Telephone 617 366-9011
TWX
710-390-0739

YANKEE ATOMIC ELECTRIC COMPANY

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20 Turnpike Road Westborough, Massachusetts 01581

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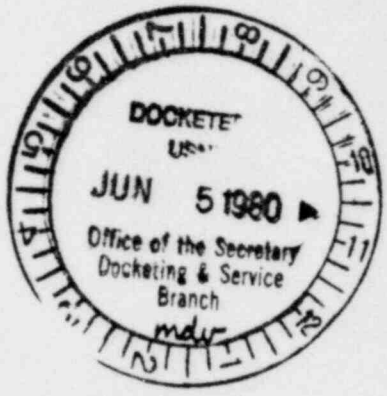

Mr. Robert G. Ryan, Director
Radiological Emergency Division
Federal Emergency Management Agency
1725 I Street, N.W.
Washington, DC 20472

Subject: Comments on NUREG-0654, FEMA-REP-1

Dear Sir:

Since January of 1980, Yankee Atomic has been reviewing NUREG-0654 and trying to develop emergency plans according to its guidance at the Yankee Rowe and Vermont Yankee nuclear power plants. We have found that the guidance document was a giant step in the direction of improving overall emergency preparedness. Unfortunately in some areas rather than taking measured sure steps, the guidance overstepped considerations of practicality and need and may have compromised the laudible objective of improved emergency preparedness and response.

It is universally agreed that emergency planning requires upgrading. Our concern deals primarily with the unnecessary haste with which these guidance criteria are being implemented and with the apparent disregard of legitimate concerns expressed by utilities, local and state governments, who are, in fact, the agencies that will be carrying out the emergency plans. The Nuclear Regulatory Commission must understand that unreviewed draft guidance should not be subject to interim use. Such a policy creates uncertainty or worse, in the face of constantly changing requirements, encourages an attitude of waiting until the rules become final before even attempting to comply. Even worse is the possibility that ill-conceived proposals become rules.

The haste with which NRC is attempting to force compliance strains established cooperative relationships with state and local agencies. Emergency planning requires as a fundamental element, a high level of cooperation and coordination between the licensee, state, regional and local agencies. NRC is quick to admit that it has no authority, except over the licensee, to force compliance to its guidance criteria and after alienating local and state agencies by substantially expanding what is required of them,

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leaves the issue with the licensee while calling for cooperative efforts. A more prudent policy would have been to conduct a thorough review of guidance criteria by involving all participants in emergency response and listening to comments of those who would be involved in implementing the plan. After this process, meaningful, workable emergency plans could be developed cooperatively involving all responding agencies.

Our detailed substantive comments on NUREG-0654 are attached. Rather than summarize them for you, we feel that they deserve a complete reading by your staff.

Very truly yours,

YANKEE ATOMIC ELECTRIC COMPANY

D. E. Vandenburgh
Senior Vice President

ACK/ncj

Attachment

cc: Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, DC 20555
Attention: Docketing and Service Branch

May 13, 1980
A. C. Kadak

Yankee Atomic Electric Company
Comments on NUREG-0654

D. Planning Basis

Yankee is concerned that while NUREG-0654 recognizes the wide range of planning bases that exist, the document tends to focus its attention on the most unlikely. In so doing it ignores some fundamental principles that go beyond the narrow objective of "upgrading emergency response". These principles are:

1. The plans must be workable, simple to use and understand. If the plans are too complicated they will be ignored. We need to apply "human factors" engineering to emergency plan development and implementation. Unfortunately, NUREG-0654 attempts to "cookbook" human responses without benefit of human reactions.

2. "Cures should never be more harmful than the disease". In the case of an emergency at a nuclear plant, the objective is to reduce the possible health effects resulting from the accident. NUREG-0654 focuses on reducing the health effect due to exposures to radiation. Depending upon the accident and actual releases of radioactivity, it is conceivable that another health effect will be more pronounced than that due to exposures to low level radiation. As TMI has graphically demonstrated, the psychological health impact of the wrong action is far more damaging, long lasting and more difficult to treat than exposures to low levels of radiation.

   The impact of psychological stress on the health of the population in a 10 mile radius was ignored in NUREG-0654. Public notification systems installed in houses, sirens on street corners. and other such devices provide an easy vehicle for trauma and unnecessary panic especially when used as proposed in NUREG-0654.

3. Whenever you alert the public to an emergency condition, you generally alert them to take some kind of action in response to a real threat to their well being. This is true for tornados, hurricanes, dam failures, chemical spills and it should also be true for accidents at nuclear power plants. In the case of nuclear power, the knowledge of the public is not great nor will it ever be informed enough to make a rational decision about the information they receive. This nuclear mystique must be considered in deciding how and when to notify the public to prevent counterproductive reactions.

   In the rush to notify the public in 15 minutes using terrifying sirens without giving more information than stay inside and turn on the radio is an unacceptable response to the emergency alert objective of taking action.

Several human factors problems arise with this scheme. The first is the problem of identifying the nature of the problem at the plant within 15 minutes such that the message to offsite authorities is accurate enough to justify a call for offiste protective actions. Secondly, if the public is hastily notified without having sufficient time to evaluate the plant condition, the information given the public is of little use for protective action. From the time the initial notification is made until more complete informaton is available, the public must either stay indoors, and be traumatized by the unknown or take premature action on their own which could hamper effective protective action for the entire population.

4. Emotional stresses would be deemed worth the risk of a 15 minute notification system if there was a demonstrated need. According to the Nuclear Safety Analysis Center no such need exists. In particular, those accident scenarios in Waste-1400 that have a bearing on emergency planning (those events that require offsite protective action), take 3 1/2 hours or greater to develop. Certainly as unlikely as these events are, there is sufficient time to not only notify the public but also to actually take protective action under those conditions. The general lack of analysis for the need of a 15 minute public notification system is underscored by the staff response to a Freedom of Information Act request for: "copies of all internal documents, and specific calculations, bases and assumptions used to establish the 15 minute notification requirement". (Letter to NRC dated March 21, 1980 from Yankee.)

   The response was a collection of NUREG's which included Waste-1400 which if actually analyzed would have yielded the NSAC result failing to justify the need.

5. The planning basis should acknowledge the time versus distance factor for protective action. The further away from the site the longer the time for protective action. If one accepts the premise that public notification should be made for protective action and not just for public information, one then must conclude that the public system should be implemented as a function of distance away from the site. Thus, should protective actions be required within 2 miles of the site all resources could be committed to that effort rather than trying to accomplish the source task over a 10 mile radius.

6. The public notification system should be used for Protective Action not for public information. There are many public information outlets available to inform the public. Sirens should be used for alerting the public to take action - not just listen to the radio.

F. Integrated Guidance and Criteria

Integration of response efforts is a laudible goal that should be pursued by all responding agencies. Development of overall emergency plans without knowledge of what several major responders such as NRC, EPA, FDA, DOE and even FEMA will do is an extremely difficult task. The fact that these agencies have not been able to produce an emergency response plan

for nuclear plant accidents identifies a major deficiency in the overall effort which is undoubtedly due to the haste with which these criteria were developed. No integrated emergency response can be developed until such time that at least FEMA and NRC develop their emergency response plans.

G. Funding and Technical Assistance

It is clear that the nuclear facility operator has a role to play in the development of state and local emergency plans. However, the nuclear facility emergency planning effort should not be used as a means to upgrade national emergency preparedness at the expense of local utility ratepayers. The President has given the responsibility for emergency prepardness to FEMA. This authority also covers among many other things nuclear power plant accidents. A national commitment of funds and resources should be made to upgrade emergency plans in local communities and states. There is no reason to single out ratepayers who happen to live near a nuclear plant to upgrade national emergency preparedness.

H. Nuclear Facility Operator Response Organization

(1) There is a serious concern on Yankee's part that NUREG-0654 overemphasizes the "what if" as opposed to the "what is" in terms of operator response and offsite protective action. In the very short time (15 minutes) given for notification of offsite authorities the "what is" will be difficult enough to determine. To recommend protective action on the "what if" in that same time frame fails to consider the realities of control room response and could easily result in incorrect recommendations. Recommendations for offsite protective actions should be carefully made using the best available information concerning plant status, existing releases and an informed assessment of the potential for further plant deterioration and radiological releases.

Emergency action levels as defined in NUREG-0610 should only be used as criteria for notification of offsite authorities. They should not be used as guidelines for protective action. Protective action recommendations via the public notification system (as opposed to public information systems) should only be made when it is clear that the action is warranted. Any other response will lead to unnecessary pyschological stress, independent irrational action, and possibly false alarms which could affect future public response.

In essence the basic problems with the NUREG-0654 section on operator response are:

1. The time to determine the "what is" is much too short for realistic appraisal of potentially complicated events. It is certainly too short, except in the extreme, to recommend protective acton.

2. Recommending protective action on the "what if" in the same short time period is not prudent public policy nor does it make sense from an amergency response point of view. An informed assessment of "what is" as well as "measurable and observable"

indications of detereorating plant conditions leading to measurable radiological releases should be used for protective action. This is particularly appropriate since there is sufficient time to make the necessary analysis, as outlined above, prior to public notification for protective action.

I. Federal Response

It is a sad commentary that with all the integration of state, local and site plans called for in NUREG-0654, a joint FEMA/NRC document, that little information is available on the precise roles of FEMA and NRC during a radiological emergency. Emergency plans based on the interim guidance that is now being forced upon local, state and utility planners will by definition not be complete because the two key agencies who will no doubt have much to say about an emergency have yet to develop their own response plans. Since the input of federal agencies such as the NRC and FEMA will have a significant impact as to the actual emergency response by site, local and state officials, the implementation schedule required for NUREG-0654 should be conditioned on the availability of the federal response plans. Once the federal plans become available and publicly reviewed, sufficient time should be allowed for utility, local and state and federal coordination. Once this process has been completed, an implementation schedule should then be developed.

If the objective is to develop emergency plans that really have a chance of working, coordination of all response agencies is essential. Setting arbitrary implementation shedules and forcing utilities, local and state agencies to meet these schedules without federal coordination will produce deficient plans that only have to be rewritten. A far better approach is to do it right the first time. Doing it right requires all responding agencies to make their response plans known and coordinating the overall emergency response effort. Until that is done, implementation dates are meaningless when it comes to effectively protecting the public health in an emergency.

J. Form and Content of Plans

It is hard to imagine a concise plan that is hundreds of pages long. This seems to be a contradiction. The workability of the plan depends on its usefulness. Plans hundreds of pages long cannot be considered very useful. Putting into the plan the level of detail called for in NUREG-0654 is in many cases repetitious of operating procedures already found elsewhere. These details unnecessarily complicate and lengthen the plan to the point where using it in an emergency would require a librarian's skill.

The emergency plan should set forth to all responding agencies a clear description of the actions to be taken, communications and coordination points and a commitment to train response personnel in a coordinated effort. The plans should be understandable to NRC and FEMA reviewers in a single reading.

II. PLANNING OBJECTIVES AND EVALUATION CRITERIA

B. Onsite Emergency Organization

B.5.(1) Due to the significant impact posed by Table B-1, "Minimum Staffing Requirements for NRC Licensees for Nuclear Plant Emergencies", the entire issue should be the subject of a separate review process.

Clearly, there are many functions designated on this table that could be performed in the order of their importance and thus prioritized depending on the situation.

B.5(2) After the initial notification to offsite authorities it is clear that plant personnel augmenting operations would arrive as soon as possible. Certainly, some people would arrive within 30 minutes who could be assigned the most important tasks. Requiring 30 minutes as the response time for 26 people is not necessarily practical or reasonable or necessary for accident mitigation or public protection. A time limit of 60 minutes is more realistic both from a practical standpoint and need when one considers the possible accident scenarios.

B.5.(3) We reserve the right within our own organization to designate who is responsible for the overall direction of the facility response and where he will be located. During the height of the emergency the individual in charge may need to operate from the TSE. As the situation improves he may choose to operate from the EOF or the near site recovery center. Unnecessary restrictions in terms of limiting flexibility of the individuals in an emergency should be avoided in regulations.

C. Emergency Response Support and Resources

C.2.(1) Spreading resources too thin should be avoided. If utilities make provisions for accommodating representatives of government agencies there seems little justification for sending utility representatives to government locations. Good communications should meet the objective of coordinated response.

E. Notification Methods and Procedures

E.4.1 Evaluation Criteria

(1) NUREG 0654 should clearly state that the ultimate decision for protective action rests with the state and/or local authorities.

(2) The facility recommendation in the short term will necessarily be made without having much time to assess the situation based on the short time within which it must be made. Thus, facility recommendations to offsite authorities should only be given for general emergencies when prompt action is required and the symptoms quite clear or they should be made after the situation is understood and offsite monitoring data obtained. This is essential for properly advising the offsite agencies and the public.

E.6 Providing the public with a means of notification and instructions for protective action rests with the local, state and federal governments for all types of emergencies. Requiring utilities to ensure that such a capability exists goes far beyond the site boundary and deals with issues far beyond their control. Emergency notification systems for all types of emergencies are important enough to give the requisite authority to FEMA to "ensure" that such capabilities exist nationwide.

G. Public Information

3.b Providing a designated location for use by news media should be sufficient for press briefings that will be held during and following an emergency. Requiring that the news media have space at the near site EOF is an unnecessary burden on people who are trying to work during the emergency. This requirement should be deleted.

H. Emergency Facilities and Equipment

H.2 It is impossible to size a facility without knowledge of the level of federal response.

H.5 Onsite monitoring devices that are used to classify emergencies in accordance with the guidance provided in 0610 are typically those that measure plant operating parameters that indicate system failures and possible offsite consequences (meteorological). Should a seismic event occur causing an internal failure surely the existing monitoring devices would detect the consequences and appropriate emergency actions taken. Thus, seismic monitoring is not required for protection of the public in an emergency.

H.8(1) Appendix 2 because of its significance and far ranging impact, requires a special notice and review process. It is quite comprehensive in its requirements and it should not be casually lumped into a general upgrading of emergency response. Appendix 2, especially the Class B dispersion models seem to loose sight of the objective of emergency planning. The objective of emergency planning is not to project offsite doses to + 1 millirem prior to advising protective action based on "real time" nuclearological conditions with options to forecast future weather, but rather to determine whether protective action is called for based on among other things actual measurements. It is quite clear that if significant radiological releases are occuring protective actions will be taken to whatever distances prudence, not a computer calculation, dictates.

Specifically:

(1) Section 3 requires Class A and B dispersion models be made available for use during accident airborne radioactive releases. The Class A model is intended to produce initial transport and diffusing estimates. If the Class A model predicts realistic maximum

concentrations for various downwind distances, (eg. plume centerline values from a Gaussian straight-line trajectory model), its results can be used to decide appropriate emergency response actions. The requirement for having a Class B model available during an accidental airborne release is redundant and not particularly purposeful. For example, Class B models are required to have the capability of forecasting changing meteorological conditions. The state of the art in computer weather forecast modeling may not be sophisticated enough to allow their application to predict diffusion at site specific locations. Prediction of seabreeze occurrences at wastal sites, or up and down valley flows in complex terrain, may be better handled by an experienced forecasting meteorologist familiar with the site than relying on computer forecasting models.

In conclusion, the application of ust a Class A model during an accidental release allows for sufficient planning for emergency response actions. Use of a site specific Class A model with input from an experienced forecasting meteorologist/consulting firm can produce accurate forecasts of future plume positions and radioactivuty concentrations.

(2) Backup meteorological data from an acceptable weather station should be all that is required. This information would normally be obtained by phone and manually fed into the meteorological computer. Appendix 2 should be clarified to allow such an interpretation without burdening either the weather station or the operator with more paper work than required for the primary objective of protecitng people.

(3) Additional comments on Appendix 2 follow:

1. Section 2 defines a viable backup metecrological system as an independent system specifically for the purpose of providing redundant site-specific meteorological information. Generally a complete digital meteorological monitoring system consists of such components as sensors, translators, A/D convertors, and digital processors and recorders. As this section is currently written, it is not clear whether redundant digital processing hardware is required, eg., whether or not the hardware necessary to perform other Appendix 2 computation requirements should be redundant. A clarification of the required redundant components for the backup system is needed.

2. Section 2 also requires all backup meteorological measurements programs to have a quality assurance program consistent with provisions of Appendix B to 10 CFR Part 50. This requirement may not be feasible for those licensees who choose to use independently-operated meteorological system (eg., National Weather Service stations) as part of their backup meteorological measurements program.

3. The title to Section 3, "Real-Time Predictions of Atmospheric Effluent Transport and Diffusion", is confusing. A suggested rewording of the title is: "Real-Time Estimates and Predictions of Atmospheric Effluent Transport and Diffusion".

4. Section 3 is not clear in distinguishing the different computational requirements for the Class A and B models. For example, as Section 3.c.(2) currently reads, both classes of models are required to forecast plume characteristics up to 24 hours in the future. However, this requirement should be beyond the intent of the quick-response Class A model, and Enclosure 1 indicates that forecasted plume characteristics are not included in the Class A remote interrogation dilution factor format.

   The computational requirement for Class A and B models hsould be more clearly defined. Suggestions for the computational requirements of each of these models are as follows:

   Class A Model Requirements:

   - use of a constant mean direction model (eg., Gaussian straight-line trajectory model) to produce initial relative concentration estimates.
   - response time within 15 miutes following an accident.

   Class B Model Requirements:

   - use of a variable trajectory model (eg., particle-in-cell model) to produce refined relative concentration and average dose rate estimates.
   - capable of executing for the duration of the release.
   - able to sue forecasts of changing meteorological conditions to forecast plume position and dimensions in three hour increments up to 24 hours in the future.

   Such a clarification of model requirements should be incorporated into Section 3, making sure they are consistent with Enclosure 1's data formats.

5. Subsection 3.c.(3) requires a determination to be made of the accuracy and conservatism of the models to be used to estimate atmospheric effluent transport and diffusion out to a distance of 50 miles. The requirement could be interpreted to require the use of tracer studies at each site to validate a particular model for that site. Such a requirement would be almost infeasible and prohibitively expensive.

   A suggested rewrite of this section is as follows:

   "Justification for the use of any given model in estimating atmospheric transport and diffusion to a distance out to 80 km (50 miles) should be documented".

6. Section 4.c.(3) requires the remote interrogation system to have a functional backup communications link. As currently stated, the purpose of this backup communications link is ambiguous. For example, it is not clear if the backup communications link should connect the tower(s) to the onsite data processor/data recorders, or if the onsite data processor should be redundantly linked to a dial-up connection located

elsewhere offsite, or both. The intent of the backup communicatons link should be made clearer.

7. In Enclosure 1 to Appendix 2, it appears that Figure A-1 is missing, and that Figures A-2 and A-3 were mislabled, respectively, as Figure A-1 and A-2.

I. Accident Assessment

I.5 Where is the offsite NRC center specified in this criteria?

J. Protective Response

J.10 Flexibility should be shown in identifying populations. For example, if an evacuation is ordered, it will likely be done on a town by town rather than 22 1/2° sector by sector basis. Sectorization is a useful computer technique but isn't a realistic protective action tool.