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December 14, 1979

Mr. Frank G. Pagano, Task Team Chief  
Emergency Preparedness Task Force  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Dear Mr. Pagano:

Attached is a draft review of the proposal emergency response plan of the Pilgrim I Nuclear Power Station. This review consists of an annotated workbook containing an outline of emergency planning considerations and a draft memorandum which summarizes our evaluation. The workbook is a compendium of NRC's emergency planning requirements, which are individually referenced, and suggestions for additional planning considerations or explanations of the requirements, which are unreferenced.

This draft material is being provided to the team leader as input to the Task Force's review of the proposed emergency response plan. Please contact myself or Mr. Selby for further information or amplification relative to this review.

Sincerely,

A.E. Desrosiers  
A. E. Desrosiers  
Senior Research Scientist

/ckm

Attachment

cc: Tom McKenna  
CR Schuller  
Team File  
Site File

*McKenna -  
I presume you had this  
info before finalizing  
your Pilgrim questions.  
FAP  
1/2/80*

8112030380 810911  
PDR FOIA  
SHOTWEL81-283 PDR

50 Years of Service  
1929-1979

SUMMARY OF REVISED EMERGENCY  
PLAN FOR PILGRIM I NPS

The major items identified in this review are:

- interrelationships with plans of offsite agencies are not summarized in section 2;
- communications are not adequately described;
- specific EALs are absent;
- the plan does not clearly provide for prompt alerting and warning of local authorities;
- the plan does not provide for continually informing state/local officials concerning the emergency status of the plant;
- manpower needs in relationship to the anticipated sequence and timing of events is not given;
- the description of the TSC, ECC and OSC are inadequate because job assignments are not stated;
- the plan relies upon environmental monitoring for accident classification;
- the plan does not discuss containment radioactivity monitoring in terms of EALs;
- local authorities are not given recommendations for protective actions based upon EPA's PAGs;
- there are no action criteria for protective cover;
- evacuation routes are not analyzed;
- effluent release rates are not obtained from in-plant measurements;
- training provisions do not provide assurance that the plant's staff will correctly respond during an emergency.

A detailed review is attached.

The State's plan has not been closely reviewed since it is being revised at present. However, the present version relies upon a tortuous path for vital communications and an excessive reliance upon centralized determination of emergency protection actions during the phases of an emergency.

## EMERGENCY RESPONSE PLAN WORKBOOK

Assessment

### 1. DEFINITIONS

Definitions of any terms that are unique to the power plant under consideration or any connotations that differ from normally accepted usage. (RG 1.101, Rev. 1)

yes \*

### 2. SCOPE AND APPLICABILITY

Section 2 is intended to be general in nature, details should follow in subsequent sections.

#### 2.1 Emergency Plan Coverage

Define the unit, plant, station, or area to which the plan is applicable. (RG 1.101, Rev. 1)

yes

- Included should be a diagram of the locations of the reactor site, exclusion area, low population zone (LPZ), and emergency planning zones (EPZs-plume and ingestion).

NO

#### 2.2 Plan Interrelationships

##### 2.2.1 Implementing Procedures

The licensee should commit that implementing emergency procedures have been documented for all "Emergency Classes." (RG 1.101, Rev. 1)

not explicit

\* could add def. of EPZ's or any other acronyms used in plan; as well as EAL.

2.2.2 Operational, Radiological, and Security Procedures

The licensee shall specify a summary of the emergency plan interrelationships with plant operating, radiological control, and industrial security procedures. (RG 1.101, Rev. 1)

yes\*

2.2.3 Other Emergency Plans

The licensee shall identify all relevant interrelationships between the emergency plan and other emergency plans of the company (i.e., an overall corporate plan). (RG 1.101, Rev. 1)

~~NO~~  
yes

2.2.4 Emergency Plans of Other Participating Agencies

The licensee shall identify all relevant interrelationships between the emergency plan and emergency plans of other participating agencies, particularly the responsible State agency or other governmental authority having radiological emergency planning responsibilities in the immediate offsite area. (RG 1.101, Rev. 1)

~~yes~~  
NO\*\*

2.2.5 Diagram of Emergency Response Activities

Identify and define by means of a block diagram the interfaces between and among the onsite functional areas of emergency activity, licensee headquarters support, local services support, and State and local

NO

\* interrelationship of Station Abnormal Operating Procedures w/ plan not given  
\*\* other plans mentioned, but not interrelationships.



government response organizations. The above shall include the onsite technical support center and the operational support center as discussed in NUREG-0578. (Acceptance Criteria)

## 2.3 Emergency Facilities Summary

### 2.3.1 Physical Lay-out

The licensee should provide graphic diagrams depicting the locations (both principal and alternate) of:

NO

- Emergency Control Center (ECC)
- Emergency Operations Center (EOC) (both state and local)
- Onsite Technical Support Center (OTSC)
- Control Room (no alternate)
- Onsite Operational Support Center (OOSC). (Acceptance Criteria)

### 2.3.2 Communications

The licensee should provide graphic diagram(s) depicting the primary and back-up communications relationships and mode between (both the principal and alternate):

NO

- EOC (local and state)
- ECC (onsite and offsite)
- OTSC
- Control Room (no alternate)
- Onsite Operational Support Center
- Press Center
- Corporation Office (if applicable). (Acceptance Criteria)

### 3. SUMMARY OF EMERGENCY PLAN

Section 3 is also intended to be general in nature, details should follow in subsequent sections.

#### 3.1 Graded Emergency Classifications

The licensee shall provide a summary listing of all graded "Emergency Classifications". To include the following or equivalent classes:

- Unusual Event
- Alert
- Site Emergency
- General Emergency (NUREG-0610)

NO

#### 3.2 Emergency Classifications Impact

The licensee shall designate the relationship of each emergency class to the participation and status of both onsite and offsite personnel and agencies. (RG 1.101 Rev. 1 and NUREG-0610)

NO

### 4. EMERGENCY CONDITIONS

#### 4.1 Classification System

The licensee's emergency plan shall have the following emergency classes or their equivalent:

- Unusual Event
- Alert
- Site Emergency
- General Emergency. (NUREG-0610)

yes <sup>the</sup>

~~\*not explicit in section 4.~~

- a) Use a classification system compatible with systems used by the State and local government. (RG 1.101, Rev. 1)  
NOTE: Table or matrix to show how systems compare between licensee, state, and local.

not mentioned

#### 4.1.1 Notification of Unusual Event

- a) Designate the criteria that would be used to recognize and declare the "Unusual Event" class. (NUREG-0610)
- b) Designate types of events which may fall in this class. (NUREG-0610)
- c) EALs - List specific instrument readings which constitute the EALs for this class. Not all conditions in NUREG-0610 have corresponding instrument levels. These need to be sorted out.

~~Categories~~  
YES } categories of EAL's  
YES } not well defined  
NO }

#### 4.1.2 Alert

- a) Designate the criteria that would be used to recognize and declare the Alert Class, including potential for releases. (NUREG-0610)
- b) Identify specific candidate situations for Alerts. (NUREG-0610)
- c) EALs - list specific instrument readings which constitute the EALs for this class. Not all conditions in NUREG-0610 have corresponding instrument levels, these need to be sorted out.

YES }  
YES } ~~see above~~  
NO }

#### 4.1.3 Site Emergency

- a) Designate the criteria (EALs) that would be used to recognize and declare a site emergency.
- Emergency action levels (EALs) for declaring a Site Emergency should be defined in terms of instrument readings or alarms that annunciate in the control room, including indications of the reactor status, functioning of safety systems and the readout from effluent monitors. (NUREG-0610)
  - Alternately, emergency action levels for declaring a Site Emergency should be defined in terms of specific contamination levels in environmental media, e.g., water, soil, vegetation, milk. (RG 1.101, Rev. 1)
  - If a conflict exists between control room instrument reading classification and environmental classification, then the higher classification should be declared.
- b) The licensee should explain the relationship of the Protective Action Guides (PAGs) to the bases and criteria used to specify EALs.

~~NO. commitment to include in plan~~  
~~• use of rapid surveys (p 9, line 2) not recommended~~

NO

NO

NO

#### 4.1.4 General Emergency

- a) Designate the criteria (EALs) that would be used to recognize and declare a general emergency.
- EALs for declaring a "general emergency" will include instrument readings and system status indications corresponding to an airborne fission product inventory within containment. (Acceptance Criteria)
  - Alternately, emergency action levels for declaring a General Emergency should be

NO ~~YES, by commitment~~

NO ~~YES (?)~~



defined in terms of specific contamination levels in environmental media, e.g., water, soil, vegetation, milk. (RG 1.101, Rev. 1)

NO

- If a conflict exists between control room instrument reading classification and environmental classification, then the higher classification should be declared.

NO

- b) Provide an explicit methodology for relating EALs and PAGs. (Acceptance Criteria)
- c) The licensee should have a coordination plan with local authorities to ensure the availability of mechanisms for early warning of the public. (RG 1.101, Rev. 1)

NO

• NOT CLEAR  
• PROMPT LOCAL NOTIFICATION IS PART OF THE PLAN, FOR "RADIATION INCIDENTS," (p)

#### 4.2 Spectrum of Postulated Accidents

The licensee should specify for each accident, postulated and analyzed in the FSAR: 1) its emergency class membership 2) instrumentation capability for prompt detection and continued assessment and 3) manpower needs in relation to the anticipated sequence and timing of events. (RG 1.101, Rev. 1)

1) YES  
2) YES  
3) NO

### 5. ORGANIZATION CONTROL OF EMERGENCIES

#### 5.1 Normal Plant Organization

The licensee should describe both day and night shift staffs (crews), indicating clearly who is in the immediate onsite position of responsibility for the plant or station and his authority and responsibility for declaring an emergency. (RG 1.101, Rev. 1)

YES

## 5.2 Onsite Emergency Organization

### 5.2.1 Direction and Coordination

#### 5.2.1.1 Emergency Coordinator

Provide for an Emergency Coordinator at all times, including an individual onsite at the time of an accident, having the authority and responsibility to initiate any emergency actions within the provisions of the emergency plan, including the exchange of information with authorities responsible for coordinating offsite emergency measures.  
(Acceptance Criteria)

yes

- a) Describe the responsibilities of the Emergency Coordinator for all emergency classes.
- b) Provide the line of succession for the Emergency Coordinator extending through the lowest possible job assignment that may replace any of his or her authority or responsibility.

yes

yes

#### 5.2.1.2 Notification During Site or General Emergency

The licensee should notify the following personnel and agencies during a site or general emergency:

- a) State and local agencies responsible for support and coordination
- b) Federal agencies (IRAP, NRC)
- c) Company personnel (offsite)
- d) Onsite personnel

yes

yes

yes

### 5.2.2 Plant Staff Emergency Assignments

The emergency plan should specify the organizational groups to which the following activities are assigned, including an indication of how the assignments are made for both day and night shifts, and designate those assignments as filled from onsite and away from site manpower resources (RG 1.101, Rev. 1):

\_\_\_\_\_ YES

#### 1. Emergency Coordination and Control

- (a) Plant Security and Access Control \_\_\_\_\_ YES
- (b) Personnel Accountability \_\_\_\_\_ YES
- (c) Recordkeeping \_\_\_\_\_ YES
- (d) Offsite Agency Coordination and Protective Action Recommendations \_\_\_\_\_ YES
- (e) Site Representation at the State EOC \_\_\_\_\_ NO

#### 2. Plant Systems Operation \_\_\_\_\_ YES

#### 3. Technical Support \_\_\_\_\_ ~~NO~~ YES

#### 4. Onsite and Offsite Communications \_\_\_\_\_ YES\*

For each emergency class, the licensee shall have primary and secondary communications to the following:

- a) State/local network within 15 min. of the emergency (only for "General Emergency" class).
- b) Federal emergency response organizations
- c) Between the nuclear facility and the state/local emergency operation center (EOC).

#### 5. Logistics and Supply \_\_\_\_\_ YES

#### 6. Emergency Assessment Measures/Verification \_\_\_\_\_ YES

- (a) Core Coolant Sampling \_\_\_\_\_ not specified
- (b) Boron and Chloride Chemical Analysis \_\_\_\_\_ not specified

\* Means of communication not detailed,

- (c) Survey of Airborne Dose Rates, Airborne Iodine, and Contamination of Food Pathways — yes
- (d) Meteorological Analysis — ~~(SPECIFICALLY NOT MENTIONED)~~ yes \*
- (e) Data Reduction, Analysis, Reporting and Interpretation — yes
7. Emergency Corrective Measures — yes
- (a) Firefighting
- (b) Decontamination
- (c) Repair and Damage Control
8. Contamination Control — yes
- (a) Isolation or Quarantine
- (b) Contaminated Item Distribution Control
- (c) Control of Water Supplies
9. Aid to Affected Persons — yes
- (a) Rescue
- (b) First Aid
- (c) Decontamination
- (d) Ambulance Transport
- (e) Medical Treatment
- (f) Hospitalization

#### 5.2.2.1 Emergency Duty Station

For each emergency duty station there should be a list of all job assignment responsibilities.

- a) Technical Support Center — NO

x by implication



b) Licensee Emergency Control Center  
(primary and alternate)

\_\_\_\_\_ NO

c) Control Room

\_\_\_\_\_ X/O

d) Operational Support Center

\_\_\_\_\_ NO

5.2.2.2 Job Assignment Diagram

The licensee shall define in both a graphic diagram and narrative text, job assignment (day and night crews).

\_\_\_\_\_ ~~NO~~ YES

5.3 Augmentation of Onsite Emergency Organization

5.3.1 Licensee Headquarters Support

Headquarters management, administrative, and technical personnel should be prepared to assist the plant staff in obtaining qualified individuals in the following areas:

\_\_\_\_\_ YES

- Logistics Support for emergency personnel (e.g. transportation, temporary quarters, food and water, sanitary facilities in the field, and special equipment and supplies procurement).
- Reentry/Recovery Operations
- Authority Notification
- Environs Monitoring
- News Media. (RG 1.101, Rev. 1)

#### 5.3.1.1 Consultants

Identify persons with special qualifications such as consultants who are not employees of the licensee but may be called in during an emergency situation. (10 CFR 50, Part E)

yes

#### 5.3.1.2 Contracts with Private Organizations

If the licensee has contracted with private organizations for emergency supporting services the following should be provided:

N/A

- a) Nature and scope of services
- b) Emergency classes for which services are required
- c) Time delay before services can be provided
- d) Quality assurance specifications of the contractors services
- e) Letter of agreement with the contractor
- f) Who will be responsible for notifying the contractor

#### 5.3.2 Local Services Support

The licensee should identify the extension of the organizational capability for handling emergencies to be provided by ambulance, medical, hospital, and firefighting organizations. (RG 1.101, Rev. 1)

yes

### 5.3.3 Minimum Onsite Emergency Organization

Provide for the augmentation of the minimum onsite emergency organization within 60 minutes for all classes of emergencies above the "alert" level. (Acceptance Criteria)

~~YES~~  
~~time limit not~~  
~~specified~~

### 5.4 Coordination with Participating Governmental Agencies

The licensee should identify the principal State agency (designated State authority) and other governmental agencies (local, county, State, and Federal) having action responsibilities for radiological emergencies in the area in which the plant is located. If the boundary line between two political entities, e.g., counties or States, passes within the EPZs (plume and ingestion), agencies from both governmental entities should be included. (RG 1.101, Rev. 1)

yes

#### 5.4.1 Agency's Authority and Responsibility

A description of each agency's authority and responsibility for emergency response, particularly in relation to those of the licensee and to those of other agencies. (RG 1.101, Rev. 1)

yes  
~~NO~~

#### 5.4.2 Written Agreements

The licensee should provide written agreements with each Federal, State, and local agency and other support organizations having an emergency response role within the Emergency Planning Zones as discussed in NUREG-0396. The agreements will identify

~~yes~~  
NO

the emergency measures to be provided and the mutually acceptable criteria for their implementation. (Acceptance Criteria)

#### 5.4.3 Activation and Control of Agency Functions

Activation of the agency function, including titles and alternates for both ends of the communication links, and primary and alternative means of communication. Administrative control methods that will ensure the effective coordination and control of the emergency activities of support organizations should be established. (RG 1.101, Rev. 1)

— NO

#### 5.4.4 State/Local Emergency Operations Center

The designation and location of the Emergency Operations Center of each State/local government agency. (RG 1.101, Rev. 1)

— NO

#### 5.4.4.1 Licensee Coordination with Offsite EOC

The licensee should designate an individual (job title) to be dispatched to the offsite EOC whose responsibility will be coordinating with offsite agencies.

— NO

#### 5.4.5 Interstate Coordination and Training

Provisions should be made where applicable for interstate coordination and training in areas of joint concern, such as:

N/A

- a) Public education
- b) Public announcements and warnings



- c) Protective Action Implementation
- d) Environmental Surveys
- e) Communications
- f) Command and Control
- g) Federal interface

## 6. EMERGENCY MEASURES

### 6.1 Activation of Emergency Organization

The licensee should describe the communication steps taken to alert or activate emergency personnel under each class of emergency. In particular emergency action levels for notification of offsite agencies should be described. (RG 1.101, Rev. 1)

~~YES~~

NO

#### 6.1.1 Initiation of Emergency Response Coordination

Designate the immediate steps to be taken and time required by licensee to initiate its emergency response coordination and control measures.

time not specified

- Initial assessment measures should assure prompt notification to offsite authorities within 15 min. of detection of the initiating event.

yes

#### 6.1.2 Communications

Describe the onsite communications capability for assuring contact with the offsite authorities responsible for implementing protective measures including a primary and backup means of communications. (Acceptance Criteria)

NO

#### 6.1.2.1 Diagram of Communication System

Description and diagram of primary and backup communications between:

NO

- Control Room
- Technical Support Center
- Operational Support Center
- State and Local Emergency Operations Center (EOC)
- Alternate EOC
- Survey data collection points
- Site emergency control center (ECC) and press center (Acceptance Criteria)

#### 6.1.2.2 Control Room and ECC Communications

Backup communications description between control room and ECC.

NO

- Number of radios
- Provisions for long-term operations
- Frequencies used should not be subject to overloading

#### 6.1.2.3 Redundant Power Sources

Redundant power sources for all centers required to perform vital emergency functions in transmission and reception of information.

NOT  
SPECIFIED

#### 6.2 Assessment Actions

The licensee should provide effective coordination and direction of all elements of

the emergency organization requiring continued assessment throughout the emergency. (RG 1.101, Rev. 1)

— yes

6.2.1 Magnitude of Radioactive Material Released

The magnitude of radioactive material released should be determined from radiation monitor readings as seen from the control room. (RG 1.101, Rev. 1)

~~committed~~  
NO

6.2.2 Magnitude of Radioactive Contamination

- a) The plan should provide for timely dispatch of radiological monitoring teams to determine plume exposure pathways (inhalation and direct radiation). Measurement points must extend to the boundary of the plume EPZ.

yes \*

— NOT SPECIFIED

- b) The plans should provide for taking precipitation, water, and vegetation samples within the site boundary and ingestion EPZ to assess potential ingestion exposure pathways. (NUREG-75/087).

yes

6.2.3 Projected Exposures

- a) The plan should describe the means of providing real-time meteorological information to the ECC. Also, provide methods of updating weather forecasts (hourly) and how this information is integrated into plume pathway prediction.

yes

\* plan errs in relying on offsite monitoring for assessment & classification.

- b) Calculate plume centerline exposure rate as inversely proportional to distance from release point, or use prepared isopleths to estimate exposure rate in downwind area. (EPA-520/1-75-001)
- c) Use calculated exposure rate and estimated exposure duration to convert to projected dose. (EPA-520/1-75-001)
- d) When the licensee notifies the state/local agencies of an accident included should be a dose estimates at the site boundary and within the plume EPZ. (EPA-520/1-75-001)

yes

yes

yes \*

#### 6.2.4 Emergency Action Levels (EALs)

- a) EALs for containment radiation monitors shall be defined for each emergency class.
  - EALs that will utilize the instrumentation discussed in items 2.1.3 and 2.1.8 of NUREG-0578 must be included as soon as possible and a commitment to do such must be provided. Provisions to estimate offsite doses and containment levels before the "lessons learned items" are implemented must be described to include pre-calculated conversions and other job aids to be used. (NUREG-0578)
- b) Each EAL should have one verification source independent of the specified EAL.
- c) Plots showing containment radiation monitor readings (in control room) vs. time following an accident for incidents involving 100% release of coolant activity, 100% release of gap activity, and 1 and 10% of the fuel melting inventory, must be provided in the control room and be placed in the plan along with a description of how they will be utilized as EALs.

NO  
~~commitment,~~

not specified yet

NO

\* dose points not specified in plan.



### 6.3 Corrective Actions

The licensee should identify those actions (e.g. fire control, repair, and damage control) in emergency situations which can be taken to correct or mitigate the situation at or near the source of the problem. (RG 1.101, Rev. 1)

YES

- Corrective actions for site and general emergency class should be designated.

### 6.4 Protective Actions

#### 6.4.1 Protective Actions Based on Dose

Provide for recommending protective actions to the appropriate State and local authorities, based on projected dose to the population-at-risk, the projected time sequence of releases, physical form of release, and other appropriate considerations; in accordance with the recommendation set forth in Table 5.1 of the Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, EPA-520/1-75-001. Upon declaration of a "general emergency", immediate notification shall be made directly to the offsite authorities responsible for implementing protective measures within the Emergency Planning Zone as discussed in NUREG-0396. (Acceptance Criteria)

YES & NO \*

#### 6.4.1.1 Preliminary Planning

Preliminary planning should reflect provisions for initiating protective actions for all exposure pathways, onsite and offsite, including:

~~YES~~

not explicit

- (a) Direct radiation exposure from a confined source in-plant, an airborne plume, and ground deposition,

\* recommendations based on dose rate & duration, not made to local authorities, <sup>19</sup>

- (b) Inhalation exposure from an airborne plume, and
- (c) Ingestion exposure from contaminated water, milk, and other agricultural products. (NUREG-75/087)

#### 6.4.1.2 Protective Action Guides

Designate protective action guides (PAGs) to be used for implementing specific protective actions in accordance with EPA, HEW/FDA recommendations.

- a) PAGs for whole body external gamma radiation and for inhalation of airborne plume should be consistent with EPA-520/1-75-001.
- b) PAGs for human food and animal foods should be consistent with HEW/FDA (21 CFR Part 1090).
  - Preventive PAG
  - Emergency PAG
- c) Emergency classifications are not to be based on dose or PAGs.

EPA: YES

FDA: NOT MENTIONED

~~YES~~ NO

#### 6.4.1.3 Emergency Situation

Upon detection of HEW/FDA response level by the monitoring teams the site must recommend for protective actions consistent with HEW/FDA ingestion pathway protective action. The specific instruments and the readings which indicate the response levels must be included in the plan. The site or offsite agency responsible for implementation of the HEW/FDA protective actions within the ingestion pathway EPZ must maintain a list of the locations of dairy cows, major water sources, food or milk processing plants, etc. within ingestion EPZ along with a point of contact.

NO

6.4.2 Protective Cover, Evacuation,  
Personnel Accountability

6.4.2.1 Plant Site

6.4.2.1.1 Action Criteria

Action criteria for protective cover and evacuation measures. (RG 1.101, Rev. 1)

NO

6.4.2.1.2 Warning Mechanism

The means and the time required to warn or advise persons involved, i.e.,

Yes

- a) Employees not having emergency assignments
- b) Working and nonworking visitors
- c) Contractor and construction personnel, and
- d) Other persons who may be in the public access areas on or passing through the site or within the exclusion area. (RG 1.101, Rev. 1)

6.4.2.1.3 Logistics

Evacuation routes, transportation of personnel, and reassembly areas, including alternatives for inclement weather and high traffic density. (RG 1.101, Rev. 1)

NO\*

6.4.2.1.4 Missing Persons Check

Missing persons check. (RG 1.101, Rev. 1)

\* general mention: no specific routes / areas  
~~to~~

#### 6.4.2.1.5 Radiological Monitoring

Radiological monitoring of evacuees. (RG 1.101, Rev. 1)

yes

#### 6.4.2.1.6 Communication Systems

Communications systems needed for plant evacuation and reentry should include an evacuation alarm, a fire alarm, and voice communications systems. Assurance should be given that features for plant evacuation and reentry will be compatible with the plant security system and procedures.

#### 6.4.2.2 Offsite Areas

##### 6.4.2.2.1 Notification of Responsible Offsite Agencies

Upon declaration of Site or General Emergency classification, offsite agencies responsible for implementation and coordination of the protective action within the EPZs will be notified and will be able to immediately undertake appropriate protective actions.

yes<sup>\*</sup>  
\*\*

##### 6.4.2.2.2 Message Formats for Notification

Predetermined message formats for notification of all offsite agencies must be provided. These must be developed for each class of protective action (i.e., shelter, evacuation, etc.) and be coordinated with the receiving agencies and the public announcements.

\* does not address EPZ's; rather LPZ.

\*\* ability to immediately undertake protective actions not clear



### 6.4.3 Use of Onsite Protective Equipment and Supplies

#### 6.4.3.1 Respiratory Protection

The licensee should have a plan for individual respiratory protection for persons within the exclusion area to help minimize the effects of radiological exposures. (RG 1.101, Rev. 1)

- a) Criteria for respirator issuance \_\_\_\_\_ *yes*
- b) Location of respirators \_\_\_\_\_ *no*
- c) Means of distribution \_\_\_\_\_ *yes*

#### 6.4.3.2 Protective Clothing

The licensee should have a plan for use of protective clothing for persons within the exclusion area to help minimize radiation exposure and contamination problems. (RG 1.101, Rev. 1)

- a) Criteria for clothing issuance \_\_\_\_\_ *no*
- b) Location of protective clothing \_\_\_\_\_ *no*
- c) Means of distribution \_\_\_\_\_ *yes*

#### 6.4.3.3 Radioprotective Drugs

The licensee should have a plan for the use of radioprotective drugs for persons within the exclusion area to help minimize radiation exposure. (RG 1.101, Rev. 1)

- a) Criteria for use of the drugs \_\_\_\_\_ *no*
- b) Source of drugs \_\_\_\_\_
- c) Means of distribution \_\_\_\_\_

#### 6.4.4 Contamination Control Measures

##### 6.4.4.1 Plant Site

The licensee should provide a plan for preventing or minimizing direct or subsequent ingestion exposure to radioactive materials deposited on the ground or other surfaces within the exclusion area but outside of fenced security areas. (RG 1.101, Rev. 1)

N/A

The plan should discuss:

- a. Isolation or quarantine and area access control,
- b. Control of the distribution of affected agricultural products, including milk,
- c. Control of water supplies, and
- d. Criteria for permitting return to normal use.

##### 6.4.4.2 Offsite Areas

The licensee should provide a plan for preventing or minimizing direct or subsequent ingestion exposure to radioactive materials deposited on the ground or other surfaces of ingestion EPZ. (RG 1.101, Rev. 1)

ND

The plan should discuss:

- a. Isolation or quarantine and area access control,
- b. Control of the distribution of affected agricultural products, including milk,
- c. Control of water supplies, and

- d. Criteria for permitting return to normal use.

## 6.5 Aid to Affected Personnel

### 6.5.1 Emergency Personnel Exposure

The licensee should specify exposure guidelines for entry or reentry to area in order to (1) remove injured persons and (2) undertake corrective actions. (RG 1.101, Rev. 1)

yes

### 6.5.2 Decontamination and First Aid

The licensee should describe capabilities for decontaminating personnel along with the first aid training and capabilities of appropriate members of the emergency organization. (RG 1.101, Rev. 1)

yes

- a) Proposed locations and physical layouts of first aid and personnel decontamination facilities in the plant should be indicated. Brief descriptions of proposed equipment and supplies for these facilities should be included. (NUREG-75/087)

NO

### 6.5.3 Medical Transportation

The licensee should describe arrangements for transporting injured personnel, who may also be radiologically contaminated, to medical treatment facilities. (RG 1.101, Rev. 1)

yes

- a) Proposed arrangements for transportation of injured personnel from the site to a relatively nearby hospital should be adequate to accommodate at least two persons who may also be radiologically contaminated, within approximately one hour. (NUREG-75/087)

yes

#### 6.5.4 Medical Treatment

The licensee should describe arrangements made for local and backup hospital and medical services and the capability for the evaluation of radiation exposure and uptake. In addition, all persons providing medical assistance should be prepared and qualified to handle radiological emergencies. (RG 1.101, Rev. 1)

yes

### 7. EMERGENCY FACILITIES AND EQUIPMENT

Some criteria listed in this section may have been discussed in other sections (4, 5, 6) and need not be repeated here.

#### 7.1 Emergency Control Centers

##### 7.1.1 Onsite

The licensee should include the principal and any alternative onsite locations from which effective emergency control direction is given. One alternative offsite location under the jurisdiction of the applicant should also be described. (RG 1.101, Rev. 1)

~~NO~~ YES

NOTE: Criteria should mention habitability of alternate ECC w/in 10 mile EPZ.



7.1.1.1 Diagram of Onsite Emergency  
Locations

Plan should include a diagram showing the locations of the following:

- a) Emergency Control Center (ECC)
- b) Offsite Emergency Operation Center (EOC)
- c) Onsite Technical Support Center (OTSC)
- d) Onsite Operational Support Center (OOSC)
- e) Control room. (Acceptance Criteria)

NO

7.1.1.2 Onsite Technical Support Center

Each operating nuclear power plant shall maintain an onsite technical support center separate from and in close proximity to the control room that has the capability to display and transmit plant status to those individuals who are knowledgeable of and responsible for engineering and management support of reactor operations in the event of an accident. The center shall be habitable to the same degree as the control room for postulated accident conditions. The licensee shall revise his emergency plans as necessary to incorporate the role and location of the technical support center. (Acceptance Criteria)

NO LOCATION GIVEN  
STAFF NOT IDENTIFIED

- a) The center should be activated at the "Alert" level or above.
- b) Licensee should provide for an alternate location should the original site be inaccessible.

NO

NO

#### 7.1.1.3 Onsite Operational Support Center

An area to be designated as the onsite operational support center shall be established. It shall be separate from the control room and shall be the place to which the operations support personnel will report in an emergency situation. Communications with the control room shall be provided. (Acceptance Criteria)

yes

- a) The licensee must provide communication (primary and backup) with the onsite technical support center or the emergency control center (ECC).
- b) Licensee should provide for an alternate location should the original site be inaccessible.

NO

NO

#### 7.1.2 Offsite

Provide for the dispatch of a representative to the principal emergency operations center established by the offsite agencies (not required if licensee's offsite emergency operation center is at the same location as the predetermined location of the Emergency Operations Center to be used for the coordination of all offsite emergency support activities. (Acceptance Criteria)

NO

#### 7.2 Communications Systems

The licensee should describe both onsite and offsite communications systems including redundant power systems (RG 1.101, Rev. 1). The licensee shall define primary and alternate communications equipment, networking and delimitation and verification methods for the principal message traffic, linking the following onsite and offsite centers, organizations, agencies and points of contact:

\_\_\_\_\_ yes\*

\_\_\_\_\_ NO

\* redundant power not mentioned

(1) Plant Site:

- Emergency Operations Center
- State Emergency Operations Center
- Control Room
- Onsite Technical Support Center
- Onsite Operational Support Center
- Offsite Emergency Operations Center
- Press Center (must be provided in the area of the plant-written agreement- with capabilities for about 25 telephone hookups and backup communications with the site and state EOC. Also, specific time following a declared emergency at which the center can be activated.

(1)-(4) primary/secondary communication means are partially discussed.

(2) State:

- Governor
- State Legislature
- State Civil Defense/Emergency Service
- Environmental or Health Departments
- Highway Patrol Office (Headquarters)
- National Guard
- Highway Department
- Department of Agriculture

(3) County or Local:

Usually either the county or local (municipal-township) personnel are responsible for emergency actions.

(3a) County:

- County Executive
- County Sheriff's Office
- Highway Department
- Department of Agriculture
- Civil Defense and Emergency Services
- Environmental or Health Department
- County Fire and Rescue Departments

(3b) Local (Municipal or Township):

- Mayor/City Manager's Office
- Civil Defense/Emergency Services

- Police Department/LLEA
- Fire and Rescue Departments
- Welfare/Social Services
- Public Utilities

(4) Federal (Regional):

- U.S. Nuclear Regulatory Commission (NRC)
- Federal Emergency Management Agency (FEMA)
- U.S. Army Corps of Engineers
- General Services Administration (GSA)
- Department of Agriculture
- Defense Civil Preparedness Agency (DCPA)
- Environmental Protection Agency (EPA)
- Federal Preparedness Agency (FPA-GSA)
- NWS/NOAA (National Weather Service/ National Oceanic Atmospheric Administration).
- FDA/HEW

7.3 Assessment Facilities

7.3.1 Onsite Systems and Equipment

7.3.1.1 Geophysical Phenomena Monitors

The licensee should include a list of the types of monitors to be used to measure geophysical phenomena (e.g. meteorological, hydrologic, seismic) for initiate emergency measures, as well as those to be used for continuing assessment. (RG 1.101, Rev. 1)

— NO

7.3.1.2 Radiological Monitors

The licensee should include a list of the types of radiological monitors (process,

— NO \*

\* referenced to FSAR 30 in conflict w/ stated aim of stand-alone plan.



area, emergency, effluent, and portable monitors and sampling equipment) that are to be used to initiate emergency measures, as well as those to be used for continuing assessment. (RG 1.101, Rev. 1)

#### 7.3.1.2.1 In-Plant Iodine Instrumentation

Each licensee shall provide equipment and associated training and procedures for accurately determining the airborne iodine concentration throughout the plant under accident conditions. (NUREG-0578)

*- not specified*

#### 7.3.1.2.2 Inadequate Core Cooling

- a) Licensee shall develop procedures to be used by the operator to recognize inadequate core cooling with currently available instrumentation. The licensee shall provide a description of the existing instrumentation for the operators to use to recognize these conditions. (NUREG-0578)
- b) Licensees shall provide a description of any additional instrumentation or controls (primary or backup) proposed for the plant to supplement those devices giving an unambiguous, easy-to-interpret indication of inadequate core cooling. A description of the functional design requirements for the system shall also be included. A description of the procedures to be used with the proposed equipment, the analysis used in developing these procedures, and a schedule for installing the equipment shall be provided. (NUREG-0578)

*- not specified*

#### 7.3.1.2.3 Post-Accident Sampling Capability

- a) The reactor coolant and containment atmosphere sampling systems should enable personnel to promptly obtain (less than 1 hour) a sample under accident conditions without incurring a radiation exposure to any individual in excess of 3 and 18 3/4 Rems to the whole body or extremities, respectively. Accident conditions should assume a Regulatory Guide 1.3 or 1.4 release of fission products. (NUREG-0578)
- b) The radiological spectrum analysis facilities should have the capability to promptly quantify (less than 2 hours) certain radioisotopes that are indicators of the degree of core damage. Such radionuclides are noble gases (which indicate cladding failure), iodines and cesiums (which indicate high fuel temperatures), and non-volatile isotopes (which indicate fuel melting). The initial reactor coolant spectrum should correspond to a Regulatory Guide 1.3 or 1.4 release. (NUREG-0578)

— not specified

— not specified

#### 7.3.1.2.4 Effluent Monitors

- a) Noble gas effluent monitors should have an extended range designed to function during accident conditions as well as during normal operating conditions; multiple monitors are considered to be necessary to cover the ranges of interest.
- Total range of concentration extending from a minimum of  $10^{-7}$   $\mu\text{Ci/cc}$  (Xe-133) to a maximum of  $10^5$   $\mu\text{Ci/cc}$  (Xe-133). (NUREG-0578).
- b) Since iodine gaseous effluent monitors for the accident condition are not considered to be practical at this time, capability for effluent monitoring of radioiodines for the accident condition

— not specified

— not mentioned

shall be provided with sampling conducted by adsorption on charcoal or other media, followed by onsite laboratory analysis. (NUREG-0578)

7.3.1.2.5 In-Containment Radiation Level Monitor

— not mentioned

In-containment radiation level monitors with a maximum range of  $10^8$  rad/hr or  $10^7$  R/hr shall be installed. A minimum of two such monitors that are physically separated shall be provided. Monitors shall be designed and qualified to function in an accident environment. (NUREG-0578)

7.3.1.3 Process Monitors

— not specified

The licensee should include a list of the types of process monitor (e.g., reactor coolant system pressure and temperature, containment pressure and temperature liquid levels, flow rates, status lineup of equipment components) that are to be used to initiate emergency measures, as well as those to be used for continuing assessment. (RG 1.101, Rev. 1)

7.3.1.4 Chemical Analyses

— not specified

In addition to the radiological analyses, certain chemical analyses are necessary for monitoring reactor conditions. Procedures shall be provided to perform boron and chloride chemical analyses assuming a highly radioactive initial sample (Regulatory Guide 1.3 or 1.4 source term). Both analyses shall be capable of being completed promptly; i.e.,

the boron sample analysis within an hour and the chloride sample analysis within a shift. (NUREG-0578)

#### 7.3.1.5 Fire Detection Devices

not listed

The licensee should include a list of the type of fire detection devices that are to be used to initiate emergency measures, as well as those to be used for continuing assessment. (NUREG-0578)

#### 7.3.2 Facilities and Equipment for Offsite Monitoring

The licensee should include a listing of facilities and equipment for offsite monitoring. (RG 1.101, Rev. 1)

— not listed

##### 7.3.2.1 Field Monitoring - Offsite

Identify the capability and resources for field monitoring in the environs of the plant including the additional dosimetry specified in the revised technical position issued by the NRC Radiological Assessment Branch for the Environmental radiological monitoring program. (Acceptance Criteria)

— not identified

"Forty Stations with two or more dosimeters or one instrument measuring and recording dose rate continuously to be placed as follows: 1) an inner ring of stations in the general area of the site boundary and an outer ring in the four to five mile range from the site with a station in each sector of each ring (16 sectors x 2 rings = 32 stations). The balance of the stations, eight, should be placed in special interest areas such as population centers, nearby residences, schools, and one to three in an area(s) to serve as a control station(s)."



#### 7.4 Protective Facilities and Equipment

The licensee should describe specific facilities and equipment that are intended to serve a protective function (e.g. shelter facilities, assembly areas, and respirators). (RG 1.101, Rev. 1)

*incomplete*

#### 7.5 First Aid and Medical Facilities

The licensee should provide a summary description of onsite and offsite first aid and medical facilities. (RG 1.101, Rev. 1)

— *yes*

a) The identification of offsite hospital facilities should include:

— *yes*

- One facility relatively nearby which is willing and potentially capable of handling patients from the plant site who may be radiologically contaminated, on an emergency basis, and
- A second hospital which is expected to be capable of providing definitive patient care for acute radiation injury. (NUREG-75/087)

#### 7.6 Damage Control Equipment and Supplies

The licensee should provide a summary description of onsite damage control equipment and supplies. (RG 1.101, Rev. 1)

— *NO*

### 8. MAINTAINING EMERGENCY PREPAREDNESS

#### 8.1 Organizational Preparedness

### 8.1.1 Training

Licensee provided training objectives should include the following minimal component specifications:

- a) What training strategies and materials the student will be given;
- b) How will the trainee be tested; and
- c) How well (to what performance standard) the trainee must perform to demonstrate training objective mastery.

— NO  
— NO  
— NO

#### 8.1.1.1 Directors of Plant Emergency Organization

The licensee should describe the specialized initial training and periodic retraining programs to be provided to the directors or coordinators of the plant emergency organization. (RG 1.101, Rev. 1)

— NO

#### 8.1.1.2 Accident Assessment

The licensee should describe the specialized initial training and periodic retraining programs to be provided to personnel responsible for accident assessment including control room shift personnel. (RG 1.101, Rev. 1)

— NO

#### 8.1.1.3 Radiological Monitoring Teams

The licensee should describe the specialized initial training and periodic retraining programs to be provided to radiological monitoring teams. (RG 1.101, Rev. 1)

— NO

\* Method of evaluation referenced to procedures.

#### 8.1.1.4 Fire Control Teams

The licensee should describe the specialized initial training and periodic retraining programs to be provided to fire control teams (fire brigades). (RG 1.101, Rev. 1)

NO

#### 8.1.1.5 Repair and Damage Control Teams

The licensee should describe the specialized initial training and periodic retraining programs to be provided to repair and damage control teams. (RG 1.101, Rev. 1)

NO

#### 8.1.1.6 First Aid and Rescue Teams

The licensee should describe the specialized initial training and periodic retraining programs to be provided to first aid and rescue teams. (RG 1.101, Rev. 1)

NO

#### 8.1.1.7 Local Service Personnel

The licensee should describe the specialized initial training and periodic retraining programs to be provided to local service personnel. (RG 1.101, Rev. 1)

NO

#### 8.1.1.8 Medical Support Personnel

The licensee should describe the specialized initial training and periodic retraining programs to be provided to medical support personnel. (RG 1.101, Rev. 1)

NO

8.1.1.9 Licensee's Headquarters Support Personnel

The licensee should describe the specialized initial training and periodic retraining programs to be provided to licensee's headquarters support personnel. (RG 1.101, Rev. 1)

NO

8.1.2 Drills and Exercises

8.1.2.1 Initial Exercise

The licensee should provide for an initial exercise prior to loading of the first unit to test the adequacy of timing and content of implementing procedures and methods, to test emergency equipment, and to ensure that emergency organization personnel are familiar with their duties. (RG 1.101, Rev. 1)

N/A

Included should be:

- a) Provisions for coordination with and participation of offsite emergency personnel (State and local agencies).
- b) Testing of communications links and notification procedures with offsite agencies to demonstrate that capability for early warning of the public is maintained.
- c) The criteria for determining that an adequate emergency response capability exists at the facility.
- d) Corrective action for failure to meet the criteria in c).



#### 8.1.2.2 Annual Exercises

The licensee should provide for annual exercises using scenarios appropriate to the Site Emergency or General Emergency Classifications to test the adequacy of timing and content of implementing procedures and methods, to test emergency equipment, and to ensure that emergency organization personnel are familiar with their duties. (RG 1.101, Rev. 1)

yes \*

Included should be:

a) Provisions for coordination with and participation of offsite emergency personnel (State and local agencies).

yes

b) Testing of communications links and notification procedures with offsite agencies to demonstrate that capability for early warning of the public is maintained.

yes \*

c) The criteria for determining that an adequate emergency response capability exists at the facility.

NO

d) A means to evaluate observer and participant comments and establish a method for assigning responsibility for implementing corrective actions, specifying times by which corrective actions should be complete and for evaluation of the adequacy of such corrective actions.

NO

#### 8.1.2.2.1 Radiation Emergency Drill

At least once each calendar year (and no sooner than 9 months or later than 15 months from the last drill) the licensee should conduct a radiation emergency drill having a scope of response at least equivalent to a Site Emergency. This drill should be in "real-time" and unannounced as to time or scenario.

yes \*

drill scenario not

\* classification of specified.

\*\*by implication

At least once every three years this drill should be conducted on a different (back) shift.

yes

#### 8.1.2.2.2 Medical Emergency Drill

A medical emergency drill should also be conducted at least once each year and involve the actual transport of a "patient" and activation of the offsite medical support facility. If the offsite medical facility supports several other nuclear facilities, the involvement of the medical facility may not be necessary each year. In such cases, notification to and verification of their response role should be ascertained.

yes

#### 8.1.2.3 Fire, Repair and Damage Control Exercises

The licensee's should also provide for quarterly drills for fire team (fire brigad ) members, annual fire emergency drills containing provisions for a participation by an offsite fire department, and annual drills of repair and damage control teams. (RG 1.101, Rev. 1)

- damage control drill not mentioned.
- offsite fire dept. offered participation

#### 8.1.2.4 Joint Exercise - Federal, State, Local

Provide, in addition to the drills and exercises identified in Regulatory Guide 1.101, a joint exercise involving Federal, State, and local response organizations. The scope of such an exercise should test as much of the emergency plans as is reasonably achievable without involving full public

yes

participation. Definitive performance criteria will be established for all levels of participation to assure an objective evaluation. This joint test exercise will be scheduled about once every five years. (Acceptance Criteria)

criteria not  
mentioned

### 8.1.3 Emergency Planning Coordinator

The licensee should establish and maintain on the normal plant operating staff an Emergency Planning Coordinator whose responsibility should include the coordination of offsite emergency planning efforts. Principal duties of this position may be described in this section. (RG 1.101, Rev. 1)

AA ~~NO~~ NO

### 8.2 Review and Updating of the Plan and Procedures

The licensee should have provisions for (a) annual review of the emergency plan and for updating and improving procedures to incorporate results of training and drills and to account for changes onsite or in the environs (b) means for maintaining all coordinate elements of the total emergency organization informed of the plan and revisions to the plan or relevant procedures should be described, and (c) reviewing and updating all written agreements at least every two years. (RG 1.101, Rev. 1)

(a) yes  
(b) no  
(c) no

### 8.3 Maintenance and Inventory of Emergency Equipment and Supplies

The operational readiness of all items of emergency equipment and supplies should be

ensured. The provisions for performing maintenance, surveillance testing, and inventory on emergency equipment and supplies should be described. (RG 1.101, Rev. 1)

yes

9. RECOVERY

This section should describe general plans, including applicable criteria, for restoring the plant as nearly as may be possible to a safe status. (RG 1.101, Rev. 1)

yes