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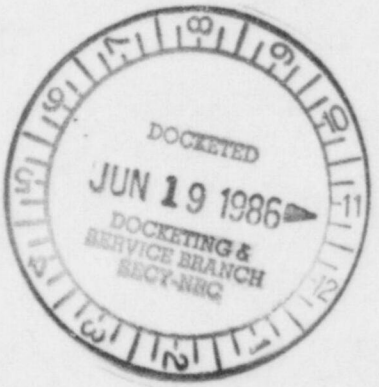

Spence W. Perry, Acting General
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Federal Emergency Management Agency
Room 840
500 C Street, S.W.
Washington, D.C. 20472

In the Matter of
Public Service Company of New Hampshire, et al.
(Seabrook Station, Units 1 and 2)
Docket Nos. 50-443 OL and 50-444 OL

Dear Mr. Perry:

In response to a request made by Edward Thomas of FEMA Region I, we have evaluated, in conjunction with Joseph Flynn of your office, an undated memorandum prepared by Thomas Dignan of Ropes and Gray on behalf of the applicants for the Seabrook nuclear plant ("Dignan Memorandum", a copy of which is attached as Attachment A). Our evaluation is set forth in the following discussion.[1]

The Dignan Memorandum addresses what are described as "three misconceptions" pertaining to offsite emergency planning for the Seabrook nuclear plant, and concludes that they are "false as matter of law" (Dignan Memorandum at 1). These purported "misconceptions" are as follows:

A. That the plans must be shown to guarantee that no adverse effects on the public health and safety will occur no matter what kind of accident occurs at Seabrook.

B. That it must be demonstrated that the plans will assure that all persons located in the Emergency Planning Zone or some certain portion of it can be evacuated in some certain time.

   - In particular, there have been assertions that the plans must assure the sheltering or evacuation of persons from the beaches in approximately 1/2 hour.

[1] It should be noted, however, that under the Commission's regulations, 10 CFR § 50.3, only written regulatory interpretations provided by the General Counsel will be recognized as binding upon the Commission.

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C. That the plans must be designed, and shown to be able, to cope with a particular type of accident -- in particular, one involving an early release of radioactivity off-site.

For the reasons set forth below, it is our opinion that, with minor clarification, Mr. Dignan's conclusions are essentially correct as to items (A) and (B) above; however, his discussion of item (C) appears to contain an error which requires correction.

DISCUSSION

A. Absolute Assurance of Perfect Safety.

As set forth above, item (A) concerns the question of whether an emergency response plan must be shown to guarantee that no adverse health and safety effects will occur, regardless of what kind of accident may occur at the plant. In our opinion, Mr. Dignan correctly concludes that "[n]either the Atomic Energy Act nor any regulation of NRC, whether dealing with emergency planning or not, requires absolute assurance of perfect safety" (Dignan Memorandum, at 1-2).

As you know, prior to issuance of a full power operating license, NRC regulations require a finding "that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency." 10 C.F.R. § 50.47(a)(1). With respect to offsite matters, the NRC will base its finding on a review of the FEMA findings and determinations "as to whether State and local emergency plans are adequate and whether there is reasonable assurance that they can be implemented." Id., § 50.47(a)(2). These regulations plainly do not require any demonstration of "absolute assurance" that the public will be totally protected in the event of a radiological emergency. Rather, the intent of the Commission's emergency planning regulations is to reduce the impact of an accident and achieve "dose savings" through protective actions that take into consideration plant conditions, evacuation times, shelter factors, and other conditions that may exist at the time of the accident. NUREG-0654/FEMA-REP-1, Rev.1 states as follows (at 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 Appeal Board has similarly stated, "[t]he basic goal of emergency planning is . . . the achievement of maximum dose savings in a radiological emergency." Cincinnati Gas & Electric Co. (Wm. H. Zimmer Nuclear Power Station, Unit No. 1) ALAB-727, 17 NRC 760, 770 (1983).

In Southern California Edison Co. (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-83-10, 17 NRC 528, 533 (1983), the Commission summarized its rationale for selecting an emergency planning basis as follows:

> The underlying assumption of the NRC's emergency planning regulations in 10 CFR § 50.47 is that, despite application of stringent safety measures, a serious nuclear accident may occur. This presumes that offsite individuals may become contaminated with radioactive material or may be exposed to dangerous levels of radiation or perhaps both. Planning for emergencies is required as a prudent risk reduction measure for those individuals. Since a range of accidents with widely differing offsite consequences can be postulated, the regulation does not depend on the assumption that a particular type of accident may or will occur. In fact no specific accident sequences should be specified because each accident could have different consequences both in nature and degree. Although the emergency planning basis is independent of specific accident sequences, a number of accident descriptions were considered in development of the Commission's regulations, including the core melt accident release categories of the Reactor Safety Study (WASH-1400).

These statements demonstrate that the goal of emergency planning is to reduce the impact and achieve dose savings for a spectrum of accidents, and that emergency planning may satisfy NRC regulations even though the potential for adverse health effects in an emergency has not been totally eliminated.

Notwithstanding our opinion that Mr. Dignan is essentially correct in his conclusion as to item (A), two statements contained in this portion of his memorandum require clarification. First, he goes too far in asserting that "it has been recognized from the outset . . . that if one assumes a major accident with offsite releases, some adverse effect on the public will, by definition, occur" (Dignan Memorandum at 2; emphasis added). Contrary to this assertion, the occurrence of a major accident accompanied by offsite releases will not necessarily lead to adverse health effects. Rather, in some circumstances, emergency planning may serve to avert the occurrence of any adverse health effects. Further, whether any such health effects occur, and the extent of any such effects, will depend upon a host of factors, such as the type and quantity of release, the plume direction, meteorological conditions, exposure durations, and the timely implementation of an appropriate protective response.

Secondly, his memorandum states that emergency planning is intended to limit any adverse health effects to as low a level as reasonably possible, "given the facilities at hand" (Id.), possibly implying that additional

facilities will never be required to be built or installed to satisfy NRC emergency planning regulations. In support of this statement, Mr. Dignan cites the San Onofre decision, supra. However, that decision provides only limited support for this conclusion. There, the Commission addressed only the issue of whether additional hospital construction should be undertaken, and concluded that such extraordinary measures are not required.

B. Evacuation Within A Specific Time Period.

The second item addressed by Mr. Dignan is whether the Applicants must demonstrate that all or part of the plume exposure pathway EPZ can be evacuated in some specified time; in particular, this item addresses the question of whether the beaches in the Seabrook vicinity must be evacuated within approximately one-half (1/2) hour. It is Mr. Dignan's conclusion that NRC regulations do not require that an evacuation be assured within any particular time (Dignan Memorandum at 2). We concur with Mr. Dignan's conclusion as to this item.

In support of his conclusion on this matter, Mr. Dignan cites two decisions: Cincinnati Gas & Electric Co. (Wm. H. Zimmer Nuclear Power Station, Unit No. 1), ALAB-727, 17 NRC 760, 770 (1983), and Detroit Edison Co. (Enrico Fermi Atomic Power Plant, Unit 2), ALAB-730, 17 NRC 1057, 1069 n.13 (1983). In Zimmer, the Appeal Board stated as follows:

> The applicants are . . . correct in their insistence that the Commission's emergency planning requirements do not prescribe specific time limits governing the evacuation of plume EPZs. The matter of the time in which evacuation can be accomplished is left to be determined on a case-by-case basis upon consideration of all relevant conditions prevailing in the specific locality. But it does not follow, as the applicants would have it, that a particular evacuation plan need not be concerned with the efficiency with which evacution might be accomplished given the conditions under which it must take place [n. 16]. Indeed, the Commission guidelines suggest the contrary. . . . If the responsible governmental officials are to make an informed decision respecting what is appropriate protective action in a given radiological emergency, they must have available to them time estimates which are realistic appraisals of the minimum period in which, in light of existing local conditions, evacuation could reasonably be accomplished. And, the nearer to the plant the area that might have to be evacuated, the greater the importance of accurate time estimates.
>
> n. 16/ Those conditions include, for example, the size and nature of the population, the available

> transportation facilities, the existing road network, topographical features and political boundaries. . . .

Zimmer, supra, 17 NRC at 770-71. Similarly, in the Fermi decision the Appeal Board stated:

> . . . [T]he Commission's emergency planning regulations do not specify the time within which the plume EPZ must be evacuated in the event of a nuclear emergency. 10 C.F.R. Part 50, Appendix E, § IV, requires only that applicants provide "an analysis of the time required to evacuate and for taking other protective actions for various sectors and distances within the plume exposure pathway EPZ for transient and permanent populations."

Fermi, supra, 17 NRC at 1069 n.13. Thus, there is no requirement that an evacuation be accomplished within 30 minutes. While some other functions must be capable of being accomplished within that time frame, those functions generally involve the notification of appropriate governmental officials and notification of the public. See 10 C.F.R. Part 50, Appendix E, § IV.D.

C. Planning for A Particular Type of Accident.

The third issue addressed by Mr. Dignan is whether a facility's emergency plans must be designed to cope with a particular type of accident and, in particular, an accident involving an "early release of radioactivity off-site." Two conclusions appear to be reached by Mr. Dignan in this regard: (1) that while emergency plans must be designed to cope with a spectrum of accidents, they need not be designed to cope with a specific accident or "any worst case accident" (Dignan Memorandum at 4), and (2) that emergency plans are not required to be designed to cope with an early release of radioactivity (Id., at 2-3). While we agree with the first of these conclusions, the second conclusion is incorrect and requires clarification.

First, Mr. Dignan is correct in stating that the emergency plans must be designed to cope with a spectrum of accidents, but are not required to address any particular accident sequence or a "worst case accident." The Commission has decided, on a generic basis, that compliance with its emergency planning regulations provides the reasonable assurance required by 10 C.F.R. § 50.47(a); accordingly, offsite emergency plans are not required to address particular accident sequences. In the Statement of Consideration published upon adoption of the Commission's final emergency planning regulations, the Commission stated as follows:

> The Commission recognizes that no single accident scenario should form the basis for choice of notification capability requirements for offsite authorities and for

> the public. Emergency plans must be developed that will have the flexibility to ensure response to a wide spectrum of accidents. This wide spectrum of potential accidents also reflects on the appropriate use of the offsite notification capability. . . .
>
> Any accident involving severe fuel degradation or core melt that results in significant inventories of fission products in the containment would warrant immediate public notification and consideration, based on the particular circumstances, of appropriate protective action because of the potential for leakage of the containment building. In addition, the warning time available for the public to take action may be substantially less than the total time between the original initiating event and the time at which significant radioactive releases take place. . . . The reduction of notification times from the several hours required for street-by-street notification to minutes will significantly increase the options available as protective actions under severe accident conditions. These actions could include staying indoors in the case of a release that has already occurred or a precautionary evacuation in the case of a potential release thought to be a few hours away. Accidents that do not result in core melt may also cause relatively quick releases for which protective actions, at least for the public in the immediate plant vicinity, are desirable.

45 Fed. Reg. 55402 (1980). Similarly, NUREG-0654/FEMA Rep.1, Rev. 1, provides as follows (at 6-7):

> No single specific accident sequence should be isolated as the one for which to plan because each accident could have different consequences, both in nature and degree. Further, the range of possible selection for a planning basis is very large, starting with a zero point of requiring no planning at all because significant offsite radiological accident consequences are unlikely to occur, to planning for the worst possible accident, regardless of its extremely low likelihood. The NRC/EPA Task Force did not attempt to define a single accident sequence or even a limited number of sequences. Rather, it identified the bounds of the parameters for which planning is recommended, based upon knowledge of the potential consequences, timing, and release characteristics of a spectrum of accidents. Although the selected planning basis is independent of specific accident sequences, a number of accident descriptions were considered in the development of the guidance, including

> the core melt accident release categories of the Reactor Safety Study [WASH-1400].

Accord, San Onofre, supra, 17 NRC at 533. In Long Island Lighting Co. (Shoreham Nuclear Power Station), LBP-85-12, 21 NRC 603, 888 (1935) (cited in Dignan Memorandum at 4), the Licensing Board dismissed a contention asserting that the emergency plans must be capable of coping with any worst case accident (there involving the possible loss of offsite power); the Board stated, "NURFG-0654 does not require an adequate response for the 'worst possible accident' at Shoreham. . . ." In sum, these regulatory pronouncements and decisions clearly demonstrate that emergency planning for a nuclear plant is not required to be designed to cope with any particular accident sequence or a "worst case accident." In this respect, we concur with Mr. Dignan's memorandum.

The Dignan Memorandum is incorrect, however, in its conclusion that the emergency plans are not required to be designed to cope with an early release of radioactivity (Dignan Memorandum at 2-3). This error appears to have resulted by confusing the "worst possible accident" for any accident involving an early release. While the "worst possible accident" could involve an early release of radioactivity, other less severe accidents might also result in early releases and were included within the parameters which established the Commission's emergency planning basis. The Statement of Consideration, quoted above, clearly recognizes that "early releases" may occur; it is for this reason, in part, that the licensee is required to notify offsite authorities within 15 minutes after the licensee has declared an emergency, and that responsible offsite authorities have a capability to notify the public within 15 minutes after they have received notification from the licensee of an emergency condition.

The following guidance is provided in NUREG-0654/FEMA Rep. 1, Rev. 1 (at 13-14):

> The range of times between the onset of accident conditions and the start of a major release is of the order of one-half hour to several hours. The subsequent time period over which radioactive material may be expected to be released is of the order of one-half hour (short-term release) to a few days (continuous release). . . . [G]uidance on the time of release . . . has been used in developing the criteria for notification capabilities . . . (Other reasons for requiring prompt notification capabilities include faster moderate releases for which protective actions are desirable and the need for substantial lead times to carry out certain protective measures, such as evacuation, when this is indicated by plant conditions.)

It should be noted that the responsible offsite authorities are not necessarily required, in all cases, to notify the public within 15 minutes after they have

received notification by the licensee. Rather, the time in which the public is notified will range from immediate notification (within 15 minutes after state and local officials are notified that a situation exists which requires urgent action) to the more likely events where there is substantial time available for them to make a judgment as to whether or not to activate the public notification system. Also, it should be noted that the 15 minute criterion refers only to the time in which the public is to receive notification, and does not refer to the time in which protective actions are to be completed.

In sum, responsible offsite authorities must have received notification of the emergency situation within 15 minutes after the licensee has declared an emergency, and the offsite authorities must have the capability to notify the public within 15 minutes after they have received notification from the licensee. Emergency planning for accidents involving "early releases" is required -- although the protective action recommendations may be issued before, during or after the occurrence of an offsite release of radioactivity. There is no requirement that protective actions be completed within 30 minutes after the licensee has declared an emergency.

CONCLUSION

For the reasons set forth above, the following conclusions are offered as to the matters referred to in the Dignan Memorandum:

1. The basic goal of emergency planning is to reduce the impact of and achieve dose savings for a spectrum of accidents; however, there is no requirement that absolute assurance be provided that adverse radiological effects will not occur.

2. The Commission's emergency planning regulations do not require that the evacuation of all or part of a plume exposure pathway EPZ be completed within any particular time.

3. The emergency plans must comply with the Commission's emergency planning regulations and thereby should be capable of responding to a wide spectrum of accidents; however, the plans are not required to be designed for any specific accident sequence or a "worst case accident."

4. Accidents involving early releases are within the Commission's emergency planning basis, however, the regulations do not specify a time within which the recommended protective actions are to be completed.

Sincerely,

Edward S. Christenbury
Director and Chief Hearing
Counsel

Enclosure

cc: J. Taylor
E. Jordan
T. Murley

MEMORANDUM

This memorandum addresses three misconceptions which have arisen as to the standards to which state and municipal emergency plans will be held in an NRC licensing proceeding. These misconceptions are:

A. That the plans must be shown to guarantee that no adverse effects on the public health and safety will occur no matter what kind of accident occurs at Seabrook.

B. That it must be demonstrated that the plans will assure that all persons located in the Emergency Planning Zone or some certain portion of it can be evacuated in some certain time.

- In particular, there have been assertions that the plans must assure the sheltering or evacuation of persons from the beaches in approximately 1/2 hour.

C. That the plans must be designed, and shown to be able, to cope with a particular type of accident -- in particular, one involving an early release of radioactivity off-site.

Each of these propositions is false as a matter of law.

First, the issue of absolute safety: Neither the Atomic Energy Act nor any regulation of NRC, whether dealing with emergency planning or not, requires absolute assurance of

perfect safety. Indeed, it has been recognized from the outset of the formulation of the current emergency planning regulations that if one assumes a major accident with offsite releases, some adverse effect on the public will, by definition, occur. The purpose of emergency planning is to have in place means and methods of coping with such an event in order to keep those effects to as low a level as reasonably possible given the facilities at hand. Southern California Edison Co. (San Onofre Nuclear Generating Station, Units 2 and 3), CLI-83-10, 17 NRC 528, 533 (1983).

Second, as to the proposition that the plans must be demonstrated to be capable of assuring evacuation of certain areas within a certain time: This simply is not the law. The Appeal Boards of the Commission have so held - flatly and without equivocation. Cincinnati Gas & Electric Company (Wm. H. Zimmer Nuclear Power Station, Unit No. 1, ALAB-727, 17 NRC 760, 770 (1983); The Detroit Edison Co. (Enrico Fermi Atomic Power Plant, Unit 2), ALAB-730, 17 NRC 1057, 1069 n.13 (1983). Indeed, the only activity which the regulations specifically require to be capable of accomplishment in one-half hour is public notification. And it is in that context the 1/2 hour rule is discussed in NUREG-0654, the NRC emergency planning guidance document.

Third , the proposition that the plans will be judged as to adequacy against a certain type of accident and in particular one involving a release as soon as 1/2 hour:

That proposition is not only bad law, it is directly contrary to the theory of the NRC emergency planning criteria. The theory upon which the regulations were based was that the planners should consider a spectrum of accidents. The key is that the plan be shown to be flexible and capable of reducing the adverse effects to the greatest extent reasonably possible. The Commission itself has stated:

> "Since a range of accidents with widely differing offsite consequences can be postulated, the regulation does not depend on the assumption that a particular type of accident may or will occur. In fact, no specific accident sequences should be specified because each accident could have different consequences both in nature and degree. Although the emergency planning basis is independent of specific accident sequences, a number of accident descriptions were considered in development of the Commission's regulations, including the core melt accident release categories of the Reactor Safety Study (WASH-1400).
>
> "It was never the intent of the regulation to require directly or indirectly that state and local governments adopt extraordinary measures, such as construction of additional hospitals or recruitment of substantial additional medical personnel, just to deal with nuclear plant accidents. The emphasis is on prudent risk reduction measures. The regulation does not require dedication of resources to handle every possible accident that can be imagined."
> CLI-83-10, 17 NRC at 533.

Furthermore, there is no requirement that it be demonstrated that a plan will cope with any worst case accident. NUREG-0654 simply does not require an adequate response for the worst possible accident. Long Island Lighting Co. (Shoreham Nuclear Power Station), LBP-85-12, 21 NRC 603, 888 (1985).

In short, the standard by which any emergency plan is to be judged is whether or not it represents the best efforts of knowledgeable people through the use of reasonably available facilities to reduce to the maximum extent reasonably possible the adverse effects on the public health and safety which will result from off-site releases resulting from a spectrum of accident scenarios. The guiding principles, as recently stated by an NRC Licensing Board are:

> "The purpose of emergency planning is to achieve dose savings to the general public in the event that radioactive material is accidentally released off site. There is no minimum standard of public radiation dose which must be met in emergency planning.
>
> "Absolute protection of the public against all radiation doses cannot be guaranteed and is not required for all possible accident scenarios.
>
> "The emergency response plan should not be developed for any specific preconceived accident sequence. It should instead be framed to cope with a spectrum of accident possibilities including the worst accidents.

"There is no standard time required to be met for evacuation in a radiological emergency. Estimates are necessary to determine accurately the actual time required for evacuation. These estimates are needed to aid in protective action decisionmaking.

"No massive investment of resources (stockpiling of supplies or construction of hospitals) are required for emergency planning. We will apply a practical standard of efficience of utilization of existing resources (such as roadways and manpower) in evaluating the acceptability of the evacuation plan." LBP-85-12 at 782.