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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING APPEAL BOARD

In the Matter of)	
)	
PHILADELPHIA ELECTRIC COMPANY)	Docket Nos. 50-352 <i>OC</i>
)	50-353 <i>OC</i>
(Limerick Generating Station,)	
Units 1 and 2))	

BRIEF IN SUPPORT OF APPEAL OF
LIMERICK ECOLOGY ACTION, INC.

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BRIEF IN SUPPORT OF APPEAL OF
LIMERICK ECOLOGY ACTION, INC.

I. INTRODUCTION

This matter is before the Appeal Board on the appeal of intervenor Limerick Ecology Action, Inc. (LEA) from the Atomic Safety and Licensing Board (ASLB) Second Partial Initial Decision of August 29, 1984, and various other related interlocutory orders which heretofore were unappealable.

Those related orders are: "Memorandum and Order Rejecting Table S-3 Fuel Cycle Contention" (February 10, 1983), "Second Special Prehearing Conference Order" (July 26, 1983), "Order Confirming Rulings and Schedules Made at Special Prehearing Conference on NEPA Severe Accident Contentions" (April 20, 1984). The essential issue on appeal with respect to those related orders is the propriety of the ASLB's exclusion of various issues from the licensing proceeding.

II STATEMENT OF ISSUES AND ARGUMENT

THE BOARD'S EXCLUSION OF STAFF-IDENTIFIED MITIGATION DESIGN
ALTERNATIVES FROM THE LICENSING PROCESS AND ENVIRONMENTAL
REVIEW VIOLATES NEPA AND COMMISSION REGULATIONS

Pursuant to the National Environmental Policy Act,^{1/} the Commission is required to include in every report on a proposal significantly affecting the quality of the human environment a "detailed statement" on "alternatives to the proposed action." 42 U.S.C. § 4332 (2)(c)(iii). The issuance of an operating license of a nuclear power reactor is subject to these requirements. See, e.g., Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, 435 U.S. 519, 98 S. Ct. 1197 (1978); Public Service Co. of New Hampshire v. U.S. Nuclear Regulatory Commission, 582 F. 2d. 77, 81 (1st Cir. 1978). NEPA was designed to "promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man." 42 U.S.C. §4321 (1976). While the obligations of an agency under NEPA are "essentially procedural" (Vermont Yankee, supra, 435 U.S. at 558), among the purposes of those "essentially procedural" obligations is to compel the agency to undertake a "thorough study and a detailed description of alternatives" to the proposed action. Monroe County Conservation Council, Inc. v. Volpe, 472 F. 2d. 693, 697-8

^{1/} 42 U.S.C. §4321, et. seq.

(2d. Cir. 1972). This requirement for a thorough study and a detailed description of alternatives has been described as the "linchpin of the entire impact statement". Id.

The Council on Environmental Quality, in its binding regulations, considers the comparison and analysis of alternatives to be at the "heart of an environmental impact statement":

§1502.14 Alternatives including the proposed action.

This section is the heart of the environmental impact statement. Based on the information and analysis presented in the sections on the Affected Environment (§1502.15) and the Environmental Consequences (§1502.16), it should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public. In this section agencies shall:

(a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated.

. . .

(f) Include appropriate mitigation measures not already included in the proposed action or alternatives.

40 C.F.R. §1502.14 ^{2/}

The Commission's own regulations implementing NEPA require it to consider alternatives to mitigate adverse environmental impact:

2/

See also, 40 C.F.R. §1502.16(b), requiring a discussion of "means to mitigate adverse environmental impacts (if not fully covered under §1504.14(f))."

§51.71 Draft Environmental Impact Statement -
Contents.

. . .

(d). The draft environmental impact statement will include a preliminary analysis which considers and balances the environmental and other effects of the proposed action and the alternatives available for reducing or avoiding adverse environmental or other effects. [Emphasis added].

10 C.F.R. §51.71 ^{3/}

Despite this plain mandate of both NEPA and Commission regulations to consider mitigation actions, the Board excluded from the licensing proceeding any NEPA consideration of reactor design alternatives for mitigation of severe accident consequences.

LEA had contended that "preventative and/or mitigative alternatives to the design, mode of operation, procedures, and/or number of reactors presently proposed must be considered" for NEPA review purposes. See "LEA's SARA/EROL Section 7 contentions (August 31, 1983), LEA's reply to Applicant and Staff Response to Severe Accident Risk Assessment Contentions; "LEA Contentions on the Environmental Assessment of Severe Accidents As Discussed in the NRC Staff Draft Environmental Statement, Supplement No. 1", "LEA Statement of significance of NRC Severe Accident Mitigation Systems Contract Documents to LEA Contention DES-5." The Board denied such contentions. (Tr. 8776-8; 9471-5; Order Confirming

^{3 /}
Recodification of 10 C.F.R. §51.23

Rulings and Schedules made at special Prehearing Conference on NEPA Severe Accident Contentions," (April 20, 1984).

Yet the Commission itself has tentatively determined that some types of severe accident mitigative alternatives are neither "remote" nor "speculative" (as Applicant argued below) but have been adequately identified as potentially cost-effective to warrant their consideration in new construction permit proceedings:

In future CP applications for both pressurized water reactors (PWRs) and boiling water reactors (BWRs), filtered vented containment systems or a variation of such systems, should be provided if these yield a cost-effective reduction in risk.

. . .

The Staff is studying the need for more reliable subsystems for containment heat removal... as possible alternatives to filtered venting for prevention of gradual overpressurization failure of the containment building. The cost-effectiveness of this alternative should be considered in the design of plants for new CP application.

"Proposed Policy Statement on Severe Accidents and Related Views on Nuclear Reactor Regulation," 48 Fed. Reg. 16014 (April 13, 1983) at 16019, 16020.

Programmatic analysis of vent-filtered containments has been underway for years by the research community. See, e.g., NUREG/CR-1029, SAND 79-1088, "Program Plan for the Investigation of Vent-Filtered Containment Conceptual Designs for Light Water Reactors" (Sandia Laboratories, Oct. 1979). Core melt retention design alternatives have also been extensively scrutinized. See,

e.g., NUREG/CR-2155, SAND 81-0416, "A Review of the Applicability of Core Retention Concepts to Light Water Reactor Containments" (Sandia Laboratories, September, 1981).

But LEA need not rely solely upon these generalized analyses of mitigation features as support for its conclusion that such features may be cost-effective at Limerick. While the Board excluded the analyses from the licensing proceeding, the regulatory staff, by its contractors, has already extensively examined Limerick-specific mitigation design feature alternatives and concluded that significant reductions in Limerick's severe accident risk are possible:

A low-volume venting strategy can potentially eliminate contribution B and the risk reduction factor is ~ 6 . On the other hand, a combined low-volume/high-volume strategy, similar to the one proposed by Benjamin for a Mark I BWR, can potentially eliminate contributions B and C ^{4/} and the risk reduction factor is ~ 17 .

NUREG/CR-2666, PWR Severe Accident Delineation and Assessment, Chapter 7 "Further Considerations of Mitigative Features for Specific Plants: Limerick," p. 7-11. ^{5/}

^{4 /} "Contributions B & C" refer to specified release categories characterized by certain containment failure modes and accident classes, which have been determined to dominate the Limerick severe accident latent cancer fatality risk. Release category "B" was determined to contribute 83.34% of the total Limerick severe accident risk of latent cancers. Thus, elimination of "contributions B&C" would eliminate 94.14% of Limerick's severe accident latent cancer risk.

^{5 /} A copy of this document was provided by LEA to the Board below as additional bases for its contention.

The cost-effectiveness of specific mitigation design features is being established for Limerick by analyses under the NRC Staff's Severe Accident Mitigation Systems Contract (NRC -03-83-092):

c. Summary to date. For Mark II containment as exemplified by the Limerick plant, mitigation requirements (functions) have been identified, including containment heat removal, core residue capture, and retention without concrete attack, and (if ATWS events are to be mitigated) some kind of venting system. Candidate components to fulfill these requirements have been selected for preliminary conceptual design and cost estimation.

. . .

d. Plans for next period: Complete preliminary designs and assessments for Limerick, and begin final design of selected version.

"Monthly Project Status Report," September 15, 1983, by R&D Associates, p. 4 (attached to "LEA's Reply to Applicant and Staff Response to Severe Accident Risk Assessment Contentions.")

In March, 1984, the Status Report stated:

c. Summary to date. For Mark II containment mitigation, the necessary requirements have been established and a choice of systems designed and costed ready for final consideration. These systems include capabilities for steam venting of excess hydrogen formation; redundant high capacity heat removal from the containment suppression pool, drywell water sprays, core retention; and vacuum breaking. Several versions have been designed for some components, especially core retention... the entire cost analysis has been prepared in three versions, for the cases of a plant already in operation, a plant still under construction, and for a new plant at inception.

"Monthly Project Status Report," March 15, 1984; by R&D Associates, p. 3 (attached to "LEA's Statement of Significance of NRC

Severe Accident Mitigation Systems Contract Documents to LEA Contention DES-5"). 6/

This analysis itself recognizes that the most significant variable for the cost of these mitigation features is whether the plant has commercial operation, is still under construction, or is a "new plant at inception".

Plant testing and operation, with its attendant increasing radioactive contamination of plant systems, may also adversely affect the practical ability to backfit the Limerick facility with cost-effective mitigation features, and thus "irretrievably commit" resources in lock-step with an original design found to pose unnecessary public risk.

In another context, the ASLB below recognized precisely this problem:

The courts have emphasized that Congress intended that agencies give serious consideration to environmental costs and that this requires agencies to consider actions to avoid these costs. Hence, the courts have stated they will not permit NEPA to become a "paper tiger" and compliance with it a "a pro forma ritual." See Calvert Cliffs' Coordinating Committee, Inc. v. AEC, 449 F. 2d 1109, 1114, 1128 (D.C. Cir. 1971). It is commonly recognized that as construction continues, the cost of corrective action to minimize environmental harm may increase, even to

6 / It should be noted that the existence of these alternatives, and the "cost-effectiveness" review was never publicly disclosed by the Commission pursuant to its NEPA obligation. Only a Freedom of Information Act request by LEA's counsel publicly disclosed the monthly project status reports under the Severe Accident Mitigation Systems Contract.

the point where such action is not reasonably possible. Id. at 1128; Public Service Company of New Hampshire (Seabrook Station, Units 1 and 2), CLI-78-14, 7 NRC 952, 959-60 (1978); Consumers Power Company (Midland Plant, Units 1 and 2), ALAB-395, 5 NRC 772, 779 (1977). In an effort to comply with Congress's intent in enacting NEPA, the Board intends to consider these contentions before construction has advanced so far that there is no realistic opportunity for it to order actions which it may determine are necessary to minimize harm to the environment.

Philadelphia Electric Co. (Limerick Generating Station, Units 1 and 2) LBP-82-92A, 16 NRC 1387, (1982) at 1388, fn., quoting Memorandum and Order (unpublished), slip. op. pp. 3-4 (July 14, 1982).

Yet the Board's action below, if uncorrected, thwarts the purpose of NEPA which it recognized pro forma and permits the licensing, contamination, and operation of a facility without any consideration of design features which may significantly reduce the public risk posed by a facility which can be favorably compared only with the risk posed by the Indian Point facility in New York,^{7/} and which can now be described as an "unnecessary risk." The result of the Board's decision is that the environmental review for Limerick required measures to mitigate the impact of noise from pump transformers (See FES, pp. 6-100-101) but permitted no consideration of mitigation measures to reduce the risk of human injury and death, despite this Appeal Board's admonition that "public safety is the first, last, and a permanent

^{7/} See, Final Environmental Statement related to the operation of the Limerick Generating Station, Units 1 & 2", NUREG-0974, pp. 5-116-5-124.

consideration" in nuclear power plant licensing decisions.

Consumers Power Co. (Midland Plant, Units 1 and 2) ALAB-315,
NRCI 76-2, 103-4 (1976).

The Appeal Board should therefore order the ASLB below to admit LEA's contention that mitigative design alternatives should be considered for Limerick.

THE BOARD IMPROPERLY EXCLUDED FROM THE
ENVIRONMENTAL REVIEW THE RISK FROM SABOTAGE

The possibility of catastrophic damage to reactors with disastrous public consequences as a result of sabotage is well known to the Commission. The knowledge of this risk has promoted extensive regulatory effort to minimize the risk through imposition of requirements for, e.g., physical security plans and facility design requirements to inhibit successful sabotage attempts. See generally, 10 C.F.R. Part 73.

Nevertheless, the risk of sabotage-induced accidents was categorically excluded from the environmental review of the facility. The Staff's FES stated in pertinent part: "Neither the applicant's analysis nor the staff's analysis includes the potential effects of sabotage; such an analysis is considered to be beyond the state of the art of probabilistic risk assessment." (FES, p. 5-74).

In its contentions on severe accident risk assessment in the Staff's environmental review, LEA contended that the risk from sabotage should be included in the risk analysis. See, e.g., "LEA Contentions on the Environmental Assessment of Severe Accidents as Discussed in the NRC Draft Environmental Statement, Supplement No. 1", (February 13, 1984). Attached as basis and support for its contention was an excerpt from a review of the

applicant's Severe Accident Risk Assessment ^{8/} performed by Mr. Steven Sholly of the Union of Concerned Scientists. ^{9/}

In the review, Mr. Sholly concluded, inter alia,:

According to a recent NRC report [9] at least eleven acts of insider sabotage were committed at licensed U.S. commercial power reactors between 1971 and 1981. . . This statistic answers the oft-repeated assertion that insider sabotage risk cannot be estimated. It should be pointed out that we now have more data points for sabotage attempts than for many events routinely analyzed in PRAs (such as ATWS, for instance). . . [O]ne can derive a frequency of sabotage attempts... one obtains a frequency of 1:57.5 or roughly 1:60 per reactor-year for insider sabotage attempts.

From here on, the analysis would become more involved; one would have to derive a conditional probability of successful sabotage. One would also need to estimate the frequency with which various systems would be affected. . . [A] published report gives the minimal cut set of systems which must be protected for a BWR/6 Mark III reactor [10], and such a list could also be constructed for the Limerick reactor without too much difficulty using the LGS PRA and the methodology layed [sic] out in reference #10.

I consider that a sabotage risk analysis could be performed. Such a study would obviously have large uncertainties. . . The analysis should be performed on a "best estimate" basis to ascertain the degree to which sabotage risks contribute to risk at Limerick.

8/

The Applicant's Severe Accident Risk Assessment (SARA) and the Staff's environmental Statement treated the risk of sabotage identically. The excluded it from the scope of the assessment.

9/

Mr. Sholly has earlier testified as an expert on probabilistic risk assessment in the context of reactor sabotage and accident consequence analysis. See, Consolidated Edison Co. of New York (Indian Pt., Unit No. 2) et. al., 18 NRC 811, 889-890 (1983)

The probabilistic risk assessment community, while not of unanimous opinion, is concluding that sabotage risk can be assessed. In the Indian Point investigative proceeding, the Board stated:

"licensee's witness Garrick believes that the risk from sabotage could be modeled in PRAs, and he indicated that European PRAs are beginning to consider sabotage. (Garrick, Tr. 7045-46). ... Staff acknowledged that some members of the Advisory Committee on Reactor Safety (ACRS) have urged Staff, over the last three or four years, to undertake the probabilistic risk assessment of sabotage."

Consolidated Edison Co. of New York, supra n. 9 , at 889.

In that proceeding, Mr. Sholly testified that sabotage could be a "sleeper", like the external events now known to dominate risk at Indian Point, whose unknown risk could also be a dominant contributor to overall risk. (Sholly, Tr. 12,778-9). (Id., p. 890). Nevertheless, the Limerick ASLB refused to even consider the contention, relying not upon any factual determination that such an analysis could not be performed, nor upon any assessment that sabotage could not be a dominant contributor to risk at Limerick,^{10/} but rather upon various Commission "policy statements looked at collectively," including the "Policy Statement on Safety Goals for the Operation of Nuclear Power Plants," ("Safety Goal Policy Statement") 48 Fed Register 10772, et. seq.^{11/}

^{10/}

Nor could it have, having precluded any testimony by rejecting the contention out of hand.

^{11/}

See, Tr. 8778-9.

That policy statement states:

The possible effects of sabotage or diversion of nuclear material are also not presently included in the safety goal. At present, there is no basis on which to provide a measure of risk on these matters.

Safety Goal Policy Statement, supra, p. 10773, col. 2.

This statement merits several observations. First, it may be that "at present there is no basis on which to provide a measure of risk on these matters "because the risk assessment has not yet been done for reasons quite apart from the "state of the art", e.g. reluctance to confront the issue.

Secondly, the policy statement does not address itself to NEPA assessments. Indeed, it expressly prohibits use of the safety goals and design objectives in the licensing process. 48 Fed. Reg. 10775, col. 3. While it does exclude sabotage from the safety goal program, (itself excluded from the licensing process) it does not expressly exclude it from NEPA reviews.

The Board also relied upon the Commission's "Proposed Commission Policy Statement on Severe Accidents and Related Views on Nuclear Reactor Regulation", 48 Fed. Reg. 16014 (April 13, 1983), especially pp.16018 and 16020. See Tr. 8,779.

The proposed policy statement notes that while the Commission "has explicitly excluded sabotage from the safety goal policy statement, the Commission recognizes the merit of providing guidance on plant design that inhibit sabotage." 48 Fed. Reg. at 16020, col. 2-3. Further, with respect to Safety Analysis Reports:

In addressing potential accident initiators (including earthquakes, sabotage, and multiple human errors) where empirical data are limited and residual uncertainty is large,^{12/} the use of conceptual modeling and scenario assumptions in Safety Analysis Reports will be helpful. They should be based on the best qualified judgments of experts, either in the form of subjective numerical probability estimates or qualitative assessments of initiating events and casual [sic] linkages in accident sequences.

48 Fed. Reg. at 16020, col. 3.

It is rather plain that the Board's categorical exclusion of this issue from the environmental review was based upon the perceived "large uncertainties" in sabotage risk estimation." But scientific uncertainties alone concerning the magnitude of risk cannot justify the total exclusion of the risk from NEPA review. CEQ regulations directly address the NEPA obligations of the Commission under circumstances of scientific uncertainty:

§1502.22 Incomplete or unavailable information.

When an agency is evaluating significant adverse effects on the human environment in an environmental impact statement and there are gaps in relevant information or scientific uncertainty, the agency shall always make clear that such information is lacking or that uncertainty exists.

(a) If the information relevant to adverse impacts is essential to a reasoned choice among alternatives and is not known and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.

^{12/} Indeed, despite the limitation of empirical data and large "residual uncertainty", risk from earthquake-initiated accidents was considered extensively by the NRC Staff in the Limerick environmental review. See, e.g. "Final Environmental Statement related to the operation of Limerick Generating Station, Units 1 and 2", NUREG-0974, pp. 5-74-5-78.

(b) If (1) the information relevant to adverse impacts is essential to a reasoned choice among alternatives and is not known and the overall costs of obtaining it are exorbitant or (2) the information relevant to adverse impacts is important to the decision and the means to obtain it are not known (e.g., the means for obtaining it are beyond the state of the art) the agency shall weigh the need for the action against the risk and severity of possible adverse impacts were the action to proceed in the face of uncertainty. if the agency proceeds, it shall include a worst case analysis and an indication of the probability or improbability of its occurrence.

Indeed, LEA need not rely upon these CEQ regulations alone in this proceeding,^{13/} because NEPA itself imposes the obligation to prepare a worst case analysis where uncertainties exist. See Southern Oregon Citizens Against Toxic Sprays, Inc. v. Clark, 720 F. 2d.1475, 1478 (9th Cir. 1983)("worst case analysis" required even though original environmental impact statement prepared before effective date of CEQ regulations, because regulations merely codified prior NEPA case law); Sierra Club v. Sigler, 695 F. 2d. 957, 971 (5th Cir. 1983) (The "CEQ's worst case analysis merely codifies ... judicially created principles");

13/ Although they are binding on administrative agencies Sierra Club v. Sigler, 695 F. 2d. 957, 972 (5th Cir. 1983). We anticipate Applicant and Staff argument that these CEQ regulations are inapplicable to NRC analyses of severe accidents contained in its environmental statements. See, 49 Fed. Reg. 9352 (March 12, 1984), at 9356. Such an argument need not detain us long. While LEA disagrees with the Commission's view of the extent to which the CEQ regulations are binding on the Commission, (See, People Against Nuclear Energy v. U.S. Nuclear Regulatory Commission, 678F.2d. 222, 231 (1982), rev'd on other grounds, U.S. (1983)) the inclusion of sabotage risk in the manner contended for by LEA is consistent with the Commission's own "Nuclear Power Plant Accident Considerations under NEPA" 45 Fed. Reg. 40101 (June 13, 1980). Second, as is discussed infra, the obligation to perform a "worst-case" analysis is not merely imposed by possibly "non-binding" CEQ regulations, but is a statutory obligation imposed by NEPA itself.

Save Our Ecosystems v. Clark, ____ F. 2d. ____, 20 E.R.C. 1607 (9th Cir. Jan. 1984) (requiring worst use analysis of carcinogenic effects of herbicide spraying even where adverse health effects unlikely).

Thus, even if one assumes that a strict probabilistic assessment of sabotage risk were not feasible, nevertheless, a "worst case" analysis could be performed with the same "best qualified judgements of experts", or "subjective numerical probability estimates" with "scenario assumptions" (48 Fed. Reg. 16020, col. 3) as the Commission's proposed policy statement would require for new Safety Analysis Reports.

We may well expect both applicant and NRC Staff to argue that no assessment of sabotage risk is required, because the risk is "very low". Such an argument, of course, is a ludicrous prejudgment of the results of precisely the assessment which the contention called for.

In any event, "remoteness" is an impermissible criterion for categorical exclusion of potentially catastrophic events:

The remoteness problem is instead addressed by mandating the preparation of a worst case analysis and indicating to the decision maker "the probability or improbability of its occurrence". [citation omitted].

Sierra Club v. Sigler, supra, at 974.

LEA demonstrated adequate basis for its contention that the risk of sabotage could, and should, be included in the environmental review for Limerick. The categorical exclusion of any assess-

ment of this risk, either through available probabilistic risk assessment techniques, or through a "worst-case" analysis, was violative of the mandates of NEPA.

THE BOARD IMPROPERLY EXCLUDED FROM NEPA
CONSIDERATION OF SEVERE ACCIDENT IMPACTS
THE SOCIOECONOMIC IMPACT OF COMPENSATION
OF VICTIMS AND TOTAL INDUSTRIAL IMPACTS

LEA contended below that the Staff's Environmental Statement improperly failed to disclose or consider (1) "The socio-economic cost of compensation required for health effects induced by radiation exposure" (DES-4 (A)(4)), and (2) "industrial impacts beyond the first year following the accident, and quantification of costs beyond the 'output loss' mentioned in DES, p. 5-46" (DES-4(A)(5)). See "LEA Contentions on the Environmental Assessment of Severe Accidents As Discussed in the NRC Staff Draft Environmental Statement, Supplement No. 1."

The Board rejected these contentions in its "Order Confirming Rulings and Schedules Made at Special Prehearing Conference on NEPA Severe Accident Contentions" (April 20, 1984). See also, Tr. 8773. The Board reasoned that the impacts were 'speculative, both in terms of occurrence and in terms of any reasonable quantification, even given that occurrence, and they are remote in terms of our reasonable proximity.' Id. The NRC Staff took the position at the prehearing conference that these contentions were admissible. Tr. 8688.

Once the preparation of an environmental impact statement is required, it must discuss economic or social effects that are interrelated with other environmental effects.

40 C.F.R. §1508.04.

Indeed, in its FES discussion of severe accident risks, the NRC Staff had included a discussion, albeit limited, of economic and societal impacts. See FES, pp. 5-93. With respect to industrial impacts of severe accidents, the FES states:

Only the impacts occurring during the first year following an accident are considered. The longer term consequences are not considered because they will vary widely depending on the level and nature of efforts to mitigate the accident consequences and to decontaminate the physically affected areas.

Id., p. 5-106.

Other economic impacts and risks were discussed:

There are other economic impacts and risks that can be monetized but that are not included in the cost calculations discussed earlier. These are accident impacts on the facility itself that result in added costs to the public (ratepayers, taxpayers, and/or shareholders). These costs would be for decontamination and repair or replacement of the facility, and replacement power. Experience with such costs is currently being accumulated as a result of the Three Mile Island accident.

Id., p. 5-107.

Nevertheless, the Staff, with approval of the ASLB, chose to ignore additional significant economic impacts that can be known with reasonable certainty to occur in the aftermath of a severe accident at a nuclear power reactor facility.

Compensation for Accident Victims

The severe accident risk assessment probabilistically calculates, inter alia, the number of early fatalities, latent non-thyroid cancer fatalities, early radiation injuries, latent

thyroid cancer fatalities and genetic defects projected to be caused by severe accidents at Limerick. Thus, the number of victims and the general types of their injuries is not at all "speculative" in the risk assessment sense, for they have been calculated probabilistically. The Staff, at least, has sufficient confidence in such calculations to advance them for NEPA decisionmaking purposes.

Neither is the likelihood of recovery of compensation by nuclear accident victims "speculative". As a matter of law, compensation will be paid to such victims. The Price-Anderson Act^{14/} establishes a statutory scheme which, inter alia, limits the liability of the industry, waives all legal defenses to liability in the event of a severe accident, transfers all claims to a single federal district court, requires payments by each reactor owner to a common fund toward the cost of compensating victims, and establishes a structure for administering the claims of victims.

The United States Supreme Court in Duke Power Co. v. Carolina Environmental Study Group, ___ U.S. ___, ___ S. Ct. ___, 57 L. Ed. 2d 595 (1978), on a challenge to the constitutionality of the Act, concluded:

The Price-Anderson Act not only provides

^{14/} Act of Sept. 2, 1957, Pub.Law No. 85-256, 71 Stat 576, as amended (codified at 42 U.S.C. §2210).

a reasonable, prompt and equitable mechanism for compensating victims of a catastrophic nuclear incident, it also guarantees a level of net compensation generally exceeding that recoverable in private litigation. Moreover, the Act contains an explicit congressional commitment to take further action to aid victims of a nuclear accident in the event that the \$560 million ceiling on liability is exceeded.

57 L. Ed. at 623-624.

The legislative history of the 1975 renewal of the Act demonstrates Congress' appraisal of the likelihood of recovery, and belies any suggestion by the Commission now that compensation recovery by nuclear accident victims is "speculative":

The primary defect of [a non-renewal of the Act] is its failure to afford the public either a secure source of funds or a firm basis for legal liability with respect to new plants. ... The present assurance of prompt and equitable compensation under a pre-structured and nationally applicable protective system would give way to uncertainties, variations, and potentially lengthy delays in recovery. ... The prospect of inequitable distribution would produce a race to the courthouse door in contrast to the present system of assured orderly and equitable compensation.

Duke Power Co., supra, 57 L. Ed. 2d. at 621-622, quoting "Hearings on HR 8631 before Joint Committee on Atomic Energy", 94th Cong., 1st Sess., 69 (1975).

In view of the probabilistically calculated numbers

of severe accident victims,^{15/} there is no reasonable doubt that at the lower end of the probability scale, and at the upper end of the consequences magnitude, the available compensation fund of \$560,000,000 will be exhausted, and Congressional appropriations of additional sums will be made. The "worst case" analyses mandated by NEPA (discussed infra, pp.15 to 17) requires the consideration and disclosure of these facts.

The result of the exclusion of victim compensation from NEPA review is that while replacement power costs of \$400,000,000 have been disclosed and considered (FES, p. 5-107), the costs of compensation of accident victims nearly \$200,000,000 in excess of that amount will not be.

Industrial Impacts Beyond First Year

The Staff's FES recognized that:

A severe accident that requires the interdiction and/or decontamination of land areas is likely to force numerous businesses to temporarily or permanently close. These closures would have additional economic effects beyond the contaminated areas through the disruption of regional markets and sources of supply.

^{15/} Early fatality calculations range from 0 to 70,000 persons (FES, p. 5-87 (Figure 5.4. (e)); latent cancer fatalities excluding thyroid range from 0-30,000 (FES, p. 5-86 (Figure 5.4(d)); latent cancer fatalities - thyroid only - range from 0 to 7,000 (Id.); early injury cases range from 0 to 200,000 (FES, p. 5-88 (Figure 5.4(f)). Thus, the total range of such victims requiring compensation ranges probabilistically from 0 to 307,000.

FES, p. 5-102. Estimates of economic impact risk were made using the risk assessment consequence model which calculates land areas (1) interdicted, (2) to be decontaminated, (3) in which crops are interdicted, and (4) in which milk is interdicted. Id.

Despite the recognition that a severe accident would likely require the permanent closure of numerous businesses, and the explicit CRAC^{16/} calculation by the Staff of land areas to be interdicted for periods in excess of 30 years^{17/} the staff admittedly did not consider them in the FES. Thus, while the impact of business closures up to one year was considered, the economic impact of permanent closures were not.^{18/}

While the Board deemed this impact "speculative", such a view is largely indefensible in the face of probabilistic calculations of specific land area interdiction by time period, distance, and sector, together with the extensive land use data

16/ Consequences of Reactor Accidents Code, utilized in the FES.

17/ See Staff Testimony of Hulman, et.al., ff. Tr. 11,148, Table 3. The probability that 1,000 square meters of land would be interdicted for more than 30 years is insignificantly different than the probability that 30,000,000 square meters will be interdicted for more than 30 years.

18/ It is difficult to imagine that a business required to close for a period in excess of thirty years will ever reopen unless relocated from the area. In addition, farmland interdicted for a time period in excess of thirty years will obviously suffer a total output loss for that period of time.

available in the applicant's environmental documents.^{19/} Indeed, the analysis of economic disruption permitted by such specific available data is far more detailed, objective, and less "speculative" than that of generalized economic and physical deterioration caused by urban blight which has been held to be a cognizable "secondary impact" under NEPA. See, e.g. City of Rochester v. U.S. Postal Service, 541 F. 2d. 967,973 (2d. Cir. 1976) (danger of economic and physical deterioration in downtown area); Trinity Episcopal School Corp. v. Romney, 523 F. 2d. 88, 93-94 (2d Cir. 1975)(Displacement and relocation of residents, decay and blight, implications for city growth policy and neighborhood stability).

The difficulty (if any) in quantification of industrial impacts beyond the first year does not justify their utter exclusion from consideration. As discussed infra, an agency is to face such uncertainties by the preparation of a "worst case" analysis if the uncertainties are so extensive as to preclude the meaningful analysis of the impacts otherwise.

^{19/} Including a listing of industries within 5 miles of the site with 10 or more employees by number of employees, products, and location. For example, it is noted that Hooker Chemical Co., employing 750 persons, is only 1.5 miles from the site.

NEITHER THE FES NOR THE RECORD OF DECISION
BELOW CONSTITUTES AN ADEQUATE DISCLOSURE AND
CONSIDERATION FOR NEPA PURPOSES OF THE RISK OF
HUMAN HEALTH IMPACTS FROM SEVERE ACCIDENTS

The Commission's "Statement of Interim Policy on
Nuclear Power Plant Accident Considerations under the National
Environmental Policy Act"^{20/} requires, inter alia, that

Environmental Impact Statements shall include a
reasoned consideration of the environmental risks
(impacts) attributable to accidents at the particular
facility...within the scope of each such statement.
In the analysis and discussion of such risks, approx-
imately equal attention shall be given to the proba-
bility of occurrence of releases and to the probability
of occurrence of the environmental consequences of
those releases.

. . .

The environmental consequences of release whose
probability of occurrence has been estimated shall
also be discussed in probabilistic terms. Such con-
sequences shall be characterized in terms of potential
radiological exposures to individuals, to population
groups, and where applicable, to biota. Health and
safety risks that may be associated with exposures to
people shall be discussed in a manner that fairly re-
flects the current state of knowledge regarding such
risks.

Further,

The National Environmental Policy Act (NEPA) places
upon an agency the obligation to consider every signi-
ficant aspect of the environmental impact of a pro-
posed action, and requires an EIS to disclose the
significant health, socioeconomic and cumulative con-

^{20/} 45 Fed. Reg. 40101, et. seq. (June 13, 1980)

sequences of the environmental impact of a proposed action.

Baltimore Gas and Electric Co., et al. v. Natural Resources Defense Council, __U.S.__, (1983) slip op. at 9, 19.

"Genetic Changes"

Among the "health and safety risks that may be associated with exposures to people" is the risk of radiation-induced genetic disorders in succeeding generations. The risk of "genetic effects" was not explicitly listed or displayed in the FES (Partial Initial Decision, slip op., p. 182, Finding F-12), although it constitutes a greater risk than any other health effect analyzed in the FES, ²¹ / i.e., 2.6×10^{-1} genetic "effects" per reactor year of operation.²² / Yet nowhere disclosed in the FES or in the record of decision is what these "genetic changes" are.

The Staff witness, Mr. Branigan, testified that the genetic effects included:

... all disorders that could cause some serious handicap during the lifetime of an individual. Examples of genetic effects that are included in the risk estimator are diseases and abnormalities caused by a dominant mutation. For example, extra fingers, extra toes. Diseases

²¹ / (Id., p. 183, Finding F-14)

²² / Thus, for operation of both units at Limerick, over the operating life of 40 years requested by the Applicant, the "risk" is 20.8 "genetic changes" expected.

caused by recessive mutations. For example, sickle cell anemia. Abnormalities caused by chromosomal aberration. For example, Downs syndrome, congenital anomalies, anemia, diabetes, and schizophrenia.

Those are examples of the types of things that are included.

(Branagan, Tr. 11,255).

The disclosure that there is a risk of "genetic changes" is largely meaningless without a discussion of the human physical manifestation of those "genetic changes". This is because the "genetic changes" themselves are events occurring at a microscopic level of physical reality, and per se, are not significant events. Only the physical manifestation of these "genetic changes" in terms of physical disorders or disease is meaningful and significant in human experience.

The risk to human health and safety of genetically based disease and disorder has therefore not been adequately disclosed or considered for NEPA purposes.

Non-Fatal Cancers

The FES did not disclose the risk of cancers without a fatal outcome which is posed by the operation of Limerick, although this risk was admitted to be greater than the other health effects analyzed by the Staff in the FES. (Hulman, Tr. 11,248; Board Finding F-14).

Benign Thyroid Nodules and Hypothyroidism

The risk posed by Limerick of radiation-induced benign thyroid nodules and hypothyroidism was nowhere disclosed in the FES (Tr. 11,250; Board Finding F-14) although this risk was greater than the other health effects risks analyzed in the FES. (Cf. Tr. 11,248; 11,261-2; Board Finding F-17)

Spontaneous Abortions

The risk posed by Limerick of radiation-induced spontaneous abortion in women was nowhere disclosed in the FES (Board Finding F-12; Tr. 11,252), although this risk is greater than any health effect risk analyzed in the FES, with the sole exception of genetic effects. (Tr. 11,258; Board Finding F-15)

Sterility

While sterility is a health risk of severe accidents at Limerick, it is nowhere disclosed in the FES, although it is greater than any health risk analyzed in the FES with the sole exception of genetic effects.²³ / (Tr. 11, 248; 11,261; Board Finding F-12, F-16).

²³ / In males, this risk is 1.6×10^{-1} per reactor-year of operation. (Hulman, et. al., ff. Tr. 11,148, p.11). Thus, for both units over an operational life of 40 years, the total risk is 12.8 cases of sterility expected. In females, this risk is 3×10^{-2} per reactor year of operation (Id.). Thus, for both units over an operational life of 40 years, the total risk is 2.40 cases of sterility expected.

Developmental Impairment of Children

The risk of severe accidents at Limerick includes impairment of development of children due to in-utero exposure of embryos and fetuses, including microcephaly, mental retardation, growth retardation, blindness, cleft palate and spina bifida. (Tr. 11,264-5; 11,267; 11,317). These health impacts were not explicitly considered by the Staff or disclosed in the FES (Board Finding F-20). While the Staff opined that its more conservative early injury whole body dose threshold provided a "bounding" calculation which thus included all other small impairment risks, (Tr. 11,264-72), this referred to increasing the number of cases of abdominal vomiting. (Tr. 11,268-9). It is difficult to comprehend how these cases of "vomiting" have anything to do with disclosure of developmental defects in children such as microcephaly and spina bifida.

As the Board noted, "the record is clear that not all latent health effects of severe accidents at Limerick were explicitly disclosed in the FES". Partial Initial Decision, slip op., p. 191.

Further: "We do believe an explicit discussion of all the health effects in the DES and FES would better permit the public (as opposed to an informed professional) to understand all factors considered in the risk assessment." Id.

Despite the plain failure of the NEPA documents circulated for public comment to disclose or consider any of these health risks, all of which are greater than any risks which were

considered in the FES, the Board offers no remedy, concluding that the disclosure in its opinion will suffice.

The Board Improperly Concluded That the FES is Deemed Amended By its Decision

In reliance upon precedent that a defective FES can be "cured" by receipt of additional evidence, the Board concluded that no supplement to or recirculation of the FES was necessary. Partial Initial Decision, slip op. pp. 178-179. However, that precedent rested upon a former Commission regulation, 10 C.F.R. § 51. 52(b)(3), which provided inter alia:

To the extent that findings and conclusions [made in an initial decision of the presiding officer in a license issuance proceeding] different from those in the final environmental statement prepared by the staff are reached, the statement will be deemed modified to that extent and the initial decision will be distributed as provided in §51.26(c).

However, that regulation no longer exists and it is inapplicable to this proceeding. In the recodification of 10 C.F.R. Part 51, the regulation was never readopted. See 49 Fed. Reg. 9352, et. seq. (March 12, 1984). While the new 10 C.F.R. §51.102 does not expressly require the recirculation of the FES under circumstances where the original document failed to disclose significant human health risks, it provides no adequate alternative. No public comments may be offered on the new information provided in an "initial decision". No notice of availability of the decision will be published in

THE BOARD'S CONCLUSION THAT APPLICANT'S
"ON-SITE" EMERGENCY PLANS ARE ADEQUATE
VIOLATES COMMISSION REGULATIONS, THE ATOMIC
ENERGY ACT, AND THE ADMINISTRATIVE PROCEDURE ACT

The Board's Failure to Determine the Adequacy of
Applicant's Emergency Facilities and its Delegation to the
Staff of Determination of Issues in Controversy Before
the Board Violates Applicable Law.

LEA had contended that the Applicant had not shown
that its on-site emergency facilities were adequate:

Contention VIII-8

The LNGSEP fails to demonstrate that adequate
emergency facilities and equipment to support
emergency response are provided and maintained as
required by 10 C.F.R. § 50.47(b)(8), especially in that:

(b) The Plan's descriptions of the Emergency
Operations Facility (Plan § 7.1.2), the Technical
Support Center (Plan § 7.1.3.), the Operational
Support Center (Plan § 7.1.4), and emergency
equipment and supplies are all insufficient to
meaningfully assess compliance with 10 C.F.R.
§ 50.47(b)(8) and to evaluate the facilities
with respect to the criteria of NUREG-0654,
Supplement 1 to NUREG-0737 (88), and NUREG-0696.
Intervenor contends the applicant has not demon-
strated that the facilities proposed are adequate.
Applicant's response to Q. 810.30 states that the
plan will be expanded when final information is
available on these facilities.

Basis: 10 C.F.R. § 50.47(b)(8); Part 50, Appendix E;
NUREG-0654, Criteria H.1, 2.9, NUREG-0696, "Functional
Criteria for Emergency Response Facilities: NUREG-0814,
pp. 2-15; Supplement 1 of NUREG-737 § 8. 25/

25/ This contention was admitted by the Board at Tr. 4839.

In its decision, the Board acknowledged that the criteria to be used in judging the adequacy of the facilities are NUREG-0696 and NUREG-0814.^{26/} It concluded that "an outside observer such as an intervenor could be both interested in the outcome of the Staff's review [of the facilities] and in a position to reasonably and fruitfully disagree with the Staff's review "because it is crucial that these facilities be adequate to the uses which would be made of them in an emergency. Moreover, determining their adequacy would appear to require some judgment . . .[.]". Partial Initial Decision, slip op., p. 133.

With one hand, the Board granted LEA an opportunity to be heard on the issue of Applicant's emergency facilities by admitting its contention, scheduling an evidentiary hearing thereon, and permitting examination of witnesses. With its other hand, the Board took the opportunity away by closing the record after a meaningless hearing in which not even the Staff could yet ascertain the facilities' adequacy because so much work was yet to be done. See Tr. 10,064-10,073.

At the time of the hearing, no more information was available concerning these facilities than LEA had at the time the Board admitted the contention. The Applicant's testimony merely referred to the emergency plan descriptions (§ 7.1.2.,

^{26/} See Partial Initial Decision, slip op., p. 133. The Board refers, of course, to "Functional Criteria for Emergency Response Facilities", NUREG- 0696, and "Methodology for Evaluation of Emergency Response Facilities" NUREG-0814. The Board's reference to NUREG-0818 was an apparent error.

7.1.3., 7.1.4.) which LEA's contention had found totally deficient, and promised no additional information other than a "floor plan which will indicate positioning of particular personnel." See Boyer, et. al., ff. Tr. 9972 at pp. 6-7.

The Staff testimony demonstrated that as of the hearing, the Staff simply had not yet evaluated the facilities against the applicable criteria. (See Sears, Tr. 10, 061-73) and that its assessment of the facilities' adequacy would depend upon future NRC Onsite Emergency Response Facilities Appraisal Visit (Sears, ff. Tr. 9776 at p. 10).^{27/} As the Board noted, "The Staff's review was still far from complete". PID, p. 132.

Faced with such a meager record, LEA suggested that resolution of the contention await the appraisal visit report, with additional opportunity to propose findings. See "LEA Proposed Findings of Fact and Conclusions of Law in the Form of a Partial Initial Decision Relating to LEA's Onsite Emergency Planning Contentions", at p. 23.^{28/}

^{27/} While not a part of the record below, because not then issued, the Staff ultimately issued its report of that "appraisal visit" on August 14, 1984. See, "Emergency Preparedness Appraisal (50-352/84-18), NRC Region I, August 14, 1984. The Staff concluded the numerous elements of the emergency facilities were deficient, and has required numerous improvements. In addition, no findings were made against the criteria of NUREG-0814, and one cannot ascertain whether a full "NUREG-0696" review was ever made by the Staff, because some criteria are simply not addressed.

^{28/} This proposal was generous. On the state of the record as it stood, the Board factually had no choice except to conclude that the Applicant had not shown compliance with the regulatory criteria, as was its burden.

Instead, the Board simply defaulted in its obligation to make findings on this issue, and made neither findings of adequacy nor inadequacy. See Partial Initial Decision, slip. op., pp. 132-134, Board Findings E-42 - E-48.

The failure to make a finding of adequacy was perfectly understandable in view of the utter lack of a record upon which to ascertain the facilities' adequacy, and in view of the Staff's own inability to timely determine their adequacy; what is not permissible is the Board's exclusion of the issue from the adjudicatory process by closing the record,^{29/} and thereby delegating to Staff resolution the question of the adequacy of these facilities.^{30/}

^{29/} Partial Initial Decision, p. 133.

^{30/} The Board also concluded that "perhaps decisive, litigation on emergency planning is first and foremost concerned with the plans; yet even though a certain amount of information about these three facilities is available in §§7.1.2, 7.1.3 and 7.1.4 of the onsite Plan, LEA has raised no issue based on any of this information." Partial Initial Decision, slip. op., p. 134. With due respect to the Board, this justification for closing the record is senseless in view of the fact that the admitted contention complained precisely about the inadequacy of the descriptions relied upon by the Board to close the record. Those descriptions are quite useless for decision-making purposes. With respect to the focus on "plans" rather than the facilities themselves, the applicable guidance, NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants" establishes a planning standard that "Each licensee shall establish a Technical Support Center and an onsite operations support center (assembly area) in accordance with NUREG-0696, Revision 1." NUREG-0654, p. 52. Indeed, it would be absurd if plans for facilities were an adequate substitute for the facilities themselves.

This action contradicts the Board's recognition elsewhere in this proceeding of the impropriety of such delegation:

When governing statutes or regulations require a licensing board to make particular findings before granting an applicant's requests, a board may not delegate its obligations to the Staff. The responsibilities of the boards are independent of those of the Staff under the Commission's system, and the Board's duties cannot be fulfilled by the Staff, however conscientious its work may be. 8/8/ Cleveland Electric Illuminating Company (Perry Nuclear Power Plant, Units 1 and 2), ALAB-298, 2 NRC 730, 737 (1975)

Partial Initial Decision, slip. op., pp. 92-93.

This Appeal Board has also stated:

The Commission in fact has long held that, "[a]s a general proposition, issues should be dealt with in the hearings, and not left over for later (and possibly more informal) resolution." Consolidated Edison Co. v. New York (Indian Point Station, Unit No. 2) CLI-74-23, 7 AEC 947,991 (1974). "[T]he 'post-hearing' approach should be employed sparingly and only in clear cases" - for example, where "minor procedural deficiencies" are involved. Id., at 952, 951 n. 8.

Louisiana Power and Light Company (Waterford Steam Electric Station, Unit 3), 17 NRC 1076, 1103 (1983).^{31/}

While the Board has some authority to make "predictive findings" in emergency planning matters, (Id.) it may not simply fail to make findings, and leave the matters up to the Staff.^{32/}

^{31/} Plainly, the facts of this case do not meet this standard - particularly in view of the Board's recognition that a determination of the adequacy of the emergency facilities requires "some judgment." Partial Initial Decision, slip.op. p. 133.

^{32/} Indeed, "predictive findings" of adequacy on this record would have been seriously contradicted by the Staff's findings of numerous deficiencies which require correction. See infra, p.35 , n. 27 .

Such an action violates Section 189(a) of the Atomic Energy Act,^{33/} and §§ 5 and 7 of the Administrative Procedure Act (APA).^{34/}

§189 of the Atomic Energy Act has been uniformly interpreted to grant interested persons who request one, an "on the record" hearing. See Union of Concerned Scientists v. U.S. Nuclear Regulatory Commission, ___ F. 2d___, (82-2053, D.C. Cir., 1984), slip. op. pp. 16-17, n. 12. The Act prohibits the Commission from limiting the scope of the operating licensing hearing by "remov[ing] from the hearing required by Section 189 (a) material issues relevant to its licensing decision."^{35/} Id., slip. op. p. 30. What the Commission is unauthorized to do by rulemaking, it cannot do by quasi-judicial decision-making.

The Board's action prejudices LEA because it destroys the safeguards of adjudication on an issue it properly presented to the Board for adjudication. The action denies LEA's right to

33 / §189(a) of the Act, as amended, Pub. L. No. 85-256, §7, 71 Stat. 578, (1957), Pub. L. No. 87-615, §2, 76 Stat. 409 (1962), Pub. L. No. 97-415, §12(a), 96 Stat. 2073, 42 U.S.C. §2239(a)(1).

34 / Pub. L. 404, 60 Stat. 237-244 (1946), as codified. Pub. L. No. 89-554, 80 Stat. 378 (1966), as amended Pub. L. No. 90-23, 81 Stat. 54 (1967), 5 U.S.C. §554, 556.

35 / There can be no question that adequacy of applicant's emergency facilities is a "material issue relevant to a licensing decision", as such adequacy is required by 10 C.F.R. §50.47 (b)(8), and 10 C.F.R. Appendix E, IV, E. (8).

submit evidence on the Staff's review, to confront and cross-examine witnesses, and to propose meaningful findings on the adequacy of the facilities - all safeguards granted by the APA,^{36/} on an issue which the Board itself acknowledged was "crucial".

The Board's order closing the record on LEA's contention VIII - 8 should be reversed, and an adjudicatory opportunity afforded to fully litigate the adequacy of the Applicant's emergency facilities.

The Board Improperly Concluded that Applicant's Medical Care Arrangements Complied with 10 C.F.R. § 50.47

Under "general emergency" conditions, Applicant's planning for medical care for on-site contaminated injured victims would require persons seriously injured to travel nearly an hour before reaching hospital care. All witnesses agreed that it would be "prudent" to make additional hospital care arrangements with any one or more of the some twenty hospitals closer to the site. Nevertheless, the majority of the ASLB^{37/} declined to require this prudence.

Applicant's plans rely upon emergency care service of two hospitals: Pottstown Memorial Medical Center ("PMMC") and the Hospital of the University of Pennsylvania ("HUP").

36/ 5 U.S.C. §§556, 557

37/ Judge Lawrence Brenner dissented on this issue. See Partial Initial Decision, slip. op., p. 149.

Applicant has an agreement with only one: PMMC, (PECO Exhibit 43). For HUP emergency care, Applicant must rely upon its agreement with Radiation Management Corporation ("RMC") (PECO Exhibit 42), which, in turn, has an agreement with HUP (PECO Exhibit 40) to accept RMC referrals for evaluation and treatment of "radiation injuries" from the Limerick site.

PMMC is the primary treatment center for on-site contaminated injured victims; where PMMC's limited resources were unable to provide required specialized personnel and equipment, HUP would receive the victims. (See Partial Initial Decision, slip. op., p. 141, Board Findings E-62, E-63).

However, PMMC is less than 2 miles from the Limerick reactor site. (Linneman, Tr. 9831; Board Finding E-63), and HUP, located in center Philadelphia, is at least 45 minutes away. (Linneman, Tr. 9844; Board Finding E-63).

As a result of its close proximity to the reactor, in a general emergency PMMC could not accept contaminated injured victims from the site because it would be preparing to evacuate.^{38 /} This unavailability was admitted by the witnesses (Tr. 9843-44) and PMMC's own evacuation plans for a Limerick general emergency

^{38/} It is the fixed nuclear facility incident evacuation policy of the Commonwealth of Pennsylvania to evacuate the plume exposure EPZ in a 360° radius around the plant, and not merely in the downwind sections. Applicant itself would recommend the evacuation of at least the area in a 2 mile radius around the plant in the event of a general emergency. (Tr. 9833)

require the referral of patients to hospitals outside the plume exposure EPZ, and the shutdown of physical plant systems. (Tr. 9834-6).

10 C.F.R. § 50.47(b)(12) establishes the following planning standard required:

Arrangements are made for medical services for contaminated injured individuals.

The "specific criteria" of NUREG-0654^{39/} addressing this planning standard is evaluation criterion L.1 :

Each organization shall arrange for local and back-up 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.

NUREG-0654, p. 69.

Both Applicant and Staff witnesses concluded that the primary medical concern for "contaminated injured" persons is with any traumatic injury; thus, a hospital close to the injury site is "optimum". (Linneman, Tr. 9906). In fact, Applicant's chief witness admitted that good medical practice would require that a traumatically injured patient be sent to the closest available hospital (Linneman, Tr. 9857), and that for planning purposes "we would be remiss in jumping over a

^{39/} NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants".

close hospital to set up a hospital farther away" (Linneman, Tr. 9906).

Notwithstanding this uncontradicted expression of medical opinion, the Applicant relies in a general emergency on a hospital 45 minutes away for treatment of serious traumatic contaminated injury, in clear violation of good medical practice.

Despite the Board's majority agreement that "it would be prudent to make more formal arrangements with a third hospital, one less vulnerable to evacuation than Pottstown Memorial, and more accessible (closer) than the University of Pennsylvania" (Partial Initial Decision, slip. op., p. 148, Board Finding E-74), it did not require this exercise of prudence. Its failure to require admittedly "prudent" measures violates Commission guidance, and rests upon assumptions fundamentally at odds with the underlying premises of the NRC's emergency planning regulations.

The majority stated its rationale as follows:

It is our view that the probability of Pottstown Memorial being unavailable is remote, that there are nineteen other hospitals with claimed capability for handling "contaminated injured" on an ad hoc basis in an emergency, and the Pottstown Memorial Staff, RMC and University of Pennsylvania specialists can provide assistance . . .

Partial Initial Decision, slip. op., p. 148, Finding E-74.

But the Board may not rely upon the "remoteness" of a general emergency causing PMMC's unavailability in judging the

adequacy of reliance upon it, for

The underlying assumption of the NRC's emergency planning regulations in 10 C.F.R. § 50.47 is that, despite application of stringent safety measures, a serious nuclear accident may occur. This presumes that offsite individuals may become contaminated with radioactive material or may be exposed to dangerous levels of radiation or perhaps both. Planning for emergencies is required as a prudent risk reduction measure for these individuals.

Southern California Edison Co., et. al. (San Onofre Nuclear Generating Station, Units 2 and 3) CLI-83-10, 17 NRC 528 (1983) at 533.

Thus, any analysis of the adequacy of applicant's medical arrangements must assume the unavailability of PMMC.^{40/}

Given such an assumption, the majority would rely upon the mere existence of numerous other area hospitals, without any showing that they are capable of handling contaminated injured victims. This reliance is also misplaced, and contradicts Commission guidance and the views of FEMA concerning the adequacy of offsite protective planning measures.^{41/}

^{40/} The possible unavailability of the primary hospital was no doubt the rationale for the evaluation criterion's requirement of "local and backup hospital services." NUREG-0654, p. 69.

^{41/} "As a matter of practice, the Commission gives great weight to FEMA's views on the need for and adequacy of specific offsite protective planning measures." Southern California Edison Co., supra, 17 NRC at 533.

Evaluation criterion L. 1 of NUREG-0654, quoted above, requires that there be "assurance that persons providing [hospital and medical] services are adequately prepared to handle contaminated individuals." [Emphasis added].

FEMA considered the question of "adequate preparation", and concluded that:

The justification for [making advance arrangements for medical services] is, in part, the difficulty of predicting additional and concurrent medical needs. Advance arrangements are justified because of the need to initiate a medical history for those exposed individuals whose future health could be affected and to reduce organizational demands on hospital emergency staff. The medical services being called for here are those predominantly of medical staff knowledge and capability to handle the additional factor of radiological contamination or exposure.

. . .

Decontamination facilities and monitoring equipment would be necessary along with trained and knowledgeable staff. Planning, training, and pre-established procedures are clearly a need.

Southern California Edison Co., supra, 17 NRC at 534.

In contravention of the clear language of NUREG-0654, the views of FEMA concerning the need for specialized equipment and procedures, (and as will be shown below, the only expert medical testimony of record) the Board majority made an assumption of adequacy without any assurance:

While the Board has no detailed knowledge of the specific abilities and training of the emergency medical service personnel at these potential alternative receiving hospitals, who might handle

"contaminated injured", it is not unreasonable to assume that they are adequately prepared. 42/ [Emphasis added].

Partial Initial Decision, slip. op., p. 147.

This impermissible assumption does not merely fail to rest upon any evidence of record -- it contradicts the expert evidence that was presented.

Dr. Linneman testified that specialized procedures, training, equipment and supplies are necessary to treat contaminated injured victims. (Tr. 9811-12; 9816-9821). Despite Joint Committee on Hospital Accreditation (JCHA) credentials possessed by "all hospitals in the area" (Tr. 9914) (thus including PMMC) which requires some radiation capability, Dr. Linneman consistently and repeatedly admitted that PMMC, without RMC's consultation, planning and the provision of additional specialized equipment, was unprepared for its response to an accident at Limerick. See Tr. 9813-14.

With respect to one of these area hospitals which the majority "assumed" was prepared, Phoenixville, the sole witness with expertise testified that he did not know whether the hospital staff was currently trained, and simply admitted that he did not know what was the extent of its preparedness for handling

42 / We note that in making this assumption of adequacy of other hospitals, the majority expressly relied upon the county Radiological Emergency Response Plans (RERPs) which show a number of hospitals "listed with radiation exposure/contamination treatment capability". E-73. LEA objects to this notice of and reliance upon extra-record material which was not marked, used, or admitted at the hearing, and which LEA had no opportunity to review, comment on, or contest in the context of the Board's reliance on it. This action plainly violates the Administrative Procedure Act, 42 U.S.C. §556 (e).

contaminated victims. Tr. 9951.

Therefore, the majority impermissibly "assumed" what an expert witness could not conclude and on that basis declined to require what it and all parties agreed was prudent, in the face of Commission guidance requiring prudent advance medical arrangements.

The course of action recommended by Judge Brenner's dissent was sensible, reasonable, and consistent with the Commission guidance in San Onofre. This Appeal Board should reverse the order of the ASLB on this contention and remand the matter to it for additional proceedings consistent with the views expressed in Judge Brenner's opinion.

THE "RECORD OF DECISION" FAILS
TO COMPLY WITH 10 C.F.R. §51.103

The recently promulgated 10 C.F.R. § 51.103^{43/}
provides:

§51.103 Record of Decision - General.

(a) The record of decision required by §51.102
shall be clearly identified and shall:

. . .

(2) Identify all alternatives considered by the Commission in reaching the decision, state that these alternatives were included in the range of alternatives discussed in the environmental impact statement, and specify the alternative or alternatives which were considered to be environmentally preferable.

(3) Discuss preferences among alternatives based on relevant factors, including economic and technical considerations, the NRC's statutory mission, and any essential considerations of national policy, which were balanced by the Commission in making the decision and state how these considerations entered into the decision.

(4) State whether the Commission has taken all practicable measures within its jurisdiction to avoid or minimize environmental harm from the alternative selected, and if not, to explain why those measures were not adopted. Summarize any license conditions and monitoring programs adopted in connection with mitigation measures.

As a review of the record of decision plainly reveals, the Board considered none of these matters, thus violating the regulation. This is a significant deficiency in the circumstances of this case particularly because LEA vigorously contended that reasonable alternatives were not considered in a NEPA context, and that "all practicable measures to avoid or

^{43/} See 49 Fed. Reg. 9352, 9396 (March 12, 1984)

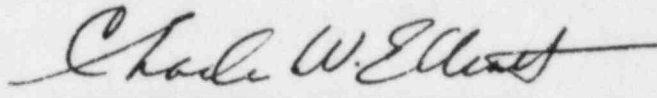
minimize environmental harm" were not being taken. See discussion, infra, pp. 2 to 10 .

The Appeal Board should remand the decision to the Board to make the findings and statements required by 10 C.F.R. §51.103.

III CONCLUSION

For all the above reasons, intervenor Limerick Ecology Action, Inc. requests this Appeal Board to reverse the decisions of the Atomic Safety and Licensing Board as set forth herein.

Respectfully submitted,



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