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NUCLEAR REGULATORY COMMISSION  
before the  
ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of	)	
	)	
PUBLIC SERVICE COMPANY	)	Docket Nos. 50-443-OL
OF NEW HAMPSHIRE, <u>et al.</u>	)	50-444-OL
	)	
(Seabrook Station, Units 1	)	(Offsite Emergency
and 2)	)	Planning Issues)
	)	

APPLICANTS' DIRECT TESTIMONY NO. 6  
(Sheltering)

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## INTRODUCTION

The NHRERP provides for a range of protective responses that may be implemented to protect the health and safety of the public, including summer, seasonal populations. Further, this range of responses has the flexibility to ensure dose savings in response to a wide spectrum of accident conditions.

The concept of protective action recommendation decisionmaking employed by the NHRERP is patterned on the emergency planning guidance of NUREG-0654/FEMA-REP-1, Rev. 1 and emergency planning regulations of the Nuclear Regulatory Commission.

Protective Action Guides (PAGs) of the U.S. Environmental Protection Agency (EPA) have been incorporated in the NHRERP and provisions have been made for calculation of projected dose which permits reliance on the PAGs for protective action decisionmaking. Decision criteria have been developed and committed to procedures to aid accident assessment personnel and decisionmakers in making choices among available protective action options including that of sheltering.

The NHRERP provides for precautionary actions intended to avoid exposure of the beach population to potential radiological risk. Plans and procedures, including decision criteria, have been put into place specifically for implementation of these measures. Accident assessment

personnel of the State of New Hampshire are prepared by procedures and training to ascertain from utility emergency response personnel the status and prognosis of plant conditions and safety systems for the purpose of recommending precautionary actions prior to the manifestation of radiological consequences.

While the preferred protective action for the seasonal beach population is the precautionary measure of early beach closure or evacuation, the State of New Hampshire is prepared to recommend the protective action of sheltering in a limited number of circumstances. These are described in the New Hampshire Response to FEMA Supplemental Testimony, Enclosure 1 to letter of Richard H. Strome to Henry G. Vickers dated February 11, 1988 (Appendix 1 to this testimony).

The NHRERP provides the method and means to ensure prompt notification of the summer, seasonal population of precautionary and protective actions to be taken. This is primarily accomplished by a system of fixed sirens providing coverage of the New Hampshire portion of the Seabrook Station EPZ. In addition, sirens providing coverage for beach areas of concern have public address capability for which a taped, voice message containing instructions for the beach population has been developed. Each campground in the EPZ will be offered a tone-alert radio to supplement notification by the siren system. Both beach areas and campgrounds will be supplied with public information materials in the form of

durable signs in the beach area, posters, and brochures that provide instructions to the public on actions to take in an emergency.

The NHRERP includes a special facility plan for each campground in the EPZ. These plans call for campground operators to ensure that campground users are notified of an emergency. The campground operators will either close the campgrounds as a precautionary measure or evacuate them based on the protective action recommended for the general population. Campground users constitute neither a significantly large segment of the population nor an inordinate concentration of persons in any one area of the EPZ so as to impede their rapid departure from the EPZ in the event of an emergency.

The NHRERP, Volume 1, Section 2.6.5, contains a discussion of the relative, representative values of dose reduction factors for typical structures to be found in the Seabrook Station EPZ. This discussion concludes that essentially any residential structure in the Seabrook Station EPZ affords a dose reduction factor of at least 0.9 which is assumed by the NHRERP for the purpose of choosing between the protective action options of evacuation and sheltering.

Furthermore, schools and day care centers are presumed to share the characteristics of structures that prevail in the Seabrook Station EPZ and to have at least the same dose reduction factors. Because protective action recommendations

for the general public apply also to schools and day care centers, evaluation of the protection afforded by the individual structures is not considered as part of the decisionmaking process.

#### PLANNING BASIS FOR PROTECTIVE ACTIONS

The NHRERP Volume 1 and the local plans, Volumes 16 through 32, and specifically plans for the Towns of Seabrook and Hampton, Volumes 16 and 18 respectively, provide for a range of responses that may be implemented to protect the health and safety of the public, including the summer, seasonal populations, in the event of a radiological emergency. This range of responses has the flexibility to achieve dose savings in response to a wide spectrum of conditions.

The plans are premised on the basic concept of NUREG-0654/FEMA-REP-1, Rev. 1 that any one or a combination of responses will be taken to achieve the maximum dose savings to the public. The responses prescribed by the NHRERP range from precautionary actions for the beach population at the early stages of an emergency to the protective actions for the general public of shelter, evacuation, and control of access to affected areas.

1. Concept of Protective Action Decisionmaking
  - a. Purpose of Protective Actions

The NHRERP is based on the planning guidance of NUREG-0654, which states at page 6:

The overall objective of emergency response plans is to provide dose savings (and in some cases immediate life saving) for a spectrum of accidents that could produce offsite doses in excess of Protective Action Guides (PAGs).

The NHRERP is predicated on the understanding that emergency planning for a nuclear plant is not required to be designed to address any particular accident sequence or a "worst case accident".

NUREG-0654 states further at page 6:

No specific accident sequence should be isolated as the one for which to plan because each accident could have different consequences, both in degree and nature.

The protective action decision criteria of the NHRERP take into consideration plant conditions, evacuation clear times, dose reduction factors, and other conditions that may exist at the time of an accident.

**b. Protective Action Guides and Projected Doses**

Protective Action Guides (PAGs) are criteria provided for use by public health officials and decisionmakers to determine the need for protective actions and for choosing appropriate protective actions. The U.S. EPA promulgated PAGs on the basis of projected doses which act as trigger points to initiate protective actions. The U.S. EPA Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, EPA - 520/1-75-001, cautions:

A Protective Action Guide under no circumstance implies an acceptable dose. Since the PAG is based on projected dose,

it is used only in an ex post facto effort to minimize the risk from an event which is occurring or has already occurred.

(Manual of Protective Action Guides and Protective Action for Nuclear Incidents, U.S. EPA, September 1975 (Revised June 1980), pg. 1.1.) In sum, PAGs are guidance tools for use by decisionmakers and are not levels of acceptable or unacceptable risks.

The NHRERP Volume 1, Section 2.6.3 incorporates the U.S. EPA PAGs for direct exposure to radioactive materials within the Plume Exposure Pathway EPZ. The range of PAG doses delineated by the U.S. EPA for the general public are indicated in Table 2.6-1 of the NHRERP. The guidelines incorporated in Table 2.6-1 consider the most sensitive members of the general population: women who are pregnant and infants. As expressed in Section 2.6.3, New Hampshire has chosen to base its protective action decisions on the lowest values cited by the U.S. EPA, that is, a 1 rem whole-body projected dose, and a 5 rem thyroid projected dose.

In order to utilize the PAGs, projected doses to the general public must be determined. Projected doses must be determined following the incident based on data from (1) plant conditions, (2) release and meteorological conditions, (3) offsite radiological measurements, or (4) combinations of these three factors. (Manual of Protective Action Guides, U.S. EPA, p. 5.1.) The NHRERP, Volume 1, Section 2.5.2 provides for estimating the projected doses for the Plume

Exposure Pathway EPZ and for reporting projected doses as quickly as possible in terms of whole body and thyroid doses. NHRERP, Volume 1, Section 2.5.3 describes the means by which State of New Hampshire officials will determine projected doses. Calculation techniques for this purpose are explicated in procedures contained in NHRERP, Volume 4A, Appendices N, O, P, and Q. Each of these procedures incorporates the factors identified in the U.S. EPA Manual for determining projected dose.

c. Protective Action Recommendation Decisionmaking for the General Public

NUREG-0654, criterion J. 9 provides that:

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 . . . .

The utility will classify an event based on plant conditions. At a Site Area Emergency or General Emergency classification level, predesignated plant conditions will result in specific protective action recommendations from the utility to the State of New Hampshire. If the event is classified as a Site Area Emergency or General Emergency, and plant conditions do not result in a specific protective action recommendation from the utility to the State, then the appropriate protective action will be reached by utilizing the decision criteria described in modified Section 2.6.7, as

discussed infra. These criteria are used by decisionmakers for choosing between sheltering and evacuation, and are sufficiently flexible to be applied to any type of projected or actual release from a nuclear power plant. The decision criteria depicted in modified Figure 2.6-7 of the NHRERP consider the time to release, time of plume arrival at a specified location, time of exposure at the reference location, projected dose, EPA PAGs, time available to make protective action decision, time available to implement protective actions, constraints to implementation of protective action decision, and dose reduction factors pertinent to either sheltering or evacuation. At the final decision step in the process, the decision criteria call for detailed analysis and calculations to determine the comparative effectiveness of shelter and evacuation.

NHRERP, Volume 4A, Appendix U contains procedures to be used by accident assessment personnel of the New Hampshire Division of Public Health Services (DPHS) in applying the NHRERP decision criteria. A revision to this procedure is being incorporated into an update of the NHRERP and is provided as Attachment 1. The State of New Hampshire protective action decisionmaking procedures recognize that the utility will evaluate plant status at the Site Area Emergency and General Emergency classification levels which may result in a protective action recommendation. DPHS accident assessment personnel at the State Incident Field

Office (IFO), co-located with the Utility Emergency Operations Facility (EOF) in Newington, New Hampshire, will obtain plant data in conjunction with utility accident assessment personnel and verify the utility protective action recommendation.

The State Emergency Operations Center (EOC), IFO, and EOF are activated at the Alert emergency classification level. Prior to the activation of these facilities, the DPHS Emergency Response Initiator is instructed to contact the plant control room for plant status information immediately after being notified of an emergency classification level. The data to be obtained are identified on the notification form utilized by both utility and Division of Public Health Services' procedures. These data will be evaluated by State of New Hampshire accident assessment personnel and decisionmakers to determine the advisability of precautionary actions. Accident assessment will be initiated at the State EOC and continued through the duration of an emergency at both the State EOC and at the IFO/EOF. DPHS accident assessment personnel at the IFO/EOF will receive firsthand projected dose data and field measurement data, assess the data with utility accident assessment personnel in conjunction with emergency management personnel, perform independent calculations of projected doses and formulate protective action recommendations to be conveyed to the State EOC where the public protective action recommendation

decision will be made.

d. **Decisionmaking Criteria for Seasonal Beach Populations**

The protective action decision criteria discussed in NHRERP, Volume 1, modified Section 2.6.7, contain decision criteria designed for summer, seasonal populations, including seasonal beach populations. These decision criteria incorporate considerations for precautionary actions for the summer, seasonal population based on the status and prognosis of plant conditions. These provisions of the NHRERP represent a cautious approach to the implementation of the emergency planning requirements of 10 CFR 50.47(b) and guidance of NUREG-0654/FEMA-REP-1, Rev. 1. They are intended to remove the beach population before the potential for exposure beyond the PAGs exists. To accomplish this, they are implemented based on plant status and conditions that may lead to a release as determined by accident assessment personnel of the utility and conveyed to State of New Hampshire decisionmakers.

The NHRERP, Volume 1, Section 2.5.2 advises accident assessment personnel that complete radiological assessment data may not be available or no release may yet be projected when they are considering early, precautionary actions for the summer, seasonal population. Therefore, the current plant status and a prognosis of anticipated plant conditions would be the best indicator of the need for precautionary actions. Procedures contained in NHRERP, Volume 4A, as

modified, facilitate consideration of plant status and prognosis of plant conditions by providing for early reporting of plant status data by the utility emergency organization to State of New Hampshire emergency management and public health officials.

State of New Hampshire accident assessment personnel and decisionmakers will consider implementation of precautionary measures as early as the Alert emergency classification level. The description of Alert in NUREG-0654, Appendix 1, says in part:

Any releases [at this classification level are] expected to be limited to small fraction of the EPA Protective Action Guidance exposure levels.

At this classification level, no offsite action would be ordinarily warranted to protect the public, but its consideration here affords additional time to clear the beaches or prevent additional public access to the beaches.

The decision criteria of the NHRERP are not intended to dictate automatic implementation of precautionary actions at this classification level. They are intended to facilitate the exercise of judgment on the part of New Hampshire accident assessment personnel and decisionmakers as to the most prudent course of action given the particular circumstances of an accident situation.

The NHRERP, Revision 2, Volume 1, Section 2.6.7 is being updated to reference the emergency classification and plant conditions under which precautionary and protective action

recommendations would be made (Attachment 2). Figure 2.6-6 of the NHRERP, as modified, see Attachment 2, indicates that for these conditions during periods of summer, seasonal population, the recommended precautionary action would be closure or evacuation of Hampton and Seabrook beaches. The intent of this provision is the implementation of measures for the beach population at the first indication of a potential for offsite populations to be affected. Under these conditions, any projected doses to the public would be expected to be below the lowest values of the EPA PAGs. At the Site Area Emergency classification level, offsite protective actions would not be expected to be necessary to protect the public. At this classification level, however, the State will recommend precautionary or protective actions for the beach population. The description of Site Area Emergency of NUREG-0654, Appendix 1 provides foundation for this decisionmaking concept where it says:

Any releases [are] not expected to exceed  
EPA Protective Action Guideline exposure  
levels except near site boundary.

The emergency classification levels are intended to be anticipatory in nature. They are initiated by plant conditions that allow anticipation of later consequences if conditions are not mitigated. Decisionmakers are thereby led to appropriate courses of action before offsite consequences are expected.

In summary, to reach a protective action recommendation,

the initial consideration is based on plant conditions. If a recommendation is not made as a result of plant conditions, then projected doses will be calculated and compared to the PAGs.

2. Implementation of Precautionary and Protective Actions for the Summer, Seasonal Population

Actions prescribed for implementation of precautionary and protective actions for the public, and specifically for the seasonal beach population, are contained in appendices to both the New Hampshire Office of Emergency Management and the Division of Public Health Services procedures (Volume 4, Appendix F and Volume 4A, Appendix U as modified). These procedures establish explicit actions for implementation of early, precautionary measures and protective actions for the Hampton and Seabrook beaches.

a. Public Alert and Notification

A key provision for initiation of protective actions is prompt notification of the public. This is achieved by activation of a system of fixed sirens situated throughout the 17 New Hampshire communities. These sirens provide audible alert coverage of the New Hampshire EPZ communities. For beach areas where precautionary actions may be recommended (i.e., Hampton and Seabrook beaches), sirens have been designated for potential activation in early stages of an emergency for the purpose of initiating precautionary actions. Procedures are in place for these sirens to sound an alert signal and to broadcast a voice message in both

English and French to advise beach populations of actions they should take. Procedures provide for immediate (within 15 minutes of the State's decision) activation of the audible alert system by either Rockingham County Dispatch Center or as a backup, by the Towns of Hampton and Seabrook after precautionary or protective action decisions are made for beach areas.

Activation of the audible alert signal would be followed by a voice message over the siren public address system containing emergency instructions for the public. The script of the voice message is: "Attention . . . Attention . . . Because of a problem at Seabrook Station, the beaches are now closed. Please leave the beach immediately. Listen to a local radio station for more information." (NHRERP, Vol. 16, pg. IV-18h; Vol. 18, pg. IV.26g.)

In addition to the audible alert system, a series of permanent signs which display emergency instructions will be posted in recreation areas, including on the beaches, throughout the EPZ. Currently 18 locations for placement of these signs have been identified in cooperation with the NH Department of Resources and Economic Development. The instructions explain what to do when sirens are heard and identify the emergency broadcast stations from which further information and instructions can be obtained. This information is also displayed in both English and French. Additional public information materials containing the same

information, again in both languages, will be available to transients at motels, hotels, and business establishments throughout the EPZ.

Emergency Broadcast System (EBS) messages would be broadcast at 15-minute intervals over radio stations identified on the public information signs and in other informational materials for transients. The content of the EBS message would depend on the actions recommended by State of New Hampshire decisionmakers. EBS messages containing instructions for the transient population, including transients without their own means of transportation, are presently being prepared.

**b. Precautionary Actions**

Precautionary actions planned for implementation for Hampton and Seabrook beaches are delineated in NHRERP, Volume 4, Appendix F and Volume 4A, Appendix U as modified in Attachment 1. (See also generally Appendix 1.) Those actions pertain particularly to the beach areas in an approximate 2-mile radius of Seabrook Station, in other words, those areas that could potentially be most immediately affected. This area is bounded by Great Boar's Head at Hampton Beach to the north and the New Hampshire-Massachusetts border at Route 286 and Ocean Boulevard at Seabrook Beach to the south. (The procedures contained in NHRERP, Rev. 2, define the northern boundary of this area as Little Boar's Head which is in North Hampton. The plan and

procedures are being amended to identify this boundary as Great Boar's Head which is consistent with traffic control and public notification provisions for precautionary actions for the beach.)

Precautionary actions prescribed for this area are:

(1) Closing beaches that attract seasonal populations and which are in close proximity to the plant;

(2) Implementation of traffic control to discourage transient traffic from flowing into the affected areas, including beach areas;

(3) Issuance of public announcements of actions taken through emergency broadcast and normal media channels; and

(4) Monitoring of traffic flow and local conditions in affected areas.

To facilitate implementation of these actions, the following arrangements have been made:

(1) The Department of Resources and Economic Development (DRED), which has jurisdiction over State beaches and parks, has been designated to assist with closing beaches and parks and adjacent parking areas under its control. Procedures are in place for DRED to utilize lifeguards, park managers, and other available personnel for this purpose.

(2) Specific traffic control points have been designated for State and local police to discourage access of transient traffic into beach areas and to facilitate egress of outgoing traffic. These points are specified for

implementation of early precautionary actions.

(3) Procedures are in place at the Rockingham County Dispatch Center and in the RERPs for the Towns of Hampton and Seabrook for activation of public alert sirens and public announcements for the beaches. Additionally, public information personnel at both the Media Center and the State EOC are activated at the Alert classification to issue public announcements to the media.

(4) Utility, State and local emergency response organizations will be activated at the Alert Emergency classification level, to monitor conditions in the plant and in potentially affected areas.

c. Evacuation As A Protective Action

In the event that accident conditions preclude implementation of early precautionary measures for the beach populations, evacuation continues to be the preferred response. NHRERP, Volume 1, Section 2.6, at page 2.6-11 says:

If all potential radiological exposure can be avoided by implementing a timely evacuation, evacuation may be the preferred protective action. Where implementation of protective action is deemed appropriate, and where time and plant conditions permit, evacuation will generally be the selected course of action.

Numerous factors can influence the effectiveness of evacuation. They include the delay time between accident warning and initiation of evacuation, the radius within which

the public is evacuated, evacuation speed, and changing meteorological conditions during the evacuation.

Specific and detailed procedures are provided in the NHRERP to ensure early notification and evacuation of the beach population. Administrative provision for and coordination of emergency instructions to be broadcast have been provided in NHRERP, Volume 1, Section 2.1, and Volume 4, NHEDA procedures, and Volume 4B, State Police Communications Center procedures to ensure the flexibility to get the most appropriate message aired in a timely manner for the spectrum of accident conditions. The conditions covered by these provisions range from when the emergency organizations are fully staffed and are following a slowly developing situation to the case when a severe situation is developing rapidly prior to emergency organizations being able to fully staff or assess the situation.

d. Shelter-in-Place

(1) General Considerations

NHRERP, Volume 1, Section 2.6.5 sets forth the shelter-in-place concept on which New Hampshire relies as a protective action option. The use of sheltering as a protective action for the beach population is dealt with in Appendix 1. The shelter-in-place concept provides for sheltering at the location in which the sheltering instruction is received. The NHRERP, Volume 1, at page 2.6-6 explains this to mean:

Those at home are to shelter at home, those at work or school are to shelter in the work place or school building. Transients located indoors or in private homes will be asked to shelter at the locations they are visiting if this is feasible. Transients without access to an indoor location will be advised to evacuate as quickly as possible in their own vehicles (i.e., the vehicles in which they arrived).

Beach closure or evacuation of the beach areas are the preferred courses of action for the beach population. Sheltering as a protective action option for this segment of the population would be considered in only a very limited number of circumstances characterized by one or more of the following conditions as described on pp. 7-8 of Appendix 1:

1. Dose Savings

Sheltering could be recommended when it would be the most effective option in achieving maximum dose reduction. New Hampshire has chosen to base its protective action decision on the lowest values cited by EPA guidance, that is 1 rem whole body dose and 5 rem thyroid dose. The protective action guidelines contained in EPA 520/1-75-001, Manual of Protective Action Guides for Nuclear Incidents, Revised 1980, have been adopted in the protective action procedures of Appendix F and Appendix U.

2. Consideration of Local Conditions

The protective action recommendation procedure of the NHRERP ([modified] Appendix F, Volume 4 and Appendix U, Volume 4A) considers impediments to evacuation when evacuation is the result of the detailed evaluation utilized in the decision-making process.

3. Transients Without Transportation

When evacuation is the recommended protective action for the beach population, certain transients may be without their own means of transportation. Shelter will be recommended for this category of

transients to ensure they have recourse to some protection while awaiting transportation assistance.

For implementation of this protective action option under any of the three conditions, New Hampshire decisionmakers will rely on the mechanisms now in place, or to be put in place, in the NHRERP for recommending shelter to the public whether on the beach or any place else. These mechanisms include rapid assessment of accident conditions; activation of the public alert system, which include the beach public address system; and EBS announcements. It is expected that people will comply with EBS announcements to take shelter and that owners/operators of public access facilities will make their facilities available for this very limited purpose.

#### (2) Transients Without Transportation

When evacuation is the recommended protective action for the beach population, certain transients may be without their own means of transportation. Their number is estimated at 2% of the peak beach population, as set forth in NHRERP, Volume 6, page 2-1n. Recent estimates of the peak beach population for Hampton and Seabrook were made using the results of vehicle occupancy rate surveys and counts of projected peak number of vehicles. The summer weekend peak population estimates calculated 23,841 for Hampton Beach South and 7,398 for Seabrook Beach. Using the 2% estimate and the peak population figures yields estimates of peak numbers of

transients without transportation of 477 at Hampton Beach and 148 at Seabrook Beach. These are considered to be peak numbers because they do not take into account ride sharing which FEMA's Regional Assistance Committee advises is a significant factor in estimating transportation resource requirements. With ride sharing considered, it is believed that more than enough capacity exists for all transients without their own transportation. However, bus routes have been planned and sufficient bus resources identified to provide transportation for persons in the beach areas including summer transients who may lack their own. The NHRERP is being amended to provide protection to the transients while they are awaiting transportation assistance.

The NHRERP will identify potential shelter locations for the transient beach population without transportation. The shelter study referenced in Section (3), infra, was provided to the State as a resource document. In its review, the State found the document to be of some value. It identified a large number of shelters that may serve as a pool from which public shelter choices will be made. The appropriate EBS message will be modified to provide for instructions to persons on the beach who have no means of transportation to go to public shelters to await assistance in the event evacuation of the beach is recommended. Appendix 1, pg. 10.

(3) Stone & Webster Shelter Study, August 1987

"A Study to Identify Potential Shelters in the Beach

Areas Near Seabrook Station August, 1987," was performed for New Hampshire Yankee by Stone & Webster Engineering Corporation. This study was performed to identify and approximate sheltering capacities that appear to be suitable for use by the beach population along the Massachusetts and New Hampshire EPZ coastlines. This study is provided as Applicants' prefiled Exhibit 2. An analysis of this study has been performed by New Hampshire Yankee and is provided as Attachment 3.

The State of New Hampshire does not intend at this time to incorporate the August, 1987 Stone & Webster Shelter Study or the analysis of this study into the NHRERP nor rely on the shelter study as a planning basis. As a compilation of available resources, the shelter study may be used to assist in identifying those public buildings to which beach transients without their own means of transportation may be directed for shelter while awaiting transportation assistance.

### 3. Implementation of Protective Actions for Campgrounds

Specific plans for special facilities within the Seabrook Station EPZ are contained in appendices to the local plans of the NHRERP, Volumes 16 - 32. These appendices are labeled Appendix F of Volumes 16 - 32. Appendix F includes plans for campgrounds located in the respective municipalities. The plans identify the campgrounds to which they pertain and contain descriptive information about the

campgrounds. They also explain the method of notification and the actions to be taken.

a. Notification

All campgrounds in the New Hampshire portion of the EPZ are covered by the system of fixed sirens. As a supplement to the sirens, campgrounds will be offered tone-alert radios which will enable proprietors or managers to be advised of any protective measures recommended for the public. The tone-alert radios are activated by the EBS radio signal over which emergency instructions will be transmitted. A supply of public information materials, including posters and brochures, will be provided to all campgrounds; and the plans call for campground operators to ensure that public information materials containing emergency instructions are available for users of their facilities.

Therefore, there are two methods of notification. One is the siren signal. Second, the operators will be alerted by tone-alert radios which provide notification and emergency instructions.

b. Actions

The campground plans provide that at a Site Area or General Emergency, campgrounds may be directed to undertake a protective response or to close on a precautionary basis. If the facility is advised to close as a precaution or if there is a sheltering recommendation announced for any part of the

EPZ, campground operators would instruct campers to leave the area.

If an evacuation is recommended in any part of the EPZ, campground operators would make an accounting of all current users of the campground and instruct campers to evacuate the area by evacuation routes specified in the campground plan.

The total maximum capacity of campgrounds in the Seabrook Station EPZ is approximately 8500 campers. This maximum capacity of campground users is distributed over a total of 1889 camp sites in 18 campgrounds situated within 11 of the 17 municipalities of the Seabrook Station EPZ. Thus, campground users constitute neither a significantly large number nor an inordinate concentration of persons in any one area of the EPZ. Therefore, it is reasonable to conclude that campground users would be able to depart the area rapidly whether this was to occur prior to an evacuation of the general population or during such an evacuation. Maximum total vehicle capacity of campgrounds is approximately 2950, or 1 vehicle for every 2.9 campers. Five of these campgrounds are day and youth camps for which nineteen buses have been allocated. Consequently, there is ample vehicle capacity for campground users to depart from the area.

#### 4. Sheltering for the General Public

##### a. Concept of Shelter-in-Place

As explained previously, New Hampshire employs the shelter-in-place concept as a protective action option for

the general public. This concept provides for short-term sheltering at the location in which the sheltering instruction is received. Those at home are to shelter at home, those at work or school are to be sheltered in the work place or school building.

Except for institutionalized populations, sheltering and evacuation will be implemented on a municipality by municipality basis in New Hampshire. One town may be advised to take shelter, while an abutting town is advised to evacuate or take no protective action. Therefore, shelter areas in New Hampshire are defined as municipalities. The decision to implement sheltering or evacuation of a particular municipality in the EPZ would be based on a prediction that projected doses to the general population would equal or exceed EPA PAGs for these areas.

**b. Assessment of Existing Shelter Adequacy**

The NHRERP, Volume 1, Table 2.6-4 provides representative values of cloud dose reduction factors for typical structures that can be found in the Seabrook Station EPZ. On the basis of these values, New Hampshire decisionmakers can approximate the level of protection that would be afforded to the population by a protective action recommendation to shelter. The values range from 0.2 or less (80% protection) for large office or industrial type buildings to 0.9 (10% protection) for wood-frame houses with no basements. Based on the documents, Structure Shielding

from Cloud and Fallout Gamma Ray Sources for Assessing the Consequences of Reactor Accidents, EG&G, Inc., Las Vegas, Nevada, EGG-1183-1670 (1975) and Public Protection Strategies for Potential Nuclear Reactor Accidents: Sheltering Concepts With Existing Public and Private Shelters by Aldrich, et al., February 1978, and their analysis of typical structures to be found in the Northeast region of the United States, Seabrook Station EPZ structures have a cloud dose reduction factor of at least 0.9; and this is, therefore, a reasonable dose reduction factor to be assumed by the NHRERP. As an assumed dose reduction factor, New Hampshire decisionmakers would apply this factor to calculations of projected doses to determine the level of protection that would be provided by implementation of sheltering. The only exceptions to this rule are certain institutions, including hospitals, nursing homes, and correctional facilities, where risks from evacuation are higher than that for the general population. For these institutions, shielding factors of the individual structures have been determined and would be applied to calculation of projected doses to the resident populations according to instructions contained in NHRERP, Volume 4A, Appendix U.

(1) Shelter Effectiveness of Residences in the Seabrook Station EPZ

Because of their location in the Northeast region of the United States, year-round residences in the Seabrook Station EPZ residences can be expected to consist of substantial

construction materials and to be of airtight construction. Essentially any indoor location, even a wood-frame house with no basement, provides at least a 10% reduction for a cloud source. This assessment of the relative shelter effectiveness of structures in the Seabrook Station EPZ indicates that typical residential structures afford a cloud shielding factor of at least 0.9.

(2) Shelter Effectiveness of Schools and Day Care Centers

It is reasonable to assume that schools and day care centers share the prevailing characteristics of typical structures of the Seabrook Station EPZ, and are airtight, winterized structures.

Further, because protective action recommendations for the general population are applied to schools and day care centers, evaluation of protection afforded by these structures would neither make them more suitable for sheltering, nor affect the choice of the sheltering option. Specific protective action recommendations would not be made for schools (which, for the purpose of the plan, include day care centers) based on the relative sheltering factors of their structures. The NHRERP explicitly says in NHRERP, Volume 4A, Appendix U that sheltering factors other than 0.9 are not to be considered for school facilities. Schools (and day care centers) will follow the same protective actions prescribed for the general population.

STATE OF NEW HAMPSHIRE  
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JAMES A. SAGGIOTES  
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February 11, 1988

Mr. Henry G. Vickers  
Regional Administrator  
Federal Emergency Management Agency  
422 McCormack Post Office  
Boston, MA 02109

Dear Mr. Vickers:

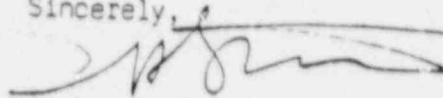
In the Supplemental Testimony of Dave McLoughlin, Edward A. Thomas and William R. Cumming on Behalf of the Federal Emergency Management Agency on Sheltering/Beach Population Issues, filed on January 25, 1988, the Federal Emergency Management Agency (FEMA) stated its current position with respect to its review of selected portions of the New Hampshire Radiological Emergency Response Plan (NHRERP). FEMA summarized its position as follows:

Briefly put, FEMA's position is (a) that it is appropriate to consider further the adequacy of the emergency response plan for the transient population of the beaches within the Seabrook Emergency Planning Zone (EPZ) during the summer, that is, from May 15 to September 15, as indicated in the New Hampshire Radiological Emergency Response Plan (NHRERP); (b) that the requirement of NUREG 0654/FEMA REP 1, Rev. 1, for a "range of protective actions" may or may not be satisfied by evacuation alone; (c) that FEMA cannot conclude that the NHRERP is adequate with respect to that beach population until it is clear that the State of New Hampshire has considered the use of sheltering for the transient beach population and explains what use, if any, it intends to make of sheltering. This latter point should not be interpreted to mean that FEMA has imposed a requirement that sheltering be available. If the State of New Hampshire intends not to employ sheltering for the transient beach population (which is not presently clear from the NHRERP), then FEMA expects the State to develop the rationale for such a choice and provide it to FEMA for review.

During the January 28, 1988 conference call among the parties in the Seabrook Operating License Proceeding, the State of New Hampshire indicated that it would respond, within two weeks, to the concerns raised by FEMA in its supplemental testimony. The State's response to FEMA's questions about protective actions for the Seabrook EPZ beach population is set forth in the accompanying enclosure.

New Hampshire appreciates the comments and assistance provided by FEMA relative to the New Hampshire Sheltering policy. We believe the enclosed material addresses the concerns raised and we welcome the continued opportunity to work in concert with FEMA in developing quality emergency plans for the people of New Hampshire.

Sincerely,



Richard H. Strome  
Director

RHS/MMN/cjf

cc: Seabrook Operating License Proceedings Service List

78648

Enclosure 1New Hampshire Response to FEMA Supplemental Testimony

At Volume 1, Section 2.6, the plan addresses "protective response." The plan explains that the objective of protective responses by the State is "... to control the radiological exposures to which the public may be subjected in the event of a significant release of radiological materials from a fixed nuclear facility." The section explains that there are various radiation exposure pathways, and outlines the federal protective action guides (PAGs) for both plume exposure EPZs and ingestion pathway EPZs. At Section 2.6.5, the plan outlines the specific protective actions adopted by the State for reducing direct exposure of the public within the plume exposure EPZ.

New Hampshire will rely on two protective actions for limiting the direct exposure of the general public within the Plume Exposure EPZ. These are sheltering and evacuation. Either of these protective actions will be coupled with access control to prevent unauthorized entry into the area in which the protective action is being implemented. (NHRERP Vol 1. p. 2.6-4)

This general statement of policy was drafted to be the basis of state policy for either of the two nuclear power plants with plume exposure EPZs within the State. It should not be inferred from this statement of policy, however, that sheltering is afforded the same weight as evacuation as a means to effect dose savings. Subsequent portions of the plan describe the relative merits of the two protective actions and describes the rationale and procedures for choosing protective actions. Sheltering is a protective action of limited usefulness in realizing dose savings for the population, regardless of the season. For a limited range of conditions, however, the protective action of sheltering is not without benefits.

Sheltering is a valuable protective response for several reasons. It can be implemented quickly, usually in a matter of minutes. In addition, it is less expensive and less disruptive of normal activities than evacuation. Implementation and management of sheltering is also less demanding on the resources of the emergency response organization since no vehicles, traffic control and dispatching of equipped emergency workers is required. (NHRERP, Rev. 2, Vol. 1 at p. 2.6-5)

To make sure sheltering is fast and easily managed, as this statement intends, the State has adopted a specific sheltering concept.

"New Hampshire employs the 'Shelter-in-Place' concept. This provides for sheltering at the location in which the sheltering instruction is received. Those at home are to shelter at home; those at work or school are to be sheltered in the workplace or school building. Transients located indoors or in private homes will be asked to shelter at the locations they are visiting if this is feasible. Transients without access to an indoor location will be advised to evacuate as quickly as possible in their own vehicles (i.e., the vehicles in which they arrived). Departing transients will be advised to close the windows of their vehicles and use recirculating air until they have cleared the area subject to radiation. If necessary, transients without transportation may seek directions to a nearby public building from local emergency workers. (NHRERP Vol 1. p. 2.6-6)

Implicit in adopting this position are three key factors. First, the State wanted a sheltering concept that was uncomplicated and manageable. The shelter-in-place concept meets this criterion. Second, the State wanted a sheltering concept that it could rely upon to be implemented quickly. The shelter-in-place concept meets this criterion; a sheltering concept that requires the movement of people to a remote shelter location may not. Third, the State feels that if a release of radiation warranted movement of the public, they are much more likely to be afforded meaningful dose reductions by moving out of the EPZ than by moving to a shelter within the EPZ. This is the case since the members of the public would be, in effect, "evacuating" to a shelter. This action would require forming family groups or social units prior to moving, deciding whether to seek shelter or evacuate spontaneously, choosing a mode of transportation (i.e., walk or ride), seeking a destination (i.e., home or shelter), and undertaking the physical movement.

Furthermore, since sheltering is a temporary protective action, those that sought public shelter would be faced with the prospect of assuming some dose while seeking shelter, more while sheltering, and even more during a subsequent evacuation. Such considerations dissuade the state from considering the movement of large numbers of people to public shelters as a primary protective action for beach transients, given that evacuation is seen as providing dose savings in nearly all accident scenarios.

This position does not preclude the State from considering and selecting sheltering as a protective action for the beach population. Nevertheless, evacuation is a much more likely protective action decision during the summer months when some beach transients cannot shelter in place, but must leave or move to public shelters.

Through the RAC review process, FEMA made it known to the State that it was concerned about a shelter-in-place concept that could, in fact, result in a hasty evacuation of the transient beach population shortly before, or during, a release. For example, the FEMA technical review comments on the December 1984 draft of the NHRERP contained the following comment regarding the beach population:

Early access control and beach instructions may have to be implemented, and this must be considered in advance both in terms of protective action decision making and public notification of such.

At FEMA's suggestion, the State, in Revision 0 to the NHRERP, adopted additional means for addressing this concern. Those means consist of closing or evacuating the beaches and establishing access control as early "precautionary actions." The precautionary action process is a detailed

procedure used by decision makers from May 15 through September 15, the months in which there is potential for a significant beach population. The procedure advises decision makers to close the beaches during Alert or close or evacuate the beaches during Site Area Emergency conditions before protective action considerations are warranted. This would mean that the beach population would be gone before an evacuation/shelter decision became necessary. The availability of the precautionary action procedure is cited in Section 2.6.5 of the plan:

"The conditions under which such an action may be taken are described in NHRERP Vol. 4 NHCDA Procedures, Appendix F."

A copy of the precautionary action procedure is attached. (See: Attachment I).

The addition of these precautionary measures alleviates most concerns about sheltering the beach population. The State's position is based, in part, upon the RAC evaluation of the State Response to the RAC review of NHRERP Rev. 2. At page 64/134, the RAC evaluation stated:

According to the State response and the plan revisions, the use of public shelters is not proposed during a Seabrook Station emergency. The only exception is the possible use of public buildings for shelters for transients without transportation. Transients with transportation and 'without access to an indoor location' will be advised to evacuate in their own vehicles. The use of public buildings or sheltering of transients without transportation is acceptable since the transients without transportation are expected to be a very small number.

These precautionary actions and the State emphasis on getting the population out early are consistent with actions planned at other nuclear power plant sites with transient populations.

Once a General Emergency is declared, State of New Hampshire decision makers begin a detailed evaluation of the protective actions to be recommended. Since the General Emergency as defined by NUREG-0654, FEMA-REP-1 is a condition where "releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels for more than the immediate site area," it is at this point that relative dose savings between evacuation and sheltering are evaluated in accordance with the protective action decision criteria of NHRERP Volume 4 Appendix F and Volume 4A Appendix U for the general population including the beach population.

For the aforementioned reasons, it is the State's position that evacuation is the protective response that would be used in response to the majority of emergency scenarios at Seabrook, and that the protective action of sheltering may be preferable to evacuation in only a very limited number of accident scenarios.

The State is currently prepared to recommend implementation of its shelter-in-place concept at either of the two plume exposure EPZ's in New Hampshire. The shelter-in-place advisory will normally be issued, for either EPZ, only under scenarios that are characterized by one or more of the following three conditions:

1. Dose Savings

Sheltering could be recommended when it would be the more effective option in achieving maximum dose reduction. New Hampshire has chosen to base its protective action decisions on the lowest values cited by EPA guidance, that is 1 rem whole body dose and 5 rem thyroid dose. The protective action guidelines contained in EPA 520/1-75-001, Manual of Protective Action Guides for Nuclear Incidents, Revised 1980, have been adopted in the protective action procedures of Appendix F and Appendix U.

2. Consideration of Local Conditions

The protective action recommendation procedure of the NHRERP (Appendix F, Vol. 4 and Appendix U, Vol. 4A) considers impediments to evacuation when evacuation is the result of the detailed evaluation utilized in the decision making process.

3. Transients without Transportation

When evacuation is the recommended protective action for the beach population, certain transients may be without their own means of transportation. Shelter will be provided for this category of transients to ensure they have recourse to some protection while awaiting transportation assistance.

A major reason for the State's reliance on evacuation is the recognition that, during the summer months, the large transient beach population potentially present constrains the use of the shelter-in-place option as a means of achieving dose savings for that segment of the entire population. Many of the beach transients are day trippers without ready access to a residence for sheltering as envisioned in the shelter-in-place concept. The adoption of early beach closings and the precautionary action of beach evacuations (and their attendant access control to stop the influx of beach goers) is intended by the State to minimize the population that could be subject to possible protective actions at a later time.

The State plans to continue its use of the shelter-in-place concept. It continues to assume that the shelter-in-place concept can be augmented. It can be augmented by the precautionary beach closures, and it can be augmented by retaining the ability to use some public shelters if a need to shelter transients without transportation occurs.

The utility has sponsored a beach area Shelter Study undertaken by Stone and Webster Engineering Corporation. This study was provided to the State as a resource document. In its review, the State found the document to be of some value. It identified a large number of shelters that may serve as a pool from which public shelter choices will be made. Based upon its review of the Shelter Study, the State is confident that unforeseen demand for shelter can be met provided that the limits of usefulness inherent in any shelter (e.g., sheltering factors, weatherization, capacity, etc.) are considered in the decision-making process.

When evacuation is the recommended protective action for the beach population, certain transients may be without their own means of transportation. An estimate of the number of beach transients who may not have their own transportation is 2% of the peak beach population, as set forth in NHRERP, Volume 6, page 2-1 n. The State agrees with the RAC's advice to consider ride sharing as a significant factor in estimating transportation resource requirements, and believes that sufficient ride sharing capacity exists for transients without their own transportation. In addition, bus routes have been planned and bus resources identified to provide transportation for persons in the beach areas who may lack their own. However, there is a concern that some mechanism be provided for this category of transients to ensure they have some protection while awaiting transportation assistance.

Using the 2% estimate and the 1987 peak population figures derived by KLD for the beach areas of concern, the number of transients without transportation might be as high as 480 in Hampton Beach and 150 in Seabrook

Beach. On the basis of the Shelter Study, there is capacity in existing buildings at Hampton Beach and Seabrook Beach to shelter those transportation-dependent transients at the beach until transportation assistance is made available.

We propose to amend the plan to identify potential shelter locations for the transient beach population without transportation. The appropriate EBS message will be modified to provide for instructions to persons on the beach who have no means of transportation to go to public shelters to await assistance in the event evacuation of the beach is recommended.

In its introduction, NUREG 0654 FEMA-REP-1, Rev. 1 criterion J. Protective Response suggests that emergency planning should ensure that:

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 . . .

As previously explained, the State has developed both evacuation and sheltering options for protecting the public. Either of these options may be coupled with access control. The NHRERP states that either of these protective actions ". . . will be implemented on a municipality-by-municipality basis." (NHRERP Vol 1.p. 2.6-11) Furthermore, the range of protective actions available to the State is expanded by three special considerations. One is specific consideration given to special facilities:

For institutionalized populations (including those in hospitals, nursing homes and jails), a more detailed evaluation of protective action recommendations is undertaken based upon facility-specific sheltering protection factors. Sheltering in place will normally be the preferred

protective action for institutional facilities, the nature of which require that the implementation of protective actions, particularly evacuation, be considered very carefully with respect to associated risks and derived benefits. The actual dose criteria (PAGs) utilized in choosing between sheltering and evacuation will be the same for the general population and institutionalized individuals. (NHRERP Vol. 1, p. 2.6-7)

A second special consideration is the potential precautionary action of closing or early evacuation of beaches before protective actions are necessary. A third special consideration is the State's ability to undertake additional protective responses, including using public shelters for the transient population without transportation. Together, these various options provide New Hampshire with a broad range of protective actions from which to choose.

The State also believes that its basis for selecting protective actions is sound. The basis is described in NHRERP Rev. 2 Vol. 1 Section 2.6.7 Criteria for Selecting Protective Actions for Direct Exposure within the Plume Exposure EPZ (p. 2.6-24). Since FEMA has found these criteria to fall short of being clear, however, the State has attempted some draft clarifications to key elements of the protective action decision criteria. The draft revisions are attached. (See: Attachment 2). Should FEMA find these draft improvements remove its doubts about the process for selecting protective actions, the State is prepared to adopt them as plan changes.

In using the procedure as modified, decision makers are directed to Figure 1A of the procedure to consider factors related to the actual or potential radiological release. These variables are derived from the guidance of EPA 520/1-78-001B. Considered specifically are: the time to release, time of plume arrival at a specified location, time of exposure at the reference location, projected dose, EPA PAGs, evacuation times, and shelter dose

reduction factors. At the General Emergency classification, the evaluation is first performed for the area of most immediate concern, that is within about two (2) miles of the plant. After the radiological consequences are evaluated, a recommendation will be reached.

It is at this point that the local conditions that may affect the recommendation are considered. These conditions are described in Attachment C to Appendix F, Vol. 4, NHRERP, and includes local meteorological conditions, conditions of the local road network, and any natural or manmade impediments to evacuation.

Once the evaluation process is completed, a recommendation to the public will be made by decision makers. It must be noted that the procedures will caution decision makers that if precautionary closure or evacuation of the beaches has been recommended, then such measures must continue to be the recommended protective action.

ATTACHMENT I

APPENDIX F

PROTECTIVE ACTION DECISION CRITERIA

STATE OF NEW HAMPSHIRE

PROTECTIVE ACTION DECISION CRITERIA

I. Purpose

This appendix establishes criteria and guidance to facilitate protective action decisions for the general population within the Plume Exposure Pathway Emergency Planning Zone for the Seabrook Station. Criteria and guidance for protective action decisions are also provided for certain special populations and for summer populations.

II. Responsibility

- A. Accident assessment personnel of the Division of Public Health Services are responsible for implementing parts III.A. and III.B. of this appendix.
- B. Decision making personnel of the Governor's office, The New Hampshire Civil Defense Agency, and the Division of Public Health Services are responsible for implementing decision guidance contained in Part IV of this appendix.

III. Protective Action Decisions for General Population

- A. Use of Protective Action Recommendation Worksheet for General Population
  - 1. Obtain a copy of Figure 1A, Protective Action Recommendation Worksheet for General Population.
  - 2. Using information from the nuclear facility operator, IFO personnel will complete a worksheet for each distance of interest.

3. Report the results of the evaluation to the DPHS IFO Coordinator and the NHCOA EOF Liaison.
- B. Additional Considerations for Special Facilities with Significant Shielding Characteristics
1. Obtain a copy of Figure 1B, Special Facility Protective Action Worksheet.
  2. Complete the worksheet.
  3. Report the results of the evaluation to the DPHS IFO Coordinator and the NHCOA EOF Liaison.

CAUTION

SPECIAL FACILITY SHELTERING FACTORS LISTED ON FIGURE 5 ARE NOT TO BE CONSIDERED FOR SCHOOL FACILITIES. SCHOOLS WILL FOLLOW THE SAME PROTECTIVE ACTIONS PRESCRIBED FOR THE GENERAL POPULATION.

- C. Plant System Considerations for early protective action decision making in the event of a fast moving incident are contained in Attachment A.
- D. Potential offsite constraints to be considered in determining action time for implementation of protective actions are contained in Attachment C.

IV. Protective Action Decision Making for Seasonal Beach Populations

- A. General Considerations
1. Precautionary actions affecting seasonal beach populations may be warranted at an early stage of an emergency before protective actions for the general population are warranted.
  2. Radiological assessment data may not be available or useful when considering early precautionary action decisions for seasonal beach populations.

3. Prognosis of deteriorating plant conditions may compel implementation of precautionary actions, without consideration of PAG ranges, when seasonal beach populations are potentially affected. Pertinent plant system considerations are indicated in Attachment A.
4. Precautionary actions for seasonal beach populations would include:
  - a. Closing beaches and other recreational facilities that attract seasonal populations and which are in close proximity to the plant, i.e. within an approximate 2 mile radius.
  - b. Implementation of access and traffic control at roadway points leading to these affected areas to monitor traffic and to advise people of actions taken.
  - c. Issuance of public announcements of actions taken through normal media channels.
  - d. Continued monitoring of traffic flow and local conditions in affected areas.

CAUTION

PRECAUTIONARY ACTIONS SHOULD BE CONSIDERED FOR THE PERIOD MAY 15 THROUGH SEPTEMBER 15.

- B. Precautionary and Protective Actions by Emergency Classification Level
  1. Alert
    - a. Initiating Conditions

- (1) Wind direction is toward the beach (from 200° to 300°).
- (2) Plant conditions as determined by plant personnel indicate that a major plant system is unstable or degrading.

b. Actions

- (1) Advise Department of Resources and Economic Development (DRED) to close beaches and state park areas in Hampton Beach and in Seabrook Beach between Little Boars Head Avenue to the North and Route 286 (NH/MA border) to the South.

Recommend that the Towns of Hampton and Seabrook close any town-supervised beaches in concurrence with the state's decision.

- (2) Advise DRED to implement special patrols to advise beach and state park populations of closing and to assure that beaches and parks are cleared.
- (3) Request Rockingham County Dispatch Center to activate the Public Alert and Notification System along the beaches in Hampton and Seabrook to announce the closings.
- (4) Coordinate with State Police implementation of access control (i.e., to facilitate movement of departing traffic and to control incoming traffic) at the following locations:
  - (a) Intersection of Routes 51 and I-95 (close exit 2)
  - (b) Intersection of Routes 107 and I-95 (close exit 1)

(5) Advise Hampton Police Department to establish traffic control points at:

- (a) Intersection of Routes 51 and U.S. 1
- (b) Ocean Boulevard (Route 1A) and Route 51
- (c) Landing Road and Route 51
- (d) Other traffic control points within Hampton as deemed necessary to facilitate the flow of traffic.
- (e) If required, the NH State Police will establish these traffic control points.

(6) Advise Seabrook Police Department to establish traffic control points at:

- (a) Intersection of Routes 107 and U.S. 1
- (b) Ocean Boulevard (Route 1A and Route 286)
- (c) Washington Road and Route 286
- (d) Other traffic control points within Seabrook as deemed necessary to facilitate the flow of traffic.
- (e) If required, the NH State Police will establish these traffic control points.

NOTE: Seabrook Police Department should request Salisbury, Massachusetts Police Department to establish traffic control at Lafayette Road and Route 286.

(7) Issue the following news release through the Media Center at Newington Town Hall: THERE HAS BEEN AN ALERT DECLARED AT THE SEABROOK STATION. AS A PRECAUTION, THE STATE OF NEW HAMPSHIRE HAS CLOSED BEACH AND STATE PARK AREAS IN HAMPTON BEACH AND IN SEABROOK BEACH. PRECAUTIONARY ACTIONS INCLUDE RESTRICTING ACCESS TO SEABROOK BEACH AND HAMPTON BEACH. THERE IS NO REASON FOR THE PUBLIC TO TAKE ANY FURTHER ACTIONS AT THIS TIME.

2. Site Area Emergency with Stable Plant Conditions

a. Initiating Conditions

- (1) Wind direction is toward the beach (300° to 300°).
- (2) Plant conditions are stable without indication of further degradation.

b. Actions

- (1) Advise Department of Resources and Economic Development (DRED) to close beaches and state park areas in Hampton Beach and in Seabrook Beach between Little Boars Head Avenue to the North and Route 286 to the South.

Recommend that the towns of Hampton and Seabrook close any town-supervised beaches in concurrence with the state's decision.

- (2) Advise DRED to implement special patrols to assure beaches and parks in those areas are cleared.
- (3) Request Rockingham County Dispatch Center to activate the Public Alert and Notification System along the beaches in Hampton and Seabrook to announce the closings.
- (4) Coordinate with State Police implementation of access control and to restrict access on the part of non-residents to Hampton Beach and to Seabrook Beach from the following locations:

- (a) Intersection of Routes 51 and I-95 (close exit 2)
  - (b) Intersection of Routes 107 and I-95 (close exit 1)
- (5) Advise Hampton Police Department to establish traffic control points and to restrict access on the part of non-residents to Hampton Beach at the following locations:
- (a) Intersection of Routes 51 and U.S. 1
  - (b) Ocean Boulevard (Route 1A) and Route 51
  - (c) Landing Road and Route 51
  - (d) Ocean Boulevard at Hampton Harbor Bridge (close bridge to ingressing traffic)
  - (e) Other traffic control points within Hampton as deemed necessary to facilitate flow of traffic.
  - (f) If required, the NH State Police will establish these traffic control points.
- (6) Advise Seabrook Police Department to establish traffic control points and to restrict access on the part of non-residents to Seabrook Beach at the following locations:
- (a) Intersection of Routes 107 and U.S. 1
  - (b) Ocean Boulevard (Route 1A) and Route 285

- (c) Washington Road and Route 286.
- (d) All other traffic control points within Seabrook as deemed necessary to facilitate the flow of traffic. | 2
- (e) If required, the NH State Police will establish these traffic control points.

NOTE: Advise Seabrook Police to request the Salisbury Massachusetts Police Department to restrict access on the part of non-residents to Route 286 from Route 1.

- (7) Prepare the appropriate EBS Message, in accordance with Appendix G, for release.
- (8) Authorize activation of New Hampshire EPZ sirens. | 2
- (9) Provide EBS message to Media Center at Newington Town Hall.

- 3. Site Area Emergency with Degrading Plant Conditions
  - a. Initiating Conditions
    - (1) All meteorological conditions
    - (2) Prognosis of plant status indicates degradation of a major plant system.
  - b. Actions
    - (1) Advise local EOCs and Massachusetts EOC of Governor's declaration of state of emergency.
    - (2) Recommend evacuation of general public of Hampton Beach and Seabrook Beach from Ocean Boulevard and Little Boars Head to the North and Ocean Boulevard and Route 286 to the South. Advise EOCs of Seabrook, Hampton, and Hampton Falls.
    - (3) Advise State Police to establish access control points for 2 mile radius. See Attachment B.

(4) Advise Hampton Police Department to establish traffic control points and to restrict entry to Hampton Beach at the following locations:

- (a) Intersection of Routes 51 and U.S. 1
- (b) Ocean Boulevard (Route 1A) and Route 51
- (c) Route 51 and Landing Road
- (d) Ocean Boulevard at Hampton Harbor Bridge (close bridge to departing and entering traffic, and route traffic North from the bridge).
- (e) Other traffic control points within Hampton as deemed necessary to facilitate flow of traffic.
- (f) If required, the NH State Police will establish these traffic control points.

- (5) Advise Seabrook Police Department to establish traffic control points and to restrict access to Seabrook Beach at the following locations:
  - (a) Intersection of Routes 107 and U.S. 1
  - (b) Ocean Boulevard (Route 1A) and Route 286
  - (c) Washington Road and Route 286
  - (d) Advise Seabrook Police to request Salisbury Massachusetts Police to restrict access to Route 286 from Route 1 and to facilitate flow of traffic West on Route 286 and South on Route 1
  - (e) Other traffic control points within Seabrook as deemed necessary to facilitate the flow of traffic.
  - (f) If required, the NH State Police will establish these traffic control points.
- (6) Advise Department HHS to activate Reception Centers at Manchester and Salem. Advise DPHS to activate Decontamination Centers at Manchester and Salem.
- (7) Prepare the appropriate EBS Message, in accordance with Appendix G, for release.
- (8) Provide EBS message to Media Center at Newington Town Hall.
- (9) Consider extending protective actions to other areas of Seabrook, Hampton, and Hampton Falls based on:
  - (a) Meteorological Conditions
  - (b) Radiological Assessment
  - (c) Local Conditions (Attachment C)
  - (d) Emergency Response Organization Status
  - (e) Plant Status and Prognosis

4. General Emergency
  - a. Initiating conditions
    - (1) All conditions
  - b. Actions
    - (1) Advise local EOCs and Massachusetts EOC of Governor's declaration of state of emergency.
    - (2) Recommend evacuation of general public from all beach areas along Ocean Boulevard within the towns of Hampton and Seabrook from Ocean Boulevard and North Shore Road to the North and Ocean Boulevard and Route 286 to the South.
    - (3) Recommend sheltering for all remaining areas of Hampton, Hampton Falls, and Seabrook.
    - (4) If wind is from the South, South-Southeast, South-Southwest or Southwest, recommend sheltering for North Hampton.
    - (5) If wind is from the East-Northeast, East, East-Southeast, recommend sheltering Kensington and South Hampton.
    - (6) Advise the Department of Resources and Economic Development to close beaches and state park areas in Hampton and Seabrook from North Shore Road and Ocean Boulevard to the North and Route 286 and Ocean Boulevard to the South, and to implement special patrols to assure that beaches and parks are cleared.
    - (7) Advise State Police to establish access control points for affected areas in a 2 mile radius and 5 miles downwind according to Attachment B.

(8) Advise Hampton Police Department to establish traffic control points at the following specific locations:

- (a) Intersection of Routes 107 and U.S. 1
- (b) Ocean Boulevard (Route 1A) and Route 51
- (c) Route 51 and Landing Road
- (d) Ocean Boulevard at Hampton Harbor Bridge (close bridge to departing and entering traffic and traffic North from the bridge)
- (e) Other traffic control points within Hampton Beach as deemed necessary to facilitate flow of traffic
- (f) If required the NH State Police will establish these traffic control points.

(9) Advise Seabrook Police Department to establish traffic control points at the following specific locations:

- (a) Intersection of Routes 107 and U.S. 1
- (b) Ocean Boulevard (Route 1A) and Route 286
- (c) Washington Road and Route 286

- (d) Seabrook Police should request Salisbury Massachusetts Police to restrict access on to Route 286 from Route 1 and to facilitate flow of traffic West on Route 286 and South on Route 1
- (e) Other traffic control points within Seabrook as deemed necessary to facilitate the flow of traffic.
- (f) If required the NH State Police will establish these traffic control points.

2

(10) Advise Department HHS to activate Reception Centers at Salem and Manchester. Advise DPHS to activate Decontamination Centers at activated Reception Centers.

(11) Prepare the appropriate EBS Message, in accordance with Appendix G, for release.

2

(12) Authorize activation of sirens in New Hampshire EPZ.

(13) Provide EBS message to Media Center at Newington Town Hall.

(14) Consider extending protective actions to other areas of the EPZ based on:

- (a) Meteorological Conditions
- (b) Radiological Assessment
- (c) Local Conditions (Attachment C)
- (d) Emergency Response Organization Status
- (e) Plant Conditions

V. FIGURES

- A. FIGURE 1A Protective Action Recommendation Worksheet
- B. FIGURE 1B Special Facility Protective Action Worksheet
- C. FIGURE 2 Protective Action Recommendation By Town
- D. FIGURE 3 Evacuation Clear Times By Wind Direction
- E. FIGURE 4 Protective Action Recommendation Guidance Charts
- F. Figure 4A Special Facility Protective Action Recommendation Guidance Charts
- G. FIGURE 5 Special Facility Sheltering Factors

2

VI. ATTACHMENTS

- ATTACHMENT A Plant System considerations for Early Protective Action Decision Making
- ATTACHMENT B Access Control Points for New Hampshire EPZ
- ATTACHMENT C Emergency Organization Status and Local Conditions

FIGURE 1A  
Protective Action Recommendation Worksheet  
For General Population

1. Time of calculation (use 24 hour clock) \_\_\_\_\_ hours
2. Time of release start \_\_\_\_\_ hours
3. Release duration \_\_\_\_\_ hours
4. a. Wind Speed \_\_\_\_\_ mph
- b. Wind direction from \_\_\_\_\_ degrees
5. Distance to reference location \_\_\_\_\_ miles
6. Affected subareas  
(use Items 4B and 5 and Figure 2) \_\_\_\_\_
7. Plume travel time (Item 5/Item 4a) \_\_\_\_\_
8. Time until exposure (choose a or b)
  - a. If release has begun:
    - (1) Difference (Item 1 - Item 2) \_\_\_\_\_ hours
    - (2) Time [Item 7 - Item 8a(1)] \_\_\_\_\_ hours
  - b. If release will begin later
    - (1) Difference (Item 2 - Item 1) \_\_\_\_\_ hours
    - (2) Time [Item 7 + Item 8b(1)] \_\_\_\_\_ hours
9. Evacuation Conditions
  - a. Season (circle one)
    - (1) Summer: May 15 - Sept 15  
(see Protective Actions for Seasonal Populations)
    - (2) Winter: Sept 15 - May 15
  - b. Weather (circle one)
    - (1) Normal seasonal weather  
(mild, light rain, light snow)
    - (2) Adverse  
(Summer: heavy rain/fog - Winter: heavy snow/ice)
10. Evacuation Time \_\_\_\_\_ hours  
(Use items 6 and 9 and Figure 3, Evacuation Time Estimates to determine evacuation time.)
11. Exposure Time \_\_\_\_\_ hours  
[Item 10 - Item 8a(2) or 8b(2)]

FIGURE 1A (cont'd)

- |   |             |  |
|---|-------------|--|
| 12. Evacuation Exposure Period<br>(smaller of Item 3 or Item 11)  | _____ hours |  |
| 13. Projected Whole Body Dose Rate  | _____ R/hr  |  |
| 14. Monitoring Team Whole Body Dose Rate  | _____ R/hr  |  |
| 15. Most Reliable Whole Body Dose Rate<br>(Item 13 or Item 14)  | _____ R/hr  |  |
| 16. Projected Thyroid Dose Rate   | _____ R/hr  |  |
| 17. Monitoring Team Thyroid Dose Rate<br>(from calculations)  | _____ R/hr  |  |
| 18. Most Reliable Thyroid Dose Rate<br>(Item 16 or Item 17)   | _____ R/hr  |  |
| 19. Whole Body Evacuation Dose<br>(Item 12 x Item 15)   | _____ R     |  |
| 20. Thyroid Evacuation Dose<br>(Item 12 x Item 18)  | _____ R     |  |
| 21. Whole Body Shelter Dose<br>(Item 15 x Item 3 x 0.9)   | _____ R     |  |
| 22. Thyroid Shelter Dose (choose a or b)  |             |  |
| a. For release duration of less than<br>1 hour (Item 18 x Item 3 x 0.5)                                     | _____ R     |  |
| b. For release duration of greater<br>than 1 hour (Item 18 x Item 3 x $\frac{1-0.5}{\text{Item 3}}$ )       | _____ R     |  |
| 23. Whole Body Indicated Action -<br>refer to Figure 4 (indicate no action,<br>shelter, or evacuation)      | _____       |  |
| 24. Thyroid indicated action -<br>refer to Figure 4 (indicate no action,<br>shelter or evacuation)          | _____       |  |
| 25. Recommended Protective Action _____<br>(Record more severe action from Item 23 or Item 24 on Figure 2.) |             |  |

Figure 18

SPECIAL FACILITY PROTECTIVE ACTION WORKSHEET

1. Facility Name \_\_\_\_\_ Town \_\_\_\_\_
2. Release Duration \_\_\_\_\_ hrs  
(Item 3 from Figure 1A)
3. Whole Body Dose Rate \_\_\_\_\_ R/hr  
(Item 15 from Figure 1A)
4. Whole Body Dose \_\_\_\_\_ R  
(Item 3 x Item 2)
5. Thyroid Dose Rate \_\_\_\_\_ R/hr  
(Item 18 from Figure 1A)
6. Thyroid Dose \_\_\_\_\_ R  
(Item 5 x Item 2)
7. Whole Body Shelter Factor \_\_\_\_\_  
(Obtain from Figure 5)
8. Thyroid Shelter Factor \_\_\_\_\_  
(Obtain from Figure 5)
9. Whole Body Shelter Dose \_\_\_\_\_ R  
(Item 4 x Item 7)
10. Thyroid Shelter Dose \_\_\_\_\_ R  
(Item 6 x Item 8)
11. Whole Body Indicated Action \_\_\_\_\_  
(Refer to Figure 4A)
12. Thyroid Indicated Action \_\_\_\_\_  
(Refer to Figure 4A)
13. Recommended Protective Actions \_\_\_\_\_  
(List actions from both Items 11 and 12) \_\_\_\_\_  
Time of Calculation \_\_\_\_\_

FIGURE 2

Protective Action Recommendations by Town

<u>DISTANCE</u>	<u>WIND DIRECTION</u> (FROM)	<u>TOWNS</u>	<u>SHELTER</u>	<u>EVACUATE</u>
0-2 miles	All	SEABROOK, NH		
		HAMPTON, NH	( )	( )
		HAMPTON FALLS, NH		
2-5 miles	ENE, E, ESE, SE	KENSINGTON, NH SOUTH HAMPTON, NH	( )	( )
	SSE, S, SSW, SW	NORTH HAMPTON, NH	( )	( )
5-10 miles	ENE, E, ESE	BRENTWOOD, NH	( )	( )
	SE, SSE	EAST KINGSTON, NH EXETER, NH KINGSTON, NH NEWFIELDS, NH NEWTON, NH STRATHAM, NH		
	SSE, S, SSW	GREENLAND, NH NEW CASTLE, NH PORTSMOUTH, NH RYE, NH	( )	( )

FIGURE 3

Total Evacuation Clear Times (Including Notification) By Wind Direction

Normal Weather (1) (2)

WIND FROM (DEGREES)	0-2 Miles			0-2 Miles Plus 2-5 Miles Downwind			0-5 Miles Plus 5-EPZ Boundary Downwind		
	SUB-AREAS	TIME (HOURS)		SUB-AREAS	TIME (HOURS)		SUB-AREAS	TIME (HOURS)	
		WINTER (1)	SUMMER (2)		WINTER (1)	SUMMER (2)		WINTER (1)	SUMMER (2)
NNW, N NNE, NE	326 to 56			A, B	2.92	5.75	A, B, C D, E	3.25	6.08
ENE, E	56 to 101			A, B, C	2.92	5.75	A, B, C D, E, F	3.25	6.08
ESE	101 to 124			A, C	2.56	5.08	A, B, C D, F	3.25	6.08
SE	124 to 146			A, C, D	2.58	5.25	A, B, C D, F	3.25	6.08
SSE, S	146 to 191			A, C, D	2.58	5.25	A, B, C D, F, G	3.25	6.08
SSW, SW	191 to 236			A, C	2.58	5.25	A, B, C D, G	3.25	6.08
WSW	236 to 258			A, D	2.58	5.25	A, B, C D	3.08	6.08
W, WNW	258 to 303			A	2.58	5.75	A, B, C D	3.08	6.08
NW	303 to 326			A, B	2.92	5.75	A, B, C D	3.08	6.08
Any Direction		A	2.58	5.75					

Notes: (1) For winter adverse weather conditions (heavy snow) add 2.5 hours.

(2) For summer adverse weather conditions (heavy rain and fog) add 2.0 hours.

FIGURE 4

Protective Action Recommendation Guidance ChartsWHOLE BODY GUIDANCE CHART

IF	THEN
Projected dose (Item 16) is less than 1 rem	No action
Shelter dose (Item 21) is less than 5 rem	Shelter
Shelter dose (Item 21) is equal to or greater than 5 rem and evacuation dose (Item 19) is equal to or greater than shelter dose	Shelter
Shelter dose (Item 21) is equal to or greater than 5 rem and evacuation dose (Item 19) is less than shelter dose	Evacuate

THYROID GUIDANCE CHART

Dose (Item 16) is less than 5 rem	No Action
Shelter dose (Item 22) is less than 25 rem	Shelter
Shelter dose (Item 22) is equal to or greater than 25 rem and evacuation dose (Item 20) is equal to or greater than shelter dose)	Shelter
Shelter dose (Item 22) is equal to or greater than 25 rem and evacuation dose (Item 20) is less than shelter dose)	Evacuate

Shelter is to be with ventilation control. Ventilation control means turning off air conditioners or fans which draw upon outdoor air, closing doors and windows, thus preventing access of outdoor air. Proceed to a basement if available.

## FIGURE 4A

SPECIAL FACILITY  
PROTECTIVE ACTION RECOMMENDATION GUIDANCE CHART

WHOLE BODY GUIDANCE CHART

IF	THEN
Shelter dose (Item 9, Figure 1B) is less than 5 rem	Shelter
Shelter dose (Item 9, Figure 1B) is equal to or greater than 5 rem and evacuation dose (Item 19, Figure 1A) is equal to or greater than shelter dose	Shelter
Shelter dose (Item 9, Figure 1B) is equal to or greater than 5 rem and evacuation dose (Item 19, Figure 1A) is less than shelter dose	Evacuate

THYROID GUIDANCE CHART

IF	THEN
Shelter dose (Item 10, Figure 1B) is less than 25 rem	Shelter
Shelter dose (Item 10, Figure 1B) is greater than 25 rem and evacuation dose (Item 20, Figure 1A) is equal to or greater than shelter dose	Shelter
Shelter dose (Item 10, Figure 1B) is greater than 25 rem and evacuation dose (Item 20, Figure 1A) is less than shelter dose	Evacuate or consider KI issuance

Shelter is to be with ventilation control. Ventilation control means turning off air conditioners or fans which draw upon outdoor air, closing doors and windows, thus preventing access of outside air. Proceed to a basement if available.

2

FIGURE 5  
SPECIAL FACILITY SHELTERING FACTORS

Facility	Distance from Seabrook Station (miles)	External (whole body) Sheltering Factor(1)	Inhalation (thyroid) Sheltering Factor(2)	Outside Projected Whole body Dose to Warrant Evac.	Outside Projected Thyroid Dose to Warrant Evac. or KI Distrib.
		t ≤ 1 hr	t ≥ 1 hr	t ≤ 1 hr	t ≥ 1 hr
<u>Hampton</u>					
Seacoast Health Center	3-4	0.75	0.65	6.7 rem	50 rem
<u>Brentwood</u>					
Rockingham County Nursing Home					
o Blaisdell Bldg.	12-13	0.35	0.65	14.3 rem	50 rem
o Farnold Bldg.	12-13	0.35	0.65	14.3 rem	50 rem
o Mitchell Bldg.	12-13	0.6	0.65	8.33 rem	50 rem
o Underhill Bldg.	12-13	0.6	0.65	8.33 rem	50 rem
Rockingham County Jail	12-13	0.25	0.65	20 rem	50 rem
<u>Exeter</u>					
Exeter Hospital	6-7	0.2	0.65*	10 rem	50 rem
Exeter Health Care	6-7	0.8	0.65	6.25 rem	50 rem
Eventide of Exeter (Original Bldg.)*	6-7	0.8	0.65	6.25 rem	50 rem
Eventide of Exeter (Brick Bldg.)	6-7	0.4	0.65	12.5 rem	50 rem
Goodwires of Exeter	6-7	0.75	0.65	6.7 rem	50 rem
<u>Portsmouth</u>					
Portsmouth Regional Hospital	11-12	0.25	0.65*	20 rem	50 rem
Edgewood Centre					
o East and West Wing	11-12	0.8	0.65	6.25 rem	50 rem
o South Wing	11-12	0.5	0.65	10 rem	50 rem
Clipper Home (Wings)	11-12	0.75	0.65	6.7 rem	50 rem
Clipper Home (Center Bldg.)	11-12	0.5	0.65	10 rem	50 rem
Wentworth Home	11-12	0.4	0.65*	12.5 rem	50 rem
Ferrill Avenue Home	11-12	0.5	0.65	10 rem	50 rem
<u>Rye</u>					
Webster at Rye	7-8	0.8	0.65	6.25 rem	50 rem

(1) Developed from guidance provided in "Structure Shielding from Cloud and Fallout Gamma Ray Sources for Assessing the Consequences of Reactor Accidents," EG & G Inc., Las Vegas

(2) Taken from "Public Protection Strategies in the Event of a Nuclear Reactor Accident... Multicompartmental Ventilation Model for Shelters," SAND-77-157

(\*) These facilities are capable of 100% air recirculation. With cracks around doors and windows sealed, actual inhalation sheltering protection could be substantially greater than 35%.

## ATTACHMENT A

PLANT SYSTEM CONSIDERATIONS  
FOR EARLY PROTECTIVE ACTION DECISION MAKING

When considering early protective actions, particularly for seasonal populations, primary concerns are plant conditions and prognosis rather than projected or measured radiological consequences. Particular attention on the part of the decision makers should, therefore, be directed to the following pertinent plant systems and conditions.

- a. Reactor Coolant System
  - 1. What is reactor vessel level? Is reactor cooling adequate?
  - 2. What is reactor core exit cooling temperature. Is reactor cooling effective?
  - 3. What is reactor coolant pressure? Are pressures increasing or decreasing beyond normal operational pressures?
  - 4. Confirm whether reactor has been shut down.
- B. Turbine Generator System
  - 1. What are Steam Line Monitor readings?
  - 2. Do readings indicate primary system to secondary system leakage with radioactivity?
- C. Electric Power Systems
  - 1. Are emergency buses - buses E-5 and E-6 - powered?
  - 2. Are the buses powered by off-site power source or by on-site diesel generator source?
- D. Radiation Data Management System
  - 1. What are readings on Wide Range Gas Monitors on the Primary Vent Stack that would indicate release rates from containment?

## ATTACHMENT A (cont'd)

2. What are readings on Main Steamline Monitors that would indicate significant levels of activity in the secondary system?
  3. What are In-Containment Post-LOCA Monitor readings that would indicate increase of activity inside the containment structure?
- E. Engineered Safety Features
1. Status of containment integrity? Is containment isolated?
  2. Activation of Emergency Core Cooling System? Is there safety injection?
  3. Status of containment air pressure? Is pressure inside containment increasing, decreasing, or steady?
  4. If pressure inside containment is a concern, what is status of Containment Spray System? Is it available?
- F. Meteorological Measurements System
1. Wind Speed?
  2. Wind Direction?
  3. Precipitation?
  4. Atmospheric Stability Class? Affect that stability class would have on plume dispersion?

## NOTE ON ATMOSPHERIC STABILITY CLASS:

The meteorological measurement system will provide atmospheric data leading to classification of atmospheric conditions ranging from relative turbulence to relative stability. Atmospheric Stability Classes are:

- A - extremely unstable
- B - moderately unstable
- C - slightly unstable
- D - neutral
- E - slightly stable
- F - moderately stable
- G - very stable

ATTACHMENT B

ACCESS CONTROL POINTS FOR NEW HAMPSHIRE EPZ

Reference traffic management manual for traffic and access control points.

NOTE

The Traffic Management Manual allocates responsibility for Implementation of Traffic and Access Control Points.

ATTACHMENT C

EMERGENCY ORGANIZATION STATUS AND LOCAL CONDITIONS

A. Response Status of the State and Town Emergency Organizations

1. The protective action decision must take into consideration the status of state and town emergency personnel and resources and the timing of the protective action announcements to the public.
2. Of particular importance to precautionary actions for the beach areas is the status of the State Police and local police to implement traffic and access controls.
3. Status considerations include:
  - a. Availability of personnel
  - b. Time required for mobilization
  - c. Degree to which mobilization has progressed
  - d. Time required for implementation of emergency actions

B. Local Conditions

1. Local conditions within an affected area may constrain protective action decisions and their implementation.
2. Local conditions should be reported to decision makers by local ECC personnel through the IFC at Newington.
3. Pertinent local conditions include:
  - a. Conditions of road and evacuation routes considering:
    - (1) Seasonal travel impediments
    - (2) Status of road repairs
    - (3) Surface conditions due to weather

ATTACHMENT C (cont'd)

- (4) Natural or man-made impediments
- (5) Affect of traffic signals on traffic flow in direction of evacuation.
- b. Population density and distribution
- c. Evacuation route capabilities
- d. Inclement weather conditions that would affect travel (snow, fog, heavy rains, etc.)
- e. Local events which may present requirements for special notification, traffic control, transportation assistance
- f. Status of schools and other special facilities.

ATTACHMENT II

Proposed Modification of Protective Action Decision

Criteria Procedure Volume 4, Appendix F

Volume 4A, Appendix U

Upon adoption of the proposed modification Attachment I would be inserted into Appendix F and Appendix U, Vol. 4A and replace pages F11-F16 and pages U11-U16 respectively.

## ATTACHMENT II

(1 of 6)

(Modification of Protective Action Decision Criteria Procedure  
Volume 4, Appendix F; Volume 4A, Appendix U)

## 4. General Emergency

## a. Initiating conditions

- (1) All conditions

## b. Actions

- (1) Advise local EOCs and Massachusetts EOC of Governor's declaration of state of emergency.
- (2) Determine protective actions for Hampton, Hampton Falls and Seabrook using Figure 1A and Attachment C:
  - (a) For seasonal beach populations in Hampton and Seabrook recommend sheltering or evacuation in accordance with the results of Step (2).

CAUTION
---------

If precautionary beach closure or beach evacuation has been recommended at an earlier Emergency Classification Level, evacuation must continue to be the recommended protective action.
---

- (b) For the remainder of Hampton, Hampton Falls and Seabrook, recommend sheltering or evacuation in accordance with the results of Step (2).
- (3) Advise the Department of Resources and Economic Development to close beaches and state park areas in Hampton and Seabrook from North Shore Road and Ocean Boulevard to the North and Route 286 and Ocean Boulevard to the South, and to implement special patrols to assure that beaches and parks are cleared.
- (4) Advise State Police to establish access control points for affected areas in a 2 mile radius and 5 miles downwind according to Attachment B.
- (5) Advise Hampton Police Department to establish traffic control points at the following specific locations:
  - (a) Intersection of Routes 107 and U.S. 1
  - (b) Ocean Boulevard (Route 1A) and Route 51
  - (c) Route 51 and Landing Road

## ATTACHMENT II

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- (d) Ocean Boulevard at Hampton Harbor Bridge (close bridge to departing and entering traffic and traffic North from the bridge)
  - (e) Other traffic control points within Hampton Beach as deemed necessary to facilitate flow of traffic
  - (f) If required the NH State Police will establish these traffic control points.
- (6) Advise Seabrook Police Department to establish traffic control points at the following specific locations:
- (a) Intersection of Routes 107 and U.S. 1
  - (b) Ocean Boulevard (Route 1A) and Route 286
  - (c) Washington Road and Route 286
  - (d) Seabrook Police should request Salisbury Massachusetts Police to restrict access on to Route 286 from Route 1 and to facilitate flow of traffic West on Route 286 and South on Route 1
  - (e) Other traffic control points within Seabrook as deemed necessary to facilitate the flow of traffic.
  - (f) If required the NH State Police will establish these traffic control points.
- (7) Advise Department HHS to activate Reception Centers at Salem and Manchester. Advise DPHS to activate Decontamination Centers at activated Reception Centers.
- (8) Prepare the appropriate EBS Message, in accordance with Appendix G, for release.
- (9) Authorize activation of sirens in New Hampshire EPZ.
- (10) Provide EBS message to Media Center at Newington Town Hall.
- (11) Consider extending protective actions to other areas of the EPZ based on Figure 1A and updated information regarding:
- (a) Meteorological Conditions
  - (b) Radiological Assessment
  - (c) Local Conditions (Attachment C)
  - (d) Emergency Response Organization Status
  - (e) Plant Conditions

ATTACHMENT II

(3 of 6)

V. FIGURES

- A. FIGURE 1A Protective Action Recommendation Worksheet
- B. FIGURE 1B Special Facility Protective Action Worksheet

## ATTACHMENT II

(4 of 6)

FIGURE 1A  
Protective Action Recommendation Worksheet  
For General Population

1. Time of calculation (use 24 hour clock) \_\_\_\_\_ hours
2. Time of release start \_\_\_\_\_ hours
3. Release duration \_\_\_\_\_ hours
4. a. Wind Speed \_\_\_\_\_ mph
- b. Wind direction from \_\_\_\_\_ degrees
5. Distance to reference location \_\_\_\_\_ miles
6. Affected subareas  
(use Items 4B and 5 and Figure 3) \_\_\_\_\_
7. Plume travel time (Item 5/Item 4a)
8. Time until exposure (choose a or b)
  - a. If release has begun:
    - (1) Difference (Item 1 - Item 2) \_\_\_\_\_ hours
    - (2) Time [Item 7 - Item 8a(1)] \_\_\_\_\_ hours
  - b. If release will begin later
    - (1) Difference (Item 2 - Item 1) \_\_\_\_\_ hours
    - (2) Time [Item 7 + Item 8b(1)] \_\_\_\_\_ hours
9. Evacuation Conditions
  - a. Season (circle one)
    - (1) Summer: May 15 - Sept 15
    - (2) Winter: Sept 15 - May 15
  - b. Weather (circle one)
    - (1) Normal seasonal weather  
(mild, light rain, light snow)
    - (2) Adverse  
(Summer: heavy rain/fog - Winter: heavy snow/ice)

## ATTACHMENT II

(5 of 6)

10. Evacuation Time \_\_\_\_\_ hours  
(Use Items 6 and 9 and Figure 3, Evacuation Time Estimates to determine evacuation time.)
11. Exposure Time \_\_\_\_\_ hours  
[Item 10 - Item 8a(2) or 8b(2)]
12. Evacuation Exposure Period \_\_\_\_\_ hours  
(smaller of Item 3 or Item 11)
13. Projected Whole Body Dose Rate \_\_\_\_\_ R/hr
14. Monitoring Team Whole Body Dose Rate \_\_\_\_\_ R/hr
15. Most Reliable Whole Body Dose Rate \_\_\_\_\_ R/hr  
(Item 13 or Item 14)
16. Projected Thyroid Dose Rate \_\_\_\_\_ R/hr
17. Monitoring Team Thyroid Dose Rate \_\_\_\_\_ R/hr  
(from calculations)
18. Most Reliable Thyroid Dose Rate \_\_\_\_\_ R/hr  
(Item 16 or Item 17)
19. Whole Body Evacuation Dose \_\_\_\_\_ R  
(Item 12 x Item 15)
20. Thyroid Evacuation Dose \_\_\_\_\_ R  
(Item 12 x Item 18)
21. Whole Body Shelter Dose \_\_\_\_\_ R  
(Item 15 x Item 3 x 0.9)
22. Thyroid Shelter Dose (choose a or b)
- a. For release duration of less than  
1 hour (Item 18 x Item 3 x 0.5) \_\_\_\_\_ R
- b. For release duration of greater  
than 1 hour (Item 18 x Item 3 x  $\frac{0.5}{1-\text{item 3}}$ ) \_\_\_\_\_ R

## ATTACHMENT II

(6 of 6)

23. Whole Body Indicated Action \_\_\_\_\_ hours

refer to Figure 4 (indicate no action,  
shelter, or evacuation)

24. Thyroid Indicated Action - \_\_\_\_\_ hours

refer to Figure 4 (indicates no action,  
shelter, or evacuation)

25. Recommended Protective Action \_\_\_\_\_

(Record more severe action from Item 23 or Item 24 on Figure 2.)

STATE OF NEW HAMPSHIRE

PROTECTIVE ACTION DECISION CRITERIA

I. Purpose

This appendix establishes criteria and guidance to facilitate protective action decisions for the general population within the Plume Exposure Pathway Emergency Planning Zone for the Seabrook Station. Criteria and guidance for precautionary and protective action decisions are also provided for certain special populations and for summer populations.

| 2

II. Responsibility

A. Accident assessment personnel of the Division of Public Health Services are responsible for implementing parts III.A. and III.B. of this appendix.

B. Decision making personnel of the Governor's office, the New Hampshire Office of Emergency Management, and the Division of Public Health Services are responsible for implementing decision guidance contained in Part IV of this appendix.

| 2

III. Protective Action Decisions for General Population

A. Use of Protective Action Recommendation Worksheet for General Population

1. Obtain a copy of Figure 1A, Protective Action Recommendation Worksheet for General Population.
2. Using information from the nuclear facility operator, IFO personnel will complete a worksheet for each distance of interest.

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3. Report the results of the evaluation to the DPHS IFO Coordinator and the NHOEM EOF Liaison. | 2
- B. Additional Considerations for Special Facilities with Significant Shielding Characteristics
1. Obtain a copy of Figure 1B, Special Facility Protective Action Worksheet.
  2. Complete the worksheet.
  3. Report the results of the evaluation to the DPHS IFO Coordinator and the NHOEM EOF Liaison. | 2

CAUTION

SPECIAL FACILITY SHELTERING FACTORS LISTED ON FIGURE 5 ARE NOT TO BE CONSIDERED FOR SCHOOL FACILITIES. SCHOOLS WILL FOLLOW THE SAME PROTECTIVE ACTIONS PRESCRIBED FOR THE GENERAL POPULATION.

- C. Protective action recommendations will be provided by the utility emergency response organization based on emergency classification level or plant status in accordance with Attachment A. | 2
  - D. Potential offsite constraints to be considered in determining action time for implementation of protective actions are contained in Attachment C.
- IV. Protective Action Decision Making for Seasonal Beach Populations
- A. General Considerations
1. Precautionary actions affecting seasonal beach populations may be warranted at an early stage of an emergency before protective actions for the general population are warranted.
  2. Radiological assessment data may not be available or useful when considering early precautionary action decisions for seasonal beach populations.

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3. Prognosis of deteriorating plant conditions may compel implementation of precautionary actions, without consideration of PAG ranges, when seasonal beach populations are potentially affected. Plant status and prognosis of plant conditions will be provided by utility emergency personnel in accordance with Attachment A. | 2
4. Precautionary actions for seasonal beach populations would include:
  - a. Consider closing beaches and other recreational facilities that attract seasonal populations and which are in close proximity to the plant, i.e., within an approximate 2 mile radius. | 2
  - b. Implementation of access and traffic control at roadway points leading to these affected areas to monitor traffic and to advise people of actions taken.
  - c. Issuance of public announcements of actions taken through EBS and normal media channels. | 2
  - d. Continued monitoring of traffic flow and local conditions in affected areas.

CAUTION

PRECAUTIONARY ACTIONS SHOULD BE CONSIDERED FOR THE PERIOD MAY 15 THROUGH SEPTEMBER 15.

- B. Precautionary and Protective Actions by Emergency Classification Level
  1. Alert
    - a. Initiating Conditions

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Plant conditions as determined by plant personnel indicate that a major plant system is unstable or degrading.

2

b. Actions

- (1) Advise Department of Resources and Economic Development (DRED) to close beaches and state park areas in Hampton Beach and in Seabrook Beach between Great Boars Head to the North and Route 286 (NH/MA border) to the South.

2

Recommend that the Towns of Hampton and Seabrook close any town-supervised beaches in concurrence with the state's decision.

- (2) DRED will advise beach and State Park population of closing.
- (3) Request Rockingham County Dispatch Center to activate the Public Alert and Notification System along the beaches in Hampton and Seabrook to announce the closings.
- (4) Request State Police to implement access control in accordance with the Traffic Management Manual.

2

2

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- (5) Advise the Hampton and Seabrook Police Departments to establish traffic control points identified in the Traffic Management Manual.
- (6) If local police departments are unable to establish traffic control points, notify State Police to establish priority traffic control points.
- (7) Authorize broadcast of pre-recorded "Alert" Message 5, Appendix G, over EBS radio channels. Provide a copy of the text to the Media Center at Newington Town Hall, if activated.

2. Site Area Emergency Without Degrading Plant Conditions

a. Initiating Conditions

Plant conditions are stable without indication of further degradation as determined by plant personnel.

b. Actions

- (1) Advise Department of Resources and Economic Development (DRED) to close beaches and state park areas in Hampton Beach and in Seabrook Beach between Great Boars Head to the North and Route 286 to the South.

Recommend that the towns of Hampton and Seabrook close any town-supervised beaches in concurrence with the state's decision.

- (2) Request Rockingham County Dispatch Center to activate the Public Alert and Notification System along the beaches in Hampton and Seabrook to announce the closings.

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- (3) Request State Police to implement access control in accordance with the Traffic Management Manual and restrict access on the part of non-residents to Hampton Beach and to Seabrook Beach.
- (4) Advise the Hampton and Seabrook Police Departments to establish traffic control points in accordance with the Traffic Management Manual and restrict access on the part of non-residents.
- (5) If local police departments are unable to establish traffic control points, notify State Police to establish priority traffic control points.
- (6) Authorize broadcast of pre-recorded "Site Area Emergency" Message 5, Appendix G, over EBS radio channels.
- (7) New Hampshire EPZ sirens will be activated.
- (8) After releasing EBS message, provide a copy of the text to the Media Center at Newington Town Hall, if activated.

2

3. Site Area Emergency with Degrading Plant Conditions

a. Initiating Conditions

Prognosis of plant status as determined by plant personnel indicates degradation of a major plant system (see Attachment A).

2

b. Actions

- (1) Advise NH local EOCs, Massachusetts EOC and the NHY ORO of the Governor's declaration of state of emergency.

2

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4. General Emergency

a. Initiating conditions

All conditions

NOTE

Protective action recommendations may be provided by the utility emergency response organization based on emergency classification level or plant status in accordance with Attachment A. Verify before proceeding.

b. Actions

(1) Advise NH local EOCs, Massachusetts EOC and NHY ORO of Governor's declaration of state of emergency.

(2) Determine protective actions for Hampton, Hampton Falls and Seabrook using Figure 1A and Attachment C:

(a) For seasonal beach populations in Hampton and Seabrook recommend sheltering or evacuation in accordance with the results of Step (1).

CAUTION

If precautionary beach closure or beach evacuation has been recommended at an earlier Emergency Classification Level, evacuation must continue to be the recommended protective action.

(b) For the remainder of Hampton, Hampton Falls and Seabrook, recommend sheltering or evacuation in accordance with the results of Step (2).

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- (3) Advise the Department of Resources and Economic Development to close beaches and state park areas in Hampton and Seabrook from Ocean Boulevard and Great Boar's Head to the North and Route 286 and Ocean Boulevard to the South. | 2
- (4) Advise State Police to establish access control points for affected areas in a 2 mile radius and 5 miles downwind. Refer to the Traffic Management Manual for identification of points in the affected area. | 2
- (5) Advise the Hampton and Seabrook Police Departments to establish traffic control points in accordance with the Traffic Management Manual. | 2
- (6) Advise Department HHS to activate Reception Centers at Salem and Manchester. Advise DPHS to activate Decontamination Centers at activated Reception Centers.
- (7) Prepare the appropriate EBS Message, in accordance with Appendix G, for release. Activate EBS and authorize broadcast. | 2
- (8) New Hampshire sirens will be activated. | 2
- (9) After releasing EBS message, provide a copy to Media Center at Newington Town Hall. | 2
- (10) Consider extending protective actions to other areas of the EPZ based on Figure 1A and update information regarding: | 2
  - (a) Meteorological Conditions
  - (b) Radiological Assessment

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- (c) Local Conditions (Attachment C)
- (d) Emergency Response Organization Status
- (e) Plant Conditions

V. FIGURES

- A. FIGURE 1A Protective Action Recommendation Worksheet
- B. FIGURE 1B Special Facility Protective Action Worksheet
- C. FIGURE 2 Map of Emergency Response Planning Areas (ERPA)
- D. FIGURE 2A Evacuation Scenarios
- E. FIGURE 3 ETE Values
- F. FIGURE 4 Protective Action Recommendation Guidance Charts
- G. Figure 4A Special Facility Protective Action Recommendation Guidance Charts
- H. FIGURE 5 Special Facility Sheltering Factors

VI. ATTACHMENTS

- ATTACHMENT A Plant Status Information and Protective Action Recommendations
- ATTACHMENT B Access Control Points for New Hampshire EPZ
- ATTACHMENT C Emergency Organization Status and Local Conditions

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## FIGURE 1A

Protective Action Recommendation Worksheet  
For General Population

- |    |   |       |         |   |
|----|---|-------|---------|---|
| 1. | Time of calculation (use 24 hour clock)           | _____ | hours   |   |
| 2. | Time of release start                             | _____ | hours   |   |
| 3. | Release duration                                  | _____ | hours   |   |
| 4. | a. Wind Speed                                     | _____ | mph     |   |
|    | b. Wind direction from                            | _____ | degrees |   |
| 5. | Distance to reference location (2, 5 or 10 miles) | _____ | miles   | 2 |
| 6. | Affected ERPA (use Figure 2)                      | _____ |         | 2 |
| 7. | Plume travel time (Item 5/Item 4a)                | _____ |         |   |
| 8. | Time until exposure (choose a or b)               |       |         |   |
|    | a. <u>If release has begun:</u>                   |       |         |   |
|    | (1) Difference (Item 1 - Item 2)                  | _____ | hours   |   |
|    | (2) Time [Item 7 - Item 8a(1)]                    | _____ | hours   |   |
|    | b. <u>If release will begin later</u>             |       |         |   |
|    | (1) Difference (Item 2 - Item 1)                  | _____ | hours   |   |
|    | (2) Time [Item 7 + Item 8b(1)]                    | _____ | hours   |   |
| 9. | Scenario (use Figure 2A)                          | _____ |         |   |

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FIGURE 1A (cont'd)

- |  |             |
|--|-------------|
| 10. Evacuation Time                      | _____ hours |
| (Use items 6 and 9 and Figure 3)         |             |
| 11. Exposure Time                        | _____ hours |
| [Item 10 - Item 8a(2) or 8b(2)]          |             |
| 12. Evacuation Exposure Period           | _____ hours |
| (smaller of Item 3 or Item 11)           |             |
| 13. Projected Whole Body Dose Rate       | _____ R/hr  |
| 14. Monitoring Team Whole Body Dose Rate | _____ R/hr  |
| 15. Most Reliable Whole Body Dose Rate   | _____ R/hr  |
| (Item 13 or Item 14)                     |             |
| 16. Projected Thyroid Dose Rate          | _____ R/hr  |
| 17. Monitoring Team Thyroid Dose Rate    | _____ R/hr  |
| (from calculations)                      |             |
| 18. Most Reliable Thyroid Dose Rate      | _____ R/hr  |
| (Item 16 or Item 17)                     |             |
| 19. Whole Body Evacuation Dose           | _____ R     |
| (Item 12 x Item 15)                      |             |
| 20. Thyroid Evacuation Dose              | _____ R     |
| (Item 12 x Item 18)                      |             |

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FIGURE 1A (cont'd)

- 21. Whole Body Shelter Dose \_\_\_\_\_ R  
(Item 15 x Item 3 x 0.9)
- 22. Thyroid Shelter Dose (choose a or b)
  - a. For release duration of less than  
1 hour (Item 18 x Item 3 x 0.5) \_\_\_\_\_ R
  - b. For release duration of greater  
than 1 hour (Item 18 x Item 3 x  $[1 - \frac{0.5}{\text{Item 3}}]$ ) \_\_\_\_\_ R
- 23. Whole Body Indicated Action - \_\_\_\_\_  
refer to Figure 4 (indicate no action,  
shelter, or evacuation)
- 24. Thyroid indicated action - \_\_\_\_\_  
refer to Figure 4 (indicate no action,  
shelter or evacuation)
- 25. Recommended Protective Action \_\_\_\_\_  
(Record more severe action from item 23 or Item 24 on Figure 2.)

New Hampshire Communities within Emergency Response Planning Areas (ERPA):

ERPA A

Seabrook  
Hampton Falls  
Hampton Beach

ERPA C

Kensington  
South Hampton

ERPA D

Hampton (except for Hampton Beach)  
North Hampton

ERPA F

Brentwood  
East Kingston  
Exeter  
Kingston  
Newfields  
Newton

ERPA C

Greenland  
New Castle  
Portsmouth  
Rye  
Stratham

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FIGURE 2.A  
EVACUATION SCENARIOS 1-10

<u>Scenario</u>	<u>Season</u>	<u>Day</u>	<u>Time</u>	<u>Weather</u>	<u>Comments</u>
1	Summer	Weekend	Mid-day	Good	Beach area population at capacity. Employees are at 70 pct. of mid-week in towns with beach areas, 40 pct. in remaining towns. Tourists fill available seasonal and overnight facilities, with half of them at the beach areas.
2	Summer	Weekend	Mid-day	Rain	As above. Sudden rain occurs with beach population at capacity concurrent with accident at Seabrook Station.
3	Summer	Mid-week	Mid-day	Good	Beach area and tourist population at 75 pct. of capacity. Employees are at 100 pct. of mid-week work force.
4	Summer	Mid-week	Mid-day	Rain	As above. Sudden rain occurs.
5	Off-Season	Mid-week	Mid-day	Good	Tourist population at 50 pct. of yearly capacity (i.e., facilities which remain open the entire year). No beach area transients. Employees at 100 pct.
6	Off-Season	Mid-week	Mid-day	Rain	As above, but for inclement (rain) weather.
7	Off-Season	Mid-week	Mid-day	Snow	Conditions the same as for Scenario 5 except that there is inclement weather (snow). Evacuees must clear driveways.
8	Off-Season	Mid-week Weekend	Evening All day	Good	Tourist population at 50 pct. of yearly capacity. No beach area transients. Employees at 25 pct. of mid-week, mid-day.
9	Off-Season	Mid-week Weekend	Evening All day	Rain	As above, but for inclement (rain) weather.
10	Off-Season	Mid-week Weekend	Evening All day	Snow	As above, but for inclement (snow) weather. Evacuees must clear driveways.

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Attachment 1, Page 14 of 35

FIGURE 3  
ETE VALUES

Wind Direction (From):

NW & NNW & N & NNE

Degrees:

303° - 34°

---

Location Distance:	2 Miles	5 Miles
Reference:		
Configuration:	2-mile radius. 5 Mile Downwind Sector	5-mile radius. 10-Mile Downwind Sector
ERPA:	A, B	A, B, C, D, E
Distance from Seabrook (mi):	<u>2</u>	<u>5</u>
<u>Scenarios</u>		
1	6:00	6:40
2	7:25	8:05
3	5:10	5:15
4	6:40	6:50
5	3:55	4:00
6	5:05	5:10
7	5:50	6:00
8	3:30	3:35
9	3:55	4:00
10	4:35	4:45

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FIGURE 3  
ETE VALUES

Wind Direction (From): E & NE & ENE  
Degrees: 34° - 101°

---

Location Distance:	2 Miles	5 Miles
Reference:		
Configuration:	2-mile radius, 5 Mile Downwind Sector	5-mile radius, 10 Mile Downwind Sector
ERPA:	A, B, C	A-F
Distance from Seabrook (mi):	<u>5</u>	<u>10</u>
<u>Scenarios</u>		
1	6:20	6:40
2	7:45	8:10
3	5:15	5:35
4	6:50	7:05
5	4:00	5:30
6	5:10	6:40
7	6:00	7:25
8	3:35	3:55
9	4:00	4:20
10	4:45	6:00

2

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FIGURE 3  
ETE VALUES

Wind Direction (From): ESE  
Degrees: 101° - 123°

---

Location Distance:	2 Miles	5 Miles
Reference:		
Configuration:	2-mile radius, 5 Mile Downwind Sector	5-mile radius, 10 Mile Downwind Sector
ERPA:	A, C	A, B, C, D, F
Distance from Seabrook (mi):	<u>5</u>	<u>10</u>
<u>Scenario(s)</u>		
1	6:20	6:40
2	7:45	8:10
3	4:40	5:20
4	6:10	7:05
5	4:00	4:05
6	4:25	5:25
7	5:25	6:25
8	3:35	3:55
9	3:35	4:20
10	4:45	6:00

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FIGURE 3  
ETE VALUES

Wind Direction (From): SE & SSE  
Degrees: 123° - 168°

---

Location Distance:	2 Miles	5 Miles
Reference:		
Configuration:	2-mile radius, 5 Mile Downwind Sector	5-mile radius, 10 Mile Downwind Sector
ERPA:	A, C, D	A, B, C, D, F, G
Distance from Seabrook (mi):	<u>5</u>	<u>10</u>

Scenarios

1	6:35	6:50
2	8:05	9:55
3	4:45	5:50
4	6:10	8:05
5	4:00	4:50
6	4:25	5:45
7	5:25	6:55
8	3:35	4:25
9	3:35	5:30
10	4:45	6:25

2

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FIGURE 3  
ETE VALUES

Wind Direction (From): S  
Degrees: 168° - 191.5°

---

Location Distance:	2 Miles	5 Miles
Reference:		
Configuration:	2-mile radius, 5 Mile Downwind Sector	5-mile radius, 10 Mile Downwind Sector
ERPA:	A, D	A, B, C, D, F, G
Distance from Seabrook (mi):	<u>5</u>	<u>10</u>

Scenarios

1	6:35	6:50
2	8:05	9:55
3	4:45	5:50
4	6:10	8:05
5	4:00	4:50
6	4:25	5:45
7	3:25	6:55
8	3:35	4:25
9	3:35	5:30
10	4:45	6:25

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FIGURE 3  
ETE VALUES

Wind Direction (From):	<u>SSW &amp; SW &amp; WSW</u>	
Degrees:	191.5° - 259°	
<hr/>		
Location Distance:	2 Miles	5 Miles
Reference:		
Configuration:	2-mile radius, 5 Mile Downwind Sector	5-mile radius, 10 Mile Downwind Sector
ERPA:	A, D	A, B, C, D, G
Distance from Seabrook (mi):	<u>5</u>	<u>10</u>
<u>Scenarios</u>		
1	6:35	6:50
2	8:05	9:50
3	4:45	5:50
4	6:10	8:05
5	4:00	4:50
6	4:25	5:45
7	5:25	6:55
8	3:35	4:25
9	3:35	5:30
10	4:45	6:25

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FIGURE 3  
ETE VALUES

Wind Direction (From): W  
Degrees: 259° - 281.5°

---

Location Distance:	2 Miles	5 Miles
Reference:		
Configuration:	2-mile radius, 5 Mile Downwind Sector	5-mile radius, 10 Mile Downwind Sector
ERPA:	A, D	A, B, C, D.
Distance from Seabrook (mi):	<u>5</u>	<u>5</u>
<u>Scenarios</u>		
1	6:35	6:35
2	8:05	8:05
3	4:45	5:15
4	6:10	6:50
5	4:00	4:00
6	4:25	5:10
7	5:25	6:00
8	3:35	3:35
9	3:35	4:00
10	4:45	4:45

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FIGURE 3  
ETE VALUES

Wind Direction (From):

WNW

Degrees:

281.5° - 303°

---

Location Distance:	2 Miles	5 Miles
Reference:		
Configuration:	2-mile radius, 5 Mile Downwind Sector	5-mile radius, 10 Mile Downwind Sector
ERPA:	A	A, B, C, D,
Distance from Seabrook (mi):	<u>2</u>	<u>5</u>
<u>Scenarios</u>		
1	6:00	6:35
2	7:25	8:05
3	4:30	5:15
4	5:50	6:50
5	3:55	4:00
6	4:20	5:10
7	5:10	6:00
8	3:30	3:35
9	3:30	4:00
10	4:35	4:45

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FIGURE 3  
ETE VALUES

Wind Direction (From):	<u>ALL POINTS</u>	
Degrees:	All (0°-360°)	
<hr/>		
Location Distance:	2 Miles	5 Miles
Reference:		
Configuration:	2-mile radius. No Downwind Sector	5-mile radius. No Downwind Sector
ERPA:	A	A-D
Distance from Seabrook (mi):	<u>2</u>	<u>5</u>
<u>Scenarios</u>		
1	6:00	6:35
2	7:25	8:05
3	4:30	5:15
4	5:50	6:50
5	3:55	4:00
6	4:20	5:10
7	5:10	6:00
8	3:30	3:35
9	3:30	4:00
10	4:35	4:45

2

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FIGURE 3  
ETE VALUES

Wind Direction (From): ALL  
Degrees: All (0°-360°)

Distance Reference Location 10 Miles

Configuration: 10-mile

5 Mile Downwind Sector

ERPA: A-G (All ERPAs)

Distance from  
Seabrook (mi): 10

Scenarios

1	7:05
2	9:55
3	5:50
4	8:05
5	5:30
6	6:40
7	7:25
8	4:25
9	5:30
10	6:25

2

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FIGURE 4

Protective Action Recommendation Guidance ChartsWHOLE BODY GUIDANCE CHART

IF	THEN
Projected dose (Item 13 x Item 12) is less than 1 rem	No action
Shelter dose (Item 21) is less than 5 rem	Shelter
Shelter dose (Item 21) is equal to or greater than 5 rem and evacuation dose (Item 19) is equal to or greater than shelter dose	Shelter
Shelter dose (Item 21) is equal to or greater than 5 rem and evacuation dose (Item 19) is less than shelter dose	Evacuate

THYROID GUIDANCE CHART

Projected Dose (Item 16 x Item 12) is less than 5 rem	No Action
Shelter dose (Item 22) is less than 25 rem	Shelter
Shelter dose (Item 22) is equal to or greater than 25 rem and evacuation dose (Item 20) is equal to or greater than shelter dose)	Shelter
Shelter dose (Item 22) is equal to or greater than 25 rem and evacuation dose (Item 20) is less than shelter dose)	Evacuate

Shelter is to be with ventilation control. Ventilation control means turning off air conditioners or fans which draw upon outdoor air, closing doors and windows, thus preventing access of outdoor air. Proceed to a basement if available.

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FIGURE 4A

1  
2

SPECIAL FACILITY  
PROTECTIVE ACTION RECOMMENDATION GUIDANCE CHART

WHOLE BODY GUIDANCE CHART

IF	THEN
Shelter dose (Item 9, Figure 1B) is less than 5 rem	Shelter
Shelter dose (Item 9, Figure 1B) is equal to or greater than 5 rem and evacuation dose (Item 19, Figure 1A) is equal to or greater than shelter dose	Shelter
Shelter dose (Item 9, Figure 1B) is equal to or greater than 5 rem and evacuation dose (Item 19, Figure 1A) is less than shelter dose	Evacuate

THYROID GUIDANCE CHART

IF	THEN
Shelter dose (Item 10, Figure 1B) is less than 25 rem	Shelter
Shelter dose (Item 10, Figure 1B) is greater than 25 rem and evacuation dose (Item 20, Figure 1A) is equal to or greater than shelter dose	Shelter
Shelter dose (Item 10, Figure 1B) is greater than 25 rem and evacuation dose (Item 20, Figure 1A) is less than shelter dose	Evacuate or consider KI issuance

Shelter is to be with ventilation control. Ventilation control means turning off air conditioners or fans which draw upon outdoor air, closing doors and windows, thus preventing access of outside air. Proceed to a basement if available.

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FIGURE 5  
SPECIAL FACILITY SHELTERING FACTORS

Facility	Distance from Seabrook Station (miles)	External (whole body) Sheltering Factor(1)	Inhalation (thyroid) Sheltering Factor(2)		Outside Projected Whole Body Dose to Warrant Evac.	Outside Projected Thyroid Dose to Warrant Evac. or KI Distrib.	
			t < 1 hr	t > 1 hr		t < 1 hr	t > 1 hr
<u>Hampton</u>							
Seacoast Health Center	3-4	0.75	0.5	0.65	6.7 rem	50 rem	35 rem
<u>Brentwood</u>							
Rockingham County Nursing Home							
o Blaisdell Bldg.	12-13	0.35	0.5	0.65	14.3 rem	50 rem	35 rem
o Fernand Bldg.	12-13	0.35	0.5	0.65	14.3 rem	50 rem	35 rem
o Mitchell Bldg.	12-13	0.6	0.5	0.65	8.33 rem	50 rem	35 rem
o Underhill Bldg.	12-13	0.6	0.5	0.65	8.33 rem	50 rem	35 rem
Rockingham County Jail	12-13	0.25	0.5	0.65	20 rem	50 rem	35 rem
<u>Exeter</u>							
Exeter Hospital	6-7	0.2	0.5	0.65*	10 rem	50 rem	35 rem
Exeter Health Care	6-7	0.8	0.5	0.65	6.25 rem	50 rem	35 rem
Eventide of Exeter (Original Bldg.)*	6-7	0.8	0.5	0.65	6.25 rem	50 rem	35 rem
Eventide of Exeter (Brick Bldg.)	6-7	0.4	0.5	0.65	12.5 rem	50 rem	35 rem
Goodwins of Exeter	6-7	0.75	0.5	0.65	6.7 rem	50 rem	35 rem
<u>Portsmouth</u>							
Portsmouth Regional Hospital	11-12	0.25	0.5	0.65*	20 rem	50 rem	35 rem
Edgewood Centre							
o East and West Wing	11-12	0.8	0.5	0.65	6.25 rem	50 rem	35 rem
o South Wing	11-12	0.5	0.5	0.65	10 rem	50 rem	35 rem
Clipper Home (Wings)	11-12	0.75	0.5	0.65	6.7 rem	50 rem	35 rem
Clipper Home (Center Bldg.)	11-12	0.5	0.5	0.65	10 rem	50 rem	35 rem
Wentworth Home	11-12	0.4	0.5	0.65*	12.5 rem	50 rem	35 rem
Parrott Avenue Home	11-12	0.5	0.5	0.65	10 rem	50 rem	35 rem
<u>Rye</u>							
Webster at Rye	7-8	0.8	0.5	0.65	6.25 rem	50 rem	35 rem

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- (1) Developed from guidance provided in "Structure Shielding from Cloud and Fallout Gamma Ray Sources for Assessing the Consequences of Reactor Accidents." EG & G Inc. Las Vegas
- (2) Taken from "Public Protection Strategies in the Event of a Nuclear Reactor Accident...Multicompartamental Ventilation Model for Shelters." SAND-77-1555
- (\*) These facilities are capable of 100% air recirculation. With cracks around doors and windows sealed, actual inhalation sheltering protection could be substantially greater than 35%.

ATTACHMENT A

PLANT STATUS INFORMATION AND PROTECTIVE  
ACTION RECOMMENDATIONS

Figures (from NHY Emergency Response Procedures)

1. ER 2.0C - Follow-Up Information Form
2. ER 5.4 (Figure 2) - Plume Exposure Protective Action Flow Chart for Site Area Emergency
3. ER 5.4 (Figure 3) - Plume Exposure Protective Action Flow Chart for General Emergency

2

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FOLLOW-UP INFORMATION FORM (Cont'd)

- 14. Time release started: \_\_\_\_\_
- 15. Release Terminated: [ ] YES [ ] NO [ ] N/A
- 16. Time release terminated \_\_\_\_\_
- 17. Estimated total release duration \_\_\_\_\_ hours

Offsite Exposure Data

- 18. Whole body dose rate (mR/hr)
- 19. Thyroid dose rate (mR/hr)
- 20. Whole body dose (mrem) (Step #17 x #18)
- 21. Thyroid dose (mrem) (Step #17 x #19)

Site Boundary	2Mi	5Mi	10Mi

- 22. Surface Spill Information: Volume: \_\_\_\_\_ liters  
 Concentration: \_\_\_\_\_ uCi/ml  
 Location: \_\_\_\_\_
- 23. Surface Contamination. a. Onsite: \_\_\_\_\_ dpm/100cm<sup>2</sup>  
 Location: \_\_\_\_\_  
 b. Offsite: \_\_\_\_\_ dpm/100cm<sup>2</sup>  
 Location: \_\_\_\_\_

24. Prognosis for Worsening or Termination:  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

25. Authorized by: \_\_\_\_\_ STED/SED/RM \_\_\_\_\_ Date/Time

26. Contact:

New Hampshire	_____	_____	_____	_____
	Name	Organization	Time	Phone No.
Massachusetts	_____	_____	_____	_____
	Name	Organization	Time	Phone No.
NHY ORO	_____	_____	_____	_____
	Name	Organization	Time	Phone No.

FIGURE 2

PLUME EXPOSURE PROTECTIVE ACTION FLOW CHART  
FOR SITE AREA EMERGENCY

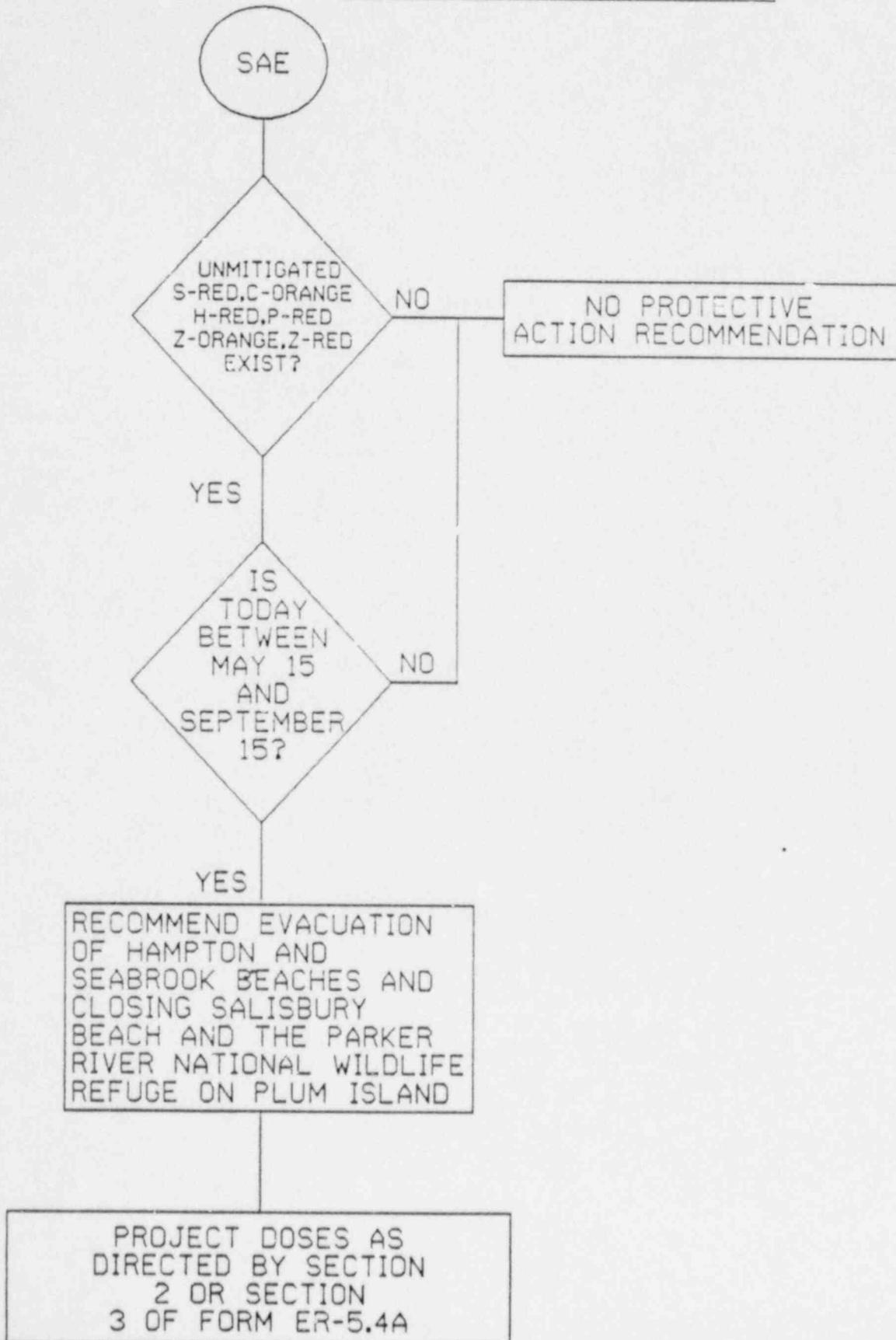
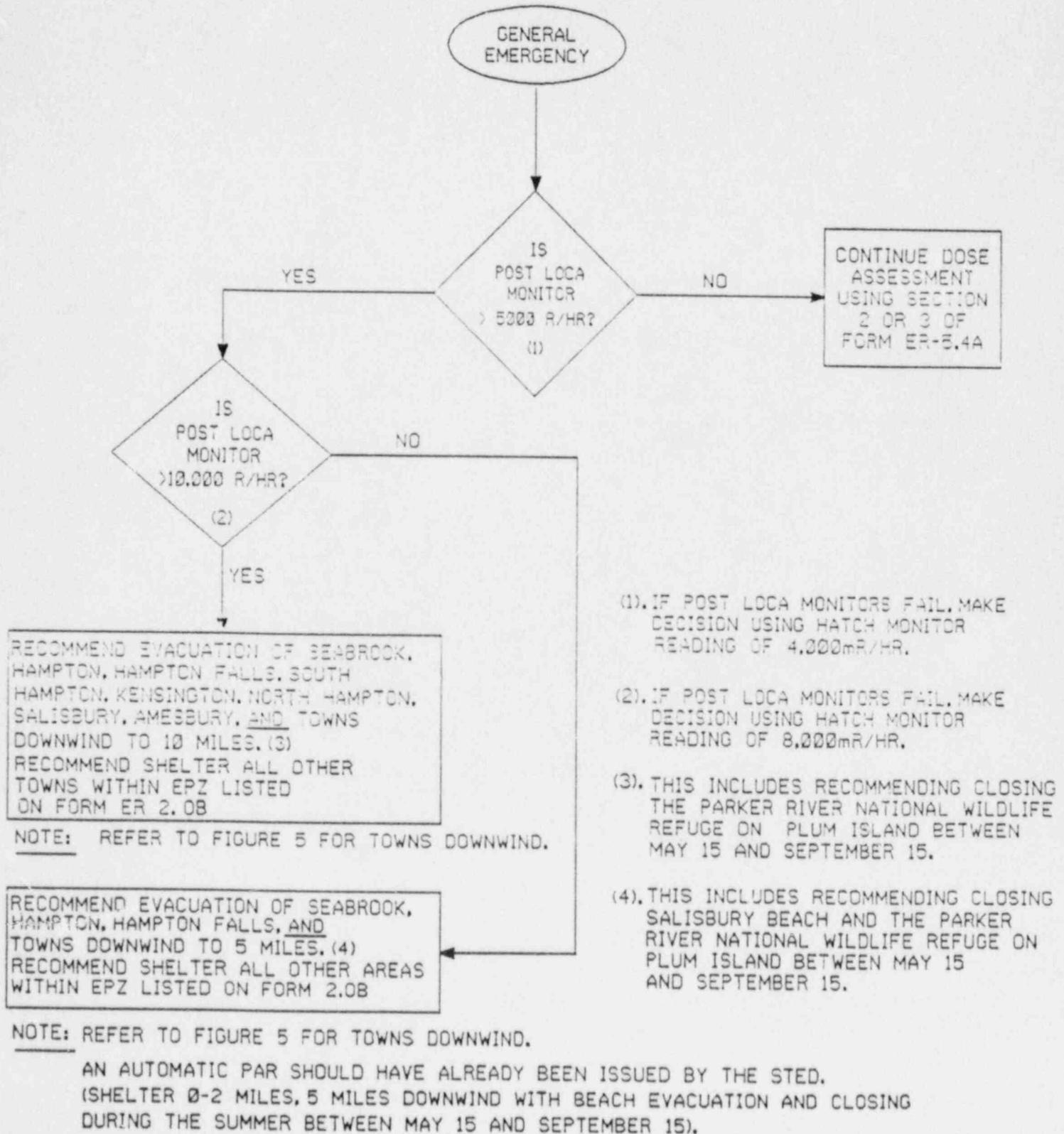


FIGURE 3  
PLUME EXPOSURE PROTECTIVE ACTION FLOW CHART  
FOR GENERAL EMERGENCY



ATTACHMENT B

ACCESS CONTROL POINTS FOR NEW HAMPSHIRE EPZ

Reference traffic management manual for traffic and access control points.

NOTE

The Traffic Management Manual allocates responsibility for Implementation of Traffic and Access Control Points.

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ATTACHMENT C

EMERGENCY ORGANIZATION STATUS AND LOCAL CONDITIONS

A. Response Status of the State and Town Emergency Organizations

1. The protective action decision must take into consideration the status of state and town emergency personnel and resources and the timing of the protective action announcements to the public.
2. Of particular importance to precautionary actions for the beach areas is the status of the State Police and local police to implement traffic and access controls.
3. Status considerations include:
  - a. Availability of personnel
  - b. Time required for mobilization
  - c. Degree to which mobilization has progressed
  - d. Time required for implementation of emergency actions

B. Local Conditions

1. Local conditions within an affected area may constrain protective action decisions and their implementation.
2. Local conditions should be reported to decision makers by local EOC personnel through the IFO at Newington.
3. Pertinent local conditions include:
  - a. Conditions of road and evacuation routes considering:
    - (1) Seasonal travel impediments
    - (2) Status of road repairs
    - (3) Surface conditions due to weather

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ATTACHMENT C (cont'd)

- (4) Natural or man-made impediments
- (5) Effect of traffic signals on traffic flow in direction of evacuation.
- b. Population density and distribution
- c. Evacuation route capabilities
- d. Inclement weather conditions that would affect travel (snow, fog, heavy rains, etc.)
- e. Local events which may present requirements for special notification, traffic control, transportation assistance
- f. Status of schools and other special facilities.

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Maps for recording Ingestion Pathway data, including locations of key land use, agricultural facilities, water supply location and related information, are kept at the State and local EOCs and at the IFO/EOFs. These maps, which are too large to be included in the plan proper, are suitable for use in identifying areas and facilities where protective actions may be necessary and for recording survey and monitoring data.

2.6.7 Criteria for Selecting Protective Actions for Direct Exposure Within the Plume Exposure EPZ

One purpose of developing a RERP is to reduce the response time in the event of an emergency at a nuclear power station. To facilitate planning, a number of accident scenarios have been developed by NRC. These are the basis for the protective action decision criteria discussed in this section. It should be noted, however, that these criteria are sufficiently flexible to be applied to any type of radiological release from a nuclear power plant. Procedures for application of these criteria are contained in Protective Action Decision Criteria for the State of New Hampshire. See NHRERP Volume 4, NHCDA Procedures, Appendix F.

In addition to the criteria contained in this section, plant status and prognosis are considered for early precautionary actions for seasonal populations. Figure 2.6-6 is a flow diagram of the process by which plant status and prognosis are considered to determine early precautionary actions.

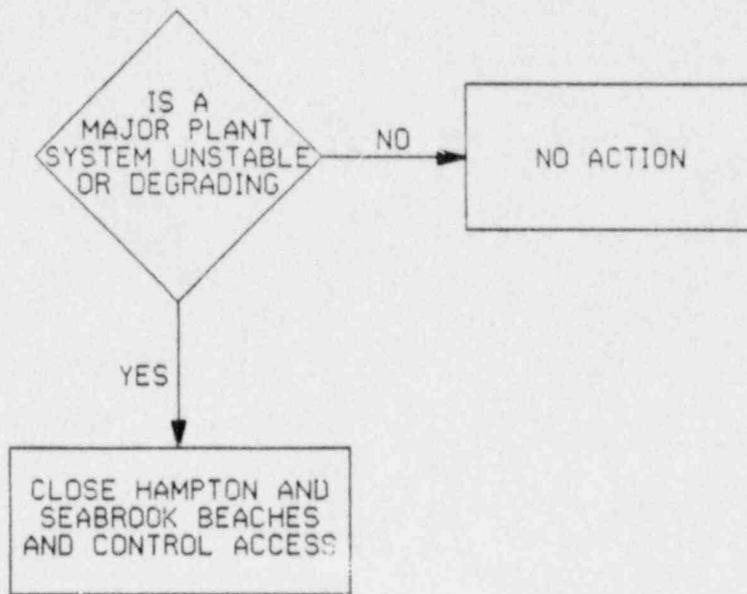
If an ALERT is declared and plant conditions indicate that a major plant system is unstable or degrading, the beaches will be closed in Hampton and Seabrook and access control will be established.

If a SITE AREA EMERGENCY is declared and plant conditions are stable, the beaches will be closed in Hampton and Seabrook and access control will be established. If a SITE AREA EMERGENCY is declared and plant conditions indicate that a major plant system is unstable or degrading, the Hampton and Seabrook beach areas will be evacuated and access control will be established for areas within 2 miles of Seabrook Station.

The discussion below explains the decision process for choosing evacuation or shelter as a protective action during an emergency response. The eight variables involved in choosing between shelter and evacuation are:

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### ALERT



### SITE AREA EMERGENCY

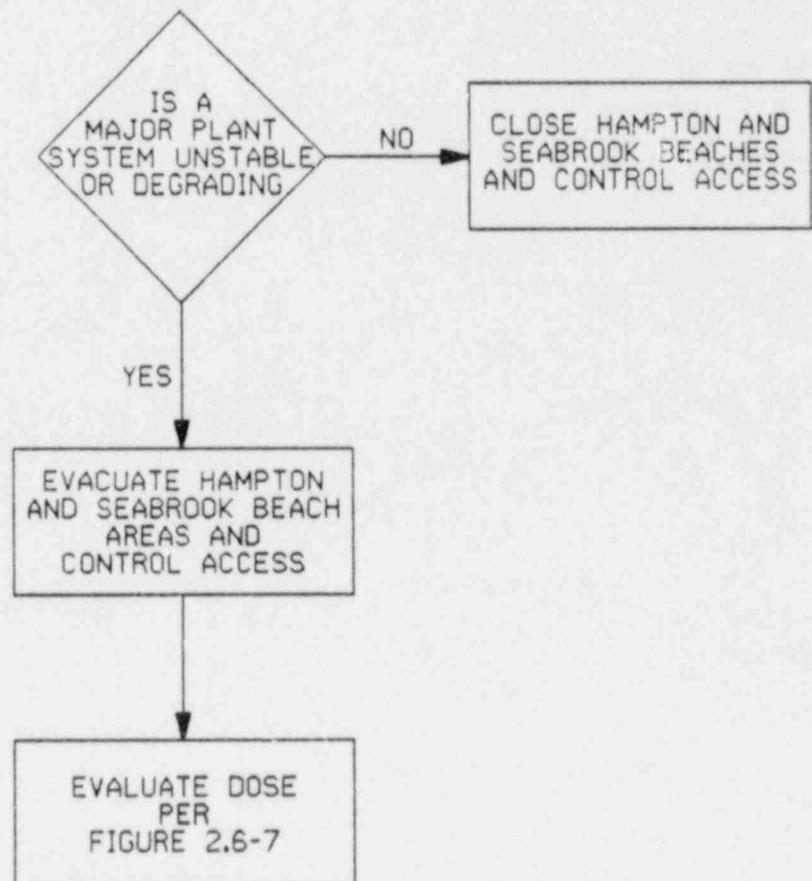


FIGURE 2.6-6  
PRECAUTIONARY DECISION CRITERIA FOR SEASONAL POPULATIONS

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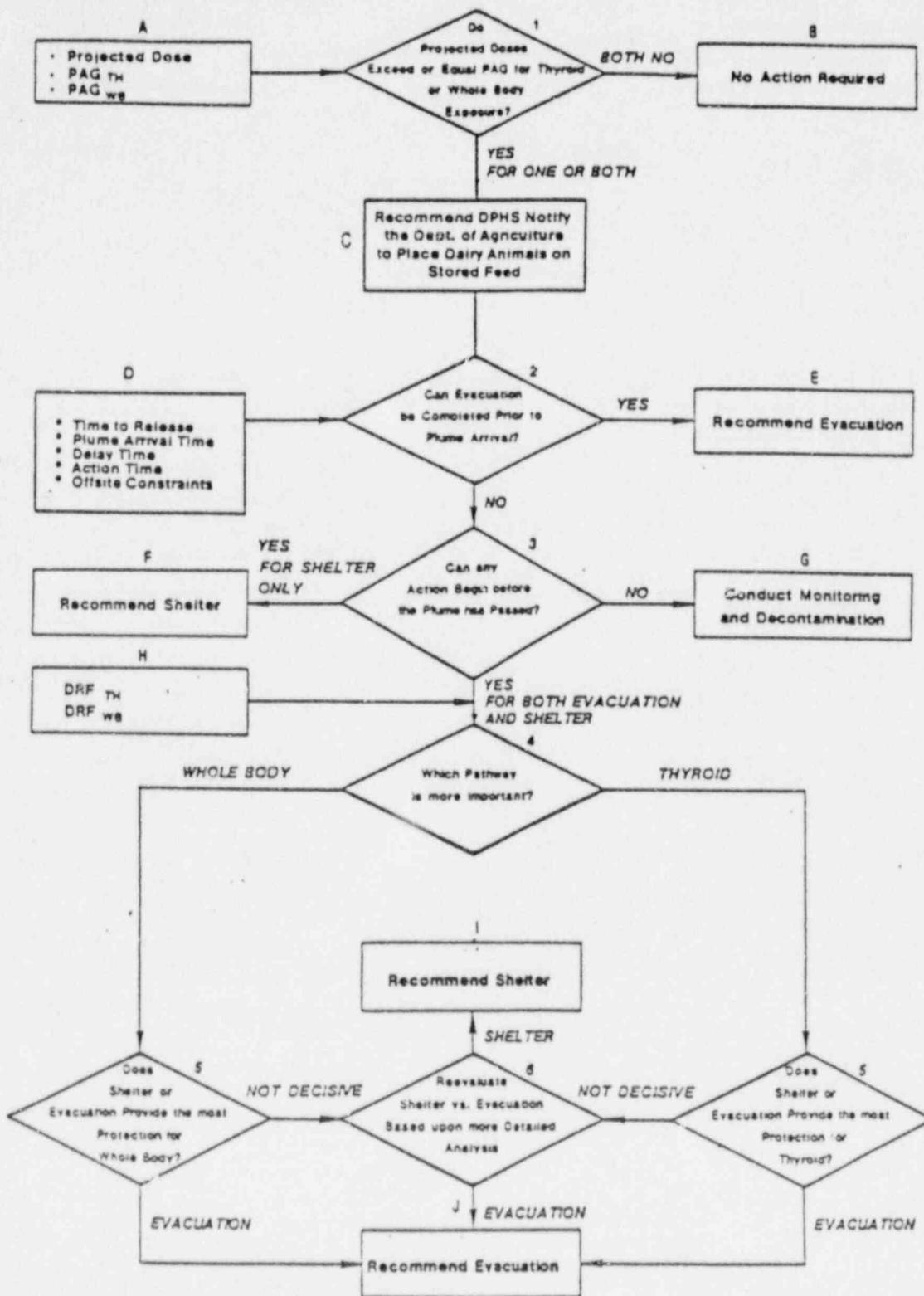


FIGURE 2.6-7 Decision Criteria for Selecting between Evacuation and Sheltering Recommendations

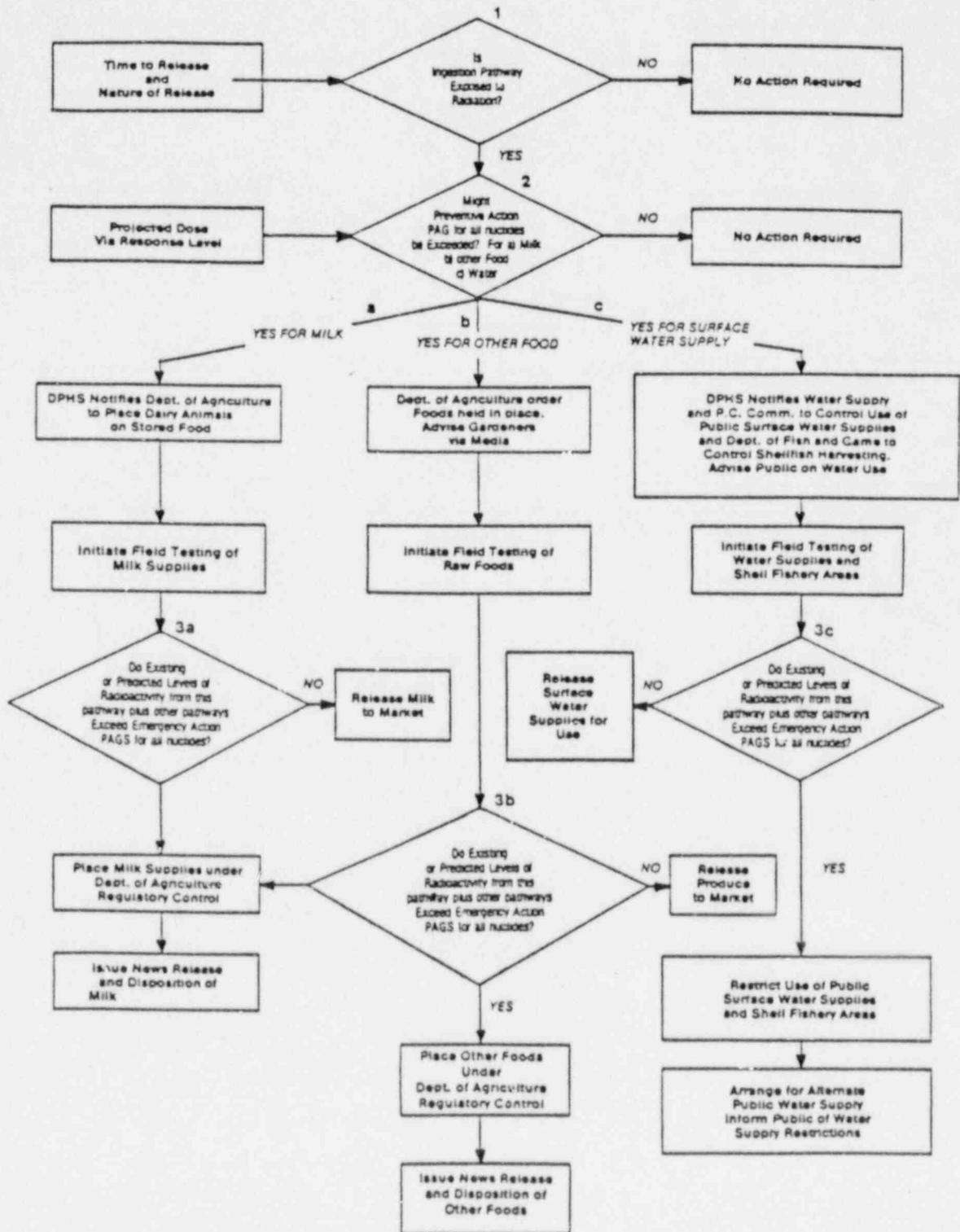


FIGURE 2.6-8 Decision Criteria for Recommended Ingestion Pathway Protective Actions

1. Protective Action Guides - These have been described and presented in Section 2.6.3. Table 2.6-1 presents the PAGs for the direct exposure pathway.
2. Projected Dose - The amount of radiation received through direct exposure to the plume assuming no protective actions are taken. The projected dose is determined by DPHS according to accident assessment procedures described in Section 2.5.
3. Time to Release - An estimate of the time remaining between the present and an anticipated release of radioactive materials from the plant. This estimate is provided to DPHS by the power plant operator.
4. Plume Arrival Time - The time period between release of radioactive material into the atmosphere and the arrival of the leading edge of the plume at the reference location. DPHS will obtain this information from the Utility, through its own monitoring, and from independent plume dispersion modeling undertaken by DPHS from the State EOC. | 2
5. Plume Exposure Time - The elapsed time between plume arrival at the reference location and the time when it has passed the reference location. DPHS will obtain this information from the Utility in accordance with established Utility procedures and from its own accident assessment activity. The cloud exposure time is determined by the duration of the release and meteorology.
6. Delay Time - The elapsed time between the determination that a release will occur and the issuance of protective action instructions to the public. | 2
7. Action Time - The estimated time required to complete an evacuation of an area, or to implement sheltering. NHOEM will use these estimates, which are based upon an assessment of actual road conditions existing during an emergency. Offsite constraints to evacuation will also be considered. | 2

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8. Dose Reduction Factor (DRF) - The DRF is the amount of protection offered by a protective action. It is measured as the proportion of the projected dose that is expected after a protective action has been taken. The DRF can range from zero (complete protection) to 1.0 (no protection).

The PAGs have been predetermined as outlined in Table 2.6-1. DRFs for typical structures in both Plume Exposure EPZs have also been predetermined. The values for the other six variables will be determined during an emergency response. Figure 2.6-7 is a flow diagram of the process in which these eight variables are used by DPHS and NHOEM to derive protective action recommendations for the Governor. This New Hampshire protective action selection process is based upon EPA guidance (EPA 520/1-78-001B). The process is built around six chronological decision steps, represented by the numbered diamond-shaped blocks in Figure 2.6-7. At each of these six steps one or more of the eight decision variables, previously outlined, is required as input, and the output is either a direct protective action decision, or a determination to move to the next decision step. The following discussion traces the six-step decision process.

NOTE: Special consideration is given to the advisability of closing the public and private beaches within the EPZ at ALERT classification, as a precautionary measure, regardless of the availability of a projected dose data. (See Volume 4, Appendix F, Protective Action Decision Criteria.)

Block #1 - At Block #1, DPHS must determine whether projected doses exceed PAGs for whole-body or thyroid doses. Input data needed for this determination are listed in Box A. They are the PAGs, from Table 2.6-1, and the projected doses based on present and anticipated releases. The projected doses are compared to the comparable PAG doses. If neither PAG is exceeded, the decision, as noted in Box B, is that no protective action is required. If either PAG is exceeded for any municipality, DPHS will notify the Department of Agriculture of the need to place dairy animals that are within the plume exposure EPZ on stored feed (Box B). This action is to be taken automatically upon an affirmative response in Block one since this particular action would have to occur prior to completion of either sheltering or evacuation within the plume exposure EPZ. DPHS and NHOEM will then proceed to the second decision step.

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Block #2 - At Block #2, DPHS and NHOEM must determine whether evacuation of the area in which whole body and/or thyroid PAG doses will be exceeded can be completed prior to the arrival of the plume. The input data for this determination are outlined IN Box D. These variables are Time to Release, Plume Arrival Time, Delay Time, and Action Time. The Action Time variable will include NHOEM assessment of offsite constraints to evacuation as indicated in Attachment C to Appendix F, Volume 4. If evacuation of the area in which PAGs are exceeded can be completed prior to plume arrival, then evacuation will in all likelihood be the recommended protective action as indicated in Box E. The final evacuation recommendation will be based on the degree to which the PAGs are projected to be exceeded and the DRF effectiveness of evacuation. If evacuation cannot be completed prior to plume arrival, DPHS and NHOEM must proceed to the third decision step.

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Block #3 - At the third decision step DPHS and NHOEM must determine whether protective action can be implemented before the plume has passed. At this point, DPHS and NHOEM must consider Time to Release, Plume Arrival, Plume Exposure Time, Delay Time and Action Time for the alternative protective actions. There are three possible types of conclusion for this determination. First, it may be determined that there is insufficient time to implement either protective action for the area being considered. In this case, DPHS must advise that corrective rather than protective actions (i.e., monitoring and decontamination) should be taken. This case is represented in Box G. Second, DPHS and NHOEM may determine that there is sufficient time to derive some protection from shelter, but insufficient time to implement evacuation. In this case, shelter will be advised, as shown in Box F (evacuation may be considered following passage of the plume due to exposure from ground deposition as discussed in Section 2.9.2). If both sheltering and evacuation begin only after arrival of the Plume, and both can be implemented before the plume has passed, DPHS and NHOEM must proceed to the fourth decision step.

Block #4 - At this point in the decision process, NHOEM and DPHS begin to address the tradeoff between evacuation and shelter. It has been determined in Block #3 that both sheltering and evacuation can begin only while the population is exposed to the plume. The question that must be addressed by NHOEM and DPHS is, "Which protective action provides the best protection under these circumstances?" Evacuees will be exposed while evacuating, but exposures will drop to zero when they have cleared the area. Sheltering provides protection quicker, but its effectiveness decreases as plume exposure time increases. The decision to be made in this step concerns a determination of which pathway is most important. If only one pathway exceeds the PAG in Block #1, this decision is automatically determined. When both pathways are involved, the decision is made by comparing the whole-body and thyroid doses received after protective actions have been taken. If the whole-body PAG exceeds the thyroid PAG, all subsequent decisions are based on the whole-body dose. If the reverse is true, subsequent decisions are based on the thyroid dose. If both are equally important, subsequent decisions can be based on either dose.

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Block #5 - Parallel decisions are made at the fifth decision step. This parallel path is shown by the pair of Blocks numbered Block #5. These blocks address the same question. The decision in one is referenced to thyroid dose, and in the other to whole-body dose. The question asked in this step is "Does shelter or evacuation provide the greatest protection?" This decision is made by using fast and simple screening calculations that compare the effectiveness of sheltering versus evacuation. If evacuation provides the best protection, then evacuation is chosen as the protective action (Box J). The DRF for evacuation considers the fact that individuals must drive through the Plume and are protected only by their automobiles until they clear the area. The DRF for sheltering considers the fact that as the duration of exposure increases, sheltering effectiveness decreases. The criteria used in this decision block are simplified to facilitate rapid analysis. The simple screening calculations are biased away from evacuation, thus, if evacuation is indicated, evacuation should be ordered. On the other hand, if these criteria do not indicate evacuation, the results are inconclusive and a more detailed comparison of the two protective actions must be undertaken at next decision step.

Block #6 - This decision asks the same question, "Which protective action offers the greatest protection?" The analysis is based on more complete data and detailed calculations. It provides a better evaluation of the comparative effectiveness of shelter and evacuation. If evacuation is still indicated, it will be recommended (Box J). If shelter is indicated, then shelter will be recommended (Box I).

The decision process above contains assumptions in Blocks #4, #5, and #6 that sheltering occurs in small structures such as residential dwelling units. Sheltering may also occur in large structures such as schools, institutional facilities, and office buildings. Large structure sheltering can be viewed as a separate protective action which requires separate evaluation. Because there are a limited number of large structures in both Plume Exposure EPZs, this option is not being considered by New Hampshire for the general population. For institutional facilities whose population may already be in large structures, sheltering may be the preferred protective action. To evaluate this case, the large structure DRF may be substituted in the above decision process and a separate evaluation made for the institutional facilities.

2

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As mentioned above, the decision to shelter or evacuate must be made with reference to a specific location. New Hampshire will use local government boundaries to define the reference locations. Therefore, protective actions will be decided and implemented on a municipality-by-municipality basis. New Hampshire has chosen this option because implementation of protective actions on any other basis is considered less manageable.

2.6.8 Decision Process for Selection of Protective  
Actions for Ingestion Pathway Exposures

The decision process for determining protective actions for Ingestion Pathway exposures is similar to, but considerably simpler than, the decision process for determining protective actions against direct exposure in the Plume Exposure EPZ. Figure 2.6-8 is a flow diagram of the process used to determine which of the protective actions is to be used for each of the Ingestion Pathways. The process is built around **three** chronological decision steps for each of three ingestion paths. The decision steps are represented by the numbered diamondshaped blocks in Figure 2.6-8. Input to each step is a comparison of dose to the Ingestion Pathway PAGs which are listed in Table 2.6-2.

To facilitate rapid decision making, a radioactivity level, which corresponds to the PAG for a particular food pathway, will be used. This level is the amount of radiation in food, water, or animal feed that would ultimately result in exceeding the PAG if it was allowed to pass up through the food chain to the human consumers. For example, if the level of Iodine-131 on a pasture exceeds the precalculated radioactivity level, the human dose resulting from the pasture-animal-milk pathway would exceed the PAG if preventive actions were not taken for milk. This radioactivity-level-to-PAG-dose-conversion calculation has been described by FDA/HHS in 43 FR 58790. Precalculated levels for specific pathways are contained in DPHS procedures. Total dose committment from all pathways and for all nuclides taken together will be calculated in determining exceedance of preventive and emergency PAGs.

The following discussion traces the **three**-step decision process for Ingestion Pathway exposure. The term "response level" refers to the precalculated radioactivity levels discussed above.

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Block #1 - At Block #1, DPHS must determine whether any Ingestion Pathway may be exposed to radiation. The decision is a simple determination of whether or not there may be a radioactive release which affects areas beyond the site boundary of the power plant. Input consists of advisories from the Utility. If the answer is no, further consideration of protective action for the Ingestion Pathway is not required. If the answer is yes, DPHS must progress to the next decision step.

Block #2 - At Block #2, DPHS must determine whether a Preventive Action PAG may be exceeded for one or more of the three Ingestion Pathways taken together. This entails using the response levels for (a) milk, (b) other foods, and (c) water to determine whether the Preventive Action PAGs, listed in Table 2.6-2, may be exceeded. If the answer is negative, no protective action is required. If the answer is positive for the three Ingestion Pathways, Preventive Actions will be recommended until more definitive analysis can be undertaken. Volume 2, Appendix D lists all commercial agricultural facilities within the 50-mile EPZ. Figure 2.6-8 lists the preventive actions in parallel for the three ingestion paths. Each involves control of the ingestible material by the appropriate State Agency followed by field testing to more accurately define the levels of contamination. For example, DPHS has the authority to close shellfish harvesting areas. In the event that harvesting of shellfish should not be done, because of contamination, the Director, DPHS will invoke this authority by notifying the Department of Fish and Game to restrict harvesting and to control access to harvesting areas. Collection of field samples is further described in Section 2.5.3. Upon activating Preventive Actions, DPHS must proceed to the third decision step.

Block #3 - At Block #3, DPHS must determine whether Emergency Action PAGs are, or may be, exceeded. The determination is based first on a comparison of dose projections to the Emergency Action PAG levels. If predictive techniques show potential for exceedance of PAG levels of the ingestible commodity, DPHS will advise control or condemnation pending verification by field data. If field data confirm predicted contamination, DPHS will advise condemnation or storage for suitable future use. If field data show levels below the appropriate response levels, State control of the ingestible material will be

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relinquished. In either event, DPHS will issue advisories on the nature of the controls for each ingestible material and means for minimizing ingestion of radioactive materials.

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Supplemental Analysis of Potential Shelter Capacity  
of the Seabrook EPZ Beach Areas

1. Shelter Study and Updated Population Estimates

The total available shelter space has been determined by the Shelter Study performed for New Hampshire Yankee by the Stone & Webster Engineering Corporation. This study assessed the potential available shelter space in commercial, municipal, tax exempt, and residential buildings in the beach areas of the Seabrook Station EPZ. Potential shelters were considered to be those structures that met the dose reduction factor criteria of the NHRERP.

The study separately evaluated the total capacity of the potential shelters for the two groups of structures, public and residential. Public structures are buildings that are normally accessible to the public for commercial or business use. Recognizing that not all building space would be available, the gross area derived from tax records was reduced by an availability factor to yield a net area that represented available space not taken up by equipment, sales stock, internal features, etc., and that could be occupied by persons taking shelter.

When the potential available shelter space was totaled, the number of persons that can be provided short-term shelter was estimated by dividing the total by 10 square feet per person (see Federal Emergency Management Agency, Radiation Safety in Shelters, CPG 2-6.4, September 23, 1983). For residential buildings, it was assumed they would be occupied at their normal rate of 6.24 persons per building. This occupancy rate was determined from the work of KLD Associates. The total potential shelter space in residences was determined by multiplying the occupancy rate by the number of residences.

In order to arrive at the total number of persons who could be sheltered, public and residential shelter capacities were added together. For the beach areas of Seabrook and Hampton, south of Great Boar's Head, there is a total of 91,527 potential shelter spaces. This available shelter space can be compared to the size of the beach population derived from aerial photographs taken on a crowded, good weather, summer weekend in July, 1987. For the same areas of Hampton and Seabrook, the estimated peak population was determined to be 31,239. Therefore, available potential shelter capacity is almost three times the estimated peak beach population.

## 2. Distribution of Shelter

As a means of showing the relative distribution of identified potential shelter capacity and the beach population, a map and chart of the areas of concern have been developed. These are presented as Attachments 1 and 2. The attachments show graphically the number of potential shelterees that can be accommodated in public and residential shelters along the beach and the number of observed persons actually on the beach and in beach areas east of Route 1A counted from the aerial photographs discussed above. The shelteree capacities and persons on the beach are shown in increments of two-tenths of a mile. These graphics show that the population on the beach is distributed in approximately direct proportion to the availability of shelter capacity. The graphics show that sufficient shelter capacity is located in all areas within one-half mile of the populated beach areas. This distribution of shelters is such that shelter capacity can be accessed by beachgoers within a matter of minutes and certainly within one-half hour.

## 3. Dose Reduction Factors of Beach Structures

Each of the potential public shelters identified by the Stone & Webster Shelter Study was visually inspected externally by a health physicist who estimated the structure's cloud shielding factors. The purpose of this examination was to ensure that identified structures conform to the dose reduction factor assumed by the NHRERP.

Aldrich, et al., Public Protection Strategies for Potential Nuclear Reactor Accidents; Sheltering Concepts with Existing Public and Private Structure, SAND-77-1725 was used as the reference for the purpose of assigning cloud shielding factors.

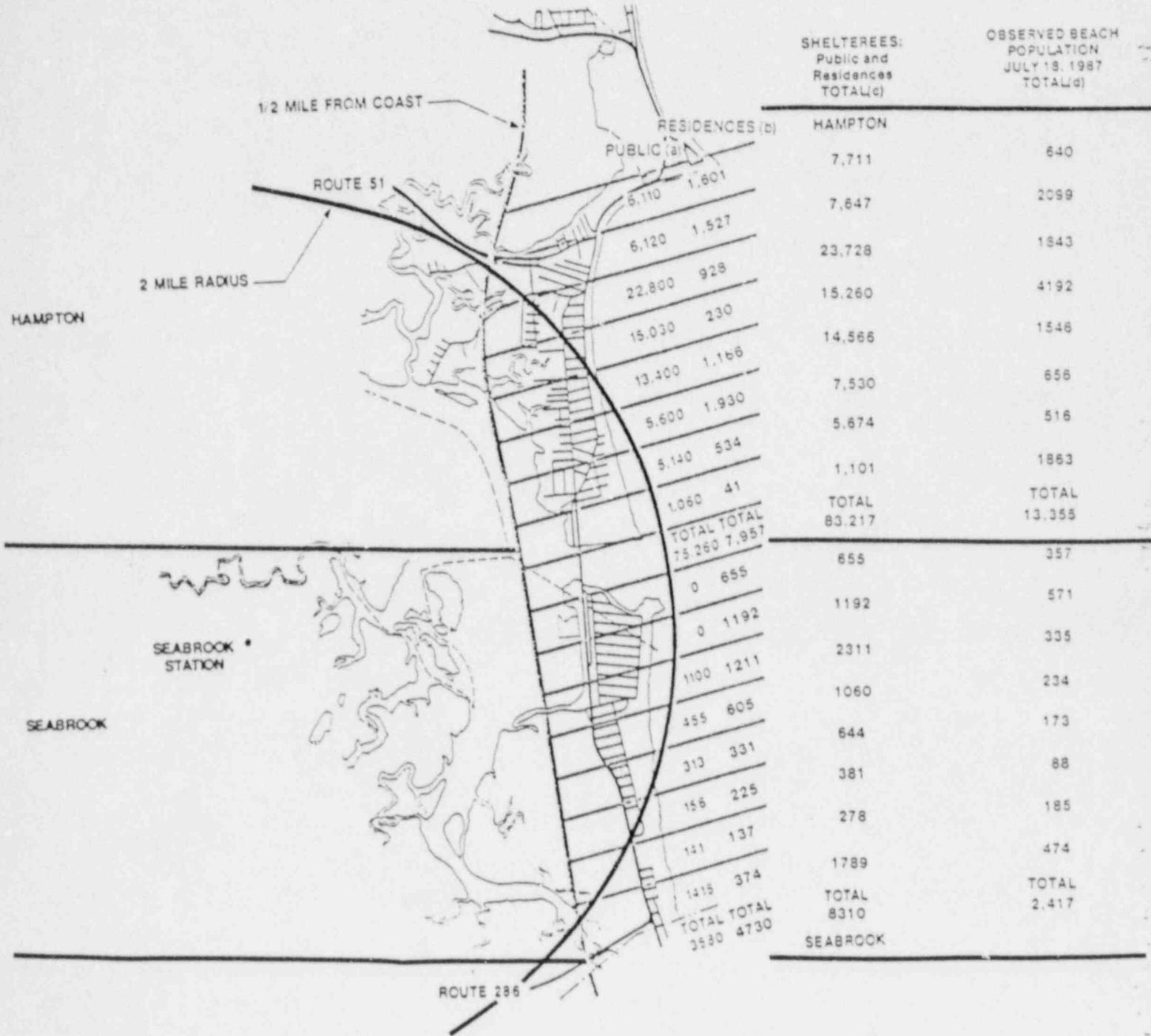
The seasonal residences in the Hampton and Seabrook Beach areas were visually inspected and found to be of wood frame or more substantial construction and therefore have the dose reduction factors (DRF) used by the NHRERP.

For dose reduction factors associated with an external cloud, it is reasonable to assume that beach unwinterized area structures meet at least the 0.9 dose reduction factor (a wood frame structure without a basement) on the basis of information provided in EPA 520/1-78-001A, Protective Evaluation, Part 1, The Effectiveness of Sheltering as a Protective Action Against Nuclear Accidents Involving Gaseous Releases at page 18.

Further, the thyroid dose reduction factor assumed by the NHRERP assumes an air exchange rate of 2 changes per hour. This is a reasonable assumption for unwinterized structures since the maximum air exchange for a structure without ventilation, weatherstripping or storm sashes is 2 changes per hour (see EPA 520/1-78-001A, page 8, Table 2).

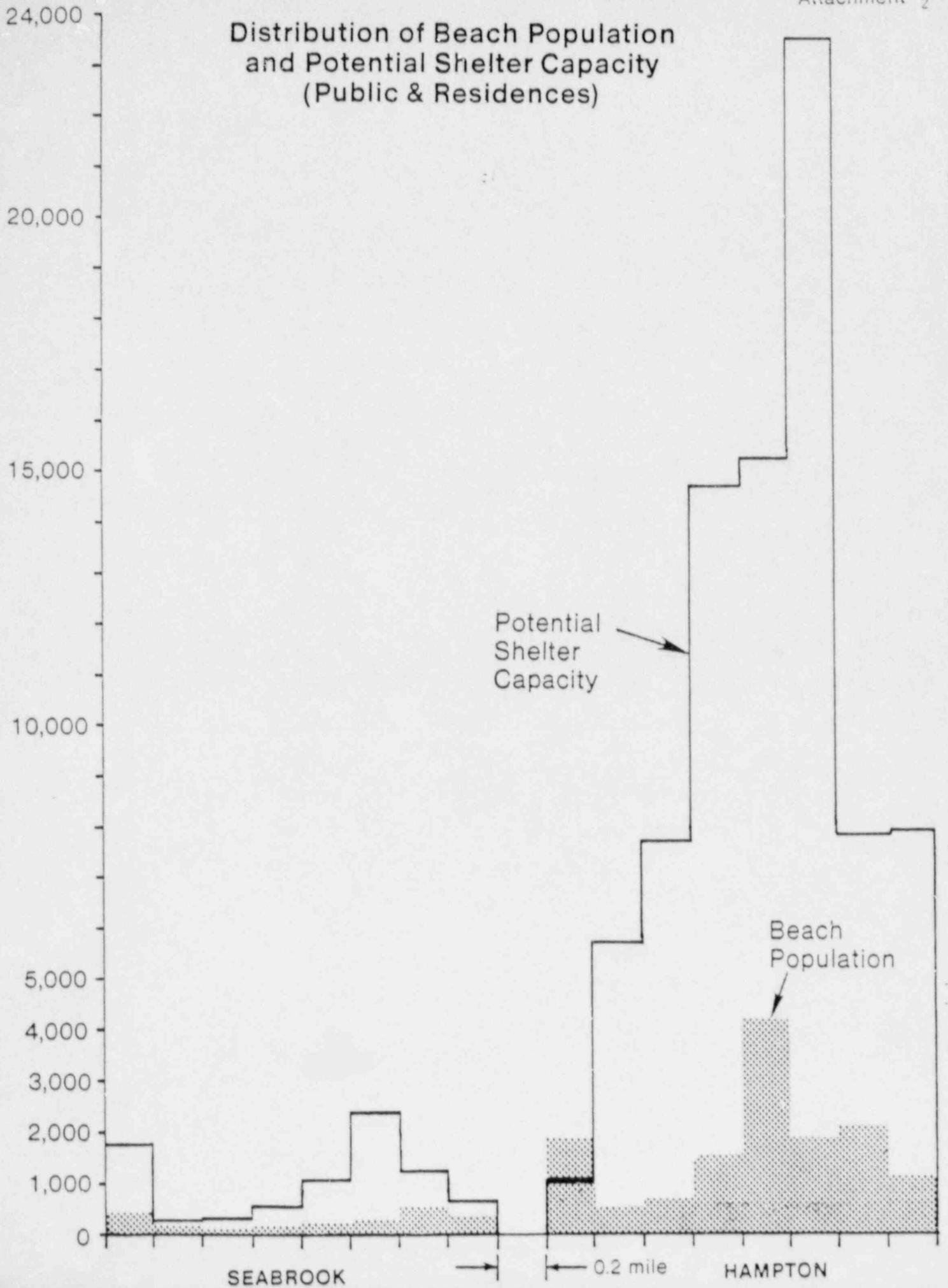
# SEABROOK SHELTER STUDY

## POTENTIAL SHELTER CAPACITY (PERSONS)



- (a) The total shelter capacity (persons) in public buildings (i.e. churches, restaurants, motels, etc.).
- (b) The total shelter capacity (persons) in private residences.
- (c) (a) + (b).
- (d) The total number of people on the beach, in the water, and on the ocean side of Route 1A on July 18, 1987 at approximately 12:20 P.M., in .2 mile increments.

### Distribution of Beach Population and Potential Shelter Capacity (Public & Residences)





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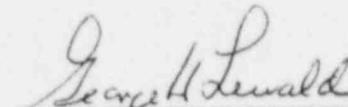
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