April 12, 2007

Mr. Britt T. McKinney
Sr. Vice President
and Chief Nuclear Officer
PPL Susquehanna, LLC
769 Salem Blvd., NUCSB3
Berwick, PA 18603-0467

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION (RAI) - SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 (SSES 1 AND 2) - EXTENDED POWER UPRATE APPLICATION RE: HEALTH PHYSICS TECHNICAL REVIEW (TAC NOS. MD3309 AND MD3310)

Dear Mr. McKinney:

In reviewing your letter dated October 11, 2006, concerning the request to increase the maximum steady-state power level at the SSES 1 and 2 from 3489 megawatts thermal (MWt) to 3952 MWt, the Nuclear Regulatory Commission staff has determined that additional information contained in the enclosure to this letter is needed to complete its review. These questions were discussed with your staff during a teleconference on April 5, 2007. As agreed to by your staff, we request you respond by May 9, 2007.

If you have any questions, please contact me at 301-415-1030.

Sincerely,

/RA/

Richard V. Guzman, Senior Project Manager
Plant Licensing Branch I-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-387 and 50-388

Enclosure:
RAI

cc w/encl: See next page

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Accession Number: * RAI provided by memo. No substantive changes made.

OFFICE	NRR/LPLI-1/PM	NRR/LPLI-1/LA	NRR/IHPB/BC	NRR/LPLI-1/BC(A)
NAME	RGuzman	SLittle	TFrye*	DPickett
DATE	4/12/07	4/12/07	3/13/07	4/12/07

OFFICIAL RECORD COPY

REQUEST FOR ADDITIONAL INFORMATION

RELATING TO THE

APPLICATION FOR EXTENDED POWER UPRATE (EPU)

SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2 (SSES 1 AND 2)

PPL SUSQUEHANNA, LLC

DOCKET NOS. 50-387 AND 50-388

The Nuclear Regulatory Commission (NRC) staff is reviewing the request from PPL Susquehanna, LLC (PPL, the licensee) to support the application of the EPU for SSES 1 and 2. The NRC staff has determined that additional information requested below will be needed to complete its review.

1. Section 8.4.2 (page 8-5) of your submittal states that the magnitude of any increase in the fission products in the steam and in the reactor water (resulting from the proposed constant pressure power uprate (CPPU) is expected to be small and would be bounded by the current licensed thermal power (CLTP) design-basis values. Provide the expected percentage increase in the fission products in the steam and in the reactor water for the proposed CPPU at SSES 1 and 2.

2. Section 8.4.2 (page 8-5) of your submittal states that the magnitude of any increase in the activated corrosion product (ACP) production in the coolant (resulting from the proposed CPPU) is expected to be negligible. Section 8.5 (page 8-6) of your submittal states that non-coolant activation (corrosion) products are expected to increase in proportion to the thermal power increase. Describe why the increase in ACPs in the coolant is expected to be negligible while the non-coolant activation (corrosion) products are expected to increase in proportion to the thermal power increase.

3. Section 8.5 (page 8-6) of your submittal states that the Nitrogen-16 (N-16) dose rates from main steam lines and related equipment may increase up to 20% due to the combined effects of increased activation rates and reduced transit decay times. Verify that the expected increase in dose rates from N-16 does not create new radiation, or high radiation areas around condensate bearing systems/components in the turbine building.

4. Section 8.5 (page 8-7) of your submittal states that the CPPU may result in localized hot spots in areas outside feedwater heater rooms and near drywell penetrations. Provide more detailed information on the expected pre- and post-CPPU dose rates in these areas and describe what controls/changes will be implemented to maintain worker doses as low as is reasonably achievable (ALARA) and within the occupational dose limits of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20.

Enclosure

5. Section 8.5 (page 8-7) of your submittal states that radiation surveys of selected areas will be conducted as part of the CPPU startup and test plan to identify areas that may require changes in radiation shielding or zone designation. Provide a listing of these selected areas where you will conduct radiation surveys following the proposed CPPU implementation and describe your criteria for selecting these areas.

6. Section 8.5 (page 8-7) of your submittal lists several strategies to control shutdown dose rates. On the basis of experience gained from other boiling-water reactors (BWRs) which have implemented power uprates of similar magnitude to the one planned at SSES 1 and 2, and in light of the various strategies that you use to control shutdown dose rates at SSES 1 and 2, describe what impact you expect the proposed power uprate will have on the annual collective doses at SSES 1 and 2. Provide an estimate of the occupational dose that will result from the plant modifications that will be needed to support the implementation of the proposed power uprate.

7. Explain the rational behind applying a scaling factor of 1.5 to the vital area CLTP doses to account for CPPU changes in power level (Section 8.5, page 8-8 and Table 8-1).

8. Section 8.6 (page 8-9) of your submittal states that the highest estimated dose to a critical offsite location due to radiation shine from turbine building components for CPPU is approximately 4 milli-roentgen equivalent man (mrem) per year. Provide your basis for this estimate and provide your reasoning why a 500% increase in N-16 steam activity (resulting from implementation of hydrogen water chemistry at SSES 1 and 2) would not result in any increase in this estimated dose.

9. Discuss any effects that the storage of the higher irradiated (due to the increased core flux) spent fuel assemblies in the spent fuel pool (SFP) may have on dose rates in accessible areas adjacent to the sides or bottom of the SFP. Discuss any plans that you may have (such as shuffling of spent fuel assemblies in the SFP so that the older assemblies are located at the perimeter of the SFP) to minimize the effects of the storage of the higher irradiated spent fuel assemblies in the SFP on dose rates in areas surrounding the SFP.

10. For the each of the four vital areas listed under “Vital Missions” in Table 8-1, provide the estimated vital area post-accident dose rates which were used to determine the vital area mission dose. Provide mark-ups of plant layout maps showing the access routes to all vital areas listed in Table 8-1.

11. Section 8.6 of your submittal states that the transport and storage of radioactive materials pathway is the major source of offsite dose, contributing approximately 12.2 mrem of the estimated 13.6 mrem/year to the limiting dose receptor location subject to the limits of 40 CFR 190 (25 mrem/year from effluents and external shine). Provide a breakdown for the estimated dose contributions from the other dose pathways (liquid radioactive effluents, gaseous radioactive effluents, and gamma radiation shine from the plant turbines) that make up this 13.6 mrem/year estimate.

Susquehanna Steam Electric Station, Unit Nos. 1 and 2

cc:

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