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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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Before the Atomic Safety and Licensing Board

In the Matter of

Philadelphia Electric Company

(Limerick Generating Station,
Units 1 and 2)

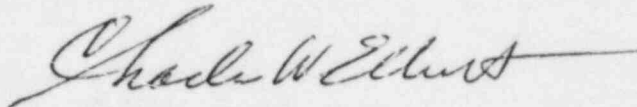
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Docket Nos. 50-352
50-353

LEA'S PROPOSED FINDINGS OF FACT
AND CONCLUSIONS OF LAW IN THE FORM
OF A PARTIAL INITIAL DECISION RELATING TO
LEA'S ONSITE EMERGENCY PLANNING CONTENTIONS

Limerick Ecology Action, Inc., Intervenor in the captioned proceeding, in accordance with 10 C. F. R. §2.754 and the Atomic Safety and Licensing Board's "Order Scheduling Proposed Findings" (April 27, 1984), hereby submits its Proposed Findings of Fact and Conclusions of Law in the Form of a Partial Initial Decision Relating to LEA's Onsite Emergency Planning Contentions.

Respectfully submitted,



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June 21, 1984

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CONTENTION VIII-1

1. This contention asserts that the Plan does not encompass the spectrum of credible accidents for which emergency planning is required. While LEA did not cross-examine the witnesses on this contention as a separate matter, LEA stated that it would propose findings of fact on the entire record it established on all other contentions. (Tr. 10,271)

2. The Board finds this to have been appropriate, because of the deficiencies in on-site emergency planning thus identified in the course of examination on other contentions, particularly where on-site planning and offsite planning interface, in the event of a general emergency.

3. The Plan is weakest at these interfaces, and demonstrates a failure to adequately consider accidents of severity requiring offsite emergency response of evacuation. This failure is in the face of NUREG-0396, "Planning Bases for the Development of State and Local Government Radiological Emergency Response Plans In Support of Light Water Nuclear Power Plants", referenced in NUREG-0654, pp.5-15, and 10 C.F.R. Part 50, Appendix E.

4. The entire planning basis for emergency response requires that "certain features of the more severe core melt sequences should be con-

sidered in planning to assure that some capability exists to reduce the consequences of even the most severe accidents", (p. I-9), and "emergency plans should be used for responding to any accident that would produce doses in excess of the PAGs.^{1/} This would include the more severe design bases accidents and the accident spectrum analyzed in the RSS. (Id., p.15).

5. In light of the findings we make below, we conclude that the Applicant's "on-site" emergency planning does not adequately encompass the spectrum of credible accidents for which emergency planning is required, to wit: severe core melt accidents which are likely to result in doses exceeding the PAGs^{1/} and to require offsite protective actions, including evacuation of the plume exposure pathway emergency planning zone.

6. Applicant would have us conclude that the Plan adequately encompasses the entire spectrum of accidents for which emergency planning is required, on the mere basis of Table 4-2^{2/} which refers to example initiating conditions consistent with those BWR sequences set forth in NUREG-0654, Appendix 1, and EP-101, which implements emergency classification procedures based upon those initiating conditions. (Applicant's Proposed Findings of Fact, #7)

^{1/} "PAGs", are Protective Action Guides, referenced in "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents" (U.S.EPA), referenced in NUREG-0654, criteria for Preparation and Evaluation of Radiological Emergency response Plans and Preparedness in Support of Nuclear Power Plants; and 10 C.F.R. 50.47(b) (11). It refers to projected doses which require protective action.

^{2/} Applicant Ex. 34

7. But this Board's review must necessarily go further than merely checking a paper Table as simply a checklist of accident sequences. The Plan in its entirety must be examined to determine whether the Plan's operation in fact will encompass the sequence of events which would occur in a severe accident.^{1/} The Plan does not withstand such scrutiny.

^{1/} In fact, while the Plan's initiating conditions may encompass severe core melt accidents (a finding that we need not, and do not here make) what is of equal significance is how the Plan will work after such initiating conditions are identified. Thus, Table 4-2 of the Plan cannot possibly tell us whether the Plan encompasses the accidents for which planning is required.

CONTENTION VIII-3

(On-site Monitoring Systems)

8. LEA contends that Applicant's Plan has not established the on-site monitoring systems that are used to initiate emergency measures in accordance with NUREG-0654, Appendix 1.

9. Among those monitoring systems to be used by Applicant are chemical monitoring systems, as reflected in Applicant's Table 4-2, where emergency identification and response is initiated by toxic (flammable gas releases on or near the site, or detected in the control room.) (E.g., Table 4-2, X(A)(B), (sheet 14 of 22); Applicant's Ex. 34)

10. While NUREG-0654, Criterion H.5, which provides guidance on on-site monitoring systems to be used to initiate emergency measures, does not explicitly require "chemical release monitoring", we find that Applicant intends to rely upon such monitoring for this purpose under some circumstances, that initiation of emergency measures depends upon detection of toxic chemical and flammable gas releases, and is thus governed by Criterion H.5.

11. Applicant admits that not all chemicals which have been identified to present a toxicity hazard to control room operators are physically monitored. (Boyer, Tr. 10,181). Thus, the question is immediately presented - if they are not physically monitored, on what basis will emergency measures which are based upon the presence of such chemicals which threaten control-

room operation be initiated?

12. Applicant's response to this inquiry was inadequate. Applicant's witness Boyer testified that "just due to the observation of plant personnel of strange odors, of nausea, lightheadness, things which the presence of toxic gases might occasion; would be the basis for the declaration of at least an alert", and concluded that reliance upon odor by the control-room operator gives him enough time to take protective action. (Boyer, Tr. 10, 184-10, 185). Yet the entire basis for this conclusion was that "my memory is hazy as to the exact details, but I remember discussing this with one of our engineers" (Id.), and that "I would have to verify that to be certain of it." (Id., - 10, 185), and we therefore reject it.

13. The Board cannot conclude, on the state of such testimony, that adequate toxic chemical monitoring is in place to initiate emergency measures.

14. With respect to meteorological monitoring and dose assessment, which Applicant uses to initiate emergency measures (See Plan, Table 4-2, III(C)(D)) (sheet 4 of 22, Applicant's Ex. 34), Applicant's witnesses rely upon the RMMS^{1/} and a manual procedure for dose calculation outlined in its implementing procedure EP-316, "Cumulative Population Dose Calculations for Airborne Releases - Manual Method".

^{1/} Radiological and Meteorological Monitoring System, a computerized dose projection system.

15. Both modes of dose assessment rely upon meteorological data from Applicant's Met-Towers 1 and 2, and data from these towers is a direct input into the RMMS system. (Murphy, Tr. 10, 187 - 10, 188).

16. But in the Staff's Safety Evaluation Report,^{1/} p. 2-19, of which this Board takes notice, Staff has identified serious concerns about reliance upon meteorological data from Met Towers No. 1, because its proximity to Limerick's cooling towers can cause distortion of air flow and can affect Tower No. 1 measurements of the wind speed and direction. (SER, p. 2-19 - 2-22). The Staff concluded that this creates the potential for misrepresenting the atmospheric stability conditions, and that it would include this in its emergency preparedness review. (SER, p. 2-19).

17. While the sole Staff witness, Mr. Sears, concluded in his testimony that Applicant met the guidance of NUREG-0654, Criterion H.5 (Sears ff. Tr. 9776, at p. 6) Mr. Sears was obviously unfamiliar with the Staff's concerns about the meteorological monitoring (Sears, Tr. 10, 188), and did not know whether the Staff's concerns had yet been resolved. (Id.). He stated merely that "this is another area that will be reviewed by this on-site emergency appraisal team" (Tr. 10, 188), which includes a meteorologist whose "responsibility is to determine whether or not adequate meteorological information is available to be fed into the dose assessment calculations." (Tr. 10, 189).

^{1/} NUREG - 0991, "Safety Evaluation Report Related to the Operation of Limerick Generating Station" (August, 1983).

18. Plainly, this witness Mr. Sears, did not and could not make such a determination. We therefore cannot conclude that the on-site meteorological monitoring systems used for emergency initiation are adequate. We will require, as part of any order, a Staff report on the evaluation and resolution of these concerns prior to any fuel load and testing.

19. A similar problem exists with respect to Limerick's water level indication. The wide-range water level transmitter is one of the instruments upon which Applicant will rely in initiating emergency actions. (Ullrich, Tr. 10,190).

20. While Applicant's witness, Mr. Ullrich, offered the generalized opinion that Limerick's instrumentation meets the requirements of Regulatory Guide 1.97 (Ullrich, Tr. 10,196-7) we accord it no weight because cross-examination revealed Mr. Ullrich to be insufficiently familiar with Regulatory Guide 1.97's requirements to render such a conclusion. Mr. Ullrich testified that "I'm not certain that there's any required location for that (wide-range water level transmitter)". (Ullrich, Tr. 10,191). But Regulatory Guide 1.97 specifically provides the reference leg of the transmitter to be located at the required tap at centerline of the main steam lines. (Regulatory Guide 1.97).

21. Applicant's Final Safety Analysis Report documents not compliance with Regulatory Guide 1.97 in this context, but rather Applicant's exception to it: "The reference leg of the wide-range water level transmitter is 5 feet

lower than the Regulatory Guide 1.97 required tap, i.e., centerline of the main steam lines." (FSAR, p. 7.5-27; Applicant Ex. 38).

22. In its SER Supplement, of which we also take notice; the Staff has not concluded that the Applicant's instrumentation complies with Reg. Guide 1.97, and the issue remains open. (SER, Supplement 1, p. 1-2). Mr. Sears testified that "another group was responsible "for review of this item, and that this review is not complete." (Sears, Tr. 10,191-2).

23. With respect to the entire issue of inadequate core cooling instrumentation upon which Applicant will rely to determine water level for purposes of emergency action initiation (Ullrich, Tr. 10,197-8), the NRC Staff has required that Applicant submit a plant-specific analysis of its position concerning the BWR Owner Group's recommendations for improvement of water level instrumentation set forth in its report SLI-8211, and the results of the NRC Staff review of the SLI-8211 (SER p.4-30). Mr. Sears could not testify whether the Staff has completed its review of this documentation, nor whether the Staff has even received it. (Sears, Tr. 10,193-4).

24. Applicant's witness, Mr. Boyer, refrained from even stating whether Applicant is committed to make the improvements required to take care of the concerns identified in the BWR Owner's Group reports. (Boyer, Tr. 10,198). The Staff witness did not know what was the status of the NRC's review of the inadequate core cooling system instrumentation. (Sears, Tr. 10,198).

25. Based upon such a record, this Board is unable to conclude that Applicant has established the on-site monitoring systems required by NUREG - 0654, (Appendix 1), and Criterion H.5.

CONTENTION VIII-6(a)

(Mutually Agreeable Basis for Notification
of Offsite Organizations)

26. NUREG-0654, Criterion E.1 requires that "each organization shall establish procedures which describe mutually agreeable bases for notification of response organizations consistent with the emergency classification and action level scheme set forth in Appendix 1."

27. LEA contends that the Applicant's plans do not demonstrate that such bases have been established for notification of response organizations with responsibility for on-site augmentation. Those organizations with responsibility for on-site augmentation for Limerick are Linfield and Limerick Fire Companies; and Goodwill Ambulance Corps. While Applicant would appear to exclude Goodwill from this category, it is apparent that Applicant maintains its own on-site first aid and medical services. (Plan p. 6-25). Thus, Goodwill's role is that of "augmentation".^{1/} Goodwill has only 5 vehicles. (Kenkus, Tr. 9847).

28. Under the circumstances of a general emergency requiring evacuation of the EPZ, the letters of agreement with these organizations are inadequate to establish that mutually agreeable bases actually exist.

^{1/} In any event, we find that the contention was intended to encompass organizations responsible for response on site, one of which is clearly Goodwill.

In the event of a general emergency requiring evacuation of the EPZ, the fire companies will be required to perform route alerting of residents with special problems, or if the sirens are inoperable (Kankus, Tr. 9982), and the Goodwill Ambulance Company will be required to provide special assistance in numerous townships. The number of persons in Pottstown Township alone requiring such assistance is estimated to be 24. (Kankus, Tr. 9936).

29. While Applicant's witness Ms. Kankus testified generally about ongoing negotiations for on site backup ambulance service with Trapp Ambulance Co., (Kankus, Tr. 9933) it is apparent that no such agreement had been executed. At the time of the hearing, a letter agreement had been presented to Trapp but was not yet approved. (Kankus, Tr. 9934).

30. LEA Exhibit #1, showed that in the event of a general emergency requiring EPZ evacuation; Goodwill was expected to serve 8 townships, 5 of which had no additional or backup coverage. (LEA Exhibit #1). While we reserved our ruling on the admissibility of this Exhibit, (Tr. 10,281-2), we find that in view of the non-applicability of the hear say exception in these proceedings, and in view of the fact that the Exhibit set forth portions of offsite emergency response plans prepared by Applicant's consultant for use in the emergency planning process (Tr. 10,276), we find there to be sufficient indicia of reliability to admit the document into evidence. Even if this document were not admitted, we would be constrained to make the same finding of inadequacy in view of Applicant's admissions on the record that Goodwill would be called upon in other townships, and that at least one

township has 24 persons requiring ambulance assistance. (Kankus, Tr. 9936).

31. There is simply nothing in the Applicant's plan, nor in its procedures, nor in the Applicant's agreements with Linfield, Limerick, or Goodwill, which provides a resolution to the possibility of conflicting claims upon these very limited resources, nor which describes how these resources already committed off site would be notified or required to leave off-site duties to travel to the site, let alone demonstrating that such arrangements are mutually agreeable.

32. In its Proposed Finding of Fact No. 79, on Contention VIII-12(b), Applicant would have us find that "Applicant would expect its call to take priority over another request", and that "sufficient interconnection among county ambulance services exists such that an adequate response can be made to cover each contingency". To support such findings, Applicant had offered only the most speculative testimony by witnesses without any direct knowledge.

33. In any event, such findings would not cure the problem, which is one of assurance now of mutually agreeable bases for notification. Reliance upon ad hoc arrangements which may, or may not, be agreeable and workable cannot possibly satisfy the planning standard, which was precisely intended to avoid such uncertain ad hoc arrangements by requiring a showing that they be "mutually agreeable".

34. We conclude, therefore, that under the circumstances of a general emergency requiring offsite emergency response by Linfield and Limerick Fire Companies, Applicant has not demonstrated compliance with NUREG-0654, Criterion E.1, and 10 C.F.R. §50.47(b) (5).

CONTENTION VIII-6(c)

(Notification of Emergency Organizations)

35. NUREG-0654, Criterion E.1 and Appendix 1, requires that a licensee notify offsite emergency response authorities "within about 15 minutes from the time that operators recognize that events have occurred that make declaration of an emergency class appropriate", and sooner than 15 minutes for emergency classes more serious than "unusual event".

36. While the Plan on its face provides for notification within 15 minutes, (Plan §6.1), the critical inquiry is whether in fact, the Applicant's implementing procedures for such notification require compliance with this provision.

37. While Applicant would have us find that its implementing procedure EP-101 permits an operator to immediately notify authorities upon classification of an event (Applicant Proposed Finding of Fact, #19), such a finding contradicts Applicant's emergency procedures, and in any event does not in itself assure compliance with the NUREG-0654 standard which requires notification within 15 minutes not from classification, but from the time that operators recognize that a emergency event has occurred.^{1/}

^{1/} This is the language of NUREG-0654, Appendix 1, p. 1-3. We note that 10 C.F.R. §50.47, Appendix E, Section D, Section 3 requires notification "within 15 minutes after declaring an emergency". Had we found that Applicant required notification within 15 minutes of emergency classification (which we do not), we would conclude that this standard would be met.

38. Indeed, classification may be delayed for as long as 20 minutes beyond event recognition under some circumstances, e.g., a transient plus failure of the core shutdown system, in which the symptom of the event will be the initiation of the liquid control system, but the failure of the core to become subcritical. (Ullrich, Tr. 10,085-6).

39. EP-101 establishes Applicant's procedure for classification of emergencies. Section 7 of EP-101 provides that "this procedure shall be implemented whenever shift supervision detects conditions which meet the Emergency Action Levels in Appendix EP-101, Classification Table". (EP-101).

40. EP-101 requires the shift supervisor to review the Emergency Action Level for the categories indicated (§9.1.1.2), and if the most severe events are classified, for example, as an alert, the shift supervisor is directed to implement the appropriate response procedure, e.g., EP-103, "Alert Immediate Response" (9.1.1.4).

41. EP-103 provides a sequence list of steps required to be taken after classification of an "Alert" including:

- 9.1.1 (Interim) Emergency Director shall:
 - 9.1.1.1 Verify the Emergency Classification as determined in EP-101 Classification of Emergencies.

- 9.1.1.2 Unless a site evacuation is going to be declared, announce assembly of personnel for purposes of accountability in accordance with EP-110 Personnel Assembly and Accountability by making the following announcement:
- THIS (IS) (IS NOT) A DRILL. ALL EMERGENCY RESPONSE TEAMS REPORT TO THE ASSIGNED EMERGENCY FACILITY. ALL OTHER UNIT 1 PERSONNEL REPORT TO YOUR NORMAL WORK OFFICE UNTIL FURTHER NOTICE. THIS (IS) (IS NOT) A DRILL.
- 9.1.1.3 Direct the evacuation of effected areas as necessary.
- Refer to the following procedures:
- EP-304 Partial Plant Evacuation
- EP-303 Local Evacuation
- EP-305 Site Evacuation
- 9.1.1.4 Direct the Information Center Staff (4256, 495-6767) to implement EP-306 Evacuation Of The Information Center. Inform the Staff of the wind direction if there is an airborne release.
- 9.1.1.5 If necessary and if conditions outside the plant are safer than inside, evacuate all construction personnel by notifying Bechtel Safety (4222) or Bechtel Security (4390). Direct them to call for a 'Total Project Evacuation' in accordance with Bechtel Procedures.
- THIS WILL CALL FOR THE ASSEMBLY OF PERSONNEL AT THE UPPER PARKING LOT AND POST #3. IF YOU WANT NON-ESSENTIAL PERSONNEL OFFSITE USE EP-305 SITE EVACUATION.
- 9.1.1.6 Contact the Station Superintendent and the Shift Technical Advisor, inform them of the situation.

9.1.1.7 Fill out Appendix EP-103-1 Alert
Notification Message and give it to the
communicator.

42. Thus, only after completion of steps 9.1.1.1 through 9.1.1.6, does the supervisor fill out the Alert Notification Message and give it to the communicator for the purpose of notification of offsite authorities (EP-103).

43. While Applicant's witness testified that notification to offsite authorities could take place immediately after emergency classification. (Ullrich, Tr. 10,083), and that the procedural steps "would not necessarily need to be done in sequence" (Ullrich, Tr. 10,110; 10,124), it is apparent from a reading of the procedures that they are intended to be followed sequentially, and do not require notification immediately after classification.

44. Indeed, implementing procedures which do not, and are not intended to provide a step by step process of the actions to be taken in the event of an emergency, but which permit personnel freedom to pick and choose steps, and to omit some steps without explicit procedural criteria to guide the Emergency Director to follow them or not, to perform some actions (e.g., announce a site evacuation) prior to other steps which must necessarily precede it (e.g., notify security to prepare for a site evacuation) are invitations to chaos, and would entirely defeat the intended purpose of implementing procedures.

45. On this very point, Applicant's witness Ullrich belied his generalized statement that the implementing procedures would not necessarily have to

be followed in sequence, when he noted that "the notification of security comes before the actual site evacuation is announced. This gives security time to prepare for such an evacuation." (Ullrich, Tr. 10,102-3). Indeed, Applicant the/admitted that all the remaining actions in the site evacuation procedure follow sequentially:

"Q Where the site is directed to be evacuated, the first step is to notify security that the evacuation is being carried out, is that right?

A The notification of security comes before the actual site evacuation is announced. This gives security time to prepare for such an evacuation. In other words, the emergency director calls the security group, tells them that he's going to announce a site evacuation at a certain time, and that gives the security individuals sufficient time to organize themselves to insure the proper control of the evacuees.

Q How much time is needed for security to prepare itself for that purpose?

A I would expect less than five minutes.

Q After security is notified, then doesn't the Applicant implement evacuation of the information center? Isn't that the next step in EP-105?

A (Witness Dubiel) That is correct.

Q At that point you call the personnel safety team leaders, is that right?

A That's correct.

Q Then after that you select the assembly areas for the site personnel?

A Yes, sir.

Q Then after that you direct the activation of the site alarm in accordance with another procedure?

A That's correct.

Q That alarm has to sound for thirty seconds, is that right?

A That's correct.

Q Then the actual announcement of the site evacuation occurs when the personnel safety team leaders are ready to do it, is that right?

A At that point he would make the announcement for the evacuation.

Q How much time is anticipated to elapse between the time the personnel safety team leader is telephoned and the time that the actual announcement of the site evacuation is made?

A I believe, as Mr. Ullrich previously said, in approximately five minutes all of this would come together. It would take less than five minutes for the personnel safety team leader to have his individuals at the exit points." (Tr. 10, 102 - 10, 104).

46. It is apparent that under any number of circumstances, notification to offsite authorities could well be delayed beyond the 15 minute limit. For example, for each emergency class procedure, verification of the emergency classification is a precondition to the balance of the procedure (See e.g., EP-102

Unusual Event Response, §9.1.1.1: EP-103, Alert Response, §9.1.1.1). Yet this verification process might require 10-15 minutes to up to one hour in one set of circumstances, depending upon the nature of the verification required. (Tr. 10,099-10,101).

47. Security would require "less than 5 minutes" to prepare for a site evacuation. Yet if evacuation of the site is required in a situation of Alert classification, the Alert response procedures of EP-103, require the supervisor to follow EP-305 (Site Evacuation) prior to offsite authority notification: "§9.1.1.3: Direct the evacuation of affected areas as necessary. Refer to the following procedures: ...EP-305 Site Evacuation."

48. Even a cursory review of EP-305 indicates that the procedural requirement to direct the evacuation of the site in accordance with EP-305, and thus requiring the interim emergency director to take various actions^{1/} and the following of the other EP-103 steps (e.g., 9.1.1.6) prior to notification of offsite authorities may easily delay notification for a period longer than 15 minutes.

^{1/} These actions are, inter alia, notify security of site evacuation (§9.1.1.1), implement evacuation of information center in accordance with EP-306, §9.1.1.2 inform Personnel Safety Team leader and direct him to prepare for site evacuation (§9.1.1.3 inform Bechtel Safety of site evacuation, 9.1.1.4, Select Assembly Areas (9.1.1.5), direct activation of Alarm (§9.1.1.6).

49. While Applicant proposes that we find that the offsite notification process is a "wholly separate function apart from site evacuation", that "different groups of site personnel are involved in these two activities", and the two activities "could be handled simultaneously" (Proposed Finding of Fact, No. 25), the Applicant's actual procedures preclude such findings. EP-103 clearly places upon the (interim) emergency director the responsibility to "verify the emergency classification" (9.1.1.1), and to "direct the evacuation of effected areas as necessary. Refer to the following procedures: [...] EP-305 Site Evacuation" (9.1.1.3), and then to fill out the offsite notification message format and give it to the communicator. EP-305 places upon the Emergency Director or Interim Emergency Director the responsibility to "direct the evacuation of the site by performing the necessary steps in this procedure." (EP-305, §2.1). Thus, the simple fact of the matter is that Applicant's procedures do not provide for notification early enough in the process. We do not understand why the procedures could not be drafted so as to require that the process of notifying offsite authorities be commenced immediately after the emergency classification, thus minimizing delay in notification.

Contention VIII-7(c) (3)

Minimum Staffing Requirements

50. LEA withdraws this contention.

CONTENTION VIII-8(b)

(Adequacy of Emergency Facilities, Equipment
and Supplies)

51. Under NUREG-0654, NUREG-0737, Supp. 1, and NUREG-0696, Applicant is required to establish three emergency facilities, the EOF (Emergency Operations Facility), the TSC (Technical Support Center) and the OSC (Operations Support Center). NRC Staff witness, Mr. Sears stated that the Staff will use the criteria of NUREG-0696, "Functional Criteria for Emergency Response Facilities", and NUREG-0818, "Methodology for Evaluation of Emergency Response Facilities", to determine if the facilities are adequate. (Sears, Tr. 10, 061).

52. The construction of these facilities is "well over" 75% complete (Tr. 10,062), but the NRC Staff has not completed its review and the Staff position on the adequacy of these facilities will not come until after an on-site emergency planning appraisal team visit. (Sears, Tr. 10,064).

53. Although NUREG-0696 sets forth numerous functional criteria deemed important, such as reliability of data systems, instrumentation and facilities, the Staff has not determined the facilities' compliance with them. For example, the NRC Staff has not yet determined the equipment unavailability (Sears, Tr. 10,065) although it is important for the Staff to know what the reliability will be (Sears, Tr. 10,067-8). The Staff has not yet determined whether all Regulatory Guide 1.97 Type A, B, C, D variables are available for

printout on the TSC, (Sears Tr. 10,069-70), does not know how many hours of post or pre-event data will be available for printout, (Sears, Tr. 10,070-71), has not yet performed a dose analysis for the route of travel between the control room and the TSC (Sears, Tr. 10,071). Thus, the Staff has simply not reviewed Applicant's facilities against the applicable guidance. Mr. Sears' testimony recites that the assurance of adequacy of these facilities depends upon the NRC Onsite Emergency Response Facilities Appraisal visit. (Sears, ff. Tr. 9776 at p. 10). But the Staff's report is not scheduled until July 20, 1984 (Tr. 10,273).

54. On this state of the record, we cannot conclude that Applicant has established adequate emergency response facilities, nor that it will be able to adequately implement them. Thus, we will require the NRC Staff's Onsite Emergency Response Facilities Appraisal visit report setting forth a specific analysis of the facilities' adequacy against the criteria of NUREG-0737, and NUREG-0696, prior to our making findings on this contention; the parties will be permitted to propose additional findings to us based upon this Staff report, within 15 days after service of the report.

CONTENTION VIII-10(a)

(Agreement with local agencies for on-site response)

55. This contention contends that Applicant's agreements with local agencies do not delineate the authorities, responsibilities and limits on the actions of the agencies as required by NUREG-0654, Criterion B,9 but merely briefly describe the general nature of the service to be provided.

56. Applicant's revised agreements with Linfield and Limerick fire companies, specify that while on site, these organizations will be "under the direction and control of Philadelphia Electric Co." (See Applicant's Exhibits 44, and 45).

57. Applicant's witness testified that with respect to Goodwill Ambulance Unit the only limits would be those placed on their site access, with Applicant providing dosimetry and escort, preventing them from going into areas where their access would not be required, and directing them to the appropriate areas to pick up the victims. (Kankus, Tr. 9967). Ms. Kankus denied that PECO would have any other authority over Goodwill in its response. (Tr. 9968-9). These limitations are not set forth in the agreement with Goodwill Ambulance Unit. (Applicant's Ex. 32, Appendix A).

58. Ms. Kankus testified with respect to Linfield or Limerick fire companies that they will have "no authority" in deciding how to fight a fire

(Kankus, Tr. 9968), they will have the authority to determine the type of equipment to bring on site (Id.), but no authority to determine where to place it (Id.), would have the authority to determine the personnel who came on site (Id.), but would not have the authority to determine how long they will continue to fight the fire (tr. 9969); In fact, Ms. Kankus stated that the fire companies will have no authority on site except to act under specific instructions from PECO. (Id.).

59. The Board finds that these limitations on actions are not adequately set forth in Applicant's agreements, inasmuch as the Agreement merely states in boilerplate that the companies will be under Applicant's "direction and control." This is so particularly in view of the Applicant's interpretation of the Agreement that experienced municipal fire fighters will be required to follow orders issued by Applicant personnel who have merely attended a 2-day course in fire fighting, (Kankus, Reid, Tr. 9970-2), and in view of Applicant's denial of any on-site authority to the fire companies (including apparently even how they will use their own equipment, with which there is no reason to believe Applicant will be familiar). Under such circumstances, to avoid potential conflict and confusion; these limits should be explicitly set forth in the agreements so as to assure notice to and acceptance by the organizations expected to enter the site and of such limitations on their actions.

CONTENTION VIII-11

(Offsite Augmentation of
Firefighting Capabilities)

60. This area is still another example of the weakness of the Applicant's onsite planning interface with the offsite emergency planning. LEA contended that the Applicant's agreement with Linfield Fire Co. to provide "all needed fire protection" for Limerick is not adequate. Since the acceptance of the Contention for litigation, Applicant obtained an agreement with a second fire company, Linfield Fire Co. These are volunteer fire companies. (Kankus Tr. 9976-7).

61. Applicant's Plan provides for initiation of various emergency measures and declaration of various emergency classifications in the event of fire under certain circumstances. (See, Kankus, Tr. 9980-9982).

62. In the event of a fire-initiated general emergency, or in a general emergency initiated by any event which requires the on-site response of either fire company, where evacuation of the plume exposure EPZ is directed, Limerick's offsite emergency plans require that both Limerick and Linfield fire personnel and equipment perform route alerting of residents with special problems, or if sirens are inoperable. (Kankus, Tr. 9982).

63. While Applicant primarily relies upon its own fire fighting capabilities, which it describes as "basically self-sufficient", (Kankus, Tr. 9983) its agreements with two fire companies demonstrates that under some circumstances, offsite augmentation may be required. While the probability of a general emergency which would require the offsite presence of both fire companies for route alerting may be relatively low, it is nonetheless a significant problem in this context because a fire so severe as to require a general emergency class declaration, and fire company response to the site necessarily presupposes the failure of Applicant's "self-sufficient" fire protection capabilities. ^{1/}

64. Thus, we find that offsite fire fighting augmentation will be unavailable when Applicant needs it most.

65. Yet there is no need for Applicant to rely upon only two fire fighting companies, which will perform route alerting, because it admits that there "are about 52" firefighting companies within a 10-mile radius of the plant. (Kankus, Tr. 9977). An alternative arrangement would be to make additional planning arrangements clarifying the availability of fire companies for on-site response, to one or more fire companies, ensuring that those fire

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As we indicate elsewhere, the planning bases for emergency planning for nuclear reactor facilities require us to measure the adequacy of the Plan in light of the circumstances of accidents which may require evacuation of the plume exposure EPZ.

company resources will not be relied upon to perform offsite services such as route alerting.

66. Although we conclude that these firefighting augmentation arrangements are inadequate, we leave it to the Applicant in the first instance to propose remedial measures, whether it be obtaining additional agreements, or making the planning clarifications suggested above.

CONTENTION VIII-12(b)

(Adequacy of Transportation for Contaminated,
Injured Victims)

67. NUREG-0654, Criterion L.4 provides: "Each organization shall arrange for transporting victims of radiological accidents to medical support facilities." LEA contends that the Plan does not demonstrate that Applicant has made such arrangements adequately.

68. Goodwill Ambulance Unit, is the sole ambulance company with which Applicant has an agreement to provide transportation of on-site contaminated injured victims. (Kankus, Tr. 9846).^{1/} Goodwill has only 5 ambulances. (Kankus, Tr. 9847). Applicant's agreement with Goodwill is explicitly, (and necessarily) limited to response within the limits of its resources. (Kankus, Tr. 9850; Applicant's Ex. 32).

69. We have already made findings concerning the inadequacy of the arrangements for ambulance service in the context of Contention VIII-6(a), i.e., whether there existed mutually agreeable bases for notification. See Board Findings No. 27 to 34 . We hereby incorporate those findings herein.

^{1/} While there was some testimony that negotiations were taking place between RMC and a Trappe Ambulance Co. for back-up service, (Kankus, Tr. 9872-9873; 9933-5), no witness testified that any agreement was actually reached. On this record, we cannot conclude that Trappe will actually be available.

70. On the bases of those findings, and these we make below, we conclude that Applicant's transportation arrangements are inadequate.

71. Given the unavailability of Goodwill Ambulance Co. in the event of a general emergency requiring plume exposure EPZ evacuation, (Board Findings No. 28 to 32), Applicant must rely upon some other mode of transportation. Yet Dr. Linneman testified that ambulance service is a important, and a necessary component of on-site emergency medical arrangements (Linneman, Tr. 9935) (emphasis added).

72. Nevertheless, we explore the adequacy of "alternative" transportation arrangements. Applicant has no direct alternative arrangements. However, RMC has an agreement with Keystone Helicopter Co. (Keystone). (Linneman, Tr. 9851; Applicant's Exhibit 41).

73. While such an arrangement for helicopter service at first blush appears quite impressive, a closer examination of the actual agreement compels the conclusion that it suffers from defects so serious as to render nugatory the ostensible commitment to provide emergency medical transportation for injured persons at Limerick, and we so find.

74. RMC's agreement of Keystone is set forth in Applicant's Exhibit 41. The agreement specifically states: "This instrument represents the entire agreement between the parties hereto, and no statements, promises, or representations inconsistent herewith shall be binding upon them." (Applicant's Exhibit 41).

75. In the agreement, Keystone agrees to make available to RMC a 6-passenger helicopter or a five passenger aircraft. Thus, while Dr. Linneman attempted to vary the terms of the agreement in his testimony that "they would make as many as they had available to us" (Tr. 9853), both the instrument itself and elementary, black-letter law, the parole evidence rule, prohibits such a contradiction of the plain terms of this written agreement, and we must find that RMC has contracted for the use of only a single aircraft.

76. Indeed, a closer look at the agreement reveals that Keystone has not committed that any aircraft will be made available for such emergency transportation - it commits to providing one to RMC if one happens to be available when the emergency occurs. (App. Exhibit 41, Paragraph 4). Indeed, even if that one aircraft happens to be available, Keystone is not required to make it available to RMC until the passage of 2 hours after notification by RMC that one is needed, (Id.). This is scarcely an acceptable arrangement for emergency medical transportation in which speed is of the essence.

77. In addition, Dr. Linneman testified that "the helicopter basically is to move patients who are stabilized and determined movable. A patient would be at a hospital in the emergency room and stabilized. You don't move patients generally from accident sites to hospitals (sic?)" (Linneman, Tr. 9855), that prior to such stabilization, air transportation is not indicated for some patients (Tr. 9857), and that "I can't imagine a situation where Keystone would be sent to the site to pick up a patient." (Tr. 9860). Thus,

Applicant's apparent reliance upon Keystone to provide transportation of contaminated injured victims from the site to a hospital is utterly misplaced; Keystone's services were contemplated only for transport of stabilized patients from PMMC to HUP. Only this conclusion is consistent with the agreement's failure to provide immediate and certain availability, and Dr. Linneman's insistence that a 2 hour delay was not critical. (Tr. 9855).

78. While Applicant suggests that private vehicles could be used to move patients, (Boyer, et.al., ff. Tr. 9772, at 10), obviously only patients not seriously injured could be so moved, who would not have required ambulance transportation in the first case. Thus, while private vehicles may be a supplementary resource, they are no substitutes for ambulances.

79. Thus, we conclude that Applicant's arrangement for transportation of contaminated injured victims is inadequate, and that remedial measures are necessary prior to any fuel load or low power testing.

CONTENTION VIII-12(c)

(Medical Services for On-site Contaminated Injured Victims)

80. NUREG-0654, Criterion L.(1) requires that "each organization shall arrange for local and backup hospital and medical services having the capability for evaluation of radiation exposure and uptake, including assurance that persons providing these services are adequately prepared to handle contaminated individuals." LEA contends that Applicant has not demonstrated that the medical services and facilities described in the Plan are adequate.

81. Applicant relies upon an agreement with Pottstown Memorial Medical Center, (PMMC) and an agreement it has with Radiation Management Corporation for medical services to be provided by the Hospital of the University of Pennsylvania (HUP). PMMC and HUP are expected to provide all offsite medical services for contaminated injured victims transported from the Limerick site. (Applicant's Ex. 42-43).

82. No other agreement exists with any other facility for medical services. PMMC is less than 2 miles from the plant (Linneman, Tr. 9831); HUP, located in Philadelphia, is at least 45 minutes driving time away. (Linneman, Tr. 9844).

83. Applicant's agreement with RMC is terminable by either party, on 60 days' notice, without any cause. (Linneman, Tr. 9802; Applicant's Ex. 41).

84. With respect to PMMC's capabilities, Applicant's witness, Dr. Linneman, testified that PMMC would be able to handle "a number" of radioactively contaminated persons utilizing its routinely available facilities and services. (Boyer, et.al., ff Tr. 9772, p.8). This testimony was premised upon the need to treat only one or two patients at the hospital at any one time. (Linneman, Tr. 9805-6).

85. He also testified that PMMC presently is not adequately prepared for the radiological aspects of its response to an accident at Limerick (Linneman, Tr. 9814), and its personnel are untrained for the treatment of contaminated injured victims. (Linneman, Tr. 9813). Dr. Linneman testified that a hospital disaster plan requires additions to enable them to handle contaminated and injured patients, including selection of a radiation emergency area, where contaminated and injured patients will be sorted and treated, plans to control contamination to this part of the hospital, plans to seek consultation and dose evaluation, and administrative aspects, which include holding ambulances at the hospital until they have been properly monitored. (Linneman, Tr. 9813-9815).

86. While Dr. Linneman testified that he "expects" to have PMMC personnel properly trained by mid-July, 1984, at the time of the hearing procedures for treatment had not even been transmitted to PMMC for review, let alone reviewed, approved, implemented, and training on them completed. (Linneman, Tr. 9812).

87. Such specialized procedures and training are required for treatment of contaminated, injured victims. (Linneman, Tr. 9811-9812).

88. With respect to persons receiving a high radiation dose, (e.g., 500 rems whole body), treatment includes isolation, antibiotics, blood replacement, blood component replacement, and must be given as the condition develops (Linneman, Tr. 9809). Dr. Linneman denied that this treatment need not be given promptly. (Id.). A person who has received a 250 rem dose would be hospitalized (Linneman, Tr. 9810), and while a 150 rem dose "probably would not require hospitalization", "at most, a day or two for evaluation", each patient must be evaluated individually. (Linneman, Tr. 9811).

89. Special equipment and supplies are necessary to treat contaminated, injured patients, including (1) radiation instrumentation to detect and control contamination, including survey instruments, and dosimetry; (2) special bath arrangements so the patient can be decontaminated while the contaminated water is collected; (3) decontamination supplies; (4) the means to determine the dose. (Linneman, Tr. 9816-9819). This equipment is not available at PMMC, and must be provided by Applicant. (Linneman, Boyer, Tr. 9818-9821).

90. Because the primary concern in cases of contaminated injured victims is the traumatic injury, Dr. Linneman believed that from a medical point of view a close hospital is "optimum" (Tr.9906), and "we would be remiss in jump-

ing over a close hospital to set up a hospital farther away". (Id.)

91. Other hospitals are located in proximity to the site, some within 10 miles (Linneman, Tr. 9843), and others beyond 10 miles, but Applicant has no agreement with any of them. The sole back-up hospital is HUP.

92. While Dr. Linneman admitted that persons who are contaminated with radiation are not necessarily radiation injury victims, (Linneman, Tr. 9802), admitted that the RMC agreement with HUP is limited to referrals for evaluation and treatment of "radiation injuries" (Tr. 9802), and denied that "radiation injury" is a term of medical art (Tr. 9803), he offered a contradictory interpretation of the contract between RMC and HUP: that "radiation injury" includes "contaminated and injured patients". (Linneman, Tr. 9803).

93. While HUP may share this interpretation as Dr. Linneman suggests (Tr. 9803), we will not leave a matter of such significance to the vagaries of individual contract interpretation, in view of the ambiguous, at best, language, and we direct that Applicant obtain an agreement which resolves this ambiguity.

94. RMMC's 2 mile proximity to the plant makes PMMC unavailable in the event of a general emergency requiring evacuation of the 10 mile

EPZ.^{1/} (Tr. 9843; 9944). Indeed, PMMC's own evacuation plan in case of a general emergency at Limerick requires the referral of stabilized patients to hospitals outside the EPZ, and the shutdown of physical plant systems. (Tr. 9834, 9836).

95. This potential unavailability leaves Applicant without nearby offsite medical services for contaminated injured victims when it may need them most, in the event of an accident so severe that releases cause offsite doses exceeding the PAGs.

96. Applicant proposes that we find that "it is difficult to postulate a radiological situation in which a hospital would be totally closed and unable to receive patients who require life-saving measures. In any event, if a hospital were closed, . . . existing contingency plans would be implemented or the hospital would adapt to the situation by shuttling patients to the nearest hospital, depending on their condition." Applicant's Proposed Finding of Fact #67.^{2/} While Dr. Linneman testified that "it would be handled as any

^{1/} It is the policy of the Commonwealth of Pennsylvania to evacuate the EPZ in a 360° radius around the plant, rather than merely in downwind sectors, and indeed, Applicant would recommend the evacuation of the 2 mile radius around the plant in the event of a general emergency. (Kankus, Tr. 9833).

^{2/} Based on the testimony, the only "radiological situation" we need "postulate" is a general emergency requiring EPZ evacuation. In the context of emergency planning, this is a plainly permissible "postulation". Indeed, under the applicable planning bases (Board Finding No. 4), we are required to evaluate the adequacy of these plans against accidents which exceed the applicable PAGs.

other medical emergency where your nearest hospital is not available. You would take them to the next closest hospital." (Tr. 9906), this Board finds that "shuttling" contaminated injured patients to "the next closest hospital" is not adequate in the absence of some prearrangements with those hospitals and some assurance of the adequacy of the capabilities of those hospitals to handle such patients. Such a finding is compelled by the balance of the testimony of Dr. Linneman.

97. Dr. Linneman testified that all hospitals possessing the accreditation of the Joint Committee on Hospital Accreditation (JCHA) "must have some plans for handling contaminated and injured patients", that all hospitals in the area are accredited (Tr. 9914), and that a hospital 10 miles from the site, Phoenixville, has such a plan (Tr. 9912-3). Dr. Linneman, however, has never examined their facilities for handling contamination, did not know whether the Phoenixville staff is currently trained, and finally simply admitted that he did not know what the extent of the preparedness is at Phoenixville for handling contaminated victims. (Linneman, Tr. 9951). Thus, we reject any finding that Phoenixville is adequately prepared to handle such cases.

98. In addition, we are constrained to reject any finding that any hospital, merely by virtue of its JCHA accreditation, is adequately prepared to treat contaminated injured victims from a nuclear facility. Dr. Linneman's own testimony compels this conclusion. While "all hospitals in the area" have the accreditation (Linneman, Tr. 9914) thus including PMMC, Dr. Linneman consistently and repeatedly admitted that PMMC was not prepared for radiological

response to an accident at Limerick (Tr. 9814; Board Finding No. 85), its personnel are untrained for the treatment of contaminated injured victims (Tr. 9813; Board Finding No. 85), and that specialized procedures, training and equipment is necessary to treat such victims. (Tr. 9811-2; 9816-19). Thus, JCEA accreditation does not assure adequacy, and plainly, in the absence of some prearrangements, all the other area hospitals are, and will be, as inadequate as PMMC was at the time of the hearing.

99. Presumably, Applicant would have us find that the HUP back-up arrangement cures any deficiency caused by PMMC's potential unavailability. But Dr. Linneman's own testimony forecloses such a finding as well, inasmuch as he testified that the primary medical concern is the serious traumatic injury, and that "we would be remiss in jumping over a close hospital to set up a hospital farther away." (Tr. 9906). Yet this is precisely what RMC has done, contrary to good medical practice which would require that a patient be sent to the closest available hospital. (Tr. 9857).

100. Reliance on HUP in the event of PMMC's unavailability due to evacuation is not appropriate under the Plan's present status for other reasons as well, not the least of which is that the Plan provides that transportation arrangements to HUP be coordinated through PMMC, (Boyer, et.al., ff Tr. 9772, at 9), and that while RMC is responsible for making the transportation arrangements for a patient, RMC only knows to make them if the "physician at Pottstown" calls (RMC) he needs to be moved. (Tr. 9872). Thus, we must

conclude that the Applicant's plans have not, but must, provide for the possibility of PMMC's unavailability.

101. Indeed, Dr. Linneman testified that "it would be prudent" to make at least skeletal arrangements with another alternate hospital further than the Pottstown Hospital but not as far as the University of Pennsylvania Hospital. (Tr. 9914-5).

102. On the basis of these findings, we cannot conclude these arrangements with PMMC are adequate, in light of the utter infancy of the actual arrangements to carry out Applicant's paper agreement with PMMC. While this Board is permitted to make findings which are predictive, we cannot make ones which are speculative.

103. Further, we find that additional arrangements for emergency hospital care for contaminated injured victims are necessary to cure the problem of PMMC's unavailability.

104. We therefore conclude that Applicant's plans do not comply with NUREG-0654, Planning Standard L, or with 10 C.F.R. §50.47(b) (12).

CONTENTION VIII-13(a)

(Resource Capabilities to Assist Federal Agencies)

LEA withdraws this contention.

CONTENTION VIII-14(c)

(Methodology for Calculating Offsite Doses)

105. Applicant primarily relies upon a computerized dose projection system (RMMS)^{1/}; in the alternative, it will use a manual dose calculation method, employing X/Q tables which were generated from the RMMS system. Both rely upon meteorological data from Applicant's Met Towers 1 and 2.

106. For the reasons set forth in our findings 14 to 18 , we cannot conclude that the meteorological data which such dose projections will be made is sufficiently reliable. Thus, Applicant's "methodology" relying thereon is itself not sufficiently reliable. We will require that the deficiencies in meteorological data be remedied, and that the manual dose calculations to be used by Applicant be revised to reflect the improved data, prior to any fuel load and testing.

107. With respect to Applicant's TLD program, Applicant asserts that the placement program complies with the NRC Branch Technical Position of R.G. 4.8,^{2/} requiring 40 TLD stations consisting of 2 rings of TLDs, and some additional ones. The Guide does not require that each TLD be placed in locations in which the air concentration of radioactive materials will be maximized. (Tr. 10,202-3).

^{1/} Radiological and Meteorological Monitoring System. .

^{2/} U.S. Nuclear Regulatory Commission Regulatory Guide 4.8

108. Three TLD locations were chosen on an "annual basis" of maximum air concentration of radioactive materials. (Tr. 10,203-4).

109. No TLDs have been placed between 5.5 to 13 miles (Tr. 10,202), yet the relative air concentration of radionuclides depends upon the particular atmospheric dispersion conditions, which change from place to place. (Tr. 10,201).

110. Although the witness described it as "unusual", atmospheric conditions may cause an increase in concentration in particular areas of the plume. (Id.)

111. We conclude that Applicant's TLD program may underestimate the radiation dose, in the sense that there is no assurance that the maximum dose will be recorded by any TLD, despite the fact that the purpose of the TLD program is to indicate the dose in each sector of the EPZ. (Tr. 10,208-10).

112. On the basis of these findings, we cannot conclude that Applicant has established adequate methodologies and monitors for calculating offsite doses, and thus Applicant has not demonstrated compliance with NUREG-0654 Planning Standard I, or 10 C.F.R. §50.47(b)(9).

CONTENTION VIII-14 (h)

(Alternate Methodologies for Determining
Release Rate and Dose)

113. While Applicant proposes we find this contention to be "abandoned", we conclude once again, that inasmuch as dose projection methodologies are dependent upon the meteorological data we have found deficient, the methodologies are themselves inadequate, and must be corrected. See our findings at 13 to 18 , which we hereby incorporate.

CONTENTION VIII-14 (e)

114. Based upon the Board's Findings at 13 to 24 , the Board concludes that Applicant has not established its Accident Assessment capabilities to be adequate, and thus fails to establish compliance with NUREG-0654 Planning Standard I, or 10 C.F.R. §50.47(b) (9) .

CONTENTION VIII-15(b)

(Monitoring of Site Evacuees)

115. IEA contends that Applicant's Plan fails to establish adequate radiological monitoring of site evacuees, including plant personnel, visitors, and construction workers at Unit 2.

116. Such monitoring is governed by Applicant's EP-254, which requires Health Physics technicians to report to offsite assembly areas and to personnel exit areas at the TSC personnel area and the Admin. Guard Station Personnel Exit Area. "Portal monitors" through which persons will walk to check for contamination are located at the exits.

117. If the portal monitors are not working, Applicant's procedures direct the technicians to "randomly check individuals exiting through the area" with hand "friskers" (EP-254, §9.1.2.1.(B)). While one person is checked, 2-6 persons may depart without being checked. (Dubiel, Tr. 10,225).

118. After personnel are assembled at the Assembly Areas (either at Cromby Station or Limerick Airport, depending on which way the wind blows, EP-254, §9.1.1.4), EP-254 only instructs the HP technicians to check vehicles for contamination, (9.1.2.4(B)), and to check the passengers of contaminated vehicles (9.1.2.4.(C)).

119. EP-254 does not require that each person assembled be individually checked for contamination, nor does any other implementing procedure of Applicant.

120. While the witness testified that "normal practice in health physics procedures" requires all individuals to be monitored for contamination at the assembly areas, (Dubiel, Tr. 10,228), we believe that inasmuch as there exist particular implementing procedures specifically requiring other monitoring practices which are purportedly "standard health physics procedures" (e.g., checking passengers of contaminated vehicles for contamination), EP-254 must be amended to specifically require that all persons at the assembly areas be individually monitored for contamination.

121. However, such an amendment does not resolve all the monitoring problems. If "standard health physics procedures" require individual monitoring of all persons at the assembly areas, as the witness stated, then as many as 3000 persons assembled at either Cromby Station or Limerick Airport will be required to be monitored.^{1/} (Dubiel, Tr. 10,236-8).

122. Inasmuch as no "portal monitors" are located at either Cromby or Limerick Airport, (Dubiel, Tr. 10,237), monitoring with hand-held survey

^{1/} This includes both Applicant personnel, and Unit 2 construction personnel. While Applicant proposes that ordinarily there would be no need for construction personnel to reassemble at these areas, and would report to the assembly areas "only if radiological conditions were indicated", (Kankus, Tr. 10,236-7) plainly it is precisely under such "radiological conditions" that monitoring would be most needed.

instruments will be required. The time required for each person to be monitored is up to 2 minutes (Dubiel, Tr. 10,267-8), and Applicant's procedures provide for one or two HP technicians to go to these offsite assembly areas to perform the monitoring. (Dubiel, Tr. 10,231).

123. The site evacuees will be required to stay at these assembly areas until they are monitored and released despite their location within the plume exposure pathway EPZ, even if the Commonwealth orders the evacuation of the plume exposure pathway EPZ. (Kankus, Tr. 10,236).

124. These facts and simple arithmetic leads to the conclusion that under Applicant's procedures, some 3,000 persons would be assembled in the open air, and 50-100 hours may pass before all persons are monitored and released,^{1/} under circumstances which require that the rest of the population in the area be evacuated for their protection. The Board finds this arrangement to be unacceptable, and concludes that inadequate arrangements for site evacuee monitoring exist.

125. Further, we are unable to conclude that these delays in monitoring which would postpone decontamination for some persons from 50-100 hours after contamination do not present a health hazard for the contamination levels possible. Applicant's witness, Mr. Dubiel, testified only that he did not anticipate health hazards by reason of one hour's contamination. (Dubiel, Tr. 10,263).

^{1/} 3,000 persons each requiring 2 minutes for monitoring is a total of 6,000 minutes, or 100 hours. If 2 HP technicians perform the monitoring, the time would be reduced in half. This of course, is conservative, assumes continuous monitoring and takes no account of inevitable delays, and confusion under such

126. On the basis of these findings, we conclude that Applicant's plans for monitoring of radioactive contamination of site evacuees are inadequate, do not comply with NUREG-0654, Planning Standards J and K, and do not comply with 10 C.F.R. §50.47(b) (10) and (11).

(Continuation ...)

circumstances. While Applicant provided some generalized testimony that up to 30 additional HP resources might be available to Limerick, Applicants' witness did not envision that those resources would be utilized at the assembly areas. (Tr. 10,261).

CONTENTION VIII-15(d) and 16(g)

(Decontamination of Site Personnel)

127. While Applicant's normal on-site decontamination facilities include showers, with contaminated waste water controlled and not discharged until analyzed, in accordance with standard health physics practice, (Plan, §6.5.2); (Dubiel, Tr. 10,239-40), no such facilities or controls will be available for contaminated personnel who are evacuated from the site.

128. Applicant's witness testified that "showering is only necessary if other methods fail, and it is unlikely that for evacuees that the other methods will fail". (Dubiel Tr. 10,243). These "other methods" include collection of contaminated clothing, use of a damp washcloth, and cutting the hair (Id.).

129. Although the need for showering is deemed "unlikely", the witness did not exclude it. Given the large number of potential site evacuees, we find that the total absence of any planning to cover the contingency that a "damp washcloth" might not suffice to decontaminate evacuees makes the arrangements for decontamination inadequate. Applicant's plans should include some provision for transportation of site evacuees to an appropriate facility for showering or bathing, with appropriate health physics controls. We conclude that the present arrangements do not comply with NUREG-0654, Planning Standard J and 10 C.F.R. §50.47(b) (10).

CONTENTION VIII-15(e)

(Personnel Accountability)

130. LEA contends that Applicant's Plan fails to demonstrate a capability to account within 30 minutes for all individuals on site at the time of an emergency.

131. NUREG-0654, Criterion J.5 provides that "each licensee shall provide for a capability to account for all individuals on site at the time of an emergency and ascertain the names of missing individuals within 30 minutes of the start of an emergency."

132. For this capability, Applicant relies upon its implementing procedure EP-110, "Personnel Assembly and Accountability". (Kankus, Tr. 10,244).

133. But EP-110 is quite limited in scope, and does not establish the capability required by NUREG-0654. While NUREG-0654 requires that the Licensee demonstrate a capability to account for all persons on site, EP-110 states that "this procedure does not apply to Unit 2 Bechtel and subcontractor personnel since they will be assembled per Bechtel procedures". Applicant's witnesses were not familiar with the procedures themselves (Kankus, Tr. 10, 244) and thus could not possibly determine whether Bechtel and subcontractor personnel could be accounted for and the names of missing individuals ascertained within the 30-minute period. On this basis alone, Applicant fails to meet its burden of proof. In addition, the testimony raises serious questions regarding Applicant's capability for accountability of its own personnel.

134. EP-110 states that "After a site evacuation is declared, this procedure no longer applies." (EP-110, §7.0). Thus, where conditions require site evacuation simultaneously with an initial emergency declaration of an alert class or higher, EP-110 simply does not apply. We discuss those conditions in our findings below, No. 137 to 145 .

135. Where EP-110 does apply, accountability occurs when security informs the (interim) emergency director of the accountability status "within 30 minutes after an assembly announcement is made". (EP-110 §9.1.3.2). Applicant's witness testified that security can wait up to 30 minutes to contact an emergency assembly area that has not reported to it on its own. (Kankus, Tr. 10,247). Thus, to meet the 30 minute criterion under Applicant's procedures, the assembly announcement must occur simultaneously with the "start of an emergency".

136. However, in each emergency class of alert or higher, the assembly announcement is made only after the verification of the emergency classification. (See, e.g., EP-103, §9.1.1.2), a process which was already established to require anywhere from 15 minutes to 1 hour.^{1/} Thus, the requirement that security report within 30 minutes of an assembly announcement cannot assure compliance with the 30 minute criterion.

^{1/} Applicant's revised implementing procedures alter the requirement for verification in each case.

137. Accountability in the event of site evacuation poses even more difficulty. Applicant's witness testified that this situation is governed by EP-305, "Site Evacuation". (Kankus, Tr. 10,246). We conclude that these applicable procedures introduce even further delay in the accountability process.

138. EP-305, §2.2 provides that "Security shall perform accountability of personnel during the evacuation." §9.2.1.1 of EP-305 requires security to perform accountability in accordance with EP-208 "Security Team Activation". The actual site evacuation cannot commence until inter alia, security is notified (EP-305, §9.1.1.1), the information center evacuation is implemented (Id., §9.1.1.2), the Personnel Safety Team leader is directed to prepare for site evacuation (Id., §9.1.1.3), Bechtel Safety is informed (Id., §9.1.1.4), the Assembly areas and Unit 1 exit points are selected (Id., §9.1.1.5), the alarm is activated (id., §9.1.1.6), and the site evacuation is announced. (Id., §9.1.1.7).

139. The provisions in EP-208 for accountability^{1/} provide that security guards posted at the Technical Support Center and the Admin. Guard Station Personnel Exit Area will direct evacuating personnel to deposit security

^{1/} Applicant's revised implementing procedure for a site emergency, EP-104, Rev. 2, for the first time requires the interim emergency director to direct security to perform an accountability check in a site emergency situation. Compare, EP-104, Rev. 2, §9.1.1.14 with EP-104, Rev. 2, §9.1.1.12.

badges in buckets; if the security computer is not operable they are required to "compile a list of badge numbers of those evacuating as they are leaving." (EP-208, §9.2.2.3). Transit times for personnel to the exit points would be about 5 minutes. (Kankus, Tr. 10,249).

140. The Personnel Accountability Group is required to then obtain the security badges or badge list from the Access Control Group, and if the security computer is operable, to use it to "card out" the badges and compile a list of personnel that are on-site (EP-208, §9.2.3.1); if the computer is not operable, a hand method of crossing out each badge number from the lists will be used. (Id., §9.2.3.1(c)).^{1/}

141. After this entire procedure, the Personnel Accountability Group is required to compile a list of missing Bechtel/Subcontractor personnel. (Id., §9.2.3.1(D-E)).

142. For Unit One operation, 400-500 persons are on day shift (Dubiel, Tr. 10,230), and pending completion of Unit 2 construction, 2500 construction personnel are on-site (Boyer, Tr. 10,230).

143. Applicant testified that the emergency response personnel who would remain on-site "could be several hundred"; thus, 100-200 may depart,

^{1/} It is not clear how long this group can wait to remove these badges, or indeed how the group would even know when the evacuation has sufficiently progressed to warrant removal of the badges to "card out."

and their badges must be individually, one-by-one, checked against the entire badge list, or by computer.

144. Prior to departure from the site, each evacuee will be required to pass through portal contamination monitors, or the evacuees as a group will be "randomly monitored"^{1/} for contamination with survey instruments. (Dubiel, Tr. 10,256-7). The process of monitoring each person with survey instruments requires up to 2 minutes per person. (Dubiel, Tr. 10,267-8).

145. The tracing of the actual steps required to reach the point where a report of the accountability status is possible leaves us with no assurance that the accountability can be known within 30 minutes of the "start of an emergency" as required by NUREG-0654, Criterion J.5, where a site evacuation is directed at the time of an emergency classification of "alert", or higher. We thus conclude that Applicant's plans and implementing procedures fail to meet the standard of 10 C.F.R. §50.47(b)(10).

CONTENTION VIII - 15 (f)

(Protection of Site Personnel)

146. LEA withdraws this contention.

^{1/} We discuss the matter of personnel monitoring at further length in our findings No. 115 to 126 .

CONTENTION VIII-16(c)

(Information for Emergency Workers)

147. LEA contends that the Plan does not demonstrate how emergency workers will have sufficient information concerning radiation risks. ^{1/}

148. Applicant's Proposed Finding of Fact No. 124 demonstrates that it relies upon the provision of projected doses to a volunteer to "give the volunteer the specific data necessary for an informed decision" (Proposed Finding of Fact No. 124), and upon some unspecified "basic training" in the biological effects of ionizing radiation. (Id.).

149. Applicant's witness agreed that radiation workers have the right to whatever information on radiation risk is available to enable them to make informed decisions regarding acceptance of those risks. (Dubiel, Tr. 10,019).

150. However, while Applicant's witness first stated that the workers are given a discussion of the acute effects of high exposures (Dubiel, Tr. 10,024), he then admitted that no information concerning any acute radiation effects are provided to these workers who come to the site, but they are provided only

1/

While Applicant would have us note that LEA "failed to pursue" this contention at hearing, this is incomprehensible in view of the extended cross-examination in this area. See Tr. 10,017-10,045.

information about low exposure levels. (Dubiel, Tr. 10,025). He admitted that these workers do not have the training for exceeding 10 CFR Part 20 limits. (Dubiel, Tr. 10,056).

151. Although the witness testified that the "minimum" training program requires that the information in Regulatory Guide 8.13 be presented,^{1/} he could not testify whether particular information actually in Reg. Guide 8.13 is specifically presented. (Dubiel, Tr. 10,036-8). Because of the testimony's vagueness, (e.g. "That is probably the type of information presented", Tr. 10, 037) we find it impossible to determine what information will be provided and what will not be.

152. However, most disturbing is the admission that the U.S. EPA Protective Action Guidelines are not explained to these workers. (Dubiel, Tr. 10,041). Thus, despite the providing of self-reading dosimetry (App. Proposed Finding No. 128; Dubiel, Tr. 10,040; 10,046) the workers will not know when "permissible" doses are exceeded.

153. For such workers there are no training success criteria, or any method of determining whether the worker has comprehended the "training" (Dubiel, Tr. 10,052).

^{1/} Regulatory Guide 8.13 sets forth, in an appendix, information concerning radiation risks required to be provided to pregnant women.

154. The NRC Staff had not reviewed the course outlines for training of these workers, but intended to review them as part of the on-site emergency implementation appraisal. (Sears, Tr. 10,048-9).

155. We find that we cannot conclude on the state of this record that Applicant's arrangements to provide information concerning radiation risks will be adequate. Accordingly, we defer findings on this contention until the completion of the Staff's review and report on these training materials, to which the Staff committed on the record. (Sears, Tr. 10,057-10,059). The parties will be free to propose additional findings to us within 15 days after service of the Staff's report.

Contention VIII - 16(d)

(Distribution and Analysis of Dosimetry)

156. LEA withdraws this contention.

Contention VIII - 18

(Training of offsite Support Organizations)

157. Based upon the Board's Findings at 147 to 155, the Board concludes that Applicant has not demonstrated its training arrangements to be adequate, and thus fails to establish compliance with NUREG-0654, Planning Standard 0, or with 10 C.F.R. §50.47(b)(15).

CONCLUSIONS OF LAW

Based upon the foregoing Findings of Fact which are supported by reliable, probative and substantial evidence as required by the Administrative Procedure Act and the Commission's Rules of Practice, and upon consideration of the entire evidentiary record in this proceeding, the Board reaches the following conclusions pursuant to 10 C.F.R. §2.760a:

1. Applicant has failed to demonstrate that the state of onsite emergency preparedness, as reflected by its Emergency Plan and implementing procedures, provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the Limerick Generating Station.
2. Applicant's onsite emergency response plans fail to meet the following standards: 10 C.F.R. §50.47(b) (1), (2) (3), (5), (6), (8), (9), (12), (15).

ORDER

WHEREFORE IT IS ORDERED in accordance with 10 C.F.R. §§2.760, 2.762, 2.785 and 2.786 of the Commission's Rules of Practice, that this Partial Initial Decision shall constitute with respect to the matters decided therein the final action of the Commission Forty-five (45) days after the date of issuance hereof, subject to any review pursuant to the Commission's Rules of Practice.

Exceptions to this Partial Initial Decision may be filed by any party within ten (10) days after service of this Partial Initial Decision. Within thirty (30) days thereafter (forty (40) days in the case of the Staff), any party filing such exceptions shall file a brief in support thereof. Within thirty (30) days of the filing of the brief of the appellant (forty (40) days in the case of the Staff), any other party may file a brief in support of, or in opposition to, the exceptions.

IT IS SO ORDERED.

THE ATOMIC SAFETY AND LICENSING BOARD

Judge Lawrence Brenner, Chairman

Judge Peter A. Morris, Member

Judge Richard F. Cole, Member

Dated at Bethesda, Maryland

this _____ day of _____

In the Matter of)
)
Philadelphia Electric Company) Docket Nos. 50-352
) 50-353
(Limerick Generating Station,)
Units 1 and 2))

I hereby certify that copies of "LEA's Proposed Findings of Fact and Conclusions of Law in the Form of a Partial Initial Decision Relating to LEA's Onsite Emergency Planning Contentions," in the captioned matter have been served upon the following by hand delivery on June 21, 1984, (as indicated by an asterisk), or by deposit in the United States Mail, first class on June 25, 1984:

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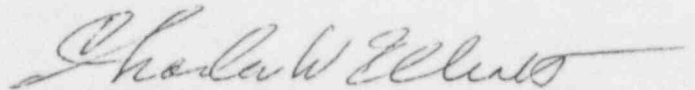
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A handwritten signature in cursive script, reading "Charles W. Elliott", with a long horizontal flourish extending to the right.

Charles W. Elliott, Esquire