release.
    - 4.13.1.2 Select "New" for the Status of the Projected Offsite Dose.

- 4.13.1.3 A Forecast Period box will appear requiring the user to enter the forecast period in hours. **IF** the release duration is not known, delete the highlighted 4 hour default value and input 1 hour as the forecast period. Select **OK**.
- 4.13.2 A pop-up message will display, "Note: forecast will use the meteorological and source term data from current step. Continue?" Select **OK**.
- 4.13.3 Raddose-V will take 10 to 30 seconds to calculate the projection. The 10-mile EPZ Map screen will appear when calculations are complete.
- 4.13.3.1 **IF** the Emergency Classification selected in 4.10.1 was General Emergency, select **GE PARs**.
- 4.13.3.2 Select **Continue** at the bottom right of the screen.
- 4.13.4 A pop-up message will display, "Do you want to save PAZ's identified in Forecast Mode for evacuation?" Select **No**.
- 4.14 At the Output Menu, select **Go to Report Menu**.
- 4.15 At the Report Menu, select **Print Emerg Notification, Summary Report**.
- 4.15.1 Raddose will fill in items 10 through 15 on the "Emergency Notification (Green) Form". Review items 10 through 15. If no recommended Protective Actions have been determined in item 15, place an "X" in box A.
- Items B and C will be identified by Raddose if dose projections indicate evacuation or sheltering is necessary. The affected zones (PAZ's) will also be listed in items B and C.
  - **IF** printer fails, go to Enclosure 5.2 and perform steps 1.8 through 1.10.
- 4.15.2 Deliver the printed Emergency notification form (including dose comparison sheet) to the Operations Shift Manager / Emergency Coordinator.
- 4.15.3 Retain the printed Summary Sheet.
- 4.15.4 Select **Return to Output Menu**.
- 4.15.5 Go to step 4.16 for additional projections. **IF** no other projections are necessary:
- 4.15.5.1 Select **Return to Main Menu**.
- A pop-up message will display, "You just completed a forecast. Remember to check meteorological and source term data." Select **OK**.
- 4.15.5.2 Select **Go to Start-up Menu**

4.15.5.3 Select **Exit Raddose-V** at this point. Go to step 4.22.

4.16 **IF** SDS data is not available or if the data is suspect for any reason, obtain all necessary information on Enclosure 5.1 (average meteorological data and relevant source term data) from the Control Room.

4.17 At the Output Menu, select **Continue Calculations**.

4.17.1 A pop-up message will display, "You just completed a forecast. Remember to check the meteorological and source term data for current information." Select **OK** to acknowledge.

4.18 At the Main Menu, select **Enter/Edit Meteorological Data**.

**NOTE:** Time steps should be added as needed to as close as possible to the ENF due time to ensure current dose projections are communicated.

4.18.1 The Meteorological Data Input screen will appear. **IF** **AUTO** was selected in step 4.5.4, Raddose provides the following pop-up message: "Do you want to add a new time step for [previous time step plus 15 minutes]?" Select **Yes**. Data will be auto retrieved. **IF** **MANUAL** was selected in step 4.5.4, Raddose-V provides the following pop-up message: "No automatic meteorological data available. Enter data manually."

4.18.2 **IF** **AUTO** was selected, use SDS to verify that the data on the Meteorological Input Screen is correct. **IF** **MANUAL** was selected, a pop-up message will display, "Do you want to add a new time step by copying data from [previous time step plus 15 minutes]?" Select **Yes**.

4.18.3 **IF** **AUTO** was selected, edit any fields which do not agree with SDS date. **IF** **MANUAL** was selected, enter Wind Speed, Win Direction, Delta Temperature, Air Temperature and Precipitation from SDS or from Enclosure 5.1.

Select the data field with a single mouse click.

Ensure the field is highlighted, (selected field turns gray).

Type in the correct data.

4.18.4 Verify the data in the time step is correct. When editing is complete, select **Accept** at the bottom of the screen.

- 4.19 At the Main Menu, select **Enter/Edit Source Term Data**.

**NOTE:** Time steps should be added as needed to as close as possible to the ENF due time to ensure current dose projections are communicated.

- 4.19.1 The Source Term Data Input screen will appear. **IF AUTO** was selected in step 4.5.4, Raddose provides the following pop-up message: "Do you want to add a new time step for [previous time step plus 15 minutes]?" Select **Yes**. Data will be auto retrieved. **IF MANUAL** was selected in step 4.5.4, Raddose-V provides the following pop-up message: "No automatic source term data available. Enter data manually." Select **OK**.
- 4.19.2 **IF AUTO** was selected, use SDS to verify that the data on the Source Term Data Input Screen is correct. **IF MANUAL** was selected, a pop-up message will display, "Do you want to add a new step by copying data from the [previous time step plus 15 minutes]?" Select **NO**. Click on **ADD NEW STEP**.
- 4.19.3 Return to step 4.9.2.
- 4.20 Continue to Perform Dose Projections, as directed by OSM/EC or until Duty Dose Assessment personnel are on station in the TSC.
- 4.21 At the Main Menu, select **Start-up Menu** then select **Exit Raddose-V** to exit the program.
- 4.22 Complete all procedure sign-offs. Route the completed Procedure Process Record, printed Summary sheets from each Raddose-V run, if applicable, and Enclosure 5.1 to Radiation Protection Staff.

## 5. Enclosures

- 5.1 Manual Input Data Collection
- 5.2 Back-up Computer Operation (TSC)
- 5.3 Accident Type
- 5.4 Commitments for HP/0/B/1009/029



**METEOROLOGICAL DATA COLLECTION**  
(Obtain Average Data)

Date / Time	Lower Wind Speed (mph) AVG LWS	Upper Wind Direction (deg from N) AVG UWD	Delta Temp (deg C) AVG D/T	Air Temperature (deg C) AVG AMB	Precipitation (diff/1 hr) PRE DIF

**SOURCE TERM DATA COLLECTION**

Date /Time	Affected Unit Steamline (mR/hr)	*Affected Unit Vent EMF Monitor Reading (cpm) (R/Hr)	*Affected Containment EMF Monitor (cpm) (R/Hr)	Unit Vent Percent Flow Rate	Actual Flow Rate

$188,748 \text{ cfm} \times \text{percent unit vent flow} = \text{actual flow rate}$

\*record EMF used in space provided

Signature: \_\_\_\_\_

**Enclosure 5.2**  
**Back Up Computer Operation**

HP/0/B/1009/029  
Page 1 of 1

**1. Operation of Backup Laptop Computer**

**NOTE:** This computer shall be used only when no other dose assessment computers are functional.

- 1.1 In the TSC Dose Assessment area, open the wall cabinet containing the Raddose Back-up Computer. The key for the wall cabinet is in the Dose Assessment cabinet.
- 1.2 Remove the laptop and place on the desk under the cabinet. Do not attempt to remove the attached security cable.
- 1.3 Connect the laptop to the LAN (yellow cable to the right side of the computer).
- 1.4 Turn on the computer by pushing the power switch (on the left side) forward.
  - 1.4.1 The computer will display the following message:  
"Starting Windows 95  
Windows cannot determine what configuration your computer is in.  
Select on the following: . . . ."
  - 1.4.2 **IF** the LAN is available, enter "2" for Lan connected.
  - 1.4.3 **IF** the LAN is NOT available, disconnect the yellow lan connection from the right side of the computer and enter 1 for not Lan connected.
- 1.5 When prompted, enter your user ID and personal domain password.
- 1.6 Select the **Raddose-V** icon.
- 1.7 Go to step 4.4 in HP/0/B/1009/029. Perform step 4.5 through 4.14. After performing the required steps, proceed to 1.8.
- 1.8 At the Report Menu, select Display Green Form.
  - 1.8.1 Review items 10 through 15 on the screen.
- 1.9 Transfer information from screen to blank Emergency Notification Form (blank sheets located in dose assessment area cabinet) and deliver to the OSM/EC. Communicate the information by phone if physical delivery is not possible. Click on SAVE.
- 1.10 Perform 4.15.4 through 4.20, as necessary.
- 1.11 When does assessment is completed, turn off the back-up computer, disconnect the modem line and place the computer back in the cabinet. Lock the cabinet and return key to dose assessment cabinet.

**Accident Type**

**Pathways**

Inside Containment

LOCA \*

LOCAG \*\*

LOCAM \*\*\*

Containment Bypass Leakage (EMF39L, 39H, 51A, 51B)

Unit Vent (EMF36L, 36H, 36HH)

Outside Containment or Annulus

LOCO \*

LOCOG \*\*

LOCOM \*\*\*

Unit Vent (EMF36L, 36H, 36HH)

S/G Tube Rupture

SGTR\*

SGTRG\*\*

SGTRM \*\*\*

Unit Vent (EMF36L, 36H, 36HH)

Main Steam Lines (EMF24, 25, 26, 27 for Unit 1)

(EMF10, 11,12,13 for Unit 2)

Fuel

Unit Vent (EMF36L, 36H, 36HH)

(Use the same pathway for Fuel accidents whether they occur in containment or in the Spent Fuel Pool.)

\* Normal Activity

\*\* Gap Activity

\*\*\* Melt Activity

**Enclosure 5.4**

**Commitments for HP/0/B/1009/029**

HP/0/B/1009/029

Page 1 of 1

68

0-M-97-0019

RP is required to maintain on-shift capability to assess potential does to the public from radiological releases that may occur during an accident