OCT 1 8 1976

Docket No. 50-320

MEMORANDUM FOR: W. H. Regan, Chief
Environmental Projects Branch 3, DSE

FROM: W. E. Kreger, Chief
Radiological Assessment Branch, DSE

SUBJECT: RESPONSE TO NOTICE TO INTERESTED PERSONS ON DRAFT SUPPLEMENT TO FES FOR THREE MILE ISLAND UNIT 2

PLANT NAME: Three Mile Island U-2
LICENSING STAGE: OL
DOCKET NUMBER: 50-320
MILESTONE NUMBER: 36-33
RESPONSIBLE BRANCH: EPB #. 3
PROJECT MANAGER: J. Morris
REQUESTED COMPLETION DATE: 10/15/76
DESCRIPTION OF RESPONSE: Response to FES Comments
REVIEW STATUS: RAB Response to Comments Complete

Enclosed are RAB responces to comments on sections 5.4 and 6.6 of the subject environmental statement by agencys, interested persons and the applicant.

This review was performed by J. Osloond, RAB/RAB.

William E. Kreger, Chief
Radiological Assessment Branch
Division of Site Safety and
Environmental Analysis

Enclosure:
As stated

DISTRIBUTION:

Central Files	J. Pancarella	R. Vollmer	F. Congel
NRR Reading	P. Shuttleworth	J. Miller	J. Osloond
DSE Reading	cc w/encl.:	S. Varga	
RAB Reading	S. Hanauer	J. Morris	
cc w/o encl.:	H. Denton	W. Kreger	
W. McDonald	D. Muller	J. Collins	

OFFICE	DSE:RAB	DSE:RAB	DSE:RAB		
SURNAME	JOSLOOND:pwe	FOCONNEL	WEKREGER		42-173
DATE	10/18/76	10/18/76	10/18/76		

Form AEC-318 (Rev. 9-53) AECM 0240 ☆ U.S. GOVERNMENT PRINTING OFFICE: 1974-526-166

POOR ORIGINAL

7904170456

RESPONSE TO AGENCY AND INDIVIDUAL COMMENTS
THREE MILE ISLAND NUCLEAR STATION UNITS NO. 2

HEW

In discussing the radiological impact on man of this facility, there is no data presented on the maximum exposure to an individual living in the immediate vicinity of the site or in the surrounding region. The only actual numbers given are for the U.S. population dose commitment in man/rems (sic). While this is valuable information from an overall population-dose standpoint, it does not provide sufficient information concerning projected exposure to individuals or small groups of persons residing in the areas mentioned above who would be subject to the highest possible exposures from the plant operations.

Response:

The individual dose commitments for airborne and liquid effluent pathways will be included in the Supplement to the Final Environmental Statement.

ERDA

We have reviewed the draft supplement and have determined that the proposed action will not conflict with current or known future ERDA programs. However, on page 5.5, paragraph 5.4.1.2 refers to appendix C for population exposure pathways, but appendix C is on biota. The final statement should include a discussion of the methods and intent to minimize release of globally-distributed long-lived radioactive effluents, such as krypton-85, carbon-14, or tritium.

Response:

The Supplement to the Final Environmental Statement will have an appendix describing the dose models and methods used in calculating the population doses. The dose models currently being used to calculate the U.S. population doses includes consideration of global transport of the mobile effluents such as Krypton-85, carbon-14 and tritium.

Chauncey Kepford

Paragraph 6.6.2, page 6-9, reveals a continuation of the NRC policy of refusing to monitor real doses to real members of the public from the nuclear power program. Of course, to monitor such doses might reveal that many nuclear power plants operate at levels of radicactivity emissions which exceed the 10 CFR 50 Appendix I guidelines for doses to members of the public. It is difficult to escape the conclusion that the public relations image of a clean nuclear industry is more important to the NRC than the health and safety of the public.

Response:

The operational offsite radiological monitoring program results are used to calculate doses to the public for existing pathways associated with liquid and gaseous effluents. The environmental monitoring required under 10 CFR 20 and 10 CFR 50, Appendix I provides the NRC with site-related data for determining that doses to the public are as low as reasonably achievable.

Department of Interior

It is indicated on pages 6-9 to 6-11, that ground water will be monitored and the hydrological situation suggest that river monitoring should ultimately intercept contaminants moving through the aquifer(s). We suggest, however, that in the event of any accidental release the delay in movement of a contaminant through the aquifer(s) and probable paths to the river should be considered in sampling.

Response:

The Three Mile Island station environmental monitoring program includes the capability of collecting short time interval river water aliquot samples. This will provide a means of identifying and assessing radioactive releases entering the river in the vicinity of this plant site.

EPA

The first of these deficiencies appears to be an editorial error. An Appendix C is referred to for description of the models and considerations for environmental pathways. The Appendix C in the draft supplement describes biota collected in the vicinity of Three Mile Island. There is no appendix describing radiation exposure pathways. The final statement should be corrected to include a discussion of radiation exposure pathways and a definition of terms and models used.

Response:

The final statement will include an appendix with a description of models used and pathways considered in calculating population doses.

No doses to individuals from various activities or pathways are presented. A table (Table 5.3) purports to summarize population dose commitments, but appears to be an estimate of annual population exposure for the year 1990. Also 10 CFR 20 and Appendix I to 10 CFR 50 are cited in the evaluation of radiological impact and the source term development, but no summary of what these regulations require for radiation dose limits to individuals and populations is given this make interpretation of the impact statement by members of the public difficult.

Response:

The individual doses and Appendix I evaluation of compliance will be included in the Supplement to the Final Environmental Statement.

We are encouraged that the NRC is now calculating annual population dose commitments to the U. S. population which is a partial evaluation of the total potential environmental dose commitments (EDC) of H-3, Kr-85, C-14, iodines and "particulates". This is a big step toward evaluating the EDC, which we have urged for several years. However, it should be recognized that several of these radionuclides (particularly C-14 and Kr-85) will contribute to long-term population dose impacts on world-wide basis, rather than just in the U. S. Assessment of the total impact would (1) incorporate the projected releases over the lifetime of the facility (rather than just the annual release), (2) extend to several half-lives or 100 years, beyond the period of release, (3) consider, at least qualitatively or generically, the world-wide impacts where appropriate. Thus, we suggest that future assessments recognize these influences on the total environmental impact or specify the limitations of the model used.

Response:

Dose commitments from H-3, Kr-85 and C-14 distributed on a world-wide basis will be included in an Appendix in the Supplement to the Final Environmental Statement. Projected releases are now considered to the midpoint of the expected lifetime of nuclear power plants. The assessed impact over a period of 50 years is being used. Present life expectancy does not warrant use of a 100 year period. The description of models used in the assessments for environmental dose impact are referenced or discussed in an appendix to the Supplement to the Final Environmental Statement.

The staff reaches the conclusion that there will be no measurable impact on man from routine operation of TMI Unit 2. Radiological environmental monitoring reports from Unit 1 have shown a very small, but measurable impact(3). It would be helpful in the final statement if all information bearing upon the radiological impact is summarized.

Response:

The final statement for TMI Unit 2 will include a summary of individual and population radiological doses, which are considered as environmental impact.

Applicant (Metropolitan Edison Co.)
Comment 12 (Section 5.4.1.3)

This section of the Draft Supplement to the Final Environmental Statement gives reference to a tritium discussion in Appendix C that applies to all tritium sources from the plant. No Appendix C was included as part of this report. The Applicant wishes to reserve the right to comment on this tritium discussion prior to its inclusion in the Final Supplement Environmental Statement.

Response:

The Appendix information that will be included in the final supplement is available now in the NRC Regulatory Guide 1.109 (March 1976).

Comment 20 (Section 6.6.1)
Items 1 through 10

Response:

The applicant's agreement to change the radiological environmental monitoring program as proposed by the NRC staff is satisfactory for the preoperational phase of this program.

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

SEP 2 3 1976

Docket No. 50-320

MEMORANDUM FOR: R. Ballard, Chief, Environmental Specialists Branch, DSE
D. Bunch, Chief, Accident Analysis Branch, DSE
J. Collins, Chief, Effluent Treatment Systems Branch, DSE
L. G. Hulman, Chief, Hydrology-Meteorology Branch, DSE
W. Kreger, Chief, Radiological Assessment Branch, DSE
M. Spangler, Chief, Cost/Benefit Analysis Branch, DSE
C. Stepp, Chief, Geology-Seismology Branch, DSE
S. Varga, Chief, Light Water Reactors Branch #4, DPM

FROM: Jan A. Norris, Project Manager, Environmental Projects Branch #3, DSE

SUBJECT: COMMENTS ON THREE MILE ISLAND, UNIT NO. 2

The 45 day comment period expired on September 20, 1976. Comments from most reviewing agencies and from many interested persons/organizations have been received. Copies of those comments which require a response are enclosed with this memo.

[ ] Please review enclosed comments and submit any response you deem necessary by

[X] Your response to the following specific comments is requested by COB October 15, 1976.

1) HEW - Complete letter
2) ERDA - Complete letter
3) Chauncey Kepford - First page - last paragraph
4) Metropolitan Edison Company - Comment 12; Comment 20
5) Dept. of the Interior - Page 4 - last paragraph
6) EPA (draft comments) - Comment A, Page 2, second and third paragraphs; Page 3, first and second paragraphs; Page 4, second paragraph.

Jan A. Norris, Project Manager
Environmental Projects Branch 3
Division of Site Safety and
Environmental Analysis

Enclosures:
As stated

42-178

UNITED STATES NUCLEAR REGULATORY COMMISSION

In the matter of

Docket No. 50-320

Metropolitan Edison Company
Jersey Central Power and Light Company
Pennsylvania Electric Company

Three Mile Island Nuclear Generating Station, Unit: II

PETITION FOR INTERVENTION

The Environmental Coalition on Nuclear Power, an unincorporated organization of individuals and groups of individuals, on behalf of its members do hereby petition the U.S. Nuclear Regulatory Commission for leave to intervene in this proceeding. The authority for this request is granted in the Atomic Energy Act of 1954, as amended, Part 2.714 of Title 10 of the Code of Federal Regulations, and decisions 73-1776, 73-1067, 74-1385, and 74-1586 of the United States Court of Appeals for the District of Columbia.

1. The Environmental Coalition on Nuclear Power is a non-profit, public interest organization composed of individuals and groups of individuals who share a concern about the purpose, magnitude, and direction of the civilian nuclear power program. Members of the Coalition live in the vicinity of Three Mile Island, Unit II. The names of the co-executive directors, the authorized representative of the Coalition before the Commission, and five members who live within approximately 20 miles of Three Mile Island II are listed below.

1. Judith H. Johnsrud
433 Orlando Drive, State College, Pennsylvania

2. George L. Boonsra
R.D. 1, Peach Bottom, Pennsylvania

427 479

3. Chauncy Kepford, Authorized Representative before the Commission
2576 Broad Street, York, Pennsylvania

4. Mary V. Southard
3514 Walnut Street, Harrisburg, Pennsylvania

5. John J. Simon
603 Cascade Road, Mechanicsburg, Pennsylvania

6. Linda (Mrs. Donald) Fortna
R.D. 1, Dauphin, Pennsylvania

7. Chuck Gassert
832 East Chocolate Ave., Hershey, Pennsylvania

8. Hans and Rhoda Hercher
21 Westmont Bldg., Briarcrest Gardens, Hershey, PA 17033

The members who live in the neighborhood of Three Mile Island, Unit II feel that the operation of this facility poses an undue threat to their lives and material possessions. Due to the recent decisions of the United States Court of Appeals, District of Columbia Circuit, 73-1776, 73-1867, 74-1385, and 74-1586, these members, and the Coalition as a whole, feel the continued operation of Three Mile Island II is illegal because the construction permit for the facility was issued without proper consideration of the "alternative" of energy conservation, with its effect on the cost-benefit analysis, and without proper consideration of the yet unsolved, and possibly unsolvable problem of radioactive waste disposal. This petition is based on the contention that there are defects in the cost-benefit analysis used by the Applicant to justify construction and operation of Three Mile Island II and approved by the Commission.

2. The Petitioners (the Environmental Coalition on Nuclear Power and its members) contend that the cost-benefit analysis of the Applicant and the Commission is faulty because the recipients of the "costs" and "benefits" have not been properly identified. It is claimed that the sale of electricity by the Applicant constitutes the primary benefit of the facility, with the customers receiving the benefit and, therefore, being the beneficiaries of the plant.

No reading of a dictionary definition of either "benefit" or "beneficiary" can produce such a meaning as applied by the applicant or the Commission. The true beneficiaries of a nuclear power plant are stockholders who receive profits (if any) due to the plant's operation. Thus, the only true benefits from the operation of a nuclear power plant are the dividends paid out by a utility as a result of the operation of the power plant. Furthermore, the "costs" are underestimated by the refusal of the Applicant and the Commission to determine the actual radiation doses delivered to real people from the [illegible] fuel cycle.

3. Petitioners contend that the stated costs of nuclear power by the Applicant and the Commission assume catastrophic accident-free operation of nuclear power plants. Such an assumption is at odds with the revised conclusions of "The Reactor Safety Study," WASH-1400, better known as the Rasmussen Report, and with Section 170(b) of the Atomic Energy Act. The U.S. Congress, with the passage of the 1975 amendments to the Price-Anderson Act, has acknowledged that there may be more than one nuclear accident requiring payments under the Price-Anderson Act in one year. Cost-benefit analysis of nuclear power plants should include the costs of accidents.

4. Petitioners contend that the cost-benefit analysis of the Applicant and the Commission assumes a virtually infinite supply of relatively low cost "yellow cake," or U_3O_8. In reality, the United States is now grossly overcommitted as far as the "known" and "estimated" reserves of the U_3O_8 are concerned. The fuel requirements for the 238 nuclear reactors operable, being built, or planned (ERDA News Release, July 28, 1976) with a capacity of 237,000 MW(e) will require 1,159,000 tons of U_3O_8 for their 30-year lifetimes at a 0.55 capacity factor. The total estimated reserves of U_3O_8 are 640,000 tons of mineable U_3O_8. (ERDA News Release, April 2, 1976)

Neither the Applicant nor the Commission has yet faced the problem of either very high U_3O_8 prices -- as $100 to $1,000 per pound of U_3O_8 -- or a simple unavailability of U_3O_8. Nor has the enormous environmental impact, net energy cost, and dollar cost of mining low grade coals, shales, granites, or even sea water for uranium been acknowledged by the Commission or the Applicant. Petitioners contend that availability of fuel and energy and environmental costs of its extraction are an integral part of the nuclear fuel cycle and therefore must be included in a full and proper cost-benefit analysis of this reactor.

5. The Petitioners contend that the rate structure of the Applicant is a promotional rate structure designed to increase the consurption of electricity by offering declining rates for increased consumption. Such a rate structure minimizes the possibility and practicality of worthwhile energy conservation efforts. Petitioners contend that a flat rate structure -- one price for all levels of consumption and for all customers -- or a declining block rate structure would make conservation a viable and practical alternative to Three Mile Island, Unit II.

6. The Petitioners contend that the Commission has been totally negligent in its handling of the problem of radioactive wastes in the granting of a construction permit for Three Mile Island II. As a result, it has been impossible to determine accurately the costs of electricity generated by nuclear plants because the costs of solidification of spent fuel reprocessing waste solutions and storage of solidified wastes were ignored or grossly underestimated. Estimates of the costs of solidifying and disposing of wastes from the Nuclear Fuel Services range from a low of $67,000 per year per 1000 MW(e) plant to $36,000,000 per year per 1000 MW(e) plant. (See "Alternative Processes for Managing Existing Commercial High-Level Radioactive Wastes," NUREG-0043.) While the $67,000 figure may represent an insignificant addition to the annual

reactor operation costs, the $36,000,000 could easily double the annual operating costs. If past experience for estimating costs by the AEC/NRC can serve as a guide, the high figure may prove to be the low. Such costs should be included in the cost-benefit analysis.

7. Petitioners contend that the cost-benefit analysis of Three Mile Island II has been biased in favor of nuclear power by greatly underestimating spent fuel reprocessing costs and by the Commission offering a credit for recovered plutonium. Since there has not yet been any successful, economical, and complete reprocessing of reactor wastes to the solid stage, costs must be largely unknown. Since the recycling of plutonium is not presently a commercial reality, the offering of a plutonium credit for yet unrecovered plutonium which may not be recycled is premature.

8. Petitioners therefore contend that, due to the above unresolved issues regarding compliance with Sec. 102 of the National Environmental Policy Act by the Commission, the construction permit for Three Mile Island, Unit II should be rescinded immediately, and construction halted pending resumption of public hearings and resolution of these matters.

9. Petitioners further request the Commission to grant financial assistance to the intervenors under the authority of Sec. 102 of the National Environmental Policy Act. Petitioners have made similar requests in the past, and have met with only denial or delay. Petitioners call the attention of the Commission to the recent court decision, York Committee for a Safe Environment, et. al., vs. Nuclear Regulator Commission, No. 74-1923, and the comments therein regarding public interest litigants. Petitioners request the amount necessary in order to meet legal, technical, and procedural expenses otherwise not available.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20201

50-320

SEP 10 1976

Mr. William H. Regan, Jr., Chief
Environmental Projects Branch 3
Division of Site Safety and
Environmental Analysis
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Regan:

This Department has reviewed the draft supplement to the Three Mile Island Nuclear Station, Unit 2 final environmental impact statement. We support the ten recommendations in paragraph 6.6.1 on pages 6-9 for improving the preoperational radiological environmental monitoring program.

In discussing the radiological impact on man of this facility, there is no data presented on the maximum exposure to an individual living in the immediate vicinity of the site or in the surrounding region. The only actual numbers given are for the U.S. population dose commitment in man/rems. While this is valuable information from an overall population-dose standpoint, it does not provide sufficient information concerning projected exposure to individuals or small groups of persons residing in the areas mentioned above who would be subject to the highest possible exposures from the plant operations.

RAB

Thank you for the opportunity to review the document.

Sincerely,

Charles Custard

Charles Custard
Director
Office of Environmental Affairs

UNITED STATES
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
WASHINGTON, D.C. 20545

SEP 16 1976

50-320

Mr. William H. Regan, Jr.
Chief, Environmental
Projects Branch 3
Division of Site Safety and
Environmental Analysis
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Regan:

This is in response to your transmittal dated July 22, 1976, inviting the U.S. Energy Research and Development Administration (ERDA) to review and comment on the Nuclear Regulatory Commission's draft supplement to the final environmental statement related to the construction of Three Mile Island Nuclear Station, Unit 2.

RAB

We have reviewed the draft supplement and have determined that the proposed action will not conflict with current or known future ERDA programs. However, on page 5.5, paragraph 5.4.1.2 refers to appendix C for population exposure pathways, but appendix C is on biota. The final statement should include a discussion of the methods and intent to minimize release of globally-distributed long-lived radioactive effluents, such as krypton-85, carbon-14, or tritium.

Thank you for the opportunity to review this supplement.

Sincerely,

W. H. Pennington, Director
Office of NEPA Coordination

cc: CEQ (5)

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

ER 76/718

50-320 SEP 15 1976

Dear Mr. Regan:

Thank you for your letter of July 22, 1976, requesting our comments on the draft supplement to the final environmental statement related to the operation of the Three Mile Island Nuclear Station, Unit 2, Dauphin County, Pennsylvania.

Our comments are submitted according to the format of the statement or by subject.

Historical Sites

To update compliance with the National Historic Preservation Act of 1966 and Executive Order 11593, the State Historic Preservation Officer should be requested to furnish an evaluation as to whether any sites now on or currently eligible for inclusion on the National Register of Historic Places will be affected by the proposed project. If so, review and comment must be requested from the Advisory Council on Historic Preservation. The Advisory Council on Historic Preservation should be requested to review and comment in relation to effects on St. Peter's Church.

Outdoor Recreation

The draft supplement does not contain any additional information relative to outdoor recreation interests. Our comments on the draft statement, page B-89 under Land Use, relative to outdoor recreation, still apply.

As a follow-up to the recommendations made, the regional office of the Bureau of Outdoor Recreation contacted the applicant to inquire about the current status of the proposed recreation development plans for Three Mile Island. It was learned that construction of the power facility is scheduled for completion by the end of 1977, at which time recreation development will commence. The need was expressed to the applicant to begin initiating coordination with all interested parties in order to facilitate timely implementation of the recreation plan.

9415

Aquatic Impacts

According to Sections 5.5.2.2 and 5.5.2.3, chemical and thermal discharges from the plant are not expected to have significant adverse effects on aquatic life. It is difficult to reconcile these statements with the fact that fish kills occurred during the spring of 1974 and 1975 along the western side of Three Mile Island downstream from the plant. Sunfishes, smallmouth bass, and channel catfish were affected. Location of the kills suggests they were attributable to the plant's thermal and chemical discharges. The relationship of these fish kills to the plant operations should be assessed.

Radioactive Wastes

In response to an earlier comment on radioactive waste disposal sites, the final statement, page B-75, indicated that all details concerning shipping points for spent fuel and solid radwastes will be completed before plant operation. We wish to emphasize that our question, page B-90, concerned disposal sites and their environmental assessment and not shipping points. In any case, now that Unit 1 is operating, the completed details should have included identification and environmental assessment of solid radioactive waste disposal sites. This is not evident, however, from the draft supplement, which contains no information on disposal sites.

The management of low- and high-level wastes is mentioned on pages 5-12 and 5-13, by reference to Table 5.5 extracted from 10 CFR 51. However, this table contains no information on specific disposal sites, does not include solid wastes produced at the reactor, and does not mention high-level wastes.

Solid wastes, other than high-level, are mentioned in the final statement, page B-30, but the radiological quantities involved are not given. The supplement should indicate quantities, identify disposal sites, and assess the environmental suitability of the sites. Similarly, the quantity of high-level wastes arising from the reactor operation and an assessment of the proposed disposal method and site should be discussed.

Decommissioning and Land Use

The 1972 draft statement, page B-90, noted the lack of plans for the eventual decommissioning of the reactor. New information on such plans of a very general nature is provided in the draft supplement, pages 9-3 and 9-4; however, there is no attempt to assess the environmental problems that would remain at the site or at disposal sites elsewhere. The major concern is the radioactive materials left at the site, even if buried. Three Mile Island is subject to overflow during Susquehanna River floods as indicated on page 2-5, and any plans to dispose of long-lived radioactive materials at the site would require the most stringent environmental analysis. Such an analysis is lacking in the draft supplement. Since there are no firm plans, one is left with the impression on page 9-4 that massive equipment and structures that are radioactively contaminated are likely to be left on the island. In the absence of a commitment to remove all radioactive materials from the island, the scope of the radioactivity which may be left behind and the ensuing environmental considerations should be discussed in reasonable detail in the final supplement.

Environmental Effects of Accidents

The additional information on severe accidents in the draft supplement, page 7-5, consists of a reference to the Rasmussen Reactor Safety Study (WASH 1400). This still does not provide an evaluation of the consequence on the Susquehanna River, the lack of which was noted in our earlier comments on page B-90, C-19. The Rasmussen study evaluated the probability of accidents that result in the melting of the radioactive fuel (the core) in the reactor. The molten fuel would then generate heat sufficient to melt through the base of the containment building and into the ground for a distance of from 10 to 50 feet (WASH 1400, p. VIII-13, par. 1).

In response to comments on the draft of WASH-1400, the final Reactor Safety Study includes a generalized evaluation of consequences of a core melt-through to a nearby river (WASH 1400, p. XI 10-1). The peak concentration for strontium-90 in ground water reaching the river is given as 23 times greater than the maximum permissible concentration. Elsewhere in the report, however, this peak concentration is shown to be 2,300 times greater than maximum permissible (WASH 1400, p. VII 47, table VII 3-10). More importantly, the river

evaluation fails to mention another strontium-90 contribution, due to liquids and gases from the containment structure, which would result in peak concentrations 2,300,000 times the maximum permissible (WASH 1400, p. VII-47, table VII 3-9). Dilution at median flow, 20,000 cfs, would then result in the Susquehanna River having a strontium-90 concentration 15 times greater than the maximum permissible, and at minimum flow 175 times greater.

It should be emphasized that the evaluations from which these numbers were drawn were based on a generalized site having different conditions than the Three Mile Island site. A study of the consequences at the Three Mile Island site might show greater or lesser consequences. Such a study should be made. It should also evaluate the long-term effectiveness of potential mitigating measures.

RAB

It is indicated on pages 6-9 to 6-11, that ground water will be monitored and the hydrological situation suggests that river monitoring should ultimately intercept contaminants moving through the aquifer(s). We suggest, however, that in the event of any accidental release the delay in movement of a contaminant through the aquifer(s) and probable paths to the river should be considered in sampling.

We hope these comments will be helpful to you.

Sincerely yours,

Stanley R. Ravenna

Deputy Assistant Secretary of the Interior

Mr. William H. Regan, Jr.
Chief, Environmental Projects Branch 3
Division of Site Safety and Environmental
Analysis
Nuclear Regulatory Commission
Washington, D. C. 20555

42-299

September 12, 1976

Dear Sir:

I have reviewed the Draft Supplement to the Final Environmental Statement for Three Mile Island, Unit 2. In my opinion it is a typical work of the N.R.C., a very non-critical assessment of the material supplied the NRC by the applicant, Metropolitan Edison Co. It does not appear that the NRC staff is capable of questioning the supplied information. This follows apparently from the long standing habit of the AEC/NRC staff of believing everything the staff is told by the nuclear industry. I'm not sure if there is another industry in country somewhere the potential hazards to the public are so great and the regulation so haphazard and non-existent with such minimal penalties for major safety infractions.

This attitude was clearly evident during recent rulemaking hearing on the Environmental Effects of the Uranium Fuel Cycle, Docket RM-50-3. Court decisions of July 21, 1976, sent the subject back to the NRC for a fuller hearing. Attached to these comments is a petition recently filed with the NRC requesting the reopening of the construction permit hearings for TMI, unit 2. While the petition is partly based on the above mentioned Court decisions, it is also based on uranium fuel cycle problems not yet acknowledged to be problems by the NRC. As a result, paragraph 5.4.3 of the Draft, page 5-13, is grossly inadequate.

RAB

Paragraph 6.6.2, page 6-4, [illegible] continuation of the NRC policy of [illegible]

43-220

RAB

monitor real doses to real members of the public from the nuclear power program. Of course, to monitor such doses might reveal that many nuclear power plants operate at levels of radioactivity emissions which exceed the 10 CFR 50 Appendix I guidelines for doses to members of the public. It is difficult to escape the conclusion that the public relations" image of a clean nuclear industry is more important to the NRC than the health and safety of the public.

This attitude of the NRC is broadened in Chapter 7 of the Draft, page 7-1, paragraph 7.2. The NRC would, it appears, have the public accept as true and correct the "Reactor Safety Study." However, many of the conclusions of this study have been severely criticized by independent groups, as the American Physical Society Review Committee, the Union of Concerned Scientists, and the Environmental Protection Agency. My concerns are more fundamental than any of these groups criticisms. I am concerned with how the industry operates in the real world. And in this world, the industry, the NRC, and the Congress showed their complete lack of faith in the past, present, and future safety of the industry in supporting and enacting into law the 1975 Amendments to Sec. 170 of the Atomic Energy Act of 1954, as amended, commonly known as the Price-Anderson Act.

Subsection (b) of the Act (Price-Anderson) was amended to modify the charges to the electric utility industry using nuclear power in the event of a serious accident. Under the new law, a utility would be assessed a one-time fee of from $2,000,000 to $5,000,000, the exact value to be set before Dec. 31, 19[illegible]

by the NRC. This fee is to replace the annual indemnity fee, and would be collected only after an accident takes place. This fee is called a "deferred premium." The fact that this fee bears no relationship whatsoever to the possible damages from an accident is still a matter for real concern. But the implications for the safety of the public are far deeper. The new law now contains this sentence, still in subsection (b), which reads

"The Commission is authorized to establish a maximum amount which the aggregate deferred premiums charged for each facility within one year may not exceed."

Without this sentence in the law, if there were two, three, or ten serious accidents in one year, the utilities would be charged a deferred premium for each accident. But as the law now reads, the Commission, the N.R.C., can set a maximum value for the deferred premiums charged to the utilities in one year. Or, looking at it another way, the NRC can relieve the nuclear utilities from even the minimal responsibility they now bear for a one record accident in one year.

Since the law carries more weight than the pronouncements of safety by all segments of the nuclear industry, I suggest that such pronouncements are merely empty words, cheap rhetoric, designed to mislead and deceive the public. I believe it then follows that the "Reactor Safety Study" is nothing but a complicated public relations document bearing no relationship to real nuclear reactors operating in the real world under the law as it presently exists.

The almost ridiculous lengths the NRC staff will go to to cover and protect its lumbering industry is exemplified in Table S 2 and Figure S.2. The costs for the plant are all given in dollars for each installed kilowatt for a year operation. But an installed kilowatt produces nothing unless the plant operates, and the data from the table plotted in the figure suggests that the cheapest operating costs for the coal and nuclear power plants are obtained when both are inoperative. The NRC has seemingly forgotten that ~~costs~~ costs vary with the production from the plants. For a nuclear plant, the biggest variable cost is the investment cost, and it cannot be treated as a fixed production cost, as is shown in the table and figure. For a coal plant the biggest variable cost is fuel, as properly shown. When the investment costs are treated as they should for both plants, as cost per unit of electrical production, as cents per kilowatt hour, a very different picture emerges. In the table below are listed, for the coal and nuclear plants, data as a of the data from Table S.2, adjusted to represent electricity generation costs in cents per kilowatt hour. Only corrected numbers are given. The only correction is made by multiplying both the "Investment Cost" and the "Total Operating Cost" by $\frac{100 \text{ ¢/unit}}{5760 \text{ hrs/year} \times \text{Cap factor}}$ for the "Investment Cost", and by the same factor without the capacity factor for the "Total Operating Costs." The capacity factor is left out of the latter factor since it is already included in the table.

Table 8.2
Corrected

Costs, ¢/kwhr	Nuclear Capacity factor 50	60	70	80	Coal Capacity factor 50	60	70	80
Investment Cost	2.45	2.05	1.75	1.53	1.54	1.33	1.14	1.00
Total Operating Cost	.36	.40	.45	.49	1.01	1.19	1.37	1.56
Sum	2.81	2.45	2.20	2.02	2.60	2.52	2.51	2.56

Clearly, a different picture emerges when the real cost of capital is considered. At a capacity factor of 50%, which is about the average for the large new nuclear power plants, a coal plant is better if only these costs are considered. For its Final Environmental Statements in the past the NRC has used operating costs in cents per kilowatt hour (See, for instance, page B-74 of this Draft). One conclusion that can be drawn from this data is that the problem of nuclear power economics has deteriorated so far that the NRC must aid the utilities in misrepresenting their data to justify building nuclear power plants.

Furthermore, this analysis ignores two important items — the direction and magnitude of the listed variable operating and maintenance costs in Table 8.2. In the original FES, contained in the Draft as Appendix B, the total lifetime O and M costs are over twice as for a coal fired plant as for a nuclear plant. (See Page B-70 of the Draft) In the text of the Draft, a factor of three is used. Yet to the best of my knowledge, experience in the industry has shown that O and M costs are at least as high, if not considerably higher, for a nuclear plant because of the radiation.

hazard for repair workers.

In addition, for any plant operating at a high capacity factor, variable O and M costs should be smaller than for one operating at a lower factor since, for base loaded plants, a reduced capacity factor is often related to increased unanticipated malfunctions, leading to increased variable O and M costs. This is the reverse of the NRC trends in Table 8.2.

Thank you for the opportunity to comment on this Draft FES. My comments would have arrived sooner had I received the Draft in August. Apparently there was a mix-up between the NRC, Post Office, and me as to my address.

Yours sincerely,

Chauncey Kepford
Box 1093
Jackson, Wyo. 83001

I. RADIOLOGICAL ASPECTS

A. Radioactive Effluents and Dose Assessments

The draft supplement section titled "Radiological Impacts" is deficient in several respects. Because of these deficiencies, it is difficult to assess and to place in perspective the radiological impacts of the draft supplement.

The first of these deficiencies appears to be an editorial error. An Appendix C is referred to for description of the models and considerations for environmental pathways. The Appendix C in the draft supplement describes biota collected in the vicinity of Three Mile Island. There is no appendix describing radiation exposure pathways. The final statement should be corrected to include a discussion of radiation exposure pathways and definition of terms and models used.

The radioactive effluents used in the dose computations were those estimated by the staff to reasonably characterize the annual release of radioactive materials. It would have been helpful to compare these with actual release data from the companion plant, TMI Unit 1. One comparison with reported values (1) is questionable because this was the Unit 1 startup period, ranges from a factor 33 greater to several orders of magnitude less for liquid effluents and consistently less by factors of 5 to 10,000 for gaseous effluents when actual releases are compared to calculated releases. A staff comparison with comparable operating data would be useful in the final statement.

(1) Three Mile Island, Unit 1, Semi-Annual Operation Report, 7/1/74 to 12/31/74.

No doses to individuals from various activities and pathways are presented. A table (Table 5.3) purports to summarize population dose commitments, but appears to be an estimate of annual population exposure for the year 1990. Also 10 CFR 20 and Appendix I to 10 CFR 50 are cited in the evaluation of radiological impact and the source term development, but no summary of what these regulations require for radiation dose limits to individuals and populations is given; this makes interpretation of the impact statement by members of the public difficult. The NRC staff has generally done a good job in the use of references, appendices, clarifying tables and figures in the environmental statement, but in this instance has failed to convey the required information succinctly in a form easily understood, both by members of the public and by public decision makers.(2)

We are encouraged that the NRC is now calculating annual population dose commitments to the U. S. population which is a partial evaluation of the total potential environmental dose commitments (EDC) of H-3, Kr-85, C-14, iodines and "particulates". This is a big step toward evaluating the EDC, which we have urged for several years. However, it should be recognized that several of these radionuclides (particularly C-14 and Kr-85) will contribute to long-term population dose impacts on world-wide basis, rather than just in the U. S. Assessment of the total impact would (1) incorporate the projected releases over the lifetime of the facility (rather than just the annual release), (2) extend to several half-lives or 100 years, beyond

(2) Environmental Quality - 1975, Sixth Annual Report of the Council on Environmental Quality, p. 632.

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RAB 4

the period of release, (3) consider, at least qualitatively or generically, the world-wide impacts where appropriate. Thus, we suggest that future assessments recognize these influences on the total environmental impact or specify the limitations of the model used.

RAB

The staff reaches the conclusion that there will be no measurable impact on man from routine operation of TMI Unit 2. Radiological environmental monitoring reports from Unit 1 have shown a very small, but measurable impact[3]. It would be helpful in the final statement if all information bearing upon the radiological impact is summarized.

B. Fuel Cycle and Long-Term Dose Assessments

Under the President's Reorganization Plan No 3 of 1970, EPA is responsible for establishing generally applicable environmental radiation protection standards to limit unnecessary radiation exposures and radioactive materials in the general environment resulting from normal operations of facilities that are part of the uranium fuel cycle. The EPA has concluded that environmental radiation standards for nuclear power industry operations should take into account the total radiation dose to population, the maximum individual dose, the risk of health effects attributable to these doses (including the future risks arising from the release of long-lived radionuclides to the environment), and the effectiveness and costs of effluent control technology. The proposed standards are expressed in terms of individual dose limits to members of the general public and limits of

(3) Radiological Environmental Monitoring Report for the Three Mile Island Nuclear Station, 1975 Semiannual Report, August, 1975, p. 17

quantities of certain long-lived radioactive materials in the general environment.

A document entitled "Environmental Survey of the Uranium Fuel Cycle" (WASH-1238) was issued by AEC in conjunction with a regulation (10 CFR 50, Appendix D) for application in completing the cost-benefit analysis for individual light-water reactor environmental reviews (39 F.R. 14188). This document is used by NRC in draft environmental statements to assess the incremental environmental impacts that can be attributed to fuel cycle components which support nuclear powerplants. This approach appears to be adequate for plants currently under consideration, and estimates of the incremental impacts of Three Mile Island are reasonable. However, as suggested in our comments on the proposed rulemaking (January 19, 1973), if this approach is to be used for future plants, it is important for NRC to periodically review and update the information and assessment techniques used. The EPA intends to monitor developments in the fuel cycle area that are relevant to continued improvement in assessing environmental impacts.

There are impacts associated with the ultimate disposal of wastes which, to our knowledge, have not yet been adequately evaluated or are largely unknown. These impacts include:

- Commitment of land and resources for an ultimate disposal site;
- Economic and resource commitments of future generations, including societal and institutional commitments;
- Economic, resource, and energy costs of ultimate waste disposal as balanced against the present benefits realized by energy production.

While EPA recognizes that the individual nuclear power plant environmental statements may not be the proper vehicle for assessing these impacts, the environmental statements can, and should, indicate any pertinent studies (and their expected completion dates) which are being conducted by NRC or other responsible agencies. If no such efforts can be documented, NRC should either include these considerations in an updated version of WASH-1248 or should urge ERDA to consider them in studies directed at developing an ultimate radioactive waste disposal technology.

C. Reactor Accidents

It appears that a recreation area is proposed for the south end of Three Mile Island. This could pose difficulties in the remote event that evacuation of people using the recreation area is needed. There is no balancing of this risk versus the benefits of the proposed recreation area.

The EPA has examined the NRC's analyses of accidents and their potential risks. The analyses were developed by NRC in the course of its engineering evaluation of reactor safety in the design of nuclear plants. Since these issues are common to all nuclear plants of a given type, EPA concurs with NRC's generic approach to accident evaluation. The NRC is expected to continue the efforts initiated by AEC to insure safety through plant design and accident analyses in the licensing process on a case-by-case basis.

In 1972, the AEC initiated an effort to examine reactor safety and the resultant environmental consequences and risks on a more quantitative basis.. The EPA continues to support this effort. On August 20, 1974, the AEC issued for public comment the draft Reactor Safety Study (WASH-1400),

which was the product of an extensive effort to quantify the risks associated with light-water-cooled nuclear power plants. The EPA's review of this document included inhouse and contractual efforts, and culminated in the release of final Agency comments on the draft report on August 15, 1975. Initial comments were issued on November 27, 1974.

EPA completed its review of the final Reactor Safety Study on June 11, 1976, and issued a public report of its findings. In general, our previous conclusions on WASH-1400 are still valid. We identified apparent errors, omissions and questionable assumptions regarding health effects analyses, emergency remedial measures and failure analysis which would generally increase the calculated probabilities or consequences and, thus, the risks. We are working with NRC to resolve these points so that a consensus may be attained regarding the validity of the risk estimates given in WASH-1400. A generic analysis of the acceptability of the present risks or whether increased levels of safety are necessary has not yet been made. In the meantime, we have identified no reason serious enough to call for an immediate restriction in the application of nuclear power.

D. Radioactive Waste Management

The NRC staff is evaluating recently furnished information concerning the capability of the liquid and gaseous waste systems to meet the requirements of Appendix I to 10 CFR 50. It is hoped that this evaluation could be incorporated into the Final Environmental Statement, as well as operating experience for Unit 1, so that the Final Statement reflects the best current estimate of the radiological impact upon the environment for the complete plant.

It would also be helpful to provide the most recent information on low-level solid wastes. Several references are available to this subject. The Atomic Energy Commission's (now NRC) concluding statement to its rule-making proceedings on Appendix I to 10 CFR Part 50 contains improved estimates of low-level solid radwastes produced during nuclear power plant operations. The Oak Ridge National Laboratory (ORNL) has published "A Critical Review of the Solid Radioactive Waste Practices at Nuclear Power Plants" (ORNL-4924), which provides a compilation of operational experience relative to these wastes. The EPA has also conducted extensive research on these wastes and their impacts at selected, licensed, shallow land burial sites. Based on analysis of available information, EPA estimates that the annual off-site shipment of "low-level solid wastes" will be comprised of approximately 18,600 feet^3 for a PWR operated at Unit 2's design power with 80 percent capacity factor (4). We believe the final statement should provide the rationale for estimate similar to this. We understand that another study is being conducted on this subject by the Atomic Industrial Forum. We encourage the NRC to update the estimates of low-level solid waste quantities using the most appropriate and current experience.

F. High Level Waste Management

The techniques and procedures used to manage high-level radioactive wastes will have an impact on the environment. To a certain extent, these impacts can be directly related to the individual project because the reprocessing of spent fuel from each new facility will contribute to the total waste problem. However, EPA concurs with NRC's generic approach

(4) Mann, Goldberg, and Hendricks, "Low-Level Solid Radioactive Waste in Nuclear Fuel Cycle," a paper presented at the November 16-21, 1976, American Nuclear Society meeting in San Francisco, California.

to waste management impacts. As part of this effort, the AEC on September 10, 1974, issued for comment a draft statement entitled, "The Management of Commercial High-Level and Transuranium-Contaminated Radioactive Waste" (WASH-1539).

Though a comprehensive long-range plan for managing radioactive wastes has not yet been fully demonstrated, acceptance of the continued development of commercial nuclear power is based on the belief that the technology to safely manage such wastes can be devised. The EPA is available to assist both NRC and ERDA in their efforts to develop an environmentally acceptable waste management program to meet this critical need. In this regard, the EPA provided extensive comments on WASH-1539 on November 21, 1974. Our major criticism was that the draft statement lacked a program for arriving at a satisfactory method of "ultimate" high-level waste disposal. We believe that this is a problem which should be resolved in a timely manner because the United States is committing an increasingly significant portion of its resources to nuclear power, and waste materials from the operating plants are already accumulating. At present ERDA intends to prepare a new draft statement which will discuss waste management and emphasize ultimate disposal in a more comprehensive manner. The EPA concurs with this decision. We will review the new draft statement when it is issued and will provide public comments.

F. Transportation

In its earlier reviews of the environmental impacts of transportation of radioactive material, EPA agreed with AEC that many aspects of this

program could best be treated on a generic basis. The NRC codified this generic approach (40 F.R. 1005) by adding a table to its regulations (10 CFR Part 51) which summarizes the environmental impacts resulting from the transportation of radioactive materials to and from light-water reactors. This regulation permits the use of the impact values listed in the table, in lieu of assessing the transportation impact for individual reactor licensing actions, if certain conditions are met. Since Three Mile Island appears to meet these conditions, and since EPA agrees that the transportation impact values in the table are reasonable, the generic approach appears adequate for this plant.

The impact value for routine transportation of radioactive materials has been set at a level which covers 90 percent of the reactors currently operating or under construction. (The basis for the impact, or risk, of transportation accidents is not as clearly defined.) The EPA will make known its views on any environmentally unacceptable condition related to transportation. On the basis of present information, EPA believes that there is no undue risk of transportation accidents associated with operation of the Three Mile Island Nuclear Station, Unit No. 2.

III. NON-RADIOLOGICAL ASPECTS

A. Water Quality Impacts

EPA's analysis of all Water Quality data and information presented in the Draft Supplement to the EIS for TMINS, shows that this section of the EIS was well written and very adequate. However, EPA is concerned with the appropriate state thermal discharge standards and their application at Three Mile Island Nuclear Station.

The draft supplement indicates on page 5-3, that the following state thermal water quality standard is applicable to TMINS:

> Temperature - Not more than a 5°F rise above ambient temperatures or a maximum of 87°F, whichever is less; not to be changed by more than 2°F during any one-hour period.

The state thermal standard is inadequately defined in the report. It does not specify how or where this standard will be applied pursuant to Section 97.82 a. and b. of the Pennsylvania State Water Laws. Under the Federal Water Pollution Control Act Amendments of 1972, effective December 30, 1974, ~~The NPDES permit issued to TMINS~~ imposed an effluent limitation of 87°F for the protection of the aquatic community. Pennsylvania later approved Metropolitan Edison's request to discharge at the ambient receiving stream temperature when the temperature is above 87°F. The company is trying to negotiate a workable application of the 5°F rise limitation with the State. The final supplement should report how this proposed variance will affect the application of thermal standards at TMINS.

42-205

The technical specifications for Unit No. 1 require that the temperature of the discharge from the mechanical draft cooling tower be no more than 7°F above or less than 3°F below the ambient temperature of the river water.

In addition, the discharge temperature must be maintained at or below the ambient river water temperature when the intake water temperature is 87°F or greater. The final supplement should indicate whether thermal limitation imposed on Unit No. 1 mechanical draft cooling tower will be applied to Unit No. 2.

In light of the recent biological data collected at the site, the final supplement should also show the location of the intake structure in relation to known spawning areas in the vicinity of the power plant.

Section 316(b)

B. Transmission Lines and Their Field Effects

It is encouraging to see a discussion of the possible health hazards due to induced electric field effects and to read that the applicant is commited to undertake a series of safety steps in this area. EPA is concerned, however, with the 550-KV transmission line that crosses Pennsylvania Route 100 east of Bechtelsville, and would like to have this transmission line included in all safety implementation plans regarding induced field current.

EPA has given notice[5] that it desires to collect the data necessary to define possible health and environmental effects of EHV power transmission. It is hoped that the applicant and others will

(5) Federal Register, Vol. 40, p. 12323, March 18, 1975.

provide the information and operating data necessary for the safety of the public in the transmission of electrical power.

C. Meteorology and Climatology

We concur with the NRC staff opinion that present state-of-the-art knowledge does not provide definitive conclusions concerning the effects on climate due to atmospheric dispersion of heat and moisture from the power station, although major weather modifications are not expected to result from the operation of the Three Mile Island Nuclear Station. We make the observation that any future projects involving large heat releases into the atmosphere in the lower Susquehanna Basin should utilize the growing body of knowledge on macroscale weather modification. The environmental impact of the large aggregation of power generation facilities in the area should be analyzed on a regional basis for future environmental impact.

Estimates of relative atmospheric concentration (x/o) values at various distances and directions from the site should be recomputed using on-site meteorological data, when the meteorological monitoring system conforms with the recommendations of Regulatory Guide 1.23.

IV. MISCELLANEOUS COMMENTS

A. Table 2-2 of Section II "Site Analysis" lists all downstream water users. The Holtwood Dam and hydroelectric power station was not included in this listing. The facility's distance downstream from TMINS, and its rate of use should be included in the inventory.

B. The final supplement should include the fact that an NPDES permit for Three Mile Island Nuclear Station was issued on December 30, 1974.

METROPOLITAN EDISON COMPANY SUBSIDIARY OF GENERAL PUBLIC UTILITIES CORPORATION

POST OFFICE BOX 542 READING, PENNSYLVANIA 19603 TELEPHONE 215 – 929-3601

September 13, 1976
GQL 1295

Director of Nuclear Reactor Regulation
Attn: Mr. W. H. Regan, Jr.
Environmental Projects Branch No. 3
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Gentlemen:

SUBJECT: THREE MILE ISLAND NUCLEAR STATION
UNIT 2
DOCKET NUMBER 50-320

Enclosed please find comments on the Commission's Draft Environmental Statement for Three Mile Island Nuclear Station Unit 2.

The enclosed responses to the Draft Environmental Statement summarizes Metropolitan Edison's position with regard to the issues raised in that document, generally describes alterations to Environmental Monitoring Program or procedure that will be implemented and gives detailed comments on the DES.

We would be pleased to discuss any of these matters with your staff should the need arise.

Very truly yours,

R. C. Arnold
Vice President

asb
Enclosure

9410

42-309

APPLICANT'S COMMENTS

on the

NUCLEAR REGULATORY COMMISSIONS'

Draft Supplement to the Final

Environmental Statement

RELATED TO THE OPERATION OF

THREE MILE ISLAND NUCLEAR STATION, UNIT 2

DOCKET NO. 50-320

September, 1976

COMMENT 1

Summary and Conclusions (Page iii, Item 6.b.(4))

Quotation: *"If it is necessary to chlorinate at the permitted level, the monitoring program shall include sampling to map the distribution of chlorine in the river."*

Comment:

It is the Applicant's understanding that this proposed licensing condition requires the sampling to map the distribution of chlorine within the river only if it is necessary to chlorinate at the permitted level. Permitted level, as stated in this proposed licensing condition, is understood by the Applicant to mean the Three Mile Island Nuclear Station (TMINS) NPDES permit level which are 0.2 ppm average and 0.5 ppm maximum free available chlorine.

TMI-1 is limited by its Environmental Technical Specifications to 0.2 ppm total residual chlorine and 0.1 ppm free available chlorine concentration at the point of discharge to the river. Presently, the Applicant does not plan to discharge in excess of these limits at TMI-1, nor is it anticipated that these limits will be exceeded when TMI-2 becomes operational. However, if at some future time it is necessary to chlorinate at the NPDES permit level in order to assure adequate defouling, the Applicant will notify the staff and will sample the discharge plume in an attempt to map the distribution of chlorine in excess of the .05 mg/l value recommended to protect aquatic life defined on page 5-3 of the Draft Supplement to the Final Environmental Statement.

COMMENT 2

2.2.3 Water Use (Page 2-2, Table 2.3)

Comment:

Table 2.2 indicates that the York Haven Power Company's Hydroelectric Generating Plant and Brunner Island Steam-Electric Generation Station is less than one mile downstream from the Three Mile Island Nuclear Generating Station. The York Haven Hydroelectric Generating Station and the Brunner Island Steam-Electric Generating Station are approximately three and four miles, respectively, downstream from Three Mile Island Nuclear Station.

COMMENT 3

2.4.3 Water Quality (Page 2-5)

Comment:

The Applicant suggests that the staff mention in this section of the report the Fe values in the river often exceed 1.5 mg/l and on occasion river pH values are greater than 8.5, which are Pennsylvania water quality criteria limits applicable to that portion of the Susquehanna River in the vicinity of TMINS. These high values are attributed to upstream surface water runoff. Ambient values in excess of these water quality criteria limits have been reported in the Applicant's 1974 and 1975 annual reports.

COMMENT 4

2.6.2.3 *Ichthyoplankton* (Page 2-10, Line 1)

Quotation: *"Ichthyoplankton was sampled by pumping every two weeks. . ."*

Comment:

Ichthyoplankton samples were not collected every two weeks as the Draft Environmental Statement states, but were sampled semi-monthly (twice a month).

COMMENT 5

3.3.3.1 *Demineralizer Regeneration Solutions* and
3.3.3.2 *Condensate Polisher Regeneration Solutions* (Page 3-9)

Comment:

Both 3.3.3.1 and 3.3.3.2 refer to batch neutralization of regenerant waste from both make-up water demineralizers and the condensate polishing system. The TMI-2 system is designed for automatic neutralization and continual discharge, however, the system is capable of batch neutralization if the need arises.

COMMENT 6

4.4 *Effects on Ecological Systems, Construction of Transmission Lines* (Page 4-3, Paragraph 5)

Quotation: *"The seeding program for the corridor appears to have been effective in most places. There were a few locations noted which may need further attention to establish a reasonable ground cover and prevent erosion. These areas should be adequately controlled under the transmission line monitoring program suggested in Section 6.5."*

Comment:

The Applicant agrees with the staff's suggestion on a transmission line monitoring program in Section 6.5, Terrestrial Monitoring Programs. Once each year, during normal transmission line inspection, areas that need additional attention to adequately control erosion attributed to transmission line construction will be noted. With the landowner's permission, areas will then be revegetated (or other actions taken) in order to control excessive erosion. As suggested by the staff, a brief report of any such area and confirmation of action to remedy the condition will accompany the annual report.

COMMENT 7

4.4 *Effects on Ecological System, Construction of Transmission Lines* (Page 4-3, Paragraph 6)

Quotation: *"The only impact noted by the staff is the former Bechtelsville substation. Construction of this substation had proceeded to the point that many concrete structures had been placed on the site before the construction was suspended. If this area is not to be used for construction, it should be promptly returned to some form of vegetative cover."*

Comment:

The site of the former Bechtelsville substation is no longer owned by the Applicant. The site has been sold in a condition which was acceptable to the buyer for his needs.

COMMENT 8

Construction of Transmission Lines (DES Page 4-3, Paragraph 1)

Quotation: *"The crossing of Route 29 occurs adjacent to a farm dealership establishment. Farm implements of various types appear to be routinely parked beneath the line. Major buildings are located some distance from the line. Before this line becomes operational, the Applicant should inform the owner of this business establishment of the hazards due to minor shocks from induced voltages on this equipment and of any precautions which would be taken to minimize such hazards (see also discussion in Section 5.2.2). After the lines become energized, field measurements should be taken to establish the actual potential for such occurrences."*

42-213

Comment:

As the staff suggests, the Applicant will inform the owner of the farm equipment dealership, prior to the operation of this line, of possible electrostatic effects and precautions that can be taken to minimize such effects. The Applicant will also take field measurements at this location once the line becomes energized to identify the potential for such occurrences. These actions are consistent with the Applicant's normal practices.

COMMENT 9

4.4 *Effects on Ecological System, Construction of the Transmission Lines* (Page 4-4, Paragraph 2)

Quotation: *"It should be noted, however, that the avoidable impact of the abandoned Bechtelsville substation can and should be mitigated. The occasional vegetation control and seeding activities should be continued in an attempt to maintain the low level of impact of this line."*

Comment:

See comments 6 and 7.

COMMENT 10

5.2.2 *Transmission Lines* (Page 5-1, Paragraph 11)

Quotation: *"The Applicant has committed to: (a) grounding transmission towers, (b) grounding fences which run both parallel and transverse to the right of way."*

Comment:

The Applicant has not committed to the above, however, the Applicant has grounded all transmission towers and will ground fences where electrostatic induction hazards exist.

COMMENT 11

5.3.3 *Water Quality Standards and Effluent Limitations* (Page 5-5, Top of Page)

Quotation: *"If it is necessary to operate at the permitted level of chlorination, then the Applicant should monitor total residuals in the river to determine the extent of the region in which concentrations exceed the value recommended to protect aquatic life."*

42-214

Comment:

See comment 1.

COMMENT 12

5.4.1.3 Dose Commitments from Radioactive Liquid Releases to the Hydrosphere (Page 5-8, Top of Page)

Comment:

This section of the Draft Supplement to the Final Environmental Statement gives reference to a tritium discussion in Appendix C that applies to all tritium sources from the plant. No Appendix C was included as part of this report. The Applicant wishes to reserve the right to comment on this tritium discussion prior to its inclusion in the Final Supplement Environmental Statement.

COMMENT 13

5.5.2.1 Intake Effects, Impingement of Fishes (Page 5-14, Line 3)

Quotation: "Impingement monitoring every two weeks. . ."

Comment:

Impingement monitoring was conducted semi-monthly (twice a month), not every two weeks.

COMMENT 14

5.5.2.2 Station Passage Effects, Chemical Discharge (Page 5-16, Paragraph 1)

Quotation: "If it is necessary to chlorinate at the permitted level, then the area in which toxic conditions are created should be at the most a few thousand square feet. The staff does not expect this to have a significant adverse impact on the local fishery resources from chlorine discharges. However, the staff will require that the operational monitoring program include sampling to map the distribution of chlorine in the river if discharge at the permitted level is necessary."

Comment:

See comment 1.

COMMENT 15

6.3 Meteorological Program
6.3.1 Preoperational Onsite Meteorological Program (Page 6-1, Paragraph 3)

Quotation: "The present wind speed and direction measuring instrument installed at the 150-ft level does not meet the instrument specification recommended in Regulatory Guide 1.23."

Comment:

The instrumentation at the 150 foot level (aerovane) was not part of the nuclear meteorological program and, therefore, did not fall within the scope of recommended instrument specifications of Regulatory Guide 1.23.

COMMENT 16

6.4 Aquatic Biological Monitoring Program (Page 6-2, Paragraph 2)

Quotation: "The staff recommends that the present Unit 1 monitoring program should be continued as the operational evaluation program for Unit 2 with the exception of the phytoplankton and zooplankton entrainment studies which may be terminated. The reasons for termination of planktonic studies are discussed in Section 5.5.2.2. It is also suggested that after staff evaluation of the 1975 monitoring results, at the time of preparation of the Environmental Technical Specifications for Unit 2, that all biological monitoring programs be evaluated by the staff and applicants for appropriateness at the TMINS. The results of this reevaluation will be incorporated in the Technical Specifications prior to issuance of the operating license."

Comment:

The Applicant agrees with the staff's evaluation of the present Unit 1 aquatic biological monitoring programs and will continue these programs with the exception of the phytoplankton and zooplankton entrainment studies as recommended by the staff to evaluate the operational impact of TMI-2. The Applicant also agrees with the staff's suggestion of reevaluating all biological monitoring programs for their appropriateness at TMINS, by the staff and the applicant, for incorporation of changes in the proposed station Environmental Technical Specifications.

COMMENT 17

6.5 Terrestrial Monitoring Programs (Page 6-2, Paragraph 4)

Quotation: *"The staff concludes that the operational programs for Unit 1 should be continued for two years after start-up of Unit 2 (termination contingent on staff review and approval) with the exception of the bird impaction program which may be terminated. In place of the bird impaction program, a provision should be adopted requiring analysis and report for staff review within thirty days of any occurrence of impaction in excess of 100 events per day. A low altitude true and false color aerial photography program should be implemented for correlation with the vegetational surveys. This will provide the basis for a long-term evaluation of any adverse terrestrial effects.*

Comment:

The Applicant agrees with the staff that the operational terrestrial monitoring program for Unit 1 be continued for two years after the start up of Unit 2 with the exception of the bird impaction program. However, the Applicant suggests that the reporting provision to replace the bird impaction program be reworded so not to give reference to a specific number of events (number of birds impacted) per day. By referencing a specific number of events per day, the Applicant would have to perform a bird impaction survey every day to determine whether the number in the provision was exceeded. Therefore, if a specific number of events per day is referenced, the staff would not be terminating, but increasing the scope of the bird impaction program. The Applicant suggests that the sentence in the above quotation from the DES in relation to this provision be changed to read as follows:

> "In place of the bird impaction program, a provision should be adopted requiring analysis and report for staff review within thirty days of any abnormal occurrence of cooling tower bird impaction."

It is the Applicant's understanding from conversation with the staff that a low altitude true and false color (infrared) aerial photography program, if implemented, would take the place of the plant pathology transect and quantitative vegetation analysis programs that the Applicant presently conducts. The Applicant understands the many advantages of implementing such a program and, therefore, agrees with the staff's suggestion. Although details of this study have not been finalized, it is the Applicant's understanding that the program will begin during 1977 and continue for two years after Unit 2 start up. It is estimated that the study area will cover approximately a two-mile radius around the WNPS site and consist of one or two overflights per year that will be verified by ground truth surveys (one for each overflight) along selected transects within the study area.

COMMENT 18

6.5 Terrestrial Monitoring Programs (Page 6-2, Paragraph 5)

Quotation: "The staff also recommends that once each year, during normal transmission line inspections, notations be made of any areas which may require reseeding. A brief report of any such areas and confirmation of action to remedy the condition should accompany the annual report."

Comment:

See comment 6.

COMMENT 19

Figure 6.2 (Page 6-4)

Comment:

In Figure 6.2, station number 11 should be listed under Seine Stations. The figure represents sampling locations only applicable to 1974. The figure title, therefore, should be changed to read: "Trapnet and Seine Stations Sampled in the Vicinity of THNS during 1974".

COMMENT 20

6.6 Radiological Environmental Monitoring
6.6.1 Preoperational Program (Page 6-9)

Comment:

Item 1 and 2

The Applicant has an air particulate sampling station in the Falmouth community and will perform analyses of quarterly composite air samples for Sr-89 and Sr-90. An iodine sampler will also be located at the Falmouth station as suggested by the staff.

Item 3

As suggested by the staff, the Applican will institute a soil sampling program in prevailing downwind sectors to monitor long term build-up to replace the precipitation sampling program.

Item 4

The Applicant will install a composite sampler as suggested by the staff at the York Haven Hydroelectric Station to replace grab samples presently taken at the TMI end of York Haven dam and the west shore of TMI.

Item 5

The Applicant will comply with the staff's recommendation that milk samples collected at the location with the highest X/Q should be taken at least semi-monthly during the grazing season, each sample measured for I-131 and monthly composites measured for Sr-89, Sr-90, and gamma scanned.

Item 6

The Applicant will comply with the staff's suggestion of sampling one recreationally important fish species in the monitoring program. No commercially important fish species exist in the TMINS vicinity.

Item 7

The Applicant agrees with the staff that fruits should be part of the vegetation sampling program and will sample fruits in the future. However, tuberous and root vegetables are not a significant pathway in the TMINS vicinity and, therefore, the Applicant should not be required to sample these vegetables.

RAB

Item 8

The Applicant is presently sampling deer, the major source of supplemental protein in the TMINS vicinity. A deer is collected and sampled from road kills that occur in the vicinity of the site. This sampling is conducted at indicator and background distances from the site on an annual basis. The Applicant should not be required to sample poultry and eggs, for it is not a significant pathway in the TMINS vicinity. A study conducted by the Applicant's consultant showed that 91% of the feed consumed by poultry, for both meat and eggs, in the vicinity of TMINS, is imported from outside the area.

Item 9

The Applicant will eliminate the use of "sensitivity" in f vor of the "lower level of detection" (LLD) terminology suggested by the NRC. In addition, a table of LLD's similar to that used in Regulatory Guide 4.8 will be developed for each radionuclide in the analyses performed. The Applicant recommends the use of the LLD proposed by the National Bureau of Standards of 3σ background as opposed to the NRC LLD of 4.66σ background. The National Bureau of Standard's number is recognized by industry and the Applicant. It is the Applicant's opinion that the NRC number is too costly for the minimum additional benefit gained.

Item 10

The Applicant agrees with the staff and will increase the sensitivity of the tritium analyses for water samples as proposed by draft Regulatory Guide 4.8 (December, 1975).

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