

March 26, 1998

Mr. Robert G. Byram  
Senior Vice President-Generation  
and Chief Nuclear Officer  
2 North Ninth Street  
Allentown, PA 18101

SUBJECT: ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT  
APPROVAL OF USE OF ATRIUM™-10 FUEL, SUSQUEHANNA STEAM ELECTRIC  
STATION, UNIT 1 (TAC NO. M99481)

Dear Mr. Byram:

Enclosed is a copy of the Environmental Assessment and Finding of No Significant Impact related to your application for an amendment to Facility Operating License No. NPF-14, dated August 26, 1997, as supplemented by letters dated December 4, 1997, and February 2, 1998, to permit the use of ATRIUM™-10 fuel in Susquehanna Steam Electric Station, Unit 1, for all operational conditions.

The assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

/s/  
Victor Nerses, Senior Project Manager  
Project Directorate I-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket No. 50-387

Enclosure: Environmental Assessment

cc w/encl: See next page

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

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Sincerely,

A handwritten signature in cursive script that reads "Victor Nerses".

Victor Nerses, Senior Project Manager  
Project Directorate I-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket No. 50-387

Enclosure: Environmental Assessment

cc w/encl: See next page

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Pennsylvania Power & Light Company

Susquehanna Steam Electric Station,  
Units 1 & 2

cc:

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**UNITED STATES NUCLEAR REGULATORY COMMISSION****PENNSYLVANIA POWER AND LIGHT COMPANY****DOCKET NO. 50-387****SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 1****ENVIRONMENTAL ASSESSMENT AND FINDING OF****NO SIGNIFICANT IMPACT**

The U.S. Nuclear Regulatory Commission (the Commission) is considering issuance of an amendment to Facility Operating License No. NPF-14, issued to Pennsylvania Power and Light Company (the licensee), for operation of the Susquehanna Steam Electric Station, Unit 1, located in Luzerne County, PA.

**ENVIRONMENTAL ASSESSMENT****Identification of the Proposed Action:**

The proposed action would change the Technical Specifications for the unit to permit the use of ATRIUM™-10 fuel in the reactor. The changes include core flow dependent minimum critical power ratio (MCPR) Safety Limits in Sections 2.1.2 and 3.4.1.1.2, addition of Siemens Power Corporation (SPC) methodology topical report references in Section 6.9.3.2, changes in Section 5.3.1 to reflect new fuel design features, changes in definitions in Section 1 to reflect the new fuel design, and changes to the Bases to correspond to the above changes as appropriate.

The proposed action is in accordance with the licensee's application for amendment dated August 26, 1997, as supplemented December 4, 1997, and February 2, 1998.

**The Need for the Proposed Action:**

The proposed action will enable the licensee to complete its maintenance and refueling outage on this unit and begin a new fuel cycle, with a portion of the core consisting of the new

higher enriched, ATRIUM™-10 nuclear fuel. Use of higher fuel enrichment will give the licensee the flexibility to extend fuel irradiation and operate for longer fuel cycles.

Environmental Impacts of the Proposed Action:

The Commission has completed its evaluation of the proposed action and concludes that it is acceptable. The safety considerations associated with the use of the ATRIUM™-10 fuel in the Susquehanna Steam Electric Station, Unit 1, have been evaluated by the NRC staff and the staff has concluded that this change in the reactor fuel design would not adversely affect plant safety. The proposed change to the fuel design has no adverse effect on the probability of any accident previously analyzed. The increase in fuel enrichment from 4.0 percent versus 4.5 percent for an increased fuel cycle of 24 months results in an increase in the projected maximum burnup rate or discharge exposure from the current 45 to 48 MWd/kgU (or 45 to 48 GWd/MT). This increased burnup may slightly change the mix of fission products that might be released in the event of a serious accident, but such changes would not significantly affect the consequences of serious accidents. There are no changes in the type or amounts of routine radiological effluents. There is no increase in individual or cumulative occupational radiation exposure.

The environmental impacts of transportation resulting from the use of higher enrichment and extended irradiation are discussed in the staff assessment entitled, "NRC Assessment of the Environmental Effects of Transportation Resulting from Extended Fuel Enrichment and Irradiation." This assessment was published in the FEDERAL REGISTER on August 11, 1988 (53 FR 30355), as corrected on August 24, 1988 (53 FR 32322), in connection with the Shearon Harris Nuclear Power Plant, Unit 1: Environmental Assessment and Finding of No Significant Impact. As indicated therein, the environmental cost contribution of an increase in fuel

enrichment of up to 5 weight percent U-235 and irradiation limits of up to 60 GWd/MT are either unchanged, or may in fact be reduced from those summarized in Table S-4 as set forth in 10 CFR 51.52(c). These findings are applicable to the proposed increase in the allowable exposure of SPC ATRIUM™-10 fuel for Susquehanna, Unit 1 since the proposal involves 4.5 percent enrichment and burnup of 48 GWd/MT. Accordingly, the Commission concludes that this proposed action would result in no significant radiological environmental impact.

With regard to potential nonradiological impacts, the proposed action does involve features located entirely within the restricted area as defined in 10 CFR Part 20. It does not affect nonradiological plant effluents and has no other environmental impact. Accordingly, the Commission concludes that there are no significant nonradiological environmental impacts associated with the proposed change in the fuel exposure limit and the use of the new fuel design.

Alternatives to the Proposed Action:

Since the Commission has concluded there is no measurable environmental impact associated with the proposed action, any alternatives with equal or greater environmental impact need not be evaluated. As an alternative to the proposed action, the staff considered denial of the proposed action. Denial of the application would result in no change in current environmental impacts and would result in reduced operational flexibility. The environmental impacts of the proposed action and the alternative action are similar.

Alternative Use of Resources:

This action does not involve the use of any resources not previously considered in the Final Environmental Statement, dated June 1991, for the Susquehanna Steam Electric Station, Unit 1.

**Agencies and Persons Consulted:**

In accordance with its stated policy, on March 12, 1998, the staff consulted with the Pennsylvania State official, D. Ney of the Pennsylvania Department of Environmental Protection, regarding the environmental impact of the proposed action. The State official had no comments.

**FINDING OF NO SIGNIFICANT IMPACT**

Based upon the environmental assessment, the Commission concludes that the proposed action will not have a significant effect on the quality of the human environment. Accordingly, the Commission has determined not to prepare an environmental impact statement for the proposed action.

For further details with respect to the proposed action, see the licensee's letter dated August 26, 1997, as supplemented by letters dated December 4, 1997, and February 2, 1998, which are available for public inspection at the Commission's Public Document Room, The Gelman Building, 2120 L Street, NW., Washington, DC, and at the local public document room located at the Osterhout Free Library, Reference Department, 71 South Franklin Street, Wilkes-Barre, Pennsylvania 18701.

Dated at Rockville, Maryland, this 26th day of March 1998.

FOR THE NUCLEAR REGULATORY COMMISSION



John F. Stolz, Director  
Project Directorate I-2  
Division of Reactor Projects - VII  
Office of Nuclear Reactor Regulation