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Jerry C. Roberts

Director
Nuclear Safety Assurance

April 5, 2001

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Document Control Desk

Subject: Grand Gulf Nuclear Station
Docket No. 50-416
License No. NPF-29
Clarification and Details on Offsite Dose Assessment Personnel as
Requested by NRC in a Letter Dated February 6, 2001

GNRO-2001/00024

Ladies & Gentlemen:

NRC letter dated February 6, 2001 was issued to correct errors in the NRC Safety Evaluation (SE) included in the NRC letter to Grand Gulf Nuclear Station dated September 29, 2000. The February 6th letter also noted that the submittal and changes did not change any requirements of qualifications and training of personnel performing the function of Offsite Dose Assessment. Although the expertise of the individual performing the Offsite Dose Assessment task was not within the scope of the approved proposed Emergency Plan changes addressed by the SE, the NRC requested information in regard to the expertise for this function. The NRC requested clarifications and details as to how personnel qualifications would be maintained as discussed in a conference call on February 2, 2001. This response provides the requested clarifications and details.

Grand Gulf Emergency Plan Figures 5-3 and 5-4 shows the normal station personnel presently filling emergency response organization positions by actual job titles. These Emergency Plan Figures were unchanged by the subject plan change. We have essentially been using the same normal station personnel to fill this function for the last 10 years. These Figures are provided to comply with 10CFR50, Appendix E and NUREG-0654 which requires in Section II.B.1 that we specify our normal station organization that fill ERO positions.

Emergency Plan Section 8.2 specifies we will have a training program. Procedure 01-S-04-21 explains the overall selection and qualification for personnel. Procedure 10-S-01-12 specifies the duties and responsibilities of Offsite Dose Assessment personnel. These procedures have been previously docketed and when changed are sent to the NRC per 10CFR50 Appendix E within 30 days of issuance.

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The ERO personnel qualifications and performance are routinely evaluated by licensee drills and audits. These same aspects are also inspected under NRC Inspection Procedures 82001 and 82206. These evaluations have typically looked at Radiological Assessment Training, Dose Calculator Qualification Card's, TSC and EOF Dose Calculator Drill Objective Sheets, and performance. The station procedures and training/qualification materials referred to above are provided as Attachments 1-5. Attachments 1 and 2 were previously docketed. Attachments 3-5 are normally not docketed and will not be updated as changes are made.

This information is consistent with the information recommended to resolve the erroneous statements in the SE that was opted not to be used in the latest letter (Letter dated February 6, 2001). If you have any question please feel free to call Jerry Roberts at 601-437-6470. This letter does not contain any commitments.

Yours truly,



JCR/MJL

- attachments:
1. Administrative Procedure, 01-S-04-21, Emergency Preparedness Training Program
 2. Emergency Plan Procedure, 10-S-01-12, Radiological Assessment And Protective Action Recommendations
 3. Radiological Assessment Training Lesson Plan
 4. Dose Calculator Qualification Card
 5. TSC and EOF Dose Calculator Drill Objective Sheets

cc:

Hoeg	T. L.	(GGNS Senior Resident)	(w/a)
Levanway	D. E.	(Wise Carter)	(w/o)
Reynolds	N. S.		(w/o)
Smith	L. J.	(Wise Carter)	(w/o)
Thomas	H. L.		(w/o)

Mr. E. W. Merschoff (w/2)
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ATTACHMENT 1 TO GNRO-2001/00024

PLANT OPERATIONS MANUAL

Volume 01
Section 04

01-S-04-21
Revision: 108
Date: 2/8/01

ADMINISTRATIVE PROCEDURE

EMERGENCY PREPAREDNESS TRAINING PROGRAM

SAFETY RELATED

Prepared: Dianne Gibson
Reviewed: Ken Green
Technical
Concurred: Mark Feltz
Responsible Manager
PSRC: [Signature]
Approved: Joe Venet / Ken Green
Plant General Manager / Manager, Training & Development

List of Effective Pages:

Pages 1-7

Attachments I-III

List of TCNs Incorporated:

<u>Revision</u>	<u>TCN</u>
0-3	None
4	1
5-9	None
10	None
11	None
12	2, 3
13	4
14	None
100	None
101	5
102	6, 7
103	None
104	None
105	None
106	None
107	None
108	None

Title: Emergency Preparedness
Training Program

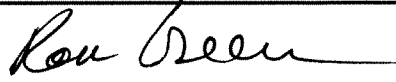
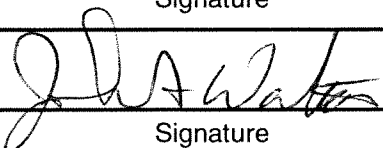
No.: 01-S-04-21

Revision: 108

Safety
Evaluation

Facility: GRAND GULF

I. SIGNATURES

Preparer:		Ron Green	1/20/2001
	Signature	Name (print)	Date
Reviewer:		John Watson	1/30/2001
	Signature	Name (print)	Date

II. OVERVIEW**Document Evaluated:** Administrative procedure 01-S-04-21 Revision 108 "Emergency Preparedness Training Program

Brief Description of the Proposed Change: This revision updates manager titles listed in the procedure, changes the title of the TSC/EOF Dose Calculator to Radiological Assessment Dose Calculator, removes the requirement for RWT training for ENM/EIC personnel, and deletes the qualification codes from the procedure.

Manager 2/5/01
ENM/EIC 2/5/01
2/5/01

III. 50.59 SCREENING**TECHNICAL SPECIFICATION SCREENING**

Does the proposed Change represent a change to:

Operating License	<input type="checkbox"/> Yes	If yes, process a change per 10CFR50.90 and obtain NRC approval prior to implementing the Change.
	<input checked="" type="checkbox"/> No	
Technical Specifications	<input type="checkbox"/> Yes	If yes, process a change per 10CFR50.90 and obtain NRC approval prior to implementing the Change.
	<input checked="" type="checkbox"/> No	
NRC Orders (ANO only)	<input type="checkbox"/> Yes	If yes, process a change per 10CFR50.90 and obtain NRC approval prior to implementing the Change.
	<input type="checkbox"/> No	
	<input checked="" type="checkbox"/> N/A	

SAR SCREENING

Does the proposed Change represent a change to the facility or procedure which alters information, operation, function or ability to perform the function of a system, structure or component described in the SAR (site-specific documents)?

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TS Bases section	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, perform a 50.59 Evaluation.
UFSAR (including pending changes)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, perform a 50.59 Evaluation.
TRM	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, perform a 50.59 Evaluation.
Core Operating Limits Report	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, perform a 50.59 Evaluation.
Fire Hazards Analysis (Included in RBS' USAR)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	If yes, perform a 50.59 Evaluation.
NRC SERs	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, perform a 50.59 Evaluation. (See Section 5.1.19.)
Does the proposed Change involve a test or experiment not described in the SAR?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, perform a 50.59 Evaluation.
Does the proposed Change result in any potential impact to equipment or facilities utilized for Ventilated Storage Cask activities? (ANO only)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	If yes, perform a 72.48 Review.

ADDITIONAL SCREENING

Does the proposed Change represent a change to:

Quality Assurance Program Manual	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, notify the quality department and ensure a 50.54 Evaluation is performed.
Emergency Plan	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If yes, notify the emergency planning department and ensure a 50.54 Evaluation is performed.

BASIS: [A brief written response providing the basis for answering the questions must be provided. Adequate basis must be provided within the Screening such that a third-party reviewer can reach the same conclusions. Simply stating that the change does not affect TS or the SAR is not an acceptable basis. Also discuss the methodology for performing the LBD search. State the location of relevant licensing document information and explain the scope of the review such as electronic search criteria used (e.g., key words) or the general extent of manual searches per Section 5.1.18.6.]

An electronic search of the UFSAR using keywords Emergency Plan, Dose Calculator, Dose Calculation, Manager, Radiation Protection Training, Radiation Worker Training, and radiological was conducted. Also a review of Technical Specifications and the TRM and an electronic search of each was conducted including section 5.0 "Administrative

Controls” and TRM section 7.7.3.1 “In-Plant Radiation Monitoring”. Further a review of the Emergency Plan Revision 43 and an electronic search using keyword “training” was conducted. All of these searches and document reviews led to the conclusion that the title changes and deletion of the qual codes and RWT requirements for the ENCM/EIC positions had any impact or affected changes to the UFSAR, Tech Specs, TRM or the Emergency Plan. The title changes merely update the procedure to reflect manager title changes for EOI standardization or other reasons. The title change does not change the responsibility or actions of any of these positions. The deletion of the qual codes from this procedure is an editorial change only. The deletion of the RWT requirement for ENMC/EIC does not delete their requirement to be trained for their position, but deletes the requirement to complete RWT training, which is not necessary for the ENMC/EIC E-plan positions. These positions due not enter the Controlled Access Area (CAA) at Grand Gulf as part of their duties therefore the do not need Radiation Worker Training (RWT).

Title: Emergency Preparedness Training Program	No.: 01-S-04-21	Revision: 108	Safety Evaluation
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IV. ENVIRONMENTAL EVALUATION APPLICABILITY REVIEW

If any of the following questions is answered "YES", then an Environmental Evaluation must be performed.

Will the Change being evaluated:

YES

NO

- | | | |
|--------------------------|-------------------------------------|--|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to the river, lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration or quantity of chemicals discharged to the atmosphere, ground water, or surface water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower that will change flow characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge that may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area that may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to non-radiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the site? |
-

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Periodic Review Required:

☒ YES ☐ NOIf Yes, list frequency: 2 Year

If No, refer to Attachment XIX of 01-S-02-3 for a list of procedure review methods and fill in the appropriate letter(s) below; if "Other," specify method.

Method(s) of Review _____

10CFR50.59 Review Required:

☒ Yes - If Yes, attach 50.59 Review.
☐ No - Not required per section _____
(enter Section 6.3.2(b) or 6.3.2(c) of procedure 01-S-02-3)

Cross-discipline review required:

☐ YES ☒ NO

Tech Reviewer's Initials



Reviewed by: _____

Does this directive contain Tech Spec, TRM, ODCM, or PCP Triggers? ☐ YES ☒ NO

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REQUIREMENTS CROSS-REFERENCE LIST

Requirement Implemented by Directive		Directive Paragraph Number That Implements Requirement
Name	Paragraph Number	
UFSAR	7.7.1.11.4.3.S3	Att I.7, Att II-C15
Emergency Plan	8.2.1	6.2
UFSAR	18.1.22.S3-S6	6.4, Att I.2, Att II - Column 10
Emergency Plan	8.2.2.S2&S3	*
Emergency Plan	8.2.S1	*
	8.2.2.S1	6.2.1, 6.2.3, 6.3.1, Att I.7
TRM	7.6.3.1.a	6.4.3
Tech Spec	5.5.3.a	Att I.7, Att II-C15
ANSI N2.3	4.5.1.S1	6.2.2a
ANSI N2.3	4.5.2.S1	6.2.2a
ANSI N2.3	4.5.3.S2	6.2.2a
Emergency Plan	6.5.1.a.5	6.2
AECM-89/0202	Att 1.IV.S7	6.1.8, 6.1.1
Emergency Plan	8.2.2.S4	6.3.1, 6.3.2
GNRO-97/00080	50-416/9709-1 Item 1	6.4.4
CR 2000/0386	CA.15	6.1.9

* Covered by directive as a whole or by various paragraphs of the directive.

NOTE

The Component Data Base Change Request statement is applicable only to Volume 06 and 07 maintenance directives.

Component Data Base Change Request generated and the backup documentation available for setpoint and/or calibration data only ☐ Yes ☒ N/A CDBCR # _____

Current Revision Statement

Revision 108:

- Changes titles of TSC/EOF Dose Calculator to Radiological Assessment Dose Calculator.
- Changes title Shift Superintendent to Shift Manager.
- Deletes RWT requirement for ENMC/EIC to meet standardization.
- Changes Manager, Training and EP to Manager, Training and Development.
- Deletes Qual codes from this procedure.

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ADMINISTRATIVE PROCEDURE

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EVALUATION OF EMERGENCY PREPAREDNESS PROCEDURE

Procedure Number: 01-S-04-21

Procedure Name: Emergency Preparedness Training Program

Revision / TCN Number: Revision 108

Does the procedure Revision / TCN require an Emergency Plan change?

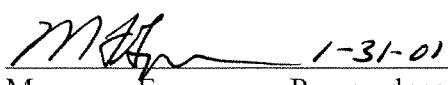
() Yes (X) No

NOTE: IF YES, THIS PROCEDURE CANNOT BE ISSUED UNTIL THE EMERGENCY PLAN IS CHANGED / REVISED.

Reason for "NO" response:

This procedure revision implements the changes made to the GGNS Emergency Plan in Revision 43 & 44 and clarifies and corrects information in the procedure. Therefore, this revision does not change the GGNS Emergency Plan.

Prepared:  1-31-01

Approved:  1-31-01
Manager, Emergency Preparedness

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1.0 PURPOSE

- 1.1 The objective of the Emergency Preparedness Training (EPT) Program is to define and implement training for GGNS emergency response personnel to ensure a constant state of preparedness for and during a radiological emergency.
- 1.2 Changes required for implementation of 1994 TSIP were incorporated in Revision 100. For historical reference this statement should not be deleted.

2.0 RESPONSIBILITIES

- 2.1 Site Vice President - Has authority and responsibility for establishing management direction and control to ensure that preparedness is maintained and that any required corrective actions are implemented.
- 2.2 Manager, Emergency Preparedness - Has overall responsibility for implementation of the Emergency Preparedness Program, including training, drills, standards of performance, and exercises involving Entergy Operations, Inc. (GGNS) Emergency Organization personnel.
- 2.3 Manager, Training & Development - Is responsible for providing and implementing an Emergency Preparedness Training Program that is in accordance with plant requirements, administrative directives and company policies.
- 2.4 Manager, Operations - Is responsible for Fire Brigade Training, including drills, standards of performance, and documentation of activities related to fire brigade training.
- 2.5 Facility Process Owners or their designee - Are responsible for:
 - 2.5.1 Making recommendations for their assigned facilities concerning:
 - a. Staffing
 - b. Operation
 - c. Readiness
- 2.6 Position Leads - Are responsible for:
 - 2.6.1 Reviewing qualification cards and EPTS lesson plans, as appropriate, for the ERO positions under their responsibility.

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3.0 REFERENCES

- 3.1 GGNS Emergency Plan
- 3.2 Administrative Procedure 01-S-05-16, Training Records
- 3.3 Administrative Procedure 01-S-04-4, General Employee Training Program
- 3.4 Administrative Procedure 01-S-05-15, GGNS Required Reading Program
- 3.5 Emergency Plan Procedure 01-S-10-4, Emergency Preparedness Drills and Exercises
- 3.6 Administrative Procedure 01-S-10-6, Emergency Response Organization
- 3.7 Site Directive No. G5.505, General Employee Training
- 3.8 Site Directive No. G6.601, Emergency Preparedness Program Responsibilities
- 3.9 Technical Requirements Manual, Section 7.0, Administrative Control
- 3.10 Administrative Procedure 01-S-04-34, Training Waivers

4.0 ATTACHMENTS

- 4.1 Attachment I - Summary/Outline of EPTS Classes
- 4.2 Attachment II - Training/Qualification Requirements
- 4.3 Attachment III - ERO Positions with Position Leads

5.0 DEFINITIONS

- 5.1 Emergency Preparedness Training Specialized (EPTS) - Includes training on related procedures and techniques necessary for proper response
- 5.2 Licensed Operators - Shift Managers, Shift Supervisors and Nuclear Operator A (NOA's)
- 5.3 Non-licensed Operators - Nuclear Operator B (NOB), Auxiliary Operator Nuclear (AON), and Radwaste Operators
- 5.4 Emergency Response Personnel - GGNS Entergy Operations personnel who are required to respond to an emergency.
- 5.5 EP Qualifying Activity - A radiation emergency drill, or exercise, of which the major component consists of a preplanned scenario designed to activate the Emergency Plan and test, or train, members of the ERO.
- 5.6 Participation - Includes, and is limited to, the following activities:
 - 5.6.1 Responding as an ERO member in the position qualifying for, or
 - 5.6.2 Serving as a Controller over the position qualifying for, or
 - 5.6.3 Serving as an Evaluator of the position qualifying for, or

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5.6.4 Serving as Coach over the position qualifying for.

5.7 CBOF - Participation in the EOI Continuing Behavioral Observation Program, with access authorized.

5.8 TLD - Assigned a Thermo Luminescent Dosimeter and no current Radworker Restrictions.

5.9 Key Card - Possession of active key card and unescorted access to Protected Area and EOF.

5.10 CBE - Credit by Examination

5.11 FW - Facility Walk-through

6.0 DETAILS

6.1 Training Program Requirements

6.1.1 All exam failures in the Emergency Preparedness Training Program must be immediately reported to the Manager, Emergency Preparedness, in accordance with 01-S-10-6.

6.1.2 Training/qualifications in the Emergency Preparedness Training Program shall be documented and retained in accordance with Reference 3.2.

6.1.3 EPTS lesson plans should be approved by a Training Supervisor, and reviewed by the Manager, Emergency Preparedness or designee.

6.1.4 Written examinations and/or performance evaluations are normally given to ensure adequate understanding and retention of material covered in the classroom/or other qualification activity. These examinations/evaluations shall be administered in accordance with Training Section Procedure 14-S-01-4, Examinations.

6.1.5 EPTS classroom training instructors shall be qualified in accordance with 01-S-04-35, Instructor Certification and Evaluations.

6.1.6 Specialized training may be provided by vendors qualified in a specific area with documentation furnished to Training in accordance with Reference 3.2.

6.1.7 Notification of changes to procedures and equipment that happen between scheduled training sessions will be done, as appropriate, in accordance with Reference 3.4. The EP Training Review Group determines if formal training is required for these changes.

6.1.8 Waivers for Training/Qualification requirements in this procedure must be documented and approved in accordance with 01-S-04-34.

6.1.9 When Training/Qualification requirements change, all affected personnel must be trained/qualified in the new requirements before the requirements are changed in this procedure.

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6.2 Emergency Plan Training for All Personnel

6.2.1 Information on the Emergency Plan is administered as part of Plant Access Training (PAT) to all personnel (excluding visitors) coming onsite for the first time and to all personnel participating in the annual PAT retraining program. This portion of PAT meets the following objectives:

- a. Trains personnel with respect to their responsibilities during an emergency situation.
- b. Keeps personnel informed of any applicable changes to the Emergency Plan.

6.2.2 To meet these objectives, instructions concerning the following will be given to all personnel participating in Plant Access Training:

- a. Signals and alarms
- b. Evacuation routes and procedures
- c. Response during an emergency
- d. Response on observing an unusual occurrence
- e. Emergency classifications
- f. Public relations

6.2.3 This training shall be completed on an annual basis, unless otherwise noted.

6.3 Emergency Preparedness Training for ERO Personnel

6.3.1 All personnel who respond as part of the GGNS Emergency Plan shall be qualified in accordance with this procedure.

6.3.2 All personnel reporting to work to satisfy staffing in accordance with the requirements of 01-S-10-6 shall be qualified in accordance with this procedure.

6.3.3 All personnel who are designated to augment station staffing (On-Call ERO) in accordance with 01-S-10-6 shall meet all qualification requirements of assigned position before being placed on-call.

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6.3.4 Training is required annually with a training grace period allowed up to the last day of the thirteenth month following current training.

6.3.5 Should a person perform duties that indicate the need to qualify for more than one Emergency Position (see Attachment II), the qualifications for the persons assigned ERO position shall prevail in determining the persons ERO qualification status.

6.4 Emergency Preparedness Training Specialized (EPTS)

6.4.1 Emergency response personnel shall receive specialized training based on their expected involvement in specific emergency response areas. This training should include, but not be limited to, attendance at, and completion of, one or more of the modules listed in Attachment I.

a. CBE may be given in lieu of class attendance at the discretion of the instructor.

(1) The CBE should include providing information on pertinent changes to the Emergency Plan and Procedures, and relevant industry events that have occurred since the last qualifying EPTS class.

(2) Any person failing any part of the CBE must retake the normal EPTS qualifying class and satisfactorily complete any skills items, as appropriate.

(3) All failures are reported IAW 6.1.1.

(4) CBE will not be used for initial ERO position qualification.

6.4.2 The following groups require EPTS-2 by UFSAR 18.1.22. Not having EPTS-2 does not affect their ability to respond in an emergency unless the emergency position requires EPTS-2.

a. Plant General Manager

b. Manager, Operations and Manager, Maintenance and Modifications

c. Senior Health Physicists

d. Instrument Technicians

e. Radiochemists

6.4.3 Training will be provided to in-plant radiological monitoring personnel on the collection, analysis, and evaluation of airborne radioiodine in vital areas under accident conditions. This training is normally completed under the Health Physics Qualification Program.

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- 6.4.4 Personnel who provide the on-shift radiological assessment function shall train with an Operations crew in the Control Room or simulator, commensurate with their emergency function, before first assignment as On-shift Chemist and annually thereafter. This training cannot occur during an Evaluated EP Exercise.

6.5 Training and Qualification Process

- 6.5.1 All Training/Qualification Requirements are listed in Attachment II.
- 6.5.2 When a person needs to be trained or qualified for emergency response duties, the position candidate must contact Training to schedule a training class and obtain a Qualification Card, if appropriate.
- 6.5.3 A person qualifying for a new or different ERO position must participate in a drill as a player in the position qualifying for.

NOTE

Requalification courses are normally scheduled, by Training, in advance.

- 6.5.4 The position candidate then completes all requirements per Attachment II for the position the candidate is attempting to qualify for before being assigned or reassigned to the ERO.

NOTE

If the candidate fails any aspect of the qualification process, refer to Section 6.1.1 of this procedure.

- 6.5.5 When the qualcard items are complete, it is reviewed by a person currently qualified in the position (or higher level in the ERO) for which the candidate is attempting to qualify. If satisfied that the candidate is proficient, the reviewer signs the qualcard as evaluator. The qualcard is also signed by the candidate's direct supervisor.
- 6.5.6 The candidate then routes the completed QualCard to EP Training.

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- 6.5.7 Training submits all completed QualCards/Course Packages to Records in accordance with Reference 3.2.
- 6.5.8 If the candidate is qualifying for a NEW ERO position, the candidate notifies Emergency Preparedness in accordance with 01-S-10-6.
- 6.5.9 If the position candidate is not qualifying for a new ERO position, no additional action is necessary.

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SUMMARY/OUTLINE OF EPTS CLASSES

The training shall include, but not be limited to, the information listed in this attachment.

1. EPTS-1 Security
 - a. Organization in an emergency
 - b. Responsibilities
 - c. Interaction between security and other emergency facilities
 - d. Response to fire truck or ambulance arrival
2. EPTS-2 Mitigation and/or Recognition of Core Damage - Is broken into two major division(s): (1) Operator-oriented class (2) Basic-oriented class for selected management and support personnel. The initial training in MCD should be an in-depth lecture/discussion. Any requalification may be an overview of MCD with any new information, problems or happenings in industry discussed. Credit for similar training from another nuclear site for management personnel, not part of a shift operating crew, may be given with proper proof and documentation.

NOTE

Normally, requalification is not required.

3. EPTS-3 Radiological Assessment
 - a. Meteorological conditions
 - b. Meteorological readings and measurements
 - c. Process monitoring systems for release points
 - d. Offsite dose calculations
 - e. Protective Action Guides
 - f. Dose calculator responsibilities
 - g. Coverage of appropriate Volume 10 procedures
 - h. Emergency action levels
 - i. Responsibilities of REM, RAC, and RPM
4. EPTS-4 Control Room Communications
 - a. Necessary forms
 - b. Communication devices and their uses
 - c. Principles of communication
 - d. Necessary notification and information

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SUMMARY/OUTLINE OF EPTS CLASSES (Continued)

5. EPTS-5 Radiological Monitoring
 - a. Equipment available
 - b. Responsibilities
 - c. Communications
 - d. Sample taking and measurements in the field
 - e. Sample points
 - f. EOF Operations
 - g. Monitoring Teams/Plume Tracker requirements/operations
 - h. Interface responsibilities
6. EPTS-6 Emergency Assessment
 - a. Coverage of Volume 10, Emergency Plan Procedures
 - b. Emergency action levels
7. EPTS-7 Post-Accident Sampling - Should be a complete, in-depth lecture/discussion/demonstration of the system operation, uses, sampling and measurement and proper handling of highly radioactive samples in a post-accident condition. The yearly requal should be a review of these techniques with any new problems, lessons learned or procedures discussed. Also covered are interfaces, responsibilities and personnel protection during emergencies and communications.
8. EPTS-8 TSC Communications
 - a. Necessary forms
 - b. Communication devices and their uses
 - c. Principles of communications
 - d. Necessary notification and information
9. EPTS-9 Standard First Aid - A Red Cross course taught under the authority of the Red Cross and in accordance with its lesson plans and conduct of operations. A higher level medical program such as Emergency Medical Technician (EMT) may be used instead of standard first aid.
10. EPTS-10 Onsite Monitoring
 - a. Onsite equipment available
 - b. Responsibilities
 - c. Communications
 - d. OSC operations

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Attachment I	Page 3 of 4

SUMMARY/OUTLINE OF EPTS CLASSES (Continued)

11. EPTS-11 Response Teams
 - a. Damage Control and Repair
 - b. Injuries Instruction
 - c. Medical Equipment and Supplies
 - d. Search and Rescue
 - e. Radiological Hazards
 - f. Responsibilities
 - g. Re-entry and Recovery Planning and Operations
12. CPR (Cardiopulmonary Resuscitation) - A Red Cross course taught under the authority of the Red Cross and in accordance with its lesson plans and conduct of operations.
13. EPTS-12 EOF Overview
 - a. Responsibilities
 - b. Organization and Set-up
14. EPTS-13 ENMC Overview
 - a. Responsibilities
 - b. Organization and Set-up
15. EPTS-14 EIC Overview
 - a. Responsibilities
 - b. Organization and Set-up
16. EPTS-16 HP Coordinator and OSC Coordinator Training
 - a. Responsibilities
17. EPTS-17 Security Coordinator Training
 - a. Responsibilities
 - b. Includes EPTS1 content
18. EPTS-19 Severe Accident Procedures Training
 - a. Responsibilities
 - b. Basis for decisions

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SUMMARY/OUTLINE OF EPTS CLASSES (Continued)

19. EPTS-20 EOF Communicator
 - a. Responsibilities
 - b. Organization and Set-up
20. Facility Walk-through (FW)
 - a. Tour of facility
 - b. Location of equipment
 - c. Facility Organization
21. Emergency Preparedness Qualification Card (EPQUALCRD)
 - a. Complete a Qualification Card that qualifies the person for the assigned position.
22. Drill Participation (EPDRILL)
 - a. Participate in a Qualifying EP Activity in the ERO position assigned.

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Revision: 108

Attachment II

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TRAINING/QUALIFICATION REQUIREMENTS

Emergency Position	PAT FFD FFDs	KEY CARD	TLD	RWT	RRT FIT PHYS	EP QUAL CARD	EP DRILL	EPTS 2**	EPTS 3	EPTS 4	EPTS 5	EPTS 6	EPTS 7	EPTS 8	EPTS 9***	EPTS 10	EPTS 11	EPTS 12	EPTS 13	EPTS 14	EPTS 16	EPTS 17	EPTS 19	EPTS 20	CPR	OTHER	
CONTROL ROOM																											
Fire Brigade	X	X	X	X	X																					Fire Brigade Training	
Operations Coord.	X	X	X	X	X			X				X											X				
NLORWO	X	X	X	X	X					X																	
RO	X	X	X	X	X			X				X											X				
Onshift Chemists	X	X	X	X	X	X	(see 6.4.5)		X				X														
SRO/STA	X	X	X	X	X			X				X											X				
ENMC/EIC																											
Company Spokesperson	X					X	X												X								
EIC Coordinator	X					X	X													X							
EIC Staff	X						X													X							
ENMC Clerical Coordinator	X						X												X								
ENMC Clerical Staff	X						X												X								
ENMC Manager	X					X	X												X								
ENMC Support Staff	X						X												X								
Media Monitor	X						X												X								
Technical Spokesperson	X					X	X												X								
EMERGENCY OPERATIONS FACILITY																											
Accident Assessment Eng.	X	X		X		X	X											X					X				
Emergency Support Manager	X	X		X			X											X									
EOF Eng. Mech.	X	X		X			X											X									
EOF Eng. Support	X	X		X			X											X									

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TRAINING/QUALIFICATION REQUIREMENTS

Emergency Position	PAT FFD FFDs	KEY CARD	TLD	RWT	RRT FIT PHYS	EP QUAL CARD	EP DRILL	EPTS 2**	EPTS 3	EPTS 4	EPTS 5	EPTS 6	EPTS 7	EPTS 8	EPTS 9***	EPTS 10	EPTS 11	EPTS 12	EPTS 13	EPTS 14	EPTS 16	EPTS 17	EPTS 19	EPTS 20	CPR	OTHER
EOF (continued)																										
EOF Eng. Elec. EPEOFEELEC	X	X		X			X											X								
EOF Eng. Civil	X	X		X			X											X								
EOF Admin. Dir.	X	X		X			X											X								
EOF Communicator	X	X		X			X																			
EOF Facility Coord.	X	X		X			X											X								
EOF Habitability Specialist	X	X		X			X											X								Rad Monitor Training & Qual Card
Food & Lodging Coordinator	X	X		X			X											X								Background Check and MMPI ** , and Breathalyzer Training Annually
Licensing Coord.	X	X		X			X																			
Offsite Emergency Coordinator	X	X		X			X					X											X			
OEC Tech. Asst.	X	X		X			X					X											X			
Offsite Monitoring Team Driver	X	X	X	X		X	X				X															
Offsite Monitoring Team Monitor	X	X	X	X		X	X				X															
Offsite Technical Advisors	X	X		X			X																			
Plume Tracking Specialist	X	X		X			X				X															
Radiation Emergency Mgr.	X	X		X			X		X														X			
Radiological Assessment Coord.	X	X		X			X		X																	
Tech/Engineering Support Manager	X	X		X			X											X					X			

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TRAINING/QUALIFICATION REQUIREMENTS

Emergency Position	PAT FFD FDS	KEY CARD	TLD	RWT	RRT FRT PFTS	EP QUAL CARD	EP DRILL	EPTS 2**	EPTS 3	EPTS 4	EPTS 5	EPTS 6	EPTS 7	EPTS 8	EPTS 9***	EPTS 10	EPTS 11	EPTS 12	EPTS 13	EPTS 14	EPTS 16	EPTS 17	EPTS 19	EPTS 20	CPR	OTHER
EOF (continued)																										
Radiological Assessment Dose Calculator	X	X		X		X	X		X																	
OPERATIONS SUPPORT CENTER																										
Chemistry Teams/ On-call Chemist	X	X	X	X	X	X	X						X													
First Aid Team (Elec, I&C)	X	X	X	X	X										X		X								X	
First Aid Team (HP)	X	X	X	X	X										X (OR EMT)						X				X	OR CPRP
Health Physics Coordinator	X	X	X	X	X	X	X	X													X					
Search & Rescue Team (Mech, Elec, I&C)	X	X	X	X	X	X											X									
Damage Control, Repair, Re-entry and Recovery (Mech, Elec, I&C)	X	X	X	X	X												X									
On-Call Health Physicist/On-shift HP	X	X	X	X	X		X	X													X					
Onsite Monitor	X	X	X	X	X	X	X									X										
OSC Communicator	X	X	X	X		X	X																			FW**
OSC Coordinator	X	X	X	X	X		X														X					
OSC Planner	X	X	X	X	X		X																			FW**
SECURITY																										

SECURITY																											
Security Contract Personnel	X	X	X	X	X																					EPTS1 or EPTS17	
Security Coordinator	X	X			X																	X					
TECHNICAL SUPPORT CENTER																											
Computer Engineer	X	X	X	X	X																					FW**	
Emergency Director	X	X	X	X	X								X											X			
Information Specialist	X	X	X	X	X								X											X			
Radiation Protection Manager	X	X	X	X	X																			X			
Records Document Manager	X	X	X	X	X																					FW**	
Technical Manager	X	X	X	X	X								X											X			

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TRAINING/QUALIFICATION REQUIREMENTS

Emergency Position	PAT FFD FPOS	KEY CARD	TLD	RWT	RRT FIT PHYS	EP QUAL CARD	EP DRILL	EPTS 2**	EPTS 3	EPTS 4	EPTS 5	EPTS 6	EPTS 7	EPTS 8	EPTS 9***	EPTS 10	EPTS 11	EPTS 12	EPTS 13	EPTS 14	EPTS 16	EPTS 17	EPTS 19	EPTS 20	CPR	OTHER	
TSC (continued)																											
TSC Communicator	X	X	X	X		X	X							X													
TSC Coordinator	X	X	X	X		X	X	X				X											X				
TSC Coordinator Assistant	X	X	X	X		X	X	X				X											X				
Engineer (Elec/Mech)	X	X		X			X																			FW**	
Radiological Assessment Dose Calculator	X	X	X	X		X	X	X																			
ENS Communicator	X	X	X	X			X							X**													

Note:

- * Per Reference 3.3
- ** Not required annually
- *** Required every 3 years

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Attachment III	Page 1 of 1

ERO POSITIONS WITH POSITION LEADS

FACILITY	ERO POSITION
TSC	EMERGENCY DIRECTOR
	TSC COORDINATOR
	TECHNICAL MANAGER
	RADIATION PROTECTION MANAGER
	INFORMATION SPECIALIST
	TSC COORDINATOR ASSISTANT
	TSC/EOF RADIOLOGICAL ASSESSMENT DOSE CALCULATOR
	TSC COMMUNICATOR
OSC	OSC COORDINATOR
	HP COORDINATOR
	ON-SITE MONITOR
	OSC COMMUNICATOR
EOF	OFF-SITE EMERGENCY COORDINATOR
	OEC TECHNICAL ASSISTANT
	RADIATION EMERGENCY MANAGER
	RADIOLOGICAL ASSESSMENT COORDINATOR
	PLUME TRACKING SPECIALIST
	OMT MONITOR
	EOF COMMUNICATOR
	TECH/ENG. SUPPORT MANAGER
	EOF FACILITY COORDINATOR
	ACCIDENT ASSESSMENT ENGINEER
EMNC/EIC	COMPANY SPOKESPERSON
	ENMC MANAGER
	EIC COORDINATOR

ATTACHMENT 2 TO GNRO-2001/00024

PLANT OPERATIONS MANUAL

Volume 10

10-S-01-12

Section 01

Revision: 28

Date: 3/23/01

EMERGENCY PLAN PROCEDURE

RADIOLOGICAL ASSESSMENT AND PROTECTIVE ACTION RECOMMENDATIONS

SAFETY RELATED

Prepared: Richard Sumrall
Reviewed: [Signature]
 Technical
Concurred: [Signature]
 Manager, Operations
PSRC: [Signature]
Approved: [Signature] Plant General Manager [Signature] Manager, Emergency Preparedness

List of Effective Pages:

Pages 1-9


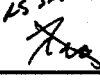

Attachments I-IV

List of TCNs Incorporated:

<u>Revision</u>	<u>TCN</u>	<u>Revision</u>	<u>TCN</u>
1	None	26	None
2	None	27	None
3	None	28	None
4	None		
5	1		
6	None		
7	None		
8	None		
9	None		
10	None		
11	2		
12	3, 4		
13	None		
14	None		
15	None		
16	5		
17	None		
18	None		
19	None		
20	None		
21	None		
22	None		
23	None		
24	None		
25	None		

Title: Radiological Assessment and Protective Action Recommendations	No.: 10-S-01-12	Revision: 28	Safety Evaluation
Facility:	GRAND GULF		

I. SIGNATURES

Preparer:		¹⁵⁻³⁻²⁰⁰¹  Richard Sumrall	3/7/01
	Signature	Name (print)	Date
Reviewer:		Richard VanDen Akker	3-7-01
	Signature	Name (print)	Date

II. OVERVIEW

Document Evaluated: 10-S-01-12, Radiological Assessment and Protective Action recommendations, Rev. 28.

Brief Description of the Proposed Change:

Adds Attachment III & IV to Attachments (Section 4.0).
Adds definition of radiological release (5.18) and guidance for entering DATE/TIME OF RELEASE in DOSECALC software (6.1.6 & 6.1.7) (CR-2000-1317 CA 12).
To address DOSECALC revision for new MET Tower and Emergency Plan Revision 45: revises 6.2.1, adds 6.2.2, revises Attachment I Section 2.2 & 2.3.1, adds Attachment III & IV. Revises Attachment I Section 2.1 to address required date/time formats and address erroneous DATE/TIME OF SHUTDOWN errors experience during ATWS.

50.59 SCREENING**TECHNICAL SPECIFICATION SCREENING**

Does the proposed Change represent a change to:

Operating License	<input type="checkbox"/> Yes	If yes, process a change per 10CFR50.90 and obtain NRC approval prior to implementing the Change.
	<input checked="" type="checkbox"/> No	
Technical Specifications	<input type="checkbox"/> Yes	If yes, process a change per 10CFR50.90 and obtain NRC approval prior to implementing the Change.
	<input checked="" type="checkbox"/> No	
NRC Orders (ANO only)	<input type="checkbox"/> Yes	If yes, process a change per 10CFR50.90 and obtain NRC approval prior to implementing the Change.
	<input type="checkbox"/> No	
	<input checked="" type="checkbox"/> N/A	

SAR SCREENING

Does the proposed Change represent a change to the facility or procedure which alters information, operation, function or ability to perform the function of a system, structure or component described in the SAR (site-specific documents)?

TS Bases section	<input type="checkbox"/> Yes	If yes, perform a 50.59 Evaluation.
	<input checked="" type="checkbox"/> No	
UFSAR (including pending changes)	<input type="checkbox"/> Yes	If yes, perform a 50.59 Evaluation.
	<input checked="" type="checkbox"/> No	

Title: Radiological Assessment and Protective Action Recommendations	No.: 10-S-01-12	Revision: 28	Safety Evaluation
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TRM ☐ Yes If yes, perform a 50.59 Evaluation.
☒ No

Core Operating Limits Report ☐ Yes If yes, perform a 50.59 Evaluation.
☒ No

Fire Hazards Analysis ☐ Yes If yes, perform a 50.59 Evaluation.
(Included in RBS' USAR) ☒ No
☐ N/A

NRC SERs ☐ Yes If yes, perform a 50.59 Evaluation.
☒ No (See Section 5.1.19.)

Does the proposed Change involve a test or experiment not described in the SAR? ☐ Yes If yes, perform a 50.59 Evaluation.
☒ No

Does the proposed Change result in any potential impact to equipment or facilities utilized for Ventilated Storage Cask activities? ☐ Yes If yes, perform a 72.48 Review.
☐ No
☒ N/A
(ANO only)

ADDITIONAL SCREENING

Does the proposed Change represent a change to:

Quality Assurance Program Manual ☐ Yes If yes, notify the quality department and ensure a 50.54 Evaluation is performed.
☒ No

Emergency Plan ☐ Yes If yes, notify the emergency planning department and ensure a 50.54 Evaluation is performed.
☒ No

BASIS: Performed an online search of the UFSAR and Tech Specs for the keywords : meteorological, meteorological tower, DOSECALC, radiological assessment, radiological release, release to offsite, and offsite release. Based on a review of the hits returned by these keywords, this change does not result in an Unreviewed Safety Question.

Title: Radiological Assessment and Protective Action Recommendations	No.: 10-S-01-12	Revision: 28	Safety Evaluation
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IV. ENVIRONMENTAL EVALUATION APPLICABILITY REVIEW

If any of the following questions is answered "YES", then an Environmental Evaluation must be performed.

Will the Change being evaluated:

- | YES | NO | |
|--------------------------|-------------------------------------|--|
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Disturb land that is beyond that initially disturbed during construction (i.e., new construction of buildings, creation or removal of ponds, or other terrestrial impact)? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase thermal discharges to the river, lake or atmosphere? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase concentration or quantity of chemicals discharged to the atmosphere, ground water, or surface water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Increase quantity of chemicals to cooling lake or atmosphere through discharge canal or tower? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Modify the design or operation of cooling tower that will change flow characteristics? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Install any new transmission lines leading offsite? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Change the design or operation of the intake or discharge structures? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Discharges any chemicals new or different from that previously discharged? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially cause a spill or unevaluated discharge that may effect neighboring soils, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve burying or placement of any solid wastes in the site area that may effect runoff, surface water or ground water? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Involve incineration or disposal of any potentially hazardous materials on the site? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Result in a change to non-radiological effluents or licensed reactor power level? |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Potentially change the type or increase the amount of non-radiological air emissions from the site? |
-

Title: Radiological Assessment and Protective Action Recommendations	No.: 10-S-01-12	Revision: 28	Emergency Plan Evaluation
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EVALUATION OF EMERGENCY PREPAREDNESS PROCEDURE

Procedure Number: 10-S-01-12

Procedure Name: Radiological Assessment and Protective Action Recommendations

Revision / TCN Number: Revision 28/None

Does the procedure Revision / TCN require an Emergency Plan change?

☐ Yes☒ No

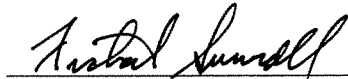
NOTE: IF YES, THIS PROCEDURE CAN NOT BE ISSUED UNTIL THE EMERGENCY PLAN IS
CHANGED / REVISED.

Reason for 'No' response:

This change is to implement Emergency Plan Revision 45 (Met Tower changes) and implement corrective actions for CR 2000-1317 CA 12.

The Emergency Plan does not address specific methods of performing radiological assessment (CR 2000-1317 CA 12).

Prepared:



3-12-01

Approved:



3-12-01

Manager, Emergency Preparedness

Title: Radiological Assessment and Protective Action Recommendations	No.: 10-S-01-12	Revision: 28	Page: i
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Periodic Review Required:
(X) YES () NO

If Yes, list frequency: 2 Year

If No, refer to Attachment XIX of 01-S-02-3 for a list of procedure review methods and fill in the appropriate letter(s) below; if "Other," specify method.

Method(s) of Review _____

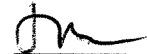
10CFR50.59 Review Required: (x) Yes - If Yes, attach 50.59 Review.
() No - Not required per section _____
(enter Section 6.3.2(b) or 6.3.2(c) of procedure
01-S-02-3)

Cross-discipline review required:
(X) YES () NO

Tech Reviewer's Initials



Reviewed by: RAC Lead



REM Lead



RPM Lead



EP Training



Does this directive contain Tech Spec Triggers? () YES (X) NO

Title: Radiological Assessment and Protective Action Recommendations	No.: 10-S-01-12	Revision: 28	Page: ii
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REQUIREMENTS CROSS-REFERENCE LIST

Requirement Implemented by Directive		Directive Paragraph Number
Name	Paragraph Number	That Implements Requirement
GGNS Emer Plan	7.6.1.E.2	*
GGNS Emer Plan	7.6.1.c.S6	Attachment I
GGNS Emer Plan	7.6.1.b.S5	Attachment I
GGNS Emer Plan	6.5.1.b.S5,S6,S7	6.3.1
AECM 84/0397	P2, Para.1	Attachment II, 6.1.7
GNRO-97/00080	97-09-01.Item4	6.1, Attachment II
GNRO-97/00113	97-15-03.Item2	5.21, 6.1(Note), 6.1.4, 6.1.7, Attachment II, 6.3.3
GNRI-97/00162	IFI 97-15-03	6.3.3(Note)
GNRI-97/00162	IFI 97-15-04	6.1 (Note)
CR-GGN-1999-0656	CA.2	6.1 (Note)
CR-GGN-2000-1317	CA.12	5.18, 6.1.6(Note), 6.1.7(Note)

* Covered by directive as a whole or by various paragraphs of the directive.

NOTE

The Component Data Base Change Request statement is applicable only to Volume 06 and 07 maintenance directives.

Component Data Base Change Request generated and the backup documentation available for setpoint and/or calibration data only ☐ Yes ☒ N/A CDBCR # _____

Current Revision Statement

Revision 28:

- Adds Attachment III & IV to Attachments (Section 4.0)
- Adds definition of radiological release (5.18) and guidance for entering DATE/TIME OF RELEASE in DOSECALC software (6.1.6 & 6.1.7) (CR 2000-1317 CA 12)
- To address DOSECALC revision for new MET Tower and Emergency Plan Revision 45: revises 6.2.1, adds 6.2.2, revises Attachment I Section 2.2 & 2.3.1, adds Attachment III & IV
- Revises Attachment I Section 2.1 to address required date/time formats and address erroneous DATE/TIME OF SHUTDOWN errors experience during ATWS
- Grammatical changes

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1.0 PURPOSE AND DISCUSSION

1.1 PURPOSE

- 1.1.1 To provide guidance for performing Radiological Assessment during emergencies.
- 1.1.2 Guidance is provided for:
 - a. Assessment of radiological release conditions.
 - b. Use of radiological data from effluent monitors (ERFIS), Containment ARMs, and Radiological Monitoring Teams in the estimates of offsite doses.
 - c. Use of actual, and estimation of, meteorological conditions and their application to the estimates of offsite doses.
 - d. Application of projected dose to Protective Action Guides and subsequent Protective Action Recommendations.
 - e. Recognizing radiological conditions that require notification of the State Radiological Assessment Officer
- 1.1.3 To provide instructions for performing offsite dose projections with the DOSECALC Dose Projection Model.

1.2 DISCUSSION

NOTE

Dose projections are performed in the TSC until the EOF is operational, then the projections are performed in the EOF. If the EOF cannot perform the projections, the projections may be performed in the TSC, Backup EOF, Clean Chemistry Lab, Admin Building Chemistry Area, or in the Control Room. (DOSECALC PDS workstations are available at each of these locations)

2.0 RESPONSIBILITIES

- 2.1 The Emergency Director/Offsite Emergency Coordinator- Is responsible for implementing this procedure.
- 2.2 The RPM - Is responsible for Radiological Assessment, after the TSC is operational.
- 2.3 The REM - Is responsible for Radiological Assessment, after the EOF is operational.
- 2.4 Radiological Assessment Dose Calculator - Perform offsite dose calculations using this procedure.
- 2.5 The Radiological Assessment Coordinator (RAC) - Coordinating Offsite Dose Calculations and Radiological data acquisition, in the EOF.

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3.0 REFERENCES

- 3.1 GGNS Emergency Plan
- 3.2 Chemistry Instruction 08-S-04-220, Ventilation Exhaust Gaseous Monitoring Systems' Operation
- 3.3 DOSECALC Users Manual
- 3.4 Chemistry Instruction 06-CH-SG17-0-0045, Radwaste Post-Release Calculations |

4.0 ATTACHMENTS

- 4.1 Attachment I - DOSECALC Instructions and Information
- 4.2 Attachment II - SRAO Trigger Points
- 4.3 Attachment III - Met Instrument Determination
- 4.4 Attachment IV - Stability Class Determination

5.0 DEFINITIONS

- 5.1 X - Airborne activity concentration in Ci/m³ or μ Ci/cm³ or μ Ci/ml
- 5.2 Q - Source material release rate in Ci/sec
- 5.3 X/Q - Atmospheric dispersion factor in sec/m³
- 5.4 $\sigma\theta$ - Standard deviation of wind direction in angular degrees
- 5.5 ΔT - Delta temperature (use 33 ft and 162 ft MET tower temperature sensor data in F°)
- 5.6 AXM - Eberline Accident Range Effluent Monitor
- 5.7 BOP - Balance of Plant Computer
- 5.8 DOWNWIND - An area located beyond a fixed point in the same direction the wind is blowing. The area covers three sectors, the sector containing the plume centerline, and the two adjacent sectors. If the plume centerline is on a sector line, four sectors are used until the three-sector criteria can be identified.
- 5.9 EOF - Emergency Operations Facility
- 5.10 PDS - Plant Display System Computer
- 5.11 EPZ - Emergency Planning Zone
- 5.12 ERFIS - Emergency Response Facility Information System
- 5.13 UFSAR - Updated Final Safety Analysis Report
- 5.14 GE - General Electric Normal Range Effluent Monitor
- 5.15 DOSECALC - A computer based mathematical model that predicts radiation doses at fixed points based on static weather conditions.
- 5.16 MET - Meteorological

Title: Radiological Assessment and Protective Action Recommendations	No.: 10-S-01-12	Revision: 28	Page: 3
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5.17 PAG - Protective Action Guide (EPA-400 Table 2.1)

5.18 radiological release - a release of uncontained gaseous or liquid radiological material to the environment outside of the Owner Controlled Area where:

- a. an offsite dose projection exceeds the gaseous radiological material SRAO Trigger Point (≥ 1 mRem TEDE or Thyroid CDE), or
- b. liquid samples performed per Chemistry procedure 06-CH-SG17-O-0045 indicate release of radioactive material above the Abnormal Effluent, LIQUID, EALs of 10-S-01-1

5.19 REM - Radiation Emergency Manager

5.20 RPM - Radiation Protection Manager

5.21 SB - Site Boundary - For emergency dose calculations, the site boundary is fixed at 696m (.43 miles) from the center of the reactor.

5.22 SPDS - Safety Parameter Display System

5.23 SPING - Eberline Normal Range Effluent Monitor

5.24 SRAO - State Radiological Assessment Officer

5.25 TSC - Technical Support Center

5.26 USEPA - United States Environmental Protection Agency

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6.0 DETAILS

6.1 Radiological Assessment Process

CAUTION

- THIS PROCEDURE MAKES THE ASSUMPTION THAT ALL CALCULATIONS ARE PERFORMED USING ACTUAL RADIOLOGICAL DATA.
- CONTINUOUS ASSESSMENT OF PLANT CONDITIONS SHALL BE PERFORMED TO ASCERTAIN IF A RELEASE IS IN PROGRESS.

NOTE

- DOSECALC decays all isotopes from time of shutdown to time of release, then decays the isotopes from time of release to time of arrival at the projection distances - SB, 2mi, 5mi, 10mi, 15mi, and 20 mi.
- DOSECALC assumes iodine removal of 99.825% for material released from a SBT vent or filtered releases.
- DOSECALC uses 696m (.43 miles) for the site boundary in all directions.
- If DOSECALC is not receiving data from the PDS computer, a DOSECALC Data Sheet (EPP 12-03) should be used for data collection to aid performing a dose calculation.
- If a liquid release results in an emergency declaration, the liquid release information is documented in accordance with Chemistry Instruction, 06-CH-SG17-O-0045.
- Information required to complete EPP 12-03 may be obtained from PDS Workstations, Status Boards, Plant Staff or other sources as directed by the RPM/REM.
- Unless the release duration is known, 2 hours should be used as the default release duration when estimating the projected exposure. Although the use of a 2-hour release duration addresses only future or projected dose, integrated dose (dose already received plus dose projected) should be considered when making protective action recommendations. The addition of dose results at various times or the use of the "future dose" field of DOSECALC may be used to obtain these results. When using the "future dose" field of DOSECALC, care should be exhibited to ensure the release rates and meteorological conditions are representative of those conditions exhibited during the release duration period.
- Radiological Assessment Guides - RA-1 and RA-1B (EPP 12-02) are normally provided via color flow charts as an aid to follow this procedure. The procedure text takes precedence over the guides in all cases where inconsistencies in interpretations may arise.

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6.1 (Cont.)

USING the Radiological Assessment Flowchart RA-1 and RA-1B (EPP 12-02) as a guide, perform the following:

- 6.1.1 Determine the correct ISOTOPIC mixture.
- 6.1.2 Determine when (if) the Rx was (is) shutdown.
- 6.1.3 Get appropriate current MET DATA. (see section 6.2 for details)
- 6.1.4 Monitor Release Pathways as follows:

- a. Using PDS data or Eberline data, monitor the following gaseous release pathways (check for flow and radiation levels):

CAUTION

Do not select any effluent monitor that contains negative numbers. Negative numbers dilute the estimated release rate.

- (1) Containment Vent
- (2) Fuel Handling Area Vent
- (3) Turbine Building Vent
- (4) Radwaste Building Vent
- (5) Standby Gas Treatment A & B Vent
- (6) Any other release path such as major doors, holes, piping, roof hatches and blow out panels. (Ask an SRO or Engineer in the facility).

AND

- b. Monitor radiation levels in containment.
 - (1) Containment Data - ERFIS OP Guide or Control Room Display or Inplant teams.

AND IF CONDITIONS WARRANT

- c. Monitor radiation levels at the protected area fence.
 - (1) Protected Area Fence - onsite or offsite monitoring teams. (Contact Control Room ED if TSC/EOF/OSC not operational, TSC-RPM or EOF-RAC if TSC/EOF/OSC are operational).

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6.1.4 (Cont.)

d. Monitor radiation levels outside the protected area.

- (1) Offsite monitoring team data. (Contact Control Room ED if TSC/EOF/OSC not operational, TSC-RPM or EOF-RAC if TSC/EOF/OSC are operational).

6.1.5 Determine the expected release duration.

6.1.6 Input the data into the DOSECALC program.

NOTE

If a radiological release is in progress, input the DATE/TIME OF RELEASE START.

6.1.7 Evaluate DOSECALC results

NOTE

Emergency Notification Form is Form EPP 06-01.

SRAO Phone Numbers are in the Emergency Telephone Book.

If the SRAO Trigger Point of gaseous radiological release >1 mR at Site Boundary is exceeded and DATE/TIME OF RELEASE START is not included, enter DATE/TIME OF RELEASE START and re-perform assessment.

- a. To assure common understanding and knowledge, the TSC RPM or EOF REM will verbally contact the SRAO at least hourly. If plant conditions change significantly or radiological conditions change significantly (SRAO Trigger Points), the SRAO will be contacted sooner.
- b. If any SRAO Trigger Point(s) (Attachment II) has been met, inform the Emergency Director/Offsite Emergency Coordinator and notify the SRAO within 60 minutes.

NOTE

The Emergency Director/Offsite Emergency Coordinator may have concurrent 15 minute limits for initial classification of an emergency due to the SRAO Trigger Point(s) identified below.

PARs should be developed within 15 minutes of data becoming available, but without delay due to uncertainty.

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6.1.7 (Cont.)

- c. If any SRAO Trigger Point(s) (Attachment II) has been met AND if any TEDE is 1000 mRem or any Thyroid CDE is 5000 mRem, inform the Emergency Director/Offsite Emergency Coordinator, initiate an Emergency Notification Form to include a Protective Action Recommendation (Section 6.3.1), and notify the SRAO.
- d. If any SRAO Trigger Point(s) (Attachment II) has been met AND if any TEDE is 1000 mRem or any Thyroid CDE is 5000 mRem at 5 miles, inform the Emergency Director/Offsite Emergency Coordinator, initiate an Emergency Notification Form to include a Protective Action Recommendation (Section 6.3.1), and notify the SRAO.

6.1.8 Go back to 6.1.1 and continue assessment.

6.2 METEOROLOGICAL DATA

- 6.2.1 DOSECALC automatically determines appropriate MET DATA based on available instruments and parameters as outlined in Attachment III.
- 6.2.2 The parameter used to calculate Stability Class (Delta-T or Sigma-Theta) and its instrument computer point are indicated in the MET DATA area. The parameter not used for Stability Class displays a question mark (?). In the event both parameters are unavailable (as indicated by question marks in both Delta-T and Sigma-Theta) use Attachment IV to determine Stability Class.

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6.3 Protective Actions

6.3.1 Protective actions shall be recommended as follows:

Condition	Protective Action Recommendation
General Emergency Declared	EVACUATE: 2 Miles All Sectors <u>and</u> EVACUATE: 5 Miles in Downwind Sectors <u>and</u> SHELTER: Remainder of 10 Mile Emergency Planning Zone (EPZ)
General Emergency Declared <u>and</u> Dose Projection or Field Measurement at ≥ 5 miles corresponds to 1000 mRem TEDE <u>or</u> 5000 mRem Thyroid CDE	EVACUATE: 2 Miles All Sectors <u>and</u> EVACUATE: 10 Miles in Downwind Sectors <u>and</u> SHELTER: Remainder of 10 Mile Emergency Planning Zone (EPZ)

NOTE

Predetermined Protective Action Recommendations for areas outside the 10-mile Emergency Planning Zone (EPZ) have not been established. If dose projections exceed any TEDE of 1000 mRem or any Thyroid CDE of 5000 mRem at 10 miles, the appropriate states should be notified to ensure protective actions for affected areas outside the 10 mile EPZ are considered.

6.3.2 The RPM/REM must report the results of dose calculations/rad assessment immediately to the Emergency Director/Offsite Emergency Coordinator.

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6.3.3 Revising Protective Action Recommendations

NOTE

When completing the Emergency Notification Form, each form should represent the current and/or projected radiological, meteorological and plant conditions.

During periods of rapid changes in wind direction, as might be experienced along the leading edge of a weather front, it is important to capture all sectors through which the wind has passed.

In such instances, Section 5.B.(Recommended Protective Actions, if applicable) of the Emergency Notification Form should reflect:

- those sectors currently affected by the plume, and
- the sectors through which the plume has passed since the last Emergency Notification Form was issued

Section 8.B.(Meteorological Data - Sectors Affected) is normally used to annotate only those sectors affected by the current wind direction.

Section 6(Comments) of the Emergency Notification form may be used to explain the reason for the additional sectors or to explain the additional affected sectors if protective action recommendations have not been made.

Dose projections are to be reviewed frequently and updated based on changing conditions such as:

- a. Site meteorological parameters and stability class
- b. Source terms
- c. Radiological field monitoring team data
- d. Expected Release Duration

6.4 Records and Information

- 6.4.1 Forms and paperwork generated by this procedure during emergencies are to be retained for information and event reconstruction and submitted to the Manager, Emergency Preparedness to be filed as a Quality Assurance record.

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DOSECALC INSTRUCTIONS AND INFORMATION

In this Instruction Manual, the term "screen" is meant to convey the window that fills the monitor. The Term "functional area" or "area" is meant to convey an area on a window dedicated to be a specific type of data (e.g. "RELEASE DATA").

1.0 **STARTUP**

When the User approaches the workstation, the screen may be dark due to the screen saver feature.

- a. Click anywhere on the screen to bring up the login screen.
- b. Enter the login and password displayed on the front of the workstation.

NOTE

Allow 2-3 minutes for PDS to load. PDS is required to be displayed for the workstation to receive plant data.

- c. After PDS menu is displayed, click in the black screen to access the Root menu.
- d. On the Root menu, scroll down to DOSECALC to bring up the Dose Calculation program. The Main Screen on the DOSECALC program appears.

2.0 **MAIN SCREEN**

The Main screen contains the DOSECALC Data windows. This is the beginning point of DOSECALC and the program returns to this screen after data is entered on data screens. If a data screen is on the monitor, click on the DONE button and it returns to the MAIN screen.

DOSECALC requires specific information to perform a dose calculation. The information is as follows: Wind Speed, Accident Type, Source Term, and when performing a dose calculation based on a field monitoring team reading, Distance and Angle. Written warnings delineating each of the above requirements are at the bottom of the screen. They disappear as each of the required data is entered.

User definable fields have a White background and are for data entry. In user definable fields, the text is either Red or Black. Red text indicates that the user has entered/modified the value displayed. Black text indicates that the program supplies the value displayed. Yellow fields are not user definable and display information for the User's benefit. All text displayed in Yellow fields is Black.

2.1 **ACCIDENT DATA AREA**

This area is in the upper left-hand corner of the MAIN screen. A HELP button is available to the User for an explanation of the area. Click on ISOTOPIC MIX to select the Isotopic Mix desired.

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DOSECALC INSTRUCTIONS AND INFORMATION

2.1 ACCIDENT DATA AREA (Cont.)

NOTE

The isotopic mixture will default to steam cycle mixture.

A window with isotopic fractions comes up and the User is required to select one prior to performing a projection. Determining the appropriate mix may require input from Operations personnel.

For entry of an effluent spectrum (e.g. from an effluent sample) choose the USER DEFINED accident type and a window appears for entry of data. The entered spectrum is used in the conversion of effluent monitor readings to release rates.

Click on the RX SHUTDOWN DATE/TIME field and enter the date in the following format: mm/dd/yy. Enter the time in the following format: hh:mm. The DOSECALC Computer normally updates the RX SHUTDOWN and DATE/TIME field automatically for all conditions except during an ATWS. During an ATWS, a manual entry or deletion of RX Status and shutdown times may be required. Concurrence of the shutdown reactor following an ATWS Condition normally comes from the Emergency Director or Shift Supervisor. When this is done, move to the MET DATA area.

NOTE

When deleting DATE/TIME OF SHUTDOWN data, ensure all characters are deleted (including spaces). Failure to delete all characters results in the ENF "RELEASE IS OCCURRING" checkbox to be checked and ENF Section 12 dose fields to be completed.

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2.2 MET DATA AREA

A HELP button is available to the User for an explanation of the area. The area is set to default to the 33' Primary Met tower. In the event this instrumentation be unavailable, DOSECALC automatically selects appropriate instrumentation based on the flowchart in Attachment III. The HELP screens and Attachment IV outline the backup method for stability class determination should the MET towers be unavailable.

The HELP button lists the ERFIS computer points for obtaining MET data in the event PDS is not automatically updating DOSECALC.

To enter Met data, click on the fields for wind speed and wind direction. DOSECALC will select a stability class based on this data. Alternately, a stability class may also be entered manually. However, if the entered stability class differs from the calculated stability class, a warning comes up on the area notifying the User of the conflict.

NOTE

When performing a dose calculation, if there is a change in wind speed, direction, or stability class, an alarm sounds. To acknowledge alarm, click on silence. To remove alarm box from screen, press OK.

After using User Defined data, a return to PDS data can be performed by clicking on the PDS Data button in the Process Monitor Data area. This returns both Process Monitor Data and Met Data to PDS.

After completing this area, move the cursor to the RELEASE DATA area.

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DOSECALC INSTRUCTIONS AND INFORMATION

2.3 RELEASE DATA/MONITOR DATA SCREEN OR WINDOWS

A HELP button is available for the User for an explanation of the area. The release duration field defaults to two hours but may be changed by the User by clicking on the field. The User may select Release to present, future release, or user defined for release duration. If RLS TO PRESENT is selected, the program automatically calculates the Release to present based upon release start time. The User is required to enter numbers for the Future Release and the User Defined.

To select the effluent monitoring data for the release, click on the appropriate button. When the user presses the title button for an area, it turns blue to indicate the values and User selections in that area are to be used during projection calculations.

2.3.1 PROCESS MONITOR DATA AREA

This area offers selection of the GGNS effluent monitors as follows:

GE MON-LR
SPING-LR CH5
SPING-MR CH7
AXM-HR CH3
AXM-MR CH4

These monitors apply for the GGNS release points which are as follows:

CNTMT VENT
TURB BLDG VENT
FUEL HNDLG VENT
RW BLDG VENT
STAND BY GAS A (except GE MON)
STAND BY GAS B (except GE MON)

The Help screen for this window has the complete list of ERFIS computer points of each of these monitor/release points.

The Flow Rate field for each release point may have either the default or PDS value set in the field, but this may be changed by User override.

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DOSECALC INSTRUCTIONS AND INFORMATION**2.3.1 PROCESS MONITOR DATA AREA (Cont.)**

Click on the appropriate monitor button and it changes to red to indicate that the monitor is selected. Click on the field and enter a monitor reading, if necessary. Multiple release points may be selected, but multiple monitors on the same release point may not be selected. Click on the desired release point and the button turns red to indicate it has been selected.

Use of SBTG A or SBTG B monitor release point indicates that SBTG is operational/functional and that the effluent is filtered at 99.825% efficiency for Iodines.

Once these selections are made, click on DONE.

A trend of a selected channel may be reviewed by double-clicking on the right mouse button of the selected channel.

NOTE

Containment monitors can also be used if process monitors are offscale or inoperable.

After using User Defined data, a return to PDS data can be performed by clicking on the PDS Data button. This returns both Process Monitor Data and Met Data to PDS.

2.3.2 CONTAINMENT DATA AREA

A dose projection may be performed using the Containment Area Monitors. A HELP screen is available to the User. Click on the monitor to be used and then click on the field and enter the monitor reading. Design leakage is default entered in the CTMT LEAK RATE field. The User may select a leak rate by clicking on the Leak Rate Button. To calculate a leakage rate, the User is required to enter area and pressure for the release point. A YES or NO answer is required to be selected for MIX FILTERED (default is YES). A "YES" reduces the iodine fraction by 99.825%. Once those selections are made, click on Done.

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DOSECALC INSTRUCTIONS AND INFORMATION**2.3.3 FIELD DATA AREA**

- a. This area is used for dose projections based on field monitoring team data. A HELP screen is available to the Users.
- b. Click on the white FIELD DATA button in the RELEASE DATA area.
- c. Click on FIELD MAP button.
- d. After clicking the FIELD MAP button, an EPZ map appears. Use the scroll bars to move to location of sample. Click on the sample location with the left mouse button. A sample data box appears. The location of the sample is automatically entered.
- e. A YES or NO answer is required to be selected for MIX FILTERED (default is YES). A "YES" reduces the iodine fraction by 99.825%.

NOTE

"YES" is selected if the release point is through Standby Gas Treatment. If the release is from an unmonitored source, then the answer is "NO".

- f. Click on the method to be used. If AIR SAMPLE RESULT is chosen by clicking on the button, the User may enter the results of a spectral analysis of a field monitoring team sample. Click twice on the AIR SAMPLE RESULT field and a screen for the air sample results in $\mu\text{Ci/cc}$ appears. Alternately, a gross $\mu\text{Ci/cc}$ may entered.
- g. After entering results, click OK. The sample results are displayed on the map in a red box.
- h. Click on the right mouse button anywhere in the map to return to main screen.
- i. Click on the FIELD DATA button to highlight the box (the box turns blue). Click on DONE when complete.

2.4 RELEASE DATA AREA (Additional Features)

An option to use the results of an effluent sample is also provided in this area. Click on the NUCLIDE MIX DATA field and a window appears for entry of the spectral data. A help screen is available in this window. Click on DONE when completed.

The "TIME TO NEXT DOSE CALCULATION" feature is displayed in this area. Dose calculations are performed every 60 seconds unless the User clicks on HOLD to delay the next dose calculation or on IMMEDIATE to begin the next dose calculation.

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DOSECALC INSTRUCTIONS AND INFORMATION**2.5 DOSE DATA, PLUME DATA, AND PATHWAY DATA AREA**

These areas provide the results of the DOSECALC calculation. There is no interaction with the User (the fields are yellow).

Doses are provided in terms of total projected dose from the time of the current projection through the estimated release duration.

NOTE

When dose calculations are performed, if projections exceed SRAO trigger points or GE limits, an alarm sounds. To acknowledge alarm, click on silence. To remove alarm box from screen, click on OK.

2.6 PRINT/PREVIEW

Click on the Preview ENF button, to preview the Emergency Notification Form. The following data is automatically entered:

DATE/TIME
REACTOR SHUTDOWN DATE/TIME
MET DATA (except for precipitation)
RELEASE INFORMATION

After the form has been reviewed, click on print in the menu bar. To exit ENF Preview, click on EXIT in the menu bar. To print the dose calculation data, click on the PRINT DATA button. The ENF and the raw data have corresponding serial numbers in the upper right corner of printouts.

NOTE

The automatic calculation freezes during the ENF preview. To resume calculations, press the RESUME button.

To recall ENF or data sheets, click on the RECALL DATA button. The last ten calculations are stored. Click on the appropriate data to retrieve.

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SRAO TRIGGER POINTS

RPM/REM shall notify the State Radiological Assessment Officer (SRAO) when any of the following occurs:

- Plant conditions exists that indicate possible, potential, or actual Gaseous Radiological release from GGNS ≥ 1 mR at Site Boundary.
- Change in wind direction that would shift projected plume centerline into another sector
- Change of ± 5 mph in wind speed
- Any change of stability class
- Any change in emergency classification
- Change (increase or decrease) of source term/radiological release rate that would result in the following projected doses at the site boundary:

TEDE	CDE Thyroid
1000 mRem	5000 mRem
2000 mRem	10000 mRem
3000 mRem	15000 mRem
4000 mRem	20000 mRem
5000 mRem	25000 mRem
above these levels, change of $\pm 20\%$	

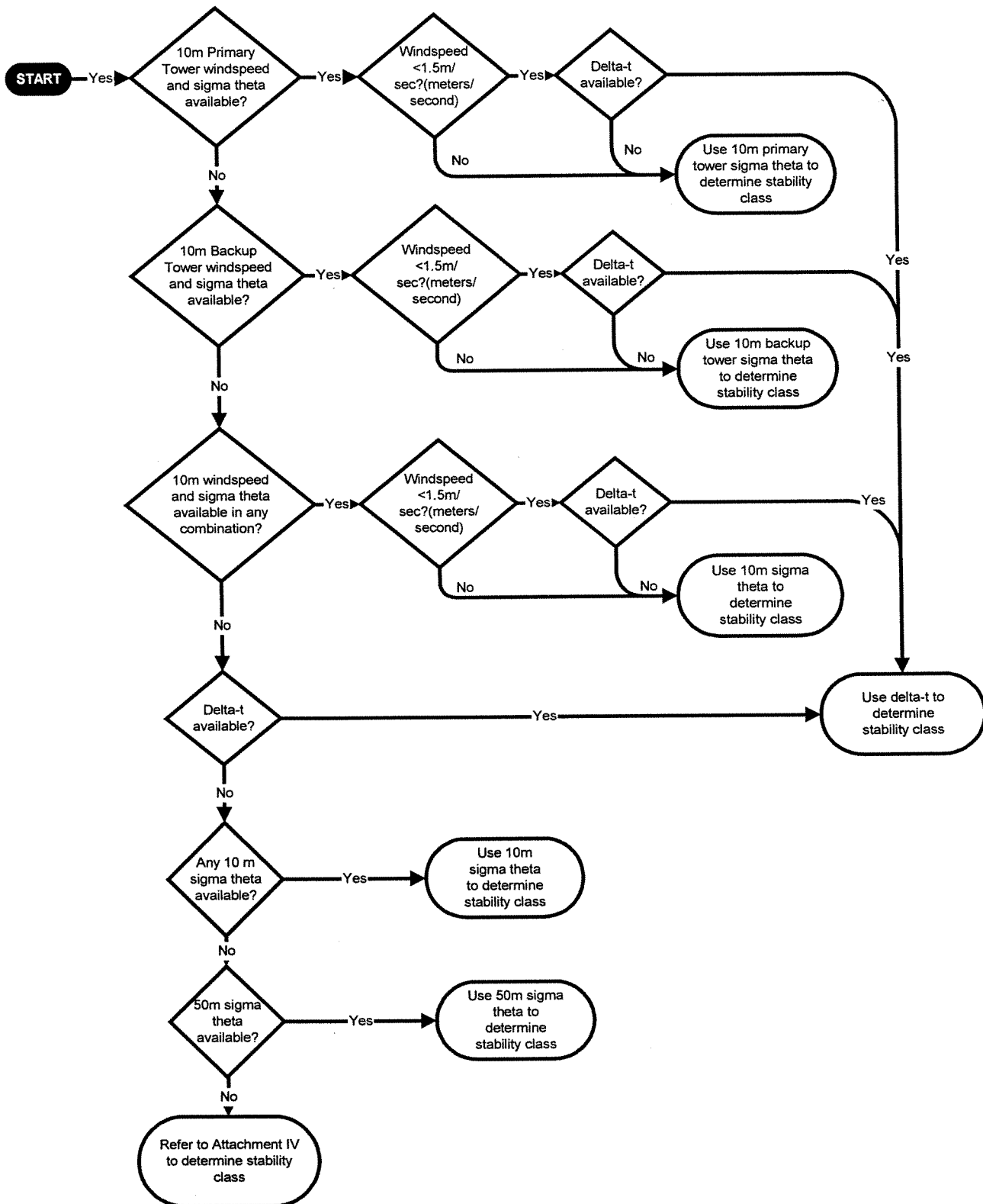
SRAO telephone numbers are in the EMERGENCY TELEPHONE BOOK

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Attachment III

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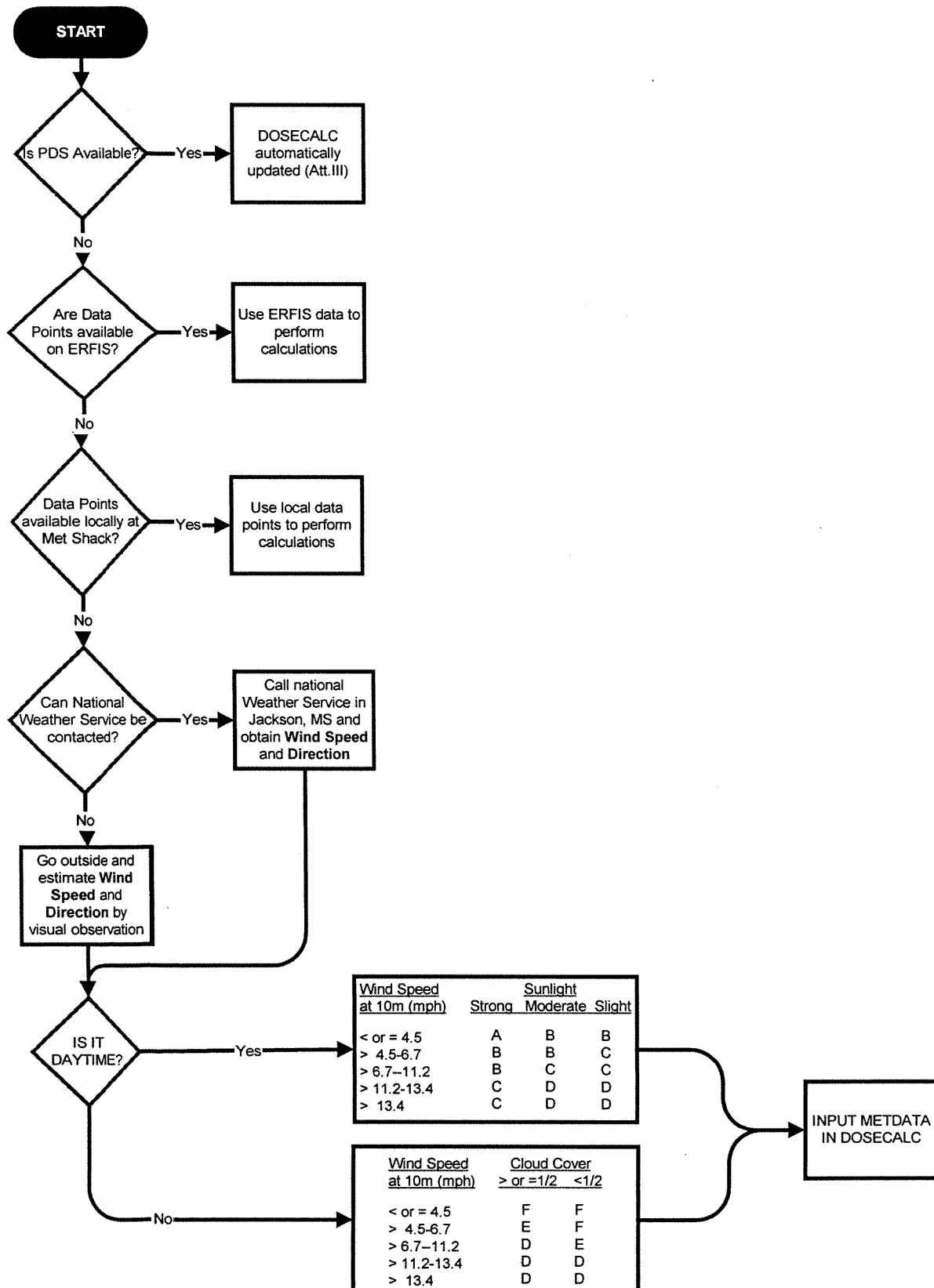
MET INSTRUMENT DETERMINATION

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STABILITY CLASS DETERMINATION

ATTACHMENT 3 TO GNRO-2001/00024



GRAND GULF
NUCLEAR STATION

LESSON PLAN

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Rtype: EO2.08

QA Record ✓

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Date 1-16-01 Initials Bg

TRAINING PROGRAM:

EMERGENCY PREPAREDNESS TRAINING

TITLE:

RADIOLOGICAL ASSESSMENT

REASON FOR REVISION: Add objectives and 90 minute response changes

THIS DOCUMENT REPLACES GG-1-LP-EP-EPT03.00

REVIEW / APPROVAL:

PREPARED BY: Dianne Gibson DATE: 1-10-01

REVIEWED BY: Dan Harper DATE: 1-10-01
Advanced Instructor

APPROVED BY: Ran Allen DATE: 1/16/01
Training Supervisor

CROSS DISCIPLINE REVIEW: Wah DATE: 1/15/01

DATE TRANSMITTED TO RM	INITIAL RECEIPT BY RM (DATE/INITIAL)	RETURNED FOR CORRECTIONS (DATE/INITIAL)	RETURN RECEIPT (DATE/INITIAL)	FINAL ACCEPTANCE BY RM (DATE/INITIALS)
JAN 16 2001	1-16-01 Bg			1-16-01 Bg



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Date _____ Initials _____

COURSE: Emergency Preparedness Training Specialized

Document Title: Radiological Assessment

Document #: GG-1-LP-EP-EPT03.01

Approximate Time Required: 8 hours

Special Equipment: (for each student)

1. 10-S-01-12
2. 10-S-01-6
3. 10-S-01-1
4. 10-S-01-17
5. 10-S-01-33
6. 10-S-01-30
7. EPTS-3 Handout
8. Flowchart for each student

References:

1. Emergency Plan Procedure, 10-S-01-12, Radiological Assessment and Protective Action Recommendations
2. Emergency Plan Procedure, 10-S-01-6, Notification of Offsite Agencies and Plant On-Call Emergency Personnel
3. Administrative Procedure, 01-S-10-6, Emergency Response Organization
4. Emergency Operations Facility Operations, 10-S-01-33
5. Activation of the Emergency Plan, 10-S-01-1



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6. Emergency Radiological Monitoring, 10-S-01-14
 7. Emergency Personnel Exposure Control, 10-S-01-17
 8. Reentry, 10-S-01-22
 9. Recovery, 10-S-01-23
 10. Technical Support Center (TSC) Operations, 10-S-01-30



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GOAL:

This document provides the basic knowledge and/or skills to aid the student in the mastery of the following:

1. Obtain information to perform as a Dose Calculator, Dose Calculator Assistant, RAC, RPM or REM.
2. Perform offsite dose calculations,
3. Obtain information from and use the PDS System,
4. Recommend Protective Action Recommendations,
5. And other related tasks associated with performing radiological assessment.

INSTRUCTIONAL OBJECTIVES:

Upon completion of this exercise, the student is expected to perform the following objectives. Performance will be measured by an examination unless otherwise indicated by a particular objective. Successful completion will be demonstrated by a score of $\geq 80\%$ on the examination.

1. State the time requirement for declaring the TSC/EOF operational.
2. Name four responsibilities for on-call personnel.
3. State your immediate responsibility after entering the emergency facility.
4. State your identification code for the VIP 2000.
5. Identify scenario modes that require you to report to your facility.
6. List the information that must be provided to Food and Lodging Coordinator/Security Island if called in for a drill or emergency.
7. Name the procedures used to operate the TSC/EOF.
8. Name the position in the TSC, EOF, and CR that must approve all notifications going to the State and Local Agencies and the NRC.



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9. Identify the emergency classifications requiring activation of the TSC and EOF.
 10. Identify emergency planning zones.
 11. Describe how to select an isotopic mixture for entry into the dosecalc software.
 12. List the possible monitored release points.
 13. List the possible unmonitored release points.
 14. Indicate when you should use ARMs for DOSECALC.
 15. List one removal mechanism and its effect.
 16. List two items to consider in performing Radiological Assessment.
 17. Using 10-S-01-12 and/or DOSECALC, perform a radiological assessment.
 18. List the locations of the DOSECALC computers.
 19. Identify trigger points for contacting State Radiological Assessment Officers.
 20. List three reasons for mandatory verbal contact of State Radiological Assessment Officers (SRAOs).
 21. Identify missing or incorrect information on Notification Form.
 22. List time requirements for making notifications to the state and local agencies/NRC.
 23. Identify the REM, RPM, & RAC responsibility to notification forms.
 24. State the time requirement for issuing a Protective Action Recommendation.
 25. Using 10-S-01-12, find the correct recommended protective actions for a given projected TEDE or thyroid dose.
 26. Name two sources for Radiological Data.
 27. List different conditions or items that will have an effect on plume dispersion.



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28. Given weather conditions and time of day be able to determine stability class.
 29. Name three methods used at Grand Gulf to determine Stability Classification.
 30. State how dose margins are obtained for emergency workers at emergency facilities.
 31. State why it is important and who is responsible for issuing emergency dosimetry.
 32. Using 10-S-01-1, find the following information:

Radiological initiating conditions and Emergency Action Levels for Core Fuel Damage, Abnormal Effluent Releases, Abnormal In-plant Radiation/Airborne levels, and Fuel Handling Accidents.

NOTES

LESSON BODY

I. INTRODUCTION

- A. State lesson objectives
- B. State learning objectives
- C. Administrative
 - 1. Hourly break
 - 2. After lecture, class is self-paced

II. GENERAL RESPONSIBILITIES

- A. If notified and accept the position, On-shift Chemist/Radiological Assessment Dose Calculator (TSC) reports to the Control Room at Alert declaration or higher. Radiological Assessment Dose Calculator (EOF) reports to the EOF (ESC Bldg.). On-shift Chemist goes to OSC.

RAC and REM report to EOF at Alert or higher. RPM reports to TSC at Alert or higher.

Objective 1. State the time requirement for declaring the TSC/EOF operational.

- B. TSC and EOF must be declared operational within 45 minutes of activation when it can be staffed by personnel already onsite. During all other times personnel offsite shall provide shift augmentation (minimum staff) within 75 minutes and have the facility fully operational in 90 minutes. Required for Alert and higher.

Objective 2. Name four responsibilities for on-call personnel.

- C. Test your beeper at the beginning of your on-call status.
 - 1. Wear it all the time and keep it on all the time during your on-call week and preferably all the time.
 - 2. Report loss or damage to EP immediately.

NOTES

LESSON BODY

Group Page Codes =

06 = Test

07 = Drill

08 = Emergency

01 = UE

02 = Alert

03 = SAE

04 = General

- D. Report all training expirations or failures to your manager immediately. Training must be maintained IAW 01-S-04-21. On-call personnel must stay current or be removed from on-call. If failing to maintain your qualification was negligence on your part, you must go before a review board.
- E. If unable to fulfill on-call duties, (this includes physical reasons) get someone to take your place and send EP a memo or E-Mail.
- F. Remain fit for duty and stay close enough to meet time requirements when on-call.
- G. Persons requiring a permanent change to the on-call list should send a Speedy Memo or CC: mail with the corrections to EP.
- H. Enter arrival and all other pertinent information into the logbook.
- I. No one but you may enter your social security #. Family may enter 99999 if you are not home.
- J. If you accept the position in the VIP 2000, you must report to facility.
- L. Backup system (group page) everyone reports. (Drill or Emergency)

Objective 3. State your immediate responsibility after entering the emergency facility

- M. Sign in immediately on the sign in board and pick up your badge.

Objective 4. State your identification code for the VIP 2000.

- N. Your I.D. code for the VIP 2000 is your social security #.

Objective 5. Identify scenario modes that require you to report to your facility.

- O. Scenario modes for VIP 2000 "drill" and "emergency" require reporting to your emergency facility.

NOTES

LESSON BODY

Objective 6. List the information that must be provided to Food & Lodging Coordinator/Security Island if called in for a drill or emergency.

- P. Notify security if you have consumed alcohol within the last five hours if called in to the ERO.

III. Technical Support Center

- A. Positions required to declare the TSC operational: Emergency Director, TSC Coordinator, Two Communicators, on-shift Chemist or Radiological Assessment Dose Calculator or RPM
- B. Supports Control Room
- C. Performs classification, PARs, Rad Assessment until EOF operational.

Objective 8: Name the position in the TSC, EOF and CR that must approve all notifications going to State and Local Agencies and the NRC.

- D. Emergency Director
1. Responsible for entire emergency organization prior to EOF activation
 2. All notifications out of CR/TSC must be approved by E.D.

Objective 7: Name the procedures used to operate the TSC/EOF.

- E. Cover 10-S-01-30 as appropriate

IV. Emergency Operations Facility (EOF)

- A. Located in the Energy Service Center. (BEOF is Baxter Wilson SES) (Cover map and layout)
- B. Positions required to declare the EOF operational
1. OEC, 2 communicators, Plume Tracker, 2 OMT members (1 driver, 1 monitor)

NOTES

LESSON BODY

2. One of the following: REM, RAC, Radiological Assessment Dose Calculator
- C. Provides information to offsite groups.
- D. Assesses the impact of the emergency off-site
- E. Provides necessary offsite support.
- F. Base of operation for offsite monitoring teams. The OSC has the capability of dispatching an offsite monitoring team.
- G. Initial point for receipt and analysis of field data. Normally, all environmental samples and environmental TLD collection will be done by environmental people after the emergency situation is stabilized.
- H. The OMTs are normally composed of one monitor and one driver. The purpose of the OMT is to locate, measure, and track the plume. They will be taking dose rates, air samples as directed by the Plume Tracker.

Objective 8. Name the position in the TSC, EOF, and CR that must approve all notifications going to State and Local Agencies and the NRC.

- I. OEC is Offsite Emergency Coordinator.
 1. Responsibilities:
 - a. Direct the activation of the EOF. (Has command and control of the EOF)
 - b. Responsible for the overall emergency response effort after EOF is declared operational.
 - c. All notifications leaving the EOF must be approved by the OEC.
- J. Food/Lodging Coordinator Responsibilities:
 1. Provides for personnel accommodations, temporary offsite facilities, meals, and administers alcohol breath tests.

Objective 7: Name the procedures used to operate the TSC/EOF.

K. Cover 10-S-01-33 as appropriate

V. **EMERGENCY CLASSIFICATION**

Objective 9. Identify the emergency classifications requiring activation of the TSC and EOF.

A. **Unusual Event**

1. Indicates a potential degradation of the level of safety of the plant.
2. No significant release of radioactive material is expected.
3. No emergency facilities are activated.

B. **Alert**

1. Involves actual or potential substantial degradation of the level of safety of the plant.
2. Potential exists for limited release of radioactivity in excess of Tech Specs.
3. TSC, OSC, EOF, ENMC, and EIC are activated.

C. **Site Area Emergency**

1. Involves actual or likely major failures of plant functions needed for the protection of the public.
2. Exists a significant actual or potential release of radioactive material.
3. Some radiation exposure to the near site public.
4. TSC, OSC, EOF, ENMC, and EIC are activated.

D. General Emergency

1. Involves actual or imminent substantial core degradation or melting.
2. Potential for loss of containment integrity.
3. Subsequent releases of large amounts of radioactive material off-site.
4. TSC, OSC, EOF, ENMC, and EIC are activated.

Objective 10. Identify emergency planning zones.**E. Emergency Planning Zone (EPZ) - Area for which planning is provided to assure that prompt and effective action can be taken to protect the public.**

1. 10 mile radius - primary concern is the Plume exposure pathway
 - a. TEDE - direct shine, inhalation
 - b. Thyroid - inhalation
2. 50 mile radius - primary concern is the Ingestion exposure pathway
 - a. Thyroid - Primary concern
 - b. Contamination

VI. SELECT ISOTOPIC MIXTURE**A. Isotopic Mix - What is it.**

1. Accident Source Term is the percent abundance of the nuclides available for release. Other names for source term are spectrum, accident type, accident mix, mix, nuclide mix, isotopic mix and isotopic ratio.

NOTES

LESSON BODY

At GGNS the source terms come from FSAR Chapter 15 design basis analysis of postulated accidents. The source term is normally divided into the Nobles Gases and Iodines. The GGNS source terms are limited to those nuclides that represent a greater than 10% contribution to the exposure of an individual in the plume exposure pathway EPZ.

Objective 11: Describe how to select an isotopic mixture for Dose Calc.

B. How to select an isotopic mixture

1. Refer to the following individuals to gather this information.
 - a) Control Room - Shift Manager
 - b) TSC - TSC Coordinator/TSC Engineer
 - c) EOF - OEC Tech Asst.
2. Each time you perform a calculation, you need to review isotopic mixture selection.
3. The program automatically defaults to a steam cycle mixture.

C. Mix Types

1. Steam Cycle Mix - Core is being cooled, process steam is being produced, breach is upstream of SJAE
2. Offgas Release – System breach is downstream of SJAE
3. Control Rod Drop Mix – Rapid in core CR blade excursion causing sudden change in reactivity in localized area of the core
4. Core Damage Mix – Core not being adequately cooled
5. Fuel Handling Mix – Condition due to fuel handling or in-vessel component manipulation

6. User Defined - Data input based on reactor samples and analysis
 - a. If the effluent stream can be sampled and an isotopic composition determined, you may enter those relevant nuclides in to the calculation. It does not matter what engineering units are used in the nuclide mix listing, as long as the unit quantities are consistent. This is because the system is only looking for relative abundance.
7. If conditions indicate more than one nuclide mix is possible, rather than choosing the mix with the lowest pre-assigned number, you will now choose the mix that provides the highest dose commitment.

VII. REACTOR SHUTDOWN

- A. Effects on dose calculations
 1. Starts decay of activity.
 2. Example: Steam Cycle Mixture is worst case because of short-lived isotopes at the onset of an event. Steam cycle is not the worst after a period of time because of decay.
- B. Special conditions for ATWS
 1. Anticipated transient without a scram. As a result of this, a manual input of reactor status and shutdown times may be required.
- C. How to get the information
 1. Control Room - Shift Manager
 2. TSC - TSC Coordinator/TSC Engineer
 3. EOF - OEC Tech Asst.

VIII. MET DATA**A. MET DATA available from BOP and PDS**

1. Readouts from Main MET Tower:
 - a. Wind speed sensors at 33 and 162 ft.
 - b. Wind direction sensors at 33 and 162ft.
 - c. Two Temperature sensors Channel A and Channel B at 33 and 165 ft.
 - c. Delta T readouts from Channel A and Channel B
 - d. Sigma Theta readouts from 33 and 165 ft. based on wind speed and direction sensors
2. Readouts from Backup Tower:
 - a. Wind speed at 10 meters
 - b. Wind direction at 10 meters
 - c. Temperature at 10 meters
 - d. Sigma Theta is readout based on 10 meters
3. Dose Calc will now choose the most appropriate channels and elevations for Met Data.

B. Met data affects on dose calc

1. Wind speed - Effects dispersion
2. Direction - New affected sectors
3. Stability class - Effects dispersion

IX. MONITOR RELEASE PATHWAY**Objective 12: List the possible monitored release points.****A. Monitored**

1. General Electric Effluent Air Monitoring System (above 100,000 CPM should be thinking about reliability) This came from data collected during annual Gas Calibrations done by Chemistry.
 - a. Four Monitored Points (vent sites)
 - 1) Offgas and Radwaste Building vent.
 - 2) Containment Building vent.
 - 3) Fuel Handling Area vent.
 - 4) Turbine Building vent.
 - d. Pre-TMI
2. SPING 4 (system-level part/iodine/ng) and AXM (Accident Range Monitor) System - Purpose is to monitor effluent releases from the plant during normal and accident conditions.
 - a. Six Monitored Points. (vent sites)
 - 1) Offgas/Radwaste Building vent.
 - 2) Containment/Drywell vent.
 - 3) Fuel Handling Area vent.
 - 4) Turbine Building vent.
 - 5) Standby Gas Treatment Train A.
 - 6) Standby Gas Treatment Train B.

NOTES

LESSON BODY

- b. Each System consists of:
 - 1) One SPING and one AXM system.
 - 2) Each SPING and each AXM has:
 - (a) Separate sample collection system.
 - (b) Separate microcomputer based detection unit.
 - (c) Post-TMI-Cover the range of GE Monitors +more
 - 3) SPING 5(LRNG) linear full scale (to 1E6 CPM) no correction needed as this is the only Noble Gas channel using scintillation detector. All other NG channels including GE monitors use GM tubes.
 - 4) SPING 7 begin to see some count rate loss above 1E5 (at 300,000 CPM loss is about 10%.) Loss reaches 30% at 1E6 CPM.
 - 5) No data on AXM channel 3 and 4 but expect it to be similar to SPING 7.
- e. Bottom line is once you get into the 1E5 to 1E6 range on any effluent NG monitor, it is a good idea to begin looking at the next higher channel.
- f. No PDS available

Objective 13: List possible unmonitored release points.

- B. Unmonitored pathways - designed and not monitored or unintended pathways.
 - 1. Doors
 - 2. Blowout shaft – Designed to relieve the Aux Bldg. pressure increase from a Main Steam Line breach (or other high energy system breach). Large metal panels about 6ft. by 12 ft. Six on either side of actual blowout shaft. Located on East side of Auxilliary Building on elevation 185'. Hinged at top so that pressure would lift them. Once lifted have to be manually resealed.

3. Holes
4. Penetrations
5. Personnel hatches

C. Actions

1. Monitored - keep monitoring and verify with field team data
2. Unmonitored Release Pathway – use field team information and talk with engineering to get release flow, if required
3. More than one pathway
 - a. Two monitored release pathways - select releasing pathways
 - b. One unmonitored and one monitored - rely on field teams

Objective 14: Indicate when you should use ARMs for DOSECALC.
--

D. Indicators of Releases

1. ARM's
 - a. When are they used - They are used when you do not have a field team or operable effluent rad monitors and you have a release. If the ARMs increase and you do not have a release, you have a source term available for calculations. This should be used as information only.
 - b. What they can be used for.
 - c. Release flow if used for calculations - Default number is available. Contact Engineering for openings not defined.

2. Increasing/Decreasing trends on monitors
3. Reactor Pressure - Increase of pressure results in higher source term and dose calculations
4. SGBT A/B – Maintains a negative pressure on the Aux building and Fuel Handling ventilation shuts down. 99% of the iodine is filtered out. The decision to shutdown building vents should be considered before shutting the vent because it could result in an unmonitored release or increased release of iodine because of no filtering.
5. Verification
 - a. Field Team versus monitors - Monitors are best choice, but data should correlate.
 - 1) Weather conditions - Cause differences in field and monitor readings.
 - 2) Time down wind – (same as above)
 - 3) Correlate with TEDE external dose information from Dose Calc printout
 - g. Do not expect field team "raw readings" to match DOSECALC TEDE dose. Field Team readings are external dose only, TEDE includes external +inhalation+ground. Closest approximation to the Field Team readings will be the external component of TEDE. Look for your correlation here.

Objective 15: List one removal mechanism and its effect.
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- E. Effects of Removal Mechanisms - Standby Gas Treatment - removes 99.825% (Tech Spec Value) of iodines that enter system. Draws from Aux Bldg. and CTMT Bldg. Dose Calc must be told to use this (Choose Standby Gas Treatment as your release path).

Suppression Pool Scrubbing - iodine is removed from the release stream through interaction with the water in the supp. pool. Iodine gases will either react with material in the pool or condense to particulate form. (already figured into isotopic mixes)

Plate-out

Plate-out is the process where iodine reacts with structure and materials in the buildings and systems. This reaction either binds the iodine to the structure or produces a particulate form of iodine that can be removed through other mechanisms. (already figured into isotopic mixes)

Sprays and Containment Sprays

Spray devices are used to condense the gaseous iodines or remove particulate iodines from the atmosphere in the affected building. (already figured into isotopic mixes)

Objective 16: List two items to consider in performing Radiological Assessment.

F. Recognizing plant conditions

Rx Water Level

Is the Rx S/D?

Is the core in coolable geometry?

Is the core being cooled?

Are the fission product barriers being maintained? (cladding, RPV, Containment)

Is heat being removed?

Is there a pathway for the release to get to the environment?

Are removal mechanisms working?

What is the cause of the release?

What is the source of the release?

How is the material moving from the source to the point of release?

NOTES

LESSON BODY

What is driving release to environment?

- Mechanical device?
- Direct Containment Heating
- Steam production
- Equilibrium

Is the rate of release controllable/stoppable?

How can the release be measured?

X. PROJECTED DURATION OF RELEASE - 2 Hours (assumed) –extend if approaching 2 hours (Discuss with States before extending) (Determine from ED/OEC expected duration time)

XI. PERFORM CALCULATION

Objective 17: Using 10-S-01-12/or DOSECALC, perform a radiological assessment.

Objective 18: List the locations of the DOSECALC computers.

Objective 19: Identify trigger points for contacting State Radiological Assessment Officers (SRAO).

A. Dose Calculation

1. Software - Cover 10-S-01-12
2. Computer Locations - Chemistry lab, Chemistry Admin. Bldg., EOF, TSC, CR
3. SRAO Trigger Points - Watch for these
4. Key indicator on dose calc printout – Cover

B. Actions for no electronic met data

1. Met data
 - a. Call National Weather Service

- b. Visually estimate
- c. Cover chart in 10-S-01-12

D. Classroom exercises – Cover RA-1

E. State/Federal dose models and differences

State of Miss and NRC uses RASCAL/2.0A - very similar to dose calc - may see differences up to factor of 20 or 100

These models require input of release rate, ours doesn't - ours does provide release rate as output.

XII. SRAO TRIGGER POINTS

A. Triggers – Cover on flowchart

B. When/ how/who to notify –

1. SRAO - Required by commitment to NRC

Objective 20: List three reasons for mandatory verbal contact of State Radiological Assessment Officers.

- a) Must be contacted for TSC/EOF activation, reaching any trigger point, within 30 minutes of recommending a PAR .

2. NRC - HPN phone - Commitment

- a) They will ask questions about source term, release duration, etc....
- b) You will be talking to an HPN communicator.
- c) Most of their info will come from ERDS, but they may ask for clarification in some areas.

C. Message content - Provide info on source term, expected release duration, met data, etc.

XIII. PAGs - Provide guidelines (Cover flowchart)

XIV. EALs – Cover 10-S-01-1

XV. NOTIFICATION

Objective 21: Identify missing or incorrect information on Notification Form.

Objective 22: List time requirements for making notifications to the State and Local Agencies/NRC.

Objective 23: Identify the REM, RPM, & RAC responsibility to notification forms?

A. Correct method for completion (Cover completing notification form)

- 1. Point out sections that are responsibility of REM, RAC, RPM**
- 2. Initiated by TSC Communicator in TSC**
- 3. Initiated by EOF Administrative Director in the EOF**
- 4. State and Local Agencies must be contacted within 15 minutes of declaration and every 60 minutes after that or when new information becomes available**
- 5. The numbers on the left of the dose calc printout indicate the line on which the information goes on the notification form.**
- 6. All SRAO trigger points that require or change a PAR require a notification form.**

Objective 24: State the time requirement for issuing a Protective Action Recommendation.

B. PARs - Protective Action Recommendations

1. What are they?

PARs are an agreement with the State of Mississippi and Louisiana. They are a set of protective measures, enacted by the executive order, that are predefined based on specific parameters affecting the population in the 10 mile EPZ.

There is one standard PAR - evacuate 2 miles in all sectors, and evacuate 5 miles in downwind sectors, and shelter the remainder of the 10 mile EPZ. There is one modification to the PAR. The modification is to evacuate the 5-10 mile portion of the Downwind sectors and shelter remainder.

2. When are they made?

The standard PAR is made at the General Emergency Declaration. The PAR is modified if projected doses exceed EPA PAGs at greater than or equal to 5 miles in the downwind sectors.

The PAR information is given out through one mechanism, the Emergency Notification, which shall be approved by the ED or OEC.

PAR shall be made within 15 minutes of a declaration of General Emergency.

After the official PAR is made, the RPM/REM will contact the State SRAO and confer on the PAR and subsequent actions.

Objective 25: Using 10-S-01-12 find the correct recommended protective actions for a given projected TEDE or thyroid dose.

3. Cover PARs in 10-S-01-12 or flowchart

NOTES

LESSON BODY

C. Flow path for notification approvals

1. Control Room - Onshift Chemist gives to Shift Manager. Shift Manager gives to Control Room communicator.
2. TSC – Radiological Assessment Dose Calculator completes, passes to RPM then TSC Coordinator then ED. Lead communicator should ensure this happens.
3. EOF – RADC prints form from dose calc gives to RAC who gives to EOF Admin Director. Admin Director takes to REM for review then OEC Tech Asst., then OEC for approval.

XVI. PROFESSIONALISM

- A. Use three-part communication
- B. Stay Calm
- C. No haste (Note: except when GE is declared, i.e., 15 minutes go with what you got) Dose and Rad data on next form if required.
- D. Listen
- E. Communicate with state LA & MS (EOF)
- F. Use phonetic Alphabet
- G. No eating, drinking, or chewing in facility until told different
- H. Times must be synchronized between all centers and official time must be used on all forms. 24-hour clock. (After 12 noon add 12 to the clock time to get 24 hr. clock.)
- I. Begin and end all drill messages with, "This is a drill".
- J. Be sure to use 3-part communication
- K. Use your procedures
- L. Listen to all briefings and PA announcements

XVII. EXPECTATIONS AND GOALS FOR POSITIONS**A. Radiological Assessment Dose Calculator****1. Definition of Position Role**

Performs dose calculations and ensures Radiological Assessment team is kept up-to-date on changing meteorological and radiological conditions.

2. Define responsibilities to next level of ERO Management

- a. Perform offsite dose calculations and generate Followup Notification Forms
- b. Notify RPM/RAC when SRAO trigger points are met
- c. Inform RPM /RAC of Meteorological and Radiological conditions
- d. Indicate Recommended Protective Actions
- e. Update Radiological status board
- f. Inform RPM/RAC of changing DW/Cont dose rates

3. Define responsibilities for Intra Organization Coordination

- a. Obtain field team data from monitoring teams
- b. Informs RPM/RAC of changing Meteorological conditions that may affect OSC teams going to and from the plant
- c. Informs Monitoring Teams of changing Meteorological conditions
- d. Informs RPM/RAC of DW/Cont dose rates that may affect Plant personnel
- e. Obtains Accident mix from TSC Engineer/OEC Tech Asst.

4. Define responsibilities for Inter Organization Coordination
 - a. Communicate/Peer check with EOF Dose Calculator
 - b. As required, provide States of MS and LA with release information
5. Define responsibilities to the next (subordinate) level of the ERO.

B. Radiation Protection Manager

1. Definition of Position Role
 - a. Perform radiological assessments and the development of radiological plans.
 - b. Determining emergency radiological survey requirements.
 - c. Continually looking forward to ensure action levels dealing with radiological significance are addressed in a timely manner.
 - d. Ensure additional help and relief shifts for HP personnel are coordinated.
 - e. Evaluate radiological conditions for the use of KI. Make recommendations for use if necessary.
 - f. Ensure TSC habitability is monitored and appropriate recommendations are made for relocation if necessary.
 - g. Ensure contamination controls are established and maintained within the Control Room envelope, when justified
 - h. Direct OSC Coordinator to establish on-site monitoring teams (if necessary).

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LESSON BODY

2. Define Responsibilities to next level of ERO Management
 - a. Communicating radiological conditions and consequences of these conditions to Emergency Director.
 - b. Provide recommendations to Emergency Director on evacuation routes, team actions, and Protective Action Recommendation, use of KI, etc.
 - c. Keeping the Emergency Director informed of the environmental conditions.
3. Define responsibilities for Intra Organization Coordination
 - a. Confer with OSC HP Coordinator on precautions, exposure control methods and protective equipment required for response teams.
 - b. Evaluate in-plant radiological conditions and provide information to OSC HP Coordinator.
 - c. Communicate plant conditions to REM/RAC in EOF
 - d. Provide support function to REM/RAC on radiological consequences and effect
4. Define responsibilities for Inter Organization Coordination
 - a. If requested, initiate and maintain communication with the NRC.
 - b. Establish initial communications and provide follow-up notifications to MS and LA SRAO's as required.
 - c. Contact the Coast Guard to recommend blocking river traffic when appropriate.
5. Define responsibilities to the next (subordinate) level of the ERO
 - a. Communicate to Dose Calculator plant conditions and changes in plant conditions that could impact radiological release rates.

C. Radiation Emergency Manager**1. Definition of position role**

- a. Is the focal point for offsite environmental, radiological and health physics support.
- b. Is the principal interface between state and NRC radiological assessment personnel.
- c. In coordination with the RAC, directs Offsite Dose Assessment activities.
- d. Reviews the Emergency Notification Forms and recommended protective actions.

2. Define responsibilities to next level of ERO management

- a. Reports to and supports the Offsite Emergency Coordinator.
- b. Provides radiological assessment insights and recommendations to the OEC.
- c. Ensures that the responding ERO team is made aware of all radiological conditions and is kept aware of any changes.

3. Define responsibilities for Intra Organization Coordination

- a. Overall responsibility to the responding ERO team for their radiological safety.
- b. Specifically responsible to coordinate with the Radiation Protection Manager on the administering of potassium iodine (KI) to the ERO.
- c. Coordination with the RPM on site evacuation routes and establishment of backup facilities.
- d. Responsible for keeping the radiological assessment team informed of changes to accident conditions and anticipated changes to plant operations.

4. Define responsibilities for Inter Organization Coordination
 - a. Responsible for keeping the State Radiological Assessment Officers briefed on changing conditions and reaching trigger points.
 - b. Responsible for briefing responding state, federal and local officials.
 - c. Responsible for determining the implementation status of PARs and discussing them with the State RAOs.
 - d. Responsible for contacting the Coast Guard regarding river traffic as appropriate
5. Define responsibilities to the next (subordinate) level of the ERO
 - a. Provide coaching and direction to the Radiological Assessment function in the EOF.
 - b. Responsible for keeping the Radiological Assessment Team informed of changes to accident conditions and anticipated changes to plant conditions.

D. Radiological Assessment Coordinator

1. Definition of position role
 - a. Coordinates Offsite Radiological Assessment Team activities from the EOF/BEOF. The RAC maintains an overview of radiological and meteorological conditions.
2. Define responsibilities to next level of ERO Management
 - a. Inform Radiation Emergency Manager (REM) of radiological assessment capability.
 - b. Informs REM of status of radiological/ meteorological conditions as they affect:
 - 1) EOF habitability

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LESSON BODY

- 2) State Radiological Assessment Officer (SRAO) notification
 - 3) PAR/PAG activities
 3. Define responsibilities for Intra Organization Coordination
 - a. Coordinates support and resources required to perform radiological assessment:
 - 1) Engineering Support
 - 2) Technical Support Center Peer checking
 - 3) Supplemental staffing
 - b. Provide radiological information to ERO staff, as required.
 4. Define responsibilities for Inter Organization Coordination
 - a. Ensures State and Federal Agencies receive input data required to perform radiological assessment.
 5. Define responsibilities to the next (subordinate) level of the ERO.
 - a. Coordinate activities of the EOF Radiological Assessment Team members including:
 - 1) Plume Tracking
 - 2) Dose Calculation/Accident mix selection
 - 3) EOF habitability monitoring
 - 4) Offsite Monitoring
 - 5) Radiological Status Board

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E. Onshift Chemist

1. Provides Emergency Director with Dose Calc results, metdata, releases, EAL triggers, SRAO Triggers, Emergency Notification Form rad data, and PAR recommendations
2. ED provides isotopic mix, plant conditions, and alarms
3. Contacts SRAO if RPM unavailable and trigger point is reached
4. Contact an HP by radio if necessary to obtain data.

XVIII. POTASSIUM IODIDE ISSUANCE

- A. Must be approved by the ED or OEC
- B. If approved, each individual must read ATT. I of 10-S-01-20.
- C. Individual issuing KI must record the names of persons taking the tablet
- A. An individual may accept or reject the tablet.

XIX. RADIOLOGICAL ASSESSMENT

A. Dose Calculation Methodology

1. Chi/Q

X/Q calculations are used to provide a ground-level concentration of the plume at a specified distance downwind from the site.

Basically, provides a conversion factor that can be applied to the release rate from the site, in order to calculate the downwind concentration.

X/Q is expressed in units of seconds/m³. It can be calculated by using 3 equations.

X/Q1 = Method of calculating atmospheric dispersion that takes into account the wake effect from nearby structures

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X/Q2 = Method of calculating atmospheric dispersion that places limits on wake effect

X/Q3 = Method of calculating atmospheric dispersion with no wake effect

These equations come from Reg Guide 1.145 and are used for ground-level releases. Although our release points are on the top of buildings, we are considered a ground level release plant because we have no elevated stack. All three equations are used at GGNS. The determination of which one to use is performed by calculating all three simultaneously. Calculate the first two and take the higher of the two values.

The highest value is compared to the third equation and the lowest of the two values is used. This avoids extremes and builds in conservatism.

2. Calculation of Offsite Dose

Multiply Release Rate and Atmospheric transport to get airborne concentration down-wind at a specific distance:

$$\frac{\text{Release Rate}}{\text{Ci/sec}} \times \frac{\text{Atmospheric transport X/Q}}{\text{Sec/m}^3} = \frac{\text{Conc. downwind}}{\text{ci/m}^3}$$

The release rate is a total release rate, therefore the downwind concentration is a total concentration. Since the relative concentration (percent abundance) of each nuclide is known, the airborne concentration for each nuclide is determined.

Example:
Nuclide mix

I_x = 50%
I_y = 20%
I_z = 30%

Once the individual nuclide concentrations (downwind) are known,

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they are multiplied times a DOSE FACTOR. The units of a dose factor are:

$$\frac{\text{REM/hr}}{\text{uCi/cc}}$$

$$\text{Ci/m}^3 \text{ or uCi/cc} \times \frac{\text{R/hr}}{\text{uCi/cc}} = \text{R/hr}$$

This yields a result in dose rate. Determine the length of time that the person is exposed and this will give the amount of exposure for that nuclide. The sum of the amounts of exposure for all of the nuclides is the dose to the individual.

NOTES:

Dose Factors

- Expressed in $\frac{\text{R/hr}}{\text{uCi/cc}}$
- There are several different dose factors for each nuclide depending on the type of exposure being considered. These come from EPA 400.

Radioactive decay

At the end of the calculation the amount of dose for each nuclide is decayed for the time the nuclide resided in the Rx from time of shutdown to time of calculation. The nuclides are then decayed for the transport time downwind.

3. Limitations on software

The primary limitation is that the dose calculation must be constrained. Due to the chaotic nature of any local meteorology, the atmospheric behavior of the plume must be constrained so as to present a reasonable yet definable estimation of the downwind concentration and affected areas.

The downwind concentration mathematical model is one that assumes a Gaussian numerical distribution. For GGNS, this is important because of the nature of statistical distribution.

NOTES

LESSON BODY

In our model, we calculate that 66.7% of the material will occur in the first standard deviation, and about 30% in the next standard deviation. We assume, for simplicity sake, that the concentration for the 1st S.D. is true for the entire area under the curve. This avoids having plume centerline dose and non-plume centerline dose. Since plume centerline dose will always be higher, we simply assume that the rest of the affected area has the same dose.

Objective 26: Name two sources for Radiological Data.

B. Getting Radiological Information from PDS

C. Other Sources for Rad data and Met data

1. Rad Data

a) ARMs in containment read on control room panel

b) Field Team Data

Objective 27: List different conditions or items that will have an effect on plume dispersion.

Objective 28: Given weather conditions and time of day be able to determine stability class.

B. Meteorology Effects

1. Stability Class - What is it?

Stability Class is a quantification or expression of the ability of a particle of air to deviate from a straight line path. If the atmosphere causes the particle to deviate greatly, then the atmosphere is considered unstable.

Dev A = represents small deviation from mean

B = represents large deviation from mean

If std deviation of fluctuation greater than 22.5, then the atmosphere is considered most unstable (Class A.)

NOTES

LESSON BODY

If standard dev in wind direction is < 2.1 , then the atmosphere is very stable.

Wind Speed is only a tertiary measurement of stability class. It is used as a physical (visual) indication, in conjunction with the amount of solar influx, to provide rough estimation of stability.

Objective 29: Name three methods used at Grand Gulf to determine stability classification.

2. The preferred method for determining stability class is an assessment of wind direction. This is done by sampling wind direction about 180 times over 15 minutes (once every 5 seconds), getting a mean for the samples, and determining standard deviation or sigma theta. This method is best used when wind speed > 3 mph because devices used to sense wind direction are not reliable at lesser wind speeds.
3. The secondary method for determining stability class is the determination of the temperature gradient difference between two known elevations, specifically 10m and 50m. This measurement is commonly known as Delta T. The $\Delta T = T_{50m} - T_{10m}$. This Delta T value is compared with a chart of experimentally determined stability class and stability class is selected.
4. The third and least desirable, method is a comparison of visual indicators in the environment. Visual estimation of wind speed is compared with an estimation of the level of incoming solar radiation to figure the stability class. This method was developed from a perceived need to have a stability class estimation method that used visual and physical cues.

NOTES

LESSON BODY

5. Stability effect on Calculations

<u>Stability</u>	<u>Dispersion</u>	<u>Resultant Dose</u>
A	greatest	least
B	greater	lesser
C	great	less
D	less	great
E	lesser	greater
F	least	greatest

XX. RADIATION PROTECTION

- A. The objective here is to keep dose ALARA. Under new 10CFR20, dose is the same, regardless of route of exposure.
- B. Legal limits are to be adhered to regardless of plant situation. Guidance on dose limits is expressed in 10-S-01-17. The Emergency Director/OEC shall have the sole authority to allow a person to exceed the legal limits.

Objective 30: State how dose margins are obtained for emergency workers at emergency facilities.

- C. Dose margins for emergency worker can be obtained by contacting the OSC HP Coordinator

Objective 31: State why it is important and who is responsible for issuing emergency dosimetry.

- D. Emergency workers leaving the facility and expected to receive above normal doses must be issued emergency dosimetry.
 - 1. OSC-OSC HP Coordinator
 - 2. TSC-RPM
 - 3. EOF-REM

NOTES

LESSON BODY

- E. If qualified Senior Health Physicist is not present in the TSC, then RP question should be referred to the OSC HP, or the Health Physics Shift Supervisor.

XXI. EMERGENCY ASSESSMENT

Objective 32: Using 10-S-01-1, find the following information: Radiological initiating conditions and EALs for Core Fuel Damage, Abnormal Effluent, Abnormal Inplant Radiation/Airborne levels, Fuel Handling Accidents

- A. COVER 10-S-01-01

XXII. REENTRY AND RECOVERY

- A. COVER 10-S-01-22 and 10-S-01-23 as pertains to Radiological Assessment

XXIII. COVER DRILL PROBLEMS AND INDUSTRY EVENTS

- A. Cover OE 10937

XXIV. SUMMARY

- A. Cover objectives

TRAINING MATERIAL DEVELOPMENT GUIDE

Attachment X

Material Development/Revision Checklist (Rev. 6)

Document Number: GG-1-LP-EP-EP03.01

Reviser: Gibson

Reason for Development/Revision: procedure changes
EPlan changes

New Lesson Plan	<input type="checkbox"/>	Lesson Plan Revised	<input checked="" type="checkbox"/>
Qual Card Revised	<input type="checkbox"/>	Handout Revised	<input checked="" type="checkbox"/>
JPM/Practical Factors Revised	<input type="checkbox"/>	Simulator/Lab Guide Revised	<input type="checkbox"/>
IRSs Issued	<input type="checkbox"/>		

NOTE: All *asterisked items checked NO must be explained in the comments section.

	Yes	No	NA	Initials
* Task Matrix Up-to-date	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>pdg</u>
* Objective Cross-Ref. Matrix Updated	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>pdg</u>
* IRSs Incorporated	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>pdg</u>
* TEARs Incorporated # <u>2000-202, 2000-1326</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pdg</u>
* OEs, LERs, SOERs, Reviewed/Incorporated #s	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pdg</u>
* Exam Bank Updated	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pdg</u>
* Transparencies Revised/Verified	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>pdg</u>
* TEARs Issued # _____	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>pdg</u>
* Did You add LP to Directory J:\train\ _____	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Comments _____

Form Completed: Ron Green 11/10/01
Supervisor Signature Date

ATTACHMENT 4 TO GNRO-2001/00024



Entergy

GRAND GULF
NUCLEAR STATION

QUALIFICATION CARD

Number: GG-1-OTH-EP-DCCHE.01
Revision: one
Page: 1 of 4
Rtype: ER.05
QA Record: ✓
Number of pages: 4
Date: 9/17/98 Initials: HH

TRAINING PROGRAM:

EMERGENCY PREPAREDNESS

TITLE:

Dose Calculator and Chemistry Lab Personnel Qualification Card

REASON FOR REVISION:

ADDS DRILL/EXERCISE PARTICIPATION

REPLACES DOCUMENT(S):

GG-1-OTH-EP-DCCHE.00

REVIEW/APPROVAL:

PREPARED BY: Dianna Able DATE: 8-19-98
TRAINING REVIEW: John G. [Signature] DATE: 8/19/98
APPROVED BY FPO: Paul D. [Signature] DATE: 9-3-98
DISCIPLINE REVIEW: QCP [Signature] DATE: 9-14-98

DATE TRANSMITTED TO RM	INITIAL RECEIPT BY RM (DATE/INITIALS)	RETURNED FOR CORRECTIONS (DATE/INITIALS)	RETURN RECEIPT (DATE/INITIALS)	FINAL ACCEPTANCE BY RM (DATE/INITIALS)	TSO ENTRY (DATE/INITIALS)
	<u>9/15/98 HH</u>			<u>9/17/98 HH</u>	<u>9/17/98 HH</u>

**GGNS Emergency Response Organization
Qualification Card**

For Dose Calculator and Chemistry Lab Personnel Position

Name: .	Social Security No.
Home Phone:	Work Phone:

SECTION 1

The following PROCEDURES have been read:		
Procedure	Revision #	ERO Member Signature/Date:
10-S-01-1		
10-S-01-6		
10-S-01-12		
10-S-01-30		
10-S-01-33		
08-S-04-220		

**GGNS Emergency Response Organization
Qualification Card**

For Dose Calculator and Chemistry Lab Personnel Position

SECTION 2

The ERO Member performed the designated ERO position duties during a DRILL/EXERCISE : DATE: _____			
Activity (any simulations must be explained below)	Drill, Ex,	SAT	UNSAT
sign in to facility			
locate procedures and other materials in TSC			
locate procedures and other materials in EOF			
start up dose calculation computer			
obtain met data from PDS			
obtain met data without PDS available			
obtain weather forecast			
obtain rad data from PDS			
obtain rad data from SPING and local control room points			
evaluate field team data			
perform dose calculations with SBT running			
perform dose calculations with field team data			
perform dose calculations with monitored release			
perform dose calculations with unmonitored release			
perform dose calculations with CTMT/Drywell ARM's			
make a PAR			
determine if trigger points have been met to perform another dose calculation			
fill out appropriate parts of the notification form			
obtain isotopic mixture determination for dose calculation			
check data for SRAO trigger points			
determine which data is "better" for a particular scenario, field team or in-plant			
identify actions to take if dose calculation computer is down in the TSC			
identify actions to take if dose calculation computer is down in the EOF			
discuss PAR with states of Louisiana and Mississippi within 30 minutes after making			
evaluate results of dose calculation			

**GGNS Emergency Response Organization
Qualification Card**

For Dose Calculator and Chemistry Lab Personnel Position

SECTION 2 (Continued)

The ERO Member performed the designated ERO position duties during a DRILL/EXERCISE :			
Activity <i>(any simulations must be explained below)</i>	Drill, Ex, TT, Obs	SAT	UNSAT
discuss when notification forms are required			
determine when rad assessment area is functional			
discuss state evacuation zones (maps in EOF)			
discuss rad monitor systems, channels and ranges			
review rad monitor data and determine if abnormal release is occurring			
evaluate met data effects on dose calculation			
respond to wind shift			
update RPM on release status (TSC)			
update RAC on release status (EOF)			
Evaluator comments:			
Evaluator Signature/Date:			
The Evaluator may be the EP staff, or ERO member qualified for this position.			

Any activity evaluated as UNSAT must be explained in the Evaluator comments section and remediated prior to signing below. Documentation of the remedial training and evaluation must be attached.

SECTION 3

I certify that _____ is qualified to participate as a member of the Grand Gulf Nuclear Station Emergency Response Organization.

_____ Evaluator	/	_____ Date	/	_____ Direct Supervisor	/	_____ Date
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ATTACHMENT 5 TO GNRO-2001/00024

Drill/Exercise Standard Evaluation Checklist **Technical Support Center**

Lead Evaluators will evaluate their area by rating the performance criteria listed below. The ratings are as follows:

- E** - Performance Exceeded the listed criteria
- M** - Performance Met the listed criteria
- NI** - Performance did not meet the listed criteria and Needs Improvement
- NO** - Listed criteria was Not Observed during this activity

Objective	Performance Criteria	Performance Level (check one)				Comments (Use additional space as needed and attached to the completed checklist)
		E	M	NI	NO	
Demonstrate the ability of the TSC staff to evaluate the source term and make dose projections based on plant parameters, meteorological data, or other simulated information made available by the exercise controllers (continued on next page)	<input type="checkbox"/> Use of 10-S-01-12					
	<input type="checkbox"/> Use of Dosecalc Software					
	<input type="checkbox"/> Selection of appropriate isotopic mixture					
	<input type="checkbox"/> Aggressively seeks estimated duration of release					
	<input type="checkbox"/> Constant observation of effluent monitors					
	<input type="checkbox"/> Constant observation of Met Data					
	<input type="checkbox"/> Observe Wind Shift					
	<input type="checkbox"/> Changes in Met Data addressed					
	<input type="checkbox"/> Contact with SRAO's as appropriate					
	<input type="checkbox"/> Communication with Field teams and EOF					

Drill/Exercise Standard Evaluation Checklist **Technical Support Center**

Lead Evaluators will evaluate their area by rating the performance criteria listed below. The ratings are as follows:

- E** - Performance Exceeded the listed criteria
- M** - Performance Met the listed criteria
- NI** - Performance did not meet the listed criteria and Needs Improvement
- NO** - Listed criteria was Not Observed during this activity

<p align="center">(continued from previous page)</p> Time of Initiating Event/Declaration _____ Type of event: _____ Time PARs generated _____ Time of Notification _____ Time of Initiating Event/Declaration _____ Type of event: _____ Time PARs generated _____ Time of Notification _____	 Time of Initiating Event/Declaration _____ Type of event: _____ Time PARs generated _____ Time of Notification _____ Time of Initiating Event/Declaration _____ Type of event: _____ Time PARs generated _____ Time of Notification _____
--	--

Drill/Exercise Standard Evaluation Checklist **Emergency Operation Facility**

Lead Evaluators will evaluate their area by rating the performance criteria listed below. The ratings are as follows:

- E** - Performance Exceeded the listed criteria
- M** - Performance Met the listed criteria
- NI** - Performance did not meet the listed criteria and Needs Improvement
- NO** - Listed criteria was Not Observed during this activity

Objective	Performance Criteria	Performance Level (check one)				Comments (Use additional space as needed and attached to the completed checklist)
		E	M	NI	NO	
Demonstrate the ability of the EOF staff to evaluate the source term and make dose projection based upon plant parameters, onsite/offsite field survey information, meteorological data, and other simulated information made available by the drill controllers.	<input type="checkbox"/> Use of 10-S-01-12					
	<input type="checkbox"/> Use of Dose Cal Software					
	<input type="checkbox"/> Selection of appropriate isotopic mixture					
	<input type="checkbox"/> Aggressively seeks estimated duration of release					
	<input type="checkbox"/> Constant observation of effluent monitors					
	<input type="checkbox"/> Constant observation of Met Data					
	<input type="checkbox"/> Observe Wind Shift					
	<input type="checkbox"/> Changes in Met Data addressed					
	<input type="checkbox"/> Contact with SRAO's as appropriate					
	<input type="checkbox"/> Communications with Fields teams and EOF					

Drill/Exercise Standard Evaluation Checklist **Emergency Operation Facility**

Lead Evaluators will evaluate their area by rating the performance criteria listed below. The ratings are as follows:

- E** - Performance Exceeded the listed criteria
- M** - Performance Met the listed criteria
- NI** - Performance did not meet the listed criteria and Needs Improvement
- NO** - Listed criteria was Not Observed during this activity

Objective	Performance Criteria	Performance Level (check one)				Comments (Use additional space as needed and attached to the completed checklist)
		E	M	NI	NO	

Demonstrate the ability of the EOF staff to make appropriate protective action recommendations to protect station personnel and the general public based on plant parameters, in-plant and onsite field surveys and/or offsite monitoring information.	<input type="checkbox"/> Correct PAR(s) <input type="checkbox"/> Timely PAR(s)				
Time of Initiating Event/Declaration _____ Type of event: _____ Time PARs generated _____ Time of Notification _____		Time of Initiating Event/Declaration _____ Type of event: _____ Time PARs generated _____ Time of Notification _____			
Time of Initiating Event/Declaration _____ Type of event: _____ Time PARs generated _____ Time of Notification _____		Time of Initiating Event/Declaration _____ Type of event: _____ Time PARs generated _____ Time of Notification _____			