

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 7908200365 DOC. DATE: 79/08/14 NOTARIZED: NO DOCKET #  
 FACIL: 50-387 Susquehanna Steam Electric Station, Unit 1, Pennsylv 05000387  
 .50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylv 05000388  
 AUTH. NAME AUTHOR AFFILIATION  
 MOSES, L. Affiliation Unknown  
 RECIPIENT NAME RECIPIENT AFFILIATION  
 Division of Site Safety & Environmental Analysis

SUBJECT: Opposes nuclear reactors & waste of electrical power.

DISTRIBUTION CODE: C002B COPIES RECEIVED: LTR 1 ENCL 0 SIZE: 1  
 TITLE: ENVIRON. COMMENTS.

NOTES: SEND ICE 3045 FSAR & ALL AMPTS. L.A. ICU EVERYTHING (ORNL)

	RECIPIENT ID CODE/NAME	COPIES L TTR ENCL	RECIPIENT ID CODE/NAME	COPIES L TTR ENCL
ACTION:	05 PM P LEECH	1	17 BC EPB #2	1
	18 LA EPB #2	1	AD MOORE	1
INTERNAL:	01 <u>REG FILE</u>	1	02 NRC PDR	1
	07 I&E	2	09 ENVN SPEC HR	1
	10 CST BNFT ANL	1	11 TA/EDO	1
	12 AD SITE TECH	2	14 ACIDENT ANALY	1
	15 EFLT TRT SYS	1	16 RAD ASMT BR	1
	19 DIR DSE	1	AD ENVIRON TECH	1
	AD SITE ANALY	1	OELD	1
EXTERNAL:	03 LPDR	1	04 NSIC	1
	20 NATL LAB	5	ACRS	1

Ltr  
 LWR  
 LWR #3 BC  
 MINER  
 LWR #3 LA  
 AUG 21 1979

TOTAL NUMBER OF COPIES REQUIRED: LTR 33 ENCL 0  
~~24~~ ~~25~~

ACRS  
 1

Aug. 14, 1979

To Whom it may concern;

In response to the N.R.C. wanting comments relating to the operation of F.P.&L. Cos. Susquehanna nuclear power plant, to me nuclear power plants remind me of Russian Roulette, but instead of gambling on one life they gamble on millions of lives and anything in their way. Nuclear power plants up to now are not to be trusted or the people that (think) they are controlling them. It was proven at the 3 mile plant near Harrisburg that up to today they don't even know what to do with the radioactive water or waste. These nuclear plants also remind me of being handed a shrapnel grenade and being told to pull the pin and hold it not knowing if it is a dud or a live one.

Now to look at being power conservative and no need for nuclear power plants. In the past 15 to 20 years people that moved into the Back Mountain want street lights on every corner but want the taxpayer to pay for them, and not as it was years ago, if a light was seen to be needed by a barn or something the individual paid for it. The road I live on is about 3 miles long and not a public street lamp is on it. I think if you want country living then don't look for a street light on every corner or power pole. And then there is the automatic washers and dryers which some people use them every day. I don't think that is necessary especially when you think of the power that goes into the electric dryer, some exercise wouldn't hurt. Then there are some stores as I have seen having about 3 televisions turned on at one time, and enough lights turned on to use a microscope without its light on. This is only a few of the ways I see electrical power wasted.

*P.S. Please let me know if & when you receive this letter and your opinion of my comments*

Truely Yours,  
Lou Moses  
R.D.#3 Wyoming Pa. 18544

7908200 363

*COOZ  
E3  
G-10*

REGULATORY DOCKET FILE COPY

Aug 14, 1979

To show it may concern:

In response to the N.R.C. ranting comments relating to the operation of W.P.M.L. Cos. Susquehanna nuclear power plant, to me nuclear power plants remind me of Russian Roulette, but instead of gambling on one life they gamble on millions of lives and anything in their way. Nuclear power plants up to now are not to be trusted or the people that (think) they are controlling them. It was proven at the 3 mile plant near Harrisburg that up to today they don't even know what to do with the radioactive water or waste. These nuclear plants also remind me of being handed a snrapnel grenade and being told to pull the pin and hold it not knowing if it is a dud or a live one.

Now to look at being power conservative and no need for nuclear power plants. In the past 15 to 20 years people that moved into the Back Mountain want street light on every corner but want the taxpayer to pay for them. and not as it was years ago, if a light was seen to be needed by a barn or something the individual paid for it. The road I live on is about 3 miles long and not a public street lamp is on it. I think if you want country living then don't look for a street light on every corner or power pole. And then there is the automatic washers and dryers which some people use them every day. I don't think that is necessary especially when you think of the power that goes into the electric dryer, some exercise you'll be hurt. Then there are some stores as I have seen having about 3 televisions turned on at one time, and enough lights turned on to use a microscope without its light on. This is only a few of the ways I see electrical power wasted.

P.S. Please let me know how you receive this letter and your opinion of any comments

Trusky Yours,  
Lou Moses  
P.O. #1 Nyoning Ex. 16544

7908200 363

4781 Greenland Rd.  
July 28, 1979

Division of Site Safety  
& Environmental Analysis  
Nuclear Regulatory Commission  
Washington DC 20555

Attn: Director

In revisiting the inside address of this letter, I find that your divisional title is inappropriate. If you were, in fact, concerned with "site safety" & "Environmental Analysis" you could not possibly recommend ~~that~~ it be granted an operating license even at a provisional level. (statement NUREG-0564)

Why is the NRC bothering to study the Three Mile Island accident? If licenses can be granted before the full impact of this accident is learned? It is indeed irresponsible for the NRC to continue - business as usual, pretending Three Mile Island never occurred.

Would you want a nuclear reactor in your back yard? And if they are indeed safe?

7908070 635

why do we need evacuation plans? If the only "safety" you can assure us of, is obtained by evacuating pregnant women & young children, you had better look again at your meaningless title which contains words like SAFETY & ENVIRONMENTAL ANALYSIS.

Sincerely,  
Donald D. Ward

**PP&L**

TWO NORTH NINTH STREET, ALLENTOWN, PA. 18101 PHONE: (610) 821-3151

September 4, 1979

Mr. Donald E. Sells, Acting Branch Chief  
Environmental Projects Branch 2  
Division of Site Safety and Environmental Analysis  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

SUSQUEHANNA SES  
COMMENTS ON DES  
ER 100450 FILE 991-2  
PLA- 396

DOCKET NOS. 50-387  
AND 50-388

Dear Mr. Sells:

Attached are PP&L's comments on the Draft Environmental Statement issued by NRC in June, 1979.

Very truly yours,  
*N. W. Curtis*  
N. W. Curtis

JSF #587:5

Copy to:  
Mr. Paul Leech  
Mail Stop P522  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

790907045

B-42

## 1. INTRODUCTION

1. Section 1.], pg. 1-1 - The issuance of a National Pollution Discharge Elimination System (NPDES) permit is a necessary prerequisite for the issuance of an operating license by the Nuclear Regulatory Commission. The permit was issued by the Pennsylvania Department of Environmental Resources on July 31, 1979.

## 2. THE SITE

1. Section 2.3.3, pg. 2-11 - Figure 2.3, Water Use Diagram has been revised per the NPDES permit. The parking area hold-up pond has been deleted (see revised Figure 2.3, attached)
2. Section 2.3.4.1, pg. 2-11 - On "line 1" - The monitoring schedule ranged from twice weekly to quarterly. On "line 2" - The monitoring by Ichthyological Associates since 1971 has been weekly instead of daily. Line 8 should read total iron "and fecal coliforms". Figures 2.5 and 2.6 are reversed.
3. Section 2.5.1.3, pg. 2-22 - Add to line 12; "An American peregrine falcon was observed in 1973.:"
4. Section 2.4.2, pg. 2-11 - Local Meteorology

The statement is made that in 1973 data recovery for the joint frequency data at the 9.6 m level was "only about 70%." Applicant data show about 90%. This is based on the wind speed and direction from the 9.6 m level and the temperature differential between 91.7 m and 9.6 m as the primary system. If these temperature differential data were missing, the temperature differentials between 30.5 m and 9.6 were used.

The years 1974 and 1975 did have an unusually high occurrence of unstable conditions. These meteorological conditions are not fully understood. The data may not be representative of long term conditions but they are representative of conditions which occurred in 1974 and 1975, and therefore, Applicant believes it should not be deleted.

For the year 1976 the wind speed and direction data indicates a predominant wind flow from the west-southwest (13.50% of the time). A secondary flow occurred from the west 12.18% of the time. These figures differ slightly from those in the DES, although the directions are in agreement. The frequency of calms was 1.51% for 1976 at the 9.6 m level, rather than the 4.6% frequency shown in the DES.

## 3. THE PLANT

1. Section 3.2.4.1, pg. 3-8 - The parking area hold up pond has been deleted. See revised Figure 2.3 which is attached.

## 4. ENVIRONMENTAL EFFECTS OF STATION OPERATION

1. Section 4.3.1, pg. 4.2 - The effluent limitations, monitoring requirements, and other standard and special conditions of the Commonwealth of Pa. Water Quality Management Permit (No. 4076203) have been superseded by the terms and the conditions of the NPDES Permit (No. PA-0047325). See part C, paragraph B of NPDES permit.
2. Section 4.3.3.3, pg. 4-5 - Inhibitors containing chromium will be used in the closed cooling loops.
3. Section 4.4.2.1, Pg. 4-9 - Although it is true that specific pool by pool comparisons have not been made, the applicant's consultant, Ichthyological Associates (IA), has compared water quality and aquatic organisms (species numbers and relative abundances) in the intake-discharge pool to that at sampling stations in pools up and downriver. A review of physicochemical, algae, zooplankton, benthos, larval fish, and adult fish data presented in IA Annual Reports from 1972 through 1974 will show that ample comparisons have been made. Overall, the results reveal that aquatic life in the intake-discharge pool is not unique in comparison to other areas sampled with the exception that this pool is an extensive recovery zone caused by acid mine drainage pollution which enters at various locations upriver. For example, in 1974 Gale and Mohr (1976) sampled fish spawning sites about 6 km up- and downriver from the intake. They determined that "no species avoided polluted waters by spawning in the tributaries or in clean water below their mouths." They also found the most kinds of fish eggs in "shallow water with strong currents." Such areas are between river pools. Furthermore, in 1973 Tuttle (1974) sampled adult fishes with nearly equal effort at five stations. He captured about three times as many fish at Falls, a relatively clean water control station about 65 km upriver, than at the intake-discharge pool (SSES).

The term "pool" is perhaps somewhat misleading. The Susquehanna River during low water periods is not a series of pools that are isolated from one another by shallow riffle areas. Even during the lowest flows at which the Susquehanna SES will be permitted to operate, there will be ample flowage between the pools so that fish and other organisms can pass freely.

References

Gale, W. F. and H. W. Mohr, Jr. 1976. Fish spawning in a large Pennsylvania River receiving mine effluents. Proc. Pa. Acad. Sci. 50: 160-162.

Tuttle, L. R., Jr. 1974. Fishes. Pages 537-691 in, An ecological study of the North Branch Susquehanna River in the Vicinity of Berwick, Pennsylvania, Progress Report for the Period January-December 1973. Ichthyological Associates, Inc., Berwick, PA.

4. Section 4.4.2.1, pg. 4-10 - An entrainment and impingement program will be provided consistent with NPDES permit (No. PA-0047325) requirements.

The applicant has stated that impingement and entrainment will be "relatively small" because of unpublished studies done by Ichthyological Associates, Inc. at the Humlock Steam Electric Station (Humlock SES) in 1974-75 (Ichthyological Associates 1975). The Humlock SES is a small, coal-fired station operated by the Luzerne Electric Division of the UGI Corporation, Kingston, Pennsylvania. It is located about 15 km upriver from the Susquehanna SES and utilizes a once through cooling system that draws about 245 m<sup>3</sup>/min of water through two intake canals with velocities up to 0.25 m/s. Once each month, from May 1974 through April 1975, impingement samples were collected. Extrapolation of results from these limited samples showed that approximately 230 kg of fish flesh were impinged throughout the one-year period. It was therefore concluded that impingement losses of about 0.6 kg/day would have a negligible effect on the sport fishery of the Susquehanna River. Because the Susquehanna SES at maximum generation will withdraw only about 150 m<sup>3</sup>/min, applicant concludes that impingement losses would be similar to those experienced at the Humlock SES. Larval fish were also sampled at the Humlock SES once per month in May, June and July, 1974 to evaluate entrainment. Mean densities of entrained larvae were always less than one larvae/m<sup>3</sup>. This was concluded to be an acceptable loss because less than 5% of the river flow was drawn into the plant on the days sampled. It would not seem unreasonable to expect similar results at the Susquehanna SES. A copy of this report to be provided under separate cover.

References

Ichthyological Associates, Inc. 1975. Humlock Steam Electric Station Ecological Study, Progress Report for the Period May 1974 through April 1975. Ichthyological Associates, Inc., Berwick, PA 107 pp.

5. Table 4.1 - This table contains several typographical errors. A copy of the table with corrections indicated will be forwarded under separate cover.

6. Table 4.5, pg. 4-16

Staff assumptions regarding Turbine Building releases do not allow credit for the leakoff collection system.

Staff assumptions regarding the off-gas system releases are significantly higher than the ER-OL estimates. It appears this is due to a failure to adjust the charcoal absorption factors for temperature.

Applicant believes that iodine releases should be reduced due to the use of the leakoff collection system.

5. ENVIRONMENTAL MONITORING

1. Table 5.1, pg. 5.3 - This table has been updated to reflect changes in sampling locations and station nomenclature corrections. The lower limits of detection have also been revised per NUREG 0473. A copy of the table with corrections indicated will be forwarded under separate cover.

6. ENVIRONMENTAL IMPACT OF POSTULATED ACCIDENTS

No Comments

7. NEED FOR POWER

1. Section 7.1, pg. 7-1 - The present schedule for commercial operation of Unit 1 is July, 1981 and for Unit 2, October, 1982. Line 7 - 4970 MW is without UGI.
2. Section 7.3.2, pg. 7-2 - The annualized construction cost of \$105 million is from FES-CP. The cost of the plant to PP&L in the ER-OL is forecast to be \$1.9 billion. With an assumed 15% levelized annual carrying charge rate a carrying charge of \$285 million per year results.
3. Table 7.4, page 7.5 appears to contain two errors. First, firm purchases are accounted for twice. Normally, these transactions are either added to total capacities or subtracted from peak load. Since 76 MWe are included in total capacities, this amount should not be subtracted from the Winter Peak. Second, for years 1982 through 1985, only Unit 1 was subtracted from the total capacities to calculate reserves without Susquehanna. Unit 2 should also be deducted.

8. EVALUATION OF PROPOSED ACTION

1. Table 8.1 - The listing of nuclear fuel consumed in kg/day (12,000) appears to be one order of magnitude too high.

9. BENEFIT-COST ANALYSIS

1. Section 9.4, pg. 9-1 - Economic Costs

The fuel cost for the first full year of operation should be \$51 million as noted on Table CAB 1.2 of the ER-OL.

2. Table 9.1, pg. 9.2 - Benefit-Cost Summary

The energy and capacity in the Direct Benefits section are for the whole plant (2 units), however the Economic Costs are PP&L's share of the first year cost of Unit #1 only. The direct benefits and the economic costs should be stated on a consistent basis.

JSP #587:5

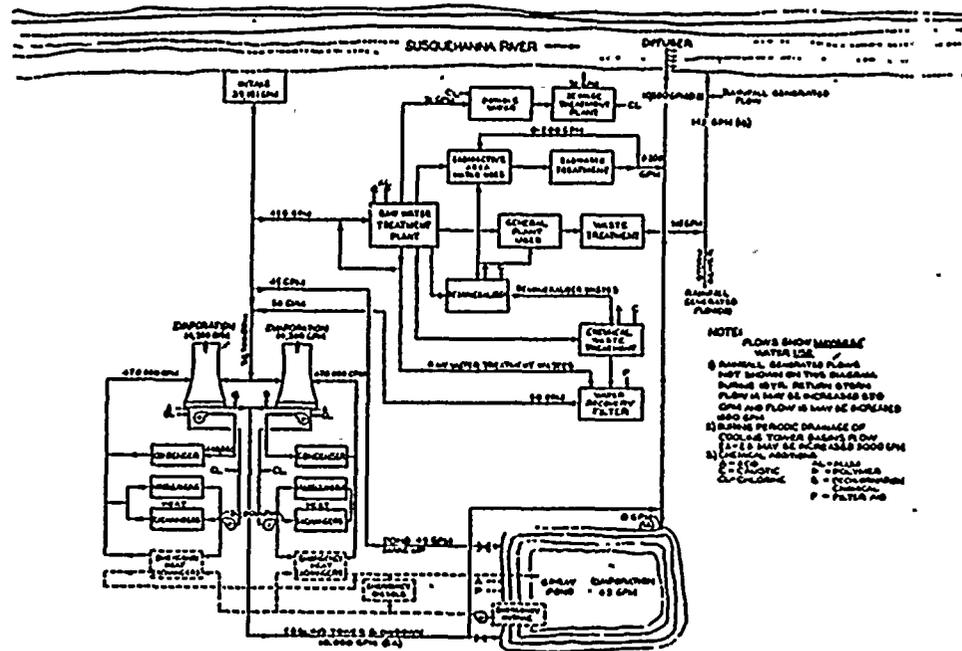


Fig. 2.3. Water Use Diagram for Susquehanna Units 1 and 2. From ER-OL, Fig. 3.3-1.

**PP&L**

344 SOUTH POPLAR STREET, HAZLETON, PA. 18201 PHONE: (717) 434-6641

September 10, 1979

Mr. Howard J. Grossman, Executive Director  
Economic Development Council of  
Northeastern Pennsylvania  
P. O. Box 777  
Avoca, Pennsylvania 18641

RECEIVED  
SEP 12 AM  
EDG:MB

Dear Howard,

Your review of the Nuclear Regulatory Commission's Draft Environmental Statement (DES) is appreciated. In response to the questions raised in your August 27, 1979 letter, we offer the following:

1. As noted in the DES, the Susquehanna River is the source of water needed for the operation of Susquehanna SES. In 1976, the SRSC formulated regulations requiring flow augmentation by users of Susquehanna River water under certain conditions. To meet this requirement, PP&L proposed to build the Pond Hill Reservoir Project. An application for plan approval of the project was submitted to SRSC in March, 1979. The SRSC has not completed their review at this time.

SRSC recognized that some projects were well underway when their regulations were issued and that augmentation facilities could not be built prior to operation of the user facility. The regulations provide flexibility in establishing an effective date for each facility consistent with reservoir approval and construction schedules. Provided that approvals are granted in a timely manner, PP&L expects to put the Pond Hill Project in service in 1983.

2. All the facilities in the flood plain related to operation of the Susquehanna SES are designed to withstand the 100-year flood and remain operational. Examples of such facilities are the transmission towers and the river water intake structures. The impact of flooding substantially above the 100-year flood level is primarily plant shutdown due to loss of operability of the river water intake. Since the plant elevation is approximately 150 feet above the river level, there would be no impact and, consequently, no hazard to the public.
3. PP&L has made arrangements with the Serwick Hospital for the treatment of injured persons who might also be radioactively contaminated. The Serwick Hospital is the nearest hospital to the Susquehanna plant and is the logical choice for this type of service.

Mr. Howard J. Grossman

- 2 -

September 10, 1979

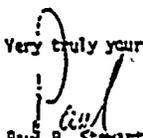
Other hospitals in the area must be considered in emergency planning, and to insure this, PP&L has been actively pursuing the formulation of adequate emergency plans with the Pennsylvania Emergency Management Agency, the Columbia and Luzerne County Civil Defense organizations and others. PP&L believes that area hospitals are addressed in the emergency plans developed by these agencies.

4. The Safety Evaluation Report (SER) is prepared and issued by NRC and is a necessary step prior to beginning public hearings on safety-related issues involving Susquehanna SES. The SER is unlikely to be issued before Spring, 1980. If you request a copy of the SER from NRC, they will forward it to you when it is issued.

If you require additional information, please feel free to contact

me.

Very truly yours,

  
Paul R. Stewart

B-46

PP&L

SUSQUEHANNA SES  
COMMENTS ON DRAFT ENVIRONMENT  
STATEMENT (DES)

May 29, 1980

Mr. E. J. Youngblood, Chief  
Licensing Branch 1  
Division of Licensing  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555

SUSQUEHANNA SES  
COMMENTS ON POND HILL DES  
ER 100450 FILE 991  
PLA-490

Docket Nos. 50-387  
and 50-388

Dear Mr. Youngblood:

Attached are PP&L's comments on the Draft Supplement to the Draft Environmental Statement related to operation of the Susquehanna Steam Electric Station (NUREG-0564). If you have any questions on these comments, please contact W. E. Barberich (Phone 215-821-5833).

Very truly yours,

*NW Curtis*

N. W. Curtis

WEB:sg  
1Q

Attachment

Summary and Conclusions

It is suggested that an additional item be added to the list of potential impacts, stating, as indicated in Section 4, that the project will have minimal impacts on the Susquehanna River.

Section 1 - Introduction

- 1) Section 1.1 Para. 3: Add "plus consumptive use" after "the Q7-10 value".
- 2) Section 1.2 Para. 3: The Applicant will also obtain necessary federal permits (Corps of Engineers, etc.)

Section 2 - The Site and Its Environs

- 1) Section 2.3.3: It should be noted that one property owner has developed a spring within the proposed project boundary, as a source of water during part of the year. This spring is in the vicinity of the inundated area and, depending on its exact location, may be inundated. This was shown as the spring on the south side of the reservoir on plate 17 of our November 17, 1979 response.

Use of this spring as a water supply source would be discontinued after project completion.

- 2) Section 2.5.2.1 Para. 1: We are unaware of any sampling by DER in Pond Hill Creek. Sampling of Pond Hill Creek referenced in Appendix H was by consultants to PP&L. The reference to the ER-OL should probably be to Appendix H of the ER-OL. This reference should also be added on the footnotes to Tables 2.2, 2.3, 2.4 and 2.5.
- 3) Page 2-22, Reference 29: This reference is redundant to reference 24, which specified the data correctly.

Section 3 - Reservoir Description

- 1) Section 3.1 Para. 2: This paragraph should be clarified to indicate the 287 m (940 ft.) normal water surface project would have an active storage volume of  $12.5 \times 10^6 \text{ m}^3$  (10,100 Ac-ft.) and

- a total storage volume of  $16.0 \times 10^6 \text{ m}^3$  (13,000 Ac-ft.). The higher, 299 m (981 ft.) MSL normal water surface project, would have an active storage volume of  $27.1 \times 10^6 \text{ m}^3$  (22,000 Ac-ft.) and a total storage volume of  $29.7 \times 10^6 \text{ m}^3$  (24,000 Ac-ft.). Based on a study of the optimum dam height, storage capacity of the site is topographically limited to a dam with a crest elevation of 310.9 m (1020 ft.) MSL, providing  $38.5 \times 10^6 \text{ m}^3$  (31,200 AC-ft.) total storage. This study indicated the most economical project would have a normal water surface elevation of 299 m (981 ft) MSL. The design for the project is being prepared based on this height of Dam.
- 2) Section 3.1 Para 3: The last sentence should be clarified to note that the drawings provided in the DES are for the larger project. Revised Plates A-1, 2, 5, 6, 17, 19, & Figure 3-2 showing the latest project concepts are attached.
  - 3) Section 3.1.1 Para 2: The last sentence should be revised to state that the impervious subsurface cutoff will be required to prevent seepage thru the saddle rather than in the saddle.
  - 4) Section 3.1.3: The project concept for the inlet-outlet structure has recently been revised from the inclined structure previously proposed to a conventional multi-port vertical tower. Three outlet ports will be provided, at Elev. 956, 925, 850 MSL. The attached Plate 6 shows the revised inlet-outlet structure concept.
  - 6) Section 3.1.4 Para 1: The pipe will convey an average flow of  $3.0 \text{ m}^3 \text{ sec.}$  (106 cfs) but will be capable of conveying higher flows. The two submerged discharge sleeve valves in the pump station will each be capable of discharging up to 150 cfs. This will be the limiting feature of the design.
  - 7) Section 3.2.2 Para 2: Average annual water use of SSES during a repeat of the meteorological conditions occurring during the drought of record has been estimated at 52.5 cfs ( $1.5 \text{ m}^3 \text{ /sec}$ ) not 49.5 cfs ( $1.4 \text{ m}^3 \text{ /sec.}$ ).
  - 8) Section 3.2.2 Para 3: We suggest that this section be retitled "Compensation Releases" and wherever the term "augmentation releases" appears in the report it be replaced by "compensation releases". The purpose of releases from Pond Hill Reservoir will be to provide compensation for water consumed by downstream users. The term augmentation releases may be misinterpreted to imply that the releases will be solely to increase flow in the river.

#### Section 4 - Environmental Effects of Construction and Operation

- 1) Section 4.3.1 Para 5: As significant volumes of fill material will be removed from the borrow areas, it will be impossible to reestablish the original contours; however, the areas will be graded so that they will drain properly, topsoil will be replaced and suitable landscaping will be provided.
- 2) Section 4.3.1 Para 6: Drainage features such as culverts will be provided in the final design for the access road where necessary to control runoff from the road as well as runoff intercepted by the road.
- 3) Section 4.3.2.3 Para. 2: As indicated above, the inlet-outlet structure concept has been revised. The revised design will provide 3 outlet ports with the top outlet port of elev. 956 ft. (291.4m) MSL or 25 ft. (7.6m) below the normal water surface. Model data indicates that this port will be in the epilimnion, thereby eliminating the problems associated with the withdrawal of hypolimnetic water. Tables 1 & 2 (attached) show the results of temperature model studies of the revised inlet-outlet structure concept. These studies are based on meteorological conditions and stream temperatures occurring in 1964 and 1975 and assume 1964 release patterns.
- 4) Section 4.3.2.3 Para. 8: The average release velocity thru the screens will only be about 0.4 fps (0.9 cm/s) (measured 1 foot from the screens) and the screens will be about 2 ft. (0.6 m) above the river bed. It is, therefore, not believed any significant scour will result from compensation releases.
- 5) Section 4.4.2.2 Para 3: Minimum flow releases to Pond Hill Creek will be 5.7 L/s (0.2 cfs) and not 5 L/s (0.18 cfs).
- 6) Section 4.4.2.3: We are currently reviewing the design concept for the spillway, and will consider the MRC's comments in this review. As design approval for the project will rest with the Pennsylvania Department of Environmental Resources, the final spillway design will meet their criteria. We will inform the MRC of any revisions to the spillway concept.

#### Section 5 - Alternatives, Need for Facility, and Benefit Analysis

- 1) Section 5.1.3: In February, 1980, the SRBC established July 1, 1984 as the deadline for compliance with the consumptive water make-up requirements (SRBC Regulations, Section 803.61).
- 2) Section 5.3.1 Para 1: The second sentence states that the applicant would have to purchase replacement power if Susquehanna were down due to low flow. This is not correct since, depending on PPA/L/RUM conditions, it may be that "sales" would be lost rather than "purchases" needed. The sentence should read "Under the river following

alternative, the applicant would incur added costs because of the loss of generation due to the shutdown of SSES".

- 3) Section 5.3.1 Para 2: The 14 day shutdown probability appears inconsistent with Table 5.3.
- 4) Section 5.3.3: The cost reported here (\$47 million) is for the smaller reservoir design. The cost is estimated to be \$65 million (1983 dollars) for the larger reservoir assessed in the DES.
- 5) Section 5.3.4 Para 3: Since PP&L is a winter peaking system in the summer-peaking RM power pool and since PP&L has favorable generation availability relative to RM, the reserve margin without Susquehanna will exceed this reserve requirement for reliability through about 1986. However, should Susquehanna be shutdown because of low river flows, PP&L and RM are both exposed to capacity reductions of other units on the Susquehanna River and other regional rivers for the same reason. In addition, because RM currently has about 45% oil-fired capacity, the added exposure to low reserves due to fuel curtailment also exists.
- 6) Table 5.4: The 1980 RM Reserve Margin without Susquehanna should be 34%.

1964 DATA  
TABLE 1

POND HILL RESERVOIR DISCHARGE TEMPERATURE (°C)  
3-PORT STRUCTURE

MONTH DAY	AUGUST		SEPTEMBER			OCTOBER			NOVEMBER		
	19	24	3	13	23	3	13	23	2	12	22
Temp. Effluent (°C)	19.6	20.6	21.5	16.7	17.8	15.8	13.4	11.8	10.8	10.2	9.0
Temp. River (°C)	26.0	24.0	22.0	20.0	18.0	17.0	15.0	13.0	11.0	9.0	8.0
Outlet Discharge (CFS)											
Outlet No. 1)	El. 956	102	102	99	0	0	0	0	0	0	0
2)	El. 925	0	0	0	99	99	102	102	0	0	0
3)	El. 850	0	0	0	0	0	0	0	102	102	102

NOTE: Outflow rates of the model deviate from the specified 102 cfs flow in order to compensate for averaging techniques.

1975 DATA  
TABLE 2

POND HILL RESERVOIR DISCHARGE TEMPERATURE (°C)  
3-PORT STRUCTURE

MONTH DAY	AUGUST		SEPTEMBER			OCTOBER			NOVEMBER		
	19	24	3	13	23	3	13	23	2	12	22
Temp. Effluent (°C)	21.6	22.5	18.7	18.6	16.9	16.4	15.1	13.4	12.9	11.4	9.6
Temp. River (°C)	21.6	22.6	19.0	19.0	17.0	16.6	16.3	16.0	15.0	14.0	14.0
Outlet Discharge (CFS)											
Outlet No. 1)	El. 956	91.8	96.8	75.3	0	0	0	0	0	0	0
2)	El. 925	0	0	0	99	86.5	99.2	102	0	0	0
3)	El. 850	15.2	10.2	23.7	0	12.5	2.8	0	102	102	102

NOTE: Outflow rates of the model deviate from the specified 102 cfs flow in order to compensate for averaging techniques.

**PP&L**

TWO NORTH NINTH STREET, ALLENTOWN, PA. 18101 PHONE: (215) 821-5151

NORMAN W. CURTIS  
Vice President-Engineering & Construction-Nuclear  
821-5281

January 7, 1980

Mr. E. J. Youngblood, Chief  
Licensing Branch No. 1  
Division of Licensing  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION  
LOW RIVER FLOW OPERATIONS  
ER 100450 FILE 841-2  
PLA-592

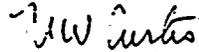
Dear Mr. Youngblood:

The following information on Susquehanna operations during low river flow conditions was requested by Mr. Richard Stark:

PP&L plans to replace water taken from the Susquehanna River during periods of low flow by utilizing water from either an existing reservoir or from the Pond Hill Reservoir to be constructed by PP&L. Should a low flow situation occur prior to the availability of a makeup water source, PP&L will comply with all SREC directives regarding water withdrawal from the Susquehanna River.

If you require additional information, please call.

Very truly yours,



N. W. Curtis  
Vice President-Engineering & Construction-Nuclear

WES:mks



GOVERNOR'S OFFICE  
OFFICE OF THE BUDGET

# Pennsylvania State Clearinghouse

P.O. BOX 1323 - HARRISBURG, PA. 17120 - (717) 787-8048  
783-3133

August 20, 1979

Director,  
Division of Site Safety and  
Environmental Analysis  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Sir:

The Pennsylvania State Clearinghouse has received from your office copies of the Draft Environmental Impact Statement related to the operation of Susquehanna Electric Station Units 1 and 2.

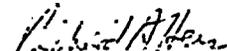
These copies have been transmitted for various State agencies for their review and comment.

Attached please find the comments of our Department of Environmental Resources relative to the above EIS.

Please consider these comments the official response of the State Clearinghouse. Additional comments received from State agencies will be transmitted to your office for response and inclusion in the Final EIS as appropriate.

Thank you for your cooperation.

Sincerely,



Richard A. Heiss,  
Supervisor

B-150

August 20, 1979

SUBJECT: 5-79-07-003  
Draft ES - Susquehanna Steam Electric  
Station Units 1 & 2 Operating Licenses

TO: Richard Heiss, Supervisor  
Pennsylvania State Clearinghouse

FROM: CLIFFORD L. JONES  
Secretary  
Department of Environmental Resources

The Department feels the Draft Environmental Statement (ES) for the Susquehanna Steam Electric Station should include a more detailed discussion of several important concerns, especially in light of the recent accident at Three Mile Island: 1) the environmental consequences of a Class 9 nuclear accident, 2) contingencies for long-term storage of spent fuel, 3) routine radiation releases, 4) certain water quality aspects, and 5) impacts on fish populations.

(1) Nuclear Accident

Section 6.2 - Table 6.2 lists the radiological consequences of all postulated accidents. Since the consequences of the Three Mile Island (TMI) accident were greater than those listed and since the sequence of failures were more severe than analyzed as a design basis accident, it could be considered as a Class 9 accident. Therefore, this type of scenario deserves more attention than a footnote in Table 6.2. A summary discussion of lessons learned from the TMI accident which are applicable to this plant should be included in the Final Environmental Statement (Operating Permit), with a more detailed discussion in the staff safety evaluation.

Table 5.1 - Section 5.3.6 states that the preoperational monitoring program delineated in Table 5.1 will be continued during the operational period. Based on experience gained as a result of the Three Mile Island accident, the number of direct radiation monitors (TMD's) would be totally inadequate for accident considerations.

The Draft ES should also evaluate the role and capability of state and local emergency management agencies in limiting the environmental health impacts of accidental radiation releases.

(2) Spent Fuel Storage

Section 4.5.5 - Radioactive Wastes - This section should be expanded to include contingencies for the long-term storage of spent fuel on site. This may be required if a decision has not been made on the final disposition of spent fuel after the plant has been operating for a few years.

(3) Radiation Releases

Section 4.5.2 - Direct Radiation - The direct radiation dose of 2.7 mrad/yr calculated by the applicant could be low by about an order of magnitude based on a more sophisticated type of analysis. If this is indeed the case, the site could exceed a liberal interpretation of 40 CFR 190. It would appear that these various models could be confirmed or refined by measurements taken near several of the operating boiling water reactors (BWR's).

Table 4.5 - It appears from this table of expected annual releases that about 18% of the Xe-133, 23% of the I-131 and about 5% of the Cs-137 is released through operation of the gland seal and mechanical vacuum pump. Since this is an untreated and unfiltered pathway, the routing of this effluent through the off gas treatment system, a seemingly simple design change, would significantly reduce the yearly routine station effluent. In addition, it has been the experience of other boiling water reactors in the Commonwealth having similar system arrangements, that the instantaneous technical specification limits have been exceeded by operating the mechanical vacuum pump following certain types of plant shutdowns.

Section 3.1 and 3.2.3 - Section 3.1 states that the applicant has modified the liquid, gaseous and solid radwaste treatment systems. Since these systems were described in some detail in the Final Environmental Statement (Construction Permit), the major design changes and their impacts should be described in more detail in this document. This is especially true of the gaseous radwaste treatment system which has changed from a cryogenic distillation system to one utilizing charcoal delay beds.

(4) Water Quality

The Draft ES is somewhat outdated with respect to the National Pollution Discharge Elimination System (NPDES) permit issued by Pennsylvania on July 31, 1979, the National Interim Drinking Water Standards for Specific Radionuclides and Recommended Water Quality Standards (Chapter 93) of the Pennsylvania Department of Environmental Resources. (Attached are the latest recommended standards which are expected to be adopted by the Environmental Quality Board on August 21, 1979).

The NPDES Permit issued by Pennsylvania limited iron to a maximum of 7 mg/l and an average of 4.6 mg/l. The Draft ES on page 4-5 at table 4.2 is not consistent with this permit requirement regarding the discharge.

The calculated radionuclide releases in liquid effluents is discussed in terms of dose commitments (pages 4-14, 4-15). The Department believes that the impact of radionuclide releases and resulting river quality concentrations should be compared to the National Drinking Water Standards.

The sulfate concentration in the river would be increased by approximately 10% to a value of 244 mg/l as a medium which approaches the water quality standard of 250 mg/l. The Department would encourage that sulfuric acid be utilized such that the Saturation Index is a positive value, insofar as possible, to minimize sulfates in the discharge.

(5) Fish Population

The Department feels that additional studies are needed on entrainment and impingement relative to water intakes and that mitigative steps identified by the studies be followed.

The report indicates that turbulence caused by the jetted water from the discharge will scour the riverbed immediately downstream and that there may be some loss of spawning habitat. The Department believes that the effect of the discharge on macroinvertebrate should be evaluated.

Attachment

RECEIVED  
OFFICE  
BUDGET

Pennsylvania  
State  
Clearinghouse

P.O. BOX 1323 - HARRISBURG, PA. 17120 - (717) 787-2045  
783-3133

Sept. 5, 1979

RE: PSCH # A 57907003.

APPLICANT: US Nuclear Regulatory  
Commission

PROJECT: DEIS - Susquehanna  
Electric Station  
Units 1 and 2

B-52

Dear Applicant:

Attached are additional comments concerning your State Clearinghouse submission referenced above.

Please include these comments with our correspondence to you dated August 29, 1979

Thank you for your cooperation.

Sincerely,

*Marian L. Elby*  
Marian L. Elby,  
Project Clearance Coordinator  
Pennsylvania State Clearinghouse

Pennsylvania Clearinghouse  
Governor's Budget Office  
P.O. Box 1323  
Harrisburg, PA 17120  
717-787-8046

PSC SAI NO. 5 79 07-003

CA-501 12-47

COMMONWEALTH OF PENNSYLVANIA

August 21, 1979

**FIRST STAGE REVIEW**  
Preapplication/Notification of Intent  
AGENCY REVIEW COMMENTS

**INSTRUCTIONS:** To be completed by review agency and returned to State Clearinghouse. Check one or more appropriate boxes. Indicate comments below. Return copy 1, 2 and 3 to the State Clearinghouse. Retain copy 4 for your official records. Attach triplicate sheets if necessary.

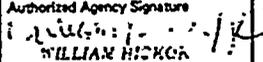
**PART I: Declaration of Interest**

- No Interest Declared - Complete Part V and return copy 1 and copy 2 to State Clearinghouse.  Interest Declared - Complete Parts II, III, IV and V and return copy 1 and copy 2 to State Clearinghouse.

**PART II: Identification of Agency Review Criteria (Agency plans, programs, policies and/or laws)**  
This report reviewed Susquehanna Steam Electric Station's application for Nuclear Regulatory Commission. Our review is in accordance with Section 106 of the Historic Preservation Officer's role in the Advisory Council on Historic Preservation's procedures for the protection of historic properties.

**PART III: COMMENTS (Include results of preliminary contact made with applicant and suggestions for improving project proposal)**  
This report adequately addresses cultural resources in the project area.

**PART IV: Recommended State Clearinghouse Action (This action will not be honored by the State Clearinghouse unless Part II and Part III above have been completed)**  
 Recommend Approval  Request the opportunity to review final application.  
 Recommend Disapproval  Request the opportunity to review environmental impact statement.

PART V: Certification	Authorized Agency Signature	Agency	Date
	 WILLIAM HICKOK	PHMC	8-22-79

**SUBJECT:** 5-79-07-003  
Addendum to Comments on Draft EIS -  
Susquehanna Steam Electric Station

**TO:** Richard A. Heiss, Supervisor  
Pennsylvania State Clearinghouse

**FROM:** CLIFFORD L. JONES  
Secretary  
Department of Environmental Resources

RECEIVED  
GOVERNOR'S  
BUDGET  
OFFICE  
AUG 29 4 1 3

The following concern should be added to the Department's comments on this Draft Environmental Statement -

**(6) Air Quality**

The Draft ES should consider the possible system-wide effects of use of the Susquehanna Steam Electric Station as a new base-load facility. The Department would anticipate that one or more coal-fired stations in the system would consequently become peaking or stand-by facilities. This may cause increased emissions unless measures are taken to avoid more frequent cold start-ups. The effects on ambient air-quality of more-frequent start-ups at such stations should be studied.

8-1-79



GOVERNOR'S OFFICE  
OFFICE OF THE BUDGET

# Pennsylvania State Clearinghouse

P.O. BOX 1323 - HARRISBURG, PA. 17120 - (717) 787-8046  
783-3133



COMMONWEALTH OF PENNSYLVANIA  
DEPARTMENT OF ENVIRONMENTAL RESOURCES  
P. O. Box 2063  
Harrisburg, PA 17120



May 20, 1980

RE: PSC-SAI# 58004002  
APPLICANT: Nuclear Regulatory Commission  
PROJECT: DRAFT EIS - Susquehanna Steam  
Electric Station  
LOCATION: Luzerne County

SUBJECT: Review and Evaluation of PSCH No.: 5-80-04-002  
Draft Supplement to the DEIS - Susquehanna  
Steam Electric Station, Units 1 & 2,  
Pennsylvania Power and Light Company Allegheny  
Electric Cooperative, Luzerne County

TO: Richard Heiss, Supervisor  
Pennsylvania State Clearinghouse

FROM: CLIFFORD L. JONES  
Secretary of Environmental Resources

Enclosed with this letter please find the comments of the  
following State Agencies relative to the project identified above:

Department of Environmental Resources

Please consider these the comments of the Pennsylvania State  
Clearinghouse at this time.

Thank you for your cooperation.

Sincerely,

Anne G. Ketchum  
Supervisor

The Department has reviewed the draft supplement to the draft environ-  
mental impact statement as prepared by the Pennsylvania Power and Light Company  
for the proposed Pond Hill Reservoir. I believe our original comments on the  
Pond Hill project made in a letter to Robert Bielo, Executive Director,  
Susquehanna River Basin Commission, dated May 21, 1979, are still pertinent.  
I will restate them below.

The concept of constructing the reservoir appears to meet the  
regulations of the Department of Environmental Resources as related to dam  
safety (Chapter 105). The applicant should be informed of the need to submit  
an application for a permit to the Bureau of Dams and Waterway Management when  
final design plans and specifications have been completed.

The Department notes that although the plant is scheduled to begin  
operation in 1981, the inservice date for augmentation operation is 1983.

The Department notes that the Pennsylvania Fish Commission has not  
been included on the list of agencies for review of this proposal. The Department  
recommends that the Pennsylvania Fish Commission be given an opportunity to  
comment on this project.

8006120351  
A

Donald E. Sells, Acting Branch Chief  
Environmental Projects Branch 2  
Division of Site Safety and Environmental  
Analysis  
Nuclear Regulatory Commission  
Washington, D.C. 20555

B-54



DOCKET NUMBER  
PROC. & UTIL. FAC. 56-387,388

August 30, 1979

424 Laurel Drive  
Hershey, PA 17033

Mr. Joseph M. Hendrie  
August 30, 1979  
Page 2

Moreover, the boiling reactor cores at the Berwick plant are untried and unproven as to their overall safety and functioning. It does not matter how remote an accident of any kind may be, a chance is still there, especially with a new design. It only takes one accident to release dangerous radiation. The safety equipment and men at the Berwick plant are untried and unproven just as they were at TMI.

Lastly, let us use honest, straightforward language and tell the truth. "The temporary loss of habitat may have significant adverse impacts on the aquatic community in the vicinity of the site," really means that it would kill all fish and wildlife currently living near the site.

In summary, the Berwick plant is another threat to the Susquehanna River Valley, an added burden and danger not needed by the people of Central Pennsylvania. The plant, as a nuclear facility, should not be licensed and operated. It is not safe to the normal environment of the people in Central Pennsylvania.

It is incumbent on the NRC in its charge "to protect the health and safety of the public" to tell us the truth about the Berwick plant and the other nuclear power plants. Please inform me in whatever scientific or non-scientific terms you wish:

1. What is your definition of significant, and how was it arrived at?
2. On what basis do you calculate the "anticipated" occurrences? The Rasmussen Report has already been proven to be incorrect.
3. How do you define "normal"? Normal operational levels of radiation emission are quite different and separate from normal background levels of radiation already existing in the environment. Also, because of bomb testing and power plants the "normal" levels of background radiation have increased over the past 30 years.
4. What individuals, by name, set these "normal" levels?
5. How much "normal" radiation will be expected to be released in Berwick?
6. What are the NRC's recorded, documented levels of "normal" radiation releases from the operating plants in the United States?

Mr. Joseph M. Hendrie  
Chairman  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Hendrie:

I note with much apprehension, that the NRC has recommended licensing of the Berwick Nuclear Plant on the Susquehanna River. You reassure us that "no significant environmental impacts are anticipated from normal operational releases of radioactive materials."

I find this statement to be both arrogant and misleading to the public. First, please define for me what "significant" means. Any low level radiation releases are significant as has been admitted and proven, even by the old AEC and the NRC's own studies. There is no safe level of radiation exposure. How can you say then that releases are of "no significance?"

Secondly, you "anticipate" no environmental impacts. May I remind you that Three Mile Island was not "anticipated" or planned for either. Where man is involved, there will never be a safe nuclear power plant. The nuclear way is an unforgiving way. Once the unanticipated happens, it stays with us for generations.

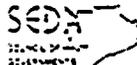
Thirdly, it is time to tell the public the truth regarding the "normal operational releases" from nuclear plants. How much "normal" radiation will be or is projected to be released by the Berwick plant, how much "normal" radiation is currently being released by the operating plants in this country, and who sets these, and how are these "normal" release ceiling levels set?

The current standards were initially set in order to justify atomic bomb testing. Those standards were kept in order to justify nuclear power plants because the nuclear industry and our government recognizes that no plant operates without "normal" releases of radiation.

Recognizing that the AEC, NRC, and other scientific studies have proven that there is no safe level of radiation exposure, negates the "normal" release standards currently used. Normal may be normal for a nuclear plant, but not for a clean environment and certainly not for the health and safety of the public.

B-1-51

Mr. Joseph M. Hendrie  
August 30, 1979  
Page 3



## SEDA-COUNCIL OF GOVERNMENTS

MEMBER AGENCIES: 401 • LEANINGBURG PENNSYLVANIA 17837 • 717 524-4419

September 26, 1979

Thank you for your anticipated prompt response to the above.

Sincerely,

Warren L. Prelesnik

cc: Richard T. Kennedy, Commissioner  
John F. Ahearn, Commissioner  
Peter A. Bradford, Commissioner  
Victor Gilinsky, Commissioner  
Richard S. Schweiker  
H. John Heinz, III  
Allen E. Ertel  
George W. Cokas  
Rudolph Dinanni  
Stephen R. Reed  
Pennsylvania Power & Light

Mr. S. Singh Bajwa  
Division of Site Safety and Environmental Analysis  
Office of Nuclear Reactor Regulation  
United States Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Bajwa:

SEDA-COG is the Area-wide A-95 Clearinghouse for a ten-county region in Central Pennsylvania. Acting in its role of A-95 Clearinghouse, the staff of SEDA-COG has reviewed the Draft Environmental Statement related to operation of the Susquehanna Steam Electric Station (SSES), Units 1 and 2 (Docket No's. 50-387 and 50-388). SEDA-COG's interest is related to the proximity of the SSES to our region, and the potential impact of the SSES in the region. It is our contention that one major omission needs to be addressed in the environmental statement. According to the new regulations of the Council of Environmental Quality:

"(c) Agencies:

- (1) Shall prepare supplement to either draft or final environmental statement if

\*\*\*

- (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action and its impact. (43 Federal Register 55978, 1502.9 (c) )"

The accident at the Three Mile Island nuclear facility certainly qualifies as a significant new circumstance. We believe it is imperative, therefore, that the environmental statement include an analysis of the natural and human environmental impacts associated with the TMI accident as a basis for evaluating potential impacts at the SSES, should an accident ever

7910160544

B-56

occur. The addition of this information will greatly strengthen the environmental statement, and will help reassure the public that Pennsylvania Power and Light Company and the Nuclear Regulatory Commission are thoroughly evaluating and mitigating the effects of any potential accident.

Sincerely,

*Dennis E. Robinson*  
Dennis E. Robinson  
Executive Director

DER/em

*Florence L. Shilly* August 18, 1979  
*Thompson, Pa. 18465*

To  
US Nuclear Regulatory Commission  
Office of Public Reactor Regulation  
Washington, D.C.

Subject: *Comments on the Draft Environmental  
Statement related to operation of  
Susquehanna Steam Electric Station  
United and I of Pennsylvania Power  
and Light Company and Allegheni-  
Electric Cooperative, Inc.  
Nureg 2.5.6.7*

*6.2 Postulated accidents involving Radio-  
active Materials.*

*This section should be updated  
in the light of T.M.1-2 accident.  
Hypothetical sequences of failures more  
severe than class 8 should be considered*

*Since human frailty and fallibility  
cannot be eliminated the worst possible  
accident is a possibility, therefore the environmental  
impact of a meltdown should be  
considered in the costs.*

*Object to the conclusion that "environ-  
mental risks due to postulated  
radioisotopic accidents are exceedingly  
small and need not be considered further"*

B-57

The NRC's own monitoring of radioactive fallout around TMI-2 out to 16 miles during the week of March 31 - April 7, 1979 and readings taken by Dr. Chauncey Kippford, upwind of the plant during that same time, indicate that the fallout did not diminish with the distance from the plant but in some instances (the N.E. sector, I believe) actually increased. Dr. Califano's calculation of projected deaths was based on a hypothetical model and not on the actual NRC data.

7.3.2 The staff concludes that economic considerations justify adding the Susquehanna facility in the scheduled time period.

The Susquehanna nuclear plant is economically uncompetitive with virtually any of the alternative sources of energy including coal when life time full cost includes plant decommissioning, ultimate dismantling and site decontamination, interim spent fuel storage and subsequent

disposal, and radioactive waste management and disposal at all stages of the nuclear fuel cycle; and when government subsidies are counted in by the taxpayer for the Price-Anderson Act and Research and Development expenses.

#### 4.5.5 Uranium Fuel Cycle Impacts

Rebn-222

Refer you to the transcript of the TMI-2 Operating License Hearing Jul 5, 1977 page 2290 and the testimony of Dr. Chauncey Kippford and Dr. Reginald Gatchy (full over)

On September 20, 1977 Dr. Walter Jorden, a member of the N.R.C. Atomic Safety and Licensing Board, submitted a memo to the Board pointing out that the number of curies (74.5) the NRC attributed to rebn-222 was far too low, by a factor of 100,000. Mit Ed's lawyer moved on December 19, 1977 that the ASLB disregard

\* Using the NRC's own data and computer models developed by the US Environmental Protection Agency, Dr. Hafford calculated that over the full de-fuelization period the radon gas (from mill tailings alone) would result in millions dying prematurely of cancer, leukemia and other radiation-related diseases.

4

Hafford's testimony and the Jordan memo on the grounds that radioactive emissions from radon-222 are insignificant compared with radon contribution of natural back-ground radiation.

4.5.5 Page 4-22

"From this above analysis the staff concludes that both the dose commitments and health effects of the uranium fuel cycle are insignificant when compared with dose commitments and potential health effects to the U.S. population resulting from all natural back-ground sources."

For rebuttal, Dr. Hafford pointed out that on the basis of NRC's own environmental health cost of \$1,000 per man-rem, Dr. Jordan's calculation of 10 million man-rem exposure per reactor year translates into an environmental cost of \$10 billion per reactor year. On a purely cost benefit basis M.T. et al. would have to sell TMI's electricity for \$2.00 per kilowatt hour to show a comparative profit.

These costs would be the same for P.P. & L. as for Met. Ed. coming as they do from the mining. I. million of maximum

I also object to the argument that costs are negligible because they are less than naturally occurring costs. The naturally occurring costs are bad enough without adding to them.

Respectfully submitted  
Flora L. Shelly  
Thompson, Pa. 18465

August 20, 1979

Wm. H. Regan, Jr., Chief  
Environmental Projects Branch 2  
Division of Site Safety and  
Environmental Analysis  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Regan:

I would like to thank you for sending me a copy of the "DRAFT ENVIRONMENTAL STATEMENT" of SSES. The following are my comments on same.

It is unbelievable that so much of the report is taken up by studies on the flora and fauna while the human aspect is almost completely ignored. It does tend to explain the treatment of those who do live within this area. According to the report we don't hardly exist. The report goes on to some length before Beach Haven is even mentioned. It gives the impression that this is a very sparsely populated area scarred from mining with a very high unemployment rate and greatly effected by the Agnes Flood. F&L saved the area by deciding to build their nuclear plant here. How much better off we would all have been if F&L would have built their plant somewhere else.

So much space is devoted to the concern for the environment, but there was that concern when the site was cleared with trees bulldozed onto piles as high as houses and set afire to burn for weeks.

Missing from the report was the fact that much blasting would be necessary to prepare the site for the buildings. This omission could explain their reluctance to admit that damages resulted from this blasting effecting local properties. In order to resolve the situation it was necessary to go one step short of a court trial. The resulting aggravation, harassment and stress on the property owners can never be measured.

Just to set the record straight, not that it will make any impact on the licensing of SSES, the following are the true facts concerning this area. This was a very beautiful, peaceful area before the start of construction of this nuclear power plant. We were experiencing a residential growth that was extending into the rural areas at a very fast pace. Some of the best agricultural areas were taken by the plant site. Naturally the agricultural activity has decreased because of the land taken out of productivity by the plant site. It is far from being the desolate area pictured in the report. Many homes are within a mile radius of the plant site and I am sure the number would be much greater in this area if it were not for the plant being here. Approximately twenty-one homes have been demolished by F&L for the site. Our area consists of

B-60

tree covered rolling hills and mountains interspersed with farm land. Except for sand and gravel excavation the only other scarring of the landscape has been done by PPA&L with the cutting of power lines in all directions through our beautiful mountains. The mining referred to in the report is in the Wilkes-Barre area and is not visible here. There is no undermining of this area. The effects of Agnes was minimal in this area. In fact, I don't think there was one family in the Beach Haven, Berwick area that was displaced by the flood. (If they were effected, they have moved back into their homes.) Economically we were much better off before the start of construction of the PPA&L plant. With the influx of workers and the high pay scale for union workers, the rents doubled and tripled. This area is now one of the most expensive places to reside. Very few residents of the Berwick area are employed at the plant site. The traffic from the commuting workers is very disruptive to local residents. As for the recreational area being developed by PPA&L, it would not have been missed in my opinion. Before the acquisition of land by PPA&L we had the best hunting and trapping area for many miles around.

In light of PPA&L we are most concerned about the possibility of an accident and the storage of spent fuel on the plant site. Our experience with PPA&L makes us most apprehensive of any reports that would come from PPA&L in case of an accident. I can't help but believe there would be no report if they thought an accident could be covered up. With the granting of a permit to store the spent fuel on the plant site is this area destined to become a dumping spot for nuclear waste? Recent reports of release of radioactivity into the environment from nuclear power plants across the United States and the "accidental" dumping of 200 gallons of radioactive water by the Oyster Creek nuclear plant, what can we expect here? How many accidents of this type can we expect during the life of this plant?

We, for one, are too close to the plant site for any errors. As you know our land borders the site to the south and southwest, with the closest cooling tower approximately 530' from our land. To date the government has done nothing to protect us or our property. Can we expect any protection from the government or are we the dispensible ones in the scheme of things?

Respectfully yours,  
*Stanley Skurtz*  
Mrs. Stanley Skurtz  
RFD #1 Box 246  
Berwick, Penna 18603

# SIERRA CLUB

## PENNSYLVANIA Chapter

REPLY TO: Thomas A. Drazdowski  
Chairman, Northeastern Group  
R.D.#2, Box 598  
Nicholson, PA. 18446  
August 15, 1979

Director,  
Division of Site Safety and Environmental Analysis  
Office of Nuclear Reactor Regulation  
Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Sirs:

The Northeastern Group of the Sierra Club, which comprises Lackawanna, Luzerne, Susquehanna, Wayne, and Wyoming counties, is very concerned about the draft Environmental Statement for the PPA&L Berwick Nuclear Plant. A preliminary review finds the report flawed and incomplete in the following:

1. Three Mile Island is only mentioned in a footnote that states it has not been considered.
2. Discussion of the health effects of radiation and radioactive waste disposal do not note the present controversy among scientists concerning risks, safe dosage, and waste disposal techniques.
3. The project site and transmission lines have not had a competent archeological survey.
4. The new transmission line will cross the gorge of the Lehigh River, a Pennsylvania Scenic River candidate.
5. Nuclear energy is compared to coal unfairly because the potentially enormous benefits of revitalizing the anthracite area are not calculated.

Please make these comments part of the official record. Thank you for your cooperation.

Sincerely,

*Thomas A. Drazdowski*  
Thomas A. Drazdowski  
Chairman  
Northeastern Group

TD.

PRINTED ON RECYCLED PAPER

B-01

Susquehanna Alliance  
PO Box 249  
Lewisburg, Pa 17837

August 17, 1979

Daniel Muller  
Director, Division of Site Safety and  
Environmental Analysis  
Office of Nuclear Reactor Regulation  
US Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr Muller,

In a letter to you, dated August 7, I requested an extension of the public comment period on behalf of the Susquehanna Alliance, for the Draft Environmental Statement related to the operation of Susquehanna Steam Electric Stations 1 and 2 (Docket Nos 50-387 and 50-388). I had indicated in that letter that the Susquehanna Alliance was undertaking a review of the statement and felt that an extension should be granted to allow time for inclusion of data now being collected on the causes and effects of the accident at Three Mile Island. Specifically, we felt that the period should be extended beyond October 25, 1979 at which time the President's Commission is expected to issue their final report. This extension would also allow time for wider public comment on the statement. We know of many citizens who only learned of the availability of the document during the past couple weeks and have not had sufficient time to obtain a copy and review it.

In a conversation on August 16 with Mr Leech, Project Manager, I learned that my letter had not yet been received and that it was unlikely that a decision would be made on the extension until after the initial deadline, August 21, had passed. I am therefore submitting to you a summary of the areas of concern that the Susquehanna Alliance has regarding the Draft Environmental Statement. We anticipate that your office will grant the requested extension and we will, during that time, continue our review and file more detailed explanations of our concerns. Here, then, are our initial comments:

- 1) Several comments in the statement with regard to the preservation of cultural resources cause concern. The staff indicates that there have been indications that cultural resources may exist on the plant site and on associated PP&L properties and that if they exist they might qualify for inclusion in the National Register. No systematic survey has been undertaken to determine if such sites exist yet the staff seems to feel strongly enough about the possible existence of such sites to include a warning in their summary that such sites could be damaged if no preventative measures are taken.

Yet the staff does not require a cultural resource survey be undertaken to determine what sites may exist and will be (or have already been) damaged by the construction of the plant and

-2-

associated projects. The staff specifically mentions the recreational area near the river. It is our understanding that the applicant has recently begun construction there without a cultural resource survey having been completed. Guidelines based on the National Environmental Policy Act and established through the Council on Environmental Quality and the Advisory Council on Historical Preservation require not only the protection of properties listed in the National Register but also those eligible. Furthermore, if no systematic survey of the area has been completed, it must be initiated and the data submitted to the Office of Archaeology and Historic Preservation for a determination of eligibility. We feel these actions should be undertaken immediately.

- 2) The discussion of the effects of the uranium fuel cycle appears to be incomplete. Table 4.14 does not list any value for the effect of Radon 222. The staff notes the absence of this figure and then proceeds to develop their own criteria for evaluating the effect of Radon. What they fail to mention is that this number was vacated from the table as the result of evidence produced during the hearings for the licensing of Three Mile Island Unit II in which Dr Chauncey Kepford, an intervenor, indicated that the value previously used was in error by an order of magnitude of well over 100,000. His calculations were based on the previous number used but extended over the full period during which Radon would be emitted to the atmosphere. This topic is still under consideration by the commission and their final report should be included in the environmental statement.

The staff draws the conclusion that, despite the extreme toxicity of high level wastes, there will be no environmental impact related to their storage in a Federal repository. This does not take into account the current controversy over whether or not a 100% safe repository can be found (or developed). There are reports from several government agencies indicating that no demonstrably safe method exists of disposing of these wastes. The damage done to the environment by leaks at the Hanford low level disposal site and the reprocessing plant at West Valley should be sufficient to raise suspicions about the feasibility of developing such a repository.

- 3) In the discussion of the potential radiological effects of accidents at the plant site there is only a footnote about the accident at Three Mile Island indicating "these calculations do not take into consideration the experience gained ...". There are those that contend that the accident was in fact a class nine accident. To our knowledge no final ruling has been issued on this. Since the "improbable" series of events did happen at Three Mile Island, the effects of other "improbable" accidents should be considered. The full effects of this accident should be studied and included in any environmental impact accident issued in relation to the operation (or construction) of a nuclear plant.

B-62

- 4) The report does not fairly represent the growing controversy over the effects of low level radiation. Time after time the assumption is made that as long as the radiation contributed to the environment is sufficiently lower than normal background levels or is below existing federal standards, that the health effects will be minimal. This does not take into account the growing feeling among the scientific community that there is not a radiation level below which there are no ill effects. Mention should be made of the reports which indicate that continued exposure to even low levels of radiation can be damaging and those that propose that in light of recent studies, federal standards be lowered.
- 5) The report does not fairly treat the possibility of the use of an anthracite fired plant as an alternative. The use of such a plant in the midst of Pennsylvania's anthracite fields could have a tremendous beneficial impact on the area. The use of modern technology to mine the anthracite in the area would offer opportunities for the revitalization of an economically depressed area, reclamation of lands previously surface mined and improvement of the water quality. The obvious benefits of lower taxes and more jobs should be weighed. In addition, the numbers used to illustrate the cost of operating a coal fired plant and the environmental impact of its operation should be based upon the operation of an anthracite fired plant.

The report does indicate that at the operating license stage, considerations of alternatives involves only the decision as to whether the plan should operate or not. However, as can be seen from the projected reserve margins shown in tables 7.4 and 7.5, the operation of the Susquehanna station as a nuclear plant will preclude the need for an anthracite facility for many years to come and will therefore preclude the possibility of the area receiving the benefits that would be associated with such a plant. A full discussion of this alternative should be included.

- 6) The benefit-cost analysis should, of course, be affected by all the above comments. In addition it is interesting to note the inclusion of a decommissioning cost of 59 million dollars. Is this an estimate based on a realistic plan for decommissioning? In light of the estimated \$400 million to "clean up" Three Mile Island Unit II, it seems unrealistic to expect to be able to decommission two units for the stated price. An outline of the expected method of decommissioning should be included.

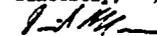
The benefit-cost analysis does not include any information with regards to the psychological effects on the residents of the area if the plant is allowed to operate. Surveys at a business located near the plant showed that 50% of the employees would quit their jobs if the plant was allowed to operate. Many area residents have already begun to make plans to leave the area. An analysis of these effects should be included.

The benefit-cost analysis also assumes that the production of 2100 MW of electrical energy is enough to offset the accumulated costs. This assumes that the additional capacity is needed. However, tables 7.4 and 7.5 seem to indicate that without the operation of the plant there would still be sufficient reserves to meet both the requirements of the interchange agreement and the recommendations of the Federal Economic Regulatory Commission. Therefore, the benefit of the additional power seems questionable.

- 7) In the July 23 Federal Register there was a notice that listed the Nuclear Regulatory Commission as one of those agencies that had not published proposed procedures to bring them in alignment with the new National Environmental Policy Act regulations adopted by the Council on Environmental Quality and effective July 30, 1979. It is our assumption, then, that this draft of the environmental statement may not follow these new regulations and we feel the commission should publish their proposed procedures and have them approved prior to releasing the final version of this report.

As we stated above, we are going to continue research on these topics. With the anticipated extension to the review period and the help of various local agencies we hope to more completely evaluate the draft environmental statement. In the wake of this country's worst nuclear accident it is, we feel, advantageous to provide as thorough an analysis as possible of the potential effects the operation of this plant could have on the environment.

Sincerely,



David Mann  
for The Susquehanna Alliance

B  
1  
0  
3

Susquehanna Alliance  
P O Box 249  
Lewisburg, Pa 17837

June 10, 1980

U S Nuclear Regulatory Commission  
Washington, D.C. 20555  
Att: Director, Division of Site Safety &  
Environmental Analysis

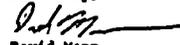
Dear Sir/Madam,

We are enclosing several documents which we hope will be of help in improving the quality of the Draft Environmental Statement and its Supplement which have been prepared in relation to the planned operation of the Susquehanna Steam Electric Station Units 1 & 2 (Docket No's 50-387 and 50-388). On May 26 we requested and were granted a 15 day extension of time in which to submit these comments by Mr Singh Bajwa, the NRC Environmental Project Manager for the project.

The documents enclosed include 1) a summary of the reasons we feel the Draft Supplement to the Draft Environmental Impact Statement with regard to the Pond Hill Reservoir is inadequate and incomplete; 2) comments on the Draft Statement itself to supplement our comments submitted on August 17 which reinforce our belief that as an Environmental Impact Statement this document is inadequate and incomplete, and 3) a copy of a recent PPSL news release which bolsters our contention that an inadequate assessment of the need for the plant has been done.

We hope that these comments will be of value to the staff in continuing the process of fully and diligently evaluating the full range of impacts of the proposed operation of the Susquehanna Steam Electric Station. It is our opinion that in order to adequately address the areas of concern raised by us and other commenters, extensive revisions to the draft must be made. In this context we request that a second draft be issued and be made available for further public comment before the final EIS is adopted. Please let us know if this request will be honored.

Sincerely,

  
David Mann  
  
Tony Sade

for the Susquehanna Alliance

COMMENTS ON DRAFT SUPPLEMENT TO DRAFT EIS FOR THE SUSQUEHANNA STEAM ELECTRIC STATION

1) One of the conclusions drawn by the Staff of the NRC's office of Nuclear Reactor Regulation and of paramount concern to residents of the vicinity is that construction of the "Pond Hill" water storage reservoir will have a significantly negative impact on water quality. In particular, the supplement states that nutrient levels, specifically phosphorous, "will considerably exceed" the criteria established by the Environmental Protection Agency for nutrient levels and thus "the potential that eutrophic conditions will occur in the Pond Hill reservoir is relatively high". Missing from the statement is a pollution abatement or mitigation plan by the applicant. Until such a plan is included, this draft supplement is incomplete.

2) The safety analysis of the project is clearly insufficient, especially given the unpredictable nature of the Susquehanna River and its tributaries, and the fact that severe flooding has occurred in the region twice within the last eight years as a result of extraordinarily heavy rains from tropical storms Agnes (1972) and Eloise (1975) in unprecedented concentrations. The maximum flood danger and impacts of overtopping the dam have not been adequately assessed, a rather glaring omission in light of the NRC's mandate to protect the health and safety of the public. Specifically, the staff noted in section 4.4.2.3 that:

If the dam were to be overtopped the staff believes that the dam could fail. The flooding that would result from failure of the dam would produce rapidly rising water elevations downstream of the dam site. The potential exists to trap and drown persons and wildlife in the downstream floodplain during such flooding (emphasis added). The potential for harm to persons using Route 239 and the railroad during such flooding also exists.

The issue of safety should be settled on the conservative side, with the maximum benefit to and protection of the public the overriding consideration. These hazards are not acceptable and a plan to mitigate these dangers should be included.

3) The report does not adequately address the consideration of alternatives to the construction of the Pond Hill Reservoir. The use of the Army Corp of Engineers Cowanesque Reservoir now under construction in Pennsylvania has not been fully explored, especially in light of the applicant's own admission that the costs of this alternative over a 30 year period would be \$12 million (as compared with the \$46-50 million cost of Pond Hill, \$63 million if property taxes are treated as an additional project cost). In fact the Staff has concluded that:

The best economic alternative would appear to be the use-an-existing-reservoir-alternative (emphasis added). Based on the information available, Cowanesque appears to be the most economic among all alternative reservoirs, given that concerned authorities grant the use of water for flow augmentation.

The Baltimore District Corps of Engineers is currently studying the feasibility of modifying the existing project to include water supply storage as a project purpose in addition to flood control and recreation. It is felt that this modification would increase the economic efficiency of the Cowanesque Lake Project. Preliminary findings indicate that this could be done without affecting the flood control capabilities, that substantial releases could be provided into the Susquehanna River during low stream flow periods and these releases would generally improve the riverine environment during naturally low streamflow periods. Rather than expend over \$63 million on what may become a putrid, stinking lake at Pond Hill, the utility and the public would be better served by the applicant's aggressive investigation of the resources required to effectuate

SUPPLEMENT COMMENTS CONTINUED

the necessary approval for their use of the Cowanesque project.

In addition to the foregoing criticism regarding alternatives to the proposed project, the applicant and staff have not fairly treated the "No Action" or "River Following" alternative, whereby SSES would merely shut down during times of low flow in the Susquehanna River. Based on an average annual occurrence of low flow of 4 days (a roughly 90% probability according to table 5.3) "the cost of Pond Hill Reservoir alternative would be very close to the replacement cost of electricity under the river following alternative". Given the excess capacity figures of both the applicant and the PJM interconnection, the staff concluded that "PP&L could provide reliable service to its customers even during a short interval of shut down of SSES". The attached press release from PP&L provides support for this statement.

4) The final area of comment in regard to this project concerns the impact of the project on the cultural resources of the area. Although the applicant is "committed to carry out an archeological survey" and certain preventative measures if resources are discovered, the applicant does not specify in sufficient detail what those measures will be and what, if any, action will be taken (including halting construction) if substantial resources are in fact discovered. This survey should be performed before an EIS is prepared and the results included. The applicant has illustrated in the construction undertaken at the recreation area near the plant that it has no regard for cultural resources. A repeat of this performance must not be allowed.

ADDITIONAL COMMENTS ON DRAFT ENVIRONMENTAL STATEMENT FOR SSES

1) The report does not adequately address the continuing and even escalating controversy regarding the health effects of continued exposure to low level radiation. In addition, no mention is given to what has been dubbed the "Heidelberg Report" which has also been translated and printed by the NRC as "Radioecological Assessment of the Why1 Nuclear Power Plant". In studying existing data on the transfer factors to plant life (and ultimately human tissue) of certain radioactive isotopes emanating from operating nuclear power reactors, the authors of the report concluded that the NRC's judgments on how much plutonium, cesium, strontium, etc was picked up from the soil were "between 10 and 1,000 times to low". Even more outrageous than the error factor calculated by the W German scientists is their contention that the old AEC in an attempt to mollify critics of earlier nuclear policy, deliberately rigged the experiments to minimize the high transfer factors inherent in the isotopes. The steps include, but were not limited to:

- a. pre-testing and selection of soils so as to choose those which absorbed the minimum amount of the isotope
- b. adding radiotoxic substances to the soil shortly before harvesting, thereby avoiding realistic conditions, where plants would grow from seeds in the contaminated soil
- c. cooking the soil in ovens to reduce the bacteriological effect upon the isotope and thus assure lower readings

The Heidelberg Report is the first time that independent scientists have examined the NRC's safety assurances about routine emissions from operating plants. Although, in all fairness, it should be noted that the report may have come into the NRC's hands after or only shortly before the release of the Draft Environmental Statement for SSES, its conclusions warrant a thorough review of the issues raised, not only by the NRC, but by the applicant as well. The EIS must assess the full range of impact on the human environment before it can be considered complete.

2) It is interesting to note that in the Draft Supplement to the Draft EIS, the applicant promises that it is "committed to carry out an archeological survey" and to take whatever preventative measures are necessary to protect cultural resources. The irony inherent in that position is that no such survey was undertaken or even alluded to for the original project itself, one that involves considerable more expense, area, and intensity of construction than the Pond Hill Reservoir. In addition, part of the plant's secondary construction involves establishment of a recreation area on the low-lying flatlands adjacent to the Susquehanna River, similar areas of which have proven to be archeological motherlodes of information on and relics of pre-existing indigenous populations. As the applicant itself notes in Appendix B to the Draft Supplement ...

Such assessments (inventories of historic or archeological resources which may be impacted by the proposed construction are to be made pursuant to 36 CFR 800, Section 106 of the National Historic Preservation Act of 1966 as amended (16 USC 470), by Executive Order 11593, May 13, 1971, "Protection and Enhancement of the Cultural Environment", and by the President's Memorandum on Environmental Quality and Water Resources Management, July 12, '78.

The applicant should be required to conduct such an inventory in compliance with the

COMMENTS ON DRAFT EIS CONTINUED

above-cited legislation, regulations, and executive pronouncements, before construction continues and an operating license is granted. In addition a plan for mitigating the damage done by construction should be implemented.

3) The Staff and applicant's cost-benefit analysis do not adequately reflect the impact of a renewed anthracite industry on the region. In an analysis prepared recently for the Susquehanna Alliance entitled "Economic, Social, and Environmental Impacts of Renewed Mining in the Anthracite Region", it was found that a revitalization of this industry, especially one employing new open-pit mining technologies, could remove all economically extractable coal and restore presently unusable areas to productive land uses, improve water quality beyond the requirements of the Pennsylvania Clean Streams Law, create 1500 new jobs in mining and related industries, and stem the outmigration of young people from the area. All of this could be accomplished in the process of producing a fuel cost-competitive (based on BTU equivalents) with those currently in use. Again we state our belief that the operation of SSZS will preclude the need for such an industry and the loss of these benefits should be included in the cost-benefit analysis.

4) As with all other Environmental Impact Statements relating to the construction of nuclear power plants, the Staff and the utility concerned have dismissed out of hand the possibility of a serious, or Class IX accident and the health effects of such a catastrophe on the local population. Although this omission will be addressed shortly in a summary of the President's Council on Environmental Quality's generic criticisms of the entire EIS process, it is especially glaring both in light of the recent events at TMI and SSZS's proximity to that crippled reactor, where in the Staff's own estimation (made in conjunction with a proceeding dealing with the Salem plant) a Class IX accident did occur. A thorough review of the possibilities of such an occurrence at SSZS should be made that is site-specific not only to the nature of the technology employed by the applicant in the construction of the plant and certain geographic and geologic features but which also thoroughly reviews, analyzes, and assesses the probability of success of a large-scale evacuation of area residents should such a measure be necessitated by extraordinary events at the site. If the NRC is to even begin to restore public confidence in its ability to safely regulate the nuclear industry, the attitude that "it can't happen here" must no longer be standard operating procedure.

5) In a recent letter to John Ahearn, Chairman of the NRC, Gus Speth of the President's Council on Environmental Quality outlined several generic deficiencies, which he characterized as "disturbing" in the NRC Impact Statement Process of nuclear power reactors.

The most damning of CEQ's criticisms was that the discussion of potential accidents and their environmental impacts in these impact statements was "perfunctory, remarkably standardized, and uninformative to the public". Speth found that despite wide variations in the size, location, and design of nuclear power plants that have been licensed by the NRC, "virtually every EIS contains essentially identical 'boilerplate' language written in an unvarying format". The failure to consider the worst case, or Class IX accident is exemplified in the Statement prepared for the licensing of TMI Units I & II, where no consideration is given to the Class IX scenario. This omission looms quite large in view of the Staff's own view that such an accident did occur on March 28, 1979.

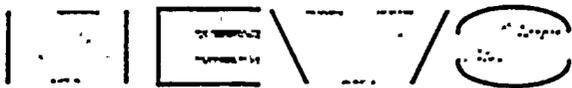
Speth also urges the Commission to "broaden its range of variables (e.g. radiation pathways) in determining accident's impacts, and expand its discussions in EIS's of the

COMMENTS ON DRAFT EIS CONTINUED

impacts of nuclear accidents on human health, the natural environment, and local economies". Once again, this criticism seems to stem from the belief that EIS's as currently prepared are simply general regurgitations of pre-existing data and positions that bear limited if any relevance to particular and unique site-specific information. The inability to translate this information in non-technical terms easily comprehensible to the general public also meets with CEQ's disapproval.

Finally, Speth suggests that the NRC vigorously pursue the goal of fulfilling to the utmost extent the requirements of the National Environmental Protection Act and the "legitimate public interest in full disclosure of nuclear plant hazards" (emphasis added) in the obvious belief that such disclosure has not been a top priority of the NRC's agenda in preparing Environmental Impact Statements for the operation of nuclear power plants.

We believe it is the responsibility of the NRC to bring the EIS's they prepare within the guidelines set by CEQ. Until this is done for the draft EIS in question here, it remains wholly inadequate and incomplete.



Contact:

Source: Al Craven (215) 821-5510

An opportunity to own part of a nuclear power plant or a percentage of the electricity it will generate during the first several years after it begins operation has been offered in letters sent by Pennsylvania Power & Light Co. to electric utilities in Virginia, West Virginia, Ohio, New York, western Pennsylvania and New England. Similar letters had already been sent to the other companies in the Pennsylvania-New Jersey-Maryland Interconnection (PJM), of which PP&L is a member.

William Hecht, manager of System Planning for PP&L, said the company will be in a position to make a portion of the capacity or electric energy from its Susquehanna Steam Electric Station available, since the company's generating capacity will be greater than its obligations to the PJM power pool when the nuclear plant near Berwick begins operating. "The rate of growth for people's use of electricity has dropped considerably since we decided to build the plant," he explained.

--more--

-2-

So, he said, PP&L is offering first to sell part ownership interests in the plant and then, if more should be sold, portions of the electricity it will produce through the 1980s will be offered. He emphasized that, despite the sales of part ownership, PP&L will retain control of the plant and be responsible for its operation.

PP&L now has about a 40 percent generating capacity reserve. Assuming that the demand for electricity grows as PP&L expects it to, the company will have about a 43 percent reserve when the first generating unit at Susquehanna begins operation. PP&L's agreement with PJM is that it will maintain a reserve of at least 6 percent.

Allegheny Electric Cooperative Inc., a Harrisburg-based power supply cooperative, already owns 10 percent of the plant. Atlantic City Electric Co., a private utility serving customers in the Atlantic City and southern New Jersey area, has agreed to buy about 6 percent of Susquehanna's electrical output until 1991. The sales to Allegheny Electric and Atlantic City Electric total about 335,000 of Susquehanna's 2.1 million kilowatts.

060240A1  
NUCLEAR

B-67



SUSQUEHANNA RIVER BASIN COMMISSION

1721 North Front Street

Harrisburg, Pennsylvania 17102

August 30, 1979

From the Office of the  
Executive Director

Mr. William H. Regan, Jr., Chief  
Environmental Projects Branch 2  
Division of Site Safety and  
Environmental Analysis  
Nuclear Regulatory Commission  
Washington, DC 20555

Re: Docket No. 50-387, 50-388

Dear Mr. Regan:

Reference is made to your letter dated June 22, 1979 transmitting the draft Environmental Statement for Susquehanna Steam Electric Station presently under construction by Pennsylvania Power and Light Company. The Commission staff has the following comments on this draft.

1. In section 3.2.1, page 3-1, it is stated that station water requirements have increased since the construction permit stage. Apparently the basis for this statement is the river intake flow shown in Table 3.1 which is shown as increasing by 0.45 cms (about 15 cfs). However, we cannot verify the 1972 figure shown in Table 3.1 nor can we determine the reason for the increased water withdrawals. Also, the text states that water withdrawal will be at a rate of 1.8 to 2.2 cms, but the table shows 2.45 cms. Please clarify the discrepancy and the reasons for increased water withdrawal. Also please clarify the text to indicate whether the increase pertains to water withdrawal or consumptive use.
2. In section 3.2.1, the discussion of the SRBC regulation is incorrect. The applicant will still be permitted to withdraw water during periods of low flow, but the amount of the consumptive use must be replaced. The proposed reservoir is not an alternative source of water but only a source of makeup water. The regulation is correctly stated in section 4.3.2.1 except that the third sentence should read, "The regulation requires replacement of consumptive use..."
3. It is stated on page iii and again in Table 3-1 that the maximum consumptive use is estimated to be 1.81 cms (63.9

Mr. W. H. Regan, Jr.

- 2 -

August 30, 1979

cfs). The basis for that number is not clear, but it appears to be based on four years of climatic data collected at the site. If so, it may not be representative of actual worst evaporative conditions experienced at the site. The Commission's concern, from the viewpoint of water management, is the probability of maximum consumptive use, expected under the worst set of climatic conditions, occurring concurrently with low flow. The draft EIS statement has not addressed this concern. Also, the procedures and assumptions used in making the calculation of maximum and average consumptive use should be clearly stated.

4. It is stated on page iii that the river flow at which consumptive use must be replaced is 23.2 cms (819.0 cfs). This figure should be equal to the 7-day, 10-year low flow plus the consumptive use. Our analysis of 7-day average low flow frequency at Wilkes-Barre, based on the period of record 1900-76, shows that the 7-day, 10-year low flow is 800 cfs. The applicant has used the value of 770 cfs which is based on an analysis by USGS for the shorter period 1900-72. We believe our analysis is more correct by virtue of including additional record.

Also, we believe that the consumptive use value used should be the maximum consumptive use, which is stated to be 64 cfs, rather than the average consumptive use used in your report. This is important in determining the storage required for consumptive loss makeup. The applicant has stated that they have computations showing that the design of the reservoir based on the 50 cfs average loss will provide adequate storage in a repeat of the 1964 drought of record. We have as yet not seen that data.

5. In section 3.2.2.3, page 3-8, the 7-day, 10-year low flow is identified as 23.2 cms (819.0 cfs). That appears to be inconsistent with the above comments, and with section 4.3.2.1, page 4-2 where the 7-day, 10-year low flow is stated as 21.8 cms (769.8 cfs).
6. The proposed intake structure may not meet the requirements of section 316(b) of PL 92-500. According to the Environmental Statement, the "embayment intake will remove more biomass than an alternative intake..." SRBC staff recommends that an intake structure be designed using best available technology before the plant is issued an operating license.

B-63

Mr. W. H. Regan, Jr.

- 3 -

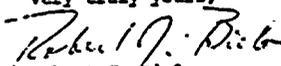
August 30, 1979

8005070541  
D

7. Staff is concerned about the effect of the consumptive withdrawal on aquatic habitat during prolonged periods of low flow. This concern should be addressed in the draft statement.
8. The post-operational monitoring programs do not include any provision for metering plant intake and discharge flows. We recommended to Pennsylvania DER that such flow meters be required in connection with approval of the encroachment permit for the intake and discharge structures, but these are not addressed in the Environmental Statement. We still believe that metering flows is an essential part of the environmental monitoring program.

Thank you for the opportunity to comment on this environmental statement.

Very truly yours,



Robert J. Bielo  
Executive Director



From the Office of the  
Executive Director

## SUSQUEHANNA RIVER BASIN COMMISSION

1721 North Front Street

Harrisburg, Pennsylvania 17102

April 30, 1980

Director  
Division of Site Safety &  
Environmental Analysis  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

Re: Docket Nos. 50-387, 388

Dear Sir/Madam:

The following comments, prepared by the staff of this Commission, are in response to the "Draft Supplement to the Draft Environmental Statement" (NUREG-0564) relating to the Susquehanna Steam Electric Station. They focus primarily on clarification of positions attributed to the Commission and apparent errors of fact or methodology. The comments are keyed to the section numbers of the "Draft Supplement".

### Section 3.1-Introduction

We believe that the second sentence of the second paragraph would more accurately reflect the circumstances if it read as follows: "In response to comments by the Pennsylvania Dept. of Environmental Resources and SRBC regarding the desirability of optimal development of the site to meet water supply needs in addition to those of the Susquehanna plant, the applicant submitted ...." Clearly, our comments have nothing to do with water conservation.

We note also that we have not seen copies of any of the correspondence referenced in the second paragraph.

### Section 3.2.2-Augmentation Releases

There is a minor misstatement of the SRBC consumptive use make-up requirement. The first sentence refers to the "average consumptive use ... by SSES" in defining the low flow criterion, whereas the regulation specifies "the 7-day 10-year low flow plus

B-69

April 30, 1980

the project's total consumptive use and dedicated augmentation." [18 CFR 803.61(c)(1)(i)] As we interpret the regulation, the appropriate value is the actual rather than the average consumptive use. This notion is stated correctly in Section 4.4.2.1. It should be corrected here.

#### Section 4.2-Impacts on Water Use

The last sentence refers to an application for a NPDES permit applicable to reservoir discharges. We are not aware of any such permits.

The section also concludes that "... the quality of the water discharged from the Pond Hill Reservoir will meet applicable DER and EPA criteria except for an occasional high level of iron." This conclusion should be reviewed in light of the comments relating to Section 4.3.2 below.

#### Section 4.3.2.2-Inundation & Operational Impacts.

On page 4-5, it is stated, "... the potential that eutrophic conditions will occur in Pond Hill Reservoir is relatively high.", suggesting that water quality problems are quite likely. Later on that page it is stated, "... once phosphorus reaches the bottom sediments, very little of it usually returns to the epilimnion." The analysis concludes that productivity levels will decline over time as "... nutrients are lost to bottom sediments." We are less optimistic that such will be the case. If the bottom water becomes anoxic, which seems to be a distinct possibility, phosphorus and ammonia will be released from the sediments. During turnovers, these nutrients would be returned to the epilimnion.

#### Section 4.3.2.3-Discharge System

In the first paragraph under Operational Impacts, there is the statement, "... as presently designed, only hypolimnetic water will be withdrawn." The report then goes on to point out that if this is the case, the result will be cold shock to many of the organisms. The only way we can see that such a conclusion is possible is to assume that for the dam presently proposed the spacing and elevation of the inlet structures remain as planned for the original dam with top elevation at 950' msl. Do you know this to be the case? As recently as April 15, 1980, PPA&L has reported to us that the project design has been revised to reflect the "full-size" reservoir (Elevation 990' msl top of dam). Further, that correspondence states that the inlet-outlet structure has been revised from inclined to a conventional multiport vertical cover structure. We assume that the applicant intends to adhere to its

April 30, 1980

design criteria of having multiple outlets "... so that releases can be made from the reservoir level where the water temperature most closely matches that of the Susquehanna River" (TAMS, "Design Report-Pond Hill Reservoir", February, 1979, p. 3-4).

We do note that the final paragraphs of the Section conclude that the release will cause cold shock, contain large amounts of organic materials, be high in iron, and may be anoxic. We have three comments with regard to these conclusions.

1. We find them difficult to reconcile with the assertion of Section 4.2 that all quality criteria, except for iron, will be met.
2. We cannot accept the conclusion that such releases "should have little impact on the Susquehanna River, since augmentation releases will be infrequent and usually small in volume" (p. 4-9). This argument seems to hang on a long time average concept. Under minimum daily flow of record conditions compensation releases would represent about 10% of the river flow. Moreover, the SRSC consumptive use requirements specify that, "The physical, chemical and biological quality of water used for compensation shall meet the quality purposes for [protection of public health; stream quality control; economic development; protection of fisheries; recreation; dilution and abatement of pollution,] among others [18 CFR 803.61(b)(1) and (e)]. It isn't clear that this requirement will be met. Finally, it should be noted that our consumptive use regulations require compensation for water removed from the river and not returned to it. Augmentation carries the idea of increasing the flow above the amount available under natural flow conditions.
3. We feel that the applicant should more fully investigate water quality problems associated with the releases and present procedures for ameliorating them.

#### Section 4.4.1-Construction

We have reservations about certain of the parameters used in the temperature modeling. The original analysis by the applicants' consultant used 1975 climatic data to simulate the 1964 drawdown. We feel it would have been more appropriate to use 1964 climatic data. Moreover, we feel that the results are even less appropriate for the larger reservoir. It is our judgment that a new analysis should be made of the larger reservoir, using more appropriate parameters.

Director

- 4 -

April 30, 1980

It is also stated that the pumping station lies outside the 100-year flood plain. We are unable to verify that statement because of the level of detail used in Figure 2.5. However, the pumping station clearly lies outside of the floodway.

#### Section 4.4.2.1-Water Supply

The second and third paragraphs contain statements that are incomplete and potentially misleading. The second paragraph ignores the fact that the larger reservoir is planned to meet not only the consumptive use requirements of SSES during periods of low flow but also similar needs by other downstream users who might contract for a portion of the Pond Hill Water Supply. To state without explanation that the applicant has assumed a release rate of 2.9 cms, as against its own needs of up to 1.8 cms, is unfair to the applicant, making it appear they are planning a release that bears no relation to their own needs.

"Other uses" are recognized in passing in the third paragraph. However, without any explanation as to the nature of these other uses, the discussion could leave the impression that they are somehow associated with the Susquehanna plant. Also, it would be more accurate to note that, based on the average consumptive use during the design drought, 1.5 cms will be needed by the SSES for replacement of consumed water and 1.4 cms will be available to other users. (A similar misstatement regarding the average consumptive use at SSES appears in the second paragraph.)

The last paragraph of the Section relates to the refilling of the reservoir. You state correctly that the planned operational procedure calls for no pumping from the river when river flow is below 85 cms (3,000 cfs). You should be aware that we have as yet unresolved concerns about possible environmental impacts of pumping at such a low level of river flow.

We assume that the refilling rate of 3.7 cms refers to the pumping capacity of the enlarged project. We have not seen these specifications.

#### Section 4.4.2.3-Hydrologic Design of Dam

We note with concern that the dam design does not meet NRC criteria and that your staff is concerned about potential overtopping. We feel that the design criteria problem is a matter for the Pa. Dept. of Environmental Resources and the applicant to resolve.

Director

- 5 -

April 30, 1980

#### Section 5.1.2-Use of Existing Reservoirs

A statement in the second paragraph misconstrues this Commission's position regarding the use of existing reservoirs. The statement "SRBC's response to this request was that the Cowanesque Reservoir is not now a timely alternative," misinterprets the statement on p. 2-3, Appendix H of the Environmental Report - Operating License Stage. The applicant correctly summarized the comments of our April 17, 1978 letter which suggested that a re-study of all potential water supply uses, the impact of these uses on other project functions, and determination of the necessity for reauthorization be made. The applicant then drew its own conclusion that, "The SRBC comments indicate that Cowanesque Reservoir is not now a timely alternative." (Emphasis added) The draft supplement sets forth as the position of this Commission a conclusion reached by the applicant. (A copy of our April 17, 1978 letter to the Corps of Engineers is attached.)

#### Section 5.1.3-Summary

In recent months, we have been working closely with both the Corps of Engineers and Pa. Power & Light Co. to explore the use of the Cowanesque project and an expanded Pond Hill project (enlarged to approximately 22,000 acre-feet of active water supply storage) as complementary water supply sources to meet several needs in the basin, including SSES. The Corps has completed Stage I of its Cowanesque Lake Reformulation Study and expects to have the entire study completed by March, 1982. PP&L estimates at this time that with continued work on the Pond Hill project, the completion date for PP&L storage only is summer, 1983 and with maximum storage, summer 1984. As you are aware, PP&L has announced the in-service date for Unit 1 is now January, 1982 and January, 1983 for Unit 2. At its March, 1980 meeting, the Susquehanna River Basin Commission adopted July 1, 1984 as the date by which Peach Bottom Nuclear Generating Station, Three Mile Island Nuclear Generating Station, and Susquehanna Steam Electric Station must be in compliance with the consumptive water make-up requirements.

#### Section 5.2-Alternative Sites

The first paragraph specifies certain parameters relating to the usable water storage requirement in the Pond Hill Reservoir that are no longer relevant. In response to questions raised by our staff, PP&L estimated that the full load consumptive use at SSES will be 52.5 cfs (1.49 cms) based on the drought of record; the Q7-10 at the Wilkes-Barre gage is 800 cfs (24.06 cms); and the consumptive use make-up storage for the full load operation at SSES consuming 52.5 cfs for 106 days is 11,030 acre-feet.

B-71

Director

- 6 -

April 30, 1980

PP&L stated further "that the Pond Hill Project, if intended solely for SSES flow compensation, will be constructed to provide an active storage of 11,600 acre-feet (11,030 acre-feet for SSES plus 570 acre-feet for losses and downstream conservation flow). (Letter from N. W. Curtis, PP&L, to R. J. Bielo, SRBC, September 4, 1979)

The first sentence of the second paragraph refers to "a 1970 SRBC study". The study in question is one made by the Susquehanna River Basin Study Coordinating Committee, an interagency task force made up of representatives from seven Federal departments and agencies and the three basin states. It was chaired by the Corps of Engineers. The report was completed and released several months before this Commission came into existence. The applicant cites the study correctly in the ER-OL, Appendix H, Section 2.4.

#### Section 5.3.1-Benefit-Cost Analysis-No Action Alternative

The benefit-cost analysis for the "river following" alternative developed in this section poses several problems. First, the analysis presented in Tables 5.1 and 5.2 is based on the assumption of a 4-day shutdown occurring every year. This is the average number of days the plant would be shutdown based upon the flow duration curve. The latter assumption implies that an average flow year will occur in each year of the life of the project. But hydrology doesn't work that way. The analysis should have been based upon the expected value of the present worth of the cost of plant shutdown for different flow sequences. The analysis displayed in Table 5.3 apparently utilizes more realistic representation of the flows.

Second, the calculations which produced the 160,000 MWH, 170,000 MWH, and 146,000 MWH values mentioned in the first paragraph of the section are not evident to us. We feel this should be clarified.

Third, the analysis assumes an equal probability of hot and cold shutdown. Our understanding of these terms is as follows:

- a. Cold shutdown means the nuclear reaction is essentially stopped, and no heat is being generated;
- b. Hot shutdown means that the reactor control rods have been inserted to stop the reaction but the reaction has not actually ceased, heat is still being generated, and both primary and secondary cooling loops are carrying away the heat. Under this circumstance, the consump-

Director

- 7 -

April 30, 1980

tive loss would still be continuing for some time (until cold shutdown is obtained) and the consumptive use would be decaying from its value prior to the beginning of the shutdown.

The point is that if our understanding is correct, hot shutdown is not a viable alternative to consumptive loss make-up, because the consumptive loss continues until cold shutdown is reached. That further implies that in order to use the river follow method, cold shutdown would have to exist on the first day that the flow goes below Q7-10+C and hot shutdown would have had to start some considerable period of time prior to that date.

Finally, under the brief periods of shutdown postulated for the analysis, it is not obvious to us why there should be any significant savings in the costs of operating SSES. While we do not know the components of the "Nuclear Generating Price", surely they are not entirely variable operating costs. It appears that this aspect of the analysis needs to be reconsidered.

#### Section 5.3.2-Use of Existing Reservoirs

The matter of cost of water from the Cowanesque Lake project is not resolved and will not be for some time to come. This Commission is in the process of developing a water supply management program, one component of which is a water pricing plan. The presumption is that SREC will serve as the wholesale vendor of any water supply storage developed in the basin. Until this entire matter is more fully developed, no one can make any meaningful estimates of the cost of obtaining water from existing reservoirs. Certainly it would not be correct at this point to apply either the prices or pricing scheme of the Delaware River Basin Commission to the Cowanesque Lake project.

#### Section 5.3.3-Pond Hill Reservoir

There is an error in the statement about the cost of electricity for pumping water into the reservoir. The annual pumping cost is the sum of a capacity charge and an energy charge. The 4,500 hp of pumping capacity is equivalent to 3,357 KW. Assuming a (mid-1978) capacity charge of \$12/KW, the annual capacity charge is  $(3,357 \text{ KW} \times \$12/\text{KW}) = \$40,300$ . The energy charge, assuming 30 days of pumping, and an energy cost of \$0.025 per KWH is  $3,357 \text{ KW} \times 30 \text{ days} \times 24 \text{ hrs./day} \times \$0.025/\text{KWH} = \$60,400$ . Thus, the total annual pumping cost is  $(\$60,400 + \$40,300) = \$100,700$ . (See TAMS Design Report, Pond Hill Reservoir, p. 7-2 and Figure 15.)

B-72

Director

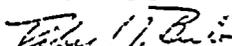
- 8 -

April 30, 1980

\* \* \* \* \*

We appreciate the opportunity to comment on the Draft Supplement. We hope that our comments are helpful.

Very truly yours,



Robert J. Bielo  
Executive Director



From the Office of the  
Executive Director

SUSQUEHANNA RIVER BASIN COMMISSION

1721 North Front Street

Harrisburg, Pennsylvania 17102

April 17, 1978

Colonel G. K. Withers  
U.S. Dept. of the Army  
Corps of Engineers  
Baltimore District  
P.O. Box 1715  
Baltimore, Maryland 21203

Dear Colonel Withers:

Thank you for providing us with a copy of a request from PP&L asking your office to determine whether the use of the Cowanesque Reservoir's potential seasonal storage capability to meet Susquehanna Steam Electric Station's consumed water make-up needs would be compatible with Cowanesque's other functions and whether such use would be practicable and economically justified. We note from the PP&L request that if it is determined such storage and water use is permissible the company intends to seek a contract with the Corps for the use of Cowanesque water and to submit such contract to SRBC for approval.

I have polled the Commission alternates on the study proposal and would advise that the Commission recognizes the need for the company (PP&L) to explore various alternative measures to obtain make-up water to compensate for consumptive losses of water at its Susquehanna Steam Electric Station during certain periods of low stream flow. Further, the Commission recognizes a need to determine the potential for seasonal water supply storage in the Cowanesque Reservoir for uses other than as outlined by the company.

Essentially the Commission believes that any review of the storage capability of the Cowanesque Reservoir should include: a range of water supply and other water use storage alternatives at the site, a determination of the effects such alternatives would have on flood storage and other project uses, and a determination whether such alternatives would require reauthorization or could be accomplished under current project authorization and Corps' authority.

B-73

Col. G. K. Withers

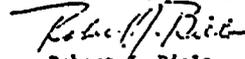
- 2 -

April 17, 1978

The Commission also wishes to note that if as a result of the study a positive determination is made of the potential capability of Cowanesque Reservoir to meet the water storage needs outlined by PP&L in its request that such finding does not in any way prejudice future Commission action regarding allocation of water from this project.

We will look forward to your findings and will be pleased to cooperate in any way possible.

Very truly yours,

  
Robert J. Bielo  
Executive Director

730 East Second Street  
Bloomsburg, PA 17815  
20 August 1979

Director, Division of Site Safety and  
Environmental Analysis  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Washington, DC 20535

The following comments concern the Draft Environmental Statement for PP&L's Susquehanna Steam Electric Station, Units 1 and 2.

I urge the denial of an operating license for the PP&L nuclear power plant for the following reasons:

1. Need

- a. the projection of the PJM summer peak (Table 7.3) shows a 6% increase; the national average is, in actuality, slightly over 2%, a more reasonable projection and one that decreases need, pushing back the drop in reserve over summer peak.
- b. while needs of the PJM power grid are a main reason given for the need to build the PP&L nuclear power plant (SS 1 & 2), those needs can be bypassed and PP&L can sell direct to member companies (e.g., sales to GPU to replace TMI electricity). PP&L's growth alone, with a generating capacity in excess of 41% over peak demand (Table 7.4), does not show conclusive need for more generating capacity by 1981, especially if the strong conservation measures of the service area continue. In fact, if the need were real, PP&L would be obliged to conduct a crash program to build a coal/solid waste/solar (or what-have-you) plant, since the nuclear plant may very well not be in operation by then.
- c. the statement that "additional reserve capacity above 20% may be desirable for a system with units which are large in relation to system size (as will be the case with 33 the Susquehanna facility in service)," (p. 7-5) rather than showing the need for the plant, shows that the plant, in fact, creates need.

2. Evaluation of the Proposed Action

In reaching the conclusion that the nuclear power cycle is less harmful to man than the coal cycle, insufficient attention was paid to the mounting evidence of the effects of low-level radiation; the unknown effects of radioactive waste disposal; and the reliability of evidence supplied almost entirely by the nuclear power industry. While measurable effects may, at present, point to the coal cycle as more harmful, the potential for harm renders the nuclear cycle the more destructive.

B-74

## 3. Benefit-Cost Analysis

- a. The benefit of 11.0 - 12.9 billion KWh of electric power to the PJM interchange is based on a not necessarily valid assumption of a plant capacity factor of 60-70%, when, in actuality, nuclear power plant performance averages less than 60%.
- b. The addition of 1890 MW of generating capacity to the PJM interchange and 210 MW to the cooperative is listed as a benefit when, in reality, it might be construed as a cost since it may encourage additional electrical power use.
- c. The "savings" of 75 million (1980 \$) in production costs per unit per year can be challenged if total costs, including government subsidies of the nuclear power industry, are included. In more concrete terms, the "savings" would accrue only if radioactive waste disposal is not pro-rated into the costs, and if the plant operates at 60-70% efficiency, without accident, for its projected lifetime: there are no models that would lead to the belief that this will happen.
- d. The conclusion that there are no significant socioeconomic costs to be expected from station operation does not give sufficient weight to the very real stress experienced since TMI by those living in a 20 mile radius of the plant--the constant feeling of living on the edge of a radioactive volcano will cost.
- e. The economic costs are presented in absolute terms rather than as compared to not operating the plant. Calculations from sources other than the utility have not been taken fully into account: Kamanoff, e.g., projects electricity generated from coal-fired plants as cheaper now than from nuclear--and the difference will increase.

In summary, I urge the Nuclear Regulatory Commission to deny an operating license to PPM for Susquehanna Steam (Nuclear) Electric Station, Units 1 and 2, because operating the nuclear plant will adversely affect me, as a PPM consumer, economically, environmentally and emotionally, and because, the need for additional generating capacity having diminished, there is enough "lead time" to develop alternate energy sources (including the use of increased conservation and efficiency) to supply the electricity needed--in an economically, environmentally and emotionally acceptable manner.

Sincerely,

*Florence K. Thompson*

Florence Thompson (Mrs. L.F.)



U. S. Nuclear Regulatory Comm.  
Office of Nuclear Reactor Regulation  
Washington, D. C. 20535

DOCKET NUMBER

REG. & UTIL. FAC. 58-327388

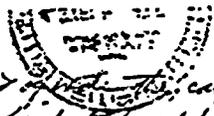
Dear Sir:

I have just received the Final Draft Environmental Statement for the Susquehanna Steam Electric Station at Berwind. It appears that much research work has gone into the preparation of this statement. As an interested and concerned citizen living less than 50 miles from the plant, I have a few comments I would like to make.

There was quite a bit of data collected on fish and wildlife but there was none collected on humans -- no health picture of the human population within 10 miles of the plant -- before the start-up of operation. I feel this should have been done -- to have some comparison with data that might be taken a few years later, with respect to effects of radiation, etc., with normal operation of the plant and also in case of an accident such as at T.M.I.

When informed, during a visit to the Berwind plant, that a reservoir is planned to be constructed across the river to make up for additional cooling water that will be needed, since the SES is restricted by the Susquehanna River Basin Compact, acknowledged by card...

Louise P. Watson  
PO Box 205  
Union Dale, Pa.  
17478



in the amount of ~~the~~ can use from  
the river. We object to the additional  
destruction of habitat which would result.

On page 687, 6.2.2. in the Environmental  
Statement of June 1973, the staff comments  
"The applicant ~~has~~ <sup>has</sup> not appear to have made  
adequate provision for availability of data as yet,  
with nearly 100 biological monitoring programs  
at Peach Bottom, T.M., Cayuga Creek, Berlin, Pine  
Branch, Forked Run, Newkirk, Scales, Dulon, or  
Limerick. In the revised Draft Statement  
of June 1979, this omission has not been  
corrected.

In the section 4.5.5 on Uranium Fuel Cycle  
Disposal, we object to the conclusion that  
both the dose commitment and health effects  
of the uranium cycle are insignificant when  
compared with dose commitment and potential  
health effects to the U.S. population resulting  
from all the natural background sources.  
The effects are additive, and even the natural  
background sources are considered responsible  
for multistage cancer, and other diseases. Just  
because we must tolerate natural background  
sources, does not follow that reduction from  
the uranium fuel cycle is harmless.  
It would be the straw that breaks the  
camel's back.

Thank you for allowing us to participate  
to make comments.

Very truly yours,  
Frank G. Weston  
RD 2 Box 27  
Wilmington, Pa  
19383

APPENDIX C. ENVIRONMENTAL ASSESSMENT BY THE DIVISION OF SITE SAFETY AND ENVIRONMENTAL ANALYSIS FOR PROPOSED MODIFICATIONS TO THE TRANSMISSION LINE SYSTEM, SUSQUEHANNA STEAM ELECTRIC STATION UNITS 1 AND 2 (PENNSYLVANIA POWER & LIGHT COMPANY CONSTRUCTION PERMIT NOS. CPPR-101 AND CPPR-102 DOCKET NOS. 50-387 AND 50-388)

### C.1. INTRODUCTION

By letter received on 15 October 1975, the Pennsylvania Power & Light Company proposed changes in the transmission routes previously evaluated for the Susquehanna Steam Electric Station. The proposed changes involve:

- a. Shortening of the Susquehanna-Lackawanna 500-kV line and resulting in the Susquehanna-Stanton 500 kV line.
- b. Elimination of the Susquehanna-Frackville 500-kV line and replacement with a 500-kV line between SSES and Sunbury Substation and a 500-kV line between SSES and the Wescosville-Siegfried Substation.<sup>1,2</sup>

Additional details concerning these changes were provided in Amendments 4 and 5 to the SSES Environmental Report, construction permit stage, submitted on 26 February 1976 and 30 June 1976.

### C.2. REASON FOR THE PROPOSED CHANGE

PP&L is a member of the Pennsylvania-New Jersey-Maryland (PJM) power pool. Prior to 1974, the reliability of the PJM bulk power transmission system was considered inadequate without the network addition of a 500-kV line from Lackawanna 500-kV substation to an existing 500-kV system in northern New Jersey. This line, which would have been jointly owned by PP&L and two other PJM utilities, was approximately 121 km long and was expected to be placed in service by 1982 to provide overall improvement in the reliability of the PJM bulk power network. This line was not analyzed in the Final Environmental Statement (June 1973). Based on the data provided by the applicant (ER-CP, Amendment No. 5) it appears that these 121-km transmission lines from Lackawanna to an existing system in northern New Jersey would be more environmentally sensitive than the proposed addition of 90 km of transmission lines. Sixty percent of the 121-km transmission lines was expected to pass through the Pocono Mountains. The staff did analyze the environmental impacts of the Lackawanna transmission line and related facilities that were to be constructed between the Susquehanna Nuclear Power Plant and the proposed Lackawanna Substation. In late 1974, modifications were made in the planned development of the PJM bulk power network due to changing patterns of load growth and capacity expansion of other companies. As a result, the proposed 121-km line was canceled. Without this line, the applicant has stated that a single contingency failure of the Susquehanna-Frackville 500-kV line would cause electrical instability of the Susquehanna generators and would necessitate restricting output of SSES. Therefore, in order to obtain an adequate level of reliability, the previously planned transmission system for SSES needs to be modified (ER-CP, Amendment No. 5, Sec. 3.9.1).

### C.3. ENVIRONMENTAL IMPACT OF THE PROPOSED CHANGE

The staff's evaluation of the two proposed changes is as follows:

- a. The staff analyzed the impacts associated with changes detailed in Amendment No. 4 (Susquehanna-Stanton 500-kV line) and it was concluded that modifications proposed in Amendment No. 4 are acceptable, as discussed in a letter to PP&L, dated March 8, 1976.<sup>3</sup>
- b. The staff has analyzed the impacts associated with changes detailed in Amendment No. 5 (proposed Susquehanna-Sunbury and proposed Susquehanna-Siegfried 500-kV lines), and this evaluation is detailed below. The review included a helicopter overflight by

the staff on September 3, 1976, of the proposed Susquehanna-Sunbury line and the proposed Susquehanna-Siegfried line. Alternative routes were also investigated.

#### Description of Line Routing and Transmission Corridor Environment

Two lines are being proposed to replace the Susquehanna-Frackville 500 kV. The Sunbury-Susquehanna 500-kV line, shown in Figure B.1, will terminate at the existing Sunbury 500-230 kV substation. This line is approximately 71 km long and proceeds in a southerly direction from SSES, crossing the Susquehanna River where it intersects with the existing Sunbury-Susquehanna 230-kV route. From this intersection, the route parallels this existing line before terminating at the Sunbury Substation. This line will cross parts of Columbia, Montour, and Northumberland counties. At a point 1.9 km south of Sunbury, the proposed line will again cross the Susquehanna River to the Sunbury Substation on the west bank in Snyder County.

The Susquehanna-Siegfried 500-kV line crosses approximately 87 km between SSES and the Siegfried Substation north of Northampton, Pennsylvania (Figure C.1). The line traverses parts of Columbia, Lucerne, Carbon, and Northampton counties.

Right-of-way data as supplied by the applicant are included in Tables C.1 and C.2.

The study areas for the Sunbury and Siegfried lines encompass characteristic steep forested ridges and valleys and gently rolling farmland. The proposed Sunbury-Susquehanna line routes would traverse approximately 55% crop and pasture lands and about 33% forested lands. The proposed Susquehanna-Siegfried line would occupy nearly 66% forest cover and 33% crop and pasture cover.

The forest cover is primarily comprised of a mixture of oaks and pines. In general, ridges and high plateaus are composed of scrub oak (*Quercus ilicifolia*), white oak (*Quercus alba*), red oak (*Quercus ruba*), pitch pine (*Pinus rigida*), and short-leaf pine (*Pinus echinata*). Valleys are composed primarily of red, white, and chestnut oaks (*Quercus prinus*), white pine (*Pinus strobus*), hemlock (*Tsuga canadensis*), several types of birch (*Betula* spp.), red maple (*Acer rubrum*), and yellow poplar (*Liriodendron tulipifera*). The slopes contain a diverse mixture of hardwoods and conifers; oaks, red birch (*Betula nigra*), white pine, hemlock, pitch pine, and white ash (*Fraxinus americana*) are dominant species.

Dominant understory species include azalea and rhododendron (*Rhododendron* spp.), mountain laurel (*Kalmia latifolia*), blueberry (*Vaccinium* spp.), and willow (*Salix* spp.) (ER-CP, Amendment No. 5).

The applicant has listed a wide variety of terrestrial and aquatic fauna within the Sunbury and Siegfried study areas (ER-CP, Amendment No. 5). The staff and the applicant have consulted the Pennsylvania Game Commission, the Pennsylvania Department of Environmental Resources, and the U.S. Department of the Interior. Local resource agencies, such as Bloomburg State College, have individually determined that the proposed routes do not cross areas containing any known unique floral or faunal habitats or state forest natural areas and wild areas.<sup>4</sup>

#### Threatened and Endangered Species

The State of Pennsylvania lists no birds, mammals, or floral species as being threatened or endangered in the state. The Department of the Interior lists two endangered mammals and three endangered birds whose range encompass the study area.<sup>5</sup> These are the eastern cougar (*Felis concolor cougar*), Indiana bat (*Myotis sodalis*), arctic peregrine falcon (*Falco peregrinus tundrius*), American peregrine falcon (*Falco peregrinus anatum*), and bald eagle (*Haliaeetus leucocephalus*).<sup>6</sup> The applicant indicates that no endangered or threatened mammals have been observed in the study area. Critical habitats have been identified for the Indiana bat.<sup>7</sup> No areas in Pennsylvania have been identified as critical habitats for this species. Peregrine falcons have been sighted at Hawk Mountain, south of the study area (ER-CP, Amendment No. 5). The bog turtle (*Climmys mühlenbergi*) is the only endangered herpetile listed on the Pennsylvania Fish Commission list whose range falls within the study area. The applicant indicates that two endangered and two rare fish are listed by the Pennsylvania Fish Commission as having ranges falling within the study area for the proposed transmission line (ER-CP, Amendment No. 5). The applicant has provided the staff with its construction specifications program and vegetative management program and, based upon the mitigative and construction measures detailed, it is the staff's position that any rare and endangered fish species that may inhabit the general area along the applicant's preferred routes will not be affected by construction of SSES transmission lines.

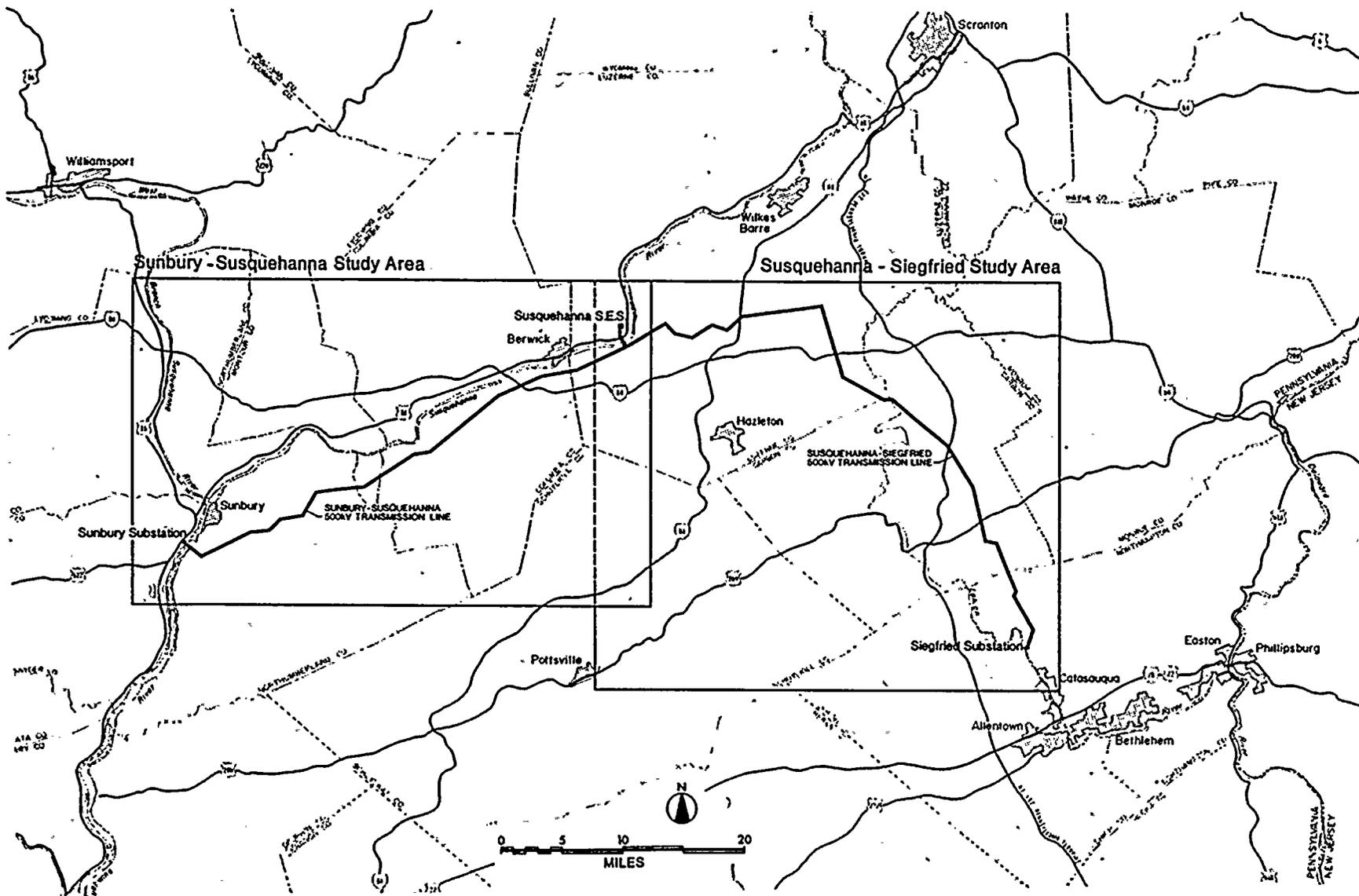


Fig. C.1. Susquehanna-Sunbury and Susquehanna-Siegfried Proposed Transmission Corridors.<sup>1</sup>

Table C.1. Right-of-way Data: Susquehanna-Sunbury Line<sup>a</sup>

Segment of Line	Length (ft) <sup>b</sup>	Required Width of Existing Line (ft) <sup>b</sup>	Required Width of New Config. (ft) <sup>b</sup>	Width of Additional ROW Required (ft) <sup>b</sup>	Area of Additional ROW Required (acres) <sup>b</sup>
Parallels existing Sunbury-Susquehanna 230 kV	222,600	150	325	175	894.3
Parallels proposed Susquehanna-Siegfried 500 kV	9,000	162.5 <sup>c</sup>	325	162.5 <sup>c</sup>	33.6
<b>Total</b>	<b>231,600</b>				<b>927.9</b>

<sup>a</sup>Source: ER-CP, Amendment No. 5, Table 3.9-A<sub>1</sub>.

<sup>b</sup>Conversion factors:  
ft to m, multiply by 0.3048.  
acres to ha, multiply by 0.40469.

<sup>c</sup>With respect to the Sunbury line, the Siegfried line is considered to be existing and the required 325-ft right-of-way is equally divided between the two lines.

Table C.2. Right-of-way Data: Susquehanna-Siegfried Line<sup>a</sup>

Segment of Line	Length (ft) <sup>b</sup>	Required Width of Existing Line (ft) <sup>b</sup>	Required Width of New Config. (ft) <sup>b</sup>	Width of Additional ROW Required (ft) <sup>b</sup>	Area of Additional ROW Required (acres) <sup>b</sup>
Parallels proposed Sunbury-Susquehanna 500 kV	9,000	152.5 <sup>c</sup>	325	162.5 <sup>c</sup>	33.6
Parallels existing Sunbury-Susquehanna 230 kV	4,400	150	325	175	17.7
New right-of-way	184,400	0	200	200	846.6
Parallels existing East Palmerton-L. Harmony (outside of BWA <sup>d</sup> land)	32,800	100	300	200	150.6
Parallels existing (north) Siegfried Harwood 230 kV	20,000	150	325	175	80.3
Parallels existing (south) Siegfried Harwood 230 kV	27,000	150	300	150	93.0
Parallels existing East Palmerton-L. Harmony (within BWA <sup>d</sup> land)	6,400	100	200	100 <sup>c</sup>	14.7
<b>Total</b>	<b>284,000</b>				<b>1,236.5</b>

<sup>a</sup>Source: ER-CP, Amendment No. 5, Table 3.9-A<sub>2</sub>.

<sup>b</sup>Conversion factors:  
ft to m, multiply by 0.3048.  
acres to ha, multiply by 0.40469.

<sup>c</sup>With respect to the Siegfried line, the Sunbury line is considered to be existing and the required 325-ft right-of-way is equally divided between the two lines.

<sup>d</sup>BWA = Bethlehem Water Authority.

The applicant indicates that the only unique flora noted in the area, American chestnut (*Castanea dentata*), is not endangered and will not be affected by the proposed routes. The staff has investigated the possibility of existence of any critical habitat containing threatened or endangered floral species as proposed by the Department of the Interior.<sup>8</sup> No critical habitats have yet been determined for any proposed threatened or endangered floral species. The staff and the applicant, in response to staff questions (see Reference 24), have found no evidence that any threatened or endangered floral species are located along the proposed transmission routes.

## Effects of Transmission Line Construction on Land Use and Impacts to the Land and Water

### 1. Land Use

The Sunbury-Susquehanna line crosses approximately 38 km of open land, predominantly utilized for crops or pastures. A small orchard will be traversed as well as 4.3 km of land classified as small farm woodlots (ER-CP, Amendment No. 5). The remaining portion of the route crosses 24.3 km of forest land and 2.6 km of state game lands. The applicant has submitted a detailed inventory of residential and commercial units; institutional and historic features; river, stream, railroad and major road crossings; as well as selected environmentally sensitive features such as wetlands, game and forest lands, etc., for each route.

The proposed Susquehanna-Siegfried line crosses 58.4 km of forest land, which includes state game land and state forest land. The line crosses a section of the Beltzville Reservoir in Beltzville State Park. At the crossing of the Lehigh River Gorge, the line will traverse 915 m of a proposed state park involving the crossing of an existing canoe trail and a proposed foot trail along an abandoned railroad right-of-way (ER-CP, Amendment No. 5). The line also crosses the Appalachian Trail at Blue Mountain while paralleling an existing 230-kV line. It is the staff's opinion that proposed paralleling 500-kV lines will not cause additional adverse impact to the Appalachian Trail. Approximately 25 km of agricultural land (29% of the total length) will be crossed by the proposed Siegfried-Susquehanna line.

### 2. Impacts

The staff's analysis of the originally proposed Susquehanna-Frackville 500-kV line in the FES-CP (Sec. 5.5.1) indicated that approximately 23.4 km of this route would traverse forested land requiring the alteration of 143 ha of forest cover. Approximately 14.8 km of agricultural land (79 ha) would also be temporarily impacted. Replacement of the Susquehanna-Frackville line with the Susquehanna-Sunbury and Susquehanna-Siegfried lines will result in an increase in both total forest and agricultural acreages required for new rights-of-way.

Impacts to the vegetative communities along the proposed paralleling Sunbury-Susquehanna line will be primarily limited to the selective removal of approximately 153 ha of forest cover along the proposed paralleling Sunbury-Susquehanna line. An additional 13.75 ha of state game lands will be disturbed, but the applicant will minimize impacts by preserving to the greatest extent possible all existing vegetation within rights-of-way limits except where removal is required for erection of line structures or installation of conductors (ER-CP, Amendment 5, Appendix I, Exhibit B, p. 11). In addition, the applicant indicates that planting and reseeding will be undertaken where required by the Pennsylvania Game Commission.

The applicant indicates that the Siegfried-Susquehanna proposed route would traverse 54.3 km of forest cover requiring 61 m of new right-of-way and 6.9 km of paralleling line requiring an average width of 52 m. The applicant estimates that the proposed Susquehanna-Siegfried right-of-way will impact 367 ha of forest land. Most of the land will be cleared by selective cutting, which will remove all trees except specified low-growing varieties (ER-CP, Amendment No. 5).

Impacts to animals along the corridor may take several forms. Most directly, some less mobile animals may be killed by construction equipment. Loss or partial alteration of habitat will result in the displacement of some faunal residences and may result in the loss of some animals.

Disturbance of fauna will temporarily result from increased human activity during construction. This type of impact is not expected to extend beyond the construction phase of the project.

Data on aquatic ecology, geology, and soil can be found in the ER-CP, Amendment No. 5. To reduce and minimize erosion and siltation problems the applicant has committed to detailed mitigative action specified in the ER: "Transmission Construction Specifications: Development of Erosion Control Plan for Line Construction" (ER-CP, Amendment No. 5, Appendix 1, Exhibit A) and "Vegetation Management" (ER-CP, Amendment No. 5, Appendix 1, Exhibits B and C).

#### Measures and Controls to Limit Adverse Effects During and From Construction

The applicant has submitted detailed erosion control plans (ER-CP, Amendment No. 5, Exhibit B) for staff review. It is the staff's conclusion that all actions outlined by the applicant will result in acceptable soil erosion control. The staff concurs with the applicant's plans to notify in advance the Soil Conservation Service (SCS) at the Conservation District of the county in which line construction activities will involve any earth-moving work. It is the staff's opinion that such contact with SCS will further reduce the possibility of serious erosion problems.

The applicant has selected two clearing methods, "selective" or "tailored" (ER-CP, Amendment No. 5, Appendix 1, Exhibit B), which the staff concludes will minimize construction impacts associated with more severe methods of clearing as well as reduce visual impacts. The applicant has provided a plan for corridor redress (ER-CP, Amendment No. 5, Appendix 1, Exhibits B and C). The staff has reviewed these plans and finds that they are acceptable as proposed; therefore, the staff does not recommend additional steps for redress.

The applicant states that no known archeological sites are crossed by either line and indicates that if any objects of possible archeological importance are unearthed, the Pennsylvania State Archeologist will be notified for an evaluation of the site.

Neither of the lines crosses or passes in the near vicinity of any registered historic site (ER-CP, Amendment No. 5, 3.9-13).

#### Effects of Transmission Line Operation on Land Use and on the Environment

The assessment of those impacts of station operation discussed in the FES-CP are still valid. Additional or new information is presented in this section.

##### 1. Environmental Impact

Transmission line inspection and maintenance will not impact the involved ecosystems, especially since periodic inspections will be conducted by aircraft or on foot.

Use of hand clearing and selective spraying of herbicides are planned for routine maintenance. Chemical control of vegetation will conform to state and federal regulations and will be applied as directed by these authorities.

All chemicals, when used, will be applied by hand. The applicant has specified numerous precautions so that the possibility of chemical herbicides entering into water bodies will be remote. Herbicides will not be applied aerially (ER-CP, Amendment No. 5).

Ozone and other gaseous pollutants, such as nitrogen oxides, are formed as a result of ionization of air molecules that surround the cylindrical conductors used for transmitting electrical energy at high voltages. This ionization is caused by electrical discharge that is termed "corona." The degree of ionization depends on voltage, humidity, conductor diameter, surface roughness, and spacing between conductors. Calculations indicate that ozone production could be 45 times higher in foul than fair weather. Measurements at 765-kV lines show, however, that at ground level beneath the conductors the ozone concentration does not rise above ambient; furthermore, ground level concentration of ozone is the same on foul days as fair days, presumably because factors favoring increased production rates also favor increased destruction rates.<sup>9,10</sup> Recently, experiments were run over a one-year period in Jefferson County, Indiana, on 765-kV lines running over open, flat cornfields. When instruments were placed six meters downwind from the 765-kV conductors at conductor height, where corona-produced ozone concentration should be greatest, "no ozone attributable to the transmission lines was detectable during the test."<sup>10</sup> The natural increase in ozone concentration of 2 to 3 ppb for an increase of 30 m in elevation was observed.

The sensitivity of measuring instruments is about  $\pm 2$  ppb; hence, increases in ozone concentration above ambient due to corona from 765-kV lines are within the sensitivities of measuring instruments.<sup>11</sup>

The national, primary air-quality standard for photochemical oxidants prescribes a level of 80 ppb as a maximum one-hour arithmetic mean not to be exceeded more than once per year. Susceptible plant species show damage symptoms from ozone exposure at concentrations as low as 30 ppb,<sup>12,13</sup> but over prolonged periods ozone is not considered injurious to vegetation, animals, or human beings unless concentrations exceed 50 ppb.<sup>14</sup> On the basis of these considerations, the staff concludes that ozone from SSES's 500-kV lines will be environmentally inconsequential.

There is a possibility that electrical fields set up around transmission lines could affect persons in the field. Studies have been performed to determine the effects of electrostatic fields on humans.<sup>15-18</sup> These studies did not incorporate controls and are limited in both scope and time. For example, cases are known of adults who were unaffected by doses of agents that are teratological or lethal to the fetus or child, and lag times between dose and effect of 20 years or more are known. Since the above studies do not consider children, since children may play beneath the transmission lines, and since controlled studies of long duration have not been carried out, the long-term effect of high voltage transmission lines is currently unknown. However, the staff is not aware of any reported observable effects on humans resulting from exposure to electric fields radiated from high voltage power lines. The physiological effects reported by the Russians<sup>16</sup> were observed on maintenance workers in EHV substations, not on individuals below transmission lines. A recent Russian paper<sup>19</sup> stressed that present standards apply only to maintenance personnel working on electrical installations. Russian standards permitting higher voltage gradients for local populations and agricultural workers are currently being considered since these populations will be exposed only infrequently.

The applicant will install a phasing arrangement and increase structure height, if necessary, at highway crossings to limit the electrostatic field strength at ground level to 7.5 kV/m. Where the applicant predicted the worst potential gradients (11 kV/m on a single circuit and double circuit 500-kV corridor), a phasing arrangement that will result in a worst-case gradient no greater than 7.83 kV/m at 11.28 m ground clearance will be used. Significantly lower field gradients will exist at highway crossings where a 16.5-m clearance will be maintained (ER-CP, Amendment No. 5, Section 5.5.1.5 and Applicant's Response to Staff Questions of October 15 and November 18, 1976). Field gradient levels at the edge of rights-of-way will be on the order of 2.4 kV/m or less.

If these gradients occur, using the more conservative Russian study<sup>16</sup> intended for maintenance personnel, a person could spend three hours daily working beneath the lines without adverse effects. The general public is not expected to spend significant amounts of time in the transmission line right-of-way corridors.

Staff's literature survey indicates that adverse health effects on switchyard workers have been observed, but no such observations were reported from studies on transmission line workers and on individuals outside the switchyard environment exposed to voltage gradients well above 7.5 kV/m.

The staff has analyzed data on the effects of high voltage electric lines on plants and animals and has found no evidence to date indicating hazardous effects to plants or animals from present levels of fields generated from existing transmission line technology.<sup>20</sup>

In the absence of such observations, the staff believes that there should be no changes in the applicant's proposed design. A number of carefully designed studies of the biological effects of electric fields are currently underway and additional studies are planned. These research projects are being sponsored by Federal agencies, including NRC, to study the effects of transmission line voltage gradients along with long-term effects on the general population. The staff will keep abreast of these studies and of any guidelines resulting from them and will consider the impacts of the transmission line operation prior to or at the time of the Operating License stage review, taking into consideration any new information (Sec. 4.4.1.2).

Induced currents are unlikely to ignite fuel vapors, but currents capable of shocking people could be induced in vehicles without grounding straps. Any stationary structure with metal parts in and along the right-of-way will be limited to a maximum electrostatic short circuit current of 5 milliamperes (rms); any object not meeting this criterion will be grounded by the applicant, especially such objects as metal fences or rail lines that run parallel to the right-of-way. In such objects that are ungrounded, shock causing involuntary muscle reaction may occur, but no permanent physiological harm is likely.<sup>21</sup> The staff believes grounding measures will reduce the likelihood of shock to a level that is of no concern.

A transmission line design guideline pertaining to induced currents which the applicant plans to follow, and which the staff considers prudent, is that ground clearances should

be maintained so that a maximum induced current of 5 milliamperes (rms) is not exceeded under conditions of maximum line sag when the largest anticipated truck, vehicle, or equipment under the line is short-circuited to ground (ER-CP, Amendment No. 5, Secs. 3.9.5.5 and 5.5.1.5).

The applicant estimates that foul-weather noise (maximum) produced at the edge of the right-of-way of a 500-kV line will be 59 dB(A) (ER-CP, Amendment No. 5, Sec. 5.5.1.2). However, these worst case conditions will not occur frequently and noise levels will diminish as soon as the conductors begin to dry. The applicant states, and the staff concurs, that the area traversed is very sparsely populated and, therefore, impact due to noise will be minimal.

The applicant addressed the potential impacts of transmission operation on radio and TV reception interference and indicates that investigation and correction of reception problems due to radio interferences will be done on an individual basis as each problem will be unique. Corona-produced television interference is not foreseen for those areas where good television reception is presently obtained during fair weather. There may be some foul-weather phenomena, but the applicant indicates that the low precipitation type television influence has been found to be less than two percent of foul-weather radio influence at a point 61 m from the outermost conductor; therefore, lines are not expected to cause any significant television disturbances (ER-CP, Amendment No. 5, Sec. 3.9.5.4).

## 2. Esthetic Impacts

Sunbury-Susquehanna will parallel an existing 230-kV transmission line for 67.9 km or 96% of its length. In addition, it is proposed that 2.7 km of the line (or the remaining 4%) will parallel the proposed Susquehanna-Siegfried 500-kV line. The staff believes that the paralleling nature of this route, as outlined by Federal guidelines,<sup>22,23</sup> will assure that all visual impacts will be on an acceptable level. In addition, it is the staff's opinion that the applicant's right-of-way clearing and maintenance practices will further aid in reducing any potential visual impact associated with both the Sunbury-Susquehanna line and Siegfried-Susquehanna line (ER-CP, Amendment No. 5, Appendix I, Exhibits B and C).

The Siegfried-Susquehanna line will cross several esthetically sensitive areas; namely, the Lehigh River Gorge crossing being considered for use as a state park and Beltzville Reservoir and State Park.

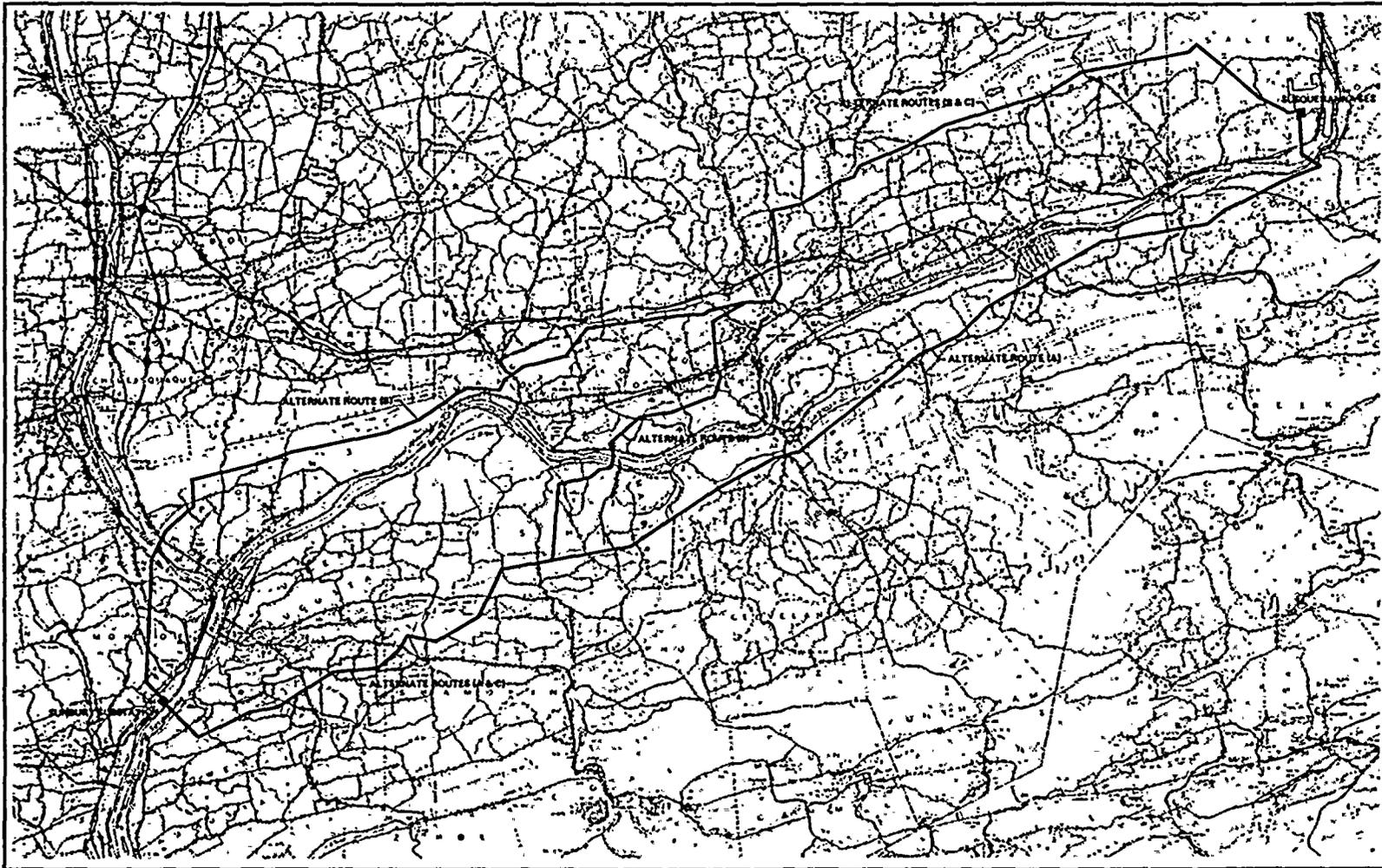
In both cases, the applicant is designing the line to minimize visual impacts. At the Lehigh River crossing, the tower structures will be set back from the gorge, being screened from the canoe run and hiking trail at the bottom of the gorge by the natural terrain. The applicant has received approval from the Pennsylvania Department of Environmental Resources for this crossing (Applicant's Response to Staff Questions, November 18, 1976). The applicant conducted a feasibility study regarding crossing of Beltzville Reservoir by using new double circuit tubular steel poles instead of existing 66-kV tower structure in front of scenic view. The study concluded, and the U.S. Corps of Engineers agreed, that such a combined crossing presents serious reliability problems. The staff believes that the parallel crossing will not create additional adverse visual impacts to the area. Based upon the implementation of the applicant's proposed mitigative measures, such as tailored clearing or feather cutting at improved road crossings, parks, peaks and ridges, and stream and river crossings (ER-CP, Amendment No. 5, Sec. 5.5.4.2.b and Appendix I, Exhibit B), combined with the remote location of large portions of this route, making it unlikely that many people would be affected by it, the staff does not expect unacceptable esthetic impact along the Susquehanna-Siegfried proposed corridor.

## Alternatives to the Proposed Routes

The applicant has considered a variety of alternative routes, analyzing both predicted minimum impact routes and minimum cost routes. Three routes were fully examined and compared for each line.

### 1. Sunbury-Susquehanna Line Alternatives

Two alternatives to the proposed Sunbury-Susquehanna route (Alternative Route A) are considered (Figure C.2). Alternative Route B leaves the Sunbury Substation in a northerly direction and crosses the west branch of the Susquehanna about 3.2 km above the confluence of the Susquehanna. It then proceeds eastward, paralleling the north branch of the Susquehanna, until it passes north of Berwick where it heads southeast to SSES. Alternative Route C parallels the applicant's preferred corridor out of Sunbury for approximately 20 km and then leads north, where it jointly crosses the north branch of the Susquehanna



Base Map: Commonwealth of Pennsylvania, Department of Transportation.



Fig. C.2. Susquehanna-Sunbury Alternative Routes.

just east of Reeds Island (southeast of Danville) with an existing line. It proceeds in a basically northerly direction until it meets with Alternative Route B and then follows the Alternative B corridor into the plant.

It appears to the staff that the applicant has endeavored to utilize existing corridors wherever practical in selection of preferred and alternative routes for the Sunbury-Susquehanna corridor. The preferred route (Alternative A) parallels an existing line (a 230-kV Sunbury-Susquehanna line) for more than 67 km and the remaining 2.7 km will parallel the proposed Susquehanna-Siegfried 500-kV line. Interpretation of the available data indicates that all three alternatives recommended by the applicant are acceptable and that the applicant's preferred route would be the most environmentally acceptable in terms of fine tuning of environmental impact reduction due to extensive "paralleling."

## 2. Susquehanna-Siegfried Route Alternative

Figure C.3 shows the three routes examined for termination at the Siegfried Substation. Alternative B proceeds in a southeasterly direction from the plant, paralleling an existing 230-kV line for almost its entire length until it joins Alternative routes A, the preferred route, and C just north of the Siegfried Substation. Alternative Route C is similar to the preferred corridor except that it departs from the preferred corridor approximately 1.6 km northwest of the intersection of Interstates 80 and 81 and proceeds easterly until it rejoins Alternative A southwest of White Haven. According to the applicant, this route was originally investigated and selected as the prime connection to the Siegfried Substation, but a potential generating plant north of White Haven resulted in modification of Alternative C to form Alternative A. It is the staff's evaluation that there are few major differences between alternative routes A and C. The applicant's analysis (Table 10.9-A<sub>2</sub>) indicates only marginal differences between alternatives A and C. The major difference is that Route C will approach more residential units than Route A. The applicant indicates that, from an environmental standpoint, Route B is more desirable. The staff's own analysis also concludes that the paralleling nature of Route B would cause a reduction in 68.3 ha of primary forest land needed for additional right-of-way. However, it appears to the staff that none of the corridors pass through any areas requiring unique siting constraints and that the additional acreage required for Alternative A will be an insignificant impact to the large inventory of forested lands in the region. The staff has assessed the applicant's proposed mitigative measures to insure minimal environmental impact and has concluded that these will reduce construction and operating impacts to an acceptable level.

The applicant has provided the staff with more detailed estimates of the length and land area requirements for the above alternatives (Table C.3). Alternative B requires less land area 68.3 ha than the applicant's preferred route (A). Land area requirements for alternatives A and C are judged by the staff to be of similar magnitude. However, Alternative C does approach approximately twice the number of residences (607) as alternatives A (359) and B (342). The staff concludes that based on this residential impact, Alternative C is not preferable to alternatives A or B. Therefore, the staff's environmental analysis of impacts associated with construction of the preferred route (A) and two alternative routes (B and C) indicates that 1) the applicant's preferred route is environmentally acceptable and 2) that selection of Alternative B would cause a slight reduction in terrestrial impacts primarily due to lower right-of-way land requirements.

Table C.3. Right-of-way Data for Alternative Analysis<sup>a</sup>

	Alternative		
	A	B	C
Length (km)	86.6	81.6	82.4
Area for total right-of-way (ha)	500.4	432.1	474.4

<sup>a</sup>Source: Applicant's Response to Staff Questions, November 18, 1976 (Reference No. 24).

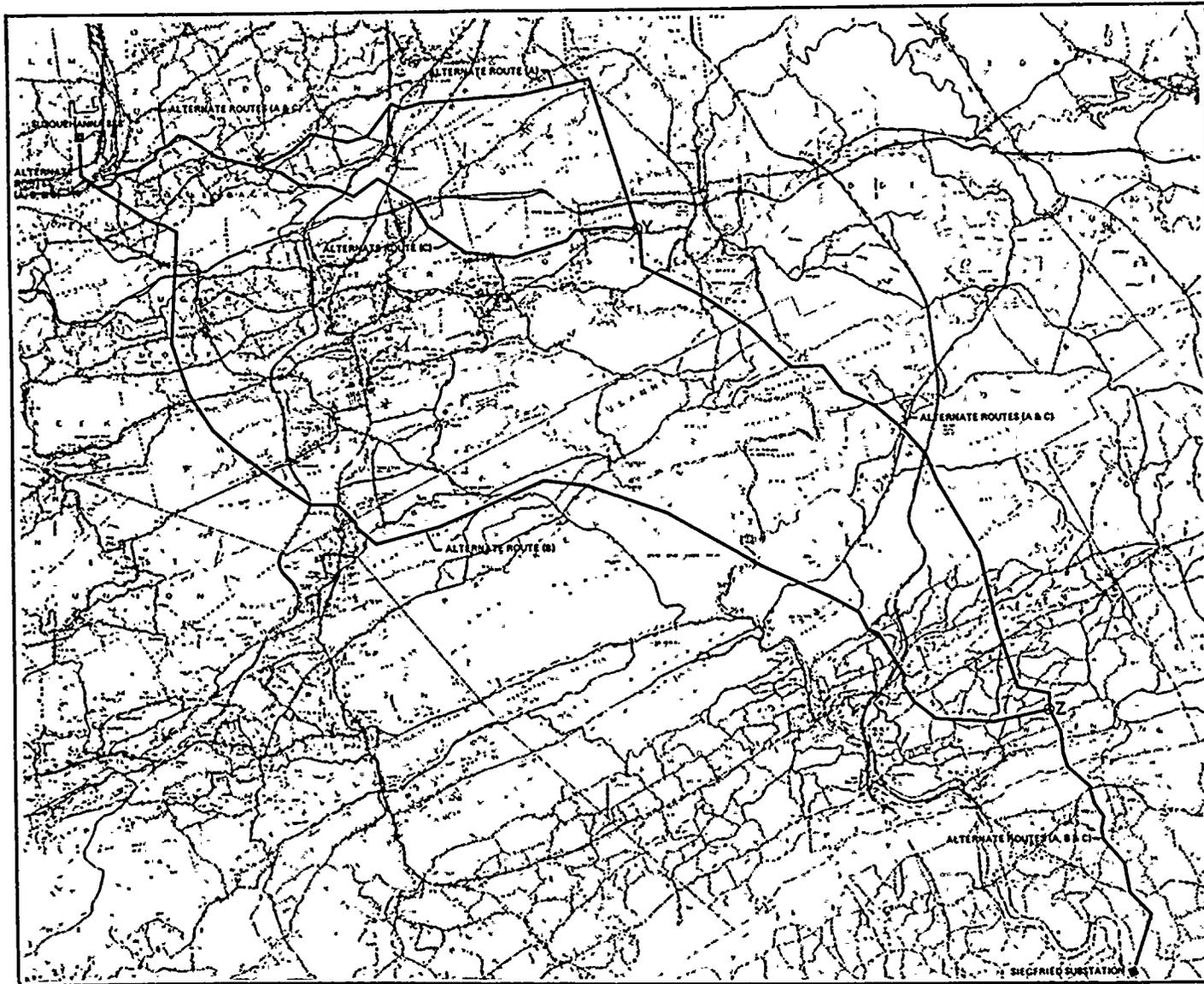


Fig. C.3. Susquehanna-Siegfried Alternative Routes.

The applicant has supplied data for the economic costs of the three alternatives.<sup>24</sup> Route A is estimated to cost \$28,586,522; Route B is estimated to cost \$29,273,095, and Route C is estimated to cost \$28,346,991. Interpretation of the available data indicates that all three alternative routes for the Susquehanna-Siegfried line recommended by the applicant are acceptable. Alternative A provides an economic advantage over Alternative B, even though Alternative B would require 68.3 ha less land area to construct. The estimated construction cost for Alternative C is slightly lower than that for Alternative A; Alternative C would approach more residential units and does not appear to offer unique advantages over Alternative A. In conclusion, although Alternative A does not represent the minimum environmental path in the Susquehanna-Siegfried line, from an overall point of view it does offer the best compromise of economic and environmental considerations. Therefore, the applicant's selection of Route A is reasonable.

#### Unavoidable Adverse Environmental Impacts

##### 1. Land

Except for small land areas used for tower bases, land will be available for multiple use within the transmission line right-of-way.

##### 2. Water

No impacts on water are expected since extensive mitigative measures will be in effect at all water-body crossings.

##### 3. Air

Construction activities may cause some dust and emissions of particulates. However, with the applicant's mitigative measures, little air quality deterioration will occur. Little ozone should be produced during operation of the lines.

##### 4. Noise

No unacceptable noise levels are expected during construction and operation of SSES transmission lines.

#### C.4. CONCLUSIONS

On the basis of the foregoing analysis, the staff has determined that modifications proposed in Amendment No. 4 and 5 combined involve greater environmental impact primarily with respect to the increase in total line lengths from 116 km to 206 km. On a region-wide basis, however, the net environmental impact could be considered lessened, since the additional 90 km of lines are necessitated by the cancellation of a proposed 121-km long line.

The proposed transmission routes would pass through areas similar to the Susquehanna-Frackville lines; therefore, the environmental impact evaluation conducted in connection with the initial application still characterizes the nature of the impacts, and the extent of impacts associated with the proposed change has been analyzed in this assessment. The staff concludes that impacts associated with the newly proposed transmission routes are acceptable and not substantial.

Further, impacts of the proposed change in transmission lines discussed above are sufficiently small so that, when they are superimposed upon the other environmental impacts assessed with respect to construction of the plant, the changes in the overall environmental impact from construction of the plant are not significant. After considering the impacts attributable to the proposed changes, the staff concludes the overall cost-benefit balance previously developed in the FES-CP remain unaltered.

References

1. "Susquehanna Steam Electric Station: Applicant's Environmental Report," Amendment No. 4, Revised July 1972, Pennsylvania Power & Light Company, February 1976.
2. "Susquehanna Steam Electric Station: Applicant's Environmental Report, Amendment No. 5, Revised July 1972, July 1976.
3. Letter dated 8 March 1976, from W. H. Regan, Environmental Projects Branch No. 3, Nuclear Regulatory Commission, to M. W. Curtis, Pennsylvania Power and Light Company.
4. Commonwealth of Pennsylvania, Department of Environmental Resources, "Pennsylvania State Forest Natural Areas and Wild Areas," August 16, 1976.
5. U.S. Department of the Interior, Federal Register, Vol. 40(188):44418-44423, September 26, 1975.
6. U.S. Department of the Interior, Federal Register, July 12, 1976.
7. U.S. Department of the Interior, Federal Register, Vol. 41(187):41914-41916, September 24, 1976.
8. U.S. Department of the Interior, Federal Register, Vol. 40(127):27824-27924, July 1, 1975.
9. S. A. Sebo, J. T. Heibel, M. Frydman, and C. H. Shih; "Examination of Ozone Emanating from EHV Lines Corona Discharges"; IEEE Trans. PES 95(2):693-703; March/April 1976.
10. M. Frydman, et al., "Oxidant Measurements in the Vicinity of Energized 765-kV Lines," IEEE Transactions on Power Apparatus and Systems, Vol. PAS-92(3):1141-1148, 1973.
11. W. Davis, Jr., "Ozone Formation by High-Voltage Transmission Line Coronas," Oak Ridge National Laboratory, Central Files Report No. 72-7-25, 19 July 1972.
12. A. C. Costonis and W. A. Sinclair, "Relationships of Atmospheric Ozone to Needle Blight of Eastern White Pine," Phytopathology 59:1566-1574, 1969.
13. P. R. Miller, J. R. Parameter, Jr., B. H. Flich, and C. W. Martinex, "Ozone Dosage Response of Ponderosa Pine Seedlings," University of California, Berkeley Press, 1969.
14. "Community Air Quality Guides, Ozone," J. Am. Ind. Hyg. Assoc., 29:299-303, 1968.
15. W. B. Kouwenhoven, et al., "Medical Evaluation of Man Working in AC Electric Fields," IEEE Transactions on Power Apparatus and Systems, Vol. PAS-86, No. 4, April 1967.
16. V. P. Korobkova, et al., "Influence of the Electric Field in 500- and 750-kV Switchyards on Maintenance Staff and Means for Its Protection," Paper 23-06, International Conference on Large High Tension Electric Systems, 25 August - 6 September 1972.
17. M. L. Singewald, et al., "Medical Follow-up Study of High Voltage Linemen Working in AC Fields," IEEE Power Engineering Society Transactions, New York Meeting, 28 January 1973.
18. Joint American-Soviet Committee on Cooperation in the Field of Energy, "Discussion of Papers Presented at the Symposium on EHV AC Power Transmission," U.S. Department of the Interior, Bonneville Power Administration, Washington, DC, February 1975.
19. Y. I. Lyskov, Y. S. Emma, and M. D. Stolyarov; "Electrical Field as a Parameter Considered in Designing Electric Power Transmission of 750-1150 kV; the Measuring Methods, the Design Practices and Direction of Further Research"; US-USSR Symposium on EHV AC Power Transmission; Bonneville Power Administration; Washington, DC; February 1975.
20. J. W. Bankoski, A. B. Graves, and G. W. Meku; "The Effects of High Voltage Electric Lines on the Growth and Development of Plants and Animals"; Proceedings of the First National Symposium on Environmental Concerns in Right-of-Way Management; Mississippi State University; 1976.

21. L. O. Barthold, et al., "Electrostatic Effects of Overhead Transmission Lines," IEEE Working Group on Electrostatic Effect of Transmission Lines, Paper No. TP 644-PWR, August 1971.
22. Federal Power Commission, "Electric Power Transmission and the Environment," 1970.
23. United States Department of the Interior and United States Department of Agriculture, "Environmental Criteria for Electric Transmission Systems," 1970.
24. "Susquehanna Steam-Electric Station: Applicant's Environmental Report, Amendment No. 5," Question and Responses, November 18, 1976.

## APPENDIX D. NEPA POPULATION DOSE ASSESSMENT

Employing the same models used for individual doses, population dose commitments are calculated for all individuals living within 80 km of the facility (see Regulatory Guide 1.109, Rev. 1). In addition, population doses associated with the export of food crops produced within the 80-km region and the atmospheric and hydrospheric transport of the more mobile effluent species such as noble gases, tritium, and carbon-14 have been considered.

### NOBLE GAS EFFLUENTS

For locations within 80 km of the reactor facility, exposures to these effluents are calculated using the atmosphere dispersion models in Regulatory Guide 1.111, Rev. 1., and the dose models described in Section 4.5 and Regulatory Guide 1.109, Rev. 1. Beyond 80 km, and until the effluent reaches the northeastern corner of the United States, it is assumed that all the noble gases are dispersed uniformly in the lowest 1000 m of the atmosphere. Decay in transit was also considered. Beyond this point, noble gases having a half-life greater than one year (e.g., Kr-85) were assumed to completely mix in the troposphere of the world with no removal mechanisms operating.

Transfer of tropospheric air between the northern and southern hemispheres, although inhibited by wind patterns in the equatorial region, is considered to yield a hemisphere average tropospheric residence time of about two years with respect to hemispheric mixing. Since this time constant is quite short with respect to the expected midpoint of plant life (15 yr), mixing in both hemispheres can be assumed for evaluations over the life of the nuclear facility. This additional population dose commitment to the U.S. population was also evaluated.

### IODINES AND PARTICULATES RELEASED TO THE ATMOSPHERE

Effluent nuclides in this category deposit onto the ground as the effluent moves downwind; this continuously reduces the concentration remaining in the plume. Within 80 km of the facility, the deposition model in Regulatory Guide 1.111, Rev. 1, was used in conjunction with the dose models in Regulatory Guide 1.109, Rev. 1. Site-specific data concerning production, transport, and consumption of foods within 80 km of the reactor were used. Beyond 80 km, the deposition model was extended until no effluent remained in the plume. Excess food not consumed within the 80-km distance was accounted for, and additional food production and consumption representative of the eastern half of the country was assumed. Doses obtained in this manner were then assumed to be received by the number of individuals living within the direction sector and distance described. The population density in this sector is taken to be representative of the eastern United States, i.e., about 62 people per square km.

### CARBON-14 AND TRITIUM RELEASED TO THE ATMOSPHERE

Carbon-14 and tritium were assumed to disperse without deposition in the same manner as krypton-85 over land. However, these nuclides do interact with the oceans. This causes the carbon-14 to be removed with an atmospheric residence time from four to six years, with the oceans being the major sink. From this, the equilibrium ratio of the carbon-14 to natural carbon in the atmosphere was determined. The same ratio was then assumed to exist in humans so that the dose received by the entire population of the United States could be estimated. Tritium was assumed to mix uniformly in the world's hydrosphere, which was assumed to include all the water in the atmosphere and in the upper 70 m of the oceans. With this model, the equilibrium ratio of tritium to hydrogen in the environment can be calculated. The same ratio was assumed to exist in humans and was used to calculate the population dose in the same manner as carbon-14.

### LIQUID EFFLUENTS

Concentrations of effluents in the receiving water within 80 km of the facility were calculated in the same manner as described for the Appendix I calculations. No depletion of the nuclides

present in the receiving water by deposition on the bottom of the Susquehanna River was assumed. The assumption that aquatic biota concentrate radioactivity in the same manner as was assumed for the Appendix I evaluation was also made. However, food consumption values appropriate for the average individual, rather than the maximum, were used. It was assumed that all the sport and commercial fish and shellfish caught within the 80-km area were eaten by the U.S. population.

Beyond 80 km it was assumed that all liquid effluent nuclides, with the exception of tritium, have deposited on the sediments so they make no further contribution to population exposures. The tritium was assumed to mix uniformly in the world's hydrosphere and to result in an exposure to the U.S. population in the same manner as discussed for tritium in gaseous effluents.

## APPENDIX E. EXPLANATION AND REFERENCES FOR BENEFIT-COST SUMMARY

### Economic Impact of Plant Operation

**Direct Benefits** - The staff has evaluated the total direct benefit of the Susquehanna Nuclear Station production of baseload energy by calculating entire output of the facility at 60% capacity factor. Applicant owns 90% of the facility. Refer to Section 7.

**Indirect Benefits** - A small portion of the state tax is provided to the impacted local counties (\$65,000). Refer to Sections 4.6.6.1 and 4.6.6.2.

**Economic Costs** - Operating costs: Supplied by applicant.

Decommissioning costs: The staff has estimated decommissioning costs in 1975 dollars at \$59 million.

1. Deactivating the reactors
2. Decontaminating of process systems and areas of plant
3. Removing all nuclear fuel from the site for recovery of fuel materials and ultimate disposal of radioactive wastes
4. Sealing of building or portion of building containing activated process piping and components by means of blocking, bolting, or welding plates over openings, etc.
5. Dismantling and sealing of all gaseous and liquid waste systems and effluent lines
6. Maintaining some security and fire systems
7. Ultimate dismantling of station

### Environmental Impact of Plant\*

#### Item 1 - Impact on water

Item 1.1 - Consumption (nuclear station consumption): The amount of water consumed by the applicant for operation is estimated to average 1.4 m<sup>3</sup>/s. This amounts to 26,000,000 m<sup>3</sup>/yr at a 60% capacity factor.

#### Item 1.2 - Heat discharge to natural water body

- 1.2.1 - Cooling capacity of water body: J/hr rejected heat =  $3.4 \times 10^{11}$  (max)
- 1.2.2 - Aquatic biota: insignificant.
- 1.2.3 - Migratory fish: insignificant.

Item 1.3 - Chemical discharge to natural water body (Includes Items 1.3.1, 1.3.2, 1.3.3, and 1.3.4): chemicals will be discharged to the Susquehanna River. The 1,400,000 kg/yr chemical discharge is an annual average, mainly sulfate.

Item 1.4 - Radionuclide contamination of natural water body: See Sec. 4.5.

Item 1.5 - Chemical contamination of groundwater: see Item 1.3, above.

Item 1.6 - Radionuclide contamination of groundwater: See Sec. 4.5.

---

\*The index numbers used in this and the next section correspond to those used in Table 9.1.

- Item 1.7 - Raising/lowering of groundwater levels (Includes Items 1.7.1 and 1.7.2): no effect is expected.
- Item 1.8 - Effects on natural water body of intake structure and condenser cooling systems: unknown.
  - 1.8.1 - Primary producers and consumers: chemical discharges are discernible (Sec. 4.3.3).
  - 1.8.2 - Fisheries: additional studies are warranted relative to the effect of construction and operation of the intake structure upon fish productivity.
- Item 1.9 - Natural water drainage
  - 1.9.1 - Flood control: no damage to station or immediate vicinity.
  - 1.9.2 - Erosion control: no significant erosion is expected.
- Item 2 - Impact on air
  - Item 2.1 - Chemical discharge to ambient air
    - 2.1.1 - Air quality--chemical: no impact. Entries for CO, NO<sub>x</sub>, and HC are non-zero because of operation of diesel equipment several hours per month.
    - 2.1.2 - Air quality--odor: no impact.
  - Item 2.2 - Radionuclides discharged to ambient air
    - 2.2.1 - Noble gases: See Sec. 4.5.
  - Item 2.3 - Fogging and icing: offsite icing may occur when the spray pond is operating (Sec. 4.4.1).
  - Item 2.4 - Salt discharge from cooling system
    - 2.4.1 - People: see FES-CP, p. 3-41.
    - 2.4.2 - Plants and soil: See ER-OL, p. 5.3-5.
- Item 3 - Impacts on terrestrial systems
  - Item 3.1 - Station area: acceptable. See ER-OL, Section 3.1-5.
  - Item 3.2 - Bird impingement on station facilities: should be monitored. See Sec. 5.3.6.
- Item 4 - Transmission line corridors
  - Item 4.1 - Right-of-way maintenance and inspection: See Sec. 4.5 and Appendix C.
  - Item 4.2 - Production of ozone, other gaseous pollutants: See Sec. 4.5 and Appendix C.
  - Item 4.3 - Audible noise: See Sec. 4.5 and Appendix C.
  - Item 4.4 - Radio and TV interference: See Sec. 4.5 and Appendix C.
  - Item 4.5 - Electrical field effects: See Sec. 4.5 and Appendix C.
- Item 5 - Total body dose commitments to U.S. population general public, unrestricted area: See Sec. 4.5 and Appendix C.

#### Societal Impact of Plant

- Item 1 - Operational fuel disposition
  - Item 1.1 - Fuel Transport: Ten truck shipments of new fuel plus 13 train shipments of radioactive spent fuel assemblies per year.
  - Item 1.2 - Fuel Storage: The staff assumes storage of new fuel to be provided for in plant design within the reactor building.
  - Item 1.3 - Waste Products: Onsite storage of spent fuel assemblies is normal and is assumed for SSES.

Item 2 - Labor: impacts anticipated due to high unemployment in area (see Section 4.6).

Item 3 - Historical and archeological sites: (see Sec. A.2.7).

Item 4 - Station operational noise: exceeds EPA standard but is to be monitored by applicant.  
Refer to Section 5.3.5.

Item 5 - Social costs: include social stresses, demand on public services, and housing.

Item 6 - Esthetics: acceptable. Refer to Section 4.4.1.1.

LE PLAIN 77  
152

APPENDIX F. APPLICATION FOR NATIONAL POLLUTANT DISCHARGE ELIMINATION  
SYSTEM (NPDES) PERMIT TO DISCHARGE TO STATE WATERS

NPDES Application No. PA-0047325

COMMONWEALTH OF PENNSYLVANIA



DEPARTMENT OF ENVIRONMENTAL RESOURCES

Bureau of Water Quality Management  
Wilkes Barre Regional Office  
90 East Union Street - 2nd Floor  
Wilkes Barre, Pa. 18701  
July 31, 1979

Industrial Waste  
NPDES Permit No. PA-0047325  
Pennsylvania Power & Light Company  
Susquehanna Steam Electric  
Salem Township  
Luzerne County

RECEIVED  
AUG 10 1979  
ENVIR MGMT

Pennsylvania Power & Light Company  
Susquehanna Steam Electric  
c/Mr. John T. Kauffman  
Executive Vice President, Operations  
Two North Ninth Street  
Allentown, Pa. 18101

Gentlemen:

The subject permit is enclosed.

Please study the permit carefully and direct any questions to this office. Our telephone number is (717) 826-2553.

Very truly yours,

A handwritten signature in cursive script that reads "Lawrence A. Pawlush".  
Lawrence A. Pawlush  
Regional Water Quality Manager

LAP:JPL:hp

Enclosures - NPDES Permit  
NPDES Discharge Monitoring Report  
DMR Instructions

cc: File  
Program Services  
Richard L. Constrisciano  
Environmental Engineer  
Water Enforcement Branch  
Pennsylvania Section 3EN22  
U.S. Environmental Protection Agency  
Sixth & Walnut Streets  
Philadelphia, Pa. 19106