

JAN 30 1980

Docket Nos. 50-352
and 50-353

Ms. Marlene G. Seidts
W. 7 Stars Road
Phoenixville, Pennsylvania 19460

Dear Ms. Seidts:

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This letter is in reply to your letter to Harold Denton dated December 10, 1979, on the Limerick Generating Station.

In response to your question why the LPZ for Limerick is smaller than that for TMI when the power level is greater, it should be pointed out that the LPZ distance is selected by the applicant, rather than the NRC, but must meet the requirement that the radiological doses to an individual on the outer boundary from a postulated accident must be within the guideline values given in 10 CFR Part 100. In addition, since the resulting doses to an individual are affected by the plant engineered safety features as well as the power level, it is possible, for example, for two different plants of similar power level to have quite different LPZ values. Also, for both the TMI and Limerick plants, the LPZ distances chosen by the respective applicants were greater than the minimum distances which would have been necessary to meet the guideline dose values of 10 CFR Part 100.

At the time of the Limerick CP review, emergency planning was generally considered to be adequate if it encompassed the LPZ. As a result of the recommendations of a joint NRC/EPA Emergency Planning Task Force in December 1978, as well as the experience gained from the accident at Three Mile Island, the NRC has proposed to revise its regulations on emergency planning (A copy of the proposed rule is enclosed.) This proposed rule would extend emergency planning out to distances of about 10 miles for the plume exposure pathway and about 50 miles for the ingestion exposure pathway. If the proposed rule takes effect, it would effectively make the LPZ obsolete for purposes of emergency planning.

The NRC staff has recently requested power reactor licensees to submit information on evacuation estimates of various areas around the reactor out to a distance of about 10 miles (Enclosed is a copy of the November 29, 1979 request sent to all power reactor licensees). You will note that the information requested includes time estimates for an adverse weather estimate as well as a best estimate. The staff intends to request the same, or very similar, information from the applicant for the Limerick station, and to evaluate this information for adequacy prior to the issuance of an operating license.

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You have asked why we do not retroactively consider a coal plant at the Limerick site or consider converting the existing structures to a coal plant. An evaluation of such alternatives must be made from the present time considering construction already completed and the time the plant is needed. Little, if any, of the current construction could be used efficiently for a coal plant. It would be better from a life-time electricity generating cost standpoint to build a complete new coal facility if the existing nuclear construction permit were withdrawn. Converting to coal plant will cause the loss of about \$1.4 billion (the investment in place as of September 30, 1979). In addition, conversion of Limerick to coal would require five more years to achieve commercial operation than would completion of the nuclear units. This results in replacement power costs on the order of \$20 million per month. Since a public utility derives all of its revenues from its customers, any action which increases costs is ultimately borne by its customers.

If the staff were to do a reevaluation of the Limerick Construction Permit based upon updated population guidelines, the evaluation must also include the latest information available on other health and safety issues of nuclear, as well as the health and safety impacts of coal. Since the issuance of the Limerick Environmental Statement, the staff has determined that the public health and safety impacts of a coal plant are much greater than for a nuclear plant. This conclusion is also reached in a number of other studies, most recently in a major study done by the National Academy of Sciences, "Energy in Transition," Washington, 1979. Thus, the replacement of the Limerick station would result in a higher health and safety risk to the public.

The life-time generating cost for a coal plant in Pennsylvania is likely to be about 30% greater than for a nuclear plant even if both were to begin operation at the same time. The difference would be much greater if the construction already under way is abandoned. Therefore, no net public benefits either in dollar costs or in health and safety costs would result in changing from a nuclear to a coal plant.

Regarding your concern about seismology, the statement in NUREG-0625 (page 28) concerning the identification of surface faulting as a current basis for rejecting the suitability of a proposed nuclear plant site pertains to proposed sites where the location of a capable fault as defined in 10 CFR 100, Appendix A has been established. The extensive geologic studies conducted at the Limerick site have shown that capable faults within the definitions of Appendix A criteria are not present at the Limerick site. The staff of the NRC following their review have agreed with this conclusion and do not consider surface faulting which could be caused by geologic activity to be an unresolved safety issue at the Limerick plant site.

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Ms. Marlene G. Seidts

- 3 -

Currently the U. S. Geological Survey has been asked to evaluate the effects of nearby blasting on performance of the Limerick plant and to assess the likelihood that this blasting could reactivate old faults at the site. The energy that is released from man-made activities such as blasting can be scheduled, controlled and monitored and is small in comparison to the energy which is unleashed from uncontrolled seismic and geologic events such as earthquakes and large fault displacements. The staff will issue review findings on this concern of nearby blasting upon completion of this evaluation.

You also expressed concern about water use and consumption by the Limerick station. The Delaware River Basin Commission (DRBC), the agency responsible for water supply and water quality matters concerning the Delaware River and its tributaries, will regulate water use and consumption by the station to assure adequate water supplies of acceptable quality in the Delaware River Basin. Regulation by the DRBC was taken into account by the NRC in its environmental review of Philadelphia Electric's application for the Limerick units.

If you have any further questions or comments on the Limerick project, please feel free to contact me at any time.

Sincerely,

Original signed by
Ronald L. Ballard

Ronald L. Ballard, Chief
Environmental Projects Branch 1
Division of Site Safety
and Environmental Analysis

Enclosures:

1. Proposed rule
2. Letter to licensees dtd 11/29/79

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SURNAME	PCCota:mh	RLBallard				
DATE	1/30/80	1/29/80				

December 10, 1979

Mr. Harold Denton
Director
Office of Nuclear Reactor Regulations
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Denton,

1 I have been reviewing the Draft Environmental Statement and Final Environmental Statement for Limerick Units 1 & 2, U. S. NRC Regulatory Guide 4.7, the Report of the Siting Policy Task Force - NUREG-0625 and the Report of the President's Commission on the Accident at Three Mile Island. There are several areas that are very disturbing to me - both the 1970 and 1980 projected populations in the surrounding Limerick, the response of the Department of Environmental Resources regarding the seismology of the area surrounding Limerick - in the Final Environmental Statement, and several responses regarding the water supply and diversion of water from the Delaware River.

2 I have read of the recent testimony of Mr. Robert Ryan regarding the siting of the Indian Point plant in New York, the Zion plant in Illinois and also the concern regarding six other plants in the United States. Limerick is number three on this list and echoes concerns that I have had since the accident at Three Mile Island since I live in close proximity to this site. It is a densely populated area within a radius of 10 miles of Limerick and is mainly a suburban-rural area with roads that are not much more than macadamized potholed, cowpaths.

3 I have recently received a reply to an inquiry that was made on my behalf by Senator Richard Schweiker. It is from Mr. Lee V. Gossick of the NRC. Enclosed is a copy of this letter and a chart that I have prepared of the population density for this area from the DES on Limerick. There is one point that is disturbing to me - the population density guide from NUREG-0625, Section 2.1.2.7 "Population Density - Practice" and Mr. Gossick's comment, "These criteria have not been retroactively applied to previously approved sites such as Limerick." The LPZ for Limerick is 1.28 miles and the nearest population center, Pottstown, Pa., is 1.7 miles. In addition to Pottstown with 25,500 population (1970) North Coventry Township with a current population of 7,600 lies parallel to Pottstown, separated only by the Schuylkill River. The LPZ at TMI is stated as 2 miles in the "Report of the President's Commission to Investigate the Accident at Three Mile Island." Why is the LPZ for Limerick smaller when the megawatt capacity is greater than TMI? These figures do not include transient population, people who would be at their places of employment in the area. According to Mr. Gossick's letter there were additional safety features incorporated in the Limerick plant to "mitigate consequences of a design basis accident." The simple fact is that if any accident would occur, design basis or other, that would result in large amounts of radiation being released, the number of people that would have to be notified and evacuated are extremely large.

4 The roads in this area are not conducive to a safe and effective evacuation. Nuclear accidents can occur at any time of the year including times when these roads are nearly impassable after a severe snowstorm.

5 It is stated in NUREG-0625 that a site which exceeds these guidelines (500/square mile) "can nevertheless be selected and approved." If these guidelines are not met and an alternative site is not available why is not another source of

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fuel recommended for the site? It is stated in the DES on Limerick on page 10-8 that, "The above disadvantages notwithstanding, the staff feels that a coal-fired plant is an alternative that can be considered." Why was this not strongly recommended at that time? It seems to me that retroactive application of population guidelines should be a serious consideration at Limerick.

6
Another area of concern to me is the response of the Department of Environmental Resources regarding the seismology of the area around Limerick. In the DES it is stated that "the nearest approach of a fault trace to the site is 1300 feet west; its vertical displacement is 350 feet". In NUREG-0625 it is stated in a footnote (page 28) surface faulting is "identified as a current basis for rejection of sites." I would refer you to pages H-94 through H-98 of the Final Environmental statement for the response of the DER regarding the seismology of the area. I do understand, however, that the U. S. Geological Survey will be doing some studies on this matter.

7
The third significant point is the water supply to cool this plant. I would like to refer you specifically to the response of Dr. Ruth Patrick, Chairman of the Department of Limnology of the Academy of Natural Science in Philadelphia. This can be found on page H-74 through H-78 in the Final Statement. There are also several other comments regarding the diversion of water from the Delaware River. The Delaware River Basin Commission has stated recently that the Schuylkill River is one they are most concerned about as far as quality and quantity at low flow periods. How can Philadelphia Electric Company taking these huge quantities of water from the river and evaporating 35,000,000 gallons per day be justified when a fossil-fueled plant would use a significantly lesser amount?

8
In conclusion, there is a recommendation in the report of the accident at TMI to site nuclear power plants in less densely populated areas. Limerick is overall less than 50% complete - Unit 1 is 54% and Unit 2 is 35% completed. I understand that if the plant were modified to use coal as a source of fuel, instead of uranium, some parts of the plant could be used and some money would be lost in the construction thus far completed. This money can eventually be replaced, but the large numbers of people whose lives would be disrupted and endangered if a serious accident occurred, cannot be discounted and this fact must be given grave consideration.

9
I would also like to point out an inaccuracy in Mr. Gossick's letter, Pottstown, Pennsylvania is located northwest of the reactors, not southwest as Mr. Gossick stated.

10
I will appreciate your response to my concerns and questions. Thank you very much.

Sincerely,

Marlene G. Seidts

Marlene G. Seidts

cc: ✓Senator Richard Schweiker
✓Mr. John Ahearne
✓Mr. Robert Ryan
✓Mr. Brian K. Grimes
✓Gov. Thornburg

W. 7 Stars Rd
Phoenixville, Pa
19460

Enclosure: As stated



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

OCT 12 1979

Docket Nos. 50-352
and 50-353

The Honorable Richard S. Schweiker
United States Senate
Washington, D. C. 20510

Dear Senator Schweiker:

This letter is in reply to your letter of August 17, 1979, requesting our consideration of a letter from Marlene G. Seidts regarding the siting of the Limerick Generating Station, a nuclear power plant in Montgomery County, Pennsylvania.

Mrs. Seidts' letter of August 10, 1979, refers to a 1962 Atomic Energy Commission Technical Information Document (TID) 14844 that established population center distances on the basis of 1000 MW reactors of the type then being proposed. The criteria of TID-14844, which considered only the engineered safeguard of a low-leakage containment, were not applied to the 1970 staff review of the Limerick construction permit application. Additional engineered safety features were incorporated in the design of Limerick to mitigate the consequences of a design basis accident. In accordance with the provisions of the Commission's Reactor Site Criteria, 10 CFR Part 100, this had the effect of permitting a significantly lesser minimum distance to a population center.

Over the years, it has been the general policy of the Nuclear Regulatory Commission (NRC) to encourage power reactor siting in low population areas. To that end, the Commission's regulations on reactor siting criteria, 10 CFR Part 100, require that every power reactor have: an exclusion area immediately surrounding the reactor which is under the control of the applicant; a low population zone, outside the exclusion area, where appropriate protective measures could be taken to protect the public in the event of a serious accident; a population center distance such that the nearest densely populated center, of about 25,000 or more persons, be located at a distance no closer than one and one-third times the outer radius of the low population zone.

With regard to Limerick 1 & 2, the minimum exclusion area distance is 2500 feet, the low population zone outer radius is 1.28 miles, and the nearest population center, Pottstown, Pa. (1970 population, approximately 26,000 persons), is located about 1.7 miles southwest of the reactors.

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As also required by Part 100, the radiological consequences of a postulated serious accident involving a major fission product release within the containment must be shown to be within the guideline values (25 rem to the whole body and 300 rem to the thyroid gland) to an individual assumed to be located at the exclusion area boundary for a two hour period, and to an individual assumed to be located at the outer boundary of the low population zone for a 30 day period. Both the licensee and the Commission's staff analyzed such events and concluded that the combination of plant safety features and site characteristics were such that the consequences of such an event would be within the regulatory guidelines.

In addition, the Commission's staff reviews both current and projected population in the vicinity of the site, and continually develops criteria for use in its reviews dealing with population density. These criteria, which are not part of the Commission regulations but which do offer guidance on staff review practices, have evolved with time. At the time (1970) that Limerick was under review for a construction permit, the Commission's staff used the guideline that the cumulative population in the vicinity of a proposed site should generally not exceed the highest values for previously approved and licensed sites. Population levels for the Limerick site were generally found to meet this criterion.

The Commission staff has, over the years, given increased attention to population distribution criteria for siting newer plants. In October 1975, (more than one year after the issuance of the Construction Permit for Limerick), the NRC staff published Regulatory Guide 4.7, "General Site Suitability Criteria for Nuclear Power Stations." (Copy enclosed.) We believe it is this guide that contains the "advisory" criteria referred to by Mrs. Seidts. In the context of environmental reviews, this guide contains the following language relative to population in the vicinity of a proposed site:

"If the population density, including weighted transient population, projected at the time of initial operation of a nuclear power station exceeds 500 persons per square mile averaged over any radial distance out to 30 miles (cumulative population at a distance divided by the area at that distance), or the projected population density over the lifetime of the facility exceeds 1,000 persons per square mile averaged over any radial distance out to 30 miles, special attention should be given to the consideration of alternative sites with lower population densities. As indicated by the staff criteria, a site which exceeds these population density guidelines can nevertheless be selected and approved, if, on balance, it offers significant advantages as compared to available and alternative sites by considering all the environmental, safety and economic aspects of the selected site and the alternative sites."

These criteria have not been retroactively applied to previously approved sites such as Limerick.

With regard to schools (elementary or otherwise) in close proximity to reactor sites, there is no established criterion that prohibits the existence of schools, residences, or industrial complexes that have no adverse effects on the safe operation of the reactors or produce a hazard to the public, within or just outside of the Low Population Zone. The elementary school that Mrs. Seidts is concerned about is approximately 1.35 miles from the nearest Limerick reactor and is just outside the outer boundary of the Low Population Zone. Part 100 describes the "Low Population Zone" as the area immediately surrounding the exclusion area which contains residents, the total number and density of which are such that there is a reasonable probability that appropriate protective measures could be taken in their behalf in the event of a serious accident. These guides do not specify a permissible population density or total population within this zone, because the situation may vary from case to case. Whether a specific number of people can, for example, be evacuated from a specific area or instructed to take shelter, on a timely basis, will depend on many factors such as location, number and size of highways, scope and extent of advance planning, and actual distribution of residents within the area. It was determined that the Low Population Zone for the Limerick site met this criterion.

Before the Limerick reactors are licensed for operation, they will be subject to re-review by the NRC. This review will address our concerns for the protection of public health and safety and the environment. The operator, Philadelphia Electric Company, will be required to work with the State of Pennsylvania to develop an emergency plan for the plant vicinity. This plan will be reviewed by the Commission before the plant can begin operation.

In conjunction with Mrs. Seidts' concerns, you may be interested to know that before the TMI-2 accident, the Commission had requested a thorough review and examination of its siting policy, and in that regard had requested a staff task force to give its recommendations regarding any needed changes in the Commission's siting criteria. The "Report of the Siting Policy Task Force" NUREG-0625, was published in August, and a copy of it is enclosed.

Sincerely,



Lee V. Gossick
Executive Director for Operations

Enclosures:

1. 10 CFR Part 100
2. RG 4.7
3. NUREG 0625
4. Memo 8/17/79 to NRC
from Sen. Schweiker

Population Data - Limerick Generating Facility

Distance from Plant (miles)	Area (sq. miles)	1970 population	No/sq mile	Projected 1980 population	No/sq mile
0-1	3.1	479	155	583	188
0-2	12.5	4871	387	5,437	472
0-3	28.3	18,984	671	23,040	814
0-4	50.2	52,048	1035	62,680	1247
0-5	78.5	67,229	855	80,240	1021
0-10	314	152,644	485	232,200	739
0-20	1256	774,248	618	922,700	734
0-30	2824	3,836,244	1357	4,243,000	1518
0-40	5024	5,944,893	1182	6,844,000	1361
0-50	7850	7,036,199	895	8,541,000	1087

Average / sq. mile 1970 population 0-30 mile 695/sq mile
0-50 " 764/sq mile

Average / sq. mile 1980 (projected) population 0-30 " 841/sq mile
0-50 " 918/sq mile

* 1980 population is exceeded currently.

* Ref: Draft Environmental Statement by Directorate of Licensing
U.S. AEC Related to Limerick Generating Station Units 1 & 2