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Docket No. 50-093

Mr. A. Victor Morisi
Boston Edison Company
M/C NUCLEAR
800 Boylston Street
Boston, Massachusetts 02199

Dear Mr. Morisi:

We have completed our review of your emergency plan submittal dated July 1, 1980, for the Pilgrim Unit No. 1 Nuclear Power Plant. Your plan was reviewed against the criteria stated in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Plans and Preparedness in Support of Nuclear Power Plants". This document addresses the standards in the revised 10 CFR which became effective November 3, 1980.

Our review has indicated that additional information and commitments are required before we can conclude that your onsite emergency preparedness program meets these criteria.

Enclosed are our comments for which resolution is necessary. Your emergency plan should be revised to address these comments in accordance with the provisions of the revised 10 CFR 50. The submittal of the revised plan is requested within 45 days of this letter. Any questions should be addressed through your project manager.

Sincerely,

Original Signed by
I. A. Ippolito

Thomas A. Ippolito, Chief
Operating Reactors Branch #2
Division of Licensing

Enclosure:
Pilgrim Emergency Plan
Review

cc w/encl:
See next page

*all comment
see QTR.*

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Mr. A. Victor Morisi
Boston Edison Company

- 2 -

November 17, 1980

cc:

Mr. Richard D. Machon
Pilgrim Station Manager
Boston Edison Company
RFD #1, Rocky Hill Road
Plymouth, Massachusetts 02360

Henry Herrmann, Esquire
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Resident Inspector
c/o U. S. NRC
P. O. Box 867
Plymouth, Massachusetts 02360

PILGRIM EMERGENCY PLAN REVIEW

The detailed results of the NRC review of the Pilgrim Nuclear Power Station 1 Emergency Plan July 1, 1980, against 10 CFR 50.47, 10 CFR 50, Appendix E and NUREG-0654, January 1980 are enclosed.

Several areas were identified as not being addressed in sufficient detail to allow for a meaningful review. Until the following information is developed and integrated into a revised plan an adequate review cannot be completed.

1. The plan must be revised to clearly show how backshift manpower will be assigned to assure that the tasks and functions required for successful implementation of the plan can be accomplished during the initial phase of an accident. The plan must show the direct relationship between the backshift staff and emergency functions and tasks identified in Table B-1 and the plan.
2. The plan must specify the specific instrument readings, or other observable/measurable indicators (Emergency Action Levels) used to initiate an emergency response along with a description of the instruments to be used.
3. The plan must address the entire population within the plume EPZ (not just Plymouth).
4. The plan must demonstrate that offsite (state/local) officials have the capability to make a public notification decision promptly on a 24 hour a day basis.
5. The plan must describe a system for determining the protective actions to be recommended offsite based on plant conditions and not solely on dose projections.

6. The plan must describe the public notification system which meets the requirements of NUREG 0654, Appendix 3 for the entire plume EPZ.

SPECIFIC NRC COMMENTS ON
PILGRIM NUCLEAR POWER STATION UNIT #1
EMERGENCY PLAN
DRAFT - JULY 1980

PLAN REFERENCE

<u>SECTION</u>	<u>PAGE</u>	<u>COMMENTS</u>
-	-	Provide an implementation schedule for the plan and its provisions to include submittal of emergency plans of Massachusetts, Rhode Island and <u>all</u> local governments within the plume EPZ.
N3	14	Throughout the plan, the concept of emergency action level is used incorrectly. An emergency action level (EAL) is the observable/measurable instrument reading (etc.) which if exceeded will indicate the emergency class. The items identified in Section 4.1 as EALs are actually initiating conditions.
N.4.1	20-31	Specify the specific observable/measurable instrument reading(s), parameter, equipment status, etc. which if exceeded will initiate each emergency class. EAL must be established for plant operation parameters, effluent reading, field monitoring results, equipment status, and containment readings (Figure N-6-1).

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<u>SECTION</u>	<u>PAGE</u>	<u>COMMENTS</u>
		Specify that the emergency action levels will be discussed and agreed on by State and local response agencies annually.
4.1.1.2	20	Classify accidents situations involving transportation of contaminated injured individuals to offsite hospitals as "Unusual Events."
4.1.2.2	22	Address NUREG 0610, Unusual Event, Example Initiation Conditions 4, 9, 11 and 16.
4.1.3.2	24/25	Address NUREG 0610, Alert, Example Initiating Conditions 6, 8, 11, 13, 14, 16 and 20.
4.1.4.2	27/28	Address NUREG 0610, Site Emergency, Example Initiating Conditions 8, 9, 10, 11, 13 and 17.
4.1.5.2	29	Indicate that protective actions will <u>always</u> be
4.2.5	45/46	immediately recommended if a General Emergency is declared. The implication that monitoring will be performed before protective actions are recommended in the event of a General Emergency must be removed. Indicate that protective actions will be recommended based on plant conditions (e.g., condition of core and containment) and projected doses.

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<u>SECTION</u>	<u>PAGE</u>	<u>COMMENTS</u>
4.1.5.2	30	Provide EALs for the accident sequences which could lead to release of large amount of radioactivity (e.g., core melt with containment failure — See Nureg 0610 and WASH 1400). X
4.2.5	46	<p>Indicate how the response agencies for <u>all</u> the jurisdictions within the plume EPZ will be notified. Provide sufficient detail to assure that the authorities responsible for actuation of public notification systems can be notified by the plant within 15 minutes of declaration of a General Emergency and can and will make protective action decisions promptly.</p> <p>Coverage of the following towns and areas must be demonstrated:</p> <ul style="list-style-type: none">o Duxburyo Kingstono Carvero Plymptono Myles Standish State Parks/Foresto Beaches - (e.g., Duxbury or Long Beach)o Clarks Island.o Saquish Necko Special Populationso Special Facilities (facilities that could not be evacuated)

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o Transients (identify)

5.1	53/54	Show the relationship between normal plant shift assignment (day and backshift) and emergency assignments.
5.1	55	Specify the duty station of the Emergency Coordinator during the initial phases of the emergency. Indicate where the initial offsite protective measures will be determined.
5.1	54	Indicate who (by job assignment) is responsible for 24 hour manpower planning during emergencies.
5.2	56	Show, for each crucial emergency task and function (as identified in the plan and Table B-1, NUREG-0654), which member of the emergency organization will perform these tasks initially (backshift) and as augmented. Show by function/task when augmentation will be available (30 min., 60 min.). Indicate how fast the emergency centers will be activated. Demonstrate (e.g., priorities) that sufficient personnel are available during the initial phases of an accident (backshift) to perform the tasks required in response to an emergency. In addition, provide

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a schedule for implementation of the manning requirements in revised NUREG-0654, Table B-1.

The implementation schedule for licensed operators and auxiliary operators and shift technical advisor on shift shall be as specified in the July 31, 1980 letter to all power reactors. Any deficiencies in staffing to the requirements of Table B-1 must be capable of augmentation within 30 minutes by Sept. 1, 1981 and all such deficiencies must be fully removed by April 1, 1982.

5.2.1.1

57/58

Specify which responsibilities of the Emergency Director cannot be delegated.

Specify that the Emergency Director is responsible for recommending offsite protective measures to appropriate offsite agencies.

Specify the conditions for higher level utility officers to assume the Emergency Director position.

Specify who is responsible for determining the protective measures to be recommended offsite (backshift).

PLAN REFERENCE

<u>SECTION</u>	<u>PAGE</u>	<u>COMMENTS</u>
5.2.2	61	Indicate that the initial offsite notification in the event of a General Emergency must include protective action recommendations. This can be a default recommendation to shelter if followed shortly (document in plan) by a recommendation based on consideration of plant conditions, etc. (See comment on Section 4.2.5).
6.4.3.2	126	Provide and coordinate with offsite authorities a standard format for use in preparing the initial offsite notification.
	61/63	The time required to make the initial offsite notifications for each class must be specified. Provide for close-out summaries in accordance with NUREG-0610.
	61	Summarize the information in follow-up messages to demonstrate compliance with NUREG-0654, Criterion E-4.
5.2.2.1	61	Specify which state and local agencies will be notified of an unusual event and how fast.
5.2.3.2	65/66	Provide for activation of the site TSC for Alerts, Site Emergencies and General Emergencies and the EOC (EOF in NUREG-0654) for Site and General Emergencies.
5.2.3.3.1		
6.1.3	105	

PLAN REFERENCE

<u>SECTION</u>	<u>PAGE</u>	<u>COMMENTS</u>
5.2.3.7	70	Provide for licensee representation at the principal offsite governmental emergency center if requested.
5.2.3.8	71	State the minimum number of personnel trained on damage control and first aid on each shift or make specific assignments.
5.2.4	74	Describe provisions to meet the requirements of NUREG-0654, Criterion K.3.a to include offsite emergency personnel (NRC, state, etc.) and how records will be maintained. Provide for maintenance of records of actual radiation doses received by emergency workers. Plan Section N.5.2.4 refers only to projected doses.
5.3.1.4	79	Provide for press briefings at the near-site EOC.
5.3.4	82	Indicate that the near-site EOC is the primary interface point with offsite response officials.
5.3.5.3	86	Demonstrate that the responsible State/Local officials
74	161	can and will make public notification decisions <u>promptly</u> on being informed by the licensee of an emergency condition. The procedure described in the plan which requires MDPH to make such decisions and

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in turn contact Plymouth does not meet this requirement since it appears to be too time consuming during the backshift, involves communication links which are not provided with backups, and does not address all the jurisdictions within the plume EPZ (See Comments on Section 4.2.5).

Fig 5-4

92

Show the interface with offsite response organizations (State/local) and the BECO Recovery Organization.

Provide a figure showing the normal backshift organization.

6.1.5

106

Specify the EALs used to determine the perspective actions recommended offsite. This must include plant conditions (core and containment conditions -see NUREG/CR1131).

6.4.3.1,

124

6.4.3.2

126

Describe how evacuation time estimates and the protection afforded by local residential units will be considered in determining recommended protective actions.

Specify that protective action criteria will be discussed and agreed to by State and local response agencies annually.

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SECTION PAGE
6.2.1 107
6.2.1.6 111

COMMENTS

Specify the criteria for performing monitoring and determining Iodine levels.

Demonstrate that sufficient personnel are available onsite to perform these functions during the backshift in a time consistent with response requirements (see Comment on Section 5.2). Will any monitoring, analysis or sampling be required to classify an event (Part of EAL)? If so, these tasks must also be described and the manpower provided.

6.2.1 108

Describe how the results of field monitoring teams will be used to project offsite doses (assumptions, conversions, job aids used).

6.2.1.6.4 112

State the "Conservative Assumptions" used to develop the Figure N.6-1.

These figures should be used as part of the EALs.

6.4.1.1.1 114

Will these levels be used as the criteria for evacuees (public and plant personnel) during an emergency?

Insure that visitors and transients inside the exclusion area but outside the protected area are:
(a) notified of an emergency, (b) accounted for, and specify the length of time to effect evacuation.

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<u>SECTION</u>	<u>PAGE</u>	<u>COMMENTS</u>
6.4.3.1	122	Describe the provisions used to assure that the evacuees are not required to await an excessive amount of time at the entrance of Rocky Hill Road (see comment on Section 5.2) during the backshift.
	123	Specify the time required for personnel accountability (backshift and dayshift).
	124	Are there facilities to decontaminate vehicles at the assembly area? Provide a map showing the assembly areas relative to the EOC and evacuation routes.
6.4.3.2	127	Describe the methods used to insure that information will be available for "ready reference" by the public in the event of an emergency (e.g., placing in phone-book and posting on beaches and in hotels, etc.). Provide a "sample" of the public information mailout or describe it in more detail. Specify when the information will be provided to the public. Specify that each year a statistical sample of the public within the plume EPZ will be taken in accordance with the provisions of revised NUREG-0654, Appendix 3.
6.4.4	128	Specify the 'projected dose' at which a thyroid blocking agent will be administered and who will make this decision.

PLAN REFERENCE

<u>SECTION</u>	<u>PAGE</u>	<u>COMMENTS</u>
6.4.5		<p>Provide a discussion of the means for disposing of contaminated waste resulting from decontamination of emergency personnel, supplies, instruments and equipment.</p> <p>Address contamination control of drinking water and food supplies within the protected area.</p> <p>Indicate the release level(s) for return of areas and items to normal use. If release levels are the ones specified in Section N.6.4.1(2), this section should be referenced in Section N.6.4.5.</p>
6.5.1	130	<p>Specify emergency dose levels for the whole body, thyroid and hands.</p> <p>Describe the "Health Physics Procedures" to be used to control access to radiation areas during <u>emergency conditions</u>. If there is a change in procedures who makes the decision and on what basis?</p>
6.5.3	132	<p>Specify the job assignment titles of the personnel who will provide "Radiation Monitoring Services" during the backshift and describe these services (onsite - offsite). (See comment on Section 5.2).</p>
6.4.1.3	117	<p>The "High Range Monitor" must be described in Section 7</p>
Fig 6-1	134	<p>of the plan to include type, range, and location</p>
Table 7.7		<p>(see comment on Table 7.7).</p>

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SECTION PAGE

7.1.1	155	Provide a map showing the location of the EOC and a figure showing the floor plan with the major functional areas identified. Provide for emergency power to the EOC.
7.1.2	155	Describe how the ongoing habitability of the emergency centers be insured (e.g., monitoring).
7.1.3		
7.1.4		
7.1.3	147	Specify the time required to travel from the TSC to the Control Room.
7.1.4	158	Describe the provisions for protective clothing, respiratory and other supplies which may be needed in response from the OSC.
7.4	160/161	Provide for backup communications between the EC and TSC, OSC, response organization (MDPH, NIAI, other towns, etc.), and BECO recovery organization.
Fig. 7.1	174	

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COMMENTS

Describe the backup communications to insure they are not vulnerable to loss of normal power or overload by public use.

Indicate the number of phone lines (normal and dedicated) to offsite response organizations to demonstrate sufficient capacity.

Indicate that once all centers have been activated that the TSC will be the primary communication interface with the Control Room.

7.5.1.4 166

Provide for additional TLDs in accordance with the

Fig 7.3 176

Radiological Assessment Branch Technical Position.

7.5.2.1 169

Describe and provide a completion schedule for an upgraded meteorological program in substantial compliance with NUREG-0654, Appendix 2.

The essential elements of the NUREG-0654, Appendix 2 criteria are:

1. A primary meteorological measurements program with redundant power sources.
2. A backup meteorological measurements program with redundant power sources.

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3. A system for making real time predictions of the atmospheric effluent transport and diffusion, including Class A and Class B models as described in Appendix 2.

4. A capability for remote interrogation on demand of the atmospheric measurements and prediction systems by the licensee, emergency response organizations, and the NRC staff with primary and backup communications systems.

7.5.2.3

170

Describe the onsite laboratory capabilities to:

1. Analyze containment samples (N.6.2.1.6.1)
2. Conduct post-accident analysis, and
3. Read TLD's

Specify the response times of the offsite laboratories

7.6.1

171

Remove terms such as "Typically" from plan.

Provide resources to meet the requirements of NUREG-0654, Criterion I.2 and an implementation schedule for integration into the emergency plan.

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<u>SECTION</u>	<u>PAGE</u>	<u>COMMENTS</u>
Tables 7-1, 7-2	179-193	Describe the radiological monitoring equipment (type, range, sensitivity).
Table 7.7	200 -	Provide additional descriptive information to include: location, monitor type and sensitivity.
		NOTE: All instruments referenced in the EALs must be described.
Section 7	General	Describe the public warning system designed to essentially complete the initial notification of the public within the plume EPZ within 15 minutes and provide its implementation schedule. It must be demonstrated that the Alerting Signal can reach all populated areas (to include indoors) and areas normally frequented by transients. It must also be demonstrated that the notification system can provide an emergency information message by radio/TV to the entire plume EPZ day or night within 15 minutes.

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<u>SECTION</u>	<u>PAGE</u>	<u>COMMENTS</u>
8.1.1.2	221	<p>Specify how personnel assigned to the emergency organization will annually demonstrate their ability to perform the emergency tasks which are not part of their normal duties. "Familiarization" is not acceptable and how qualification is documented. Specify when all emergency response personnel will be qualified.</p> <p>Provide for training and qualifying the appropriate (assigned) individual on protective action determination.</p>
8.1.1.2.14	226	<p>Train the press representative on the relationship between plant conditions and recommended protective actions (EAL, Class).</p>
8.1.1.3.6	228	<p>Include notification procedures, etc., as related to plant conditions in addition to EALs.</p> <p>Clearly provide for the instruction of offsite police and fire fighting personnel, local support services (i.e. Civil Defense/Emergency Services) or medical support personnel.</p>
8.1.2	228/229	<p>Describe the scenarios prepared for drills and exercises to demonstrate they will contain the information required by NUREG-0654, Criterion N.3. Clearly define performance objectives as measurable/</p>

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observable standards used to evaluate performance of crucial tasks and functions.

229 Describe the provisions for official state and local observers.

230/231 Describe the provisions for a critique to demonstrate compliance with Criterion N.4 and N.5. The observed performance must be evaluated against the performance objectives developed as part of the scenarios.

Indicate if, by whom, or when, corrections for erroneous performance during drills will be made.

8.1.2.1 231 Provide a schedule for the 1st, integrated exercise which has been coordinated with Federal, State, and local officials.

8.1.2.2.1 232 Provide additional details on the health physics drill to demonstrate that it meets NUREG-0654, Criterion N.2.e.

8.1.2.2.4 Provide for communication tests between the plant and local Emergency Operations Centers and field assessment teams.

8.3 235 Define 'NSRAC' and describe its relationship to the plant emergency planners and management to demonstrate independence. In addition, specify the retention time for the bi-annual audit results.

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Defined criteria will be used to lower the emergency class and who makes that decision.

Appendix A

Letter of Agreement with Plymouth fire department must discuss authority onsite.

Provide Letters of Agreement with NSSS, AE and other utility support (see Section N.5.3.1, pg 77).

The state and local letters must be revised to reflect their roles and means of interface with site as expressed in the Plan. This can be accomplished by submitting the state and local plans along with an endorsement letter (signed by all agencies with emergency roles).

Specify that all Letters of Agreement will be reviewed by signators on an annual basis and that this will be documented.

Specify when the state and local plans will be submitted to the NRC along with the revised Letters of Agreement.

Appendix B

Discuss how these figures and assumptions (historical met data) will be used for the purpose of determining

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protective action recommendation and how they will be integrated in a procedure and the job aids (e.g. fill in blank forms) to be used.

Who will perform these calculations?

Describe how offsite dose rates will be determined when the radiation monitor or meteorological instrumentation is offscale or inoperable.

Describe how the total population does over the course of the release will be calculated.

How the figures in Appendix B are to be used is not clearly defined. Annex B is deficient because it fails to present an easily interpreted method of assessing offsite doses or concentrations. The only place they address the source term is in the caption block on figures B, 1-A and B. They do not relate it to sample flow just to counts per second. The whole methodology fails if the exhaust flows are not the constants specified. The licensee relates the dry well radioactivity monitor to atmospheric release without factoring a containment pressure. The treatment given is appropriate for a FSAR but is too complex for an emergency plan. If this methodology is used the licensee is going to have a difficult training

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problem, to train their emergency personnel on the use of these graphs. They fail to provide simple methods of offsite dose assessment that involve eight to ten typed pages and few figures to provide a concise easily understood method of dose assessment. In addition to the major deficiencies, the following minor deficiencies are listed.

It is not written in a manner that makes it easy to use. The format has several features that are conducive to making large errors when using the tables in an emergency.

1. The tables list values that must be divided by one milli by the user. One would have to carefully read the small print on the tables to be aware of this.
2. The tables for gamma dose and concentration look identical except for a small section of the caption

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at the top of the page. The same is true for elevated and ground releases. The tables should clearly identify what they represent in large letters on the body of the table.

3. If tables are to be used in an emergency situation, they should be designed to be easily read and require a minimum of interpretation. It should be obvious what the table represents. The tables should be easily read. A table with many lines of numbers per page should be either lined or have a change in paper color about every third line to enhance accurate interpretation of the table. If data is graphically presented, it can be quickly interpreted.
4. Symbol (F) in equations for whole body and thyroid dose are identical. Subscripts should be used to differentiate between the two uptake factors.
5. Equations use both division signs (-) and numerator/denominator format on the same page. This is confusing. In addition, the division symbols have not copied completely. It would be an improvement to stay with the numerator/denominator format.

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6. The nomographs on Figure B4/7A are so concentrated that they are difficult to read and interpret, and how they are to be used during an accident is never addressed.

Table 6.2 142

Appendix C

Show the relationship between provisions of the plan and procedures.

Appendix H

Provide a description of the process used to obtain the comments of local officials (fire, police) on the accuracy of the evacuation time estimates and how these comments were integrated into estimates.