DTE Energy®

Detroit Edison

Fermi 3 Combined License Application

Part 5: Emergency Plan

Revision 0
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Explanatory notes regarding the Emergency Plan and Supplemental Information

The Fermi 3 Combined License Emergency Plan consists of a basic plan and seven appendices. The basic plan follows the format of NUREG-0654 and provides detailed information regarding each of the sixteen *Planning Standards* and associated *Evaluation Criteria*. The seven appendices that follow provide additional detailed information on various aspects of the Emergency Plan. Supplemental information includes the Fermi 3 Nuclear Power Plant Development of Evacuation Time Estimates, certification letters, and current state and local emergency planning documents. Emergency Planning Inspections, Test, Analyses, and Acceptance Criteria (ITAAC) are included in COLA Part 10.

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Acronyms and Abbreviations

AEOF	Alternate Emergency Operations Facility
ALARA	As Low As Reasonably Achievable
ANI	American Nuclear Insurers
ANS	Alert and Notification System
CAS	Central Alarm Station
CDE	Committed Dose Equivalent
CFR	Code of Federal Regulations
COL	Combined Operating License
CR	Control Room
DCD	Design Control Document
DEQ	(State of Michigan) Department of Environmental Quality
DHS	(U.S.) Department of Homeland Security
DOE	(U.S.) Department of Energy
EAL	Emergency Action Level
EAS	Emergency Alert System
ECOS	Emergency Callout System
EMD	Emergency Management Division
ENS	Emergency Notification System
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EP	Emergency Preparedness
EPA	(U.S.) Environmental Protection Agency
EPZ	Emergency Planning Zone
ERDS	Emergency Response Data System
ERF	Emergency Response Facility

ERO	Emergency Response Organization
FEMA	Federal Emergency Management Agency
FRMAC	Federal Radiological Monitoring and Assessment Center
FSAR	Final Safety Analysis Report
GEH	General Electric-Hitachi
GET	General Employee Training
HEPA	High Efficiency Particulate Air
HPN	Health Physics Network
HVAC	Heating, Ventilation and Air Conditioning
IC	Initiating Condition
INPO	Institute of Nuclear Power Operations
JIC	Joint Information Center
KI	Potassium Iodide
LAN	Local Area Network
LOCA	Loss of Coolant Accident
MCL	Management Counterpart Link
MDAS	Meteorological Data Acquisition System
MEMP	Michigan Emergency Management Plan
mrem	millirem
MSP	Michigan State Police
NOC	Nuclear Operations Center
NRC	(U.S.) Nuclear Regulatory Commission
NRF	National Response Framework
NWS	National Weather Service
OCA	Owner Controlled Area

OCANS	Owner Controlled Area Notification System
ODCM	Offsite Dose Calculation Manual
OSC	Operational Support Center
PAA	Protective Action Area
PABX	Private Automatic Branch Telephone Exchange
PAG	Protective Action Guideline
PA/PL	Plant Page /Party Line
PAR	Protective Action Recommendation
PMCL	Protective Measures Counterpart Link
REAC/TS	Radiation Emergency Assistance Center/Training Site
RET	Radiological Emergency Team
RMS	Radiological Monitoring System
RSCL	Reactor Safety Counterpart Link
SAS	Secondary Alarm Station
SAMG	Severe Accident Management Guidelines
SPDS	Safety Parameter Display System
SRO	Senior Reactor Operator
TSC	Technical Support Center
USCG	U.S. Coast Guard
USGS	U.S. Geological Society

Definitions

1. Annual: Based on a calendar year, unless otherwise designated.

2. Abnormal Operating Procedures (AOPs): AOPs describe actions to be taken during other than routine operations, which if continued, could lead to either material failure, personnel harm, or other unsafe conditions. AOPs are written so that a trained operator knows in advance the expected course of events or indications that identify an abnormal situation and the immediate action to be taken.

3. Committed Dose Equivalent (CDE): Total dose from internally deposited radionuclide over subsequent 50 year period to a specific organ.

4. Committed Effective Dose Equivalent (CEDE): Sum of risk-weighted Committed Dose Equivalent to organs.

5. Dose Projection: The calculated estimate of a radiation dose to individuals at a given location (normally offsite), determined from the source term/quantity of radioactive material (Q) released, and the appropriate meteorological dispersion parameters (x/Q).

6. Drill: A supervised instruction period aimed at testing, developing, and maintaining skills in a particular operation.

7. Emergency Action Levels (EALs): Plant conditions used to determine the existence of an emergency and to classify its severity. The conditions include specific instrument readings, alarms, and observations that in combination indicate that an emergency initiating event has occurred and therefore an appropriate class of emergency should be declared. EALs cover a broad range of events such as radioactive releases to the environment, loss of all onsite and offsite power, security threats, and fire.

8. Emergency Alert System (EAS): A network of broadcast stations and interconnecting facilities authorized by the Federal Communications Commission to operate in a controlled manner during a war, state of public peril, disaster, or other national, state and local emergency.

9. Emergency Operating Procedures (EOPs): EOPs are step-by-step procedures for direct actions taken by licensed reactor operators to mitigate and/or correct an off-normal plant condition through the control of plant systems.

10. Emergency Operations Facility (EOF): The EOF is a Fermi 3 facility near the plant that is provided for the management of overall Detroit Edison emergency response in the event of a nuclear accident at the plant. Upon activation, the EOF assumes responsibility for coordination of emergency response activities with state, federal, and local emergency response officials, including offsite radiological and environmental assessments; recommendations for public protective actions; and direction of recovery operations.

11. Emergency Planning Zone (EPZ): A generic area defined about a nuclear facility to facilitate offsite emergency planning and develop a significant response base. It is defined for the plume and ingestion exposure pathways.

12. Evacuation: The removal of people from an area on an emergency basis to avoid or reduce possible short term radiation exposure.

13. Exercise: An event that tests the integrated capability of a major portion of the basic elements existing within emergency preparedness plans and organizations.

14. Hostile Action: An act toward Fermi 3 or its personnel that includes the use of violent force to destroy equipment, take hostages, and/or intimidate Detroit Edison to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. Hostile Action should not be construed to include the acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Non-terrorism-based EALs should be used to address such activities (e.g., violent acts between individuals in the owner-controlled area.)

15. Ingestion Exposure Pathway (IPZ): The principal exposure from this pathway would be from ingestion of contaminated water or foods such as milk or fresh vegetables. The duration of principal exposures could range in length from hours to months.

16. Joint Information Center (JIC): A center set up in a central location where public information officers from the involved agencies assemble to ensure coordination of information to be released to the media and the public. This center becomes the central point for media access to latest developments and emergency information. All information released is coordinated among the agencies involved to ensure consistency and accuracy.

17. Loss of Coolant Accident (LOCA): A loss of coolant accident can result from an opening in the primary cooling system, such as a pipe break or a stuck open relief valve.

18. Operational Support Center (OSC): An onsite emergency response facility which serves as an assembly area for dispatch of emergency support personnel (operations, maintenance, radiation protection, chemistry, fire protection) during an emergency.

19. Plume Exposure Pathway: The principal exposure sources from this pathway are external exposure to gamma radiation from the plume and from deposited materials and inhalation exposure from the passing radioactive plume.

20. Potassium Iodide (KI): A chemical compound that readily enters the thyroid gland when ingested. If taken in a sufficient quantity prior to exposure to radioactive iodine, it can prevent the thyroid from absorbing any of the potentially harmful radioactive iodine-131.

21. Projected Dose: An estimate of the potential radiation dose which affected population groups could receive.

22. Protected Area: An area of the plant site encompassed by physical barriers to which access is controlled.

23. Protective Action: Sometimes referred to as a protective measure. An activity conducted in response to an incident or potential incident to avoid or reduce radiation dose to members of the public.

24. Protective Action Guide (PAG): The projected dose to reference man or other defined individual from an accidental release of radioactive material at which a specific protective action to reduce or avoid that dose is warranted.

25. Recovery: The process of reducing radiation exposure rates and concentrations of radioactive material in the environment to levels acceptable for unconditional occupancy or use.

26. Source Term: Radioisotope inventory of the reactor core, or amount of radioisotope released to the environment, often as a function of time.

27. Technical Support Center (TSC): A center outside the Control Room in which information is supplied on the status of the plant to those individuals who are knowledgeable or responsible for engineering and management support of reactor operations in the event of an emergency, and to those persons who are responsible for management of the onsite emergency response.

28. Total Effective Dose Equivalent (TEDE): Sum of deep dose equivalent and the committed effective dose equivalent.

I. Introduction

This Emergency Plan describes the plans established by Detroit Edison Company for responding to a radiological emergency at Fermi 3.

A. Purpose

The Emergency Preparedness program consists of the Emergency Plan, implementing and administrative procedures to support the Plan, and related emergency preparedness plans and procedures of federal, state, local, and provincial governmental agencies. The purpose of the program is to provide protection of plant personnel and the general public; to restrict the release of radioactivity; and to secure plant systems in a stable and safe configuration in the event of an emergency situation at Fermi 3. Program objectives include:

- effective coordination of emergency activities among onsite and offsite organizations having an emergency response role;
- early warning and clear instructions to the general public in the affected area in the event of a radiological emergency; and
- continued assessment of an adequate state of emergency preparedness.

B. Scope

This Emergency Plan describes actions to be taken in the event of a radiological emergency at Fermi 3 that may impact the health and safety of the general public or plant employees. It also serves to limit the damage to facilities and property and provide methods for restoration of facilities in the event of an emergency. This Plan describes the functions and operation of the Emergency Response Organization (ERO) in response to a classified emergency and includes assignments of authority and responsibility. The scope of this Plan includes:

- identification and evaluation of emergency situations;
- protective measures;
- communications;
- coordination and notification of governmental authorities;
- document review and control;
- emergency preparedness assessment;
- training of all emergency response personnel; and
- guidance for recovering from a declared emergency.

This Plan has been coordinated with the plans of affected government agencies and private sector support organizations, as listed in Section II.A of this Plan. Ongoing coordination with affected state, county, provincial, and federal agencies and private sector support organizations is imperative to ensure an effective emergency response capability.

C. Planning Basis

This Emergency Plan, in conjunction with the implementing and administrative procedures that support the Plan, documents the methods by which the Fermi 3 Emergency Preparedness Program meets the planning standards set forth in 10 CFR 50.47(b) (Ref. 2) and the requirements of 10 CFR 50, Appendix E (Ref. 3). This Plan has been developed to address the applicable provisions of U.S. NRC Regulatory Guide 1.101, “Emergency Planning and Preparedness for Nuclear Power Reactors,” and is also based on the guidance provided in NUREG-0654/FEMA-REP-1, Revision 1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants” (Ref 10). Other applicable regulations, publications, and guidance were used during development of the Plan, as referenced in Appendix 1.

D. Emergency Planning Zones

NUREG-0654/FEMA-REP-1 establishes two (2) Emergency Planning Zones (EPZs) for which planning for predetermined actions should be implemented – the Plume Exposure Pathway EPZ, which has a radius of approximately ten miles, and the Ingestion Exposure Pathway EPZ, which has a radius of approximately fifty miles.

Plume Exposure Pathway EPZ

The Plume Exposure Pathway EPZ is that area where the principal sources of incident-related radiation exposures are likely to be whole body gamma radiation exposures and inhalation exposures from the passing radioactive plume. As a result of this exposure scenario, any exposures resulting from a radiological incident at the facility are likely to have duration from less than one hour to a few days.

The Plume Exposure Pathway EPZ consists of an area about 10 miles in radius around the site. Figure I-1 provides an illustration of the Fermi 3 Plume Exposure Pathway EPZ which includes all areas within 10-miles of Fermi 3 in Monroe County, Michigan; a small portion of the southern tip of Wayne County, Michigan; and a small portion of the Province of Ontario, Canada.

Ingestion Exposure Pathway EPZ

The Ingestion Exposure Pathway EPZ is that area where the principal sources of incident-related radiation exposures are likely to result from ingestion of contaminated water and food, including milk, fresh vegetables, and aquatic foodstuffs. As a result of this exposure scenario, any exposures resulting from a radiological incident at the facility are likely to have a duration from a few hours to months.

The Fermi 3 Ingestion Exposure Pathway EPZ consists of an area about 50 miles in radius around the site and includes portions of Michigan, Ohio, and Canada. Figure I-2 provides an illustration of the Ingestion Exposure Pathway EPZ.

E. Site Area Description

Fermi 3 consists of a General Electric ESBWR, as described in the Fermi 3 FSAR and the ESBWR Design Control Document (Ref. 8). In addition to Fermi 3, Detroit Edison currently operates Fermi 2 at the Fermi site. The location of each reactor is specified by the latitude and longitude coordinates below.

Enrico Fermi Nuclear Station	Latitude	Longitude
Unit 2	41º57’ 48” North	83º15’ 31” West
Unit 3	41º57’ 39” North	83º15’ 43” West

The Fermi 3 site is located in the southeastern corner of Monroe County in southern Michigan, about 20 miles north of the Michigan/Ohio border. The US/Canada international border runs through Lake Erie about 7 miles east of Fermi. The site is located approximately 24 miles northeast of Toledo, Ohio; 30 miles southwest of Detroit, Michigan; and approximately 7 miles southwest of the city of Monroe, Michigan.

Figure I-1 shows the Fermi 3 site in relation to the features of the surrounding approximate 10-mile vicinity. Figure I-2 shows the location of the Fermi 3 facility/site in relation to the counties and larger cities and towns in the region, which is the area within a radius of 50 miles from the center of the power block. The Fermi 3 site layout and property boundary shown on Figure I-3 encompasses the approximately 1,260 acres that comprise the Fermi site. This land is solely owned by Detroit Edison. Interstate 75 is the major transportation route in the vicinity, running in a north-south direction west of the Fermi site. Several other highways are present in the site vicinity, including Dixie Highway and US Route 24 to the west.

Additional site information is located in the Fermi 3 FSAR (Ref. 6).

Figure I-1: Fermi 3 Plume Exposure Pathway EPZ

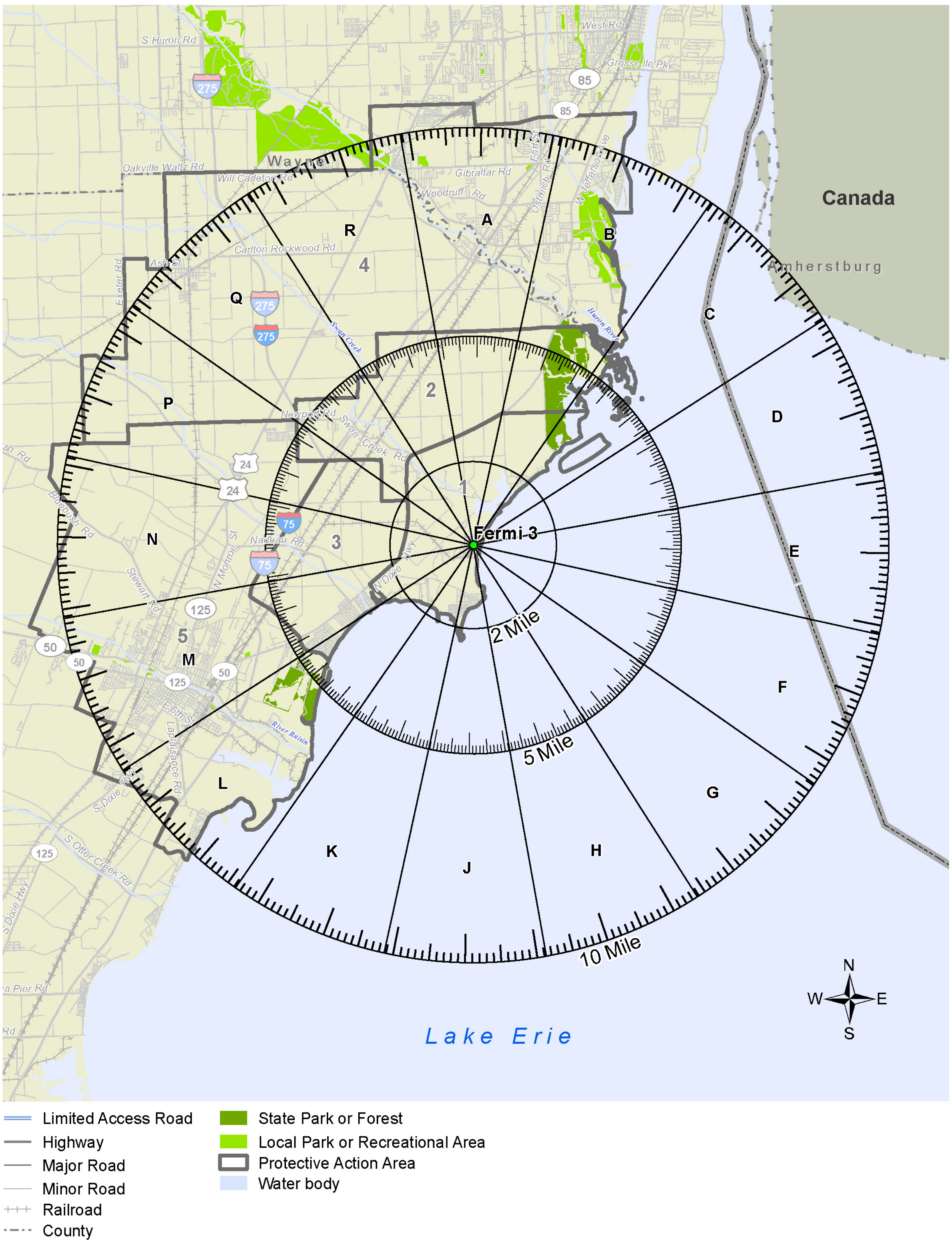


Figure I-2: Fermi 3 Ingestion Exposure Pathway EPZ

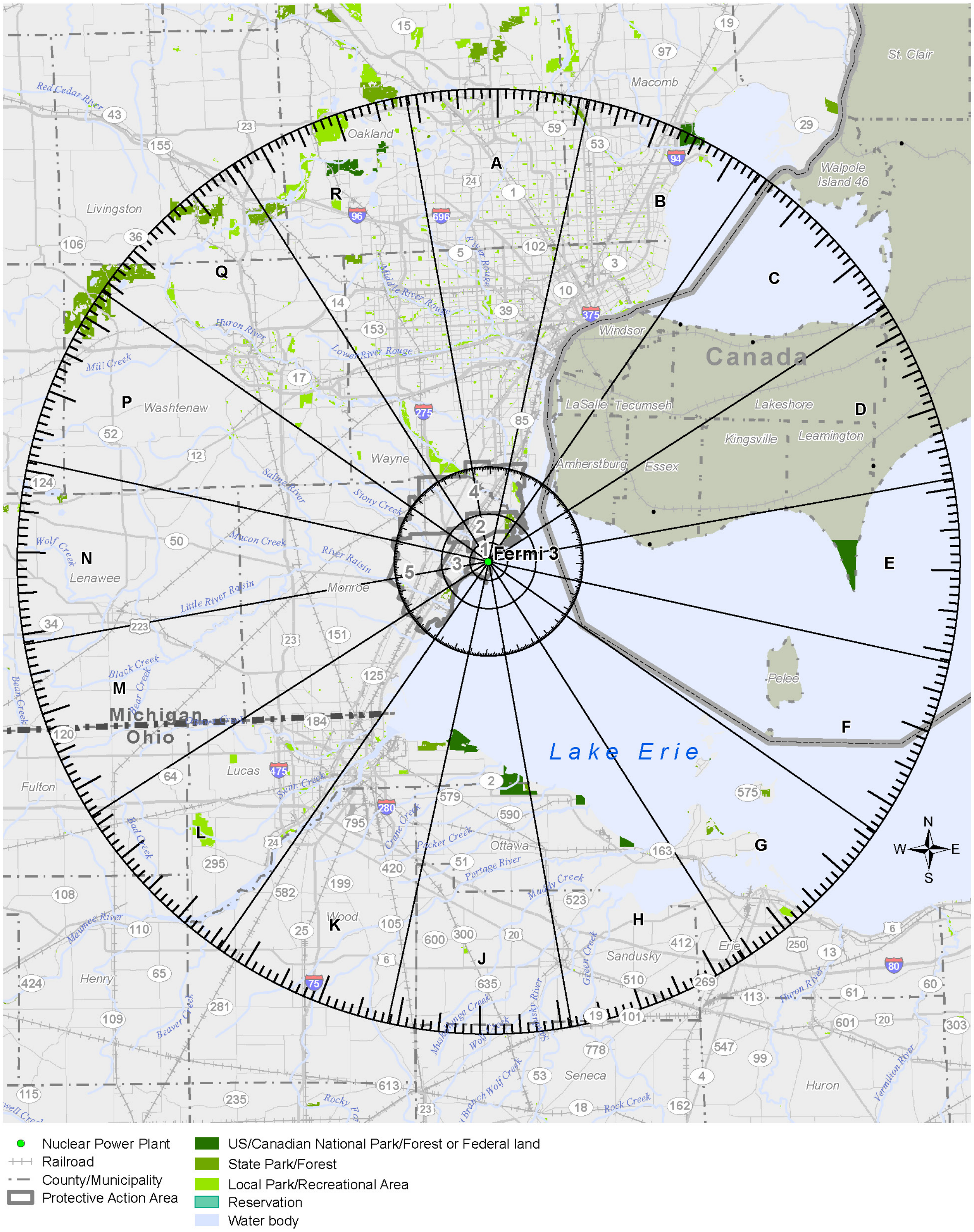
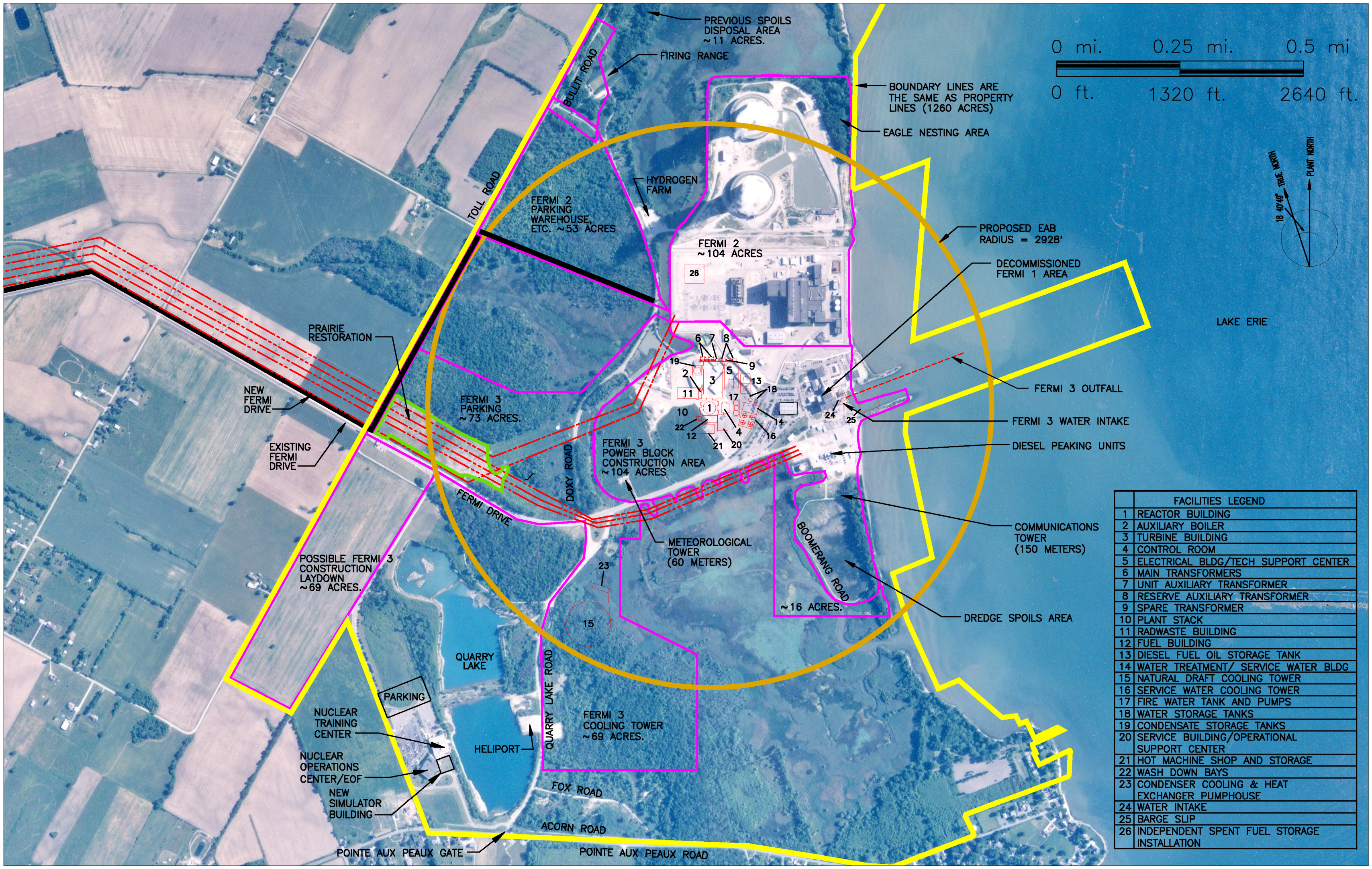


Figure I-3: Fermi 3 Site Layout



II. Emergency Plan

A. Assignment of Responsibility

This section describes the primary responsibilities and organizational control involved in response to an emergency at Fermi 3. Radiological emergency response preparedness is a cooperative effort involving Detroit Edison, the State of Michigan, local government agencies, federal government agencies, provincial agencies in Ontario, Canada, and various organizations that provide support for these agencies.

Each organization has the responsibility to assure, through coordinated planning and regularly scheduled exercises, that it can provide effective response 24-hours per day.

1. Emergency Organization

a. Participating Organizations

1. State, Local and Provincial Governmental Agencies

In the event of a radiological emergency at Fermi 3, notification of and support from the State of Michigan, Monroe and Wayne counties, and the Province of Ontario, Canada may be required. Participating agencies whose plans are interrelated with this plan are listed below:

- State of Michigan whose plans are interrelated with this plan include the following:
    - Department of State Police
    - Department of Environmental Quality
- Monroe and Wayne Counties

  These two counties are the local governmental jurisdictions within the Fermi 3 Plume Exposure Pathway EPZ. They have developed plans to be implemented in the event of a radiological emergency at Fermi 3. The counties have communications centers which serve as the means for notifying various support services (for example, fire assistance, medical transportation, or law enforcement).
- Province of Ontario Canada

  The Province of Ontario is also located within the Fermi 3 Plume Exposure Pathway EPZ and has developed plans to be implemented in the event of a radiological emergency at Fermi 3.

2. Federal Agencies

   In addition to the State of Michigan, Monroe and Wayne counties, and the Province of Ontario, notification and support of federal agencies may be necessary in the event of a radiological emergency at Fermi 3. Responsibilities of affected federal agencies during an emergency at Fermi 3 (and Fermi 2) are established in the *National Response Framework (NRF),January 2008* (Ref. 14). The primary Federal Response Agencies include the following:

   - U.S. Nuclear Regulatory Commission
   - U.S. Department of Energy
   - Department of Homeland Security/Federal Emergency Management Agency
   - Environmental Protection Agency
   - U.S. Coast Guard.

b. Concept of Operations

Detroit Edison's responsibilities during an emergency condition focus on taking actions to:

- Assess plant conditions.
- Classify emergency conditions.
- Notify the Detroit Edison Emergency Response Organization and affected agencies and individuals of emergency conditions.
- Make protective action recommendations.
- Provide communications and technical expertise to affected agencies.
- Provide support for offsite assessment and protective activities.
- Mitigate the consequences of adverse plant conditions by monitoring and controlling plant parameters.
- Request offsite support, as needed.
- Coordinate with affected agencies to provide accurate information to the public.
- Terminate emergency conditions.

All normal operations at Fermi 3 are conducted under the authority of the Shift Manager (SM) and directed from the Control Room. In the event of an abnormal condition, the Shift Manager directs the activities of the plant staff in performing initial assessment, corrective, and protective functions. Using approved operating and emergency procedures, including the EALs provided in Appendix 3 of this Plan, the Shift Manager determines if an emergency condition exists and, if so, determines the proper emergency classification.

Based on the classification and plant conditions, the Shift Manager assumes the responsibilities of the Emergency Director; makes or directs initial notifications to affected plant personnel, the State of Michigan, Monroe and Wayne Counties, the Province of Ontario, Canada, and federal authorities; and determines if activation of the Fermi 3 emergency response facilities is desirable or required[1, 2, 3].

The Control Room is the initial center for coordination of emergency response for all emergency conditions. For emergencies classified as Alert, Site Area Emergency and General Emergency, the Emergency Director directs the activation of the Fermi 3 ERO. The Emergency Director may direct the activation of all or part of the Fermi 3 ERO for a Notification of Unusual Event, based on an assessment of plant conditions and support needs.

The TSC provides support of the command and control function of the Control Room and provides an area for response by plant personnel who have expertise in those areas of plant operation required to support the emergency response. This facility is equipped with communication equipment, computer terminals, printers, offsite and onsite computer access, plant drawings, procedures and other materials and equipment to support its function. Personnel in the TSC assess the accident condition and make responsible recommendations to the Control Room, the EOF and offsite agencies, as necessary, to provide for the safety of plant personnel and members of the general public. After the EOF is activated, the EOF assumes some of the functions of the TSC and relies on the TSC as a vital link to the plant.

Following activation of the emergency response facilities and receipt of adequate turnovers, a qualified Detroit Edison senior manager assumes the Emergency Director position, relieves the Shift Manager of Emergency Director responsibilities, and directs the activities of the onsite emergency response organization from the TSC. If the EOF is activated, a qualified member of Detroit Edison senior management assumes the responsibilities of the Emergency Officer and has ultimate responsibility for Detroit Edison emergency response. The Emergency Officer has the responsibility for the Fermi 3 offsite emergency response efforts, coordinates the availability and utilization of corporate and external resources, and manages recovery efforts (if needed).

The OSC provides manpower and support to the TSC and Control Room for in-plant functions. The OSC dispatches emergency response teams for activities such as

1 If an event is transient in nature such that staffing of the ERO is not practical prior to termination of the event, then the ERO may not be staffed. However, notifications to affected authorities will be completed consistent with the requirements of this Plan.

2 Under some circumstances, such as unanticipated natural events or hostile action against the facility, the Emergency Director may judge that movement of personnel as needed to staff the Emergency Response Facilities may create undue personnel hazards. Under such circumstances, the Emergency Director may elect to postpone staffing of the emergency response facilities and implement compensatory measures, as needed to ensure ongoing personnel and facility safety.

3 The ERO may be staffed prior to the declaration of an emergency situation, such as in anticipation of severe weather that is likely to result in the declaration of an emergency condition.

damage control and rescue and radiological assessment, as directed by the Emergency Director.

Table II.A-1 summarizes the responsibilities and activities of the emergency response facilities under the various emergency classifications.

Coordination with Fermi 2

Detroit Edison has identified the need to coordinate emergency response actions taken at Fermi 3 with Fermi 2. As noted previously in this section, the Emergency Director is responsible for initiating notifications to affected plant staff, which may include the Fermi 2 Control Room. The notification and subsequent communications are intended to advise Fermi 2 staff of any actions they may be required to take.

Additionally, in the unlikely event that emergencies are declared simultaneously at Fermi 2 and Fermi 3, a single Emergency Director is designated from onsite shift management, in accordance with emergency plan implementing procedures. The Emergency Director performs those duties described in this Plan, as well as those described in the Fermi 2 Emergency Plan, and coordinates activities between the Technical Support Centers and Operational Support Centers.

State Government Response

Participating governmental agencies whose plans are interrelated with this plan include the following:

- State of Michigan Emergency Management Division, Department of State Police - Has overall responsibility for planning, command and control, and overall coordination of the activities of state and local government agencies in the event of a radiological emergency.
- State of Michigan Department of Environmental Quality - Has overall responsibility for the lead technical response role in the event of a radiological emergency, including environmental monitoring and exposure control.
- State of Michigan Department of Community Health - Has overall responsibility to protect the public health and safety of the general public from the hazards of radiation.

State of Michigan Response

The Governor of the State of Michigan has complete authority over offsite emergency operations and decision making when a radiological emergency occurs at Fermi 3, and a “State of Emergency” or a “State of Disaster” is declared under the provisions of Act 390 of the Public Acts of 1976. Other responsibilities include authorizing use of state resources and requesting assistance from federal government agencies.

State responsibilities include, but are not limited to, radiological assessment via environmental sampling and monitoring, implementation of protective actions (evacuation or shelter), control of food and water supplies, damage assessment, medical services, sanitation, environmental protection, dissemination of warning and notification information, security, traffic control and maintenance, public information, and crisis counseling. The Michigan Emergency Management Plan (MEMP), December 2005 (Ref. 16) describes the specific duties of each state agency or department.

The MEMP is activated when the Governor, as a result of available information or at the request of a county, declares a State of Emergency or a State of Disaster.

When a disaster has been declared, available state resources are mobilized for the response, and state authority supersedes local authority. The Monroe and Wayne County Emergency Management Plans are also activated at this time, if not previously activated.

The State Emergency Operations Center (EOC) in Lansing, Michigan, is activated for coordination of state emergency activities. The EOC is staffed by state personnel in accordance with the MEMP. Communications with the state from Detroit Edison are maintained via a dedicated telephone system or alternate method, as described in Section II.F of this Plan. The state has provided for, and is capable of, 24-hour per day operation for a protracted period of time during an emergency situation at Fermi 3.

The Emergency Management Division, Department of State Police and State of Michigan Department of Environmental Quality are the primary state response agencies during a radiological emergency.

- The Emergency Management Division, Department of State Police is responsible for general planning, command and control, and overall direction and coordination. Other responsibilities include the following:
  - Developing and maintaining state plans and procedures.
  - Operating the state Emergency Operations Center (EOC).
  - Coordinating communication links between the State EOC, other state facilities, local and federal agencies (including FEMA), adjacent states, and the Province of Ontario (through the Ministry of the Solicitor General in Toronto, Canada).
  - Activating the EAS, as necessary.
  - Organizing and coordinating damage assessment and public information functions.
  - Coordinating with local organizations to implement protective actions to evacuate and/or shelter the general population.

- The Department of Environmental Quality is responsible for environmental monitoring and formulating ingestion pathway protective actions for the general public. Other responsibilities include:
  - Advising state and local officials on implementation of protective actions based on accident assessment.
  - Minimizing environmental contamination and coordinating offsite decontamination activities.
  - Providing monitoring, sampling, and analysis services.
  - Minimizing damage/impact to natural resources.
  - Establishing radiological exposure controls.

Local Government Emergency Response

Wayne and Monroe County governments have established emergency response facilities in accordance with their individual county emergency management plans. Upon notification of a radiological emergency at Fermi 3, Monroe County Central Dispatch initiates notification procedures in Monroe County.

When notified of an emergency at Fermi 3, Wayne County Central Communications initiates notification procedures in Wayne County, including notification to the Gibraltar, Flat Rock, and Rockwood Police Departments and the Brownstown Township Fire Department. Detroit Edison maintains communications with Wayne and Monroe Counties until the State EOC in Lansing is activated, at which time all communications to the counties are channeled through the State EOC.

The Chairperson of the Monroe County Board of Commissioners is responsible for Monroe County emergency preparedness and has the authority to declare a “State of Emergency” within the county in the event of a radiological emergency at Fermi 3. If a “State of Emergency” is declared, the Monroe County Emergency Management Plan is implemented, and the Monroe County EOC is activated and staffed at the Monroe County Emergency Management Division, Monroe, Michigan.

The Wayne County Executive is responsible for Wayne County emergency preparedness, and the implementation of the Wayne County Emergency Operations Plan. The Wayne County EOC is located at the Wayne County Emergency Management Division, Romulus, Michigan and is activated and staffed with county agency personnel and personnel from Brownstown Township.

Monroe and Wayne County responsibilities include, but are not limited to:

- Access and traffic control
- Firefighting and rescue
- Public warning and information

- Sheltering (involving food, clothing, sanitation, medical services, and counseling)
- Decontamination centers
- Transportation of persons and supplies
- Evacuation of the general population.

These activities are directed and coordinated from the respective county EOCs, and the local response activities are coordinated through the State EOC. Both Monroe and Wayne Counties have made provisions for and are capable of 24-hour operation for extended periods of time during an emergency situation at Fermi 3.

Federal Government Emergency Response

Federal agencies will be activated according to the National Response Framework (NRF) to provide support to Detroit Edison, state, or local authorities upon notification from Fermi 3 or the state of an emergency that may affect public health and safety.

- Nuclear Regulatory Commission (NRC)

  The response provided by the NRC is described in NUREG-0728, “NRC Incident Response Plan” (Ref. 13). The scope and extent of the NRC response depends on the severity of the incident and typically correlates with information reported by Detroit Edison. Detroit Edison maintains close contact with the NRC Headquarters Operations Center in Rockville, Maryland, and/or the NRC Region III offices in Chicago, Illinois. The NRC performs independent assessments of incidents and potential offsite consequences and oversight by monitoring, evaluating protective action recommendations, advising, and assisting with the emergency response. The NRC coordinates federal agency technical support, including technical support provided by the DOE and EPA.

- Federal Emergency Management Agency (FEMA)

  FEMA coordinates the non-technical federal agency support for the facility and affected area, including the support of agencies, such as activities of the Departments of Transportation and Health and Human Services. FEMA is responsible for ensuring that offsite protective actions are carried out appropriately by the state. FEMA also provides backup provisions to support state and local emergency response organizations.

  Additional actions of the NRC and FEMA are described in applicable annexes to the NRF.

- Department of Energy (DOE)

  The DOE bears the responsibility to prepare for, establish, and manage the

Federal Radiological Monitoring and Assessment Center (FRMAC). The FRMAC Operations Plan provides for the coordinated management of Federal technical response activities related to a radiological emergency. Its primary goals include:

- Assisting the state and Federal Coordinating Agency with personnel, equipment, and technical resources, as needed.
- Collecting offsite environmental radiological data.
- Providing the data and related assessments to involved state agencies and to the Federal Coordinating Agency.

The FRMAC may be activated when a major radiological emergency exists, and the federal government will respond when a state, other governmental entity with jurisdiction, or a regulated entity requests federal support. Further information concerning the objectives and organization is provided in the FRMAC Operations Plan. The DOE Chicago Operations Office provides radiological assistance, including advice and emergency actions essential for control of immediate hazards to health and safety.

- Environmental Protection Agency (EPA)

  The EPA may provide assistance in supporting environmental monitoring teams and mobile radio-analytical laboratories.

- U.S. Coast Guard

  The U.S. Coast Guard (USCG) will provide assistance through the NRF upon request from the state in the event that an emergency at Fermi 3 may affect activities on Lake Erie, including Canadian waters. Upon notification by the state, the Captain of the Port exercises his authority to control traffic through establishment of a safety zone in the immediate area.

c. Organizational Interrelationships

The interfaces and interrelationships between and among the onsite and offsite functional areas of emergency response are illustrated in Figure II.A-1.

d. Individual in Charge of Emergency Response

In the event of an abnormal condition, the Shift Manager determines if an emergency condition exists and, if so, determines the proper emergency classification. Upon declaration of an emergency, the Shift Manager assumes the role of the Emergency Director and is in charge of the emergency response for the facility.

If required by the emergency classification, or if deemed appropriate by the Emergency Director, emergency response personnel are notified and instructed to report to their emergency response locations [4]. The Shift Manager is relieved as Emergency Director by a qualified Detroit Edison senior manager who is updated on the status of the unit, the emergency actions taken, and the current status of the emergency. Following this relief, the Emergency Director will report to the TSC.

The EOF is activated upon declaration of an Alert or higher emergency classification, or earlier at the discretion of the Emergency Director. The EOF is staffed by plant and corporate personnel, including the Emergency Officer who is a designated member of Detroit Edison senior management and directs activities in the EOF. The Emergency Officer is responsible for ensuring the EOF communicates emergency status to the state and local governments; directs the efforts of the offsite monitoring teams; makes radiological assessments; recommends offsite protective measures to the state, and arranges through the company for dispatch of any special assistance or services requested by the plant.

The Emergency Officer reports to the Chief Nuclear Officer, Detroit Edison and maintains overall responsibility for the emergency response and subsequent recovery operations. The Emergency Officer has the authority to immediately and unilaterally initiate all emergency actions.

e. 24 Hour Emergency Response Capability

Detroit Edison maintains the capability for 24 hour response, including manning of communications links, through:

- Training of multiple responders for key emergency response positions, consistent with the training requirements established in Section II.O of this Plan.
- Assignment of emergency response personnel to extended shifts, as needed to support emergency response operations.
- Procurement of external resources as needed to supplement the assigned emergency response staff.
- Establishment of arrangements for provision of basic necessities (e.g., food, cleanliness, and sleeping facilities) to affected emergency response personnel.

2. Written Agreements

Appendix 2 of this Plan provides a list of the certification letters established between Detroit Edison, the State of Michigan, Monroe and Wayne County agencies, and private sector organizations committed to supporting implementation of this Plan.

The responsibilities of many federal agencies are established in the National Response Framework; therefore, no certification letters are required for these agencies.

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[4] See Section II.A.1.b of this Plan regarding situations under which staffing of the emergency response facilities may be deferred.

3. Continuous Operations

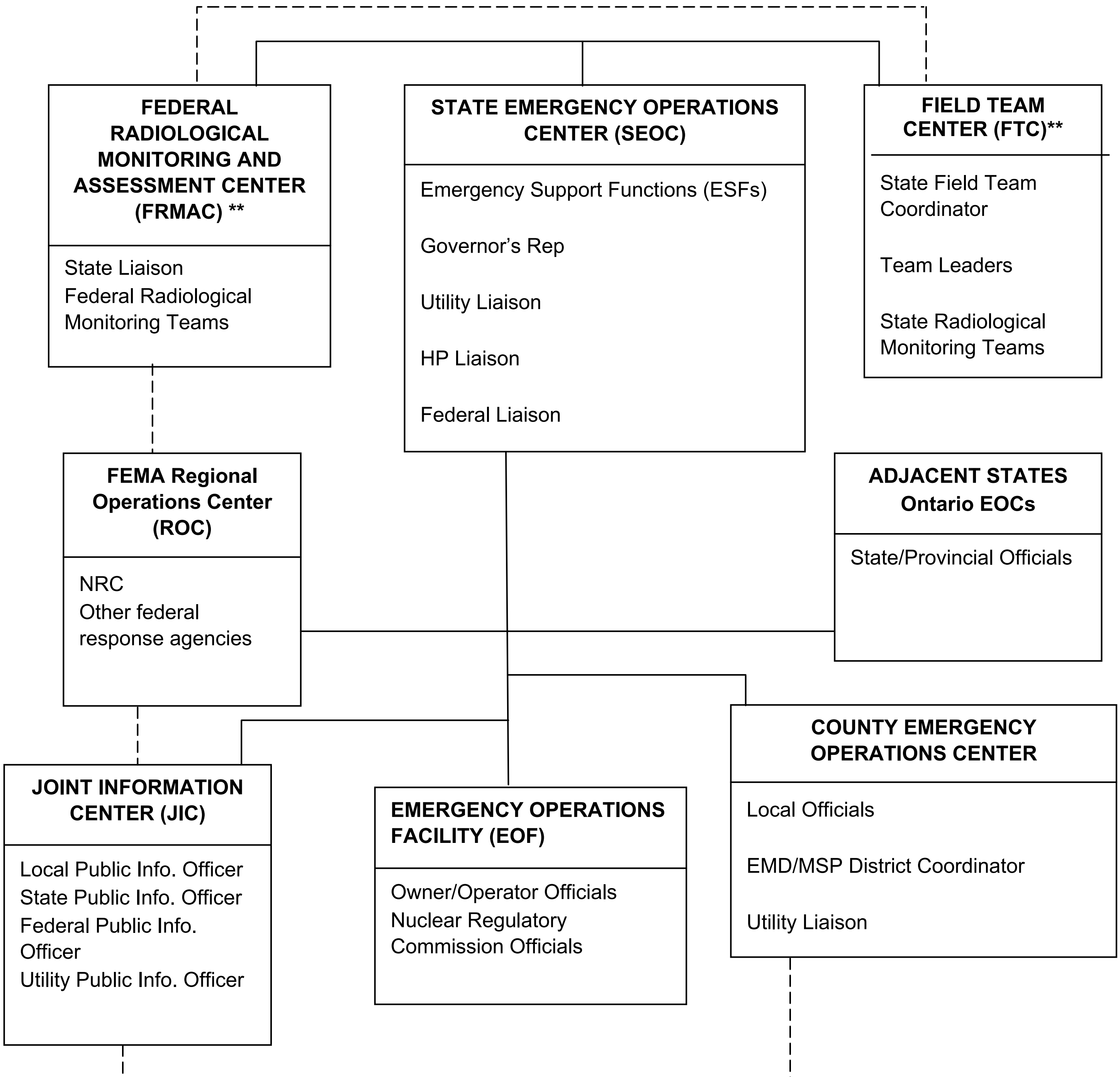
Detroit Edison maintains the capability for continuous operations, as described above in Section II.A.1.e. The Emergency Officer (if the position is staffed), or the Emergency Director (if the Emergency Officer position is not staffed) is responsible for ensuring continuity of technical, administrative, and material resources during emergency operations.

Table II.A-1: Responsibility for Emergency Response Functions

	Emergency Classification			
Function	**Notification of Unusual Event**	**Alert**	**Site Area Emergency**	**General Emergency**
Supervision of reactor operations and manipulation of controls	CR	CR	CR	CR
Management of plant operations	CR (TSC)	TSC	TSC	TSC
Technical support for reactor operations	CR (TSC)	TSC	TSC	TSC
Management of corporate emergency response resources	CR (TSC) (EOF)	EOF	EOF	EOF
Monitoring of radioactive effluents and the environs; dose assessment and projection	CR (TSC) (EOF)	EOF	EOF	EOF
Provision of information to State and local emergency response organizations, including Protective Action Recommendations	CR (TSC) (EOF)	EOF	EOF	EOF
Management of recovery operations	CR (TSC) (EOF)	EOF	TSC/EOF	TSC/EOF
Technical support for recovery operations	CR (TSC) (EOF)	EOF	TSC/EOF	TSC/EOF

Notes:
1. Listing of facilities in parentheses indicates that activation of these facilities or performance of these functions is optional, based on management assessment of plant conditions and emergency response needs.
2. If the initial event is an Alert or higher classification, the Control Room (CR) performs the majority of these functions until the Emergency Response Facilities are activated.

Figure II.A-1: Emergency Operation Center Interrelationships*



* Under a Governor's State of Disaster/Emergency Declaration
** When the FRMAC is opened, the FTC is then incorporated into FRMAC.
--- dashed lines indicate key coordination links

B. Emergency Response Organization

This section describes the Fermi 3 ERO, including key positions and associated responsibilities. This section outlines the staffing requirements which provide initial emergency response actions and provisions for timely augmentation of onshift personnel, when required. Emergency plan implementing procedures provide more details regarding ERO position descriptions, responsibilities, and major tasks.

1. Onsite Emergency Organization

The minimum staff required to conduct routine and immediate emergency operations is maintained at the plant consistent with 10 CFR 50.54(m) and the Fermi 3 Technical Specifications. Plant administrative procedures provide the details of the normal plant organization, including reporting relationships.

Upon declaration of an emergency, designated members of the normal staff complement fulfill corresponding roles within the ERO. For example, Radiation Protection personnel participate in radiation protection activities; Security personnel perform Security activities; Engineering personnel focus on plant assessment and technical support for operations; and Operations personnel focus on plant operations.

Upon declaration of an emergency, the Shift Manager will assume the role and responsibilities of Emergency Director. The Shift Manager and Operations staff will evaluate plant status and the degree of safety degradation, based on plant instrumentation and reports from technical personnel making actual examination of equipment.

Onshift personnel are considered to be immediately available to respond to the emergency situation and initiate emergency response actions. The normal complement of shift personnel is augmented according to the emergency classification. The full ERO will be activated at an Alert, Site Area Emergency, or General Emergency. Table II.B-1 describes minimum onshift staffing requirements and augmented staffing according to functional areas, Emergency Response Facility (ERF), and emergency classification. Table II.B-1 reflects Detroit Edison’s intent to achieve the 30-minute and 60-minute augmentation times indicated in Table B-1 of NUREG-0654/FEMA-REP-1, and in Supplement 1 to NUREG-0737 (Ref. 12) as a desirable goal for facility staffing.

Figures II.B-1 through II.B-4 describe the ERO in the Control Room, OSC, TSC, and EOF.

The Shift Manager, when initially classifying an emergency condition, will assume the responsibilities of the Emergency Director, until properly relieved by another qualified individual. The Shift Manager will be in the Control Room and will have the responsibility for the manipulation of plant equipment and controls during the declared emergency and assessment of plant conditions until turnover of responsibilities. This is consistent with Section II.B.2 and II.B.3 below.

The Shift Manager will be primarily responsible for emergency direction and control. The Shift Manager or the Unit Supervisor will be in the Control Room at all times.

The individual filling the Emergency Director role has the responsibility and authority to initiate any required emergency response actions, including emergency classification changes; notification of federal, state, local and provincial authorities; and Protective Action Recommendations (PARs) to offsite authorities. The Emergency Director is responsible for coordinating the onsite emergency response under the direction and control of the Emergency Officer, when the EOF is declared operational.

Initially, the Emergency Director operates from the Control Room. If the emergency escalates from an Unusual Event to an Alert emergency classification or higher, the Plant Manager, or designated alternate, will assume Emergency Director responsibilities and function from the TSC. The Emergency Director (TSC) is responsible for coordinating and directing the combined activities of personnel in the Control Room, TSC, OSC, and elsewhere in the Owner Controlled Area. The Emergency Director, upon assuming emergency assessment responsibility from the Shift Manager, conducts a detailed evaluation of plant conditions, and if necessary, will reclassify the event in accordance with the emergency plan implementing procedures.

Fermi 3 personnel will implement Severe Accident Guidelines (SAG) from the TSC. If an event requires entry into SAG, the Control Room will interact with the TSC and transition from Emergency Operating Procedure (EOP) decision-making in the Control Room to SAG decision-making in the TSC. The TSC must be operational to implement SAG. The TSC is the primary SAG decision-maker, but the Emergency Director retains authority for SAG implementation.

When the EOF is activated, the Emergency Officer is responsible for overall direction and control of the entire activated Emergency Response Organization at Fermi 3 and for coordinating the emergency response with offsite agencies.

The Emergency Officer position is filled by a qualified Detroit Edison senior manager. The Emergency Officer operates from the EOF and assumes overall management responsibility for the ERO and for all assignments in the organization. The Emergency Officer assumes full responsibility for all coordination and interaction with offsite response organizations with the exception of the local fire department, ambulance service, and hospital for contaminated injured personnel. These organizations are, and will continue to be contacted through the Control Room. The Emergency Officer has the unique responsibility, which may not be delegated, to direct notification of and make protective action recommendations to governmental authorities responsible for implementing offsite emergency response actions. The Emergency Officer ensures that the full resources of Detroit Edison are made available, as required to meet the demands of the emergency; ensures that information released to the media and the general public is accurate; communicates with Corporate Headquarters; and ensures that the long-term emergency and recovery organizations are established.

2. Emergency Director Line of Succession

If the Shift Manager is rendered unable to fulfill the duties and responsibilities of the Emergency Director position (such as due to personal illness or injury), the Unit Supervisor present on shift (a position that also is staffed at all times) assumes the Emergency Director position, until relieved by the Plant Manager, or designated alternate. The Plant Manager, or alternate, may assume Emergency Director responsibilities from the Shift Manager after becoming fully familiar with the pertinent plant and radiological conditions and status of emergency response/accident mitigation efforts.

3. Emergency Director Responsibilities

The Emergency Director has the responsibility and authority to initiate emergency actions necessary to protect the life, health, and safety of both the plant staff and the affected public onsite. The responsibilities of the Emergency Director include:

Implement the immediate onsite corrective and protective actions to bring the incident under control and mitigate its effects.

Classify the emergency.*

Initiate offsite notifications and protective action recommendations.*

Interface with governmental authorities as required.

Ensure Detroit Edison personnel are called in as conditions warrant.

Ensure that information to be released to the public is prompt, accurate, and released through proper channels.

Coordinate and direct the combined activities of Detroit Edison personnel in the Control Room, TSC, OSC, and elsewhere on owner-controlled property.

Authorize plant and emergency workers to receive radiation doses in excess of 10 CFR 20 limits.*

Authorize the distribution and use of Potassium Iodide (KI).*

Obtain assistance of offsite support organizations as necessary.

Provide oversight of Severe Accident Management.

The items above designated with an asterisk (*) may not be delegated to a subordinate. Upon activation of the EOF, the Emergency Officer assumes the responsibility for offsite notifications to the state, counties, and provincial agencies (NRC notifications normally stay in the Control Room); issuing Protective Action Recommendations (PAR’s); ensuring information released to the news media is accurate; and committing company resources.

4. Fermi 3 Emergency Response Organization Staff

Detroit Edison provides for minimum Fermi 3 ERO staffing consistent with Table II. B-1 of this Plan (based on Table B-1 of NUREG-0654) and is consistent with the emergency response staffing requirements previously approved and successfully implemented for Fermi 2.

The positions, titles and major tasks to be performed by the persons assigned to the functional areas of emergency activity at the plant are described in emergency plan implementing procedures. These assignments shall cover the emergency functions in Table II.B-1.

Upon declaration of an emergency requiring augmented Detroit Edison ERO staff support, other members of the Fermi 3 normal operating organization assume positions in the Fermi 3 ERO consistent with their qualifications.

Table II. B-2 describes key ERO positions and their functional responsibilities.

The ERO, when fully activated, includes the positions described in Table II.B-1. Additional personnel may be designated by plant management as emergency responders providing special expertise deemed beneficial, but not mandatory, to the planned response.

Detroit Edison Fermi 3 management, technical, and administrative personnel staff the EOF and JIC in accordance with emergency plan implementing procedures and provide augmented support for the Detroit Edison personnel in the Control Room, TSC and OSC consistent with the requirements of NUREG-0654, Table B-1.

The EOF staff focuses on performing management, technical and administrative activities, as needed, to support the plant emergency response staff and to relieve the onsite component of the Fermi 3 ERO of external coordination responsibilities, including notification of and coordination with offsite authorities and release of information to the media. In addition to the activities discussed in Table II.B.1, activities of the EOF staff include:

- Logistical support for plant personnel, as discussed in Sections II.A and II.B of this Plan.
- Technical support for planning and recovery/re-entry operations, as discussed in Section II.M of this Plan.
- Management-level interface with governmental authorities, as discussed in Sections II.E and II.F of this Plan.
- Coordination with and release of information to the news media, as discussed in Section II.G of this Plan.

5. Interfaces Between Functional Areas

Figure II.A-1 illustrates the interfaces between and among the site functional areas of emergency response activity, Corporate Headquarters, the State of Michigan, Monroe and Wayne counties, Province of Ontario, and federal agencies. The interface between these organizations provides a logical flow of information which is based on the functional responsibilities of each organization. The Emergency Response Facilities (ERFs) are described in Section II.H of this Plan; and communication systems designed to assist with information flow between onsite and offsite agencies are described in Section II.F of this Plan.

6. Detroit Edison Headquarters Support for the Fermi 3 Emergency Response Organization

At an Unusual Event or higher emergency classification, Fermi 3 notifies Corporate Headquarters to communicate status of the emergency. Corporate support functions during the emergency include notifications and communications with other organizations not directly involved in the emergency response.

When the Fermi 3 JIC is operational, the Corporate Office receives information concerning the emergency from the JIC and keeps Detroit Edison upper management and other Company locations informed of emergency activities.

7. Support from Contractor and Private Organizations

a. Institute of Nuclear Power Operations

The Institute of Nuclear Power Operations (INPO) serves as a clearinghouse for industry wide support during an emergency. INPO provides a dedicated emergency call number and is capable of providing assistance on a 24-hour per day basis through the Emergency Response Center at INPO headquarters. When notified of an emergency situation, INPO has an emergency response plan that enables it to provide the following emergency support functions:

- Assistance to Detroit Edison in locating sources of emergency manpower and equipment.
- Analysis of the operational aspects of the incident.
- Dissemination to member utilities of information concerning the incident.
- Organization of industry experts who could advise on technical matters.

If requested, one or more suitably qualified members of the INPO staff will report to the Emergency Officer and assist in coordinating INPO's response to the emergency.

b. General Electric-Hitachi (GEH)

Detroit Edison may request that the reactor vendor, General Electric-Hitachi, provide technical support for emergency response activities. GEH operates primarily from its corporate offices, with a small contingent at the plant, if requested. GEH has a support program in place which utilizes the full resources of the Nuclear Energy Group in Wilmington, North Carolina and the Installation and Services Engineering personnel in the local districts to support utilities during emergency situations. A special emergency support program has been established by GEH's Nuclear Service Department, and Fermi 3 has access to this GEH support program 24-hours per day.

c. DOE Radiation Emergency Assistance Center/Training Site (REAC/TS)

DOE REAC/TS provides medical services and health physics support and advises on health physics aspects of situations requiring medical assistance.

d. Medical and Public Health Support

A number of private sector medical service agencies provide support for Fermi 3 emergency response activities. Section II.L of this Plan provides a description of these arrangements.

e. Other Supporting Organizations

Detroit Edison has established a mutual assistance agreement with Entergy Nuclear Palisades, L.L.C. and Indiana Michigan Power to provide support during an emergency. American Nuclear Insurers (ANI) is also available to provide insurance assistance resulting from an emergency at Fermi 3. Section II.C of this Plan provides a description of these arrangements.

8. Local Emergency Response Support

Detroit Edison has established and maintains agreements with outside support agencies who do not take part in the organizational control of the emergency and provide assistance when notified during the emergency or recovery phase. These agreements identify the emergency measures to be provided; the mutually accepted criteria for implementation; and the arrangements for information exchange. The support agencies are described in Section II.L of this Plan and are available to provide the following services:

Law enforcement

Fire protection

Ambulance (medical transport)

Medical and hospital support.

Section II.L of this Plan provides a description of the arrangements for medical support services, including hospital and ambulance support.

Appendix 2 of this Plan lists certification letters for organizations providing the required service.

Table II.B-1 Minimum Staffing Requirements for Emergencies (Sheet 1 of 2)

Major Functional Area	Major Tasks	Locations	Emergency Response Organizational Title	Onshift	Alert (or higher) +30 min	Alert (or higher) +60 min
Plant Operations and Assessment of Operational Aspects	Plant Operations and Assessment, Accident Mitigation, Corrective Actions, Damage Assessment	CR	Control Room Supervisor	1		
		CR	Nuclear Supervising Operator	3		
		CR	Non-Licensed Operator	5		
Emergency Direction and Control		CR	Emergency Director	1		
		TSC	Emergency Director		1	
Notification/ Communication	Notify ERO, State, Local and Federal Authorities, Maintain Communications	CR	Communicator	1*		
		TSC	Communicator		1	
		EOF	Communicator			2
Radiological Accident Assessment and Support of Operational Accident Assessment	Emergency Officer	EOF	Emergency Officer			1
	Offsite Dose Assessment	CR/OSC	Chemistry Technician	1*		
		TSC	Radiation Protection Advisor		1	
		EOF	Radiation Protection Coordinator			1
	Offsite Surveys	OSC/EOF	RET Sampler or RP Technician		2	2
	Onsite (out of plant) Surveys	OSC	RET Sampler or RP Technician		1	1
	In plant Surveys	OSC	RP Technicians	2	1	1
	Chemistry/Radiochemistry	OSC	Chemistry Technician	1		

Table II.B-1 Minimum Staffing Requirements for Emergencies (Sheet 2 of 2)

Major Functional Area	Major Tasks	Locations	Emergency Response Organizational Title	Onshift	Alert (or higher) +30 min	Alert (or higher) +60 min
Plant System Engineering, Repair and Corrective Actions	Technical Support	CR	Shift Technical Advisor	1		
		TSC	Technical Engineer or Nuclear Safety Advisor			1
		TSC	Support Engineer			1
		OSC	OSC Coordinator		1	
	Repair and Corrective Actions	OSC	Damage Control and Rescue Team Members	2	2	3
Protective Actions (In Plant)	Radiation Protection: 1. Access Control 2. HP coverage for repair, corrective actions, search and rescue, first-aid and fire-fighting 3. Personnel monitoring 4. Dosimetry	OSC	RP Technicians	2*	2	2
Fire Fighting		OSC	Fire Brigade	FSAR		
Rescue Operations and First Aid		OSC	Damage Control and Rescue Teams	2*		
Site Access Control and Personnel Accountability	Security and Personnel Accountability	Per Security Plan	Nuclear Security Force	Per Security Plan		
			Total	16	12	15

* May be provided by shift personnel assigned other functions and not included in the total.

Table II.B-2 Emergency Response Organization Functional Responsibilities (Sheet 1 of 10)

Functional Position	Location	Reports To	Responsibilities
Emergency Officer	Emergency Operations Facility	Chief Nuclear Officer, Detroit Edison	Overall emergency management Approve all protective action recommendations Ensure that the full resources of Detroit Edison are made available to secure the plant systems and to minimize the effects of the incident on plant personnel and public. This includes availability of other utilities and vendor resources Interface with governmental authorities as required Ensure information released to the public is prompt and accurate and released through proper channels Establish long-term emergency and recovery organization Communicate with Corporate Headquarters
Emergency Director	Control Room	Emergency Officer	Implement the immediate onsite corrective and protective actions to bring the incident under control and mitigate its effects Classify the emergency
	Technical Support Center	Emergency Officer	Initiate offsite notifications and protective action recommendations Interface with governmental authorities as required Ensure Detroit Edison personnel are called in as conditions warrant

Table II.B-2 Emergency Response Organization Functional Responsibilities (Sheet 2 of 10)

Functional Position	Location	Reports To	Responsibilities
Emergency Director (continued)	Technical Support Center	Emergency Officer	Ensure that information to be released to the public is prompt, accurate, and released through proper channels Coordinate and direct the combined activities of Detroit Edison personnel in the Control Room, TSC, OSC, and elsewhere on owner-controlled property Authorize plant and emergency workers to receive radiation doses in excess of 10 CFR 20 limits Authorize the distribution and use of Potassium Iodide (KI) Obtain assistance of offsite support organizations as necessary Provide oversight of Severe Accident Management
Shift Technical Advisor	Control Room	Emergency Director	Advise the Emergency Director on plant technical matters, including thermal/hydraulic issues, Reactor Engineering, analysis related to safe operation of the plant.

Table II.B-2 Emergency Response Organization Functional Responsibilities (Sheet 3 of 10)

Functional Position	Location	Reports To	Responsibilities
OSC Coordinator	Operational Support Center	Emergency Director	Direct maintenance operations. Dispatch onsite emergency teams Advise the Emergency director on repair activities Recommend maintenance actions to mitigate the emergency Provide work assignments for maintenance personnel
Technical Engineer	Technical Support Center	Emergency Director	Provide recommendations to the Emergency Director on plant technical matters Request technical and engineering analyses from the Nuclear Safety Advisor Severe Accident Management decision maker
Operations Liaison	Technical Support Center	Technical Engineer	Advises Technical Engineer Severe Accident Management Team Member Monitors Plant Status

Table II.B-2 Emergency Response Organization Functional Responsibilities (Sheet 4 of 10)

Functional Position	Location	Reports To	Responsibilities
Nuclear Safety Advisor	Technical Support Center	Emergency Director	Provide work assignments for Nuclear Engineering Support groups
Radiation Protection Advisor	Technical Support Center	Emergency Director	Advise the Emergency Director concerning offsite protective action recommendations Provide work direction for radiation protection and dose assessors Ensure personnel exposure records are maintained Ensure TSC habitability surveys are performed Authorize the Dispatch of Onsite RETs Authorizes the Dispatch of Offsite RETs until the EOF is activated Evaluate results of offsite environmental surveys until the EOF is activated Ensure that radiation protection equipment, such as dosimetry devices, respiratory protection gear, and protective clothing, is issued and controlled, as required Direct onsite decontamination activities

Table II.B-2 Emergency Response Organization Functional Responsibilities (Sheet 5 of 10)

Functional Position	Location	Reports To	Responsibilities
Dose Assessor	Technical Support Center	Radiation Protection Advisor	Perform onsite and offsite does assessment and projections Assess meteorological conditions and projections
Rad Chem Advisor	Technical Support Center	Emergency Director	Direct in-plant chemistry sampling activities Direct Radiochemistry Laboratory activities Advise Emergency Director on radwaste processing/storage/disposal
Chemistry Technician	CR/OSC	Emergency Director Rad Chem Advisor	Perform dose assessment on potential or actual releases and access met data Perform in-plant samples and analysis
Security Advisor	Technical Support Center	Emergency Director	Ensure that site security is maintained and appropriate contingency measures are implemented Ensure that security and traffic Operations control measures are in effect, including traffic direction during evacuation Ensure personnel accountability procedures are implemented in the event of a radiological emergency or the need for plant/site evacuation Advise the Director, Nuclear Security and Emergency Director on matters related to security

Table II.B-2 Emergency Response Organization Functional Responsibilities (Sheet 6 of 10)

Functional Position	Location	Reports To	Responsibilities
Support Engineer	Technical Support Center	Nuclear Safety Advisor	Use IPCS/SPDS to monitor and/or trend key plant parameters Severe Accident Management evaluator
TSC Administrator	Technical Support Center	Emergency Director	Ensure that all notifications and communications to offsite organizations are accomplished within time requirements Maintain and control documentation concerning the emergency Supervise TSC communicators, and clerical support Coordinate logistical support for onsite emergency personnel Advise the Emergency Director on matters relating to personnel and equipment Provide for replacement or addition of TSC personnel or equipment as conditions warrant

Table II.B-2 Emergency Response Organization Functional Responsibilities (Sheet 7 of 10)

Functional Position	Location	Reports To	Responsibilities
Radiation Protection Coordinator	Emergency Operations Facility	Emergency Officer	Direct and coordinate offsite environmental assessment activities Direct Radiological emergency Team Coordinator, Dose Assessors, Meteorologists, and Laboratory Tech Determine survey areas for offsite RETs Determine environmental samples/surveys Advise Emergency Officer on offsite protective action recommendations Evaluate results of offsite environmental surveys Direct activities in EOF Emergency Laboratory Ensure personnel exposure records are maintained Ensure EOF habitability surveys are performed Ensure that radiation protection equipment, such as dosimetry devices, respiratory protection gear, and protective clothing, is issued and controlled Implement a vehicle monitoring/decontamination program

Table II.B-2 Emergency Response Organization Functional Responsibilities (Sheet 8 of 10)

Functional Position	Location	Reports To	Responsibilities
Dose Assessor/ Meteorological Assessor	Emergency Operations Facility	Radiation Protection Coordinator	Perform dose assessment and projections Assess meteorological conditions as required
Radiological Emergency Team Coordinator	Emergency Operations Facility	Radiation protection Coordinator	Update RET status Coordinate efforts of the Offsite RETs
Nuclear Operations Advisor Operations Training Instructor Field Support Supervisor Strategic Planning	Emergency Operations Facility	Emergency Officer	Advise Emergency Officer on plant status Provide updated information to the Detroit Edison liaisons to the State of Michigan, Monroe County, and Wayne County

Table II.B-2 Emergency Response Organization Functional Responsibilities (Sheet 9 of 10)

Functional Position	Location	Reports To	Responsibilities
Public Information Coordinator	Emergency Operations Facility	Emergency Officer	Prepare information under the direction of the Emergency Officer for prompt release to the Joint Information Center (JIC)
EOF Administrator	Emergency Operations Facility	Emergency Officer	Ensure that all notifications and communications to offsite organizations are accomplished with the time requirements Ensure communications with offsite emergency response organizations are established. Maintain and control documentation concerning the emergency Supervise EOF status board clerks communicators, and clerical support Coordinate logistical support for onsite emergency personnel Advise the Emergency Officer on matters relating to personnel and equipment Provide for replacement or addition of EOF personnel or equipment as conditions warrant

Table II.B-2 Emergency Response Organization Functional Responsibilities (Sheet 10 of 10)

Functional Position	Location	Reports To	Responsibilities
Security Advisor	Emergency Operations Facility	Emergency Officer	Coordinate access and egress of offsite personnel to owner-controlled area Advise the Emergency Officer on security matters Maintain security of the EOF

Figure II.B-1 Control Room

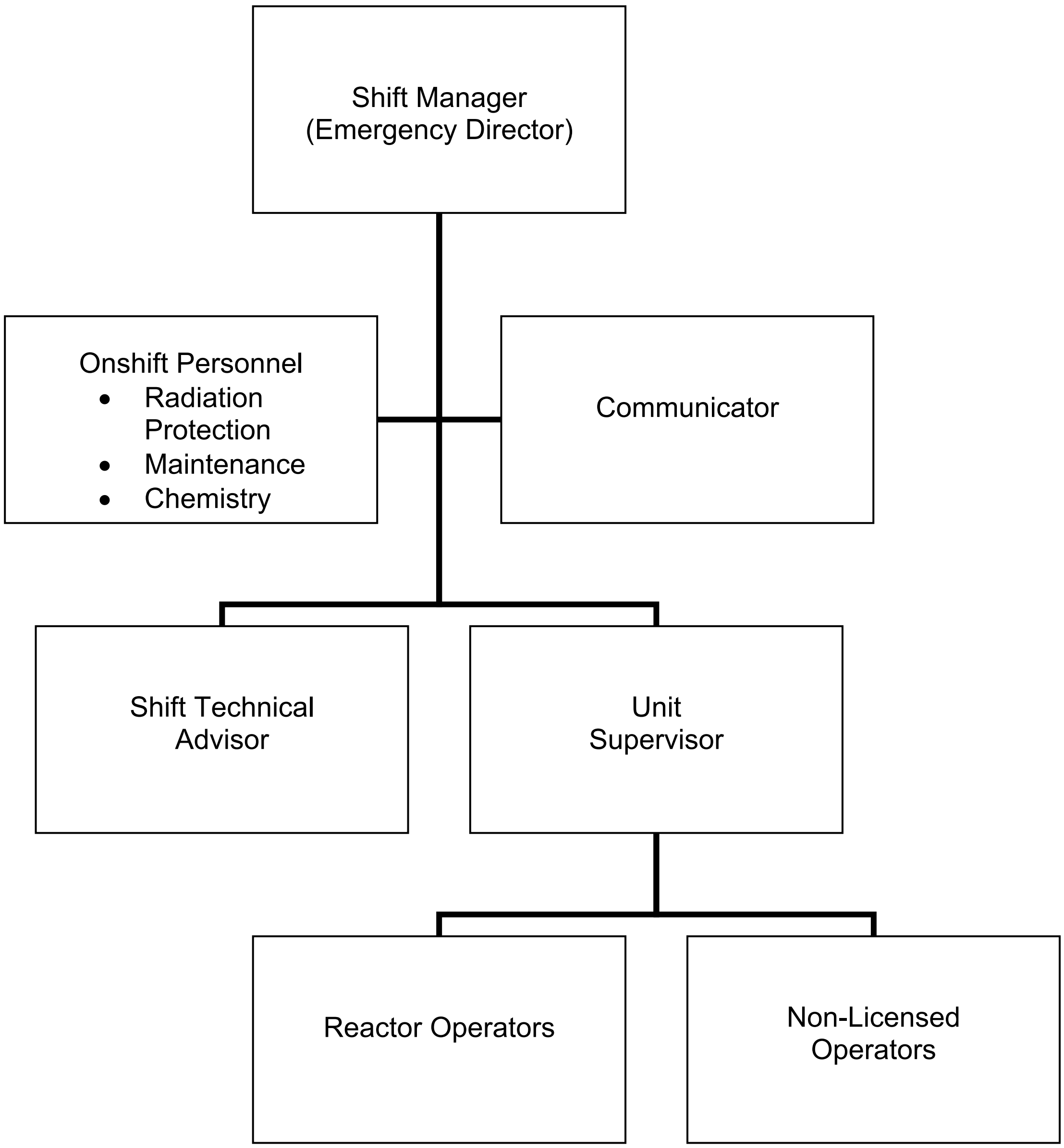
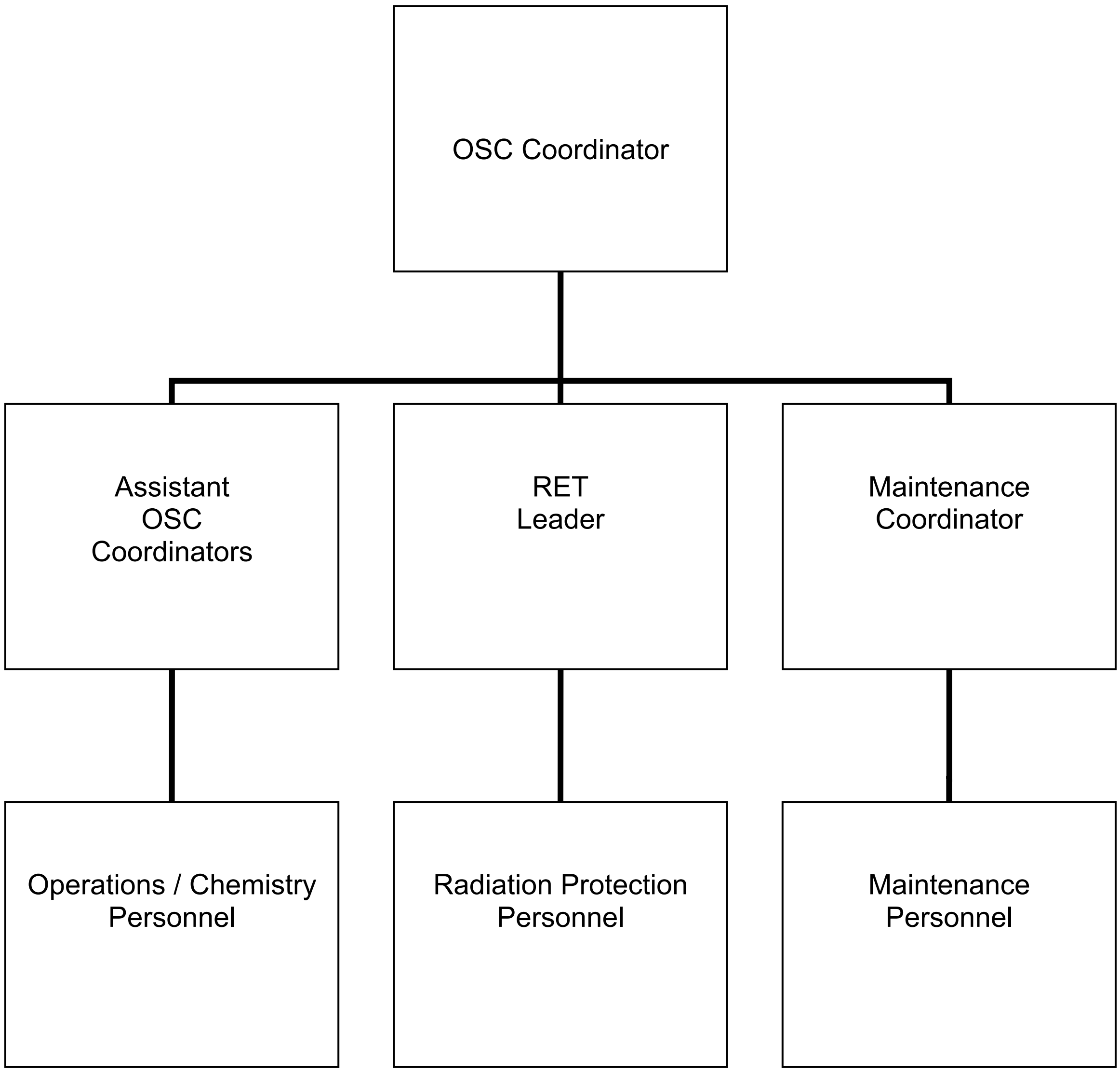


Figure II.B-2 Operational Support Center



Note: Some personnel may be directed to report to the Control Room.

Figure II.B-3 Technical Support Center

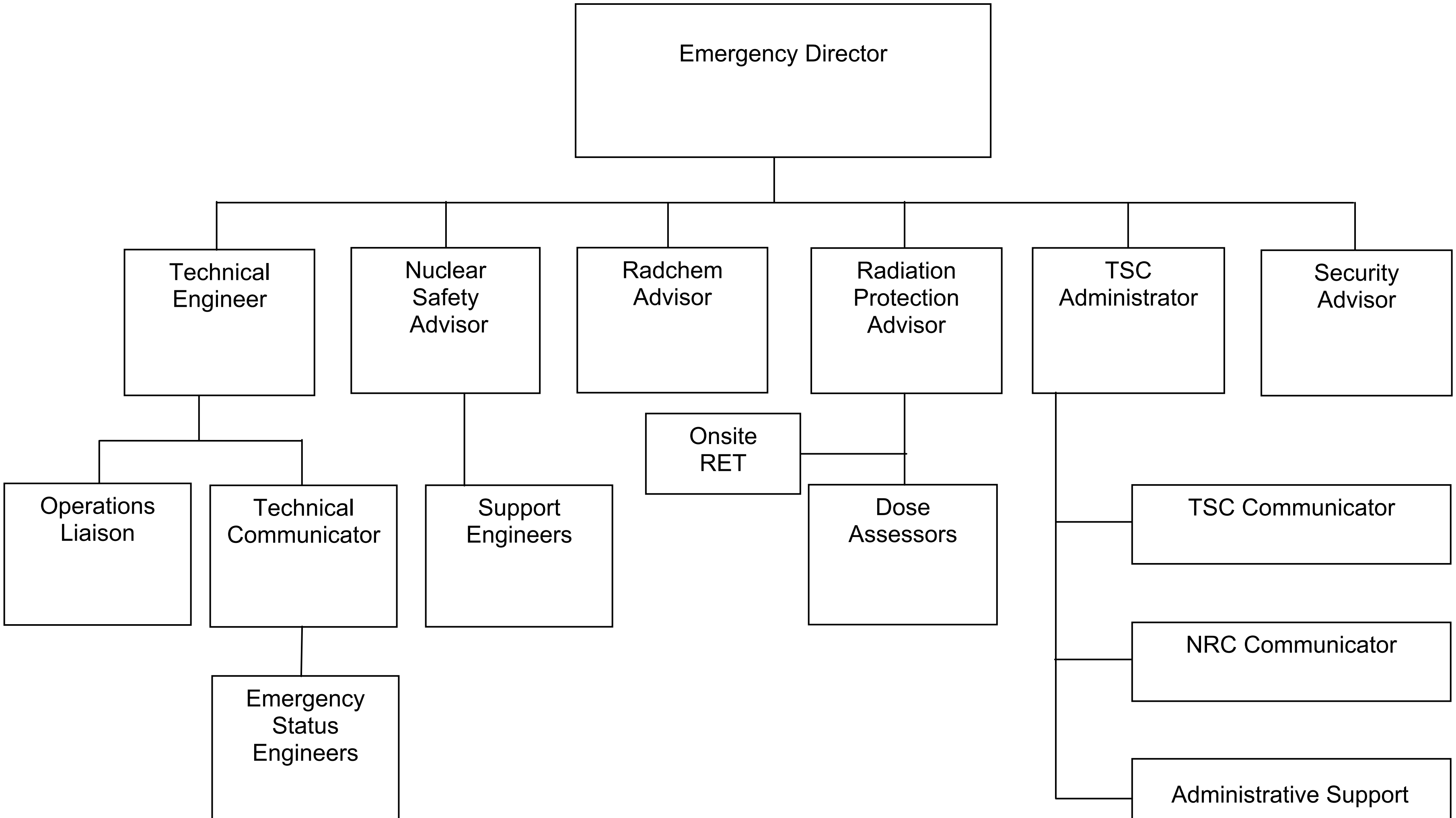
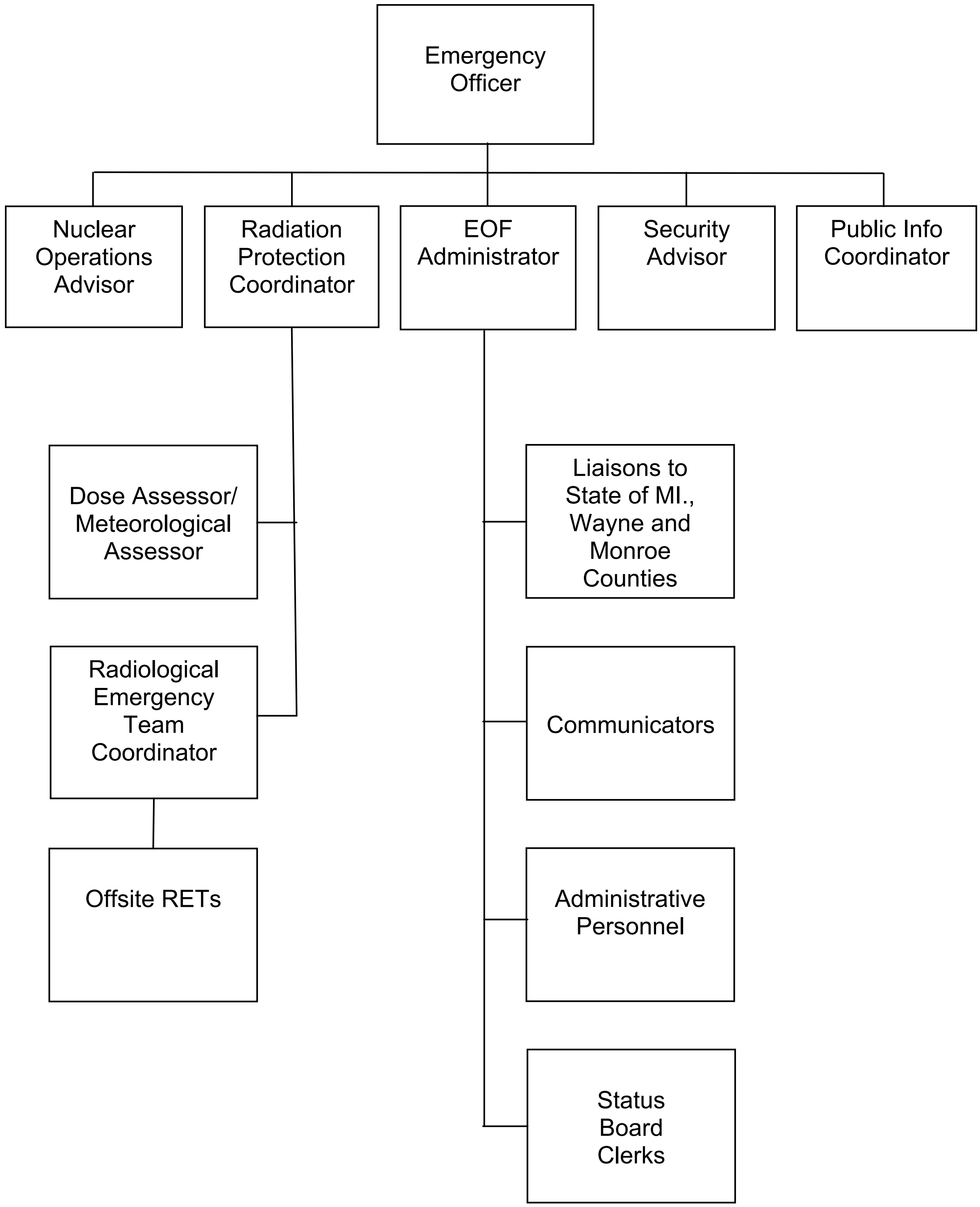


Figure II.B-4 Emergency Operations Facility



C. Emergency Response Support and Resources

This section describes arrangements for requesting and effectively using government or other industry support to augment the onsite emergency response capability.

1. Federal Response Capability

The Emergency Director or the Emergency Officer (when the EOF is activated) is responsible for requesting federal assistance, as needed. Federal assistance is available through the National Response Framework (NRF), as described in Section II.A of this Plan.

a. The State EOC may request FRMAC assistance directly or through the NRC (Federal Coordinating Agency). The DOE-Chicago Operations Office may provide support, as requested. Federal radiological monitoring assistance may be provided by DOE-Oak Ridge under the DOE Radiological Assistance Program. Support available from DOE-Oak Ridge includes medical support from the Radiation Emergency Assistance Center/Training Site. Detroit Edison estimates that a FRMAC Advance Party could be expected in the site vicinity within 12 hours following the order to deploy.

b. Detroit Edison expects that NRC assistance from the NRC offices in Chicago, Illinois will arrive in the site vicinity within 4-5 hours following notification. The team may reduce this time by use of aircraft.

c. Airfields in the vicinity of the plant that may be used by emergency support groups include commercial airports and small municipal airports that can only accommodate small aircraft. The approximate distances in miles to these airfields from Fermi 3 are indicated below. Two (2) helicopter landing pads are located on the site.

Airports	**Approximate Distance (Miles)**
Commercial:	
Detroit Metropolitan	19
Detroit City	34
Toledo Express	39
Willow Run	24
Municipal:	
Carl	6
Custer	10
Grosse Ile	11

d. Detroit Edison provides facilities and resources needed to support the federal response through the EOF. Office space and communications equipment is available for NRC personnel in the TSC, EOF, and JIC.

e. State and local command centers that may be available to support the federal response include the State EOC (Lansing, Michigan) or alternate State EOC (Northville, Michigan); Monroe County EOC (Monroe, Michigan); and Wayne County EOC (Romulus, Michigan). Supporting information is described in the state and county emergency management plans.

2. Offsite Organization Representation in the EOF

The NRC dispatches representatives to the EOF and TSC, in accordance with the NRC Incident Response Plan (NUREG-0728). Federal representatives (NRC and FEMA) are also expected to be dispatched to the Joint Information Center (JIC) to participate in the coordinated dissemination of information to the media and general public.

The State of Michigan team will interface with Fermi 3 ERO personnel in performing radiological dose calculations; determining offsite protective action recommendations; and coordinating field monitoring team activities. Monroe and Wayne counties and the Province of Ontario, Canada may dispatch liaisons to the EOF, if deemed necessary.

Detroit Edison personnel are assigned as liaisons to the State, Monroe County, and Wayne County Emergency Operations Centers (EOCs), when they are activated. These representatives act as technical liaisons to provide plant status information to the offsite agencies and keep them updated on plant emergency activities.

3. Radiological Laboratories

An onsite laboratory is available to support radiation monitoring and analysis efforts. The onsite laboratory is the central point for receipt and analysis of all onsite samples and includes equipment for chemical analyses and for the analysis of radioactivity.

An additional laboratory facility which is capable of analyzing radiological and environmental samples is available at the Michigan Department of Environmental Quality (MDEQ) in Lansing, Michigan. MDEQ has a laboratory that can be prepared to receive samples in the event of a Site Area Emergency or General Emergency with an expected response time of 1 to 3 hours following notification. This laboratory has the capability to measure beta-gamma emitters, including radioiodine in environmental samples (soil, vegetation, water, and air). Additional mobile laboratories with similar capabilities are available from the DOE and EPA, upon request.

All of the listed laboratories are available to support emergency response activities on a 24-hour per day basis.

4. Other Supporting Organizations

a. Institute of Nuclear Power Operations (INPO)

Detroit Edison has made arrangements to obtain additional emergency response support from the INPO Fixed Nuclear Facility Voluntary Assistance Agreement signatories and General Electric, as discussed in Section II.B of this Plan.

An agreement with INPO is maintained on file by the Fermi 3 Emergency Preparedness Department.

b. Mutual Assistance Agreement – Other Utilities

A mutual assistance agreement exists between Detroit Edison, Entergy Nuclear Palisades, L.L.C., and Indiana Michigan Power. Detroit Edison can request manpower or equipment assistance, as necessary. The agreement is limited to assistance for offsite environmental monitoring.

The mutual assistance agreement is maintained on file by the Fermi 3 Emergency Preparedness Department.

c. General Electric-Hitachi

GEH has an emergency support program in place to provide design engineering expertise, specialized equipment and other services, as discussed in Section II.B of this Plan.

d. American Nuclear Insurers

ANI provides insurance to cover legal liability for Fermi 3 up to the limits imposed by the Price-Anderson Act for bodily injury and/or property damage caused by the nuclear energy hazard resulting from an incident at the plant.

e. National Weather Service (NWS)

The National Weather Service is available to provide meteorological information during an emergency, if required. Available data includes existing and forecasted surface wind directions, wind speed with azimuth variability, and ambient surface air temperature.

D. Emergency Classification System

This section describes the emergency classification and emergency action level scheme used to determine the minimum response to an abnormal event at Fermi 3. Detroit Edison has developed a standard emergency classification and action level scheme, based on system and effluent parameters, on which affected State and local response organizations may rely for determining initial offsite response measures.

1. Classification System

The emergency classification system is based on the four emergency classes described in 10 CFR 50, Appendix E. The Emergency Plan provides for classification of emergencies into four (4) categories or conditions covering the postulated spectrum of emergency situations and include: Notification of Unusual Event (referred to as Unusual Event), Alert, Site Area Emergency, and General Emergency. Each classification is characterized by EALs or event Initiating Conditions (ICs) and address emergencies of increasing severity.

A general description and the purpose of each classification level are provided in Sections A through D. The actions required by the licensee and by the state and/or local offsite authorities are also given for each emergency class.

a. Unusual Event

Events are in process or have occurred that indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection. No releases of radioactive material requiring offsite response or monitoring are expected unless further degradation of safety systems occurs.

The purpose of this classification is to bring the response personnel and offsite agencies to a state of readiness in the event of escalation to a more severe action level classification, and to provide for systematic handling of event information and related decision making.

<u>Detroit Edison Actions:</u>

1. Inform state and local offsite authorities of the nature of the unusual condition within 15 minutes following classification and notify the Nuclear Regulatory Commission (NRC) as soon as possible but within one hour.
2. Augment on-shift resources as needed
3. Assess and respond.
4. Escalate to a more severe class, if appropriate, or
5. Close out with verbal summary to offsite authorities.

State and/or Local Offsite Authority Actions:

1. Provide fire, ambulance, or security assistance, if requested.
2. Escalate to a more severe class, if appropriate.
3. Stand by until verbal closeout.

b. Alert

Events are in process or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of intentional malicious dedicated efforts of a hostile act. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

The purpose of this classification is to ensure that emergency personnel are readily available to respond if the situation becomes more serious or to perform confirmatory radiation monitoring if required, and provide offsite authorities with current status information.

Detroit Edison Actions:

1. Inform state and local authorities of Alert status and reason for Alert within 15 minutes following classification and to the NRC as soon as possible but within one hour.
2. Augment resources by activating the TSC, EOF, and OSC.
3. Assess and respond.
4. Mobilize and dispatch onsite monitoring teams with associated communication equipment if required.
5. Provide periodic plant status updates to offsite authorities.
6. Provide periodic meteorological assessments to offsite authorities and, if any releases of radioactive material as specified for an Alert in Appendix 3 are occurring, provide dose estimates for those releases.
7. Escalate to a more severe class, if appropriate, or
8. Close out emergency class by verbal summary to offsite authorities.

State and/or Local Offsite Authority Actions:

1. Provide fire, ambulance, or security assistance, if required.

2. Augment resources and bring Emergency Operations Centers (EOCs) to standby.

3. Place key emergency personnel on standby status, including monitoring teams with associated communication equipment.

4. Provide confirmatory offsite radiation monitoring and ingestion pathway dose projections if actual releases substantially exceed Technical Specifications limits.

5. Escalate to a more severe class, if appropriate.

6. Maintain Alert status until verbal closeout or de-escalation of emergency class.

c. Site Area Emergency

Events are in process or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or security events that result in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

The purpose of the Site Area Emergency classification is to (1) assure that response centers are staffed; (2) assure that monitoring teams are dispatched; (3) provide consultation with offsite authorities, and (4) provide updates for the public through offsite authorities.

<u>Detroit Edison Actions</u>

1. Inform state and local offsite authorities of Site Area Emergency status and reason for emergency within 15 minutes following classification and to the NRC as soon as possible, but within one hour.

2. Augment resources by activating the TSC, OSC, EOF and JIC.

3. Assess and respond.

4. Dispatch onsite and offsite monitoring teams with associated communication equipment if required.

5. Provide regular plant status updates to offsite authorities and periodic press briefings with offsite authorities.

6. Make onsite senior technical and management staff available for consultation with NRC and state authorities on a periodic basis.

7. Provide meteorological data and dose estimates to offsite authorities for potential/actual releases as appropriate.
8. Provide release data and dose projections based on available plant condition information and foreseeable contingencies.
9. Escalate to General Emergency classification, if appropriate, or
10. Close out or de-escalate emergency classification by briefing offsite authorities.

State and/or Local Offsite Authority Actions:

1. Provide any assistance requested.
2. Provide public within 10-mile radius with periodic updates on emergency status.
3. Augment resources by activating EOCs.
4. Dispatch key emergency personnel, including monitoring teams with associated communications.
5. Alert other emergency personnel to standby status (for example, those needed for evacuation) and dispatch personnel to assigned near-site locations.
6. Provide offsite monitoring results to licensee and others, and jointly assess them.
7. Continuously assess information from licensee and offsite monitoring teams regarding changes to protective actions already initiated for public and mobilizing evacuation resources.
8. Consider placing milk animals within 2-mile radius on stored feed and assess need to extend distance.
9. Provide press briefings with licensee.
10. Escalate to General Emergency classification, if appropriate.
11. Maintain Site Area Emergency status until closeout or de-escalate of emergency class.

d. General Emergency

Events are in process or have occurred which involve actual or imminent substantial core degradation or melting with potential for loss of containment integrity or security events that result in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guidelines exposure levels offsite for more than the immediate area.

The purpose of the General Emergency classification is to: (1) initiate predetermined protective actions for the public; (2) provide continuous assessment of information from Detroit Edison and offsite organization measurements; (3) initiate additional measures as indicated by actual or potential releases; (4) provide consultation with offsite authorities; and (5) provide updates for the public through offsite authorities.

Detroit Edison Actions

1. Inform state and offsite authorities of the General Emergency status, reason for emergency, and a minimum protective action recommendation (PAR) within 15 minutes following classification and the NRC as soon as possible, but within one hour.
2. Augment resources by activating the TSC, OSC, EOF, and JIC, if not already activated.
3. Assess and respond.
4. Dispatch onsite and offsite monitoring teams with associated communications, if required.
5. Provide regular plant status updates to offsite authorities and periodic press briefings with offsite authorities.
6. Continually assess existing PAR for adequacy based on review of plant conditions, current and future meteorological data, dose estimates, field readings, and plant response efforts.
7. Make senior technical and management staff available onsite for consultation with NRC and State authorities on a periodic basis.
8. Provide meteorological data and dose estimates to offsite authorities for potential/actual releases.
9. Provide release data and dose projections based on available plant condition information and foreseeable contingencies.
10. Close out or de-escalate emergency class by briefing offsite authorities.

State and/or Local Offsite Authority Actions:

1. Provide any assistance requested.
2. Activate public notification system promptly, inform public of emergency status, and provide updates periodically.
3. Order protective actions based on actual or potential plant conditions, licensee recommendations, and field surveys.

4. Augment resources by activating EOCs.
5. Dispatch key emergency personnel including monitoring teams with associated communications.
6. Dispatch other emergency personnel to duty stations within 5-mile radius and alert all others to standby status.
7. Provide offsite monitoring results to licensee and others, and jointly assess them.
8. Continuously assess information from licensee and offsite monitoring teams regarding changes to protective actions already initiated for public and mobilizing evacuation resources.
9. Consider placing milk animals within 10-mile radius on stored feed and assess need to extend distance.
10. Provide press briefings with Detroit Edison.
11. Maintain General Emergency status until closeout or de-escalation of emergency class.

2. Emergency Action Levels (EALs)

Emergency classifications are characterized by EALs which are consistent with the general class descriptions (and provided in NEI guidance documentation) in accordance with Regulatory Guide 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors". Where possible, these EALs will be related to plant instrumentation readings.

An emergency is classified after assessing abnormal plant conditions and comparing them to EAL Threshold Values for the appropriate Initiating Conditions (ICs). An Initiating Condition is one of a predetermined subset of unit conditions where either the potential exists for a radiological emergency, or such an emergency has occurred. Defined in this manner, an IC is an emergency condition, which sets it apart from the broad class of conditions that may or may not have the potential to escalate into a radiological emergency. Initiating Conditions are arranged in one of the Recognition Categories.

Appendix 3 provides Recognition Categories, the associated Initiating Condition Matrices, and the Emergency Action Levels. The Appendix also includes parameter values and equipment status that are indicative of each emergency class.

3. State/Local Emergency Action Level Scheme

Detroit Edison coordinates with the State of Michigan, Monroe, and Wayne Counties to ensure consistency between classification schemes. The content of the EALs is reviewed with the state, county, and provincial authorities on an annual basis. Detroit Edison informs the offsite governmental agencies of any EAL changes that significantly impact the Initiating Conditions or technical basis.

4. Offsite Emergency Procedures

Detroit Edison coordinates with the state and Monroe and Wayne counties to ensure that procedures are in place which provide for emergency actions to be taken that are consistent with the protective actions recommended by the plant, and which account for local offsite conditions that exist at the time of the emergency.

E. Notification Methods and Procedures

This section describes notification of emergency response organization personnel; state, local, province, federal agencies; and the general public during a declared emergency at Fermi 3. This section also outlines the content of initial and follow-up messages to response organizations within the 10-mile Plume Exposure Pathway EPZ.

Detroit Edison, in cooperation with state, county and provincial authorities, has established mutually agreeable methods and procedures for notification of offsite response organizations consistent with the emergency classification and action level scheme, as described in Section D, “Emergency Classification System”. The use of emergency classifications as the primary basis for notification has been mutually agreed upon by applicable state, county, provincial and Federal response organizations.

Details regarding notification responsibilities, communications systems, and information required to be transmitted to offsite agencies, including provisions for message verification, are described in appropriate emergency plan implementing procedures.

1. Notification and Mobilization of Emergency Response Personnel

a. Detroit Edison Emergency Response Organization

The Control Room Emergency Director is responsible for classifying an event under the appropriate emergency classification and directing the notification and mobilization of onsite and offsite personnel.

The primary means for notification of onsite personnel is the Plant Page/Party Line (PA/PL) system. The Control Room will make an announcement that an emergency has been declared and what actions should be taken. ERO members are requested to respond to their designated emergency response facility; or if the emergency involves a security threat, the Emergency Director may designate an alternate assembly area to protect the responding ERO members.

The Control Room will also notify onsite/offsite personnel assigned to the ERO, using an automatic callout system or commercial telephone as backup. Telephone numbers of ERO personnel are available in the Emergency Telephone Directory.

b. Offsite Emergency Response Organizations

The Emergency Director (Control Room or TSC, as applicable) or Emergency Officer in the EOF, once operational, is responsible for notifying state/county/federal agencies, in accordance with emergency plan implementing procedures.

Mobilization of state, county and federal response organizations is performed in accordance with their applicable emergency plan and procedures. At a minimum, mobilization of federal response organizations and activation of state and county Emergency Operations Centers (EOCs) is expected to occur at the declaration of a Site

Area Emergency. The state and counties are responsible for the process of notification of the general public.

1. State of Michigan, Monroe, and Wayne Counties

   A notification shall be made within fifteen (15) minutes of:

   - Initial emergency classification;
   - Classification escalation;
   - Issuance of, or change to a Protective Action Recommendation (PAR) for the general public;
   - Change in radiological release status, occurring outside of an event classification or PAR notification;
   - Event de-escalation, termination, or entry into Recovery phase

   The emergency warning points are simultaneously notified using the Ring-down Phone System. Commercial telephone lines and/or radios are available as backup notification methods.

2. Nuclear Regulatory Commission

   An event will be reported to the NRC Operations Center immediately after notification of the appropriate state and county agencies, but not later than one (1) hour after the time of initial classification, escalation, termination or entry into the Recovery phase. The NRC is notified using a dedicated system, the Emergency Notification System (ENS). If the ENS is inoperable, the required notifications can be made via commercial telephone or any other method to ensure that a report is made as soon as practical.

   Specific requirements for notifications to the NRC for classified emergency events are detailed in 10 CFR 50.72, and guidance is provided in emergency plan implementing procedures. The Emergency Response Data System (ERDS) which is a computerized link to the NRC will be initiated within one (1) hour of the declaration of an Alert classification or higher.

3. Province of Ontario, Canada

   The Province of Ontario is notified immediately after the NRC and only once at each initial emergency classification of an Unusual Event, Alert, Site Area Emergency, or General Emergency. The Michigan State Police will provide all subsequent communications and information.

4. Detroit Edison Nuclear Information

   The Detroit Edison Nuclear Information Department is notified following notification to the Province of Ontario, and updated information will be provided as appropriate. If the JIC becomes operational, notifications from the site to Nuclear Information will be discontinued; the JIC will provide updates to the Corporate Office concerning the emergency.

5. Other Support Organizations

   Medical, rescue, and fire-fighting support agencies are notified for assistance, as the emergency situation dictates.

   The Institute of Nuclear Power Operations (INPO) and American Nuclear Insurers are notified at an Alert level classification or higher with requests for assistance, as necessary.

   Vendor and contractor support services are notified for assistance as the situation dictates.

2. Message Content

Detroit Edison personnel, in conjunction with state and county authorities, have established the content of the initial notification message form transmitted during a classified emergency. The content of the message includes plant contact information (location, date, time); current classification of emergency and reason; whether a release is taking place; basic meteorological data; any recommended protective action recommendations; and potentially affected population/areas.

As additional information describing the emergency situation and local conditions becomes available, follow-up messages containing more detail than the initial notification will be provided.

Approval of the notification message, transmittal date and time, and offsite agencies contacted should be recorded either on the notification form or in a logbook.

3. Follow-Up Messages To Offsite Authorities

For all emergency classifications, follow-up messages from the plant to affected state and local authorities will be issued to provide further description of the emergency. The following information would be supplied to the extent the information is available and appropriate:

a. Plant contact information (location, date, time);

b. Meteorological data (wind speed and direction, stability class, and precipitation);

c. Reactor information;

d. Plant status/additional information;

e. Release/offsite dose data; calculated dose rates; and projected dose

f. Measured offsite radiation levels.

4. Disseminating Information To The Affected Public

The state and county emergency response plans describe procedures for state and county officials to make a public notification decision promptly after notification from Fermi 3 of an emergency. The system of disseminating information to the public includes notification by pre-scripted messages through appropriate broadcast media such as the EAS.

5. Instructions to the Public in the Plume Exposure EPZ

The capability exists for the prompt notification of the general public within the 10-mile Plume Exposure EPZ around the Fermi 3 site. This notification capability consists of two (2) principal elements: 1) the Alert and Notification System (ANS) and 2) the EAS radio and television stations.

The ANS consists of fixed sirens located throughout the 10-mile EPZ. The locations of the sirens were determined by a comprehensive engineering study which addressed population density, geographical features, siren output, and mounting heights of sirens to ensure coverage of the EPZ. Activation of the ANS sirens, when directed by county officials, will alert the population to tune to a local radio or television station affiliated with the EAS for detailed information on the emergency. Local and state actions are then instituted in accordance with the Michigan Emergency Management Plan (MEMP) to assure the implementation of appropriate protective measures.

The EAS is a network of local radio and television stations prepared to transmit or relay emergency information and instructions from the county officials to the general public.

The counties will initiate activation of the ANS upon direction by state or local authorities and as specified in existing agreements concerning system activation. The siren system is designed to be operationally segregated by county boundary within the 10-mile radius. The ANS signal will be a three (3) minute steady signal. Upon determination of the need for public notification, the ANS can be activated within 15 minutes.

To ensure the ANS is maintained in an operational state of readiness, the local agencies have agreed to a testing frequency for the system by sounding the sirens on a periodic basis that meets or exceeds FEMA guidance. Reports of inoperable equipment are provided to maintenance personnel designated by the Fermi 3 Emergency Preparedness Department. The goal of the testing and maintenance program is to identify inoperable equipment in a timely manner and to restore equipment to a functional status commensurate with FEMA operability requirements, as referenced in FEMA-REP-10, “Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants” (Ref. 5). In addition to the routine test and repair program, preventive maintenance of the ANS will be performed on an annual basis, as described in plant procedures.

6. Written Messages to the Public

The State of Michigan has developed EAS messages for the public which are consistent with the emergency classification scheme. These draft messages are included as part of the State of Michigan EAS Plan and contain instructions with regard to specific protective actions to be taken by occupants and visitors of affected areas. Detroit Edison will provide offsite authorities with supporting information for messages to the public. Messages may include instructions such as: take shelter and go indoors; close windows and doors; turn off ventilation systems; directions for evacuation; directions to stay tuned to specific stations for further information; ad-hoc respiratory protection (for example, handkerchief over mouth or thyroid blocking). The state and/or counties control the distribution of radio protective drugs to the general public.

F. Emergency Communications

This section describes the provisions for communication between the Fermi 3 site and principal response organizations, including state, local, and federal agencies and also describes communications between the emergency response facilities. Emergency plan implementing procedures describe use of communications systems during an emergency; and emergency plan administrative procedures provide additional details describing testing and maintenance of communications systems.

1. Description of Communication Links

Detroit Edison has extensive and reliable communications systems installed at Fermi 3. The communications network provides:

- Voice communication through normal telephone, dedicated line and automatic ring-down between selected facilities, conference call capability, speaker phones, and operator assistance when required.
- Communications between emergency vehicles and appropriate fixed locations, as well as with state mobile units and fixed locations.
- Facsimile, computer network, and modem transmission.

Fermi 3 maintains the capability to make initial notifications to the designated offsite agencies on a 24-hour per day basis. The offsite notification Ringdown Phone System provides communications to state and county warning points, and Emergency Operations Centers from the Control Room, TSC and EOF. Backup methods include commercial telephone lines, radios, and facsimile, as described below. State and county warning points are continuously staffed. Figure II.F-1 describes the emergency communications telephone network; and Figure II.F-2 describes the communication links between the Fermi 3 site, Monroe County, Wayne County and the State of Michigan.

a. Telephone Communications

At Fermi 3 normal and emergency offsite communications are provided by public telephone lines, the private utility network connected to the PABX, and radio systems. An Edison-owned microwave system is also installed to provide primary and back-up emergency communications from the Fermi 3 site. Figure II.F-1 illustrates the interface of these systems between the Emergency Response Facilities.

1. Private Automatic Branch Exchange (PABX) Lines

The private automatic branch telephone exchange (PABX) equipment and cabling is supplied and installed by the local telephone company. The PABX is a multi-node system with telephones located throughout the plant, including the Control Room, TSC, OSC, and EOF. The nodes of the PABX are located in separate communication rooms. The PABX is connected to the commercial telephone system and the utility private network that allows offsite communications for normal and emergency conditions. The PABX system has backup power capability in the event of a loss or the normal AC supply.

2. Sound Powered Telephone System

   The sound powered telephone system is a separate telephone communication system using portable sound-powered telephone units, independent of the PA/PL and PABX systems, and is provided for normal and abnormal/accident conditions. This sound-powered system allows uninterrupted private communication between the Control Room and other areas of the plant. It does not require an external power supply for operation.

3. Ringdown Phone System

   Automatic ring lines are provided between key positions within the Emergency Response Facilities and also with offsite emergency response organizations. These extensions are programmed for automatic dialing.

4. Automatic Callout System

   As described in Section II.E of this Plan, notification of onsite personnel will be completed through a combination of public address announcements, alarms and proceduralized phone calls.

   Fermi 3 utilizes an automatic callout system that employs pagers as the primary and an automatic telephone system as back-up to rapidly notify members of the ERO. The system consists of a computer with modem equipment capable of initiating and receiving telephone calls. When contact is made, the system automatically requests security identification and then responds. The pager vendor's system accepts group and individual numbers from the callout system, activating several radio transmitters which, in turn, activate personal pagers assigned to ERO members. The system is designed with redundant power, phone, and computer components with geographic separation.

5. NRC Telephones

   Separate telephone lines are dedicated for communications with the NRC and include the following:

   a) Emergency Notification System (ENS): Provides for initial notifications, as well as provision of ongoing information about plant systems, status and parameters, to the NRC. ENS lines are located in the Control Room, TSC and EOF.

b) Health Physics Network (HPN): Provides for communications regarding radiological and meteorological conditions, assessments, trends, and protective measures. HPN lines are located in the TSC and EOF.

c) Reactor Safety Counterpart Link (RSCL): Allows for internal NRC discussions regarding plant and equipment conditions. RSCL lines are located in the TSC and EOF.

d) Protective Measures Counterpart Link (PMCL): Allows for conduct of internal NRC discussions on radiological releases, meteorological conditions, and protective measures. PMCL lines are located in the TSC and EOF.

e) ERDS Channel: Allows transmittal of reactor parametric data to the NRC. ERDS data is transmitted to the NRC Operations Center.

f) Management Counterpart Link (MCL): This system has been established for internal discussions between the NRC Executive Team Director/members and the NRC Site Team Director or licensee management. MCL lines are located in the TSC and EOF.

g) Local Area Network (LAN) Access: Provides access to the NRC local area network. Telephone jacks are provided in the TSC and EOF for NRC LAN access.

6. Microwave System

A Detroit Edison-owned microwave system is installed at Fermi 3 to provide primary functions for the emergency telephones and back-up emergency telephone communications via the administrative lines. Through use of the microwave system, telephone communications are routed from the Fermi site to the General Offices in Detroit and transferred by land lines through the central office system to any desired location. Offsite or remote locations may be accessed via the microwave system from all telephone locations.

7. Joint Information Center (JIC)

The telephone network for the JIC, located in Monroe, is served by the local telephone company. The interface between the JIC and the onsite Emergency Response Facilities is provided through off premises stations with site extensions from the onsite Emergency Response Facilities. General business lines are installed for ERO use; and additional lines are in place for use by media representatives, as needed.

b. Radio Communications

The communications network at Fermi 3 also involves several radio systems to support onsite communications with radiological monitoring teams, maintenance teams, and

Nuclear Security personnel, as well as provide backup communication methods to offsite governmental and support agencies.

Normal and emergency communications within the plant can be maintained independent of the PA/PL and PABX systems through the plant radio system. The system is designed to permit radio to radio and radio to console communications from any location within the plant and satellite buildings. Communication consoles are located at selected plant locations including the Control Room and remote shutdown rooms. Communications between consoles is through hardwire and provides a means of communication between selected areas of the plant even with the failure of the radio base station, PA/PL system, and PABX. This system is backed up by batteries and a standby generator. Portable, hand-held radios provide two-way voice communications between the various units for personnel who need mobility. The radios are equipped with multiple channels and include emergency, fire brigade, operations, maintenance, management; and health physics.

1. Offsite Radiological Emergency Teams (RET)

   Each RET vehicle is equipped with a radio to provide mobile communications which are carried over Detroit Edison UHF service frequencies assigned to Western Wayne County. The radio control console for directing actions of the Offsite RETs is located in the EOF/RET Dispatch Room.

2. Nuclear Security System

   The Nuclear Security System provides communications with Nuclear Security personnel within the Owner-Controlled Area through use of hand-held portable radios operating through Security, Zone 3, and two associated repeater systems. The primary location of the radio console is the Security Building Secondary Alarm Station (SAS); however, this console is also duplicated at the Office Services Building Security Annex Central Alarm Station (CAS).

Communications with the Monroe County and Wayne County Sheriff departments from the Emergency Response Facilities are through installation of automatic ring lines, as described in Section II.F.A of this Plan. In addition to using general business phones as backup, the EOF Security Advisor has direct radio contact with the Michigan State Police or the Monroe County Sheriff when telephones are inoperative. The CAS and SAS have telephone-to-radio patching capability which also allows a telephone caller to be relayed to the Monroe County Sheriff or the Michigan State Police via radio.

c. Facsimile Transmission

Facsimile machines are available in the Control Room, TSC, EOF, and JIC for use by ERO personnel and NRC personnel.

d. Plant Page/Party Line (PA/PL)

This system provides communication means such as ringing, mutual telephonic communication and simultaneous broadcasting in various select buildings and areas including outdoor locations of the plant. The system permits merging with and separation from other units of the plant. The system is primarily used for intra-plant communications. It is a hard-wired communication system used during plant operations, testing, calibration, startup, and limited emergencies.

The system is operated from a battery source with a normal and a spare battery charger. The PA/PL equipment is backed by an exclusive DC power supply with a dedicated battery.

Handsets and speakers are installed in places which are important for plant operation and necessary for personnel safety, and where communication is frequent, including the Control Room and TSC. Each handset station can be used to communicate with any other handset station or the central station of another unit.

e. Owner Controlled Area Notification System (OCANS)

This system is used to alert personnel outside buildings throughout the Protected Area and the Owner Controlled Area. OCANS announcements are made from the CAS.

f. Evacuation Alarm and Alert Warning System

The evacuation alarm and remote warning system is provided to warn personnel of emergency conditions. This system supplements the radiological monitoring system described in Section II.H.5 of this Plan.

The evacuation alarm system consists of a siren tone generator, public address system speakers, and an outdoor siren. A selector switch in the Control Room is used to manually initiate the evacuation alarm. This selector switch also selects the evacuation alarm coverage in the drywell or the entire plant, including the initiation of the outdoor siren and the remote broadcast speakers.

The remote warning system consists of a message storage device, microphone, remote broadcast speakers, and an output/feedback monitoring system. The message storage device transmits recorded messages and the microphone transmits warning instructions through the remote broadcast speakers. An initiation signal from the Control Room starts the message storage device or opens the microphone available for transmission. Power for this system is supplied from a nonsafety-related bus backed by the plant batteries.

2. Communication with Fixed and Mobile Medical Support Facilities

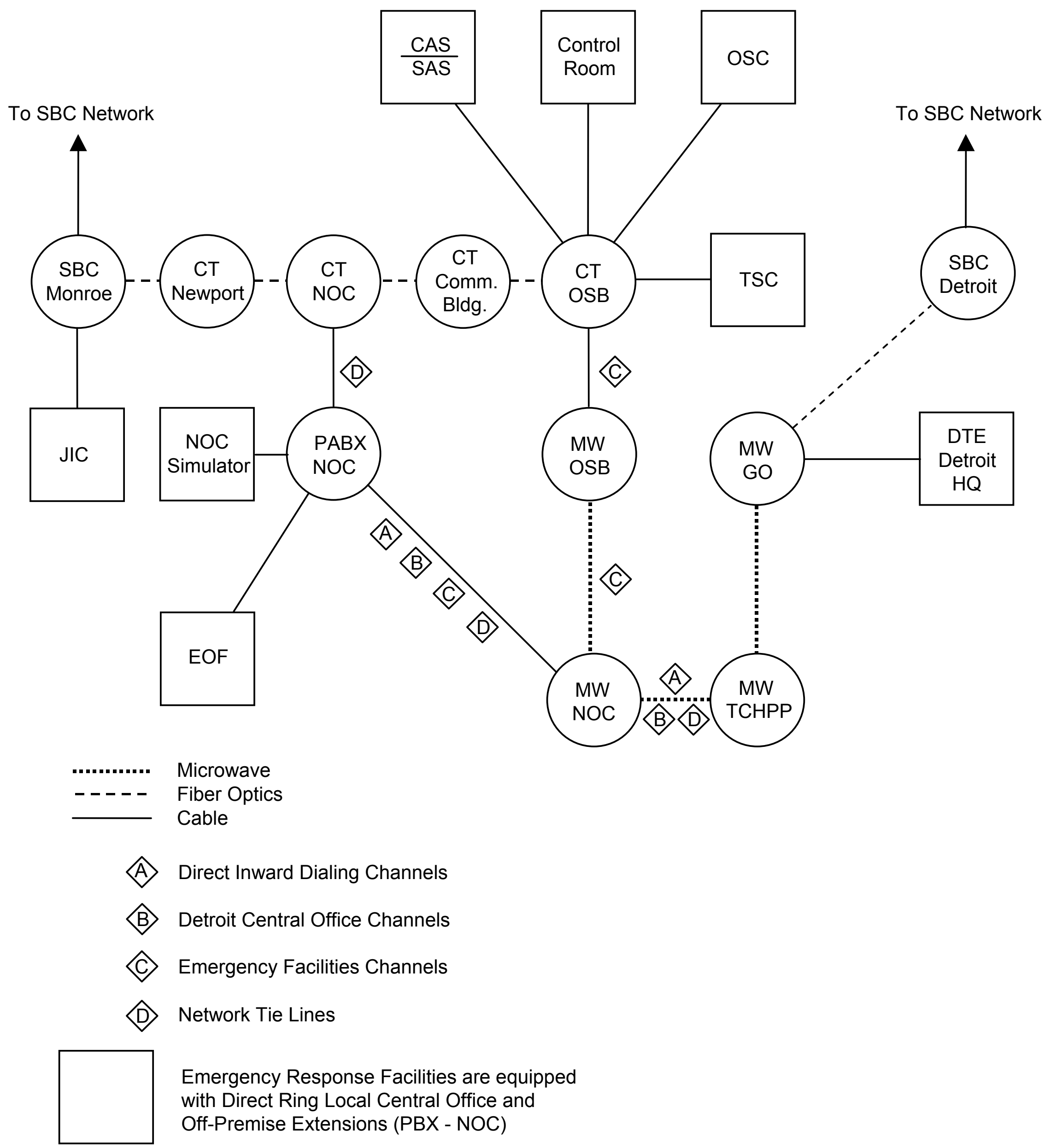
Communications are established from the site to the primary and backup medical hospitals and transportation services via commercial telephone. Radio communications or other mobile services can serve as a back-up notification method. The Control Room maintains responsibility throughout an emergency for all communications to hospitals. Ambulance/hospital communication system maintenance is the responsibility of the ambulance and hospital services.

3. Communication System Tests

Fermi 3 conducts periodic testing of communications systems at the site consistent with communications drill requirements. Communications between the Fermi 3 Emergency Response Facilities (ERFs) and the state/county warning points are tested monthly. Communications between the state/local EOCs and field assessment teams are tested consistent with the requirements of the affected state and county plans.

Section II.N of this Plan provides further information describing communications system testing.

Figure II.F-1 Emergency Communications Telephone Network



CT Century Telephone
PABX Private Automatic Branch Telephone Exchange
SBC Southern Bell Communications/AT&T
TCHPP Trenton Channel Power Plant

Figure II.F-2 Personnel in Charge of Communications Links at Fermi 3, Monroe County, Wayne County, and the State of Michigan

FERMI 3

Control Room (prior to TSC being functional)
Primary: Shift Manager as Emergency Director
Backup: Control Room Supervisor

Technical Support Center (prior to EOF being functional)
Primary: Emergency Director
Backup: Shift Manager (in the Control Room)

Emergency Operations Facility
Primary: Emergency Officer
Backup: Emergency Director (in the TSC)

MONROE COUNTY

Central Dispatch (prior to EOC being functional)
Primary: Communications Supervisor
Backup: Shift Supervisor

After EOC functional
Primary: Chief Executive
Backup: Chief of Staff

WAYNE COUNTY

Central Communications (prior to EOC being functional)
Primary: Senior Dispatcher
Backup: Dispatcher

After EOC functional
Primary: Chief of Staff
Backup: Deputy Chief of Staff

STATE OF MICHIGAN

State Police Operations (prior to EOC being functional)
Primary: Lieutenant, Operations Division
Backup: Next Senior Officer on Duty

After EOC functional
Primary: State Director of Emergency Management
Backup: Operations Group Chief

G. Public Education and Information

This section describes Detroit Edison's public education and information program and outlines the process for keeping the public in the 10-mile EPZ informed in the event of an emergency. Details regarding types of information provided to the public and coordination with the news media are specifically described in emergency plan implementing procedures.

1. Public Information Program

The public safety information publication for the Fermi 3 Plant is updated annually by Detroit Edison, in coordination with state and county agencies, to address how the general public is notified and what their actions should be in an emergency.

This information includes, but is not limited to, the following:

a. Educational information on radiation.

b. Information regarding who to contact for additional information.

c. Protective measures (sheltering information, evacuation route maps, reception/ congregate care center locations, and respiratory protection information)

d. Any special instructions for the handicapped

2. Distribution and Maintenance of Public Information

Detroit Edison distributes a safety information publication on an annual basis to residents and transients in the 10-mile EPZ. The information is distributed by mail to each occupable and addressable dwelling and to appropriate locations where a transient population may obtain a copy, including hotels, highway rest areas, and state recreation areas.

Detroit Edison's public information program provides the permanent, as well as the transient, population with an adequate opportunity to become aware of the information that is available. Public information materials instruct the public to go indoors and turn on their radios or televisions when they hear the ANS sirens operating. The publications identify the local radio and television stations to which the public can tune in for information related to the emergency.

Other methods of distributing public safety information may include, but are not limited to, such activities as school program presentations, speeches at meetings of community groups, booth displays at the Monroe County Fair and tours of Fermi 3. The tour programs include exhibits, lectures, and the opportunity to ask questions about all aspects of plant operations.

3. News Media Coordination

The JIC will be activated to coordinate the dissemination of information to the public during an emergency. The JIC is located at the Monroe County Community College and can accommodate approximately 500 members of the news media. The college is located outside the EPZ approximately 12 miles west-southwest of Fermi 3. The JIC will be staffed by representatives from Detroit Edison, Monroe County, Wayne County, the Province of Ontario, the State of Michigan, NRC, and FEMA. This team reviews information, coordinates all news releases, and holds press conferences.

Detroit Edison also has an Onsite News Center which serves as a briefing area for the media, when appropriate. The Onsite News Center is located in the Nuclear Operations Center (NOC) Auditorium and can accommodate 20 to 50 news media personnel. The NTC is located approximately one mile southwest of the plant and within the Owner Controlled Area.

4. Information Exchange

A Company officer has been designated as the Corporate Utility Spokesperson for Detroit Edison in the event of an emergency at Fermi 3. If the Onsite News Center is activated for an emergency involving nonradiological releases, the Spokesperson (or designated alternate) is responsible for briefing news media with up to date information. When the JIC is activated and operational, the Spokesperson and JIC staff coordinate emergency information with the EOF, Corporate Communication personnel located in the General Office Complex in downtown Detroit, Michigan, and federal, state, county, and Canadian spokespersons located in the JIC.

The timely exchange of information between spokespersons will enhance communications flow to the public and news media and also aid in dispelling rumors. JIC personnel coordinate rumor control with personnel staged at the Monroe County Emergency Management Division (EMD) prior to conducting media briefings. Designated public telephone lines are reserved at the Monroe County EMD for use by the public wishing to obtain specific information about the emergency. The telephone number will be widely publicized at the time of the emergency. The lines usually will be staffed by representatives from local government. Rumors should be kept to a minimum through the use of this location which authenticates information. State and local plans and procedures provide further details concerning control of rumors and other misinformation. The rumor control center is described in the Public Information Annex of the Monroe County Emergency Management Plan.

5. News Media Training

Detroit Edison, with the assistance of state and local authorities, conducts an annual program to acquaint the news media with emergency planning and procedures. These programs cover radiation and radiological effects of nuclear plants, as well as offer information to enhance the media's ability to communicate radiological events to the public.

H. Emergency Facilities and Equipment

This section describes the functions and locations of the Emergency Response Facilities (ERFs) and equipment that will be used and maintained by Detroit Edison in coordinating and performing emergency response activities.

The ERFs that have been established for Fermi 3 to assist Control Room personnel in mitigating the consequences of accidents include the Technical Support Center, Operational Support Center, Emergency Operations Facility and Joint Information Center. Additional details regarding the design, construction, and habitability of the Control Room, TSC, and OSC is located in the Fermi 3 FSAR.

Emergency supplies and equipment located in the Control Room, TSC, OSC, EOF, and JIC are described in emergency plan administrative procedures and radiation protection procedures.

1. Onsite Emergency Response Facilities

a. Control Room

The Control Room is located in the Control Building and is designed to meet 10 CFR 50, Appendix A, Criterion 19. Control Room habitability and radiation protection requirements are described in Section 6.4 of the Fermi 3 FSAR. The Control Room contains instrumentation, controls, and displays for monitoring and controlling the plant operating and safety systems during emergency events and for mitigating the consequences of an emergency. Safe operation of the reactor and plant manipulations are performed by licensed Control Room personnel under the supervision of the Shift Manager. The Control Room is the first onsite emergency facility to become involved with the response to emergency events. Control Room personnel must evaluate the emergency and activities to effectively control the emergency until such time that augmented emergency response facilities can be activated.

Initial emergency response measures are exercised from the Control Room under the direction of the Emergency Director (Shift Manager) and include:

- Reactor and plant control;
- Initial direction of all plant related operations;
- Accident recognition, classification, mitigation, and initial corrective actions;
- Alerting of onsite personnel;
- Activation of the ERO notification system;
- Activation of the emergency response facilities;
- Notification of offsite agencies;
- Activation of ERDS;

- Continuous evaluation of the magnitude and potential consequences of an incident;
- Initial dose projections; and
- Recommendation for immediate protective actions for the public.

The Control Room is the initial onsite communications center during an emergency. It contains a reliable communications system providing communication capability to the offsite state, local, and provincial government agencies and NRC; OSC, TSC, EOF, and all areas of the plant.

When the TSC, OSC, and EOF become operational, they will supply support to the Control Room. Overall command and control of the emergency will transfer to the EOF, when it is properly staffed and ready to take over these responsibilities. Throughout all emergencies, the Control Room will maintain its emergency activation status until its normal operational status may be resumed or recovery from the event is initiated.

b. Technical Support Center

When emergency conditions escalate to an Alert level emergency or higher, coordination of emergency response shifts from the Control Room to the TSC under the direction of the Emergency Director (Plant Manager, or designated alternate). The Emergency Director coordinates activities in the TSC and interfaces with the Control Room, the OSC, and the EOF.

The TSC is located within the Protected Area in the Electrical Building, as referenced on the site layout drawing on Figure I-3. The ESBWR Standard Plant complies with all the Technical Support Center (TSC) design requirements. Specifically, a TSC of sufficient size to support 26 people consistent with Section 2 of NUREG-0696 (Reference 11), is located in the electrical building. Display capability in the TSC includes a workstation that at a minimum is capable of displaying the parameters that are required of a Safety Parameter Display System (SPDS).

The TSC is the onsite location utilized to support the Control Room for assessment of plant status and potential offsite impact, and for implementation of emergency actions. The TSC provides plant management and technical support to Control Room personnel and relieves the reactor operators of peripheral duties not directly related to reactor system manipulations during an emergency. The TSC may also be used to provide technical support during recovery operations following an emergency. The TSC is activated for all emergencies classified as Alert or higher (or earlier if conditions warrant). When operational, TSC functions include:

- Support for the Control Room's emergency response efforts;
- Continued evaluation of event classification;
- Assessment of plant status and potential offsite impact;

- Coordination of emergency response actions within the Protected Area;
- Protective actions onsite and offsite (until EOF is operational);
- Communication with offsite local government agencies (NRC; and state, county, provincial until the EOF is operational).

When operational, the TSC becomes the primary onsite communications center during an emergency. The TSC provides reliable voice and data communication to the Control Room, OSC, EOF, NRC Operations Center, and other offsite agencies. Control Room communications with the NRC include transmission of information via the ERDS. Section II.F of this Plan provides a description of TSC communications capabilities.

The TSC is of sufficient size to accommodate 26 people, including 21 Detroit Edison personnel and workspace for five (5) NRC representatives. Section II.B of this Plan provides a description of the TSC staffing. Section II.O of this Plan provides a description of ERO training and qualification requirements.

The TSC is environmentally controlled to provide room air temperature, humidity and cleanliness appropriate for personnel and equipment. The room is provided with radiological protection and monitoring equipment necessary to monitor personnel radiation exposure and to maintain personnel doses less than 5 rem TEDE, as defined in 10 CFR 50.2 for the duration of the accident. The level of protection is similar to the Control Room. In the event that offsite and onsite AC power were unavailable, TSC functions can be transferred to an alternate facility unaffected by the radiation release, such as the EOF, or another location as determined by the Emergency Director

Display capability of the technical data system in the TSC includes a workstation that, at a minimum, is capable of displaying the parameters that are required of a SPDS. The SPDS function is described in Subsection 7.1.5 of the ESBWR Design Control Document.

The TSC staff has access to key reference materials including:

- Up-to-date as-built drawings, schematics, and diagrams showing conditions and locations of plant structures and systems down to the component level
- Plant technical specifications
- Plant operating procedures
- Emergency operating procedures
- Final Safety Analysis Report
- Up-to-date records related to Detroit Edison, state, and local emergency management plans
- Offsite population distribution data
- Evacuation plans

- Emergency Plan Implementing Procedures

The TSC has the capability to record and display vital plant data, in real time, to be used by knowledgeable individuals responsible for engineering and management support of reactor operations, and for implementation of emergency procedures.

c. Operational Support Center (OSC)

The OSC is located within the Protected Area in the Service Building, as referenced on the site layout drawing on Figure I-3. The OSC is located separate from the Control Room and provides an area for coordination of shift personnel to support emergency response operations without causing congestion in the Control Room. The OSC is a location where survey, operations, and repair teams are dispatched into areas of the plant and is the staging area for individuals who may be assigned to first aid, search and rescue, and emergency repair and damage control activities.

The OSC Coordinator manages the activities of the OSC and dispatches emergency personnel on assignments, as directed by the Emergency Director. Station disciplines reporting to the OSC include, but are not limited to:

- Operating personnel not assigned to the Control Room,
- Radiation Protection personnel,
- Chemistry personnel, and
- Maintenance personnel (mechanical, electrical, and I&C).

The OSC is activated at an Alert emergency classification or higher and may be activated at an Unusual Event, as determined by the Emergency Director.

The OSC communications system shall have at least one dedicated telephone extension to the Control Room, one dedicated telephone extension to the TSC, and one telephone capable of reaching onsite and offsite locations, as a minimum. Section II.F of this Plan provides additional information about the onsite communications systems.

The OSC Coordinator is responsible for managing the activities of the OSC including ongoing accountability of anyone dispatched to the OSC and radiological exposure control of individuals within the OSC and TSC.

Equipment and supplies for the OSC include protective clothing, dosimetry, sampling and survey equipment to be used by the OSC teams.

The OSC is not designed to remain habitable under all projected emergency conditions. Emergency plan implementing procedures make provisions for relocating the OSC as needed, based on ongoing assessments of plant conditions and facility habitability. The Emergency Director directs relocation of the OSC, if required.

d. Emergency Operations Facility (EOF)

The EOF, which serves both Fermi 2 and 3, is the location where the Emergency Officer will direct a staff in overall company activities involved with an emergency. The EOF is located on the first floor of the Nuclear Operations Center (NOC) and is approximately 6000 feet southwest of Fermi 3 on owner-controlled property. Supporting facilities at the NOC include the plant simulator, plant training offices, training classrooms, and space for news reporters.

The EOF is activated at an Alert level emergency or higher. The EOF provides for:

- Management of the overall emergency response;
- Performance of non-delegable functions when in command and control;
- Offsite protective actions;
- Offsite radiological monitoring;
- Environmental sample analysis;
- Public information;
- Communications (Detroit Edison and state/counties)

The EOF was designed with the following considerations:

- The location provides optimum functional and availability characteristics for carrying out overall strategic direction of Fermi 3 onsite and offsite support operations; determination of public protective actions to be recommended to offsite officials, and coordination of Federal, State and county agencies.
- It is of sufficient size to accommodate about 40 people, including 25 Detroit Edison personnel and nine (9) NRC representatives. The EOF contains available workspace for representatives from offsite governmental agencies (State of Michigan, Monroe and Wayne counties, and the Province of Ontario) who may dispatch representatives as they deem necessary to support emergency response activities.
- The EOF has been designed for habitability in the event of a postulated accidental radioactive release from Fermi 3. The design includes shielding (protection factor of 20), HVAC system with HEPA filters, and portable airborne radioactivity and area radiation monitors that alarm locally to assure that personnel exposures to radiological hazards do not exceed 10 CFR 20 limits (Ref. 1).

The EOF contains an extensive communications system which includes communications to the TSC, offsite Radiological Environmental Teams, the NRC, the offsite Emergency Operations Centers (EOCs), and intrafacility communications. In addition, the EOF has facsimile, computer transmission, and electronic transfer capabilities, as described in Section II.F of this Plan.

The EOF counting laboratory is available for the qualitative analysis of environmental samples collected by the Radiological Environmental Team, as well as a backup facility to the inplant laboratories. Laboratory facilities are described in Section II.C.3 of this Plan.

Display capability of the technical data system in the EOF includes a workstation that, at a minimum, is capable of displaying the parameters that are required of a SPDS. The SPDS function is described in Subsection 7.1.5 of the ESBWR Design Control Document. The EOF technical data system receives, stores, processes, and displays information sufficient to perform assessments of the actual and potential onsite and offsite environmental consequences of an emergency condition.

The EOF has ready access (either through hard copies or electronic media) to plant records and procedures needed for effective overall management of Fermi 3 emergency response resources, including:

- Up-to-date as-built drawings, schematics, and diagrams showing conditions and locations of plant structures and systems down to the component level
- Plant technical specifications
- Plant operating procedures
- Emergency operating procedures
- Final Safety Analysis Report
- Up-to-date records related to Detroit Edison, State, and local emergency management plans
- Offsite population distribution data
- Evacuation plans
- Emergency Plan Implementing Procedures

The EOF draws its primary power from commercial power. There is electrical generator backup power to the EOF, so a loss of commercial power should not impact any of the voice or data communications equipment located in the EOF. Common Detroit Edison telecommunications infrastructure that supports EOF functions, including, but not limited to, fiber optic transmission equipment, telephone switching equipment and data network routers, is configured to operate at least one and usually multiple backup power sources in the event of a loss of commercial power. These backup sources include generator, DC battery and the UPS systems.

An Alternate EOF (AEOF) is located at Western Wayne Center, approximately 22 miles northwest of Fermi 3. The facility has adequate communications equipment and sufficient space to accommodate the additional personnel required for continuity of dose projection and decision making capability, including coordination of the offsite teams. Portable equipment is provided for the personnel to perform their assigned functions. Activation and support functions of the Alternate EOF are described in emergency plan implementing procedures.

e. Joint Information Center

The JIC, which serves both Fermi 2 and 3, is located approximately 12 miles west-southwest of the Fermi 3 site at the Monroe County Community College. The JIC coordinates the dissemination of information to the news media and the public during an emergency.

The JIC is the facility in which media personnel gather to receive information related to the emergency event. The JIC is also the location where approved news releases will be provided to the media for dissemination to the public.

News releases are coordinated between the EOF and JIC personnel, including representatives from Detroit Edison, the State of Michigan, Monroe and Wayne counties, the Province of Ontario, the NRC and FEMA. The JIC is operated and under the control of the State of Michigan, in accordance with Public Act 390 as a state facility. Detroit Edison is responsible for JIC logistical and administrative support and provides a representative who functions as Corporate Utility Spokesperson.

The JIC is activated at a Site Area Emergency classification or higher (or earlier, if deemed necessary). The JIC provides for:

- Coordination of timely and accurate news releases for dissemination of emergency information to the news media and the general public.
- Periodic media briefings to keep the news media and public updated on the emergency and provide an opportunity for questions relative to the emergency.
- Control of rumors associated with the emergency.

The JIC provides work space and telephones for use of JIC personnel and also provides a bank of telephones for news media use. The JIC has communication links to the EOF, as described in Section II.F of this Plan.

The Corporate Utility Spokesperson, in conjunction with other spokespersons from offsite agencies, will be the source of public information during an emergency at the plant. The Corporate Utility Spokesperson is the primary spokesperson for Detroit Edison and has access to emergency information via interface with EOF personnel. The spokespersons will review information, coordinate all news releases, and participate in periodic media briefings to update the news media and general public concerning the emergency.

JIC staff members provide responses to media inquiries through media communicators who staff telephones that the media can call for information about an emergency. Rumors or misinformation are identified during an emergency by the media monitors and rumor control personnel who monitor media reports and public and news media calls.

Detroit Edison also has an Onsite News Center which is located in the Nuclear Training Center Auditorium approximately one (1) mile southwest of the plant in the owner controlled area. The Onsite News Center serves as a briefing area for the media when appropriate.

2. State/County Emergency Operations Centers

Emergency Operations Centers (EOCs) which are operated by the State of Michigan, and Monroe and Wayne counties have been established to perform direction and control of emergency response functions and are described in state and county emergency management plans.

3. Activation and Staffing of Emergency Response Facilities (ERFs)

Detroit Edison staffs and activates the designated ERFs as follows:

Notification of Unusual Event – ERF staffing not normally needed, but may be undertaken at the discretion of the Emergency Director.

Alert, Site Area Emergency, and General Emergency – Staffing of the TSC, OSC and EOF required.

Site Area Emergency and General Emergency – Staffing of the JIC required.

Following declaration of an emergency condition, the ERFs are staffed and activated in accordance with emergency plan implementing procedures. Section II.E.1.A of this Plan discusses provisions for notifying emergency response personnel of the need to staff the emergency facilities. Section II.B of this Plan provides a discussion of the time required to complete the staff augmentation process. The State of Michigan and Monroe and Wayne counties staff their emergency facilities in accordance with the requirements of their emergency management plans.

4. Onsite Monitoring Systems

Detroit Edison maintains and operates onsite monitoring systems needed to provide data that is essential for initiating emergency measures and performing accident assessment. Monitoring systems for geophysical phenomena, radiological conditions, plant processes, and fire hazards include:

a. Seismic Monitoring System

The seismic monitoring system measures and records the acceleration (earthquake ground motion) of the structure. Earthquakes produce low frequency accelerations which, when detected by the remote sensing devices, are permanently recorded as information which defines the response spectrum. The system remains in a standby condition until an earthquake causes the remote unit (s) to activate the recording circuits and tape transports. It also provides signals for immediate remote indication that specific preset response accelerations have been exceeded.

The seismic monitoring system is described in subsection 3.7.4 of the Fermi 3 FSAR and Section 3.7.4 of the ESBWR Design Control Document.

Offsite seismic monitoring information can be obtained from the United States Geological Survey's National Earthquake Information Center or the University of Michigan at Ann Arbor, Michigan.

b. Radiological Monitoring System (RMS)

In-plant radiological measurements provide information that may help determine the nature, extent, and source of emergency conditions. The RMS for Fermi 3 is available to give early warning of a possible emergency and provides for a continuing evaluation of the situation in the Control Room. Radiation monitoring instruments are located at selected areas within the facility to detect, measure, and record radiation levels. In the event the radiation level should increase above a pre-set alarm, an alarm is initiated in the Control Room. Certain radiation monitoring instruments also alarm locally in selected areas of the facility. The RMS is divided into three (3) subsystems:

1. Area Radiation Monitors are used for the direct measurement of in-plant exposure rates. The area radiation monitor readings allow in-plant exposure rate determinations to be made remotely without requiring local hand-held meter surveys. This information may be used initially to aid in the determination of plant area accessibility. In addition to permanent monitors, portable continuous air monitors measure airborne particulate and airborne iodine activities at various locations within the operating areas.

2. Process radiation monitors are used for measurement of radioactive noble gas, iodine, and particulate concentrations in plant effluent and other gaseous and fluid streams.

3. The accident, or high range, RMS monitors radiation levels at various locations within the operating area. These are high range instruments used to track radiation levels under accident or post-accident conditions. These instruments include the containment monitors.

The RMS provides the necessary activity or radiation levels required for determining source terms in dose projection procedures. Key RMS data is linked to the plant computer, which allows information to be passed to the TSC and EOF. The isotopic mix, including isotopes such as those in Table 3 of NUREG-0654, is based on default accident mix.

Section 12.3 of the Fermi 3 FSAR provides a description of the installed radiological monitoring systems. In addition to the installed systems, Detroit Edison maintains an adequate supply of portable radiation monitoring and sampling equipment, including dedicated emergency response equipment, as described in emergency plan administrative procedures and radiation protection procedures.

c. Process Monitoring System

The Control Room and applicable redundant backup locations are equipped with extensive plant process monitors for use in both normal and emergency conditions. These indications include, but are not limited to, reactor coolant system pressure and temperature, containment pressure and temperature, liquid levels, flow rates, and status or lineup of equipment components. This instrumentation provides the basis for corrective actions.

1. Integrated Plant Computer System (IPCS): A plant monitoring information system provides the data acquisition and database capability for performing plant monitoring and functions. The system is designed to scan, convert to engineering units, conduct reasonability and alarm limit checks, apply required transformations, store for recall and analysis, and display the reading of transformed data from plant instrumentation. The system scans flows, pressures, temperatures, fluid levels, radiation levels, equipment, and valve status at required frequencies. Scanned variables are quality tagged. The system provides for short and midterm storage of data for online retrieval and fast recall, and long-term storage to appropriate media.

2. The system provides real-time meteorological data for calculating offsite radiological dose assessment, as described in Section I of this Plan. The emergency response function of the system interfaces with the Meteorological Data Acquisition System (MDAS) to provide and retain data needed to project offsite doses. Computer terminals are located in the Control Room, OSC, TSC, and EOF, as well as other onsite locations.

3. Safety Parameter Data System: SPDS provides a display of plant parameters from which the status of operation may be assessed in the Control Room, TSC, and EOF for the plant. The primary function of the SPDS is to assist operations personnel in the Control Room with quick assessments of plant safety status. SPDS and/or other display systems in the TSC and EOF promote the exchange of information between these facilities and the Control Room, and assist the ERO in decision making processes. The SPDS function is described in Subsection 7.1.5 of the ESBWR Design Control Document.

Section 11.5 of the Fermi 3 FSAR provides a description of the plant process monitoring system.

d. Fire Detection System

The Fire Detection System is designed to quickly detect visible or invisible smoke (or other products of combustion) and/or heat in designated areas of the plant. The fire alarm communication systems and sub-systems are located at strategic points throughout the plant to warn personnel of a nuclear incident or other emergency conditions. Existing plant alarms are sufficiently audible to alert personnel in the event of a fire or need for assembly. These alarm communication systems consist of warning sirens and lights (in high noise areas) and the evacuation alarm and alert warning system.

Subsection 9.5.1 of the Fermi 3 FSAR and Subsection 9.5.1 of the ESBWR Design Control Document provide a description of the plant fire protection program.

5. Access to Data from Monitoring Systems

a. Detroit Edison acquires meteorological data from the National Weather Service (NWS) during periods when the primary system is unavailable. Back-up seismic data is available from the U.S. Geological Survey. Other data sources, such as commercial media outlets, may also be used. Offsite environmental radiological monitoring equipment includes a series of continuous air samplers and environmental monitoring dosimeters surrounding the facility. The Fermi 3 Offsite Dose Calculation Manual (ODCM) describes the monitoring systems. Dosimeters are posted and collected in accordance with Table 1, of the NRC's "Environmental Monitoring for Direct Radiation".

b. The EOF laboratory is the designated facility for the receipt and analysis of environmental samples during emergencies. The inplant Chemistry and Rad Protection laboratories are also available for the analysis of environmental samples. The calibration and operational readiness of all laboratory equipment is assured in accordance with plant procedures.

   In addition to the monitoring systems, equipment, and radiological laboratory facilities provided at the plant, Detroit Edison maintains arrangements for back-up radiological monitoring and analysis support from offsite organizations. Section II.A of this Plan provides a description of these arrangements and the capabilities of the affected organizations and facilities. Appendix 2 of this Plan provides pertinent agreements from these support organizations.

c. Section II.C.3 of this Plan also provides information concerning available laboratory facilities.

6. Offsite Radiological Monitoring Equipment

Detroit Edison provides offsite radiological monitoring equipment suitable for assessment of the offsite radiological consequences of facility incidents, for use by offsite Radiological Emergency

Teams. Emergency plan administrative procedures and radiation protection procedures describe the types of radiological monitoring equipment provided for field team use.

7. Meteorological Instrumentation and Procedures

The Meteorological Monitoring System at Fermi 3 is shared with Fermi 2. The meteorological monitoring system presently meets the requirements of Regulatory Guide 1.23 and provides the capability for predicting atmospheric effluent transport and diffusion.

The onsite 60-meter meteorological tower has meteorological sensors that include a temperature differential network, and sigma theta signal conditioner, and a precipitation gauge capable of real-time data acquisition. A secondary meteorological system consists of redundant sensors mounted on the 60-meter tower that are independent of the primary system and require redundant signal conditioners, digital data acquisition systems, and power supplies.

The parameters monitored by the primary and secondary system are listed below:

<u>10-Meter Elevation:</u>

Wind Speed

Wind Direction

Air Temperature

Dew Point (available from primary system only)

Sigma Theta

<u>60-Meter Elevation:</u>

Wind Speed

Wind Direction

<u>Miscellaneous:</u>

Temperature Difference (60-100M)

Precipitation at Ground Level (available from primary system only)

Pasquill Stability Class

The meteorological system is capable of providing the following types of data upon request from dial-up terminals in the Control Room, TSC, and EOF:

Instantaneous values

One-minute blocked averages

Fifteen-minute blocked averages

Fifteen-minute rolling average

One-hour blocked average

Twelve-hour, fifteen-minute blocked historical file

In addition, the system has the capability of being remotely interrogated on a simultaneous basis by multiple users. There is sufficient redundancy built into the system so only under the most unusual circumstances would site data be unavailable. If any of the parameters required for dose assessment become unavailable, supplementary meteorological data is available via the corporate computer system. In the unlikely event that both the primary and backup meteorological systems become inoperable, Detroit Edison maintains a contract with a vendor that provides various weather and forecast data. Also, National Weather Service (NWS) data is available by contacting the nearest NWS office.

In addition, Fermi 3 utilizes the official National Oceanic and Atmospheric Administration (NOAA) gauging station in the Fermi 2 intake canal for hydrological monitoring. This gauge records Lake Erie water levels. In addition, NOAA has gauging stations at Gibraltar, Michigan, about 10 miles north-northeast of the plant on the Detroit River, and Toledo Ohio, about 22 miles south-southwest of the plant on Lake Erie. Data will be obtained from the Toledo station by calling the Toledo Coast Guard should the gauge at Fermi 2 become inoperable.

8. Operational Support Center

The OSC provides an area for coordinating and planning OSC activities and staging personnel, as described in Section II.H.1.c of this Plan.

9. Emergency Equipment and Supplies / Emergency Kits

Equipment and supplies needed to support the emergency response effort at Fermi 3 are described in emergency plan administrative procedures and radiation protection procedures and include the following general categories:

Communications equipment

Protective clothing

Respiratory protection equipment

Environmental monitoring equipment

Decontamination supplies

Miscellaneous tools and equipment

Data and reference material

Emergency response facilities and equipment are inspected and inventoried in accordance with emergency plan administrative procedures and other station procedures. These procedures provide information on locations and availability of emergency equipment and supplies. An inventory of all emergency equipment and supplies is performed on a quarterly basis and after each use in a drill, exercise, or actual emergency. During this inventory radiological monitoring equipment is checked to verify that the required calibration period and location are in accordance with the inventory lists. Surveillances include an operational check of instruments and equipment. Equipment which has a shelf life is identified, checked, and replaced as necessary. Detroit Edison maintains sufficient reserves of instruments and equipment to replace any items that are removed from emergency kits for calibration or repair.

10. Receipt of Field Monitoring Data

When the EOF is operational, radiological assessment personnel located in the EOF are designated as the central point for the receipt and analysis of offsite radiological field monitoring data results and sample media analysis results collected by Radiological Emergency Team personnel. Sampling and analysis equipment is available for activity determination of these samples. Sufficient field monitoring equipment is maintained at the plant for initial sampling. Instrumentation and equipment utilized for sample activity determination are routinely calibrated to ensure timely availability.

I. Accident Assessment

This section describes the methods, systems, and equipment available for assessing and monitoring actual or potential offsite consequences of a radiological emergency.

1. Parameters Indicative of Emergency Conditions

Plant system and effluent parameter values are utilized in the determination of accident severity and subsequent emergency classification, as described in Section D of this Plan. Environmental and meteorological events are also determining factors in emergency classification. Appendix 3 of this Plan identifies plant system and effluent parameter values that are indicative of off-normal or accident conditions and includes the various indications that correspond to the emergency initiating conditions based on the methodology provided in NEI 07-01, "Methodology for Development of Emergency Action Levels for Advanced Passive Light Water Reactors", Revision 0, March 2008. (Ref. 9).

In order to adequately assess the emergency condition, each emergency response facility has the necessary equipment and instrumentation installed to make available essential plant information on a continuous basis. Evaluation of plant conditions is accomplished through the monitoring of plant parameters both from indication in the Control Room and within the plant. Some of the more important plant parameters to be monitored in the Control Room are assembled into a single display location, which is called the SPDS. The SPDS monitors parameters relative to the plant design such as reactor coolant system pressure, containment pressure, reactor power, safety system status, containment radiation level, and effluent monitor readings. The instrumentation and equipment capabilities available for each emergency response facility are described in Section II.H.

The resources available to provide initial and continuing information for accident assessment throughout the course of an event include plant parameter display systems, liquid and gaseous sampling system, Area and Process Radiation Monitoring Systems, and Accident Radiation Monitoring Systems (which includes the high range containment radiation monitors). Descriptions of these systems are provided in Section II.H of this Plan.

2. Plant Monitoring Systems

Initial values and continuing assessment of plant conditions through the course of an emergency may rely on reactor coolant sample results, radiation and effluent monitors, in-plant iodine instrumentation, and containment radiation monitoring.

Appendix 4 of this Plan provides information regarding plant monitoring systems that are significant to continuing radiological assessment. Provisions are made for obtaining samples under accident conditions as discussed in the ESBWR Design Control Document.

3. Determination of Source Term and Radiological Conditions

Source term (or core damage) estimations serve several roles within the Fermi 3 emergency preparedness program. For planning purposes, core damage considerations are used as the bases for several of the EAL initiating conditions and as the threshold for the declaration of a General Emergency (i.e. the definition of a General Emergency specifies conditions which involve 'substantial' core degradation or melting as one of the bases for the classification).

From an implementing perspective, core damage estimations provide a means of realistically differentiating between the four (4) core states (no damage, clad failure, and fuel melt, and vessel melt-through) to:

Evaluate the status of the fission product barriers and how their status relates to the risks and possible consequences of the accident.

Provide input on core configuration (coolable or uncoolable) for prioritization of mitigating activities.

Determine the potential quality (type) and/or quantity (%) of source term available for release in support of projected offsite doses and Protective Action Recommendations (PARs).

Provide information that quantifies the severity of an accident in terms that can be readily understood and visualized.

Support the determination of radiological protective actions that could be considered for long term recovery activities.

The assessment methodologies used by Fermi 3 are intended to provide a best estimate of core damage which, when evaluated together, assist to develop an overall picture of the extent of core damage.

Appendix 4 of this Plan describes the means for relating various measured parameters, including containment radiation monitor readings, to the source term available for release within plant systems; and also describes the means for relating various measured parameters, including effluent monitor readings, to the magnitude of the release of radioactive materials.

4. Relationship Between Effluent Monitor Reading and Exposure and Contamination Levels

Emergency plan implementing procedures include the relationship between effluent monitor readings and onsite and offsite exposures and contamination for various meteorological conditions.

Appendix 4 provides a description of the emergency dose assessment program used at Fermi 3. Information includes dose and dose rate determinations based on plant effluent monitors, and contamination estimates based on deposition assumptions and meteorological conditions.

5. Meteorological Information

Section II.H.7 of this Plan provide a description of the meteorological monitoring systems that are used to provide initial values and continuing assessment of meteorological conditions under emergency conditions.

6. Determination of Release Rates and Projected Doses When Installed Instruments are Inoperable or Off-Scale

Emergency plan implementing procedures establish processes for estimating release rates and projected doses if the associated instrumentation is inoperable or off-scale. These procedures include the following considerations:

Estimated releases based on field monitoring data

Surrogate instrumentation and methods to estimate extent of fuel damage.

The capability for projecting offsite dose and dose rates due to actual or potential airborne releases is via the Raddose-V computer program interfaced with the plant process computer. Raddose-V is available in the Control Room, TSC, and EOF. The manual version of Raddose-V can be available in other onsite/offsite facilities and locations.

The basic methodology used to calculate the offsite radiological dose and dose rates was developed by and agreed upon by Detroit Edison (Fermi 3), Entergy Nuclear (Palisades), and American Electric Power (D.C. Cook) and accepted by the State of Michigan's Department of Environmental Quality for use in emergency planning. The Technical Basis Document DAS/RADDOSE-V, "DAS/RADDOSE-V", Version 1.0, March 2002 (Ref. 17) provides information on the RADDOSE-V Model. This methodology carried out by the Raddose-V computer program determines the Total Effective Dose Equivalent (TEDE) dose and dose rates due to noble gases and the Committed Dose Equivalent (CDE) adult thyroid dose and dose rate due to airborne radioiodine. Projected doses are compared against Protective Action Guidelines as part of Protective Action Recommendation decision-making for members of the public.

Appendix 4 of this Plan provides a more detailed description of the emergency dose assessment program used at Fermi 3. Information includes dose and dose rate determinations based on plant effluent monitors, and contamination estimates based on deposition assumptions and meteorological conditions.

7. Field Monitoring Capability

The Radiological Emergency Teams (RETs) perform field monitoring within the Plume Exposure Pathway. These teams are trained to conduct field surveys, obtain air samples, and collect environmental samples, and are qualified in accordance with Regulatory Guide 1.8 and the emergency preparedness training requirements described in Section II.O of this Plan. Emergency plan implementing procedures provide guidance for performance of field monitoring team activities.

At the onset of an emergency with potential for actual radiological releases in excess of ODCM limits, RET members can be dispatched to field positions. From two (2) to four (4) teams are available and can be dispatched within 30 to 60 minutes of the emergency declaration. Each team is provided with air sampling equipment, personnel dosimetry, radiological survey instruments, procedures, communications equipment, and supplies to facilitate performance of radiation, surface contamination, and airborne radioactivity monitoring.

The information collected is forwarded to the TSC or EOF when activated. RET members act under the direction of designated personnel in the TSC prior to activation of the EOF, and following activation of the EOF, they perform activities under the direction of designated personnel in that facility. The EOF laboratory may be used for the receipt and qualitative analysis of all environmental sample media.

If necessary, supplemental teams trained in field survey and monitoring techniques can be called out or may be requested by Detroit Edison through mutual assistance agreements. The teams are also equipped with appropriate monitoring and sampling equipment. Data from the supplemental field monitoring team(s) is also reported to the EOF.

8. Measuring Radioiodine Concentrations

Detroit Edison equips Radiological Emergency Teams (RETs) with portable air samplers, appropriate sample media, and analysis equipment capable of detecting radioiodine concentrations at or below 1E-7 microcuries per cubic centimeter under field conditions, taking into consideration potential interference from noble gas activity and background radiation. The collected air sample is measured by hand held survey meter as an initial check of the projection derived from plant data to determine if significant quantities of elemental iodine have actually been released (the chemical form that would pose a health hazard).

Section H of this Plan provides information regarding emergency supplies, equipment, and instruments.

9. Relating Measured Parameters to Dose Rates

Appendix 4 of this Plan describes the means for relating measured parameters, such as surface, airborne, or waterborne activity levels, to dose rates for those key isotopes listed in Table 3 of NUREG-0654/FEMA-REP-1. Appendix 4 also describes the provisions for estimating the projected dose based on projected and actual dose rates. Qualified ERO personnel are responsible for directing implementation of these procedures under emergency conditions.

10. Tracking of Plume Using Federal and State Resources

The State of Michigan Department of Environmental Quality has the ability to dispatch their own field monitoring teams to track the airborne radioactive plume. The state also has the ability and resources to coordinate with Federal and Fermi 3 monitoring teams to compare results. State response and field monitoring team activities are described in the Michigan Emergency Management Plan.

J. Protective Response

This section describes the range of protective actions that have been developed for Fermi 3 emergency workers and the general public in the Plume Exposure Pathway EPZ. Protective response consists of emergency actions taken during or after an emergency situation, which are intended to minimize or eliminate hazards to the health and safety of the public and/or plant personnel. Guidelines have been established to aid in choosing protective actions during an emergency that are consistent with Federal guidance. Detroit Edison is responsible for onsite actions; and the responsibility for offsite actions rests with the state, county, and other offsite response agencies.

Detailed information describing onsite and offsite protective response actions is located in emergency plan implementing procedures and the state and county emergency management plans.

1. Onsite Notification

In the event of an emergency at Fermi 3, methods are established for notifying personnel within the Protected Area, including employees, visitors, and contractor personnel. The primary means of notification within the Protected Area is the Evacuation Alarm and Remote Warning System, as described in Section II.F and the Fermi 3 FSAR. The system provides an audible signal that alerts personnel of an emergency event via siren and public address announcement. Announcements include the emergency classification and response actions to be taken based on the event. The In-Plant Page/Party Line (PA/PL) system may also be used for notification inside the Protected Area. In high noise areas where these systems may not be audible, other measures such as visible warning signals or personal notifications may be used.

Detroit Edison informs individuals located outside of the Protected Area but inside the Owner Controlled Area via audible warnings provided by warning systems and the activities of the Security Force (e.g., vehicle-mounted public address systems) and if needed, local law enforcement personnel. Detroit Edison provides information regarding the meaning of the various warning systems and the appropriate response actions via plant training programs, visitor orientation, escort instructions, posted instructions, or within the content of audible messages. Escorts provide response instructions to visitors who may not be trained to take specific emergency response actions.

Detroit Edison maintains the ability to notify all individuals within the Protected Area within about 15 minutes of the declaration of any emergency requiring individual response actions, such as accountability or evacuation.

2. Evacuation Routes and Transportation

Procedures are in place at Fermi 3 to address the following types of evacuations:

Plant Area Evacuation – the supervised evacuation of all non-essential personnel from a specific area of the plant to another designated location.

Protected Area Evacuation – the supervised evacuation of all non-essential personnel from the Protected Area.

Owner Controlled Area Evacuation – the supervised evacuation of all non-essential personnel from the Owner Controlled Area.

Non-essential personnel are those personnel who are not required for emergency response activities.

Figure II.J-1 identifies the Owner Controlled Area; and the evacuation routes and relocation and monitoring centers for persons leaving Fermi 3 are shown in Figure II.J-2. Evacuated personnel will be directed to assemble at the Newport Service Center, Dixie Warehouse, and Trenton Channel Power Plant, or will be sent home.

Detroit Edison establishes and maintains pre-planned site evacuation routes consistent with emergency plan implementing procedures. A secondary route is provided for site evacuation in the event that the primary route is rendered impassable, such as due to radiological or meteorological conditions or other impediments to evacuation. The directions of travel and offsite assembly area(s) are determined by the Emergency Director based on the current meteorological and emergency conditions.

Affected individuals evacuate the site via personal vehicles. If any individual onsite does not have access to a personal vehicle, arrangements will be made for transportation with another evacuating individual. Nuclear Security is responsible for traffic direction and control of persons leaving Fermi 3, including special provisions for a coordinated evacuation under severe conditions such as inclement weather, large groups of personnel to be evacuated, or a high level radioactive release. If site evacuation is inadvisable due to adverse conditions (e.g., weather-related, radiological, or traffic density conditions), Detroit Edison directs affected individuals to a safe onsite area, as determined by the Emergency Director, for accountability and if necessary, contamination monitoring and decontamination.

Detroit Edison informs individuals of the evacuation routes and appropriate instructions via plant training programs, visitor orientation, escort instructions, posted instructions, or within the content of audible messages.

3. Personnel Monitoring and Decontamination

The Emergency Director directs contamination monitoring of personnel, vehicles, and personal property when there is likelihood that individuals and their property may have become contaminated before or during the site evacuation.

Personnel evacuating the site will be monitored for contamination by the portal monitors as they exit the Protected Area or sent to offsite assembly areas and monitored by portable friskers. If there is no release of radioactive materials with the plant, limited monitoring may be utilized to speed the evacuation process.

Personnel entering offsite assembly areas will be monitored for contamination by individuals trained in the operation of personnel monitoring equipment. Vehicles will be monitored, as necessary, depending on the amount and direction of the radioactivity released. Decontamination equipment is described in radiation protection procedures. Personnel monitoring and decontamination is performed using the techniques described in plant radiation protection procedures; and vehicle monitoring and decontamination is described in emergency plan implementing procedures.

4. Non-essential Personnel Evacuation and Decontamination

In the event of a Site Area Emergency or General Emergency, Detroit Edison evacuates non-essential personnel (i.e., personnel who do not have an emergency response assignment) consistent with the provisions of Section II.J.2 of this Plan. Appropriate equipment and supplies are provided from the facility to facilitate contamination monitoring and decontamination, if needed.

5. Personnel Accountability

Detroit Edison provides the capability to account for all individuals within the Protected Area and to determine the identities of any missing individuals within 30 minutes following declaration of a Site Area Emergency or General Emergency (or Alert emergency declaration if deemed appropriate). The purpose of accountability is to determine the locations of all personnel inside the Protected Area.

As individuals exit the Protected Area, they leave their identification badges with Nuclear Security personnel. Security will begin the accountability process using either the security computer system or by visual inspection using the badge exchange system and report accountability results to the Emergency Director.

Once established, accountability within the Protected Area is maintained throughout the course of the event, unless specifically terminated by the Emergency Director.

Emergency plan implementing procedures describe the accountability process which is consistent with the requirements of the Fermi 3 Security Plan.

6. Protective Measures

Adequate supplies of radiation protection equipment are maintained for personnel remaining in or entering the Protected Area or Emergency Response Facilities (ERFs), including respiratory protection equipment, protective clothing; and radioprotective drugs. This emergency equipment is listed, maintained, and inspected in accordance with radiation protection procedures.

The Onsite Medical Facility maintains adequate amounts of potassium iodide (KI) to support the onsite ERO for emergency situations, as determined and authorized by the Emergency Director.

Onsite supplies of protective clothing and respiratory protection equipment may be augmented by that provided by off-site responders, such as firefighters responding to the site.

In the event of a hostile attack against the site, conditions may dictate initiation of protective measures other than personnel assembly, accountability and evacuation.

The Emergency Director makes decisions regarding appropriate protective measures based on evaluation of site conditions, including input from the Nuclear Security. If, based on the judgment of the Emergency Director, personnel assembly, accountability, and evacuation may result in undue hazards to site personnel, the Emergency Director may direct other protective measures, including:

Evacuation of personnel from areas and buildings perceived as high-value targets

Site evacuation by opening, while continuing to defend, security gates

Dispersal of key personnel

Onsite sheltering

Staging of ERO personnel in alternate locations pending restoration of safe conditions

Implementation of accountability measures following restoration of safe conditions

7. Protective Action Recommendations and Bases

In a radiological emergency, an estimate must be made of the radiation dose that affected population groups may potentially receive. A protective action is taken to avoid or reduce the effects of the projected radiation dose. The Protective Action Guideline (PAG) is a predetermined level of the projected dose to individuals in the population at which protective actions are warranted.

Detroit Edison recommends protective actions to the State of Michigan and Monroe and Wayne county and governmental agencies, as described in emergency plan implementing procedures. The State of Michigan, in conjunction with Monroe and Wayne counties, is responsible for implementation of protective actions for the general public. The State of Michigan, Monroe County, and Wayne County emergency management plans describe the provisions to implement measures for the Plume Exposure Pathway EPZ for state and local emergency response personnel, and the general public. Provisions include the following:

Maps showing evacuation routes/areas, congregate care centers, and shelter areas.

Maps showing population distribution around the Fermi 3 site.

Methods for notifying all segments of the transient and resident population.

Means for protecting handicapped, institutionalized, or confined individuals whose mobility may be impaired.

Methods for registering and monitoring evacuees at reception centers.

Means of relocation, including reception centers; access control; and evacuation routes and methods.

Methods for protecting the public from consumption of contaminated foodstuffs.

Public Protective Action Recommendations (PARs) are based on plant conditions, estimated offsite doses, or some combination of both. Detroit Edison provides PARs promptly to affected state and county government officials.

If the Emergency Director declares a General Emergency, Detroit Edison will notify the State of Michigan, Monroe County, and Wayne County governmental authorities with a PAR to evacuate the Protective Action Areas (PAAs) within a two mile radius around the Fermi 3 site; evacuate five miles downwind in affected Areas and shelter in place the remainder of the Plume Exposure Pathway EPZ. The PAR is provided to offsite agencies within 15 minutes of the General Emergency declaration and within 15 minutes of a change in status of the PAR.

In addition to the EAL-based Protective Action Recommendation, Detroit Edison provides PARs based on offsite dose projections. The Radiation Protection staff is responsible for conducting offsite dose projections periodically throughout any emergency during which there is an actual or potential release of an amount of radioactive material that is likely to result in offsite consequences. Emergency plan implementing procedures establish the requirements for performing required calculations and projections consistent with Section II.I of this Plan.

The projected doses are compared to the Protective Action Guides (PAGs) shown in Table II.J-1 which are derived from EPA 400-R-92-001, “The Manual of Protective Action Guides and Protective Actions for Nuclear Incidents” (Ref. 4) and Supplement 3 to NUREG-0654/FEMA-REP-1 (Ref. 10). PARs are then developed based on the results of these comparisons.

Prior to activation of the EOF, the Emergency Director is responsible for determining PARs and communicating the PARs to affected state and local authorities. Following activation of the EOF, the Emergency Officer assumes these responsibilities.

The Emergency Director or Emergency Officer provides Protective Action Recommendations to state and local authorities who are responsible for implementing the protective actions, using the communications systems discussed in Section II.H of this Plan, or by direct communications in the EOF.

8. Evacuation Time Estimates

Detroit Edison has conducted a Fermi 3-specific Evacuation Time Estimate (ETE) (Ref. 7) which is summarized in Appendix 5 of this Plan. The Fermi 3 ETE is consistent with the guidance provided in Appendix 4 of NUREG-0654/FEMA-REP-1 and NUREG/CR-6863, “Development of Evacuation Time Estimate Studies for Nuclear Power Plants” (Ref. 15). The ETE did not reveal the existence of any significant impediments to the development of emergency plans.

Appendix 5 of this Plan summarizes the population distribution and Evacuation Time Estimate.

9. State and Local Government Implementation of Protective Measures

The State of Michigan, Monroe County, and Wayne County implement protective measures, as outlined in Section II.J.7 of this Plan and detailed in the state and county emergency management plans.

10. Protective Measures Implementation

a. Appendix 5 provides a map of the Plume Exposure Pathway EPZ illustrating evacuation routes, Protective Action Areas (PAAs), pre-selected radiological sampling and monitoring points, and locations of shelter areas and relocation centers.

b. Appendix 5 also provides a map of the Plume Exposure Pathway EPZ illustrating population distribution around the facility by PAAs. Appendix 5 also provides a map of the Plume Exposure Pathway EPZ illustrating population distribution around the facility in a sector format.

c. The State of Michigan, in conjunction with Monroe and Wayne counties, is responsible for making decisions regarding the public protective actions. Protective actions are implemented by affected state and local officials. The primary method of warning the public is by using the Fermi 3 Alert and Notification System sirens. The Directors of Monroe and Wayne County Emergency Management are responsible for activating the portion of the system within their respective jurisdictions. Other warning methods may include telephone communications, television and radio EAS stations, public address systems, bull horns from patrol cars and personal contact.

11. Protective Measures Specified by the State

The State of Michigan has responsibility for protective measures for the Plume Exposure Pathway EPZ as described above. In addition, the state is responsible for specifying protective measures for the Ingestion Pathway EPZ, including methods for protecting the public from consumption of contaminated water and foodstuffs.

12. Registering and Monitoring Evacuees

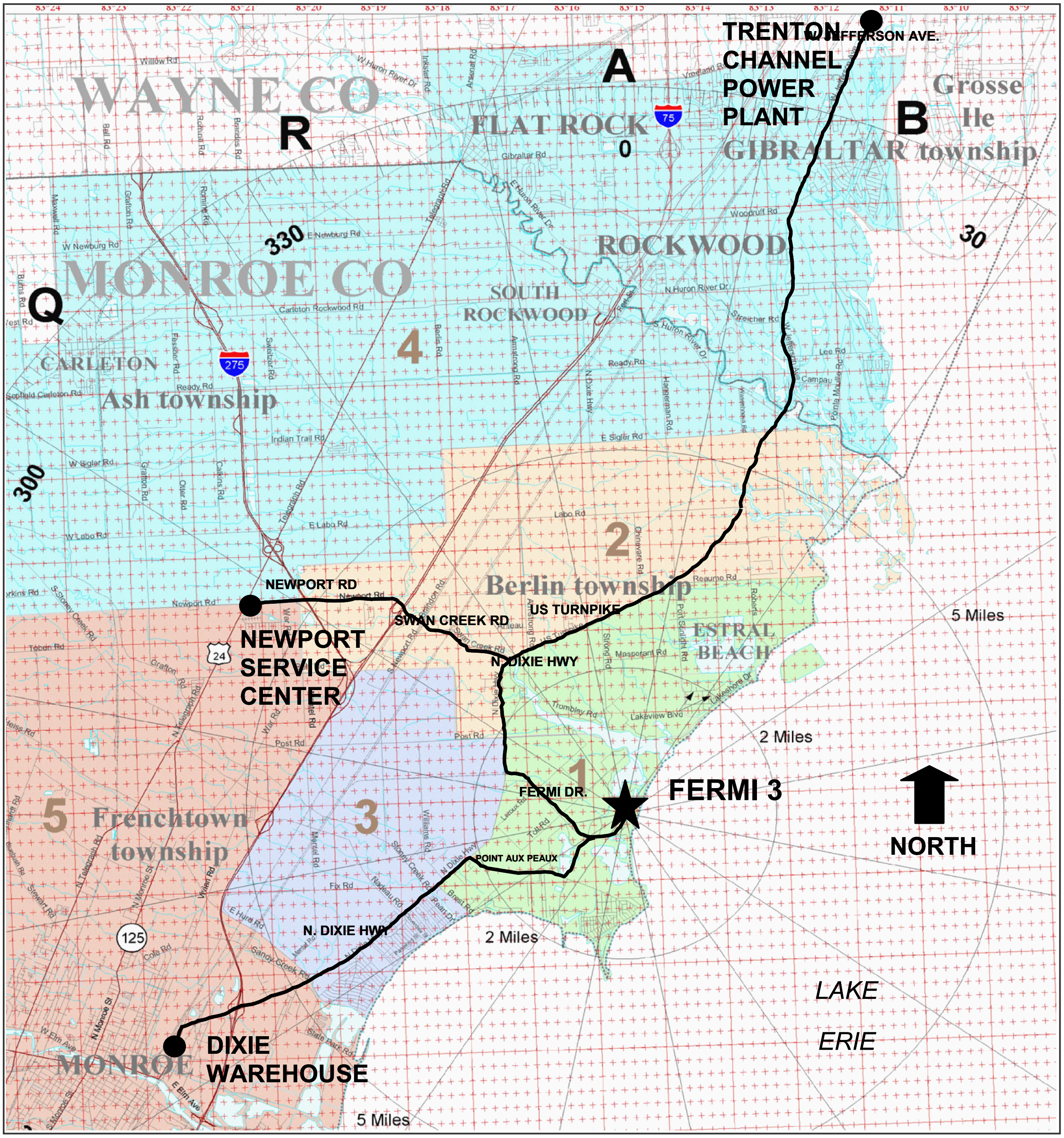
The State and county organizations have the capability to register and monitor evacuees at designated reception centers. This capability includes personnel and equipment capable of monitoring residents and transients evacuating from the Plume Exposure EPZ at the reception centers, in accordance with Department of Homeland Security (DHS) guidelines.

Table II.J-1 Protective Action Guides

Projected Dose		
Total Effective Dose Equivalent (TEDE)	**Committed Dose Equivalent Thyroid (Thyroid CDE)**	**Protective Action Recommendation**
< 1 rem	< 5 rem	No protective action required based on projected dose.
≥ 1 rem	≥ 5 rem	Evacuate (or shelter) affected zones.

Figure II.J-1 Fermi 3 Owner Controlled Area

Figure II.J-2 Evacuation Routes and Assembly Areas



K. Radiological Exposure Control

This section describes the means for controlling emergency worker radiological exposures during an emergency, as well as the measures that are used by Fermi 3 to provide necessary assistance to persons injured or exposed to radiation and/or radioactive materials. Exposure guidelines in this section are consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides, as described in EPA 400-R-92-001.

1. Onsite Exposure Guidelines and Authorizations

In an emergency situation, all reasonable measures will be taken to maintain the radiation exposure of emergency personnel providing rescue, first aid, decontamination, ambulance, medical treatment services, or performing corrective or assessment actions within applicable limits specified in 10 CFR 20.

The Emergency Director is assigned the non-delegable responsibility for authorizing personnel exposure levels under emergency conditions. The Emergency Director will evaluate any emergency response exposures in excess of 10 CFR 20 limits and authorize emergency personnel to exceed the 10 CFR 20 dose limits, if deemed necessary. Whenever possible, the Emergency Director will consult with Radiation Protection personnel before exposing individuals beyond the EPA-400 lower limit.

Table II.K-1 contains the basis for emergency exposure criteria and guidelines in accordance with EPA-400. Every reasonable effort will be made to ensure that during an emergency no worker exceeds the exposure limits stated in Table II.K-1.

2. Radiation Protection Program

The Radiation Protection Advisor is the individual responsible for the implementation of radiation protection actions during an emergency. Radiation protection guidelines include the following:

a. Volunteers over 45 years of age are considered first for any emergency response action requiring exposure greater than normal limits. Routine dose limits shall not be extended to emergency dose limits for declared pregnant individuals. As in the case of normal occupational exposure, doses received under emergency conditions should be maintained as low as reasonably achievable.

b. Persons undertaking any emergency operation in which the dose will exceed 25 Rem TEDE should do so only on a voluntary basis and with full awareness of the risks involved including the numerical levels of dose at which acute effects of radiation will be incurred and numerical estimates of the risk of delayed effects.

c. In the context of the emergency limits, exposure of workers that is incurred for the protection of large populations may be considered justified for situations in which the collective dose avoided by the emergency operation is significantly larger than that incurred by the workers involved.

d. Exposure accountability is maintained, and proper personnel radiological monitoring equipment is provided for all personnel during emergency conditions.

e. Access to high radiation areas is only permitted with prior approval of the Radiation Protection Advisor. Personnel are not allowed to enter known or potential high radiation areas unless their exposure has been properly evaluated.

f. Periodic habitability surveys of emergency response facilities are performed during an emergency. If the facility is determined to be uninhabitable, the facility will be evacuated in order to prevent or minimize exposure to radiation and radioactive materials. An alternate assembly location would be designated, as necessary, to relocate and monitor evacuated personnel.

Chapter 12 of the Fermi 3 FSAR provides additional detail regarding the Radiation Protection Program consistent with the requirements of 10 CFR 20. The Radiation Protection Program, in conjunction with emergency plan implementing procedures, includes provisions for implementing emergency exposure guidelines.

3. Dosimetry and Dose Assessment

Detroit Edison maintains a site personnel radiation dosimetry program that includes the capability to determine both external and internal doses consistent with the requirements of 10 CFR 20 on a 24-hour per day basis.

The external dosimetry program includes provisions and requirements for use of both permanent record and self-reading dosimeters (e.g., pocket or electronic dosimeters). Dosimeter ranges are sufficient to measure both planned routine and foreseeable accident doses. Emergency plan implementing procedures establish requirements for distributing dosimeters to emergency responders, including those individuals responding to the site from offsite locations. Internal doses are typically estimated through the use of whole body counting and/or in-vitro sampling and analysis routines. Emergency plan implementing procedures, in conjunction with radiation protection procedures establish requirements for determining internal doses based on in-vivo or in-vitro analyses results or by assessment of individual exposures to airborne radioactive materials. Dose assessment and dosimetry services are available on a 24-hour per day basis.

4. State and Local Responder Exposure Authorizations

The responsibility for authorizing state and local emergency workers to receive exposures in excess of EPA General Public Protective Action Guides rests with the state and county organizations, unless the offsite emergency workers are on the Fermi 3 site. In this situation, the Emergency Director would authorize exposures in excess of EPA General Public Protective Action Guides.

5. Decontamination Action Levels

Detroit Edison implements requirements for personnel and area decontamination, including decontamination action levels and criteria for returning areas and items to normal use, in accordance with radiation protection procedures.

Detroit Edison also implements procedures for decontamination of onsite emergency personnel wounds, supplies, instruments and equipment, and for waste disposal.

Emergency equipment and supplies for use by emergency response facility personnel and offsite field monitoring teams are maintained at Fermi 3 and include decontamination supplies, as described in Section H of this Plan and station radiation protection procedures.

6. Contamination Control Measures

Controls are established 24 hours per day to contain the spread of loose surface radioactive contamination.

a. Contaminated areas will be designated and clearly identified to minimize personnel contamination or the spread of contamination in the plant. Access to these areas is controlled and personnel will take the required precautionary measures and use the appropriate protective clothing and equipment. Prior to being released for general use, contaminated areas are decontaminated in accordance with plant decontamination procedures. Personnel leaving contaminated areas are monitored to ensure that they or their clothing are not contaminated. The Radiation Protection access control point and the primary and alternate access portals are provided with portal monitors and personnel friskers to prevent the spread of loose surface contamination outside the protected area.

b. In the event that personnel become contaminated, they will be decontaminated in accordance with established procedures. If normal decontamination procedures do not reduce contamination to acceptable levels, the case will be referred to an onsite medical representative.

c. Because of the possibility of the presence of radioiodine during emergency situations, particular attention is focused on searching for skin contamination when monitoring personnel during evacuation. Personnel found to be contaminated are directed to the onsite or offsite decontamination facility as appropriate.

d. Supplies, instruments, and equipment that are in contaminated areas or have been brought into contaminated areas will be monitored prior to removal. If tools or equipment are contaminated, they will be decontaminated in accordance with radiation protection procedures.

e. Contaminated vehicles will be decontaminated before being released. An ambulance responding and transporting injured, contaminated personnel will be monitored and decontaminated prior to departing the medical facility by Plant personnel.

f. Measures will be taken to control onsite access to potentially contaminated potable water and food supplies. Under emergency conditions when uncontrolled releases of activity have occurred, eating, drinking, and chewing are prohibited in all Plant emergency response facilities until habitability surveys indicate that such activities are permissible.

g. Restricted areas and contaminated items will be returned to normal use when contamination levels have been returned to acceptable levels. Contamination control criteria for returning areas and items to normal use are contained in plant procedures.

7. Decontamination of Relocated Site Personnel

Onsite personnel not needed for emergency response may be evacuated to an offsite assembly area, as discussed in Section II.J. Radiation protection personnel at the assembly area monitor evacuees and determine the need for decontamination. Existing and temporary facilities to limit contamination and exposure will be used and established at the site, as necessary, during an emergency situation. In the event that decontamination of site evacuees locally is not possible, personnel will be sent to designated locations for monitoring and decontamination. Provisions for extra clothing are made, and suitable decontaminates are available for the expected type of contaminations, particularly with regard to skin contaminations.

Table II.K-1: Emergency Exposure Criteria

Dose limit (rem) (a)	Activity	Condition
5	all	
10 (b)	protecting valuable property	lower dose not practicable
25 (b)	life saving or protection of large populations	lower dose not practicable
>25 (b)	lifesaving or protection of large populations	only on a voluntary basis to persons fully aware of the risks involved

Reference: U.S. Environmental Protection Agency, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," EPA 400-R-92-001.

(a) Limit for Total Effective Dose Equivalent to non-pregnant adults during the duration of the emergency. Dose to the lens of the eye should be limited to 3 times the stated values. Dose to all other organs, including thyroid, skin, and body extremities, should be limited to 10 times the stated values.

(b) Only the Emergency Director can authorize exposure in excess of 10 CFR 20 limits.

Additional Criteria

1. All emergency exposure will be maintained ALARA.
2. Exposure limits are for total exposure received over the duration of an emergency.
3. Emergency exposures will be justified if the maximum risks permitted to workers are acceptably low, and the risks or costs to others that are avoided by their actions outweigh the risks to which the workers are subjected.
4. Declared pregnant workers should be excluded from exposure in excess of 10 CFR 20 limits.

L. Medical and Public Health Support

This section describes the arrangements made for medical services for contaminated injured personnel at the Fermi 3 site. Details outlining radiological medical emergencies and response are described in emergency plan implementing procedures.

1. Hospital and Medical Support

Arrangements by written agreement are maintained by Detroit Edison for medical treatment of Fermi 3 personnel who may have injuries complicated by the presence of radioactive contamination and/or overexposure to radiation. The primary treatment facility is Mercy Memorial Hospital in Monroe, Michigan. A back-up medical facility is established at Oakwood Southshore Medical Center in Trenton, Michigan, located approximately 12 miles from the plant if Mercy Memorial Hospital is unavailable.

Mercy Memorial Hospital and Oakwood Southshore Medical Center are adequately supplied and equipped to receive and treat contaminated patients. Detroit Edison maintains emergency cabinets containing contamination control supplies and dosimeters at both hospitals.

In addition, Detroit Edison will coordinate medical emergency activities and ensure the following are provided:

a. An emergency medical plan in place for the treatment of radiation-related injuries.

b. A radiation emergency medical team qualified to implement the emergency medical plan.

c. Written procedures regarding radiological medical emergencies detailing actions to be taken onsite, including offsite transportation of injured, contaminated individuals and hospital notifications.

d. Immediate telephone consultation for the hospital staff and/or Fermi 3 personnel with respect to evaluation and treatment of individuals involved in a radiological emergency.

e. Recommendations regarding facilities, equipment, and supplies required for effective implementation of the emergency medical plan.

f. Annual training of plant, ambulance, and hospital personnel who have responsibilities regarding radiological medical emergencies.

g. An annual emergency medical drill providing immediate evaluation and critique results.

h. Backup radio-bioassay laboratory services for the evaluation of body burdens and exposure consequences.

i. Arrangements, as required, for the medical evaluation and/or treatment of radiological casualties at a definitive care center for specialized treatment.

Mercy Memorial Hospital and Oakwood Southshore Medical Center maintain appropriate radiological control capabilities through training courses supported by Detroit Edison, as described in Section II.O of this Plan and periodic drills and exercises consistent with the requirements described in Section II.N of this Plan.

Agreements with Mercy Memorial Hospital and Oakwood Southshore Medical Center are maintained on file by the Fermi 3 Emergency Preparedness Department and listed in Appendix 2 of this Plan.

2. Onsite First Aid Capability

Detroit Edison maintains at least two (2) personnel qualified in first aid at the site on a 24-hour basis. During normal working hours, the onsite nurse is available and responsible for first aid treatment and the decision for offsite medical assistance. During off-hours or when the onsite nurse is not present, the Plant First Responder is responsible for first aid treatment and the decision for offsite medical assistance. Operations personnel qualified in first aid are also available to respond, as necessary. Personnel may be dispatched for first aid response from the Control Room or the Operational Support Center, if activated.

In cases of severe injury, lifesaving first aid and medical treatment will take precedence over personnel decontamination. In general, the order of medical treatment will be:

Care of severe physical injuries and illness.

Personnel decontamination

First aid to other injuries.

Definitive medical treatment and subsequent therapy, as required.

Radiation Protection personnel at the site are experienced and trained in control of radioactive contamination and decontamination associated with injured or contaminated personnel and can be dispatched to support personnel administering first aid and medical support if required. If decontamination is not considered due to the immediacy of medical treatment, efforts will be made to isolate and reduce the spread of contamination prior to transportation offsite to a medical facility.

The Onsite Medical Facility at Fermi 3 is designed to provide basic first responder aid to injured or ill personnel prior to arrival of offsite medical support. Fermi 3 maintains supplies and equipment at the Onsite Medical Facility necessary for the treatment of contaminated or injured persons, as described in emergency plan administrative procedures.

In the event of a mass casualty incident, medical triage will be implemented and victims will be screened and categorized in order to prioritize victim treatment. Monroe County Emergency Medical Services can provide support by coordinating all EMS resources, including communications, transport, and treatment, in accordance with the Monroe County Emergency Management Plan.

3. Medical Transportation

Injured and contaminated personnel requiring hospital medical attention will be transported to an offsite medical facility, if required. A local ambulance service has agreed to respond to emergency calls from the site, including transporting persons with injuries involving radioactive contamination. This service is available on a 24-hour basis and is confirmed by written agreement which is maintained on file by the Fermi 3 Emergency Preparedness Department and listed in Appendix 2 of this Plan.

A qualified Radiation Protection person shall accompany the ambulance to the hospital upon determination that the injured or ill person is contaminated, or if the determination cannot be made that the individual is free of contamination. If possible, contaminated clothing and equipment may be removed from the patient; or the patient may be wrapped in clean sheets or clothing to prevent contamination of the transporting personnel and vehicle.

The ambulance maintains radio communications (or alternate communications link) with the hospital while in transit. Additional Radiation Protection personnel may be contacted and dispatched to the offsite medical facility to assist in the monitoring and decontamination of the injured person(s), the hospital facilities, and the ambulance and response personnel as needed.

M. Reentry and Recovery Planning

This section describes activities for reentry into areas of the plant that have been evacuated as a result of an accident and outlines the Fermi 3 Recovery Organization and its concept of operations. Detailed information describing reentry and recovery activities are located in emergency plan implementing procedures.

1. Recovery Plans and Procedures

a. Evaluating Reentry Conditions

During an emergency, immediate actions are directed toward limiting the consequences of the accident in a manner that gives maximum protection to plant personnel and the general public. After corrective measures have been taken and effective control of the plant has been re-established, a more methodical approach to reentry is taken. Reentry can be divided into two (2) separate categories:

- *Reentry during the emergency phase of an accident* is performed to save a life; control a release of radioactive material; or prevent further damage to plant equipment or restore equipment. If necessary, this category of reentry may be performed using emergency exposure limits. Briefings, rather than written radiation protection procedures, may be used when making these entries. All reentry activities conducted during an emergency are authorized by the Emergency Coordinator and coordinated with OSC personnel.
- *Reentry during the recovery phase of an accident* is performed using normal exposure limits. Either normal procedures or procedures that consider existing as well as potential conditions inside affected areas are developed specifically for each reentry. Reentry during the recovery phase is authorized by the Recovery Manager and coordinated with the recovery organization managers in charge of personnel making reentry.

The following actions will be taken, as required, prior to authorizing reentry into the plant:

- Review available radiation surveillance data and determine plant areas potentially affected by radiation and/or contamination.
- Review radiation exposures of personnel required to participate in the recovery operations and determine the need for additional personnel as well as the source of the additional personnel.
- Review the adequacy of radiation survey instrumentation and equipment (for example, types, ranges, number, and calibration).
- Pre-plan activities and briefings for the reentry team that include the following:
  - Areas to be surveyed
  - Radiation and contamination levels anticipated

- Radiation survey equipment required
- Shielding requirements and availability
- Protective clothing and equipment required
- Access control procedures
- Issuance of new Radiation Work Permit
- Exposure control limits and personnel dosimetry required
- Decontamination requirements
- Communication equipment required

The initial reentry into the plant areas should encompass the following activities with task priority determined by the Recovery Manager:

- Determine the initial required recovery operations.
- Observe any hazards or potential hazards associated with recovery operations.
- Make a comprehensive radiation surveillance of plant facilities and designate all radiological problem areas.
- Isolate hazardous areas of the plant by using appropriate warning signs and rope barriers.
- Revise security access lists to prevent authorized or inadvertent entry into hazardous areas.

b. Evaluating Entry Into Recovery

The Recovery phase is that period when major repairs are being performed to return the plant to an acceptable condition, and the possibility of further degradation due to the emergency no longer exists. When the plant has been stabilized, contained and controlled, the Recovery phase may be entered.

The recovery plans, from a practical standpoint, must be flexible enough to meet the needs of the existing event. It is not possible to anticipate in advance all the conditions that may be encountered in an emergency situation. The recovery plans will be developed by Detroit Edison and coordinated with federal, state, county, and provincial government officials.

Recovery from an emergency situation includes the following elements:

- The protective of the public health and safety is the foremost consideration in formulating recovery plans.
- Public officials are kept informed of recovery plans, so they can properly carry out their responsibilities to the public.

- Periodic briefings of media representatives are held to inform the public of recovery plans and the progress made.
- Periodic status reports are given to Detroit Edison employees at other locations and to government and industry representatives.
- The radiation doses to employees and other radiation workers are kept ALARA.
- Necessary adjustments in the size and makeup of the Recovery Organization are made, as deemed necessary by the Recovery Manager.

2. Recovery Organization

When the decision is made to enter the Recovery phase, the Emergency Officer, with assistance from senior management, will determine the extent of staffing for the Fermi 3 Recovery Organization. The ERO will be notified of the change, and appropriate personnel will be assigned responsibilities for the recovery effort. The Emergency Officer will also initiate notification to offsite governmental organizations that the site is transitioning to a Recovery Organization and include information concerning changes in the organizational structure that may occur.

For events of a minor nature (for example, for Unusual Event classifications), the normal onshift organization should be adequate to perform necessary recovery actions.

For events where damage to the plant has been significant, but no offsite releases have occurred and/or protective actions were not performed (for example, for Alert classifications), the Emergency Response Organization, or portions thereof, should be adequate to perform the recovery tasks prior to returning to the normal plant organization.

For events involving major damage to systems required to maintain safe shutdown of the plant and/or radioactive releases have occurred (for example, for Site Area Emergency or General Emergency classifications), the Recovery Organization is put into place.

The specific members of the Recovery Organization are selected based on the sequence of events that preceded the recovery activities, as well as the requirements of the Recovery phase. The basic framework of the Recovery Organization is shown in Figure II.M-1. This organization may be modified during the recovery process to better respond to conditions at the site.

The state will be the lead organization for offsite recovery operations, and the state's recovery organization will be set up in accordance with the State of Michigan Emergency Management Plan.

Responsibilities of the following personnel assigned to the Recovery Organization include:

a. Recovery Manager (Manager-Nuclear Outage Management)

- Authorizes funds and ensures sufficient personnel, equipment, or other resources from Detroit Edison and other organizations are available to support the recovery operation.
- Directs the development of a recovery plan and procedures.
- Notifies offsite authorities, in a timely manner, that a recovery operation will be initiated and indicates any expected or potential offsite impact.
- Initiates offsite notification whenever recovery operations have potential offsite effects.

b. Nuclear Production Coordinator (Director, Nuclear Production or Alternate)

- Authorizes the start of plant reentry activities.
- Prepares an analysis of the circumstances leading up to and resulting from the emergency, in conjunction with recommendations to prevent a recurrence.
- Ensures that ALARA concerns are addressed in Recovery-related operations activities and coordinates onsite/offsite radiation monitoring programs.
- Maintains the plant during the recovery operation.
- Develops implementing and operating procedures to support recovery efforts.
- Ensures that plant personnel are trained in recovery-related operating and maintenance procedures.
- Develops post-accident plans and procedures for obtaining solid, liquid, and gaseous samples, as required.
- Authorizes the return to normal operations when approved by the NRC.

c. Offsite Activities Coordinator (Regional Manager, Corporate & Governmental Affairs or Alternate)

- Provides liaison with offsite agencies and coordinates Fermi 3 assistance for offsite recovery activities.
- Updates offsite agencies with status of onsite recovery efforts.

d. Public Information Coordinator (Supervisor, Communication Planning or Alternate)

- Disseminates information about the recovery operation to the media.
- Coordinates with all public information groups (federal, state, county, and provincial).

The remainder of the Recovery Organization is established during an initial recovery plan developed at the end of the emergency phase, or just after entry into the recovery phase. Consideration is given to recovery activity needs and use of the normal Fermi 3 organizations. An individual recovery supervisor may be designated in any or all of the following areas:

- Maintenance
- Engineering/Technical Support
- Radiation Protection
- Operations
- Chemistry
- Security
- Quality Assurance
- Training
- Licensing

The Recovery Organization develops plans and procedures designed to address both immediate and long term actions. The necessity to maintain protective measures implemented during the emergency is evaluated and, if deemed appropriate, the Recovery Organization recommends relaxation of the protective measures. Because it is not possible to foresee all of the consequences of an event, specific recovery procedures may need to be written to address specialized requirements. When possible, existing Fermi 3 procedures are utilized in the areas of operations, maintenance, and radiological controls.

Depending on plant conditions and the scope of required activities, the Recovery Organization may operate from one or more of the emergency response facilities, or from other designated locations. As recovery operations progress, the Recovery organization may be augmented or reduced, as needed, to maintain effectiveness and meet ongoing operational needs.

The Emergency Director, with concurrence from the Emergency Officer, has the responsibility for determining when an emergency situation is stable, and the site is ready to enter the Recovery Phase. Prior to terminating an emergency and entering recovery, the following conditions should be considered (this is not intended to be a complete list; and additional criteria may apply, depending on the specifics of the event):

- Conditions that initiated the emergency have been contained, controlled, eliminated, or stabilized such that the emergency classification is no longer applicable.
- Radioactive releases are under control and are no longer in excess of Technical Specification limits.

- The radioactive plume has dissipated, and plume tracking is no longer required. The only environmental assessment activities in progress are those necessary to assess the extent of deposition resulting from passage of the plume.
- In-plant radiation levels are stable or decreasing, and acceptable, given the plant conditions.
- The potential for uncontrolled radioactive release is acceptably low.
- The reactor is in a stable shutdown condition, and long-term core cooling is available.
- Containment pressure is within Technical Specification limits.
- Any fire, flood, earthquake or similar emergency condition no longer exists.
- All required notifications have been made.
- Discussions have been held with federal, state, county, and provincial government agencies; and agreement has been reached to terminate the emergency.
- At an Alert or higher emergency classification, the ERO is in place, and emergency response facilities are operational.

It is not necessary for all conditions listed above to be met. However, all items must be considered prior to entering the Recovery Phase. For example, it is possible that some conditions remain after a severe accident which exceeds an EAL, but entry into the Recovery Phase is appropriate.

Decisions to relax protective actions for the public will be made in accordance with the State of Michigan Emergency Management Plan. The Recovery Manager will provide information to the appropriate state agencies to facilitate the decision.

The Recovery Phase involves assessing equipment damage and repairs; installing shielding, rope barriers, signs and tags; and decontaminating and cleaning as necessary to place the plant in acceptable, long-term stable condition. Recovery operations will not be initiated until the area(s) affected by the emergency has been defined. Particular attention will be directed toward isolating components and systems as required to control or minimize the hazards. A systematic investigation will be conducted to determine what equipment has been damaged and the extent of the damage.

Recovery operations can be terminated when the plant has been returned to pre-accident levels of radiation and contamination, and a condition which is acceptable and controllable for an extended period of time, or to normal operating condition.

3. Updating Total Population Exposure During Recovery Operations

Total population exposure calculations will be performed and periodically updated during the Recovery phase of an accident. A method has been developed for estimating the total population exposure resulting from the accident from data collected in cooperation with the state and other federal agencies. Total population exposure is determined through a variety of procedures including:

Examination of pre-positioned environmental monitoring TLDs.

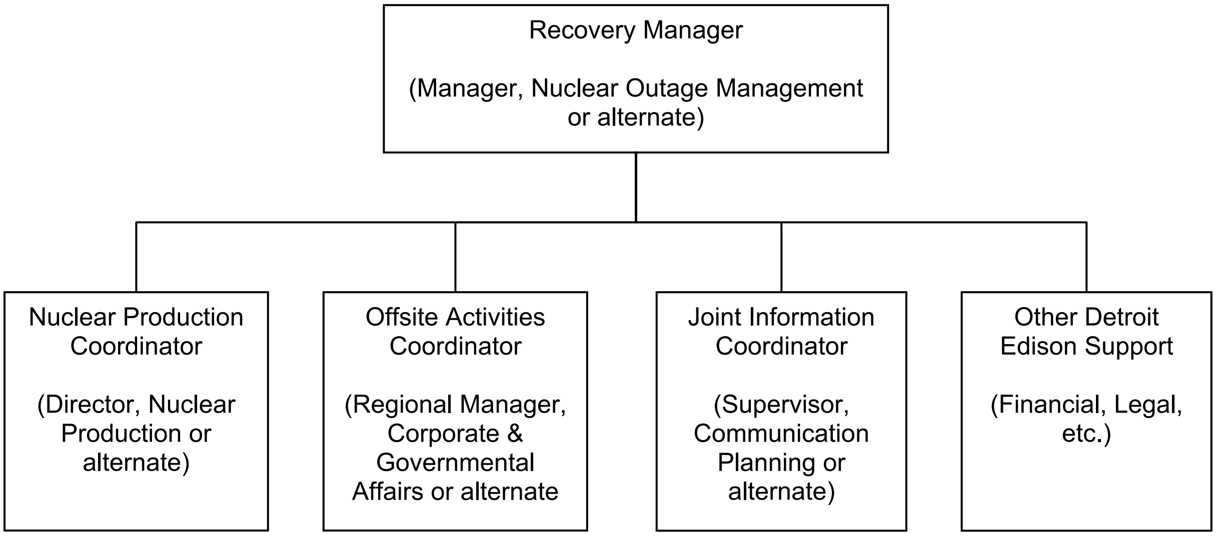
Bioassay.

Estimates based on release rates and meteorology.

Estimates based on environmental monitoring of food, water, and ambient dose rates.

The state will be the lead agency in the collection and analysis of environmental air, soil, foliage, food, and water samples and for the generation of radiation monitoring reports. Fermi 3 environmental sampling activities will be coordinated with state efforts, as requested, and results shared with cognizant agencies.

Figure II.M-1 Recovery Organization (Basic Framework)



N. Exercises and Drills

This section describes the program of exercises and drills conducted to practice, test, and evaluate the adequacy of the emergency preparedness program, including facilities, equipment, procedures, communication links, actions of ERO personnel, and coordination between Fermi 3 and offsite emergency response organizations. Any identified drill/exercise deficiencies are evaluated and corrected. Details for conduct of drills and exercises are described in emergency plan administrative procedures.

1. Exercises

An exercise is an event that tests the integrated capability of a major portion of the basic elements existing within emergency preparedness plans and organizations. Exercises are conducted in accordance with NRC and FEMA rules (e.g.,10 CFR 50.47(b)(14) and 44 CFR 350.9).

a. Exercise Scope and Frequency

An emergency (biennial) exercise will be conducted at least every two (2) years. The exercise scenarios will be varied from exercise to exercise such that major elements of the plans and emergency organizations are tested within a 6-year period. One exercise shall start between 6:00 p.m. and 4:00 a.m. within a 6-year period. Exercises may be announced or unannounced and conducted under various weather conditions. The site will demonstrate emergency response to a security-based threat at least once within a 6-year period.

b. Exercise Scenarios and Participation

The State of Michigan Emergency Management Plan delineates the frequency in which the state will participate in an exercise with Detroit Edison. This participation may be either full or partial depending on the objectives of the exercise and the degree to which the state and local plans will be tested.

Full participation exercises will include appropriate offsite state, county, and provincial authorities and Fermi 3 personnel actively taking part in testing the integrated capability to adequately assess and respond to a declared emergency at the plant. Additionally, full participation exercises will include testing the major observable portions of the onsite and offsite emergency plans and mobilization of state, local, provincial, and Fermi 3 personnel and other resources in sufficient numbers to verify the capability to respond to an accident scenario. Some of the offsite response actions may be provided for evaluation in an out-of-sequence manner.

Exercises involving participation by offsite agencies will simulate an emergency that may result in the release of radioactivity to the offsite environs or the threat of such a release, sufficient in magnitude to warrant a response by offsite authorities.

Ingestion Pathway Exercises are conducted on a 6-year cycle. Fermi 3 participates on a rotating basis with the other fixed nuclear facilities in the State of Michigan. These exercises are usually conducted in conjunction with a full participation exercise as the State chooses.

2. Drills

A drill is a supervised instruction period aimed at testing, developing, and maintaining skills in a particular operation. Drills are conducted to ensure that adequate emergency response capabilities are maintained during the interval between evaluated exercises. As a minimum the following drills will be conducted:

a. Communication Drills

1. Communication between the Control Room, TSC, EOF, Michigan State Police, Monroe County Central Dispatch, and Wayne County Central Communications shall be tested monthly.

2. Communication between the Control Room, TSC, and EOF to the NRC Headquarters Operations Center shall be tested monthly.

3. Communications between the Fermi 3 Emergency Response Facilities and the appropriate offsite response organizations shall be tested during annual drills and include the aspect of understanding the content of messages.

4. Communications between the plant, state, and local emergency operations centers, and offsite radiological emergency teams shall be tested annually.

5. Communications between the Control Room, TSC, OSC, EOF, and JPIC shall be tested annually.

b. Fire Drills

Fire drills shall be conducted in accordance with Section 13.1 of the Fermi 3 FSAR and plant procedures. A fire drill involving the Frenchtown Fire Department is conducted annually.

c. Medical Emergency Drill

A medical emergency drill involving a simulated contaminated individual and participation by local support agencies (for example, contracted ambulance service, Oakwood Southshore Medical Center or Mercy Memorial Hospital) shall be conducted annually. The offsite portions of the medical drill may be performed as part of the required biennial exercise.

d. Radiological Monitoring Drills

Plant environs and radiological monitoring drills (onsite and offsite) shall be conducted annually. These drills include collection and analysis of sample media (such as water, vegetation, and soil from the Owner Controlled Area or nearby offsite areas and provisions for communications and record keeping. Collection of milk is demonstrated during conduct of ingestion pathway exercises.

e. Radiation Protection Drills

Radiation Protection drills involving the sampling and analysis of simulated elevated radioactive airborne and liquid samples, as well as direct radiation measurements in the plant environment, shall be conducted semi-annually. These drills may be conducted in conjunction with the required biennial exercise.

f. Additional Drills

1. Additional drills will be scheduled, as necessary, to provide adequate training of personnel; provide emphasis on weak areas; and ensure an adequate level of emergency preparedness.

2. During the interval between biennial exercises, at least one (1) “off year” drill should be conducted at the plant involving principal areas of onsite emergency response capabilities. These areas include management and coordination of emergency response, accident assessment, protective action decision-making, and plant system repair and corrective action. The drill may involve no participation or limited participation by offsite agencies, although a routine offer is made to determine the extent of offsite agency participation.

3. Conduct of Drills and Exercises

Advance knowledge of a drill/exercise scenario will be kept to a minimum to allow “free play” decision making and to ensure a realistic participation by those involved.

Drill and exercise scenarios will contain, as a minimum, the following:

a. The basis objective(s) of the drill or exercise and the appropriate evaluation criteria.

b. The date(s), time period, location of the drill or exercise, and participating organizations.

c. The simulated events.

d. A list of anticipated Drill/Exercise Performance (DEP) opportunities including classification, notifications, and protective action recommendations.

e. A time schedule of real and simulated initiating events.

f. A narrative summary describing the conduct of the drill or exercise and includes such items as simulated casualties, offsite fire department assistance, rescue of personnel, use of protective clothing, deployment of emergency teams, and public information activities.

g. Assignments for qualified controllers/evaluators and provisions for observers from federal, state, and local organizations, as appropriate.

4. Exercise and Drill Evaluation

Prior to the drill or exercise, a package will be distributed to the controllers and evaluators that will include the scenario, a list of performance objectives, and a description of the expected responses. During conduct of the drill or exercise, qualified evaluators who have the skills and knowledge to effectively evaluate the participants will evaluate drill/exercise performance objectives against measurable demonstration criteria. Official observers from federal, state or local governments will observe, evaluate, and critique the required biennial exercise in which the state and counties participate.

5. Drill and Exercise Critiques

As soon as possible following the conclusion of each drill or exercise, a critique is conducted to evaluate the ability of all participating organizations to respond. The Fermi 3 Emergency Preparedness Department will develop a formal written critique based on input from the drill participants, controllers/evaluators, and observers. The written critique will document the ability of the ERO to respond the simulated emergency situation or sequence of events and may identify the need for changes to the Plan, procedures, equipment, facilities, or other components of the emergency preparedness program.

The critique and evaluation process are used to identify areas of the emergency preparedness program that require improvement. The Supervisor, Emergency Preparedness is responsible for evaluation of recommendations and comments to determine which items will be incorporated into the program or require corrective actions, and for scheduling, tracking, and evaluating resolution of the items.

O. Radiological Emergency Response Training

This section describes the radiological emergency response training program which assures the training, qualification, and requalification of individuals who may be called on for assistance during an emergency at Fermi 3. Detroit Edison implements a training program that provides for initial training and retraining for individuals who have been assigned emergency response duties, including both Fermi 3 ERO personnel and offsite support agencies that may be requested to provide assistance.

The Supervisor, Emergency Preparedness (EP), is responsible for the overall content and administration of the emergency response training program. Training will be conducted in accordance with the emergency plan administrative procedures.

Initial training and periodic retraining is provided to ERO personnel in accordance with the emergency response training program.

1. Offsite Emergency Response Training

Detroit Edison conducts, or supports the conduct of, site-specific training for offsite personnel who may be called upon to provide assistance during an emergency. The affected agencies include local fire departments, law enforcement, ambulance, and hospital personnel, as described in Section II.A of this Plan.

Training of offsite emergency response organization personnel is described in their respective radiological emergency plans, with support provided by Fermi 3, as requested. Offsite training assistance may be provided, as needed, by personnel from Training, Radiation Protection, Operations, Security, Chemistry, or Corporate Communications.

This emergency plan training may include the following topics, as a minimum:

Radiological Emergency Response Plan orientation, including site layout

Communications interfaces and procedures between the onsite organizations and offsite support agencies (including identification of onsite individuals who are in control of offsite support activities)

Transporting and treating contaminated patients

Basic health physics and radiation protection

Emergency equipment

Site access procedures

In addition to the specific offsite training described above, Detroit Edison, the Michigan State Police, and the local counties have developed a four-part training program that is presented annually to the local offsite emergency response organizations and includes the following information:

Plant operations and emergency planning

Basics of radiation

Radiological emergency response plans, organizations, and procedures for the State of Michigan

Emergency worker orientation to the county radiological emergency response plan

Additional specific training programs are available to local organizations through the Emergency Management Division, Michigan Department of State Police, as described in the Michigan Emergency Management Plan.

Detroit Edison also conducts an annual seminar for offsite state, local and provincial government personnel who will be involved with the onsite/offsite emergency response facilities, EALs, emergency classification, meteorology, dose assessment, field surveys, and protective action recommendations. The seminar provides a basis for understanding the application, process, and interfaces among Fermi 3 and offsite response organizations and is made available to the following agencies:

Michigan Department of State Police Emergency Management and Homeland Security

Michigan Department of Environmental Quality

Province of Ontario, Canada

Monroe County

Wayne County

2. Onsite Emergency Response Training

The emergency response training program includes Fermi 3 and other Detroit Edison personnel who may be called upon to respond to an emergency. All ERO personnel are initially trained and receive periodic retraining which is developed based on the requirements of 10 CFR 50, Appendix E and position-specific responsibilities. The lesson plans, study guides, and written exams are contained in the ERO training program. The initial and requalification training requirements are described in emergency plan administrative procedures.

The training program includes General Employee Training (GET) for all persons at Fermi 3 and detailed training for ERO personnel having responsibilities during an emergency. Each individual completes the required training prior to assignment to a position in the ERO.

The training program establishes the scope, nature, and frequency of the required training and qualification measures. The training program includes practical drills, consistent with Section II.N of this plan, during which each individual demonstrates the ability to perform responsibilities and tasks for their assigned emergency response function. The instructor/evaluator immediately corrects any erroneous performance noted during the practical drills and, if appropriate, demonstrates proper performance consistent with approved procedures and accepted standards.

All ERO personnel are trained in the following subjects, to the extent appropriate to their duties and responsibilities:

- Emergency response organization
- Emergency classification system
- Personnel accountability
- Emergency exposure limits
- Emergency response facilities
- Security access control and site evacuation process
- Exposure control techniques

Detroit Edison implements a program to provide facility position-specific emergency response training for designated members of the ERO. The content of the training program is appropriate for the duties and responsibilities of the assigned position.

Knowledge based training may be provided in a classroom setting or other setting as described in emergency plan administrative procedures; and performance-based training and evaluations will be conducted for most ERO members during drills, walk-throughs, or table-tops. Completion of training activities and evaluations are documented on ERO qualification guides.

3. First Aid Training

Personnel assigned to emergency teams that provide first aid will complete a training course equivalent to Red Cross Multi-Media on a schedule compatible with the Red Cross requirements.

P. Responsibility for the Planning Effort

This section describes responsibilities associated with maintaining the Emergency Preparedness Program, including the development, review and distribution of the Emergency Plan. This section also outlines the criteria for ensuring that personnel responsible for the emergency planning effort are trained appropriate to their duties and responsibilities.

1. Training

In order to support an effective implementation of the emergency preparedness effort, Detroit Edison implements a process to provide training for the Emergency Preparedness staff consistent with applicable regulatory requirements and guidance; license conditions; other commitments; and accepted good practices. Training may include formal education, professional seminars, plant specific training, industry meetings, and other activities and forums that provide for an exchange of pertinent information.

2. Responsibility for Radiological Emergency Response Planning

The Chief Nuclear Officer is responsible for the safe and reliable operation of the Fermi 3 Plant. The Manager, Licensing has overall authority and responsibility for Emergency Preparedness (EP) for Detroit Edison; for issuance and control of the Emergency Plan; and activities associated with emergency preparedness.

The Supervisor, who reports to the Manager, Licensing is designated as the Emergency Planning Coordinator and is responsible for developing and updating the Emergency Plan and implementing and administrative procedures which support the Plan. The Supervisor-Emergency Preparedness also coordinates the development and revision of the Plan and procedures with other response organizations.

The Supervisor-Emergency Preparedness in conjunction with Nuclear Training, is responsible for ensuring that all ERO personnel complete training in emergency preparedness.

The Supervisor-Emergency Preparedness is responsible for the training of individuals responsible for the planning effort.

3. Plan Reviews and Updates

The Supervisor- Emergency Preparedness is responsible for conducting or coordinating an annual review of the Plan to ensure that the Plan and its supporting agreements are current.

Changes to the Plan are recommended based on the following considerations:

a. Issues identified during training, audits, assessments, drills, exercises, or actual emergency events.

b. Changes in the Detroit Edison or plant organization.

c. Changes in the function, organization, or capabilities of offsite support agencies.

d. Changes in state or federal regulations or regulatory guidance.

e. Changes in state or local emergency plans.

f. Modifications to the plant or site that could affect emergency planning, for example modifications to plant systems, emergency equipment, or emergency facilities.

g. Changes to Technical Specifications.

h. Recommendations from other organizations, such as state or federal agencies and other utilities.

i. Significant changes in the areas surrounding the site, for example, changes in population density or land usage.

j. Changes in other plant operating or administrative procedures.

4. Distribution of Revised Plans

The Supervisor-Emergency Preparedness is responsible for determining which recommended changes are incorporated into the Plan or implementing or administrative procedures. Proposed revisions to the Plan shall be completed in accordance with the plant review and approval processes.

Revisions to the Plan are reviewed by affected organizations and then routed to the onsite review organization for review and approval. Changes to the Plan are made without NRC approval only if the changes do not decrease the effectiveness of the Plan in accordance with 10 CFR 50.54(q); and the Plan, as changed, continues to meet the standards of 10 CFR 50.47(b) and requirements of 10 CFR 50, Appendix E. Proposed changes that decrease or have the potential to decrease the effectiveness of the approved Plan are not implemented without prior approval by the NRC.

The Plan and implementing procedures are distributed as necessary on a controlled basis to the Emergency Response Facilities and selected state, local, provincial, and Federal agencies, in accordance with the plant's document control distribution process.

5. Supporting Plans

The following list identifies supporting plans and their sources:

a. NUREG-0728, U.S. Nuclear Regulatory Commission, "Concept of Operations: NRC Incident Response"

b. National Response Framework

c. Michigan Emergency Management Plan

d. Monroe County Emergency Management Plan

e. Wayne County Emergency Operations Plan

f. Fermi 3 Safeguards Contingency Plan – Note: The Safeguards Contingency Plan contains industrial security information that must be withheld from public disclosure under provisions of 10 CFR 2.73.21.

6. Implementing and Supporting Procedures

Appendix 6 of this Plan contains a listing, by title, of those procedures that implement the Plan during an emergency and also contains a listing of administrative procedures which describe actions necessary to maintain the Fermi 3 Emergency Preparedness Program. In addition, Appendix 6 describes the section(s) of the Plan that are implemented by each procedure.

7. Table of Contents and Cross-Reference

This Plan contains a specific table of contents. The format of the Plan follows the format of NUREG-0654, FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in support of Nuclear Power Plants".

Appendix 7 of this Plan provides a cross-reference between the Plan and evaluation criteria contained in NUREG-0654.

8. Emergency Plan Audits

To meet the requirements of 10 CFR 50.54(t), periodic independent reviews of the Emergency Preparedness Program will be conducted to examine conformance with 10 CFR 50.47, 10 CFR 50.54, and 10 CFR 50, Appendix E. The review will address all aspects of the Program, including:

a. The Emergency Plan and associated implementing procedures.

b. The Emergency Preparedness Training Program.

c. The readiness of the plant's Emergency Response Organization to perform its function (for example, in drills and exercises).

d. The documents and programs used to direct and document the administrative portion of the Emergency Preparedness Program.

e. The readiness of emergency response facilities, equipment, and supplies.

f. The interfaces between Fermi 3, the state, county, and provincial governmental agencies pertaining to the overall Emergency Preparedness Program.

The Detroit Edison Nuclear Quality Assurance organization performs, or oversees the performance of, the independent audit and coordinates with the Supervisor, Emergency Preparedness to ensure that audit findings and recommendations for improvement are subject to management controls consistent with the plant's corrective action program.

Detroit Edison establishes and maintains the frequency of the periodic audits based on an assessment of performance as compared to performance indicators; however, the audit frequency may not be less than once every 24 months. In addition, Detroit Edison conducts a program audit as soon as reasonably practicable after a change occurs in personnel, procedures, equipment, or facilities that could potentially adversely affect emergency preparedness, but no longer than 12 months after the change.

Detroit Edison's independent assessment organization documents audit results and improvement recommendations and reports these results to Fermi 3 and corporate management. Detroit Edison makes those portions of the audits that address the adequacy of interfaces with Federal, State, local and provincial government agencies available to the affected agencies.

Audit records are filed and maintained for a period of at least five (5) years, in accordance with the plant's document retention requirements.

9. Emergency Telephone Numbers

The Supervisor, Emergency Preparedness, or designee, is responsible for performing a quarterly review of telephone numbers in emergency response procedures and for ensuring that required updates are completed.

Appendix 1 - References

References

A. Cited References

1. Code of Federal Regulations; Title 10, Part 20, “Standards for Protection Against Radiation”.
2. Code of Federal Regulations; Title 10, Part 50, Section 47, “Emergency Plans”.
3. Code of Federal Regulations; Title 10, Part 50, Appendix E, “Emergency Planning and Preparedness for Production and Utilization Facilities”.
4. EPA 400-R-92-001, “Manual of Protective Action Guides and Protective Actions for Nuclear Incidents”, U.S. Environmental Protection Agency, May 1992.
5. FEMA REP 10, Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants” November 1985
6. Fermi 3 Final Safety Analysis Report (FSAR)
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8. GE-Hitachi Nuclear Energy, “ESBWR Design Control Document,” Revision 4, September 2007.
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10. NUREG-0654/FEMA-REP-1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants”, November 1980, Revision 1.
11. NUREG-0696, “Functional Criteria for Emergency Response Facilities”, Final Report, February 1981.
12. NUREG-0737, Supplement 1, “Requirements for Emergency Response Capability”, December 1982.
13. NUREG-0728, “NRC Incident Response Plan” Revision 4, April 2005
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16. Michigan Emergency Management Plan, December 2005.
17. Technical Basis Document DAS/RADDOSE-V, "DAS/RADDOSE-V, Version 1.0, March 2002.

B. Supplemental References

1. Federal Register, Vol. 47, No. 205, U.S. Food and Drug Administration, “Accidental Radioactive Contamination of Human Food and Animal Feeds, Recommendations for State and Local Agencies”. October 22, 1982.
2. Code of Federal Regulations; Title 10, Part 52, “Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants”.
3. Federal Emergency Management Agency, Guidance Memorandum MS-1, “Medical Services”, Federal Emergency Management Agency, November 13, 1986.
4. IE Information Notice 85-55, “Revised Emergency Exercise Frequency Rule”, July 15, 1985.
5. NUREG-0737, “Clarification of TMI Action Plan Requirements”, October 1980.
6. NUREG/CR-4831, “State of the Art in Evacuation Time Estimate Studies for Nuclear Power Plants”, March 1992.
7. U.S. Department of Energy, “Federal Radiological Monitoring and Assessment Center Operations Plan,” DOE/NV 11718-080, December 2005.
8. U.S. Nuclear Regulatory Commission Bulletin 2005-02, “Emergency Preparedness and Response Actions for Security-Based Events”.
9. U.S. Nuclear Regulatory Commission Correspondence: SECY 88-147, SECY 89-012, Generic Letter 88-20.
10. U.S. Nuclear Regulatory Commission Order, “Implementation Guidance for Interim Safeguards and Security Compensatory Measures for the Order”, February 25, 2002.
11. U.S. Nuclear Regulatory Commission, RTM-92, “Response Technical Manual”, 1992.
12. Federal Register, Vol. 43, No. 242, U.S. Food and Drug Administration, “Accidental Radioactive Contamination of Human Food and Animal Feeds”. December 15, 1978.

Appendix 2 – Certification Letters

Certification Letters

This Appendix contains a list of agreements between Detroit Edison and other organizations that may be required to provide support to Fermi 3 in the event of an emergency. Copies of the original agreements are kept on file by Fermi 3 Emergency Preparedness or Detroit Edison Contract Services.

1. Michigan State Police
2. Monroe County Emergency Management Division
3. Wayne County Department of Homeland Security & Emergency Management
4. Frenchtown Charter Township Fire Department
5. Mercy Memorial Hospital Corporation
6. Monroe Community Ambulance
7. Oakwood Southshore Medical Center

Appendix 3- Emergency Action Levels

Emergency Action Levels

EXECUTIVE SUMMARY

This appendix provides the set of Emergency Action Levels and Initiating Conditions based on industry guidance provided in NEI 07-01, “Methodology for Development of Emergency Action Levels, Advanced Passive Light Water Reactors,” Rev. 0, March 2008 (Ref. 11). Emergency Action Levels are presented by Recognition Category:

A - Abnormal Rad Levels/Radiological Effluent

C - Cold Shutdown / Refueling System Malfunction

F - Fission Product Barrier Degradation

H - HAZARDS or OTHER Conditions Affecting Plant Safety

S - System Malfunction

Each of these Recognition Categories is structured in the following way:

Recognition Category - As described above.

Emergency Class – Notice of Unusual Event (NOUE), Alert, Site Area Emergency or General Emergency.

Initiating Condition - Symptom- or Event-Based, Generic Identification and Title.

Operating Mode Applicability - Power Operation, Hot Standby, Safe/Stable Shutdown, Cold Shutdown, Refueling, Defueled, All, or Not Applicable.

Emergency Action Level(s) corresponding to the IC.

Note: Basis information for plant-specific readings and factors that may relate to changing the generic IC or EAL to a different emergency class, such as for Loss of ALL AC Power is not located in this Appendix. Basis information is located in the emergency plan implementing procedures.

For Recognition Category F, the information is presented in a matrix format. The presentation method was chosen to clearly show the synergism among the Emergency Action Levels and to support more accurate dynamic assessments. For Recognition Category F, the Emergency Action Levels are arranged by safety function or fission product barrier. Classifications are based on various combinations of safety function or fission product barrier challenges.

The primary threshold for Notification of Unusual Event as operation outside the safety envelope for the plant as defined by plant Technical Specifications, including LCOs and Action Statement Times. In addition, certain precursors of more serious events such as earthquakes are included in Notification of Unusual Event Emergency Action Levels. This provides a clear demarcation between the lowest emergency class and "non-emergency" notifications specified by 10 CFR 50.72.

The approved Design Certification does not include detailed design data for those items specific to a site location. In many cases this data is necessary to determine EAL thresholds. In these cases this document provides a [Fermi 3 site specific] placeholder.

The approved Design Certification does not include some detailed design information such as setpoints and some instrument numbers which are being developed by General Electric. In many cases this data is necessary to determine EAL thresholds. Appropriately, this document provides a [TBD] placeholder for future inclusion. This applies to certain site specific values, as well. Development of the site specific EAL scheme was based on this concept.

ACRONYMS

AC	Alternating Current
APRM	Average Power Range Monitor
CDE	Committed Dose Equivalent
CET	Core Exit Thermocouple
CFR	Code of Federal Regulations
Ci	Curie
CMT/CNMT	Containment
CSF	Critical Safety Function
DC	Direct Current
DG	Diesel Generator
EAL	Emergency Action Level
EIP	Emergency Implementing Procedure
EOF	Emergency Operations Facility
EOP	Emergency Operating Procedure
EPA	Environmental Protection Agency
EPG	Emergency Procedure Guideline
EPRI	Electric Power Research Institute
ERG	Emergency Response Guideline
FAA	Federal Aviation Administration
FAQ	Frequently Asked Question
FBI	Federal Bureau of Investigation
FEMA	Federal Emergency Management Agency
FSAR	Final Safety Analysis Report
GE	General Emergency
HCTL	Heat Capacity Temperature Limit

IC	Initiating Condition
IRWST	In Containment Refueling Water Storage Tank
Keff	Effective Neutron Multiplication Factor
LCO	Limiting Condition of Operation
LOCA	Loss of Coolant Accident
LWR	Light Water Reactor
MCR	Main Control Room
MSL	Main Steam Line
MSIV	Main Steam Isolation Valve
mR	milliRoentgen
Mw	Megawatt
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
NOUE	Notification Of Unusual Event
OBE	Operating Basis Earthquake
ODCM	Off-site Dose Calculation Manual
PA	Protected Area
PAG	Protective Action Guideline
PIP	Plant Investment Protection
PLS	Plant Control System
POAH	Point of Adding Heat
PRA/PSA	Probabilistic Risk Assessment / Probabilistic Safety Assessment
PWR	Pressurized Water Reactor
psig	Pounds per Square Inch Gauge
Q-DCIS	Safety Related Distributed Control and Information System

R	rem
RCS	Reactor Coolant System
RMS	Radiation Monitoring System
RPS	Reactor Protection System
RPV	Reactor Pressure Vessel
RWCU/SDC	Reactor Water Cleanup/Shutdown Cooling System
SAG	Severe Accident Guideline
SCBA	Self Contained Breathing Apparatus
SBGTS	Stand-By Gas Treatment System
SPDS	Safety Parameter Display System
SRNM	Source Range Neutron Monitor
SRO	Senior Reactor Operator
SSE	Safe Shutdown Earthquake
TEDE	Total Effective Dose Equivalent
TBD	To Be Determined
TOAF/TAF	Top of Active Fuel
TSC	Technical Support Center

1.0 METHODOLOGY FOR DEVELOPMENT OF EMERGENCY ACTION LEVELS

This appendix provides the set of Emergency Action Levels and Initiating Conditions based on industry guidance provided in NEI 07-01, “Methodology for Development of Emergency Action Levels, Advanced Passive Light Water Reactors,” Rev. 0 Draft, March 2008.

The approved Design Certification does not include detailed design data for those items specific to a site location. In many cases this data is necessary to determine EAL thresholds. In these cases this document provides a [Fermi 3 site specific] placeholder.

The approved Design Certification does not include some detailed design information such as setpoints and some instrument numbers which are being developed by General Electric. In many cases this data is necessary to determine EAL thresholds. Appropriately, this document provides a [TBD] placeholder for future inclusion. This applies to certain site specific values, as well. Development of the site specific EAL scheme was based on this concept.

2.0 CHANGES INCORPORATED WITH NEI 07-01

Reserved.

3.0 DEVELOPMENT OF BASIS FOR GENERIC APPROACH

The Emergency Action Levels (EALs) and Initiating Conditions (ICs) provided in this appendix address the emergency classification scheme discussed in Section II.D of the Emergency Plan. In addition to radiological events, non-radiological events are included in the classification scheme only to the extent that these events represent challenges to the continued safety of the reactor plant and its operators. There are existing reporting requirements (EPA, OSHA) under which utilities operate. There are also requirements for emergency preparedness involving hazardous chemical releases. While the proposed classification structure could be expanded to include these non-radiological hazards, these events are beyond the scope of this document.

This classification scheme is based on the four classification levels described in Section II.D of the Emergency Plan.

3.1 Emergency Action Levels

ICs/EALs are for unplanned events. A planned evolution involves preplanning to address the limitations imposed by the condition, the performance of required surveillance testing, and the implementation of specific controls prior to knowingly entering the condition. Planned evolutions to test, manipulate, repair, or perform maintenance or modifications to systems and equipment that result in an EAL Threshold Value being met or exceeded are not subject to classification and activation requirements as long as the evolution proceeds as planned. However, these conditions may be subject to the reporting requirements of 10 CFR 50.72.

All classifications are to be based upon VALID indications, reports or conditions. Indications, reports or conditions are considered VALID when they are verified by (1) an instrument channel check, or (2) indications on related or redundant indications, or (3) by direct observation by plant personnel, such that doubt related to the indication's operability, the condition's existence, or the report's accuracy is removed. Implicit in this definition is the need for timely assessment.

With the emergency classes defined, the thresholds that must be met for each EAL to be placed under the emergency class can be determined. There are two basic approaches to determining these EALs. EALs and emergency class boundaries coincide for those continuously measurable, instrumented ICs, such as radioactivity, core temperature, coolant levels, etc. For these ICs, the EAL will be the threshold reading that most closely corresponds to the emergency class description using the best available information.

The Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is IMMINENT. Under certain plant conditions, an alternate instrument or a temporary instrument may be installed to facilitate monitoring the parameter. In addition, visual observation may be sufficient to detect that a parameter is approaching or has reached a classifiable threshold. In these cases, the classification of the event is appropriate even if the instrument normally used to monitor the parameter is inoperable or has otherwise failed to detect the threshold. If, in the judgment of the Emergency Director, an IMMINENT situation is at hand, the classification should be made as if the threshold has been exceeded.

For discrete (discontinuous) events, the approach will have to be somewhat different. Typically, in this category are internal and external hazards such as FIRE or earthquake. The purpose for including hazards in EALs is to assure that station personnel and off-site emergency response organizations are prepared to deal with consequential damage these hazards may cause. If, indeed, hazards have caused damage to safety functions or fission product barriers, this should be confirmed by symptoms or by observation of such failures. Therefore, it may be appropriate to enter an Alert status for events approaching or exceeding design basis limits such as Operating Basis Earthquake, design basis wind loads, FIRE within VITAL AREAs, etc. This would give the operating staff additional support and improved ability to determine the extent of plant damage. If damage to barriers or challenges to Critical Safety Functions (CSFs) have occurred or are identified, then the additional support can be used to escalate or terminate the Emergency Class based on what has been found. Security events must reflect potential for increasing security threat levels.

The Emergency Operating Procedures (EOPs) contain detailed instructions regarding the monitoring of these functions and provide a scheme for classifying the significance of the challenge to the functions. In providing EALs based on these schemes, the emergency classification can flow from the EOP assessment rather than being based on a separate EAL assessment. This is desirable as it reduces ambiguity and reduces the time necessary to classify the event.

3.2 Treatment of Multiple Events and Emergency Class Upgrading

When multiple simultaneous events occur, the emergency classification level is based on the highest EAL reached. For example, two Alerts remain in the Alert category. Or, an Alert and a Site Area Emergency is a Site Area Emergency.

Although the majority of the EALs provide very specific thresholds, the Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is IMMINENT. If, in the judgment of the Emergency Director, an IMMINENT situation is at hand, the classification should be made as if the threshold has been exceeded. While this is particularly prudent at the higher emergency classes (as the early classification may provide for more effective implementation of protective measures), it is nonetheless applicable to all emergency classes.

3.3 Classifying Transient Events

There may be cases in which a plant condition that exceeded an EAL threshold was not recognized at the time of occurrence, but is identified well after the condition has occurred (e.g., as a result of routine log or record review) and the condition no longer exists. In these cases, an emergency should not be declared.

Reporting requirements of 10 CFR 50.72 are applicable, and the guidance of NUREG-1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73, should be applied.

Existing guidance for classifying transient events addresses the period of time of event recognition and classification (15 minutes). However, in cases when an EAL declaration criterion may be met momentarily during the normal expected response of the plant, declaration requirements should not be considered to be met when the conditions are a part of the designed plant response or result in appropriate operator actions.

3.4 Operating Mode Applicability

The plant operating mode that existed at the time that the event occurred, prior to any protective system or operator action initiated in response to the condition, is compared to the mode applicability of the EALs. If an event occurs, and a lower or higher plant operating mode is reached before the emergency classification can be made, the declaration shall be based on the mode that existed at the time the event occurred.

For events that occur in Cold Shutdown or Refueling, escalation is via EALs that have Cold Shutdown or Refueling for mode applicability, even if Safe/Stable Shutdown (or a higher mode) is entered during any subsequent heatup. In particular, the Fission Product Barrier Matrix EALs are applicable only to events that initiate in Safe/Stable Shutdown or higher.

<u>ESBWR Operating Modes:</u>

Power Operations (1): Mode Switch in Run

Startup (2): Mode Switch in Startup or Refuel

Hot Shutdown (3): Mode Switch in Shutdown, Average Reactor Coolant Temperature greater than 420°F

Stable Shutdown (4)	Mode Switch in Shutdown, Average Reactor Coolant Temperature less than or equal to 420°F and greater than 200°F
Cold Shutdown (5):	Mode Switch in Shutdown, Average Reactor Coolant Temperature less than or equal to 200°F
Refueling (6):	Mode Switch in Shutdown or Refuel, and one or more vessel head bolts less than fully tensioned.
Defueled (None)	All reactor fuel removed from reactor pressure vessel

4.0 HUMAN FACTORS CONSIDERATIONS

Human factors considerations were included in the development of NEI 07-01.

5.0 EMERGENCY ACTION LEVELS

This section of the appendix specifies each IC and EAL. Basis information for each IC and EAL is located in NEI 07-01.

5.1 Generic Arrangement

The information is presented by Recognition Categories:

A - Abnormal Rad Levels / Radiological Effluent

C - Cold Shutdown / Refueling System Malfunction

F - Fission Product Barrier Degradation

H - HAZARDS or OTHER Conditions Affecting Plant Safety

S - System Malfunction

The Initiating Conditions for each of the above Recognition Categories are in the order of NOUE, Alert, Site Area Emergency, and General Emergency. For all Recognition Categories, an Initiating Condition matrix versus Emergency Class is first shown. For Recognition Category F, the barrier-based EALs are presented in Table A3-F-2.

With the exception of Recognition Category F, each of the EAL guides in Recognition Categories is structured in the following way:

Recognition Category - As described above.

Emergency Class - NOUE, Alert, Site Area Emergency or General Emergency.

Initiating Condition – Symptom- or Event-Based, Generic Identification and Title.

Operating Mode Applicability - These modes are defined in the Technical Specifications

Emergency Action Level(s) – These EALs are conditions and indications that were considered to meet the criteria of the IC.

Basis—Provides information that explains IC and EALs. These bases are written to assist the personnel developing operator aids and procedures.

For Recognition Category F, basis information is presented in a format consistent with Tables A3-F-1 and A3-F-2. The presentation method shown for Fission Product Barrier Function Matrix was chosen to clearly show the synergism among the EALs and to support more accurate dynamic assessments.

5.2 Generic Bases

The primary threshold for NOUEs is operation outside the safety envelope for the plant as defined by plant Technical Specifications, including LCOs and Action Statement Times. In addition, certain precursors of more serious events are included in NOUE IC/EALs. This provides a clear demarcation between the lowest emergency class and "non-emergency" notifications specified by 10 CFR 50.72.

For a number of Alerts, IC/EALs are chosen based on hazards which may cause damage to plant safety functions (i.e., tornadoes, hurricanes, FIRE in plant VITAL AREAs) or require additional help directly (Control Room evacuation) and thus increased monitoring of the plant is warranted. The symptom-based and barrier-based IC/EALs are sufficiently anticipatory to address the results of multiple failures, regardless of whether there is or is not a common cause. Declaration of the Alert will already result in the staffing of the TSC for assistance and additional monitoring. Thus, direct escalation to the Site Area Emergency is unnecessary. Other Alerts, that have been specified, correspond to conditions which are consistent with the emergency class description.

The basis for declaring a Site Area Emergency and General Emergency is primarily the extent and severity of fission product barrier challenges, based on plant conditions as presently known or as can be reasonably projected.

With regard to the Hazards Recognition Category, the existence of a hazard that represents a potential degradation in the level of safety of the plant is the basis of NOUE classification. If the hazard results in VISIBLE DAMAGE to plant structures or equipment associated with safety systems or if system performance is affected, the event may be escalated to an Alert. The reference to “duration” or to “damage” to safety systems is intended only to size the event. Consequential damage from such hazards, if observed, would be the basis for escalation to Site Area Emergency or General Emergency, by entry to System Malfunction or Fission Product Barrier IC/EALs.

5.3 Site-Specific Implementation

Reserved.

5.4 Definitions

In the IC/EALs, selected words have been set in all capital letters. These words are defined terms having specific meanings as they relate to this document. Definitions of these terms are provided below:

BOMB: An explosive device suspected of having sufficient force to damage plant systems or structures.

CIVIL DISTURBANCE: A group of persons violently protesting station operations or activities at the site.

CONTAINMENT CLOSURE: The Tech. Spec. Section 3.6 required and site-specific procedurally defined action taken to secure primary containment or the Reactor Building and the associated structures, systems, and components as a functional barrier to fission product release under existing plant conditions.

EXPLOSION: A rapid, violent, unconfined combustion, or catastrophic failure of pressurized equipment that imparts energy of sufficient force to potentially damage permanent structures, systems, or components.

FIRE: Combustion characterized by heat and light. Sources of smoke, such as slipping drive belts or overheated electrical equipment do not constitute FIRES. Observation of flame is preferred but is NOT required if large quantities of smoke and heat are observed.

HOSTAGE: A person(s) held as leverage against the station to ensure that demands will be met by the station.

HOSTILE ACTION: An act toward a nuclear power plant or its personnel that includes the use of violent force to destroy equipment, take HOSTAGES, and/or intimidates the licensee to achieve an end. This includes attack by air, land, or water using guns, explosives, projectiles, vehicles, or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on the nuclear power plant. Non-terrorism-based EALs should be used to address such activities, (i.e., violent acts between individuals in the OWNER CONTROLLED AREA).

HOSTILE FORCE: One or more individuals who are engaged in a determined assault, overtly or by stealth and deception, equipped with suitable weapons capable of killing, maiming, or causing destruction.

IMMINENT: Mitigation actions have been ineffective, additional actions are not expected to be successful, and trended information indicates that the event or condition will occur. Where “IMMINENT” timeframes are specified, they shall apply.

NORMAL PLANT OPERATIONS: Activities at the plant site associated with routine testing, maintenance, or equipment operations, in accordance with normal operating or administrative procedures. Entry into abnormal or emergency operating procedures, or deviation from normal security or radiological controls posture, is a departure from NORMAL PLANT OPERATIONS.

PROJECTILE: An object directed toward a nuclear power plant that could have an effect sufficient to cause concern for its continued operability, reliability, or safety of personnel.

PROTECTED AREA: Typically, the area which normally encompasses all controlled areas within the security PROTECTED AREA fence.

REACTOR BUILDING ISOLATION: See CONTAINMENT CLOSURE.

SABOTAGE: Deliberate damage, mis-alignment, or mis-operation of plant equipment with the intent to render the equipment inoperable. Equipment found tampered with or damaged due to malicious mischief may not meet the definition of SABOTAGE until this determination is made by security supervision.

SECURITY CONDITION: Any security event as listed in the approved security contingency plan that constitutes a threat/compromise to site security, threat/risk to site personnel, or a potential degradation to the level of safety of the plant. A SECURITY CONDITION does not involve a HOSTILE ACTION.

SIGNIFICANT TRANSIENT: [TBD].

STRIKE ACTION: A work stoppage within the PROTECTED AREA by a body of workers to enforce compliance with demands made on (site-specific). The STRIKE ACTION must threaten to interrupt NORMAL PLANT OPERATIONS.

UNISOLABLE: A breach or leak that cannot be promptly isolated.

UNPLANNED: A parameter change or an event that is not the result of an intended evolution and requires corrective or mitigative actions.

VALID: An indication, report, or condition, is considered to be VALID when it is verified by (1) an instrument channel check, or (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel, such that doubt related to the indicator's operability, the condition's existence, or the report's accuracy is removed. Implicit in this definition is the need for timely assessment.

VISIBLE DAMAGE: Damage to equipment or structure that is readily observable without measurements, testing, or analysis. Damage is sufficient to cause concern regarding the continued operability or reliability of affected structure, system, or component. Example damage includes: deformation due to heat or impact, denting, penetration, rupture, cracking, paint blistering. Surface blemishes (e.g., paint chipping, scratches) should not be included.

VITAL AREA: Any area, normally within the PROTECTED AREA, which contains equipment, systems, components, or material, the failure, destruction, or release of which could directly or indirectly endanger the public health and safety by exposure to radiation.

5.5 ABNORMAL RAD LEVELS/ RADIOLOGICAL EFFLUENT EALs

Table A3-A: Recognition Category "A" Initiating Condition Matrix

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOUE
AG1 Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 1000 mrem TEDE or 5000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology. *Op. Modes: All*	**AS1** Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 100 mrem TEDE or 500 mrem Thyroid CDE for the Actual or Projected Duration of the Release. *Op. Modes: All*	**AA1** Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than 200 Times the Off-site Dose Calculation Manual for 15 Minutes or Longer. *Op. Modes: All*	**AU1** Any Release of Gaseous or Liquid Radio-activity to the Environment Greater Than 2 Times the Off-site Dose Calculation Manual for 60 Minutes or Longer. *Op. Modes: All*
		AA3 Rise in Radiation Levels Within the Facility that Impedes Operation of Systems Required to Maintain Plant Safety Functions. *Op. Modes: All*	**AU2** UNPLANNED Rise in Plant Radiation Levels. *Op. Modes: All*
		AA2 Damage to Irradiated Fuel or Loss of Water Level that Has Resulted or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel. *Op. Modes: All*	

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AU1

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than 2 Times the Off-site Dose Calculation Manual for 60 Minutes or Longer.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2 or 3)

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.

1. VALID reading on any of the following radiation monitors greater than the reading shown for 60 minutes or longer:

Main Steamline	D11-PRM-RMS-01	[TBD]
Containment Purge Exhaust	D11-PRM-RMS-23	[TBD]
Drywell Sump LCW/HCW Discharge	D11-PRM-RMS-16	[TBD]
Turbine Bldg. Combined Ventilation Exhaust	D11-PRM-RMS-10	[TBD]
Radwaste Bldg. Ventilation Exhaust	D11-PRM-RMS-17	[TBD]

2. VALID reading on any of the following radiation monitors greater than 2 times the alarm setpoint established by a current radioactivity discharge permit for 60 minutes or longer.

Plant Stack	D11-PRM-RMS-13	[TBD]
Liquid Radwaste Discharge	D11-PRM-RMS-11	[TBD]
Isolation Condenser Vent Exhaust	D11-PRM-RMS-19	[TBD]

3. Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates greater than 2 times (site-specific ODCM values) for 60 minutes or longer.

Basis:

This IC addresses a potential or actual decrease in the level of safety of the plant as indicated by a radiological release that exceeds regulatory commitments for an extended period of time.

Nuclear power plants incorporate features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, or control and monitor intentional releases. The occurrence of extended,

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

uncontrolled radioactive releases to the environment is indicative of a degradation in these features and/or controls.

The ODCM multiples are specified in ICs AU1 and AA1 only to distinguish between non-emergency conditions, and from each other. While these multiples obviously correspond to an off-site dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, NOT the magnitude of the associated dose or dose rate.

This EAL includes any release for which a radioactivity discharge permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable permit.

Threshold #1 addresses effluent or accident radiation monitors on non-routine release pathways (i.e., for which a discharge permit would not normally be prepared).

Threshold #2 addresses radioactivity releases, that for whatever reason, cause effluent radiation monitor readings to exceed two times the Technical Specification limit and releases are not terminated within 60 minutes.

Threshold #3 addresses uncontrolled releases that are detected by sample analyses, particularly on unmonitored pathways, e.g., spills of radioactive liquids into storm drains, heat exchanger leakage in river water systems, etc.

The 0.10 mR/hr value in EAL #4, and the site specific value for EAL #5 is based on a release rate not exceeding 500 mrem per year.

EAL #1 and #2 directly correlate with the IC since annual average meteorology is required to be used in showing compliance with the ODCM and is used in calculating the alarm setpoints. EALs #4 and #5 are a function of actual meteorology, which will likely be different from the limiting annual average value. Thus, there will likely be a numerical inconsistency.

The underlying basis of this EAL involves the degradation in the level of safety of the plant implied by the uncontrolled release. Exceeding EAL #4 or #5 is an indication of an uncontrolled release.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Rise in Plant Radiation Levels.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2)

1. a. UNPLANNED water level drop in a refueling pathway as indicated by:

Rx Well Cavity	G21-FAPCS-LS-N020-Low	[TBD]
Buffer Pool	G21-FAPCS-LS-N019-Low	[TBD]
Upper Fuel Transfer Pool	G21-FAPCS-LS-N018-Low	[TBD]
Skimmer Surge Tank A/B Level	G21-FAPCS-LS-R621-Low,	[TBD]
	G21-LS-R622-Low-Low	[23 feet]
Spent Fuel Storage Pool	G21-FAPCS-LS-R634-Low,	[TBD]
	G21-LS-R632	[TBD]
	G21-LS-R633	[TBD]
Lower Fuel Transfer Pool	G21-FAPCS-LS-N026-Low	[TBD]
Visual observation		

AND

b. VALID Area Radiation Monitor reading rise on:

Refueling Floor Area #1, EL 34000 (Reactor Building)	D21-ARM-RMS-01
Refueling Floor Area #2, EL 34000 (Reactor Building)	D21-ARM-RMS-02
New Fuel Buffer Pool, EL 27000 (Reactor Building)	D21-ARM-RMS-03
New Fuel Buffer Pool, EL 27000 (Reactor Building)	D21-ARM-RMS-04
Fuel Handling Machine (IFTS), EL 34000 (Reactor Building)	D21-ARM-RMS-40
Spent Fuel Floor, EL 4650 (Fuel Building)	D21-ARM-RMS-01
Fuel Handling Machine, EL 4650, (Fuel Building)	D21-ARM-RMS-02
Fuel Transfer Cask Area, EL 4650 (Fuel Building)	D21-ARM-RMS-03
IFTS Fuel Building Isolation Valve Room (Inside), EL 4600	D21-ARM-RMS-12

2. UNPLANNED VALID Area Radiation Monitor readings or survey results indicate a rise by a factor of 1000 over normal* levels.

   *Normal levels can be considered as the highest reading in the past twenty-four hours excluding the current peak value.

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Basis:

This IC addresses elevated radiation levels as a result of water level lowering but above the RPV flange or events that have resulted, or may result, in UNPLANNED rise in radiation dose rates within plant buildings. These radiation levels represent a loss of control over radioactive material and may represent a potential degradation in the level of safety of the plant.

The refueling pathway is a site specific combination of cavities, tubes, canals and pools. While a radiation monitor could detect a rise in dose rate due to a drop in the water level, it might not be a reliable indication of whether or not the fuel is covered.

For refueling events where the water level drops below the RPV flange classification would be via CU2. This event escalates to an Alert per IC AA2 if irradiated fuel outside the reactor vessel is uncovered. For events involving irradiated fuel in the reactor vessel, escalation would be via the Fission Product Barrier Matrix for events in operating modes 1-4.

Threshold #2 addresses elevated in-plant radiation levels encountered during operation of plant processes that represent a degradation in the control of radioactive material, and represent a potential degradation in the level of safety of the plant. This EAL excludes in-plant radiation levels that may result from use of radiographic sources. A specific list of ARMs is not required as it would restrict the applicability of the Threshold. The intent is to identify loss of control of radioactive material in any monitored area.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AA1

Initiating Condition -- ALERT

Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than 200 Times the Off-site Dose Calculation Manual for 15 Minutes or Longer.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2 or 3)

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.

1. VALID reading on any of the following radiation monitors greater than the reading shown for 15 minutes or longer:

Main Steamline	D11-PRM-RMS-01	[TBD]
Containment Purge Exhaust	D11-PRM-RMS-23	[TBD]
Drywell Sump LCW/HCW Discharge	D11-PRM-RMS-16	[TBD]
Turbine Bldg. Combined Ventilation Exhaust	D11-PRM-RMS-10	[TBD]
Radwaste Bldg. Ventilation Exhaust	D11-PRM-RMS-17	[TBD]

2. VALID reading on any effluent monitor that exceeds 200 times the alarm setpoint established by a current radioactivity discharge permit for 15 minutes or longer.

Plant Stack	D11-PRM-RMS-13	[TBD]
Liquid Radwaste Discharge	D11-PRM-RMS-11	[TBD]
Isolation Condenser Vent Exhaust	D11-PRM-RMS-19	[TBD]

3. Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates, greater than 200 times {site specific ODCM values} for 15 minutes or longer.

Basis:

The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

This IC addresses a potential or actual decrease in the level of safety of the plant as indicated by a radiological release that exceeds regulatory commitments for an extended period of time.

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The occurrence of extended, uncontrolled radioactive releases to the environment is indicative of a degradation in the features and/or controls established to prevent unintentional releases, or control and monitor intentional releases.

The ODCM multiples are specified in ICs AU1 and AA1 only to distinguish between non-emergency conditions, and from each other. While these multiples obviously correspond to an off-site dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, NOT the magnitude of the associated dose or dose rate.

This EAL includes any release for which a radioactivity discharge permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable permit.

Threshold #1 addresses effluent or accident radiation monitors on non-routine release pathways (i.e., for which a discharge permit would not normally be prepared).

Threshold #2 addresses radioactivity releases that for whatever reason cause effluent radiation monitor readings that exceed two hundred times the alarm setpoint established by the radioactivity discharge permit. This alarm setpoint may be associated with a planned batch release, or a continuous release path.

Threshold #3 addresses uncontrolled releases that are detected by sample analyses, particularly on unmonitored pathways, e.g., spills of radioactive liquids into storm drains, heat exchanger leakage in river water systems, etc.

The 10.0 mR/hr value in EAL #4, and the site specific value for EAL #5 is based on a release rate not exceeding 500 mrem per year.

EAL #1 and #2 directly correlate with the IC since annual average meteorology is required to be used in showing compliance with the ODCM and is used in calculating the alarm setpoints. EALs #4 and #5 are a function of actual meteorology, which will likely be different from the limiting annual average value. Thus, there will likely be a numerical inconsistency.

The underlying basis of this EAL involves the degradation in the level of safety of the plant implied by the uncontrolled release. Exceeding EAL #4 or #5 is an indication of an uncontrolled release.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AA2

Initiating Condition -- ALERT

Damage to Irradiated Fuel or Loss of Water Level that Has or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2)

1. A water level drop in the reactor refueling pathway resulting in irradiated fuel becoming uncovered as indicated by:

Rx Well Cavity	G21-FAPCS-LS-N020-Low	[TBD]
Buffer Pool	G21-FAPCS-LS-N019-Low	[TBD]
Upper Fuel Transfer Pool	G21- FAPCS-LS-N018-Low	[TBD]
Skimmer Surge Tank A/B Level	G21-FAPCS-LS-R621-Low,	[TBD]
	G21-FAPCS-LS-R622-Low-Low	[23 feet]
Spent Fuel Storage Pool	G21-FAPCS-LS-R634-Low,	[TBD]
	G21-FAPCS-LS-R632,	[TBD]
	G21-FAPCS-LS-R633	[TBD]
Lower Fuel Transfer Pool	G21-FAPCS-LS-N026-Low	[TBD]
Visual observation		

2. A VALID alarm or elevated reading on any of the following due to damage to irradiated fuel or loss of water level

Refueling Floor Area #1, EL 34000 (Reactor Building)	D21-ARM-RMS-01
Refueling Floor Area #2, EL34000 (Reactor Building)	D21-ARM-RMS-02
New Fuel Buffer Pool, EL 27000 (Reactor Building)	D21-ARM-RMS-03
New Fuel Buffer Pool, EL 27000 (Reactor Building)	D21-ARM-RMS-04
Fuel Handling Machine (IFTS), EL 34000 (Reactor Building)	D21-ARM-RMS-40
Spent Fuel Floor, EL 4650 (Fuel Building)	D21-ARM-RMS-01
Fuel Handling Machine, EL 4650 (Fuel Building)	D21-ARM-RMS-02
Fuel Transfer Cask Area, EL 4650 (Fuel Building)	D21-ARM-RMS-03
IFTS Fuel Building Isolation Valve Room (Inside), EL 4650	D21-ARM-RMS-12

Basis:

This IC addresses specific events that have resulted, or may result, in unexpected rise in radiation dose rates within plant buildings, and may be a precursor to a radioactivity release to

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the environment. These events represent a loss of control over radioactive material and represent degradation in the level of safety of the plant.

In Threshold #1, site-specific indications may include instrumentation such as water level and personnel (e.g., refueling crew) reports. The refueling pathway is a site specific combination of cavities, tubes, canals and pools. Threshold #2 addresses radiation monitor indications of fuel uncovery and/or fuel damage.

Increased readings on ventilation monitors may be indication of a radioactivity release from the fuel, confirming that damage has occurred. Raised background at the monitor due to water level lowering may mask raised ventilation exhaust airborne activity and needs to be considered.

Escalation, if appropriate, would occur via IC AS1 or AG1.

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AA3

Initiating Condition -- ALERT

Rise in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Plant Safety Functions.

Operating Mode Applicability: All

Emergency Action Levels:

1. Dose rate greater than 15 mR/hr in the following areas requiring continuous occupancy to maintain plant safety functions:

Main Control Room	D11-PRM-RMS-04A, B
Technical Support Center	D11-PRM-RMS-20
Central Alarm Station	D11-PRM-RMS-[TBD]
Secondary Alarm Station	D11-PRM-RMS-[TBD]

Basis:

This IC addresses increased radiation levels that: impact continued operation in areas requiring continuous occupancy to maintain safe operation or to perform a safe shutdown.

The cause and/or magnitude of the increase in radiation levels is not a concern of this IC. The Emergency Director must consider the source or cause of the increased radiation levels and determine if any other IC may be involved.

ABNORMAL RAD LEVELS/RADIOLOGICAL EFFLUENT

AS1

Initiating Condition -- SITE AREA EMERGENCY

Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 100 mrem TEDE or 500 mrem Thyroid CDE for the Actual or Projected Duration of the Release.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2 or 3)

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. If dose assessment results are available at the time of declaration, the classification should be based on dose assessment instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.

1. VALID reading on any of the following radiation monitors greater than the reading shown for 15 minutes or longer:

Plant Stack	D11-PRM-RMS-13	[Setpoint TBD]
Isolation Condenser Vent Exhaust	D11-PRM-RMS-19	[Setpoint TBD]

2. Dose assessment using actual meteorology indicates doses greater than 100 mrem TEDE or 500 mrem thyroid CDE at or beyond the site boundary.

3. Field survey results indicate closed window dose rates greater than 100 mR/hr expected to continue for 60 minutes or longer; or analyses of field survey samples indicate thyroid CDE greater than 500 mrem for one hour of inhalation, at or beyond the site boundary.

Basis:

This IC addresses radioactivity releases that result in doses at or beyond the site boundary that exceed 10% of the EPA Protective Action Guides (PAGs). Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public.

The site specific monitor list in EAL #1 should include effluent monitors on all potential release pathways.

Since dose assessment is based on actual meteorology, whereas the monitor reading EALs are not, the results from these assessments may indicate that the classification is not warranted, or may indicate that a higher classification is warranted. For this reason, emergency implementing procedures should call for the timely performance of dose assessments using actual

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meteorology and release information. If the results of these dose assessments are available when the classification is made (e.g., initiated at a lower classification level), the dose assessment results override the monitor reading EALs.

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AG1

Initiating Condition -- GENERAL EMERGENCY

Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 1000 mrem TEDE or 5000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology.

Operating Mode Applicability: All

Emergency Action Levels: (1 or 2 or 3)

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed, the applicable time. If dose assessment results are available at the time of declaration, the classification should be based on dose assessment instead of radiation monitor values.

1. VALID reading on any of the following radiation monitors greater than the reading shown for 15 minutes or longer:

Plant Stack	D11-PRM-RMS-13	[Setpoint TBD]
Isolation Condenser Vent Exhaust	D11-PRM-RMS-19	[Setpoint TBD]

2. Dose assessment using actual meteorology indicates doses greater than 1000 mrem TEDE or 5000 mrem thyroid CDE at or beyond the site boundary.

3. Field survey results indicate closed window dose rates greater than 1000 mR/hr expected to continue for 60 minutes or longer; or analyses of field survey samples indicate thyroid CDE greater than 5000 mrem for one hour of inhalation, at or beyond site boundary.

Basis:

This IC addresses radioactivity releases that result in doses at or beyond the site boundary that exceed the EPA Protective Action Guides (PAGs). Public protective actions will be necessary. Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public and likely involve fuel damage.

The site specific monitor list in EAL #1 should include effluent monitors on all potential release pathways.

Since dose assessment is based on actual meteorology, whereas the monitor reading EALs are not, the results from these assessments may indicate that the classification is not warranted. For this reason, emergency implementing procedures should call for the timely performance of dose assessments using actual meteorology and release information. If the results of these

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dose assessments are available when the classification is made (e.g., initiated at a lower classification level), the dose assessment results override the monitor reading EALs.

5.6 Cold Shutdown/Refueling System Malfunction EALs

Table A3-C: Recognition Category "C" Initiating Condition Matrix

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOUE
CG1 Loss of RCS/RPV Inventory Affecting Fuel Clad Integrity with Containment Challenge. *Op. Modes: Cold Shutdown, Refueling*	**CS1** Loss of RCS/RPV Inventory Affecting Core Decay Heat Removal Capability. *Op. Modes: Cold Shutdown, Refueling*	**CA1** Loss of RCS/RPV Inventory. *Op. Modes: Cold Shutdown, Refueling*	**CU1** RCS Leakage *Op. Mode: Cold Shutdown*
			CU2 UNPLANNED Loss of RCS/RPV Inventory *Op. Mode: Refueling*
			CU3 All Safety Related DC Batteries Not Being Charged for Greater Than 30 Minutes Due to Loss of Power to PIP Busses. *Op. Modes: Cold Shutdown, Refueling, Defueled*
		CA4 Inability to Maintain Plant in Cold Shutdown. *Op. Modes: Cold Shutdown, Refueling*	**CU4** UNPLANNED Loss of Decay Heat Removal Capability With Irradiated Fuel in the RPV. *Op. Modes: Cold Shutdown, Refueling*
			CU6 Loss of All On-site or Off-site Communications Capabilities. *Op. Modes: Cold Shutdown, Refueling, Defueled*
			CU7 Loss of Required DC Power for 15 Minutes or longer. *Op. Modes: Cold Shutdown, Refueling*
			CU8 Inadvertent Criticality. *Op. Modes:, Cold Shutdown, Refueling*

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CU1

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

RCS Leakage.

Operating Mode Applicability: Cold Shutdown

Emergency Action Level Threshold:

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

1. RCS leakage results in the inability to maintain or restore RPV level greater than Level 2 setpoint [338.5 inches (8597 mm)] on B21-NBS-LI R604A-D Wide Range for 15 minutes or longer.

Basis:

This IC is included as a NOUE because it is considered to be a potential degradation of the level of safety of the plant. The inability to establish and maintain level is indicative of loss of RCS inventory. Prolonged loss of RCS Inventory may result in escalation to the Alert level via either IC CA1 (Loss of RCS/RPV Inventory with Irradiated Fuel in the RPV) or CA4 (Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the RPV).

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Loss of RCS/RPV Inventory.

Operating Mode Applicability: Refueling

Emergency Action Level Thresholds: (1 or 2)

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

1. UNPLANNED RPV level drop as indicated by either of the following:

   RPV water level drop below the RPV flange for 15 minutes or longer when the RCS/RPV level band is established above the RPV flange.

   RPV water level drop below the RCS level band for 15 minutes or longer when the RPV level band is established below the RPV flange.

2. RPV level cannot be determined with a loss of RPV inventory as indicated by unexplained Drywell Equipment or Floor Drain Sumps level rise on Drywell K10-HCW Sump LE-[TBD] OR Drywell K10-LCW Sump LE-[TBD]

Basis:

This IC is a precursor of more serious conditions and, as result, is considered to be a potential degradation of the level of safety of the plant. Refueling evolutions that decrease RCS water level below the RPV flange are carefully planned and procedurally controlled. An UNPLANNED event that results in water level decreasing below the RPV flange, or below the planned RCS water level for the given evolution (if the planned RCS water level is already below the RPV flange), warrants declaration of a NOUE due to the reduced RCS inventory that is available to keep the core covered.

The allowance of 15 minutes was chosen because it is reasonable to assume that level can be restored within this time frame using one or more of the redundant means of refill that should be available. If level cannot be restored in this time frame then it may indicate a more serious condition exists. Continued loss of RCS Inventory will result in escalation to the Alert level via either IC CA1 or CA4.

EAL Threshold #1 involves a decrease in RCS level below the top of the RPV flange that continues for 15 minutes due to an UNPLANNED event. This EAL is not applicable to decreases in flooded reactor cavity level, which is addressed by AU2 EAL1, until such time as

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the level decreases to the level of the vessel flange. if RPV level continues to decrease and reaches the Low-Low ECCS Actuation Setpoint then escalation to CA1 would be appropriate.

EAL threshold #2 addresses conditions in the refueling mode when normal means of core temperature indication and RCS level indication may not be available. Redundant means of RPV level indication will normally be installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RPV inventory loss was occurring by observing sump and tank level changes. Sump and tank level increases must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage.

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CU3

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

All Safety Related DC Batteries Not Being Charged for 30 Minutes or Longer Due to Loss of Power to PIP Busses.

Operating Mode Applicability: Cold Shutdown
Refueling
Defueled

Emergency Action Level Threshold:

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

1. Loss of all AC power capability to PIP busses 1000A3 AND 1000B3 for 30 minutes or longer.

Basis:

The off-site AC power system supplies power for the unit in cold shutdown, refueling, and defueled conditions. Both the normal off-site and standby on-site AC power systems are non-Class 1E with no Technical Specification requirements. All safety-related functions associated with the unit in cold shutdown and refueling are provided by the safety-related on-site Class 1E DC power systems.

Loss of DC power potentially compromises all safety related plant systems requiring electric power.

Escalation to an Alert, if appropriate, is by Abnormal Radiation Levels / Radiological Effluent, or Emergency Director Judgment ICs. Thirty minutes was selected as a threshold to exclude transient or momentary power losses, and is appropriate because of the passive cooling systems and the on-site safety-related Class 1E DC power systems.

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CU4

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Loss of Decay Heat Removal Capability With Irradiated Fuel in the RPV.

Operating Mode Applicability: Cold Shutdown
Refueling

Emergency Action Level Thresholds: (1 or 2)

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

1. UNPLANNED event results in RCS temperature exceeding 200 degrees F on C51-TC-[TBD]
2. Loss of all RCS temperature and RPV level indication for 15 minutes or longer.

Basis:

This IC is a precursor of more serious conditions and, as a result, is considered to be a potential degradation of the level of safety of the plant. In cold shutdown the ability to remove decay heat relies primarily on forced cooling flow. Operation of the systems that provide this forced cooling may be jeopardized due to the unlikely loss of electrical power or RCS inventory. Since the RCS usually remains intact in the cold shutdown mode a large inventory of water is available to keep the core covered.

Monitoring RCS temperature and RPV level will determine if escalation to the Alert level via CA4 or CA1 will occur if required.

Any reduction of RCS inventory to the predetermined setpoint will result in an Alert based on CA1 or CA4.

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CU6

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Loss of All On-site or Off-site Communications Capabilities.

Operating Mode Applicability:	Cold Shutdown Refueling Defueled
Emergency Action Level Thresholds:	(1 or 2)

1. Loss of all of the following on-site communications capability affecting the ability to perform routine operations:

   Plant Page/Party Line

   PABX

   Sound Powered Phones

   Plant Radios

2. Loss of all of the following off-site communication methods affecting the ability to perform offsite notifications:

   Ringdown Phone System

   UHF Radio Systems

   Emergency Notification System

   Health Physics Network

   Reactor Safety Counterpart Link

   Protective Measures Counterpart Link

   Management Counterpart Link

Basis:

The purpose of this IC and its associated EALs is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks necessary for plant operations or the ability to communicate problems with off-site authorities. The loss of off-site communications ability is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72.

The availability of one method of ordinary off-site communications is sufficient to inform state and local authorities of plant conditions. This EAL is to be used only when extraordinary means

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(e.g., relaying of information from radio transmissions, individuals being sent to off-site locations, etc.) are being utilized to make communications possible.

EFS and TVS are comprised of the following:

Wireless Telephone System

Telephone-Page System

Sound Powered System

Security Communication System

Closed Circuit Television System

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CU7

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Loss of Required DC Power for 15 minutes or longer.

Operating Mode Applicability: Cold Shutdown
Refueling

Emergency Action Level Threshold:

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

1. a. Loss of All Vital DC Busses 11, 12, 21, 22, 31, 32, 41, AND 42 based on bus voltage less than [TBD] V for 15 minutes or longer.

   AND

   b. Failure to restore power to at least one required DC bus in less than 15 minutes from the time of loss.

Basis:

The purpose of this IC and its associated EALs is to recognize a loss of the Class 1E DC, which provides electrical power for safety related and vital control and monitoring instrumentation loads. It also provides power for safe shutdown when all the on-site and off-site AC power sources are lost and cannot be recovered for 72 hours.

Bus voltage of [TBD] VDC is the minimum bus voltage necessary for the operation of safety-related instrumentation and controls. This voltage value incorporates a margin significantly longer than the allowed 15 minutes of operation before the onset of inability to operate those loads.

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CU8

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Inadvertent Criticality.

Operating Mode Applicability: Cold Shutdown
Refueling

Emergency Action Level Threshold:

1. An UNPLANNED SRNM sustained positive period.

Basis:

This IC addresses criticality events that occur in Cold Shutdown or Refueling modes such as fuel assembly loading errors (mis-located and mis-oriented). This IC indicates a potential degradation of the level of safety of the plant, warranting a NOUE classification.

Escalation would be by Emergency Director judgment.

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CA1

Initiating Condition -- ALERT

Loss of RCS/RPV Inventory.

Operating Mode Applicability: Cold Shutdown
Refueling

Emergency Action Level Thresholds: (1 or 2)

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

1. RCS inventory reduced below Level 1 setpoint [218.4 inches (5547 mm) above TAF] on RPV Water Level B21-NBS-LI R604A-D Wide Range for 15 minutes or longer.
2. RCS/RPV level cannot be determined for 30 minutes or longer with a loss of RCS/RPV inventory as indicated by unexplained Drywell Equipment or Floor Drain Sumps level rise on Drywell K10-HCW Sump LE-[TBD] OR Drywell K10-LCW Sump LE-[TBD]

Basis:

These thresholds serve as precursors to a loss of ability to adequately cool the fuel. The magnitude of this loss of water indicates that makeup systems have not been effective and may not be capable of preventing further RPV level lowering and potential core uncovery. This condition will result in a minimum classification of Alert. The inability to restore and maintain level after reaching this setpoint would therefore be indicative of a failure of the RCS barrier.

If all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RPV inventory loss was occurring by observing sump or tank level changes.

The 30-minute duration for the loss of level indication was chosen to allow CA1 to be an effective precursor to CS1. This provides time to increase makeup and isolate leakage prior to core uncovery. Whether or not the actions in progress will be effective should be apparent within 30 minutes.

If RPV level continues to decrease then escalation to Site Area Emergency will be via CS1 (Loss of RPV Inventory Affecting Core Decay Heat Removal Capability).

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CA4

Initiating Condition -- ALERT

Inability to Maintain Plant in Cold Shutdown with Irradiated Fuel in the RPV.

Operating Mode Applicability: Cold Shutdown
Refueling

Emergency Action Level Thresholds: (1 or 2)

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

1. An UNPLANNED event results in RCS temperature exceeding 200 degrees F as indicated by any of the following for greater than the specified duration on table:

   Core Inlet Temperature, C51-TC-[TBD],

   RWCU Bottom Head Suction Temperature G31-RWCU-SDC-TT-N005, -N006, A-1,B-1 through A-4, B-4

   RWCU Suction Temperature G31-RWCU-SDC-TT-N001, -N002, A-1, B-1 through A-4, B-4

Table: RCS Reheat Duration Thresholds		
RCS	**REACTOR BUILDING ISOLATION**	**Duration**
Intact	N/A	60 minutes*
Open	Established	20 minutes*
	Not Established	0 minutes

   * If an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced, the EAL is not applicable.

2. An UNPLANNED event results in RCS Pressure increase greater than 10 psi due to a loss of RCS cooling.

Basis:

For EAL Threshold 1, the RCS Reheat Duration Threshold table addresses complete loss of functions required for core cooling for greater than 60 minutes during refueling and cold

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shutdown modes when RCS integrity is established. The 60 minute time frame should allow sufficient time to restore cooling without there being a substantial degradation in plant safety.

The RCS Reheat Duration Threshold table also addresses the complete loss of functions required for core cooling for greater than 20 minutes during refueling and cold shutdown modes when CONTAINMENT CLOSURE is established. The allowed 20 minute time frame was included to allow operator action to restore the heat removal function, if possible.

Finally, complete loss of functions required for core cooling during refueling and cold shutdown modes when neither CONTAINMENT CLOSURE nor RCS integrity are established.

The note (*) indicates that this EAL is not applicable if actions are successful in restoring an RCS heat removal system to operation and RCS temperature is being reduced within the specified time frame.

In EAL Threshold 2, the 10 psi pressure increase covers situations where, due to high decay heat loads, the time provided to restore temperature control, should be less than 60 minutes. The RCS pressure setpoint chosen should be 10 psi or the lowest pressure that the site can read on installed Control Board instrumentation that is equal to or greater than 10 psi.

Escalation to Site Area would be via CS1 should boiling result in significant RPV level loss leading to core uncovery.

A loss of Technical Specification components alone is not intended to constitute an Alert. The same is true of a momentary UNPLANNED excursion above the Technical Specification cold shutdown temperature limit when the heat removal function is available.

The Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is IMMINENT. If, in the judgment of the Emergency Director, an IMMINENT situation is at hand, the classification should be made as if the threshold has been exceeded.

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CS1

Initiating Condition -- SITE AREA EMERGENCY

Loss of RCS/RPV Inventory Affecting Core Decay Heat Removal Capability.

Operating Mode Applicability: Cold Shutdown, Refueling

Emergency Action Level Thresholds:(1 or 2 or 3)

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

1. WITH REACTOR BUILDING ISOLATION NOT established:

   RPV level less than Level 0.5 Setpoint [39.4 inches (1000 mm) above TAF] on B21-NBS-LI-R615A-D

   OR

2. With REACTOR BUILDING ISOLATION established

   RPV level less than Level 0 Setpoint [0 inches (0 mm)] on B21-NBS-LI-R615A-D

   OR

3. RPV level cannot be monitored for 60 minutes or longer with a loss of RPV inventory as indicated by unexplained Drywell Equipment or Floor Drain Sumps level rise on Drywell K10-HCW Sump LE-[TBD] OR Drywell K10-LCW Sump LE-[TBD]

Basis:

Under the conditions specified by this IC, continued lowering in RPV level is indicative of a loss of inventory control. Inventory loss may be due to an RPV breach, pressure boundary leakage, or continued boiling in the RPV.

Escalation to a General Emergency is via CG1 or AG1.

The 60-minute duration allows sufficient time for actions to be performed to recover needed cooling equipment and is considered to be conservative.

Declaration of a Site Area Emergency is warranted under the conditions specified by the IC. Escalation to a General Emergency is via CG1 (Loss of RPV Inventory Affecting Fuel Clad Integrity with Containment Challenged with Irradiated Fuel in the RPV) or radiological effluent IC

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

AG1 (Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Exceeds 1000 mrem TEDE or 5000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology).

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

CG1

Initiating Condition -- GENERAL EMERGENCY

Loss of RCS/RPV Inventory Affecting Fuel Clad Integrity with Containment Challenged.

Operating Mode Applicability: Cold Shutdown
Refueling

Emergency Action Level Threshold:

Note: *The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.*

1. a. CONTAINMENT challenged as indicated by one or more of the following:

   - Explosive mixture inside containment
   - UNPLANNED rise in containment pressure
   - REACTOR BUILDING ISOLATION <u>not</u> established
   - Reactor Building radiation monitors above [TBD value]

   AND

   b. Core uncovery for 30 minutes or longer as indicated by EITHER:

   - Less than Level 0 Setpoint [0 inches (0 mm)] on B21-NBS-LI-R615A-D.

   <u>OR</u>

   - RPV level cannot be monitored with core uncovery indicated by EITHER of the following:
     - Drywell Radiation Monitors T62-RMS-RDT-[TBD] reading greater than {site-specific} high setpoint
     - Erratic Source Range Monitor Indication
     - Unexplained Drywell Equipment or Floor Drain Sumps level rise on Drywell K10-HCW Sump LE-[TBD] <u>OR</u> Drywell K10-LCW Sump LE-[TBD]

Basis:

These conditions represent the inability to restore and maintain RPV level to above the top of active fuel. Fuel damage is probable if RPV level cannot be restored, as available decay heat will cause boiling, further reducing the RPV level. With the CONTAINMENT breached or

COLD SHUTDOWN/REFUELING SYSTEM MALFUNCTION

challenged then the potential for unmonitored fission product release to the environment is high. This represents a direct path for radioactive inventory to be released to the environment. This is consistent with the definition of a GE. The GE is declared on the occurrence of the loss or IMMINENT loss of function of all three barriers.

Analysis indicates that core damage may occur within an hour following continued core uncovery therefore, conservatively, 30 minutes was chosen.

If CONTAINMENT CLOSURE is re-established prior to exceeding the 30 minute core uncovery time limit then escalation to GE would not occur.

Sump or tank level rise must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage.

As water level in the RPV lowers, the dose rate above the core will increase. The dose rate due to this core shine should result in up-scaled radiation monitor indication and possible alarm.

Additionally, post-Three Mile Island (TMI) studies indicated that the installed nuclear instrumentation will operate erratically when the core is uncovered.

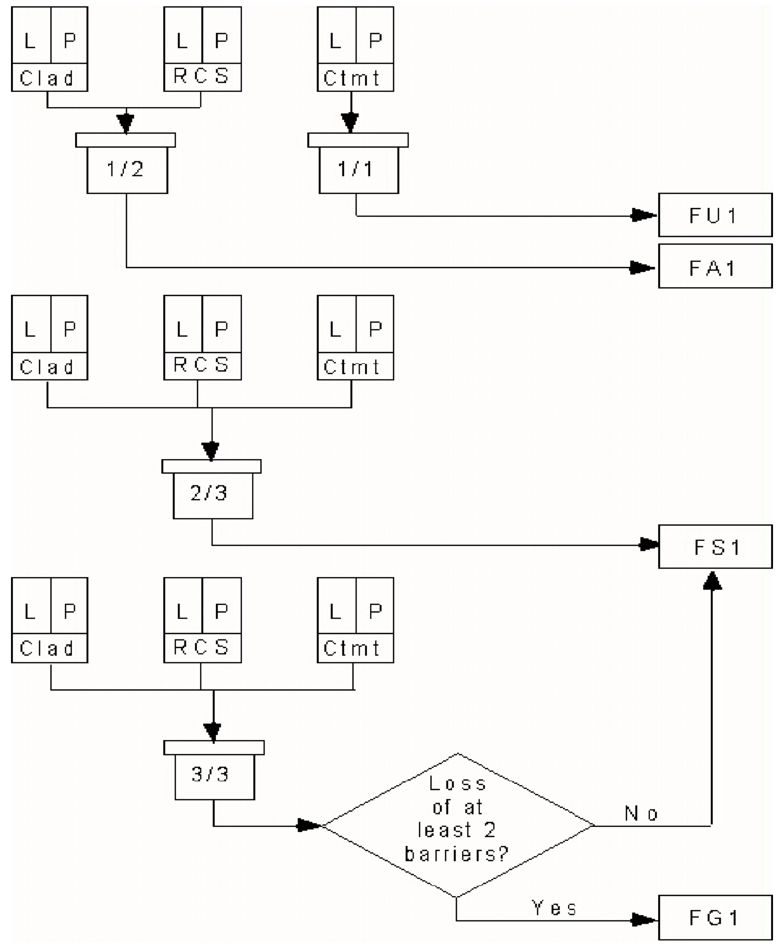
5.7 Fission Product Barrier Degradation EALs

Table A3-F-1: Recognition Category "F" Initiating Condition Matrix

See Table A3-F-2 for EAL Thresholds

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOUE
FG1 Loss of ANY Two Barriers AND Loss or Potential Loss of the Third Barrier *Op. Modes: Power Operation, Hot Standby, Startup, Safe/Stable Shutdown*	**FS1** Loss or Potential Loss of ANY Two Barriers *Op. Modes: Power Operation, Hot Standby, Startup, Safe/Stable Shutdown*	**FA1** ANY Loss or ANY Potential Loss of EITHER Fuel Clad OR RCS *Op. Modes: Power Operation, Hot Standby, Startup, Safe/Stable Shutdown*	**FU1** ANY Loss or ANY Potential Loss of Containment *Op. Modes: Power Operation, Hot Standby, Startup, Safe/Stable Shutdown*

Fission Product Barrier Degradation EALs



Note: The logic flow diagram is for use by developers and is not required for site specific implementation.

Fission Product Barrier Degradation EALs

Fission Product Barrier

NOTES

The logic used for these initiating conditions reflects the following considerations:

The Fuel Clad Barrier and the RCS Barrier are weighted more heavily than the Containment Barrier (See Section 3.4 of Appendix 3). NOUE ICs associated with RCS and Fuel Clad Barriers are addressed under System Malfunction ICs.

At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from the threshold for a General Emergency. For example, if Fuel Clad and RCS Barrier "Loss" EALs existed, that, in addition to off-site dose assessments, would require continual assessments of radioactive inventory and containment integrity. Alternatively, if both Fuel Clad and RCS Barrier "Potential Loss" EALs existed, the Emergency Director would have more assurance that there was no immediate need to escalate to a General Emergency.

The ability to escalate to higher emergency classes as an event deteriorates must be maintained. For example, RCS leakage steadily increasing would represent an increasing risk to public health and safety.

The Containment Barrier should not be declared lost or potentially lost based on exceeding Technical Specification action statement criteria, unless there is an event in progress requiring mitigation by the Containment barrier. When no event is in progress (Loss or Potential Loss of either Fuel Clad and/or RCS) the Containment Barrier status is addressed by Technical Specifications.

Fission Product Barrier Degradation EALs

Table A3-F-2: EAL Fission Product Barrier Table
Thresholds For LOSS or POTENTIAL LOSS of Barriers*

*Determine which combination of the three barriers are lost or have a potential loss and use the following key to classify the event. Also, multiple events could occur which result in the conclusion that exceeding the loss or Potential loss thresholds is IMMINENT. In this IMMINENT loss situation use judgment and classify as if the thresholds are exceeded.

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss of ANY two Barriers AND Loss or Potential Loss of Third Barrier	Loss or Potential Loss of ANY two Barriers	ANY loss or ANY Potential Loss of EITHER Fuel Clad or RCS	ANY loss or ANY Potential Loss of Containment

Fuel Clad Barrier Threshold Values		RCS Barrier Threshold Values		Containment Barrier Threshold Values	
LOSS	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**
1. Primary Coolant Activity Level		**1. Primary Containment Pressure**		**1. Primary Containment Conditions**	
1. Primary coolant activity greater than [TBD-300 uCi/gm]	Not Applicable	1. Primary containment pressure greater than [1.85 psig] on T62-CMS-PI-[TBD]-A-D due to RCS leakage	Not Applicable	1. Primary containment pressure rise followed by a rapid unexplained drop in primary containment pressure **OR** 2. Primary containment pressure response not consistent with LOCA conditions	1. Primary containment pressure [45 psig] on T62-CMS-PI-[TBD]-A-D and rising **OR** 2. H_2 greater than [6%] **AND** O_2 greater than [5%] **OR** 3. RPV pressure AND suppression pool temperature cannot be maintained below the HCTL
OR		**OR**		**OR**	
2. Reactor Vessel Water Level		**2. Reactor Vessel Water Level**		**2. Reactor Vessel Water Level**	
1. RPV water level cannot be restored and maintained above Post Accident Monitor Fuel Zone Range 0 inches [(0 mm)] B21-LI-R615A-D	1. RPV water level cannot be restored and maintained above Level 0.5 Setpoint Post Accident Monitor Fuel Zone Range[39.4 inches (1000 mm)] B21- LI-R615A-D	1. RPV water level cannot be restored and maintained above Level 0.5 Setpoint Post Accident Monitor Fuel Zone Range [39.4 inches (1000 mm)] B21- LI-R615A-D	Not Applicable	Not Applicable	1. Primary Containment Flooding is required.
OR		**OR**		**OR**	

Fission Product Barrier Degradation EALs

Table A3-F-2: EAL Fission Product Barrier Table
Thresholds For LOSS or POTENTIAL LOSS of Barriers*

*Determine which combination of the three barriers are lost or have a potential loss and use the following key to classify the event. Also, multiple events could occur which result in the conclusion that exceeding the loss or Potential loss thresholds is IMMINENT. In this IMMINENT loss situation use judgment and classify as if the thresholds are exceeded.

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss of ANY two Barriers AND Loss or Potential Loss of Third Barrier	Loss or Potential Loss of ANY two Barriers	ANY loss or ANY Potential Loss of EITHER Fuel Clad or RCS	ANY loss or ANY Potential Loss of Containment

Fuel Clad Barrier Threshold Values		RCS Barrier Threshold Values		Containment Barrier Threshold Values	
LOSS	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**
3. Not Applicable		**3. RCS Leak Rate**		**3. Primary Containment Isolation Failure or Bypass**	
Not applicable	Not applicable	1. UNISOLABLE Main Steamline Break as indicated by: Failure of both valves in any one line to close **AND** 1a. Steamline High Flow greater than [140%] rated **OR** 1b. Main Steam Line Low Pressure less than [750 psig] **OR** 1c. Main Steam Tunnel Ambient Temperature greater than [TBD] **OR** 2. Automatic Depressurization System automatically OR manually initiated.	1. RCS leak greater than 100 gpm in the drywell. **OR** 2. UNISOLABLE primary system leakage outside primary containment as indicated by exceeding EITHER of the following: 2a. Max Normal Operating Temperature. **OR** 2b. Max Normal Area Radiation.	1. Failure of all valves in any one line to close AND direct downstream pathway to the environment exists after a primary containment isolation signal **OR** 2. Intentional primary containment venting per EOPs **OR** 3. UNISOLABLE primary system leakage outside Containment as indicated by exceeding EITHER of the following: 3a. Max Safe Operating Temperature. **OR** 3b. Max Safe Area Radiation.	1. Feedline break as indicated by: [TBD]
OR		**OR**		**OR**	

Fission Product Barrier Degradation EALs

Table A3-F-2: EAL Fission Product Barrier Table
Thresholds For LOSS or POTENTIAL LOSS of Barriers*

*Determine which combination of the three barriers are lost or have a potential loss and use the following key to classify the event. Also, multiple events could occur which result in the conclusion that exceeding the loss or Potential loss thresholds is IMMINENT. In this IMMINENT loss situation use judgment and classify as if the thresholds are exceeded.

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
Loss of ANY two Barriers AND Loss or Potential Loss of Third Barrier	Loss or Potential Loss of ANY two Barriers	ANY loss or ANY Potential Loss of EITHER Fuel Clad or RCS	ANY loss or ANY Potential Loss of Containment

Fuel Clad Barrier Threshold Values		RCS Barrier Threshold Values		Containment Barrier Threshold Values	
LOSS	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**
4. Primary Containment Radiation Monitoring		**4. Primary Containment Radiation Monitoring**		**4. Primary Containment Radiation Monitoring**	
1. Primary containment radiation monitor reading greater than (5% clad failure dispersed in the drywell) R/hr on [TBD]	Not Applicable	1. Primary containment radiation monitor reading greater than (normal operating chemistry dispersed in the drywell) R/hr on [TBD]	Not Applicable	Not applicable	1. Primary containment radiation monitor reading greater than (20% clad failure dispersed in the drywell) R/hr on [TBD]
OR		**OR**		**OR**	
5. Other Indications		**5. Other Indications**		**5. Other Indications**	
1. [MSL Rad Monitors Drywell Fission Product Monitor – TBD]	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable
OR		**OR**		**OR**	
6. Emergency Director Judgment		**6. Emergency Director Judgment**		**6. Emergency Director Judgment**	
Emergency Director that indicates Loss or Potential Loss of the Fuel Clad Barrier		1. Any condition in the judgment of the Emergency Director that indicates Loss or Potential Loss of the RCS Barrier		1. Any condition in the judgment of the Emergency Director that indicates Loss or Potential Loss of the Containment barrier	

Fission Product Barrier Degradation EALs

Basis Information For Table A3-F-2
ESBWR Emergency Action Level
Fission Product Barrier Reference Table

FUEL CLAD BARRIER THRESHOLDS: (1 or 2 or 3 or 4 or 5 or 6)

The [TBD] Fuel Clad barrier consists of the Zircaloy or stainless steel fuel bundle tubes that contain the fuel pellets.

1. Primary Coolant Activity Level

This value is 300 μCi/gm I-131 equivalent indicates that this amount of coolant activity is well above that expected for iodine spikes and corresponds to less than 5% fuel clad damage. This amount of radioactivity indicates significant clad damage and thus the Fuel Clad Barrier is considered lost.

There is no potential loss associated with this condition.

2. Reactor Vessel Water Level

The "Loss" value is the top of active fuel which is used in EOPs to indicate challenge of core cooling. This is the minimum value to assure core cooling without further degradation of the clad.

Level 0.5 corresponds to a water level 39.4 inches above the top of the active fuel. The "Potential Loss" Threshold is the same as the RCS barrier "Loss" Threshold #2. Thus, this Threshold indicates a "Loss" of RCS barrier and a "Potential Loss" of the Fuel Clad Barrier. This Threshold appropriately escalates the emergency class to a Site Area Emergency.

3. Not applicable

4. Primary Containment Radiation Monitoring

The [TBD] reading is a value which indicates the release of reactor coolant, with elevated activity indicative of fuel damage, into the drywell.

Reactor coolant concentrations of this magnitude are several times larger than the maximum concentrations (including iodine spiking) allowed within Technical Specifications and are therefore indicative of fuel damage.

This value is greater than that specified for RCS barrier Loss Threshold #4. Thus, this Threshold indicates a loss of both Fuel Clad barrier and RCS barrier that appropriately escalates the emergency classification level to a Site Area Emergency.

There is no potential loss associated with this condition.

Fission Product Barrier Degradation EALs

5. Other Indications

Main Steam Line Monitors and the Drywell Fission Product Monitor at the specified values are indicative of fuel clad failure.

6. Emergency Director Judgment

This Threshold addresses any other factors that are to be used by the Emergency Director in determining whether the Fuel Clad barrier is lost or potentially lost. In addition, the inability to monitor the barrier should also be incorporated in this Threshold as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost. (See also IC SG1, " Prolonged Loss of All Off-site and On-site AC Power for greater than 72 hours.", for additional information.)

RCS BARRIER THRESHOLDS: (1 or 2 or 3 or 4 or 5 or 6)

The RCS Barrier is the reactor coolant system pressure boundary and includes the reactor vessel and all reactor coolant system piping up to the isolation valves.

1. Primary Containment Conditions

1.85 psig drywell pressure is based on the drywell high pressure set point which indicates a LOCA.

There is no potential loss associated with this condition.

2. Reactor Vessel Water Level

The Loss Threshold corresponds to the level which is used in EOPs to indicate challenge of core cooling. Level 0.5 corresponds to a water level 39.4 inches above the top of the active fuel.

There is no potential loss associated with this condition.

3. RCS Leak Rate

An unisolable MSL break is a breach of the RCS barrier. Thus, this Threshold is included for consistency with the Alert emergency classification. Automatic Depressurization System automatically or manually initiated indicates a breach of the RCS.

The potential loss of RCS based on leakage is set at a level indicative of a breach of the RCS but which is well within the makeup capability of the CRD high pressure injection. Core uncovery is not a significant concern for a 100 gpm leak, however, break propagation leading to significantly larger loss of inventory is possible.

Fission Product Barrier Degradation EALs

Potential loss of RCS based on primary system leakage outside the drywell is determined from site-specific temperature or area radiation Max Normal setpoints in the areas of the plant which indicate a direct path from the RCS to areas outside primary containment. The indicators should be confirmed to be caused by RCS leakage.

4. Primary Containment Radiation Monitoring

The [TBD] reading is a value which indicates the release of reactor coolant to the drywell.

There is no potential loss associated with this condition.

5. Other Indications

This Threshold addresses other indications that may indicate loss or potential loss of the RCS barrier.

6. Emergency Director Judgment

This Threshold addresses any other factors that are to be used by the Emergency Director in determining whether the RCS barrier is lost or potentially lost. In addition, the inability to monitor the barrier should also be incorporated in this Threshold as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost. (See also IC SG1, " Prolonged Loss of All Off-site and On-site AC Power for greater than 72 hours.", for additional information.)

PRIMARY CONTAINMENT BARRIER THRESHOLDS: (1 or 2 or 3 or 4 or 5 or 6)

The Primary Containment Barrier includes the drywell, the wetwell, their respective interconnecting paths, and other connections up to and including the outermost containment isolation valves. Containment Barrier Thresholds are used primarily as discriminators for escalation from an Alert to a Site Area Emergency or a General Emergency.

1. Primary Containment Conditions

Rapid unexplained loss of pressure (i.e., not attributable to drywell spray or condensation effects) following an initial pressure increase indicates a loss of containment integrity. Drywell pressure should increase as a result of mass and energy release into containment from a LOCA. Thus, drywell pressure not increasing under these conditions indicates a loss of containment integrity. This indicator relies on the operator’s recognition of an unexpected response for the condition and therefore does not have a specific value associated. The unexpected response is important because it is the indicator for a containment bypass condition.

Fission Product Barrier Degradation EALs

The 45 psig for potential loss of containment is based on the primary containment design pressure. Existence of an explosive mixture means hydrogen and oxygen concentration of at least the lower deflagration limit curve exists.

The Heat Capacity Temperature Limit (HCTL) is the highest suppression pool temperature from which Emergency RPV Depressurization will not raise:

Suppression chamber temperature above the maximum temperature capability of the suppression chamber and equipment within the suppression chamber which may be required to operate when the RPV is pressurized,

Suppression chamber pressure above Primary Containment Pressure Limit A, while the rate of energy transfer from the RPV to the containment is greater than the capacity of the containment vent.

The HCTL is a function of RPV pressure and suppression pool water level. It is utilized to preclude failure of the containment and equipment in the containment necessary for the safe shutdown of the plant and therefore, the inability to maintain plant parameters below the limit constitutes a potential loss of containment.

2. Reactor Vessel Water Level

There is no loss threshold associated with this condition.

The potential loss requirement for Primary Containment Flooding indicates adequate core cooling cannot be established and maintained and that core melt is possible. Entry into Primary Containment Flooding procedures is a logical escalation in response to the inability to maintain adequate core cooling.

The conditions in this potential loss Threshold represent a potential core melt sequences which, if not corrected, could lead to vessel failure and increased potential for containment failure. In conjunction with and an escalation of the level Thresholds in the Fuel and RCS barrier columns, this Threshold will result in the declaration of a General Emergency -- loss of two barriers and the potential loss of a third.

3. Containment Isolation Failure or Bypass

These thresholds address incomplete containment isolation that allows direct release to the environment.

The use of the modifier “direct” in defining the release path discriminates against release paths through interfacing liquid systems. The existence of an in–line charcoal filter does not make a release path indirect since the filter is not effective at removing fission noble gases.

Site specific EOPs may direct containment isolation valve logic(s) to be intentionally bypassed, regardless of radioactivity release rates. Under these conditions with a valid containment

Fission Product Barrier Degradation EALs

isolation signal, the containment should also be considered lost if containment venting is actually performed.

Intentional venting of primary containment for primary containment pressure or combustible gas control per EOPs to the secondary containment and/or the environment is considered a loss of containment. Containment venting for pressure when not in an accident situation should not be considered.

In addition, the presence of area radiation or temperature Max Safe Operating setpoints indicating unisolable primary system leakage outside the primary containment are addressed after a containment isolation. The indicators should be confirmed to be caused by RCS leakage.

There is no Potential Loss threshold associated with this item.

4. Primary Containment Radiation Monitoring

There is no loss associated with this condition.

The [TBD] reading is a value which indicates significant fuel damage well in excess of that required for loss of RCS and Fuel Clad.

Regardless of whether containment is challenged, this amount of activity in containment, if released, could have such severe consequences that it is prudent to treat this as a potential loss of containment, such that a General Emergency declaration is warranted.

5. Other Indications

This Threshold addresses other (site-specific) indications that may indicate loss or potential loss of the containment barrier.

6. Emergency Director Judgment

This Threshold addresses any other factors that are to be used by the Emergency Director in determining whether the Containment barrier is lost or potentially lost. In addition, the inability to monitor the barrier should also be incorporated in this Threshold as a factor in Emergency Director judgment that the barrier may be considered lost or potentially lost. The Containment Barrier should not be declared lost or potentially lost based on exceeding Technical Specification Action Statement criteria, unless there is an event in progress requiring mitigation by the Containment barrier. When no event is in progress (Loss or Potential Loss of either Fuel Clad and/or RCS) the Containment Barrier status is addressed by Technical Specifications. (See also IC SG1, "Prolonged Loss of All Off-site and On-site AC Power for greater than 72 hours.", for additional information.)

5.8 HAZARDS or OTHER Conditions Affecting Plant Safety EALs

Table A3-H: Recognition Category "H" Initiating Condition Matrix

GENERAL EMERGENCY		SITE AREA EMERGENCY		ALERT		NOUE	
HG1	HOSTILE ACTION Resulting in Loss Of Physical Control of the Facility. *Op. Modes: All*	**HS4**	HOSTILE ACTION within the PROTECTED AREA *Op. Modes: All*	**HA4**	HOSTILE ACTION within the OWNER CONTROLLED AREA or Airborne Attack Threat. *Op. Modes: All*	**HU4**	Confirmed SECURITY CONDITION or Threat Which Indicates a Potential Degradation in the Level of Safety of the Plant. *Op. Modes: All*
HG2	Other Conditions Exist Which in the Judgment of the Emergency Director Warrant Declaration of a General Emergency. *Op. Modes: All*	**HS3**	Other Conditions Exist Which in the Judgment of the Emergency Director Warrant Declaration of a Site Area Emergency. *Op. Modes: All*	**HA6**	Other Conditions Exist Which in the Judgment of the Emergency Director Warrant Declaration of an Alert. *Op. Modes: All*	**HU5**	Other Conditions Exist Which in the Judgment of the Emergency Director Warrant Declaration of a NOUE. *Op. Modes: All*
		HS2	Control Room Evacuation Has Been Initiated and Plant Control Cannot Be Established. *Op. Modes: All*	**HA5**	Control Room Evacuation Has Been Initiated. *Op. Modes: All*		
				HA1	Natural or Destructive Phenomena Affecting VITAL AREAS. *Op. Modes: All*	**HU1**	Natural or Destructive Phenomena Affecting the PROTECTED AREA. *Op. Modes: All*
				HA2	FIRE or EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe/Stable Shutdown. *Op. Modes: All*	**HU2**	FIRE Within PROTECTED AREA Boundary Not Extinguished Within 15 Minutes of Detection OR EXPLOSION within the Protected Area Boundary *Op. Modes: All*
				HA3	Access To a VITAL AREA Is Prohibited Due To Release of Toxic, Corrosive, Asphyxiant or Flammable Gases Which Jeopardizes Operation of Systems Required to Maintain Safe Operations or Safely Shutdown the Reactor *Op. Modes: All*	**HU3**	Release of Toxic, Corrosive, Asphyxiant, or Flammable Gases Deemed Detrimental to NORMAL PLANT OPERATIONS. *Op. Modes: All*

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HU1

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Natural or Destructive Phenomena Affecting the PROTECTED AREA.

Operating Mode Applicability: All

Emergency Action Level Threshold: (1 or 2 or 3 or 4)

1. Seismic event identified by any 2 of the following:

   Seismic event confirmed by [site-specific indication or method TBD].

   Earthquake felt in plant.

   National Earthquake Center.
2. Tornado striking within PROTECTED AREA boundary.
3. Turbine failure resulting in casing penetration or damage to turbine or generator seals.
4. Severe weather with indications of sustained high winds greater than or equal to 74 mph within the PROTECTED AREA boundary.

Basis:

These Thresholds are categorized on the basis of the occurrence of an event of sufficient magnitude to be of concern to plant operators.

Threshold #1: Damage may be caused to some portions of the site, but should not affect ability of safety functions to operate.

The National Earthquake Center can confirm that an earthquake has occurred in the area of the plant.

Threshold #2 is based on the assumption that a tornado striking (touching down) or high winds within the PROTECTED AREA may have potentially damaged plant structures containing functions or systems required for safe shutdown of the plant. If such damage is confirmed visually or by other in-plant indications, the event may be escalated to Alert.

Threshold #3 addresses main turbine rotating component failures of sufficient magnitude to cause observable damage to the turbine casing or to the seals of the turbine generator. This Threshold is consistent with the definition of a NOUE while maintaining the anticipatory nature desired and recognizing the risk to non-safety related equipment. Escalation of the emergency classification is based on potential damage done by projectiles generated by the failure. These events would be classified by the radiological ICs or Fission Product Barrier ICs.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

Threshold #4 is other site-specific phenomena that can also be precursors of more serious events.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

FIRE Within the PROTECTED AREA Boundary Not Extinguished Within 15 Minutes of Detection OR EXPLOSION within the PROTECTED AREA Boundary.

Operating Mode Applicability: All

Emergency Action Level Threshold:

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the duration has exceeded, or will likely exceed, the applicable time.

1. FIRE not extinguished in less than 15 minutes of Control Room notification or receipt of a Control Room FIRE alarm in any of the following areas:

   Containment

   Reactor Building

   Fuel Building

   Control Building

   Turbine Building

   Electrical Building

   Radwaste Building

2. EXPLOSION within the Protected Area boundary.

Basis:

The purpose of Threshold #1 is to address the magnitude and extent of FIREs that may be potentially significant precursors to damage to safety systems. As used here, *Detection* is visual observation and report by plant personnel or sensor alarm indication. The 15 minute time period begins with a credible notification that a FIRE is occurring, or indication of a VALID fire detection system alarm. Validation of a fire detection system alarm includes actions that can be taken with the Control Room or other nearby site-specific location to ensure that the alarm is not spurious. An alarm is assumed to be an indication of a FIRE unless it is disproved within the 15 minute period by personnel dispatched to the scene.

The 15 minute duration is to size the FIRE and to discriminate against small FIREs that are readily extinguished. Fires inside the protected area, located near equipment, that last 15

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

minutes or longer can result in a challenge to the site fire brigade. This represents a degradation in plant operational status.

For Threshold #2 only those EXPLOSIONS of sufficient force to damage permanent structures or equipment within the PROTECTED AREA should be considered. The Emergency Director also needs to consider any security aspects of the EXPLOSION, if applicable.

Escalation to a higher emergency class is by IC HA2, "FIRE Affecting the Operability of Plant Safety Systems Required for the Current Operating Mode".

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HU3

Initiating Condition – NOTIFICATION OF UNUSUAL EVENT

Release of Toxic, Corrosive, Asphyxiant, or Flammable Gases Deemed Detrimental to NORMAL PLANT OPERATIONS.

Operating Mode Applicability: All

Emergency Action Level Thresholds: (1 or 2)

1. Toxic, corrosive, asphyxiant or flammable gases in amounts that have or could adversely affect NORMAL PLANT OPERATIONS.
2. Report by County or State Officials for evacuation or sheltering of site personnel based on an off-site event.

Basis:

This IC is based on the existence of uncontrolled releases of toxic or flammable gas that may enter the site boundary and affect NORMAL PLANT OPERATIONS.

The fact that SCBA may be worn does not eliminate the need to declare the event.

This IC is not intended to require significant assessment or quantification. It assumes an uncontrolled process that has the potential to affect plant operations. This would preclude small or incidental releases, or releases that do not impact structures needed for plant operation.

An Asphyxiant is a gas capable of reducing the level of oxygen in the body to dangerous levels. Most commonly, asphyxiants work by merely displacing air in an enclosed environment. This reduces the concentration of oxygen below the normal level of around 19%, which can lead to breathing difficulties, unconsciousness or even death.

Escalation of this emergency classification level, if appropriate, would be based on HA3.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HU4

Initiating Condition – NOTIFICATION OF UNUSUAL EVENT

Confirmed SECURITY CONDITION or Threat Which Indicates a Potential Degradation in the Level of Safety of the Plant.

Operating Mode Applicability: All

Emergency Action Level Thresholds: (1 or 2 or 3)

1. A SECURITY CONDITION that does NOT involve a HOSTILE ACTION as reported by the security shift supervision.

2. A credible site specific security threat notification.

3. A validated notification from NRC providing information of an aircraft threat.

Basis:

Security events which do not represent a potential degradation in the level of safety of the plant, are reported under 10 CFR 73.71 or in some cases under 10 CFR 50.72. Security events assessed as HOSTILE ACTIONS are classifiable under HA4, HS4 and HG1. A higher initial classification could be made based upon the nature and timing of the threat and potential consequences.

Threshold #1 is based on Site Security Plans.

Reference is made to security shift supervision because these individuals are the designated personnel on-site qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict secrecy controls placed on the plant Safeguards Contingency Plan.

This threshold is based on Fermi 3 security plans. Fermi 3 Safeguards Contingency Plans are based on guidance provided by NEI 03-12.

Threshold #2 is to ensure that appropriate notifications for the security threat are made in a timely manner. This includes information of a credible threat.

The determination of “credible” is made through use of information found in the site specific Safeguards Contingency Plan

Threshold #3 is to ensure that notifications for the security threat are made in a timely manner and that Off-site Response Organizations and plant personnel are at a state of heightened

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

awareness regarding the credible threat. It is not the intent of this EAL to replace existing non-hostile related EALs involving aircraft.

This EAL is met when a plant receives information regarding an aircraft threat from NRC. Validation is performed by calling the NRC or by other approved methods of authentication. Only the plant to which the specific threat is made need declare the Unusual Event.

The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an airliner (airliner is meant to be a large aircraft with the potential for causing significant damage to the plant). The status and size of the plane may be provided by NORAD through the NRC.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HU5

Initiating Condition – NOTIFICATION OF UNUSUAL EVENT

Other Conditions Exist Which in the Judgment of the Emergency Director Warrant Declaration of a NOUE.

Operating Mode Applicability: All

Emergency Action Level Threshold:

1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.

Basis:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the NOUE emergency class.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HA1

Initiating Condition -- ALERT

Natural or Destructive Phenomena Affecting the Plant VITAL AREAS.

Operating Mode Applicability: All

Emergency Action Level Thresholds: (1 or 2 or 3 or 4 or 5 or 6)

1. Seismic event greater than Operating Basis Earthquake (OBE) {0.10g} as indicated by seismic instrumentation.

   AND

   Confirmed by **EITHER**:

   Earthquake felt in plant

   National Earthquake Center

   Control Room indication of degraded performance of systems required for the safe shutdown of the plant.

2. Tornado resulting in VISIBLE DAMAGE to any of the following structures containing safety systems or components OR Control Room indication of degraded performance of those systems.

   Containment Building

   Reactor Building

   Control Building

   Electrical Building

3. Internal flooding in any areas of the plant that creates an industrial safety hazard (e.g., electric shock) that precludes access necessary to operate or monitor equipment.

4. Turbine failure-generated projectiles result in any VISIBLE DAMAGE to or penetration of the Electrical Building.

5. Vehicle crash within PROTECTED AREA boundary and resulting in VISIBLE DAMAGE to any of the following structures containing safety systems or components OR Control Room indication of degraded performance of those safety systems:

   Containment

   Reactor building

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

Fuel Building

Control Building

Turbine Building

Electrical Building

Radwaste Building

6. Sustained hurricane winds greater than 74 mph within PROTECTED AREA boundary resulting in VISIBLE DAMAGE to plant structures containing equipment necessary for safe shutdown, or has caused damage as evidenced by Control Room indication of degraded performance of those systems.

Basis:

These Thresholds escalate from HU1 in that the occurrence of the event has resulted in VISIBLE DAMAGE to plant structures or areas containing equipment necessary for a safe shutdown, or has caused damage to the safety systems in those structures evidenced by control indications of degraded system response or performance. The occurrence of VISIBLE DAMAGE and/or degraded system response is intended to discriminate against lesser events. The initial "report" should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this Threshold to assess the actual magnitude of the damage. The significance here is not that a particular system or structure was damaged, but rather, that the event was of sufficient magnitude to cause this degradation.

Escalation to higher classifications occur on the basis of System Malfunctions.

Threshold #3 addresses the effect of internal flooding that has created industrial safety hazards (e.g., electrical shock) that preclude necessary access to operate or monitor safety equipment.

Threshold #4 addresses the threat to safety related equipment imposed by projectiles generated by main turbine rotating component failures. Therefore, this EAL threshold is consistent with the definition of an ALERT in that if projectiles have damaged or penetrated areas containing safety structure, system, or component the potential exists for substantial degradation of the level of safety of the plant.

Threshold #5 addresses crashes of vehicle types large enough to cause significant damage to safety structure, system, or component containing functions and systems required for safe shutdown of the plant.

Threshold #6 is other site-specific phenomena that can also be precursors of more serious events.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HA2

Initiating Condition -- ALERT

FIRE or EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe/Stable Shutdown.

Operating Mode Applicability: All

Emergency Action Level Threshold:

1. FIRE or EXPLOSION resulting in VISIBLE DAMAGE to any of the following structures containing safety systems, or components OR Control Room indication of degraded performance of those safety systems:

   Containment

   Reactor building

   Fuel Building

   Control Building

   Turbine Building

   Electrical Building

   Radwaste Building

Basis:

VISIBLE DAMAGE is used to identify the magnitude of the FIRE or EXPLOSION and to discriminate against minor FIRES and EXPLOSIONS.

The reference to structures containing safety systems or components is included to discriminate against FIRES or EXPLOSIONS in areas having a low probability of affecting safe operation. The significance here is not that a safety system was degraded but the fact that the FIRE or EXPLOSION was large enough to cause damage to these systems.

The use of VISIBLE DAMAGE should not be interpreted as mandating a lengthy damage assessment prior to classification. The declaration of an Alert and the activation of the Technical Support Center will provide the Emergency Director with the resources needed to perform detailed damage assessments. The Emergency Director also needs to consider any security aspects of the EXPLOSION.

Escalation of this emergency classification level, if appropriate, will be based on System Malfunctions, Fission Product Barrier Degradation or Abnormal Rad Levels / Radiological Effluent ICs.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HA3

Initiating Condition -- ALERT

Access to a VITAL AREA Is Prohibited Due To Release of Toxic, Corrosive, Asphyxiant or Flammable Gases Which Jeopardizes Operation of Operable Equipment Required to Maintain Safe Operations or Safely Shutdown the Reactor.

Operating Mode Applicability: All

Emergency Action Level Thresholds:

Note: If the equipment in the stated area was already inoperable, or out of service, before the event occurred, then this EAL should not be declared as it will have no adverse impact on the ability of the plant to safely operate or safely shutdown beyond that already allowed by Technical Specifications at the time of the event.

1. Access to a VITAL AREA is prohibited due to toxic, corrosive, asphyxiant, or flammable gases which jeopardizes operation of systems required to maintain safe operations or safely shutdown the reactor.

Basis:

Gases in a VITAL AREA can affect the ability to safely operate or safely shutdown the reactor. The fact that SCBA may be worn does not eliminate the need to declare the event.

Declaration should not be delayed for confirmation from atmospheric testing if the atmosphere poses an immediate threat to life and health or an immediate threat of severe exposure to gases. This could be based upon documented analysis, indication of personal ill effects from exposure, or operating experience with the hazards.

If the equipment in the stated area was already inoperable, or out of service, before the event occurred, then this EAL should not be declared as it will have no adverse impact on the ability of the plant to safely operate or safely shutdown beyond that already allowed by Technical Specifications at the time of the event.

An asphyxiant is a gas capable of reducing the level of oxygen in the body to dangerous levels. Most commonly, asphyxiants work by merely displacing air in an enclosed environment. This reduces the concentration of oxygen below the normal level of around 19%, which can lead to breathing difficulties, unconsciousness or even death.

An uncontrolled release of flammable gasses within a facility structure has the potential to affect safe operation of the plant by limiting either operator or equipment operations due to the potential for ignition and resulting equipment damage/personnel injury. Flammable gasses, such as hydrogen and acetylene, are routinely used to maintain plant systems (hydrogen) or to

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

repair equipment/components (acetylene - used in welding). This EAL assumes concentrations of flammable gasses which can ignite/support combustion.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HA4

Initiating Condition - ALERT

HOSTILE ACTION Within the OWNER CONTROLLED AREA or Airborne Attack Threat.

Operating Mode Applicability: All

Emergency Action Level Threshold:(1 or 2)

1. A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by the (site specific security shift supervision).
2. A validated notification from NRC of an airliner attack threat within 30 minutes of the site.

Basis:

Note: Timely and accurate communication between Security Shift Supervision and the Control Room is crucial for the implementation of effective Security EALs.

These EALs address the contingency for a very rapid progression of events, such as that experienced on September 11, 2001. They are not premised solely on the potential for a radiological release. Rather the issue includes the need for rapid assistance due to the possibility for significant and indeterminate damage from additional air, land or water attack elements.

The fact that the site is under serious attack or is an identified attack target with minimal time available for further preparation or additional assistance to arrive requires a heightened state of readiness and implementation of protective measures that can be effective (such as on-site evacuation, dispersal or sheltering).

Threshold #1 addresses the potential for a very rapid progression of events due to a HOSTILE ACTION. It is not intended to address incidents that are accidental events or acts of civil disobedience, such as small aircraft impact, hunters, or physical disputes between employees within the OCA. Those events are adequately addressed by other EALs.

Threshold #2 addresses the immediacy of an expected threat arrival or impact on the site within a relatively short time.

The intent of this EAL is to ensure that notifications for the airliner attack threat are made in a timely manner and that OROs and plant personnel are at a state of heightened awareness regarding the credible threat. Airliner is meant to be a large aircraft with the potential for causing significant damage to the plant.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

This EAL is met when a plant receives information regarding an airliner attack threat from NRC and the airliner is within 30 minutes of the plant. Validation is performed by calling the NRC or by other approved methods of authentication. Only the plant to which the specific threat is made need declare the Alert.

The NRC Headquarters Operations Officer (HOO) will communicate to the licensee if the threat involves an airliner (airliner is meant to be a large aircraft with the potential for causing significant damage to the plant). The status and size of the plane may be provided by NORAD through the NRC.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HA5

Initiating Condition -- ALERT

Control Room Evacuation Has Been Initiated.

Operating Mode Applicability: All

Emergency Action Level Threshold:

1. Abnormal Operating Procedure [TBD] Forced Control Room Evacuation, requires Control Room evacuation.

Basis:

With the Control Room evacuated, additional support, monitoring and direction through the Technical Support Center and/or other emergency response facilities is necessary. Inability to establish plant control from outside the Control Room will escalate this event to a Site Area Emergency.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HA6

Initiating Condition -- ALERT

Other Conditions Exist Which in the Judgment of the Emergency Director Warrant Declaration of an Alert.

Operating Mode Applicability: All

Emergency Action Level Threshold:

1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Basis:

This Threshold addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the Alert emergency class.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HS2

Initiating Condition – - SITE AREA EMERGENCY

Control Room Evacuation Has Been Initiated and Plant Control Cannot Be Established.

Operating Mode Applicability: All

Emergency Action Level Threshold:

1. a. Control room evacuation has been initiated.

   AND

   b. Control of the plant cannot be established per [procedure TBD] in less than [TBD] minutes.

Basis:

The intent of this IC is to capture those events where control of the plant cannot be reestablished in a timely manner. In this case, expeditious transfer of control of safety systems has not occurred (although fission product barrier damage may not yet be indicated).

The intent of the EAL is to establish control of important plant equipment and knowledge of important plant parameters in a timely manner. Primary emphasis should be placed on those components and instruments that supply protection for and information about safety functions. Typically, these safety functions are reactivity control (ability to shutdown the reactor and maintain it shutdown), reactor water level (ability to cool the core), and decay heat removal (ability to maintain a heat sink) for a BWR.

The determination of whether or not control is established at the remote shutdown panel is based on Emergency Director (ED) judgment. The Emergency Director is expected to make a reasonable, informed judgment within the site specific time for transfer that the licensee has control of the plant from the remote shutdown panel.

Escalation of this emergency classification level, if appropriate, would be by Fission Product Barrier Degradation or Abnormal Rad Levels/Radiological Effluent EALs.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HS3

Initiating Condition – -SITE AREA EMERGENCY

Other Conditions Exist Which in the Judgment of the Emergency Director Warrant Declaration of a Site Area Emergency.

Operating Mode Applicability: All

Emergency Action Level Threshold:

1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts: (1) toward site personnel or equipment that could lead to the likely failure of; or (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

Basis:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the emergency class description for Site Area Emergency.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HS4

Initiating Condition – - SITE AREA EMERGENCY

HOSTILE ACTION Within the PROTECTED AREA.

Operating Mode Applicability: All

Emergency Action Level Threshold:

1. A HOSTILE ACTION is occurring or has occurred within the PROTECTED AREA as reported by the site security shift supervision.

Basis:

This condition represents an escalated threat to plant safety above that contained in the Alert in that a HOSTILE FORCE has progressed from the OWNER CONTROLLED AREA to the PROTECTED AREA.

This EAL addresses the contingency for a very rapid progression of events, such as that experienced on September 11, 2001. It is not premised solely on the potential for a radiological release. Rather the issue includes the need for rapid assistance due to the possibility for significant and indeterminate damage from additional air, land or water attack elements.

The fact that the site is under serious attack with minimal time available for further preparation or additional assistance to arrive requires ORO readiness and preparation for the implementation of protective measures.

This EAL addresses the potential for a very rapid progression of events due to a HOSTILE ACTION. It is not intended to address incidents that are accidental events or acts of civil disobedience, such as small aircraft impact, hunters, or physical disputes between employees within the PROTECTED AREA. Those events are adequately addressed by other EALs.

Escalation of this emergency classification level, if appropriate, would be based on actual plant status after impact or progression of attack.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HG1

Initiating Condition – GENERAL EMERGENCY

HOSTILE ACTION Resulting in Loss of Physical Control of the Facility.

Operating Mode Applicability: All

Emergency Action Level Threshold: (1 or 2)

1. A HOSTILE ACTION has occurred such that plant personnel are unable to operate equipment required to maintain safety functions.
2. A HOSTILE ACTION has caused failure of Spent Fuel Cooling Systems and IMMINENT fuel damage is likely for a freshly off-loaded reactor core in pool.

Basis:

This IC encompasses conditions under which a HOSTILE ACTION has resulted in a loss of physical control of VITAL AREAS (containing vital equipment or controls of vital equipment) required to maintain safety functions and control of that equipment cannot be transferred to and operated from another location.

If control of the plant equipment necessary to maintain safety functions can be transferred to another location, then the above initiating condition is not met.

This EAL also addresses failure of spent fuel cooling systems as a result of HOSTILE ACTION if IMMINENT fuel damage is likely, such as when a freshly off-loaded reactor core is in the spent fuel pool.

HAZARDS OR OTHER CONDITIONS AFFECTING PLANT SAFETY EALs

HG2

Initiating Condition – GENERAL EMERGENCY

Other Conditions Exist Which in the Judgment of the Emergency Director Warrant Declaration of a General Emergency.

Operating Mode Applicability: All

Emergency Action Level Threshold:

1. Other conditions exist which in the judgment of the Emergency Director indicate that events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels at or beyond, the site boundary.

Basis:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere but that warrant declaration of an emergency because conditions exist which are believed by the Emergency Director to fall under the General Emergency classification level description for General Emergency.

5.9 SYSTEM MALFUNCTION EALs

Table A3-S: Recognition Category "S" Initiating Condition Matrix

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOUE
SG1 All Safety Related DC Batteries Not Being Charged for 72 Hours or Longer Due to Loss of Power to PIP Busses. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*	**SS1** All Safety Related DC Batteries Not Being Charged for 24 Hours or Longer Due to Loss of Power to PIP Busses. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*	**SA1** All Safety Related DC Batteries Not Being Charged for 60 Minutes or Longer Due to Loss of Power to PIP Busses. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*	**SU1** All Safety Related DC Batteries Not Being Charged for 30 Minutes or Longer Due to Loss of Power to PIP Busses. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*
SG2 Automatic Scram (Trip) and All Manual Actions Fail to Shutdown the Reactor and Indication of an Extreme Challenge to the Ability to Cool the Core Exists. *Op. Modes: Power Operation, Startup*	**SS2** Automatic Scram (Trip) Fails to Shutdown the Reactor and Manual Actions Taken From the Reactor control Console are NOT Successful in Shutting Down the Reactor *Op. Modes: Power Operation, Startup*	**SA2** Automatic Scram (Trip) Fails to Shutdown the Reactor and the Manual Actions Taken From the Reactor Control Console are Successful in Shutting Down the Reactor *Op. Modes: Power Operation, Startup*	**SU8** Inadvertent Criticality. *Op Modes: Hot Standby, Safe/Stable Shutdown*
	SS6 Inability to Monitor a SIGNIFICANT TRANSIENT in Progress. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*	**SA4** Loss of Indicating and Monitoring Functions *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*	
	SS3 Loss of All Vital DC Power for 15 Minutes or Longer. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*		**SU2** Inability to Reach Required Shutdown Mode Within Technical Specification Limits. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*
			SU4 Fuel Clad Degradation. *Op. Modes: Power Operation, Startup, Hot Standby*
			SU5 RCS Leakage. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*
			SU6 Loss of All On-site OR Off-site Communications Capabilities. *Op. Modes: Power Operation, Startup, Hot Standby, Safe/Stable Shutdown*

SYSTEM MALFUNCTION

SU1

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

All Safety Related DC Batteries Not Being Charged for 30 Minutes or Longer Due to Loss of Power to PIP Busses.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Safe/Stable Shutdown

Emergency Action Level Threshold:

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

1. PIP Busses 1000A3 and 1000B3 de-energized for 30 minutes or longer.

Basis:

Prolonged de-energization of the PIP busses reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete loss of DC Power. 30 minutes was selected as a threshold to exclude transient or momentary losses of AC power.

SYSTEM MALFUNCTION

SU2

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Inability to Reach Required Shutdown Mode Within Technical Specification Limits.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Safe/Stable Shutdown

Emergency Action Level Threshold:

1. Plant is not brought to required operating mode within Technical Specifications LCO Action Statement Time.

Basis:

Limiting Conditions of Operation (LCOs) require the plant to be brought to a required shutdown mode when the Technical Specification required configuration cannot be restored. Depending on the circumstances, this may or may not be an emergency or precursor to a more severe condition. An immediate NOUE is required when the plant is not brought to the required operating mode within the allowable Action Statement time in the Technical Specifications. Declaration of a NOUE is based on the time at which the LCO-specified Action Statement time period elapses under the site Technical Specifications and is not related to how long a condition may have existed.

SYSTEM MALFUNCTION

SU4

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Fuel Clad Degradation.

Operating Mode Applicability:	Power Operation Startup Hot Standby
Emergency Action Level Thresholds:	(1 or 2)

1. [TBD] radiation monitor readings indicating fuel clad degradation greater than Technical Specification 3.4.3 allowable limits.

2. [TBD] coolant sample activity value indicating fuel clad degradation greater than Technical Specification 3.4.3 allowable limits.

Basis:

This IC is included as a NOUE because it is considered to be a potential degradation in the level of safety of the plant and a potential precursor of more serious problems. EAL #1 addresses site-specific radiation monitor readings such as BWR air ejector monitors that provide indication of fuel clad integrity. EAL #2 addresses coolant samples exceeding coolant Technical Specifications for iodine spike. Escalation of this IC to the Alert level is via the Fission Product Barrier Degradation Monitoring ICs.

SYSTEM MALFUNCTION

SU5

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

RCS Leakage.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Safe/Stable Shutdown

Emergency Action Level Thresholds: (1 or 2)

1. Unidentified or pressure boundary leakage greater than 50 gpm.
2. Total leakage greater than 75 gpm.

Basis:

This IC is included as a NOUE because it may be a precursor of more serious conditions and, as result, is considered to be a potential degradation of the level of safety of the plant. The value for the unidentified leakage (including the pressure boundary) was selected as it is observable with normal Control Room indications and is 10 times the Technical Specification limit. Lesser values must generally be determined through time-consuming surveillance tests (e.g., mass balances).

Relief valve normal operation should be excluded from this IC. However, a relief valve that operates and fails to close per design should be considered applicable to this IC if the relief valve cannot be isolated.

The EAL for identified leakage is set at a higher value due to the lesser significance of identified leakage in comparison to unidentified or pressure boundary leakage and is 2.5 times the Technical Specification limit. In either case, escalation of this IC to the Alert level is via Fission Product Barrier Degradation ICs.

SYSTEM MALFUNCTION

SU6

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

UNPLANNED Loss of All On-site or Off-site Communications Capabilities.

Operating Mode Applicability:	Power Operation Startup Hot Standby Safe/Stable Shutdown
Emergency Action Level Thresholds:	(1 or 2)

1. Loss of all of the following on-site communication methods affecting the ability to perform routine operations:

   Plant Page/Party Line

   PABX

   Sound Powered Phones

   Plant Radios

2. Loss of all of the following off-site communication methods affecting the ability to perform offsite notifications:

   Ring Down Phone

   UHF Radio Systems

   Emergency Notification System

   Health Physics Network

   Reactor Safety Counterpart Link

   Protective Measures Counterpart Link

   Management Counterpart Link

Basis:

The purpose of this IC and its associated EALs is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks necessary for plant operations or the ability to communicate problems with off-site authorities. The loss of off-site communications ability is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72.

SYSTEM MALFUNCTION

The availability of one method of ordinary off-site communications is sufficient to inform state and local authorities of plant conditions.

SYSTEM MALFUNCTION

SU8

Initiating Condition -- NOTIFICATION OF UNUSUAL EVENT

Inadvertent Criticality.

Operating Mode Applicability: Hot Standby
Safe/Stable Shutdown

Emergency Action Level Threshold:

1. UNPLANNED SRNM Short Period Alarm.

Basis:

This IC addresses inadvertent criticality events. This IC indicates a potential degradation of the level of safety of the plant, warranting a NOUE classification. This IC excludes inadvertent criticalities that occur during planned reactivity changes associated with reactor startups.

Escalation would be by the Fission Product Barrier Matrix, as appropriate to the operating mode at the time of the event, or by Emergency Director judgment.

SYSTEM MALFUNCTION

SA1

Initiating Condition -- ALERT

All Safety Related DC Batteries Not Being Charged for Greater Than 60 Minutes Due to Loss of Power to PIP Busses.

Operating Mode Applicability:	Power Operation Startup Hot Standby Safe/Stable Shutdown

Emergency Action Level Threshold:

1. PIP Busses [1000A3 and 1000B3] de-energized for greater than 60 minutes.

Basis:

This IC and the associated EALs are intended to provide an escalation from IC SU1. Prolonged de-energization of the PIP busses reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete loss of DC Power. 60 minutes was selected as an escalation to ensure augmented support is available to the operating crew.

The condition indicated by this IC is the degradation of the AC power systems.

SYSTEM MALFUNCTION

SA2

Initiating Condition -- ALERT

Automatic Scram (Trip) Fails to Shutdown the Reactor AND the Manual Actions Taken from the Reactor Control Console are Successful in Shutting Down the Reactor

Operating Mode Applicability: Power Operation
Startup

Emergency Action Level Threshold:

1. a. An Automatic Reactor Protection System actuation failed to shutdown the reactor.

   AND

   b. Manual actions taken at the reactor control console successfully shutdown the reactor as indicated by less than [0.25% power].

Basis:

A manual actuation is any set of actions by the reactor operator(s) at the reactor control console which causes or should cause control rods to be rapidly inserted into the core and shuts down the reactor (e.g., reactor trip button, Alternate Rod Insertion).

If actions taken at the reactor control console fail to shutdown the plant, the event would escalate to a Site Area Emergency.

This condition indicates failure of the automatic protection system to scram (trip) the reactor. This condition is more than a potential degradation of a safety system in that a front line automatic protection system did not function in response to a plant transient. Thus the plant safety has been compromised because design limits of the fuel may have been exceeded. An Alert is indicated because conditions may exist that lead to potential loss of fuel clad or RCS.

SYSTEM MALFUNCTION

SA4

Initiating Condition -- ALERT

Loss of Indicating and Monitoring Functions.

Operating Mode Applicability:	Power Operation Startup Hot Standby Safe/Stable Shutdown

Emergency Action Level Threshold:

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

1. Loss of any three Q-DCIS Indicating and Monitoring Functions for 15 minutes or longer.

Basis:

This IC recognizes the difficulty associated with monitoring changing plant conditions without the use of a major portion of the control and indication systems.

This Alert will be escalated to a Site Area Emergency if the operating crew cannot monitor the transient in progress.

SYSTEM MALFUNCTION

SS1

Initiating Condition -- SITE AREA EMERGENCY

All Safety Related DC Batteries Not Being Charged for 24 Hours or Longer Due to Loss of Power to PIP Busses.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Safe/Stable Shutdown

Emergency Action Level Threshold:

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

1. PIP Busses [1000A3 and 1000B3] de-energized for 24 hours or longer.

Basis:

Prolonged de-energization of the PIP busses reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete loss of DC Power. 24 hours was selected as a threshold to escalate for recognition of the seriousness of the issue in that power has been unable to be restored through normal and abnormal operating procedures.

Escalation to General Emergency is via Fission Product Barrier Degradation or IC SG1, “Prolonged Loss of All Off-site and On-site AC Power for greater than 72 hours."

SYSTEM MALFUNCTION

SS2

Initiating Condition -- SITE AREA EMERGENCY

Automatic Scram (Trip) Fails to Shutdown the Reactor AND Manual Actions Taken from the Reactor Control Console are NOT Successful in Shutting Down the Reactor

Operating Mode Applicability: Power Operation
Startup

Emergency Action Level Threshold:

1. An Automatic Reactor Protection System actuation failed to shutdown the reactor.

   AND

2. Manual actions taken at the reactor control console DO NOT shutdown the reactor as indicated by greater than [0.25% power].

Basis:

Under these conditions, the reactor is producing more heat than the maximum decay heat load for which the safety systems are designed. A Site Area Emergency is indicated because conditions exist that lead to IMMINENT loss or potential loss of both fuel clad and RCS.

A manual trip/scram initiation is not considered successful if action away from the Control Room control panels was required to trip/scram the reactor.

A manual trip/scram is any set of actions by the reactor operator(s) at the Control Room control panels which causes control rods to be rapidly inserted into the core and brings the reactor subcritical.

Escalation of this event to a General Emergency would be due to a prolonged condition leading to challenges in maintaining core-cooling or heat sink.

SYSTEM MALFUNCTION

SS3

Initiating Condition -- SITE AREA EMERGENCY

Loss of All Vital DC Power for 15 Minutes or Longer.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Safe/Stable Shutdown

Emergency Action Level Threshold:

Note: The Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

1. Less than [210V] on all Vital DC Busses 11, 12, 21, 22, 31, 32, 41, and 42 for 15 minutes or longer.

Basis:

Loss of all DC power compromises ability to monitor and control plant safety functions. Prolonged loss of all DC power will cause core uncovering and loss of containment integrity when there is significant decay heat and sensible heat in the reactor system. Fifteen minutes for the initiating condition was selected as a threshold to exclude transient or momentary power losses.

Escalation to a General Emergency would occur by Abnormal Rad Levels/Radiological Effluent, Fission Product Barrier Degradation, or Emergency Director judgment ICs.

SYSTEM MALFUNCTION

SS6

Initiating Condition -- SITE AREA EMERGENCY

Inability to Monitor a SIGNIFICANT TRANSIENT in Progress.

Operating Mode Applicability: Power Operation
Startup
Hot Standby
Safe/Stable Shutdown

Emergency Action Level Threshold:

1. a. UNPLANNED Loss of all Q-DCIS Indicating and Monitoring Functions

   AND

   b. A SIGNIFICANT TRANSIENT is in progress.

Basis:

This IC recognizes the inability of the Control Room staff to monitor the plant response to a transient. A Site Area Emergency is considered to exist if the Control Room staff cannot monitor safety functions needed for protection of the public.

SYSTEM MALFUNCTION

SG1

Initiating Condition -- GENERAL EMERGENCY

All Safety Related DC Batteries Not Being Charged for Greater Than 72 Hours Due to Loss of Power to PIP Busses.

Operating Mode Applicability:	Power Operation Startup Hot Standby Safe/Stable Shutdown

Emergency Action Level Threshold:

1. PIP Busses [000A3 and 1000B3] de-energized for greater than 72 hours.

Basis:

This IC is specified to assure that in the unlikely event of a prolonged station blackout, timely recognition of the seriousness of the event occurs and that declaration of a General Emergency occurs as early as is appropriate, based on a reasonable assessment of the event trajectory.

The likelihood of restoring at least one bus should be based on a realistic appraisal of the situation since a delay in an upgrade decision based on only a chance of mitigating the event could result in a loss of valuable time in preparing and implementing public protective actions.

Under these conditions, fission product barrier monitoring capability may be degraded. Although it may be difficult to predict when power can be restored, it is necessary to give the Emergency Director a reasonable idea of how quickly to declare a General Emergency based on two major considerations:

1. Are there any present indications that core cooling is already degraded to the point that Loss or Potential Loss of Fission Product Barriers is IMMINENT?

2. If there are no present indications of such core cooling degradation, how likely is it that power can be restored in time to assure that a loss of two barriers with a potential loss of the third barrier can be prevented?

Thus, indication of continuing core cooling degradation must be based on Fission Product Barrier monitoring with particular emphasis on Emergency Director judgment as it relates to IMMINENT Loss or Potential Loss of fission product barriers and degraded ability to monitor fission product barriers.

SYSTEM MALFUNCTION

SG2

Initiating Condition -- GENERAL EMERGENCY

Automatic Scram (Trip) and All Manual Actions Fail to Shutdown the Reactor and Indication of an Extreme Challenge to the Ability to Cool the Core Exists.

Operating Mode Applicability: Power Operation
Startup

Emergency Action Level Threshold:

1. Automatic scram and ALL Manual actions failed to shutdown the reactor.

   AND

   EITHER of the following exists or has occurred due to continued power generation:

   a. RPV level less than Level 0 Setpoint [0 inches (0 mm)] on B21-NBS-LI-R615A-D

      OR

   b. RPV pressure and suppression pool temperature cannot be maintained below the Heat Capacity Temperature Limit (HCTL) Curve

Basis:

Automatic and manual trip/scram are not considered successful if action away from the Control Room control panels was required to trip/scram the reactor.

Under the conditions of this EAL, efforts to bring the reactor subcritical to the extent that the reactor is producing more heat than the maximum decay heat load for which the safety systems were designed are not successful. This situation could be a precursor for a core melt sequence.

In the event either of these challenges exists at a time that the reactor has not been brought below the power associated with the Safety System Design, a core melt sequence exists. In this situation, core degradation can occur rapidly. For this reason, the General Emergency declaration is intended to be anticipatory of the fission product barrier matrix declaration to permit maximum off-site intervention time.

Appendix 4 – Radiological Monitoring and Assessment

Radiological Monitoring and Assessment

1.0 Introduction

This appendix describes the basis for the Fermi 3 atmospheric transport and diffusion assessment capability, as discussed in Appendix 2 to NUREG-0654, Rev. 1, "Meteorological Criteria for Emergency Preparedness at Operating Nuclear Power Plants."[5] Three topics are identified in Appendix 2 to NUREG-0654:

Meteorological measurements;

Atmospheric transport and diffusion assessment; and

Remote interrogation.

Because meteorological measurements are discussed elsewhere in this COL application, only a brief discussion of this topic is provided in this Appendix. The majority of this Appendix provides a description of the design for the atmospheric transport and diffusion assessment models used by Detroit Edison at the Fermi 3 site.

2.0 Discussion

10 CFR 50.47 requires that the Emergency Plan provide "adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use."[6] Appendix E to 10 CFR 50 requires that emergency facilities and equipment shall include "equipment for determining the magnitude of and for continuously assessing the impact of the release of radioactive materials to the environment."[7]

The Raddose-V software has been developed using the Visual Basic (Version 6) computer language and is designed to operate under the Microsoft™ Windows XP Operating System. Raddose-V is designed to estimate dose rates from the plume, inhalation, and ground deposition; and calculate deposition rates at 15-minute intervals. From these estimates, integrated doses and total deposition are calculated for the length of time covering the release of radioisotopes. Doses and deposition are determined at radial grid and special receptor locations surrounding the facility, based on radiological and meteorological data collected at the plant.

The Raddose-V model is designed to provide real-time (as the release is occurring), site specific predictions of atmospheric transport and diffusion as required by NUREG-0654, Revision 1, Appendix 2. Atmospheric transport and diffusion are determined using a variable trajectory plume simulation model, along with real-time or simulated scenario meteorological data. The

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5 U.S. Nuclear Regulatory Commission, NUREG-0654/FEMA REP-1, Rev.1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Washington, DC, November 1980.

6 10 CFR 50.47(b)(9)

7 10 CFR 50, Appendix E, IV.E.2

radiological component of Raddose-V uses plant specific data for a number of accidents and source types. Further, the model accounts for source decay and plume depletion. Raddose-V also offers the following features:

The ability to find current dose rates and deposition rates at any user selected location from the release point;

The ability to make a forecast (projection) of avoided dose and deposition (for the forecast period) at any time without disrupting real-time data;

The ability to correct meteorological and/or radiological data and re-run from a previous time step.

Raddose-V is currently in-use at the Fermi site.

2.1 Source Term Data Inputs

In general, plant data are available to calculate a source term as opposed to having to rely on default values or direct entry of release rates. Raddose-V provides the opportunity to calculate the source term using a variety of plant specific accident types, pathways and monitors. Typical accident types that Raddose-V can address include (though not all inclusive) Loss of Coolant Accidents, and Fuel Handling Accidents.

For each 15 minute time step, the user is able to estimate the total noble gas, total iodine and total particulate release rates from plant specific radiation monitor readings and flow rates, by direct input, by back calculating from field data, or by a grab sample analysis. Radiation monitor readings and associated flow rates can be accessed directly from the plant's computer network or entered manually. Since Raddose-V is tailored to each facility, a number of different radiation monitors can be used to develop release rates. Typically, the available monitors included are as follows:

Containment High Range Radiation Monitors (reading in R/hr)

Containment Bypass Monitors (reading in cpm or R/hr)

Plant Vent Monitors (reading in uCi/cc, cpm, R/hr, or mR/hr)

Steam Line Monitors (reading in R/hr or mR/hr)

Again, because the model is tailored to the site, these as well as other monitors can be coded into Raddose-V, along with the units shown above (or others). Once release rates are determined, these are apportioned to the individual isotopes that make up the decayed source term. For a grab sample, isotope specific concentrations (in uCi/cc or uCi/ml) and a flow rate are entered by the user to generate total noble gas, total iodine, and total particulate release rates.

Raddose-V is able to automatically query the plant network to retrieve any radiation monitor data available. Data input from the plant's network may be overwritten by the user, if necessary, and data may also be entered manually if unavailable from the network. The model then applies conversion and plant specific calibration factors, and performs unit conversions, to generate a total noble gas, total iodine and total particulate release rate.

For each available accident type (e.g., LOCA, fuel handling, etc.), Raddose-V maintains an initial inventory for up to 24 isotopes. The accident type defines the initial isotopic distribution modeled. Once reactor trip occurs, these inventories are allowed to change in time according to isotope specific half-life and decay of parent isotopes.

2.2 Meteorological Data Inputs

Raddose-V also accommodates entry of meteorological data from the plant's meteorological tower via the plant's computer network. Each time the user enters the program's meteorological data entry screen, Raddose-V automatically queries the plant's network for the necessary data, using the plant specific data selection hierarchy. If data are not available from the network, it can be copied from the previous step or entered manually. Meteorological data required by Raddose-V include wind speed and direction, stability class or stability class indicator (e.g., delta-temperature or sigma-theta), and precipitation rate. The model is capable of maintaining meteorological instrument ranges, so that the user can be warned if out of range values are entered into Raddose-V.

3.0 Model Description

The remainder of this Appendix focuses on the conceptual design for the atmospheric transport and diffusion assessment models used by Fermi 3. The design description addresses the following program elements for accident assessment that demonstrate compliance with requirements in 10 CFR 50.47(b)(9) and address evaluation criteria from NUREG-0654 discussed in Section II.I of this plan:

The means exists to provide initial and continuing radiological assessment throughout the course of an accident. The means exists to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors.

The means exists to continuously assess the impact of the release of radioactive materials to the environment, accounting for the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions.

The means exists to make rapid assessment of potential magnitude and locations of any radiological hazards through gaseous release pathways.

The means exists to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the EPA Protective Action Guides (PAGs).

Raddose-V uses a variable trajectory, puff advection dispersion model to estimate atmospheric transport and diffusion of radioisotopes from a nuclear plant. Plume trajectories are calculated using meteorological data obtained from the on-site meteorological tower. Puffs are transported by the horizontal wind field, which varies with time. Both continuous and intermittent releases from various release points may be considered.

The diffusion (or spread) of each puff is based on a Gaussian distribution model. The dimensions of individual puffs, which compose the plume, are determined as a function of travel distance and atmospheric stability. Further, the initial dimensions of ground level puffs are adjusted to account for building wake effects. Plume growth during changing atmospheric stability conditions is determined using a virtual source concept. The virtual source concept is based on maintaining plume history and incrementing the plume's growth for each new time step. Consistent with NUREG-0654, Revision 1, Appendix 2, Raddose-V calculates dose, plume concentration and deposition at receptors in the 10 mile plume exposure and 50 mile ingestion pathway emergency planning zones. The user is able to calculate this information for the duration of the release.

The program can provide both real-time and forecast (projection) dose and deposition information. In either real-time mode or forecast mode, the same equations and methods are used to calculate concentrations, doses, and deposition.

Meteorological conditions and source term data are allowed to vary in time, and the transport and diffusion component of the program produces the following data:

Sector maximum dose rates and deposition data;

Plume dose rates and deposition at predefined special receptor points;

Plume concentrations for ground-level receptors;

Plume arrival times at grid receptor distances in the Plume EPZ;

Deposition flux of radioiodines and particulates;

Plume exposure dose rates based on a finite-cloud plume technique.

Raddose-V uses a discrete puff formulation to account for atmospheric transport and diffusion under changing meteorological conditions. Each puff is released at a rate which is based on current meteorology.

Raddose-V uses the puff advection model for both real-time and forecast (projection) calculations. Forecasts (projections) provide a user with the capability of predicting dose rates and doses for any future time step (i.e. avoided dose for the forecast period) and is accessible after each real-time update. The basic time step is 15 minutes.

For a forecast, the forecast period is incremented in 15 minute time steps and calculations are conducted similar to having a series of 15-minute periods in real-time mode.

Puffs are transported in space using current meteorological data. For each puff, the east and north coordinate location of its center is stored. The release point is assumed to be E,N=0,0. During an advection step, the centers of <u>new</u> puffs are determined by calculating an incremental change in each puff's east and north component based on the current meteorology. Following the release of all new puffs in an advection step, the centers of old puffs are updated.

Downwind concentrations associated with the release of contaminants from a source point are influenced by a number of factors including: (1) the strength of the release, (2) the release characteristics (e.g., release height), (3) surface features which may produce mechanical turbulence, (4) turbulence associated with the atmosphere's thermal structure (i.e., stability class), and (5) wind speed and direction. Source strength and release characteristics are based on the facility's design and operation. Onsite buildings may induce mechanical turbulence near release points so as to enhance the initial dispersion of a plume. The modeling of this affect is included. Plume diffusion, which involves the mixing of a plume with ambient air, is also influenced by the thermal structure of the atmosphere and wind conditions. As the air at the ground's surface is heated, turbulence is generated from the resulting buoyancy forces. This buoyancy-induced turbulence causes the mixing of the atmosphere and enhances a plume's ability to mix with the atmosphere. This mixing in turn results in the dilution of a released plume. The stability is classified into seven (7) categories. These categories are designated by the letters A through G (or numbers 1 through 7). The category ranges are designed so that A (or 1) is the most unstable category and G (or 7) is the most stable category. Neutral stability is given by category D (or 4). Thus, during early morning hours when the atmosphere tends to be more stable, the categories E through G are common. However, during afternoons when the sun warms the ground, categories A through C are more typical. Neutral stability (category D) is common during overcast conditions.

From the thermal structure of the atmosphere, also arises a mixing layer. As the ground heats and warms the air at the surface, an interface between lower unstable air and upper stable air is created. Ground level contaminants released into the lower unstable air experience mixing associated with the thermally induced turbulence at the ground. However, because mixing is limited in stable air, mixing across this interface is suppressed. The height of this interface is referred to as the mixing height and the atmosphere below is called the mixing layer.

Wind conditions also influence plume concentrations by transporting the plume towards receptors and diluting the plume. Dilution is also a function of wind speed; the greater the wind speed the larger the quantity of air that emissions are released into during a time increment, thus reducing concentrations.

For real-time modeling, the most common method of evaluating plume dispersion is through the use of mathematical diffusion equations with the assumption that contaminants are distributed in a Gaussian fashion around the plume centerline. (The centerline paralleling the wind direction.) In Raddose-V, this Gaussian distribution is assumed for both the vertical and lateral dimensions (at right angles with the plume transport direction). The shape of the Gaussian distribution (or "bell curve") at any distance is designed to provide a relationship between the spread (or width) of the plume and the concentration away from the plume centerline. Since a Gaussian distribution's shape is defined by it's standard deviation and a plume's concentration is related to the level of atmospheric turbulence (or stability category), data have been derived to relate these two parameters (i.e., standard deviation to turbulence levels). These methods involve defining the standard deviation, for both the vertical and lateral dimensions, of the Gaussian plume as a function of downwind distance and stability class. Raddose-V uses this approach to model plume concentration.

Radioisotopes released to the atmosphere are assumed distributed in a Gaussian manner, between the surface boundary and mixing height. The diffusion of released materials is expressed in terms of a normalized concentration, χ/Q. Normalized concentrations are multiplied by a source strength Q to provide an estimate of cloud concentration χ(Ci/m^3). For gamma radiation, which can extend beyond the physical edge of the concentration plume, a different set of χ/Q values (referred to as "gamma *χ/Q's")* are calculated using finite plume techniques.

Puff depletion that takes into consideration the removal of iodines and particulates from the plume, as a result of dry and wet deposition, is also calculated. Deposition fluxes are provided to assist in the identification of areas where relatively high levels of surface contamination might be expected to occur.

4.0 Raddose-V Output

Raddose-V provides three types of outputs: tabular screen displays, graphical map displays, and printed reports. Forecast mode printouts and screens are clearly labeled.

4.1 Tabular Output Screens

Dose and dose rate data are reported at radial grid receptors, and include:

- The plume effective dose equivalent (Plume EDE exposure).
- The four day ground effective dose equivalent (Ground EDE exposure).
- The committed effective dose equivalent (CEDE) from inhalation.
- The total effective dose equivalent (TEDE).
- CDE-Thyroid from inhalation of iodines.
- Total ground level concentration of all isotopes.
- Deposition rate and accumulated deposition of all isotopes on the ground.

In addition, the model provides:

- Dose and deposition information for up to 75 predefined survey points.
- Color coding of dose values based on EPA-400 Protective Action Guides (PAGs) for TEDE and CDE-Thyroid doses.

Dose and dose rates can be reported using either units of rem or mrem, depending on the nomenclature used by the plant. Ground level concentrations are reported as uCi/cc, while deposition is given in units of uCi/m^2.

4.2 Map Displays

Raddose-V produces high resolution graphical representations of the position of the released plume at the end of each time step and forecast. Maps are displayed for the area surrounding the plant to the 10-mile EPZ limit. The plume itself is depicted by a series of puffs. In addition, the screen provides pertinent information on the time step currently being computed and its associated meteorology.

Representations of the 2-mile and 50-mile maps are also available.

4.3 Printed Reports

The report options menu provides the user with several choices for obtaining hard copy output of model generated data after each time step. Report options include the ability to print grid receptor and survey point dose rates and doses, a summary report of inputs, a one to two page Emergency Notification Form, and maps. The reports are provided in a format similar to the data displayed on the screen.

Appendix 5– Evacuation Time Estimate Summary

EXECUTIVE SUMMARY

This report describes the analyses undertaken and the results obtained by a study to develop Evacuation Time Estimates (ETE) for the Fermi Nuclear Power Plant (FNPP) located in Monroe County, Michigan. ETE are part of the required planning basis and provide FNPP and State and local governments with site-specific information needed for Protective Action decision-making.

In the performance of this effort, all available prior documentation published by Federal Government agencies and relevant to ETE was reviewed. Most important of these are:

- Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, NUREG 0654/FEMA-REP-1, Rev. 1, November 1980.
- Analysis of Techniques for Estimating Evacuation Times for Emergency Planning Zones, NUREG/CR-1745, November 1980.
- Development of Evacuation Time Estimates for Nuclear Power Plants, NUREG/CR-6863, January 2005.

Overview of Project Activities

This project began in January, 2008 and extended over a period of 5 months. The major activities performed are briefly described in chronological sequence:

- Attended "kick-off" meetings with Detroit Edison (DTE) personnel, Black and Veatch personnel and emergency management personnel representing state and local governments.
- Reviewed prior ETE reports prepared for the FNPP.
- Accessed U.S. Census Bureau data files for the year 2000. Studied Geographical Information Systems (GIS) maps of the area in the vicinity of FNPP, then conducted a detailed field survey of the highway network.
- Synthesized this information to create an analysis network representing the highway system topology and capacities within the Emergency Planning Zone (EPZ), plus a Shadow Region extending 15 miles radially from the plant.
- Designed and sponsored a telephone survey of residents within the EPZ to gather focused data needed for this ETE study that were not contained within the census database. The survey instrument was reviewed and modified by DTE and county personnel prior to the survey.
- A data collection survey was conducted to obtain data pertaining to employment, transients, and special facilities within the EPZ.
- The traffic demand and trip-generation rates of evacuating vehicles were

estimated from the gathered data. The trip generation rates reflected the estimated mobilization time (i.e., the time required by evacuees to prepare for the evacuation trip) computed using the results of the telephone survey of EPZ residents.

- Following Federal guidelines, the EPZ is subdivided into 5 Protective Action Areas (PAA). These PAA are then grouped within circular areas or "keyhole" configurations (circles plus radial sectors) that define a total of 7 Evacuation Regions.
- The time-varying external circumstances are represented as Evacuation Scenarios, each described in terms of the following factors: (1) Season (Summer, Winter); (2) Day of Week (Midweek, Weekend); (3) Time of Day (Midday, Evening); and (4) Weather (Good, Rain, Snow). Two special event scenarios were considered: the River Raisin Jazz Festival in St. Mary's Park in the City of Monroe, and the construction on Fermi 3 during refueling of Fermi 2 in the Year 2018.
- The Planning Basis for the calculation of ETE is:
  - A rapidly escalating accident at FNPP that quickly assumes the status of General Emergency such that the Advisory to Evacuate is virtually coincident with the siren alert.
  - While an unlikely accident scenario, this planning basis will yield ETE, measured as the elapsed time from the Advisory to Evacuate until the last vehicle exits the impacted Region, that represent "upper bound" estimates. This conservative Planning Basis is applicable for all initiating events.
- If the emergency occurs while schools are in session, the ETE study assumes that the children will be evacuated by bus directly to specified host schools and reception centers located outside the EPZ. Parents, relatives, and neighbors are advised to not pick up their children at school prior to the arrival of the buses dispatched for that purpose. The ETE for school children are calculated separately.
- Evacuees who do not have access to a private vehicle will either ride-share with relatives, friends or neighbors, or be evacuated by buses provided as specified in the county evacuation plans. Those in special facilities will likewise be evacuated with public transit, as needed: bus, van, or ambulance, as required. Separate ETE are calculated for the transit-dependent evacuees and for those evacuated from special facilities.

Computation of ETE

A total of 98 ETE were computed for the evacuation of the general public. Each ETE quantifies the aggregate evacuation time estimated for the population within one of the 7 Evacuation Regions to completely evacuate from that Region, under the circumstances defined for one of the 14 Evacuation Scenarios (14 x 7 = 98). Separate ETE are calculated for transit-dependent evacuees, including school children for applicable scenarios.

Except for Region R03, which is the evacuation of the entire EPZ, only a portion of the people within the EPZ would be advised to evacuate. That is, the Advisory to Evacuate applies only to those people occupying the specified impacted region. It is assumed that 100 percent of the people within the impacted region will evacuate in response to this Advisory. The people occupying the remainder of the EPZ outside the impacted region may be advised to take shelter.

The computation of ETE assumes that a portion of the population within the EPZ but outside the impacted region, will elect to "voluntarily" evacuate. In addition, a portion of the population in the Shadow Region beyond the EPZ that extends a distance of 15 miles from FNPP, will also elect to evacuate. These voluntary evacuees could impede those who are evacuating from within the impacted region. The impedance that could be caused by voluntary evacuees is considered in the computation of ETE for the impacted region.

The computational procedure is outlined as follows:

- A link-node representation of the highway network is coded. Each link represents a unidirectional length of highway; each node usually represents an intersection or merge point. The capacity of each link is estimated based on the field survey observations and on established procedures.
- The evacuation trips are generated at locations called "zonal centroids" located within the EPZ. The trip generation rates vary over time reflecting the mobilization process, and from one location (centroid) to another depending on population density and on whether a centroid is within, or outside, the impacted area.
- The computer models compute the routing patterns for evacuating vehicles that are compliant with federal guidelines (outbound relative to the location of the plant), then simulate the traffic flow movements over space and time. This simulation process estimates the rate that traffic flow exits the impacted region.
- The ETE statistics provide the elapsed times for 50 percent, 90 percent, 95 percent and 100 percent, respectively, of the population within the impacted region, to evacuate from within the impacted region. These statistics are presented in tabular and graphical formats.

Traffic Management

This study includes the development of a comprehensive traffic management plan designed to expedite the evacuation of people from within an impacted region. This plan, which was reviewed with State and local law enforcement personnel, is also designed to control access into the EPZ after returning commuters have rejoined their families.

The plan is documented in the form of detailed schematics specifying: (1) the directions of evacuation travel to be facilitated, and other traffic movements to be discouraged; (2) the traffic control personnel and equipment needed (cones, barricades) and their deployment; (3) the locations of these “Traffic Control Points” (TCP); (4) the priority assigned to each traffic control point indicating its relative importance and how soon it should be manned relative to others; and (5) the number of traffic control personnel required.

Selected Results

A compilation of selected information is presented on the following pages in the form of Figures and Tables extracted from the body of the report; these are described below.

- Figure 3-1 displays a map of the FNPP site showing the layout of the 5 PAA that comprise, in aggregate, the Emergency Planning Zone (EPZ). The 2008 estimates of permanent resident population within each PAA are also provided.
- Table 3-3 presents the estimates of permanent resident population in each PAA based on the 2000 Census data. Extrapolation to the year 2008 reflects population growth rates in each municipality obtained from the Census.
- Table 6-1 defines each of the 7 Evacuation Regions in terms of their respective groups of PAA.
- Table 6-2 lists the 14 Evacuation Scenarios.
- Tables 7-1C and 7-1D are compilations of ETE. These data are the times needed to *clear the indicated regions* of 95 and 100 percent of the population occupying these regions, respectively. These computed ETE include consideration of mobilization time, and of estimated voluntary evacuations from other regions within the EPZ and from the shadow region.
- Table 8-5A presents ETE for the schoolchildren in good weather.
- Table 8-7A presents ETE for the transit-dependent population in good weather.

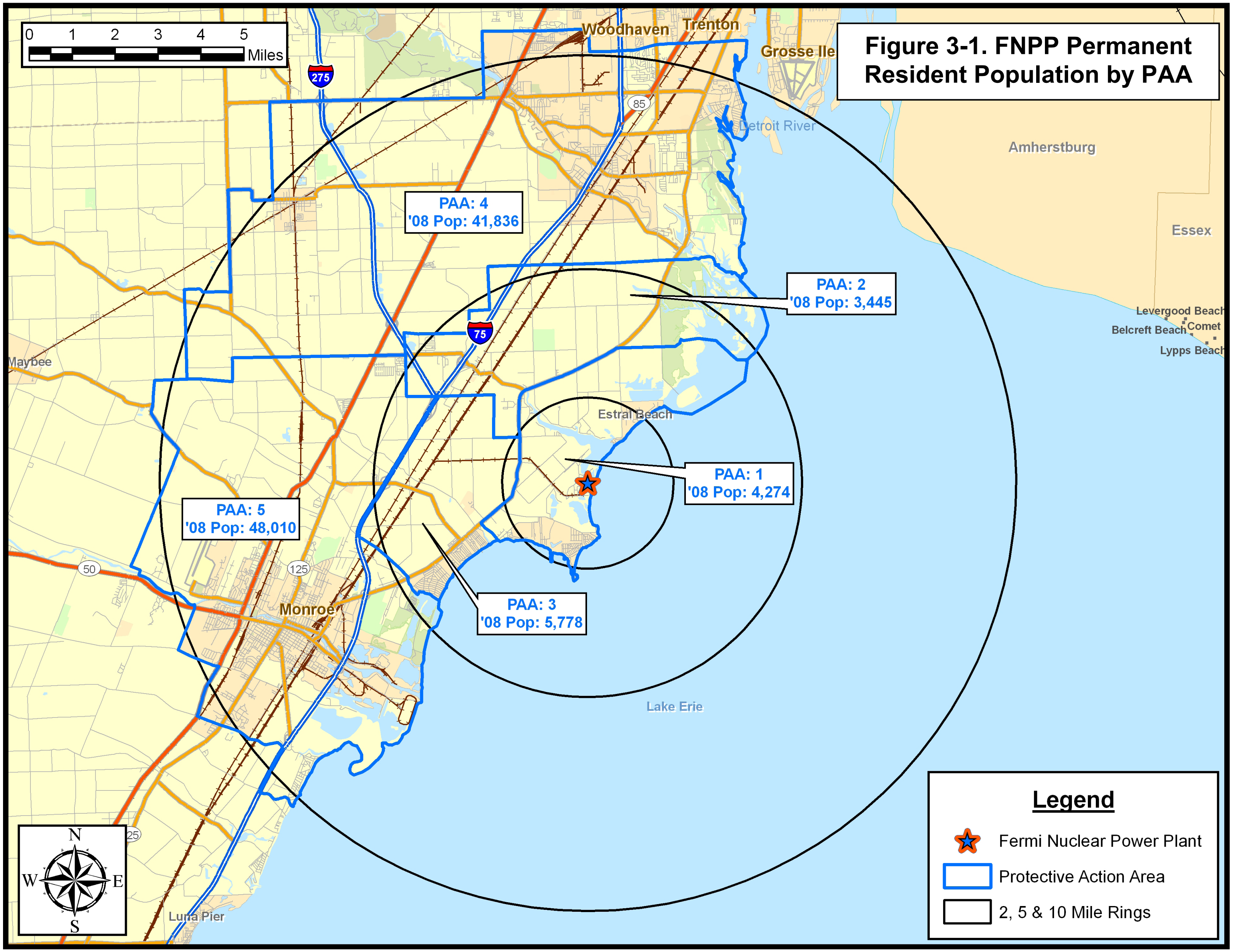

Figure 3-1. FNPP Permanent Resident Population by PAA

Table 3-2. EPZ Permanent Resident Population		
PAA	**2000 Population**	**2008 Population**
1	3,723	4,274
2	2,576	3,445
3	5,628	5,778
4	33,723	41,836
5	47,049	48,010
TOTAL	**92,699**	**103,343**
Population Growth:		**11.5%**

Table 6-1. Description of Evacuation Regions

Region	Description	Protective Action Area				
		1	2	3	4	5
R01	2-Mile Ring	X				
R02	5-Mile Ring	X	X	X		
R03	Full EPZ	X	X	X	X	X
Evacuate 2-Mile Ring and 5 Miles Downwind						
Region	**Wind Direction From:**	**Protective Action Area**				
		1	**2**	**3**	**4**	**5**
R04	SSE,S,SSW,SW,WSW	X	X			
	W,WNW,NW,NNW,N,NNE	**Refer to Region R01**				
R05	NE,ENE,E	X		X		
	ESE,SE	**Refer to Region R02**				
Evacuate 5-Mile Ring and Downwind to EPZ boundary						
Region	**Wind Direction From:**	**Protective Action Area**				
		1	**2**	**3**	**4**	**5**
R06	SSE,S,SSW,SW	X	X	X	X	
	WSW,W,WNW,NW,NNW,N	**Refer to Region R02**				
R07	NNE,NE,ENE	X	X	X		X
	E,ESE,SE	**Refer to Region R03**				

Table 6-2. Evacuation Scenario Definitions					
Scenarios	**Season**	**Day of Week**	**Time of Day**	**Weather**	**Special**
1	Summer	Midweek	Midday	Good	None
2	Summer	Midweek	Midday	Rain	None
3	Summer	Weekend	Midday	Good	None
4	Summer	Weekend	Midday	Rain	None
5	Summer	Midweek, Weekend	Evening	Good	None
6	Winter	Midweek	Midday	Good	None
7	Winter	Midweek	Midday	Rain	None
8	Winter	Midweek	Midday	Snow	None
9	Winter	Weekend	Midday	Good	None
10	Winter	Weekend	Midday	Rain	None
11	Winter	Weekend	Midday	Snow	None
12	Winter	Midweek, Weekend	Evening	Good	None
13	Summer	Weekend	Midday	Good	River Raisin Jazz Festival
14	Summer	Midweek	Midday	Good	New Plant Construction and Refueling

Table 7-1C. Time To Clear The Indicated Area of 95 Percent of the Evacuating Population

	Summer		Summer		Summer		Winter			Winter			Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend			Midweek Weekend		Weekend Jazz Festival	Midweek Construction + Refueling
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	(11)	(12)	Scenario:	(13)	(14)
	Midday		Midday		Evening		Midday			Midday			Evening		Midday	Midday
Region	Good Weather	Rain	Good Weather	Rain	Good Weather	Region	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Region	Good Weather	Good Weather
Entire 2-Mile Region, 5-Mile Region, and EPZ																
R1	2:40	2:40	2:15	2:20	2:10	R1	2:40	2:40	3:20	2:10	2:20	2:55	2:10	R1	2:15	2:30
R2	2:20	2:20	1:50	2:00	2:10	R2	2:20	2:20	2:50	1:50	2:00	2:30	2:10	R2	1:50	2:30
R3	3:10	3:25	3:00	3:20	2:40	R3	3:10	3:20	3:55	2:50	3:00	3:40	2:40	R3	3:25	3:25
2-Mile Ring and Downwind to 5 Miles																
R4	2:00	2:00	1:40	1:45	2:00	R4	2:00	2:00	2:30	1:40	1:45	2:10	2:00	R4	1:40	2:20
R5	2:10	2:20	1:50	2:00	2:10	R5	2:10	2:20	2:50	1:50	2:00	2:30	2:10	R5	1:50	2:20
5-Mile Ring and Downind to EPZ Boundary																
R6	2:45	3:00	2:35	2:50	2:20	R6	2:45	3:00	3:25	2:25	2:40	3:10	2:20	R6	2:35	3:20
R7	3:10	3:30	3:05	3:30	2:50	R7	3:10	3:30	4:00	2:50	3:10	3:40	2:50	R7	3:30	3:15

Table 7-1D. Time To Clear The Indicated Area of 100 Percent of the Evacuating Population

	Summer		Summer		Summer		Winter			Winter			Winter		Summer	Summer
	Midweek		Weekend		Midweek Weekend		Midweek			Weekend			Midweek Weekend		Weekend Jazz Festival	Midweek Construction + Refueling
Scenario:	(1)	(2)	(3)	(4)	(5)	Scenario:	(6)	(7)	(8)	(9)	(10)	(11)	(12)	Scenario:	(13)	(14)
	Midday		Midday		Evening		Midday			Midday			Evening		Midday	Midday
Region	Good Weather	Rain	Good Weather	Rain	Good Weather	Region	Good Weather	Rain	Snow	Good Weather	Rain	Snow	Good Weather	Region	Good Weather	Good Weather
Entire 2-Mile Region, 5-Mile Region, and EPZ																
R1	4:00	4:00	4:00	4:00	4:00	R1	4:00	4:00	5:00	4:00	4:00	5:00	4:00	R1	4:00	4:00
R2	4:00	4:00	4:00	4:00	4:00	R2	4:00	4:00	5:00	4:00	4:00	5:00	4:00	R2	4:00	4:00
R3	4:05	4:10	4:05	4:10	4:05	R3	4:05	4:10	5:10	4:05	4:05	5:10	4:05	R3	4:30	4:10
2-Mile Ring and Downwind to 5 Miles																
R4	4:00	4:00	4:00	4:00	4:00	R4	4:00	4:00	5:00	4:00	4:00	5:00	4:00	R4	4:00	4:00
R5	4:00	4:00	4:00	4:00	4:00	R5	4:00	4:00	5:00	4:00	4:00	5:00	4:00	R5	4:00	4:00
5-Mile Ring and Downind to EPZ Boundary																
R6	4:05	4:10	4:05	4:10	4:00	R6	4:05	4:10	5:00	4:00	4:00	5:00	4:00	R6	4:05	4:10
R7	4:00	4:10	4:00	4:10	4:00	R7	4:00	4:00	5:00	4:00	4:00	5:00	4:00	R7	4:30	4:00

Table 8-5A. School Evacuation Time Estimates - Good Weather								
School	**Driver Mobilization Time(min)**	**Loading Time (min)**	**Dist. to EPZ Boundary (mi.)**	**Travel Time to EPZ Bdry (min)**	**ETE (hr:min)**	**Dist. EPZ Bndry to H.S. (mi.)**	**Travel Time EPZ Bdry to H.S. (min)**	**ETE to H.S. (hr:min)**
Monroe County Schools								
North Elementary School	45	5	12.3	20	**1:10**	7.4	10	**1:20**
Neidermeier Elementary School	45	5	7.7	13	**1:05**	16.8	22	**1:25**
St. Charles School	45	5	4.0	7	**1:00**	5.9	8	**1:05**
Jefferson High School	45	5	8.1	13	**1:05**	7.4	10	**1:15**
Jefferson Middle School	45	5	9.2	15	**1:05**	7.4	10	**1:15**
Sodt Elementary School	45	5	9.0	15	**1:05**	7.4	10	**1:15**
Airport Senior High School	15	5	2.3	3	**0:25**	17.0	23	**0:50**
Carleton Country Day	15	5	0.1	1	**0:25**	17.0	23	**0:45**
Eyler Elementary School	45	5	2.7	4	**0:55**	17.2	23	**1:20**
Ritter Elementary School	45	5	7.1	12	**1:05**	17.3	23	**1:25**
St. Patrick School	45	5	0.5	1	**0:55**	16.5	22	**1:15**
Sterling Elementary School	45	5	2.5	4	**0:55**	16.8	22	**1:20**
Wager Junior High School	15	5	2.4	3	**0:25**	17.6	23	**0:50**
Cantrick Middle School	45	5	4.1	7	**1:00**	14.3	19	**1:20**
Christiancy Elementary School	45	5	3.2	5	**0:55**	6.3	8	**1:05**
Custer Elementary School #1	45	5	0.1	1	**0:55**	13.9	19	**1:10**
Custer Elementary School #2	45	5	0.1	1	**0:55**	13.9	19	**1:10**
Hollywood Elementary School	45	5	4.2	7	**1:00**	14.3	19	**1:20**
Holy Ghost Lutheran School	45	5	1.7	3	**0:55**	13.5	18	**1:15**
Hurd Elementary School	45	5	5.8	10	**1:00**	7.4	10	**1:10**
Lincoln Elementary School	45	5	2.6	4	**0:55**	15.0	20	**1:15**
Lutheran High School South	45	5	8.2	14	**1:05**	6.0	8	**1:15**
Manor Elementary School	45	5	2.4	4	**0:55**	15.1	20	**1:15**
Monroe Middle School	45	5	2.5	4	**0:55**	14.3	19	**1:15**
Monroe Senior High School	45	5	2.2	4	**0:55**	18.4	25	**1:20**
Orchard Center High School	45	5	2.4	4	**0:55**	7.3	10	**1:05**
Pathway Christian Academy/ Daycare	45	5	3.2	5	**0:55**	8.0	11	**1:10**
Raisinville Elementary School	45	5	2.9	5	**0:55**	18.4	25	**1:20**
Riverside Elementary School	45	5	1.9	3	**0:55**	14.9	20	**1:15**
S. Monroe Townsite Elementary School	45	5	0.7	1	**0:55**	15.1	20	**1:15**
St. John's School	45	5	2.4	4	**0:55**	6.4	9	**1:05**
St. Mary's Catholic Center High School	45	5	3.0	5	**0:55**	6.3	8	**1:05**
St. Mary's Parish School	45	5	3.0	5	**0:55**	6.3	8	**1:05**
St. Michael's School	45	5	1.9	3	**0:55**	6.8	9	**1:05**
Trinity Lutheran School	45	5	2.7	4	**0:55**	6.3	8	**1:05**
Waterloo Elementary School	45	5	2.1	3	**0:55**	18.7	25	**1:20**
Zion Lutheran School	45	5	4.4	7	**1:00**	6.3	8	**1:05**
Wayne County Schools								
Chapman Elementary School	60	5	2.9	5	**1:10**	10.7	14	**1:25**
David Oren Hunter Elementary School	60	5	0.5	1	**1:10**	10.7	14	**1:20**
Downriver High School	60	5	3.7	7	**1:15**	13.6	18	**1:30**
Ethel C. Bobcean Elementary School	60	5	1.7	3	**1:10**	8.7	12	**1:20**
Flat Rock / Gibraltar Head Start	60	5	1.7	3	**1:10**	8.7	12	**1:20**
Flat Rock Community High School	60	5	1.6	3	**1:10**	11.3	15	**1:25**
Hellen C. Shumate Junior High School	60	5	2.0	4	**1:10**	13.5	18	**1:30**
John M. Barnes Elementary	60	5	2.9	5	**1:10**	8.7	12	**1:25**
Oscar A. Carlson High School	60	5	2.1	4	**1:10**	13.5	18	**1:30**
Parsons Elementary School	60	5	1.6	3	**1:10**	13.5	18	**1:30**
Simpson Middle School	60	5	3.0	6	**1:15**	8.7	12	**1:25**
St. Mary's Rockwood Elementary School	60	5	3.3	6	**1:15**	10.7	14	**1:25**
Summit Academy/Summit Early Childhood Center	60	5	2.1	4	**1:10**	10.7	14	**1:25**
				Average for EPZ:	**1:00**		**Average:**	**1:15**

Table 8-7A. Transit-Dependent Evacuation Time Estimates - Good Weather

		Single Wave					Second Wave						
Route Number	Bus Number	Mobilization (min.)	Route Length (mi.)	Route Travel Time (min.)	Pickup Time (min.)	ETE (hr:min)	Arrive at RC (min.)	Unload (min.)	Driver Rest (min.)	Return to EPZ (min.)	Route Travel Time (min.)	Pickup Time (min.)	ETE (hr:min)
1	1-10	90	12.5	36	30	**2:40**	75	5	10	16	45	30	**3:05**
	11-20	120	12.5	36	30	**3:10**							
2	1-10	90	8.9	26	30	**2:30**	75	5	10	16	32	30	**2:50**
	11-20	120	8.9	26	30	**3:00**							
3	1-10	90	9.1	26	30	**2:30**	75	5	10	16	33	30	**2:50**
	11-20	120	9.1	26	30	**3:00**							
4	1-10	90	9.4	27	30	**2:30**	75	5	10	16	34	30	**2:50**
	11-20	120	9.4	27	30	**3:00**							
5	1-5	90	7.3	21	30	**2:25**	75	5	10	16	26	30	**2:45**
6	1-10	90	10.2	29	30	**2:30**	75	5	10	16	37	30	**2:55**
7	1-5	90	5.9	17	30	**2:20**	75	5	10	16	21	30	**2:40**
					Average for EPZ:	**2:40**						**Average for EPZ:**	**2:50**

Appendix 6 – Emergency Plan Implementing and Supporting Procedures (Typical List) and Procedure Cross-Reference to Plan

Emergency Plan Implementing and Supporting Procedures (Typical List) and Procedure Cross-Reference to Plan

Implementing Procedures	**Affected Sections of Plan**
Emergency Classification	Section D, Appendix 3
Notifications/Communications	Sections E, F
Protective Action Recommendations	Section J
Dose Assessment Methodology	Section I, Appendix 4
Onsite/Offsite Radiological Monitoring	Section I
Core Damage Assessment	Section I
Radiological Exposure Control	Section K
Evacuation and Accountability	Section J, Appendix 5
Medical Response	Sections B, L
Recovery and Reentry	Section M
Technical Support Center Activation and Operation	Sections A, B, H
Operational Support Center Activation and Operation	Sections A, B, H
Emergency Operations Facility Activation and Operation	Sections A, B, H
Joint Information Center Activation and Operation	Sections B, G, H
Administrative Procedures	
Maintaining Emergency Preparedness	Section P
Emergency Response Facilities and Equipment	Sections B, H, I
Drills and Exercises	Section N
Radiological Emergency Response Training	Section O
Public Information	Section G
Emergency Preparedness Telephone Directory	Sections E, P

Appendix 7 – NUREG-0654 Cross-Reference

NUREG-0654 Cross-Reference

Note: Offsite Responsibility is shaded in Planning Element Column.

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Section A: Assignment of Responsibility (Organization Control) ***Primary responsibilities for emergency response by the nuclear facility licensee, and by State and local organizations within the Emergency Planning Zones have been assigned, the emergency responsibilities of the various supporting organizations have been specifically established, and each principal response organization has staff to respond and to augment its initial response on a continuous basis.***		
Criteria A.1.a. *Each plan shall identify the State, local, Federal, and private sector organizations (including utilities), that are intended to be part of the overall response organization for Emergency Planning Zones.*	II.A.1.a Figure II.A-1	
Criteria A.1.b. *Each organization and sub-organization having an operational role shall specify its concept of operations, and its relationship to the total effort.*	II.A.1.b	
Criteria A.1.c. *Each plan shall illustrate these interrelationships in a block diagram.*	Figure II.A-1	
Criteria A.1.d. *Each organization shall identify a specific individual by title who shall be in charge of the emergency response.*	II.A.1.d	
Criteria A.1.e. *Each organization shall provide for 24-hour per day emergency response, including 24-hour per day manning of communications links.*	II.A.1.e	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria A.2.a. ***Each organization shall specify the functions and responsibilities for major elements and key individuals by title, of emergency response, including the following: Command and Control, Alerting and Notification, Communications, Public Information, Accident Assessment, Public Health and Sanitation, Social Services, Fire and Rescue, Traffic Control, Emergency Medical Services, Law Enforcement, Transportation, Protective Response (including authority to request Federal assistance and to initiate other protective actions), and Radiological Exposure Control. The description of these functions shall include a clear and concise summary such as a table of primary and support responsibilities using the agency as one axis, and the function as the other. (See Section B for licensee).***	II.A.1.b Table II.A-1	Offsite Responsibility
Criteria A.2.b. ***Each plan shall contain (by reference to specific acts, codes or statutes) the legal basis for such authorities.***	II.A.1.b	Offsite Responsibility

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria A.3 *Each plan shall include written agreements referring to the concept of operations developed between Federal, State, and local agencies and other support organizations having an emergency response role within the Emergency Planning Zones. The agreements shall identify the emergency measures to be provided and the mutually acceptable criteria for their implementation, and specify the arrangements for exchange of information. These agreements may be provided in an appendix to the plan or the plan itself may contain descriptions of these matters and a signature page in the plan may serve to verify the agreements. The signature page format is appropriate for organizations where response functions are covered by laws, regulations or executive orders where separate written agreements are not necessary.*	II.A.2 Appendix 2, Certification/Letters	
Criteria A.4 *Each principal organization shall be capable of continuous (24-hour) operations for a protracted period. The individual in the principal organization who will be responsible for assuring continuity of resources (technical, administrative, and material) shall be specified by title.*	II.A.1.b II.A.1.e	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Section B: On-site Emergency Organization ***On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various on-site response activities and off-site support and response activities are specified.***		
Criteria B.1. *Each licensee shall specify the on-site emergency organization of plant staff personnel for all shifts and its relation to the responsibilities and duties of the normal staff complement.*	II.B.1 Table II.B-1 Table II.B-2	
Criteria B.2. *Each licensee shall designate an individual as emergency coordinator who shall be on shift at all times and who shall have the authority and responsibility to immediately and unilaterally initiate any emergency actions, including providing protective action recommendations to authorities responsible for implementing off-site emergency measures.*	II.B.1	
Criteria B.3. *Each licensee shall identify a line of succession for the emergency coordinator position and identify the specific conditions for higher level utility officials assuming this function.*	II.B.2	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria B.4. *Each licensee shall establish the functional responsibilities assigned to the emergency coordinator and shall clearly specify which responsibilities may not be delegated to other elements of the emergency organization. Among the responsibilities which may not be delegated shall be the decision to notify and to recommend protective actions to authorities responsible for off-site emergency measures.*	II.B.3	
Criteria B.5. *Each licensee shall specify the positions or title and major tasks to be performed by the persons to be assigned to the functional areas of emergency activity. For emergency situations, specific assignments shall be made for all shifts and for plant staff members, both on-site and away from the site. These assignments shall cover the emergency functions in Table B-1 entitled, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies." The minimum on-shift staffing levels shall be as indicated in Table B-1. The licensee must be able to augment on-shift capabilities within a short period after declaration of an emergency. This capability shall be as indicated in Table B-1. The implementation schedule for licensed operators, auxiliary operators and the shift technical advisor on shift shall be as specified in the July 31, 1980 letter to all power reactor licensees. Any deficiencies in the other staffing requirements of Table B-1 must be capable of augmentation within 30 minutes by September 1, 1981, and such deficiencies must be fully removed by July 1, 1982.*	II.B.4 II.B.6 Table II.B-1	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria B.6. *Each licensee shall specify the interfaces between and among the on-site functional areas of emergency activity, licensee headquarters support, local services support, and State and local government response organization. This shall be illustrated in a block diagram and shall include the on-site technical support center and the operational support (assembly) center and the licensee's near-site Emergency Operations Facility (EOF)*	II.B.5 Figure II.A-1	
Criteria B.7. *Each licensee shall specify the corporate management, administrative, and technical support personnel who will augment the plant staff as specified in the table entitled "Minimum Staffing Requirements for Nuclear Power Plant Emergencies," (Table B-1) and in the following areas:*	II.B.6	
Criteria B.7.a. *Logistics support for emergency personnel, e.g., transportation, communications, temporary quarters, food and water, sanitary facilities in the field, and special equipment and supplies procurement.*	II.B.4	
Criteria B.7.b. *Technical support for planning and reentry/recovery operations.*	II.B.4 II.M.1 II.M.2	
Criteria B.7.c. *Management level interface with governmental authorities.*	II.B.5 Table II.B-2	
Criteria B.7.d *Release of information to news media during an emergency (coordinated with governmental authorities).*	II.B.3 Table II.B-2 II.G.3 II.G.4	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria B.8. *Each licensee shall specify the contractor and private organizations that may be requested to provide technical assistance to and augmentation of the emergency organization.*	II.B.7	
Criteria B.9. *Each licensee shall identify the services to be provided by local agencies for handling emergencies, e.g., police, ambulance, medical, hospital, and fire-fighting organizations shall be specified. The licensee shall provide for transportation and treatment of injured personnel who may also be contaminated. Copies of the arrangements and agreements reached with contractor, private, and local support agencies shall be appended to the plan. The agreements shall delineate the authorities, responsibilities, and limits on the actions of the contractor, private organization, and local services support groups.*	II.B.8 II.L.1 II.L.3 Appendix 2, Certification Letters	
Section C: Emergency Response Support and Resources **Arrangements for requesting and effectively using assistance resources have been made, arrangements to accommodate State and local staff at the licensee's near-site Emergency Operations Facility have been made, and other organizations capable of augmenting the planned response have been identified.**		

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria C.1. *The Federal government maintains in-depth capability to assist licensees, States, and local governments through the Federal Radiological Monitoring and Assessment Plan (formerly Radiological Assistance Plan (RAP) and Interagency Radiological Assistance Plan (IRAP). Each State and licensee shall make provisions for incorporating the Federal response capability into its operation plan, including the following:*		
Criteria C.1.a. *Specific persons by title authorized to request Federal assistance.*	II.C.1	
Criteria C.1.b. *Specific Federal resources expected, including expected times of arrival at specific nuclear facility sites.*	II.C.1 II.C.3 II.C.4	
Criteria C.1.c. *Specific licensee, State, and local resources available to support the Federal response, e.g., air fields, command posts, telephone lines, radio frequencies, and telecommunications centers.*	II.C.1	
Criteria C.2.a. *Each principal offsite organization may dispatch representatives to the licensee's near-site Emergency Operations Facility.*		Offsite Responsibility
Criteria C.2.b. *The licensee shall prepare for the dispatch of a representative to principal off-site governmental emergency operations centers.*	II.C.2	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria C.3. *Each organization shall identify radiological laboratories and their general capabilities and expected availability to provide radiological monitoring and analyses services which can be used in an emergency.*	II.C.3	
Criteria C.4. *Each organization shall identify nuclear and other facilities, organizations or individuals which can be relied upon in an emergency to provide assistance. Such assistance shall be identified and supported by appropriate letters of agreement.*	II.C.4	
Section D: Emergency Classification System **A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial off-site response measures.**		
Criteria D.1. *An emergency classification and emergency action level scheme as set forth in Appendix 1 must be established by the licensee. The specific instruments, parameters, or equipment status shall be shown for establishing each emergency class, in the in-plant emergency procedures. The plan shall identify the parameter values and equipment status for each emergency class.*	II.D.1	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria D.2. *The initiating conditions shall include the example conditions found in Appendix I and all postulated accidents in the Final Safety Analysis Report (FSAR) for the nuclear facility.*	II.D.2 Appendix 3, Emergency Action Levels and Initiating Conditions	
Criteria D.3. *Each State and local organization shall establish an emergency classification and emergency action level scheme consistent with that established by the facility licensee.*	II.D.3	Offsite Responsibility
Criteria D.4. *Each State and local organization should have procedures in place that provide for emergency actions to be taken which are consistent with the emergency actions recommended by the nuclear facility licensee, taking into account local off-site conditions that exist at the time of the emergency.*	II.D.4	Offsite Responsibility
Section E: Notification Methods and Procedures ***Procedures have been established for notification, by the licensee of State and local response organizations and for notification of emergency personnel by all response organizations; the content of initial and follow-up messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.***		

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria E.1. *Each organization shall establish procedures which describe mutually agreeable bases for notification of response organizations consistent with the emergency classification and action level scheme set forth in Appendix 1. These procedures shall include means for verification of messages. The specific details of verification need not be included in the plan.*	II.E	
Criteria E.2. *Each organization shall establish procedures for alerting, notifying, and mobilizing emergency response personnel.*	II.E.1.a II.E.1.b	
Criteria E.3. *The licensee in conjunction with State and local organizations shall establish the contents of the initial emergency messages to be sent from the plant. These measures shall contain information about the class of emergency, whether a release is taking place, potentially affected population and areas, and whether protective measures may be necessary.*	II.E.2	
Criteria E.4. *Each licensee shall make provisions for follow-up messages from the facility to off-site authorities which shall contain the following information if it is known and appropriate:*	II.E.3	
Criteria E.4.a. *Location of incident and name and telephone number (or communications channel identification) of caller.*	II.E.3	
Criteria E.4.b. *Date/time of incident.*	II.E.3	
Criteria E.4.c. *Class of emergency.*	II.E.3	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria E.4.d. *Type of actual or projected release (airborne, waterborne, surface spill),and estimated duration/impact times.*	II.E.3	
Criteria E.4.e. *Estimate of quantity of radioactive material released or being released and the points and height of releases.*	II.E.3	
Criteria E.4.f. *Chemical and physical form of released material, including estimates of the relative quantities and concentration of noble gases, iodines, and particulates.*	II.E.3	
Criteria E.4.g. *Meteorological conditions at appropriate levels (wind speed, direction (to and from), indicator of stability, precipitation, if any).*	II.E.3	
Criteria E.4.h. *Actual or projected dose rates at site boundary; projected integrated dose at site boundary.*	II.E.3	
Criteria E.4.i. *Projected dose rates and integrated dose at the projected peak and at 2, 5 and10 miles, including sector(s) affected.*	II.E.3	
Criteria E.4.j. *Estimate of any surface radioactive contamination in-plant, on-site or off-site.*	II.E.3	
Criteria E.4.k. *Licensee emergency response actions underway.*	II.E.3	
Criteria E.4.l. *Recommended emergency actions, including protective measures.*	II.E.3	
Criteria E.4.m. *Request for any needed on-site support by off-site organizations.*	II.E.3	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria E.4.n. *Prognosis for worsening or termination of event based on plant information.*	II.E.3	
Criteria E.5. *State and local government organizations shall establish a system for disseminating to the public appropriate information contained in initial and follow-up messages received from the licensee including the appropriate notification to appropriate broadcast media, e.g., the Emergency Broadcast System (EBS).The Emergency Broadcast System (EBS) has been replaced with the Emergency Alert System (EAS)by a Report and Order that the Federal Communication Commission issued on December 28, 1994 (59 FR 67090). Source NUREG-0654 Addenda March 2002.*	II.E.4	Offsite Responsibility
Criteria E.6. *Each organization shall establish administrative and physical means, and the time required for notifying and providing prompt instructions to the public within the plume exposure pathway EPZ. (See Appendix 3.) It shall be the licensee's responsibility to demonstrate that such means exist, regardless of who implements this requirement. It shall be the responsibility of the State and local governments to activate such a system.*	II.E.5	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria E.7 *Each organization shall provide written messages intended for the public, consistent with the licensee's classification scheme. In particular, draft messages to the public giving instruction with regard to specific protective actions to be taken by occupants of affected areas shall be prepared and included as part of the State and local plans. Such messages should include the appropriate aspects of sheltering, ad hoc, respiratory protection, e.g., handkerchief over mouth, thyroid blocking or evacuation. The role of the licensee is to provide supporting information for the messages. For ad hoc respiratory protection, see "Respiratory Protective Devices Manual" American Industrial Hygiene Association, 1963, pp. 123-126.*	II.E.6	Offsite Responsibility is shaded in Planning Element column.
Section F: Emergency Communications ***Provisions exist for prompt communications among principal response organizations to emergency Personnel and to the public***		
Criteria F.1. *The communication plans for emergencies shall include organizational titles and alternates for both ends of the communication links. Each organization shall establish reliable primary and backup means of communication for licensees, local, and State response organizations. Such systems should be selected to be compatible with one another. Each plan shall include:*	II.F.1	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria F.1.a. *Provision for 24-hour,per day notification to and activation of the State/local emergency response network; and at a minimum, a telephone link and alternate, including 24-hour per day manning of communications links that initiate emergency response actions.*	II.F.1	
Criteria F.1.b. *Provision for communications with continuous State/local governments within the Emergency Planning Zones.*	II.F.1	
Criteria F.1.c. *Provision for communications as needed with Federal emergency response organizations.*	II.F.1	
Criteria F.1.d. *Provision for communications between the nuclear facility and the licensee's near-site Emergency Operations Facility, State and local emergency operations center, and radiological monitoring teams.*	II.F.1	
Criteria F.1.e. *Provision for alerting or activating emergency personnel in each response organization.*	II.F.1	See respective state and county plans for additional details
Criteria F.1.f. *Provision for communication by the licensee with NRC headquarters and NRC Regional Office Emergency Operations Centers and the licensee's near-site Emergency Operations Facility and radiological monitoring team assembly area.*	II.F.1	
Criteria F.2. *Each organization shall ensure that a coordinated communication link for fixed and mobile medical support facilities exists.*	II.F.2	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria F.3. *Each organization shall conduct periodic testing of the entire emergency communications system (see evaluation criteria H.10, N.2.a and Appendix 3).*	II.F.3	
Section G: Public Education and Information ***Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.***		

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria G.1. *Each organization shall provide a coordinated periodic (at least annually) dissemination of information to the public regarding how they will be notified and what their actions should be in an emergency. This information shall include, but not necessarily be limited to, the following:* *a. Educational information on radiation;* *b. Contact for additional information;* *c. Protective measures, e.g., evacuation routes and relocation centers, sheltering, respiratory protection, radioprotective drugs; and* *d. Special needs of the handicapped.* *Means for accomplishing this dissemination may include, but are not necessarily limited to information in the telephone book, periodic information in utility bills, posting in public areas, and publications distributed on an annual basis.*	II.G.1	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria G.2. *The public information program shall provide the permanent and transient adult population within the plume exposure EPZ an adequate opportunity to become aware of the information annually. The programs should include provision for written material that is likely to be available in a residence during an emergency. Updated information shall be disseminated at least annually. Signs or other measures (e.g., decals, posted notices or other means, placed in hotels, motels, gasoline stations and phone booths) shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an emergency or accident occurs. Such notices should refer the transient to the telephone directory or other source of local emergency information and guide the visitor to appropriate radio and television frequencies.*	II.G.2	
Criteria G.3.a. *Each principal organization shall designate the points of contact and physical locations for use by news media during an emergency.*	II.G.3	
Criteria G.3.b. *Each licensee shall provide space which may be used for a limited number of the news media at the near-site Emergency Operations Facility.*	II.G.3	
Criteria G.4.a. *Each principal organization shall designate a spokesperson who should have access to all necessary information.*	II.G.4	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria G.4.b. *Each organization shall establish arrangements for timely exchange of information among designated spokespersons.*	II.G.4	
Criteria G.4.c. *Each organization shall establish coordinated arrangements for dealing with rumors.*	II.G.4	
Criteria G.5. *Each organization shall conduct coordinated programs at least annually to acquaint news media with the emergency plans, information concerning radiation, and points of contact for release of public information in an emergency.*	II.G.5	
Section H: Emergency Facilities and Equipment ***Adequate emergency facilities and equipment to support the emergency response are provided and maintained.***		
Criteria H.1. *Each licensee shall establish a Technical Support Center and an on-site operations support center (assembly area) in accordance with NUREG-0696, Revision 1.*	II.H.1.b II.H.1.c	
Criteria H.2. *Each licensee shall establish an Emergency Operations Facility from which evaluation and coordination of all licensee activities related to an emergency is to be carried out and from which the licensee shall provide information to Federal, State and local authorities responding to radiological emergencies in accordance with NUREG-0696, Revision 1.(Revision 1 should be deleted. NUREG-0696 has not been revised. (Source: NUREG-0654 Addenda March 2002).*	II.H.1.d	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria H.3. *Each organization shall establish an emergency operations center for use in directing and controlling response functions.*	II.H.2	Offsite Responsibility
Criteria H.4. *Each organization shall provide for timely activation and staffing of the facilities and centers described in the plan.*	II.H.3	
Criteria H.5. *Each licensee shall identify and establish on-site monitoring systems that are to be used to initiate emergency measures in accordance with Appendix 1, as well as those to be used for conducting assessment.* *The equipment shall include the following:*	II.H.4	
Criteria H.5.a. *Geophysical phenomena monitors, (e.g., meteorological, hydrologic, seismic);*	II.H.4.a	
Criteria H.5.b. *Radiological monitors, (e.g., process, area, emergency, effluent, wound and portable monitors and sampling equipment);*	II.H.4.b	
Criteria H.5.c. *Process monitors, (e.g., reactor coolant system pressure and temperature, containment pressure and temperature, liquid levels, flow rates, status or lineup of equipment components); and*	II.H.4.c	
Criteria H.5.d. *Fire and combustion products detectors.*	II.H.4.d	
Criteria H.6. *Each licensee shall make provision to acquire data from or for emergency access to off-site monitoring and analysis equipment including:*		

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria H.6.a. *Geophysical phenomena monitors, (e.g., meteorological, hydrologic, seismic);*	II.H.4.a	
Criteria H.6.b. *Radiological monitors including radiometers and sampling devices. Dosimetry shall be provided and shall meet, as a minimum, the NRC Radiological Assessment Branch Technical position for the Environmental Radiological Monitoring Program; and*	II.H.4.b	
Criteria H.6.c. *Laboratory facilities, fixed or mobile.*	II.C.3 II.H.1.d II.H.5.b	
Criteria H.7. *Each organization, where appropriate, shall provide for off-site radiological monitoring equipment in the vicinity of the nuclear facility.*	II.H.2 II.H.6	
Criteria H.8. *Each licensee shall provide meteorological instrumentation and procedures which satisfy the criteria in Appendix 2, and provisions to obtain representative current meteorological information from other sources.*	II.H.7	
Criteria H.9. *Each licensee shall provide for an on-site operations support center (assembly area) which shall have adequate capacity, and supplies, including, for example, respiratory protection, protective clothing, portable lighting, portable radiation monitoring equipment, cameras and communications equipment for personnel present in the assembly area.*	II.H.1.c II.H.8	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria H.10. *Each organization shall make provisions to inspect, inventory, and operationally check emergency equipment/instruments at least once each calendar quarter and after each use. There shall be sufficient reserves of instruments/equipment to replace those which are removed from emergency kits for calibration or repair. Calibration of equipment shall be at intervals recommended by the supplier of the equipment.*	II.H.9	
Criteria H.11. *Each plan shall, in an appendix, include identification of emergency kits by general category (protective equipment, communications equipment, radiological monitoring equipment and emergency supplies).*	II.H.9	
Criteria H.12. *Each organization shall establish a central point (preferably associated with the licensee's near-site Emergency Operations Facility), for the receipt and analysis of all field monitoring data and coordination of sample media.*	II.H.10	
Section I: Accident Assessment ***Adequate methods, systems, and equipment for assessing and monitoring actual or potential off-site consequences of a radiological emergency condition are in use.***		

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria I.1. *Each licensee shall identify plant system and effluent parameter values characteristic of a spectrum of off-normal conditions and accidents, and shall identify the plant parameter values or other information which correspond to the example initiating conditions of Appendix 1. Such parameter values and the corresponding emergency class shall be included in the appropriate facility emergency procedures. Facility emergency procedures shall specify the kinds of instruments being used and their capabilities.*	II.I.1	
Criteria I.2. *On-site capability and resources to provide initial values and continuing assessment throughout the course of an accident shall include post-accident sampling capability, radiation and effluent monitors, in-plant iodine instrumentation, and containment radiation monitoring in accordance with NUREG-0578, as elaborated in the NRC letter to all power reactor licensees dated October 30, 1979.*	II.I.2, & Appendix 4	
Criteria I.3. *Each licensee shall establish methods and techniques to be used for determining:*		
Criteria I.3.a. *The source term of releases of radioactive material within plant systems. An example is the relationship between the containment radiation monitor(s) reading(s) and radioactive material available for release from containment.*	II.I.3, & Appendix 4	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria I.3.b. *The magnitude of the release of radioactive materials based on plant system parameters and effluent monitors.*	II.I.3, & Appendix 4	
Criteria I.4. *Each licensee shall establish the relationship between effluent Monitor readings and on-site and off-site exposures and contamination for various meteorological conditions.*	II.I.4, & Appendix 4	
Criteria I.5. *Each licensee shall have the capability of acquiring and evaluating meteorological information sufficient to meet the criteria of Appendix 2. There shall be provisions for access to meteorological information by at least the near-site Emergency Operations Facility, the Technical Support Center, the Control Room and an off-site NRC center. The licensee shall make available to the State suitable meteorological data processing interconnections which will permit independent analysis by the State, of facility generated data in those States with the resources to effectively use this information.*	II.I.5 II.H.7	
Criteria I.6. *Each licensee shall establish the methodology for determining the release rate/projected doses if the instrumentation used for assessment are offscale or inoperable.*	II.I.6	
Criteria I.7. *Each organization shall describe the capability and resources for field monitoring within the plume exposure EPZ which are an intrinsic part of the concept of operations for the facility.*	II.I.7	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria I.8. *Each organization, where appropriate, shall provide methods, equipment and expertise to make rapid assessments of the actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways. This shall include activation, notification means, field team composition, transportation, communication, monitoring equipment, and estimated deployment times.*	II.I.7 II.I.8	
Criteria I.9. *Each organization shall have a capability to detect and measure radioiodine concentrations in air in the plume exposure EPZ as low as 10-7 μCi/cm3 (microcuries per cubic centimeter) under field conditions. Interference from the presence of noble gas and background radiation shall not decrease the stated minimum detectable activity.*	II.I.8	
Criteria I.10. *Each organization shall establish means for relating the various measured parameters (e.g., contamination levels, water and air activity levels) to dose rates for key isotopes (i.e., those given in Table 3, Page 18) and gross radioactivity measurements. Provisions shall be made for estimating integrated dose from the projected and actual dose rates and for comparing these estimates with the protective action guides. The detailed provisions shall be described in separate procedures.*	II.I.9	
Criteria I.11. *Arrangements to locate and track the airborne radioactive plume shall be made, using either or both Federal and State resources.*	II.I.10	Offsite Responsibility

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Section J: Protective Response ***A range of protective actions have been developed for the plume exposure pathway EPZ for emergency Workers and the public. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure pathway EPZ appropriate to the locale have been developed.***		
Criteria J.1. *Each licensee shall establish the means and time required to warn or advise on-site individuals and individuals who may be in areas controlled by the operator, including:*	II.J.1	
Criteria J.1.a. *Employees not having emergency assignments;*	II.J.1	
Criteria J.1.b. *Visitors;*	II.J.1	
Criteria J.1.c. *Contractor and construction personnel; and*	II.J.1	
Criteria J.1.d. *Other persons who may be in the public access areas on or passing through the site or within the owner controlled area.*	II.J.1	
Criteria J.2. *Each licensee shall make provisions for evacuation routes and transportation for on-site individuals to some suitable off-site location, including alternatives for inclement weather, high traffic density and specific radiological conditions.*	II.J.2	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria J.3. *Each licensee shall provide for radiological monitoring of people evacuated from the site.*	II.J.3	
Criteria J.4. *Each licensee shall provide for the evacuation of on-site non-essential personnel in the event of a Site or General Emergency and shall provide a decontamination capability at or near the monitoring point specified in J.3.*	II.J.4	
Criteria J.5. *Each licensee shall provide for a capability to account for all individuals on-site at the time of the emergency and ascertain the names of missing individuals within 30 minutes of the start of an emergency and account for all on-site individuals continuously thereafter.*	II.J.5	
Criteria J.6. *Each licensee shall, for individuals remaining or arriving on-site during the emergency, make provisions for:*		
Criteria J.6.a. *Individual respiratory protection;*	II.J.6	
Criteria J.6.b. *Use of protective clothing; and*	II.J.6	
Criteria J.6.c. *Use of radioprotective drugs, (e.g., individual thyroid protection).*	II.J.6	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria J.7. *Each licensee shall establish a mechanism for recommending protective actions to the appropriate State and local authorities. These shall include Emergency Action Levels corresponding to projected dose to the population-at-risk, in accordance with Appendix 1 and with the recommendations set forth in Tables 2.1 and 2.2 of the Manual of Protective Action Guides and Protective Actions for Nuclear Incidents (EPA-520/1-75-001). As specified in Appendix 1, prompt notification shall be made directly to the off-site authorities responsible for implementing protective measures within the plume exposure pathway Emergency Planning Zone.*	II.J.7	
Criteria J.8. *Each licensee's plan shall contain time estimates for evacuation within the plume exposure EPZ. These shall be in accordance with Appendix 4.*	II.J.8 Appendix 5, Evacuation Time Estimate Summary	
Criteria J.9. *Each State and local organization shall establish a capability for implementing protective measures based upon protective action guides and other criteria. This shall be consistent with the recommendations of EPA regarding exposure resulting from passage of radioactive airborne plumes, (EPA-520/1-75-001) and with those of DHEW (DHHS)/FDA regarding radioactive contamination of human food and animal feeds as published in the Federal Register of December 15, 1978 (43 FR 58790).*	II.J.9	Offsite Responsibility
Criteria J.10. *The organization's plans to implement protective measures for the plume exposure pathway shall include:*	II.J.10	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria J.10.a. *Maps showing evacuation routes, evacuation areas, preselected radiological sampling and monitoring points, relocation centers in host areas, and shelter areas; (identification of radiological sampling and monitoring points shall include the designators in Table J-1 or an equivalent uniform system described in the plan);*	II.J.10 Appendix 5, Evacuation Time Estimate Summary	
Criteria J.10.b. *Maps showing population distribution around the nuclear facility. This shall be by evacuation areas (licensees shall also present the information in a sector format);*	II.J.10 Appendix 5, Evacuation Time Estimate Summary	
Criteria J.10.c. *Means for notifying all segments of the transient and resident population;*	II.J.10	
Criteria J.10.d. *Means for protecting those persons whose mobility may be impaired due to such factors as institutional or other confinement;*	II.J.10	Offsite Responsibility
Criteria J.10.e. *Provisions for the use of radioprotective drugs, particularly for emergency workers and institutionalized persons within the plume exposure EPZ whose immediate evacuation may be infeasible or very difficult, including quantities, storage, and means of distribution.*	II.J.10	Offsite Responsibility
Criteria J.10.f. *State and local organizations' plans should include the method by which decisions by the State Health Department for administering radioprotective drugs to the general population are made during an emergency and the pre-determined conditions under which such drugs may be used by off-site emergency workers;*	II.J.10	Offsite Responsibility

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria J.10.g. *Means of relocation;*	II.J.10	Offsite Responsibility
Criteria J.10.h. *Relocation centers in host areas which are at least 5 miles, and preferably 10 miles, beyond the boundaries of the plume exposure emergency planning zone; (See K.8)*	II.J.10	Offsite Responsibility
Criteria J.10.i. *Projected traffic capacities of evacuation routes under emergency conditions;*	II.J.10 Evacuation Time Estimate Study	Offsite Responsibility
Criteria J.10.j. *Control of access to evacuated areas and organization responsibilities for such control;*	II.J.10 Evacuation Time Estimate Study	Offsite Responsibility
Criteria J.10.k. *Identification of and means for dealing with potential impediments (e.g., seasonal impassability of roads) to use of evacuation routes, and contingency measures;*	II.J.10 Evacuation Time Estimate Study	Offsite Responsibility
Criteria J.10.l *Time estimates for evacuation of various sectors and distances based on a dynamic analysis (time-motion study under various conditions) for the plume exposure pathway emergency planning zone (see Appendix 4); and*	II.J.10 Evacuation Time Estimate Study	Offsite Responsibility
Criteria J.10.m. *The bases for the choice of recommended protective actions from the plume exposure pathway during emergency conditions. This shall include expected local protection afforded in residential units or other shelter for direct and inhalation exposure, as well as evacuation time estimates.*	II.J.7	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria J.11. *Each State shall specify the protective measures to be used for the ingestion pathway, including the methods for protecting the public from consumption of contaminated food stuffs. This shall include criteria for deciding whether dairy animals should be put on stored feed. The plan shall identify procedures for detecting contamination, for estimating the dose commitment consequences of uncontrolled ingestion, and for imposing protection procedures such as impoundment, decontamination, processing, decay, product diversion, and preservation. Maps for recording survey and monitoring data, key land use data (e.g., farming), dairies, food processing plants, water sheds, water supply intake and treatment plants and reservoirs shall be maintained. Provisions for maps showing detailed crop information may be by including reference to their availability and location and a plan for their use. The maps shall start at the facility and include all of the 50-mile ingestion pathway EPZ. Up-to-date lists of the name and location of all facilities which regularly process milk products and other large amounts of food or agricultural products originating in the ingestion pathway Emergency Planning Zone, but located elsewhere, shall be maintained.*	II.J.11	Offsite Responsibility

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria J.12. *Each organization shall describe the means for registering and monitoring of evacuees at relocation centers in host areas. The personnel and equipment available should be capable of monitoring within about a 12-hour period all residents and transients in the plume exposure EPZ arriving at relocation centers.*	II.J.12	Offsite Responsibility
Section K: Radiological Exposure Control ***Means for controlling radiological exposures, in an emergency, are established for emergency workers. The means for controlling radiological exposures shall include exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective Action Guides.***		
Criteria K.1. *Each licensee shall establish on-site exposure guidelines consistent with EPA Emergency Worker and Lifesaving Activity Protective*	II.K.1 Table II.K-1	
Criteria K.1.a. *removal of injured persons;*	II.K.1	
Criteria K.1.b. *undertaking corrective actions;*	II.K.1	
Criteria K.1.c *performing assessment actions;*	II.K.1	
Criteria K.1.d *providing first aid;*	II.K.1	
Criteria K.1.e *performing personnel decontamination;*	II.K.1	
Criteria K.1.f *providing ambulance service; and*	II.K.1	
Criteria K.1.g *Providing medical treatment services.*	II.K.1	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria K.2. *Each licensee shall provide an on-site radiation protection program to be implemented during emergencies, including methods to implement exposure guidelines. The plan shall identify individual(s), by position or title, who can authorize emergency workers to receive doses in excess of 10 CFR Part 20 limits. Procedures shall be worked out in advance for permitting on-site volunteers to receive radiation exposures in the course of carrying out lifesaving and other emergency activities. These procedures shall include expeditious decision making and a reasonable consideration of relative risks.*	II.K.2	
Criteria K.3.a. *Each organization shall make provision for 24-hour-per-day capability to determine the doses received by emergency personnel involved in any nuclear accident, including volunteers. Each organization shall make provisions for distribution of dosimeters, both self-reading and permanent record devices.*	II.K.3	
Criteria K.3.b. *Each organization shall ensure that dosimeters are read at appropriate frequencies and provide for maintaining dose records for emergency workers involved in any nuclear accident.*	II.K.3	
Criteria K.4. *Each State and local organization shall establish the decision chain for authorizing emergency workers to incur exposures in excess of the EPA General Public Protective Action Guides (i.e., EPA PAGs for emergency workers and lifesaving activities).*	II.K.4	Offsite Responsibility

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria K.5.a. *Each organization as appropriate shall specify action levels for determining the need for decontamination.*	II.K.5	
Criteria K.5.b. *Each organization, as appropriate, shall establish the means for radiological decontamination of emergency personnel wounds, supplies, instruments and equipment, and for waste disposal.*	II.K.5	
Criteria K.6. *Each licensee shall provide on-site contamination control measures including:*	II.K.6	
Criteria K.6.a. *area access control;*	II.K.6	
Criteria K.6.b. *drinking water and food supplies;*	II.K.6	
Criteria K.6.c. *Criteria for permitting return of areas and items to normal use, see Draft ANSI 13.12.*	II.K.6	
Criteria K.7. *Each licensee shall provide the capability for decontaminating relocated on-site personnel, including provisions for extra clothing and decontaminants suitable for the type of contamination expected, with particular attention given to radioiodine contamination of the skin.*	II.K.7	
Section L: Medical and Public Health Support ***Arrangements are made for medical services for contaminated injured individuals.***		

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria L.1. *Each organization shall arrange for local and backup hospital and medical services having the capability for evaluation of radiation exposure and uptake, including assurance that persons providing these services are adequately prepared to handle contaminated individuals.*	II.L.1 Appendix 2, Certification Letters	
Criteria L.2. *Each licensee shall provide for on-site first aid capability.*	II.L.2	
Criteria L.3. *Each State shall develop lists indicating the location of public, private and military hospitals and other emergency medical services facilities within the State or contiguous States considered capable of providing medical support for any contaminated injured individual. The listing shall include the name, location, type of facility and capacity and any special radiological capabilities. These emergency medical services should be able to radiologically monitor contamination personnel, and have facilities and trained personnel able to care for contaminated injured persons.*	N/A	Offsite Responsibility
Criteria L.4. *Each organization shall arrange for transporting victims of radiological accidents to medical support facilities.*	II.L.3	
Section M: Recover and Reentry Planning and Post accident Operations ***General plans for recovery and reentry are developed.***		

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria M.1. *Each organization, as appropriate, shall develop general plans and procedures for reentry and recovery and describe the means by which decisions to relax protective measures (e.g., allow reentry into an evacuated area) are reached. This process should consider both existing and potential conditions.*	II.M.1	
Criteria M.2. *Each licensee plan shall contain the position/title, authority and responsibilities of individuals who will fill key positions in the facility recovery organization. This organization shall include technical personnel with responsibilities to develop, evaluate and direct recovery and reentry operations. The recovery organization recommended by the Atomic Industrial Forum's "Nuclear Power Plant Emergency Response Plan" dated October 11, 1979, is an acceptable framework.*	II.M.2 Table II.M-1	
Criteria M.3. *Each licensee and State plan shall specify means for informing members of the response organizations that a recovery operation is to be initiated, and of any changes in the organizational structure that may occur.*	II.M.3	
Criteria M.4. *Each plan shall establish a method for periodically estimating total population exposure.*	II.M.4	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Section N: Exercises and Drills ***Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.***		
Criteria N.1.a. *An exercise is an event that tests the integrated capability and a major portion of the basic elements existing within emergency preparedness plans and organizations. The emergency preparedness exercise shall simulate an emergency that results in off-site radiological releases which would require response by off-site authorities. Exercises shall be conducted as set forth in NRC and FEMA rules.*	II.N.1	
Criteria N.1.b. *An exercise shall include mobilization of State and local personnel and resources adequate to verify the capability to respond to an accident scenario requiring response. The organization shall provide for a critique of the annual exercise by Federal and State observers/evaluators. The scenario should be varied from year to year such that all major elements of the plans and preparedness organizations are tested within a 5-year period. Each organization should make provisions to start an exercise between 6:00 p.m. and midnight, and another between midnight and 6:00 a.m. once every 6 years. Exercises should be conducted under various weather conditions. Some exercises should be unannounced.*	II.N.1	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria N.2. *A drill is a supervised instruction period aimed at testing, developing and maintaining skills in a particular operation. A drill is often a component of an exercise. A drill shall be supervised and evaluated by a qualified drill instructor. Each organization shall conduct drills, in addition to the annual exercise at the frequencies indicated below:*	II.N.2	
Criteria N.2.a. *Communication Drills* *Communications with State and local governments within the plume exposure pathway EPZ shall be tested monthly. Communications with Federal emergency response organizations and States within the ingestion pathway shall be tested quarterly. Communications between the nuclear facility, State and local emergency operations centers, and field assessment teams shall be tested annually. Communication drills shall also include the aspect of understanding the content of messages.*	II.N.2.a	
Criteria N.2.b. *Fire Drills* *Fire drills shall be conducted in accordance with the plant (nuclear facility) technical specifications.*	II.N.2.b	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria N.2.c. *Medical Emergency Drills* *A medical emergency drill involving a simulated contaminated individual which contains provisions for participation by the local support services agencies (i.e., ambulance and off-site medical treatment facility) shall be conducted annually. The off-site portions of the medical drill may be performed as part of the required annual exercise.*	II.N.2.c	
Criteria N.2.d. *Radiological Monitoring Drills* *Plant environs and radiological monitoring drills (on-site and off-site) shall be conducted annually. These drills shall include collection and analysis of all sample media (e.g., water, vegetation, soil and air), and provisions for communications and record keeping. The State drills need not be at each site. Where appropriate, local organizations shall participate.*	II.N.2.d	
Criteria N.2.e. *Health Physics Drills* *(1) Health Physics drills shall be conducted semi-annually which involve response to, and analysis of, simulated elevated airborne and liquid samples and direct radiation measurements in the environment. The State drills need not be at each site.* *(2) Analysis of in plant liquid samples with actual elevated radiation levels including use of the post-accident sampling system shall be included in Health Physics drills by licensees annually.*	II.N.2.e	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria N.3. *Each organization shall describe how exercises and drills are to be carried out to allow free play for decision making and to meet the following objectives. Pending the development of exercise scenarios and exercise evaluation guidance by NRC and FEMA, the scenarios for use in exercises and drills shall include, but not be limited to, the following:*	II.N.3	
Criteria N.3.a. *The basic objective(s) of each drill and exercise and appropriate evaluation criteria;*	II.N.3.a	
Criteria N.3.b. *The date(s), time period, place(s) and participating organizations;*	II.N.3.b	
Criteria N.3.c. *The simulated events;*	II.N.3.c	
Criteria N.3.d. *A time schedule of real and simulated initiating events;*	II.N.3.e	
Criteria N.3.e. *A narrative summary describing the conduct of the exercises or drills to include such things as simulated casualties, off-site fire department assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams, and public information activities; and*	II.N.3.f	
Criteria N.3.f. *A description of the arrangements for and advance materials to be provided to official observers.*	II.N.3.g	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria N.4. *Official observers from Federal, State or local governments will observe, evaluate, and critique the required exercises. A critique shall be scheduled at the conclusion of the exercise to evaluate the ability of organizations to respond as called for in the plan. The critique shall be conducted as soon as practicable after the exercise, and a formal evaluation should result from the critique.*	II.N.4	
Criteria N.5. *Each organization shall establish means for evaluating observer and participant comments on areas needing improvement, including emergency plan procedural changes, and for assigning responsibility for implementing corrective actions. Each organization shall establish management control used to ensure that corrective actions are implemented.*	II.N.5	
Section O: Radiological Emergency Response Training *Radiological emergency response training is provided to those who may be called on to assist in an emergency.*		
Criteria O.1. ***Each organization shall ensure the training of appropriate individuals.***	II.O	
Criteria O.1.a. *Each facility to which the plant applies shall provide site specific emergency response training for those off-site emergency organizations who may be called upon to provide assistance in the event of an emergency.*	II.O.2	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria O.1.b. *Each off-site response organization shall participate in and receive training. Where mutual aid agreements exist between local agencies such as fire, police and ambulance/rescue, the training shall also be offered to the other departments who are members of the mutual aid district.*	II.O.1 II.O.2	Offsite Responsibility
Criteria O.2. *The training program for members of the on-site emergency organization shall, besides classroom training, include practical drills in which each individual demonstrates ability to perform his assigned emergency function. During the practical drills, on-the-spot correction of erroneous performance shall be made and a demonstration of the proper performance offered by the instructor.*	II.O.3	
Criteria O.3. *Training for individuals assigned to licensee first aid teams shall include courses equivalent to Red Cross Multi-Media.*	II.O.4	
Criteria O.4. *Each organization shall establish a training program for instructing and qualifying personnel who will implement radiological emergency response plans. The specialized initial training and periodic retraining programs (including the scope, nature and frequency) shall be provided in the following categories:*	II.O.1	
Criteria O.4.a. *Directors or coordinators of the response organizations;*	II.O	
Criteria O.4.b. *Personnel responsible for accident assessment;*	II.O	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria O.4.c. *Radiological monitoring teams and radiological analysis personnel;*	II.O	
Criteria O.4.d. *Police, security and fire fighting personnel;*	II.O	
Criteria O.4.e. *Repair and damage control/correctional action teams (on-site);*	II.O	
Criteria O.4.f. *First aid and rescue personnel;*	II.O	
Criteria O.4.g. *Local support services personnel including Civil Defense/Emergency Service personnel;*	II.O	
Criteria O.4.h. *Medical support personnel;*	II.O	
Criteria O.4.i. *Licensee's headquarters support personnel;*	II.O	
Criteria O.4.j. *Personnel responsible for transmission of emergency information and instructions.*	II.O	
Criteria O.5. *Each organization shall provide for the initial and annual retraining of personnel with emergency response responsibilities.*	II.O.3	
Section P: Responsibility for the Planning Effort: Periodic Review and Distribution of Emergency Plans ***Responsibilities for plan development and review and for distribution of emergency plans are established, and planners are properly trained.***		

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria P.1. *Each organization shall provide for the training of individuals responsible for the planning effort.*	II.P.1	
Criteria P.2. *Each organization shall identify by title the individual with the overall authority and responsibility for radiological emergency response planning.*	II.P.2	
Criteria P.3. *Each organization shall designate an Emergency Planning Coordinator with responsibility for the development and updating of emergency plans and coordination of these plans with other response organizations.*	II.P.3	
Criteria P.4. *Each organization shall update its plan and agreements as needed, review and certify it to be current on an annual basis. The update shall take into account changes identified by drills and exercises.*	II.P.4	
Criteria P.5. *The emergency response plans and approved changes to the plans shall be forwarded to all organizations and appropriate individuals with responsibility for implementation of the plans. Revised pages shall be dated and marked to show where changes have been made.*	II.P.5	
Criteria P.6 *Each plan shall contain a detailed listing of supporting plans and their source.*	II.P.6	
Criteria P.7. *Each plan shall contain as an appendix listing, by title, procedures required to implement the plan. The listing shall include the section(s) of the plan to be implemented by each procedure.*	II.P.7 Appendix 6, Emergency Plan Implementing and Supporting Procedures (Typical List) and Procedure Cross-Reference to Plan	

Planning Element	Fermi 3 Emergency Plan Section(s)	Comments
Criteria P.8. *Each plan shall contain a specific table of contents. Plans submitted for review should be cross-referenced to these criteria.*	II.P.8 Table of Contents	
Criteria P.9. *Each licensee shall arrange for and conduct independent reviews of the emergency preparedness program at least every 12 months. (An independent review is one conducted by any competent organization either internal or external to the licensees' organization, but who are not immediately responsible for the emergency preparedness program). The review shall include the emergency plan, its implementing procedures and practices, training, readiness testing, equipment, and interfaces with State and local governments. Management controls shall be implemented for evaluation and correction of review findings. The result of the review, along with recommendations for improvements, shall be documented, reported to appropriate licensee corporate and plant management, and involved Federal, State and local organizations, and retained for a period of five years.*	II.P.9	Audit frequency changed to no less than every 2 years per 10 CFR 50.54 (t)(1).
Criteria P.10 *Each organization shall provide for updating telephone numbers in emergency procedures at least quarterly.*	II.P.10	