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SUBJECT: Forwards comments on DES Document & proposal have been classified environ rept 2. Due to environ reservations, DES contains insufficient info to assess environ impact fully.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION III

6TH AND WALNUT STREETS  
PHILADELPHIA, PENNSYLVANIA 19106

AUG 17 1979

Mr. Voss A. Moore  
Assistant Director  
Environmental Projects  
Nuclear Regulatory Commission T-518  
Washington, DC 20555

Dear Mr. Moore:

We have completed our review of the Draft Environmental Impact Statement concerning the Susquehanna Steam Electric Station, Units 1 and 2, Luzerne County, Pennsylvania.

On the basis of our review and concerns we have classified the document and proposal ER-2. This means we have environmental reservations concerning the project and we do not believe the impact statement has sufficient information to assess fully the environmental impact of the action. We have enclosed our comments.

The EPA classification and the date of our comments will be published in the Federal Register in accordance with our responsibility to inform the public of our review on proposed actions under Section 309 of the Clean Air Act.

Sincerely yours,

  
John R. Pomponio  
Chief

EIS & Wetlands Review Section

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Comments

Draft Environmental Impact Statement  
Susquehanna Steam Electric Units 1 & 2  
Luzerne County, Pennsylvania

## Radiological Issues

### Iodine

We request the NRC to explain the changes which allowed a five to seven fold increase in projected gaseous iodine releases (found by comparison of the Statements of 1973 and 1979) and to explain why the increases did not result in any substantial change in the associated doses to a child's thyroid. (For details, see the Draft Statement, page 4-16 versus page G-56, and 4-18 versus G-75, 77.)

In support of this request, it may be noted that our 1973 comments on projected gaseous iodine releases and associated doses were sharply critical, and we recommended the use of engineered iodine control systems and other design modifications to reduce iodine release such that the offsite dose to a child's thyroid did not exceed 5 millirem per year. Our comments are reproduced in the Draft Statement, pages G-151, 152. The 1973 response to those comments, shown on page G-123, item 11.13, stipulated use of design modifications, and referenced a revised radiological impact as described on page G-77, section 5.4.1. Even though section 5.4.1 noted the existence of uncertainties in the calculational model, and the dose impact has now been recalculated using new source-term calculations, per page 4-1, but the Statement does not contain any specific discussion of lessened impact per unit of iodine release. This discussion of lessened impact per unit of iodine release must be incorporated in the Final Environmental Impact Statement.

### Reactor Accidents

The EPA has examined the NRC's assessment of accidents and their potential risks. The assessments 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 risk evaluation. The NRC is expected to continue to ensure safety through siting, plant design and accident assessments 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 final report of this effort was issued in October 1975 by the U.S. Nuclear Regulatory Commission as the Reactor Safety Study, WASH-1400 (NUREG/75/014). The EPA's review of the study included in-house and contractual efforts, and our comments were released in a report in June 1976.

In July 1977 the NRC chartered the Risk Assessment Review Group to provide advice and information to the NRC on WASH-1400 in response to letters from Congressman Udall expressing misgivings about the report and in particular about the Executive Summary published with the report. The Risk Assessment Review Group issued its findings in September 1978 and the NRC accepted the findings during January 1979. The NRC also withdrew any explicit or implicit past endorsement of the Executive Summary, among other specific actions. EPA agrees with the NRC's position in this matter. We also concur with the NRC's continued support for the use of probabilistic risk assessments in regulatory decisionmaking, with the admonishment that such decisions be based on several factors encompassing social, technical and economic issues in addition to accident risk assessments.

The reactor accident at the Three Mile Island-2 reactor on March 28, 1979 has focused attention on the great need for a thorough reexamination of reactor safety. We are concerned about the effectiveness of the procedures by which reactor operating experience is translated into improved reactor designs or operational practices. We believe it incumbent on the NRC to carefully review its current procedures for identifying, assessing and acting on potential accident sequences as operating experience with reactors increases.

Consideration of accident scenarios should of course include Class 9 accidents, because their existence was demonstrated at TMI. The SSES statement does not consider such accidents. As SSES is on the Susquehanna, upstream from Three Mile Island, and 75 miles away, the statement should review the possible cumulative effects of a second Class 9 accident in central Pennsylvania.

#### Population Dose Commitments

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 a world-wide basis, rather than just in the U.S. To the extent that this draft statement (1) has limited the EDC to the annual discharge of these radionuclides, (2) is based on the assumption of a population of constant size, and (3) assesses the doses during 50 years only following each release, it does not fully provide the total environmental impact. Assessment of the total impact would (1) incor-

porate the projected releases over the lifetime of the facility (rather than just the annual release), (2) extend to several generations beyond the period of release, (3) consider, at least qualitatively or generically, the world-wide influences on the total environmental impact or specify the limitations of the model used.

#### Fuel Cycle and Long-Term Dose Assessments

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 the 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. EPA's Uranium Fuel Cycle standards are expressed in terms of dose limits to individuals members of the general public and limits on quantities of certain long-lived radioactive materials released to the general environment.

A document entitled "Environmental Survey of the Uranium Fuel Cycle" (WASH-1248) 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 power plants.

Recently the NRC decided to update the WASH-1248 survey. We believe this is a prudent step and commend the NRC on initiating this update. In providing comments to the NRC on this subject, dated November 14, 1978, we encouraged NRC to express environmental impacts in terms of potential consequences to human health, since for radioactive materials and ionizing radiation the most important impacts are those ultimately affecting human health. We believe that presentation of environmental impact in terms of human health impact fosters a better understanding of the radiation protection afforded the public.

A second major concern of EPA deals with the discharge and dispersal of long-lived radionuclides into the general environment. In the areas addressed in WASH-1248, there are several cases in which radioactive materials of long persistence are released into the environ-



ment. The resulting consequences may extend over many generations and constitute irreversible public health commitments. This long-term potential impact should be considered in any assessment on health impact. EPA has consistently found inadequate the NRC's estimates of population doses for these persistent radioactive materials. In particular, the NRC has generally limited their analyses to the population within 50 miles of a facility, or in rare cases, to the U.S. population and to doses committed for a 50-year period by an annual release. These limitations produce incomplete estimates of environmental impacts and underestimate the impact in some cases, such as from releases of tritium, krypton-85, carbon-14, technetium-99 and iodine-129. The total impact of these persistent radionuclides should be assessed, qualifying such estimates as appropriate to reflect the uncertainties. In this regard, we note that the Nuclear Energy Agency is addressing this approach in making assessments and that the NRC is represented in this effort.

Another major consideration in updating WASH-1248 is the health impact from radon-222 from the uranium mining and milling industry. Estimates made by EPA among others indicate that radon-222 contributes the greatest fraction of the total health impact from nuclear power generation. In preparing an updated WASH-1248, we believe NRC should:

- a. Include the radon-222 contribution from both the uranium mining and milling industries.
- b. Determine the health impact to larger populations than only the local population.
- c. Recognize the persistent nature of the radon-222 precursors (Th-230 and Ra-226) by estimating the health impact for a period reflecting multi-generation times.

#### 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 projects because the reprocessing of spent fuel from each new facility will contribute to the total waste. 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). In this regard, 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.

DOE issued a draft EIS, "Management of Commercially Generated Radioactive Waste," during April of 1979. EPA is conducting a comprehensive review of this EIS, and will submit comments to DOE upon completion of the review.

EPA is cooperating with both NRC and DOE to develop an environmentally acceptable program for radioactive waste management. In this regard, EPA has published proposed environmental radiation protection criteria for the management of all radioactive waste and will establish environmental radiation protection standards for high-level waste in 1979. We have concluded that the continued development of the Nation's nuclear power industry is acceptable from an environmental point during the period required to satisfactorily resolve the waste management question.

#### 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 has 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.

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. At present, EPA, DOE and NRC are each attempting to more fully assess the radiological impact of transportation risks. The EPA will make known its views on any environmentally unacceptable conditions related to transportation. On the basis of present information, EPA believes that there is no undue risk of transportation accidents associated with the SSES.

#### Decommissioning

The NRC has published a proposed rulemaking of Decommissioning Criteria for Nuclear Facilities in the Federal Register on March 13, 1978. EPA comments were sent to NRC on July 5, 1978, dealing with the decommissioning issues.

In summary, we believe that one of the most important issues in the decommissioning of nuclear facilities is the development of standards

for radiation exposure limits for materials, facilities and sites to be released for unrestricted use. We have included the development of such standards among our planned projects. The work will require a thorough study to provide the necessary information, including a cost-effectiveness analysis for various levels of decontamination.

The development of standards for decommissioning must, of course, include consideration of the many concurrent activities in radioactive waste management and radiological protection. EPA has developed proposed Criteria for Radioactive Waste for management of all radioactive wastes which will provide guidance for decommissioning standards. From the decommissioning view probably the most important criterion is that limiting reliance on institutional controls to a finite period. EPA believes that the use of institutional control to protect the public from retired nuclear facilities, until they can be decontaminated and decommissioned, should be limited at the most to 100 years and preferably less than 50 years. This includes nuclear reactors shut down and moth-balled or entombed for a period of time under protective storage. After the allowable institutional care period is over, the site will have to meet radioactive protection levels established for release for unrestricted use. We believe EPA's proposed criteria would be directly applicable, as above, to decommissioning of nuclear facilities and should be given serious consideration by the Nuclear Regulatory Commission (NRC).

The availability of adequate funds when the time to decommission arrives is also most important; it should be the responsibility of the NRC to assure that such provisions are made. We recognize the great complexity of providing funds for such activities at some time in the future, particularly where utilities are involved due to the controls imposed by State and local utility commissions. However, if it can be firmly established that the total cost of decommissioning in current dollars is a very small fraction of initial capital costs, provision of escrow funding may not be necessary. Therefore, we urge the NRC to conduct the necessary studies and assessments to determine unequivocally the costs of decommissioning and to compare such costs to initial capital costs. It is only through a definitive analysis, and perhaps through realistic demonstration, that this issue can be resolved.

#### Direct Radiation From Nitrogen-16

The assessment of the direct radiation from the nitrogen-16 is not discussed in sufficient detail to allow meaningful interpretation (see pages 4-16 to 4-21). For example, it is stated that the applicant calculated a direct radiation dose of 2.7 mrem/year per unit at 0.55km

south of the plant. It is also stated that Monte Carlo techniques were used to calculate direct radiation and skyshine dose rates on the order of 20 mrem/year per unit at a typical site boundary distance of 0.6km from the turbine building. It is noted that the direct radiation dose is not listed on Tables 4.9 and 4.10, that there are residences at 610 m and 756m from the plant, and that the SE sector with the residence at 610m also has a garden and meat animal at 644m. These factors could serve to maximize doses in these sectors and therefore should be more fully discussed in the final EIS.

#### Health Risk Conversion Factors

The health risk conversion factors listed on page 4-27 appear low and are inconsistent with the factors used in the Generic EIS on Uranium Milling (NUREG-0511). These values should be made consistent with those used in NUREG-0511.

#### Comments Relating to Water Quality

##### 1. Page 2-12, Figure 2.3

Figure 2.3 depicts the Water Use Diagram for Susquehanna Units 1 and 2; however, a water balance cannot be calculated for many of the unit processes shown on the diagram due to insufficient information. For example, it is impossible to determine the makeup of the waste treatment discharge since the flow rates of the demineralizer and raw water treatment plant discharges are not indicated.

For purposes of clarity and future permitting, a revised diagram should be submitted which clearly shows all discharge points and includes a complete water balance. This treatment scheme could also be better utilized if it were included in Section 3.2.4 entitled Chemical, Sanitary, and Other Waste Treatment.

Paragraph 2.3.4 relates that the Susquehanna at the plant site meets water quality standards for all parameters except iron. In describing the discharge, on pages 4.4 and the pages following, the impression is given that the discharge will degrade the river beyond water quality limits for several contaminants. Table 4-3 shows that the chloride ion is extraordinarily high. The quantity of the ion is not the major concern but its nature is, particularly when you consider the stoichiometry of the various ions that are on the list of the State's water quality parameters, those making up the effluent of the plant and those ions and compounds not included but may be present in the list of water quality parameters.

Figure 2-3 does not clearly illustrate whether the sewage treatment plant effluent is discharged into the Susquehanna River. The plant is not described in sufficient detail. The lack of design or operation mode does not give the necessary assurance that it will operate efficiently at 1/3 capacity without adverse impacts upon the river. Many treatment systems fail when they are not operated at capacity.

2. Page 2-17, Table 2.8

Table 2.8 lists specific Water Quality Criteria applicable to fecal coliform, total iron, manganese, dissolved oxygen, pH, and total dissolved solids but has not included the applicable criteria for temperature. Specific temperature criteria for zone 03.010, North Branch Susquehanna River, are as follows:

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

This information can be found in Pennsylvania's Water Quality Criteria, Pennsylvania Code, Title 25, Part I, Environmental Resources, Chapter 93, Water Quality Criteria Amended September 16, 1976; Effective October 11, 1976.

3. Page 3-3, 3.2.2.2

Section 3.2.2.2 describes the intake structure which will be employed at the plant. A comparison of this intake and intake designs illustrated in EPA Document 660/2-73-016 Reviewing Environmental Impact Statements - Power Plant Cooling Systems Engineering Aspects shows the design of the plant's intake as generally unsatisfactory. The document states that travelling screens with continuous movement are preferred to those with intermittent movement. In addition, it is recommended that stationary louvers for fish by pass or collection and removal facilities should be provided in the Screenwell. These two modifications to the proposed intake structure at SSES should be considered in the final design, especially in light of the NRC staff's concern of adverse affects to the aquatic community within the immediate vicinity of the wing walls and associated rip-rap. It should also be noted that Section 316(b) of the Clean Water Act of 1977 requires the location design construction and capacity of cooling water intake structures reflect Best Available Technology for minimizing adverse environmental impact by July 1, 1984.

Table 3-1 reveals that the average annual intake from the river exceeds the maximum monthly intake. These figures are confusing and should be clarified.

4. Page 3-8, Section 3.2.4.1

The first paragraph of Section 3.2.4.1, Industrial Wastes, states that sulfuric acid added to the circulating water system is the major source of industrial chemical waste and of potential impact to the aquatic environment. This section does not discuss what measures or treatment the applicant has employed to eliminate or minimize this impact. This section should be expanded to address this point.

The second paragraph of this section states that wastes from raw water treatment will be discharged with roof drains, etc. to the holdup pond in the parking lot. No indication is made, however, if any additional treatment will take place in this pond. If so, any proposed treatment should be outlined. If not, the applicant will most likely have to clean out the pond as a result of the build up of suspended solids. In this case, the disposal of these solids should be addressed.

5. Page 4-6, Section 4.3.4

Section 4.3.4, EPA Effluent Guidelines and Limitations states the station shall achieve effluent limitations requiring the application of BPTCA according to P.L. 92-500. It should also be noted that amendments to this law (Clean Water Act of 1977, P.L. 95-217) will require the station to achieve effluent limitations which require the installation of Best Conventional Technology no later than July 1, 1984; Best Available Technology for non-conventional pollutants by July 1, 1984 or three years after limitations are established, whichever is later, but never later than July 1, 1987; and Best Available Technology for those 129 toxic pollutants which appeared at 43 Federal Register 4108 no later than July 1, 1984, as applicable.

6. Page 4-9

It is questionable as to the practicability of reintroducing shad to the river. Due to the number of dams between Conowingo and the Susquehanna Steam Electric site, it does not appear that this anadromous fish could survive. The cost of getting the migrating fish over the dams would be exorbitant and difficult to justify.