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Nuclear Management Company, LLC
Prairie Island Nuclear Generating Plant
1717 Wakonade Dr. East • Welch MN 55089

March 12, 2001

US Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
Docket Nos. 50-306 License Nos. DPR-60

Prairie Island Emergency Plan
Implementing Procedures - F3

Emergency Response Plan Implementing Procedures

Furnished with this letter are the Prairie Island Nuclear Generating Plant Emergency Plan Implementing Procedures F3. This revision includes the following procedures:

INDEXES: Emergency Plan Implementing Procedures TOC

REVISIONS

F3-20	Determination of Radioactive Release Concentrations	Rev 17
F3-23.1	Emergency Hotcell Procedure	Rev 10
F3-8.1	Recommendations for Offsite Protective Actions for the On Shift Emergency Director/Shift Manager	Rev 11
F3-20.1	Determination of Steam Line Dose Rates	Rev 7
F3-13.6	Weather Forecasting Information	Rev 11
F3-1	Onsite Emergency Organization	Rev 19
F3-18	Thyroid Iodine Blocking Agent (Potassium Iodine)	Rev 8

INSTRUCTIONS:

Please post changes in your copy of the Prairie Island Nuclear Generating Plant Emergency Plan Implementing Procedures. Procedures, which have been superseded or deleted, should be destroyed. Please sign and return the acknowledgment of this update to Bruce Loesch, Prairie Island Nuclear Generating Plant, 1717 Wakonade Drive East, Welch, MN 55089.

A045

If you have any questions, please contact Mel Agen at 651-388-1121 Extension 4240.

Joel P. Sorensen
Site General Manager
Prairie Island Nuclear Generating Plant

c: USNRC – James Foster, Region III (2 copies)
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Mfst Num: 2001 - 0194 Date : 03/09/01
FROM : Bruce Loesch/Mary Gadient Loc : Prairie Island
TO : UNDERWOOD, BETTY J
Copy Num: 515 Holder : US NRC DOC CONTROL DESK
SUBJECT : Revisions to CONTROLLED DOCUMENTS

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Procedure #	Rev	Title
Revisions:		
F3-20	17	DETERMINATION OF RADIOACTIVE RELEASE CONCENTRATIONS
F3-23.1	10	EMERGENCY HOTCELL PROCEDURE
F3-8.1	11	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACT THE ON SHIFT EMERGENCY DIRECTOR /SHIFT MAN
F3-20.1	7	DETERMINATION OF STEAM LINE DOSE RATES
F3-13.6	11	WEATHER FORECASTING INFORMATION
F3-1	19	ONSITE EMERGENCY ORGANIZATION
F3-18	8	THYROID IODINE BLOCKING AGENT (POTASSIUM I

UPDATING INSTRUCTIONS

Place this material in your Prairie Island Controlled Manual or File. Remove revised or cancelled material and recycle it. Sign and date this letter in the space provided below within ten working days and return to Bruce Loesch or Mary Gadient, Prairie Island Nuclear Plant, 1717 Wakonade Drive E., Welch, MN 55089.
Contact Bruce Loesch (ext 4664) or Mary Gadient (ext 4478) if you have any questions.

Received the material stated above and complied with the updating instructions

_____ Date _____

PRAIRIE ISLAND NUCLEAR GENERATING PLANT	Title: Emergency Plan Implementing Procedures TOC Effective Date : 03/09/01
Approved By: Joyce Chitty /BJ BPS Supt	

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REFERENCE USE

- *Procedure segments may be performed from memory.*
- *Use the procedure to verify segments are complete.*
- *Mark off steps within segment before continuing.*
- *Procedure should be available at the work location.*

O.C. REVIEW DATE:	OWNER:	Effective Date
2-21-01		3-9-01

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1.0 PURPOSE

The purpose of this instruction is to:

1.1 Specify the onsite emergency organization during normal and off normal hours.

1.2 Describe the general duties and responsibilities of emergency response personnel.

The onsite emergency organization is illustrated in Figure 1 and is comprised of personnel from the normal plant organization. The detailed organization discussed in this procedure may be further augmented or decreased as the needs of the emergency condition dictate.

2.0 APPLICABILITY

This procedure is applicable to all plant personnel whenever the Emergency Response Organization (ERO) is activated. The ERO will be activated at an Alert, Site Area Emergency or General Emergency. The ERO may be activated at a Notification of Unusual Event (NUE), if necessary.

3.0 PRECAUTIONS

3.1 Prairie Island plant staff should not make any information releases to members of the news media or the public. All inquiries by the news media should be directed to the ERO Communications personnel at the Joint Public Information Center (JPIC) located at the Minnesota State EOC in St. Paul.

3.2 In order to provide a sufficient number of alternates to fill the various Prairie Island emergency organization positions, some individuals may be listed in more than one emergency organization position. In the event that an individual is assigned to more than one emergency organization position, the position required to implement immediate actions by the onsite emergency organization should take precedence over all other positions.

3.3 All Prairie Island emergency response personnel should carry their company Picture ID for access through potentially established road blocks and card access to an emergency facility.

3.4 All Prairie Island personnel are subject to the Fitness For Duty policy and call-in requirements during a declared emergency.

3.4.1 Post-Accident Fitness For Duty examinations will be conducted if there is reasonable suspicion that a person's behavior contributed to plant's accident condition.

3.4.2 In the event of an off-normal hours activation, emergency response personnel should report to their duty station unless they feel impaired or know themselves to be unfit for duty in which case they should notify their supervisor.

3.4.3 During an off-normal hours activation, those individuals who do not consider themselves impaired but have ingested alcohol within five (5) hours preceding their arrival **SHALL** inform the Badge Issue Station or EOF Access Control Station that they have ingested alcohol within five (5) hours preceding their arrival. Security will administer a breath analysis test and allow access to those who have a BAC less than 0.02%.

3.4.4 Under extreme emergency conditions, it may be determined that the services of an individual having a BAC of 0.02% is required. Under these circumstances necessary controls, e.g., constant escort, etc., **SHALL** be established to ensure the individual performs the assignment as required.

4.0 RESPONSIBILITIES

4.1 DIRECTION AND CONTROL

4.1.1 Emergency Director (ED)

During the initial stages of an emergency condition, the Emergency Director has overall coordinating authority for NMC. The Emergency Director has the authority and responsibility to immediately initiate any emergency actions including providing protective action recommendations to offsite authorities responsible for implementing offsite emergency measures. Following activation of the EOF emergency organization, the Emergency Manager **SHALL** assume the offsite coordinating authority for NMC and the Emergency Director **SHALL** retain the responsibility for onsite operations.

Initially, the Duty Shift Manager assumes the responsibility of the Emergency Director. If necessary, the Shift Supervisor of the unaffected unit may function as an alternate Emergency Director backing up the Shift Manager.

The Shift Manager should be relieved of the Emergency Director responsibilities when the designated Emergency Director arrives on-site. The Plant Manager should be the designated Emergency Director and should be available with a pager on a twenty-four (24) hour basis. When he is unavailable, (e.g., out of town), the designated Emergency Director responsibility should be passed to an individual in the line of succession described in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

Any of the individuals above the Shift Manager in the line of succession may take over the responsibility of the Emergency Director until the designated Emergency Director arrives onsite.

NOTE:	**The duty Shift Supervisor of the affected unit, until relieved, SHALL remain in the Control Room at all times during accident situations to direct the activities of the Control Room operators.**

A. The general responsibilities of the Emergency Director are:

1. Coordinate response of the plant onsite emergency organization;

2. Emergency classification and notification of offsite authorities until the Emergency Manager assumes this responsibility at which time the ED makes reclassification recommendations to the EM;

3. Authorize offsite Protective Action Recommendations until the Emergency Manager assumes this responsibility;

4. Direct the activation of all onsite emergency response centers, delegate coordinators for all onsite emergency response centers, and ensure that the emergency response center's environment is being monitored for habitability;

5. Direct onsite protective actions as necessary;

6. Ensure twenty-four (24) hour coverage for key positions in the onsite emergency organization;

7. During plant evacuations, initiate personnel accountability, ensure that it is completed within thirty (30) minutes following a plant evacuation announcement, and maintain accountability throughout the emergency condition;

8. Authorize radiation exposure in excess of normal limits (this responsibility **SHALL NOT** be delegated);

9. Ensure that radiological monitoring (onsite and offsite) is initiated (when required).

10. Ensure the Severe Accident Management process is implemented as necessary and become the Severe Accident Management Decision-maker.

4.1.2 Emergency Manager (EM)

During an Alert, Site Area or General Emergency, the Emergency Operations Facility (EOF) Organization **SHALL** be activated. It is expected that the EOF Organization can be fully staffed and ready to assume its emergency responsibilities within 1 hour of notification. The EOF Organization will base its operations at the Near-Site EOF, under the direction of the Emergency Manager (EM).

The Emergency Manager **SHALL** assume, from the Emergency Director, responsibility for overall management of all offsite support efforts. This includes offsite coordinating authority for NMC, efforts to enhance control of the plant and efforts to determine the potential or actual radiological impact in the environs of the plant.

A. Emergency Manager - Designees and Alternates

The Emergency Manager **SHALL** be staffed by a person named in the Emergency Manager call list. A list of Emergency Managers is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. The general responsibilities of the Emergency Manager are:

1. Determine the extent of the offsite response;

2. Authorize reclassifications including event termination or recovery;

3. Authorize offsite Protective Action Recommendations;

4. Supervise the operation of the EOF;

5. Direct personnel to provide the necessary offsite support for the plant as requested by the Emergency Director.

6. Provide technical support as necessary;

7. Provide direction to personnel performing offsite radiation surveys and dose estimates as to the desired types of samples and sample location;

8. Direct assessment and implementation of a modified Radiological Environmental Monitoring Program as needed;

9. Direct personnel to provide the necessary logistics support for the plant and EOF operation;

10. Provide information to utility management, as necessary, to assist in development of news releases;

11. Provide a direct interface with NRC representatives assigned to the EOF.

4.2 EMERGENCY ORGANIZATION COORDINATORS

4.2.1 Technical Support Center Coordinator

The Technical Support Center Coordinator **SHALL** be responsible for the general activation, operation and coordination of activities in the Technical Support Center (TSC).

A. A list of TSC Coordinators is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. The general responsibilities of the TSC Coordinator are:

1. Establish and verify radiological monitoring for the TSC including startup of the TSC ventilation cleanup systems;

2. Assist personnel performing the accountability check;

3. Maintain or designate individuals to maintain records throughout the emergency condition;

4. Coordinate activities of plant and non-plant personnel located in the TSC;

5. Establish, or ensure that communications are established, between all onsite emergency facilities and the EOF;

6. Ensure plant status is obtained via the ERCS plant process computer and/or via the communicator assigned to the Control Room;

7. Ensure ERDS (Emergency Response Data System) is activated with NRC.

8. Ensure periodic updates are occurring in the TSC with appropriate information;

9. Ensure TSC status boards are maintained;

10. Provide technical guidance to the Emergency Director and Control Room operators on plant operations;

11. Obtain engineering and technical assistance as required to support the Control Room operations.

4.2.2 Operational Support Center Coordinator

The Operational Support Center Coordinator **SHALL** be responsible for the general activation, operation, and coordination of activities in the Operational Support Center (OSC).

A. A list of Operational Support Center Coordinators is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. The general responsibilities of the OSC Coordinator are:

1. Establish and verify radiological monitoring for the OSC and the Control Room;

2. Coordinate activities of plant personnel located in the OSC to support plant operations as requested by the Control Room and TSC.

3. Assist personnel performing the accountability check.

4. Maintain the communications systems in the OSC. A person may be designated to act as a communicator.

5. Issue dosimetry to OSC and Control Room personnel.

6. Ensure OSC status boards are updated as required.

7. Periodically update personnel located in the OSC with appropriate information.

8. Control the use of equipment located in the emergency locker.

4.2.3 Assembly Point Coordinator

The Assembly Point Coordinator **SHALL** be responsible for the general operation of the assembly area.

A. A list of Assembly Point Coordinators is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. The general responsibilities of the Assembly Point Coordinator are:

1. Verify that radiological monitoring has been established for the Assembly Point.

2. Coordinate activities of all personnel (plant and non-plant) located at the Assembly Point.

3. Assist the Emergency Director in performing the accountability check, as necessary.

4. Maintain the communication systems. A person may be designated as the communicator, if necessary.

5. Control the use of the equipment located in the Emergency Locker.

6. Update all personnel with appropriate information when directed by the Emergency Director.

7. Provide instructions to personnel when they are released from the assembly point for reentry or transport offsite.

4.2.4 Radiological Emergency Coordinator

The Radiological Emergency Coordinator (REC) **SHALL** be responsible for radiological accident assessment, onsite and offsite. The REC should report to the Technical Support Center when the TSC is activated. Upon activation of the Near-Site EOF, the Radiation Protection Support Supervisor should assume responsibility for the offsite accident assessment.

A. A list of Radiological Emergency Coordinators (RECs) is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. The general responsibilities of the REC are:

1. Offsite dose assessment
2. Formulating offsite Protective Action Recommendations
3. Offsite surveys
4. Onsite surveys
5. Chemistry
6. Radiochemistry
7. Onsite Radiation Protection for:
   a. access control
   b. damage control and repair
   c. search and rescue
   d. first-aid
   e. fire fighting
   f. personnel monitoring & decontamination
   g. dosimetry

4.3 SHIFT ORGANIZATION

4.3.1 Shift Manager (SM)

The Shift Manager (SM) **SHALL** be onsite continuously. The Shift Manager **SHALL** assume overall coordination and control in the Control Room and provide direction as necessary to the Shift Supervisor.

A. SM - Line of Succession

1. Duty Shift Manager

2. Shift Manager

B. Responsibilities

The Shift Manager **SHALL**:

1. Assume the duties of Emergency Director until relieved by the designated Emergency Director. Portions of the E-Plan implementation may be delegated to other members of the plant staff as dictated by plant conditions.

2. Assess the emergency condition, event evaluation, and safety related aspects of the plant.

3. Implement the Severe Accident Management process as necessary.

4.3.2 Operations Group

The Operations Group consists of the General Supt. Plant Operations, Shift Managers, Shift Supervisors, and all operators. The Operations Group Leader should report to the Technical Support Center when the TSC is activated.

A. The designated Group Leader list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

The Operations Group **SHALL** have responsibility for:

1. Plant Operations and assessment of operational aspects of the emergency

2. Rad Waste equipment operation

3. Emergency radiation surveys

4. Short term damage control and repair for electrical, mechanical, and I&C equipment.

5. Implement the Severe Accident Management process as necessary.

4.3.3 Security Group

The Security Group consists of the Superintendent Security, the Security Shift Lieutenants, and Contract Security Officers.

A. The designated Group Leader list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

The Security Group **SHALL**:

1. Carry out the plant security and Access Control program.

2. Maintain strict personnel accountability onsite.

3. Assist communications efforts when necessary.

4. Assist in first aid treatment.

4.3.4 Shift Emergency Communicator (SEC)

A. The designated SEC list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

1. Complying with NRC overtime restrictions.

2. Assuring that assigned shifts are covered when changes have been made on the schedule.

3. Assuring that communication with Shift Supervisors is adequate.

4. Performing normal and emergency SEC duties.

5. Meeting the specified training requirements.

C. General Requirements

1. Working Hours

a. The SEC **SHALL** comply with overtime restriction policies of 5AWI 3.15.0.

b. The SEC should remain on duty until relieved by another SEC.

2. SEC Availability

a. The SEC should be available so that he or she can be in the Control Room within 10 minutes of being notified.

b. To ensure the 10 minute requirement can be met, the SEC should ensure that:

1) Their personal communication equipment (pager) is operable.

2) Shift Supervisors are aware of SEC location if personal communication equipment or plant page system will not provide adequate communication, e.g., noisy areas, structures where pager and page system are not available, etc. In such cases the SEC should ensure that Shift Supervisors can make immediate notification.

3) The SEC **SHALL NOT** leave the plant site while on duty. (PI Training Center is included in the plant site for this requirement).

4) The SEC should notify the Shift Supervisor when going to the PI Training Center, Cooling Tower area or ISFSI area. When at the PI Training Center, the SEC should inform the Training Center receptionist of their classroom location.

D. **Normal Duties**

1. The SEC should report to the Shift Supervisor upon arrival on site and check plant status.

2. The SEC should proceed to the Technical Support Center (TSC), conduct the National Warning System (NAWAS) test, and document completion in the SEC Log.

3. The SEC should conduct Communication Surveillance Tests as directed by the Shift Supervisor, inform the Shift Supervisor of the results and document the results in the SEC Log.

4. The SEC should conduct weekly and monthly PANS Siren Monitoring Tests as directed by Shift Supervisor, inform the Shift Supervisor of the results and document the results in SEC Log.

5. The SEC should assist with the Semiannual Emergency Organization Response Test as scheduled, inform the Shift Supervisor of the results and document the results in SEC Log.

6. The SEC should transmit PINGP 666 (NRC Form 361 - Event Notification Worksheet) to NRC Operations Center and send a copy to the NRC Resident Inspectors.

7. The SEC should make courtesy notifications to state and local authorities as requested by the Shift Supervisor or plant management for situations or conditions, which are abnormal but non-emergencies, that may have consequences extending beyond immediate site concern, e.g., serious injuries, fires, explosions, breaches of security, media sensitive events, etc.

E. **Emergency Duties**

1. The SEC should be notified by the Shift Supervisor in the event of:

   a. Implementation of the Plant Emergency Plan.

   b. Implementation of Plant Emergency Procedures (Operations Manual E-Section) that require SEC notification.

   c. Abnormal events e.g., trip, shutdown, etc., that may be of interest to the public.

2. The SEC should report to the Control Room within 10 minutes of being notified. In the case of a fire alarm or plant trip announcement, the SEC should report immediately to the Control Room without waiting for notification by the Supervisor.

3. The SEC should report to the Shift Manager or Shift Supervisor and perform Emergency Notifications and documentation in accordance with Emergency Plan Implementing Procedure F3-5.

4. The SEC **SHALL** notify state and local authorities within 15 minutes of Emergency Class declaration.

F. Training and Qualifications

1. The SEC should meet the minimum qualifications for Security Staff personnel positions.

2. The SEC should meet the following training requirements:

   a. Satisfactorily completed an initial SEC training program that should include:

      1) General overview of the Emergency Plan.

      2) Emergency and non-emergency notification requirements and procedures.

      3) Operation and testing of emergency communication equipment and systems.

b. Satisfy the requirements of periodic SEC continuing training that should include:

1) Review of changes to emergency communication equipment and procedures.

2) Review of lessons learned from emergency plan drills and actual plant events.

3. The SEC should be capable of:

a. Providing intelligible verbal communications to offsite organizations.

b. Assisting the Emergency Director in drafting messages.

c. Directing the activities of additional communicators.

d. Completing checklists to document communications activities.

4. In all cases, SEC qualifications should be approved by the General Superintendent Radiation Protection and Chemistry.

4.3.5 Fire Brigade

A. The Fire Brigade should consist of:

1. Brigade Chief - U-1 Turb. Bldg. APEO or as designated by the Shift Manager.

2. Assistant Chief - Turbine Building APEO

3. Fire Fighters - BOP Operators

4. Runner - As designated to accompany fire department, operate equipment, or bring additional equipment to fire scene.

NOTE:	The Red Wing Fire Department provides emergency assistance and should be called immediately on report of fire. Other plant personnel on site may be called on for emergency work or called to plant for emergency service.

B. Responsibilities

The Fire Brigade **SHALL** be:

1. Responsible for fire fighting per F5, "Fire Fighting".

2. Primary responders for Search and Rescue efforts.

4.3.6 Shift Radiation Protection Specialist

The Shift Radiation Protection Organization consists of one Radiation Protection Specialist onsite at all times.

A. Shift RPS - Line of Succession

1. Shift RPS

2. Non-licensed operators are trained to perform emergency radiation surveys.

B. Responsibilities

During emergency conditions, the Shift Radiation Protection Specialist **SHALL** be responsible for:

1. In-Plant surveys

2. Chemistry

3. Radiochemistry

4. Dose Assessment

5. Assist Fire Brigade

4.4 EMERGENCY STAFF AUGMENTATION GROUPS

4.4.1 Maintenance Group

The Maintenance Group consists of all maintenance crew personnel and all plant electricians. The onsite Emergency Organization includes the General Supt. Plant Maintenance, who should report to the Technical Support Center (TSC); and the Maintenance Supervisors (Mechanical & Electrical), and designated Electricians, Machinists, and Riggers who should report to the Operational Support Center (OSC). The mechanical and electrical maintenance staff in the OSC can be further augmented or decreased as emergency conditions dictate.

A. The designated Group Leader list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

The Mechanical and Electrical Maintenance Group **SHALL** have responsibility for:

1. Supporting the repair and corrective actions for the mechanical and electrical systems in support of emergency response and recovery actions.

2. Supporting the Search and Rescue effort.

4.4.2 Instrument and Control Group

The Instrument and Control Group consists of all I&C Specialists and I&C Supervisors. The onsite emergency organization includes the Supt. I&C Systems who should report to the Technical Support Center; and the I&C Supervisors who report to the Operational Support Center. The I&C Group can be further augmented or decreased as emergency conditions dictate.

A. The designated Group Leader list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

The I & C Group **SHALL** be responsible for:

1. Supporting the repair and corrective actions for the instrument and control systems in support of emergency response and recovery actions.

2. Supporting the Search and Rescue effort.

4.4.3 Work Management Group

The Work Management Group consists of Work Control Center (WCC) personnel and the Work It Now Team (WIN Team). The Work Control Center personnel should report to or remain in the Work Control Center. The WIN Team leader should report to the WCC and WIN Team workers should report to the OSC.

A. The WCC personnel and the WIN Team workers are made up of those personnel who work in these groups during normal non-emergency situations.

B. Responsibilities

1. The WCC personnel should be responsible for control, review and preparation of work packages and for tagging operations.

2. The WIN Team workers should be responsible for repair and corrective actions in support of emergency response as assigned by the OSC.

4.4.4 Radiation Protection Group

The Radiation Protection Group consists of the Gen. Supt. Radiation Protection, who should report to the Technical Support Center; and all members of the Radiation Protection Group.

A. The designated Group Leader list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

The responsibilities of the Radiation Protection Group are:

1. Offsite Dose Assessment
2. Offsite Surveys
3. Onsite Surveys
4. Chemistry
5. Radiochemistry
6. Radiation Protection for:
   a. Access Control
   b. Damage control and repair
   c. Search and rescue
   d. First aid
   e. Fire fighting
   f. Personnel monitoring and decontamination
   g. Dosimetry

4.4.5 Engineering Group

The Engineering Group consists of Mechanical, Electrical and I&C System Engineers, Nuclear Engineers, Radiation Protection Engineers, Program Engineers, Safety Assessment and Quality Engineers.

Upon activation of the onsite emergency organization, all Engineering Superintendents and engineers assigned to the emergency organization should report to the Technical Support Center. Other designated engineers may be requested to further augment engineering support in the TSC, as required.

A. The designated Group leader list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

The Engineering Group **SHALL** have responsibility for:

1. Providing technical support for plant system engineering on electrical/mechanical systems.

2. Providing technical support for operating radioactive waste control systems.

3. Providing core parameter analysis to determine current core status.

4. Providing plant parameter trending and analysis utilizing the Emergency Response Computer System (ERCS)

5. Project possible loss of key equipment and its consequences.

6. Providing technical support for emergency repairs and corrective actions on electrical/mechanical systems.

7. Update TSC staff of potential problems and developments.

4.4.6 Logistics Support Group

The Logistics Support Group consists of the Business Support Group (Administrative Services and Document Control), the Plant Services Group and Materials Management (Warehouse).

A. The designated Group Leader list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

The Business Support Group (Administrative Services and Document Control) **SHALL** supply logistical support in their area of expertise. This includes a switchboard operator reporting to the TSC Communications area and operating the TSC telephone switchboard. Other personnel in these areas may be called in to provide support for emergency response on an "as needed" basis.

The Materials Management (Warehouse) Group **SHALL** provide assistance in retrieving the parts necessary for an emergency response from Warehouse No. 1. During an off hours emergency activation or during plant evacuations, designated Materials Management personnel should report to the Operations Support Center.

The Plant Services Group **SHALL** support an emergency response by providing necessary assistance by the nuclear plant service attendants. Designated nuclear plant service attendants should report to the Operational Support Center. The Plant Services Group should have responsibility for:

1. Providing Offsite Survey Team Drivers and/or Sample Couriers for Offsite Radiation Survey Teams.

2. Providing general support of emergency response and recovery actions, as requested.

4.4.7 Severe Accident Management Group

The Severe Accident Management Group **SHALL** be responsible for the implementation of the Severe Accident Management process.

A. The Severe Accident Management Group consists of Decision Makers, Evaluators and Implementors made up of selected individuals from plant management, operations, engineering and technical staff. The Decision Maker and a team of Evaluators report to the TSC. Decision Maker and Evaluator lists are given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory. All other individuals who support the Severe Accident Management process by implementing the Severe Accident Management strategies are considered to be Implementors. Implementors consist of all other emergency personnel that may be asked to assist based on their plant expertise and experience.

B. The general responsibilities of the Severe Accident Management Group are:

1. Implement the use of the Severe Accident Management Guidelines when the Control Room has transitioned into severe accident management.

2. Using the Severe Accident Management Guidelines formulate and evaluate various severe accident management strategies for implementation.

3. Implement the appropriate severe accident management strategies.

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5.0 PREREQUISITES

An Unusual Event, Alert, Site Area Emergency, or General Emergency has been or will be declared.

6.0 PROCEDURE

6.1 If an Unusual Event has been or will be declared, the Operations Group and Shift Emergency Communicator **SHALL** perform their Emergency Plan duties in accordance with the instructions outlined in F3-2, Classifications of Emergencies and F3-3, Responsibilities During A Notification Of Unusual Event.

6.2 If an Alert, Site Area Emergency, or General Emergency has been or will be declared, all plant emergency response personnel **SHALL** perform their Emergency Plan duties in accordance with the instructions outlined in F3-2, Classifications of Emergencies and F3-4, Responsibilities During An Alert, Site Area, or General Emergency.

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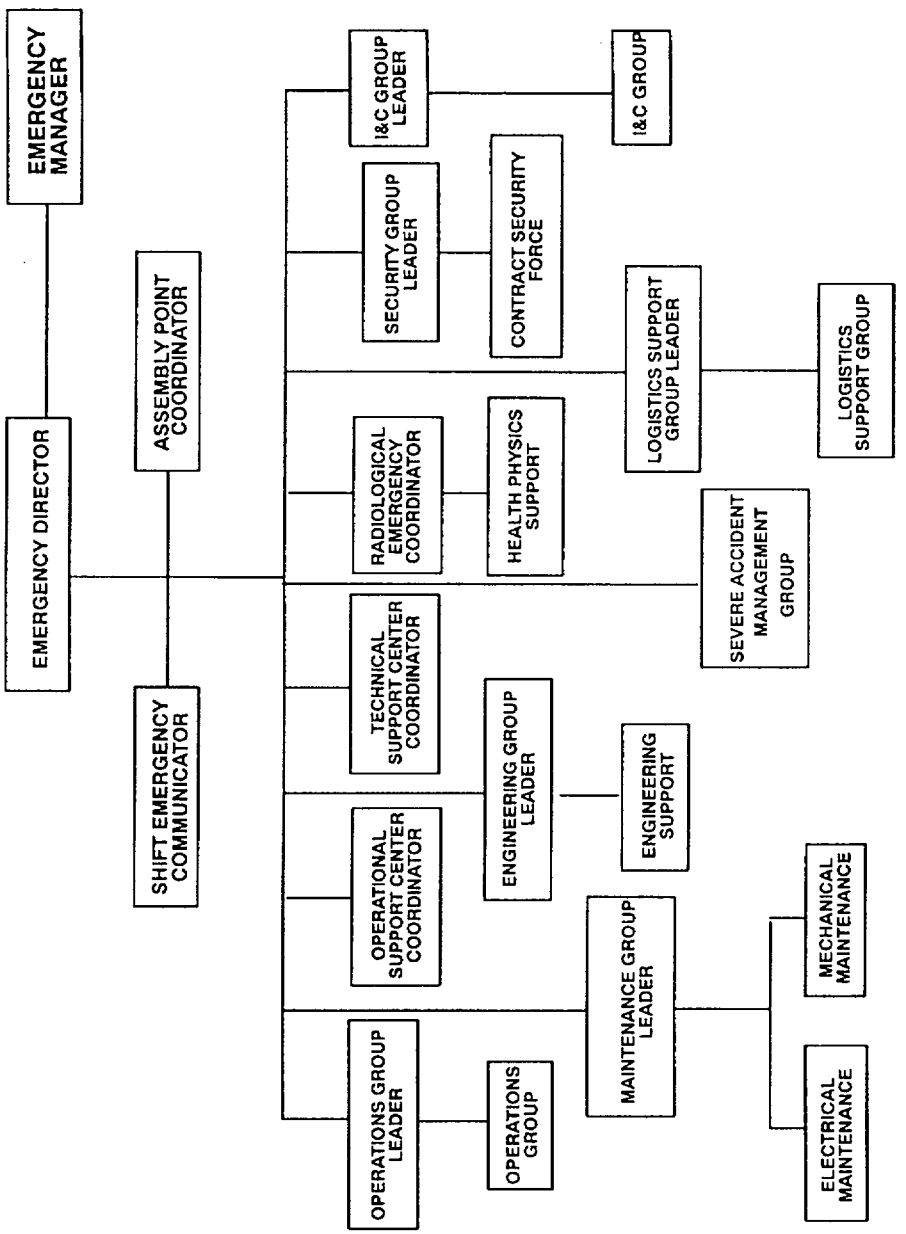
		REV: 19

Figure 1 On-Site Emergency Organization



F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1 REV: 11

REFERENCE USE
• *Procedure segments may be performed from memory.* • *Use the procedure to verify segments are complete.* • *Mark off steps within segment before continuing.* • *Procedure should be available at the work location.*

O.C. REVIEW DATE:	OWNER:	EFFECTIVE DATE
1-15-01 S.C.	M. Werner	3-9-01

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1 REV: 11

1.0 PURPOSE

The purpose of this procedure is to provide guidance for the interim on-shift Emergency Director in formulating immediate offsite Protective Action Recommendations (PARs) for the general public during the early phase of a radiological emergency.

2.0 APPLICABILITY

This instruction **SHALL** apply to the Shift Manager OR Shift Supervisor who has assumed the position of interim Emergency Director.

3.0 PRECAUTIONS

3.1 Declaration of a General Emergency requires immediate initial protective action recommendations (PARs) to offsite agencies. Under these circumstances, NO dose projections are required for formulating the initial offsite protective action recommendation.

3.2 Implementation of protective actions for offsite areas is the responsibility of the State of Minnesota and the State of Wisconsin. If it is determined, by the Emergency Director, that, immediate protective actions are required, and the State EOCs are not activated, the Emergency Director **SHALL** authorize such recommendations to be made directly to the local authorities. Once the State EOCs are activated, all protective action recommendations **SHALL** be made to the State EOCs.

3.3 It is the responsibility of the county and state agencies and the National Weather Service to notify members of the Prairie Island community of approved protective actions. Protective action notification is accomplished by the activation of the Public Alert and Notification System (PANS).

3.4 Offsite protective actions for the ingestion exposure pathway (ingestion of contaminated food and water) will be determined and implemented by the appropriate state authorities during the intermediate phase of an emergency.

4.0 RESPONSIBILITIES

The Shift Manager OR Shift Supervisor, acting as interim Emergency Director, is responsible to implement this procedure and has the non-delegatable authority to authorize protective action recommendations until relieved by the designated Emergency Director.

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
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5.0 DEFINITIONS

See Attachment 1.

6.0 PREREQUISITES

6.1 A General Emergency has been or will be declared, OR

6.2 A Site Area Emergency has been or will be declared with actual or potential radioactive airborne release conditions that meets or exceeds the PAGs.

7.0 PROCEDURE

7.1 Protective Action Recommendations For A General Emergency

NOTE:	**DO NOT DELAY Protective Action Recommendations during GENERAL EMERGENCY conditions. Urgent actions are required by offsite officials. The initiated protective action recommendation need only be based on Control Room indications. No dose projections are required.**

7.1.1 **Refer** to Figure 1, "GENERAL EMERGENCY INITIAL PROTECTIVE ACTION GUIDELINES" for the initial Protective Action Recommendations.

7.1.2 The Emergency Director **SHALL** make recommendations for appropriate protective actions to State and local authorities by identifying the affected keyhole area and the affected geopolitical subareas on the "Emergency Notification Report Form", PINGP 577, Figure 3.

7.1.3 **Document** all Protective Action Recommendations on PINGP 577 and in the Operations log.

7.1.4 The Emergency Director **SHALL** authorize the "Emergency Notification Report Form", PINGP 577, and direct the Shift Emergency Communicator to notify State and local authorities using PINGP 577.

7.1.5 **Consider** future changes to the initial Protective Action Recommendation in case of changing wind direction or wind speeds. (A wind speed < 5 mph affects all sectors. A wind direction shift may possibly affect new sectors.)

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
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7.1.6 IF R-50 is in valid alarm, THEN **ensure** that offsite dose assessment and review of the initial Protective Action Recommendation are conducted provided that such actions will NOT prevent the completion of any other critical actions needed to mitigate the event.

A. IF the REC is available, THEN **direct** the REC to conduct the offsite dose projections and assessment.

B. IF the REC is NOT available, THEN **direct** the Shift Chemist to perform the offsite dose projections.

C. **Compare** the plume projected dose results with the Protective Action Guides (PAGs):

- TEDE 4-Day Integrated Dose > 1000 mrem?
- Thyroid CDE 4-Day Integrated Dose > 5000 mrem?

NOTE:	**The initial General Emergency Protective Action Recommendation should be more than adequate for most severe plant accidents. Dose projection results exceeding PAGs beyond the initial evacuation area may be because of errors in meteorological or rad monitor data inputs.**

D. IF the plume projected dose exceeds the Protective Action Guides for areas which evacuation has not been recommended (which is very unlikely), THEN **re-evaluate** the validity of the dose projection results.

E. IF projections are confirmed correct, THEN **revise** the initial Protective Action Recommendation to ensure the public is evacuated from areas which exceed the PAGs using Figure 2.

F. **Utilize** the "Emergency Notification Report Form", PINGP 577, Figure 3, for any changes to the initial Protective Action Recommendation.

7.2 Protective Action Recommendations During a Site Area Emergency

7.2.1 Based on the definition of a Site Area Emergency classification, **NO** immediate offsite Protective Action Recommendations for the general public are warranted during a Site Area Emergency.

7.2.2 IF R-50 is in valid alarm, THEN **ensure** offsite dose assessment AND **review** of the initial Protective Action Recommendation are conducted provided that such actions will NOT prevent the completion of any other critical actions needed to mitigate the event.

A. IF the REC is available, THEN **direct** the REC to conduct the offsite dose projections and assessment.

B. IF the REC is NOT available, THEN **direct** the Shift Chemist to perform the offsite dose projections.

C. **Compare** the plume projected dose results with the Protective Action Guides (PAGs):

- TEDE 4-Day Integrated Dose > 1000 mrem?
- Thyroid CDE 4-Day Integrated Dose > 5000 mrem?

D. IF the plume projected dose exceeds the Protective Action Guides, **re-evaluate** the emergency classification AND **reclassify** to a General Emergency if appropriate.

E. **Utilize** the "Emergency Notification Report Form", PINGP 577, Figure 3, for the reclassification and issuance of the Protective Action Recommendation.

7.2.3 Precautionary recommendations may be warranted for the nearsite special population (Treasure Island Casino) under certain conditions. The REC or RPSS will conduct this evaluation.

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1 REV: 11

Figure 1 General Emergency Initial Protective Actions Recommendations

The following protective action recommendations in this table should be conducted at the same time the General Emergency notifications are conducted.

Prerequisite: Plant Staff Detects **GENERAL EMERGENCY**

IF wind is ≥ 5 mph, THEN:	Evacuate all sectors out to 2 miles; AND The five downwind sectors out to 5 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.
IF wind is < 5 mph, THEN:	Evacuate all sectors out to 5 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.

NOTE:	**Based on NRC Response Technical Manual, RTM-93, Vol. 1, Rev. 3.**

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1 REV: 11

Figure 2 Protective Action Guides for On Shift Interim Emergency Director

PAGS for Early Phase Projected Doses

Use the MIDAS 4-Day Integrated Dose to determine the Protective Action Recommendation base on the Protective Action Guidelines[1, 2, 3, 4] below:

Offsite Projected Doses (mrem)	Recommended Protective Actions	Comments
IF TEDE dose < 1000 mrem at Site Boundary AND Thy CDE < 5000 mrem at Site Boundary; THEN:	No protective actions recommended.	The states of MN & WI may choose to implement sheltering or precautionary evacuation for the general public at their discretion.
IF TEDE dose ≥ 1000 mrem at Site Boundary; OR Thy CDE ≥ 5000 mrem at Site Boundary; THEN:	See Next Page for specific evacuation recommendation.	Evacuation should be recommended in absence of local constraints. MN, WI or Local Tribe may choose to shelter if evacuation were not immediately possible due to offsite constraints (severe weather, competing disasters or local traffic constraints).

Figure 2 Protective Action Guides for On Shift Interim Emergency Director

PAGS for Early Phase Projected Doses (Continued)

Use the MIDAS 4-Day Integrated Dose to determine the Protective Action Recommendation base on the Protective Action Guidelines[1, 2, 3, 4] below:

Wind Condition	Offsite Projected Doses (mrem)	Recommended Protective Actions
IF wind is ≥ 5 mph AND	IF TEDE dose ≥ 1000 mrem beyond 5 miles; OR Thy CDE ≥ 5000 mrem beyond 5 miles; THEN:	Evacuate all sectors out to 5 miles; AND The five downwind sectors out to 10 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.
	IF TEDE dose ≥ 1000 mrem beyond 2 miles; OR Thy CDE ≥ 5000 mrem beyond 2 miles; THEN:	Evacuate all sectors out to 2 miles; AND The five downwind sectors out to 5 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.
	IF TEDE dose ≥ 1000 mrem at Site Boundary; OR Thy CDE ≥ 5000 mrem at Site Boundary; THEN:	Evacuate all sectors out to 2 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.
IF wind is < 5 mph; THEN	See next page.	

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1 REV: 11

Figure 2 Protective Action Guides for On Shift Interim Emergency Director

PAGS for Early Phase Projected Doses (Continued)

Use the MIDAS 4-Day Integrated Dose to determine the Protective Action Recommendation base on the Protective Action Guidelines[1, 2, 3, 4] below:

Wind Condition	Offsite Projected Doses (mrem)	Recommended Protective Actions
IF wind is < 5 mph AND	IF TEDE dose ≥ 1000 mrem beyond 5 miles; OR Thy CDE ≥ 5000 mrem beyond 5 miles; THEN:	Evacuate all sectors out to 10 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.
	IF TEDE dose ≥ 1000 mrem beyond 2 miles; OR Thy CDE ≥ 5000 mrem beyond 2 miles; THEN:	Evacuate all sectors out to 5 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.
	IF TEDE dose ≥ 1000 mrem at Site Boundary; OR Thy CDE ≥ 5000 mrem at Site Boundary; THEN:	Evacuate all sectors out to 2 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.

Notes: 1. TEDE = Total Effective Dose Equivalent, Thyroid CDE = Thyroid Committed Dose Equivalent
2. Based on EPA 400-R-92-001, May 1992
3. The Skin CDE PAG for evacuation of the general public is 50,000 mrem
4. Offsite projected doses include exposure from radioactive plume (external & internal) and 4 days exposure to ground contamination.

Figure 2 Protective Action Guides for On Shift Interim Emergency Director

PAGs for Emergency Workers

TEDE Dose Limit (mrem)	Activity	Condition
5,000	All	
10,000	Protecting valuable property	Lower dose not practicable
25,000	Life saving or protection of large populations	Lower dose not practicable
>25,000	Life saving or protection of large populations	Only on a voluntary basis to persons fully aware of the risks involved.

Notes: 1. Based on EPA 400-R-92-001, May 1992
2. These are doses to nonpregnant adults from external exposure and intake during an emergency.
3. Workers should limit dose to the lens of the eye to 3 times the listed values and doses to extremities and any other organ to 10 times the doses listed above.

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
		REV: 11

Figure 3 Emergency Notification Report Form

EXAMPLE ONLY
USE CURRENT REVISION

PINGP 577, Rev 27
Page 1 of 2
Retention: Life of Plant
Document Type: 7.36E

EMERGENCY NOTIFICATION REPORT FORM

INSTRUCTIONS

1. Complete all sections of this form for Alert, S.A., or General Emergency and NUEs involving a hazardous release; otherwise, Section 2.2 (Met Info) is not necessary.
2. Use Table 1 on Back of Page 2 to determine geopolitical subareas.
3. Notify State/Local authorities within 15 minutes, with information contained on Pages 1 and 2.
4. Fax only Page 1 and Page 2 Front to State/Local authorities.

1.1 PLANT IDENTIFICATION

This is _____, **Emergency Communicator at the Prairie Island Nuclear Generating Plant.** (651-388-1121)

_____ (a) This is a Real Emergency.
_____ (b) This is a Drill.

1.2 EVENT CLASSIFICATION

We have
_____ (a) Declared a(an) _____ Notification of Unusual Event
_____ (b) Escalated to a(an) _____ Alert
_____ (c) No classification change, PAR update only. _____ Site Area Emergency
_____ (d) Terminated the _____ General Emergency
_____ and entered the Recovery Phase

At _____ **hours on** _____ **(date).**

1.3 RELEASE INFORMATION (Report a radioactive release if any RCS activity or Rad Waste System activity is released to the environment during an emergency.)

The emergency
_____ (a) **DOES NOT** involve a radioactive release.
_____ (b) **DOES** involve a _____ radioactive release.
liquid/airborne

1.4 PROTECTIVE ACTION RECOMMENDATION

The protective action recommended at this time is:

_____ (a) Evacuate ___ALL___ sectors out to _____ miles
_____ sectors out to _____ miles

(circle) SUBAREAS (2) 5N 5E 5S 5W 10NW 10N 10NE 10E 10SE 10SW 10W

Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.

_____ (b) None
_____ (c) Other _____

J:\TEMPLATE\0577 Emergency Notification Report Form.dot

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1 REV: 11

Figure 3 Emergency Notification Report Form

EXAMPLE ONLY
USE CURRENT REVISION

PINGP 577, Rev 27
Page 2 of 2 (FRONT)

EMERGENCY NOTIFICATION REPORT FORM

2.1 **EVENT DESCRIPTION** (Use the generic Initiating Condition and the EAL Ref. Manual # from F3-2.)

The initiating event causing the emergency is:

_____

_____

_____

The EAL Reference Manual Condition Number is _____.

This event is related to: ( ) Unit 1 ( ) Unit 2 ( ) Both Units

2.2 **METEOROLOGICAL INFORMATION** (Complete this section for an Alert, S.A. or General Emergency and an NUE involving a hazardous release; otherwise NA may be indicated. Use the 10 meter 15 minutes average met data, from the 10a sensor if reliable, otherwise use 10b, 60a, 60b, or 22 meter tower. Use 60a for stability class, otherwise use 60b. If met not available via MIDAS, access met via ERCS per F3-13.5.)

Present Meteorological data is:

a. **Wind Speed** _____ **mph**

b. **Wind direction (from)** _____ °

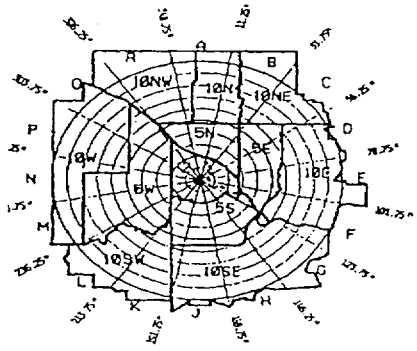
c. **Temperature** _____ °F

d. **Precipitation** _____

e. **Stability Class:** A B C D E F G
(Circle One)
unstable ⇐ ⇒ stable

f. **Affected sectors** _____

_____



2.3 **PLEASE RELAY THIS INFORMATION TO YOUR EMERGENCY ORGANIZATION PERSONNEL.**

NOTE:	ED/EM should ensure date & time are correct in Section 1.2.

EMERGENCY DIRECTOR/MANAGER APPROVAL_____
NAME

For NUE Routing Only _____Supt. Radiation Protection and Chemistry

Figure 3 Emergency Notification Report Form

EXAMPLE ONLY
USE CURRENT REVISION

PINGP 577, Rev. 27
Page 2 of 2 (BACK)

EMERGENCY NOTIFICATION REPORT FORM

NOTE:	DO NOT FAX THIS PAGE TO STATE AND LOCAL AUTHORITIES

TABLE 1

SELECTING GEOPOLITICAL SUBAREAS

Choose geopolitical subareas corresponding to the current wind direction (or affected downwind sectors) and the desired downwind distance one needs to apply the Protective Action Recommendations.

	AFFECTED DOWNWIND SECTORS	AFFECTED GEOPOLITICAL SUBAREAS		
		2 MILES	5 MILES	10 MILES
IF WIND < 5 MPH OR FROM 22 M MET TOWER	ALL	2	5N, 5E, 5S, 5W	10NW, 10N, 10NE, 10E, 10SE, 10SW, 10W

FOR WIND ≥ 5 MPH, WIND FROM (DEGREES)	AFFECTED DOWNWIND SECTORS	AFFECTED GEOPOLITICAL SUBAREAS		
		2 MILES	5 MILES	10 MILES
348.75 - 11.25	GHJKL	2	5S, 5W	10SE, 10SW
11.25 - 33.75	HJKLM	2	5S, 5W	10SE, 10SW, 10W
33.75 - 56.25	JKLMN	2	5S, 5W	10SE, 10SW, 10W
56.25 - 78.75	KLMNP	2	5S, 5W	10SW, 10W
78.75 - 101.25	LMNPQ	2	5W	10SW, 10W
101.25 - 123.75	MNPQR	2	5W, 5N	10W, 10NW
123.75 - 146.25	NPQRA	2	5W, 5N	10W, 10NW, 10N
146.25 - 168.75	PQRAB	2	5W, 5N	10W, 10NW, 10N, 10NE
168.75 - 191.25	QRABC	2	5W, 5N, 5E	10W, 10WN, 10N, 10NE
191.25 - 213.75	RABCD	2	5N, 5E	10NW, 10N, 10NE, 10E
213.75 - 236.25	ABCDE	2	5N, 5E	10NW, 10N, 10NE, 10E
236.25 - 258.75	BCDEF	2	5N, 5E	10N, 10NE, 10E
258.75 - 281.25	CDEFG	2	5N, 5E, 5S	10NE, 10E, 10SE
281.25 - 303.75	DEFGH	2	5N, 5E, 5S	10E, 10SE
303.75 - 326.25	EFGHJ	2	5E, 5S	10E, 10SE
326.25 - 348.75	FGHJK	2	5E, 5S	10E, 10SE, 10SW

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
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Attachment 1 Definitions Related to PARS

1.0 **Affected Area** is any area where radiation emanating from a plume or deposited material from the plume can be detected using field instruments. (Also known as the footprint.)

2.0 **Affected Sectors** refer to those sectors that are in a downwind direction from the plant. If the wind speed ≥5 mph, the affected sectors are the 2 sectors on either side of the downwind sector and the downwind sector. If the wind speed < 5 mph, all sectors are affected sectors (because of meandering).

3.0 **Dose Terms**

3.1 **Dose Equivalent (rem)** refers to the product of absorbed dose (rad) and the quality factor (i.e., rads X QF = rem).

3.2 **Effective Dose Equivalent (rem)** is the sum of the products of the dose equivalent (rem) to each organ and a weighting factor, where the weighting factor is the ratio of the stochastic risk arising from an organ or tissue to the total risk when the whole body is irradiated uniformly.

3.3 **Committed Dose Equivalent (rem)** refers to the dose equivalent to organs or tissues that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

3.4 **Committed Effective Dose Equivalent (rem) (CEDE)** refers to the sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues.

3.5 **Deep Dose Equivalent (rem)** refers to the external whole body exposure due to external radiation from the radioactive plume or deposited radioactive material.

3.6 **Total Effective Dose Equivalent (rem) (TEDE)** refers to the sum of the deep dose equivalent and the committed effective dose equivalent (TEDE = Deep Dose Equivalent + CEDE).

3.7 **Thyroid Committed Dose Equivalent (rem) (Thyroid CDE)** refers to the committed dose equivalent to the thyroid due to internally deposited radionuclides from inhalation.

Attachment 1 Definitions Related to PARS

4.0 Emergency Planning Zone (EPZ) is a defined area around the Prairie Island plant to facilitate emergency planning by state and local authorities, to assure that prompt and effective actions are taken to protect the public in the event of a release of radioactive material. It is defined for:

4.1 Plume Exposure Pathway (10 mile EPZ)

The 10 mile radius around the Prairie Island plant defined for the early phase plume exposure. The principal exposure sources from this pathway are:

4.1.1 External exposure from the radioactive plume (either overhead or submergence);

4.1.2 External exposure from the radionuclides deposited on the ground by the plume; and

4.1.3 Internal exposure from the inhaled radionuclides deposited in the body.

4.2 Ingestion Exposure Pathway (50 mile EPZ)

A 50 mile radius around the Prairie Island plant where the principal exposure would be from the ingestion of contaminated water or foods such as, milk or fresh vegetables.

5.0 Evacuation is the urgent removal of people from an area to avoid or reduce high-level, short-term exposure, usually from the plume or from deposited activity.

6.0 Geopolitical Subareas are subareas of the 10 mile EPZ defined by predetermined geographic and/or political boundaries. A map of the geopolitical subareas and a table for selecting the affected geopolitical subareas are shown in Figure 3, PINGP 577, "Emergency Notification Report Form".

7.0 Keyhole Area is a subarea of the 10 mile EPZ defined by a 360 degree area surrounding the plant out to a distance of 2 or 5 miles and continuing in a downwind direction which should include 2 sectors on either side of the affected sector, out to a distance determined by the Protective Action Guides.

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
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Attachment 1 Definitions Related to PARS

8.0 **Nuclear Incident Phases** relate to three time periods following the beginning of a nuclear incident.

8.1 **Early Phase** or emergency phase is the period immediately following the beginning of the incident. There may be a threat of a radiological release or an actual ongoing radiological release to the environment. Immediate decisions concerning protective actions are required and usually based on plant conditions or offsite dose projections. This phase may last from hours to days.

8.2 **Intermediate Phase** is the period beginning after the source and releases have been brought under control. Based on environmental measurements, additional protective actions may be made. This phase may overlap the early and late phase and may last from weeks to many months.

8.3 **Late Phase** is the period beginning when offsite recovery action designed to reduce radiation levels in the environment to acceptable levels for unrestricted use are commenced. This period may extend from months to years.

9.0 **Projected Dose** refers to the future dose calculated for a specified time period on the basis of estimated or measured initial concentration of radionuclides or exposure rates and in the absence of protective actions.

9.1 **Plume Projected Dose** refers to future calculated doses from plume submersion, plume shine, plume inhalation and 4 days of ground deposition exposure.

9.2 **Relocation Projected Dose** refers to future calculated doses from one year of exposure to ground deposition groundshine and inhalation of resuspended material, but excluding internal dose from consuming contaminated foodstuffs.

9.3 **Ingestion Pathway Projected Dose** is the projected CEDE (ICRP-30) from consuming contaminated foodstuffs.

10.0 **Protective Action** refers to an action taken to avoid or reduce radiation dose to members of the public.

11.0 **Protective Action Guide (PAG)** refers to a projected dose level that warrants protective actions.

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
		REV: 11

Attachment 1 Definitions Related to PARS

12.0 **Public Alert and Notification System (PANS)** is used to alert the public within the 10 mile Emergency Planning Zone of an emergency condition at Prairie Island. Once alerted, the public should then turn to local commercial broadcast messages for specific protective action instructions. The PANS consists of the following:

12.1 Fixed Sirens for 100% coverage throughout the 5 mile zone and in population centers in the 5-10 mile zone.

12.2 Emergency vehicles with sirens and public address in the 5-10 mile areas not covered by fixed sirens.

12.3 National Oceanic and Atmospheric Administration (NOAA) activated tone alert radios in institutional, educational, and commercial facilities.

12.4 The Emergency Alert System (EAS) which has access to television and radio stations within the area.

13.0 **Return** refers to people permanently reoccupying their normal residence within a previously evacuated area.

14.0 **Reentry** refers to temporary entry into an evacuated area under controlled conditions.

15.0 **Relocation** refers to removal or continued exclusion of people from contaminated areas to avoid chronic radiation exposure.

16.0 **Sheltering** refers to the use of a structure for radiation protection from an airborne plume and/or deposited radioactive material.

F3	WEATHER FORECASTING INFORMATION	NUMBER: F3-13.6 REV: 11

REFERENCE USE

- *Procedure segments may be performed from memory.*
- *Use the procedure to verify segments are complete.*
- *Mark off steps within segment before continuing.*
- *Procedure should be available at the work location.*

F3	WEATHER FORECASTING INFORMATION	NUMBER: F3-13.6
		REV: 11

1.0 PURPOSE

This procedure provides instructions to obtain weather forecast information from the National Weather Service and satisfies the weather forecasting capability commitments made in the PINGP Emergency Plan.

2.0 APPLICABILITY

This procedure **SHALL** apply to the Shift Emergency Communicator, Radiological Emergency Coordinators (REC) and Radiation Protection Support Supervisor.

3.0 PRECAUTIONS

Ensure that weather forecast information is being considered whenever protection actions are being recommended.

4.0 INITIAL CONDITIONS

An Alert, SIte Area Emergency or General Emergency has been declared.

F3	WEATHER FORECASTING INFORMATION	NUMBER: F3-13.6
		REV: 11

5.0 PROCEDURE

5.1 Contact the National Weather Service Forecast Office by telephone at: 952-361-6671

5.2 Request the desired weather forecast information (e.g., wind speed/direction, stability class, precipitation, etc.) for zone forecast area number 78 (See Figure 1 for the Zone Forecast Boundaries).

5.3 General area trends and forecasts may be received via the Internet at:

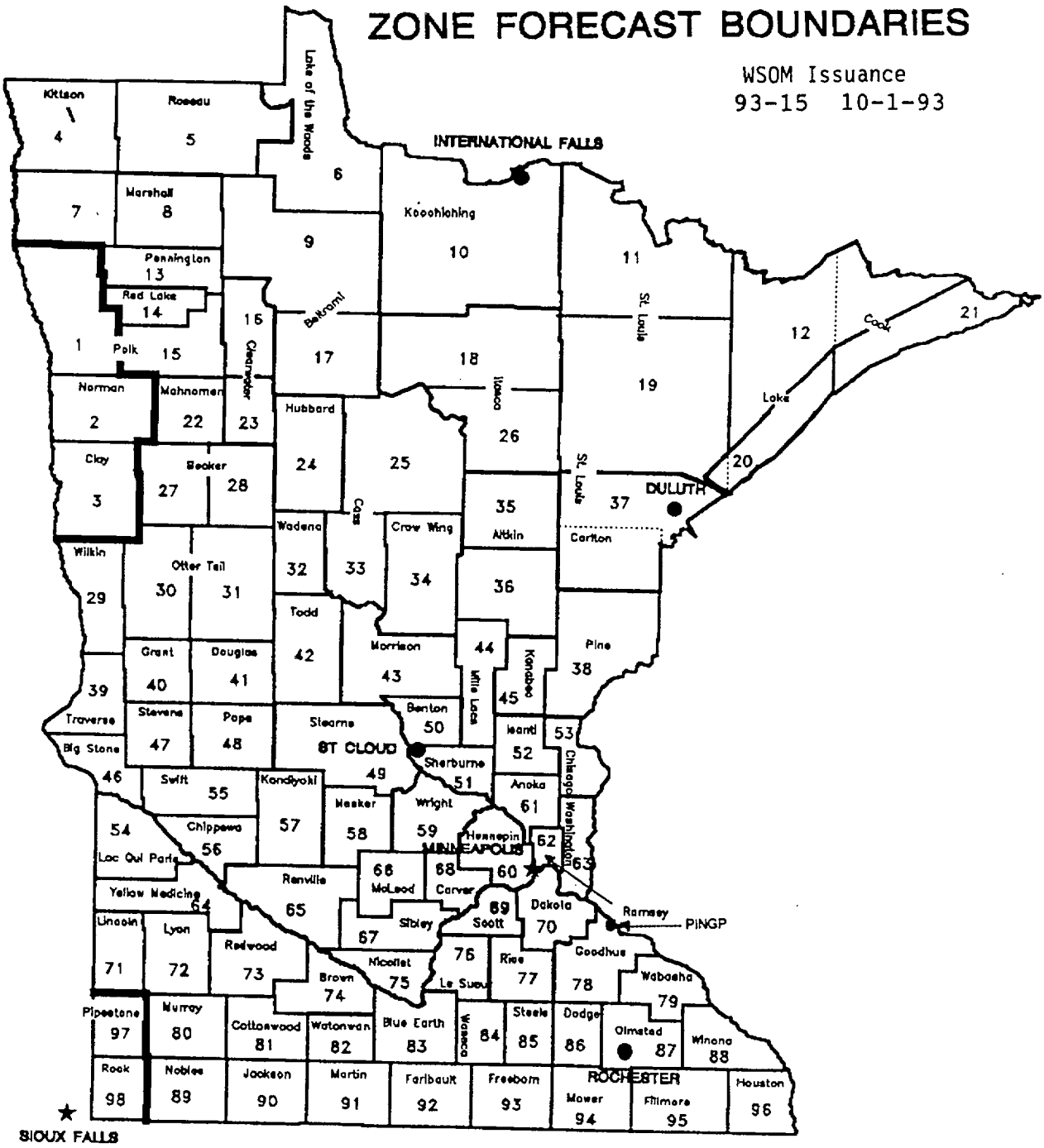
5.3.1 www.intellicast.com

5.3.2 www.chr.noaa.gov

5.3.3 www.wsicorp.com

F3	WEATHER FORECASTING INFORMATION	NUMBER: F3-13.6
		REV: 11

Figure 1



F3	THYROID IODINE BLOCKING AGENT (POTASSIUM IODINE)	NUMBER: F3-18
		REV: 8

REFERENCE USE
• *Procedure segments may be performed from memory.*
• *Use the procedure to verify segments are complete.*
• *Mark off steps within segment before continuing.*
• *Procedure should be available at the work location.*

O.C. REVIEW DATE:	OWNER:	EFFECTIVE DATE
3-2-01 SC	M. Werner	3-9-01

F3	THYROID IODINE BLOCKING AGENT (POTASSIUM IODINE)	NUMBER: F3-18
		REV: 8

1.0 PURPOSE

This procedure provides instructions for the issuance of thyroid iodine blocking agent (Potassium Iodine Tablets).

2.0 APPLICABILITY

This Instruction **SHALL** apply to all plant personnel involved in the emergency organization at Prairie Island. This procedure does NOT apply to members of the general public offsite.

3.0 PRECAUTIONS

3.1 Thyroid blocking agents are to be used in a radiation emergency only.

3.2 Use only as directed by the Emergency Director.

3.3 Potassium Iodide **SHALL NOT** be used by anyone who is allergic to iodine.

3.4 Follow the dosage instructions carefully. Potassium Iodide should be taken as soon as possible after authorization by the Emergency Director.

3.5 Do not take more than one dose every 24 hours and do not take for more than 10 days unless directed by the Emergency Director.

3.6 In case of an allergic reaction, stop taking Potassium Iodide immediately. Contact your supervisor and a physician immediately.

4.0 PREREQUISITES

Dose assessment indicates a possible or actual thyroid exposure of 25 Rem CDE.

F3	THYROID IODINE BLOCKING AGENT (POTASSIUM IODINE)	NUMBER: F3-18
		REV: 8

5.0 RESPONSIBILITIES

5.1 The Radiological Emergency Coordinator (REC) has the responsibility to assess and recommend to the Emergency Director when Potassium Iodide should be used.

5.2 The Emergency Director has the responsibility to authorize using Potassium Iodide when recommended by REC.

6.0 PROCEDURE

6.1 During emergency conditions, the Radiation Protection Group should **sample** areas of the plant where airborne iodine activity may exist.

NOTE:	**Since it is not feasible to conduct emergency operations with all emergency organization personnel wearing respiratory protection, the use of a thyroid blocking agent is highly recommended when thyroid dose could approach 25 REM CDE. (Final Recommendations, FDA, April, 1982)**

6.2 The Radiological Emergency Coordinator (REC) should **recommend**, to the Emergency Director, the use of Potassium Iodide WHEN:

6.2.1 Sample results indicate a possible thyroid exposure of 25 Rem CDE, using Figure 3 or Figure 4,

OR;

6.2.2 A large uncontrolled iodine release is imminent, AND the projected thyroid exposure could approach 25 Rem CDE.

6.3 The Emergency Director should **authorize** the use of Potassium Iodide and **order** its distribution.

F3	THYROID IODINE BLOCKING AGENT (POTASSIUM IODINE)	NUMBER: F3-18
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NOTE:	**Use of Potassium Iodide SHALL be strictly on a voluntary basis.**

6.4 The Coordinator at each of the emergency operating centers should complete the distribution of Potassium Iodide as follows:

6.4.1 **Distribute** a bottle containing Potassium Iodide tablets and an information sheet that describes the use of the tablets (See Figure 1), to each individual in the emergency operating center.

6.4.2 **Maintain** a distribution record (Figure 2) of all individuals receiving Potassium Iodide and **forwarded** to the Emergency Director.

6.4.3 **Instruct** each individual taking Potassium Iodide to read the informational leaflet (See Figure 1).

6.4.4 **Report** any side effects should be reported to plant management so that a medical evaluation may be made.

6.5 Each individual should take the prescribed dosage of one tablet every twenty-four hours. This dosage should be taken for a maximum of ten days unless directed otherwise by the Emergency Director.

6.6 Conditions should be continually evaluated by the Radiological Emergency Coordinator to determine when the usage of Potassium Iodide may be terminated.

6.7 WHEN the need for Potassium Iodide no longer exists, THEN all emergency organization personnel issued Potassium Iodide should return all unused tablets to the Emergency Director or his designee.

6.8 Update records to verify that all unused Potassium Iodide tablets have been returned.

F3	THYROID IODINE BLOCKING AGENT (POTASSIUM IODINE)	NUMBER: F3-18
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Figure 1

Patient Package Insert For

THYRO-BLOCK®
TABLETS
(POTASSIUM IODIDE TABLETS, USP)
(pronounced poe TASS-e-um EYE-oh-dyed)
(abbreviated: KI)

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 15° and 30°C (59° to 86°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 white, round, scored, monogrammed THYRO-BLOCK® TABLET contains 130 mg of potassium iodide. Other ingredients: magnesium stearate, microcrystalline cellulose, silica gel, and sodium thiosulfate.

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 salt 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 be 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 Tablets, USP) are white, round tablets, one side scored, other side 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

IN-0472-03 Rev. 5/94

F3	THYROID IODINE BLOCKING AGENT (POTASSIUM IODINE)	NUMBER: F3-18
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Figure 2

EXAMPLE ONLY
USE CURRENT REVISION

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Page 1 of 1
Retention: Lifetime

LOCATION _____ DATE _____

THYRO-BLOCK DISTRIBUTION

NAME	TLD/CO	AMOUNT/DATE ISSUED	AMOUNT/DATE RETURNED	REMARKS

Figure 3 Frisker Count Rate vs. Thyroid Dose Rate

Net Count Rate (cpm)	Thyroid Dose Rate (rem/h)	Net Count Rate (cpm)	Thyroid Dose Rate (rem/h)	Net Count Rate (cpm)	Thyroid Dose Rate (rem/h)	Net Count Rate (cpm)	Thyroid Dose Rate (rem/h)
30	0.002	240	0.28	1400	1.3	7000	6.8
40	0.017	260	0.29	1600	1.5	8000	8.3
50	0.024	280	0.31	1800	1.7	9000	9.2
60	0.037	300	0.33	2000	1.8	10000	10
70	0.046	350	0.37	2200	2.0	12000	11
80	0.057	400	0.42	2400	2.2	14000	14
90	0.064	450	0.48	2600	2.6	16000	18
100	0.079	500	0.55	2800	2.8	18000	24
120	0.097	600	0.66	3000	2.9	20000	28
140	0.11	700	0.73	3500	3.3	25000	46
160	0.13	800	0.84	4000	3.9	30000	61
180	0.17	900	0.92	4500	4.6	35000	92
200	0.18	1000	1.1	5000	5.1	40000	110
220	0.22	1200	1.3	6000	5.9	45000	180

Based on: - 25 Cubic Foot Air Sample
- Silver Zeolite Frisker Count Rate

Reference: NSP Internal Correspondence, Wildenborg to Agen, Airborne Radioactive Versus Thyroid Dose, December 10, 1996.

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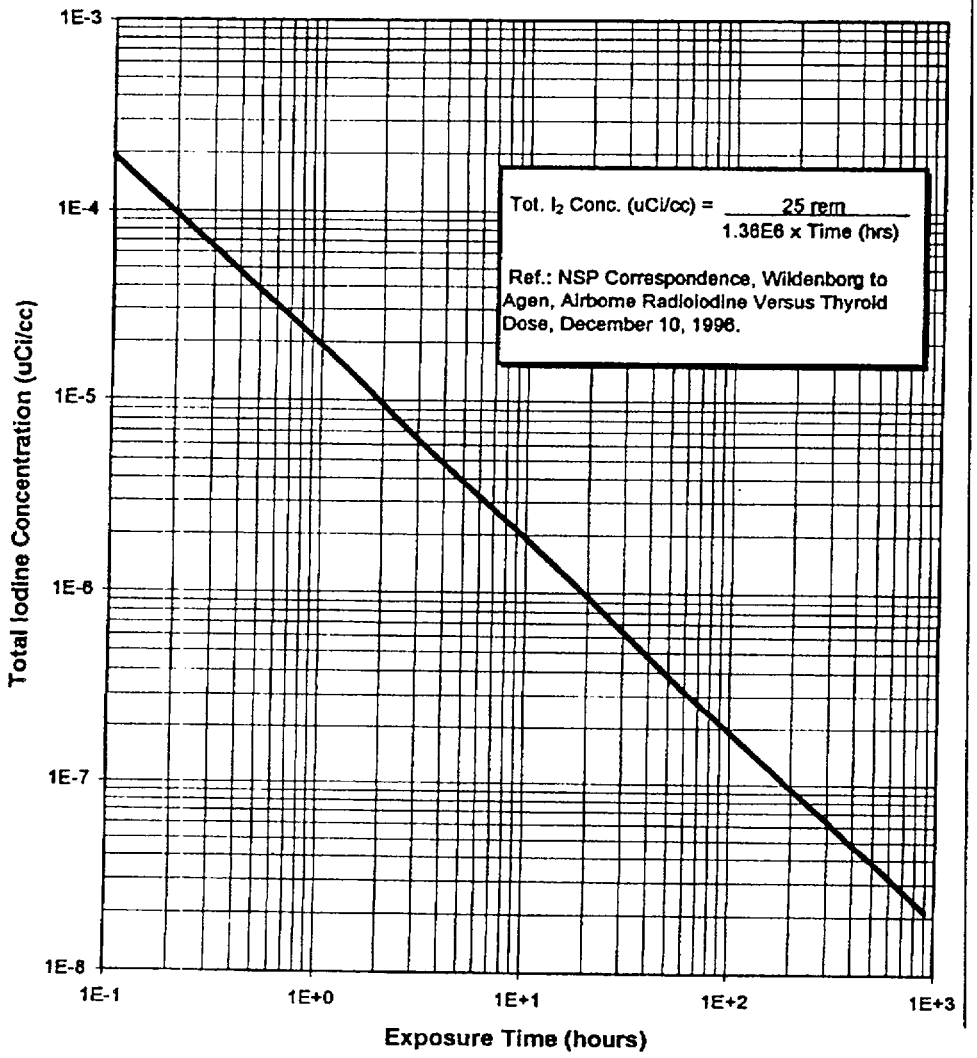
Figure 4

Iodine Concentration Vs. Exposure Time Resulting in 25 Rem CDE



F3	DETERMINATION OF RADIOACTIVE RELEASE CONCENTRATIONS	NUMBER: F3-20
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REFERENCE USE
• *Procedure segments may be performed from memory.*
• *Use the procedure to verify segments are complete.*
• *Mark off steps within segment before continuing.*
• *Procedure should be available at the work location.*

O.C. REVIEW DATE:	OWNER:	EFFECTIVE DATE
1-15-01 SC.		3-9-01

F3	DETERMINATION OF RADIOACTIVE RELEASE CONCENTRATIONS	NUMBER: F3-20
		REV: 17

1.0 PURPOSE

This procedure provides instructions to determine the concentration and flow rate of radionuclides being released via the steam release headers or Shield Building vent stacks.

2.0 APPLICABILITY

This Instruction **SHALL** apply to Radiological Emergency Coordinators (REC), Radiation Protection Support Supervisor (RPSS), and the MIDAS operators.

3.0 PRECAUTIONS

Use engineering judgment whenever possible to estimate steam relief flow rates.

4.0 PREREQUISITES

An Alert, Site Area Emergency, or General Emergency has been declared and there exists an actual or potential for radioactive airborne release.

5.0 PROCEDURE

5.1 Steam Release Activity

5.1.1 IF the ERCS is obtaining steam release data, THEN obtain the steam line dose rates and the steam rad release rate from the ERCS as follows:

A. At the TOC (Turn On Code), enter "GRPDIS STM-RAD" to gain access to the STM-RAD group of parameters.

B. The display will respond with a list of the points along with the prompt: ENTER UPDATE RATE IN SEC (5-1800). Enter the desired update interval, and then press <RETURN>.

C. Log Loop A & B Rad Level on Part I of PINGP 783.

D. Log Radiation Release Rate in μCi/sec on Part I of PINGP 783 (ERCS Rad Release Rate is already converted to μCi/sec Xe-133 Equiv.)

E. Go to Step 5.1.7.

5.1.2 If the ERCS is unable to provide steam release data, request an RPS to obtain the steam line dose rates in accordance with F3-20.1; or read R51 and R52 Rad Monitors local readout located in Train A Event Monitor Room (via 112 Bus Room). Log results on Part II of PINGP 783.

A. Using the time since reactor shutdown, obtain the Dose Rate Concentration Conversion Factor (IDE) from Figure 3, Figure 4 or Figure 5.

B. Calculate the noble gas release concentration, μCi/cc Xe-133 equivalent, by multiplying the steam line monitor dose rate (mR/hr) times the dose rate concentration conversion factor (μCi/cc/mR/hr).

5.1.3 Determine if a steam release is occurring thru the Safety Relief Valves, PORV's, Dump Valves or SDAFW Pump Turbine Exhaust.

A. If the Power Operated Relief Valves (PORV's) are not closed:

1. Estimate the fractional opening of the PORV (0-1). Assistance from the Engineering Technical Group may be required as appropriate.

2. Determine each PORV flow rate as follows:

   Flow Rate (CFM) = (3500)(L)
   where L = fractional opening

B. If the dump valves are not closed:

1. Check the position of the MSIV's. If both closed, no release should be occurring. If open, continue.

2. Estimate the fractional opening of the dump valves, L, (0-1). Assistance from the Engineering Technical Group may be required as appropriate.

3. Calculate each dump valve flow rate as follows:

   Flow Rate (CFM) = (6400)(L)
   where L = fractional opening (0-1)

C. If any of the safety relief valves are not closed:

1. The REC should request engineering to calculate each safety relief flow rate.

2. If the safety is known to be full open, a default flow of 6000 cfm may be used.

D. If Steam Driven Aux Feedwater Pump is in operation on contaminated steam from faulted steam generator, use a steam exhaust flow rate of 150 cfm as a maximum flow rate.

5.1.4 Determine the total steam release rate by summing the PORV, dump valve and safety valve flow rates.

5.1.5 If the SG's are flooded and water is relieving thru the PORV's, dumps or safeties, use engineering judgment to determine the flow rate. Use the estimated SG tube break flow rate. Consider using SI and Charging flow rates to be the flow rate through the SG tube break. Assume all the liquid flashes as it leaves the PORV's, dumps, or safeties.

5.1.6 Determine the noble gas release rate (Xe-133 Equiv μCi/sec) by multiplying the noble gas concentration by the total steam flow per Part IV of PINGP 783.

5.1.7 Determine the iodine release rate or concentration as follows:

A. Obtain the SG wide range level (%).

1. If the SG level ≤ 85%, use 0.001 as an iodine/noble gas ratio.

2. If the SG level > 85%, use 0.1 as an iodine/noble gas ratio or as determined by primary system of S/G sample.

B. Calculate the iodine release rate or concentration by multiplying the noble gas release rate or concentration by the applicable iodine/noble gas ratio.

NOTE:	In order to perform a MIDAS dose projection using an iodine/noble gas ratio of 0.1, use "Manual Entry of Isotopic Concentration" or "Manual Entry of Isotopic Release Rate".

5.2 Shield Building Vent Stack Activity

5.2.1 Calculate the ventilation flow rates (cfm) of each Shield Building Vent Stack.

A. Determine which ventilation systems are in service. (Information may be obtained from Control Room.)

Unit 1 Vent: Aux Special - 8000 CFM
Shield Building Vent - 400 CFM
Spent Fuel Pool Special - 5000 CFM

Unit 2 Vent: Aux Special - 8000 CFM
Shield Building Vent - 400 CFM
Spent Fuel Pool Special - 5000 CFM

NOTE:	Shield Building Vent should only be inservice on the unit experiencing accident. There are two trains of Shield Building Vent, each 200 CFM.

B. Log results on PINGP 784 (Figure 2)

5.2.2 Determine the gas activity (Xe-133 Equiv.) being released via the Shield Building Vent Stacks.

A. If the Shield Building Vent Stack radiation monitors are operable and on scale:

1. Obtain the Unit 1 and Unit 2 Shield Building Vent Stack radiation monitor count rate or dose rate from 1 [2] R-22 or 1 [2] R-50.

2. Using the count rate or dose rate, refer to the radiation monitor calibration curves, Figure 6, Figure 7 or Figure 9, to determine the gaseous release activity in μCi/cc Xe-133 equiv.

3. Record results on PINGP 784 (Figure 2).

B. If the Shield Building Vent Stack radiation monitors are not operable or not on-scale:

1. Request the RPS to obtain the 1 [2] R-50 gas chamber dose rates in accordance with F3-20.2.

2. Using the 1 [2] R-50 gas chamber dose rates, refer to Figure 7, to determine the gaseous release activity in μCi/cc Xe-133 equiv.

3. Record results on PINGP 784 (Figure 2).

5.2.3 Determine the iodine release activity (I-131 equiv.) as follows:

A. Request the RPS to obtain gas, iodine and particulate samples in accordance with F3-20.2.

B. Determine the total sample time in minutes.

1. Record the time the AgZ was changed.

2. Record the sample start time, which may be either:

- accident start time;
- release start time, if known. This may be determined by rad monitor indication, or;
- time since AgZ was last changed

3. Using the sample start and ending times, determine the total sample time, in minutes.

4. Record results on PINGP 784 (Figure 2).

C. Obtain and record on PINGP 784 (Figure 2), the AgZ flow rates in cc/min.

NOTE:	For high flow rate AgZ section, use conversion factor of 2.83E04 cc/ft^3 to convert CFM to cc/min.

D. Determine the total iodine activity on the AgZ adsorber.

1. Obtain, from the RPS , the count rate or dose rate on the AgZ, whichever is applicable.

2. Using the count rate or dose rate, refer to Figures 10, 11, or 12, to determine the total iodine activity, in μCi, on the AgZ adsorber.

3. Record results on PINGP 784 (Figure 2).

E. Determine the iodine activity, in μCi/cc, for each stack, as follows:

1. Stack Activity = $\dfrac{\text{AgZ Activity (μCi) X 50}}{\text{AgZ flow rate (cc/min) X Total Sample Time (min)}}$

2. Calculate the stack activity for both Shield Building Vents and record results on PINGP 784 (Figure 2).

NOTE:	A correction factor of 50 is used to adjust for sample line plate out of iodine.

NOTE:	If particulate activity is calculated; a correction factor of 3 is used to adjust for sample line plate out of particulates.

5.2.4 If radioactive effluents are being released from more than one release point, then determine an activity concentration and flow for each release path and input each into MIDAS dose calculations or calculate one weighted average concentration and total flow and input into MIDAS dose calculations. See PINGP 784 for calculating weighted averages.

F3	DETERMINATION OF RADIOACTIVE RELEASE CONCENTRATIONS	NUMBER: F3-20
		REV: 17

Figure 1

EXAMPLE ONLY
USE CURRENT REVISION

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Document Type: 7.37L
Retention: Life of Corporation

STEAM RELEASE ACTIVITY
(F3-20)

Date: _____ Time: _____ Unit: _____

Time since reactor shutdown: _____ hours

I. **STEAM RELEASE COMPUTER RELEASE RATE (Xe-133 Equiv. µCi/sec)**
Readings from ERCS "STM-RAD" Group:

	LOOP A (R51)	LOOP B (R52)
Steam Line Dose Rates	_____ mR/hr	_____ mR/hr

Total radioactive release rate _____ µCi/sec Xe-133 Equiv.

II. **MANUAL GASEOUS RELEASE CONCENTRATION DETERMINATION (Xe-133 Equivalent)**

	LOOP A (R51)	LOOP B (R52)
Steam Line Dose Rates:	_____ mR/hr	_____ mR/hr
Dose Rate Concentration Conversion Factor (IDE): µCi/cc/mR/hr (Fig. 3, 4, or 5)	_____ µCi/cc/mR/hr	_____
Release Concentration: (Stm Line Dose Rate x Dose Rate Concen. Convers. Factor)	_____ µCi/cc (Xe-133)	_____ µCi/cc (Xe-133)

III. **MANUAL STEAM FLOW RATE DETERMINATION (CFM)**
FOR EACH PORV:
L = fraction open = _____

Flow Rate = (3500) (L) _____ ft^3/min

FOR EACH DUMP VALVE:
L = fraction open = _____

Flow Rate - (6400) (L) _____ ft^3/min

FOR EACH SAFETY RELIEF:
Engineering Estimate Flow Rate = _____ ft^3/min

(Estimated Full Open Flow Rate = 6000 cfm)

FOR SDAFW PUMP TURBINE EXHAUST
(Estimated Maximum Flow Rate = 150 cfm) _____ ft^3/min

TOTAL STEAM FLOW _____ ft^3/min

J:\TEMPLATE\0783 Steam Release Activity.DOT

F3	DETERMINATION OF RADIOACTIVE RELEASE CONCENTRATIONS	NUMBER: F3-20
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Figure 1

EXAMPLE ONLY
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IV. MANUAL STEAM RELEASE RATE (Xe-133 Equiv. µCi/sec):

LOOP A Release Rate (Xe-133):

_____ µCi/cc x _____ ft^3/min x 472 cc/sec/ft^3/min = _____ µCi/sec

LOOP B Release Rate (Xe-133):

_____ µCi/cc x _____ ft^3/min x 472 cc/sec/ft^3/min = _____ µCi/sec

V. IODINE-131 EQUIVALENT RELEASE CONCENTRATIONS

SG Wide Range Level: LOOP A: _____ % LOOP B: _____ %

If SG Level ≤85%, use 0.001 iodine/noble gas ratio:

_____ (µCi/cc) Xe-133 Equiv. x 0.001 = _____ (µCi/cc) I-131
or (µCi/sec) or (µCi/sec)

If SG Level >85%, use 0.1 iodine/noble gas ratio:

_____ (µCi/cc) Xe-133 Equiv. x 0.1 = _____ (µCi/cc) I-131
or (µCi/sec) or (µCi/sec)

NOTE:	**The iodine release concentrations (µCi/cc) or release rates (µCi/sec) may be used in the "Manual Entry of Isotopic Concentration" or "Manual Entry of Isotopic Release Rate" MIDAS Accident Dose Calculations.**

Completed By: _____ Authenticated By: _____

F3	DETERMINATION OF RADIOACTIVE RELEASE CONCENTRATIONS	NUMBER: F3-20
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Figure 2

EXAMPLE ONLY USE CURRENT REVISION

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Document Type: 7.37K

SHIELD BUILDING STACK ACTIVITY (F3-20)

Date: _____ Time: _____

I. STACK FLOW RATES

	UNIT 1	UNIT 2
Aux Special (8000 CFM)	_____	_____
Shield Building Vent (400 CFM) (200 CFM/Train)	_____	_____
Spent Fuel Special (5000 CFM/Train)	_____	_____
TOTALS	_____	_____

II. GAS CONCENTRATIONS (Xe-133 Equiv.)

RAD MONITORS:	1R-22 _____ cpm	_____ µCi/cc (Fig. 6)	
	2R-22 _____ cpm	_____ µCi/cc (Fig. 6)	
	1R-50 _____ mR/hr	_____ µCi/cc (Fig. 7)	
	2R-50 _____ mR/hr	_____ µCi/cc (Fig. 7)	
SAMPLE CHAMBER:	UNIT 1 _____ mR/hr	_____ µCi/cc (Fig. 9)	
	UNIT 2 _____ mR/hr	_____ µCi/cc (Fig. 9)	

III. IODINE CONCENTRATIONS (I-131 Equiv.)

Sample Times: UNIT 1 ON _____ OFF _____ TOTAL _____ min.
UNIT 2 ON _____ OFF _____ TOTAL _____ min.

AgZ Flow rates: UNIT 1 _____ cc/min (Low Flow)
(High Flow) _____ cfm/x 2.83E04 = _____ cc/min
UNIT 2 _____ cc/min (Low Flow)
(High Flow) _____ cfm x 2.83E04 = _____ cc/min

Iodine Activity:	Dose/Count Rate	Total µCi's
Count rate	UNIT 1 _____ cpm	_____ µCi (Fig. 10)
(contact)	UNIT 2 _____ cpm	_____ µCi (Fig. 10)
Count rate	UNIT 1 _____ cpm	_____ µCi (Fig. 11)
(1 foot)	UNIT 2 _____ cpm	_____ µCi (Fig. 11)
Dose rate	UNIT 1 _____ mR/hr	_____ µCi (Fig. 12)
(1 foot)	UNIT 2 _____ mR/hr	_____ µCi (Fig. 12)

0784 Shield Building Stack Activity.dot

Figure 2

EXAMPLE ONLY
USE CURRENT REVISION

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IV. STACK ACTIVITY (I-131 Equiv.)

$$\text{Stack Activity} = \frac{\text{AgZ Activity } (\mu\text{Ci}) \times 50}{\text{AgZ Flow Rate (cc/min)} \times \text{Total Sample Time (min)}}$$

UNIT 1: $\frac{(\qquad \mu\text{Ci}) \times 50}{(\qquad \text{cc/min}) \times (\qquad \text{min})} =$ μCi/cc

UNIT 2: $\frac{(\qquad \mu\text{Ci}) \times 50}{(\qquad \text{cc/min}) \times (\qquad \text{min})} =$ μCi/cc

NOTES:

(1) A correction factor of 50 is used to adjust for sample line plate out of iodine.

(2) If particulate activity is calculated a correction factor of 3 is used to adjust for sample line plate out of particulate.

(3) The iodine release concentrations (μCi/cc) or release rates (μCi/sec) may be used in the "Manual Entry of Isotopic Concentration" or "Manual Entry of Isotopic Release Rate" MIDAS Accident Dose Calculations.

(4) If radioactive effluents are being released from more than one release point, then calculate:

(1) The total release flow rate, F, (cfm).
$F = F_1 + F_2 + \ldots$
and

(2) The AVERAGE CONCENTRATION (μCi/cc)

$$\text{AVG CONC} = \frac{(F_1)(ISO_1)}{(F)} + \frac{(F_2)(ISO_2)}{(F)} + \ldots$$

Where:
- F_1 = release point 1 flow rate (cfm)
- F_2 = release point 2 flow rate (cfm)
- ISO_1 = release path 1 isotope concentration (μCi/cc)
- ISO_2 = release path 2 isotope concentration (μCi/cc)

Completed By: _____ Authenticated By: _____

Figure 3

STEAM LINE MONITOR
DOSE RATE CONCENTRATION CONVERSION FACTOR
IDE VERSUS TIME FOR GAP RELEASE
0 – 24 HOURS

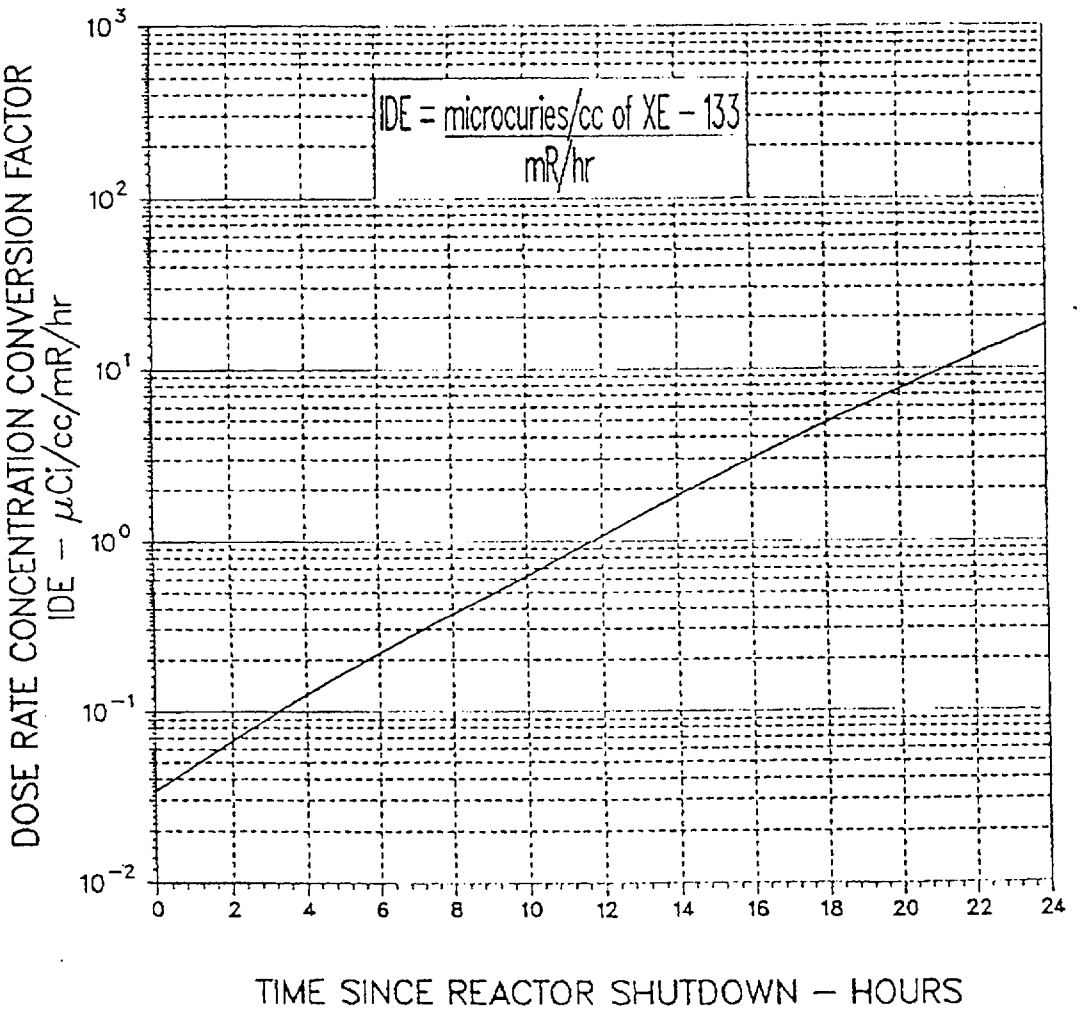


Figure 4

STEAM LINE MONITOR
DOSE RATE CONCENTRATION CONVERSION FACTOR
IDE VERSUS TIME FOR GAP RELEASE
24 – 48 HOURS

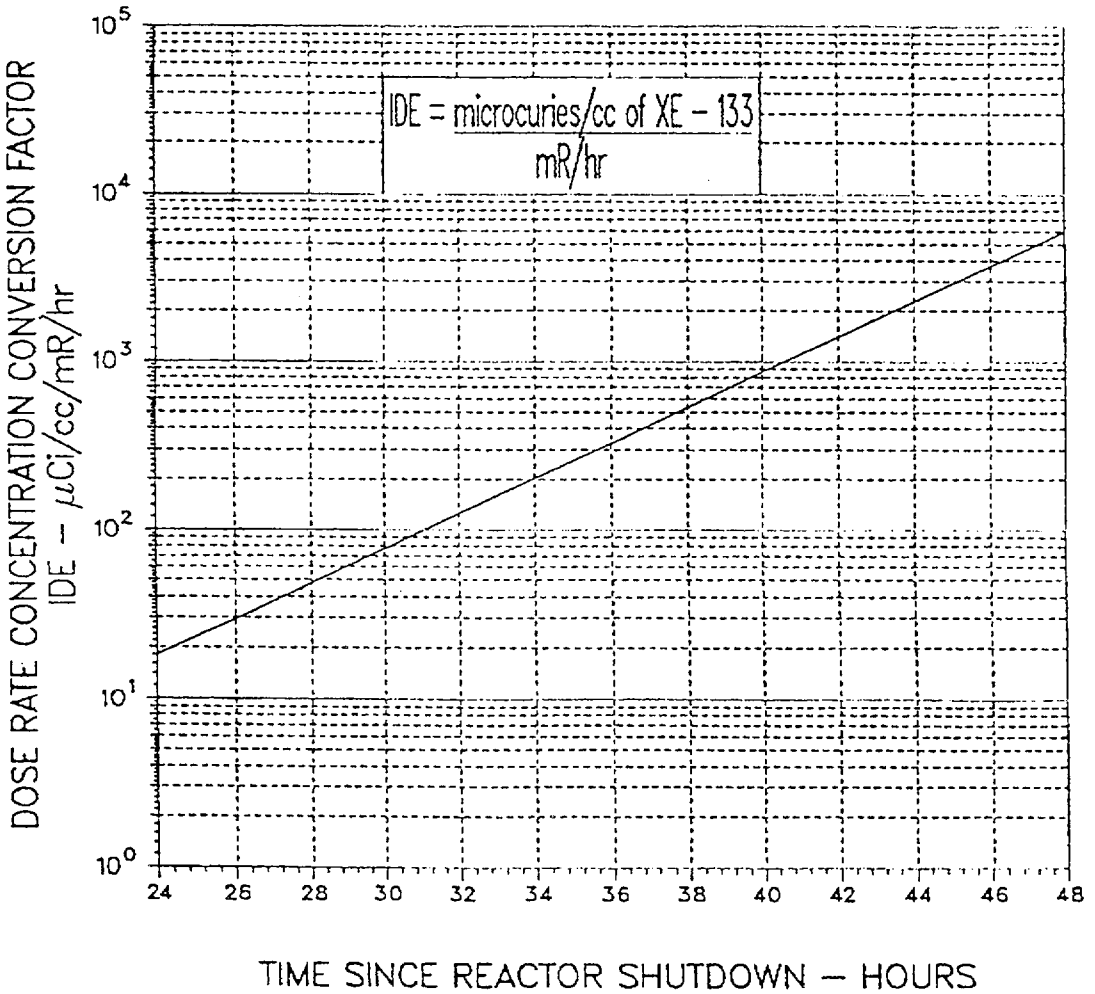


Figure 5

STEAM LINE MONITOR
DOSE RATE CONCENTRATION CONVERSION FACTOR
IDE VERSUS TIME FOR GAP RELEASE
0 – 7 DAYS

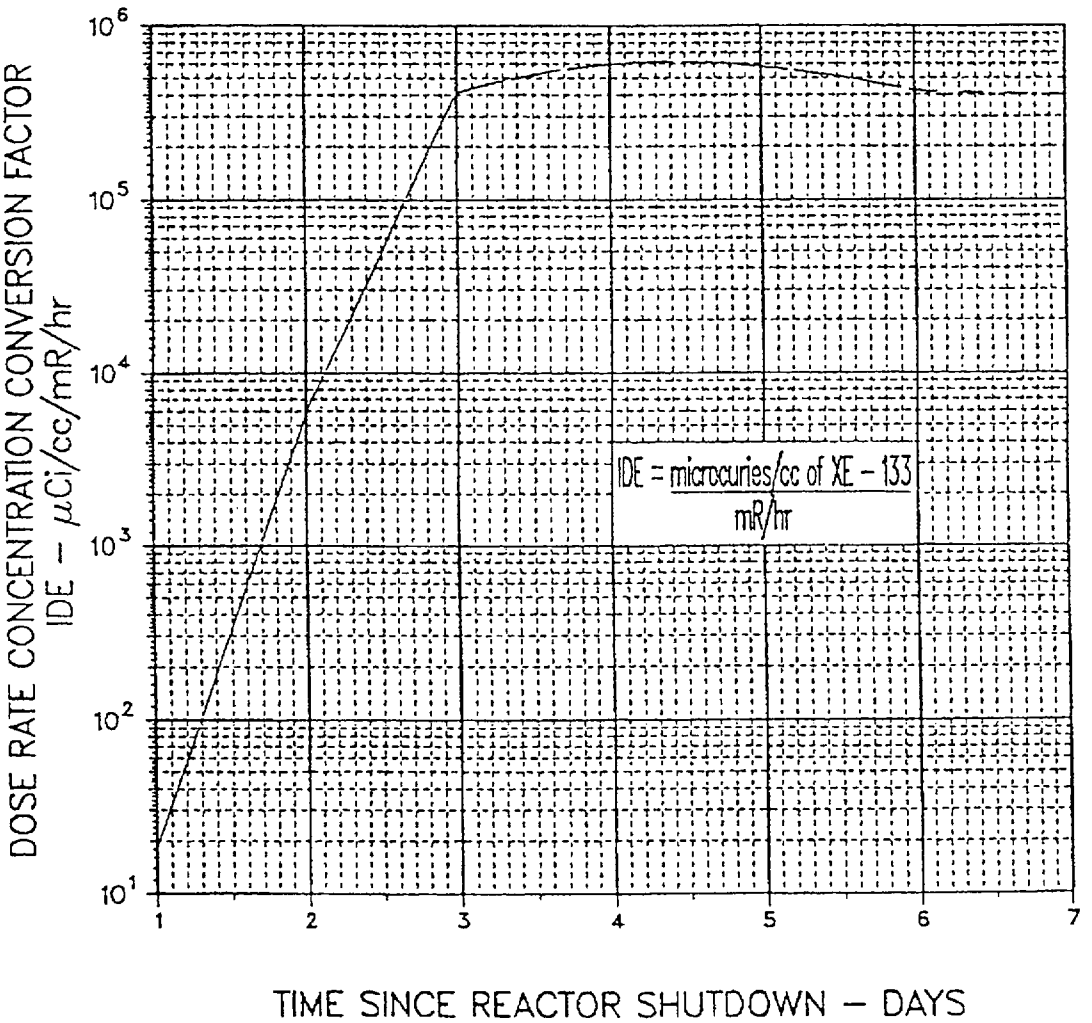


Figure 6

1R22 & 2R22 CALIBRATION CURVES

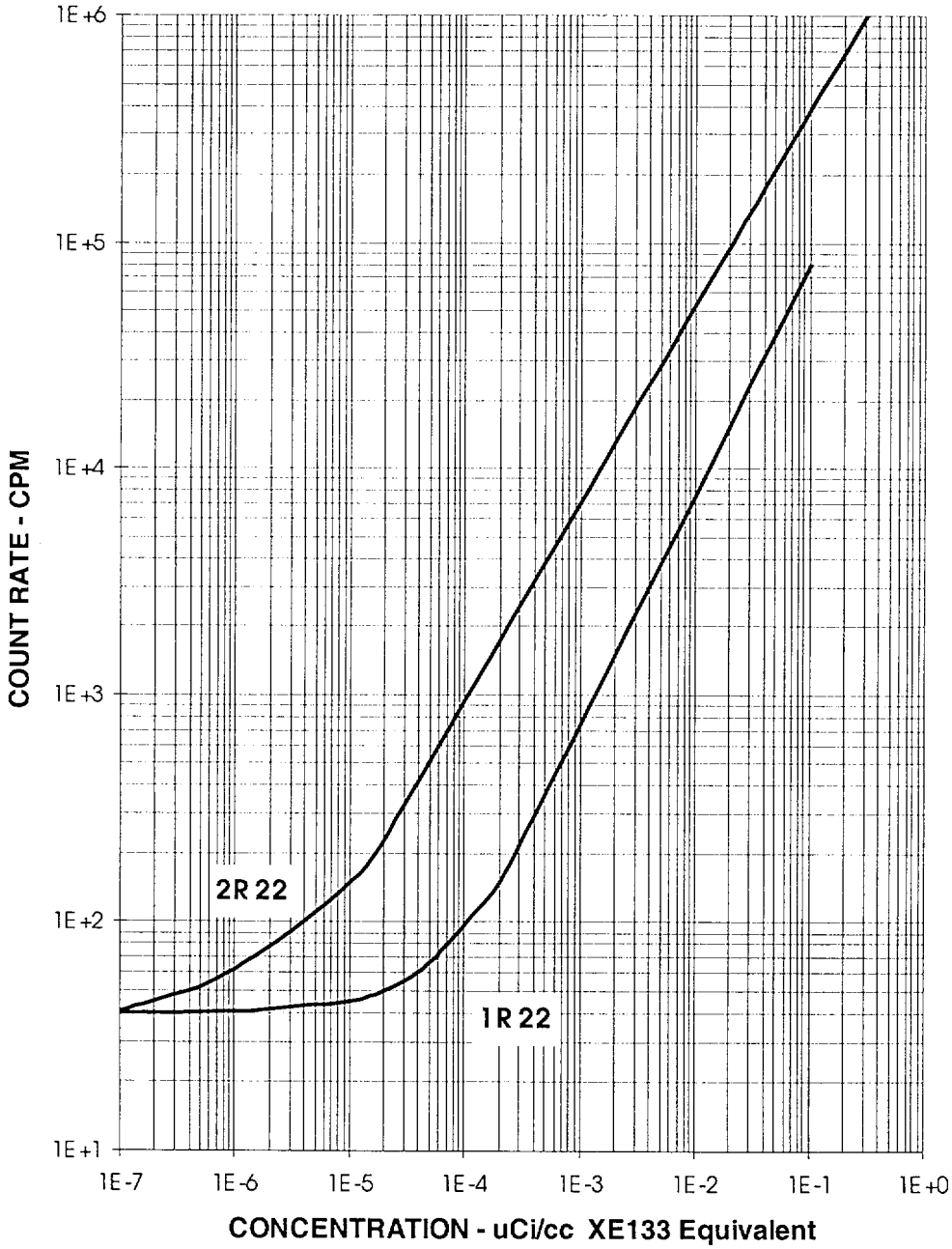


Figure 7

1 AND 2 R-50 CALIBRATION CURVE

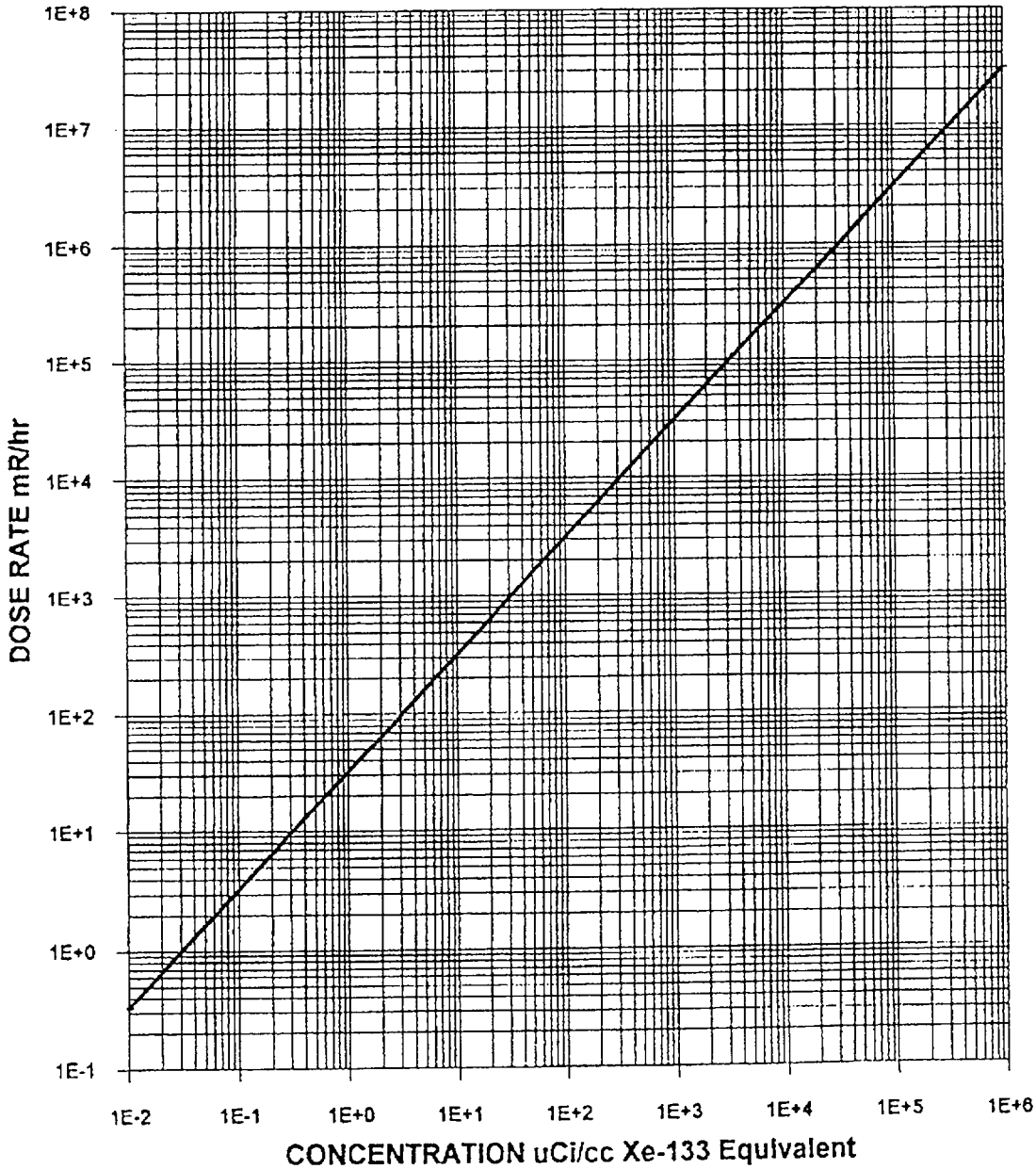
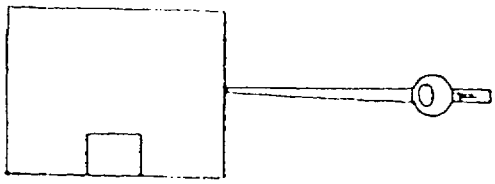


Figure 8

SHIELD BUILDING STACK MONITOR SAMPLE CHAMBER

MONITOR POINTS

TELESCAN or EXTENDER - End of probe against chamber at designated point.



RO-20 or RO-2A - Bottom of meter against side.

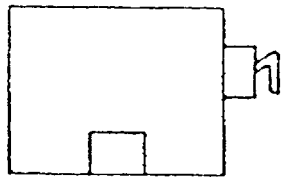


Figure 9

PORTABLE METER VERSUS
STACK GAS CHAMBER ACTIVITY

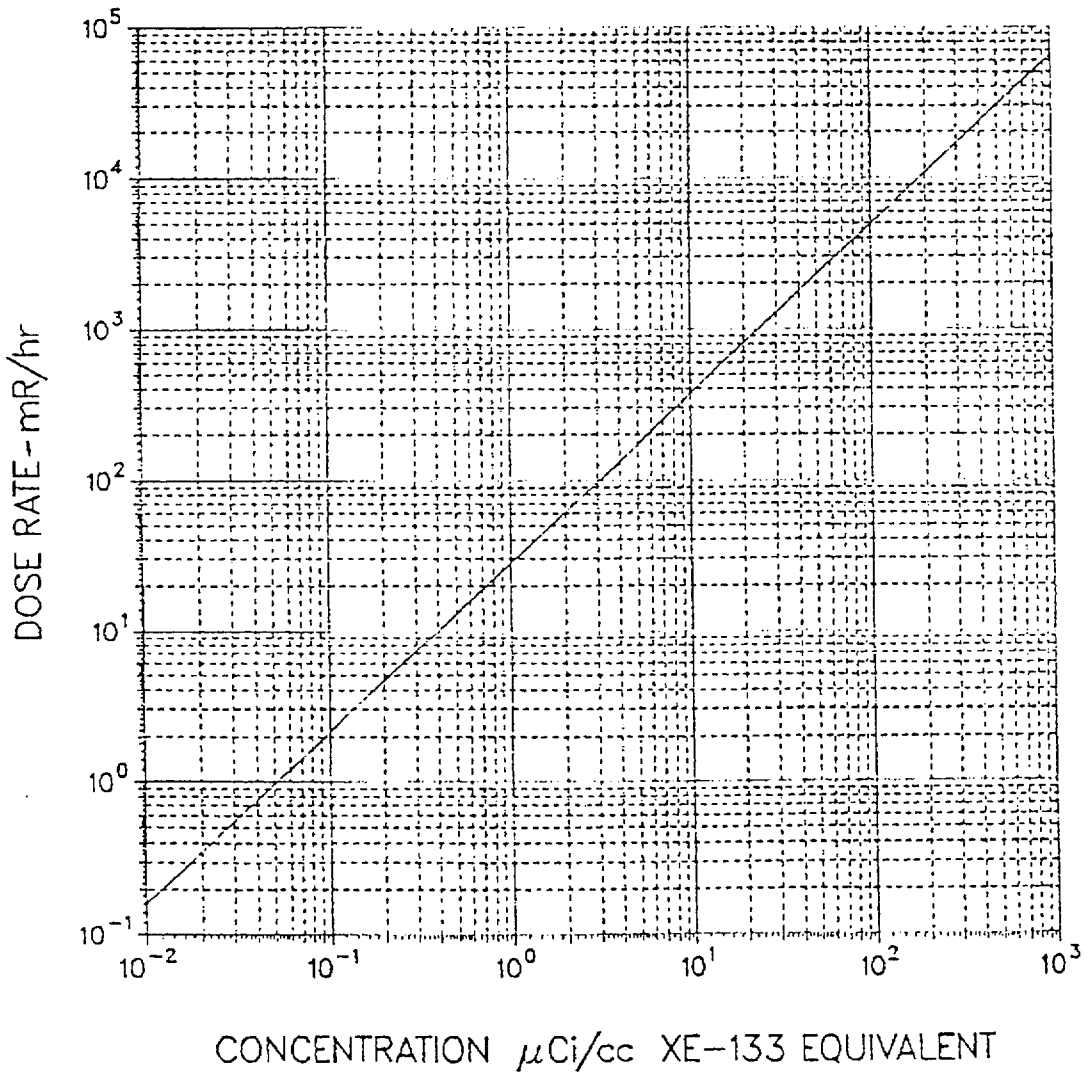


Figure 10

GROSS IODINE CURVE USING RM-14
WITH 2" GM PANCAKE PROBE WITH
SILVER ZEOLITE ADSORBER

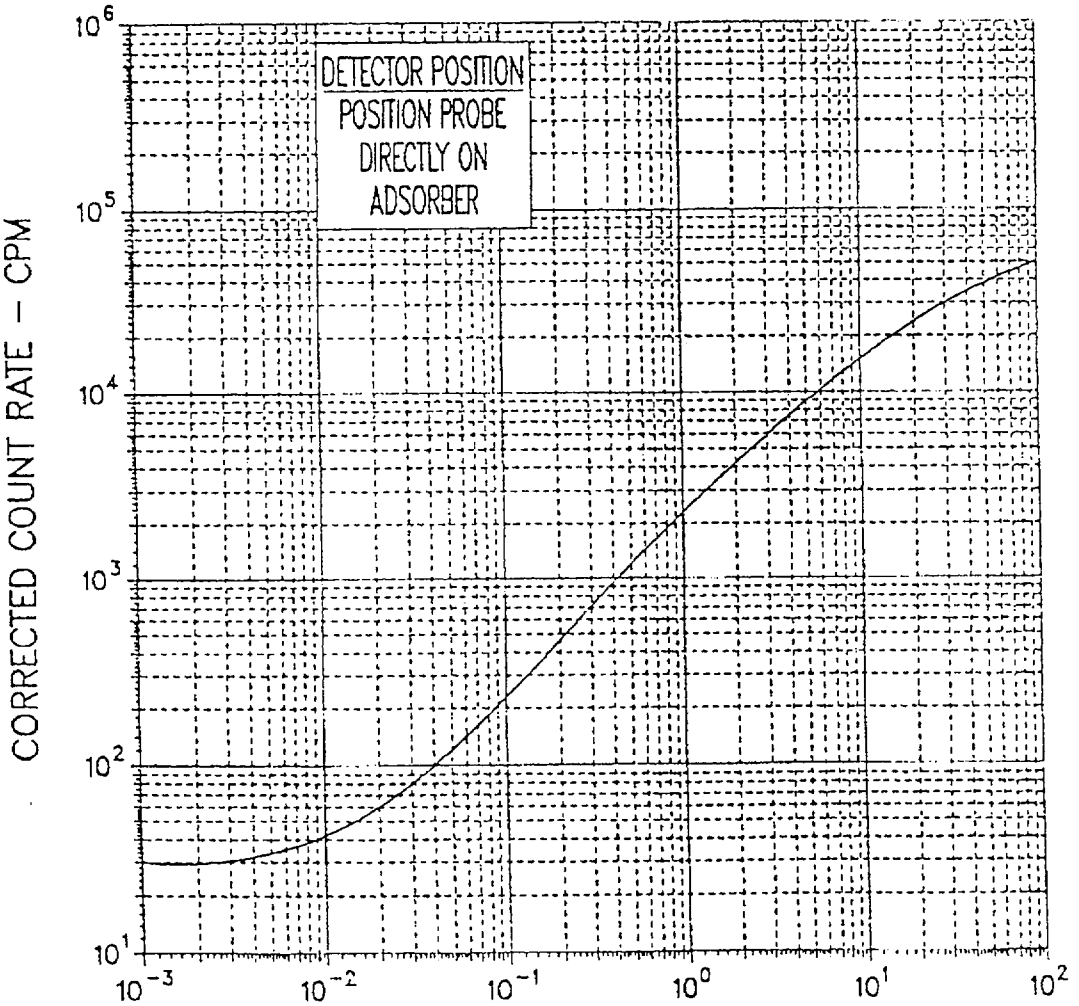


Figure 11

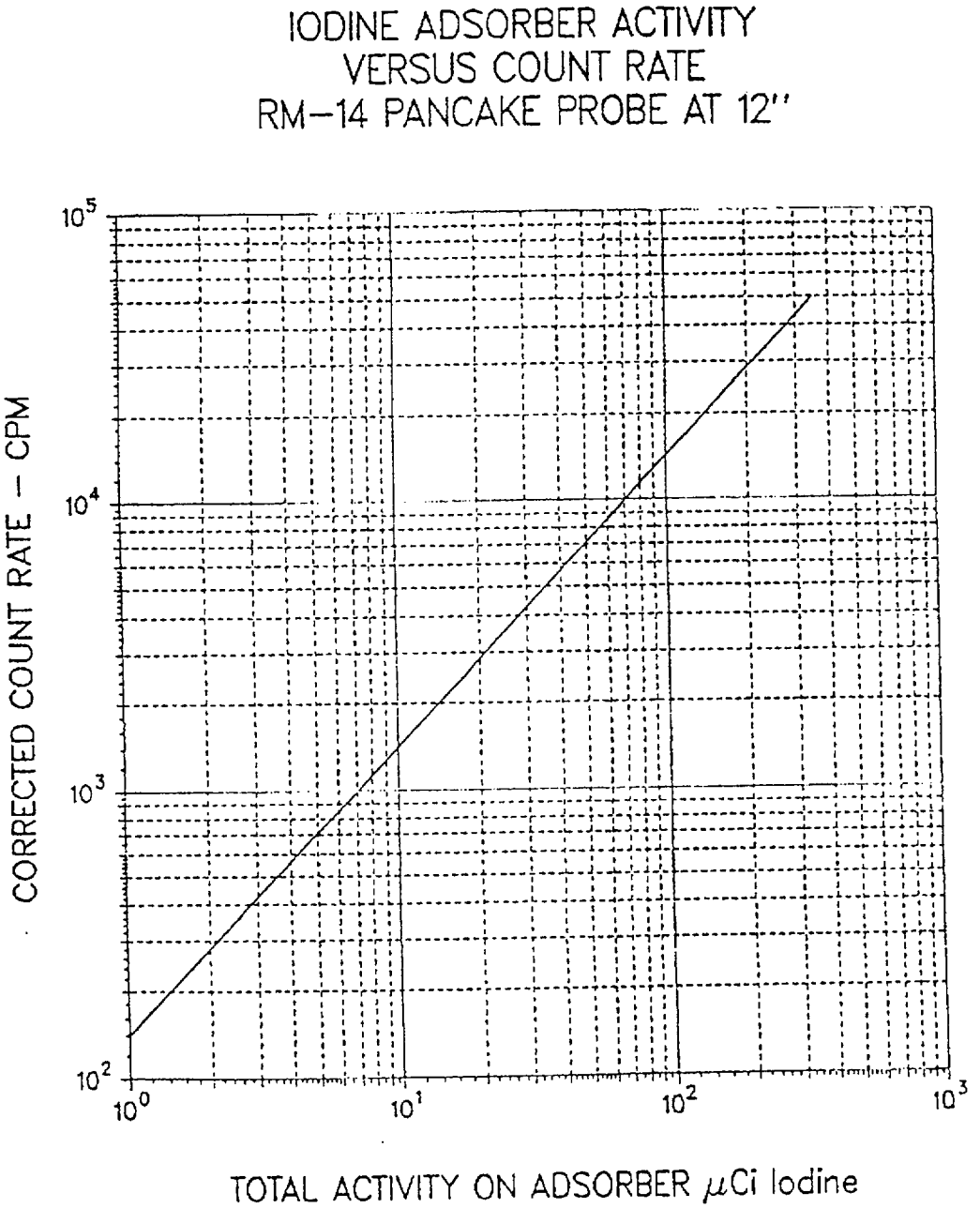
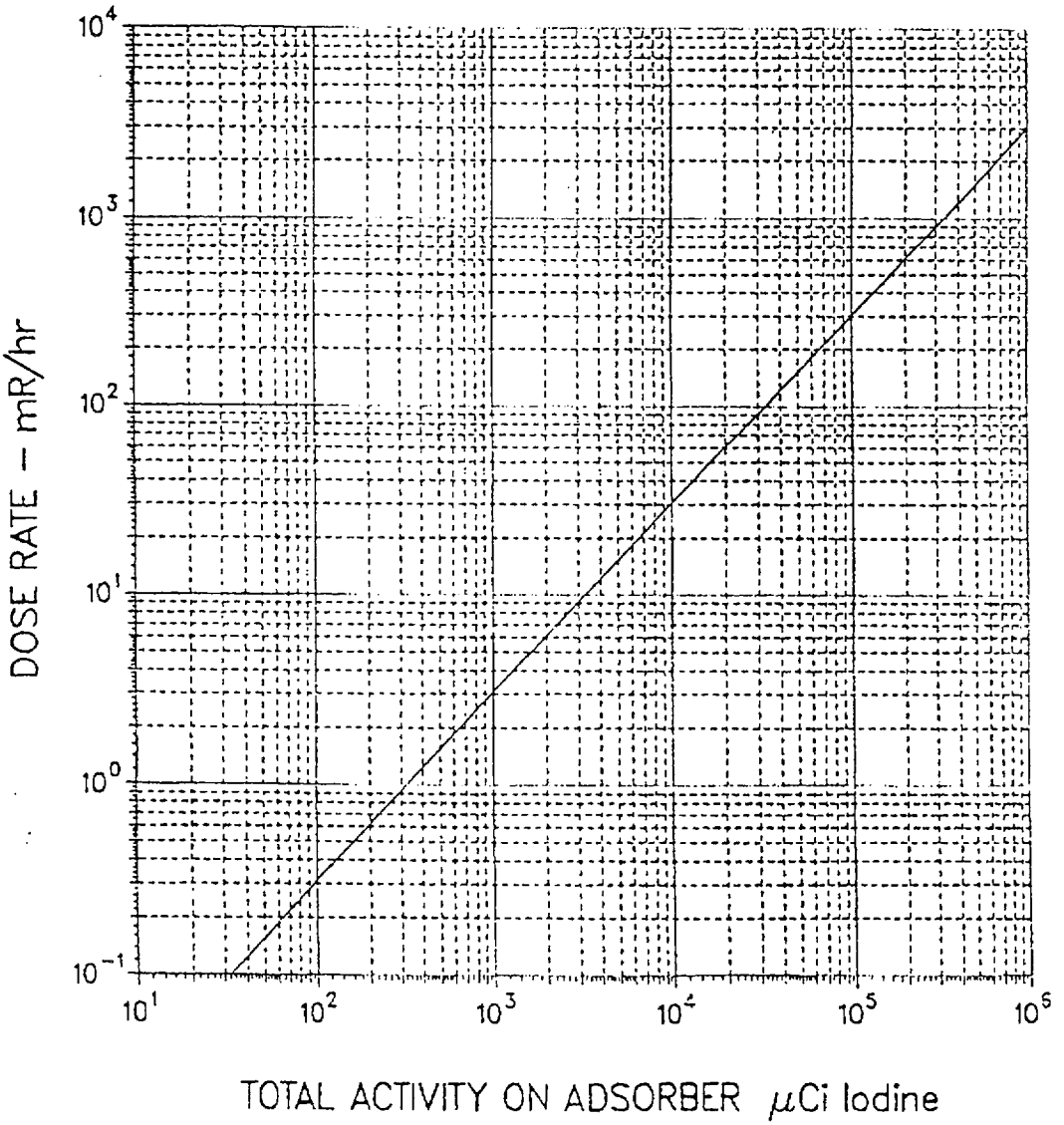

IODINE ADSORBER ACTIVITY
VERSUS COUNT RATE
RM-14 PANCAKE PROBE AT 12"
CORRECTED COUNT RATE - CPM
10^5
10^4
10^3
10^2
10^0
10^1
10^2
10^3
TOTAL ACTIVITY ON ADSORBER μCi Iodine

Figure 12

IODINE ADSORBER ACTIVITY VERSUS DOSE RATE
DOSE RATE METER AT 12''



F3	DETERMINATION OF STEAM LINE DOSE RATES	NUMBER: F3-20.1
		REV: 7

REFERENCE USE
• *Procedure segments may be performed from memory.*
• *Use the procedure to verify segments are complete.*
• *Mark off steps within segment before continuing.*
• *Procedure should be available at the work location.*

O.C. REVIEW DATE:	OWNER:	EFFECTIVE DATE
2-12-01 SC		3-9-01

F3	DETERMINATION OF STEAM LINE DOSE RATES	NUMBER: F3-20.1
		REV: 7

1.0 PURPOSE

This procedure provides instructions to enable the Radiation Protection Specialist to locally determine the dose rates on the steam lines whenever the steam line monitors are out of service.

NOTE:	**The radiological controls specified in this procedure are applicable only when there are indications of fuel damage.**

2.0 APPLICABILITY

This procedure applies to the Radiation Protection Specialists and to the Radiological Emergency Coordinator.

3.0 PRECAUTIONS

3.1 Minimize personnel exposure by waiting in lower dose rate areas.

3.2 If survey equipment should fail, all personnel **SHALL** return to a safe area.

3.3 Periodically check dosimeters. If above your allowable limit or off scale, return to a safe area, and notify the Radiological Emergency Coordinator.

3.4 Consider using two survey meters if radiation levels are expected to exceed 10R/hr.

4.0 RESPONSIBILITIES

4.1 The Radiological Emergency Coordinator has the responsibility to assess the need for steam line dose rate readings from AM-2 remote monitor, and to request the RPS Group to obtain readings in accordance with this procedure.

4.2 The Radiation Protection Specialists have the responsibility to obtain the AM-2 remote monitor readings, in accordance with this procedure, when requested by the REC.

5.0 PREREQUISITES

NONE

F3	DETERMINATION OF STEAM LINE DOSE RATES	NUMBER: F3-20.1
		REV: 7

6.0 PROCEDURE

The Radiation Protection Specialists should:

6.1 **Obtain** the current wholebody exposure for team members: _____

Name	TLD No.	Current Exposure	ADG	Allowable Exposure

6.2 **Verify** that each team member has necessary dosimetry. _____

6.3 IF OSC Rad. Prot. Coordinator has deemed protective clothing and/or respiratory protection necessary, THEN **don** necessary equipment. _____

6.4 **Obtain** a dose rate meter and **perform** meter check. _____

6.5 **Obtain** a portable radio for communication with the OSC. _____

NOTE:	**If a Unit 1 accident and/or high radiation levels exist, enter via D-3 Diesel Room (door #92). If a Unit 2 accident, enter via normal Access Control.**

6.6 IF a Unit 1 accident, THEN **request** security to open D-3 Diesel Rm (Door #92) OR **obtain** "Six" series key from SS office, key tags 173, 174, 175. _____

F3	DETERMINATION OF STEAM LINE DOSE RATES	NUMBER: F3-20.1 REV: 7

6.7 **Notify** OSC prior to entering Aux Bldg and **verify** any changes in plant status. _____

6.8 **Proceed** to the Turbine/Aux Bldg interface. _____

6.9 IF SCBA's are worn, THEN **activate** SCBA's. _____

6.10 **Record** dose rates in route and **report** results to the OSC as time permits. _____

695 Unit 2 _____mR/hr Access Control _____mR/hr

715 Unit 2 _____mR/hr 715 Unit 1 _____mR/hr

Hot Chem Lab _____mR/Hr

Hot Sample Room _____mR/Hr _____

6.11 **Proceed** to the steam line AM-2 remote monitor located by the BCMS panels, outside the Hot Lab. _____

6.12 **Turn** the AM-2 selector switch to the appropriate steam line and **record** the dose rates. _____

Unit 1 Loop A (1R51) _____ mR/hr Unit 2 Loop A (2R51) _____mR/hr

Unit 1 Loop B (1R52) _____ mR/hr Unit 2 Loop B (2R52) _____mR/hr

6.13 **Proceed** back to known lower dose rate area and **report** results to the OSC. _____

6.14 **Determine** from the OSC, if additional readings are required. _____

6.15 **Request** the OSC to convey the steam line dose rate information to the REC in the TSC. _____

6.16 **Exit** the Aux Bldg and **remove** any protective clothing worn. _____

6.17 **Return** this procedure to the OSC Rad. Prot. Coordinator. _____

F3	EMERGENCY HOTCELL PROCEDURE	NUMBER: F3-23.1
		REV: 10

REFERENCE USE
• *Procedure segments may be performed from memory.*
• *Use the procedure to verify segments are complete.*
• *Mark off steps within segment before continuing.*
• *Procedure should be available at the work location.*

O.C. REVIEW DATE:	OWNER:	EFFECTIVE DATE
2-23-01 SC		3-9-01

F3	EMERGENCY HOTCELL PROCEDURE	NUMBER: F3-23.1
		REV: 10

1.0 PURPOSE

The purpose of this procedure is to provide instructions to the Radiation Protection Group on the use of the Hotcell, to include Hotcell setup, various chemical analysis evolutions and radioactive sample disposal techniques.

2.0 APPLICABILITY

This Instruction is applicable to all Chemistry Radiation Protection Specialists.

3.0 PRECAUTIONS

3.1 Monitor the general area of the Hotcell for direct radiation to ensure the habitability of the Hotcell.

3.2 The reactor coolant samples taken in an accident condition have the potential to be highly radioactive. This may give rise to dose rates far in excess of what would normally be encountered. All work involving these samples is to be performed in the Hotcell with the fume hood in operation and with remote handling tools, to minimize radiation exposure, until one of the following is determined:

3.2.1 The sample is determined not to have dose rates in excess of normal values.

3.2.2 The sample has been diluted to the point where the diluted portion does not have dose rates in excess of normal values.

3.3 If a sample is determined to be of normal dose rate values, or is diluted to the point NOT to exceed normal dose rate values, the following should apply:

3.3.1 The instructions specified in this procedure may be completed in an area other than the Hotcell Hood.

3.3.2 Monitor the alternate area for direct radiation to ensure habitability.

3.3.3 Analyze the sample in accordance with the appropriate RPIP, as a normal chemistry sample for the analyte of interest.

3.3.4 The instructions for **Post Accident Sample Waste Storage and Disposal** apply.

4.0 RESPONSIBILITIES

The Chemistry Radiation Protection Specialists are responsible to implement this procedure.

5.0 DISCUSSION

The Hot Chem Lab in the Auxiliary Building may not be available due to abnormal radiological conditions. Use of the Hotcell or Alternate Area would be necessary.

6.0 PREREQUISITES

6.1 Hotcell Set-up Procedure or Alternate Area

NOTE:	**The following procedure should be completed prior to introducing a hot sample into the Hotcell Area.**

6.1.1 **Ensure** that all instrumentation is turned on, warmed up and calibrated.

6.1.2 **Fill** a 1 L volumetric to the mark with demineralized water.

6.1.3 **Fill** a 100 ml volumetric to the mark with demineralized water.

6.1.4 **Remove** 1 ml of demineralized water from each volumetric using a 1 ml pipet.

6.1.5 **Add** a stir bar to each volumetric.

6.1.6 **Turn ON** the two stir plates in the fume hood

NOTE:	**IF containment spray has been activated, consider buffering pH meter with 7 and 10 buffer.**

6.1.7 **Buffer** the pH electrode.

6.1.8 **Place** a 250 ml beaker of water near the pH probe.

F3	EMERGENCY HOTCELL PROCEDURE	NUMBER: F3-23.1
		REV: 10

7.0 Procedure

7.1 Sample Preparation

NOTE:	The RPS Sample Team members SHOULD ensure all samples are properly labeled with sample identification, sample size/volume, flowrates, pressures, and sample times, as appropriate to facilitate accurate analysis. As samples are diluted, split, or reduced; the appropriate information needs to be included on new labels attached to the newly created samples. Sample dose rate information should be included on all sample labels, to help ensure personnel awareness of radiological consideration. For ALARA reasons, the sample containers should be prelabeled whenever possible.

7.1.1 **Label** all samples.

7.1.2 **Don** a finger ring on each hand.

7.1.3 **Ensure** TLD and dosimeters are worn.

7.1.4 **Place** the 60 ml bottle shielded carrier in the fume hood near the pH probe.

CAUTION:	AVOID PLACING HANDS OVER TOP OF OPEN SHIELDED CARRIER.

7.1.5 IF radiation levels require, THEN **use** the remote handling tool.

7.1.6 **Remove** the lid from the 60 ml bottle shielded carrier.

7.1.7 **Remove** the stopper from the bottle.

7.1.8 **Pipet** 1 ml of coolant from the 60 ml bottle to the 1L volumetric.

7.1.9 **Cap** the volumetric and **agitate** to mix.

7.1.10 **Pipet** 1 ml of coolant from the 60 ml bottle to the 100 ml volumetric.

NOTE:	The 100 ml volumetric is to be saved for the Chloride Analysis, which is to be completed within four days. The undiluted sample must also be saved for 30 days.

7.1.11 **Cap** the volumetric and **agitate** to mix.

7.1.12 **Label** the volumetric with sample, date, time, and the number of mls of sample in the volumetric.

7.1.13 **Mark** sample **"TO BE SAVED".**

7.1.14 **Store** the 100 ml volumetric in the Hotcell Shielded Area.

7.1.15 IF a pH Analysis is to be determined on the sample, THEN **proceed** to Step 7.2. IF NOT, THEN **replace** the stopper on the 60 ml bottle.

7.1.16 **Replace** the lead cover on the shielded carrier, **place** the shielded carrier in the Hotcell Shielded Area and **proceed** to Step 7.3, Gamma Analysis Preparation.

7.2 pH Analysis - Using the Combination Methods

NOTE:	The pH meter gives a digital readout of sample temperature and will auto-compensate for temperature.

7.2.1 **Insert** the combination pH probe and temp probe into the 60 ml bottle and **read** pH and temperature of coolant.

7.2.2 **Remove** both probes and **place** in a beaker of demin water.

7.2.3 **Log** sample results on PINGP 655, Post Accident Chemical Analysis Report.

NOTE:	IF radiation levels require, THEN use remote handling tools for handling the 60 ml bottle stopper and shielded carrier Lid.

7.2.4 **Replace** the stopper on the 60 ml bottle and the lid on the 60 ml bottle shielded carrier.

7.2.5 **Remove** the shielded carrier and the beaker of rinse water from the fume hood and **store** according to Step 7.5, Post Accident Sample Waste Storage and Disposal.

7.3 Gamma Analysis Preparation

7.3.1 **Pipet** 10 ml of diluted coolant sample from the 1 L volumetric to a 10 ml vial.

7.3.2 **Verify** that the indicated dose rate on the 10 ml vial is capable of being counted on extended geometry in EOF Countroom.

NOTE:	Sample should be diluted to give a contact reading of under 1 millirem/hr contact. The diluted sample should NOT exceed 25 millirem/hr contact.

7.3.3 **Label** the vial with the sample point, date, time, and dilution factor to the sample prior to sending to EOF Countroom.

7.3.4 **Place** the 10 ml vial in the shielded carrier for transport to the EOF Countroom.

7.3.5 WHEN radioactive gas, charcoal, or particulate samples are received, THEN **ensure** all samples are labeled with date and time of sample, sample point, sample volume and/or correction factor, and flow rate.

7.3.6 **Store** all samples in the Hotcell Shielded Area until transported to the EOF Countroom.

7.4 Boron Analysis

7.4.1 **Using** the 1 L sample prepared in Step 7.1, Sample Preparation, **analyze** in accordance with RPIP 3314, Boron by Ion Exclusion Chromatography.

7.4.2 **Log** the results on PINGP 655, Post Accident Chemical Analysis Report.

7.4.3 **Dispose** of all radioactive waste according to Step 7.5, Post Accident Sample Waste Storage and Disposal.

7.5 Post Accident Sample Waste Storage and Disposal

NOTE:	**Ensure samples are labeled. "TO BE SAVED" or "TO BE DUMPED" before storage in shielded area.**

7.5.1 **Place** all capped or covered radioactive sample waste in the Hotcell Shielded Area.

7.5.2 IF additional waste samples are added to the Hotcell Shielded Area, THEN **survey** the Hotcell general area radiation levels. **Add** additional shielding, as necessary.

7.5.3 IF making subsequent entries into Auxiliary Building, THEN **return** the sample waste to the Sample Room for disposal down the affected unit's Sample Hood Drain.

Mfst Num: 2001 - 0194 Date : 03/09/01
FROM : Bruce Loesch/Mary Gadient Loc : Prairie Island
TO : UNDERWOOD, BETTY J
Copy Num: 213 Holder : JAMES FOSTER (US NRC)
SUBJECT : Revisions to CONTROLLED DOCUMENTS

****

Procedure #	Rev	Title
Revisions:		
F3-20	17	DETERMINATION OF RADIOACTIVE RELEASE CONCENTRATIONS
F3-23.1	10	EMERGENCY HOTCELL PROCEDURE
F3-8.1	11	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACT THE ON SHIFT EMERGENCY DIRECTOR /SHIFT MAN
F3-20.1	7	DETERMINATION OF STEAM LINE DOSE RATES
F3-13.6	11	WEATHER FORECASTING INFORMATION
F3-1	19	ONSITE EMERGENCY ORGANIZATION
F3-18	8	THYROID IODINE BLOCKING AGENT (POTASSIUM I

UPDATING INSTRUCTIONS

Place this material in your Prairie Island Controlled Manual or File. Remove revised or cancelled material and recycle it. Sign and date this letter in the space provided below within ten working days and return to Bruce Loesch or Mary Gadient, Prairie Island Nuclear Plant, 1717 Wakonade Drive E., Welch, MN 55089.
Contact Bruce Loesch (ext 4664) or Mary Gadient (ext 4478) if you have any questions.

Received the material stated above and complied with the updating instructions

_____ Date _____

PRAIRIE ISLAND NUCLEAR GENERATING PLANT	Title: Emergency Plan Implementing Procedures TOC Effective Date : 03/09/01
Approved By: Joyce Chitty /BJ BPS Supt	

Document #	Title	Rev
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F3-31	RESPONSE TO SECURITY RELATED THREATS	3
F3-32	REVIEW OF EMERGENCY PREPAREDNESS DURING OR AFTER NATURAL DISASTER EVENTS	1

F3	ONSITE EMERGENCY ORGANIZATION	NUMBER: F3-1
		REV: 19

REFERENCE USE
• *Procedure segments may be performed from memory.*
• *Use the procedure to verify segments are complete.*
• *Mark off steps within segment before continuing.*
• *Procedure should be available at the work location.*

O.C. REVIEW DATE:	OWNER:	Effective Date
2-21-01		3-9-01

F3	ONSITE EMERGENCY ORGANIZATION	NUMBER: F3-1
		REV: 19

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		REV: 19

1.0 PURPOSE

The purpose of this instruction is to:

1.1 Specify the onsite emergency organization during normal and off normal hours.

1.2 Describe the general duties and responsibilities of emergency response personnel.

The onsite emergency organization is illustrated in Figure 1 and is comprised of personnel from the normal plant organization. The detailed organization discussed in this procedure may be further augmented or decreased as the needs of the emergency condition dictate.

2.0 APPLICABILITY

This procedure is applicable to all plant personnel whenever the Emergency Response Organization (ERO) is activated. The ERO will be activated at an Alert, Site Area Emergency or General Emergency. The ERO may be activated at a Notification of Unusual Event (NUE), if necessary.

3.0 PRECAUTIONS

3.1 Prairie Island plant staff should not make any information releases to members of the news media or the public. All inquiries by the news media should be directed to the ERO Communications personnel at the Joint Public Information Center (JPIC) located at the Minnesota State EOC in St. Paul.

3.2 In order to provide a sufficient number of alternates to fill the various Prairie Island emergency organization positions, some individuals may be listed in more than one emergency organization position. In the event that an individual is assigned to more than one emergency organization position, the position required to implement immediate actions by the onsite emergency organization should take precedence over all other positions.

3.3 All Prairie Island emergency response personnel should carry their company Picture ID for access through potentially established road blocks and card access to an emergency facility.

3.4 All Prairie Island personnel are subject to the Fitness For Duty policy and call-in requirements during a declared emergency.

3.4.1 Post-Accident Fitness For Duty examinations will be conducted if there is reasonable suspicion that a person's behavior contributed to plant's accident condition.

3.4.2 In the event of an off-normal hours activation, emergency response personnel should report to their duty station unless they feel impaired or know themselves to be unfit for duty in which case they should notify their supervisor.

3.4.3 During an off-normal hours activation, those individuals who do not consider themselves impaired but have ingested alcohol within five (5) hours preceding their arrival **SHALL** inform the Badge Issue Station or EOF Access Control Station that they have ingested alcohol within five (5) hours preceding their arrival. Security will administer a breath analysis test and allow access to those who have a BAC less than 0.02%.

3.4.4 Under extreme emergency conditions, it may be determined that the services of an individual having a BAC of 0.02% is required. Under these circumstances necessary controls, e.g., constant escort, etc., **SHALL** be established to ensure the individual performs the assignment as required.

4.0 RESPONSIBILITIES

4.1 DIRECTION AND CONTROL

4.1.1 Emergency Director (ED)

During the initial stages of an emergency condition, the Emergency Director has overall coordinating authority for NMC. The Emergency Director has the authority and responsibility to immediately initiate any emergency actions including providing protective action recommendations to offsite authorities responsible for implementing offsite emergency measures. Following activation of the EOF emergency organization, the Emergency Manager **SHALL** assume the offsite coordinating authority for NMC and the Emergency Director **SHALL** retain the responsibility for onsite operations.

Initially, the Duty Shift Manager assumes the responsibility of the Emergency Director. If necessary, the Shift Supervisor of the unaffected unit may function as an alternate Emergency Director backing up the Shift Manager.

F3	ONSITE EMERGENCY ORGANIZATION	NUMBER: F3-1
		REV: 19

The Shift Manager should be relieved of the Emergency Director responsibilities when the designated Emergency Director arrives on-site. The Plant Manager should be the designated Emergency Director and should be available with a pager on a twenty-four (24) hour basis. When he is unavailable, (e.g., out of town), the designated Emergency Director responsibility should be passed to an individual in the line of succession described in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

Any of the individuals above the Shift Manager in the line of succession may take over the responsibility of the Emergency Director until the designated Emergency Director arrives onsite.

NOTE:	**The duty Shift Supervisor of the affected unit, until relieved, SHALL remain in the Control Room at all times during accident situations to direct the activities of the Control Room operators.**

A. The general responsibilities of the Emergency Director are:

1. Coordinate response of the plant onsite emergency organization;

2. Emergency classification and notification of offsite authorities until the Emergency Manager assumes this responsibility at which time the ED makes reclassification recommendations to the EM;

3. Authorize offsite Protective Action Recommendations until the Emergency Manager assumes this responsibility;

4. Direct the activation of all onsite emergency response centers, delegate coordinators for all onsite emergency response centers, and ensure that the emergency response center's environment is being monitored for habitability;

5. Direct onsite protective actions as necessary;

6. Ensure twenty-four (24) hour coverage for key positions in the onsite emergency organization;

7. During plant evacuations, initiate personnel accountability, ensure that it is completed within thirty (30) minutes following a plant evacuation announcement, and maintain accountability throughout the emergency condition;

8. Authorize radiation exposure in excess of normal limits (this responsibility **SHALL NOT** be delegated);

9. Ensure that radiological monitoring (onsite and offsite) is initiated (when required).

10. Ensure the Severe Accident Management process is implemented as necessary and become the Severe Accident Management Decision-maker.

4.1.2 Emergency Manager (EM)

During an Alert, Site Area or General Emergency, the Emergency Operations Facility (EOF) Organization **SHALL** be activated. It is expected that the EOF Organization can be fully staffed and ready to assume its emergency responsibilities within 1 hour of notification. The EOF Organization will base its operations at the Near-Site EOF, under the direction of the Emergency Manager (EM).

The Emergency Manager **SHALL** assume, from the Emergency Director, responsibility for overall management of all offsite support efforts. This includes offsite coordinating authority for NMC, efforts to enhance control of the plant and efforts to determine the potential or actual radiological impact in the environs of the plant.

A. Emergency Manager - Designees and Alternates

The Emergency Manager **SHALL** be staffed by a person named in the Emergency Manager call list. A list of Emergency Managers is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. The general responsibilities of the Emergency Manager are:

1. Determine the extent of the offsite response;

2. Authorize reclassifications including event termination or recovery;

3. Authorize offsite Protective Action Recommendations;

4. Supervise the operation of the EOF;

5. Direct personnel to provide the necessary offsite support for the plant as requested by the Emergency Director.

6. Provide technical support as necessary;

7. Provide direction to personnel performing offsite radiation surveys and dose estimates as to the desired types of samples and sample location;

8. Direct assessment and implementation of a modified Radiological Environmental Monitoring Program as needed;

9. Direct personnel to provide the necessary logistics support for the plant and EOF operation;

10. Provide information to utility management, as necessary, to assist in development of news releases;

11. Provide a direct interface with NRC representatives assigned to the EOF.

4.2 EMERGENCY ORGANIZATION COORDINATORS

4.2.1 Technical Support Center Coordinator

The Technical Support Center Coordinator **SHALL** be responsible for the general activation, operation and coordination of activities in the Technical Support Center (TSC).

A. A list of TSC Coordinators is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. The general responsibilities of the TSC Coordinator are:

1. Establish and verify radiological monitoring for the TSC including startup of the TSC ventilation cleanup systems;

2. Assist personnel performing the accountability check;

3. Maintain or designate individuals to maintain records throughout the emergency condition;

4. Coordinate activities of plant and non-plant personnel located in the TSC;

5. Establish, or ensure that communications are established, between all onsite emergency facilities and the EOF;

6. Ensure plant status is obtained via the ERCS plant process computer and/or via the communicator assigned to the Control Room;

7. Ensure ERDS (Emergency Response Data System) is activated with NRC.

8. Ensure periodic updates are occurring in the TSC with appropriate information;

9. Ensure TSC status boards are maintained;

10. Provide technical guidance to the Emergency Director and Control Room operators on plant operations;

11. Obtain engineering and technical assistance as required to support the Control Room operations.

4.2.2 Operational Support Center Coordinator

The Operational Support Center Coordinator **SHALL** be responsible for the general activation, operation, and coordination of activities in the Operational Support Center (OSC).

A. A list of Operational Support Center Coordinators is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. The general responsibilities of the OSC Coordinator are:

1. Establish and verify radiological monitoring for the OSC and the Control Room;

2. Coordinate activities of plant personnel located in the OSC to support plant operations as requested by the Control Room and TSC.

3. Assist personnel performing the accountability check.

4. Maintain the communications systems in the OSC. A person may be designated to act as a communicator.

5. Issue dosimetry to OSC and Control Room personnel.

6. Ensure OSC status boards are updated as required.

7. Periodically update personnel located in the OSC with appropriate information.

8. Control the use of equipment located in the emergency locker.

4.2.3 Assembly Point Coordinator

The Assembly Point Coordinator **SHALL** be responsible for the general operation of the assembly area.

A. A list of Assembly Point Coordinators is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. The general responsibilities of the Assembly Point Coordinator are:

1. Verify that radiological monitoring has been established for the Assembly Point.

2. Coordinate activities of all personnel (plant and non-plant) located at the Assembly Point.

3. Assist the Emergency Director in performing the accountability check, as necessary.

4. Maintain the communication systems. A person may be designated as the communicator, if necessary.

5. Control the use of the equipment located in the Emergency Locker.

6. Update all personnel with appropriate information when directed by the Emergency Director.

7. Provide instructions to personnel when they are released from the assembly point for reentry or transport offsite.

4.2.4 Radiological Emergency Coordinator

The Radiological Emergency Coordinator (REC) **SHALL** be responsible for radiological accident assessment, onsite and offsite. The REC should report to the Technical Support Center when the TSC is activated. Upon activation of the Near-Site EOF, the Radiation Protection Support Supervisor should assume responsibility for the offsite accident assessment.

A. A list of Radiological Emergency Coordinators (RECs) is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. The general responsibilities of the REC are:

1. Offsite dose assessment
2. Formulating offsite Protective Action Recommendations
3. Offsite surveys
4. Onsite surveys
5. Chemistry
6. Radiochemistry
7. Onsite Radiation Protection for:
   a. access control
   b. damage control and repair
   c. search and rescue
   d. first-aid
   e. fire fighting
   f. personnel monitoring & decontamination
   g. dosimetry

4.3 SHIFT ORGANIZATION

4.3.1 Shift Manager (SM)

The Shift Manager (SM) **SHALL** be onsite continuously. The Shift Manager **SHALL** assume overall coordination and control in the Control Room and provide direction as necessary to the Shift Supervisor.

A. SM - Line of Succession

1. Duty Shift Manager

2. Shift Manager

B. Responsibilities

The Shift Manager **SHALL**:

1. Assume the duties of Emergency Director until relieved by the designated Emergency Director. Portions of the E-Plan implementation may be delegated to other members of the plant staff as dictated by plant conditions.

2. Assess the emergency condition, event evaluation, and safety related aspects of the plant.

3. Implement the Severe Accident Management process as necessary.

4.3.2 Operations Group

The Operations Group consists of the General Supt. Plant Operations, Shift Managers, Shift Supervisors, and all operators. The Operations Group Leader should report to the Technical Support Center when the TSC is activated.

A. The designated Group Leader list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

The Operations Group **SHALL** have responsibility for:

1. Plant Operations and assessment of operational aspects of the emergency

2. Rad Waste equipment operation

3. Emergency radiation surveys

4. Short term damage control and repair for electrical, mechanical, and I&C equipment.

5. Implement the Severe Accident Management process as necessary.

4.3.3 Security Group

The Security Group consists of the Superintendent Security, the Security Shift Lieutenants, and Contract Security Officers.

A. The designated Group Leader list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

The Security Group **SHALL**:

1. Carry out the plant security and Access Control program.

2. Maintain strict personnel accountability onsite.

3. Assist communications efforts when necessary.

4. Assist in first aid treatment.

4.3.4 Shift Emergency Communicator (SEC)

A. The designated SEC list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

1. Complying with NRC overtime restrictions.

2. Assuring that assigned shifts are covered when changes have been made on the schedule.

3. Assuring that communication with Shift Supervisors is adequate.

4. Performing normal and emergency SEC duties.

5. Meeting the specified training requirements.

C. General Requirements

1. Working Hours

a. The SEC **SHALL** comply with overtime restriction policies of 5AWI 3.15.0.

b. The SEC should remain on duty until relieved by another SEC.

2. SEC Availability

a. The SEC should be available so that he or she can be in the Control Room within 10 minutes of being notified.

b. To ensure the 10 minute requirement can be met, the SEC should ensure that:

1) Their personal communication equipment (pager) is operable.

2) Shift Supervisors are aware of SEC location if personal communication equipment or plant page system will not provide adequate communication, e.g., noisy areas, structures where pager and page system are not available, etc. In such cases the SEC should ensure that Shift Supervisors can make immediate notification.

3) The SEC **SHALL NOT** leave the plant site while on duty. (PI Training Center is included in the plant site for this requirement).

4) The SEC should notify the Shift Supervisor when going to the PI Training Center, Cooling Tower area or ISFSI area. When at the PI Training Center, the SEC should inform the Training Center receptionist of their classroom location.

D. **Normal Duties**

1. The SEC should report to the Shift Supervisor upon arrival on site and check plant status.

2. The SEC should proceed to the Technical Support Center (TSC), conduct the National Warning System (NAWAS) test, and document completion in the SEC Log.

3. The SEC should conduct Communication Surveillance Tests as directed by the Shift Supervisor, inform the Shift Supervisor of the results and document the results in the SEC Log.

4. The SEC should conduct weekly and monthly PANS Siren Monitoring Tests as directed by Shift Supervisor, inform the Shift Supervisor of the results and document the results in SEC Log.

5. The SEC should assist with the Semiannual Emergency Organization Response Test as scheduled, inform the Shift Supervisor of the results and document the results in SEC Log.

6. The SEC should transmit PINGP 666 (NRC Form 361 - Event Notification Worksheet) to NRC Operations Center and send a copy to the NRC Resident Inspectors.

7. The SEC should make courtesy notifications to state and local authorities as requested by the Shift Supervisor or plant management for situations or conditions, which are abnormal but non-emergencies, that may have consequences extending beyond immediate site concern, e.g., serious injuries, fires, explosions, breaches of security, media sensitive events, etc.

E. **Emergency Duties**

1. The SEC should be notified by the Shift Supervisor in the event of:

   a. Implementation of the Plant Emergency Plan.

   b. Implementation of Plant Emergency Procedures (Operations Manual E-Section) that require SEC notification.

   c. Abnormal events e.g., trip, shutdown, etc., that may be of interest to the public.

2. The SEC should report to the Control Room within 10 minutes of being notified. In the case of a fire alarm or plant trip announcement, the SEC should report immediately to the Control Room without waiting for notification by the Supervisor.

3. The SEC should report to the Shift Manager or Shift Supervisor and perform Emergency Notifications and documentation in accordance with Emergency Plan Implementing Procedure F3-5.

4. The SEC **SHALL** notify state and local authorities within 15 minutes of Emergency Class declaration.

F. Training and Qualifications

1. The SEC should meet the minimum qualifications for Security Staff personnel positions.

2. The SEC should meet the following training requirements:

   a. Satisfactorily completed an initial SEC training program that should include:

      1) General overview of the Emergency Plan.

      2) Emergency and non-emergency notification requirements and procedures.

      3) Operation and testing of emergency communication equipment and systems.

b. Satisfy the requirements of periodic SEC continuing training that should include:

1) Review of changes to emergency communication equipment and procedures.

2) Review of lessons learned from emergency plan drills and actual plant events.

3. The SEC should be capable of:

a. Providing intelligible verbal communications to offsite organizations.

b. Assisting the Emergency Director in drafting messages.

c. Directing the activities of additional communicators.

d. Completing checklists to document communications activities.

4. In all cases, SEC qualifications should be approved by the General Superintendent Radiation Protection and Chemistry.

4.3.5 Fire Brigade

A. The Fire Brigade should consist of:

1. Brigade Chief - U-1 Turb. Bldg. APEO or as designated by the Shift Manager.

2. Assistant Chief - Turbine Building APEO

3. Fire Fighters - BOP Operators

4. Runner - As designated to accompany fire department, operate equipment, or bring additional equipment to fire scene.

NOTE:	The Red Wing Fire Department provides emergency assistance and should be called immediately on report of fire. Other plant personnel on site may be called on for emergency work or called to plant for emergency service.

B. Responsibilities

The Fire Brigade **SHALL** be:

1. Responsible for fire fighting per F5, "Fire Fighting".

2. Primary responders for Search and Rescue efforts.

4.3.6 Shift Radiation Protection Specialist

The Shift Radiation Protection Organization consists of one Radiation Protection Specialist onsite at all times.

A. Shift RPS - Line of Succession

1. Shift RPS

2. Non-licensed operators are trained to perform emergency radiation surveys.

B. Responsibilities

During emergency conditions, the Shift Radiation Protection Specialist **SHALL** be responsible for:

1. In-Plant surveys

2. Chemistry

3. Radiochemistry

4. Dose Assessment

5. Assist Fire Brigade

4.4 EMERGENCY STAFF AUGMENTATION GROUPS

4.4.1 Maintenance Group

The Maintenance Group consists of all maintenance crew personnel and all plant electricians. The onsite Emergency Organization includes the General Supt. Plant Maintenance, who should report to the Technical Support Center (TSC); and the Maintenance Supervisors (Mechanical & Electrical), and designated Electricians, Machinists, and Riggers who should report to the Operational Support Center (OSC). The mechanical and electrical maintenance staff in the OSC can be further augmented or decreased as emergency conditions dictate.

A. The designated Group Leader list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

The Mechanical and Electrical Maintenance Group **SHALL** have responsibility for:

1. Supporting the repair and corrective actions for the mechanical and electrical systems in support of emergency response and recovery actions.

2. Supporting the Search and Rescue effort.

4.4.2 Instrument and Control Group

The Instrument and Control Group consists of all I&C Specialists and I&C Supervisors. The onsite emergency organization includes the Supt. I&C Systems who should report to the Technical Support Center; and the I&C Supervisors who report to the Operational Support Center. The I&C Group can be further augmented or decreased as emergency conditions dictate.

A. The designated Group Leader list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

The I & C Group **SHALL** be responsible for:

1. Supporting the repair and corrective actions for the instrument and control systems in support of emergency response and recovery actions.

2. Supporting the Search and Rescue effort.

4.4.3 Work Management Group

The Work Management Group consists of Work Control Center (WCC) personnel and the Work It Now Team (WIN Team). The Work Control Center personnel should report to or remain in the Work Control Center. The WIN Team leader should report to the WCC and WIN Team workers should report to the OSC.

A. The WCC personnel and the WIN Team workers are made up of those personnel who work in these groups during normal non-emergency situations.

B. Responsibilities

1. The WCC personnel should be responsible for control, review and preparation of work packages and for tagging operations.

2. The WIN Team workers should be responsible for repair and corrective actions in support of emergency response as assigned by the OSC.

4.4.4 Radiation Protection Group

The Radiation Protection Group consists of the Gen. Supt. Radiation Protection, who should report to the Technical Support Center; and all members of the Radiation Protection Group.

A. The designated Group Leader list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

The responsibilities of the Radiation Protection Group are:

1. Offsite Dose Assessment
2. Offsite Surveys
3. Onsite Surveys
4. Chemistry
5. Radiochemistry
6. Radiation Protection for:
   a. Access Control
   b. Damage control and repair
   c. Search and rescue
   d. First aid
   e. Fire fighting
   f. Personnel monitoring and decontamination
   g. Dosimetry

4.4.5 Engineering Group

The Engineering Group consists of Mechanical, Electrical and I&C System Engineers, Nuclear Engineers, Radiation Protection Engineers, Program Engineers, Safety Assessment and Quality Engineers.

Upon activation of the onsite emergency organization, all Engineering Superintendents and engineers assigned to the emergency organization should report to the Technical Support Center. Other designated engineers may be requested to further augment engineering support in the TSC, as required.

A. The designated Group leader list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

The Engineering Group **SHALL** have responsibility for:

1. Providing technical support for plant system engineering on electrical/mechanical systems.

2. Providing technical support for operating radioactive waste control systems.

3. Providing core parameter analysis to determine current core status.

4. Providing plant parameter trending and analysis utilizing the Emergency Response Computer System (ERCS)

5. Project possible loss of key equipment and its consequences.

6. Providing technical support for emergency repairs and corrective actions on electrical/mechanical systems.

7. Update TSC staff of potential problems and developments.

4.4.6 Logistics Support Group

The Logistics Support Group consists of the Business Support Group (Administrative Services and Document Control), the Plant Services Group and Materials Management (Warehouse).

A. The designated Group Leader list is given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory.

B. Responsibilities

The Business Support Group (Administrative Services and Document Control) **SHALL** supply logistical support in their area of expertise. This includes a switchboard operator reporting to the TSC Communications area and operating the TSC telephone switchboard. Other personnel in these areas may be called in to provide support for emergency response on an "as needed" basis.

The Materials Management (Warehouse) Group **SHALL** provide assistance in retrieving the parts necessary for an emergency response from Warehouse No. 1. During an off hours emergency activation or during plant evacuations, designated Materials Management personnel should report to the Operations Support Center.

The Plant Services Group **SHALL** support an emergency response by providing necessary assistance by the nuclear plant service attendants. Designated nuclear plant service attendants should report to the Operational Support Center. The Plant Services Group should have responsibility for:

1. Providing Offsite Survey Team Drivers and/or Sample Couriers for Offsite Radiation Survey Teams.

2. Providing general support of emergency response and recovery actions, as requested.

4.4.7 Severe Accident Management Group

The Severe Accident Management Group **SHALL** be responsible for the implementation of the Severe Accident Management process.

A. The Severe Accident Management Group consists of Decision Makers, Evaluators and Implementors made up of selected individuals from plant management, operations, engineering and technical staff. The Decision Maker and a team of Evaluators report to the TSC. Decision Maker and Evaluator lists are given in the front of the Mo & PI Nuclear Emergency Preparedness Telephone Directory. All other individuals who support the Severe Accident Management process by implementing the Severe Accident Management strategies are considered to be Implementors. Implementors consist of all other emergency personnel that may be asked to assist based on their plant expertise and experience.

B. The general responsibilities of the Severe Accident Management Group are:

1. Implement the use of the Severe Accident Management Guidelines when the Control Room has transitioned into severe accident management.

2. Using the Severe Accident Management Guidelines formulate and evaluate various severe accident management strategies for implementation.

3. Implement the appropriate severe accident management strategies.

5.0 PREREQUISITES

An Unusual Event, Alert, Site Area Emergency, or General Emergency has been or will be declared.

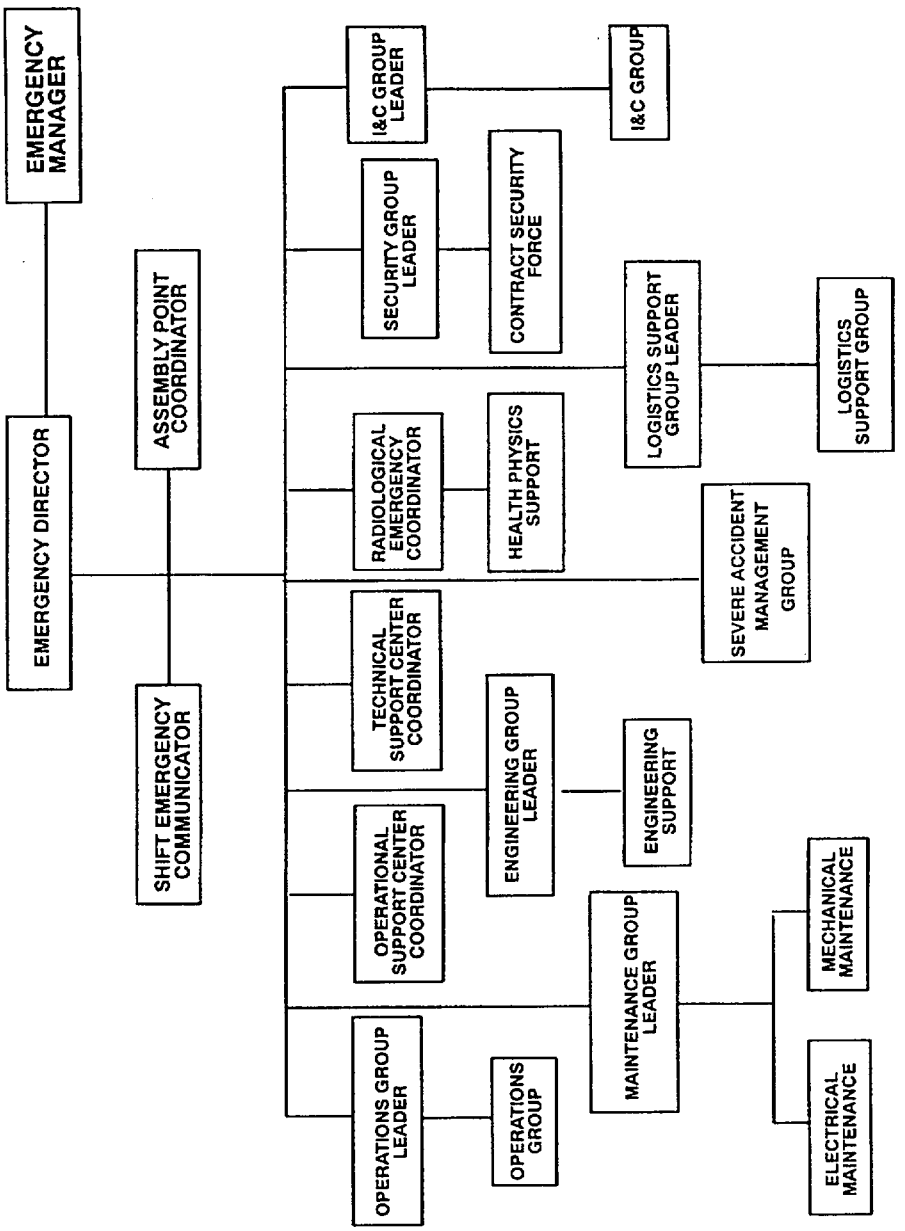
6.0 PROCEDURE

6.1 If an Unusual Event has been or will be declared, the Operations Group and Shift Emergency Communicator **SHALL** perform their Emergency Plan duties in accordance with the instructions outlined in F3-2, Classifications of Emergencies and F3-3, Responsibilities During A Notification Of Unusual Event.

6.2 If an Alert, Site Area Emergency, or General Emergency has been or will be declared, all plant emergency response personnel **SHALL** perform their Emergency Plan duties in accordance with the instructions outlined in F3-2, Classifications of Emergencies and F3-4, Responsibilities During An Alert, Site Area, or General Emergency.

F3	ONSITE EMERGENCY ORGANIZATION	NUMBER: F3-1
		REV: 19

Figure 1 On-Site Emergency Organization



F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1 REV: 11

REFERENCE USE

- ***Procedure segments may be performed from memory.***
- ***Use the procedure to verify segments are complete.***
- ***Mark off steps within segment before continuing.***
- ***Procedure should be available at the work location.***

O.C. REVIEW DATE:	OWNER:	EFFECTIVE DATE
1-15-01 S.C.	M. Werner	3-9-01

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
		REV: 11

1.0 PURPOSE

The purpose of this procedure is to provide guidance for the interim on-shift Emergency Director in formulating immediate offsite Protective Action Recommendations (PARs) for the general public during the early phase of a radiological emergency.

2.0 APPLICABILITY

This instruction **SHALL** apply to the Shift Manager OR Shift Supervisor who has assumed the position of interim Emergency Director.

3.0 PRECAUTIONS

3.1 Declaration of a General Emergency requires immediate initial protective action recommendations (PARs) to offsite agencies. Under these circumstances, NO dose projections are required for formulating the initial offsite protective action recommendation.

3.2 Implementation of protective actions for offsite areas is the responsibility of the State of Minnesota and the State of Wisconsin. If it is determined, by the Emergency Director, that, immediate protective actions are required, and the State EOCs are not activated, the Emergency Director **SHALL** authorize such recommendations to be made directly to the local authorities. Once the State EOCs are activated, all protective action recommendations **SHALL** be made to the State EOCs.

3.3 It is the responsibility of the county and state agencies and the National Weather Service to notify members of the Prairie Island community of approved protective actions. Protective action notification is accomplished by the activation of the Public Alert and Notification System (PANS).

3.4 Offsite protective actions for the ingestion exposure pathway (ingestion of contaminated food and water) will be determined and implemented by the appropriate state authorities during the intermediate phase of an emergency.

4.0 RESPONSIBILITIES

The Shift Manager OR Shift Supervisor, acting as interim Emergency Director, is responsible to implement this procedure and has the non-delegatable authority to authorize protective action recommendations until relieved by the designated Emergency Director.

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
		REV: 11

5.0 DEFINITIONS

See Attachment 1.

6.0 PREREQUISITES

6.1 A General Emergency has been or will be declared, OR

6.2 A Site Area Emergency has been or will be declared with actual or potential radioactive airborne release conditions that meets or exceeds the PAGs.

7.0 PROCEDURE

7.1 Protective Action Recommendations For A General Emergency

NOTE:	**DO NOT DELAY Protective Action Recommendations during GENERAL EMERGENCY conditions. Urgent actions are required by offsite officials. The initiated protective action recommendation need only be based on Control Room indications. No dose projections are required.**

7.1.1 **Refer** to Figure 1, "GENERAL EMERGENCY INITIAL PROTECTIVE ACTION GUIDELINES" for the initial Protective Action Recommendations.

7.1.2 The Emergency Director **SHALL** make recommendations for appropriate protective actions to State and local authorities by identifying the affected keyhole area and the affected geopolitical subareas on the "Emergency Notification Report Form", PINGP 577, Figure 3.

7.1.3 **Document** all Protective Action Recommendations on PINGP 577 and in the Operations log.

7.1.4 The Emergency Director **SHALL** authorize the "Emergency Notification Report Form", PINGP 577, and direct the Shift Emergency Communicator to notify State and local authorities using PINGP 577.

7.1.5 **Consider** future changes to the initial Protective Action Recommendation in case of changing wind direction or wind speeds. (A wind speed < 5 mph affects all sectors. A wind direction shift may possibly affect new sectors.)

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
		REV: 11

7.1.6 IF R-50 is in valid alarm, THEN **ensure** that offsite dose assessment and review of the initial Protective Action Recommendation are conducted provided that such actions will NOT prevent the completion of any other critical actions needed to mitigate the event.

A. IF the REC is available, THEN **direct** the REC to conduct the offsite dose projections and assessment.

B. IF the REC is NOT available, THEN **direct** the Shift Chemist to perform the offsite dose projections.

C. **Compare** the plume projected dose results with the Protective Action Guides (PAGs):

- TEDE 4-Day Integrated Dose > 1000 mrem?
- Thyroid CDE 4-Day Integrated Dose > 5000 mrem?

NOTE:	**The initial General Emergency Protective Action Recommendation should be more than adequate for most severe plant accidents. Dose projection results exceeding PAGs beyond the initial evacuation area may be because of errors in meteorological or rad monitor data inputs.**

D. IF the plume projected dose exceeds the Protective Action Guides for areas which evacuation has not been recommended (which is very unlikely), THEN **re-evaluate** the validity of the dose projection results.

E. IF projections are confirmed correct, THEN **revise** the initial Protective Action Recommendation to ensure the public is evacuated from areas which exceed the PAGs using Figure 2.

F. **Utilize** the "Emergency Notification Report Form", PINGP 577, Figure 3, for any changes to the initial Protective Action Recommendation.

7.2 Protective Action Recommendations During a Site Area Emergency

7.2.1 Based on the definition of a Site Area Emergency classification, **NO** immediate offsite Protective Action Recommendations for the general public are warranted during a Site Area Emergency.

7.2.2 IF R-50 is in valid alarm, THEN **ensure** offsite dose assessment AND **review** of the initial Protective Action Recommendation are conducted provided that such actions will NOT prevent the completion of any other critical actions needed to mitigate the event.

A. IF the REC is available, THEN **direct** the REC to conduct the offsite dose projections and assessment.

B. IF the REC is NOT available, THEN **direct** the Shift Chemist to perform the offsite dose projections.

C. **Compare** the plume projected dose results with the Protective Action Guides (PAGs):

- TEDE 4-Day Integrated Dose > 1000 mrem?
- Thyroid CDE 4-Day Integrated Dose > 5000 mrem?

D. IF the plume projected dose exceeds the Protective Action Guides, **re-evaluate** the emergency classification AND **reclassify** to a General Emergency if appropriate.

E. **Utilize** the "Emergency Notification Report Form", PINGP 577, Figure 3, for the reclassification and issuance of the Protective Action Recommendation.

7.2.3 Precautionary recommendations may be warranted for the nearsite special population (Treasure Island Casino) under certain conditions. The REC or RPSS will conduct this evaluation.

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
		REV: 11

Figure 1 General Emergency Initial Protective Actions Recommendations

The following protective action recommendations in this table should be conducted at the same time the General Emergency notifications are conducted.

Prerequisite: Plant Staff Detects **GENERAL EMERGENCY**

IF wind is ≥ 5 mph, THEN:	Evacuate all sectors out to 2 miles; AND The five downwind sectors out to 5 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.
IF wind is < 5 mph, THEN:	Evacuate all sectors out to 5 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.

NOTE:	**Based on NRC Response Technical Manual, RTM-93, Vol. 1, Rev. 3.**

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
		REV: 11

Figure 2 Protective Action Guides for On Shift Interim Emergency Director

PAGS for Early Phase Projected Doses

Use the MIDAS 4-Day Integrated Dose to determine the Protective Action Recommendation base on the Protective Action Guidelines[1, 2, 3, 4] below:

Offsite Projected Doses (mrem)	Recommended Protective Actions	Comments
IF TEDE dose < 1000 mrem at Site Boundary AND Thy CDE < 5000 mrem at Site Boundary; THEN:	No protective actions recommended.	The states of MN & WI may choose to implement sheltering or precautionary evacuation for the general public at their discretion.
IF TEDE dose ≥ 1000 mrem at Site Boundary; OR Thy CDE ≥ 5000 mrem at Site Boundary; THEN:	See Next Page for specific evacuation recommendation.	Evacuation should be recommended in absence of local constraints. MN, WI or Local Tribe may choose to shelter if evacuation were not immediately possible due to offsite constraints (severe weather, competing disasters or local traffic constraints).

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1 REV: 11

Figure 2 Protective Action Guides for On Shift Interim Emergency Director

PAGS for Early Phase Projected Doses (Continued)

Use the MIDAS 4-Day Integrated Dose to determine the Protective Action Recommendation base on the Protective Action Guidelines[1, 2, 3, 4] below:

Wind Condition	Offsite Projected Doses (mrem)	Recommended Protective Actions
IF wind is ≥ 5 mph AND	IF TEDE dose ≥ 1000 mrem beyond 5 miles; OR Thy CDE ≥ 5000 mrem beyond 5 miles; THEN:	Evacuate all sectors out to 5 miles; AND The five downwind sectors out to 10 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.
	IF TEDE dose ≥ 1000 mrem beyond 2 miles; OR Thy CDE ≥ 5000 mrem beyond 2 miles; THEN:	Evacuate all sectors out to 2 miles; AND The five downwind sectors out to 5 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.
	IF TEDE dose ≥ 1000 mrem at Site Boundary; OR Thy CDE ≥ 5000 mrem at Site Boundary; THEN:	Evacuate all sectors out to 2 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.
IF wind is < 5 mph; THEN	See next page.	

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
		REV: 11

Figure 2 Protective Action Guides for On Shift Interim Emergency Director

PAGS for Early Phase Projected Doses (Continued)

Use the MIDAS 4-Day Integrated Dose to determine the Protective Action Recommendation base on the Protective Action Guidelines[1, 2, 3, 4] below:

Wind Condition	Offsite Projected Doses (mrem)	Recommended Protective Actions
IF wind is < 5 mph AND	IF TEDE dose ≥ 1000 mrem beyond 5 miles; OR Thy CDE ≥ 5000 mrem beyond 5 miles; THEN:	Evacuate all sectors out to 10 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.
	IF TEDE dose ≥ 1000 mrem beyond 2 miles; OR Thy CDE ≥ 5000 mrem beyond 2 miles; THEN:	Evacuate all sectors out to 5 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.
	IF TEDE dose ≥ 1000 mrem at Site Boundary; OR Thy CDE ≥ 5000 mrem at Site Boundary; THEN:	Evacuate all sectors out to 2 miles; AND Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.

Notes: 1. TEDE = Total Effective Dose Equivalent, Thyroid CDE = Thyroid Committed Dose Equivalent
2. Based on EPA 400-R-92-001, May 1992
3. The Skin CDE PAG for evacuation of the general public is 50,000 mrem
4. Offsite projected doses include exposure from radioactive plume (external & internal) and 4 days exposure to ground contamination.

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
		REV: 11

Figure 2 Protective Action Guides for On Shift Interim Emergency Director

PAGs for Emergency Workers

TEDE Dose Limit (mrem)	Activity	Condition
5,000	All	
10,000	Protecting valuable property	Lower dose not practicable
25,000	Life saving or protection of large populations	Lower dose not practicable
>25,000	Life saving or protection of large populations	Only on a voluntary basis to persons fully aware of the risks involved.

Notes: 1. Based on EPA 400-R-92-001, May 1992
2. These are doses to nonpregnant adults from external exposure and intake during an emergency.
3. Workers should limit dose to the lens of the eye to 3 times the listed values and doses to extremities and any other organ to 10 times the doses listed above.

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
		REV: 11

Figure 3 Emergency Notification Report Form

EXAMPLE ONLY
USE CURRENT REVISION

PINGP 577, Rev 27
Page 1 of 2
Retention: Life of Plant
Document Type: 7.36E

EMERGENCY NOTIFICATION REPORT FORM

INSTRUCTIONS

1. Complete all sections of this form for Alert, S.A., or General Emergency and NUEs involving a hazardous release; otherwise, Section 2.2 (Met Info) is not necessary.
2. Use Table 1 on Back of Page 2 to determine geopolitical subareas.
3. Notify State/Local authorities within 15 minutes, with information contained on Pages 1 and 2.
4. Fax only Page 1 and Page 2 Front to State/Local authorities.

1.1 PLANT IDENTIFICATION

This is _____, **Emergency Communicator at the Prairie Island Nuclear Generating Plant.** (651-388-1121)

_____ (a) This is a Real Emergency.
_____ (b) This is a Drill.

1.2 EVENT CLASSIFICATION

We have
_____ (a) Declared a(an) _____ (a) Notification of Unusual Event
_____ (b) Escalated to a(an) _____ (b) Alert
_____ (c) No classification change, PAR update only. _____ (c) Site Area Emergency
_____ (d) Terminated the _____ (d) General Emergency
_____ (e) and entered the Recovery Phase

At _____ **hours on** _____ **(date).**

1.3 RELEASE INFORMATION (Report a radioactive release if any RCS activity or Rad Waste System activity is released to the environment during an emergency.)

The emergency
_____ (a) **DOES NOT** involve a radioactive release.
_____ (b) **DOES** involve a _____ radioactive release.
liquid/airborne

1.4 PROTECTIVE ACTION RECOMMENDATION

The protective action recommended at this time is:

_____ (a) Evacuate ____ALL____ sectors out to _____ miles
_____ sectors out to _____ miles

(circle) SUBAREAS (2) 5N 5E 5S 5W 10NW 10N 10NE 10E 10SE 10SW 10W

Advise remainder of plume EPZ to monitor radio/TV broadcasts for further emergency information.

_____ (b) None
_____ (c) Other _____

J:\TEMPLATE\0577 Emergency Notification Report Form.dot

Figure 3 Emergency Notification Report Form

EXAMPLE ONLY
USE CURRENT REVISION

PINGP 577, Rev 27
Page 2 of 2 (FRONT)

EMERGENCY NOTIFICATION REPORT FORM

2.1 EVENT DESCRIPTION (Use the generic Initiating Condition and the EAL Ref. Manual # from F3-2.)

The initiating event causing the emergency is:

_____

_____

_____

The EAL Reference Manual Condition Number is _____.

This event is related to: ( ) Unit 1 ( ) Unit 2 ( ) Both Units

2.2 METEOROLOGICAL INFORMATION (Complete this section for an Alert, S.A. or General Emergency and an NUE involving a hazardous release; otherwise NA may be indicated. Use the 10 meter 15 minutes average met data, from the 10a sensor if reliable, otherwise use 10b, 60a, 60b, or 22 meter tower. Use 60a for stability class, otherwise use 60b. If met not available via MIDAS, access met via ERCS per F3-13.5.)

Present Meteorological data is:

a. **Wind Speed** _____ **mph**

b. **Wind direction (from)** _____ °

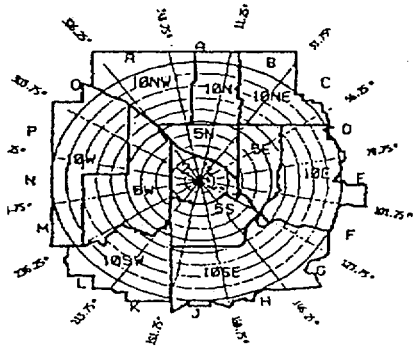
c. **Temperature** _____ °F

d. **Precipitation** _____

e. **Stability Class:** A B C D E F G
(Circle One)
unstable ⇐ ⇒ stable

f. **Affected sectors** _____

_____



2.3 PLEASE RELAY THIS INFORMATION TO YOUR EMERGENCY ORGANIZATION PERSONNEL.

NOTE:	ED/EM should ensure date & time are correct in Section 1.2.

EMERGENCY DIRECTOR/MANAGER APPROVAL _____
NAME

For NUE Routing Only _____ Supt. Radiation Protection and Chemistry

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
		REV: 11

Figure 3 Emergency Notification Report Form

EXAMPLE ONLY
USE CURRENT REVISION

PINGP 577, Rev. 27
Page 2 of 2 (BACK)

EMERGENCY NOTIFICATION REPORT FORM

NOTE:	DO NOT FAX THIS PAGE TO STATE AND LOCAL AUTHORITIES

TABLE 1

SELECTING GEOPOLITICAL SUBAREAS

Choose geopolitical subareas corresponding to the current wind direction (or affected downwind sectors) and the desired downwind distance one needs to apply the Protective Action Recommendations.

	AFFECTED DOWNWIND SECTORS	AFFECTED GEOPOLITICAL SUBAREAS		
		2 MILES	5 MILES	10 MILES
IF WIND < 5 MPH OR FROM 22 M MET TOWER	ALL	2	5N, 5E, 5S, 5W	10NW, 10N, 10NE, 10E, 10SE, 10SW, 10W

FOR WIND ≥ 5 MPH, WIND FROM (DEGREES)	AFFECTED DOWNWIND SECTORS	AFFECTED GEOPOLITICAL SUBAREAS		
		2 MILES	5 MILES	10 MILES
348.75 - 11.25	GHJKL	2	5S, 5W	10SE, 10SW
11.25 - 33.75	HJKLM	2	5S, 5W	10SE, 10SW, 10W
33.75 - 56.25	JKLMN	2	5S, 5W	10SE, 10SW, 10W
56.25 - 78.75	KLMNP	2	5S, 5W	10SW, 10W
78.75 - 101.25	LMNPQ	2	5W	10SW, 10W
101.25 - 123.75	MNPQR	2	5W, 5N	10W, 10NW
123.75 - 146.25	NPQRA	2	5W, 5N	10W, 10NW, 10N
146.25 - 168.75	PQRAB	2	5W, 5N	10W, 10NW, 10N, 10NE
168.75 - 191.25	QRABC	2	5W, 5N, 5E	10W, 10WN, 10N, 10NE
191.25 - 213.75	RABCD	2	5N, 5E	10NW, 10N, 10NE, 10E
213.75 - 236.25	ABCDE	2	5N, 5E	10NW, 10N, 10NE, 10E
236.25 - 258.75	BCDEF	2	5N, 5E	10N, 10NE, 10E
258.75 - 281.25	CDEFG	2	5N, 5E, 5S	10NE, 10E, 10SE
281.25 - 303.75	DEFGH	2	5N, 5E, 5S	10E, 10SE
303.75 - 326.25	EFGHJ	2	5E, 5S	10E, 10SE
326.25 - 348.75	FGHJK	2	5E, 5S	10E, 10SE, 10SW

Attachment 1 Definitions Related to PARS

1.0 **Affected Area** is any area where radiation emanating from a plume or deposited material from the plume can be detected using field instruments. (Also known as the footprint.)

2.0 **Affected Sectors** refer to those sectors that are in a downwind direction from the plant. If the wind speed ≥5 mph, the affected sectors are the 2 sectors on either side of the downwind sector and the downwind sector. If the wind speed < 5 mph, all sectors are affected sectors (because of meandering).

3.0 **Dose Terms**

3.1 **Dose Equivalent (rem)** refers to the product of absorbed dose (rad) and the quality factor (i.e., rads X QF = rem).

3.2 **Effective Dose Equivalent (rem)** is the sum of the products of the dose equivalent (rem) to each organ and a weighting factor, where the weighting factor is the ratio of the stochastic risk arising from an organ or tissue to the total risk when the whole body is irradiated uniformly.

3.3 **Committed Dose Equivalent (rem)** refers to the dose equivalent to organs or tissues that will be received from an intake of radioactive material by an individual during the 50-year period following the intake.

3.4 **Committed Effective Dose Equivalent (rem) (CEDE)** refers to the sum of the products of the weighting factors applicable to each of the body organs or tissues that are irradiated and the committed dose equivalent to these organs or tissues.

3.5 **Deep Dose Equivalent (rem)** refers to the external whole body exposure due to external radiation from the radioactive plume or deposited radioactive material.

3.6 **Total Effective Dose Equivalent (rem) (TEDE)** refers to the sum of the deep dose equivalent and the committed effective dose equivalent (TEDE = Deep Dose Equivalent + CEDE).

3.7 **Thyroid Committed Dose Equivalent (rem) (Thyroid CDE)** refers to the committed dose equivalent to the thyroid due to internally deposited radionuclides from inhalation.

F3	RECOMMENDATIONS FOR OFFSITE PROTECTIVE ACTIONS FOR THE ON SHIFT EMERGENCY DIRECTOR/SHIFT MANAGER	NUMBER: F3-8.1
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Attachment 1 Definitions Related to PARS

4.0 Emergency Planning Zone (EPZ) is a defined area around the Prairie Island plant to facilitate emergency planning by state and local authorities, to assure that prompt and effective actions are taken to protect the public in the event of a release of radioactive material. It is defined for:

4.1 Plume Exposure Pathway (10 mile EPZ)

The 10 mile radius around the Prairie Island plant defined for the early phase plume exposure. The principal exposure sources from this pathway are:

4.1.1 External exposure from the radioactive plume (either overhead or submergence);

4.1.2 External exposure from the radionuclides deposited on the ground by the plume; and

4.1.3 Internal exposure from the inhaled radionuclides deposited in the body.

4.2 Ingestion Exposure Pathway (50 mile EPZ)

A 50 mile radius around the Prairie Island plant where the principal exposure would be from the ingestion of contaminated water or foods such as, milk or fresh vegetables.

5.0 Evacuation is the urgent removal of people from an area to avoid or reduce high-level, short-term exposure, usually from the plume or from deposited activity.

6.0 Geopolitical Subareas are subareas of the 10 mile EPZ defined by predetermined geographic and/or political boundaries. A map of the geopolitical subareas and a table for selecting the affected geopolitical subareas are shown in Figure 3, PINGP 577, "Emergency Notification Report Form".

7.0 Keyhole Area is a subarea of the 10 mile EPZ defined by a 360 degree area surrounding the plant out to a distance of 2 or 5 miles and continuing in a downwind direction which should include 2 sectors on either side of the affected sector, out to a distance determined by the Protective Action Guides.

Attachment 1 Definitions Related to PARS

8.0 Nuclear Incident Phases relate to three time periods following the beginning of a nuclear incident.

8.1 Early Phase or emergency phase is the period immediately following the beginning of the incident. There may be a threat of a radiological release or an actual ongoing radiological release to the environment. Immediate decisions concerning protective actions are required and usually based on plant conditions or offsite dose projections. This phase may last from hours to days.

8.2 Intermediate Phase is the period beginning after the source and releases have been brought under control. Based on environmental measurements, additional protective actions may be made. This phase may overlap the early and late phase and may last from weeks to many months.

8.3 Late Phase is the period beginning when offsite recovery action designed to reduce radiation levels in the environment to acceptable levels for unrestricted use are commenced. This period may extend from months to years.

9.0 Projected Dose refers to the future dose calculated for a specified time period on the basis of estimated or measured initial concentration of radionuclides or exposure rates and in the absence of protective actions.

9.1 Plume Projected Dose refers to future calculated doses from plume submersion, plume shine, plume inhalation and 4 days of ground deposition exposure.

9.2 Relocation Projected Dose refers to future calculated doses from one year of exposure to ground deposition groundshine and inhalation of resuspended material, but excluding internal dose from consuming contaminated foodstuffs.

9.3 Ingestion Pathway Projected Dose is the projected CEDE (ICRP-30) from consuming contaminated foodstuffs.

10.0 Protective Action refers to an action taken to avoid or reduce radiation dose to members of the public.

11.0 Protective Action Guide (PAG) refers to a projected dose level that warrants protective actions.

Attachment 1 Definitions Related to PARS

12.0 **Public Alert and Notification System (PANS)** is used to alert the public within the 10 mile Emergency Planning Zone of an emergency condition at Prairie Island. Once alerted, the public should then turn to local commercial broadcast messages for specific protective action instructions. The PANS consists of the following:

12.1 Fixed Sirens for 100% coverage throughout the 5 mile zone and in population centers in the 5-10 mile zone.

12.2 Emergency vehicles with sirens and public address in the 5-10 mile areas not covered by fixed sirens.

12.3 National Oceanic and Atmospheric Administration (NOAA) activated tone alert radios in institutional, educational, and commercial facilities.

12.4 The Emergency Alert System (EAS) which has access to television and radio stations within the area.

13.0 **Return** refers to people permanently reoccupying their normal residence within a previously evacuated area.

14.0 **Reentry** refers to temporary entry into an evacuated area under controlled conditions.

15.0 **Relocation** refers to removal or continued exclusion of people from contaminated areas to avoid chronic radiation exposure.

16.0 **Sheltering** refers to the use of a structure for radiation protection from an airborne plume and/or deposited radioactive material.

F3	WEATHER FORECASTING INFORMATION	NUMBER: F3-13.6
		REV: 11

REFERENCE USE

- ***Procedure segments may be performed from memory.***
- ***Use the procedure to verify segments are complete.***
- ***Mark off steps within segment before continuing.***
- ***Procedure should be available at the work location.***

O.C. REVIEW DATE:	OWNER:	EFFECTIVE DATE
013001		3-9-01

F3	WEATHER FORECASTING INFORMATION	NUMBER: F3-13.6
		REV: 11

1.0 PURPOSE

This procedure provides instructions to obtain weather forecast information from the National Weather Service and satisfies the weather forecasting capability commitments made in the PINGP Emergency Plan.

2.0 APPLICABILITY

This procedure **SHALL** apply to the Shift Emergency Communicator, Radiological Emergency Coordinators (REC) and Radiation Protection Support Supervisor.

3.0 PRECAUTIONS

Ensure that weather forecast information is being considered whenever protection actions are being recommended.

4.0 INITIAL CONDITIONS

An Alert, SIte Area Emergency or General Emergency has been declared.

F3	WEATHER FORECASTING INFORMATION	NUMBER: F3-13.6
		REV: 11

5.0 PROCEDURE

5.1 Contact the National Weather Service Forecast Office by telephone at: 952-361-6671

5.2 Request the desired weather forecast information (e.g., wind speed/direction, stability class, precipitation, etc.) for zone forecast area number 78 (See Figure 1 for the Zone Forecast Boundaries).

5.3 General area trends and forecasts may be received via the Internet at:

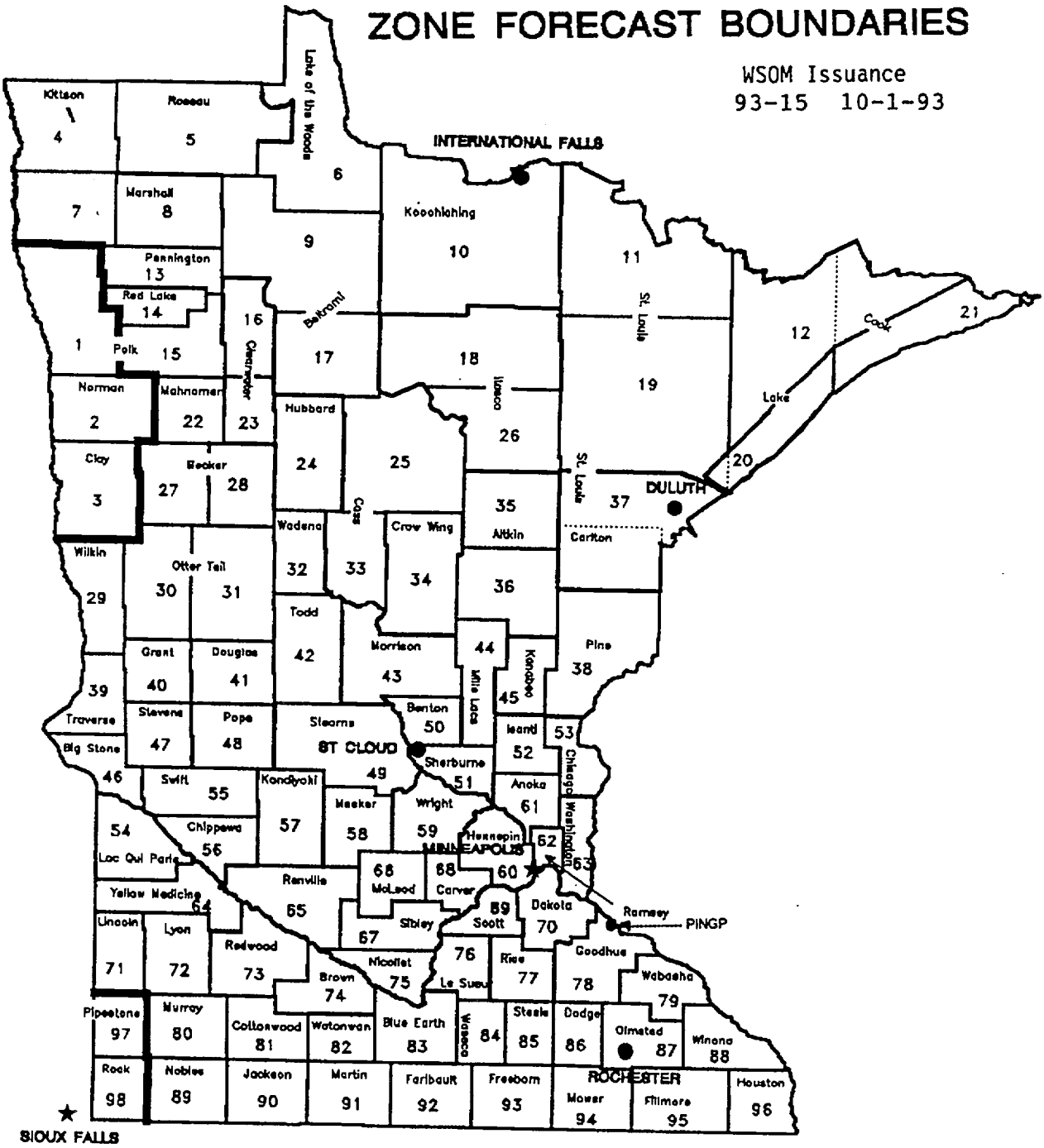
5.3.1 www.intellicast.com

5.3.2 www.chr.noaa.gov

5.3.3 www.wsicorp.com

F3	WEATHER FORECASTING INFORMATION	NUMBER: F3-13.6
		REV: 11

Figure 1



F3	THYROID IODINE BLOCKING AGENT (POTASSIUM IODINE)	NUMBER: F3-18
		REV: 8

REFERENCE USE
• *Procedure segments may be performed from memory.*
• *Use the procedure to verify segments are complete.*
• *Mark off steps within segment before continuing.*
• *Procedure should be available at the work location.*

O.C. REVIEW DATE:	OWNER:	EFFECTIVE DATE
3-2-01 SC	M. Werner	3-9-01

F3	THYROID IODINE BLOCKING AGENT (POTASSIUM IODINE)	NUMBER: F3-18
		REV: 8

1.0 PURPOSE

This procedure provides instructions for the issuance of thyroid iodine blocking agent (Potassium Iodine Tablets).

2.0 APPLICABILITY

This Instruction **SHALL** apply to all plant personnel involved in the emergency organization at Prairie Island. This procedure does NOT apply to members of the general public offsite.

3.0 PRECAUTIONS

3.1 Thyroid blocking agents are to be used in a radiation emergency only.

3.2 Use only as directed by the Emergency Director.

3.3 Potassium Iodide **SHALL NOT** be used by anyone who is allergic to iodine.

3.4 Follow the dosage instructions carefully. Potassium Iodide should be taken as soon as possible after authorization by the Emergency Director.

3.5 Do not take more than one dose every 24 hours and do not take for more than 10 days unless directed by the Emergency Director.

3.6 In case of an allergic reaction, stop taking Potassium Iodide immediately. Contact your supervisor and a physician immediately.

4.0 PREREQUISITES

Dose assessment indicates a possible or actual thyroid exposure of 25 Rem CDE.

F3	THYROID IODINE BLOCKING AGENT (POTASSIUM IODINE)	NUMBER: F3-18
		REV: 8

5.0 RESPONSIBILITIES

5.1 The Radiological Emergency Coordinator (REC) has the responsibility to assess and recommend to the Emergency Director when Potassium Iodide should be used.

5.2 The Emergency Director has the responsibility to authorize using Potassium Iodide when recommended by REC.

6.0 PROCEDURE

6.1 During emergency conditions, the Radiation Protection Group should **sample** areas of the plant where airborne iodine activity may exist.

NOTE:	**Since it is not feasible to conduct emergency operations with all emergency organization personnel wearing respiratory protection, the use of a thyroid blocking agent is highly recommended when thyroid dose could approach 25 REM CDE. (Final Recommendations, FDA, April, 1982)**

6.2 The Radiological Emergency Coordinator (REC) should **recommend**, to the Emergency Director, the use of Potassium Iodide WHEN:

6.2.1 Sample results indicate a possible thyroid exposure of 25 Rem CDE, using Figure 3 or Figure 4,

OR;

6.2.2 A large uncontrolled iodine release is imminent, AND the projected thyroid exposure could approach 25 Rem CDE.

6.3 The Emergency Director should **authorize** the use of Potassium Iodide and **order** its distribution.

F3	THYROID IODINE BLOCKING AGENT (POTASSIUM IODINE)	NUMBER: F3-18
		REV: 8

NOTE:	Use of Potassium Iodide SHALL be strictly on a voluntary basis.

6.4 The Coordinator at each of the emergency operating centers should complete the distribution of Potassium Iodide as follows:

6.4.1 **Distribute** a bottle containing Potassium Iodide tablets and an information sheet that describes the use of the tablets (See Figure 1), to each individual in the emergency operating center.

6.4.2 **Maintain** a distribution record (Figure 2) of all individuals receiving Potassium Iodide and **forwarded** to the Emergency Director.

6.4.3 **Instruct** each individual taking Potassium Iodide to read the informational leaflet (See Figure 1).

6.4.4 **Report** any side effects should be reported to plant management so that a medical evaluation may be made.

6.5 Each individual should take the prescribed dosage of one tablet every twenty-four hours. This dosage should be taken for a maximum of ten days unless directed otherwise by the Emergency Director.

6.6 Conditions should be continually evaluated by the Radiological Emergency Coordinator to determine when the usage of Potassium Iodide may be terminated.

6.7 WHEN the need for Potassium Iodide no longer exists, THEN all emergency organization personnel issued Potassium Iodide should return all unused tablets to the Emergency Director or his designee.

6.8 Update records to verify that all unused Potassium Iodide tablets have been returned.

F3	THYROID IODINE BLOCKING AGENT (POTASSIUM IODINE)	NUMBER: F3-18
		REV: 8

Figure 1

Patient Package Insert For

THYRO-BLOCK®
TABLETS
(POTASSIUM IODIDE TABLETS, USP)
(pronounced poe TASS-e-um EYE-oh-dyed)
(abbreviated: KI)

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 15° and 30°C (59° to 86°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 white, round, scored, monogrammed THYRO-BLOCK® TABLET contains 130 mg of potassium iodide. Other ingredients: magnesium stearate, microcrystalline cellulose, silica gel, and sodium thiosulfate.

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 salt 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 be 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 Tablets, USP) are white, round tablets, one side scored, other side 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

IN-0472-03 Rev. 5/94

F3	THYROID IODINE BLOCKING AGENT (POTASSIUM IODINE)	NUMBER: F3-18
		REV: 8

Figure 2

EXAMPLE ONLY
USE CURRENT REVISION

PINGP 651, Rev. 0
Page 1 of 1
Retention: Lifetime

LOCATION _____ DATE _____

THYRO-BLOCK DISTRIBUTION

NAME	TLD/CO	AMOUNT/DATE ISSUED	AMOUNT/DATE RETURNED	REMARKS

Figure 3 Frisker Count Rate vs. Thyroid Dose Rate

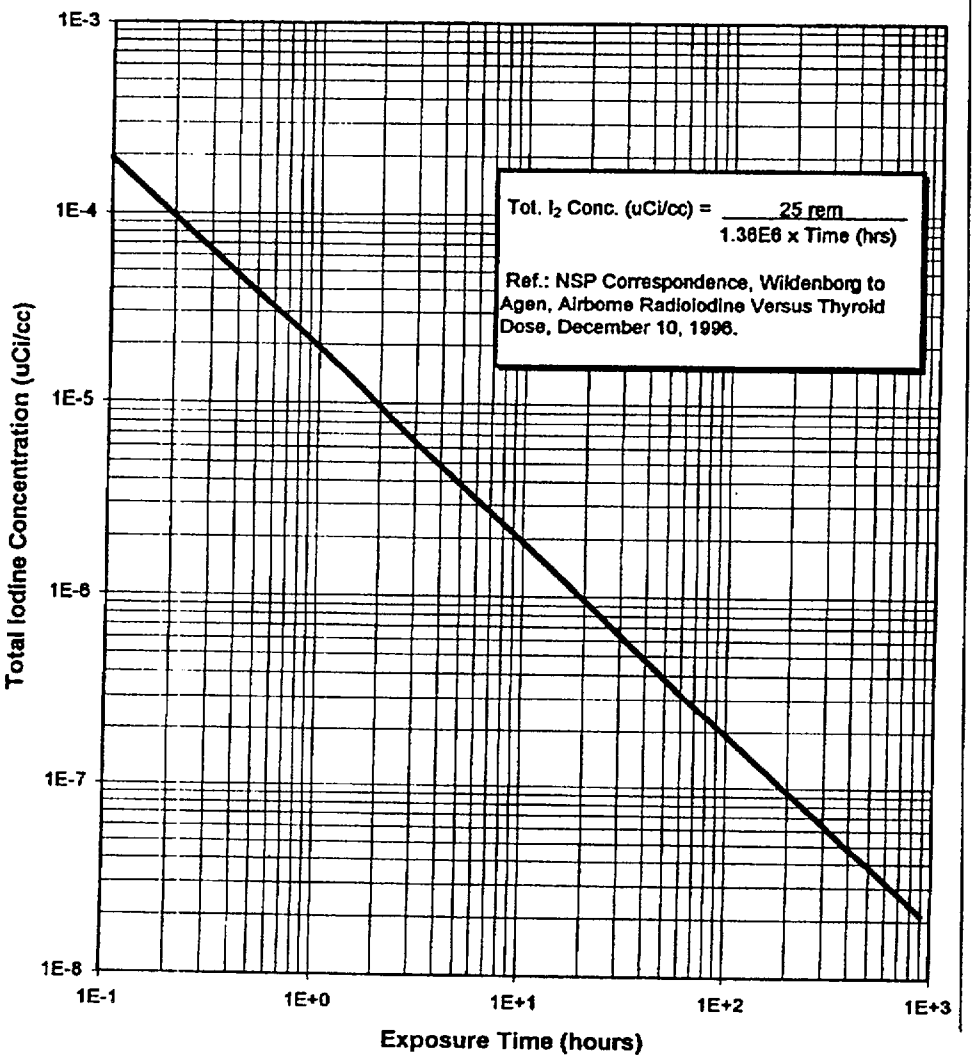
Net Count Rate (cpm)	Thyroid Dose Rate (rem/h)	Net Count Rate (cpm)	Thyroid Dose Rate (rem/h)	Net Count Rate (cpm)	Thyroid Dose Rate (rem/h)	Net Count Rate (cpm)	Thyroid Dose Rate (rem/h)
30	0.002	240	0.28	1400	1.3	7000	6.8
40	0.017	260	0.29	1600	1.5	8000	8.3
50	0.024	280	0.31	1800	1.7	9000	9.2
60	0.037	300	0.33	2000	1.8	10000	10
70	0.046	350	0.37	2200	2.0	12000	11
80	0.057	400	0.42	2400	2.2	14000	14
90	0.064	450	0.48	2600	2.6	16000	18
100	0.079	500	0.55	2800	2.8	18000	24
120	0.097	600	0.66	3000	2.9	20000	28
140	0.11	700	0.73	3500	3.3	25000	46
160	0.13	800	0.84	4000	3.9	30000	61
180	0.17	900	0.92	4500	4.6	35000	92
200	0.18	1000	1.1	5000	5.1	40000	110
220	0.22	1200	1.3	6000	5.9	45000	180

Based on: - 25 Cubic Foot Air Sample
- Silver Zeolite Frisker Count Rate

Reference: NSP Internal Correspondence, Wildenborg to Agen, Airborne Radioactive Versus Thyroid Dose, December 10, 1996.

Figure 4

Iodine Concentration Vs. Exposure Time Resulting in 25 Rem CDE



F3	DETERMINATION OF RADIOACTIVE RELEASE CONCENTRATIONS	NUMBER: F3-20
		REV: 17

REFERENCE USE
• *Procedure segments may be performed from memory.*
• *Use the procedure to verify segments are complete.*
• *Mark off steps within segment before continuing.*
• *Procedure should be available at the work location.*

O.C. REVIEW DATE:	OWNER:	EFFECTIVE DATE
1-15-01 SC.		3-9-01

F3	DETERMINATION OF RADIOACTIVE RELEASE CONCENTRATIONS	NUMBER: F3-20
		REV: 17

1.0 PURPOSE

This procedure provides instructions to determine the concentration and flow rate of radionuclides being released via the steam release headers or Shield Building vent stacks.

2.0 APPLICABILITY

This Instruction **SHALL** apply to Radiological Emergency Coordinators (REC), Radiation Protection Support Supervisor (RPSS), and the MIDAS operators.

3.0 PRECAUTIONS

Use engineering judgment whenever possible to estimate steam relief flow rates.

4.0 PREREQUISITES

An Alert, Site Area Emergency, or General Emergency has been declared and there exists an actual or potential for radioactive airborne release.

5.0 PROCEDURE

5.1 Steam Release Activity

5.1.1 IF the ERCS is obtaining steam release data, THEN obtain the steam line dose rates and the steam rad release rate from the ERCS as follows:

A. At the TOC (Turn On Code), enter "GRPDIS STM-RAD" to gain access to the STM-RAD group of parameters.

B. The display will respond with a list of the points along with the prompt: ENTER UPDATE RATE IN SEC (5-1800). Enter the desired update interval, and then press <RETURN>.

C. Log Loop A & B Rad Level on Part I of PINGP 783.

D. Log Radiation Release Rate in μCi/sec on Part I of PINGP 783 (ERCS Rad Release Rate is already converted to μCi/sec Xe-133 Equiv.)

E. Go to Step 5.1.7.

5.1.2 If the ERCS is unable to provide steam release data, request an RPS to obtain the steam line dose rates in accordance with F3-20.1; or read R51 and R52 Rad Monitors local readout located in Train A Event Monitor Room (via 112 Bus Room). Log results on Part II of PINGP 783.

A. Using the time since reactor shutdown, obtain the Dose Rate Concentration Conversion Factor (IDE) from Figure 3, Figure 4 or Figure 5.

B. Calculate the noble gas release concentration, μCi/cc Xe-133 equivalent, by multiplying the steam line monitor dose rate (mR/hr) times the dose rate concentration conversion factor (μCi/cc/mR/hr).

5.1.3 Determine if a steam release is occurring thru the Safety Relief Valves, PORV's, Dump Valves or SDAFW Pump Turbine Exhaust.

A. If the Power Operated Relief Valves (PORV's) are not closed:

1. Estimate the fractional opening of the PORV (0-1). Assistance from the Engineering Technical Group may be required as appropriate.

2. Determine each PORV flow rate as follows:

Flow Rate (CFM) = (3500)(L)
where L = fractional opening

B. If the dump valves are not closed:

1. Check the position of the MSIV's. If both closed, no release should be occurring. If open, continue.

2. Estimate the fractional opening of the dump valves, L, (0-1). Assistance from the Engineering Technical Group may be required as appropriate.

3. Calculate each dump valve flow rate as follows:

Flow Rate (CFM) = (6400)(L)
where L = fractional opening (0-1)

C. If any of the safety relief valves are not closed:

1. The REC should request engineering to calculate each safety relief flow rate.

2. If the safety is known to be full open, a default flow of 6000 cfm may be used.

D. If Steam Driven Aux Feedwater Pump is in operation on contaminated steam from faulted steam generator, use a steam exhaust flow rate of 150 cfm as a maximum flow rate.

5.1.4 Determine the total steam release rate by summing the PORV, dump valve and safety valve flow rates.

5.1.5 If the SG's are flooded and water is relieving thru the PORV's, dumps or safeties, use engineering judgment to determine the flow rate. Use the estimated SG tube break flow rate. Consider using SI and Charging flow rates to be the flow rate through the SG tube break. Assume all the liquid flashes as it leaves the PORV's, dumps, or safeties.

5.1.6 Determine the noble gas release rate (Xe-133 Equiv μCi/sec) by multiplying the noble gas concentration by the total steam flow per Part IV of PINGP 783.

5.1.7 Determine the iodine release rate or concentration as follows:

A. Obtain the SG wide range level (%).

1. If the SG level ≤ 85%, use 0.001 as an iodine/noble gas ratio.

2. If the SG level > 85%, use 0.1 as an iodine/noble gas ratio or as determined by primary system of S/G sample.

B. Calculate the iodine release rate or concentration by multiplying the noble gas release rate or concentration by the applicable iodine/noble gas ratio.

NOTE:	In order to perform a MIDAS dose projection using an iodine/noble gas ratio of 0.1, use "Manual Entry of Isotopic Concentration" or "Manual Entry of Isotopic Release Rate".

5.2 Shield Building Vent Stack Activity

5.2.1 Calculate the ventilation flow rates (cfm) of each Shield Building Vent Stack.

A. Determine which ventilation systems are in service. (Information may be obtained from Control Room.)

Unit 1 Vent: Aux Special - 8000 CFM
Shield Building Vent - 400 CFM
Spent Fuel Pool Special - 5000 CFM

Unit 2 Vent: Aux Special - 8000 CFM
Shield Building Vent - 400 CFM
Spent Fuel Pool Special - 5000 CFM

NOTE:	Shield Building Vent should only be inservice on the unit experiencing accident. There are two trains of Shield Building Vent, each 200 CFM.

B. Log results on PINGP 784 (Figure 2)

5.2.2 Determine the gas activity (Xe-133 Equiv.) being released via the Shield Building Vent Stacks.

A. If the Shield Building Vent Stack radiation monitors are operable and on scale:

1. Obtain the Unit 1 and Unit 2 Shield Building Vent Stack radiation monitor count rate or dose rate from 1 [2] R-22 or 1 [2] R-50.

2. Using the count rate or dose rate, refer to the radiation monitor calibration curves, Figure 6, Figure 7 or Figure 9, to determine the gaseous release activity in μCi/cc Xe-133 equiv.

3. Record results on PINGP 784 (Figure 2).

B. If the Shield Building Vent Stack radiation monitors are not operable or not on-scale:

1. Request the RPS to obtain the 1 [2] R-50 gas chamber dose rates in accordance with F3-20.2.

2. Using the 1 [2] R-50 gas chamber dose rates, refer to Figure 7, to determine the gaseous release activity in μCi/cc Xe-133 equiv.

3. Record results on PINGP 784 (Figure 2).

5.2.3 Determine the iodine release activity (I-131 equiv.) as follows:

A. Request the RPS to obtain gas, iodine and particulate samples in accordance with F3-20.2.

B. Determine the total sample time in minutes.

1. Record the time the AgZ was changed.

2. Record the sample start time, which may be either:

- accident start time;
- release start time, if known. This may be determined by rad monitor indication, or;
- time since AgZ was last changed

3. Using the sample start and ending times, determine the total sample time, in minutes.

4. Record results on PINGP 784 (Figure 2).

C. Obtain and record on PINGP 784 (Figure 2), the AgZ flow rates in cc/min.

NOTE:	For high flow rate AgZ section, use conversion factor of 2.83E04 cc/ft^3 to convert CFM to cc/min.

D. Determine the total iodine activity on the AgZ adsorber.

1. Obtain, from the RPS , the count rate or dose rate on the AgZ, whichever is applicable.

2. Using the count rate or dose rate, refer to Figures 10, 11, or 12, to determine the total iodine activity, in μCi, on the AgZ adsorber.

3. Record results on PINGP 784 (Figure 2).

E. Determine the iodine activity, in μCi/cc, for each stack, as follows:

1. Stack Activity = $\frac{\text{AgZ Activity (μCi) X 50}}{\text{AgZ flow rate (cc/min) X Total Sample Time (min)}}$

2. Calculate the stack activity for both Shield Building Vents and record results on PINGP 784 (Figure 2).

NOTE:	A correction factor of 50 is used to adjust for sample line plate out of iodine.

NOTE:	If particulate activity is calculated; a correction factor of 3 is used to adjust for sample line plate out of particulates.

5.2.4 If radioactive effluents are being released from more than one release point, then determine an activity concentration and flow for each release path and input each into MIDAS dose calculations or calculate one weighted average concentration and total flow and input into MIDAS dose calculations. See PINGP 784 for calculating weighted averages.

F3	DETERMINATION OF RADIOACTIVE RELEASE CONCENTRATIONS	NUMBER: F3-20
		REV: 17

Figure 1

EXAMPLE ONLY
USE CURRENT REVISION

PINGP 783, Rev. 13
Page 1 of 2
Document Type: 7.37L
Retention: Life of Corporation

STEAM RELEASE ACTIVITY
(F3-20)

Date: _____ Time: _____ Unit: _____

Time since reactor shutdown: _____ hours

I. **STEAM RELEASE COMPUTER RELEASE RATE (Xe-133 Equiv. µCi/sec)**
Readings from ERCS "STM-RAD" Group:

	LOOP A (R51)	LOOP B (R52)
Steam Line Dose Rates	_____ mR/hr	_____ mR/hr

Total radioactive release rate _____ µCi/sec Xe-133 Equiv.

II. **MANUAL GASEOUS RELEASE CONCENTRATION DETERMINATION (Xe-133 Equivalent)**

	LOOP A (R51)	LOOP B (R52)
Steam Line Dose Rates:	_____ mR/hr	_____ mR/hr
Dose Rate Concentration Conversion Factor (IDE): µCi/cc/mR/hr (Fig. 3, 4, or 5)	_____ µCi/cc/mR/hr	_____
Release Concentration: (Stm Line Dose Rate x Dose Rate Concen. Convers. Factor)	_____ µCi/cc (Xe-133)	_____ µCi/cc (Xe-133)

III. **MANUAL STEAM FLOW RATE DETERMINATION (CFM)**
FOR EACH PORV:
L = fraction open = _____

Flow Rate = (3500) (L) _____ ft^3/min

FOR EACH DUMP VALVE:
L = fraction open = _____

Flow Rate - (6400) (L) _____ ft^3/min

FOR EACH SAFETY RELIEF:
Engineering Estimate Flow Rate = _____ ft^3/min

(Estimated Full Open Flow Rate = 6000 cfm)

FOR SDAFW PUMP TURBINE EXHAUST
(Estimated Maximum Flow Rate = 150 cfm) _____ ft^3/min

TOTAL STEAM FLOW _____ ft^3/min

J:\TEMPLATE\0783 Steam Release Activity.DOT

F3	DETERMINATION OF RADIOACTIVE RELEASE CONCENTRATIONS	NUMBER: F3-20
		REV: 17

Figure 1

EXAMPLE ONLY
USE CURRENT REVISION

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Page 2 of 2

IV. MANUAL STEAM RELEASE RATE (Xe-133 Equiv. µCi/sec):

LOOP A Release Rate (Xe-133):

_____ µCi/cc x _____ ft^3/min x 472 cc/sec/ft^3/min = _____ µCi/sec

LOOP B Release Rate (Xe-133):

_____ µCi/cc x _____ ft^3/min x 472 cc/sec/ft^3/min = _____ µCi/sec

V. IODINE-131 EQUIVALENT RELEASE CONCENTRATIONS

SG Wide Range Level: LOOP A: _____ % LOOP B: _____ %

If SG Level ≤85%, use 0.001 iodine/noble gas ratio:

_____ (µCi/cc) Xe-133 Equiv. x 0.001 = _____ (µCi/cc) I-131
or (µCi/sec) or (µCi/sec)

If SG Level >85%, use 0 1 iodine/noble gas ratio:

_____ (µCi/cc) Xe-133 Equiv. x 0.1 = _____ (µCi/cc) I-131
or (µCi/sec) or (µCi/sec)

NOTE:	**The iodine release concentrations (µCi/cc) or release rates (µCi/sec) may be used in the "Manual Entry of Isotopic Concentration" or "Manual Entry of Isotopic Release Rate" MIDAS Accident Dose Calculations.**

Completed By: _____ Authenticated By: _____

F3	DETERMINATION OF RADIOACTIVE RELEASE CONCENTRATIONS	NUMBER: F3-20
		REV: 17

Figure 2

EXAMPLE ONLY
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Retention: Life
Document Type: 7.37K

SHIELD BUILDING STACK ACTIVITY
(F3-20)

Date: _____ Time: _____

I. STACK FLOW RATES

	UNIT 1	UNIT 2
Aux Special (8000 CFM)	_____	_____
Shield Building Vent (400 CFM) (200 CFM/Train)	_____	_____
Spent Fuel Special (5000 CFM/Train)	_____	_____
TOTALS	_____	_____

II. GAS CONCENTRATIONS (Xe-133 Equiv.)

RAD MONITORS:	1R-22 _____	cpm	_____ µCi/cc (Fig. 6)
	2R-22 _____	cpm	_____ µCi/cc (Fig. 6)
	1R-50 _____	mR/hr	_____ µCi/cc (Fig. 7)
	2R-50 _____	mR/hr	_____ µCi/cc (Fig. 7)
SAMPLE CHAMBER:	UNIT 1 _____	mR/hr	_____ µCi/cc (Fig. 9)
	UNIT 2 _____	mR/hr	_____ µCi/cc (Fig. 9)

III. IODINE CONCENTRATIONS (I-131 Equiv.)

Sample Times: UNIT 1 ON _____ OFF _____ TOTAL _____ min.
UNIT 2 ON _____ OFF _____ TOTAL _____ min.

AgZ Flow rates: UNIT 1 _____ cc/min (Low Flow)
(High Flow) _____ cfm/x 2.83E04 = _____ cc/min
UNIT 2 _____ cc/min (Low Flow)
(High Flow) _____ cfm x 2.83E04 = _____ cc/min

Iodine Activity:	Dose/Count Rate	Total µCi's
Count rate	UNIT 1 _____ cpm	_____ µCi (Fig. 10)
(contact)	UNIT 2 _____ cpm	_____ µCi (Fig. 10)
Count rate	UNIT 1 _____ cpm	_____ µCi (Fig. 11)
(1 foot)	UNIT 2 _____ cpm	_____ µCi (Fig. 11)
Dose rate	UNIT 1 _____ mR/hr	_____ µCi (Fig. 12)
(1 foot)	UNIT 2 _____ mR/hr	_____ µCi (Fig. 12)

0784 Shield Building Stack Activity.dot

F3	DETERMINATION OF RADIOACTIVE RELEASE CONCENTRATIONS	NUMBER: F3-20
		REV: 17

Figure 2

EXAMPLE ONLY
USE CURRENT REVISION

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IV. STACK ACTIVITY (I-131 Equiv.)

$$\text{Stack Activity} = \frac{\text{AgZ Activity } (\mu\text{Ci}) \times 50}{\text{AgZ Flow Rate (cc/min)} \times \text{Total Sample Time (min)}}$$

UNIT 1: $\frac{\quad}{(\quad \text{cc/min}) \times (\quad \text{min})} = \quad \mu\text{Ci/cc}$

UNIT 2: $\frac{\quad}{(\quad \text{cc/min}) \times (\quad \text{min})} = \quad \mu\text{Ci/cc}$

NOTES:

(1) A correction factor of 50 is used to adjust for sample line plate out of iodine.

(2) If particulate activity is calculated a correction factor of 3 is used to adjust for sample line plate out of particulate.

(3) The iodine release concentrations (μCi/cc) or release rates (μCi/sec) may be used in the "Manual Entry of Isotopic Concentration" or "Manual Entry of Isotopic Release Rate" MIDAS Accident Dose Calculations.

(4) If radioactive effluents are being released from more than one release point, then calculate:

(1) The total release flow rate, F, (cfm).
$F = F_1 + F_2 + \ldots$
and

(2) The AVERAGE CONCENTRATION (μCi/cc)

$$\text{AVG CONC} = \frac{(F_1)(ISO_1)}{(F)} + \frac{(F_2)(ISO_2)}{(F)} + \ldots$$

Where:
- F_1 = release point 1 flow rate (cfm)
- F_2 = release point 2 flow rate (cfm)
- ISO_1 = release path 1 isotope concentration (μCi/cc)
- ISO_2 = release path 2 isotope concentration (μCi/cc)

Completed By: _____ Authenticated By: _____

Figure 3

STEAM LINE MONITOR
DOSE RATE CONCENTRATION CONVERSION FACTOR
IDE VERSUS TIME FOR GAP RELEASE
0 – 24 HOURS

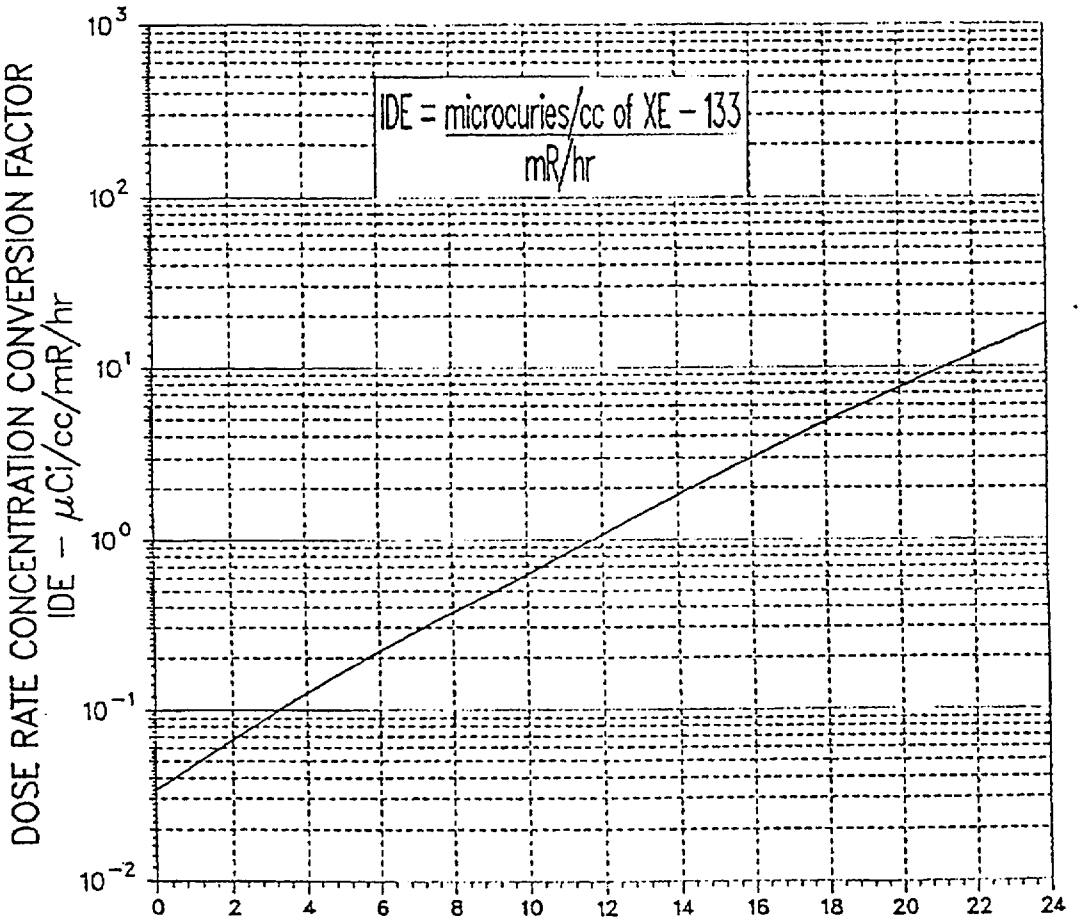


Figure 4

STEAM LINE MONITOR
DOSE RATE CONCENTRATION CONVERSION FACTOR
IDE VERSUS TIME FOR GAP RELEASE
24 – 48 HOURS

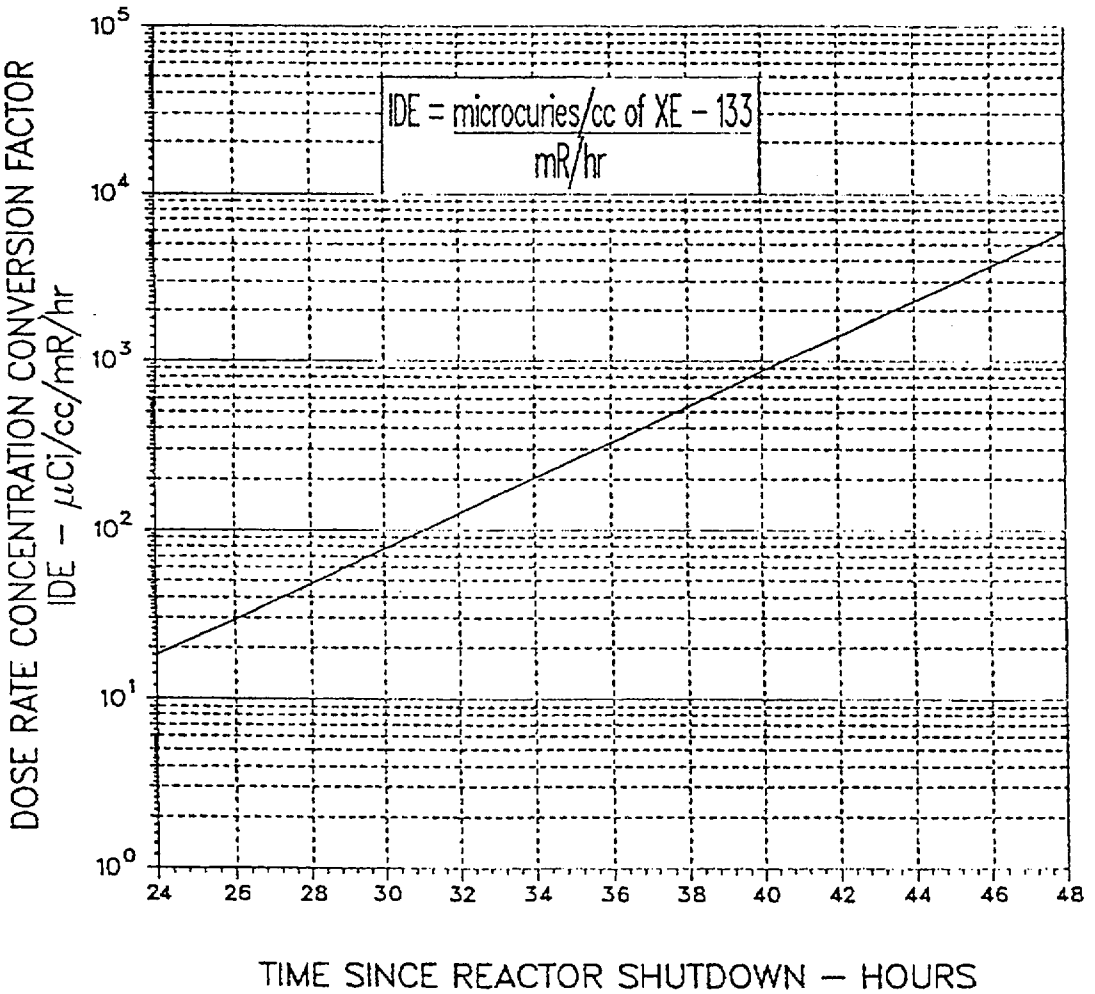


Figure 5

STEAM LINE MONITOR
DOSE RATE CONCENTRATION CONVERSION FACTOR
IDE VERSUS TIME FOR GAP RELEASE
0 – 7 DAYS

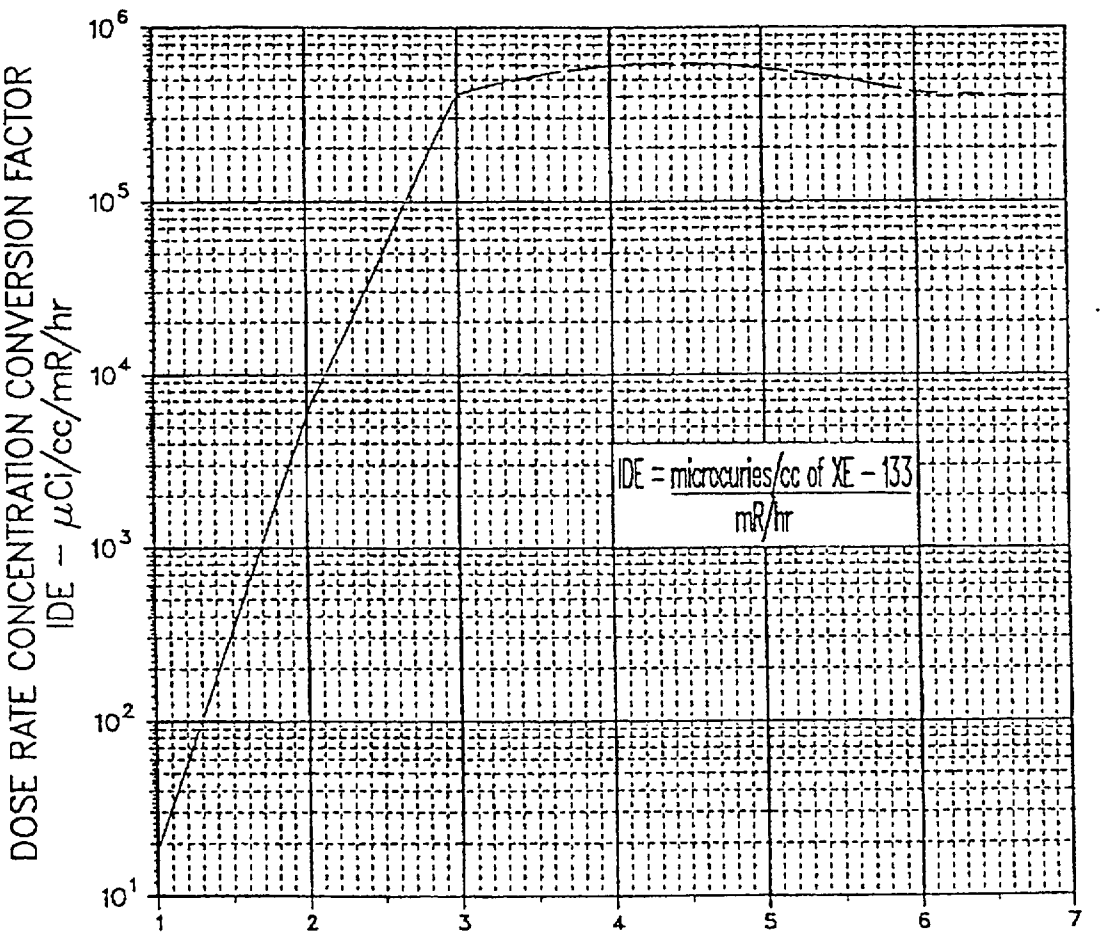


Figure 6

1R22 & 2R22 CALIBRATION CURVES

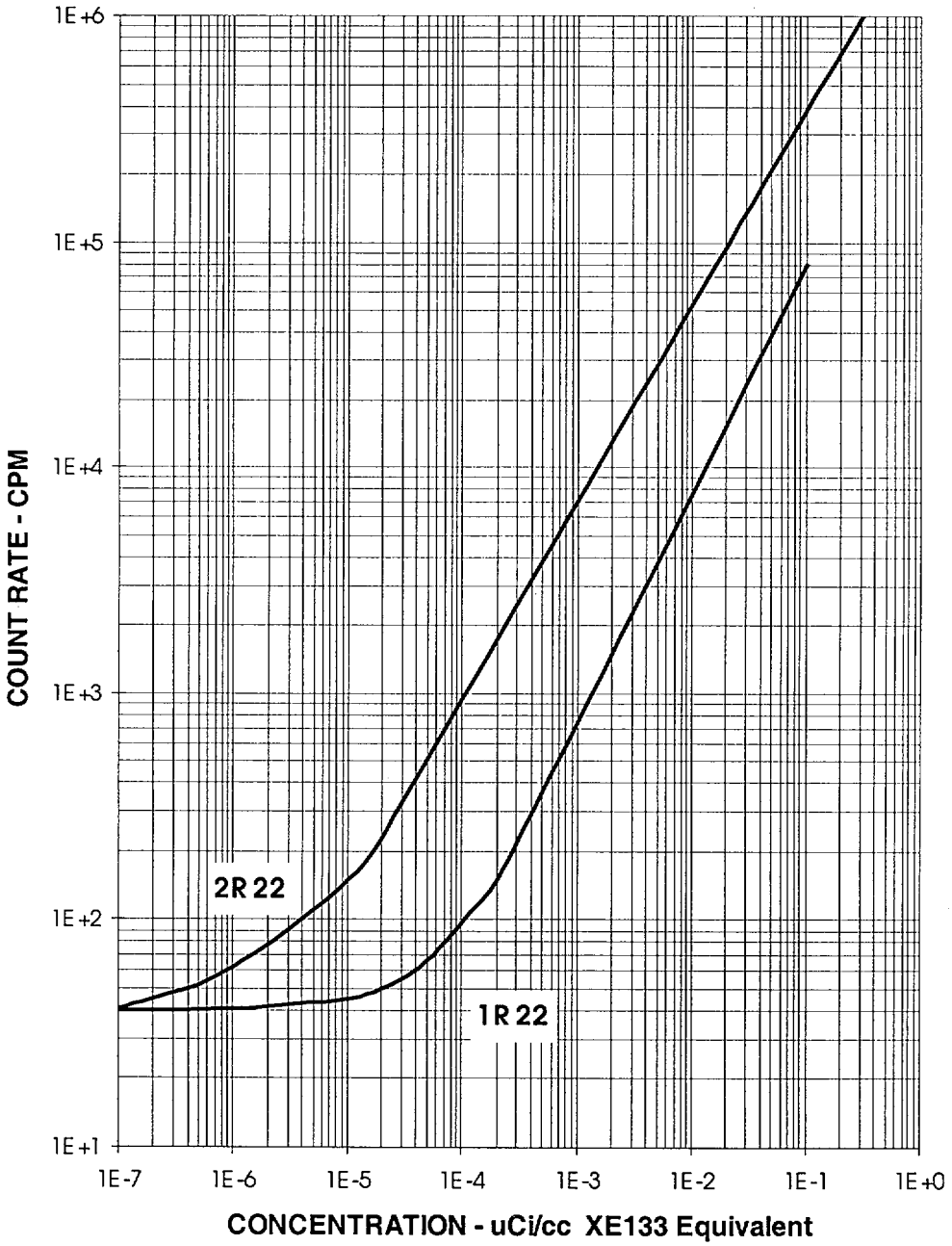


Figure 7

1 AND 2 R-50 CALIBRATION CURVE

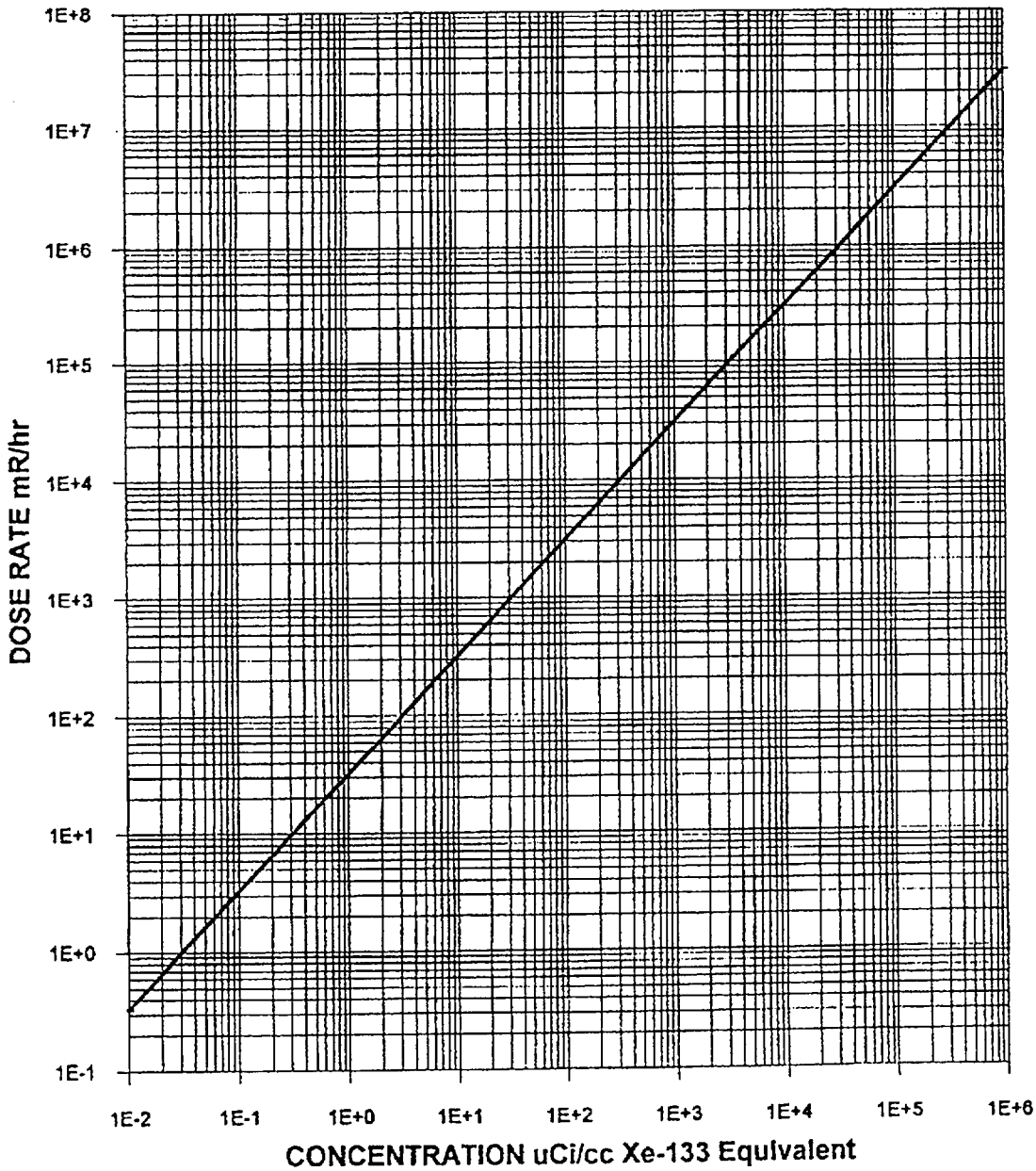
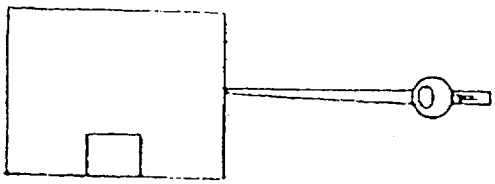


Figure 8

SHIELD BUILDING STACK MONITOR SAMPLE CHAMBER

MONITOR POINTS

TELESCAN or EXTENDER - End of probe against chamber at designated point.



RO-20 or RO-2A - Bottom of meter against side.

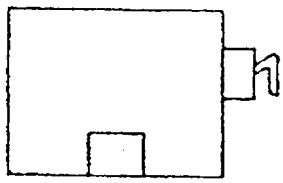


Figure 9

PORTABLE METER VERSUS
STACK GAS CHAMBER ACTIVITY

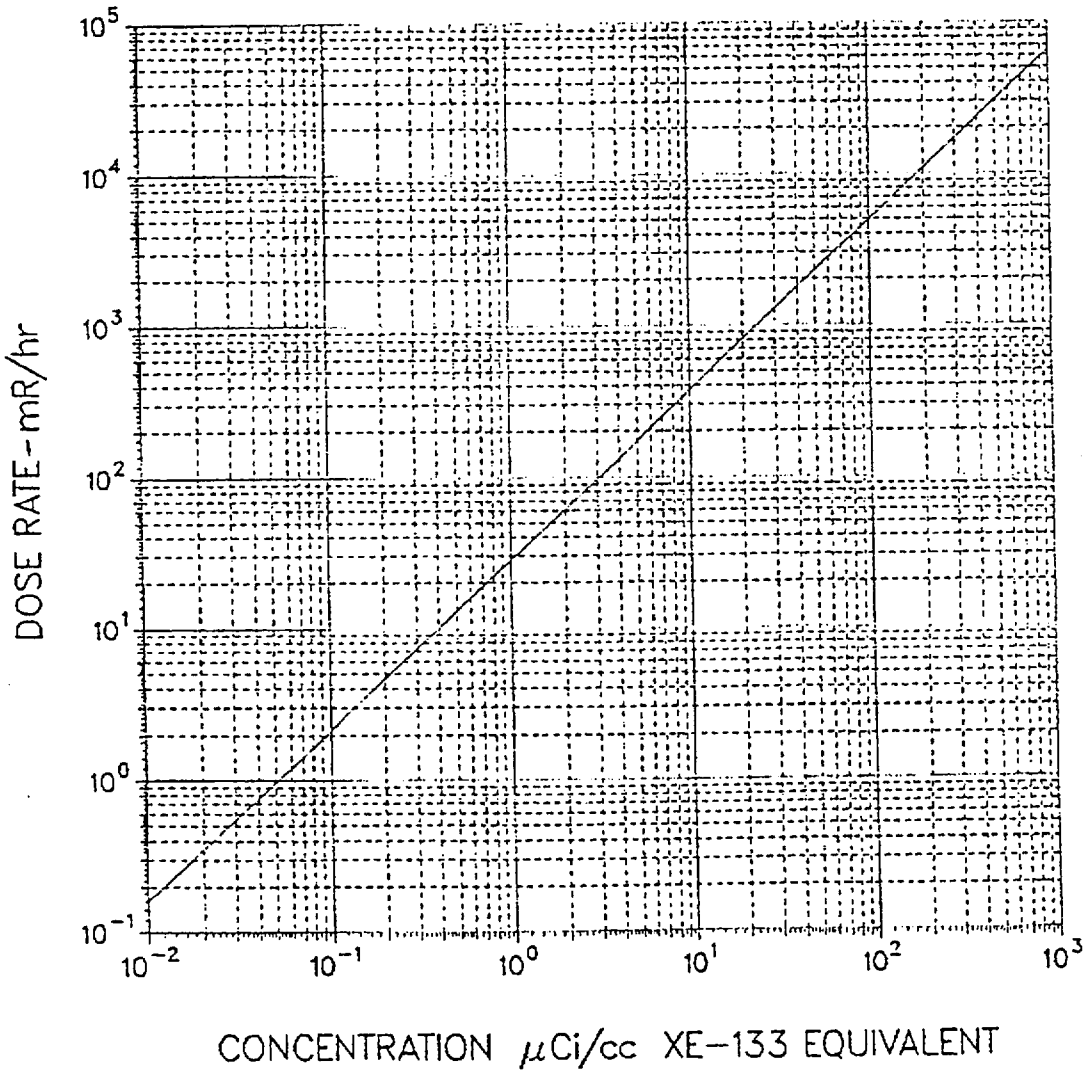


Figure 10

GROSS IODINE CURVE USING RM-14
WITH 2" GM PANCAKE PROBE WITH
SILVER ZEOLITE ADSORBER

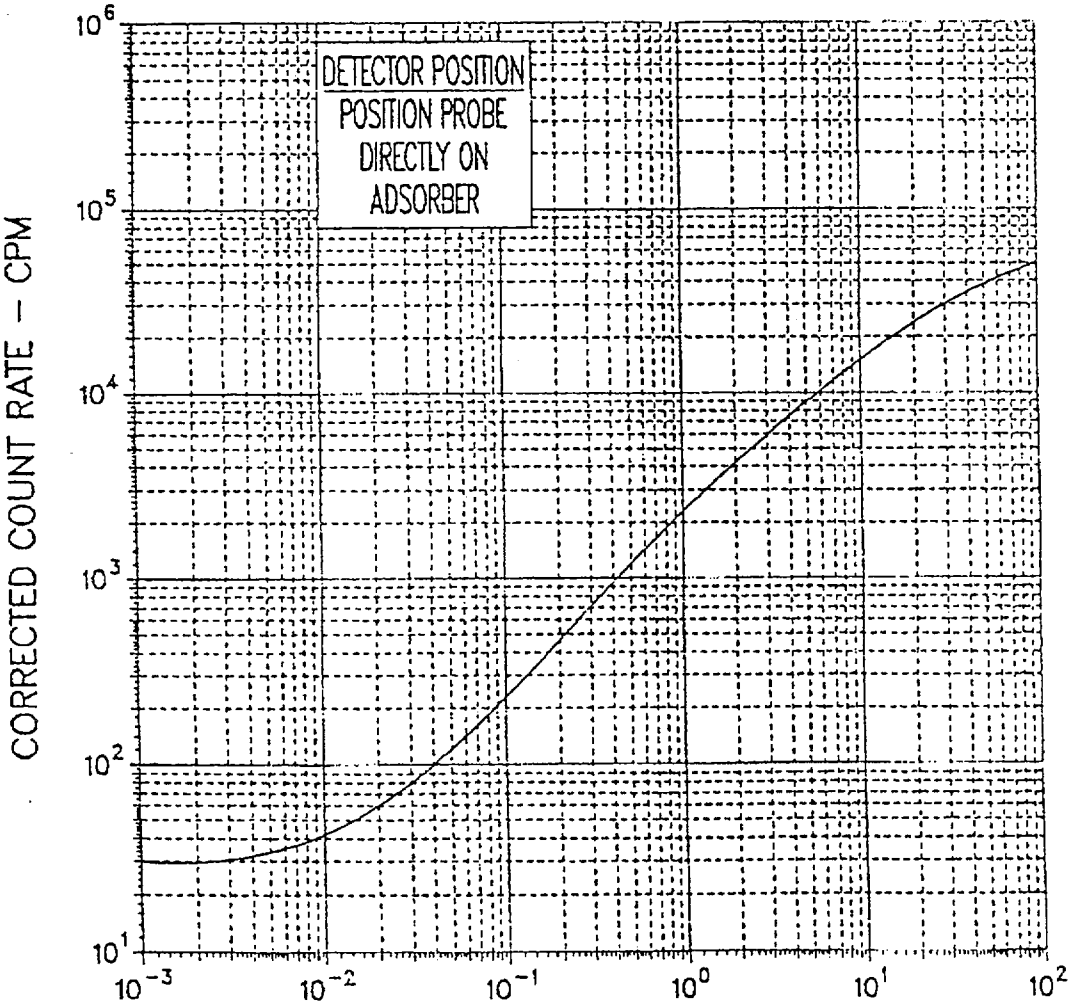


Figure 11

IODINE ADSORBER ACTIVITY
VERSUS COUNT RATE
RM–14 PANCAKE PROBE AT 12"

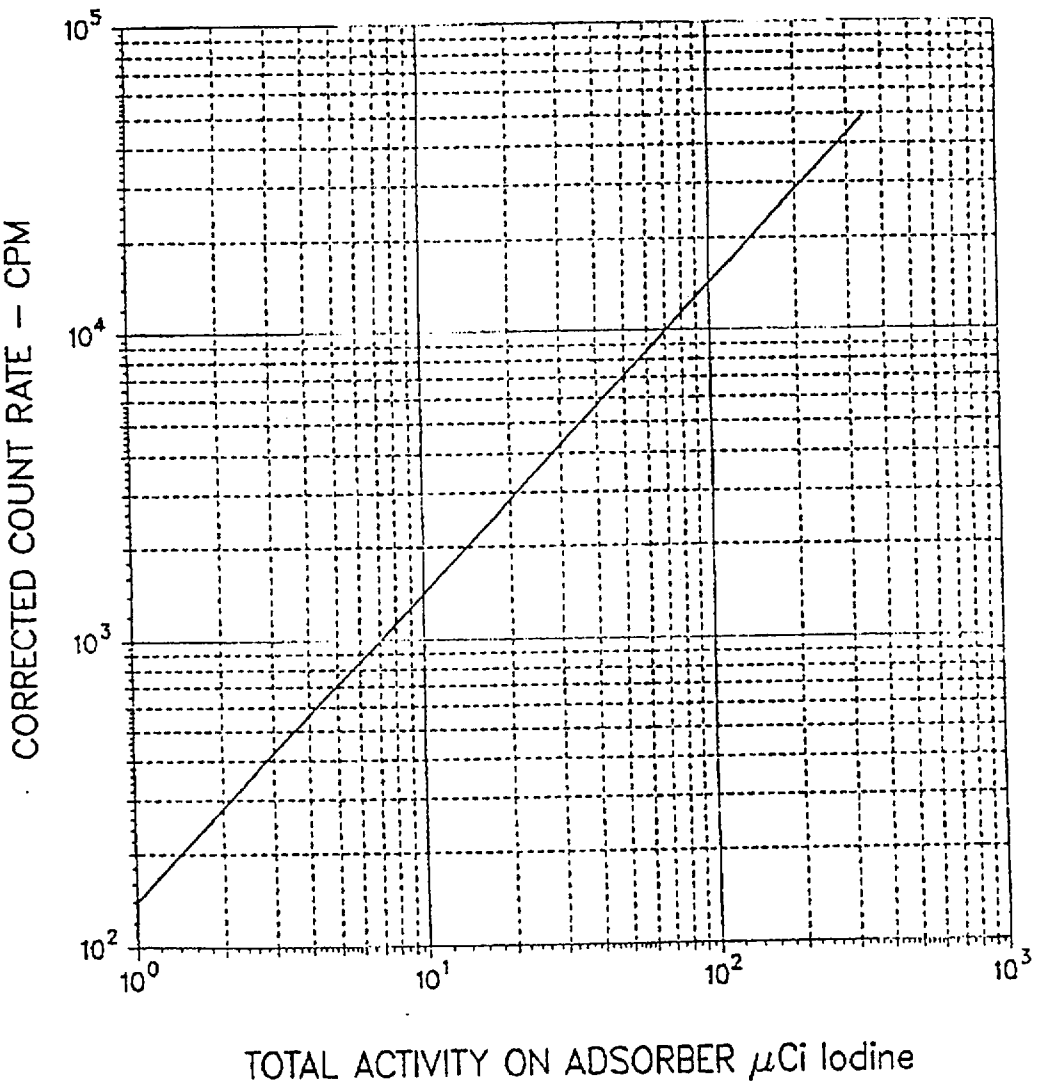
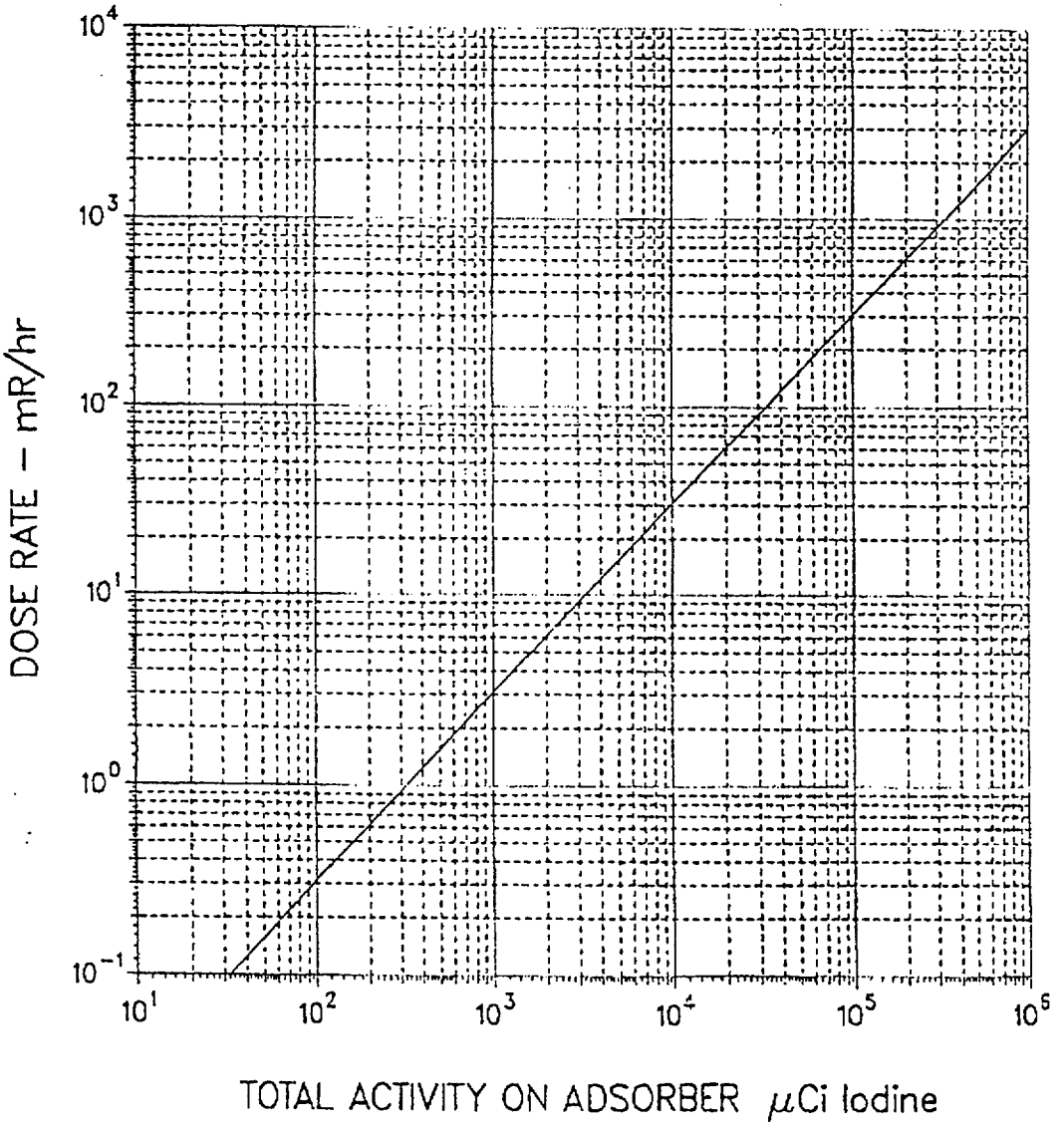


Figure 12

IODINE ADSORBER ACTIVITY VERSUS DOSE RATE
DOSE RATE METER AT 12"



F3	DETERMINATION OF STEAM LINE DOSE RATES	NUMBER: F3-20.1
		REV: 7

REFERENCE USE
• *Procedure segments may be performed from memory.*
• *Use the procedure to verify segments are complete.*
• *Mark off steps within segment before continuing.*
• *Procedure should be available at the work location.*

O.C. REVIEW DATE:	OWNER:	EFFECTIVE DATE
2-12-01 SC		3-9-01

F3	DETERMINATION OF STEAM LINE DOSE RATES	NUMBER: F3-20.1
		REV: 7

1.0 PURPOSE

This procedure provides instructions to enable the Radiation Protection Specialist to locally determine the dose rates on the steam lines whenever the steam line monitors are out of service.

NOTE:	**The radiological controls specified in this procedure are applicable only when there are indications of fuel damage.**

2.0 APPLICABILITY

This procedure applies to the Radiation Protection Specialists and to the Radiological Emergency Coordinator.

3.0 PRECAUTIONS

3.1 Minimize personnel exposure by waiting in lower dose rate areas.

3.2 If survey equipment should fail, all personnel **SHALL** return to a safe area.

3.3 Periodically check dosimeters. If above your allowable limit or off scale, return to a safe area, and notify the Radiological Emergency Coordinator.

3.4 Consider using two survey meters if radiation levels are expected to exceed 10R/hr.

4.0 RESPONSIBILITIES

4.1 The Radiological Emergency Coordinator has the responsibility to assess the need for steam line dose rate readings from AM-2 remote monitor, and to request the RPS Group to obtain readings in accordance with this procedure.

4.2 The Radiation Protection Specialists have the responsibility to obtain the AM-2 remote monitor readings, in accordance with this procedure, when requested by the REC.

5.0 PREREQUISITES

NONE

F3	DETERMINATION OF STEAM LINE DOSE RATES	NUMBER: F3-20.1
		REV: 7

6.0 PROCEDURE

The Radiation Protection Specialists should:

6.1 **Obtain** the current wholebody exposure for team members: _____

Name	TLD No.	Current Exposure	ADG	Allowable Exposure

6.2 **Verify** that each team member has necessary dosimetry. _____

6.3 IF OSC Rad. Prot. Coordinator has deemed protective clothing and/or respiratory protection necessary, THEN **don** necessary equipment. _____

6.4 **Obtain** a dose rate meter and **perform** meter check. _____

6.5 **Obtain** a portable radio for communication with the OSC. _____

NOTE:	**If a Unit 1 accident and/or high radiation levels exist, enter via D-3 Diesel Room (door #92). If a Unit 2 accident, enter via normal Access Control.**

6.6 IF a Unit 1 accident, THEN **request** security to open D-3 Diesel Rm (Door #92) OR **obtain** "Six" series key from SS office, key tags 173, 174, 175. _____

F3	DETERMINATION OF STEAM LINE DOSE RATES	NUMBER: F3-20.1 REV: 7

6.7 **Notify** OSC prior to entering Aux Bldg and **verify** any changes in plant status. _____

6.8 **Proceed** to the Turbine/Aux Bldg interface. _____

6.9 IF SCBA's are worn, THEN **activate** SCBA's. _____

6.10 **Record** dose rates in route and **report** results to the OSC as time permits. _____

695 Unit 2 _____mR/hr Access Control _____mR/hr

715 Unit 2 _____mR/hr 715 Unit 1 _____mR/hr

Hot Chem Lab _____mR/Hr

Hot Sample Room _____mR/Hr _____

6.11 **Proceed** to the steam line AM-2 remote monitor located by the BCMS panels, outside the Hot Lab. _____

6.12 **Turn** the AM-2 selector switch to the appropriate steam line and **record** the dose rates. _____

Unit 1 Loop A (1R51) _____ mR/hr Unit 2 Loop A (2R51) _____mR/hr

Unit 1 Loop B (1R52) _____ mR/hr Unit 2 Loop B (2R52) _____mR/hr

6.13 **Proceed** back to known lower dose rate area and **report** results to the OSC. _____

6.14 **Determine** from the OSC, if additional readings are required. _____

6.15 **Request** the OSC to convey the steam line dose rate information to the REC in the TSC. _____

6.16 **Exit** the Aux Bldg and **remove** any protective clothing worn. _____

6.17 **Return** this procedure to the OSC Rad. Prot. Coordinator. _____

F3	EMERGENCY HOTCELL PROCEDURE	NUMBER: F3-23.1
		REV: 10

REFERENCE USE
• *Procedure segments may be performed from memory.*
• *Use the procedure to verify segments are complete.*
• *Mark off steps within segment before continuing.*
• *Procedure should be available at the work location.*

O.C. REVIEW DATE:	OWNER:	EFFECTIVE DATE
2-23-01 SC		3-9-01

F3	EMERGENCY HOTCELL PROCEDURE	NUMBER: F3-23.1
		REV: 10

1.0 PURPOSE

The purpose of this procedure is to provide instructions to the Radiation Protection Group on the use of the Hotcell, to include Hotcell setup, various chemical analysis evolutions and radioactive sample disposal techniques.

2.0 APPLICABILITY

This Instruction is applicable to all Chemistry Radiation Protection Specialists.

3.0 PRECAUTIONS

3.1 Monitor the general area of the Hotcell for direct radiation to ensure the habitability of the Hotcell.

3.2 The reactor coolant samples taken in an accident condition have the potential to be highly radioactive. This may give rise to dose rates far in excess of what would normally be encountered. All work involving these samples is to be performed in the Hotcell with the fume hood in operation and with remote handling tools, to minimize radiation exposure, until one of the following is determined:

3.2.1 The sample is determined not to have dose rates in excess of normal values.

3.2.2 The sample has been diluted to the point where the diluted portion does not have dose rates in excess of normal values.

3.3 If a sample is determined to be of normal dose rate values, or is diluted to the point NOT to exceed normal dose rate values, the following should apply:

3.3.1 The instructions specified in this procedure may be completed in an area other than the Hotcell Hood.

3.3.2 Monitor the alternate area for direct radiation to ensure habitability.

3.3.3 Analyze the sample in accordance with the appropriate RPIP, as a normal chemistry sample for the analyte of interest.

3.3.4 The instructions for **Post Accident Sample Waste Storage and Disposal** apply.

4.0 RESPONSIBILITIES

The Chemistry Radiation Protection Specialists are responsible to implement this procedure.

5.0 DISCUSSION

The Hot Chem Lab in the Auxiliary Building may not be available due to abnormal radiological conditions. Use of the Hotcell or Alternate Area would be necessary.

6.0 PREREQUISITES

6.1 Hotcell Set-up Procedure or Alternate Area

NOTE:	**The following procedure should be completed prior to introducing a hot sample into the Hotcell Area.**

6.1.1 **Ensure** that all instrumentation is turned on, warmed up and calibrated.

6.1.2 **Fill** a 1 L volumetric to the mark with demineralized water.

6.1.3 **Fill** a 100 ml volumetric to the mark with demineralized water.

6.1.4 **Remove** 1 ml of demineralized water from each volumetric using a 1 ml pipet.

6.1.5 **Add** a stir bar to each volumetric.

6.1.6 **Turn ON** the two stir plates in the fume hood

NOTE:	**IF containment spray has been activated, consider buffering pH meter with 7 and 10 buffer.**

6.1.7 **Buffer** the pH electrode.

6.1.8 **Place** a 250 ml beaker of water near the pH probe.

F3	EMERGENCY HOTCELL PROCEDURE	NUMBER: F3-23.1
		REV: 10

7.0 Procedure

7.1 Sample Preparation

NOTE:	The RPS Sample Team members SHOULD ensure all samples are properly labeled with sample identification, sample size/volume, flowrates, pressures, and sample times, as appropriate to facilitate accurate analysis. As samples are diluted, split, or reduced; the appropriate information needs to be included on new labels attached to the newly created samples. Sample dose rate information should be included on all sample labels, to help ensure personnel awareness of radiological consideration. For ALARA reasons, the sample containers should be prelabeled whenever possible.

7.1.1 **Label** all samples.

7.1.2 **Don** a finger ring on each hand.

7.1.3 **Ensure** TLD and dosimeters are worn.

7.1.4 **Place** the 60 ml bottle shielded carrier in the fume hood near the pH probe.

CAUTION:	AVOID PLACING HANDS OVER TOP OF OPEN SHIELDED CARRIER.

7.1.5 IF radiation levels require, THEN **use** the remote handling tool.

7.1.6 **Remove** the lid from the 60 ml bottle shielded carrier.

7.1.7 **Remove** the stopper from the bottle.

7.1.8 **Pipet** 1 ml of coolant from the 60 ml bottle to the 1L volumetric.

7.1.9 **Cap** the volumetric and **agitate** to mix.

7.1.10 **Pipet** 1 ml of coolant from the 60 ml bottle to the 100 ml volumetric.

NOTE:	The 100 ml volumetric is to be saved for the Chloride Analysis, which is to be completed within four days. The undiluted sample must also be saved for 30 days.

7.1.11 **Cap** the volumetric and **agitate** to mix.

7.1.12 **Label** the volumetric with sample, date, time, and the number of mls of sample in the volumetric.

7.1.13 **Mark** sample **"TO BE SAVED".**

7.1.14 **Store** the 100 ml volumetric in the Hotcell Shielded Area.

7.1.15 IF a pH Analysis is to be determined on the sample, THEN **proceed** to Step 7.2. IF NOT, THEN **replace** the stopper on the 60 ml bottle.

7.1.16 **Replace** the lead cover on the shielded carrier, **place** the shielded carrier in the Hotcell Shielded Area and **proceed** to Step 7.3, Gamma Analysis Preparation.

7.2 pH Analysis - Using the Combination Methods

NOTE:	The pH meter gives a digital readout of sample temperature and will auto-compensate for temperature.

7.2.1 **Insert** the combination pH probe and temp probe into the 60 ml bottle and **read** pH and temperature of coolant.

7.2.2 **Remove** both probes and **place** in a beaker of demin water.

7.2.3 **Log** sample results on PINGP 655, Post Accident Chemical Analysis Report.

NOTE:	IF radiation levels require, THEN use remote handling tools for handling the 60 ml bottle stopper and shielded carrier Lid.

7.2.4 **Replace** the stopper on the 60 ml bottle and the lid on the 60 ml bottle shielded carrier.

7.2.5 **Remove** the shielded carrier and the beaker of rinse water from the fume hood and **store** according to Step 7.5, Post Accident Sample Waste Storage and Disposal.

7.3 Gamma Analysis Preparation

7.3.1 **Pipet** 10 ml of diluted coolant sample from the 1 L volumetric to a 10 ml vial.

7.3.2 **Verify** that the indicated dose rate on the 10 ml vial is capable of being counted on extended geometry in EOF Countroom.

NOTE:	Sample should be diluted to give a contact reading of under 1 millirem/hr contact. The diluted sample should NOT exceed 25 millirem/hr contact.

7.3.3 **Label** the vial with the sample point, date, time, and dilution factor to the sample prior to sending to EOF Countroom.

7.3.4 **Place** the 10 ml vial in the shielded carrier for transport to the EOF Countroom.

7.3.5 WHEN radioactive gas, charcoal, or particulate samples are received, THEN **ensure** all samples are labeled with date and time of sample, sample point, sample volume and/or correction factor, and flow rate.

7.3.6 **Store** all samples in the Hotcell Shielded Area until transported to the EOF Countroom.

7.4 Boron Analysis

7.4.1 **Using** the 1 L sample prepared in Step 7.1, Sample Preparation, **analyze** in accordance with RPIP 3314, Boron by Ion Exclusion Chromatography.

7.4.2 **Log** the results on PINGP 655, Post Accident Chemical Analysis Report.

7.4.3 **Dispose** of all radioactive waste according to Step 7.5, Post Accident Sample Waste Storage and Disposal.

7.5 Post Accident Sample Waste Storage and Disposal

NOTE:	**Ensure samples are labeled. "TO BE SAVED" or "TO BE DUMPED" before storage in shielded area.**

7.5.1 **Place** all capped or covered radioactive sample waste in the Hotcell Shielded Area.

7.5.2 IF additional waste samples are added to the Hotcell Shielded Area, THEN **survey** the Hotcell general area radiation levels. **Add** additional shielding, as necessary.

7.5.3 IF making subsequent entries into Auxiliary Building, THEN **return** the sample waste to the Sample Room for disposal down the affected unit's Sample Hood Drain.