

8/13/81

In the Matter of
METROPOLITAN EDISON COMPANY,
(Three Mile Island Nuclear
Station, Unit No. 1)

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A circular stamp with a clock-like border. The word "RECEIVED" is at the top. Below it is the date "AUG 18 1981" followed by a small black triangle pointing to the right. At the bottom is "U.S. NUCLEAR REGULATORY COMMISSION". The border has numbers 1 through 12.

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

COMMONWEALTH OF PENNSYLVANIA'S PROPOSED
FINDINGS OF FACT AND CONCLUSIONS OF LAW
ON EMERGENCY PLANNING ISSUES

INTRODUCTION

The Commonwealth's approach to proposed findings and conclusions on emergency planning issues is similar to that stated in the "Commonwealth of Pennsylvania's Proposed Findings of Fact and Conclusions of Law on Management Issues". The Commonwealth elects to exercise its right to "advise the Commission" only on the discrete emergency planning issues set forth below. 42 U.S.C. §2021(1); 10 C.F.R. §2.715(c). The Commonwealth assumes that the Staff and the adversary parties will submit comprehensive proposed findings and conclusions on the remaining emergency planning issues (including individual contentions) to assist the Board in its decision. The Commonwealth does not adopt specific findings and conclusions proposed by any other party. Moreover, the Commonwealth reserves its right to participate as a full party on all issues on appeal. Gulf State Utilities Co. (River Bend Station, Units 1 and 2), ALAB-317, March 4, 1976, 2 NUC. REG. REP. (CCH) ¶30,053.

In preparing its Proposed Findings of Fact and Conclusions of Law, the Commonwealth has only focused on those unresolved areas of emergency planning which it feels are of particular importance, or which merit

special consideration. The discussion is presented in the context of the emergency planning rule and NUREG-0654; wherever the subject matter is also covered by a specific contention, the contention is referenced. The Board should not conclude from this approach that the Commonwealth has ignored the specific deficiencies identified by FEMA, or that it feels improvements to the plans are unnecessary. Rather, the Commonwealth's commitment to upgrade emergency planning in the TMI-1 area is a more generic one.

In the area of emergency planning, the Board is in the unique and admittedly difficult position of reviewing plans which are in a constant state of change and upgrading. During April, the Commonwealth presented its own plan and the most recent draft of the 5 risk county plans, as well as witnesses to answer any questions about the level of planning and preparedness at that time. In July, the NRC Staff presented the FEMA review of those plans to the Board, together with FEMA's report based on the June 2 exercise of the TMI-1 area emergency response plans. Staff Ex. 20 and 21. Both documents identified weaknesses in planning and in the level of preparedness, and included recommendations for consideration by the Commonwealth. As stated by Commonwealth's counsel on July 8, 1981 (Tr. 22, 834-35), the Commonwealth welcomes the assistance and guidance given by FEMA and has committed to address the deficiencies listed.

PEMA* is in the process of revising the Commonwealth's Disaster Operations Plan, Annex E (Commonwealth Ex. 2). Once the state plan has

* The Pennsylvania Emergency Management Agency (PEMA) is the lead agency in Pennsylvania for coordination of emergency planning efforts. Pa. Emergency Management Services Code, 35 P.S. §7311, et seq.; Tr. 17, 967 (Lothrop). It also provides emergency direction and control of Commonwealth and local emergency operations during any emergency situation. 35 P.S. §7313(7).

been completed, PEMA will turn its attention to revising the 5 TMI-1 risk county plans. Both the state and county revisions will attempt to resolve each of the deficiencies identified by FEMA. PEMA hopes to be able to formally submit the state and county plans to FEMA by November 1, 1981.*

PEMA is in constant contact with the FEMA regional representatives, and informal discussions regarding the revisions to the various plans are ongoing. Thus, PEMA hopes that the revisions made to the plans will be acceptable to FEMA and will support a formal finding and determination of adequacy. Nevertheless, the Commonwealth assumes that any outstanding deficiencies identified after the formal submission of the plans will be communicated by FEMA directly to the Commission, through the NRC Staff.**

* Formal submission will be pursuant to the provisions of 44 C.F.R. §350.7(a).

** It should be noted that the NRC Staff's testimony indicates that an identification of outstanding deficiencies will be requested as of January 1, 1982. Tr. 22, 924 (Chestnut).

PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW

I. Legal Standards On Emergency Planning Issues

1. The need to upgrade emergency planning and preparedness around commercial nuclear power plants was one of the major lessons learned from the TMI-2 accident. See Order and Notice of Hearing (August 9, 1979), Slip op. at 4-5. Emergency planning was included as both a short-term and a long-term item in the Commission's Order and Notice of Hearing.* In addition, emergency planning was the subject of a large number of contentions filed by intervenors, and consumed approximately 4 months of hearing time.

A. Application of the new emergency planning rule

2. As we pointed out in our March 23, 1981 Memorandum and Order

* Short-term order item 3 reads:

3. The licensee shall improve his emergency preparedness in accordance with the following:

(a) Upgrade emergency plans to satisfy Regulatory Guide 1.101 with special attention to action level criteria based on plant parameters.

(b) Establish an Emergency Operations Center for Federal, State, and Local Officials and designate a location and an alternate location and provide communications to plant.

(c) Upgrade offsite monitoring capability, including additional thermoluminescent dosimeters or equivalent.

(d) Assess the relationship of State/Local plans to the licensee plans so as to assure the capability to take emergency actions.

(e) Conduct a test exercise of its emergency plan.

Long-term order item 4 reads:

4. improve emergency preparedness in accordance with the following:

(a) modify emergency plans to address changing capabilities of plant instrumentation,

(b) extend the capability to take appropriate emergency actions for the population around the site to a distance of ten miles.

on Effect of New Emergency Planning Regulations [hereinafter March 23 Order], the litigation of emergency planning issues in this proceeding was complicated further by the Commission's promulgation of the new emergency planning rule. 45 Fed. Reg. 55, 402 (August 19, 1980) (adding 10 C.F.R. §§50.47 and 50.54(q)-(u); amending 10 C.F.R. §50.33 and 10 C.F.R. Part 50, app. E). The Board's findings of fact and conclusions of law are founded, as they must be, on the application of this new rule. It is necessary, therefore, to explain the manner in which the rule is applied to the many detailed and complex findings of fact and conclusions of law set forth below. This is particularly important in light of the lack of Commission case law regarding the application of the new rule.

3. The effect of the new emergency planning rule on this proceeding was the subject of a protracted debate among the parties. See March 23 Order, supra, at 1-2. The primary result of this debate was an agreement by the Board and all of the affected parties with the seemingly obvious, yet deceptively simple, conclusion that the Licensee's and the state and local emergency plans must comply fully with the requirements of the new rule prior to restart. March 23 Order, supra, at 2-3. Joint Statement by the Commonwealth of Pennsylvania, the NRC Staff, and Licensee on Emergency Planning Requirements (March 6, 1981), at 1; Statement of ENCP, Newberry Township TMI Steering Committee, TMIA and Aamodt Family on Emergency Planning Requirements (March 11, 1981), at 2.* The new rule includes specific substantive standards which, as is true for any final NRC rule or regulation, bear the full force and effect of law.

* Literally, the Joint Statement by the intervenors requires compliance with the requirements of NUREG-0654 prior to restart. The difference between compliance with the rule and compliance with NUREG-0654 is addressed infra.

See, e.g., Moran Bros., Inc. v. United States, 346 F.2d 590 (1965).

Thus, compliance with these standards is the first, last, and foremost consideration of the Board in judging the adequacy of emergency plans and preparedness around TMI.

4. The basic standard for compliance with the emergency planning rule is a finding by the NRC "that the state of emergency preparedness provides* reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency." 10 C.F.R. §§50.47(a)(1); 50.54(s)(2) (emphasis added). The Board wishes to emphasize at the outset that its primary consideration in judging the adequacy of both onsite and offsite emergency planning is the capability to implement adequate protective measures.

5. Taken alone, this broad standard would afford this Board little guidance in judging the adequacy of emergency planning. Fortunately, the rule also contains more precise standards which must be met in order for a plan to be found adequate. The rule sets forth sixteen specific planning standards, 10 C.F.R. §50.47(b)(1)-(16), as well as additional requirements in Appendix E to 10 C.F.R., Part 50. Absent the specific alternative finding noted below, the Board insists on a clear demonstration that each of these standards will be met prior to restart. The burden of proof on emergency planning issues lies with Licensee, as it does for all other issues in this proceeding. 10 C.F.R. §2.732; see [Commonwealth's Proposed Plant Design Findings (First Set), ¶¶1-3].

6. Finally, the emergency planning rule provides flexibility in the event that some of the above-cited standards are not met. The rule provides an applicant or a licensee the "opportunity to demonstrate to

* 10 C.F.R. §50.54(s)(2) utilizes negative language: "does not provide reasonable assurance..."

the Commission's satisfaction that the deficiencies in the plan are not significant for the plant in question, or that adequate interim compensating actions have been or will be taken promptly, or that there are other compelling reasons for continued operation." 10 C.F.R. §50.54(s)(3); see also 10 C.F.R. §50.47(c)(2).* The Board has already forewarned the parties that reliance on this flexibility must be based on a specific demonstration, on the record of this proceeding, that waiver of the standard in question is warranted. March 23 Order, supra, at 4. The Board notes parenthetically that no evidence has been produced which would indicate "other compelling reasons for continued operation." Waiver of a specific standard, therefore, requires a demonstration supported by the record that either the deficiency in question is not significant or that adequate interim compensating actions have been or will be taken prior to restart. In rendering these judgments, the Board will fall back on the basic and essential requirement of the emergency planning rule--reasonable assurance that adequate protective measures can and will be taken.

7. Having thus set forth the basic standards required by the new emergency planning rule, the Board still needs to deal with a number of additional nuances and complexities arising from the nature of this proceeding, the nature of the emergency planning guidance document entitled "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" (NUREG-0654/FEMA-REP-1, Rev. 1) (1980) [hereinafter NUREG-0654**],

* The language of 10 C.F.R. §50.47(c)(2), which applies to new operating licenses, differs slightly from the language quoted above, but is substantively identical in terms of the three means of permitting operation notwithstanding failure to meet one of the emergency planning standards.

** NUREG-0654 was admitted into evidence in this proceeding as Staff Ex. 7.

and the NRC/FEMA* relationship. All of these issues arose in the context of the proceeding and are dealt with sequentially below.

B. Status of Licensee in this proceeding

8. At the time of issuance of the Board's March 23 Order, there was still room for argument over whether Licensee should be treated as an operating reactor for purposes of compliance with the emergency planning rule. See March 23 Order, supra, at 2-3. All room for doubt on this issue was eliminated by an Order issued by the Commission the same day, which instructed that "The Commission believes that Unit One should be grouped with reactors which have received operating licenses, rather than with the units with pending operating license applications. It emphasizes though that it expects the Board to find to the contrary when the record so dictates." Metropolitan Edison Co., (Three Mile Island Nuclear Station, Unit No. 1), CLI-81-3, March 23, 1981, Slip op. at 7.

9. In any case, the Board has already noted that the differences between operating reactors and operating license applicants for purposes of substantive compliance with the emergency planning rule is moot. March 23 Order, supra, at 2-3. Both classes are required to meet the standards set forth in 10 C.F.R. §50.47(b) and Appendix E. The differences between an applicant and a licensee are procedural. As noted in our March 23 Order, one possible distinction is the provision in the section of the emergency planning rule applicable to operating reactors of a four-month "grace period" for the correction of deficiencies prior to shutdown. 10 C.F.R. §50.54(s)(2). However, as noted in our earlier ruling, the Board has serious difficulties with applying the

* The Federal Emergency Management Agency will be referred to in this decision as FEMA.

"grace period" concept to the instant case. First, it is elementary that the specific provisions of the Order and Notice of Hearing in this case override the generic provisions of the emergency planning rule with respect to the procedural treatment of this licensee. Second, there is no need for the Board to find record evidence of a need to treat TMI-1 differently from other operating reactors for purposes of applying the emergency planning rule. The Commission already found in its Order and Notice of Hearing that there were "recognized deficiencies in emergency plans and station operating procedures." Slip op. at 5. Third, TMI-1 requires no grace period to achieve compliance with the emergency planning rule. TMI-1 has been shutdown for over two years, during which time substantial efforts have been made to upgrade the status of emergency planning at all levels. For this analysis, TMI-1 is more closely analagous to a near-term license applicant than to an operating reactor. In fact, even after the issuance of this decision, the Licensee and the state and local governments will have a number of months prior to restart to correct any deficiencies noted herein. Finally, we stated at the outset that the Board and all of the parties agree to the fundamental principle that compliance with the provisions of the emergency planning rule is a prerequisite to restart. It would be disingenious to establish this principle at the outset, only to destroy its effect by applying a grace period which would extend beyond the date of restart. The Board, not the Staff,* has been vested with the responsibility to determine what actions with respect to emergency planning are necessary and sufficient to provide reasonable assurance that TMI-1 can be operated without endangering the health and safety of the public. The Board concludes as

* Literal application of 10 C.F.R. §50.54(s)(2) would appear to vest the NRC Staff with the discretion as to whether shutdown is appropriate at the end of the four-month grace period.

a matter of law that compliance with the emergency planning rule prior to restart is necessary to provide such reasonable assurance.

10. A second potential procedural distinction between operating reactors and operating license applicants is the degree of weight to be afforded to the findings and determinations of FEMA with respect to the adequacy of offsite emergency planning. As we noted in our March 23 Order, §50.47(a)(2) (new operating licenses) states that "In any NRC licensing proceeding, a FEMA finding will constitute a rebuttable presumption on a question of adequacy." Section 50.54(s)(3) (operating reactors) does not refer at all to either licensing proceedings or a rebuttable presumption. See March 23 Order, supra, at 10 n. 4. At that point, we merely noted the anomaly in the rule, and questioned whether it would become important in this proceeding. Id. It is now apparent that there are evidentiary disputes between the parties regarding FEMA's findings and determinations in this case. It is necessary, therefore, to discuss this issue in greater detail.

11. As a preliminary matter, the Board notes that the rebuttable presumption given to FEMA findings and determinations does not shift the burden of persuasion in this proceeding, which rests with the Licensee. The concept of rebuttable presumption is a legal concept with varied meanings in different forums and jurisdictions. See, e.g., McCormick, Evidence §§342-345 (2d ed. 1972). It is necessary, therefore, to determine the precise legal meaning of rebuttable presumption for the purposes of this litigation. Rebuttable presumption is not defined in the NRC Rules of Practice. We turn next, then, to Federal Rule of Evidence 301, which states:

In all civil actions and proceedings not otherwise provided for by Act of Congress or

by these rules, a presumption imposes on the party against whom it is directed the burden of going forward with evidence to rebut or meet the presumption, but does not shift to such party the burden of proof in the sense of the risk of nonpersuasion, which remains throughout the trial upon the party on whom it was originally cast.

Therefore, even if the rebuttable presumption rule is applicable to this proceeding, it shifts only the burden of going forward with evidence (burden of production), and not the ultimate burden of persuasion.

As long as there is some reliable and probative evidence on the record to rebut or meet a particular FEMA finding and determination, the effect of the rebuttable presumption on that issue dissolves.

12. Turning next to the question of whether the rebuttable presumption rule applies to this proceeding, the Board perceives three possible explanations for the apparent anomaly in the emergency planning rule. First, as we noted earlier, the difference in treatment between license applicants and operating reactor licenses may simply be a mistake. A completely literal reading of the rule, of course, would require us not to afford a rebuttable presumption to the FEMA findings and determinations. Second, the Commission may purposely have intended to give FEMA findings and determinations less weight for operating reactors than for applicants. This Board can see no logical reason for such a distinction, however, and therefore dismisses this theory. The most logical explanation appears to be that the authors of the rule simply did not consider the possibility of holding a hearing with respect to an operating reactor. For a near-term license application, on the other hand, it is virtually certain that a hearing will be held, and that the evidentiary weight of FEMA findings and determinations should be set forth.* This hypothesis

* This explanation, of course, still leaves an omission in the rule with respect to show cause proceedings. This issue, however, need not be addressed here.

is supported by the language of §50.47(a)(2), which reads: "In any NRC licensing proceeding, a FEMA finding will constitute a rebuttable presumption on a question of adequacy." (emphasis added). Therefore, the Board believes that the strongest arguments weigh in favor of applying the rebuttable presumption rule in this proceeding, as defined by Rule 301 of the Federal Rules of Evidence.

C. NUREG-0654

13. Another pervasive emergency planning issue in this proceeding has been the nature of NUREG-0654. See, e.g., TR. 4231-33. As we noted in our earlier ruling, the Board is not prepared to cloak NUREG-0654 with the mantle of a regulation, despite the footnote references to NUREG-0654 in the emergency planning rule. March 23 Order, supra, at 5. NUREG-0654 has not been approved by the Commission, nor was it even published in its present form at the time the emergency planning rule was promulgated.*

14. Rather, the Board treats NUREG-0654 as more in the nature of a regulatory guide. As such, NUREG-0654 represents one possible means of meeting the standards of the emergency planning rule; but alternative means of meeting those standards are also possible. See Tr. 15, 010 (Grimes). Such alternative means of compliance, of course, must be supported on the record. Conversely, a party may also be permitted to demonstrate that compliance with NUREG-0654 alone is not sufficient to comply with the emergency planning rule. See Gulf States Utilities Co. (River Bend Station, Units 1 & 2), ALAB-444, 6 NRC 760, 772 (1977). This principle may be applied separately to each individual planning standard in the emergency planning rule. For each of the 16 standards, NUREG-0654 provides a set of "evaluation criteria." Staff Ex. 7, at

* The rule was promulgated on August 19, 1980. 45 Fed. Reg. 55402. The current version of NUREG-0654 is dated November, 1980. Staff Ex. 7.

31-79. Compliance with the evaluation criteria may constitute one means of complying with the applicable planning standard. But the necessity and sufficiency of those criteria to comply with the applicable standard is open to attack based on reliable and probative evidence on the record.

15. The Board wishes to emphasize, however, that it will not view a challenge to NUREG-0654 lightly. In general, regulatory guides are entitled to "considerable prima facie weight." Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), CLI-74-40, 8 AEC 809, 811 (1974). More importantly, NUREG-0654 clearly has been the foundation on which those responsible for upgrading emergency plans have relied throughout this proceeding. See Tr. 4232 (McCormell). The Commonwealth stated early in the proceeding that NUREG-0654 was the standard by which they expected their plans to be judged. Tr. 4240-41 (K. Carter). This reliance on the part of the Commonwealth was also stated in the Commonwealth's testimony:

Now, prior to November of last year, our planning effort was somewhat splintered because we received varying guidance. It was not until we received new Regulation 0654, FEMA Rev. 1 ... that we had a document which we could rely upon and hopefully is not going to change, at least for some time, in our planning efforts.

Tr. 20, 955 (Belser). This concept was confirmed by both NRC Staff and FEMA witnesses. Chestnut & Bath, ff. Tr. 19, 626, at 19; Tr. 18, 969-70 (Adler); Tr. 22, 531 (Dickey). See also Staff Ex. 7, at i(Foreward). In short, the Board does not believe that a moving target would serve the ultimate purpose of improving emergency plans and preparedness to the maximum degree possible.

D. NRC/FEMA Relationship

16. The role of FEMA in the NRC licensing process is outlined in the emergency planning rule: "The NRC will base its finding on a review

of the FEMA findings and determinations as to whether the licensee's emergency plans are adequate and capable of being implemented." 10 C.F.R. §50.54(s)(3). The relationship between NRC and FEMA is also the subject of a "Memorandum of Understanding Between NRC and FEMA Relating to Radiological Emergency Planning and Preparedness" [hereinafter NRC/FEMA MOU].* This relationship was explained to the Board and the parties on numerous occasions throughout the proceeding. E.g., Tr. 4231-32 (McConnell); Tr. 22, 525-31 (Dickey). Essentially, the NRC is responsible for evaluating the adequacy of onsite (Licensee) emergency planning; FEMA is responsible for providing NRC with "findings and determinations" regarding the adequacy of offsite (state and local) emergency planning; and the NRC has the ultimate responsibility for determining the overall state of emergency planning around the site.

17. The Board wishes to make one critical point abundantly clear in this regard. FEMA makes initial findings and determinations with regard to offsite emergency planning due to its expertise in this area and due to its role as the lead federal agency for civil emergency planning and assistance. NRC/FEMA MOU, at 1. The NRC, however, is vested with the ultimate statutory responsibility under the Atomic Energy Act for the radiological health and safety of the public. Power Reactor Development Corp. v. International Union of Electrical Radio and Machine Workers, 367 U.S. 396 (1961). This is expressly recognized by the NRC/FEMA MOU, at 1, 3. Nor for that matter, could such an MOU transfer a statutory duty from one agency to another.

18. The Commission, of course, recognized this responsibility in the emergency planning rule, which provides: "the Commission will determine whether the reactor shall be shutdown until such deficiencies

* The Board took official notice of the NRC/FEMA MOU.

are remedied ... the Commission shall take into account, among other factors, whether the licensee can demonstrate to the Commission's satisfaction ...," etc. 10 C.F.R. §50.54(s)(2) (emphasis added). An MOU signed by the Executive Director for Operations cannot alter the effect of the rule. In other words, the Commission will afford a rebuttable presumption (as discussed earlier) to FEMA's findings and determination as to whether state and local emergency plans are adequate and capable of being implemented according to the 16 planning standards set forth in the rule. Once particular deficiencies are identified, the Commission will make the ultimate public health and safety determination regarding the effect of those deficiencies on the licensing process.

II. Emergency Operations Facility Staffing

19. The staff found licensee's offsite emergency response organization deficient due to insufficient staffing of the offsite Emergency Operations Facility (EOF) during the early hours of an accident. This finding generated a controversy between the licensee on one side and the staff and the Commonwealth of Pennsylvania on the other. All three parties produced direct evidence on this issue.

20. The NRC staff testified from the outset that Licensee must staff the Emergency Operations Facility (EOF) with a senior manager acting as EOF Director withinin one hour of declaration of an emergency in order to comply with NUREG-0654. Although many of the discrete functions performed by the Emergency Support Director (Licensee's EOF director) can be performed by other personnel on Licensee's emergency staff, the Staff's position is based on the need to have "a senior manager who can speak with authority to other emergency organizations on radiological or operational matters ..." Chesnut, ff. Tr. 15,007, at 23-24.

21. The Board does not underestimate the importance of either the EOF or the Emergency Support Director. Licensee's testimony refers to the EOF as the "central point for: (a) providing overall corporate management and direction in responding to an emergency, (b) coordinating administrative and logistical support, (c) interfacing with state and county representatives, and (d) establishing the basis for long-term recovery efforts." Rogan, et al., ff. Tr. 13, 756, at 21-22; see also, Licensee Ex. 30, at 7-3; Staff Ex. 8, at 16-24. The importance of the Emergency Support Director is set forth in Licensee's emergency plan:

1. The Emergency Support Director will be responsible for activating and directing the offsite emergency support organization and ensuring that the functional groups provide a coordinated response in support of the onsite emergency organization. The Emergency Support Director will serve as the senior management representative at or in the vicinity of the TMI site. As such, during emergency operations, the Emergency Support Director will direct all emergency efforts and policies; the Emergency Director, however, will maintain responsibility for the operation and control of the plant. In the absence of the Emergency Support Director, the senior most TMI-1 operations person will assume his responsibilities. As emergency situations tend to stabilize, the Emergency Support Director may relieve the Emergency Director of more and more accident management responsibilities. This will provide a controlled means of shifting to a recovery organization should that type of organizational arrangement be deemed necessary.

Licensee Ex. 30, at 5-16 to 5-17. Once the emergency support director arrives at the EOF, he assumes the responsibility for making protective action recommendations to the Commonwealth's Bureau of Radiation Protection (BRP). Tr. 14, 779 (Rogan); 14, 781 (Giangi).

22. An analysis of NUREG-0654 and the emergency planning rule proves Mr. Chestnut to be correct. Two planning standards apply to the

issue at hand. First, planning standard 8 reads: "Adequate emergency facilities and equipment to support the emergency response are provided and maintained." 10 C.F.R. §50.47(b)(8). As interpreted by NUREG-0654, there are two pertinent EOF requirements:

2. Each licensee shall establish an Emergency Operations Facility from which evaluation and coordination of all licensee activities related to an emergency is to be carried out and from which the licensee shall provide information to Federal, State and local authorities responding to radiological emergencies in accordance with NUREG-0696, Revision 1.

4. Each organization shall provide for timely activation and staffing of the facilities and centers described in the plan.

Staff Ex. 7, at 52 (emphasis added). NUREG-0696, Revision 1, states, in pertinent part:

The EOF shall be staffed to provide the overall management of licensee resources and the continuous evaluation and coordination of licensee activities during and after an accident. Upon EOF activation, designated personnel shall report directly to the EOF to achieve full functional operation within one hour. A senior management person designated by the licensee shall be in charge of all licensee activities in the EOF. The EOF staff will include personnel to manage the licensee onsite and offsite radiological monitoring, to perform radiological evaluations, and to interface with offsite officials. The EOF staff assignments shall be part of the licensee's emergency plan. The specific number and type of personnel assigned to the EOF may vary according to the emergency class. The staffing for each emergency class shall be fully detailed in the licensee's emergency plan. Operating procedures and staff training in the use of data systems and instrumentation shall contain guidance on the limitations of instrumentation including whether the information can be relied upon following serious accidents.

Staff Ex. 8, at 19 (emphasis added).

23. Second, planning standard 2 states:

On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.

10 C.F.R. §50.47(b)(2) (emphasis added). Compliance with the timeliness elements of this standard are defined by Table B-1 of NUREG-0654, which requires a senior manager to serve as EOF Director within 60 minutes. Staff Ex. 7, at 37.

24. Third, Appendix E to 10 C.F.R. Part 50 requires that:

"Adequate provisions shall be made and described for emergency facilities and equipment, including ... 8. A licensee onsite technical support center and a licensee rear-site emergency operations facility from which effective direction can be given and effective control can be exercised during an emergency." (emphasis added).

It is difficult for the Board to interpret "during an emergency" as precluding the first four hours of an emergency.

25. The Board explained in the introduction to the emergency planning section of this decision that compliance with NUREG-0654 constitutes but one means of compliance with the planning standards of the emergency planning rule. The bottom line is compliance with the two planning standards and the applicable portion of Appendix E, quoted above. The burden of proof is clearly on Licensee to demonstrate on the basis of firm record evidence the workability of an alternative means of compliance.

26. The Staff reiterated its position on EOF staffing requirements

later in the hearing. In Supplement 1 to the Staff's Emergency Preparedness Evaluation for TMI-1 (NUREG-0746), the Staff indicated that full staffing of the EOF within about one hour of an emergency declaration was necessary for compliance with both NUREG-0654 and NUREG-0696. This document further indicated that "staffing falling below the minimum staffing guidelines of Table B-1 to NUREG-0654 should, by September 1, 1981, be capable of being augmented within 30 minutes and that deficiencies should be fully removed by July 1, 1982." Staff Ex. 27, at II-13 to II-14. The Staff's view is essentially that there is a:

need to have a separate individual responsible for making protective action recommendations and performing some of those nonplant related functions, and that he should be removed from the control room to eliminate some of the confusion that exists ...

Tr. 22, 971 (Chesnut). Thus, the Staff suggests a separation of functions between operation tasks to be performed on the control room and non-operational tasks, such as protective action recommendations.

27. The Licensee's primary objection to this separation of functions concept, as represented by Licensee's counsel, is that the separation of functions may result in a less senior corporate official in the EOF than in the control room. Tr. 22, 972-73 (Zahler). See also, Tr. 23, 074-75 (Rogan). The Board understands Licensee's concern. However, in a large sense, Licensee's concern is contradicted by Licensee's own testimony scattered throughout the record that indicates that a multitude of TMI-1 officials are trained and qualified to make protective action recommendations, down to the level of shift foreman. E.g., Rogan, et al., ff. Tr. 13, 756, at 26-27; License Ex. 30, at 5-6 to 5-7.

28. Licensee's first two choices for emergency support director

are Mr. Arnold and Mr. Clark.* Both of these officials are located at GPU's corporate offices in Parsippany, New Jersey, and therefore may not be available during the early phases of an emergency. Licensee acknowledges, however, that there are other officials who would be well-qualified to serve as emergency support director until the arrival of Mr. Arnold or Mr. Clark. Tr. 23, 039-40 (Rogan). The Commonwealth would not object to such substitution. Tr. 23, 016 (Dornsife). Nor would the Staff, Tr. 22, 973-74 (Chesnut).

29. Previously, Mr. Rogan had identified four possible candidates for Emergency Support Director: Mr. Arnold, Mr. Clark, Mr. Herbein and Mr. Hovey. These individuals all will receive the same training in making protective action recommendations as all of the emergency directors. Tr. 14, 784-85 (Rogan). Mr. Chesnut had also testified earlier that the EOF Director function could be filled by any "senior site or corporate manager who could arrive and who had knowledge of the plant's procedures." Tr. 15, 022 (Chesnut). See also, Tr. 15, 024 (Grimes); Tr. 22, 969 (Chesnut); Tr. 22, 974 (Chesnut) (acceptability of Emergency Directors as Emergency Support Directors). It is not clear why the insertion of one of these officials as an interim emergency support director for purposes of making protective action recommendations during a three-hour period early into an accident would be detrimental to public health and safety.

30. Licensee's position on EOF staffing was elicited first through supplemental direct testimony. Licensee believes that the functions required to be performed of the EOF Director, as described in Table B-1 to NUREG-0654, are performed in other ways. Radiological assessment,

* Mr. Arnold is the Chief Executive Officer of GPU Nuclear Corporation; Mr. Clark is his deputy. Arnold, ff. Tr. 11, 434, at 7-10, Figure 1.

operational assessment, and formulation of protective action recommendations can all be performed in the control room. Tr. 13, 763-64 (Giangi). At this point, Licensee committed to have the EOF Director report in six hours. Id. at 13, 765. Apparently, Licensee's major difficulty with full staffing of the EOF early into an accident involves the logistics of senior licensee managers arriving at the EOF in short time periods. Tr. 14, 592-94 23, 081-82 (Rogan).

31. Licensee reiterated its position in a letter from Robert E. Zahler (counsel for Licensee) to Joseph Gray, Esquire (counsel for the NRC Staff), dated July 8, 1981. However, the Licensee did commit in this letter to activate the EOF earlier than envisioned in its Emergency Plan. Licensee committed to activate the EOF within one hour of declaration of a site area emergency, staffed with a minimum of six "key personnel." The Licensee commits to the arrival of the Emergency Support Director within four hours after declaration of a site emergency. The key to Licensee's position continues to be that "pending arrival of a designated Emergency Support Director, the Emergency Director will retain decision-making authority and will function as the Senior Corporate Management spokesman from the Control Room." Licensee Ex. 58, at 1-2; Tr. 23, 084-85 (Rogan).

32. Mr. William Dornsife testified on this issue on behalf of the Commonwealth of Pennsylvania. Mr. Dornsife is the supervising Nuclear Engineer of the Pennsylvania Department of Environmental Resources, Bureau of Radiation Protection. The Board notes, among Mr. Dornsife's other qualifications, that he is extremely familiar with the TMI site. In addition to TMI review work performed for the Commonwealth, Mr. Dornsife spent four years at Burns & Roe, Inc., performing engineering

liaison and coordination functions at TMI-2. Biographic Information of William P. Dornsife, P.E., ff. Tr. 23, 011. The Board was extremely impressed with Mr. Dornsife's technical expertise and judgment throughout the hearing, although his participation mainly involved cross-examination rather than direct testimony. The Board holds Mr. Dornsife's judgment in high esteem.

33. Mr. Dornsife is responsible for communicating with Licensee to determine the operational status of the facility, in order to provide insight into protective action recommendations based on operational factors. The Commonwealth has determined, through drills at TMI and at other plants, as well as during the TMI-2 accident, that operational information is a critical input into the protective action recommendation. In order to perform this function, Mr. Dornsife will report initially to the state headquarters in Harrisburg, and later, to the EOF when the EOF is manned. Tr. 23, 012; 23, 014 (Dornsife).

34. Originally, it was envisioned that Mr. Dornsife could satisfactorily obtain the necessary operational information by remaining at BRP headquarters. During drills conducted in preparation for the TMI-2 exercise, however, the Commonwealth determined that it was difficult to obtain the necessary operational information through the radiological line. Significantly, based on this deficiency in information flow, it was Licensee who recommended that Mr. Dornsife be dispatched to the EOF as soon as possible. Tr. 23, 013-14 (Dornsife). The Staff witness also agreed with this conclusion due to his observation of the June 2 exercise. Tr. 23, 062 (Chesnut). Another alternative would have been to provide for direct telephone conversations between the BRP nuclear engineer and the emergency director in the control room. Licensee chose the EOF

alternative, however, since the emergency director's workload might prevent immediate communications with the BRP representative. Tr. 23, 035 (Dornsife). The Board attributes added weight to Mr. Dornsife's opinion on this issue, since it was based on actual experience--a process of trial and error--rather than more speculative judgment. See Tr. 23, 014 (Dornsife).

35. The Board notes parenthetically that the inadequacy of information flow to offsite response organizations, including BRP, was one of the major lessons learned from the TMI-2 accident. An investigation into information flow during the TMI-2 accident, conducted by the NRC Office of Inspection and Enforcement, concluded that "information was not adequately transmitted to the Nuclear Regulatory Commission or the Bureau of Radiation Protection (BRP) ... The predominant factor was the absence of an effective onsite system to accumulate, evaluate and disseminate information." Staff Ex. 5, at 10; see also id. at 10-11 (Conclusions 1, 2, 4 and 8). In light of these conclusions, the Board cannot view the Commonwealth's concerns lightly.

36. Mr. Dornsife's view is also supported by the Staff. The Staff's views regarding interface with offsite agencies was based, in part, on the assumption that the state nuclear engineer would report to the EOF. Tr. 15, 523 (Chesnut). (As just noted, the Commonwealth has since decided to dispatch a nuclear engineer to the EOF as soon as possible during an accident.) Mr. Chesnut testified that:

... one function the staff considers important is that of interface in coordination with other offsite agencies as well, and some coordination of the overall emergency offsite response.

Several other agencies will be responding to an emergency at Three Mile Island Unit 1,

and they in many cases will report to the emergency operations facility. Staff believes that this function should be available within one hour of the declaration of an emergency.

Tr. 15, 013 (Chesnut). See also Tr. 15, 036 (Grimes).

37. Mr. Dornsife explained further that, during drills conducted prior to the June 2 exercise, the status boards and other technical and radiological information available at the EOF was behind real time, and was not necessarily consistent with information actually used to formulate protective action recommendations. Critical real time information was obtained through direct communications between the emergency director and the emergency support director. Mr. Dornsife expressed doubts as to whether such information would necessarily be transmitted to the EOF without the presence of the Emergency Support Director. Tr. 23, 014-15 (Dornsife). Given the critical need to allocate personnel resources in the heat of an emergency, the Board finds this concern to be well-founded. Moreover, Mr. Dornsife opined that face-to-face contact between the state and the emergency support director was "very important not only for us directly understanding what the protective action considerations were, but for us being able to provide our input into that protective action recommendation prior to it being made by the licensee." Id. at 23, 016; 23, 045-35.

38. Mr. Dornsife's view that the attention devoted to the EOF staff will diminish in the absence of the Emergency Support Director also appears to be supported by Licensee's emergency plan:

2. The Emergency Staff Support located at the EOF will assist the Emergency Support Director by interfacing with the offsite emergency support organization leaders and providing status reports to the Emergency

Support Director. In the absence of the Emergency Support Director the Emergency Staff Support will not assume emergency responsibilities rather it will be the most senior TMI-1 operations person (i.e.: VP-TMI-1).

Licensee Ex. 30, at 5-17 (emphasis added).

39. The Commonwealth's view is also supported by the manner in which the June 2, 1981 comprehensive exercise was conducted. When Mr. Dornsife arrived at Licensee's EOF, approximately one half-hour after declaration of site emergency, the EOF was fully manned, including the emergency support director. Tr. 23, 015 (Dornsife). Thus, the exercise can be used only for the proposition that Licensee's emergency response organization can function efficiently, including adequate interface with BRP, with the EOF manned and the emergency support director present early into the accident sequence. In fact, the Board has difficulty understanding why the exercise was conducted with the emergency support director artificially present three and one-half hours earlier than called for in Licensee's emergency plan.

40. Mr. Rogan was not aware of any drills conducted at TMI-1 that did not involve activation of the EOF when the exercise was carried through to making protective action recommendations to the state.* Thus, there is no demonstrated capability to interface with the state in terms of transmitting protective action recommendations absent full activation of the EOF.

41. Mr. Dornsife also demonstrated, by using an example from the June 2 exercise, that some types of operational status information are not available through the normal CRTs and display panels available at the EOF. Tr. 23, 022-24 (Dornsife). Indeed, numerical parameters alone

* Mr. Rogan is the Manager-Emergency Preparedness for GPU Nuclear. Rogan, et al., ff. Tr. 13, 756, at 1.

could not possibly convey a complete and accurate depiction of the operational status of a facility as complex as a commercial nuclear power plant. Again, Mr. Dornsife expressed doubt as to whether such information would be conveyed to the EOF without the presence of the emergency support director. Id. at 23, 023-25. The burden of proof is on Licensee to demonstrate the workability of its emergency plan. Since Licensee conducted the June 2 drill with the EOF manned as envisioned by the Staff and the Commonwealth, the Licensee demonstrated the workability of the Staff's and the Commonwealth's concept of operations, rather than their own.

42. The Commonwealth's position, however, transcends the need to obtain raw operational data. The Commonwealth's preference is to communicate directly with the official actually responsible for making protective action recommendations. Tr. 23, 053-56. As explained by counsel for the Commonwealth, the Commonwealth views the interface between Licensee and the state for the purpose of conveying protective action recommendations as an overriding consideration in emergency planning. Tr. 22, 982-83; 23, 063 (R. Adler). The Board is inclined to agree with this perspective. The focus of the emergency planning rule is "reasonable assurance that appropriate protective measures can and will be taken ... " 10 C.F.R. §50.54(5)(2). The transmission of protection action recommendations from Licensee to the state is the initial, and hence a critical step in the process of taking appropriate protective measures to safeguard the health and safety of the public in the event of a radiological emergency. The importance of this initial interface, therefore, cannot be understated.

43. Licensee, apparently, does not disagree completely with the Commonwealth's reasoning. On cross-examination, Mr. Rogan agreed with

Mr. Dornsife that the adequacy of communication of protective action recommendations is a valid concern. Mr. Rogan stated that:

"The mechanical process of communicating is an essential element of making the recommendation to the state. In terms of communicating the basis for that recommendation certainly the more information that was made available to the state the more of an appreciation they would have of the licensee's reasons for making the recommendations and, therefore, I presume, would be in a better posture to determine whether to accept or reject that recommendation.

Tr. 23, 086-87 (Rogan).

44. In fact, earlier in the hearing, Mr. Rogan recognized the benefit of face-to-face contact between the BRP representative and the emergency support director:

upon activation of the emergency offsite facility, a representative of the BRP is stationed in that facility and will be aware both of the identification of the emergency support director and will have access to the same information that the emergency support director has, so that in effect that representative could serve as the verifying process within his own agency should there be any question as to whether or not the person who picked up the phone as designated emergency support director and made a protective action recommendation was doing so properly.

Tr. 14, 783 (Rogan).

45. Mr. Rogan also agreed that deficiencies in the use of the radiological line, particularly in terms of receiving operational information, hampered communications between Licensee and the Commonwealth. Mr. Rogan feels, however, that such communication problems can be resolved through amended procedures. Tr. 23, 088-89 (Rogan). The Board cannot understand how the problems of an overburdened line can be resolved through procedures. In any case, the Licensee has in no way demonstrated that this problem has been corrected. Although Mr. Rogan suggested that

an additional dedicated line could be installed between Licensee and BRP, such a line has not been produced. Instead, Licensee's preferred solution was for the Commonwealth to dispatch its engineer to the EOF in order to "facilitate communications" and to "enhance both the state's understanding and ours of the situation and the processes that were ongoing." Tr. 23, 089-90 (Rogan).

46. The Commonwealth also questioned the difference between division of responsibilities during the early hours of an emergency (between hours one and three) and at later times, when the Licensee agrees to divide responsibilities between the Emergency Director and the Emergency Support Director. Tr. 23, 092-93 (R. Adler). Licensee's response, essentially, is that the need for broad management direction from the EOF expands greatly as an accident proceeds. Tr. 23, 093-96 (Rogan). Assuming this premise to be correct, the Commonwealth next asked what the disadvantage was of delegating to an interim emergency support director only the function of making protective action recommendations to the state during the early hours of an accident. Tr. 23, 096 (R. Adler). Licensee's only response to this question was the pure judgment that it is desirable to vest responsibility for making protective action recommendations to the state in the most senior management official onsite. Tr. 23, 096-97 (Rogan). In Licensee's view, this consideration is more important than the need to improve the communication of the protective action recommendation to the Commonwealth. Tr. 23, 100 (Rogan). In the view of the Staff, Tr. 23, 101 (Chesnut), and obviously the Commonwealth, the opposite is true. This is where the Board's judgment must focus.

47. The Board has given this controversy a considerable amount of

attention, and finds the question to be a close one. Initially, the Board was inclined to question the wisdom of interfering with Licensee's management decision as to where to repose decision-making authority during an emergency. This hesitation, however, must be balanced against the real and valid concerns identified by the Staff and the Commonwealth regarding the need for the EOF and the Emergency Support Director during the early hours of an emergency. On balance, the Board finds that the reasoning presented by the Staff and the Commonwealth is sufficient to override Licensee's management prerogatives in this regard. The Board has had the opportunity to observe both the Staff and the Commonwealth during the management phase of this proceeding. In no other instance did either party attempt to substitute their judgment in place of Licensee's with regard to the management structure of TMI-1. Both parties obviously recognized the beneficial policy of allowing the maximum amount of management flexibility possible as long as the desired result of good management is achieved. The EOF issue is unique, however, in that it involves the interface between Licensee's management structure and the structure of offsite emergency response organizations. It is only this factor that led the Staff and the Commonwealth to question Licensee's judgment.

48. The Board's decision is based on a number of factors. First, the Board is persuaded that the concerns raised by both the Staff and the Commonwealth are valid and need to be corrected. Considerable attention has been given in this proceeding to both onsite and offsite emergency planning as separate issues. Yet surprisingly little focus has been placed on the interface between the onsite and the offsite organizations. The Board sees adequate staffing of the EOF, with a

single responsible authority in charge of the interface, as a key element in this interface. Licensee has provided no alternative solution to these problems. Second, although the Board appreciates Licensee's objections to early vesting of authority in an interim emergency support director, this factor does not, in the Board's judgment, outweigh the critical need to provide a smooth interface between the onsite and offsite emergency response networks. Third, the Board believes that the question is decided, at least in part, by the placement of burden of proof. The burden of proof is on Licensee to demonstrate the adequacy of the interface between onsite and offsite emergency response organizations, as required by 10 C.F.R. §50.47(b)(2), (3), (5), (6), and (8). Licensee has not met this burden of proof. Rather it has demonstrated the adequacy of the interface envisioned by the Staff and the Commonwealth. Further, the opinions of the Staff and the Commonwealth are supported by actual experience with drills and exercises as well as considered judgment. Licensee's view is supported only by judgment.

49. The Board concludes that, prior to restart, Licensee must commit to the full staffing of the EOF, including the Emergency Support Director, within about one hour of declaration of a site area emergency. This level of staffing is necessary to provide reasonable assurance that TMI-1 can be operated safely without endangering the health and safety of the public.

50. The Board wishes to emphasize, however, that it does not intend to limit the flexibility of Licensee to vest decision-making authority to any degree greater than necessary. Licensee is free to dictate any qualified official as Emergency Support Director. This view is shared by both the Staff and the Commonwealth. Tr. 22, 979 (Tourtelotte); 22, 983, 23, 064-65 (R. Adler).

III. Municipal Plans*

51. The issue of adequacy of municipal plans has occupied a large portion of the hearings during the offsite emergency planning phase. The Board shares FEMA's and the Commonwealth's concerns that absent written plans or implementing procedures at the municipal level, no determination can be made regarding the amount of resources available to implement a protective response at the municipal level. Nor can any determination be made of each municipality's awareness and acceptance of its unique responsibilities during a fixed nuclear facility emergency. Adler & Bath (3/16 Testimony), ff. Tr. 18, 975, at 44; Tr. 19, 090 (Pawlowski); Tr. 20, 910 (Belser); Staff Ex. 21, at 7, 26; Tr. 20, 909 (Wertz). The concept of operations contained in state and county planning follows "accepted emergency management practices" in placing initial responsibility for carrying out a protective response on the municipalities, with reliance upon county and state level resources to augment that initial response. Smith & Lothrop, ff. Tr. 17, 698, at 3; Adler & Bath (3/16 Testimony), ff. Tr. 18, 975, at 28; Belser, et al., ff. Tr. 20, 787, at 5; Knopf, et al., ff. Tr. 21, 816, at 11. The Board thus finds it important, from a logical standpoint, that the planning and preparedness at the municipal level be at least at the same par as that at the state and county levels. This is not presently the case. Staff Ex. 21, at 2, 4.

52. Planning Standard A of NUREG-0654 (10 C.F.R. §50.47(b)(1)) requires that "[p]rimary responsibility for emergency response ... by State and local organizations within the Emergency Planning Zones have been assigned, [and] the emergency responsibilities of the various

* This section also covers subject matter identified in Contentions 14(O), 14 (T), 14 (B), 14(W), 14(S) (in part), 6(F), 14(I), 14(C) (in part).

supporting organizations have been specifically established ...". FEMA has consistently stated that to the extent that emergency response responsibilities have been assigned to municipalities, the procedures for carrying out such responsibilities must be reflected in the county plans. Tr. 19, 213 (Bath); Tr. 19, 025 (Bath); Staff Ex. 21, at 1 of update, 4, 26. In fact, the FEMA reviewers would not recommend that a county plan was adequate unless it incorporated the substance of those municipal procedures. Tr. 19, 329 (Adler). The existence or development of the necessary implementing procedures at the municipal level is a prerequisite to their incorporation into any county plans.

53. The emergency planning rule further requires a showing that the protective measures chosen can and will be implemented. 10 C.F.R. §50.47(a)(1). FEMA's call for written municipal plans is entirely consistent with the rule's requirement. The mere assignment of responsibilities to the municipalities does not in and of itself demonstrate an ability to carry them out. The coordinated response contemplated by the state and county plans cannot succeed unless all participants in the response effort are prepared. The June 2 exercise results highlight the need for municipalities to go through the planning thought process on each of the responsibilities assigned to them, in order to be adequately prepared. The three municipalities that participated in the June 2 exercise have plans specific to fixed nuclear facility emergencies in place. Board Ex. 13 (New Cumberland Borough, Londonderry Township, and Elizabethtown Borough). Thus, the exercise showed both how prior planning and consideration provided for a good response in certain areas, and the lack of planning diminished the effectiveness of the response in other areas. Specific areas of responsibility will be discussed in greater

detail, infra. The Board finds that the rule's requirement of implementability can only be met by a demonstration that municipalities within the plume exposure pathway EPZ have developed the necessary implementing procedures. As one of the Commonwealth's witnesses stated in discussing the importance of municipal plans: "... in order to evaluate a degree of preparedness, the medium for doing so is something in writing." Tr. 20, 910 (Belser); see also, Tr. 20, 909 (Belser), referring to Oran K. Henderson's* comment on local planning quoted at Tr. 20, 908.

54. The plume exposure pathway EPZ for TMI-1 (as represented on the Commonwealth's map, Commonwealth Ex. 2.b) includes 38 municipalities, of which 25 have had some form of plans submitted to FEMA for review. Board Exhibits 5, 6, 7, 8, and 9, Annex V; Board Ex. 13. The 13 municipalities which have not submitted written plans are all located in York and Dauphin Counties. Board Exhibits 5 and 6, Annex V. Both York and Dauphin Counties have assigned significant responsibilities to the municipalities within the plume exposure pathway EPZ in each county, including such areas as designating pick-up points for residents without transportation, identifying invalids, homebounds and mobility-impaired persons with special transportation needs, identifying necessary traffic control points within the municipality, coordinating route alerting as a means of notifying the public of an emergency, and identifying available and unmet equipment and personnel resources. Tr. 19, 025 (Bath); Tr. 19, 446-448 (Bath). Without written plans or implementing procedures covering these areas of responsibility, the ability of the 13 remaining municipalities to perform their assigned duties promptly remains an unknown. E.g., Tr. 22, 392 (Bath). The Board also notes that its brief

* Mr. Henderson was the Director of FEMA at the time of the TMI-2 accident.

review of the plans contained in Board Exhibit 13 supported FEMA's observation that many of the existing municipal plans are deficient in these particular areas. Staff Ex. 21, at 1 of update, 4.

55. Evacuation plans for the TMI-1 plume exposure pathway EPZ must provide for all segments of the public; one group identified by NUREG-0654 and FEMA as needing specific planning is that of persons who do not have transportation resources of their own. NUREG-0654, Planning Standard J, Criterion 10.g. and Appendix 4; Adler & Bath (3/16 Testimony), ff. Tr. 18, 975, at 39. York and Dauphin Counties are relying on the municipalities to determine the location of pick-up points for such persons and to coordinate the means of transporting them. Board Ex. 5, at 8, Sections VI.C.9 and C.10; Board Ex. 6, at 6, Section V.C.8; Staff Ex. 21, at 19; Bath, ff. Tr. 22, 350, at 4; Tr. 22, 468, 22, 470 (Bath); Belser, et al., ff. Tr. 20, 787, at 9. The pick-up points themselves are an "essential bit of information", which FEMA expects will become a part of the public information distributed within the EPZ. Tr. 22, 425 (Bath); Tr. 20, 814 (Curry). The record in this proceeding does not reflect that pick-up points or transportation means have been identified for all municipalities. Tr. 20, 947 (Wertz) (Dauphin County has a total of 16 municipalities within EPZ); Staff Ex. 21, at 19; Tr. 22, 391 (Bath). Nor has FEMA established that all pick-up points have been identified despite the lack of municipal plans, so as to avoid "ad hoc management" at the time of an emergency. Staff Ex. 21, at 19. In fact, FEMA has stated that York County's plan, in particular, would not be "fully adequate" until pick-up points are included, and a demonstration has been made that sufficient vehicles are available to service the pick-up points identified. Bath, ff. Tr. 22, 350, at 4; Tr. 22, 468,

2%, 470 (Bath). And York County has expressed its reliance on the municipalities themselves to perform these functions. Tr. 20, 878 (Curry). In light of the estimated size of the population without transportation in York County alone, approximately 3,310 persons,* the Board is especially interested in assurances that adequate planning for the evacuation of this sector of the public has been accomplished. This is not possible without a full delineation of where the people are to be picked up, and a knowledge of what resources are available to each municipality to transport them from these points.

56. A second category of persons identified in NUREG-0654 as requiring special planning is that encompassing invalids, homebounds, and other mobility-impaired persons. NUREG-0654, Planning Standard J, Criterion 10.d; Adler & Bath (3/16 Testimony), ff. Tr. 18, 975, at 30-31; Tr. 19, 205 (Adler); Tr. 19, 256 (Adler). FEMA's review of the York and Dauphin County plans revealed deficiencies in meeting the planning standard in this area, due both to lack of plans and inadequate plans at the municipal level.** The deficiencies resulted from both the failure to identify the actual persons requiring transportation, and the failure to determine the available and unmet resources. Adler & Bath (3/16 Testimony), ff. Tr. 18, 975, at 2 (outline), 30-31, 43-44; Staff Ex. 21, at 18. FEMA felt this was a deficiency which would have to be corrected

* This number is based on the figures found in the Parsons Brinkerhoff Evacuation Time Study. Licensee Ex. 52, at 8. The following ERPA's are included in York County: 4, 5, 6, 13, 15, 16, 17, 18, 23, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 41. It should be noted that Manchester Borough, though listed on p. 7, is not assigned an ERPA number on p. 3.

** This is another area where York and Dauphin Counties have assigned planning responsibility to the individual municipalities. Board Ex. 5, at 8, Sections VI.C.8 and C.11; Board Ex. 6, at 6, Section V.C.9.

to receive final approval.* Tr. 19, 205 (Adler); Tr. 19, 256 (Adler). Pre-planning for invalids and other mobility-impaired persons is especially important due to the difficulty of quickly identifying this group and their unique transportation needs during an actual emergency. Tr. 22, 384-385 (Bath). This was supported by the experience of the June 2 exercise. New Cumberland Borough waited until the exercise itself to do an assessment of who would need transportation and what kind of special assistance they would require; the process of just making the assessment took 1-1/2 hours. Staff Ex. 20, at 4. Londonderry Township, on the other hand, had assimilated the necessary information prior to the exercise and apparently suffered no delay in performing this function. Staff Ex. 20, at 30. The Board notes that without a documented attempt at the municipal level to develop lists of invalids, homebounds, and other mobility-impaired persons, and to identify the transportation resources required, there is no assurance that this segment of the public can and will be evacuated during an emergency. Adler & Bath (3/16 Testimony), ff. Tr. 18, 975, at 43-44; Tr. 22, 391 (Bath); Tr. 22, 384 (Bath).

57. Municipalities have been delegated a major responsibility with respect to notification of the public of the existence of an emergency. Tr. 20, 877 (Curry); Tr. 17, 855 (Lamison). At the close of the record, route alerting** was one of the primary methods of notification. Bath & Adler (2/23 Testimony), ff. Tr. 18, 975, at 25; Staff Ex. 21, at 9.

* Requirements for "final approval" by FEMA will be viewed as requirements for compliance with the emergency planning rule, since both processes apply the same planning standards. Compare 10 C.F.R. §50.47(b) with 44 C.F.R. §350.5(a); Tr. 22, 527, 22, 529 (Dickey), for interim agency rule status of 44 C.F.R. Part 350.

** Route alerting is a process by which a sound truck(s) drives along a pre-determined route within the municipality, using a loudspeaker to advise the public to turn their radios to the Emergency Broadcast System (EBS) for further details. E.g., Staff Ex. 20, at 5; Tr. 22, 792 (Hardy).

After installation and activation of a new siren system by Licensee,* it is anticipated that the route alerting system will be relied upon for supplementary or backup notification capability only. Tr. 22, 793-94 (Adler); Tr. 22, 450 (Bath); Staff Ex. 21, at 9; Bath & Adler (2/23 Testimony), ff. Tr. 18, 975, at 22-23. It should be noted, however, that the full extent of reliance on route alerting cannot be determined until the siren system is installed and fully tested.** Adler & Bath (3/16 Testimony), ff. Tr. 18, 975, at 14-15. As supplementary notification, the route alerting system must be capable of assuring 100% coverage of the plume exposure pathway EPZ within 45 minutes of notification of a general emergency to the county. NUREG-0654, Appendix 3, Section B.2(c); Staff Ex. 21, at 9. There is no question that the present level of planning for route alerting is inadequate due to the failure of many municipalities to predesignate routes and determine physical and personnel resources needed to accomplish the task within 45 minutes. Staff Ex. 21, at 1 and 9; Staff Ex. 20, at 7, recommendation 8. The June 2 exercise highlighted the potential problems with route alerting, even in municipalities where attention had been paid to planning in this area. Both Londonderry Township and Elizabethtown Borough ran into problems completing the predesignated routes due to lack of available trucks. In Londonderry Township, the fire truck had to respond to an emergency part-way into the exercise. Staff Ex. 20, at 5. In Elizabethtown Borough, the lack of vehicles allowed the alerting of only 3 out of 4

* The NRC Staff has recommended that installation and activation of the siren system be required prior to restart. Chesnut, ff. Tr. 22, 881. See also 10 C.F.R. Part 50, Appendix E, Section D.3.

* FEMA has not even set standards yet for fully testing siren systems, so it is unknown when this point will be reached. Tr. 22, 889 (Chesnut). See discussion on Siren Notification System, infra.

pre-designated sectors in 1 hour, 15 minutes; it was estimated the complete exercise would have taken 1 hour, 45 minutes. Staff Ex. 20, at 5-6. Without detailed planning at the municipal level, there is no assurance that a system which provides for notification of 100% of the public within 45 minutes is in place or can be implemented. See also, Tr. 19, 102 (Adler).

58. The question of implementability of a protective action ultimately rests with the availability of adequate resources to carry out the functions described in any plan. The reliance in the TMI-1 area emergency planning or response by the lowest-level government first emphasizes the need for municipalities to recognize their responsibilities and assess the adequacy of their personnel and equipment resources to meet these responsibilities. Adler & Bath (3/16 Testimony), ff. Tr. 18, 975, at 36; Tr. 20, 909 (Wertz). The county plans have assigned to municipalities the responsibility of determining unmet needs and reporting them to the county, but the lack of municipal plans does not reflect whether this has been done. Board Ex. 5, at 8, Sections VI.C.9, C.10, and C.13; Board Ex. 6, at 6, Sections V.C.8 and C.10. Even those municipalities with written plans have not necessarily adequately identified their unmet needs. The Elizabethtown Borough plan provided for evaluation during the exercise of the need for extra buses and ambulances. This was characterized by FEMA as "unsatisfactory municipality/county coordination". Staff Ex. 20, at 27. The previous discussion within this section has identified various types of personnel and equipment resources which should be planned for at the municipal level prior to an emergency. The Board has identified the following additional areas based on testimony presented during the hearings, but it is by no means

intended to be an exhaustive listing of possible unmet needs: traffic control points and personnel (Adler & Bath (3/16 Testimony), ff. Tr. 18, 975, at 55-56; Tr. 20, 943 (Belser); Tr. 20, 973 (Belser)); emergency services such as wrecker and fuel services (Belser, et al., ff. Tr. 20, 787, at 4; Tr. 17, 831 (Lamison); Tr. 19, 202 (Adler)); buses and ambulances (Tr. 20, 807-808 (Curry); Tr. 19, 444 (Bath)).

59. On the basis of the record in this proceeding, to the extent that municipal plans are non-existent or deficient and counties have not done the planning for the municipalities, the Board finds that there has been insufficient showing that the capability exists at the municipal level to take the emergency actions assigned to them. The Board notes with favor the efforts being undertaken at various levels to improve the extent of municipal planning: Licensee has retained an emergency planning consulting firm to provide its services to municipalities (Knopf, et al., ff. Tr. 21, 816); the Commonwealth has in its Proposed Findings of Facts stated its objective of working with the counties to get all municipal plans completed; and the County Coordinators have pledged their assistance to the municipalities in assessing resource deficiencies, in particular (Tr. 20, 799 (Curry)). Therefore, the Board finds that planning and preparation in the following substantive areas must be reflected at the municipal level:

1. identification of pick-up points for persons without transportation and assessment of available and unmet transportation needs;
2. identification of invalids, homebounds and other mobility-impaired persons and assessment of available and unmet transportation needs;
3. identification of routes which will provide for 100% notification within 45 minutes and assessment of available and unmet personnel and equipment necessary to accomplish same;

4. identification of unmet personnel and equipment needs for all aspects of municipal response during a fixed nuclear incident emergency.

The Board directs the NRC Staff to monitor the development of municipal plans within the plume exposure pathway EPZ and to advise the Commission, in the context of its January 1, 1982 status report,* of the progress being made. The Staff is specifically directed to determine whether each municipality within the plume exposure pathway EPZ is prepared to perform the above functions, and whether such preparation is reflected in the form of written plans or written implementing procedures which are consistent with state and county-level planning.

IV. School Plans**

60. The concept of operations for evacuation of school children attending school within the plume exposure pathway EPZ surrounding TMI-1 places reliance upon individual schools to conduct the actual evacuation in coordination with the school districts and respective counties. Tr. 22, 395 (Bath); Tr. 22, 407 (Bath); Tr. 20, 902-03 (Curry, Wertz). The present state of planning reflects the existence of "master plans" at the county level which identify the host schools or centers for evacuated school children, i.e., those points outside the plume exposure pathway EPZ where parents can pick their children up. E.g., Board Ex. 5, Annex 0 (York County). The responsibility for developing implementing procedures on a school-by-school basis, for providing coordination between risk and host schools, and for providing the bus resources necessary to effectuate an evacuation have been specifically delegated to the school

* See Tr. 22, 924 (Chesnut).

** This section also covers subject matter identified in Contention 6(D)(5), 14(V), 14(AA), 16(T), 14(B) (in part), 16(J).

districts. E.g., Board Ex. 5, Annex O, Sections II.C.1, C.2, and C.3; Board Ex. 6, Annex L, Sections II.B.1, B.2, and B.4. Most importantly, the decision of which schools within a district will be evacuated (e.g., if a school straddles the EPZ, or if the children attending a school outside the EPZ reside within the EPZ) has also been delegated to the school districts. Tr. 20, 859 (Curry); Tr. 20, 856-857 (Wertz); Tr. 20, 863 (Belser); Tr. 20, 866 (Curry). Based upon the record in this proceeding, the Board concludes that of the approximately 16 school districts affected, only 2 school districts have completed plans which are specific to a fixed nuclear facility emergency, or which have been coordinated with the county-level "master plan". Tr. 20, 968-969 (Wertz); Tr. 20, 969-970 (Curry). Apparently the schools themselves also do not have plans or implementing procedures which are based upon the county-level "master plan". Tr. 22, 395 (Bath); Tr. 22, 407 (Bath).

61. The evacuation of school children is another situation, similar to that described in the "Municipal Plans" section, where various important responsibilities have been assigned to school districts and individual schools, yet little evidence has been presented to show that the school districts or schools have accepted those responsibilities and have the resources or capability to carry them out. See NUREG-0654, Planning Standard A, p. 31, and 10 C.F.R. §50.47(a)(1). The question of whether the school evacuation portion of the TMI-1 area emergency response plans can and will be implemented is still open - one which cannot be answered until school district plans specific to nuclear emergencies (i.e. coordinated with the county "master plans") are available and reviewed. Tr. 19, 025 (Adler); Tr. 22, 435-436 (Bath); Tr. 22, 430 (Bath); Tr. 22, 480 (Bath). FEMA witnesses stated on a number of occasions

that they found this lack of planning at the school or school district level to be an important deficiency which would render the county plans inadequate. Bath & Adler (2/23 Testimony), ff. Tr. 18, 975 at 55; Adler & Bath (3/16 Testimony), ff. Tr. 18, 975, at 4, 56-57; Bath, ff. Tr. 22, 350, at 5 (see also Tr. 22, 401-402); Tr. 22, 436 (Bath); Tr. 22, 866-967 (Hardy); Tr. 22, 479 (Bath); Tr. 19, 267-268 (Bath); Tr. 19, 329 (Adler); Staff Ex. 21, at 26. To achieve a final finding of adequacy,* the county plans would have to reflect that the school districts or schools had recognized their responsibilities during a nuclear emergency and had documented adequate resources to implement those responsibilities. Tr. 19, 215 (Adler); Tr. 19, 214 (Pawlowski). Commonwealth and County witnesses also emphasized the desirability of having plans available to determine the level of preparedness at the school or school district level. Tr. 20, 909 (Belser); Tr. 20, 844 (Belser); Tr. 20, 909 (Curry); Tr. 20, 859 (Curry); Tr. 20, 909 (Wertz).

62. The Board agrees with FEMA and the other witnesses that plans or implementing procedures, at least at the school district level, are critical for conducting a coordinated evacuation effort. First, the estimated size of the school population of approximately 37,306 students** represents a substantial portion of the public to be evacuated. Thus, the Board takes particular notice of the fact that implementing procedures for taking protective measures for this sector of the public are virtually non-existent. Second, the functions assigned to the school districts are important ones, and failure to perform them adequately and in a timely manner during an emergency could directly affect the success of

* See footnote *, p. 36 supra.

* This number is the sum of the enrollment data for schools located within the EPZ provided in the Parsons Brinkerhoff Evacuation Time Study. Licensee Ex. 52, Table 8, at 16-24.

an evacuation. The importance of the school district's initial function - identifying those schools which will need to be evacuated - does not even warrant discussion. The present state of planning includes a list at the county level of host schools or centers, but no complete listing of schools which will need to be evacuated. Pre-identification of affected schools is a logical planning task, which should be accomplished prior to the onset of a real emergency. Tr. 20, 859 (Curry).

63. Along with the identification of schools which will need to be evacuated, the school planning must demonstrate a coordination with the county-level "master plan"; i.e., the school level planning must recognize which host schools or centers are relevant and what routes will be taken to get there. Tr. 19, 408 (Bath). Since information regarding appropriate responses during an emergency reaches the principals and teachers of each school through the school district (Tr. 20, 843 (Curry)), it seems wise to eliminate as many levels of information-gathering as possible prior to an actual emergency. Furthermore, it is anticipated that the public information to be predistributed will include information regarding host schools or centers for students and appropriate action to be taken by parents. Tr. 22, 433-434 (Bath). The Board notes with concern that this information cannot be provided until the school districts have identified which schools will be affected, and failure to provide this information prior to an emergency may affect the parents' response.

64. The other primary function to be performed at the school level is identification of resources available to effectuate an evacuation. Schools are expected to use their own buses to evacuate their students, and to provide notification to the bus drivers in the event of an emergency. Tr. 19, 408 (Bath); Adler & Bath (3/16 Testimony), ff. Tr.

18, 975 at 35. Without plans at the school or school district level, FEMA has been unable to assess whether enough buses can be provided during an emergency to evacuate each risk school. Adler & Bath (3/16 Testimony), ff. Tr. 18, 975 at 60; Adler & Bath (3/16 Testimony), ff. Tr. 18, 975, at 35; Staff Ex. 21, at 7. Apparently, the lack of planning in this area caused some confusion during the June 2 exercise. Tr. 22, 865-866 (Swiren). Similarly, FEMA has been unable to assess whether the schools and buses have the communications means available to relate necessary information to the bus drivers. Tr. 19, 118-119 (Adler). FEMA feels it is "critical" to have this information in order to judge the adequacy of planning for the school population, since methods of notification of key emergency response personnel is a specific requirement of NUREG-0654, Planning Standard F. Adler & Bath (3/16 Testimony), ff. Tr. 18, 975 at 56-57; Tr. 19, 121 (Adler).

65. One additional problem relating to schools was highlighted by the June 2 exercise and will be discussed briefly. The June 2 exercise showed that lack of adequate planning at all levels regarding schools caused "conflicting direction" which would have led to "serious confusion". Staff Ex. 20, at 8. Specifically, the appropriate "chain of command" regarding the direction to close schools was unclear as between the Pennsylvania Department of Education and the respective counties. Tr. 22, 865-866 (Swiren). The Board feels that this particular problem regarding school evacuations will be resolved in the revised versions of the state and county emergency response plans. The Commonwealth has, in its Proposed Findings of Fact, indicated that the decision to close or evacuate schools will be made by PEMA in consultation with the Pennsylvania Department of Education. The recommendation will then pass

from PEMA to the counties, who will contact the appropriate school districts, who will contact the affected schools.

66. The Board notes that FEMA has placed the issue of improved coordination at all levels for school evacuations high on its list of issues to be corrected first. Staff Ex. 20, at 1-2, Recommendations 2, 3, and 7; Tr. 22, 753 (Adler); Tr. 22, 867 (Hardy). The Board also notes that school districts have been characterized as "rather independent" and likely to exercise their independent judgment. Tr. 19, 437 (Bath). In light of this and in light of the virtual void of information regarding the extent of planning at the school district and school levels, the Board finds that there has been no showing that school children can and will be evacuated as planned for by the counties. Tr. 22, 395 (Bath). Planning at the school or school district level is necessary to provide reasonable assurance that TMI-1 can be operated without endangering the health and safety of the public. The Board acknowledges that school district plans are in the process of being developed, with assistance from various levels: the emergency management consultant hired by Licensee has provided a model school plan (Knopf, et al., ff. Tr. 21, 816, at 8-9); the Commonwealth has in its Proposed Findings of Fact stated its objective of providing guidance to the school districts in order to complete the remaining plans, while at the same time urging the districts to expedite their development by joint letter from PEMA and the Department of Education; the County Coordinators have held meetings with the school district superintendents to encourage them to complete the plans (Tr. 20, 848 (Wertz); Tr. 20, 842 (Curry)). The Board, however, is concerned with results and not just efforts. Therefore, the Board finds that the state and county plans must reflect a coordinated

decision-making procedure regarding the closing or evacuation of schools, prior to restart. In addition, the Board finds that planning and preparation for the evacuation of schools must be reflected at least at the school district level prior to restart. The Board directs the NRC Staff to certify to the Commission that each school district is prepared to evacuate in accordance with the appropriate county "master plan", that such preparation is reflected in the form of written plans or written implementing procedures at the school district level, and that such plans or implementing procedures have been communicated to the affected schools.

V. Emergency Workers

67. Emergency workers, as a category, are specifically referred to in the emergency planning rule and NUREG-0654. Planning Standard J of NUREG-0654* requires that "[a] range of protective actions have been developed for emergency workers...". The specific evaluation criteria make reference to the suggested use of radioprotective drugs for emergency workers as a protective action. NUREG-0654, Planning Standard J, Criteria 10.e and 10.f. Planning Standard K of NUREG-0654** requires that the "[m]eans for controlling radiological exposures, in an emergency, are established for emergency workers." The specific evaluation criteria refer to dosimetry, both self-reading and permanent record devices, as the suggested means of controlling radiological exposures.

68. The Commonwealth of Pennsylvania has incorporated both suggestions in its plans regarding emergency workers during a fixed nuclear facility incident. Commonwealth Ex. 2, Appendix 16, Section V. In fact, since evacuation and sheltering are almost by definition inappropriate for emergency workers, the Commonwealth relies on the use of a thyroid prophylactic drug and dosimetry as the protective measures to be taken for this group.

69. At the close of hearings on emergency planning issues, serious problems regarding the capability to implement both methods of protection for emergency workers had been identified. In addition to inadequate supplies of both the drug and dosimetry, the existing supplies had not been fully predistributed to the emergency response organizations, nor had adequate distribution plans for use during an emergency been developed.

* This is the same language as used in the emergency planning rule, 10 C.F.R. §50.47(b)(10).

** This is the same language as used in the emergency planning rule, 10 C.F.R. §50.47(b)(11).

FEMA found that this state of affairs provided "relatively little assurance" that radioprotective drugs and dosimetry could be used as protective actions for emergency workers during an emergency, or that a "desirable level of protection" would be achieved. Tr. 22, 772-773 (Adler); Tr. 22, 764-765 (Adler). Furthermore, FEMA rated the pre-distribution of the drug and dosimetry for emergency workers as one of the most important issues to be addressed after the June 2 exercise. Staff Ex. 20, at 1-2, No. 5; Tr. 22, 753 (Adler).

70. The Board finds that improvements must be made in the area of protective actions and radiological exposure control for emergency workers. The individual types of protective measures will be discussed separately, infra.

A. Dosimetry

71. The function of dosimetry is to determine the radiological dose received by an individual. In the case of emergency workers, dosimetry is the method used to determine the amount of exposure s/he is receiving, specifically for purposes of advising the worker to leave the plume exposure pathway EPZ once the pre-determined level of exposure has been reached. Commonwealth Ex. 2; Appendix 16, Section V.B.

72. The state plan, as reflected in Commonwealth Exhibit 2, presently calls for distribution of dosimetry to the emergency workers at the time of an incident. Commonwealth Ex. 2, Appendix 16, Section V.B. Central storage of the equipment would be at Fort Indiantown Gap, with distribution to the county, and from there to the individual emergency workers. Tr. 22, 768-769 (Adler). FEMA has been unable to assess whether timely distribution of dosimetry to the individual workers can be accomplished under this plan. Staff Ex. 21, at 20. The June 2 exercise showed the

infeasibility of this particular plan of distribution. Although a large amount of dosimetry was predistributed to the counties in anticipation of the exercise, at least one county did not have any means of distributing the dosimetry equipment to the participating municipality. Tr. 22, 386 (Bath); Staff Ex. 20, at 21. FEMA indicated that "[t]his would have been a major problem had there been an actual incident at TMI." Staff Ex. 20, at 21.

73. The Board agrees with FEMA's frequent statements that dosimetry must be predistributed to the local level before there can be any assurance that the equipment will actually be available for use by the emergency workers. Staff Ex. 21, at 20; Tr. 22, 768-769 (Adler); Adler and Bath (3/16 Testimony), ff. Tr. 18, 975, at 2 (outline), 31. Although the emergency workers can still perform their assigned functions without dosimetry, the Board finds that predistribution to at least the county level is necessary to avoid having emergency workers remain in the EPZ without protection. Tr. 22, 388 (Bath). The Board also finds that each organization to which predistribution is made must have a plan or implementing procedure for distribution to the individual emergency workers in the event of an emergency. These actions are required before restart to provide reasonable assurance that the radiological exposure of the emergency workers can be monitored, so as to protect their health and safety.

74. The second problem identified with dosimetry was the inadequate supply of permanent record dosimetry to distribute to all emergency workers. Staff Ex. 21, at 15. Following the June 2 exercise, it was determined that an adequate supply of self-reading dosimetry (CDV-730's and CDV-742's) is available for pre-distribution to the counties for

emergency workers in the plume exposure pathway EPZ for TMI-1. Staff Ex. 21, at 15, 20; Tr. 22, 476 (Bath); Staff Ex. 20, at 21; Tr. 22, 386 (Bath). There is, however, a shortfall of permanent record dosimetry (TLD's). Tr. 22, 387 (Bath); Staff Ex. 21, at 15, 20; Tr. 22, 476 (Bath); Staff Ex. 20, at 21; Tr. 22, 771 (Adler). TLD's are used as a warning mechanism regarding accumulated dosage. Tr. 20, 803 (Curry).

75. The Board believes that a supply of both self-reading and permanent-record dosimetry, sufficient to equip each emergency worker according to the state plan, should be available prior to restart. This is consistent with the emergency planning rule's requirement that adequate equipment to support the emergency response must be provided and maintained. 10 C.F.R. §50.47 (b)(8); NUREG-0654, Planning Standard H*; Bath, ff. Tr. 22, 350, at 4; Staff Ex. 21, at 15. The Board notes that FEMA has identified possible alternate methods of compliance with this standard, given the lack of dosimetry equipment. These include rotating emergency workers more frequently than otherwise planned for, or using one dosimeter for several emergency workers stationed in the same area. Tr. 22, 772-773 (Adler). FEMA has not, however, indicated whether these alternatives are included in the state's planning, or whether they have been found adequate. Based on the record in this proceeding, the Board cannot, therefore, rely upon these possible alternatives as constituting reasonable assurance that an adequate amount of dosimetry will be provided to each emergency worker during an emergency.

76. The Commonwealth has, in its Proposed Findings of Fact, made several commitments regarding the distribution of dosimetry. It has

* The evaluation criteria for Planning Standard H indicate that this requirement is specifically intended to encompass radiological monitoring equipment, such as dosimetry. NUREG-0654, Planning Standard H, Criteria 10 and 11.

committed to predistribute all necessary self-reading dosimetry (CDV-730's and CDV-742's) to the risk counties prior to restart. It is requesting additional supplies of TLD's from FEMA, and will predistribute available TLD's to the county level as soon as possible. In addition, the Commonwealth has stated that it will assist the counties in developing plans for further distribution of the dosimetry during an emergency, and such distribution plans will be a part of the county plans when they are submitted to FEMA for formal review. The Commonwealth has also committed to review and revise, where necessary, its plans regarding rotation of emergency workers; this will be accomplished prior to restart.

77. Therefore, the Board directs the NRC Staff to certify to the Commission that the following items have been accomplished prior to restart:

1. Sufficient supplies of self-reading dosimetry have been predistributed to the 5 risk counties to equip each emergency worker fully according to the state plan;
2. To the extent that sufficient supplies of permanent record dosimetry have not been predistributed, state and county plans include other means to provide reasonable assurance that the health and safety of emergency workers will be insured;
3. Prior to restart each county plan includes procedures for further predistribution of dosimetry, or procedures for timely distribution of dosimetry to individual emergency workers during an emergency.

B. Equipment Training

78. The emergency planning rule requires that "[r]adiological emergency response training [be] provided to those who may be called on to assist in an emergency." 10 C.F.R. §50.47(b)(15); NUREG-0654, Planning Standard O. Testimony presented by the Commonwealth indicated that, for the most part, training programs for emergency response personnel had

been developed. Lamison (Training), ff. Tr. 17, 818 at 2. Although not all emergency workers have received the necessary training, FEMA implied that the June 2 exercise results could be used to show that the emergency response personnel had the requisite knowledge, possibly despite formal training. Chesnut and Bath, ff. Tr. 19, 626, at 16; Tr. 22, 800 (Adler); Bath, ff. Tr. 22, 350, at 8, 10-11; Tr. 22, 412 (Bath).

79. The exercise results did, however, show a lack of training at the volunteer level regarding the proper use of personnel decontamination monitoring and record-keeping equipment, i.e. dosimetry. Thus, decontamination monitoring personnel at one mass care center were unfamiliar with the use of the equipment assigned to them. Staff Ex. 20, at 21; See also Staff Ex. 21, at 19. Similarly, the Pennsylvania State Police had not been instructed to read their dosimeters periodically or to keep records of the readings. Staff Ex. 20, at 21. The Board recognizes that providing this training is probably a very simple task, yet the lack of such training totally negates the usefulness of the equipment. FEMA has indicated that compliance with the planning standard regarding adequate equipment includes provision of instruction or use of the equipment. NUREG-0654, Planning Standard H; Staff Ex. 21, at 2, 15, 19, and 25.

80. Despite the availability of a home-study course on radiological monitoring pertaining to a nuclear war scenario, the Board finds that the record contains no reasonable assurances that appropriate instruction in the use of personnel decontamination monitoring equipment will be provided to emergency workers on a timely basis. Tr. 20, 805 (Curry); Tr. 20, 931 (Curry); Belser, et al., ff. Tr. 20, 787, at 7. In its Proposed Findings of Fact, the Commonwealth has stated that it is in the

process of developing an instructor's course for individuals at the state agency, county and municipal levels, to cover the use of dosimetry and personnel decontamination monitoring equipment. The intent of the instructor's course is to provide those individuals with a curriculum which they can use in training the emergency workers in their respective areas. The Commonwealth intends to offer the instructor's course once or twice prior to January 1, 1982. The Board also notes that both County Coordinators who testified stated their personal commitment to improving the level of training in their county. Tr. 20, 931 (Curry); Tr. 20, 953 (Wertz).

81. Therefore, the Board directs the NRC Staff to certify to the Commission that, prior to restart, a comprehensive training program has been developed and is available to individual emergency workers, which trains them in the use of all appropriate dosimetry and personnel decontamination monitoring equipment.

C. Potassium Iodide*

82. As recommended in NUREG-0654, Planning Standard J, regarding protective actions for emergency workers, the Commonwealth has planned to predistribute a radio protective drug (potassium iodide or "KI") to all emergency response organizations, for distribution to individual emergency workers during an emergency. Commonwealth Ex. 2, Appendix 16, Section V.A., and Appendix 9, Appendix I; Cox, ff. Tr. 18, 497, at 1; Tr. 22, 767 (Adler). FEMA has found the state and county predistribution plans for KI adequate. Tr. 22, 765 (Adler); Tr. 22, 420 (Bath); Bath, ff. Tr. 22, 350, at 1.

* This section also covers subject matter identified in Contentions 6(E), 14(M).

83. The problem with the use of KI as the protective action for emergency workers arises due to lack of supply. Staff Ex. 21, at 18. The only type of KI which has been approved by the U.S. Food and Drug Administration (FDA) for blocking uptake by the thyroid of radioactive iodine is "Thyro Block", a pill which is prepackaged in appropriate amounts and containers. Cox, ff. Tr. 18, 497, at 1. These KI pills are produced by only one manufacturer, and the only supply presently available has a shelf life which expires December 31, 1981. Tr. 18, 498-499 (Cox); Tr. 22, 768 (Adler) For this reason, the Commonwealth of Pennsylvania has not purchased a supply of KI, and thus none is available on a predistributed basis for emergency workers. An "ad hoc" procedure was used for distribution of KI during the June 2 exercise, but the extent of simulation in the procedure and the December 1981 shelf life of that supply do not provide the Board with any assurance that KI would actually reach emergency workers in time to be useful.* Staff Ex. 20, at 23; Bath, ff. Tr. 22, 350, at 1; Tr. 22, 765 (Adler); Tr. 22, 354-356 (Bath).

84. In trying to resolve this problem, the Board has looked to agency guidance on the use and importance of KI for emergency workers. The Board recognizes, of course, that NUREG-0654 specifically recommends the use of radioprotective drugs, and mentions the development of further guidance on the subject. NUREG-0654, at 63 n. 1; Bath and Adler (2/23

* Although the KI was not actually distributed to emergency workers during the exercise, it was estimated that it would have taken from 4-6 hours for the supply to reach the individual needing it. Bath, ff. Tr. 22, 350, at 1. Taking into consideration the fact that emergency workers were already dispersed throughout the EPZ at their assigned positions when the supply would have been distributed, the Board does not attach much weight to those time estimations. The Board also notes a potential conflict between the length of time required for distribution during the exercise, and the advisability of taking KI several hours before anticipated exposure for maximum thyroid blocking effectiveness. Tr. 18, 541 (Reilly).

Testimony), ff. Tr. 18, 975, at 33. In addition, the Nuclear Regulatory Commission's position is set out in an "interim position paper" dated May 1980.* That paper does not change the guidance provided in NUREG-0654 with respect to emergency workers. The FEMA agency position also supports the use of KI for emergency workers. Tr. 19, 398-399 (Pawlowski). Apparently the FDA has done a risk/benefit analysis which even supports the use of KI by the general public. Tr. 19, 399 (Pawlowski).

85. FEMA reviewers of the plans and June 2 exercise have attached great importance to the use of KI as a protective action for emergency workers. The unavailability of KI, despite the full use of dosimetry, caused FEMA to find exposure control of the field monitoring teams during the exercise to be inadequate. Staff Ex. 20, at 18. Similarly, FEMA would expect other protective measures to be provided for in plans, in the event that KI was unavailable. Tr. 19, 074 (Bath). The record does not reflect that other measures adequate to protect against radioactive iodine exposure have been provided for in the state or county plans.**

86. Based upon its review of the guidance regarding the usefulness of KI, and the fact that no provisions have been found in the emergency response plans for alternate reliable protective actions specific to radioactive iodine for emergency workers, the Board finds that the predistribution of KI is necessary to provide reasonable assurance that the health and safety of the emergency workers will be protected. Under

* The Board took official notice of the Commission's interim position paper, SECY 80-257/257A. This is also the NRC guidance on which the Commonwealth based its decision to predistribute KI. Tr. 18, 523, 18, 526 (Cox).

** There is no clothing which totally protects against radioactive iodine. Compare Staff Ex. 20, at 18, with Tr. 19, 380-382 (Adler, Pawlowski); Lamison (Command & Control), ff. Tr. 17, 818, at 3. The relative merits of specialized breathing apparatus, access control and prophylaxis have not been developed on the record, nor are they included in the plans. Staff Ex. 20, at 18; Tr. 19, 075 (Adler).

ordinary circumstances, the Board would find that predistribution is required prior to restart. However, in its proposed Findings of Fact, the Commonwealth has committed to make KI available to the target groups identified in its plan*, to the extent that the plan provisions are consistent with forthcoming FDA guidance. This commitment is predicated upon the availability of a supply with a reasonable shelflife beyond December 31, 1981.

87. Therefore, the Board directs the NRC Staff to notify the Commission within a reasonable time after a supply of KI becomes available, whether predistribution has been accomplished in accordance with the state and county plans, and consistent with the most recent federal guidance available at that time.

* This includes emergency workers and institutionalized persons. Commonwealth Ex. 2, Appendix 9, Appendix I, Section V.

VI. Public Education*

88. The Board finds that a comprehensive and timely public education program is essential to ensuring a successful public response in the event of an emergency at TMI-1. The TMI-2 accident highlighted the importance of disseminating information prior to an actual emergency situation regarding both the effects of radiation and the expected reactions of the public. Tr. 17, 715 (Gen. Smith); Tr. 19, 464 (Pawlowski). Almost every witness who testified on the nature of public reactions drew a direct correlation between the amount and accuracy of information provided to the public and the appropriateness of their reaction during an emergency. E.g., Tr. 17, 717 (Gen. Smith); Tr. 20, 863 (Belser); Tr. 19, 290 (Pawlowski); Staff Ex. 19 (Witness Jaske); Eriksen, ff. Tr. 21, 686.

89. The emergency planning rule sets forth a planning standard which requires that "[i]nformation [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 ...". 10 C.F.R. §50.47(b)(7). The evaluation criteria of NUREG-0654 specify that such public information should include, at a minimum, general information on the effects of radiation, information on evacuation routes and protective measures available, and information for populations with special needs. NUREG-0654, Planning Standard G, Criterion 1. This public education program must be in place prior to the occurrence of an emergency. Chesnut & Bath, ff. Tr. 19, 626, at 8.

* This section also covers subject matter identified in Contentions 14(Q), 14(C) (in part).

90. The Commonwealth has set forth a comprehensive public information program in Annex E (Fixed Nuclear Facility Incidents) to its Disaster Operations Plan. The Annex includes direct distribution to the public and media coverage. Commonwealth Ex. 2, Appendix 15, Section IV. The essential elements of the program are brochures prepared for each of the 5 risk counties which include evacuation routes and other pertinent information. E.g., Commonwealth Ex. 4, 5, and 7. These brochures have been distributed at least to the municipal level in most counties. Tr. 18, 046 (Corney); Tr. 19, 053 (Adler). The latest distribution in York County, for example, was November, 1980 Tr. 20, 799-800 (Curry). The Commonwealth (PEMA) has also prepared a booklet giving general educational information on radiation. Commonwealth Ex. 3. The record reflects that this booklet was last distributed in the TMI-1 area in September, 1979. Tr. 18, 065-067 (Corney).

91. FEMA has reviewed the 5 county brochures and the PEMA brochure and has found that a combination of the information in both is required for full compliance with Planning Standard G. Staff Ex. 21, at 13; Tr. 22, 426 (Bath); Chesnut & Bath, ff. Tr. 19, 626, at 9; Tr. 18, 981 (Adler); Tr. 22, 799 (Adler); Tr. 19, 291 (Pawlowski). Furthermore, FEMA has found that implementation of the public education program is required prior to a formal finding of adequacy;* i.e., both the county and PEMA pamphlets must be distributed to the entire permanent and transient population. Tr. 19, 338 (Adler); Chesnut & Bath, ff. Tr. 19, 626, at 8, 9; Tr. 18, 983-984 (Adler); Tr. 22, 799 (Adler).

92. The Board's review of the entire record on emergency planning issues leads it to the conclusion that the county brochures may be outdated and inadequate. Tr. 18, 048 (Corney). The Dauphin County

* See footnote *, p. 36, supra.

Coordinator indicated that revisions to his brochure was anticipated, based upon changes reflected in the April, 1981 draft of the county plan. Tr. 20, 962 (Wertz).^{*} In addition, the County Coordinators stated that pick-up points identified by the municipalities would become a part of the public education materials. Tr. 20, 814, 20, 879 (Curry); Tr. 20, 947 (Wertz). Some changes in the evacuation routes may be made following FEMA's full review of the Parsons Brinkerhoff Evacuation Time Study (Licensee Ex. 52). Tr. 19, 387 (Adler); Tr. 18, 015 (Lothrop); Tr. 18, 072 (Coney). FEMA has stated that information regarding school evacuations should be included in the county brochures. Tr. 22, 433-34 (Bath); Tr. 19, 636 (Bath). The Board also notes that a review of the final versions of the public information pamphlet by FEMA or the NRC Staff is anticipated. Tr. 19, 390 (Adler); Tr. 22, 916 (Chesnut).

93. Based on the above discussion, the Board finds that a combined distribution of updated county brochures and the FEMA booklet is necessary to provide reasonable assurance that the public health and safety will be adequately protected, in that the public will have complete and accurate information available prior to the possibility of an emergency at TMI-1. The Board finds further that this distribution must be accomplished prior to restart, in order to achieve the result of educating the public prior to the possibility of an accident.

94. In its Proposed Findings of Fact, the Commonwealth has committed to the distribution of the updated FEMA booklet and county brochures prior to restart. The Board also notes that Licensee has, by letter dated June 26, 1981, committed to assume at least financial responsibility for such printing and distribution. Tr. 22, 878 (Chesnut).

^{*} Based upon the Commonwealth's announced intention to submit further revised county plans to FEMA for formal review later this year, the county brochures should reflect the most up-to-date information available. See Tr. 19, 633 (Chesnut).

95. Therefore, the Board directs the NRC Staff to certify to the Commission that the following items have been accomplished prior to restart:

1. The 5-risk county brochures have been revised and updated;
2. The PEMA brochure and updated county brochures have been distributed to the resident population* within the plume exposure pathway EPZ.

* For distribution to transient population, see Section on Transient, infra.

VII. Notification to Transients*

96. The Board has dealt with the transient sector of the population in a separate section, because the issues relating to transients cover two main substantive areas which cannot be easily disassociated: public education and notification. "Transients", as that term has been used in this proceeding, includes those members of the public who do not permanently reside within the plume exposure pathway EPZ; i.e., tourists or other visitors, and the non-residential work force. E.g., Adler & Bath (3/16 Testimony), ff. Tr. 18, 975, at 6; Staff Ex. 21, at 13, 18; Bath, ff. Tr. 22, 350, at 1. The estimated size of this transient population is variable, from a minimum of approximately 9,016 people** to a maximum of approximately 23,918 people.***

97. NUREG-0654 makes specific reference to the transient population:

"The public information program shall provide the ... transient adult population within the plume exposure EPZ an adequate opportunity to become aware of the information annually ... Signs or other measures ... shall also be used to disseminate to any transient population within the plume exposure pathway EPZ appropriate information that would be helpful if an emergency or accident occurs."
NUREG-0654, Planning Standard G, Criterion 2.

"... plans to implement protective measures for the plume exposure pathway shall include: ... Means for notifying all segments of the transient and resident populations."
NUREG-0654, Planning Standard J, Criterion 10.c.

Clearly, the transient population is one of the segments of "the public" for whom public education and protective actions must be provided for

* This section also covers subject matter identified in Contention 14(C) (in part), 6(D)(9).

** This number is the sum of the estimated tourist/transient population and the estimated transient employment population data under a night scenario, as presented in the Parsons Brinkerhoff Evacuation Time Study. Licensee Ex. 52, Tables 5 and 6, pp. 10 and 12.

*** Id., under day scenario.

compliance with the emergency planning rule. 10 C.F.R. §§50.47(b)(7) and (b)(10). Similarly, the transient population is part of "the public" for which notification of an emergency must be provided within about 15 minutes. 10 C.F.R. Part 50, Appendix E, Section D.3.

98. The method of notifying transients within the EPZ for TMI-1 in the event of an emergency is tied directly to the public education process for that group of people. Planning for notification of transients is a county responsibility. Tr. 18, 048 (Corney). The latest statement on county planning available to the Board indicates that the counties are relying on motel and hotel managers, park managers, and employers to notify the transients on their premises themselves in the event of an emergency, and to inform them at that time of the appropriate actions to take. Tr. 22, 372-73 (Bath). This notification should include dissemination of predistributed public education materials to the transients. The responsibility placed on the individual managers and employers is a large one. In York County, e.g., posting of the county brochure which includes instructions to turn on the radio and evacuation routes (Commonwealth Ex. 5) is not anticipated. Tr. 22, 374 (Bath). Nor has the information contained in the county brochures been published in places with high visibility to transients, e.g. phone books.* Thus, at the time the siren sounds, the only source of information for the transient on what to do next is his/her "host" or employer. Without having access to the public information brochure until the time of an emergency, the transient may not even know to turn the radio on, let alone which station would carry the EBS announcement. Bath & Adler (2/23 Testimony), ff. Tr. 18, 975, at 22.

* The Board recognizes that the Commonwealth is working with Bell of Pennsylvania to place this information in phone books, but this appears to be an ongoing process with no known completion date. Tr. 18, 049 (Corney); Tr. 20, 841-42 (Belser).

99. FEMA has stated that distribution of public education materials to the transient population is required before the public education and information program can be found adequate. NUREG-0654, Planning Standard G; Chesnut & Bath, ff. Tr. 19, 626, at 8-10; Tr. 19, 628 (Bath); Tr. 19, 366, 19, 375 (Adler). FEMA has also indicated that distribution of the information to the transient population must be accomplished prior to an actual emergency. Chesnut & Bath, ff. Tr. 19, 626, at 9. Apparently, the plan of distributing at least the 5 risk county brochures to the various hotels, motels, employers, parks, and other transient locations is acceptable to FEMA. Tr. 22, 372-74 (Bath). This distribution has not, however, been accomplished yet.* Tr. 20, 965 (Wertz); Belser, et al., ff. Tr. 20, 787, at 6; Tr. 18, 051 (Corney).

100. With respect to the notification aspect of the transient issue, FEMA found the level of planning deficient when it first testified before the Board. Chesnut & Bath, ff. Tr. 19, 626, at 10; Tr. 10, 103 (Bath); Tr. 19, 628 (Bath). After reviewing the revised plans which do address transients, FEMA still found the level of preparedness to be deficient. Staff Ex. 21, at 18; Bath, ff. Tr. 22, 350, at 2; Tr. 22, 375-77 (Bath). In fact, FEMA stated that it had no present assurance that the responsible "hosts" (hotel and motel managers, employers, etc.) were aware of their responsibility to notify transients, or were capable of carrying out that responsibility. It thus had no assurance that transients would actually be notified during an emergency, or that they would actually receive the information necessary to respond appropriately. Tr. 22, 375-77 (Bath). Other than the York County Coordinator's statement that he meets frequently with industry officials to discuss emergency preparedness of all kinds, there is no indication on the record that

* See discussion of Public Education, supra, regarding anticipated revisions to the county brochures.

managers or employers are aware of the need to notify transients during an emergency, let alone that they are prepared to do so. Tr. 20, 796 (Curry); Tr. 22, 375 (Bath).

101. The Board agrees with FEMA that predistribution of the public information brochures to all transient locations is necessary before the requirements of the emergency planning rule can be deemed to have been met. 10 C.F.R. §50.4; (b)(7); Staff Ex. 21, at 13, 18; Chesnut & Bath, ff. Tr. 19, 626, at 10. The Board also finds that there has been no showing that hotel and motel managers and employers, etc. within the plume exposure pathway EPZ are capable of implementing the unique notification responsibility which has been assigned to them. On the basis of the present state of preparedness regarding notification and education of transients,--i.e., the "hosts" are unaware of their responsibility to distribute information during an emergency, nor is the information available to them to distribute--the Board finds that there is no reasonable assurance that any measures will be taken during an emergency at TMI-1 to protect the health and safety of the transient population. The Board finds that the level of preparedness regarding notification to the transient population must be improved prior to restart.

102. In its Proposed Findings of Fact, the Commonwealth has committed to the distribution of updated county brochures to identified transient locations (e.g., hotels, motels, parks, employers) within the plume exposure pathway EPZ. Said distribution will be accomplished prior to restart. The Commonwealth will also encourage the 5 risk counties and respective Chambers of Commerce to follow up at each transient location to urge them to make provisions for informing guests or employees in the

event of an emergency at TMI-1. Therefore, the Board directs the NRC Staff to certify to the Commission that the following items have been accomplished prior to restart:

1. Updated public information has been distributed to identified transient locations within the plume exposure pathway EPZ;
2. Steps have been taken to specifically inform the owner or key individual at each transient location and business of their responsibilities in the event of an emergency at TMI-1.

VIII. Access Control

103. The emergency planning rule requires that "[a] range of protective actions have been developed for the plume exposure pathway EPZ for ... the public." 10 C.F.R. §50.47(b)(10); NUREG-0654, Planning Standard J. The protective actions included in the Commonwealth's plans for the TMI-1 area are sheltering, evacuation and access control. Commonwealth Ex. 2; Staff Ex. 21, at 17. Access control serves two important functions: exposure control and security. Staff Ex. 20, at 22. The concept of access control is to station personnel around the perimeter of the plume exposure pathway EPZ to control entrance into the EPZ during sheltering or evacuation, and after evacuation has been completed. The Board recognizes the importance of limiting the number of people entering the EPZ area on the effectiveness of sheltering or evacuation as a protective action.

104. FEMA's review of the TMI-1 area plans and the exercise results highlights the present inadequacy of the access control plans. The plans themselves are sketchy and need considerable development. Staff Ex. 21, at 18; Tr. 22, 452 (Bath); Tr. 22, 774-75 (Hardy). They do not identify an adequate number of control points, nor has the large number of personnel required to man the points been considered. Staff Ex. 20, at 22. Based upon the June 2 exercise, FEMA also felt there was no assurance that access control could actually be implemented during an emergency. Staff Ex. 20, at 22-23; Tr. 22, 774-75 (Hardy). Of the four representative access control points tested, two were disbanded and thus were not fully evaluated by FEMA. Staff Ex. 20 at 22 (Lancaster County). The two which FEMA did observe first-hand were manned well before necessary, yet the barricades and traffic control devices never arrived.

Staff Ex. 20, at 22 (Dauphin County). The Board agrees with FEMA that the present level of preparedness for access control is inadequate.

105. The plans for access control in the event of an emergency at TMI-1 have not been fully developed, nor has there been a demonstration of the capability to implement access control as a protective action. The Board finds that development of a comprehensive access control plan, together with identification of adequate personnel to carry out the plan, is necessary to provide reasonable assurance that TMI-1 can be operated without endangering the health and safety of the public. In its Proposed Findings of Fact, the Commonwealth has committed to develop detailed access control procedures prior to restart, which would be incorporated into the state plan for submission to FEMA for formal review. These procedures will include an identification of the number of access control points required, their location, the number of persons required to man them, and the source of such access control personnel. Therefore, the Board directs the NRC Staff to certify to the Commission that the following items have been accomplished prior to restart:

1. An access control plan has been developed and incorporated into the state plan which adequately covers the perimeter of the plume exposure pathway EPZ;
2. Personnel resources adequate to implement the access control plan have been identified.

IX. Siren Notification System*

106. The emergency planning rule sets specific requirements regarding the capability to complete initial notification of the public within the plume exposure pathway EPZ within about 15 minutes. 10 C.F.R. Part 50, Appendix E, Section D.3. This requirement was reviewed by the Commission after promulgation of the emergency planning rule, and its utility and importance were reaffirmed. In re Final Rule on Emergency Planning, CLI-80-40, December 5, 1980, 2 NUC. REG. REP. (CCH) ¶30,558. The burden of demonstrating the capability of 15-minute notification is on Licensee. 10 C.F.R. Part 50, Appendix E, Section D.3.

107. The notification system presently in effect within the TMI-1 plume exposure pathway EPZ does not cover the entire EPZ, nor does it meet the 15-minute requirement. Tr. 17, 878 (Lamison); Adler and Bath (3/16 Testimony) ff. Tr. 18, 975, at 15; Tr. 19,099 (Adler); Staff Ex. 21, at 9. Licensee has presented the Staff with a design study for a siren notification system. Staff Ex. 23, at II-1. This study is founded upon various assumptions, the validity of which have not been empirically verified. Staff Ex. 23, at II-2. The Staff has reviewed the proposed design and found that, on paper at least, it meets the criteria set forth in NUREG-0654, Appendix 3. Tr. 22,889 (Chesnut); Tr. 22,894 (Chesnut). Licensee has committed to install the proposed siren notification system; the anticipated completion date is August, 1981. Tr. 22,878 (Chesnut).

108. The Staff has stated its position that the siren notification system must be completed prior to restart of TMI-1. Chesnut, ff. Tr. 22,881. The Board, of course, has no quarrel with this; the language of

* This section also covers subject matter identified in Contentions 5(D), 14(T), 14(A), 16(E), 16(M).

the rule itself mandates this conclusion. Completion of the siren notification system, as that word is used by the Staff, includes provision of the physical and administrative means necessary to activate the system. Tr. 22, 891 (Chesnut); Tr. 22, 895-896 (Chesnut); Tr. 19, 390-391 (Adler, Bath). Licensee has stated that this will be completed as part of the installation process. Tr. 22, 909 (Rogan); Tr. 22, 912 (Rogan).

109. The Staff has also stated that a final test to determine how much of the population actually would receive notification under the proposed system is required at some point, but the methodology has not yet been developed by FEMA. Tr. 22, 889 (Chesnut); Tr. 22, 891 (Chesnut). The Board does not feel that sound testing of each individual siren is adequate to demonstrate compliance with the notification requirement. Tr. 17, 857 (Lamison); Tr. 19, 100 (Adler); Tr. 22, 889 (Chesnut); Tr. 22, 903 (Rogan). Not only will this fail to provide a verification of the assumptions used in designing the system, but any variations in sound dispersion caused by changed locations of individual sirens will be unaccounted for. Tr. 22, 903 (Rogan).

110. The Board finds that a certification of capability to notify essentially 100% of the population within the plume exposure pathway EPZ is necessary to provide reasonable assurance that TMI-1 can operate without endangering the health and safety of the public. The Board believes that such a certification should be possible based upon a review of Licensee's consultant's sampling of siren coverage, which will be performed after installation to confirm the design model. Tr. 22, 904 (Rogan); Tr. 22, 906-907 (Rogan).

X. Miscellaneous Commonwealth Commitments

111. The Commonwealth has made additional commitments in its Proposed Findings of Fact which address certain recommendations made by FEMA following the June 2 exercise and certain Intervenor contentions. Without discussing each one at length, the Board finds that the following actions are necessary to provide reasonable assurance that TMI-1 can operate without endangering the health and safety of the public, and should be accomplished.

A. Public Information Coordination*

112. One of the lessons learned from the TMI-2 accident was the need for improved coordination on the release of information to the public during an emergency. Tr. 17, 715 (Gen. Smith); Bath & Adler (2/23 Testimony), ff. Tr. 18, 975, at 25-26. The emergency planning rule requires that "procedures for coordinated dissemination of information to the public are established." 10 C.F.R. §50.47(b)(7); NUREG-0654, Planning Standard G. The means of disseminating information to the public themselves highlight the importance of good coordination at all levels. Each county has the authority and responsibility to inform the public during an emergency, both through the EBS announcement and press releases. Bath & Adler (2/23 Testimony), ff. Tr. 18, 975, at 25; Tr. 19, 094-95 (Bath). Although each county is expected to receive its information from a central source, PEPA, the possibility exists for counties to give out inaccurate or inconsistent information. Tr. 18, 044 (Corney); Tr. 18, 094-95 (Corney); Tr. 19, 094 (Bath).

113. The June 2 exercise indicated that many of the problems with coordination of public information during an emergency have not yet been

* This section also covers subject matter identified in Contention 12.

fully resolved. In many instances, there was no consultation between the state and counties (and vice-versa) prior to the drafting of news releases, which resulted in incomplete and contradictory information being released to the public. Staff Ex. 20, at 11, 35; Tr. 22, 759 (Adler). FEMA also noted a "total lack of coordination between jurisdictions on the timing and content of EBS releases and siren activation." Staff Ex. 20, at 33.

114. The Board agrees with FEMA that this is an area of potential improvement which should be given priority and addressed promptly. Staff Ex. 20, at 1-2, Recommendation 3. It is the Board's understanding that planning is underway to develop further procedures for coordination between the Governor's office, the Public Information Officer (PIO) at FEMA, County PIO's, County Commissioners, municipal emergency management coordinators, municipal officials, the media and Licensee. The Commonwealth anticipates that the revisions to the public information coordination portions of existing state and county plans will be reflected in the plans to be submitted to FEMA for formal review.

B. Communications Drill*

115. The need for well developed communications networks between response agencies is another lesson learned from TMI-2. Tr. 17, 715 (Gen. Smith); Tr. 18, 949-950 (Adler). The direct corollary to the existence of a network is the ability to understand the information which is being communicated. The emergency planning rule addresses this problem by requiring "periodic drills ... to develop and maintain key skills"; additionally, any deficiencies identified in the exercises or

* This section also covers subject matter identified in Contention 14(N), 16(C), 16(F).

drills must be corrected. 10 C.F.R. §50.47(b)(14); NUREG-0654, Planning Standard N. The evaluation criteria of NUREG-0654 recommend that "[c]ommunications with State and local governments within the plume exposure pathway Emergency Planning Zone shall be tested monthly. ... Communication drills shall also include the aspect of understanding the content of messages." NUREG-0654, Planning Standard N, Criterion 2.a.

116. The Commonwealth's emergency plans do provide for monthly communications drills as required. Commonwealth Ex. 2, Appendix 14, Section II.A.1.a; Tr. 17, 951 (Lamison). The June 2 exercise identified problems, however, in the ability of state, county and municipal emergency response organizations to communicate adequately. Staff Ex. 21, at 11, 15. One aspect of adequate communication is, of course, the length of time required to contact various response personnel. Bath & Adler (2/23 Testimony), ff. Tr. 18, 975, at 6; Tr. 19, 114 (Adler). Although contact was made in some counties during the exercise down to the municipal level, FEMA did not comment on the efficiency of the process. See, e.g., Staff Ex. 20, at 4; Tr. 22, 779-780 (Swiren, Hardy). In several counties, the full communications network was apparently not tested. Staff Ex. 20, at 33.

117. In terms of the substance of communications during the exercise, various types of problems arose. They included failure to relay complete information (e.g., Staff Ex. 20, at 5), failure to relay information at all (e.g., Staff Ex. 20, at 5, 11), and misinterpretation of information (e.g., Staff Ex. 20, at 3; Tr. 22, 778 (Adler)). The result of these problems was some confusion and some inconsistent protective action recommendations among the counties. E.g., Staff Ex. 20, at 4 (Dauphin County's independent decision to shelter).

118. FEMA has recommended that the communication and coordination weaknesses identified by the exercise be improved "without delay". Tr. 22, 755 (Adler) One means of improving these skills is by additional drilling between all levels of government. Staff Ex. 21, at 2, 24; Tr. 22, 755 (Adler); Tr. 22, 756 (Hardy). The Board agrees with FEMA that such specialized drills should be undertaken prior to the testing of the entire emergency response, as during an accident. Staff Ex. 20, at 14; Tr. 22, 756-758 (Hardy, Adler). The Commonwealth intends to conduct at least one communication drill prior to restart. The drill will include, at a minimum, communications between Licensee and PEMA, PEMA and each county emergency management coordinator (EMC), each county and its key elected officials and each municipal EMC, each municipality and its key elected officials. PEMA will encourage the counties and municipalities to extend the drill further, so as to test communications to the EOC staff members. Due to the fundamental importance of prompt and accurate communication during an emergency (Tr. 22, 755 (Adler)), the Board finds that this communications drill shall be conducted prior to restart.

C. National Guard*

119. An annex on military support has been added to each of the county plans and will be incorporated into the state plan prior to submission to FEMA for formal review. The operations plan for the National Guard will be an Appendix to the state plan; it will identify which battallions have been assigned to support each risk county and the time element which should be allowed for complete mobilization.

* This section covers subject matter identified in Contention 14(H), 14(R), 14(X).

D. Protection of Farmers*

120. The Commonwealth has somewhat changed its approach towards farmers and the protection of livestock. Farmers with livestock will be treated as emergency workers during any fixed nuclear incident facility. Before restart, the state and county plans will include provisions for the distribution of dosimetry and potassium iodide (KI) to farmers as needed during an emergency. The dosimetry and KI will not be predistributed to individual farms; supplies adequate to equip one emergency worker per farm will be predistributed to the county level. Farmers will be given the opportunity to obtain training at the local level regarding use of the dosimetry equipment.

Respectfully submitted,

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* This section covers subject matter identified in Contentions 2, 5(G), 14(BB).


UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the within
Proposed Findings of Fact and Conclusions of Law on Emergency Planning
Issues was this day served on the attached service list by U.S. mail,
postage prepaid.



MICHELE STRAUBE
Attorney for the Commonwealth

Date: 8-13-81

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NUCLEAR REGULATORY COMMISSION

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