UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

BEFORE ADMINISTRATIVE JUDGES

Lawrence Brenner, Chairman
Dr. Richard F. Cole
Dr. Peter A. Morris

In the Matter of	:	Docket Nos. 50-352-OL
PHILADELPHIA ELECTRIC COMPANY	:	50-353-OL
(Limerick Generating Station, Units 1 and 2)	:	
	:	

CITY OF PHILADELPHIA'S ISSUES OF CONCERN
WITH THE DRAFT ENVIRONMENTAL IMPACT STATEMENT, SUPPLEMENT NO. 1

I. INTRODUCTION AND BASES

A. The National Environmental Policy Act Mandaters Full Disclosure Of The Environmental Consequences Of A Requested Federal Action And Thereafter A Decision As To Whether The Federal Action Must Yield To The National Goal Of Environmental Protection.

The Congressional purpose in enacting the National Environmental Policy Act ("NEPA" or "the Act",, Pub.L. 91-190, §2, Jan. 1, 1970, 83 Stat. 852, 42 U.S.C.A. §4321, was stated, inter alia, to be,

> [t]o declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man;....

Id.

The ensuing declaration of policy in the Act makes it clear that Congress intended that federal officials actively effectuate this goal of protecting and preserving the environment:

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all components of the natural environment, particularly the profound influences of...new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

(b) In order to carry out the policy set forth in this chapter, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the nation may--

(1) fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
(2) assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;
(3) attain the widest range of beneficial uses of the environmental without degradation, risk to health or safety, or other undesirable and unintended consequences;
(4) preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice;
(5) achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
(6) enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

43 U.S.C.A. §4331. (Emphasis added.) Accordingly, those who act on behalf of the Federal Government have been given a clear direction "to use all practicable means, consistent with other essential considerations of national policy, to improve...Federal...functions...to the end..." of protecting the environment.

The Act did not and could not say substantively how federal officials in carrying out their functions should in each instance follow their direction. The appropriate course must obviously be left to the discretion of the appropriate federal official. However, the overriding Congressional intent is clear: projects which require federal action may be required to yield to the national goal of protecting and preserving the environment. Arlington Coalition on Transportation v. Volpe, 458 F.2d 1323, 1327 (4th Cir. 1972), cert. denied, 409 U.S. 1000, (1972). (Federal highway construction halted pending issuance of EIS; otherwise "reconsideration would be a hollow gesture.")

Congress explicitly provided in the Act that all federal agencies must issue an EIS before taking actions:

> ... include in every recommendation or report on proposals for...major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on--
>
> (i) the environmental impact of the proposed action,
>
> (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
>
> (iii) alternatives to the proposed action,
>
> (iv) the relationship between local short-term uses of man's environmental and the maintenance and enhancement of long-term productivity, and
>
> (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

42 U.S.C.A. §4332(C).

Consistent with this requirement, the Council on Environmental Quality has stated in NEPA's enforcement regulations that: "NEPA procedures must insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken." 40 C.F.R. §1500.1(b) The courts have stated that the federal agency, Congress, and the public must have sufficient information through an EIS to independently evaluate the environmental consequences, Columbia Basin Land Protection Ass'n v. Schlesinger, 643 F.2d 585, 592 (C.A. Wash. 1981), and that such a statement must provide "a record upon which a decisionmaker could make an informed decision." Sierra Club v. Frochike. 345 F.Supp. 440, 444 (W.D. Wis. 1972), aff'd 486 F.2d 946 (7th Cir. 1973).

"The adequacy of the content of the EIS is determined by a rule of reason...." Columbia Basin, supra at 592. It must contain "[a] reasonably thorough discussion of the significant aspects of the probable environmental consequences." Trout Unlimited v. Morton, 509 F.2d 1276, 1283 (9th Cir. 1974). The analysis must be "sufficiently detailed to aid in the substantive decision whether to proceed with the project in light of the environmental consequences." Save Lake Washington v. Frank, 641 F.2d 1330, 1334 (9th Cir. 1981). The Supreme Court has established that the governing standard as regards NEPA is whether the federal agencies involved have fulfilled the NEPA mandate to take "a 'hard look' at the environmental consequences." Kleppe v.Sierra Club, 427 U.S. 390, 410, n.21 (1976).

The above legislative history and judicial construction flatly contradicts the notion advanced by some that NEPA is a mere disclosure requirement. To the contrary, Congress clearly envisioned that application of the Act might well result in a federal decision to substantively alter a proposed project in order to minimize environmental harm. This was made clear

most recently in Weinberger v. Catholic Action of Hawaii, 454 U.S. 139, 143 (1981), where the Court noted the "twin aims" of NEPA were "to inform" and "to inject environmental considerations into the federal agency's decisionmaking process." Similarly, in agreeing that development of a breeder reactor must be evaluated under NEPA, Circuit Judge J. Skelly Wright observed:

> These procedural requirements are not dispensable technicalities, but are crucial if the statement is to serve its dual functions of informing Congress, the President, other concerned agencies and the public of the environmental affects of agency actions [footnote], and of ensuring meaningful consideration of environmental factors at all stages of agency decisionmaking. [footnote]

Scientists' Institute for Public Information v. AEC, 481 F.2d 1079, 1091 (D.C. Cir. 1973).

Moreover, in upholding the Nuclear Regulatory Commission's jurisdiction to review the siting of a transmission line associated with a nuclear facility, the First Circuit in Public Service Company of New Hampshire v. N.R.C., 582 F.2d 77, 85-6 (1st Cir. 1978), cert. denied, 439 U.S. 1046 (1979), concluded that the mandates of NEPA were just as important as those of the Atomic Energy Act:

> ...[U]nder the dictates of NEPA, it [the NRC] was obliged to minimize adverse environmental impact flowing therefrom. [footnote] We quote Judge Wright from the Calvert Cliffs opinion, "[c]learly, it is pointless to 'consider' environmental costs without also seriously considering action to avoid them." 146 U.S.App.D.C. at 52, 449 F.2d at 1128. The Commission has statutory authority to condition licenses. 42 U.S.C. §§2131, 2133(a), 2233. Cf. 5 U.S.C. §551(9); North Anna Env. Coalition v. NRC, 174 U.S.App. D.C. 428, 431, 533 F.2d 655, 658 (1976). In this instance, the Commission used one of its statutory powers in the furtherance of NEPA, whose mandate the Commission must follow. The Commission is under a dual obligation: to pursue the objectives of the Atomic Energy Act and those of the National Environmental Policy Act.

> "The two statutes and the regulations promulgated under each must be viewed in para [sic] materia." Citizens for Safe Power v, NRC, 173 U.S.App.D.C. 317, 325, 524 F.2d 1291, 1299 (1975).

In summary, it is clear that the requirments of NEPA must be strictly observed in this proceeding. An environmental analysis must be produced here which is factually complete, thoroughly reasoned and premised on the understanding that the federal action here may have to be modified if on balance the consequences found are unacceptably harmful to the public and the environment.

B. Given The Unique Siting Here And The Absence Of A Generic Standard or Other Final Policy For Assessing The Environmental or Public Health Impact Of Severe Accidents At Nuclear Generating Facilities, The Board Must Carefully Review the Severe Accident Consequences In This Case And Decide Whether Any Alternative or Mitigative Actions Are Needed Here.

On June 13, 1980, the Nuclear Regulatory Commission issued its "Statement of Interim Policy on Nuclear Power Plant Accident Considerations Under the National Environmental Policy Act of 1969," 45 Fed. Reg. 40101, et seq., and expressed therein its intent to henceforth review more closely the possible consequences of severe accidents:

> The March 29, 1979 accident at Unit 2 of the Three Mile Island nuclear plant has emphasized the need for changes in NRC policies regarding the considerations to be given to serious accidents from an environmental as well as well as a safety point of view.

Id. In its licensing decisions prior to that date, no explicit consideration was given to the environmental impacts of severe accidents beyond a design basis. As stated by Commissioner Asselstine, "it was thought that such

accidents were so unlikely to be virtually incredible." F. 48 Fed. Reg. 16022 (April 13, 1983). We now know differently.

In its Statement of Interim Policy the Commission also expressed its "intent...that the staff take steps to identify additional cases that might warrant early consideration of either additional features or other actions which would prevent or mitigate the consequences of serious accidents." The Commission went on to state that "[i]n carrying out this directive, the staff should consider relevant site features, including population density associated with accident risk in comparison to such features at presently operating plants." Id. at 40103.

On April 13, 1983 the Commission issued a Proposed Policy Statement that purported to summarize "the changes in rules, policies, and regulatory practices that constitute the NRC approach for severe accident rulemaking." 48 Fed. Reg. 16014. In this very recent proposal, recognizing the limitations on the prior approach, the Commission stated the new policy would "replace unfocused, long term generic rulemaking." For plants under construction there would now be "regulatory decisions based on generic evaluations and decisions...." 45 Fed. Reg. 16014. For new plants, if any, there will be a standardized design requirement.

In its discussion of "Treatment of Severe Accidents in Ongoing Licensing Proceedings" the Commission noted that it had considered whether to require any more current regulations to mitigate consequences of severe accidents. Id. at 16018. The Commission stated that extensive on-going efforts "have not yet produced significant new insights into consequence mitigation features sufficient to support further regulatory changes, nor have they yet shown a clear need to add such features." Id. The Commission further proposed that in spite of their 1980 Statement of Interim Policy on NEPA, "the capability

of current designs or procedures (or alternatives thereto) to control or mitigate severe accidents should not be addressed in case-related safety hearings." Id. Finally, the Commission expressed its view that by mid-1984 it would complete its review to determine if additional rules were needed for plants under construction. Id.

Under NEPA adequate and full disclosure must be made of environmental consequences. Until the results are developed and reviewed for this unique Limerick site and its surrounding environment, the Commission cannot reasonably and rationally decide whether alternatives, mitigation actions, or protective actions are required.

Furthermore, under the Commission traditional regulatory approach persuant to the Atomic Energy Act alternative design features may be ordered if needed to ameliorate harm to the public. For example, according to previous NRC regulations, "there will be some water cooled nuclear power plants for which the General Design Criteria are not sufficient and for which additional criteria must be identified and satisfied in the interest of public safety. In particular, it is expected that additional or different criteria will be needed to take into account unusual sites and environmental conditions...." Part 50, App. A. See also, LEA's Reply To Applicant And Staff Response To Severe Accident Risk Assessment Contentions. Independent of NEPA, it is clear that the Atomic Energy Act requires a review of alternatives, if needed. Thus if the NEPA analysis points to unacceptable adverse health impacts, the Commission must consider appropriate alternatives, mitigation actions and protective actions.

C. The NEPA Review For The Limerick Generating Station Does Not Provide Full Disclosure Of Environmental Consequences Of A Severe Accident Or An Adequate Basis For A Reasoned Licensing Decision.

On May 6, 1980, the NRC staff requested that PECO make a severe accident risk assessment for Limerick which would include "the evaluation of high population densities and proposed power levels on severe accident sequences." Draft Environmental Statement related to the operation of Limerick Generating Station, Units 1 and 2, NUREG-0974, Supp. No. 1 at 1-1. (Hereinafter "DES".)

As a result of its review of PECO's SARA submission, the NRC Staff concluded, as follows:

> Based on the foregoing considerations of environmental impacts of accidents, which have not been found to be significant, the staff has concluded that there are no special or unique circumstances about the Limerick site and environs that would warrant consideration of alternatives for Limerick Units 1 and 2.

DES at 5-61. For the reasons detailed below, this conclusion cannot be accepted by the Commission at this time because it was founded upon insufficient factual and methodological bases.

An understanding of the Limerick site and its proximity to Philadelphia is essential here. Limerick is located on the Schuylkill River, a major source of drinking water for the City of Philadelphia. The plant is approximately 21 miles (SER at 2-1) from the northeastern edge of the City of Philadelphia. The 1980 population of the City proper was 1.7 million people (1980 Census) and of the metropolitan area, over 4.7 million (SMSA value, 1980 Census). The entire City and both of its drinking water sources, the Schuylkill and Delaware Rivers, are located within the ingestion pathway emergency planning zone. The predominant wind directions are toward Philadelphia: there is a more than one in four chance the wind would be blowing toward Philadelphia (ESE-16% and SE-11%, DES at 5-20).

The proximity of Limerick to the high density population Philadelphia metropolitan area and its water supply not only justifies, but mandates a precise and reasoned analysis of the potential consequences of severe accidents at the facility so that the consequences resulting from severe accidents can be accurately weighed and factored into the decisionmaking process, including a consideration of alternatives. The development of probability of consequence data separate from probability of release data is essential here. A severe accident is now assumed to be credible. Certainly the consequences of such an accident must be examined separately from the probability of its occurrence.

The methodology used in the present DES, improperly averages the probability of occurrence with the probabilities of consequences. Together with some questionable input assumptions, this methodology reduces and obscures the consequences of an accident, particularly as to the citizens of the City of Philadelphia. The DES also does not, as it should, isolate and examine the health effect of a severe accident on the high density population of the Philadelphia metropolitan area. Those results are lumped together with consequences for all population densities in a circle around the plant. These and other important deficiencies in methodological approaches and input assumptions are detailed below.

In summary, it is clear that the DES does not contain the necessary information for adequate disclosure, for reasoned decisionmaking or for developing policies to reduce the radiological effects of an accident. The current DES does not comply with NEPA or the requirements of 10 C.F.R. §§50.20(b), 51.21, 51.23(c) and 51.26. Furthermore, such an analysis is needed in this present case in order that the Commission can determine whether it is fulfilling its mandate under the Atomic Energy Act to protect the public from the real hazards associated with the use of nuclear energy. A more detailed

analysis must be undertaken. Based on that analysis, an informed decision can be made as to the need for any alternatives, mitigation strategies, and/or protective actions.

II. THE CITY OF PHILADELPHIA'S ISSUES OF PUBLIC CONCERN

CITY-13 Consequences to the citizens of Philadelphia in terms of dose-distance relationships are not presented in the DES analysis, nor, in fact are such consequences for any area. The absence of this explicit data makes it impossible for this Commission to accurately ascertain the likelihood of the public receiving doses in excess of Protective Action Guide ("PAG") levels, or in excess of some other unacceptable level of societal risk, at, for example the 21 miles which is the distance a plume would have to travel to reach the City of Philadelphia. Computer analysis by the City has developed preliminary specific dose-distance consequence data for the high density Philadelphia area.* These findings raise serious questions about the adequacy of the DES.

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* For purposes of this presentation source terms from the DES case II-T/WW were used. This sequence is 1/100,000. The ingestion pathway assumptions as to no protective action as developed in NUREG-0396, were also used for these purposes. This analysis is not in all respects one that would be presented, for example, in testimony. It is a limited analysis made under constraint of the filing deadline for the sole purpose of presenting some dose-distance data and some high density population data to the Board to demonstrate the seriousness of the City's contentions.

Under these values, should there be a severe accident at Limerick with the wind moving toward the SE Sector, the chance of citizens of Philadelphia receiving a whole-body dose of 5 rems at the City boundary 21 miles down wind from Limerick is 70%; the chance of a 30 rem dose is 40%. (At the eastern boundary of the City on the Delaware River, some 30 miles from the plant, the public has a 55% chance of receiving a 5 rem dose and 15% chance of 30 rems). In 50% of such severe accident releases, given wind direction toward Philadelphia, the total exposure within the SE Sector in the 20-30 mile range could reach 10.5 million person-rems. This could result in as many as 8,400 latent induced cancers including 4,200 latent cancer fatalities.

A further analysis is also necessary to delineate the results of a severe accident that might directly contaminate the water sources of the City, the Schuylkill and Delaware Rivers, creating health consequences of an unacceptable level.

The Commission announced in its Statement of Interim Policy that both the probability of occurrence of release and the probability of occurrence of environmental consequences are now to be considered. 45 Fed. Reg. at 40103. Logic tells us that if they are to be meaningful these probabilities cannot be presented as a combined value as has been done in the present DES. If these probabilities are to be seperately understood and evaluated, they must be presented seperately. The Commission has also stated that these "new treatments... will take into account significant site-and plant-specific features...." Id. at 40103. Again, strict adherence to this requirement is essential here in order that the significance of the high density population around the site can be fairly examined in isolation in light of the new credibility of severe accidents.

The Staff's failure to provide such an adequate analysis violates the Commission's rules. This summary analysis also deprives federal officials of the ability to make a reasoned decision, and deprives the Congress and the public of real knowledge of the environmental impact of severe accidents. Without this base data, no reasoned decision as to the need for alternatives or other mitigating action can be made, nor can there be a judgment as to whether the public safety requirements of the Atomic Energy Act are met.

CITY-14 The DES does not accurately reflect either the median or upper estimates of the radiological effects which could result from an accident at Limerick because several key input assumptions associated with human activity after a severe accident are not realistic.

(a) The base case average evacuation time of 2.5 mph is based on an 1980 study which is now inaccurate. See also Statement of Issues of the Commonwealth of Pennsylvania with Respect to Offsite Emergency Planning, January 30, 1984.

(b) Not included in the base case is the known phenomenon that as evacuees approach the City outskirts, their speeds would reduce, backups would occur and consequences due to trapped evacuees would increase.

(c) It is unrealistically assumed that people beyond ten miles would after an accident engage in "normal" activity, i.e., average shielding, and then when appropriate would rapidly relocate to safer areas. This assumption must be more carefully examined in light of the "shadow" phenomenon, the high population density and any other factors that might be more appropriate in terms of reasonable human response patterns in this situation.

(d) The CRAC model assumes an unrealistic radial evacuation path away from the plant. The actual evacuation paths will vary with road patterns.

(e) The DES does not separately portray the health consequences of an accident under a bad weather scenario. Many weather

scenarios, including theoretically bad weather conditions, are averaged together.

(f) The evacuation scenarios used in the DES for seismically-initiated accidents present an unrealistic portrayal of health effects because they unreasonably assume "normal behavior" beyond the EPZ. To the contrary, an earthquake would result in the kind of disorganized behavior, such as unnecessary evacuation, that would surely increase adverse health consequences.

CITY-15 The DES does not adequately analyze the Contamination that could occur to nearby liquid pathways, and the City's water supplies sourced therefrom, as a results of precipitation after a release. A reasoned decision as to environmental impacts cannot be made without a site specific analysis of such a scenario.

The DES addresses at great length releases to groundwater (DES at 5-34 et seq.), but gives only a cursory and conclusory discussion of contamination of open water (DES at 5-33). This issue is of crucial concern here as the two major water bodies at and near the facility are the City's only water supplies. The City also has open reservoirs within its boundaries which could be contaminated through precipitation. For an issue of such great importance, insufficient consideration has been given here. The mandate of NEPA to take a hard look at environmental consequences has been ignored.

CITY-16 DES understates the range of reasonable environmental impacts in terms of latent-cancer fatalities per person-rem because the input values used in the health effects model do not include state of knowledge study results. The Commission has explicitly required that "[h]ealth and safety risks...shall be discussed in a manner that fairly reflects the current state of knowledge...." 45 Fed. Reg. at 40103. This direction has not been followed.

It is obvious that environmental impacts cannot be meaningfully identified and examined by ignoring current data.

CITY-17 The input assumptions used in the cost benefit analysis for the direct benefits and economic costs overstate the benefits and understate the economic costs. This is true for a number of reasons. Among other possible short comings, it is erroneously assumed that Limerick power will replace power produced from PECO's current facilities. In fact, much displacement will be of PJM produced power at a lessor cost saving in many instances than PECO produced power. PECO is a large purchaser on the PJM because the running costs of PECO's units in relatively higher. A detailed analysis will also have to be made to determine whether power produced by Limerick, especially Unit No. 2, is replacing coal base load power, whose capital investment is already made. A PECO-specific, as well as PJM-specific, computerized analysis would have to be made to determine whether the production of electricity, especially for Unit No. 2, is a benefit to other PJM-members' customers or to PECO's customers.

III. PROCEDURAL MATTERS

Pursuant to the Board's Order of October 28, 1983 (slip op. at 9) and a subsequent schedule adopted by the Board at the hearing of January 11 and 12, Memorandum And Order Confirming Rules Made At Hearing, January 20, 1984 (slip op. at 1-2), the City of Philadelphia hereby submits its severe accident risk assessment filing. This presentation was made after informal discovery responses were verbally received from the NRC Staff and is a refinement of the City's issues previously distributed and discussed by the Board and parties at the Prehearing Conference of October 17 and 18, 1983.

This document is timely filed under the Board's orders and the principles of Duke Power Company (Catawba) Nuclear Station Units 1 and 2, ALAB-687, 16 NRC 460, 469 (1982).

The instant filing is responsive to the Staff's DES which was issued on December 16, 1983. It was wholly reasonable, and was so ordered by the Board, that this filing be made in the time frame.

IV. CONCLUSION

For all the foregoing reasons, the conclusion of the DES as to the acceptability of the siting of Limerick, the assessment of the consequences to man and his environment of the plant's operation, and the benefits of the plant are based upon an insufficient analysis and must be rejected.

Without the needed revisions discussed above, the Commission and the public will be unable to make reasoned decisions as to environmental impacts and any appropriate alternatives, mitigation actions, or protective actions required for the particular circumstances of Limerick's operation.

Respectfully submitted,

Martha W. Bush

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Dated: February 14, 1984

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ATOMIC SAFETY AND LICENSING BOARD

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PHILADELPHIA ELECTRIC COMPANY	:	
(Limerick Generating Station, Units 1 and 2)	:	

CERTIFICATE OF SERVICE

I hereby certify that the Severe Accident Environmental Impact Issues of the City of Philadelphia in the above-captioned proceeding have been served on the following persons named on the attached service list by Federal Express or by causing the same to be deposited in envelopes addressed to said persons, first class, postage prepaid, and deposited with the United States Postal Service at Philadelphia, Pennsylvania 19107.

Respectfully submitted,

Martha W. Bush

MARTHA W. BUSH
Deputy City Solicitor

Dated: February 14, 1984

(By telephone, on February 13, 1984, Administrative Judge Lawrence Brenner granted the City of Philadelphia a one-day extension.)

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