UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
METROPOLITAN EDISON COMPANY, ET AL.	)	Docket No. 50-289 (Restart)
	)	
(Three Mile Island Nuclear Station, Unit 1)	)	
	)	

NRC STAFF TESTIMONY OF STEPHEN H. CHESNUT ON CONTENTIONS RELATED TO ONSITE EMERGENCY PLANNING AND THE LICENSEE'S EMERGENCY PLAN

FEBRUARY 9, 1981

8102120267

OUTLINE

NRC STAFF TESTIMONY OF STEPHEN H. CHESNUT ON CONTENTIONS RELATED TO ONSITE EMERGENCY PLANNING AND THE LICENSEE'S EMERGENCY PLAN

This testimony addresses all or part of 20 contentions directed to the licensee's emergency plan and onsite emergency planning as well as two related Licensing Board questions involving the licensee's offsite radiation monitoring provisions.

The testimony is subdivided into the major areas of emergency planning of: (A) Accident Assessment; (B) Initial Notification of Governmental Units; (C) Protective Action Decisions; (D) Public Warning and Emergency Instructions; (E) Implementation of Protective Actions; (F) Radiation Monitoring; (G) Exercises and Drills; and (H) Audit and Review of Plans insofar as these areas relate to onsite emergency planning and the licensee's Emergency Plan.

The licensee's provisions for accident assessment are described and compared to the requirements of the new emergency planning rules and guidance. The matters of accident classification and assessment and licensee staffing for the emergency accident assessment function are addressed. It is shown that the licensee's emergency planning in this regard generally, with minor exceptions, complies with the NRC's guidance and requirements for accident assessment.

The licensee's provisions for initial notification of governmental units are described and compared to regulatory requirements and guidance. The timing of such notification and the provisions for transmitting information on accident classification, projected offsite doses and protective action recommendations are addressed.

Matters bearing on protective action decisions, including public warning time and evacuation time estimates are addressed. Several incomplete areas of planning in this regard are identified.

Licensee's provisions for prompt notification to the public in the event of an emergency and for public education on radiological emergency response are addressed. Both areas are identified as in need of further planning.

As to implementation of protective actions, the plume exposure pathway emergency planning zone chosen for TMI-1 is described and its adequacy discussed. The need, under NRC Regulations, for provisions to protect property around the TMI site is addressed. The adequacy of agreements by persons and organizations to provide emergency services for the licensee is also addressed.

In the area of radiation monitoring, the need for offsite, real-time monitors that read remotely onsite as well as the need for radiation monitors that can be read by the public is addressed.

Participation of various governmental emergency response organizations in emergency exercises is addressed. In the same vein, the licensee's Emergency Plan provisions for periodic tests and drills are described and the adequacy of those provsiions addressed.

The provisions and assignment of responsibility for audit and review of the licensee's Emergency Plan and for revising, and distributing revised versions of, the plan are addressed.

Finally, unresolved matters and areas of incomplete planning for onsite and licensee preparedness, as identified in this testimony and in NUREG-0746, "Emergency Preparedness Evaluation for TMI-1", are summarized.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
METROPOLITAN EDISON COMPANY, ET AL.	)	Docket No. 50-289
	)	(Restart)
(Three Mile Island Nuclear Station, Unit 1)	)	
	)	

NRC STAFF TESTIMONY OF STEPHEN H. CHESNUT ON CONTENTIONS RELATED TO ONSITE EMERGENCY PLANNING AND THE LICENSEE'S EMERGENCY PLAN

AAMODT CONTENTION	4 (EP-1)
ANGRY CONTENTIONS	IIF (EP-3C) IIIA(B) (EP-4A) IIIA(D) (EP-4B) IIIA(E) (EP-4C) IIIA(G) (EP-4E) IIIA(H) (EP-4F) IIIA(I) (EP-4G) IIIA(J) (EP-4H) IIIA(K) (EP-4I) IIIA(M) (EP-4J) IIIB(G)(1) (EP-5D(1))
ECNP CONTENTION	2-8 (EP-7) 2-9 (EP-8)
NEWBERRY TMI STEERING COMMITTEE CONTENTIONS	Met. Ed. Plan 1 (EP-15A) Met. Ed. Plan 3 (EP-15B) Met. Ed. Plan 4 (EP-15C) Met. Ed. Plan 7 (EP-15F)
SHOLLY CONTENTIONS	8I(B)(1) & (2) (EP-17A(1) & (2)) 8I(I) (EP-17B)
LICENSING BOARD QUESTIONS	4(a) 4(b)

Q.1. State your name and position with the NRC.

A. My name is Stephen H. Chesnut. I am an employee of the U.S. Nuclear Regulatory Commission (NRC) assigned to the Emergency Preparedness Licensing Branch, Division of Emergency Preparedness, Office of Inspection and Enforcement.

Q.2. Have you prepared a statement of professional qualifications?

A. Yes. A copy of this statement is attached to this testimony.

Q.3. State the nature of the responsibilities that you have had with respect to the Three Mile Island Nuclear Station, Unit 1 (TMI-1).

A. I have been responsible for reviewing and evaluating the TMI-1 Emergency Plan for conformance with the planning standards and requirements of 10 CFR Part 50, Appendix E and the evaluation criteria of NUREG-0654, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants". Based on this review, I provided input for, and was the principal author of, NUREG-0746, "Emergency Preparedness Evaluation for TMI-1", issued in December 1980. As part of my responsibilities in reviewing and evaluating the TMI-1 Emergency Plan, I am also responsible for addressing those contentions related to the Licensee's Emergency Plan for TMI-1 and onsite emergency planning and preparedness.

Q.4. What is the purpose of this testimony?

A. The purpose of this testimony is to address those admitted emergency planning contentions and those Licensing Board Questions related to the Licensee's Emergency Plan and onsite emergency preparedness.

Q.5. How is this testimony organized and what specific contentions are addressed?

A. The testimony is organized into categories of emergency planning actions with pertinent contentions addressed under the applicable categories. The specific categories and contentions addressed within those categories are:

(A) Accident Assessment - ANGRY Contentions IIIA(K) (EP-4I) and IIIA(M)(EP-4J); and ECNP Contentions 2-8(EP-7) and 2-9(EP-8);

(B) Initial Notification of Governmental Units - Aamodt Contention 4 (in part) (EP-1); ANGRY Contentions IIIA(G)(EP-4E) and IIIA(I)(EP-4G); and Newberry Contention Met. Ed. Plan 3 (EP-15B);

(C) Protective Action Decisions - ANGRY Contention IIIA(J) (EP-4H);

(D) Public Warning and Emergency Instructions - Aamodt Contention 4 (in part) (EP-1); ANGRY Contentions IIIA(E)(EP-4C) and IIIB(G)(1)(EP-5D(1)); and Newberry Contention Met. Ed. Plan 7 (EP-15F);

(E) Implementation of Protective Actions - ANGRY Contentions IIIA(B)(EP-4A) and IIIA(D) (EP-4B); Newberry Contention Met. Ed. Plan 1 (EP-15A); and Sholly Contentions 8I(B)(1) and (2)(EP-17A(1) and (2));

(F) Radiation Monitoring - ANGRY Contention IIF(1) (EP-3C(1)); Licensing Board Questions 4(a) and 4(b);

(G) Exercises and Drills - ANGRY Contention IIIA(H) (EP-4F); and

(H) Audit and Review of Plans - Sholly Contention 8I(I) (EP-17IB) and Newberry Contention Met. Ed. Plan 4 (in part) (EP-15C).

A. Accident Assessment

Q.6. Describe the provisions of the licensee's Emergency Plan for classifying emergencies and assessing accidents or abnormal occurrences.

A. Since the accident at TMI-2, the NRC has required that all licensees develop a four level Classification/Emergency Action Level Scheme to replace the accident classification system in Regulatory Guide 1.101. This classification system is required by the new rule on emergency planning, 10 CFR 50, Appendix E. The basis of the accident classification scheme and Emergency Action Levels is contained in NUREG-0654, Appendix 1. Using this system, the various accidents are classified based on their seriousness and the potential for offsite release. This system provides for worsening of accident conditions by providing prompt notification for minor events which could lead to more serious consequences given operator error or equipment failure or which might be indicative of more serious conditions which are not yet fully realized. A gradation is provided to assure

fuller response preparations for more serious indicators. By classifying each potential accident into one of the four categories, Notification of Unusual Event, Alert, Site Area Emergency, and General Emergency, and by identifying various instrument and radiation monitor readings and alarms which correspond to accidents or occurrences in each of these categories, accident recognition and classification is enhanced. The TMI-1 Emergency Plan incorporates a four-tiered accident classification system which meets the requirements of the new regulation on emergency planning, 10 CFR 50, Appendix E. Additionally, in a letter to the Staff dated December 29, 1980, the licensee modified its Emergency Action Levels which are used in conjunction with the classification scheme to be in general compliance with Appendix 1 of NUREG-0654. These Emergency Action Levels (EALs), however, classify accidents in the Site Emergency and General Emergency cateogries at lower radiation readings or lower fractions of the EPA Protective Action Guides (PAGs) than those recommended by NUREG-0654, Appendix 1. Though using EALs based on lower radiation readings and lower fractions of PAGs adds additional conservatism in that site and general emergencies would be declared for events less severe than those recommended by NUREG-0654, the Staff's position is that the licensee must conform these emergency action levels more closely to Appendix 1 of NUREG-0654. The licensee may recommend, and the State may choose, however, to take actions at lower levels of radiation readings and at lower fractions of PAGs than those specified in NUREG-0654 for particular emergency classes.

Q.7 What requirements are there with regard to the time within which a licensee is to recognize and classify an accident?

A. The NRC has not specified any minimum amount of time in which licensees are required to classify an accident and declare an appropriate level of emergency since accidents may result from a series of equipment failures or operator errors. Once an accident has been recognized using the Classification System previously described, however, the NRC will require that the licensee notify offsite response agencies within 15 minutes.

Q.8. What then is the purpose of the accident classification and emergency action level schemes?

A. The accident classification system and emergency action level schemes are designed to avoid failures in recognizing an accident and to provide for orderly and rapid accident assessment. This system accounts for the possibility of worsening accident conditions, added operator error and added equipment failures by bringing about the declaration of "emergency conditions", and the initiation of the licensee's emergency response for even minor events (those that would be classed in the "Notification of Unusual Event" category) which might be indicative of more serious conditions which are not yet fully recognized. By triggering the initiation of the emergency plan at a low threshold such as that for the "Notification of Unusual Event" cateogry, the

licensee's emergency response accident assessment effort is initiated as soon as an off-normal condition of any potential significance occurs. This accident classification system and emergency action level scheme also removes a large amount of discretion the licensee previously had in declaring an emergency condition. Once an incident has been classified in any one of the four categories, prompt notification of offsite response agencies is required.

Q.9 ECNP Attention 2-8 (EP-7) states:

> The fractions of EPA PAGs listed on p. 4-1 of the Plan, with their associated action levels, do not take into account the total accumulated dose and dose commitment. As a result, the total exposures may exceed by large margins the listed PAG fractions prior to the advancement to a higher emergency category.

What is a Protective Action Guide (PAG)?

A. A Protective Action Guide is a criterion used by public health officials and emergency response decision makers to determine the need for choosing and implementing appropriate protective actions. After a nuclear accident occurs, an estimate of the projected radiation dose from the accident to the affected population is made. That projected dose is then compared to PAGs which are the projected doses to individuals in the population which would warrant taking protective action. PAGs do not imply an acceptable dose; rather they constitute a trigger point for the taking of protective actions. If

the projected dose from the accident meets or exceeds the PAGs, protective actions specified for the particular PAG should be implemented to ameliorate the impact of the accident on the population at risk.

Q.10 How does the TMI-1 Emergency Plan utilize fractions of PAGs in its accident classification scheme?

A. The licensee chose fractions of the lower EPA PAGs as emergency action levels which are used to classify an accident into one of the four emergency categories. In this manner, an accident would be classified as an Alert if the whole body dose rate or iodine concentration for one hour would result in accumulating .01 of the lower EPA PAG; as a Site Emergency at .05 of the PAG; and as a General Emergency at one-tenth of the lower EPA PAG. These are conservative fractions used in accident classification, not in making protective action recommendations. These Emergency Action Levels using EPA PAGs will not prevent the escalation to a more severe accident classification based on other plant conditions or other Emergency Action Levels.

Q.11 How do these fractions compare to NRC guidance for emergency classifications and emergency action levels?

A. NUREG-0654 contains standard criteria and initiating conditions for use in developing Emergency Classification/Action level schemes. The use by the licensee of fractions of the EPA PAGs is compared with the NUREG-0654 Guidance as shown below:

Emergency Classification	Licensee's Plan	NUREG-0654 Guidance
ALERT	.01 EPA PAG (10 mr in 1 hr WB) (50 mr in 1 hr thyroid)	small fractions of EPA PAGs
Site Emergency	.05 EPA PAG (50 mr in 1 hr WB) (250 mr in 1 hr thyroid)	50 mr in ½ hr WB 250 mr in ½ hr thyroid
General Emergency	.1 EPA PAG (100 mr in 1 hr WB) (500 mr in 1 hr thyroid)	1 rem/hr WB 5 rem/hr thyroid (using actual meterological conditions)

As the table above shows, the dose rate received in one hour which corresponds to fractions of the EPA PAGs would result in the licensee classifying an accident in the Alert category consistent with NUREG-0654 (since no specific fraction is provided and .01 EPA PAG is a small fraction of the EPA PAG). The TMI-1 Plan would also result in ar accident being classified in Site Emergency or General Emergency categories based on lower doses than the guidance in NUREG-0654, Appendix A. Thus, in fact, the licensee's Plan is more conservative than the NRC guidance in this regard. The staff's position is, however, that the TMI-1 EALs should be modified to be more consistent with the NRC guidance in this regard.

Q.12 How does the licensee's use of fractions of PAGs in its emergency classification/action level scheme account for total accumulated dose and dose commitment?

A. The TMI-1 Plan uses the fractions of the PAGs only as an aid to accident classification and, as such, they do not account for total accumulated dose or dose commitment.

Q.13 How will using such fractions of PAGs affect the licensee's recommendations to offsite officials for taking public protective action?

A. Using fractions of the EPA PAG in its accident classification scheme should not, in any way, affect the licensee's recommendations to take protective actions. In fact, for the more serious accidents (those in the Site and General Emergency Category), emergency organizations would be mobilized at lower radiation levels than those recommended by NUREG-0654 under the licensee's classification system. The licensee and State still intend to base protective action recommendations on a comparison of dose projections (not dose rates) with Protective Action Guides as discussed previously.

Q.14 Do the EPA PAGs account for total accumulated dose?

A. The EPA PAGs do not, and as a practical matter could not, account for what is termed "unavoidable dose." These are doses previously received by individuals from sources such as background radiation and medical and dental X-rays before the nuclear accident in question. Rather, the EPA PAGs are designed to provide criteria for protecting persons from doses resulting from the accident in question.

The EPA PAGs have been written for application to individual and particular pathways for exposure to radiation. Thus, there is an EPA PAG for Exposure to Airborne Radioactive Material, an EPA PAG for Exposure from Foodstuffs and Water, and an EPA PAG for Exposure from Material Deposited on Property or Equipment. The PAG for each pathway represents a trigger point dose for the entire pathway--that is, the accumulated projected accident dose to an individual from the particular pathway is compared to the PAG for that pathway. In this respect, the EPA PAGs do account for accumulated dose from the accident but it is the accumulated dose from a particular pathway.

If one could add the discrete projected doses from an accident for each of the various pathways, the total accumulated dose projected to result from an accident could be determined. There is not, however, a separate PAG which considers the radiation dose received from all pathways. In fact, such a PAG would not be very meaningful or useful. This is because there are separate and distinct possible protective or restorative actions and costs associated with each pathway. In the case of an airborne plume, exposure to a given plume would be related to the duration of release. Protective action options would include sheltering, evacuation, controlling access to the area of the plume, thyroid protection, and respiratory protection. For the foodstuff and water pathway, exposure to the food chain would be either short-term or chronic depending on the characteristics and half lives of the radionuclides involved. Methods to protect the public from doses from this pathway would be entirely different from those protective actions for the airborne radioactive material pathway and

and time available and needed to take protective actions for each pathway differs significantly. The protective action options for the foodstuff pathway include control of access to contaminated animal feeds, decontamination of certain food stuffs, diversion and storage to allow decay of short half-life radionuclides, and destruction of contaminated foods. For the pathway from materials deposited on the ground, protective options include evacuation and controlled access. Again, the protective actions and the time available and needed to take them may be different for this pathway exposure than they would be for the others. Since PAGs are used by emergency response officials as triggering points on which to base decisions on the implementation of protective actions, it is necessary to distinguish between the three pathways so that the proper protective actions can take place. The use of distinct PAGs for each of the major radiation pathways rather than an "integrated" PAG best serves this purpose.

Q.15 What is meant by dose commitment?

A. This is the dose that will be delivered ultimately from a given insult. For sources external to the body, the dose commitment ends when either the source or subject is removed. For sources of radiation inside the body, the dose rate in the body (or organ) will eventually decrease with time due to radionuclide decay and body elimination, but growth of daughter products could make the instantaneous dose rate increase before decreasing. The integral of this instantaneous dose rate over time is the dose commitment.

Q.16 How do the EPA PAGs account for the total dose commitment?

A. Each EPA Protective Action Guide for a given pathway takes into account the dose commitment for that particular pathway and does not consider the dose commitment received from the other pathways. Since the purpose of the PAGs is to provide action guides based on advance planning that will facilitate national decisions in emergency situations, and since the protective actions to be taken for each pathway are different, establishing an overall PAG which accounts for the dose commitment from each pathway would not serve those planning purposes.

Q.17 As a result of the manner in which total accumulated dose and dose commitment are treated in the EPA PAGs, will the "total exposures... exceed by large margins the listed PAG fractions prior to the advancement to a higher emergency category?"

A. The total hypothetical exposure of an individual could exceed the PAG fraction used as an indication of a particular emergency classification before the accident classification would be advanced to the next emergency classification level by the licensee.

Q.18 What is the significance of such an occurrence?

A. There is really no significance to this. The fraction of EPA PAGs used by the licensee as indicators of a particular emergency class are strictly that--indicators of an emergency class. They are not used as indicators that protective actions should be taken promptly and are not intended to be used that way. Rather, they are a trigger-point for mobilizing emergency response organizations. Fractions of PAGs are used so that an emergency classification is declared and emergency response organizations notified and mobilized before protective actions are necessary. The levels of projected accident doses or dose rates recommended in NUREG-0654 for use in classifying an emergency are small fractions of PAGs in order to provide substantial lead time for mobilizing emergency response organizations. The fractions of PAGs used by the licensee are generally smaller than those recommended by NUREG-0654 and would lead to mobilization of emergency response even earlier than if the guidelines of NUREG-0654 were used. With the small fractions of PAGs that are used as indicators of emergency classifications, projected doses from accidental releases could exceed the PAG fractions substantially and yet be far below the level at which protective actions are necessary.

Q.19. ANGRY Contention IIIA(K) (EP-4I) states:

> The time provided in the EP for accident assessment, 1/2 hour (EP, p. 6-7), is in excess of the maximum permissible therefor specified in the Standard Review Plan, NUREG 75/087, §13.3(II)(3). (EP Fig. 21 shows the thyroid PAG of 5 rems being reached in 12 minutes at 600 meters). Moreover, the estimate given is unsupportable for monitoring of off-site locations on nearby islands or on the west shore of the Susquehanna River. Such factors may become

critical in the event of a general emergency, which produces a "shift in emphasis to greater off-site monitoring efforts" (EP, p. 6-6).

Do the time estimates for accident assessment described in the June 10, 1980 TMI-1 Emergency Plan (one-half hour, p. 6-7) exceed the guidance specified in the Standard Review Plan (NUREG 75/087) or other NRC guidance regarding accident assessment?

A. No. The NRC has not promulgated any guidance for maximum permissible times to conduct accident assessment. This is because accident assessment will commence upon initiation of an event and will continue until the plant is stable and there is no further potential for radioactive release.

Q.20. What requirements are there, then, to promote accident assessment and mobilization of an emergency response in a timely manner?

A. The NRC requires that the licensee have procedures and facilities to make a rapid <u>initial</u> assessment based on in-plant alarms, parameters, and monitors so that the accident may be properly classified and so that notifications and protective action recommendations can be made to offsite authorities. Follow-on accident assessment will continue and may be based on offsite radiation data in addition to plant monitors, parameters, and meteorological data available onsite.

Q.21. What role in initial accident assessment does the licensee's "capability to dispatch radiation monitoring teams" to offsite areas play?

A. The statement in the TMI-1 Emergency Plan referred to by ANGRY in this contention, "The plant has the capability to dispatch radiation monitoring teams and receive initial monitoring data within one-half hour of the emergency declaration", refers to confirmatory actions conducted after the initial accident assessment and after notification of offsite response organizations. The information provided by such teams is useful in verifying accident assessment projections by the onsite response organization but is not used and is not necessary to provide the information upon which the initial accident assessment, notification to offsite authorities and protective action recommendations are based. The onsite emergency organization should not rely on offsite radiation readings when making initial accident assessment since this may cause a delay in notifying offsite emergency response organizations and in warning the public equal to the time it takes to dispatch monitoring teams and receive the monitoring data and since it is desirable to notify response organizations rapidly, prior to the arrival of a radioactive plume offsite. In fact, it is inappropriate to rely on offsite monitoring alone for accident classification, dose projection and protective action recommendations since offsite readings will do nothing more than show what levels of radiation are actually being experienced at the monitoring location at a time when protective actions, if necessary, should already have been initiated.

Q.22. What need is there to have monitoring teams dispatched to islands in the Susquehanna River near the site and to the west shore of the river?

A. The offsite monitoring teams would be useful in verifying the source terms and offsite dose levels and radioactive contamination estimated by the emergency organization. These confirmatory actions would normally be taken after the initial accident assessment, dose projection, and notification of offsite authorities for protective action. The extent of radiation surveys and monitoring required for the nearby islands and on the west shore of the Susquehanna River would be dependent on the particular accident and the meteorological conditions during the accident. Immediate, offsite monitoring at these locations is not necessary however as the licensee's Emergency Plan relies on inplant instruments and site meterological information to take its initial emergency actions and notify officials offsite.

Q.23. Are the provisions in the licensee's emergency plan, which do not call for dispatching offsite monitoring teams until one-half hour after an accident occurs, inadequate in the event of severe and rapidly developing accidents at TMI-1?

A. No. Initial accident classification, assessment, and notification of offsite authorities as described in the TMI-1 Emergency Plan is not dependent on the dispatching of offsite monitoring teams or the receipt of data on radiation levels measured offsite. As previously indicated,

the Plan calls for making the initial classification, assessment, and notification actions upon reaching predetermined Emergency Action Levels, which are based on inplant or effluent monitors observable in the TMI-1 control room. For serious and rapidly developing accident sequences falling in the General Emergency category, the licensee's Plan calls for making immediate notification and protective action recommendations to offsite authorities. As discussed in response to the previous question, the offsite monitoring teams would serve a useful purpose in confirming those dose estimates made by the onsite emergency organization, or in defining the boundaries of a radioactive plume; however, notification, warning and protective action would not be delayed while awaiting this information.

Q.24. ANGRY Contention IIIA(M) (EP-4J) states:

> The licensee's Onsite Emergency Organization staffing provisions as set forth in Table 8 of its EP fail to conform to the standards of N. 0654 Sec. B5 in the following respects:
>
> > 1. Under said standards two control room operators are assigned the function of "plant operations and assessment of operational aspects." Another shift employee is given the exclusive task of providing communications liaison with off-site officials. Under the licensee's staffing provisions, by contrast, the two control room operators are assigned to "operate equipment in control room and act as communicator" (emphasis added). This divided responsibility compromises the licensee's ability to provide prompt off-site notification of emergency conditions. The inadequacy of these staffing provisions is aggravated by the absence of any provision for the addition of three more persons with communications responsibilities within 30 minutes, as required by the aforementioned acceptability standard.

2. A similar confusion of assignments exists with regard to the shift supervisor and shift foreman, who are expected to fill three roles between them.

3. Although N. 0654 requires the emergency operations facility director to assume his assignment within 30 minutes, under the licensee's plan this will not occur for as long as four hours.

4. Two radiological analysis support engineers, who are the only employees identified as having the training and primary responsibility for performing "dose projection calculations and source term calculations" (EP, p. 5-10) will not be available for as long as 60 minutes.

As to Part 1 of this contention, what guidance is provided in NUREG-0654 on emergency response assignments for control room operators?

A. NUREG-0654, Table B-1 recommends that two onshift control room operators be assigned to the major functional area of plant operations and assessment of operational aspects. As stated in the contention, NUREG-0654 recommends that an additional person be available for notification of State, Federal and licensee personnel.

Q.25. What are the provisions of the licensee's Emergency Plan in this regard?

A. The licensee's Plan assigns to the two control room operators the emergency functions of operating control room equipment and acting as communicators.

Q.26. How does the licensee's divided responsibilities for the control room operators affect the licensee's ability to provide prompt off-site notification of emergency conditions?

A. The licensee's provisions will not compromise the licensee's ability to provide prompt off-site notification. Table B-1 of NUREG-0654 provides guidance to the licensees regarding minimum shift and on-call personnel assets available for emergency assignments. Additionally, this table includes the major functional areas and emergency tasks to be planned for in making assignments to the emergency organization. The licensee's emergency organization assignments described in the Emergency Plan provide for the assignment of adequate numbers of on-shift personnel to perform the emergency functions. This plan calls for a typical shift manning of 19 personnel; NUREG-0654 requires a minimum of 10 on-shift personnel to perform the initial emergency functions. Thus, for TMI-1, there are extra personnel available to perform the offsite notifications if the shift supervisor determines that the plant conditions would prevent the two control room operators from making initial notifications. Consequently, the adequacy of provisions for prompt offsite notification is not compromised. The NRC has made the additional requirement that the licensee conduct emergency exercises annually and prior to restart. During these exercises and during periodic communications drills, the licensee's performance in providing satisfactory initial and follow-up notifications will be confirmed.

Q.27. Describe the licensee's emergency plan provisions with regard to staffing of personnel responsible for communications and compare that to the recommendations of NUREG-0654.

A. The TMI-1 Emergency Plan provides that one communicator and two communications assistants will be available within one hour of being notified. In Table B-1 of NUREG-0654, it is recommended that one person responsible for communications be available within thirty minutes and two additional persons be available within one hour of being notified. Thus, the licensee's plan complies explicitly with the NUREG-0654 recommendation that two additional communications personnel be available within one hour but does not explicitly comply with the recommendation that one person responsible for communications be available within thirty minutes. However, the normal onshift manning at TMI exceeds the number of personnel recommended on shift by Table B-1 of NUREG-0654. Thus, the licensee's emergency plan provides additional personnel, continuously and immediately available, who could be called upon immediately to undertake communications. The TMI-1 Emergency Plan provisions for three additional personnel to perform emergency communications within one hour in combination with the provisions for excess onshift manning to assist immediately in communications if necessary meets the intent of the minimum staffing recommendations of Table B-1 for notification and communications and will assure adequate staffing for this purpose.

Q.28. As to ANGRY Contention IIIA(M)(2)(EP-4J(2)), Table B of the TMI-1 Emergency Plan states that the Shift Supervisor will become the Emergency Director and, as required, the Radiological Assessment Coordinator or Operations Coordinator. The plan also states the emergency functions of the Shift Foreman as the Radiological Assessment Coordinator and Operations Coordinator. Is the assignment of these three emergency functions to two operators an acceptable allotment of emergency responsibilities?

A. The licensee's Emergency Plan states that the Shift Supervisor and Shift Foreman should be qualified to perform the multiple emergency functions described above in order to insure that these tasks can be performed during all shifts. The Shift Supervisor and Shift Foreman will assume the three emergency roles only until the onsite emergency organization is fully manned, which will occur within 1 hour, at which time these emergency functions will be performed by the emergency duty section which is on call. The on-shift staffing described in the TMI-1 Emergency Plan is adequate to insure that the initial emergency functions listed in NUREG-0654 can be performed. The duty section for onsite support has assigned a Duty Superintendant who will relieve the Shift Supervisor and Shift Foreman of remaining emergency functions. The Shift Supervisor and Shift Foreman will then assume emergency duties reporting to the Operations Coordinator. Interim assignment of emergency functions to the Shift Supervisor and Shift Foreman while

awaiting the arrival of the Onsite Emergency Organization is consistent with the NRC guidance contained in Table B-1 of NUREG-0654 and is an acceptable allotment of emergency responsibility for the interim period before arrival of the onsite emergency organization.

Q.29. As to ANGRY Contention IIIA(M)(3)(EP-4J(3)), what guidance does NUREG-0654 provide with regard to when the Emergency Operations Facility (EOF) Director is to assume his duties after an emergency arises?

A. NUREG-0654, Revision 1 indicates that specific assignments shall be made which cover the emergency functions of Table B-1 to NUREG-0654, Revision 1, "Minimum Staffing Requirements for Nuclear Power Plant Emergencies". Table B-1 provides that the major functional area of "Radiological Accident Assessment and Support of Operational Accident Assessment" is to be directed by a senior manager acting as the Emergency Operations Facility Director and that the EOF Director and the capability for augmenting this major functional area must be available within one hour of declaration of an emergency. Thus, under the provisions of NUREG-0654, Revision 1, the EOF Director is to assume his responsibilities within one hour of the declaration of an emergency rather than within one-half hour as stated in ANGRY Contention IIIA(M)(3) (EP-4J(3)).

Q.30. How do the licensee's emergency plan provisions in this regard compare to NUREG-0654?

A. The TMI-1 Emergency Plan calls for the stationing of the EOF Director (called the Emergency Support Director in the Plan), a senior manager, within four hours of declaration of an emergency, not within one hour, the time recommended by NUREG-0654 for stationing the EOF Director. The TMI-1 Plan does describe procedures for performing the Radiological Accident Assessment function, however. These functions are supervised by the Emergency Director and Radiological Assessment Coordinator, not the EOF Director. When an emergency occurs, the shift supervisor assumes the functions of the Emergency Director. He will be assisted by the Shift Foreman and on-shift Health Physics technicians in performing radiological assessments of the accident until the emergency duty section support organization is activated at which time the Shift Supervisor and Shift Foreman are relieved by the assigned duty section Emergency Director, Radiological Assessment Coordinator, and the Operations Coordinator. These provisions indicate that the licensee's plan has not neglected the Radiological Assessment function; however, it does not fully comply with Table B-1 of NUREG-0654 in that a senior manager who can speak with authority to other emergency organizations on radiological or operational matters should be stationed at the EOF within one hour of notification. Thus, the Staff position is that the licensee's plan must be modified to provide for the arrival of such an individual within the time called for in NUREG-0654.

Q.31. As to ANGRY Contention IIIA(M)(4)(EP-4J(4)), what are the recommendations of NUREG-0654 with regard to the timing and availability of

radiological analysis support engineers or other adequately trained personnel having the responsibility for dose projection and source term calculations?

A. Table B-1 of NUREG-0654 lists minimum staffing requirements for the functional area of Radiological Accident Assessment. This table indicates that one senior Health Physics person should be available within one-half hour to perform Offsite Dose Assessment.

Q.32. How do the licensee's emergency plan provisions in this regard compare to the recommendations of NUREG-0654?

A. The licensee's emergency plan calls for three health physics trained personnel on shift (one Health Physics Foreman and two Health Physics Technicians) who can assist the Emergency Director in the initial radiological assessment at the onset of an emergency. These personnel are available continuously and immediately and are qualified to perform dose projection calculations and source term calculations. These personnel, in combination with the arrival of the Radiological Assessment Coordinator and Radiological Analysis Support Engineers within one hour, are sufficient to meet the staffing criteria of NUREG-0654 with respect to performing dose projections and source term calculations.

Q.33. ECNP Contention 2-9 (EP-8) states:

> The various emergency categories (p. 4-2 to 4-8) each list a number of triggering events or conditions. Many of these are questionable indicators. For instance, on p. 4-3, "Valid" alarms are referred to. But there is no mention of the definition of a "valid" alarm, or what would be an invalid alarm. A number of reactor coolant, activities (50, 130, and 300 µci/ml) are referred to, but no mention is made of how much fuel damage it takes to produce these readings. In addition, there is no indication of how or how rapidly these coolant activities will be determined.

How do the initiating events or conditions for the various emergency categories indicate the onset of an event requiring an emergency response?

A. The initiating conditions or events described in the licensee's Emergency Plan classify the postulated events and accidents based on their level of potential or actual consequences. These "triggering" conditions are generally in compliance with Appendix 1 to NUREG-0654, Emergency Action Level Guidelines for Nuclear Power Plants, and include, but are not limited to, initiating events for the postulated accidents in the licensee's Final Safety Analysis Report (FSAR). The TMI-1 emergency action levels were revised in December 1980. As described in response to Question 7, some further modification will be required to more closely conform the emergency action levels with the standard classification/action level scheme recommended by NUREG-0654 Appendix 1.

Q.34. What is your view as to whether the triggering events and conditions, as upgraded in the revised Emergency Action Level/Classification Scheme, are valid indicators of the onset of a condition potentially requiring emergency actions?

A. The revised emergency action levels provided by the licensee provide specific instruments, parameters or equipment status for each emergency class and are indicative of the example conditions of NUGEG-0654, Appendix 1. Using these emergency action levels, operators and decisionmakers should be able to promptly classify accidents and make protective action recommendations.

Q.35. What is the meaning of a "valid alarm" referred to in the Emergency Plan.

A. A valid alarm would be one brought about by an actual plant condition, not an erroneous instrument reading or failed alarm circuit. Normally, plant operators would monitor related instrumentation to determine if an alarm was valid or, instead, is an erroneous alarm resulting from a failed or defective instrument and not indicative of the actual plant condition. The licensee's reference, in its Emergency Plan, to "valid" alarms is merely made to indicate that an emergency should not be declared based on obviously invalid or erroneous alarms caused by instrument failure or obviously erroneous instrument readings which are not accurate indicators of actual plant conditions.

Q.36. How much fuel damage will correspond to the reactor coolant activities referenced in the emergency plan?

A. The licensee's Emergency Plan does not provide levels of fuel damage associated with the coolant activities listed in its emergency action

levels. Three coolant activities appear in the action level scheme; 50,130 and 300 µci/ml. NUREG-0654, Appendix 1 does suggest that 300 µci/ml would be indicative of severe fuel cladding damage, approaching about 1%. My discussions with the licensee indicate that 50 µci/ml was chosen as an actual level because it is higher than normally expected and previously experienced spikes in coolant activity at TMI-1 and is roughly equivalent to 0.1% fuel failure. Additionally, the licensee indicates that it chose 130 µci/ml because it is approximately one-half the operational limit in the technical specifications for failed fuel. The licensee indicated that this is equivalent to approximately one-third of one percent fuel damage. The licensee's emergency action levels which reference coolant activity levels are more conservative than those recommended by NUREG-0654. Specifically NUREG-0654 recommends that 300 µci/ml be used to trigger an Alert, whereas the TMI-1 plan would classify the same accident as a Site Emergency based on the same coolant activity. The Staff position is that the licensee's EALs should conform more closely to NUREG-0654 to remain consistent with the standard classification system.

Q.37. How will high reactor coolant activities be determined and how rapidly will they be determined?

A. TMI-1 has modified its normal coolant sampling procedures for taking high activity coolant samples. These modified procedures will be used until the sampling system modifications required by NUREG-0578 are completed. The interim high activity chemistry procedures will utilize

the current sample piping; however, sampling techniques are modified such that additional sheilding, protective equipment, long handled instruments and dosimetry will be used so that personnel extracting and analyzing the coolant samples will be given added protection from radiation doses. It is estimated that this procedure for taking the sample and analyzing it can be accomplished in less than three hours, the time specified in NUREG-0737, Clarification of TMI Action Plan Requirements, with regard to post-accident sampling capability. These procedures will be evaluated by the Staff (OIE) during exercises and drills required by the new emergency planning rule and NUREG-0654. The status of modifications to the sampling systems required by NUREG-0578 are reported in NUREG-0680.

B. Initial Notification of Governmental Units

Q.38. Aamodt Contention 4 (EP-1) states, in part:

> All data and plant operating personnel observations relative to all radioactive releases must be transmitted immediately and simultaneously to the NRC, Pennsylvania Department of Environmental Resources, the commissioners of Dauphin, York and Lancaster Counties, and the licensee's management. It is further contended that licensee must provide this capability before restart of TMI-1.

What provision is made in the TMI-1 Emergency Plan for transmitting data and observations on radioactive releases to the NRC?

A. The TMI-1 Emergency Plan includes specific provisions for transmitting data on radioactive releases to the NRC. Upon the declaration of an emergency in any one of the categories of Notification of Unusual

Event, Alert, Site Emergency or General Emergency, the licensee's shift supervisor will notify, among others, the NRC office in Bethesda, Maryland. The initial notification will provide information concerning the emergency class, affected populace and areas, and the type and magnitude of any actual or potential release. Subsequently, followup messages will be sent to the NRC and, as specified on page 5-8 of the TMI-1 Emergency Plan, will include the following information: type and quantity of release of radioactivity; affected areas; chemical and physical form of the release including estimates of the relative amounts of noble gases, iodines and particulates; prevailing weather; actual or projected dose rates and integrated doses at 2, 5 and 10 miles; and estimates of surface radioactive contamination. The transfer of this information in the followup message to the NRC will be made using the Health Physics Network which connects the NRC Operations Center in Bethesda, Maryland, the NRC Regional Office and the TMI-1 site.

Q.39. What provision is made in the TMI-1 Emergency Plan for transmitting data and observations on radioactive releases to the Pennsylvania Department of Environmental Resources?

A. The TMI-1 Emergency Plan includes specific provisions for transmitting data on radioactive releases to the Pennsylvania Emergency Management Agency (PEMA). Upon the declaration of an emergency in any one of the categories of Notification of Unusual Event, Alert, Site Emergency or General Emergency, the licensee's shift supervisor will notify the

PEMA duty officer in addition to the NRC and others. That initial notification will provide information concerning the emergency class, affected populace and areas, and the type and magnitude of any actual or potential release. PEMA, in turn, will notify the Department of Environmental Resources Bureau of Radiation Protection (BORP) immediately after receiving notification of an emergency at TMI-1. Thus, the initial notification of an emergency and transmittal of information on radioactive releases will not be made by the licensee directly to the Department of Environmental Resources but, instead, will appropriately be made directly to PEMA, the State agency responsible for mobilizing the State's emergency response.

Followup messages from the licensee on radioactive releases including the information outlined in response to the previous question will be made directly to the Department of Environmental Resources BORP through a direct "Radiological Line" which will provide dedicated telephone communication lines between the TMI-1 Control Room, the Operations Support Center, the EOF, the alternate EOF and BORP.

Q.40. What provision is made in the TMI-1 Emergency Plan for transmitting data and observations on radioactive releases to Dauphin, York and Lancaster Counties?

A. The TMI-1 Emergency Plan specifically provides for direct notification by the licensee of the Dauphin County emergency management agency immediately upon the declaration of any emergency in the Notification

of Unusual Event, Alert, Site Emergency and General Emergency categories. It also provides for direct notification by the licensee of the York and Lancaster County emergency management agencies upon declaration of a General Emergency. Under the provisions of the Emergency Plan, the information to be transmitted to the counties by the licensee in these initial notifications includes the pertinent emergency class, a projection of the populace and areas that might be affected, and a description of the type and magnitude of any actual or potential release of radioactivity. For emergencies classed in the Notification of Unusual Event, Alert or Site Emergency categories, notification of York and Lancaster Counties will be made by PEMA, rather than by the licensee directly, unless such notification has not been accomplished by PEMA within 15 minutes of the declaration of an emergency. In all instances, the capability exists for providing information to the Counties on radioactive releases directly from the TMI-1 Control Room using the Emergency Director's auto-dialer telephone which lists all five counties in the plume exposure pathway EPZ on the auto-log.

Subsequent to the initial notifications to the counties, additional information will be transmitted to the counties by PEMA. Specifically, technical information will be evaluated by BORP and then further information on radioactive releases and protective action recommendations will be transmitted to the counties by PEMA. In this way, the additional information on radioactive releases and coordinated protective action recommendations will be made to the counties by a single agency, PEMA, in order to ensure consistent and coordinated emergency responses by the counties.

Q.41. What provision has been made for direct initial notification of county commissioners themselves of the declaration of an emergency and of actual or potential radioactive releases?

A. Direct, initial notification of county commissioners themselves is not provided for and is not required. As a practical matter, it would be extremely difficult to assure that the initial notification of the declaration of an emergency and of actual or potential releases will be made directly to county commissioners since it is not possible for the commissioners to be directly reachable from the TMI site or from PEMA on a 24 hour-per-day, 7 day-per-week basis. Rather, provision has been made for the continuous, full-time manning of county communications links. Initial notification of declaration of an emergency and of actual or potential releases will be made to the county duty officers who will then undertake to mobilize the county emergency response organizations which includes contacting county commissioners or chief executive officers.

Q.42. What provision is made in the TMI-1 Emergency Plan for transmitting data and observations on radioactive releases to the licensee's management?

A. The licensee's Emergency Plan calls for providing initial notification of a radioactive release through its emergency call-out procedures. The effective duty section rosters will include members of both the

site and corporate management. As directed by the Plan, these personnel will report to their respective onsite or offsite positions. In the event of a Site or General Emergency, the corporate Parsippany (N.J.) Technical Functions Center will be staffed. A direct line between the Control Room, TSC, EOF, and Babcock and Wilcox will allow transmission of information on radiological releases and other technical matters. Furthermore, the licensee's emergency plan gives to the Emergency Director the authority to implement onsite protective measures as well as to make recommendations for offsite protective actions, rather than rely on upper site or corporate management to make such decisions.

Q.43. For what types of radioactive releases do the emergency plan notification provisions outlined in response to the previous questions apply?

A. The notification provisions outlined above will be followed when there has been an abnormal, nonroutine event which results in the declaration of an emergency in one of the four categories of Notification of Unusual Event, Alert, Site Emergency or General Emergency. Consequently, the notifications of actual or potential radioactive releases would involve releases that are abnormal and nonroutine and result from an accident or other off-normal event at TMI-1. In addition, once there has been a declaration of an emergency in any one of the four emergency classes, the Emergency Plan provides for the continuous

notification of offsite authorities of plant status and of actual or projected radioactive releases during the entire course of the emergency.

However, there are no Emergency Plan provisions for notifications of normal, routine releases of radioactivity which are not a result of an accident or an emergency, which are made in the normal course of reactor operation within regulatory and licensed limits or which are unplanned but are within the release limits contained in the NRC regulations and the TMI-1 license. In the absence of an abnormal event or accident which triggers the Emergency Plan, there is no requirement that notification of such routine, authorized releases be made under an emergency plan and notification of such releases is not properly a part of emergency planning. It should be noted, however, that all unplanned releases of whatever size are reported to the NRC under the provisions of 10 CFR § 50.72 and similar arrangements may be negotiated outside the NRC regulatory process for other public authorities.

Q.44. What are your views as to the need to immediately transmit to the NRC, the Pennsylvania Department of Environmental Resources, Dauphin, York and Lancaster Counties and the licensee's management, data and observations on normal, planned routine radioactive releases within the limits of the NRC regulations and the TMI-1 license.

A. Immediate reporting of such releases is not required by the regulations or the TMI-1 license and is not needed. Such release are anticipated during normal operation and are permitted by the regulations and the operating license. Such routine releases were previously analyzed during initial licensing of the facility and found to have no significant impact. The NRC does require that licensees report routinely to the NRC under the Radiological Environmental Monitoring Program, all gaseous and liquid releases in the time frame or frequency described in Regulatory Guide 10.1.

Q.45. ANGRY Contention IIIA(I) (EP-4G) states:

> The licensee's emergency notification procedures (pp. 6-2, 6-3, 6-4; Figure 15) (see also Pa. DOP Appendix 3) are inadequate with respect to certain areas directly at risk in the event of a nuclear accident, namely, York and Lancaster Counties. Although the Dauphin County Emergency Operations Center receives immediate notification of an emergency declaration, notification of York and Lancaster Counties must follow an excessively circuitous path:
>
> 1. Licensee to Dauphin
> 2. Licensee to PEMA
> 3. PEMA to BORP
> 4. BORP to Licensee
> 5. Licensee to BORP
> 6. BORP to PEMA
> 7. PEMA to Dauphin
> 8. PEMA to York, Lancaster and Cumberland Counties
>
> Such a notification sequence is in direct conflict with requirements that "delegations of authority that will permit emergency actions (such as evacuation) to be taken

with a minimum of delay should be carefully considered" (NUREG-75/111, § A3) and that "Upon declaration of a 'general emergency' immediate notification shall be made directly to the offsite authorities responsible for implementing protective measures..." (EPRG § II(A)(5)) (Emphasis in original). Also N. 0654, 57.

How will York and Lancaster Counties be notified of an emergency declaration?

A. In the event of an accident at TMI-1, the Shift Supervisor immediately assumes the duties of Emergency Director. He is responsible for ensuring the prompt notification of the responsible offsite emergency organizations. The Shift Supervisor will assign one of the control room operators or other available personnel on shift to assume the role as communicator. In the event of an emergency in the General Emergency category, the communicator will directly notify all five counties in the plume EPZ, including York and Lancaster Counties, PEMA and the NRC. In the event of an emergency in the Notification of Unusual Event, Alert and Site Emergency categories, the communicator will notify Dauphin County, then PEMA and the NRC. PEMA will then notify York and Lancaster Counties.

Q.46. Under this notification sequence, how promptly after declaration of an emergency will York and Lancaster Counties be notified?

A. In the event of a General Emergency, the licensee has revised its Emergency Plan to provide for notifying York and Lancaster Counties directly and immediately.

For the Not ification of Unusual Event, Alert and Site Emergency categories, the licensee's Emergency Plan notification sequence provides for only two steps prior to York and Lancaster Counties being notified - licensee contacts Dauphin County and licensee contacts PEMA. PEMA then notifies York and Lancaster Counties directly. Thus, the eight steps outlined in ANGRY Contention IIIA(I) (EP-4G) for notification of York and Lancaster Counties are not correct. The communications links at the TMI-1 Control Room, Lancaster and York Counties and PEMA are manned continuously, 24 hours a day. Furthermore, the licensee and Dauphin County have adopted contingency procedures which provide for Dauphin County's notifying Lancaster and York Counties in the event that PEMA has not notified those counties or if PEMA or BORP does not promptly verify that those counties have been notified. With these provisions, notification of York and Lancaster Counties should occur within about 15 minutes of declaration of an emergency in the Notification of Unusual Event, Alert and Site Emergency categories. The physical and administrative means to promptly notify all five counties in the plume EPZ will be observed during the required exercises.

Q.47. How does the notification sequence with regard to Lancaster and York Counties described in the licensee's plan compare to the recommendations for initial notification in NUREG-0654?

A. NUREG-0654 does not call for notification of Counties or State governments in any particular sequence. NUREG-0654, Appendix 1 states that,

for the categories Notification of Unusual Event, Alert, and Site Area Emergency, licensee actions include promptly informing State and/or local authorities of (classificiation) status and reason for that classification as soon as discovered. For the General Emergency Category, Appendix 1 states that licensee should, "Promptly inform State and local offsite authorities of general emergency status and reason for emergency as soon as discovered (Parallel notification of State/local)". In addition, the new rule and NUREG-0654 require that licensees shall have the capability to notify State and local governmental agencies within 15 minutes after declaring an emergency. The procedures and facilities of the licensee, described in response to the previous questions, which are used to complete initial notification, therefore, are not inconsistent with the new rule or NUREG-0654.

Q.48. Does the notification sequence for the Notification of Unusual Event, Alert and Site Emergency categories, whereby PEMA, rather than the licensee, notifies York and Lancaster Counties, conflict with the NUREG 75/111 guidance that "delegations of authority that will permit emergency actions (such as evacuation) to be taken with a minimum of delay should be carefully considered".

A. No. In fact, the quoted guidance from NUREG 75/111 is that where time may be saved and delay minimized through delegating authority, consideration should be given to providing for such delegation. The notification sequence in question is not inconsistent with such guidance. Furthermore, criteria and guidance for emergency planning

are today established by the new emergency planning rules and NUREG-0654, Revision 1, rather than by NUREG 75/111. The current guidance recommends notification of state and local emergency response agencies within 15 minutes of the declaration of an emergency by whatever means are necessary to accomplish such prompt notification. The licensee possesses the capability to accomplish this prompt notification in accordance with the current guidance and has provided for it in its Emergency Plan.

Q.49. Newberry Contention Met. Ed. Plan 3 (EP-15 B) states:

> Section 4.5.1.3(1)(c)(d) states that the Emergency Director shall provide liaison communication with county, state and federal government to ensure that notification and reports to these agencies are made in a timely manner and that he will communicate with off-site emergency support organizations. It is Intervenor's contention that this part of the Plan which is critical to the coordination of all emergency activities does not state with specificity the exact timeframe in which notification and communication is to be made with off-site emergency support organizations and agencies. It is Intervenor's position that this is critical in order to ensure that licensee reports and communicates any abnormal and emergency condition to the respective organizations in a truly timely fashion. The Emergency Plan as now drafted leaves too much discretion with the Emergency Director with regard to the contacting of these off-site agencies.

What county, State and Federal government agencies and offsite emergency response organizations are to be notified promptly of an emergency condition?

A. The planning standard for Notification Methods and Procedures requires provisions for "... notification by the licensee of State and local

response organizations ..." Additionally, the planning standard for Emergency Communications requires that "Provisions exist for prompt communications among principal response organizations ..." Those principal organizations would include Federal, State, and local agencies or departments or executive offices and nuclear utilities having major or lead roles in emergency preparedness. For the Three Mile Island site, provisions should exist for prompt notification of the Pennsylvania Emergency Management Agency, Dauphin, Lancaster, York, Cumberland, and Lebanon Counties, and the NRC.

Q.50. In what time frame will notification of an accident be made to these counties, the State, and the NRC?

A. In the new emergency planning rule, 10 CFR 50, Appendix E, the NRC requires that all licensees shall have the capability to notify responsible state and local government agencies within 15 minutes after declaring an emergency. The licensee's Emergency Plan has designated the Shift Supervisor as responsible for insuring immediate notification of off-site organizations following an emergency declaration.

If an emergency situation requires implementation of the TMI-1 Emergency Plan, and if the accident falls within the Notification of Unusual Event, Alert, or Site Emergency categories, the Shift Supervisor will notify the Dauphin County EOC, PEMA duty officer, NRC office in Bethesda, Maryland, the Duty Section Superintendent, and the

unaffected Control Room. The PEMA duty officer will then immediately notify the five counties within the plume EPZ. In addition, the licensee has developed contingency procedures whereby all five counties will be immediately notified for the Notificiation of Unusual Event, Alert and Site Emergency categories in the event those counties have not been notified by PEMA within 15 minutes.

If the accident falls into the General Emergency category, the notification sequence will be the same except that all five counties within the plume exposure pathway EPZ will receive direct and immediate notification from the TMI-1 site. Thus, provision is made for notification of the necessary Federal, State and local emergency response organizations within about 15 minutes of declaration of an emergency.

The procedures and capability to complete prompt notification of Federal, State and local governments will be evaluated during the joint exercise required by the Commission's August 9, 1979 Order and during subsequent communications drills and exercises to ensure that the capability for prompt notification is maintained.

Q.51. What discretion does the licensee's emergency plan give to the Emergency Director with regard to the timing of notifications to county, State and Federal emergency response oganizations?

A. The procedures described in the TMI-1 Emergency Plan and Implementing Document do not give the Shift Supervisor or Emergency Director

discretion regarding notification of offsite officials. Once an Emergency Action Level has been reached, as determined by various plant parameters reaching predetermined levels or by reaching certain alarm points or abnormal conditions indicated in the Emergency Plan and Implementing Procedures, the Emergency Director (or shift supervisor) is required to declare the appropriate emergency class. The emergency plan and implementing procedures then call for immediate notification of offsite organizations and agencies. The provisions in the Plan and the implementing procedures clearly assign immediate priority to the task of offsite notification and satisfy the planning standard with respect to providing prompt notification.

Q.52. ANGRY Contention IIIA(G) (EP-4E) states:

> The licensee's EP fails to provide for furnishing to the Pennsylvania Bureau of Radiation Protection (BORP) information called for in the latter's plan such as "nature of the failure, the status of safeguards, the condition of consequence mitigating features" (p. VI-1).

To comply with the new emergency planning regulations and guidance, what information must be supplied to BORP with regard to the "nature of the failure, the status of safeguards, and the condition of consequence mitigating features?"

A. The planning standard in the Emergency Planning rule with regard to Notification Methods and Procedures requires that procedures for notification and information transfer be in place and that the content of initial and follow-up messages to response organizations be

established. Though the types of information discussed in ANGRY Contention IIIA(G) (EP-4E) are not specifically called for in the rule, this information would be useful to BORP, the State response organization responsible for assessing radiological hazards and making protective action decisions.

Q.53. Does the licensee's plan include provisions to provide information called for in the BORP plan such as "the nature of the failure, the status of safeguards and the condition of consequence mitigating features?"

A. Yes. The licensee has established a standard format and content for follow-up messages to offsite response organizations. This information is included on page 5-8 of Revision 3 to the TMI-1 Emergency Plan. Included in the list of information to be provided is information similar to that asserted to be necessary in ANGRY Contention IIIA(G) (EP-4E). i.e.: (1) class of emergency, nature of emergency, and plant status; (2) descriptions of the quantity and nature of radiation releases; (3) prevailing weather; (4) projected or actual dose rates at 2, 5 and 10 miles; (5) estimates of surface contamination; (6) emergency response actions underway; (7) recommended protective actions and protective measures; (8) requests for assistance; and (9) prognosis for worsening or termination of the event based on plant information. This information satisfies the criteria of NUREG-0654 for follow-up notifications. In addition, the plan provides for a direct line of communications between the licensee's

Radiological Assessment Center and BORP (called the Radiological line). Any further information required by BORP could be provided upon request over this circuit. These provisions satisfy the planning standard of 10 CFR 50, Appendix E with regard to Notification Methods and Procedures and provide BORP with a direct line which could be used to request additional information necessary to assess the emergency and make protective action decisions. Thus, with this direct dedicated line between the Radiological Assessment Center at the TMI-1 site and BORP, any information regarding the nature of the failure, the status of safeguards and the condition of consequence mitigating features which may be needed by BORP but which may not have been specifically provided in the form desired by BORP in the initial and followup messages from the licensee can be requested from and provided by the licensee at any time.

C. Protective Action Decisions

Q.54. ANGRY Contention IIIA(J) (EP-4H) states:

> RG 1.101 Section 6.4 requires the licensee to specify "criteria for implementing protective actions . . . ." The licensee's EP fails to set forth the following mandatory items of information regarding the time required for protective action implementation:
>
> 1. Expected accident assessment time. RG 1.70, S. 13.3.1-2.
>
> 2. Time required to warn persons at risk. RG 1.101, Sec. 6.4.1-2(b); RG 1.70, Sec. 13.3.1-3, 4.
>
> 3. Time required for a general evacuation. RG 1.70, Sec. 13.3.1-5, 6; November 29, 1979 letter to "All Power Reactor Licensees" from Brian K. Grimes, Director, NRC Emergency Preparedness Task Group.

4. Time required to evacuate special facilities (e.g., hospitals). November 29, 1979 letter, supra.

What are the current NRC requirements on the inclusion of expected accident assessment times in site emergency plans?

A. Neither the new rule on emergency planning, 10 CFR 50, Appendix E, nor the criteria for the evaluation and preparation of emergency plans (NUREG-0654), requires that licensees specify the expected times to assess accidents. Additionally, those portions of Regulatory Guide 1.70 dealing with the emergency planning considerations and hence, the requirement for specifying accident assessment times, have been superseded by 10 CFR 50 Appendix E and NUREG-0654. The new emergency planning rules and NUREG-0654 do specify, however, that licensee's plans shall provide for rapid accident classification and initial assessments by using a standard four-level accident classification system and emergency action level scheme which is based on predetermined plant parameters and monitor readings which are indicative of the degree of accident seriousness. The TMI-1 Emergency Plan utilizes this concept of accident classification and assessment and generally satisfies the planning standard for the emergency classification/action level scheme contained in 10 CFR 50 and NUREG-0654 (see Section I, p. 18-19 of NUREG-0746) (although the EALs should be made more consistent with the EAL criteria of NUREG-0654). One purpose of the establishment of a standard accident classification system and emergency action level scheme is to provide for orderly and rapid

accident assessment. Emergency plan provisions complying with the planning standards in this regard provide a mechanism for rapid accident assessment. While no time is specified in the Emergency Plan for initial accident recognition and assessment, the licensee's adopted classification procedures provide for prompt classification and initial assessment as required by the new emergency planning regulations and the absence of time estimates for accident classification and assessment is not a deficiency. At the same time, since the possible types of accidents that could potentially occur are many and varied, it is neither practical nor necessarily useful to predict and rely on accident assessment times in making protective action decisions.

Q.55. How does the licensee's Emergency Plan compare to NRC requirements regarding the information that is to be provided on the time needed to warn persons at risk?

A. Current emergency planning requirements and guidance contained in the new emergency planning rule do not require that plans provide the time required to complete initial off-site notification of emergency response organizations. However, in accordance with the new emergency planning rule, licensees must establish notification or communications systems and procedures capable of completing such notification to offsite governmental authorities within 15 minutes of the classification of an emergency. The emergency procedures in this regard, as described in the TMI-1 plan, require that the shift supervisor direct immediate notification of offsite authorities after an accident is classified.

These procedures combined with the existing communications equipment and the assignment of personnel on shift in excess of the recommendations of NUREG-0654, Table B-1 who could conduct immediate notifications provide reasonable assurance that such prompt notification would occur. As previously discussed in response to ANGRY Contention IIIA(I) and Newberry Contention Met. Ed. Plan 3, with the notification capability and procedures established by the licensee, notification of offsite governmental authorities should occur within about 15 minutes of the declaration of an emergency.

The TMI-1 Emergency Plan does not give adequate information on the time needed to provide emergency warnings to the public within the plume EPZ. The licensee has been informed that its description of the emergency warning system does not appear to comply with the new emergency planning regulation, 10 CFR 50, Appendix E. Descriptions of acceptable methods for providing prompt alerting and notification of the population which will satisfy the 10 CFR 50 and Appendix E requirements are contained in Appendix 3 of NUREG-0654, Revision 1 and these include a siren alert system used in conjunction with the emergency broadcast system. The licensee has awarded a contract to Alerting Communications of America for installation of a siren system to provide an alerting signal within the 10 mile EPZ; however, the Staff has not received detailed descriptions of the alerting system improvements contemplated.

Since decisions on the proper protective actions to take in the event of an accident are dependent, in part, on the length of time it will take to warn and instruct persons at risk, a description of the warning system adequate to allow an estimate of how long it will take to warn and instruct the affected populace using that system is important and necessary. Accordingly, the Staff recommends that an adequate description of the emergency warning system and procedures be included in the licensee's emergency plan prior to restart. Further, the licensee should be required to provide a description and proposed schedule of the warning system improvements necessary to comply with the new rule prior to restart. Under the new emergency planning rule, the licensee is required to have inplace by July 1, 1981, the physical and administrative means to provide prompt warning to the public within the plume exposure pathway EPZ. At this time and lacking a description of the proposed warning system, the Staff is unable to determine whether reasonable progress is being made toward compliance with the prompt notification requirements of the new rule.

Q.56. What does the TMI-1 Emergency Plan provide with regard to estimates of the time required for evacuating the areas surrounding TMI-1, including the evacuation of special facilities?

A. The licensee's plan does not contain any information regarding time necessary to conduct evacuations of the area surrounding TMI-1. The licensee has submitted an evacuation time estimate study to meet the requirement of the November 29, 1979 letter to "All Power Reactor

Licensees" referenced in the contention. This evacuation study was prepared by Wilbur Smith and Associates for the Federal Emergency Management Agency. This study does not satisfy the requirements for an evacuation study required by the November 29, 1979 letter or Appendix 4 of NUREG-0654 in part because the times to conduct evacuation of areas defined by circles of radii 2, 5, and 10 miles from the TMI site are not included. In addition, the times necessary to evacuate special facilities such as hospitals are not identified in this study. Accordingly, the study alone does not form an adequate basis for making protective action decisions. Information on evacuation times is necessary for making proper protective action decisions because the time that will be required to undertake various types of evacuations will have a direct bearing on whether evacuation is a viable protective action option that can be taken in response to a particular accident. The licensee is currently preparing a new evacuation time estimate study to meet the requirements of Appendix 4 to NUREG-0654 (including the time required to evacuate special facilities). The licensee has informed the NRC Staff that this study will be made available in February 1981. After receipt and analysis of that study, the Staff will report on its adequacy for the purpose of making protective action decisions. Since a decision on appropriate protective actions is dependent, in part, on decisionmakers having estimates of the time it will take to both warn the public and evacuate the populace in the plume exposure pathway EPZ, the Staff recommends that the licensee be required to include warning and evacuation time estimates in its Emergency Plan prior to restart.

D. Public Warning & Emergency Instructions

Q.57. What are the areas of "public warning and emergency instruction" for which emergency planning is required?

A. There are two broad areas in this regard which require substantial preplanning. The first area involves preparing, installing and implementing the physical and administrative means to provide prompt warning and then emergency instructions on protective actions to the public once an emergency has been declared. The second area involves the preparation and dissemination to the public on a periodic basis, of general, basic information on radiation hazards, warning signals, actions to be taken upon hearing warning signals, and the range of protective actions that may be taken in a radiological emergency. This second area is educational in nature and its purpose is to instruct members of the public in areas that might be directly affected by a radiological emergency in the manner in which they will be warned and told how to take protective actions.

Q.58. Aamodt Contention 4 (EP-1) states, in part:

> It is contended that licensee has not made provision for timely dissemination of information in the event of accidental release of airborne radioactive gases or particulates. It is contended that licensee must make information available to the public which will allow appropriate action to be taken to protect persons, livestock, foodstuff and feed in the event of a discharge of significant proportions.

ANGRY Contention IIIB(G)(1) (EP-5D(1)) states:

> The physical means to provide warning to all persons within the plume EPZ in a manner conforming to the standards set forth in NUREG-0654 paragraph E6 (and App. 3 referenced therein) and in the Pa. DOP, App. 13, paragraph 111 A(6) should exist before TMI-1 is allowed to restart.

Similarly, Newberry Contention Met. Ed. Plan 7 (EP-15F) states:

> Section 4.6.7.1 of the Emergency Plan deals with early warnings and information for transient areas. It is Intervenor's position that the methods depended upon in the Emergency Plan to warn the population at risk, are, at the present time, not in place. For example, section 2 of this particular section of the Emergency Plan states that a siren alert system could be activated by counties in order to warn the populace of impending danger. As has been indicated earlier in Intervenor's contention with regard to Emergency Planning, there are not enough Civil Defense warning sirens in order to adequately ensure that all members of the community are within hearing distance of the siren. Moreover, section 5 of this subsection of the Emergency Plan indicates that vehicles with loudspeakers could be dispatched to broadcast warning messages. The problem with this approach is that it would take time to get volunteers to man the vehicles and, secondly, there are many miles of road which would have to be traveled in order to ensure that all members of the populace were informed of the impending emergency condition. It is Intervenor's contention that until the Emergency Plan specifically states that a siren alert system is in place and that the warning emitted by the siren alerts could be heard at any point in the county surrounding the plant site, the Emergency Plan as now drafted is unacceptable.

All of these contentions deal with prompt notification and warning to the populace that might be affected by a radiological emergency at TMI-1. What are the specific requirements for prompt notification and instructions to the public?

A. The new emergency planning rules, specifically 10 CFR Part 50, Appendix E, Section IV.D(3) requires that a licensee have the capability to notify State and local governmental agencies within 15 minutes after declaring an emergency. Further, by July 1, 1981, the licensee must demonstrate that administrative and physical means have been established for both alerting the public within the plume exposure pathway EPZ and for providing prompt instructions to that segment of the public. Appendix 3 to NUREG-0654, Revision 1 provides the acceptance criteria against which the means for prompt notification of the public are to be evaluated. The capability both to provide an alert signal and to provide an informational or instructional message over radio and television is to be demonstrated. The design objective for the prompt notification system is to have the capability to complete the initial notification of the public in the plume exposure pathway EPZ within about 15 minutes of the time that State and local officials are notified that a situation exists requiring urgent action, although the use of the prompt notification system will range from those emergencies requiring immediate public notification (i.e. within 15 minutes of the time that State and local officials are notified) to events where there is substantial time available for State and local officials to make a judgment on whether or not to activate the public notification system.

Q.59. Who is responsible for meeting these requirements?

A. Under the new emergency planning rules, there is no requirement for the licensee to notify the public directly of what actions should be taken to protect persons or property. It is the licensee's responsibility, however, to establish the physical and administrative means to notify State and local governmental emergency response organizations and to establish the means to communicate to such organizations information on plant conditions, and projected or actual radioactive releases. It is also the licensee's responsibility to make protective action recommendations to the lead State and/or local agencies responsible for implementing protective actions for the public. Finally, it is the licensee's responsibility to demonstrate the establishment of the physical and administrative means for the prompt notification of the public within the plume EPZ and for transmitting emergency instructions to the public. On the other hand, it is the responsibility of the State and local government emergency response organizations to determine whether to activate part or all of the public notification system and to actually activate the system itself.

Q.60. How do these requirements on prompt notification of the public apply to TMI-1 and to restart of that facility?

A. The new emergency planning rules, including those portions of the rules requiring the capability to promptly notify and instruct the public within the plume exposure pathway EPZ, became effective November 3, 1980. The new rule is, of course, applicable to the TMI-1 licensee who must comply with the rule according to its terms. No

exceptions for TMI-1 are stated in the rule, either for compliance with the rule or various terms, conditions and deadlines in the rule, or for accelerating compliance with the rule for TMI-1. As to prompt notification of the public in the plume EPZ, the Commission's August 9, 1979 Order on restart of TMI-1 identified as a long-term action on which reasonable progress prior to restart was to be made, an extension of the capability to take appropriate emergency actions for the population around the TMI-1 site to a distance of ten miles. Since this is classed as a long-term action for which completion is not necessary as a condition of restart, there is no implication that the requirements for notifying the public within the plume EPZ are to be accelerated or necessarily made a condition of restart. Rather, the new emergency planning rule should be applied to the licensee in this proceeding according to its explicit terms. By July 1, 1981, the licensee must demonstrate that physical and administrative means have been established for alerting and instructing the public within the plume EPZ. In the event that restart, if ultimately authorized, does not occur before that date, then, of course, such demonstration would be necessary prior to restart. For present purposes, however, the licensee must show reasonable progress toward complying with the July 1, 1981 requirements.

Q.61. What methods for prompt notification and instruction to the public are available and acceptable?

A. The new emergency planning rules do not impose requirements on the specific method for prompt notification of the public within the plume exposure pathway EPZ. Rather, they require that some method be developed for providing a prompt alerting signal and instructions without dictating what those means are. The alert signal could be provided by a network of sirens situated in such a way that, upon activation, they can be heard by essentially all persons in the plume EPZ. The alert signal could also be provided by tonal alerts, NOAA weather radios, and mobile broadcasting vehicles dispatched throughout the countryside to alert the public. Mobile broadcasting vehicles are not precluded as part of a prompt notification system. However, such vehicles, used alone, would probably not be adequate because of the number of vehicles that would be required, the distances to be covered, and the time it would take to alert the public within the plume EPZ. Rather, a combination of an extensive siren alert system, and limited use of tonal alerts, NOAA weather radios and mobile broadcasting vehicles to cover limited areas not fully covered by the siren alert system, would probably provide the most practical means of meeting the prompt notification requirements in the TMI EPZ.

Alerting the public to the existence of a radiological emergency is only part of what must be done. Through previous education on emergency preparedness, members of the public within the plume EPZ must be instructed on how to obtain information on necessary protective actions (e.g. by turning to identified radio and television stations) once they have been alerted to the existence of an emergency.

Q.62. What is the present status of planning and capability with regard to prompt notification of the public within the plume exposure pathway EPZ?

A. In my responses to contentions dealing with "Initial Notification of Government Units" (ANGRY Contentions IIIA(G) (EP-4E) and IIIA(I) (EP-4G), Newberry Contention Met. Ed. Plan 3 (EP-15B) and part of Aamodt Contention 4 (EP-1)), I discussed the Licensee's compliance with NRC requirements for notifying Federal, State and local emergency response organizations. As indicated in those responses, the Licensee does have the capability to promptly notify and transmit protective action recommendations to governmental emergency response organizations in accordance with the requirements of the new emergency planning rules. Thus, the Licensee has the capability to achieve the first step in prompt notification of the public - notification of the government agencies who will activate the prompt alerting system.

As to the prompt notification of the public in the plume EPZ, the Licensee's current emergency plan describes the use of existing sirens and the Emergency Broadcast System (EBS) to alert the public. This system, as described in the current Emergency Plan, does not fulfill the requirements of the new emergency planning regulations regarding a demonstration of the existence of physical and administrative means to provide prompt notification to the public in the plume exposure pathway EPZ because the system and procedures as described in the Emergency Plan are not capable of providing notification and instructions to the

public within the entire 10 mile EPZ in the 15 minute timeframe provided for by Appendix 4 to NUREG-0654. The licensee has informed the NRC Staff, however, that it has performed a study of an outdoor siren system to determine the number and proper location of sirens capable of providing a prompt alerting signal throughout the plume exposure pathway EPZ and is currently negotiating for acquisition and installation of the required hardware. The details of the final alerting system to be installed, including the design, coverage area, means of activation, and schedule for implementation of such a system, are not yet available for NRC Staff review and evaluation. Consequently, a determination on the adequacy of the system design and on whether the licensee's efforts constitute reasonable progress towards meeting the July 1, 1981 implementation date cannot now be made.

Q.63. In view of the fact that the capability to promptly notify the public in the plume exposure pathway EPZ does not now exist, what do you recommend?

A. The Staff recommends that the Licensee demonstrate reasonable progress toward meeting the July 1, 1981 implementation date in this regard by revising its Emergency Plan to fully describe the prompt alerting system and the procedures for its activation prior to restart. In the event that restart, if it is authorized, were to occur after July 1, 1981, the Licensee should demonstrate that physical and administrative means to provide prompt alerting and clear instructions to the public within the plume EPZ exist as required by the new emergency rule.

Q.64. ANGRY Contention IIIA(E) (EP-4C) states:

> The adoption of the Commonwealth of Pennsylvania Disaster Operations Plan Annex E (EOP) designation of "the 'risk county' as responsible for the preparation and dissemination of information material on the protective actions to the general public" (p. g-8) conflicts with the requirements in EPRG paragraph II(A)(7) and RG 1.101 Section 6.4(2) to make available on request to occupants in the LPZ information concerning how the emergency plans provide for notification to them and how they can expect to be advised what to do.

This contention addresses the second important aspect of notification of the public - education of, and dissemination of basic emergency planning information to, the public before an emergency ever arises. Where are the regulatory requirements and criteria in this regard set out?

A. 10 CFR 50, Appendix E lists the planning standard for licensee's emergency plans with regard to public education and information. This standard states that information should be made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g. listening to a local broadcast station and remaining indoors), that the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) should be established in advance, and that procedures for coordinated dissemination of information to the public should be established. NUREG-0654, § II.G provides the detailed criteria used by the Staff and FEMA in evaluating the public education programs. These criteria essentially

state that a coordinated, periodic (at least annually) program for disseminating information to the public regarding how they will be notified and what their actions should be in an emergency, including information on radiation, protective measures, special needs of handicapped, and contact points for additional information, should be established. The criteria further provide that the program should reach the permanent and transient adult population in the plume exposure EPZ. Additionally, the criteria specify that the licensee, State, and local emergency response organizations should also establish contact points for news media, identify spokespersons and make other arrangements for timely exchange of information among the designated spokespersons. These requirements and the guidance in NUREG-0654, Revision 1 supercede the guidance of EPRG and Regulatory Guide 1.101.

Q.65. What is the purpose of these requirements?

A. The purpose of these requirements is to set up a mechanism whereby persons in the plume exposure pathway EPZ will be informed as to what their initial actions should be in a radiological emergency. The purpose of dissemination of such information on a periodic basis is to assure that the public is informed of any changes in emergency plans and procedures that might affect the public's initial actions in an emergency and to keep the public current on required emergency response.

Q.66. Who is responsible for meeting these requirements in public education and pre-emergency information?

A. The emergency planning regulation 10 CFR 50, Appendix E, lists the planning standard for public education and information and indicates that this standard must be adequately addressed in emergency preparedness plans. The criteria in NUREG-0654 state that each organization (licensee, State, local) provide a coordinated public information system. This does not mean that the licensee, State and local governments shall each develop separate public information and education programs, but that these organizations collectively shall ensure that a program meeting the requirements of the planning standard for public education and information is met, that the information is coordinated and consistent, and that it is made available to the entire permanent and transient population. As the NRC staff interfaces directly with the licensee, the Staff will hold the licensee responsible for the existence of a satisfactory public information and education program, regardless of which organization actually prepares or distributes the information.

Q.67. What is the status of the licensee's compliance with these requirements on public education and pre-emergency information?

A. The licensee's emergency plan does not adequately describe an effective public information and education program. This was addressed in the TMI-1 Emergency Plan Evaluation Report, NUREG-0746. The TMI-1

Plan states that the program is primarily the responsibility of the State and local governments. I have discussed this discrepancy with the licensee and PEMA and have been informed that the public information program plans are not yet complete. The licensee has provided the Staff with some proposed pamphlets describing evacuation routes, emergency and protective actions, notification methods and other information on response to a radiological emergency. Additionally, the licensee informed the Staff that attempts to put information in the local telephone books are being made. The Staff is unable to make a decision, however, on the program's adequacy or reasonable progress towards meeting the planning standard with regard to public information until the plans are finalized or until commitments for the public information system, such as the types of information, and the method and schedule for distributing such information, are provided.

Q.68. In view of the status of the planning in this regard, what do you recommend be done prior to any authorization for restart of TMI-1?

A. The Staff will recommend that the licensee provide, prior to restart of TMI-1, that the following actions or commitments take place:

(a) Drafts of literature containing information for the public which meets the planning standard and criteria of NUREG-0654 be provided for review and evaluation;

(b) Schedules for and methods of distribution of such information be submitted which adequately provide emergency information to the permanent and transient population; and

(c) The licensee's emergency plan be modified to include the commitments for the continued periodic dissemination of emergency preparedness information to the public.

E. Implementation of Protective Actions

Q.69. Sholly Contention 8I(B) (EP-17B) states, in part:

> Licensee's acceptance, without formal analysis or evaluation, of a circular 10-mile radius for the Plume Exposure Emergency Planning Zone (as designated by the Pennsylvania Emergency Management Agency) does not discharge Licensee's responsibility to ensure that adequate emergency response plans exist to protect the public health and safety in the event of an emergency at TMI-1. Further, acceptance of or designation of a circular 10-mile radius Plume Exposure EPZ for TMI-1 is unjustified because such an EPZ fails to adequately consider local emergency response needs and capabilities as they are affected by demography and jurisdictional boundaries. These considerations, among others, are specified in NUREG-0396, NUREG-0654, and the new emergency planning rule published in the Federal Register on August 19, 1980. The following specific local conditions should be reflected in the Plume Exposure EPZ for TMI-1.
>
> (1) The proposed 10-mile radius circular EPZ includes within the EPZ portions of numerous jurisdictions at the township, city, borough, and town levels of government. Calling for an evacuation of only a portion of any political jurisdiction due to a hazard which affects a large geographic area and basing emergency plans and response capabilities on such a limited evacuation will lead to problems due to spontaneous evacuation of a much larger area, with a concommitant increase in traffic and supply requirements at shelters. Therefore, the Plume Exposure EPZ for TMI-1 should include the entire geographic extent of all governmental jurisdictions at the township, city, borough, and town level which are bisected by the proposed circular 10-mile EPZ.
>
> (2) There are heavily populated areas in and near the cities of Harrisburg and York represented by the city proper and adjacent continuation of the urban areas into the suburbs. In the event that the wind is blowing toward

either of these areas when a large release of radioactivity occurs, such areas would constitute a large percentage of the total population dose (in the case of the TMI-2 accident, for instance, Harrisburg contributed 25% of the total population dose despite the fact that most of the city is more than 10 miles distant from the plant). The urbanized areas in and around Harrisburg and York are concentrations of population for which pre-planning for an evacuation is a necessity for successful implementation (for instance, pre-planning would have to include evacuation routes, transportation needs, host area requrements, and problems posed by special populations such as prisons). Therefore, the urbanized areas around and including the cities of Harrisburg and York should be included within the Plume Exposure EPZ for TMI-1.

What is the basis of the NRC's recommendation of a generic plume exposure EPZ of approximately 10 miles?

A. With regard to the area for which planning efforts should be carried out to provide protection for the plume exposure pathway, the NRC chose to base its rationale on a full spectrum of accidents and their corresponding consequences, tempered by probability considerations. Using this rationale, planning bases can be stated and understood in terms of areas or distances, time frames and radiological characteristics that will correspond to the consequences from a range of possible accidents. This guidance also provides consistency and uniformity in the amount of planning recommended to licensees and State and local governments. Analysis of the likelihood and consequences of a complete spectrum of accidents, including severe accidents such as the design basis Loss of Coolant Accident, indicated that there is a relatively low likelihood of occurrence of an accident which would require a

plume exposure Emergency Planning Zone greater than the generic 10 mile zone guidance provided by the NRC. For the very low probability worst case core melt sequence which could produce radiation levels requiring protective actions beyond the 10-mile EPZ, detailed planning within 10 miles would provide a substantial base for expansion of response efforts in the event that this is necessary.

Q.70. The 10-mile Emergency Planning Zone cuts across the boundaries of Harrisburg and several townships, boroughs, and towns. Should each political jurisdiction which is crossed by the 10-mile EPZ have its entire geographic content included in the plume exposure pathway (EPZ)?

A. NRC guidance on Emergency Planning Zones indicates that jurisdictional boundaries should be considered by the licensee and State and local governments when establishing Emergency Planning Zones. Consideration of jurisdictional or other boundaries will serve to make the implementation of protective measures (such as directing sheltering or evacuation) less complicated. Assignment of well-defined natural or jurisdictional boundaries for planning purposes will eliminate confusion which could exist by those members of the public unsure as to whether they were located in the zone to take protective actions. Though the licensee and State appear to have originally promulgated a uniform 10-mile radius EPZ, the State, licensee, and local governments

have indeed included a larger area in their detailed emergency planning which either incorporates the geographic content of those political jurisdictions crossed by a 10-mile circle around TMI or utilizes natural or man-made boundaries such as rivers or highways which clearly define the plume exposure EPZ. This new EPZ is shown in the State Emergency Plan. Additionally, the local government emergency plans call for each of the five counties which have territory falling within the plume EPZ to establish a county Emergency Operations Center (EOC) which will serve as the lead emergency response organization for the county. In this manner each county will coordinate the emergency response of the many jurisdictions within its boundaries.

Q.71. What then is the shape and extent of the plume exposure pathway EPZ that is being planned for TMI-1?

A. The plume exposure EPZ for TMI-1 is very roughly circular, with a minimum radius of 10 miles and with the EPZ boundary conforming to the outer jurisdictional or municipal limits of any municipality intersected by a 10-mile radius line from the TMI site or conforming to natural or manmade boundaries which will make emergency planning and response administratively feasible.

Q.72. ANGRY CONTENTION IIIA(B) (EP-9A) states:

> There is no provision in the EP for the prevention of damage to property (e.g., livestock) in the area surrounding the plant site as required by Appendix E to 10 CFR 50, §§ II(C), III and IV(C).

Do those parts of Appendix E cited in this contention, namely Sections II(C), III and IV(C), require emergency planning provisions to protect property in the areas surrounding the plant site?

A. No. Sections II(C), III and IV(C) of the new emergency planning rule, which became effective on November 3, 1980, deal with information needed in the Preliminary Safety Analysis Report at the construction permit stage, information needed in the Final Safety Analyses Report at the operating license stage and provisions of emergency plans for activation of the emergency organization, respectively. None of these provisions relate in any way to requirements for the protection of property.

Q.73. What provisions are required on the part of the licensee to prevent damage to property in the area surrounding the plant site due to an emergency at the plant site?

A. During the development of the new 10 CFR Part 50, Appendix E (which became effective on November 3, 1980), the Commission decided that the rule will address only protective measures for the public health and safety. As discussed in the Statement of Considerations to the new rule, , Fed. Reg. 55402, the Commission decision in this regard was made because "public health and safety should take clear precedence over actions to protect property. Measures to protect property can be taken on an ad hoc basis as resources become available after an accident". Accordingly, the new emergency planning rules set forth no

requirements for the protection of property near the site. The focus of emergency preparedness efforts is on protecting public health and safety. The absence in the licensee's Emergency Plan of explicit provisions for protecting property is not a defect and is, in fact, consistent with the new emergency planning rules.

Q.74. NEWBERRY CONTENTION MET. ED. PLAN 1 (EP-15A) states:

> Section 4 5.2 provides that off-site authorities would provide certain services in the event of an emergency situation. The Plan does indicate that there are agreements between the various personnel, organizations and agencies listed in this section; however, the agreements of most local fire companies only indicate that certain manpower is available and certain pieces of equipment are available. Moreover, it appears as though somebody produced documents for the local fire companies to sign, which would indicate the amount of manpower and resources available to each one of the fire companies who signed such an agreement. The agreements with the fire companies do not state that they know exactly what will be expected of them in an emergency situation. Without a sound contractual understanding in place, it is questionable that during a crisis situation off-site authorities will know exactly what is expected of them. Detailed understandings should be drawn between the local police, firefighting authorities and the State Police and other off-site authorities and agencies in order to ensure orderly support in the event of an emergency. The absence of such documentation and understanding between Metropolitan Edison Company and offsite authorities creates a deficiency in the Emergency Plan.

Similarly, ANGRY CONTENTON III.A(D) (EP-4B) states:

> The licensee's Emergency Plan (EP) fails to satisfy reasonable and applicable standards of adequacy and effectiveness in the following principal respects: The perfunctory form letters found in Appendix C to licensee's EP provide no indication, let alone assurance of the existence of "mutually acceptable criteria" for implementation of emergency measures as required by Emergency Planning Review Guideline No. One, Revision One (EPRG) IV(A)(1). Also NUREG-0654, A.3.

What level of detail is expected to be included in an agreement letter with contractors or response organizations providing services during an emergency?

A. The amount of detail would vary according to the nature of the response services to be provided. Some response organizations and contractors have their own emergency response plans and may agree to provide support in accordance with those plans. This reduces the need for detailed descriptions of the scope and nature of the response or the mutually acceptable criteria for implementation that is required in letters of agreement. For those organizations which provide response to emergencies on a routine basis (police, fire companies, National Guard), less detail would be expected in agreement letters since the nature and scope of their response is often exercised and well understood. However, these letters should still include an understanding of the resources to be provided, under what conditions the assistance will be provided, and any limitations to the response and to services to be provided.

Q.75. What is meant by "mutually acceptable criteria" in NUREG-0654 Evaluation Criteria A.3?

A. The phrase "mutually acceptable criteria" with respect to implementing emergency measures was inserted in the evaluation criteria to ensure that the conditions under which protective measures and emergency

response services would be provided by Federal, State and local response organizations is delineated. The mutually acceptable criteria could range from "upon request by the licensee" to some other criteria such as "upon declaration of a Site Area Emergency".

Q.76. Is the licensee's use of "form" letters in making arrangements for assistance or support acceptable?

A. Appendix C to the TMI-1 Emergency Plan includes letters of agreement which appear to be form letters provided by the licensee. Those letters of agreement which appear to be form letters can be categorized into two groups: (1) agreements with fire and rescue services and (2) agreements with county governments' emergency management agencies. In the first category, each fire company or rescue service indicates that upon notification it will respond with the emergency workers and equipment specified in the letter of agreement. Additionally, specialized services such as transporting contaminated individuals or providing boats is indicated. These letters of agreement, arranged with organizations which respond to emergencies on a daily basis, are acceptable in that they state the nature of services, equipment and personnel they agree to provide and the basis upon which such services will be provided (i.e., "upon notification" by the licensee). The letters themselves document the agreement of the organizations to provide identified services to the licensee and thus provide reasonable assurance that the emergency services indicated would be provided in the event of an emergency requiring assistance at TMI-1.

The second category of "form letters" involves agreements reached with emergency management agencies for those counties in the plume exposure EPZ. Since each county has developed its own emergency preparedness plans designed to respond to a radiological emergency at TMI-1, which provide detailed descriptions of such a response, detailed letters of agreement are not required. In fact, the county emergency management agencies are legally recognized agencies responsible to direct and perform emergency services, and, as such, letters of agreement are not even required under the new emergency planning rule or the criteria in NUREG-0654. As described above, the form letters used by the licensee provide adequate detail of the emergency response arrangements and satisfy the criteria of NUREG-0654.

Q.77. Are letters of agreement with firefighting and police organizations intended to be sound contractural understandings?

A. No. Letters of agreement do not constitute a contract. These letters should be provided with the TMI-1 Emergency Plan to indicate that the extent of those services provided by other groups or organizations which are relied upon by the licensee are understood by both the licensee and the providers of the services and to document the fact that the licensee does have arrangements with such organizations and those organizations have committed to provide support services. In essence, letters of agreement are to provide evidence that services relied upon by the licensee are available, can be provided, and may be relied upon. The letters of agreement provided by the licensee accomplish that purpose.

Q.78. How will the police and firefighting organizations know what is expected of them?

A. As specified in the letters of agreement and the TMI-1 Emergency Plan, police and firefighting organizations are relied upon to provide services such as security assistance, traffic control, firefighting assistance, and transportation of injured and/or contaminated personnel. Such services are routinely provided by police and firefighting organizations, who are trained to perform such services. To ensure that these organizations are familiar with the special problems with performing these emergency services, NUREG-0654 specifies that the licensee shall provide orientation and training to police and firefighting organizations. Additionally, the licensee is required to periodically hold fire drills, medical emergency drills and joint exercises which will provide further training as well as an opportunity to evaluate the capability of these emergency organizations to respond to an emergency at TMI-1.

Q.79. How does the licensee's emergency plan compare with NUREG-0654 provisions for training of police and firefighting organizations?

A. The TMI-1 Emergency Plan calls for an annual training program for the Pennsylvania State Police and Middletown Police Department which will include a review of applicable parts of the TMI-1 Emergency Plan and Implementing Document with emphasis on classification of emergencies, communications and specific areas of responsibility; a training program

for fire and rescue companies will discuss: (a) security force interface; (b) basic radiological controls training; (c) TMI station layout; (d) onsite fire fighting equipment, emphasizing difference between site and fire company equipment; (e) communications system; (f) applicable parts of TMI-1 plans; and (g) the onsite emergency organization with emphasis on the TMI Fire/Brigade and Fire Company interface. These programs implemented as described in the TMI-1 Plan satisfy the criteria of NUREG-0654.

F. Radiation Monitoring

Q.80 ANGRY CONTENTION IIF(1) (EP-3C(1)) states:

> The NRC's vague instruction to the licensee to "upgrade" in generally unidentified respects its "Offsite monitoring capability" is insufficient to assure that such upgrading will result in the ability to obtain and analyze the type and volume of information essential for protection of the public health and safety. ANGRY contends that such capability must at minimum encompass the following elements or their equivalent:
>
> (1) Permanent offsite monitoring devices which register all forms of ionizing radiation and which can be remotely read onsite.

In addition, the Licensing Board, in an inquiry designated as Board Question 4(a), has asked:

> Has the licensee considered stationing a limited number of dose rate meters near the site with the data telemetered to the control room or response center?

Do current NRC regulations or guidance require the stationing of dose rate meters or other monitoring devices offsite which telemeter readings to the control room or response centers or may otherwise be read onsite?

A. No. Current regulations do not require the installation of monitoring devices which have the capability to telemeter dose rates or other monitoring data to the site.

Q.81. What benefit would the installation of such real-time radiation instrumentation provide?

A. Such a system could allow the automatic readout of offsite radiation readings, under both normal and accident conditions, without the potential time delay for dispatching radiation monitoring teams which would then measure and report offsite radiation readings. If such instruments were properly located, this information could be used to verify offsite dose projections, define boundaries of the plume or high radiation, and assist in making emergency response decisions or recommendations. For such a system to be effective however, a large and extensive array of instruments would be required to provide assurance that a radioactive plume could be detected throughout the plume exposure EPZ.

Q.82. How do the emergency preparedness plans at TMI-1 provide for obtaining the data that might be obtained with a real-time, remotely read monitoring system?

A. The TMI-1 Emergency Plan makes no provision for a real time dose rate telemetering system with capabilities described in ANGRY Contention IIF(1)

(EP-3C(1)) and Board Question 4(a). The plan does however, provide for obtaining offsite radiation readings using offsite monitoring teams. The plan provides the capability to dispatch two teams within 30 minutes, which would be directed towards areas of projected plume travel. More teams could be dispatched later as members of the duty section arrive (30 minutes to 1 hour after notification). These teams are equipped with portable radios and could be directed to areas of projected plume travel based on wind direction and stability determined by the onsite meteorological system. In this manner dose projections and projected plume boundaries can be verified, and area radiation readings determined to assist emergency response decisionmakers. Additionally, for more slowly developing accidents or those involving long duration releases, monitoring teams from the State of Pennsylvania, Federal agencies and private organizations identified in the TMI-1 Emergency Plan could provide additional offsite monitoring capability.

The licensee has informally indicated to the NRC Staff that it is considering installing a limited number of offsite monitoring devices that will be read remotely onsite. However, these devices are not, and need not be, provided for in the Emergency Plan and are not currently relied upon for emergency response purposes.

Q.83. Would the installation of a real tim ray of radiation monitors with remote readouts significantly improve or accelerate accident classification and assessment?

A. No. Under the licensee's current accident recognition and assessment plans and procedures the functions of accident classification, initial assessment, dose projections, and protective action recommendations are performed using plant process and effluent monitors and site meteorological data which is available in the control room. With plant information and operators trained in emergency procedures, operators can initially assess and classify an accident, activate the emergency organizations and make protective action recommendations to offsite authorities before a radioactive plume would travel enough to be detected by offsite radiation monitors. This assessment, based on plant information before or just after initiation of a release, would allow more time to implement protective actions such as sheltering or evacuation prior to the plume's arrival offsite. Thus, while offsite radiation meters with control room readouts could provide instantaneous readings of a confirmatory nature, the use of emergency action levels and dose projection methods will allow the licensee to promptly classify and assess an accident as well as make protective action recommendations earlier in the development of an accident. The NRC is planning additional studies in this area to determine whether there are advantages to using both survey teams and in-place rate-meters.

Q.84. The Licensing Board, in an inquiry designated as Board Question 4(b), has asked:

> Has the licensee considered placing meters, which publicly measure background radiation levels, at a number of limited places, thereby enabling the populace to know what that level is?

Please respond.

A. None of the licensee's emergency plans or procedures discuss or provide for such meters. Nor does the licensee's public information plan address this matter.

Q.85. What benefit would be derived by radiation instruments placed to inform the public of background radiation levels?

A. Such instrumentation in my opinion would probably reassure the public and tend to alleviate fears of certain members of the public as to the effect of routine operation of a nuclear power plant on their environment. This instrumentation could possibly have a favorable impact on the utility's public image.

Q.86. How would the installation of meters which publicly measure and display background radiation levels affect the emergency preparedness around TMI-1?

A. I believe that installation of such instrumentation would have a minimal impact on the emergency preparedness around TMI. I do not believe that public radiation displays would aid emergency preparedness efforts since it is desirable to implement coordinated protective actions during emergencies which are directed by State and local officials.

G. Exercises & Drills

Q.87. ANGRY CONTENTION IIIA(H) (EP-4F) states:

> The provisions for the conducting of a "Radiation Emergency Exercise" of the licensee (EP, p. 8-8) and of the Commonwealth (Pa. DOP, App. 14) are inadequate in that they do not clearly provide for the participation therein of federal agencies. The necessity for such participation is clearly established by the extensive involvement of federal agencies in the TMI accident. Second, the aforementioned appendix to the Commonwealth's emergency plan indicates that "all major elements of the plans and preparedness organizations" may be tested only over a period of five years. All such elements should be tested in an exercise prior to the restart of TMI-1.

What organizations will participate in the test exercise required for TMI-1 Restart by the Commission's August 9, 1979 Order?

A. The joint exercise will be held to test the emergency preparedness plans for the licensee, State and local government. As the exercise will be "full scale", involving a simulated degradation of plant conditions requiring the eventual declaration of a Site or General Emergency, all licensee, State, and local emergency response centers and major response functions will be tested. The NRC and FEMA will participate as monitors to evaluate the adequacy of the joint emergency response and as necessary to test the communications facilities reserved for use by federal agencies. To insure that the exercise will sufficiently test both the onsite and offsite response organizations, the NRC staff and FEMA will review the exercise scenario prior to conducting a comprehensive test of the TMI-1 and associated State and local emergency plans.

Q.88. What are the requirements of the new emergency planning rules with regard to periodic tests?

A. 10 CFR 50, § 50.47 lists the planning standard for exercises and tests. This states that "Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain skills and deficiencies identified as a result of exercises are (will be) corrected."

Q.89. How do the provisions of the licensee's Emergency Plan with regard to tests compare to the requirements of the regulations?

A. Section 4.8.1.2 of the TMI-1 Emergency Plan describes the licensee's plans for conducting periodic drills and exercises to test emergency plans and to develop and maintain emergency preparedness skills. That part of the Plan provides for conduct of a major Radiation Emergency Exercise (every 12 ± 3 months), Medical Emergency Drills involving offsite support services (every 12 ± 3 months), and Quaterly Fire Drills with annual participation of offsite fire companies. Communications Links Tests will be conducted involving monthly tests of State and local governments in the plume exposure EPZ, quarterly tests of links with Federal emergency response organizations and states within the 50 mile EPZ, and annual tests of links between TMI-1 and local emergency operation centers and field assessment teams. Radiological Monitoring Drills will be conducted every 12 months and will involve collection and analysis of sample media on and offsite.

Radiological Controls Drills will be conducted semi-annually and will involve response to and analysis of simulated elevated airborne and liquid samples. These provisions meet the requirements of the new rule and NUREG-0654 § II.N with the exception of annual analyses of in-plant samples involving actual elevated radiation levels and the post-accident sampling system. The Staff position is that the emergency plan should be modified to require analysis of actual elevated liquid samples rather than simulated samples.

H. Audit & Review of Plans

Q.90 SHOLLY CONTENTION 8I(I) (EP-17B) states:

> Licensee's Emergency Plan fails to adequately provide a mechanism which will assure the effectiveness of the Emergency Plan throughout the operational lifetime of the TMI-1 facility.

NEWBERRY CONTENTION MET. ED. PLAN 4 (EP-15C) states, in part:

> There is no provision in the Emergency Plan for the distribution and updates of the TMI-1 Emergency Plan, and based on these deficiencies, the Emergency Plan as now written is inadequate.

Each of these contentions alleges deficiencies in the maintenance and upgrading of the TMI-1 Emergency Plan throughout the life of the facility. What provisions in the Emergency Plan are directed to maintaining the effectiveness of the plan throughout the operational lifetime of TMI-1?

A. According to the TMI-1 Plan, the Supervisor of Emergency Preparedness will be responsible for the effectivness of the plan throughout the operational life of Unit 1. His responsibilities will include ensuring coordination of the TMI Plan with State and county plans; coordinating the review and updating of the TMI Emergency Plan and Implementing Document, and maintaining himself current with respect to changes in Federal regulations and guidance that impact emergency planning.

The TMI Quality Assurance Department is responsible for auditing the TMI Plan and Implementing Document annually to verify compliance with Federal regulations and operating license provisions. Additionally, the results from drills and exercises will be critiqued and discrepancies or problems requiring Plan or procedure modification will be coordinated by the Supervisor - Emergency Preparedness. A formal evaluation will be prepared from each critique and maintained in the drill and exercise records. Consequently, the licensee's Emergency Plan does, in fact, provide mechanisms which should assure that the effectiveness of the Plan is maintained.

Q.91. Where are the requirements or criteria for maintaining, updating and distributing Emergency Plans and changes to the Plan set forth?

A. The new emergency planning rule, 10 CFR 50, § 50.47.16 contains the planning standard for planning effort responsibility, reviews, development and distribution. The evaluation criteria used by the Staff to determine the adequacy of plans in this regard are set forth in NUREG-0654, § II.P.

Q.92. How does the TMI-1 Emergency Plan provide for the distribution of changes to the Emergency Plan and procedures?

A. The TMI-1 Emergency Plan assigns the responsibility for coordinating updates of the Emergency Plan and the Emergency Plans Implementing Document. The plan provides that licensee, State, county and federal agencies which maintain controlled copies will receive revisions as they are issued. Furthermore, the plan provides that the Supervisor - Emergency Preparedness shall, through letters, seminars or other means, ensure that all elements of the total emergency organization (i.e., GPU-Nuclear, State, federal, county) are informed of the Emergency Plan and Implementing Document as well as revisions to these documents. Thus, the Emergency Plan does, in fact, provide for the distribution of updated and revised versions of the Emergency Plan and implementing documents to the appropriate emergency response organizations.

I. Adequacy of Onsite Planning

Q.93 Based on your review and evaluation of the licensee's Emergency Plan, what is your view as to the adequacy of the TMI-1 onsite emergency planning.

A. The TMI-1 Emergency Plan represents a significant improvement in the overall onsite emergency preparedness at TMI-1. The TMI-1 Emergency Plan generally meets the requirements of the new emergency planning rules and conforms to the guidance set forth in NUREG-0654, Revision 1 with the exception, as

expressed in this testimony and in NUREG-0746, Emergency Preparedness Evaluation for TMI-1, of several matters which remain currently open or unresolved.

Q.94 Summarize the unresolved matters you have referred to.

A. The Staff position is that the following open and unresolved items should be satisfactorily responded to prior to restart.

- Provide descriptions of the early warning and notification system including descriptions of the methods for activating such a system, the implementation schedule, and how such a system will satisfy the acceptance criteria of Appendix 3 to NUREG-0654. If restart is after July 1, 1981 demonstrate that the physical and administrative means exist for prompt notification.

- Provide information on the public education and information program including:

  (a) Drafts of information for the public be provided to the staff for review;

  (b) Schedules for and methods of distribution of such information be submitted which will adequately provide information to the permanent and transient population;

(c) Modify the TMI-1 Emergency Plan to include the commitments for continued periodic dissemination of emergency preparedness information to the public.

- Provide time estimates for evacuations within the plume exposure EPZ which conform with the guidance of NUREG-0654, Appendix 4.

- Commit to upgrade the Emergency Plan to provide for the stationing of a senior manager acting as EOF director within one hour of the decision to activate the EOF, by September 1, 1981 in accordance with NUREG-0654.

- Modify Emergency Action Levels to ensure that they are consistent with the guidance of NUREG-0654, Appendix I.

- Determine more exact assumptions for containment leak rates used in dose projections.

- Establish provisions for stockpiling thyroid blocking drugs for onsite workers.

- Modify the Emergency Plan to provide that annual radiological control drills, when conducted, include analysis of samples with actual elevated activity levels rather than simulated activity levels.

STEPHEN H. CHESNUT
PROFESSIONAL QUALIFICATIONS
OFFICE OF INSPECTION AND ENFORCEMENT
U.S. NUCLEAR REGULATORY COMMISSION

My name is Stephen H. Chesnut. I am currently a Nuclear Engineer assigned to the Emergency Preparedness Licensing Branch, Division of Emergency Preparedness, Office of Inspection and Enforcement. My duties include the review and evaluation of Nuclear Power Reactor Emergency Plans.

I received a Bachelor of Science degree in Mechanical Engineering in 1974 from the U.S. Naval Academy.

From 1974 to 1979 I was a commissioned officer in the U.S. Navy Nuclear Power program. While in the U.S. Navy, I completed considerable training in the operation and supervision of nuclear power plants. I served as division officer of several divisions responsible for personnel training, plant operation, nuclear material maintenance, and radiological controls on board a nuclear submarine. Additionally I qualified and served as Acting Chief Engineer Officer, responsible for the overall operation, supervision, and maintenance of a naval nuclear power plant.

Following my tour in the U.S. Navy, I spent one year as a senior engineering consultant, employed by Booz, Allen and Hamilton. During this period, I served as a consultant to the Department of the Navy, and provided technical engineering reviews and recommendations to the TRIDENT nuclear submarine acquisition program.

I joined the NRC in May 1980 where my duties include the review and evaluation of nuclear power plant emergency plans. These reviews result in the identification of discrepancies and some specific recommendations to improve overall Emergency Preparedness of Nuclear Reactor Sites. I am currently the Emergency Preparedness Team Leader for the Nuclear Power Plants in Pennsylvania.