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DAEC EMERGENCY PLANNING DEPARTMENT PROCEDURE TRANSMITTAL ACKNOWLEDGEMENT MEMO (TAM-41)

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Please perform the following to your assigned manual. If you have any questions regarding this TAM please contact Don A. Johnson at 319-851-7872.

	REMOVE	INSERT
EPIP Table of Contents Revision	Rev. 136	Rev. 137
EPIP 3.3 (PWR: 21769)	Rev. 18	Rev. 19
EPIP ERO-01 (PWR: 21830) Add new form.	Rev. 0	Rev. 0

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A045

Procedure	Title	Revision Number	Date
1.1	Determination of Emergency Action Levels	19	09/12/01
1.2	Notification	28	4/4/03
1.3	Plant Assembly and Site Evacuation	9	09/12/01
1.4	Release of Emergency-Related Information	4	09/04/02
1.5	Activation and Operation of the EOF	4	6/11/03
2.1	Activation and Operation of the OSC	13	09/12/01
2.2	Activation and Operation of the TSC	23	10/23/02
2.3	Operation of the FTS-2001 Phone Network	6	09/04/02
2.4	Activation and Operation of the ORAA	8	09/12/01
2.5	Control Room Emergency Response Operation	14	10/15/01
2.6	Activation and Operation of the ORAL	9	12/30/02
2.7	Activation and Operation of the ODEF	6	10/15/01
2.8	Security Threat	1	11/16/01
3.1	In-Plant Radiological Monitoring	12	9/2/02
3.2	Field Radiological Monitoring	13	9/2/02
3.3	Dose Assessment and Protective Action	19	6/25/03
4.2	First Aid, Decontamination and Medical Support	7	8/23/02
4.3	Rescue and Emergency Repair Work	11	8/23/02
4.5	Administration of Potassium Iodide (KI)	7	2/10/03
5.2	Recovery and Re-entry	9	10/15/01

Form Number	Title	Revision Number	Referencing Procedure
CR-01	OSM/OSS Checklist	Rev. 2	EPIP 2.5
CR-02	Back Panel Communicator Checklist	Rev. 1	EPIP 2.5
CR-03	Dose Projection & ARM Data Sheet	Rev. 0	EPIP 2.5
CR-04	Control Room to TSC Command and Control Transfer Checklist	Rev. 1	EPIP 2.5
EAL-01	Abnormal Rad Levels/Radioactive Effluent Table	Rev. 3	EPIP 1.1
EAL-02	Fission Barrier Table	Rev. 3	EPIP 1.1
EAL-03	Hazards & Other Conditions Affecting Plant Safety	Rev. 2	EPIP 1.1
EAL-04	System Malfunction Table	Rev. 3	EPIP 1.1
EOF - 02	NRC - HPN Communicator Checklist	Rev. 3	EPIP 1.5
EOF - 03	Technical Recorder Checklist	Rev. 2	EPIP 1.5
EOF - 04	Summary of Computer Data Backup Collection Activities	Rev. 1	EPIP 1.5
EOF - 05	EOF Information Services Representative Checklist	Rev. 3	EPIP 1.5
EOF - 06	DAEC Key Parameter Log	Rev. 0	EPIP 1.5
EOF - 07	Emergency Response and Recovery Director Checklist	Rev. 4	EPIP 1.5
EOF - 08	Rad & EOF Manager Checklist	Rev. 6	EPIP 1.5, 3.3
EOF – 09	EOF STA/OPS Liaison Checklist	Rev. 0	EPIP 1.5
EOF – 10	EOF-TSC Communicator Checklist	Rev. 3	EPIP 1.5
EOF – 11	Support Services Coordinator Checklist	Rev. 3	EPIP 1.5
EOF – 12	Field Team Director Checklist	Rev. 0	EPIP 1.5, 3.3
EOF – 13	Radiological Data Communicator Checklist	Rev. 0	EPIP 1.5, 3.3

EOF – 14	EOF MIDAS Operator Checklist	Rev. 1	EPIP 1.5, 3.3
EOF – 15	Radiological Data Plotter Checklist	Rev. 0	EPIP 1.5, 3.3
EOF – 16	Radiological Assessment Coordinator Checklist	Rev. 1	EPIP 1.5, 3.3
EOF – 17	EOF Security Access Clerk Checklist	Rev. 2	EPIP 1.5
EOF – 18	EOF Staffing Accountability Roster	Rev. 3	EPIP 1.5
EOF – 19	Drill Announcement Message	Rev. 0	EPIP 1.4, 1.5
EOF – 20	Emergency Announcement Message	Rev. 1	EPIP 1.4, 1.5
EOF – 21	Personnel Access Log	Rev. 1	EPIP 1.4, 1.5
EOF – 22	Registration Form	Rev. 0	EPIP 14, 1.5
EOF – 23	Security Post Log	Rev. 2	EPIP 1.4, 1.5
EOF – 24	First Floor Security Post Description	Rev. 2	EPIP 1.4, 1.5
EOF – 25	Fourteenth Floor Security Post Description	Rev. 11	EPIP 1.5
EOF – 27	Status Update Message – EOF Communicator	Rev. 0	EPIP 1.5
EOF – 28	Verbal Closeout Summary	Rev. 0	EPIP 1.5
EOP – 29	Written Closeout Summary	Rev. 0	EPIP 1.5
EOF – 30	Status Board	Rev. 0	EPIP 1.5
EOF – 31	Access B adge Example	Rev. 0	EPIP 1.5
EOF – 32	EOF Staff Response	Rev. 3	EPIP .15
EOF – 33	Recovery Issues	Rev. 0	EPIP 5.2
EOF – 34	EOF Activities	Rev. 0	EPIP 5.2
EOF – 35	Recovery Phase Plan Outline Guidance	Rev. 0	EPIP .52
EOF – 36	RE-Entry Briefing Guide	Rev. 0	EPIP 5.2
EOF – 37	RE-Entry Debriefing Guide	Rev. 0	EPIP 5.2
EOF – 38	EOF Messenger Checklist	Rev. 1	EPIP 1.5
ERO – 01	ERO Position Equivalency Table	Rev. 0	EPIP 1.5
JPIC – 01	JPIC Manager Checklist	Rev. 4	EPIP 1.4
JPIC – 03	Alliant Spokesperson Checklist	Rev. 3	EPIP 1.4

JPIC – 04	Technical Liaison Checklist	Rev. 4	EPIP 1.4
JPIC – 05	Sequence of Events	Rev. 0	EPIP 1.4
JPIC – 06	Public Information Officer Support Checklist	Rev. 5	EPIP 1.4
JPIC – 07	Logistics Coordinator Checklist	Rev. 4	EPIP 1.4
JPIC – 08	Logistics Support Checklist	Rev. 4	EPIP 1.4
JPIC – 09	Audiovisual Support Checklist	Rev. 4	EPIP 1.4
JPIC – 11	Rumor Control Coordinator I Checklist	Rev. 3	EPIP 1.4
JPIC – 12	Rumor Control Event Summary Log	Rev. 1	EPIP 1.4
JPIC – 13	Rumor Control Coordinator II Checklist	Rev. 2	EPIP 1.4
JPIC – 14	Public Rumor Control Checklist	Rev. 2	EPIP 1.4
JPIC – 15	News Media Rumor Control Checklist	Rev. 4	EPIP 1.4
JPIC – 16	Assistant JPIC Manager Checklist	Rev. 3	EPIP 1.4
JPIC – 17	JPIC Security Access Control Checklist	Rev. 3	EPIP 1.4
JPIC – 18	Sixth Floor Security Post Description	Rev. 2	EPIP 1.4
JPIC – 19	JPIC Distribution List	Rev. 2	EPIP 1.4
NOTE-01	ERO Notification –Phone System Callout	Rev. 4	EPIP 1.2
NOTE-02	ERO Notification – Alphanumeric Paging System Callout	Rev. 3	EPIP 1.2
NOTE-03	Event Notification Worksheet	Rev. 1	EPIP 1.2
NOTE-04	Plant Assembly Notification	Rev. 2	EPIP 1.2
NOTE-05	Emergency Action Level Notification	Rev. 6	EPIP 1.2
NOTE-06	Plant Page for Emergency Classification Changes	Rev. 1	EPIP 1.2
NOTE-07	Basic Notification Flowpath	Rev. 1	EPIP 1.2
ODEF-01	ODEF Decontamination Waiting Area	Rev. 0	EPIP 2.7
ODEF-02	Floor Plan for ORAL/ODEF	Rev. 0	EPIP 2.7
ODEF-03	Travel Route to ORAL/ODEF	Rev. 0	EPIP 2.7
ODEF-04	12th Avenue Entrance to ORAL/ODEF	Rev. 0	EPIP 2.7
ORAA-01	Offsite Relocation and Assembly Area Supervisor's	Rev. 1	EPIP 2.4

	Checklist		
ORAA-02	Health Physics Support for the Offsite Relocation and Assembly Area	Rev. 0	EPIP 2.4
ORAA-03	Security Support for the Offsite Relocation and Assembly Area	Rev. 0	EPIP 2.4
ORAA-04	Offsite Relocation and Assembly Area	Rev. 0	EPIP 2.4
ORAA-05	Offsite Relocation and Assembly Area Parking and Vehicle Monitoring	Rev. 0	EPIP 2.4
OSC-01	OSC Layout	Rev. 0	EPIP 2.1
OSC-02	OSC Organization Chart	Rev. 0	EPIP 2.1
OSC-03	Minimum Staffing Level	Rev. 1	EPIP 2.1
OSC-04	Recommended Log Entry Topics	Rev. 0	EPIP 2.1
OSC-05	Emergency Event Log Sheet	Rev. 0	EPIP 2.1
OSC-06	Personal Statement Concerning Incident	Rev. 0	EPIP 2.1
OSC-07	Emergency Exposure Tracking Log	Rev. 0	EPIP 2.1
OSC-08	OSC Supervisor Checklist	Rev. 0	EPIP 2.1
OSC-09	Health Physics Supervisor Checklist	Rev. 0	EPIP 2.1
OSC-10	Electrical, Mechanical, I&C Maintenance Supervisor Checklist	Rev. 0	EPIP 2.1
OSC-11	Emergency Assignment Staffing Board Duties	Rev. 0	EPIP 2.1
OSC-12	External Exposure Limits	Rev. 0	EPIP 4.3
OSC-13	Guidance on Dose Limits for Workers Performing Emergency Services	Rev. 0	EPIP 4.3
OSC-14	Guidelines Regarding Selection of Volunteers	Rev. 0	EPIP 4.3
OSC-15	OSC Repair Team Work Order	Rev. 0	EPIP 4.3
OSC-16	Repair Team Datasheet Flowpath	Rev. 0	EPIP 4.3
PAR – 01	PAR Decision Making – Recommendations	Rev. 0	EPIP 3.3
PAR – 02	PAR Decision Making – Flowchart	Rev. 0	EPIP 3.3
PASE-02	Onsite Assembly Locations	Rev. 2	EPIP 1.3

PASE-05	Site Evacuation Routes	Rev. 1	EPIP 1.3
SAM-01	EOP-SAG Transition Checklist	Rev. 0	EPIP 2.2
TSC-01	Emergency Coordinator Checklist	Rev. 3	EPIP 2.2
TSC-02	TSC Supervisor Checklist	Rev. 2	EPIP 2.2
TSC-03	Site Radiation Protection Coordinator Checklist	Rev. 1	EPIP 2.2
TSC-04	Technical & Engineering Supervisor Checklist	Rev. 3	EPIP 2.2
TSC-05	Quality Assurance Checklist	Rev. 1	EPIP 2.2
TSC-06	Security & Support Supervisor Checklist	Rev. 1	EPIP 2.2
TSC-07	Administrative Supervisor Checklist	Rev. 1	EPIP 2.2
TSC-08	Material Management Supervisor Checklist	Rev. 1	EPIP 2.2
TSC-09	TSC-CR-OSC Communicator Checklist	Rev. 2	EPIP 2.2
TSC-10	CR-TSC-OSC Communicator Checklist	Rev. 2	EPIP 2.2
TSC-11	TSC-EOF-JPIC Communicator Checklist	Rev. 1	EPIP 2.2
TSC-12	ENS Communicator Checklist	Rev. 2	EPIP 2.2
TSC-13	HPN Communicator Checklist	Rev. 1	EPIP 2.2
TSC-14	TSC/OSC Operations Liaison Checklist	Rev. 2	EPIP 2.2
TSC-15	Radiological Support Staff Checklist	Rev. 1	EPIP 2.2
TSC-16	Radio Operator – Offsite Checklist	Rev. 0	EPIP 2.2
TSC-17	Radio Operator – Onsite Checklist	Rev. 0	EPIP 2.2
TSC-18	TSC MIDAS Operator Checklist	Rev. 0	EPIP 2.2
TSC-19	Technical & Analysis Engineer Checklist	Rev. 1	EPIP 2.2
TSC-20	TSC Operations Supervisor	Rev. 2	EPIP 2.2
TSC-21	Electrical Engineer Checklist	Rev. 0	EPIP 2.2
TSC-22	I & C Engineer Checklist	Rev. 0	EPIP 2.2
TSC-23	Mechanical Engineer Checklist	Rev. 0	EPIP 2.2
TSC-24	Reactor Engineer Checklist	Rev. 2	EPIP 2.2
TSC-25	SPDS Operator Checklist	Rev. 1	EPIP 2.2

TSC-26	Information Services Representative Checklist	Rev. 2	EPIP 2.2
TSC-27	Fire Marshall Checklist	Rev. 1	EPIP 2.2
TSC-28	NRC Roles During A Nuclear Power Plant Emergency Checklist	Rev. 0	EPIP 2.2
TSC-29	TSC Minimum Staffing Level	Rev. 2	EPIP 2.2
TSC-30	Emergency Action Request Log	Rev. 0	EPIP 2.2
TSC-31	Radio Operator Log	Rev. 0	EPIP 2.2
TSC-32	Status Board Recorder	Rev. 1	EPIP 2.2
TSC-33	Typical Organization of the NRC Site Team	Rev. 0	EPIP 2.2
TSC-34	TSC Organization Chart	Rev. 3	EPIP 2.2
TSC-35	Assignment Form	Rev. 0	EPIP 5.2
TSC-36	Deactivation Report	Rev. 0	EPIP 5.2
TSC-37	Plant Operations Status	Rev. 0	EPIP 5.2
TSC-38	TSC/Control Room/OSC Activities	Rev. 0	EPIP 5.2
TSC-39	TSC Clerical Checklist	Rev. 0	EPIP 2.2
TSC-40	ARM Locations	Rev. 0	EPIP 3.1/4.3
TSC-41	PASS Capabilities	Rev. 0	EPIP 3.1
TSC-42	On-Site Map	Rev. 0	EPIP 3.2
TSC-43	ESB Logon Instructions (TSC/CR/EOF)	Rev. 0	EPIP 2.2

EMERGENCY PLAN IMPLMENTING PROCEDURES	EPIP 3.3
DOSE ASSESSMENT AND PROTECTIVE ACTION	Rev. 19 Page 1 of 25

Effective Date: 6/25/2003

TECHNICAL REVIEW

Prepared by: Chris Blood Date: 6/24/03

Reviewed by: [signature] Date: 6/24/03
Independent Reviewer

PROCEDURE APPROVAL

I am responsible for the technical content of this procedure.

Approved by: [signature] Date: 6/24/03
Manager, Emergency Planning

Table of Contents

1.0 PURPOSE

(1) This procedure provides instructions for directing offsite radiological monitoring activities performed by Duane Arnold Energy Center (DAEC), coordinating such activities with those accomplished by the State of Iowa, assessing the offsite radiological impacts of an event at the DAEC, and formulating Protective Action Recommendations.

2.0 DEFINITIONS

(1) MIDAS Meteorological Information and Dose Assessment System.

(2) PAR (Protective Action Recommendation) - Made to the State with regards to evacuation or sheltering of subareas within the Emergency Planning Zone (EPZ).

(3) PAG (Protective Action Guides) - Established by the Environmental Protection Agency (EPA) Reference 2.

3.0 INSTRUCTIONS

3.1 PROTECTIVE ACTION RECOMMENDATION DECISION MAKING

(1) At the initial Emergency Classification declaration, the on-shift chemist reports to the TSC MIDAS Computer to initiate MIDAS dose projection runs. Projected off-site doses shall be communicated to the Control Room, until the TSC is activated.

(2) Plant conditions and/or dose projections (as available) shall be reviewed to determine:

(a) If the Emergency Action Level (EAL) has changed, reclassification of the event is necessary and/or protective actions are warranted.

(b) If the EPA Protective Action Guides (PAGs) are being exceeded and if protective actions are warranted or need to be revised.

(3) There are two tables intended to assist in the recommendation of appropriate protective actions to the State of Iowa, PAR-01 and PAR-02. The Protective Action Recommendations for emergency classification levels and radiological releases impacting the areas outside of the site boundary, are in PAR-01. The Protective Action Recommendations for Severe Core Damage or loss of control of plant functions are contained in PAR-02. All protective actions listed are appropriate for the conditions indicated but do not restrict the decision-maker(s) should it be desirable to recommend other protective actions based on the situation at the time of the emergency.

(4) When an emergency class has been declared, or dose projections are available for radiological releases, go to PAR-01. PAR-01 allows for the assessment of appropriate protective actions based on downwind dose projections resulting from airborne radiological releases.

(a) Protective Action Recommendations shall be recorded in your log, the Status Board and NOTE-05.

(b) To determine the subareas affected and the maximum evacuation time (if needed), refer to Attachment 1, "Evacuation Time Estimates".

(c) Continue to work through the table as new classifications are determined or dose projection information becomes available.

(5) If the incident is classified as a General Emergency, with core damage as specified in PAR-02, recommend the minimum protective action as given in PAR-02. PAR-02 allows for the assessment of a core melt sequence and provides appropriate protective actions based on the conditions adopted from Section G of the RTM-96.

(a) Enter the table at the top decision block which asks, "Actual or projected severe damage or loss of control of facility".

(b) To determine the sectors affected and the maximum evacuation time (if needed), refer to Attachment 1, "Evacuation Time Estimates."

(6) Continue to work through the table as new information becomes available.

(7) Protective Action Recommendations should be determined (forecast weather information should be considered during all Protective Action Decision Making) by:

(a) The Operations Shift Manager/Supervisor if neither the TSC nor the EOF is activated. This person is responsible for ensuring that Protective Action Recommendations are provided to offsite authorities.

(b) The Site Radiation Protection Coordinator once the TSC is activated. This person shall develop these recommendations for approval by the Emergency Coordinator. The Emergency Coordinator shall ensure that this information is provided to offsite authorities.

(c) The Radiological and EOF Manager, assisted by the Radiological Assessment Coordinator, upon activation of the EOF. These persons shall assume responsibility for development and recommendation of the Protective Actions and, upon approval by the Emergency Response and Recovery Director, provide formal communication of these recommendations to offsite agencies.

(8) Recommend the Protective Actions as specified in PAR-01 for all declared events.

(a) If the situation is degrading such that a potential exists for declaration of a General Emergency, evaluate trends and prognosis for change to determine the need for precautionary protective measures for the general public.

(b) Pay special attention to wind direction and speed as this may lead to a Protective Action Recommendation for other affected subareas, reference Attachment 2, 'Wind Direction and Affected Subareas'.

(9) Field readings should be used to evaluate Protective Action Recommendations. If a significant number of actual dose rates, measured in the field, are greater than those projected to be occurring at the time, consideration should be given to upgrading or expanding the current protective actions, as appropriate.

(10) Formulated Protective Action Recommendations shall be recorded on NOTE-05, 'Emergency Action Level Notification Form'.

(a) The Emergency Coordinator/Emergency Response and Recovery Director shall approve the Protective Action Recommendations by signing NOTE-05, 'Emergency Action Level Notification Form'.

(11) The SRPC/Radiological and EOF Manager should release Protective Action Recommendations in the following manner:

(a) Short pre-briefing of impending recommendations and related plant conditions should be given to State EOC Dose Assessment personnel via the microwave phone.

(b) When the EOF is activated this briefing shall be followed by official recommendations being delivered via the "Administrative Hotline" within 15 minutes of recognizing the criteria.

(c) State, County, and Federal notifications shall be made in accordance with EPIP 1.2, 'Notification'.

(12) Information regarding emergency classification, plant status, offsite radiological data, Protective Action Recommendations, and response actions underway shall be provided when significant changes occur and on a periodic basis to the ERO, Linn and Benton County EOCs, the State EOC, and the NRC in accordance with EPIP 1.2, 'Notification'.

(13) If protective actions actually implemented by local and State officials differ from those recommended by DAEC, the Emergency Coordinator/Emergency Response & Recovery Director should be informed.

(14) The Protective Action Recommendations will be continuously assessed and changed, as appropriate, depending upon the changing conditions.

3.2 INITIAL AND PERIODIC BRIEFINGS

(1) Prior to assuming responsibility for offsite radiological monitoring and dose assessment activities, the Site Radiation Protection Coordinator/Radiological Assessment Coordinator should obtain the following information:

(a) Effluent release information, if a release is in progress, including the release point and release concentration from the KAMAN Effluent Monitoring System.

(b) Weather forecast information. This information can be obtained from the National Weather Service (phone number listed in the ETB).

(c) Meteorological information, including stability class (or ΔT), wind speed and wind direction from the Safety Parameter Display System (SPDS). If meteorological information cannot be obtained from SPDS via the Met Tower, then call the National Weather Service phone number and request an update of the current Met conditions.

(d) The results of dose projection calculations.

(e) Containment High Range Radiation Monitor levels.

(f) Protective Action Recommendations which have been made.

(g) On-site radiological information, post-accident sampling activities, and effluent release isotopic mixes, if available.

(h) Status of off-site monitoring activities conducted, if any, and locations of the DAEC Off-site Radiological Monitoring Teams.

(i) Plant status information and prognosis for deteriorating conditions.

(j) The status of activation of the Off-site Radiological and Analytical Laboratory (ORAL).

(k) The status of activation of the Off-site Radiological and Assembly Area (ORAA).

(2) The Site Radiation Protection Coordinator should summarize this information, advise the Emergency Coordinator of pertinent points discussed, and brief the Radiological Assessment Group.

OR

The Radiological Assessment Coordinator should summarize this information, advise the Radiological and EOF Manager of pertinent points discussed, and brief the Radiological Assessment Group.

(a) The Radio Operator/Field Team Director should ensure that the Offsite Radiological Monitoring Teams are apprised of pertinent information regarding plant potential radiological problems expected.

(b) Caution should be exercised in relaying information to teams over the radio, since the radio transmission becomes public information. Only transmit information that is necessary for the field teams to perform their duties safely and information that is made public through news releases.

(3) The Radio Operator should ensure that the meteorological and field team information on the DAEC EPZ maps/status boards are updated and maintained. Items such as the following should be considered for display.

OR

The Field Team Director should ensure that the Radiological Data Plotters display the following information on the DAEC EPZ maps/status boards.

(a) Wind direction

(b) Wind speed

(c) Stability class

(d) Weather forecast information

(e) Plume width and centerline

(f) Team locations

(g) Survey results at selected locations and an outline of the subarea Protective Action Recommendations as necessary.

(h) Projected TEDE doses or dose rates in the plume path

(i) Projected thyroid doses or dose rates in the plume path

(4) Additionally, the Radiological Data Plotter in the EOF should display selected radiological information obtained by the State monitoring teams, as reported by the State Field Team Captain in the EOF.

3.3 OFFSITE RADIOLOGICAL MONITORING TEAMS

(1) Offsite Radiological Monitoring Teams should be initially briefed and dispatched in accordance with EPIP 3.2, "Field Radiological Monitoring."

(2) In preparation for directing the Offsite Radiological Monitoring Teams, the Radio Operator should:

(a) Conduct a radio check with the Teams and verify their locations.

(b) Advise the Teams of the latest radiological and plant status information, as necessary to perform their duties safely.

(c) Inform the Site Radiation Protection Coordinator of readiness to assume control of the Offsite Radiological Monitoring Teams.

(3) Direction and control of the Offsite Radiological Monitoring Teams should be done in accordance with the directions given in EPIP 3.2.

(4) In preparation for assuming control of the Offsite Radiological Monitoring Teams, the Field Team Director should:

(a) Contact the TSC Radio Operator and inform them of the intent to establish contact with Teams.

(b) Conduct radio check with the Teams and verify their locations.

(c) Advise the Teams of the latest radiological and plant status information, as necessary to perform their duties safely.

(d) Inform the Radiological Assessment Coordinator of readiness to assume control of the Field Radiological Monitoring Teams.

(5) When the EOF has been activated, the Radiological Assessment Coordinator should contact the Site Radiation Protection Coordinator and advise that the EOF is ready to assume control of the Offsite Radiological Monitoring Teams.

(a) The Site Radiation Protection Coordinator should inform the Emergency Coordinator that control of the field radiological monitoring teams and dose assessment has been transferred to the EOF.

(b) The Radiological Assessment Coordinator should then advise the Radiological and EOF Manager that the Radiological Assessment Group is ready to assume responsibility for offsite monitoring and dose assessment activities.

(c) The Field Team Director (in the EOF) should follow up with each Team and the TSC Radio Operator and advise them that all further communications should be conducted with the EOF.

(d) Transfer of responsibility should be recorded in both the TSC and EOF Logs.

3.4 DOSE PROJECTION ACTIVITIES

(1) Until the TSC is activated, the Operations Shift Manager/Supervisor, as the Emergency Coordinator, is responsible for assuring dose projections by the on-duty shift chemist are performed.

(a) The results of these projections will normally be summarized for the Site Radiation Protection Coordinator as part of the initial briefing.

(2) Until the EOF is activated, the Site Radiation Protection Coordinator and/or the Operations Shift Manager/Supervisor are responsible for performing dose projections.

(a) The results of these projections will normally be summarized for the Radiological Assessment Coordinator as part of the initial briefing.

(3) Dose projection calculations will be performed by the MIDAS Operator using one of the following methodologies:

(a) MIDAS computer, MIDAS Instruction Manual User's Guide.

(b) MIDAS Backup on the Personal Computer.

(c) MIDAS Laptop Personal Computer.

(4) Dose projections will normally be performed in accordance with the MIDAS instructions in the MIDAS User's Guide. If MIDAS is unavailable, the options below will be reviewed by the Site Radiation Protection Coordinator/Radiological Assessment Coordinator to determine the appropriate back-up methodology.

(a) If real-time data collection in MIDAS is not functional, the TSC MIDAS Operator should coordinate directly with the Back Panel Communicator to determine updated radiological and meteorological parameters applicable to actual or potential release rates.

(b) If there is a loss of MIDAS in the TSC consider using the following:

(i) MIDAS Backup on the Personal Computer

(ii) Use of MIDAS Laptop Computer

(c) If real-time data collection in MIDAS is not functional, the EOF MIDAS Operator should coordinate directly with the Site Radiation Protection Coordinator to determine updated radiological and meteorological parameters applicable to actual or potential release rates.

(d) If there is a loss of MIDAS in the EOF consider the following:

(i) Transfer of dose assessment back to the TSC

(ii) Use the MIDAS Backup on the Personal Computer

(iii) Use of MIDAS Laptop Computer

(5) Following review of the latest dose projection, the Site Radiation Protection Coordinator should brief the Radio Operator on the magnitude of the projected doses and the need to adjust offsite radiological monitoring activities.

OR

Following review of the latest dose projection, the Radiological Assessment Coordinator should brief the Field Team Director on the magnitude of the projected doses and the need to adjust field radiological monitoring activities.

(6) If Field Team readings are significantly higher than those projected by MIDAS, consider the possibility of an unmonitored release.

3.5 COORDINATION OF DOSE ASSESSMENT WITH THE STATE OF IOWA

(1) Upon activation of the EOF, the Radiological Data Communicator shall verify that the "Rad Data Line" is established and operable or contact the State EOC and request that it be established.

(2) Once established, the Radiological Data Communicator shall maintain communications with the State EOC and the Benton and Linn County EOCs.

(3) Radiological release, dose projections, and meteorological data from the electronic MIDAS print out shall be provided to the State in order for the State to conduct dose assessment and projection activities.

(4) The Radiological Data Communicator shall request the State's dose projection results as they become available, and provide this information to the Radiological Assessment Coordinator.

3.6 DATA RECORDING AND TREND ANALYSIS FROM THE TSC

(1) The Site Radiation Protection Coordinator should initiate and ensure conduct of trend analysis.

(a) Parameters of interest include KAMAN System Effluent Monitor readouts, analyses conducted ot effluent stream particulate filters and iodine cartridges, meteorological data, ARM levels and Containment High Range Radiation Monitor levels.

(b) ARM and Containment High Range Radiation Monitor levels are of dual importance due to their direct impact on response activities within the plant and their significance with respect to determining the quantity of radioactive material potentially available for release offsite.

(2) An estimate of fuel failure can be determined by direction found in the PASAPs.

(3) An estimate of the potential release rate can be determined by using the PASAPs.

(4) The Site Radiation Protection Coordinator should evaluate the trending plot periodically to determine if any significant trends are apparent.

(5) The Emergency Coordinator and the Radiological Assessment Team should be periodically advised of the current radiological status, significant trends, and potential implications.

(a) The SRPC should ensure to periodically inform representatives of the, State and Federal Government of the current radiological status, significant trends, and potential implications (prior to operation of the EOF).

3.7 DATA RECORDING AND TREND ANALYSIS FROM THE EOF

(1) The Radiological Assessment Coordinator or his designee should trend the following information:

(a) Projected TEDE and Thyroid dose rates at the following locations:

(i) Site Boundary

(ii) Two Miles

(iii) Five Miles

(iv) Ten Miles

(v) Greater than ten miles

(vi) Location(s) of peak Whole Body and Thyroid dose rates if other than at one of the above locations.

(b) Containment High Range Radiation Monitors levels for both the Drywell and Torus

(2) An estimate of fuel failure can be determined by using the PASAPs.

(3) An estimate of the potential release rate can be determined using the PASAPs.

(4) The Radiological and EOF Manager and the Radiological Assessment Group should be periodically advised of the current radiological status, significant trends, and potential implications.

(a) The Radiological and EOF Manager should periodically inform the EOF staff and representatives of local, State and Federal governments of the current radiological status, significant trends, and potential implications.

(b) The Field Team Director should ensure that the Offsite Radiological Monitoring Teams are provided updated information periodically.

(5) The trending of offsite doses can be utilized as an estimation of integrated dose(s) to the general public throughout the course of the event.

3.8 RE-ENTRY AND FOLLOW-UP ACTIVITIES

(1) Once releases have been terminated, the Radiological and EOF Manager, Radiological Assessment Coordinator and Site Radiation Protection Coordinator should coordinate with local, State and Federal officials to identify the activities required prior to re-entry of the general public into areas that have been evacuated.

(2) As directed by the Emergency Response and Recovery Director, the Radiological and EOF Manager should establish an environmental monitoring program as part of the Recovery Plan to more adequately quantify the impact of this release on the environment.

(a) As a minimum, this program should include sampling and analysis of milk, surface water, vegetation, and soil in the affected area surrounding DAEC.

(b) This program should be structured such that it complements the routine DAEC environmental sampling program.

(c) This program should be coordinated with the State's environmental program.

4.0 RECORDS

(1) All logs forms and other pertinent information shall be maintained in accordance with EPDM 1007, (exception is for material generated during drills and exercises.)

5.0 REFERENCES

(1) DAEC Emergency Plan

(2) Manual of Protective Action Guides and Protective Actions for Nuclear Incidents (EPA-400-R-92-001)

(3) DAEC Radiological Engineering Calculation 93-022-H; dated December 17, 1993

(4) EPIP 3.2 "Field Radiological Monitoring"

(5) EPIP 1.2 "Notification"

(6) Response Technical Manual (RTM) 1996 Section G.

6.0 ATTACHMENTS

(1) Attachment 1 -Evacuation Time Estimates

(2) Attachment 2 -Wind Direction and Affected Subareas.

ATTACHMENT 1

EVACUATION TIME ESTIMATES

(1) Select the appropriate table for the event scenario (Summer or Winter, Midweek or Weekend, Midday or Evening)

(2) Select the section of the table corresponding to the extent of the evacuation recommendation (Within 2, 5, or 10 miles, or to the EPZ boundary).

(3) Select the wind range for the expected wind direction, and read across for the evacuation time estimate under the expected weather condition for both the general population and special population (special population consists of those at hospitals, nursing homes, and other residential care facilities).

(4) Following the tables are evacuation time estimates for two recreational events occurring annually within the DAEC EPZ: the All-Iowa Fair and the Cedar Rapids Freedom Festival.

(5) Times in the tables are given in hours and minutes (i.e., 03:35 = 3 hours, 35 minutes).

NOTES

For Summer or Winter Weekend Evening times, use the Summer or Winter Midweek Evening times, respectively.

Summer defined as Memorial Day through Labor Day. Winter defined as Labor Day to Memorial Day.

ATTACHMENT 1 (Cont.)

EVACUATION TIME ESTIMATES FOR SUMMER WEEKEND MIDDAY, SUMMER WEEKEND EVENING, SUMMER WEEKDAY MIDDAY AND SUMMER WEEKDAY EVENING SCENARIOS

Table 5.5 Evacuation Times Estimates for Scenarios 1-8

Region	Subareas	Scenarios 1	2	3	4	5	6	7	8
		Summer Weekend Midday Fair	Summer Weekend Midday Poor	Summer Weekend Evening Fair	Summer Weekend Evening Poor	Summer Weekday Midday Fair	Summer Weekday Midday Poor	Summer Weekday Evening Fair	Summer Weekday Evening Poor
1	1	2:45	2:45	2:45	3:00	2:45	3:15	2:45	3:15
2	1-8	5:30	5:45	5:15	5:45	5:45	6:00	5:15	5:30
3	1-24	10:45	11:45	11:15	11:45	10:30	11:15	10:15	11:00
4	1,2,8	3:00	3:45	3:15	4:15	3:30	3:45	3:15	3:30
5	1,2,3	3:00	3:45	3:15	4:15	3:30	3:45	3:15	3:30
6	1,2,3,8	3:00	3:45	3:15	4:15	3:30	3:45	3:15	3:30
7	1,2,3,4	3:00	3:45	3:15	4:15	3:30	3:45	3:15	3:30
8	1,3,4	3:00	3:45	3:00	4:15	3:30	3:45	3:15	3:30
9	1,3,4,5	3:15	4:00	3:15	4:00	3:30	3:45	3:15	3:30
10	1,4,5,6	3:15	4:00	3:15	4:00	3:30	3:45	3:15	3:30
11	1,5,6,7	3:15	4:00	3:15	4:00	3:30	3:45	3:15	3:30
12	1,7,8	3:00	4:00	3:00	4:00	3:45	4:00	3:30	3:45
13	1,5,6,7,17-20	4:15	5:15	4:15	4:30	4:30	4:45	4:00	4:15
14	1,5,6,7,18-21	4:15	5:15	4:15	4:30	4:30	4:45	4:00	4:15
15	1,7,8,18-21	4:00	5:15	4:00	4:15	4:30	4:45	4:00	4:15
16	1,7,8,19-22	4:00	5:15	4:00	4:15	4:30	4:45	4:00	4:15
17	1,7,8,9,20-22	4:00	5:45	4:00	4:15	4:30	4:45	4:00	4:15
18	1,2,8,9,10,21,22	4:00	5:45	4:00	4:15	4:30	4:45	4:00	4:15
19	1,2,3,8-12,21,22	4:00	5:45	4:00	4:15	4:30	4:45	4:00	4:15
20	1,2,3,9-13,22	4:00	5:45	4:00	4:15	4:30	4:45	4:00	4:15
21	1,2,3,10-13	3:45	5:45	3:45	4:00	4:30	4:45	4:00	4:15
22	1,2,3,4,10-14	4:30	5:45	4:30	5:00	4:45	5:00	4:30	5:00
23	1,4,5,6,15-18,23,24	9:45	10:15	9:45	10:00	7:45	8:00	7:30	7:45
24	1,5,6,7,16-19,24	9:00	10:00	9:00	9:00	7:30	8:00	7:30	7:45
25	1,3,4,12-15,23	9:00	10:00	9:00	9:30	7:45	8:00	7:30	7:45
26	1,3,4,5,12-16,23,24	10:30	11:45	11:30	11:45	10:45	11:00	10:30	10:45
27	1,3,4,5,13-17,23,24	10:45	11:45	11:15	11:45	10:45	11:00	10:30	10:45
28	1,4,5,6,14-18,23,24	10:30	11:45	11:15	11:45	10:45	11:00	10:30	10:45

ATTACHMENT 1 (Cont.)

EVACUATION TIME ESTIMATES FOR WINTER WEEKEND MIDDAY, WINTER WEEKEND EVENING, WINTER WEEKDAY MIDDAY, WINTER WEEKDAY EVENING SCENARIOS

Table 5.8 Evacuation Times Estimates for Scenarios 9-16.

Region	Subareas	Scenarios							
		9	10	11	12	13	14	15	16
		Winter Weekend Midday Fair	Winter Weekend Midday Poor	Winter Weekend Evening Fair	Winter Weekend Evening Poor	Winter Weekday Midday Fair	Winter Weekday Midday Poor	Winter Weekday Evening Fair	Winter Weekday Evening Poor
1	1	2:45	2:45	2:45	3:00	2:45	3:15	2:45	3:45
2	1-8	5:30	6:15	5:15	6:30	6:00	6:45	5:30	6:00
3	1-24	10:45	12:30	9:45	14:15	12:00	14:30	11:00	12:45
4	1,2,8	3:00	4:45	3:00	4:45	3:15	3:45	3:00	3:30
5	1,2,3	3:00	4:45	3:00	4:45	3:15	3:45	3:00	3:30
6	1,2,3,8	3:00	4:45	3:00	4:45	3:15	3:45	3:00	3:30
7	1,2,3,4	3:00	4:45	3:00	4:45	3:15	3:45	3:00	3:30
8	1,3,4	3:00	4:45	3:00	4:45	3:15	3:45	3:00	3:30
9	1,3,4,5	3:15	5:00	3:15	5:00	3:30	3:45	3:00	3:50
10	1,4,5,8	3:15	5:00	3:15	5:00	3:30	3:45	3:00	3:50
11	1,5,6,7	3:15	5:00	3:15	5:00	3:30	3:45	3:00	3:30
12	1,7,8	3:00	5:00	3:00	5:00	3:15	3:45	3:00	3:30
13	1,5,6,7,17-20	4:15	6:30	4:15	6:30	4:30	7:00	4:00	5:15
14	1,5,6,7,18-21	4:15	6:30	4:15	6:30	4:30	7:00	4:00	5:15
15	1,7,8,18-21	4:00	6:00	4:00	6:00	4:30	7:00	4:00	5:15
16	1,7,8,19-22	4:00	6:00	4:00	6:00	4:15	7:00	4:00	5:15
17	1,7,8,9,20-22	4:00	6:00	4:00	6:00	4:15	7:00	4:00	5:15
18	1,2,8,9,10,21,22	4:00	6:00	4:00	6:00	4:15	7:00	4:00	5:15
19	1,2,3,8-12,21,22	4:00	6:00	4:00	6:00	4:15	7:00	4:00	5:15
20	1,2,3,9-13,22	4:00	6:00	4:00	6:00	4:15	7:00	4:00	5:15
21	1,2,3,10-13	3:45	6:00	3:45	6:00	5:00	7:00	4:45	5:45
22	1,2,3,4,10-14	4:30	6:30	4:30	6:30	5:00	7:45	4:45	6:45
23	1,4,5,6,15-18,23,24	9:45	10:15	9:45	10:15	10:30	13:00	10:00	12:45
24	1,5,6,7,16-19,24	9:00	10:00	9:00	10:00	10:15	13:00	10:00	12:30
25	1,3,4,12-15,23	9:00	10:00	9:00	10:00	10:15	13:00	10:00	12:30
26	1,3,4,5,12-16,23,24	10:30	12:15	10:30	12:30	11:00	13:00	10:15	12:45
27	1,3,4,5,13-17,23,24	10:46	12:30	10:46	12:30	11:00	14:30	10:15	12:45
28	1,4,5,6,14-18,23,24	10:30	12:30	10:30	12:45	11:15	14:30	10:15	12:45

ATTACHMENT 1 (Cont.)

EVACUATION TIME ESTIMATES FOR SUMMER WEEKEND EVENING SCENARIOUS

Table 5.7 Evacuation Times Estimates for Scenario 17.

Region	Subareas	Scenarios 17 Summer Weekend Evening Fair
1	1	2:45
2	1-6	5:15
3	1-24	16:00
4	1,2,8	3:15
5	1,2,3	3:15
6	1,2,3,8	3:15
7	1,2,3,4	3:15
8	1,3,4	3:00
9	1,3,4,5	3:15
10	1,4,5,6	3:15
11	1,5,6,7	3:15
12	1,7,8	3:00
13	1,5,6,7,17-20	4:15
14	1,5,6,7,18-21	4:15
15	1,7,8,18-21	4:00
16	1,7,8,19-22	4:00
17	1,7,8,9,20-22	4:00
18	1,2,8,9,10,21,22	4:00
19	1,2,3,8-12,21,22	4:00
20	1,2,3,9-13,22	4:00
21	1,2,3,10-13	3:45
22	1,2,3,4,10-14	4:30
23	1,4,5,8,15-18,23,24	15:45
24	1,5,6,7,16-19,24	15:30
25	1,3,4,12-15,23	15:00
26	1,3,4,5,12-16,23,24	16:00
27	1,3,4,5,13-17,23,24	16:00
28	1,4,5,6,14-18,23,24	16:00

ATTACHMENT 1 (Cont.)

EVACUATION TIME ESTIMATES FOR SCHOOLS IN WINTER FAIR WEATHER SCENARIOUS

Table 5.10 Evacuation time estimates for schools in winter fair weather (based on scenario 13).

	1st Trip					2nd Trip							
Subarea	Mobilization time (hr:min.)	Travel to schools	Loading time	Travel to EPZ edge	EPZ Edge to TRC	Unload/ Load	TRC to EPZ Edge	EPZ Edge to School	Loading time	Travel to EPZ edge	ETE
1	-	-	-	-	-	-	-	-	-	-	
2	-	-	-	-	-	-	-	-	-	-	
3	-	-	-	-	-	-	-	-	-	-	
4	1:00	0:20	0:15	1:30	0:30	0:30	0:30	0:30	0:15	1:30	6:50
5	1:00	0:20	0:15	2:15	0:45	0:30	0:45	0:30	0:15	2:15	8:50
6	-	-	-	-	-	-	-	-	-	-	
7	1:00	0:20	0:15	1:30	0:35	0:30	0:35	0:30	0:15	1:30	7:00
8	-	-	-	-	-	-	-	-	-	-	
9	1:00	0:20	0:15	0:45	0:35	0:30	0:35	0:30	0:15	0:45	5:30
10	-	-	-	-	-	-	-	-	-	-	
11	-	-	-	-	-	-	-	-	-	-	
12	1:00	0:20	0:15	0:45	0:30	0:30	0:30	0:30	0:15	0:45	5:20
13	-	-	-	-	-	-	-	-	-	-	
14	1:00	0:20	0:15	1:45	0:35	0:30	0:35	0:30	0:15	1:45	7:30
15	1:00	0:20	0:15	2:00	0:40	0:30	0:40	0:30	0:15	2:00	8:10
16	1:00	0:20	0:15	1:45	0:40	0:30	0:40	0:30	0:15	1:45	7:40
17	-	-	-	-	-	-	-	-	-	-	
18	1:00	0:20	0:15	0:45	0:40	0:30	0:40	0:30	0:15	0:45	5:40
19	-	-	-	-	-	-	-	-	-	-	
20	-	-	-	-	-	-	-	-	-	-	
21	-	-	-	-	-	-	-	-	-	-	
22	1:00	0:20	0:15	0:45	0:25	0:30	0:25	0:30	0:15	0:45	5:10
23	1:00	0:20	0:15	1:30	0:35	0:30	0:35	0:30	0:15	1:30	7:00
24	1:00	0:20	0:15	1:45	0:35	0:30	0:35	0:30	0:15	1:45	7:30

ATTACHMENT 1 (Cont.)

EVACUATION TIME ESTIMATES FOR SCHOOLS IN WINTER POOR WEATHER SCENARIOS

Table 5.11. Evacuation time estimates for schools in winter poor weather (based on scenario 14).

	1st Trip			2nd Trip							
Subarea	Mobilization time (hr:min.)	Travel to schools	Loading time	Travel to EPZ edge	EPZ Edge to TRC	Unload/ Load	TRC to EPZ Edge	EPZ Edge to School	Loading time	Travel to EPZ edge	ETE
1	-	-	-	-	-	-	-	-	-	-	
2	-	-	-	-	-	-	-	-	-	-	
3	-	-	-	-	-	-	-	-	-	-	
4	1:00	0:20	0:15	2:00	0:30	0:30	0:30	0:30	0:15	1:30	7:20
5	1:00	0:20	0:15	2:30	0:45	0:30	0:45	0:30	0:15	2:15	9:05
6	-	-	-	-	-	-	-	-	-	-	
7	1:00	0:20	0:15	2:00	0:35	0:30	0:35	0:30	0:15	1:30	7:30
8	-	-	-	-	-	-	-	-	-	-	
9	1:00	0:20	0:15	1:15	0:35	0:30	0:35	0:30	0:15	0:45	5:45
10	-	-	-	-	-	-	-	-	-	-	
11	-	-	-	-	-	-	-	-	-	-	
12	1:00	0:20	0:15	1:15	0:30	0:30	0:30	0:30	0:15	0:45	5:50
13	-	-	-	-	-	-	-	-	-	-	
14	1:00	0:20	0:15	2:00	0:35	0:30	0:35	0:30	0:15	1:45	7:45
15	1:00	0:20	0:15	2:30	0:40	0:30	0:40	0:30	0:15	2:00	8:40
16	1:00	0:20	0:15	2:15	0:40	0:30	0:40	0:30	0:15	1:45	8:10
17	-	-	-	-	-	-	-	-	-	-	
18	1:00	0:20	0:15	1:15	0:40	0:30	0:40	0:30	0:15	0:45	6:10
19	-	-	-	-	-	-	-	-	-	-	
20	-	-	-	-	-	-	-	-	-	-	
21	-	-	-	-	-	-	-	-	-	-	
22	1:00	0:20	0:15	1:15	0:25	0:30	0:25	0:30	0:15	0:45	5:40
23	1:00	0:20	0:15	1:45	0:35	0:30	0:35	0:30	0:15	1:30	7:15
24	1:00	0:20	0:15	2:15	0:35	0:30	0:35	0:30	0:15	1:45	8:00

ATTACHMENT 1 (Cont.)

EVACUATION TIME ESTIMATES FOR HEALTH-RELATED SPECIAL FACILITIES UNDER FAIR WEATHER SCENARIOS

Table 5.12 Evacuation time estimates for the evacuation of health-related special facilities under fair weather conditions.

Evacuation Trip	Mobilization time (hr:min.)	Travel to facility	Loading time	Travel to EPZ edge	EPZ Edge to RC	Unload/ Load	RC to EPZ Edge	Trip Time
1	1:00	0:45	0:30	2:00	1:15	0:30	1:00	7:00
2	-	0:15	0:30	0:15	0:15	0:30	1:00	2:45
3	-	0:15	0:30	0:15	0:15	0:30	1:00	2:45
4	-	0:15	0:30	0:15	0:15	0:30	1:00	2:45
5	-	0:15	0:30	0:15	0:15	0:30	1:00	2:45
								18:00

Table 5.13 Evacuation time estimates for the evacuation of health-related special facilities under poor weather conditions.

Evacuation Trip	Mobilization time (hr:min.)	Travel to facility	Loading time	Travel to EPZ edge	EPZ Edge to RC	Unload/ Load	RC to EPZ Edge	Trip Time
1	1:15	0:45	0:30	2:30	1:30	0:30	1:15	8:45
2	-	0:15	0:30	0:30	0:30	0:30	1:15	3:30
3	-	0:15	0:30	0:30	0:30	0:30	1:15	3:30
4	-	0:15	0:30	0:30	0:30	0:30	1:15	3:30
5	-	0:15	0:30	0:30	0:30	0:30	1:15	3:30
								22:45

ATTACHMENT 1 (Cont.)

EVACUATION TIME ESTIMATES

The evacuation time estimates for the Cedar Rapids Freedom Festival consider an evacuation of the general population within the entire DAEC Emergency Planning Zone (Subareas 1-24) this event is in progress.

Cedar Rapids Freedom Festival: 11:15

ATTACHMENT 2
WIND DIRECTION and AFFECTED SUBAREAS

Wind direction and affected subarea populations for the DAEC EPZ (based on Table 5.2 from the Evacuation Time Estimate Study report).

		Subareas (Population)				
Wind Direction	(degrees)	0-2 Miles	2-5 Miles	5-10 Miles	10-EPZ edge	Total Population
N	(348.76-11.25)	1 (1,134)	4,5,6 (1,781)	15,16,17,18 (64,839)	23,24 (57,214)	(124,968)
NNE	(11.26-33.75)	1 (1,134)	5,6,7 (5,491)	16,17,18,19 (35,237)	24 (22,140)	(64,002)
NE	(33.76-56.25)	1 (1,134)	5,6,7 (5,491)	17,18,19,20 (4,065)	-	(10,690)
ENE	(56.26-78.75)	1 (1,134)	5,6,7] (5,491)	18,19,20,21 (2,814)	-	(9,439)
E	(78.76-101.25)	1 (1,134)	7,8 (1,711)	18,19,20,21 (2,814)	-	(5,659)
ESE	(101.26-123.75)	1 (1,134)	7,8 (1,711)	19,20,21,22 (2,679)	-	(5,524)
SE	(123.76-146.25)	1 (1,134)	7,8 (1,711)	9,20,21,22 (4,721)	-	(7,566)
SSE	(146.26-168.75)	1 (1,134)	2,8 (559)	9,10,21,22 (4,758)	-	(6,451)
S	(168.76-191.25)	1 (1,134)	2,3,8 (1,262)	9,10,11,12,21,22 (5,744)	-	(8,140)
SSW	(191.26-213.75)	1 (1,134)	2,3 (1,019)	9,10,11,12,13,22 (5,710)	-	(7,863)
SW	(213.76-236.25)	1 (1,134)	2,3 (1,109)	10,11,12,13 (2,097)	-	(4,250)
WSW	(236.26-258.75)	1 (1,134)	2,3,4 (3,523)	10, 11,12,13,14 (37,057)	-	(41,714)
W	(258.76-281.25)	1 (1,134)	3,4 (3,207)	12,13,14,15 (66,340)	23 (35,074)	(105,755)
WNW	(281.26-303.75)	1 (1,134)	3,4,5 (7,160)	12,13,14,15,16 (97,880)	23,24 (57,214)	(163,388)
NW	(303.76-326.25)	1 (1,134)	3,4,5 (7,160)	13,14,15,16,17 (99,017)	23,24 (57,214)	(164,525)
NNW	(326.26-348.75)	1 (1,134)	4,5,6 (7,160)	14,15,16,17,18 (99,790)	23,24 (57,214)	(164,674)

ATTACHMENT 3

WIND DIRECTION AND AFFECTED SUBAREAS

<<<<<<<<<<<<<<<<< MILES OUT >>>>>>>>>>>>>>>>>>

Wind Direction	0-2	2-5	5-10	10 - EPZ
N (348.76– 11.25)	1	4, 5, 6	15, 16, 17, 18	23, 24
NNE (11.26 – 33.75)	1	5, 6, 7	16, 17, 18, 19	24
NE (33.76 – 56.25)	1	5, 6, 7	17, 18, 19, 20	
ENE (56.26 – 78.75)	1	5, 6, 7	18, 19, 20, 21	
E (78.76 – 101.25)	1	7, 8	18, 19, 20, 21	
ESE (101.26 – 123.75)	1	7, 8	19, 20, 21, 22	
S 23.76 – 146.25)	1	7, 8	9, 20, 21, 22	
SSE (146.26 – 168.75)	1	2, 8	9, 10, 21, 22	
S (168.76 – 191.25)	1	2, 3, 8	9, 10, 11, 12, 21, 22	
SSW (191.26 – 213.75)	1	2, 3	9, 10, 11, 12, 13, 22	
SW (213.76 – 236.25)	1	2, 3	10, 11, 12, 13	
WSW (236.26 – 258.75)	1	2, 3, 4	10, 11, 12, 13, 14	
W (258.76 – 281.25)	1	3, 4	12, 13, 14, 15	23
WNW (281.26 – 303.75)	1	3, 4, 5	12, 13, 14, 15, 16	23, 24
NW (303.76 – 326.25)	1	3, 4, 5	13, 14, 15, 16, 17	23, 24
NNW (326.26-348.75)	1	4, 5, 6	14, 15, 16, 17, 18	23, 24

ERO POSITION EQUIVALENCY TABLE

(1) **ERO Position Equivalency Table:** A table used to provide guidance for determining which ERO positions can be called upon to support other ERO positions where skill sets and training are similar.

(a) In the event that timely augmentation with qualified ERO responders becomes suspect, the ER&RD and EC have the authority to appoint plant personnel to staff these positions until a qualified responder can respond (reference E-Plan "B" & EPIP 1.5, 2.2)

(b) This ERO Equivalency Table provides a subset of positions with similar skill sets to allow the ER&RD or EC to determine who should staff what.

NOTE

Staffing via the Equivalency Table shall only be until a qualified responder is available. Positions staffed by the Equivalency Table shall receive increased direction & oversight, and shall be appropriately documented.

(2) When staffing ERO positions with additional staff, use this table as follows:

(a) Determine the ERO position you wish to staff

(b) Determine if additional ERO personnel equivalent to the open position are available

(i) If an alternate is not available for the open position, staffing the open position with anyone else is satisfactory. However, as much as possible, adherence to this equivalency table should be maintained.

(c) Staff the open ERO position with the additional ERO staff member

(d) Provide additonal direction and oversight to this staff member

(e) Continue to locate qualified ERO staff members for the given position.

(3) This staffing decision shall be documented in the logs of the ERO Staff member making the decision.

ERO POSITION	EQUIVALENT POSTION
ADMIN SUPV	TSC CLERICAL / SECURITY SUPV
ASST JPIC MANAGER	WEBMASTER
AV SPECIALIST	LOGISTICS SUPPORT / LOGISTIC COORDINATOR
BACKPANEL COMM	EDS / POOL FROM TSC
BENTON COUNTY LIAISON	ANY STATE / COUNTY LIAISON
CHEM TECHS	CHEM STAFF
CR-TSC COMM	TSC-CR COMM
DAEC SPOKESPERSON	JPIC MANAGER
EMERGENCY COORDINATOR	TECH & ENG SUPV / TSC OPS SUPV
ELECTRICAL ENGINEER	ANY ERO ENG
ELECTRICAL SUPV	OSC / IC / MM SUPV

* - REFER TO ETB FOR QUALIFIED STAFF

ERO POSITION	EQUIVALENT POSTION
ELECTRICIANS	EM ENG / EM SUPV
EOF HPN COMM	TSC HPN / TSC ENS COMM
EOF MIDAS OPERATOR	RAD PRO STAFF
EOF OPS LIAISON	TSC OPS SUPV / TSC OPS LIAISON / OSM-CRS-STA
ER&RD	NONE
FIELD TEAM DIR	RAD SUPPORT STAFF / RAC
FIELD TEAM DRIVER *	ANYONE WITH A DRIVER'S LICENSE
FIELD TEAM MONITOR *	RAD PRO STAFF
HP SUPV	SRPC
HP TECHS *	HP STAFF
I&C ENGINEER	ANY ERO ENG
I&C SUPV	OSC / IC / EM SUPV

* - REFER TO ETB FOR QUALIFIED STAFF

ERO POSITION	EQUIVALENT POSTION
I&C TECHS	IC ENG / IC SUPV
INFO SERVICES REP	EDS FROM TSC OR EOF
JPIC MGR	ASST JPIC MGR / TECH LIAISON
JPIC SECURITY ACCESS CLERK	LOGISTICS SUPPORT / PIO SUPPORT
LINN COUNTY LIAISON	ANY STATE / COUNTY LIAISON
LOGISTICS COORD	JPIC MGR / ASSISTANT JPIC MGR
LOGISTICS SUPPORT SPECIALIST	PIO SUPPORT
MECHANICAL ENGINEER	ANY ERO ENG
MECHANICAL SUPV	OSC / IC / EM SUPV
MECHANICS	MM ENG / MM SUPV
MESSENGERS	POOL EOF
NEWS MEDIA RUMOR CONTROL	ASST JPIC MGR

* - REFER TO ETB FOR QUALIFIED STAFF

ERO POSITION	EQUIVALENT POSTION
ORAA SUPV	ANY RAD PRO STAFF
ORAL/ODEF SUPV	ANY RAD PRO STAFF
OSC STAFF (RADWASTE)	POOL TSC
OSC SUPV	IC / MM / EM / HP SUPV
PIO SUPPORT	LOGISTICS SUPPORT / LOGISTISC COORDINATOR
RAC	RAD & EOF MGR
RAD & EOF MGR	SRPC
RAD DATA PLOTTER	INFO SERVICES
RAD STATUS COMM	POOL EOF
RAD SUPPORT STAFF	SRPC / TSC OR EOF HPN COMM
RADIO OPERATOR	FIELD TEAM DIR / RAD SUPPORT / SRPC / HPN
RUMOR CONTROL COORD	ALLIANT CUSTOMER SERVICE SUPV

* - REFER TO ETB FOR QUALIFIED STAFF

ERO POSITION	EQUIVALENT POSTION
RX ENGINEER	STA
SECURITY & SUPPORT SUPV	SECURITY LT.
SECURITY ACCESS CLERK	POOL EOF
SPDS OPERATOR	ANY ERO ENG
SRPC	HP SUPV
STATE LIAISON	ANY COUNTY LIAISON
SUPPORT SERVICES COORD	POOL FROM EOF
TECH & ANALYSIS ENG	ANY PRA QUALIFIED ENG OR STA
TECH & ENG SUPV	ANY ERO ENG
TECHNICAL LIAISON	ASST JPIC MGR / ANY ENG OR OPS LIAISON / SPOKESPERSON
TECHNICAL RECORDER	TSC DED COMMUNICATOR / ANY STATE & COUNTY LIAISON
TSC CLERICAL	PLANT POOL

* - REFER TO ETB FOR QUALIFIED STAFF

ERO POSITION	EQUIVALENT POSTION
TSC DEDICATED COMM	TSC-CR / CR-TSC COMM
TSC-CR COMM	CR-TSC COMM
TSC-EOF COMM	SECURITY LT / POOL
TSC-OPS LIAISON	EOF OPS LIAISON / TSC OPS SUPV/ OSM-CRS-STA
WAREHOUSE SUPV	ANY ERO ENG