



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

October 14, 1999

Mr. Michael J. Mulligan  
5420 Maltdie Court  
Sugar Hill, GA 30518

Dear Mr. Mulligan:

This letter acknowledges your inputs and comments regarding the Susquehanna Steam Electric Station (SSES), Units 1 and 2 which you provided to Mr. V. Dricks, Office of Public Affairs, by electronic mail message dated September 8, 1999. As the SSES Project Manager, your electronic message was referred to me for action.

The information you provided was reviewed, and it was decided to forward the information to our Region I office for consideration and appropriate action if necessary. We appreciate you keeping us aware of the issues that you are concerned with at SSES.

Sincerely,

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

Victor Nerses, Sr. Project Manager, Section 1  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-387 and 50-388

Enclosure: Copy of e-mail dated September 8, 1999

cc w/enc1: See next page

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PDR ADOCK 05000387  
PDR

**From:** "Michael Mulligan" <stmshvl@together.net>  
**To:** "cliff Anderson" <cja@nrc.gov>, "Deb Katz" <can@sh...>  
**Date:** Wed, Sep 8, 1999 10:59 AM  
**Subject:** RE: Safety Concern: Accident Precursor?

Mr Dricks

Within just a few months of my concerns, Susquehanna 1 had a MSIV disc separation scram- and if I remember right the grid had many capacity problem at about the same time. The latest Susquehanna inspection report talks about the growing NRC concern on plant trips and equipment failures. The question for the NRC is, a plant can have a long historic record of safety equipment failures indicating poor management, this places multiple safety systems in a state of degradation, then a failure like the broken MSIV causes a plant transient that raises concerns. The next thing you see in the operational history is a string of plant and equipment trips that increases risk to the public, and it becomes very hard for the plant to recover from.

1) Did the NRC or Susquehanna have any documented concerns with MSIV reliability prior to the plant trip outside of my questioning? Does the public have any assurance that you can detect management problems early?

2) By the historic record of this facility, if we shutdown the plant today and did leak rate testing, the chance is extremely high that you would have multiple MSIV leak rate failures, and most likely two valves in a row would leak and need reporting. The facility's repeated dependence of the accident design calculation (300scfh) as a excuse for valve failures is reckless. Meaning as a general rule, you are providing just enough maintenance such that an equipment failure during an accident will drive the plant right up to the plant design margins without any margin of safety. Aren't you worried that you discovered additional leakage problems in testing after this incidence with the horrible historic MSIV record.

3) The LER on this report is a mess-99-003. Susquehanna flatly declared that no incident in this LER challenged the containment. Meanwhile the next inspection report talks about the delayed start-up of suppression cooling. Like if RCIC or HPCI only operated a half capacity for an hour, the LER would have had a detailed discussion on why that occurred. The inspection report worried that the facility never had a concern on the high suppression pool temp and the delayed startup of the cooling system in the post trip critique which is not in the LER. That peak suppression pool temp and the poor facilities perception to it, was more a threat to containment than any common mode failure. This LER is incomplete and misleading to the public. Request that an historic analysis on this peak temperature be preformed-just how abnormal was it compared to other similar incidences? How vulnerable was this plant at the peak temperature? By looking up this LER in ten years, how would we know that the facility had a performance problem in maintaining torus temps. If the plant did this three times in a row, how would we pick up this trend in LERs if there was no documentation of it? Can you ever use any broad-based LER's risk analysis if accident reporting information is so bias.

Enclosure

Susquehanna Steam Electric Station, Units 1 &2

cc:

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Attachment

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FINANCIAL QUALIFICATIONS AND FOREIGN OWNERSHIP REVIEW OF PROPOSED REORGANIZATION OF PENNSYLVANIA POWER AND LIGHT COMPANY

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PROPRIETARY INFORMATION ON PAGES 3, 4, AND 9

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Docket: 05000387  
Docket: 05000388

MEM04



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

March 11, 2000

MEMORANDUM TO: Elinor G. Adensam, Director  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

FROM: Cynthia A. Carpenter, Chief  
Generic Issues, Environmental, Financial,  
and Rulemaking Branch  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

SUBJECT: FINANCIAL QUALIFICATIONS AND FOREIGN OWNERSHIP REVIEW  
OF PROPOSED REORGANIZATION OF PENNSYLVANIA POWER AND  
LIGHT COMPANY (TAC NOs. MA7380, and MA7383)

The attached analysis constitutes our financial qualifications, decommissioning funding assurance, insurance, and foreign ownership review and input to the SER on the transfer and amendment request dated December 15, 1999, as supplemented by letter dated February 7, 2000, for Susquehanna SES Units 1 and 2. The submittal from PP&L, Inc. (formerly Pennsylvania Power & Light Company), the licensed operator of the Susquehanna facilities, describes a proposed corporate restructuring of PP&L, Inc. The proposed restructuring will transfer PP&L, Inc.'s ownership interests and licensed operating authorities in Susquehanna SES to a new, affiliated nuclear generating company, PPL Susquehanna, Limited Liability Company (PPL Susquehanna).

PP&L, Inc. currently owns 90% of Susquehanna SES Units 1 and 2, and is the licensed operator of the units. Following the proposed restructuring, the PP&L, Inc. nuclear generating assets will be transferred to the new nuclear generation affiliate, PPL Susquehanna. PP&L, Inc.'s non-nuclear generation assets will be transferred to other limited liability companies owned by PPL Generation, LLC, the newly formed generation assets holding company. Each of these entities will be wholly-owned subsidiaries of PP&L Resources, Inc., the current parent of PP&L, Inc.

The basis of this review is 10 CFR 50.80(a), which states, "No license for a production or utilization facility, or any right thereunder, shall be transferred, assigned, or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of the license to any person, unless the Commission shall give its consent in writing."

Contact: Mike Davis, RGEB/DRIP  
301-415-1016

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E. Adensam

-2-

Note that NRR procedures require that orders approving this proposed restructuring must be signed by the Director, Office of Nuclear Reactor Regulation.

With respect to our financial qualifications review, we conclude that the proposed restructuring should be approved, based on the fact that PP&L, Inc. and PPL Susquehanna have provided reasonable assurance that PPL Susquehanna will be able to obtain adequate funding to own, operate, and decommission Susquehanna SES Units 1 and 2.

Finally, with respect to foreign ownership, we conclude from the submitted material that the proposed restructuring will not result in PPL Susquehanna or Susquehanna SES being owned, controlled, or dominated by any alien, foreign corporation, or foreign government.

RGEB is also preparing a change to the Indemnity Agreements for the Susquehanna nuclear generating units to reflect the modified ownership structure. These indemnity changes will be sent to all parties for signature.

Attachment: Safety Evaluation



Note that NRR procedures require that orders approving this proposed restructuring must be signed by the Director, Office of Nuclear Reactor Regulation.

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Attachment: Safety Evaluation

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WASHINGTON, D.C. 20555-0001

PROPRIETARY INFORMATION ON PAGES 3, 4, AND 9

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

PROPOSED REORGANIZATION

OF PENNSYLVANIA POWER & LIGHT COMPANY

DOCKET NOS. 50-387, AND 50-388

SUSQUEHANNA STEAM ELECTRIC STATION UNITS 1 AND 2

1.0 INTRODUCTION

By application dated December 15, 1999, as supplemented February 7, 2000, PP&L Inc, formerly Pennsylvania Power & Light Company (PP&L) informed the NRC that a corporate restructuring is proposed that will transfer PP&L, Inc.'s 90% ownership interest and licensed operating authority in Susquehanna Steam Electric Plant Units 1 and 2 to a new affiliated nuclear generating company, PPL Susquehanna, LLC. PP&L, Inc. currently owns 90% of Susquehanna Units 1 and 2, and is the licensed operator of the units. This restructuring does not affect Allegheny Electric Cooperative, Inc., the other owner of the units.

The application states that the proposed restructuring is "part of a planned corporate realignment by PP&L Resources designed to enable it to respond effectively to the deregulation of the electric utility industry." PPL Susquehanna is being "created as a new, wholly owned subsidiary of PPL Generation, LLC (PPL Generation), which will be a wholly owned subsidiary of PPL Energy Funding Corporation which in turn will be a wholly owned subsidiary of PP&L Resources, the current parent of PP&L, Inc. As a result of the proposed transfers, PPL Susquehanna will become the owner of PP&L, Inc.'s current ownership share of Susquehanna SES and will assume operational responsibility for the facility. In addition, PP&L, Inc. will transfer its non-nuclear generating units to other limited liability companies owned by PPL Generation."

Pursuant to 10 CFR 50.80, the Commission may approve the transfer of the control of a license, after notification to interested persons. Such action is contingent upon the Commission's determination that the holder of the license following the transfer of control is qualified to hold the license and the transfer is otherwise consistent with applicable provisions of law, regulations, and orders of the Commission.

## 2.0 FINANCIAL QUALIFICATIONS ANALYSIS

Pursuant to 10 CFR 50.33(f), an electric utility is exempt from demonstrating its financial qualifications. The staff does not agree with the assertion in the application that PPL Susquehanna will meet the definition of an electric utility as defined in 10 CFR 50.2. 10 CFR 50.2 states that an electric utility is "any entity that generates or distributes electricity and which recovers the cost of this electricity, either directly or indirectly, through rates established by the entity itself or by a separate regulatory authority." PPL Susquehanna will sell electricity to its utility affiliates and will market electricity pursuant to rate tariffs approved by the Federal Energy Regulatory Commission. However, as described below, the power sold to its affiliates is not fully subject to rate regulation. After the Power Sales Agreement with PP&L EnergyPlus Co. expires at the end of 2009, PPL Susquehanna will sell power on the open market at market based rates.

While the NRC staff does not find that PPL Susquehanna qualifies as an "electric utility" specifically for purposes of 10 CFR 50.2, the NRC staff finds that PPL Susquehanna meets the financial qualifications requirements for a non-electric utility pursuant to 10CFR 50.33(f).

PPL Susquehanna, as both a newly formed entity and non-electric utility applying to own and to operate nuclear power plants, is subject to a more detailed financial qualifications review by the NRC than an established electric utility. Specifically, PPL Susquehanna must meet the requirements of 10 CFR 50.33(f) by providing information which shows the following:

- (1) As a non-electric utility applicant for multiple operating licenses, it possesses or has reasonable assurance of obtaining the funds necessary to cover estimated operating costs for the period of the licenses. Also, it must submit estimated total annual operating costs for the first five years of facility operations and indicate the source of funds to cover these costs.
- (2) As a newly formed entity organized primarily for the purpose of operating nuclear power plants, it must show: (a) the legal and financial relationships it has or proposes to have with its stockholders or owners; (b) its financial ability to meet any contractual obligation to the entity which they have incurred or propose to incur; and (c) any information considered necessary by the Commission to enable it to determine the applicant's financial qualification.

Also, 10 CFR 50.33(k)(1) requires that PPL Susquehanna must provide information as described in 10 CFR 50.75 indicating reasonable assurance that funds will be available to decommission the facilities. PPL Susquehanna's proposals for decommissioning funding assurance are discussed in Section 6.0 of this staff's Evaluation.

The application states that PPL Susquehanna's revenues from sales of power and energy will be sufficient to cover its projected operating costs. Attachment 6 to the application is a draft power sales agreement between PPL Susquehanna and PP&L EnergyPlus Co., which will purchase all the energy and power from the Susquehanna SES through December 31, 2009, at

**PROPRIETARY INFORMATION**

a price of [**\$35/MWh**]. PP&L EnergyPlus Co., the power marketing subsidiary of PPL Energy Funding Corporation, will market to PP&L, Inc. the energy it purchases from PPL Susquehanna and other generating facilities owned by PPL Generation. As described below, PPL Susquehanna has demonstrated the financial qualifications to meet the application requirements of 10 CFR 50.33(f) for non-electric utility licensees. Specifically, PPL Susquehanna will possess, or will have reasonable assurance of obtaining, the funds necessary to cover the estimated operating costs for the period of the facility licenses in accordance with 10 CFR 50.33(f)(2). Section 50.33(f)(2) states "The applicant shall submit estimates for total annual operating costs for each of the first five years of operation of the facility. The applicant shall also indicate the source(s) of funds to cover these costs."

The application contained a Projected Income Statement for PPL Susquehanna operations from January 1, 2000 through December 31, 2004. The Projected Income Statement is included in Attachments 4 and 4A of the December 15, 1999, application. Attachment 4A is a separate proprietary Addendum to the application. PP&L, Inc. has requested that Attachment 4A be withheld from public disclosure pursuant to 10 CFR 2.790, since the Attachment 4A contains confidential commercial and financial information.

	<b>SUSQUEHANNA SES</b>				
	<b>PROJECTED INCOME STATEMENT (\$1000)</b>				
	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>
<b>Assumptions:</b>					
Price Projection (\$/Mwh)	\$35	\$35	\$35	\$35	\$35
Plant Capacity Factor	88%	89%	90%	91%	92%
<b>Revenues:</b>					
Revenue from Sales	\$534,240	\$541,170	\$550,620	\$557,550	\$565,425
Reservation Charge	<u>\$25,796</u>	<u>\$23,666</u>	<u>\$21,969</u>	<u>\$20,696</u>	<u>\$19,422</u>
<b>Total:</b>	<b>\$560,036</b>	<b>\$564,836</b>	<b>\$572,589</b>	<b>\$578,246</b>	<b>\$584,847</b>
<b>Expenses:</b>					
Fuel Expense	\$72,743	\$72,050	\$73,602	\$76,139	\$78,629
Spent Fuel D&D	\$10,685	\$10,463	\$10,452	\$10,520	\$10,492
Decommissioning	\$25,796	\$23,666	\$21,969	\$20,696	\$19,422
Direct O&M (90%)	\$193,628	\$199,114	\$203,797	\$208,603	\$213,612
Intercompany Charges	\$41,057	\$41,032	\$40,245	\$40,293	\$37,762
Taxes (Non Income)	\$10,662	\$11,046	\$11,429	\$11,812	\$12,196
Depreciation	<u>\$37,044</u>	<u>\$37,607</u>	<u>\$38,116</u>	<u>\$39,218</u>	<u>\$40,986</u>
<b>Total:</b>	<b>\$391,615</b>	<b>\$394,978</b>	<b>\$399,609</b>	<b>\$407,281</b>	<b>\$413,099</b>
<b>Income before Taxes:</b>	<b>\$168,421</b>	<b>\$169,858</b>	<b>\$172,980</b>	<b>\$170,965</b>	<b>\$171,748</b>
<b>Income Taxes:</b>	<u>\$69,884</u>	<u>\$70,480</u>	<u>\$71,775</u>	<u>\$70,939</u>	<u>\$71,264</u>
<b>Net Income (Loss):</b>	<b>\$98,537</b>	<b>\$99,378</b>	<b>\$101,205</b>	<b>\$100,026</b>	<b>\$100,484</b>

## PROPRIETARY INFORMATION

In accordance with the NRC Standard Review Plan on Power Reactor Licensee Financial Qualifications and Decommissioning Funding Assurance (NUREG-1557, Rev. 1), the Susquehanna Projected Income Statement provides the estimated total annual operating costs for the facilities to be owned by PPL Susquehanna. The source of funds to cover the operating expenses will be the operating revenues. The Projected Income Statement shows that the anticipated revenues from sales of capacity and energy by PPL Susquehanna provides reasonable assurance of adequate funds to meet their ongoing operating expenses. The projected revenues from the sale of electricity from the nuclear units are expected to provide sufficient income to cover the total operating costs of Susquehanna SES.

The staff found that projections of operating expenses are consistent with historical operating costs. However, the staff concluded that one line item required more extensive review: the projected revenues from 2000-2004 as stated in the income statements. Projected revenues are the product of expected megawatt-hour sales times PP&L, Inc.'s market price assumptions as stated in the Attachment 4A Income Statement Market Price and Capacity Factor Assumptions. Projected revenues and net income are adequate to cover PPL Susquehanna's expected expenses and to provide the parent companies with favorable returns on their expected investment in the facility. However, in a competitive market, the possibility exists that prices, capacity factors, revenue, and net income levels could be significantly lower than anticipated by PP&L, Inc. during some portions of the 5-year projection period and that this could mean less funding would be available for nuclear unit operations.

The staff analysis focuses on how sensitive the PPL Susquehanna revenue forecasts are to lower market prices for the purpose of establishing a projected market price "floor" below which it would begin to have difficulty covering its nuclear operating expenses by relying on revenues. This is done to determine the average annual simple growth rate for the market price which would produce virtually zero net income (or break even level) over the period from 2000 to 2004, and the growth rate is compared to the higher average annual growth rate in the market prices in PPL Susquehanna's forecast. If a combination of lower prices, capacity factors, revenue or net income levels was to persist for an extended period, PPL Susquehanna or its parent companies might decide to continue operating the nuclear units without profits or, at a certain point, to cease operations permanently at one or both of the nuclear units.

The fixed market price of [**\$35/Mwh**] from the closing date through December 31, 2009, is specified in the Power Sales Agreement between PPL Susquehanna and PP&L EnergyPlus Co. which is included as Attachment 6 to the December 15, 1999, application.

The next step in the staff's analysis was to try to determine how reasonable or probable the various growth rates might be for the foreseeable future. Forecasts of electric rates in competitive markets are subject to many unknown factors that make such predictions highly speculative at best, but the reasonableness of various growth rates may be assessed by considering various factors that could provide some indication of future electricity prices. For example, recent trends in electricity prices could allow some inferences as to how such prices might continue to change in the more competitive future environment expected in the electric power industry.

Data on U.S. retail electricity prices from the Energy Information Administration indicate that the overall price (all sales categories) has declined from its highest level in 1993 (at 6.93 cents per kWh) to 6.88 cents per kWh by 1997. The average retail price for the industrial category declined from 4.85 cents per kWh in 1993 to 4.56 cents per kWh in 1997. Considering this downward trend in retail prices and increasing competition in the electric power industry, the general trend of electricity prices at the retail level is likely to continue downward in the near term.

However, it is difficult to predict the direction of prices likely to be paid for PPL Susquehanna's power in its market area. PPL Susquehanna will probably be selling power primarily at market-based prices after the expiration of Power Sales Agreement at the end of the year 2009, and these prices will be a mix of competitively determined retail and wholesale prices. Also, trends in retail and wholesale electricity prices vary from one region to another, so PPL Susquehanna's prices within its market area may not follow national trends. Thus, the recent downward trend in national retail prices may not necessarily produce a significant downward influence on prices for the Susquehanna SES units.

The North American Electric Reliability Council (NERC) projects that capacity margins will decline substantially in the Mid-Atlantic Area Council (MAAC) region in which the Susquehanna nuclear units operate between 1998 and 2007. (See NERC's Reliability Assessment 1998-2007, October 1998, page 11.) The 17.1-percent capacity margin in 1998 in the MAAC region will decline to 5.1 percent in 2007, according to the NERC forecast. NERC concludes that lower capacity margins can diminish the ability of the bulk electric supply systems to respond to higher than projected demand for electricity caused by extreme weather or unforeseen outages. Actual demand growth rates, driven by a strong economy, are much higher than current projections. This trend would tend to cause market prices of electricity to increase, other factors remaining equal and suggests that PP&L, Inc.'s price projections are reasonable.

After reviewing several forecasts of U.S. electricity prices and other relevant information (such as a forecast of regional capacity margins), the staff concludes that attempting to forecast the growth rate, or even the direction of change, for market-based prices in the PPL Susquehanna market area is too speculative to be useful for its contingency analysis. But the staff's most important conclusion from this analysis is that, even if prices for power were to change at an average annual rate much lower than that anticipated by PP&L, Inc., this does not preclude PPL Susquehanna from operating and maintaining the Susquehanna nuclear units in a manner that would protect the public health and safety.

The staff has concluded that the projected income statement shows that the anticipated revenues from sales of capacity and energy from Susquehanna SES provide reasonable assurance of an adequate source of funds to meet PPL Susquehanna's ongoing operating expenses.

The December 15, 1999, application states that PPL Susquehanna anticipates that its parent companies will make adequate contributions to it, on an ongoing basis, so that adequate funding is available for ongoing operation and maintenance costs, even in the unlikely event of an extended shutdown of the units. An additional financial arrangement, in the form of a letter

agreement included as Attachment 7 in the application package, formalizes the commitment between PP&L Resources and PPL Susquehanna and provides reasonable assurance that sufficient funds will be available to fund a simultaneous six-month outage of both Susquehanna units. Pursuant to this funding commitment, up to \$130 million, is available at any time the Board of Managers of PPL Susquehanna determines that, in order to protect public health and safety and/or to comply with NRC requirements, it needs to draw upon the funding commitment.

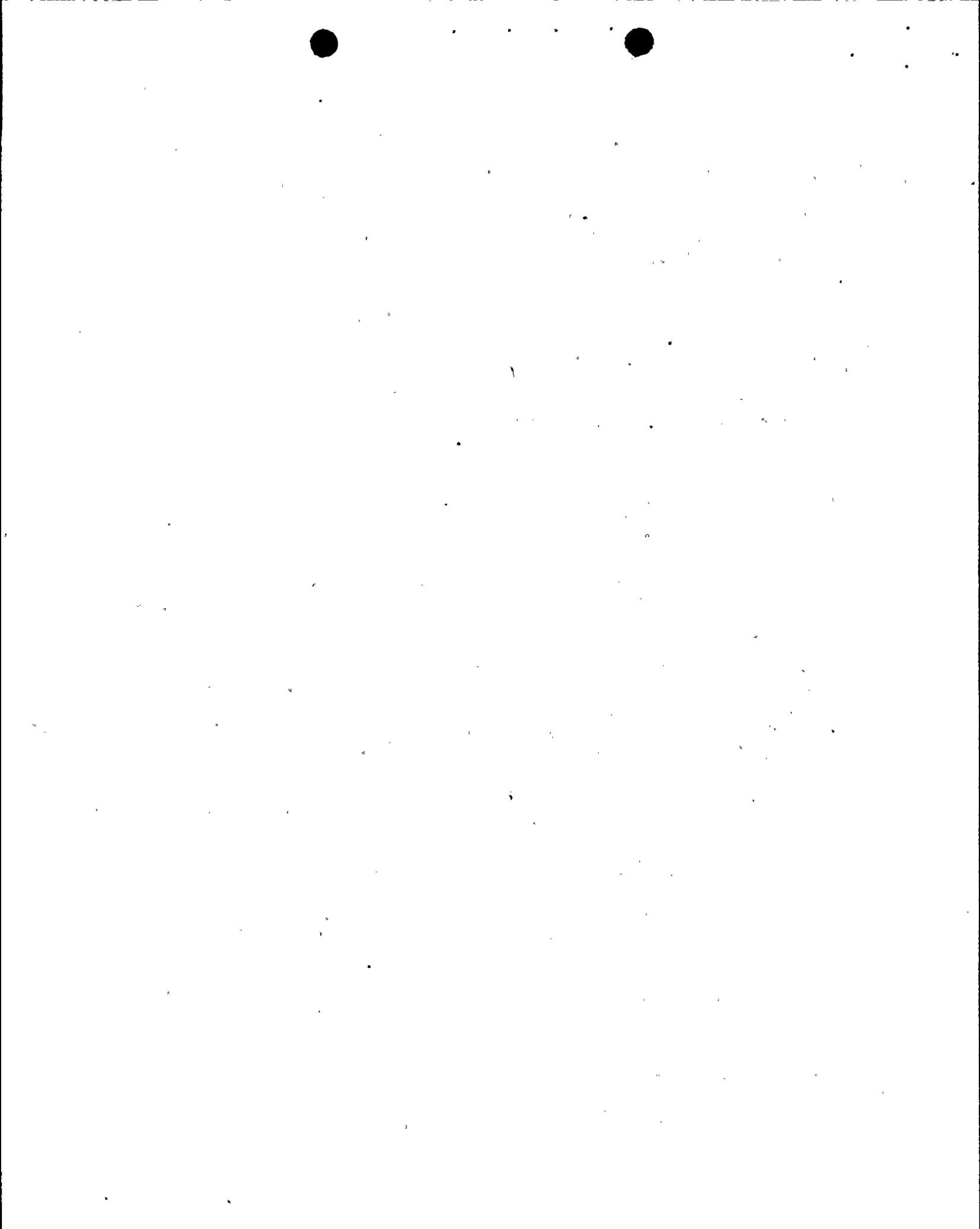
The funding commitment will remain in effect until fuel has been removed from the units after PPL Susquehanna has determined to permanently cease Susquehanna SES operations or the NRC has given its prior written consent to the discontinuance of the funding arrangements contemplated by the letter agreement. PP&L Resources maintains the right to demand that PPL Susquehanna permanently cease Susquehanna SES operations rather than using funds available under the commitment for continued operations. PPL Susquehanna has the right to continue to obtain funds necessary for the safe and orderly shutdown of Susquehanna SES and to continue to safely maintain the units until fuel has been permanently removed from the reactors.

PPL Susquehanna does not anticipate ever having to draw upon the commitments. But if PPL Susquehanna is forced to draw upon the funding agreement, which would require specific findings and a vote by the PPL Susquehanna Board of Managers, PPL Susquehanna maintains in the application that it will exercise care to assure that it either maintains funds, or holds in reserve the right to draw upon funds, sufficient to assure that it would be able to fund the transition to a safe shutdown of its operating units. PPL Susquehanna will inform the NRC in writing at any time that it draws upon the funding commitment.

The staff finds that PP&L Inc. has provided reasonable assurance that PPL Susquehanna will be able to obtain adequate funding to own PP&L Inc.'s 90% share of the Susquehanna SES and to operate both units and to cover estimated operating costs for the period of the current licenses, as well as sufficient documentation of specific legal and financial relationships that support this conclusion. However, to ensure that adequate funds are available as might be necessary to fund an extended plant shutdown, the commitment stated in the application that PP&L Resources will have sufficient cash flow from operations to fund one or more extended shutdowns, should be made a condition of the Order approving the license transfers and the licenses for Susquehanna Units 1 and 2, as follows:

PPL Susquehanna shall not take any action that would cause PP&L Resources or its parent companies to void, cancel, or diminish the commitment to fund an extended plant shutdown as represented in the application for approval of the transfer of the respective licenses for the Susquehanna SES Units 1 and 2.

Additionally, in view of the NRC's concern that restructuring can lead to a diminution of assets necessary for the safe operation and decommissioning of a licensee's nuclear power plant, the NRC has sought to obtain commitments from its licensees that initiate restructuring actions not to transfer significant assets from the licensee without notifying the NRC. Thus, the NRC proposes the following commitment or equivalent be made a condition for the units licenses or of the order granting the proposed restructuring:



PPL Susquehanna agrees to provide the Office of the Director of the Nuclear Reactor Regulation a copy of any application, at the time it is filed, to transfer (excluding grants of security interests or liens) from PPL Susquehanna to its proposed parent, or to any other affiliated company, facilities for the production, transmission, or distribution of electric energy having a depreciated book value exceeding ten percent (10%) of such licensee's consolidated net utility plant, as recorded on PPL Susquehanna's book of accounts.

### 3.0 ANTITRUST REVIEW

The Atomic Energy Act does not require or authorize antitrust reviews of post-operating license transfer applications. [Kansas Gas and Electric Co., et al. (Wolf Creek Generating Station Unit 1), CLI-99-19, June 18, 1999)]. Therefore since the transfer application post-dates the issuance of the Susquehanna SES operating licenses and since there are no existing antitrust license conditions, no antitrust review is required or authorized.

### 4.0 TECHNICAL QUALIFICATIONS

Clause (b)(7) of 10 CFR 50.34 requires information describing the technical qualifications of the proposed transferee to engage in licensed activities. [This information will be supplied by IOLB.]

### 5.0 FOREIGN OWNERSHIP, CONTROL, OR DOMINATION

The application states that the proposed restructuring complies with the restriction on foreign ownership, control, or domination in Section 103(d) of the Atomic Energy Act and 10 CFR 50.38.

"PPL Susquehanna will be a limited liability company organized under the laws of the State of Delaware, formed to acquire the interests in Susquehanna SES presently owned by PP&L, Inc. and to operate Susquehanna SES. PPL Susquehanna will be a wholly-owned subsidiary of PPL Generation, a wholly owned subsidiary of PPL Energy Funding Corporation, which in turn will be a wholly owned subsidiary of PP&L Resources." The Board of Managers and principal officers of PPL Susquehanna are all US citizens.

In the December 15, 1999, application the following statement is made: "Following the proposed transfer, PPL Susquehanna will not be owned, controlled, or dominated by an alien, a foreign corporation, or a foreign government. In addition, neither PP&L, Inc. nor PPL Susquehanna is acting as agent or representative of any other person in filing this Application."

Based on the information stated above, the NRC staff finds that the proposed restructuring will not result in PPL Susquehanna being owned, controlled or dominated by foreign interests.

### 6.0 DECOMMISSIONING FUNDING ASSURANCE

The NRC has determined that the requirements to provide assurance of decommissioning funding and provision of an adequate amount of decommissioning funding are necessary to ensure the adequate protection of public health and safety.

Section 10 CFR 50.33(k) requires that an application for an operating license for a utilization facility contain information indicating how reasonable assurance will be provided that funds will be available to decommission the facility.

On September 22, 1998, the Commission issued a Final Rule in its Financial Assurance Requirements for Decommissioning Nuclear Power Reactors, 63 Federal Register 50465 (1998) (codified at 10 CFR parts 30 and 50). In this rule, the Commission established "non-bypassable charges" as a defined term and modified its Final Rule to reflect that such charges should be available to the licensee as part of the funds for decommissioning deposited in an external sinking fund. As set forth in 10 CFR 50.2, non-bypassable charges are defined as:

. . . those charges imposed over an established time period by a Government authority that affected persons or entities are required to pay to cover costs associated with the decommissioning of a nuclear power plant. Such charges include, but are not limited to, wire charges, stranded cost charges, transition charges, exit fees, other similar charges, or the securitized proceeds of a revenue stream.

The Commission also amended its provision regarding the use of an external sinking fund, one of the methods used to provide financial assurance. Specifically, 10 CFR 50.75(e)(1)(ii)(B) provided that an external sinking fund may be the exclusive mechanism relied upon for providing financial assurance for decommissioning even if the licensees' source of revenue for the external sinking fund is a non-bypassable charge. In this sense, the financial assurance provided by the non-bypassable charge is equivalent to that provided by traditional rate regulation applicable to an "electric utility."

In accordance with 10 CFR 50.75(b), PPL Susquehanna will maintain financial assurance for decommissioning funding that meets the requirements of 10 CFR 50.75(e), by maintaining external sinking funds for Susquehanna SES Units 1 and 2. PP&L, Inc. will collect additional funds pursuant to a non-bypassable charge mechanism approved by the Pennsylvania Public Utilities Commission and by the Federal Energy Regulatory Commission (FERC) for retail and wholesale customers, respectively. The additional funds collected by PP&L, Inc. will be paid to PPL Susquehanna pursuant to inter-company contractual arrangements.

PP&L, Inc., as a rate-regulated electric utility, currently maintains Nuclear Decommissioning Trusts for its share of interests in the Susquehanna units. The Nuclear Decommissioning Trusts utilize the external sinking fund financial assurance mechanism provided in 10 CFR 50.75(e)(1)(ii). On March 29, 1999, PP&L, Inc. submitted information to the NRC regarding the status of the Nuclear Decommissioning Trusts. These existing Nuclear Decommissioning Trusts will be transferred to PPL Susquehanna, which will continue to utilize the external sinking fund method, with periodic deposits to be made to the funds over the remaining operating life of the units.

Pursuant to the restructuring legislation in Pennsylvania, the Pennsylvania Public Utilities Commission has authorized PP&L, Inc. to recover the decommissioning costs for its interests in the Susquehanna units pursuant to non-bypassable charge mechanisms. Following the transfer, PP&L, Inc. will continue to recover these costs through these mechanisms and will be

## PROPRIETARY INFORMATION

contractually obligated to pay these amounts to PPL Susquehanna. The staff has reviewed the terms of the non-bypassable charge and has concluded that it, plus funds accumulated in the decommissioning trust so far and earnings on current and future accumulated amounts, will be sufficient to fully fund PPL Susquehanna's proposed ownership share of the Susquehanna SES. Thus, PPL Susquehanna will have a source of dedicated revenues for decommissioning the Susquehanna units that is a "non-bypassable charge" within the meaning of 10 CFR 50.75(e)(1)(ii)(B).

The staff concludes that reasonable assurance of decommissioning funding will be provided by the method proposed by PP&L, Inc. in the December 15, 1999, application, provided that the Orders approving the license transfers for Susquehanna SES Units 1 and 2 contain the following condition:

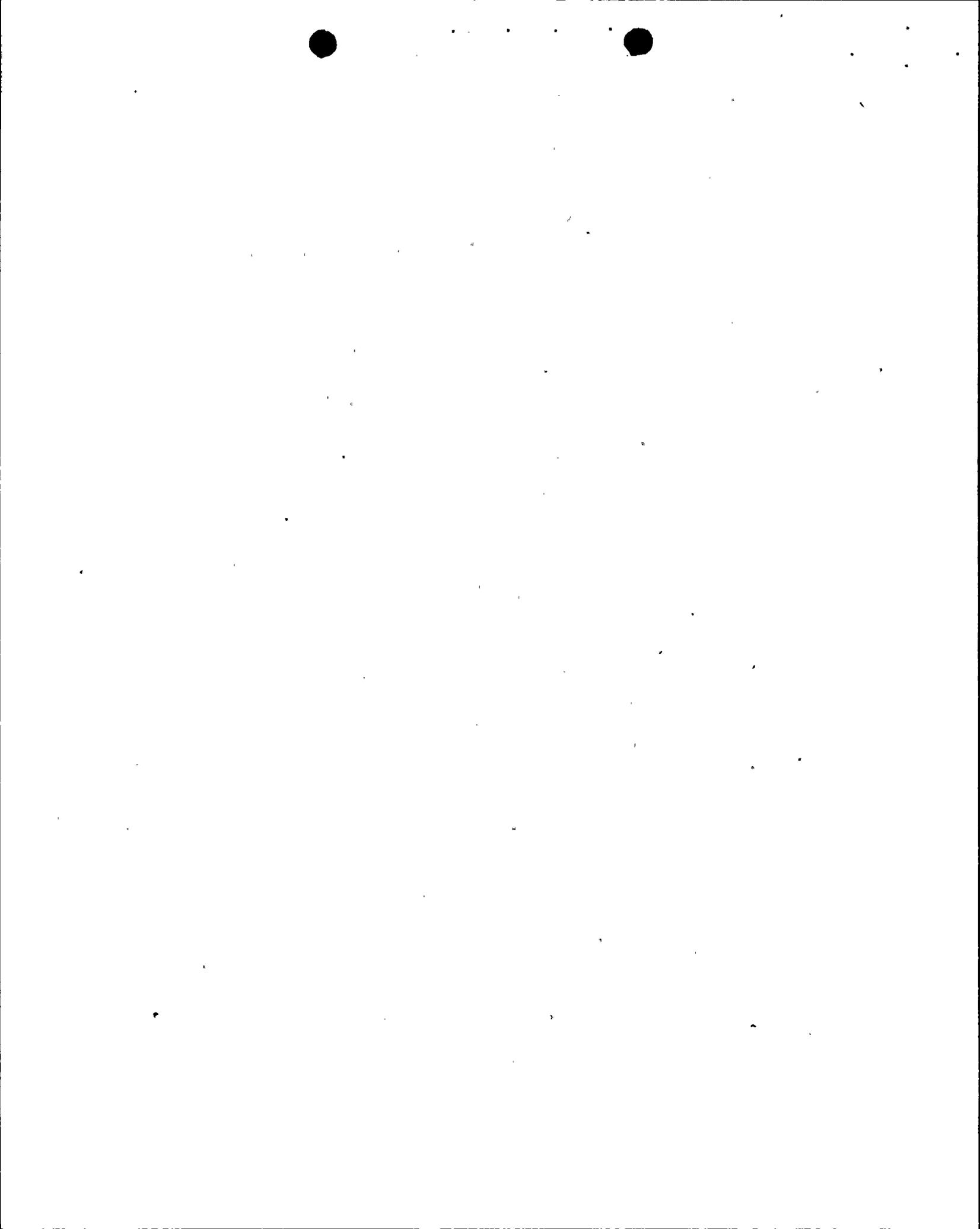
For purposes of ensuring public health and safety, PPL Susquehanna shall provide decommissioning funding assurance, to be held in decommissioning trusts for Susquehanna SES Units 1 and 2, upon transfer of the respective licenses to PPL Susquehanna, of no less than a combined total of [\$226.7 million] on the date of transfer. In addition, PPL Susquehanna will ensure that its contractual arrangements with PP&L EnergyPlus Co., and PP&L EnergyPlus Co.'s contractual arrangements with PP&L, Inc. to obtain necessary decommissioning funds for Susquehanna SES through a non-bypassable charge will be maintained until the decommissioning trust is fully funded.

### 7.0 INSURANCE

The provisions of the Price-Anderson Act (Section 170 of the AEA) require that PPL Susquehanna be added to the current indemnity agreement for Susquehanna SES. In accordance with the Price-Anderson Act, PPL Susquehanna will also be required to provide primary insurance and participate in the secondary retrospective insurance pool. These requirements can be met by purchasing insurance policies from the nuclear liability insurance pool, American Nuclear Insurers. PPL Susquehanna will also be required to maintain property insurance as specified in 10 CFR 50.54(w). The information provided in the application concerning financial qualifications demonstrates that PPL Susquehanna will be able to pay its share of the \$10 million per unit annual insurance premium, in accordance with 10 CFR 140.21(e)-(f). The orders approving the transfer of Susquehanna Units 1 and 2 should be conditioned on demonstration by PPL Susquehanna that the insurance requirements are satisfied.

### 8.0 CONCLUSION

In view of the foregoing information, the NRC staff concludes that with the appropriate conditions discussed above, PPL Susquehanna is financially qualified to hold the licenses for Susquehanna SES Units 1 and 2 as proposed in the application and is technically qualified to operate the Susquehanna SES Units 1 and 2. In addition, the staff concludes that there are no problematic foreign ownership considerations that arise from the proposed transfers.



Accordingly, the staff concludes that PPL Susquehanna is qualified to hold the licenses for Susquehanna SES Units 1 and 2 to the extent now held by PP&L, Inc. and that the transfer of the respective licenses, as described herein, is otherwise consistent with applicable provisions of law, regulations, and orders issued by the Commission pursuant thereto, subject to the conditions addressed in this safety evaluation.

Principal Contributor: M. Davis

Dated: March 11, 2000



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

PROPOSED REORGANIZATION

OF PENNSYLVANIA POWER & LIGHT COMPANY

DOCKET NOS. 50-387, AND 50-388

SUSQUEHANNA STEAM ELECTRIC STATION UNITS 1 AND 2

1.0 INTRODUCTION

By application dated December 15, 1999, as supplemented February 7, 2000, PP&L Inc, formerly Pennsylvania Power & Light Company (PP&L) informed the NRC that a corporate restructuring is proposed that will transfer PP&L, Inc.'s 90% ownership interest and licensed operating authority in Susquehanna Steam Electric Plant Units 1 and 2 to a new affiliated nuclear generating company, PPL Susquehanna, LLC. PP&L, Inc. currently owns 90% of Susquehanna Units 1 and 2, and is the licensed operator of the units. This restructuring does not affect Allegheny Electric Cooperative, Inc., the other owner of the units.

The application states that the proposed restructuring is "part of a planned corporate realignment by PP&L Resources designed to enable it to respond effectively to the deregulation of the electric utility industry." PPL Susquehanna is being "created as a new, wholly owned subsidiary of PPL Generation, LLC (PPL Generation), which will be a wholly owned subsidiary of PPL Energy Funding Corporation which in turn will be a wholly owned subsidiary of PP&L Resources, the current parent of PP&L, Inc. As a result of the proposed transfers, PPL Susquehanna will become the owner of PP&L, Inc.'s current ownership share of Susquehanna SES and will assume operational responsibility for the facility. In addition, PP&L, Inc. will transfer its non-nuclear generating units to other limited liability companies owned by PPL Generation."

Pursuant to 10 CFR 50.80, the Commission may approve the transfer of the control of a license, after notification to interested persons. Such action is contingent upon the Commission's determination that the holder of the license following the transfer of control is qualified to hold the license and the transfer is otherwise consistent with applicable provisions of law, regulations, and orders of the Commission.

## 2.0 FINANCIAL QUALIFICATIONS ANALYSIS

Pursuant to 10 CFR 50.33(f), an electric utility is exempt from demonstrating its financial qualifications. The staff does not agree with the assertion in the application that PPL Susquehanna will meet the definition of an electric utility as defined in 10 CFR 50.2.

10 CFR 50.2 states that an electric utility is "any entity that generates or distributes electricity and which recovers the cost of this electricity, either directly or indirectly, through rates established by the entity itself or by a separate regulatory authority." PPL Susquehanna will sell electricity to its utility affiliates and will market electricity pursuant to rate tariffs approved by the Federal Energy Regulatory Commission. However, as described below, the power sold to its affiliates is not fully subject to rate regulation. After the Power Sales Agreement with PP&L EnergyPlus Co. expires at the end of 2009, PPL Susquehanna will sell power on the open market at market based rates.

While the NRC staff does not find that PPL Susquehanna qualifies as an "electric utility" specifically for purposes of 10 CFR 50.2, the NRC staff finds that PPL Susquehanna meets the financial qualifications requirements for a non-electric utility pursuant to 10CFR 50.33(f).

PPL Susquehanna, as both a newly formed entity and non-electric utility applying to own and to operate nuclear power plants, is subject to a more detailed financial qualifications review by the NRC than an established electric utility. Specifically, PPL Susquehanna must meet the requirements of 10 CFR 50.33(f) by providing information which shows the following:

- (1) As a non-electric utility applicant for multiple operating licenses, it possesses or has reasonable assurance of obtaining the funds necessary to cover estimated operating costs for the period of the licenses. Also, it must submit estimated total annual operating costs for the first five years of facility operations and indicate the source of funds to cover these costs.
- (2) As a newly formed entity organized primarily for the purpose of operating nuclear power plants, it must show: (a) the legal and financial relationships it has or proposes to have with its stockholders or owners; (b) its financial ability to meet any contractual obligation to the entity which they have incurred or propose to incur; and (c) any information considered necessary by the Commission to enable it to determine the applicant's financial qualification.

Also, 10 CFR 50.33(k)(1) requires that PPL Susquehanna must provide information as described in 10 CFR 50.75 indicating reasonable assurance that funds will be available to decommission the facilities. PPL Susquehanna's proposals for decommissioning funding assurance are discussed in Section 6.0 of this staff's Evaluation.

The application states that PPL Susquehanna's revenues from sales of power and energy will be sufficient to cover its projected operating costs. Attachment 6 to the application is a draft power sales agreement between PPL Susquehanna and PP&L EnergyPlus Co., which will purchase all the energy and power from the Susquehanna SES through December 31, 2009, at

a price of [     ]. PP&L EnergyPlus Co., the power marketing subsidiary of PPL Energy Funding Corporation, will market to PP&L, Inc. the energy it purchases from PPL Susquehanna and other generating facilities owned by PPL Generation. As described below, PPL Susquehanna has demonstrated the financial qualifications to meet the application requirements of 10 CFR 50.33(f) for non-electric utility licensees. Specifically, PPL Susquehanna will possess, or will have reasonable assurance of obtaining, the funds necessary to cover the estimated operating costs for the period of the facility licenses in accordance with 10 CFR 50.33(f)(2). Section 50.33(f)(2) states "The applicant shall submit estimates for total annual operating costs for each of the first five years of operation of the facility. The applicant shall also indicate the source(s) of funds to cover these costs."

The application contained a Projected Income Statement for PPL Susquehanna operations from January 1, 2000 through December 31, 2004. The Projected Income Statement is included in Attachments 4 and 4A of the December 15, 1999, application. Attachment 4A is a separate proprietary Addendum to the application. PP&L, Inc. has requested that Attachment 4A be withheld from public disclosure pursuant to 10 CFR 2.790, since the Attachment 4A contains confidential commercial and financial information.

**SUSQUEHANNA SES  
PROJECTED INCOME STATEMENT (\$1000)**

	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>
<b>Assumptions:</b>					
Price Projection (\$/Mwh)					
Plant Capacity Factor					
<b>Revenues:</b>					
Revenue from Sales					
Reservation Charge					
<b>Total:</b>					
<b>Expenses:</b>					
Fuel Expense					
Spent Fuel D&D					
Decommissioning					
Direct O&M (90%)					
Intercompany Charges					
Taxes (Non Income)					
Depreciation					
<b>Total:</b>					
<b>Income before Taxes:</b>					
<b>Income Taxes:</b>					
<b>Net Income (Loss):</b>					

In accordance with the NRC Standard Review Plan on Power Reactor Licensee Financial Qualifications and Decommissioning Funding Assurance (NUREG-1557, Rev. 1), the Susquehanna Projected Income Statement provides the estimated total annual operating costs for the facilities to be owned by PPL Susquehanna. The source of funds to cover the operating expenses will be the operating revenues. The Projected Income Statement shows that the anticipated revenues from sales of capacity and energy by PPL Susquehanna provides reasonable assurance of adequate funds to meet their ongoing operating expenses. The projected revenues from the sale of electricity from the nuclear units are expected to provide sufficient income to cover the total operating costs of Susquehanna SES.

The staff found that projections of operating expenses are consistent with historical operating costs. However, the staff concluded that one line item required more extensive review: the projected revenues from 2000-2004 as stated in the income statements. Projected revenues are the product of expected megawatt-hour sales times PP&L, Inc.'s market price assumptions as stated in the Attachment 4A Income Statement Market Price and Capacity Factor Assumptions. Projected revenues and net income are adequate to cover PPL Susquehanna's expected expenses and to provide the parent companies with favorable returns on their expected investment in the facility. However, in a competitive market, the possibility exists that prices, capacity factors, revenue, and net income levels could be significantly lower than anticipated by PP&L, Inc. during some portions of the 5-year projection period and that this could mean less funding would be available for nuclear unit operations.

The staff analysis focuses on how sensitive the PPL Susquehanna revenue forecasts are to lower market prices for the purpose of establishing a projected market price "floor" below which it would begin to have difficulty covering its nuclear operating expenses by relying on revenues. This is done to determine the average annual simple growth rate for the market price which would produce virtually zero net income (or break even level) over the period from 2000 to 2004, and the growth rate is compared to the higher average annual growth rate in the market prices in PPL Susquehanna's forecast. If a combination of lower prices, capacity factors, revenue or net income levels was to persist for an extended period, PPL Susquehanna or its parent companies might decide to continue operating the nuclear units without profits or, at a certain point, to cease operations permanently at one or both of the nuclear units.

The fixed market price of [ ] from the closing date through December 31, 2009, is specified in the Power Sales Agreement between PPL Susquehanna and PP&L EnergyPlus Co. which is included as Attachment 6 to the December 15, 1999, application.

The next step in the staff's analysis was to try to determine how reasonable or probable the various growth rates might be for the foreseeable future. Forecasts of electric rates in competitive markets are subject to many unknown factors that make such predictions highly speculative at best, but the reasonableness of various growth rates may be assessed by considering various factors that could provide some indication of future electricity prices. For example, recent trends in electricity prices could allow some inferences as to how such prices might continue to change in the more competitive future environment expected in the electric power industry.



Data on U.S. retail electricity prices from the Energy Information Administration indicate that the overall price (all sales categories) has declined from its highest level in 1993 (at 6.93 cents per kWh) to 6.88 cents per kWh by 1997. The average retail price for the industrial category declined from 4.85 cents per kWh in 1993 to 4.56 cents per kWh in 1997. Considering this downward trend in retail prices and increasing competition in the electric power industry, the general trend of electricity prices at the retail level is likely to continue downward in the near term.

However, it is difficult to predict the direction of prices likely to be paid for PPL Susquehanna's power in its market area. PPL Susquehanna will probably be selling power primarily at market-based prices after the expiration of Power Sales Agreement at the end of the year 2009, and these prices will be a mix of competitively determined retail and wholesale prices. Also, trends in retail and wholesale electricity prices vary from one region to another, so PPL Susquehanna's prices within its market area may not follow national trends. Thus, the recent downward trend in national retail prices may not necessarily produce a significant downward influence on prices for the Susquehanna SES units.

The North American Electric Reliability Council (NERC) projects that capacity margins will decline substantially in the Mid-Atlantic Area Council (MAAC) region in which the Susquehanna nuclear units operate between 1998 and 2007. (See NERC's Reliability Assessment 1998-2007, October 1998, page 11.) The 17.1-percent capacity margin in 1998 in the MAAC region will decline to 5.1 percent in 2007, according to the NERC forecast. NERC concludes that lower capacity margins can diminish the ability of the bulk electric supply systems to respond to higher than projected demand for electricity caused by extreme weather or unforeseen outages. Actual demand growth rates, driven by a strong economy, are much higher than current projections. This trend would tend to cause market prices of electricity to increase, other factors remaining equal and suggests that PP&L, Inc.'s price projections are reasonable.

After reviewing several forecasts of U.S. electricity prices and other relevant information (such as a forecast of regional capacity margins), the staff concludes that attempting to forecast the growth rate, or even the direction of change, for market-based prices in the PPL Susquehanna market area is too speculative to be useful for its contingency analysis. But the staff's most important conclusion from this analysis is that, even if prices for power were to change at an average annual rate much lower than that anticipated by PP&L, Inc., this does not preclude PPL Susquehanna from operating and maintaining the Susquehanna nuclear units in a manner that would protect the public health and safety.

The staff has concluded that the projected income statement shows that the anticipated revenues from sales of capacity and energy from Susquehanna SES provide reasonable assurance of an adequate source of funds to meet PPL Susquehanna's ongoing operating expenses.

The December 15, 1999, application states that PPL Susquehanna anticipates that its parent companies will make adequate contributions to it, on an ongoing basis, so that adequate funding is available for ongoing operation and maintenance costs, even in the unlikely event of an extended shutdown of the units. An additional financial arrangement, in the form of a letter

agreement included as Attachment 7 in the application package, formalizes the commitment between PP&L Resources and PPL Susquehanna and provides reasonable assurance that sufficient funds will be available to fund a simultaneous six-month outage of both Susquehanna units. Pursuant to this funding commitment, up to \$130 million, is available at any time the Board of Managers of PPL Susquehanna determines that, in order to protect public health and safety and/or to comply with NRC requirements, it needs to draw upon the funding commitment.

The funding commitment will remain in effect until fuel has been removed from the units after PPL Susquehanna has determined to permanently cease Susquehanna SES operations or the NRC has given its prior written consent to the discontinuance of the funding arrangements contemplated by the letter agreement. PP&L Resources maintains the right to demand that PPL Susquehanna permanently cease Susquehanna SES operations rather than using funds available under the commitment for continued operations. PPL Susquehanna has the right to continue to obtain funds necessary for the safe and orderly shutdown of Susquehanna SES and to continue to safely maintain the units until fuel has been permanently removed from the reactors.

PPL Susquehanna does not anticipate ever having to draw upon the commitments. But if PPL Susquehanna is forced to draw upon the funding agreement, which would require specific findings and a vote by the PPL Susquehanna Board of Managers, PPL Susquehanna maintains in the application that it will exercise care to assure that it either maintains funds, or holds in reserve the right to draw upon funds, sufficient to assure that it would be able to fund the transition to a safe shutdown of its operating units. PPL Susquehanna will inform the NRC in writing at any time that it draws upon the funding commitment.

The staff finds that PP&L Inc. has provided reasonable assurance that PPL Susquehanna will be able to obtain adequate funding to own PP&L Inc.'s 90% share of the Susquehanna SES and to operate both units and to cover estimated operating costs for the period of the current licenses, as well as sufficient documentation of specific legal and financial relationships that support this conclusion. However, to ensure that adequate funds are available as might be necessary to fund an extended plant shutdown, the commitment stated in the application that PP&L Resources will have sufficient cash flow from operations to fund one or more extended shutdowns, should be made a condition of the Order approving the license transfers and the licenses for Susquehanna Units 1 and 2, as follows:

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Additionally, in view of the NRC's concern that restructuring can lead to a diminution of assets necessary for the safe operation and decommissioning of a licensee's nuclear power plant, the NRC has sought to obtain commitments from its licensees that initiate restructuring actions not to transfer significant assets from the licensee without notifying the NRC. Thus, the NRC proposes the following commitment or equivalent be made a condition for the units licenses or of the order granting the proposed restructuring:

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Based on the information stated above, the NRC staff finds that the proposed restructuring will not result in PPL Susquehanna being owned, controlled or dominated by foreign interests.

### 6.0 DECOMMISSIONING FUNDING ASSURANCE

The NRC has determined that the requirements to provide assurance of decommissioning funding and provision of an adequate amount of decommissioning funding are necessary to ensure the adequate protection of public health and safety.

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Pursuant to the restructuring legislation in Pennsylvania, the Pennsylvania Public Utilities Commission has authorized PP&L, Inc. to recover the decommissioning costs for its interests in the Susquehanna units pursuant to non-bypassable charge mechanisms. Following the transfer, PP&L, Inc. will continue to recover these costs through these mechanisms and will be

contractually obligated to pay these amounts to PPL Susquehanna. The staff has reviewed the terms of the non-bypassable charge and has concluded that it, plus funds accumulated in the decommissioning trust so far and earnings on current and future accumulated amounts, will be sufficient to fully fund PPL Susquehanna's proposed ownership share of the Susquehanna SES. Thus, PPL Susquehanna will have a source of dedicated revenues for decommissioning the Susquehanna units that is a "non-bypassable charge" within the meaning of 10 CFR 50.75(e)(1)(ii)(B).

The staff concludes that reasonable assurance of decommissioning funding will be provided by the method proposed by PP&L, Inc. in the December 15, 1999, application, provided that the Orders approving the license transfers for Susquehanna SES Units 1 and 2 contain the following condition:

For purposes of ensuring public health and safety, PPL Susquehanna shall provide decommissioning funding assurance, to be held in decommissioning trusts for Susquehanna SES Units 1 and 2, upon transfer of the respective licenses to PPL Susquehanna, of no less than a combined total of [ ] on the date of transfer. In addition, PPL Susquehanna will ensure that its contractual arrangements with PP&L EnergyPlus Co., and PP&L EnergyPlus Co.'s contractual arrangements with PP&L, Inc. to obtain necessary decommissioning funds for Susquehanna SES through a non-bypassable charge will be maintained until the decommissioning trust is fully funded.

## 7.0 INSURANCE

The provisions of the Price-Anderson Act (Section 170 of the AEA) require that PPL Susquehanna be added to the current indemnity agreement for Susquehanna SES. In accordance with the Price-Anderson Act, PPL Susquehanna will also be required to provide primary insurance and participate in the secondary retrospective insurance pool. These requirements can be met by purchasing insurance policies from the nuclear liability insurance pool, American Nuclear Insurers. PPL Susquehanna will also be required to maintain property insurance as specified in 10 CFR 50.54(w). The information provided in the application concerning financial qualifications demonstrates that PPL Susquehanna will be able to pay its share of the \$10 million per unit annual insurance premium, in accordance with 10 CFR 140.21(e)-(f). The orders approving the transfer of Susquehanna Units 1 and 2 should be conditioned on demonstration by PPL Susquehanna that the insurance requirements are satisfied.

## 8.0 CONCLUSION

In view of the foregoing information, the NRC staff concludes that with the appropriate conditions discussed above, PPL Susquehanna is financially qualified to hold the licenses for Susquehanna SES Units 1 and 2 as proposed in the application and is technically qualified to operate the Susquehanna SES Units 1 and 2. In addition, the staff concludes that there are no problematic foreign ownership considerations that arise from the proposed transfers.

Accordingly, the staff concludes that PPL Susquehanna is qualified to hold the licenses for Susquehanna SES Units 1 and 2 to the extent now held by PP&L, Inc. and that the transfer of the respective licenses, as described herein, is otherwise consistent with applicable provisions of law, regulations, and orders issued by the Commission pursuant thereto, subject to the conditions addressed in this safety evaluation.

Principal Contributor: M. Davis

Dated: March 11, 2000

3/16/2000

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 TECHNICAL EVALUATION OF PROPOSED SAN ONOFRE NUCLEAR GENERATING STA  
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Docket: 05000387  
 Docket: 05000388

memo4

March 10, 2000

MEMORANDUM TO: Stuart A. Richards, Project Director  
Project Directorate IV and Decommissioning  
Division of Licensing Project Management

FROM: Cynthia A. Carpenter, Chief /RA/  
Generic Issues, Environmental, Financial, and Rulemaking Branch  
Division of Regulatory Improvement Programs

SUBJECT: TECHNICAL EVALUATION OF PROPOSED SAN ONOFRE NUCLEAR  
GENERATING STATION TECHNICAL SPECIFICATIONS CHANGES

By work request dated, December 10, 1999, Project Directorate IV requested the assistance of the Generic Issues, Environmental, Financial, and Rulemaking Branch (RGEB) in reviewing proposed technical specification (TS) changes for San Onofre Nuclear Generating Station (SONGS), Unit 1. Modifications to the technical specifications were requested by Southern California Edison, licensee for SONGS, to facilitate decommissioning efforts and to provide consistency with Units 2 and 3 technical specifications.

Specifically, RGEB was requested to review only the environmentally-related technical specifications, including the submission of the Annual Report and Annual Radiological Environmental Operating Report; the description of the intake and discharge systems; the time allowed for reporting to the NRC events reportable to other Federal, State, or local agencies; and the submission of copies of applications for or proposed changes to the National Pollutant Discharge Elimination System (NPDES) permit.

Staff of RGEB have reviewed these proposed technical specifications changes related to environmental protection. However, the technical specification change regarding the submission of the Annual Report and Annual Radiological Environmental Operating Report should be reviewed by the Emergency Preparedness and Radiation Protection Section of the Division of Inspection Program Management; this was discussed with the Project Manager for SONGS, Unit 1. The attached report summarizes the results of RGEB's technical evaluation of the remaining proposed environmental technical specification changes.

If you have any questions or comments related to this review, please contact Cynthia Sochor of our staff at 415-2462.

ACCESSION MLO03691742 Template NRR-106

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

March 10, 2000

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Project Directorate IV and Decommissioning  
Division of Licensing Project Management

FROM: Cynthia A. Carpenter, Chief  
*Cynthia A. Carpenter*  
Generic Issues, Environmental, Financial, and Rulemaking Branch  
Division of Regulatory Improvement Programs

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TECHNICAL EVALUATION OF SONGS, UNIT 1, PROPOSED  
ENVIRONMENTAL TECHNICAL SPECIFICATION CHANGES

1.0 INTRODUCTION

By letter dated December 2, 1999, Southern California Edison, licensee for San Onofre Nuclear Generating Station (SONGS), submitted an application to amend facility operating licenses DPR-13, NPF-10, and NPF-15, for SONGS, Units 1, 2, and 3, respectively, to make the technical specifications (TSs) consistent for all three Units and to facilitate decommissioning efforts for Unit 1. This report provides an evaluation of the three environmentally-related TS changes for Unit 1 only.

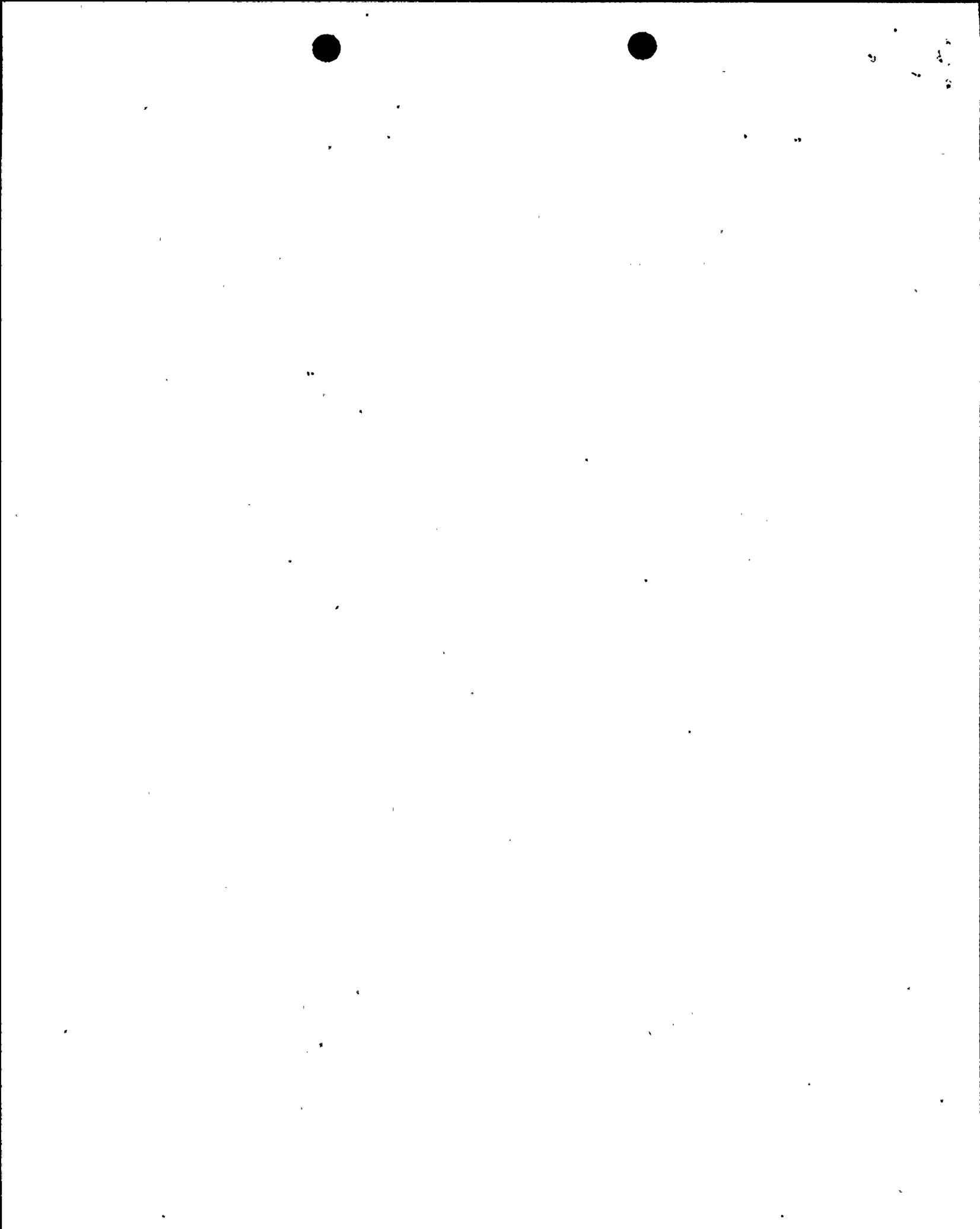
The first change involves a revision to the description of the intake and discharge systems for SONGS, Unit 1. The proposed change to a more general description removes references to the circulating water system, design velocities for the intake structure, mechanical rakes, and traveling screens, bar screens, and screenwells. The change is necessary to permit modifications to these systems during the decommissioning process.

The second change involves the NRC reporting requirements of events which are reportable to other Federal, State, or local agencies. The current TS states that the licensee will provide a copy of a report to the NRC at the same time it is submitted to another agency. The proposed change would allow the licensee up to 30 days to send the NRC a copy of such reports.

The final environmental TS change involves the discontinuation of the practice of sending the NRC copies of applications for and changes to National Pollutant Discharge Elimination System (NPDES) Permits. The licensee will still be required to report to the NRC any changes or additions to the NPDES Permit within 30 days of approval, and of any violations of the NPDES Permit or State Certification, as well as a copy of the Section 316(b) Demonstration Study.

2.0 EVALUATION

The technical specification change allowing a less detailed description of the intake and discharge system is needed to allow the licensee to dismantle those portions of the systems that are not needed for operation. The circulating water system has not been in use since the plant was defueled and placed in SAFSTOR in 1994. The removal of reference to a cooling water system is consistent with the Safety Evaluation Report issued on December 28, 1993, for the Permanently Defueled Technical Specifications. The SER provided the technical basis to omit specifications related to the reactor cooling system, because the reactor is permanently defueled. Under the SAFSTOR decommissioning status of SONGS, Unit 1, only the non-safety related salt water cooling (SWC) system is used to provide a heat sink for the spent fuel pool cooling system via the component cooling water (CCW) heat exchangers. The SWC system consists of two trains containing a pump and a CCW heat exchanger. Only one train is needed and the pool may be passively cooled to below 150° F. The SWC pumps also provide dilution flow for liquid effluents and will be maintained to ensure that discharges are within effluent concentration limits. Flow rates associated with the SWC pumps are a fraction of those needed by the cooling water system; therefore, operation of the screens and rakes is not needed to maintain adequate flow for the SWC system. Furthermore, the velocities through the intake structure are not as high as those associated with operation of the cooling water system and



the reference to design velocities is not applicable to the current mode of operation. Thus, the changes to the description of the intake and discharge systems are necessary to allow dismantlement of systems that are no longer in service and to maintain consistency with the current status of the Unit.

The technical specification change regarding the relaxation of the time requirements for the submission of copies of reports submitted to other Federal, State, or local agencies is not acceptable as proposed. The NRC needs to remain cognizant of environmental issues related to licensee operations to adequately address concerns of other agencies and the public. Alternative language stating that copies of these reports would be submitted to the NRC as soon as practicable but no later than 30 days is acceptable. Notwithstanding language in the TS, the licensee will comply with the requirements of 10 CFR 50.72, which provides a four hour reporting requirement for any environmental event that results in a news release or report to another government agency.

Finally, the licensee proposes to delete the TS requirement to submit copies of applications for or changes to the NPDES permit to the NRC. The EPA or permitting State has the authority to issue NPDES permits for non-radiological pollutants consistent with the Clean Water Act, as amended, 10 CFR Part 51.10(c), and the "Memorandum of Understanding and Policy Statement Regarding Implementation of Certain NRC and EPA Responsibilities" found at 40 CFR 60115. The licensee is still required to report any violations of its NPDES permit, submit copies of its Section 316(b) demonstration study, and provide copies of changes or additions to the NPDES Permit or the State certification to the NRC within 30 days of approval. The proposed TS is acceptable.

### 3.0 STATE CONSULTATION

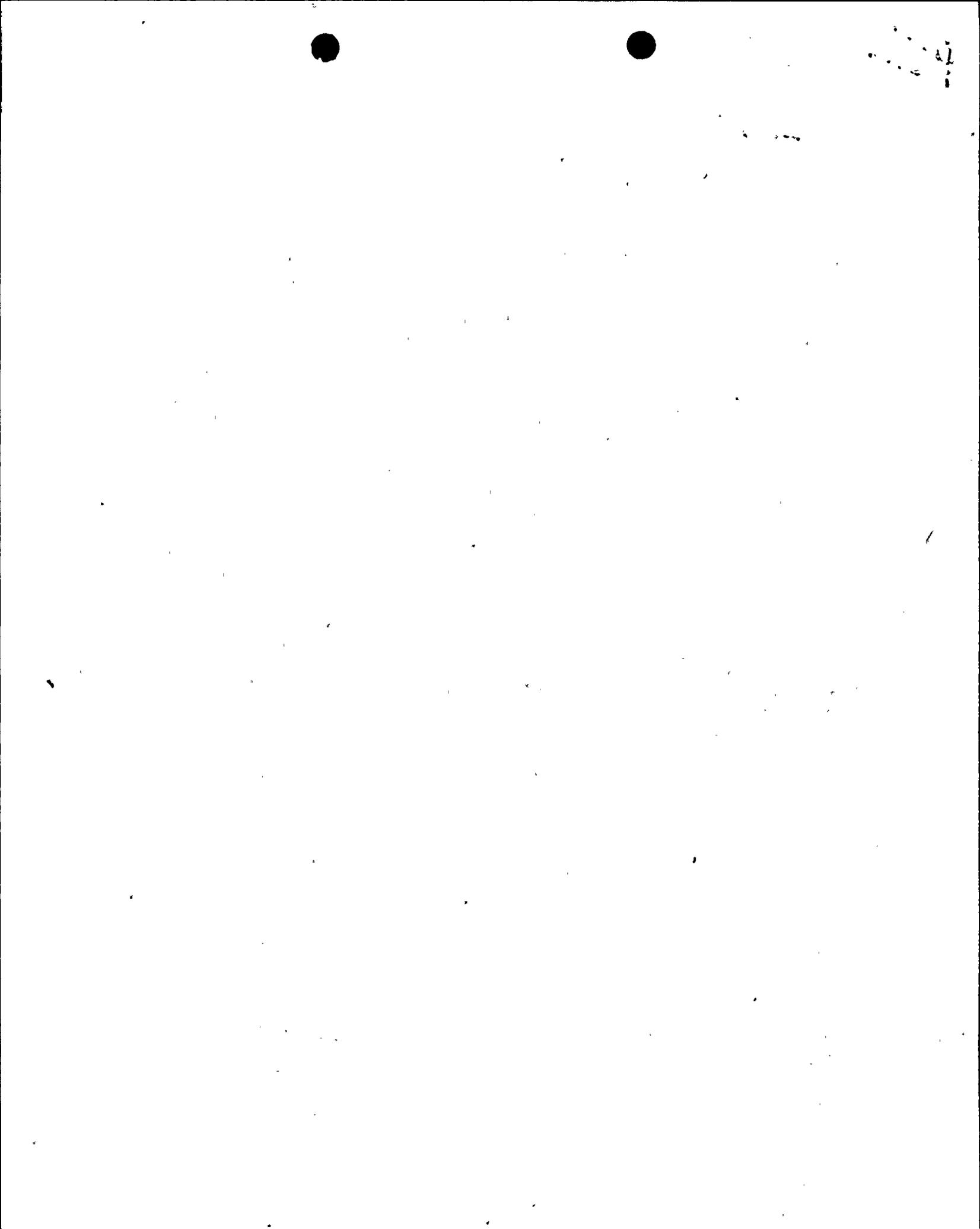
The California State official should be notified of the proposed issuance of the amendments.

### 4.0 ENVIRONMENTAL CONSIDERATION

In the application for amendments to the technical specifications for SONGS, the licensee states that the proposed changes should be categorically excluded, pursuant to 10 CFR 51.22 (c)(9). As 51.22 (c)(9) applies to changes to requirements with respect to installation or use of a facility component located within the restricted area, or which changes an inspection of a surveillance requirement, some of the technical specification changes are not applicable. Thus, preparation of an environmental assessment is appropriate for this amendment request.

### 5.0 CONCLUSION

The RGE staff has concluded that, based on the considerations discussed above, the proposed changes to the environmental technical specifications changes, with the alternative wording for the reporting requirements for events reportable to other government agencies, will provide an adequate level of protection of the environment, and that such activities will be conducted in compliance with the Commission's regulations.



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SUSQUEHANNA STEAM ELECTRIC STATION (SSES), UNIT 1 AND 2 DRAFT REQUEST FOR ADDITIONAL INFORMATION, GENERIC LETTER (GL) 96-06

Body:

PDR ADOCK 05000387 P

Docket: 05000387, Notes: N/A

Docket: 05000388, Notes: N/A

memo4



December 10, 1999

MEMORANDUM TO: File Center

Original signed by:

FROM: Victor Nerses, Project Manager, Section 1  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION (SSES), UNIT 1 AND 2,  
DRAFT REQUEST FOR ADDITIONAL INFORMATION, GENERIC  
LETTER(GL) 96-06 (TAC NOS. M96875 AND M96876)

The attached request for additional information (RAI) pertaining to SSES, Units 1 and 2 was transmitted by facsimile on December 10, 1999, to Mr. R. Kichline of PP&L, Inc. (licensee). Review of the RAI would allow the licensee to determine and agree upon a schedule to respond to the RAI. This memorandum and the attachment do not convey a formal request for information or represent an NRC staff position.

Docket Nos. 50-387 and 50-388

Attachment: Draft RAIs to PP&L, Inc.'s GL 96-06 Response

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

December 10 1999

MEMORANDUM TO: File Center

FROM: Victor Nerses, Project Manager, Section *Victor Nerses*  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION (SSES), UNIT 1 AND 2,  
DRAFT REQUEST FOR ADDITIONAL INFORMATION, GENERIC  
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Docket Nos. 50-387 and 50-388

Attachment: Draft RAIs to PP&L, Inc.'s GL 96-06 Response

THE UNIVERSITY OF CHICAGO

1919

## DRAFT RAIS TO PP&L, INC.'S GL 96-06 RESPONSE

1. Provide further justification for P[3] - containment heating causes heating and expansion of the water trapped between the isolation valves overpressurizing the pipe until rupture. At a minimum, please, address additional failure modes such as station blackout and human reliability.
2. Page 16 of the submittal states, "Penetration failure is a concern when a large radioactive source term is available for release in the drywell." Please quantify the probability of a large radioactive source term in the drywell at the time of penetration failure.
3. During the resolution of Generic Safety Issue 150, "Overpressurization of Containment Penetrations," the staff estimated a value of 0.1 for the probability that the penetration fails in a manner that results in a leakage path from the containment atmosphere to the environment. Although the staff believes that 0.1 is very conservative, barring further justification from PP&L, the staff believes that a value of 0.1 is more appropriate than PP&L's estimate of between  $10^{-5}$  and  $10^{-2}$  with a point estimate of  $3 \times 10^{-4}$ . The staff's concern in supporting a less conservative value is based on PP&L's application of Branch Technical Position MEB 3-1, failure to address the effects of non-uniform strain, failure to identify the more likely failure points given overpressurization, and a lack of relevant data.
4. Section 5.0 of the submittal discusses two mitigating measures that provide protection to primary containment integrity for the overpressurization failure mode as well as other threats. The submittal goes on to say that these measures have been implemented in the plant's Emergency Operating Procedures via safety evaluations per 10 CFR 50.59. Please provide a copy and reference these safety evaluations in your submittal. What controls exist to assure that these improvements to the Emergency Operating Procedures will not be modified without the consideration of the issues raised in GL 96-06?
5. Considering the safety importance of the drywell spray valves to open as described in Section 4.2.1 of the submittal what monitoring program will be implemented to support the modeling assumptions of the drywell spray isolation valves? Have insights from the engineering evaluation in Section 4.2.1 been incorporated into the drywell spray isolation valves' maintenance program? Have these valves been classified as having high safety significance? If so, will possible future changes to their classification consider their role in the disposition of GL 96-06?
6. Page 16 of the submittal states that, "Estimating the probability that the containment will reach a sustained temperature sufficient to rupture requires an evaluation of ... the containment temperature for a spectrum of accidents," and, "It is assumed that penetration failure will occur if cooling to the drywell is not restored." Please provide the evaluation of containment temperature for a spectrum of accidents described above. Have you quantified the impact of drywell sprays on containment temperature? If not, what is the basis for the assumption that the penetration will not fail given restoration of cooling to the drywell?

7. For those penetrations that are susceptible to thermally-induced overpressure, provide the maximum-calculated temperature and pressure for the piping run. Describe in detail the method used to calculate these pressure and temperature values. This should include a discussion of the heat transfer model, and the basis for the heat transfer coefficients used in the analysis. Discuss any source of uncertainty associated with the calculated pressure and temperature.
  
8. Provide the results of piping and valve analysis based on the criteria contained in the ASME Code, Section III, Appendix F. For each component, provide a summary of the maximum faulted pressure, design load combination, calculated stress for design load combination including faulted pressure, and allowable stress based on the criteria contained in Appendix F. Also, you should include a reference to the specific provisions of Appendix F used as a basis in calculating the allowable stress (e.g., F-1331, F-1430, F-1420).

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Request for additional information regarding Susquehanna's risk-informed response to Generic Letter 96-06.

Body:

Docket: 05000387, Notes: N/A

Docket: 05000388, Notes: N/A

50-387/388

November 19, 1999

MEMORANDUM TO: Kamal Manoly, Section Chief  
 Mechanical and Civil Engineering Branch

FROM: Mark Rubin, Section Chief  
 Probabilistic Safety Assessment Branch

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING  
 SUSQUEHANNA'S RISK-INFORMED RESPONSE TO GENERIC  
 LETTER 96-06 (TAC NOS. M96875 AND M96876)

Per your request, the Probabilistic Safety Assessment Branch (SPSB) has completed our initial review of Susquehanna's risk-informed response to Generic Letter 96-06, "Assurance of Equipment Operability and Containment Integrity During Design-Basis Accident Conditions." To complete our evaluation, we find that additional information is needed from the licensee. With your approval, we recommend that the attached request for additional information be transmitted to the licensee via the project manager.

One area requiring further justification is the licensee's modeling of containment heating causing a penetration to rupture. The licensee's model does not address failures of the Drywell Spray System due to station blackout or human reliability. The first request in the attachment is an attempt to address this deficiency.

Additionally, SPSB can not support the licensee's modeling of a penetration failure causing a leak path from the primary containment to the reactor building. The licensee believes that the three mechanisms documented in NUREG-0933 as part of the resolution of Generic Safety Issue 150, "Overpressurization of Containment Penetrations," are not credible for the Susquehanna penetration design because a longitudinal rupture would have to be more than 72 inches or simultaneous failure of the penetration in both the drywell and the reactor building would be required. The simultaneous failure requires two weak links in the penetration. The licensee believes that it is incredible that two equivalent weak links exist in the same penetration with one being in the containment and the other being outside the containment.

During the resolution of Generic Safety Issue 150, the Office of Research estimated a value of 0.1 for the probability that the penetration fails in a manner that results in a leakage path from the containment atmosphere to the environment. Although SPSB believes that 0.1 is very conservative, barring further justification from the licensee or requantification by the Office of Research, SPSB believes that a value of 0.1 is more appropriate than the point estimate of  $3 \times 10^{-4}$  assumed by the licensee.

Contact: Michael Snodderly, NRR/DSSA/SPSB  
 415-2047

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November 19, 1999

MEMORANDUM TO: Kamal Manoly, Section Chief  
Mechanical and Civil Engineering Branch

FROM: Mark Rubin, Section Chief  
Probabilistic Safety Assessment Branch

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING  
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LETTER 96-06 (TAC NOS. M96875 AND M96876)

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Contact: Michael Snodderly, NRR/DSSA/SPSB  
415-2047

Attachment: As stated

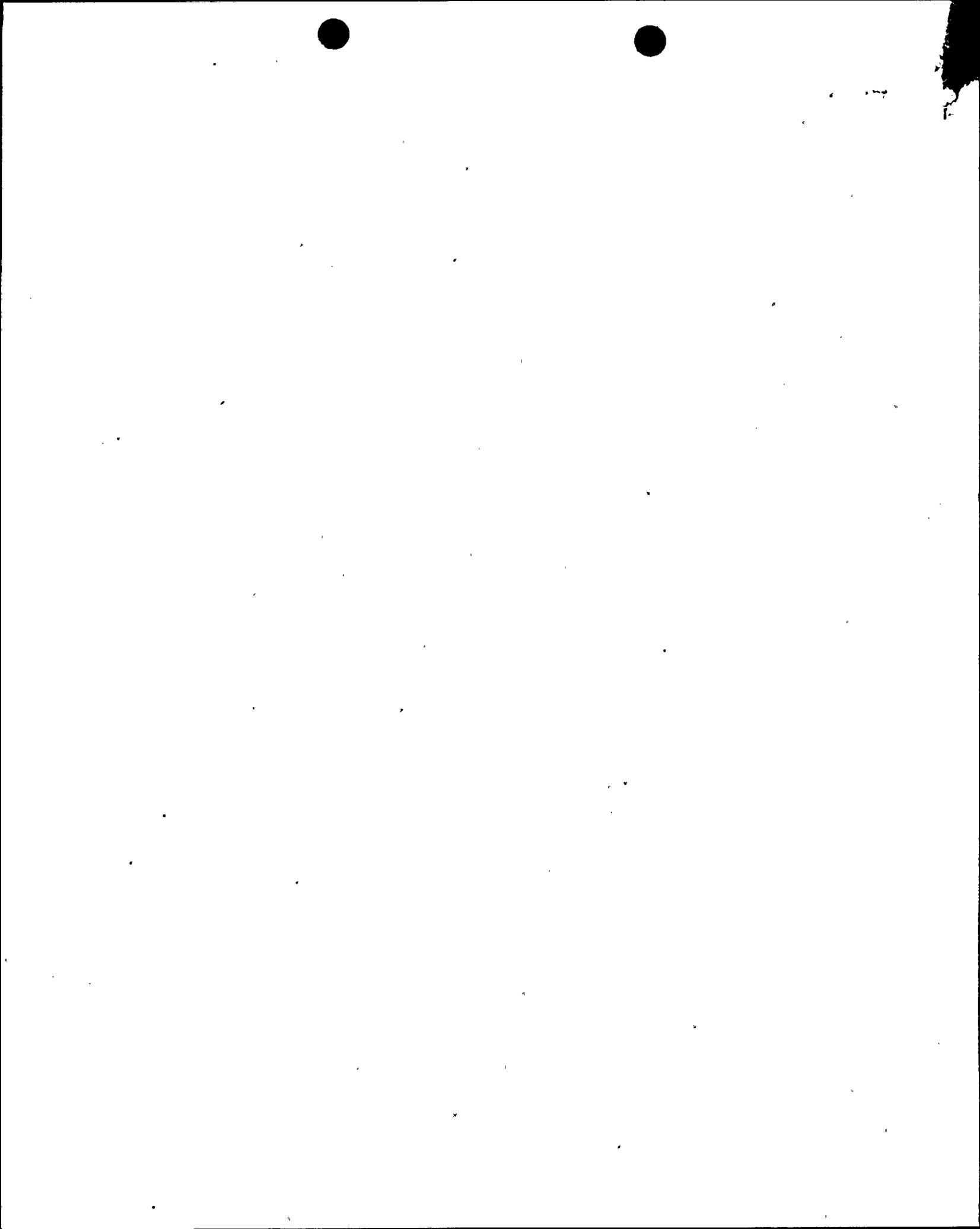
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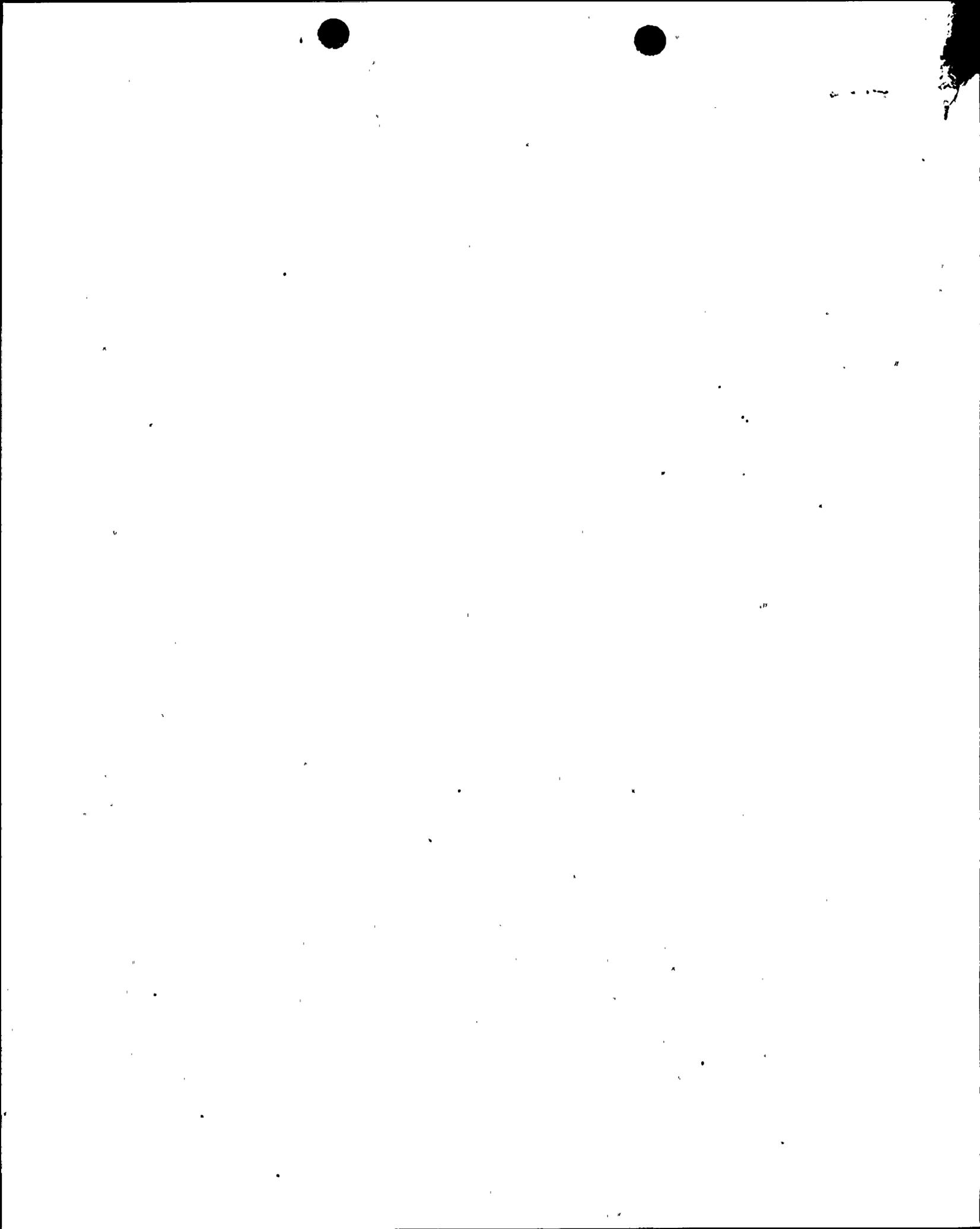
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## SPSB's RAIs to Susquehanna's Generic Letter 96-06 Response

- 1) Provide further justification for P[3] - containment heating causes heating and expansion of the water trapped between the isolation valves overpressurizing the pipe until rupture. At a minimum, please, address additional failure modes such as station blackout and human reliability.
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11/16/29

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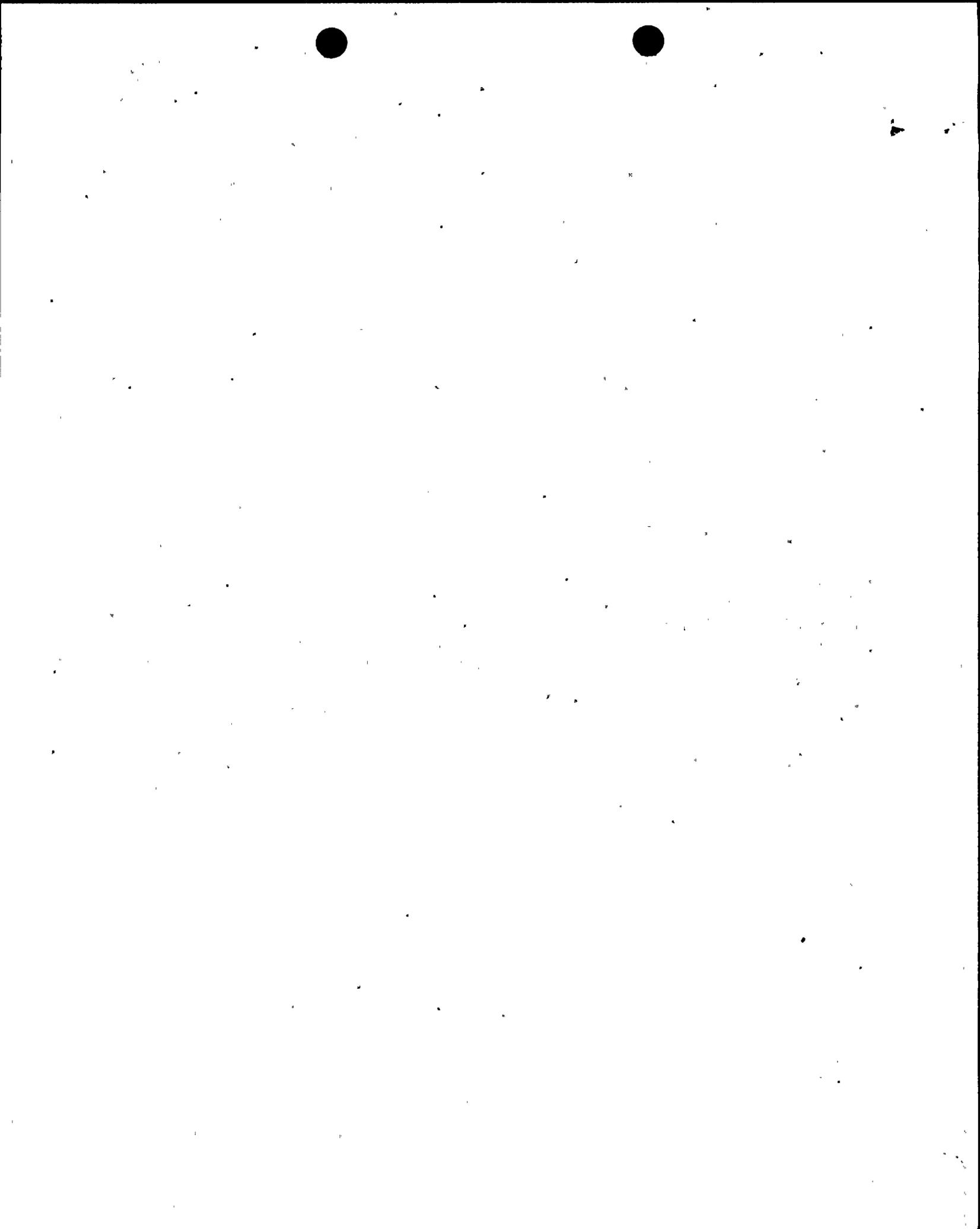
**Subject:**

**REVISION TO LICENSE AMENDMENT REQUEST FOR SUSQUEHANNA STEAM ELECTRIC STATION (TAC NO. MA5014)**

**Body:**

**Docket: 05000387, Notes: N/A**

memo



November 16, 1999

MEMORANDUM TO: Victor Nerses, Project Manager  
Project Directorate I-2  
Division of Reactor Projects - I/II

FROM: Ralph Caruso, Chief/original signed by R. Landry for/  
BWR Systems and Nuclear Performance Section  
Reactor Systems Branch  
Division of Systems Safety and Analysis

SUBJECT: REVISION TO LICENSE AMENDMENT REQUEST FOR  
SUSQUEHANNA STEAM ELECTRIC STATION (TAC NO. MA5014)

Plant Name: Susquehanna Steam Electric Station, Unit 1  
Utility: Pennsylvania Power and Light Company  
TAC No(s): MA5014  
Docket No(s): 50-387  
Operating License: NPF-14  
Project Directorate: Project Directorate I-2  
Project Manager: V. Nerses  
Review Branch: SRXB/DSSA  
Review Status: Complete

By letter dated March 12, 1999, as supplemented by letter dated November 1, 1999, Pennsylvania Power and Light Company (PP&L) made application to amend the Technical Specifications (TS) for the Susquehanna Steam Electric Station, Unit 1 (SSES-1). The proposed changes involve the minimum critical power ratio safety limits and Core Operating Limits Report for SSES-1 Cycle 12 operation. The Reactor Systems Branch has reviewed the licensee's amendment request and prepared the attached safety evaluation (Attachment). We find that the proposed Technical Specifications are acceptable.

This completes our efforts on TAC No. MA5014.

Attachment:  
As stated

cc: G. Holahan  
J. Zwolinski  
E. Adensam

CONTACT: T. Huang, SRXB/DSSA  
415-2867

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ATTACHMENT

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATING TO AMENDMENT NO. TO LICENSE NO. NPF-14  
PENNSYLVANIA POWER AND ELECTRIC COMPANY  
SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 1  
DOCKET NO. 50-387

1 INTRODUCTION

By letter dated March 12, 1999 (Reference 1), as supplemented by letters dated November 1, 1999 (Reference 2), Pennsylvania Power and Light Company (PP&L, the licensee) proposed changes to the Technical Specifications (TS) for the Susquehanna Steam Electric Station, Unit 1 (SSES-1) Cycle 12 operation. The proposed TS changes involve the Minimum Critical Power Ratio (MCPR) safety limits for ATRIUM-10 fuel which is coresident with Siemens Power Corporation (SPC) 9x9-2 fuel. The SSES-1 Cycle 12 core has 764 fuel assemblies, which consist of 256 fresh ATRIUM-10 assemblies, 308 once-burned ATRIUM-10 assemblies, and 200 twice-burned 9x9-2 assemblies.

2 EVALUATION

The licensee requested a change to the SSES-1 Cycle 12 Technical Specifications in accordance with 10 CFR 50.59, 50.90, and 2.101. The proposed revision of Technical Specifications 2.1.1.2, 5.6.5.b and the associated Bases 2.1.1.1, 2.1.1.2, 3.2.1, 3.2.2, 3.2.3 and 3.2.4 is described below.

2.1 TS 2.1.1.2

The following changes are proposed for TS 2.1.1.2 Safety Limit MCPR (SLMCPR):

1) Delete Figures 2.1.1.2-1 and 2.1.1.2-2 including the footnote indicating that the MCPR Safety Limit is only approved for Unit 1 Cycle 11; and 2) Single value MCPR Safety Limits of 1.11 for two recirculation loop operation or 1.13 for single recirculation loop operation are proposed to replace the flow dependent MCPR Safety Limit when the reactor steam dome pressure is greater than or equal to 785 psig and core flow is greater than or equal to 10 million lbm/hr.

For the Cycle 12 SLMCPR analyses, the licensee has used the approved ANFB-10 correlation for ATRIUM-10 fuel and the ANFB correlation for SPC 9x9-2 fuel to support the TS changes. Based on our review of the licensee's submittals (References 1 and 2), the staff finds that the proposed TS change for the SLMCPR of 1.11 for two recirculation loop and 1.13 for single recirculation loop in Cycle 12 operation is acceptable. The basis of the staff's acceptance is that boiling transition is predicted using approved critical power correlations and a minimum critical power ratio value is specified such that at least 99.9% of the fuel rods are expected to avoid boiling transition during normal or anticipated operational occurrences. The flow



dependent MCPWR Safety Limits are replaced by single value SLMCPRs using the approved ANFB-10 correlation. Therefore, the deletion of Figures 2.1.1.2-1 and 2.1.1.2-2, which are no longer applicable to SSES-1 Cycle 12 operation, is acceptable.

### 2.2 TS Bases 2.1.1.1, 2.1.1.2, 3.2.1, 3.2.2, 3.2.3, and 3.2.4

The proposed changes to the Bases are merely to reflect the use of the ANFB-10 correlation for ATRIUM-10 fuel in Bases 2.1.1.1, 2.1.1.2, and 3.2.2 and to update its associated approved methodology in the references in Bases 3.2.1, 3.2.2, 3.2.3, and 3.2.4 since the four ABB LUAs will be discharged from Unit 1 during 11<sup>th</sup> refueling and inspection outage. The range of the applicability of the ANFB-10 correlation is valid for pressures greater than 571 psi and bundle mass fluxes greater than  $0.115 \times 10^6$  lb/hr-ft<sup>2</sup>. Therefore, the proposed changes are acceptable.

### 2.3 TS 5.6.5 Core Operating Limits Report

The proposed changes include: (1) to delete the approved methodologies listed in TS 5.6.5.b such as Items 1, 2, 6, 7, 8, 9, 10, 11, 20, 23, 24, 25, 26, 27, 29, 30, 34, 35, 36, 37, 38 and 39; (2) to renumber the rest of the old approved methodologies such as Item 1 through 16 and update the approved volume or supplement such as revised Items 4 and 8; (3) to add a new approved topical report, Item 17, EMF-1997 (P)(A) Revision 0, "ANFB-10 Critical Power Correlation," July 1998, and EMF-1997(P)(A) Supplement 1 Revision 0, "ANFB-10 Critical Power Correlation: High Local Power Peaking Results," July 1998; and (4) to delete the cycle-specific footnote, "Only applicable for Unit 1 Cycle 11 operation."

The staff has reviewed the proposed changes to the list of approved methodologies (Reference 1) in TS 5.6.5.b and found them acceptable. These changes revise the list of methodologies to reflect those necessary for Cycle 12 specific operating limits in TS 5.6.5.a. One new approved topical report is added to TS 6.6.5.b to support Cycle 12 operation. This new topical report is number 17: EMF-1997 (P)(A) Revision 0, "ANFB-10 Critical Power Correlation," July 1998, and EMF-1997 (P)(A) Supplement 1 Revision 0, "ANFB-10 Critical Power Correlation: High Local Peaking Results," July 1998. The proposed removal of cycle-specific footnote is acceptable since the analysis is already performed using plant- and cycle-specific parameters.

## 3 CONCLUSIONS

Based on the review, we conclude that the proposed TS revisions are acceptable for SSES-1, Cycle 12 application.

The staff has concluded, based on the consideration discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety to the public.

#### 4 REFERENCES

1. Letter (PLA-5040) from R. G. Byram to USNRC, "Susquehanna Steam Electric Station Proposed Amendment No. 227 to License NPF-14: ANFB-10 Critical Power Correlation and MCPR Safety Limits," March 12, 1999.
2. Letter (PLA-5110) from R. G. Byram to USNRC, "Susquehanna Steam Electric Station Revised Proposed Amendment No. 227 to License NPF-14: ANFB-10 Critical Power Correlation and MCPR Safety Limits," November 01, 1999.

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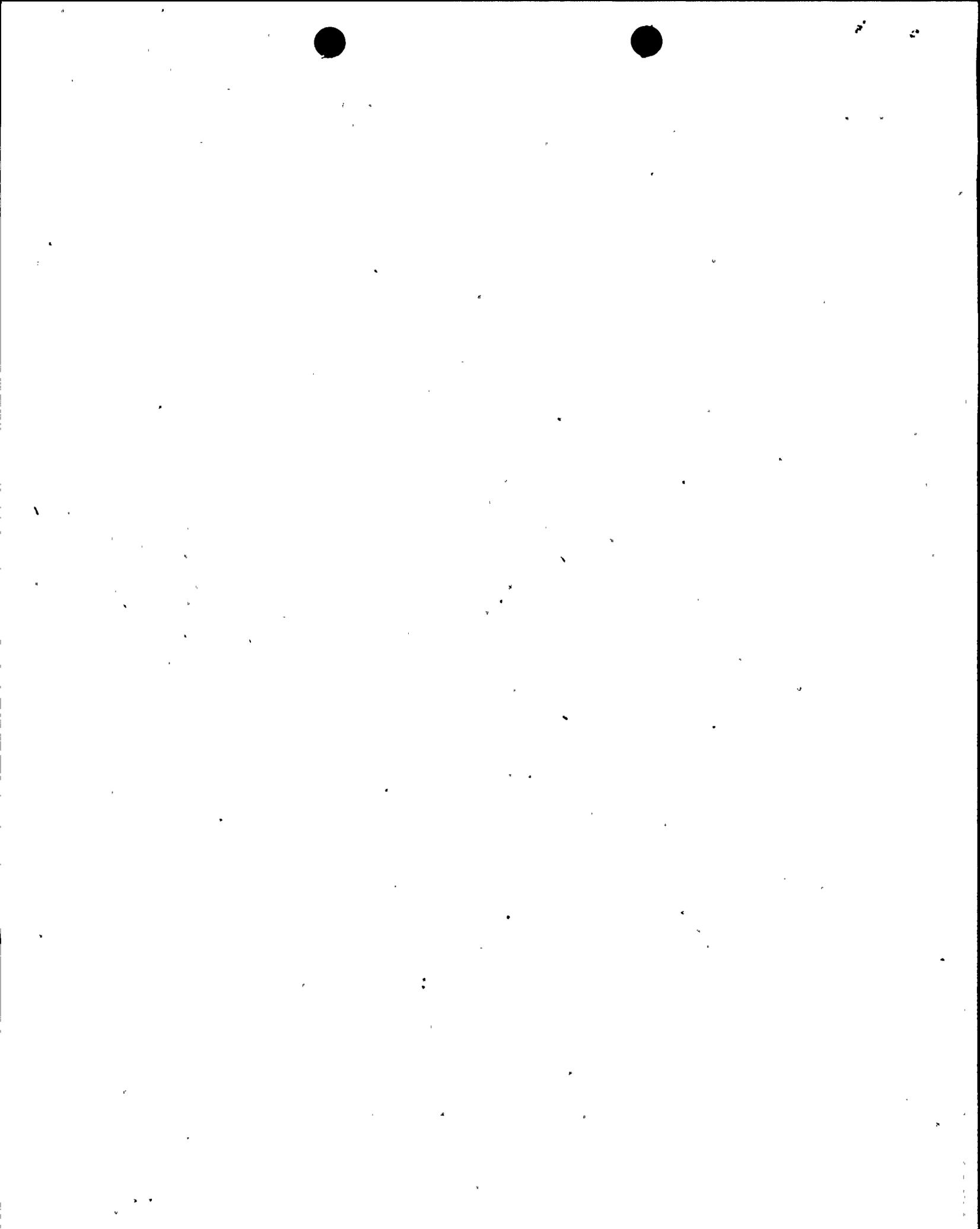
REQUEST FOR ADDITIONAL INFORMATION REGARDING RESPONSE TO GENERIC LETTE  
R 96-06 FOR THE SUSQUEHANNA STEAM ELECTRIC STATION

Body:

Docket: 05000387, Notes: N/A

Docket: 05000388, Notes: N/A

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

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November 5, 1999

MEMORANDUM TO: Sheri Peterson, Acting Chief  
Section 1, Project Directorate I  
Division of Licensing Project Management

FROM: Kamal A. Manoly, Chief *Kamal A. Manoly*  
Civil & Engineering Mechanics Section  
Mechanical & Civil Engineering Branch  
Division of Engineering

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION REGARDING  
RESPONSE TO GENERIC LETTER 96-06 FOR THE SUSQUEHANNA  
STEAM ELECTRIC STATION (TACS M96875 AND M96876)

References: Letters, Pennsylvania Power and Light, Inc., to NRC, regarding response  
to Generic Letter (GL) 96-06, dated January 29, 1997, May 9, 1997,  
June 30, 1997, November 9, 1998, July 9, 1999, and August 3, 1999

The Mechanical & Civil Engineering Branch (EMEB) has reviewed the referenced submittals by Pennsylvania Power and Light, Inc., (licensee) which provides its response to GL 96-06, "Assurance of Equipment Operability and Containment Integrity During Design Basis Accident Conditions," for the Susquehanna Steam Electric Station. The following addresses the issue of thermally-induced pressurization of piping runs penetrating the containment for which EMEB has the lead review responsibility. The Probabilistic Safety Assessment Branch (SPSB) is responsible for the review of the risk analysis in the licensee's August 3, 1999, submittal. The Plant Systems Branch (SPLB) is the lead review branch for the water hammer and two phase flow issues.

In its submittal of May 9, 1997, the licensee identified 12 containment penetrations, non-safety-related drywell floor sump system discharge piping, and a closed loop system inside the containment, as vulnerable to a water solid volume that may be subjected to an increase in pressure due to heating of trapped fluid. The licensee provided operability assessments for these systems. In its June 30, 1997, submittal, the licensee indicated that it was pursuing two options for resolving the issue of thermally-induced overpressure for these systems. One option involved ongoing engineering efforts to evaluate the susceptible containment penetrations. The other option involved participation in ongoing ASME Code initiatives on this issue. Members from industry in Section III of the ASME Code proposed a Code Case (N-584) as an alternative acceptance criteria for Class 2 and 3 piping systems containing isolated fluid subject to thermal expansion from accident environmental conditions. The staff did not accept the industry's proposal. The ASME Code Case N-584 has been withdrawn by industry. It is the staff's position that the resolution of thermally-induced overpressurization is a Code compliance issue.

CONTACT: B. P. Jain, EMEB/DE  
415-2766

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associated with the drywell floor drain sump pump discharge lines. However, the licensee in its submittal of August 3, 1999, elected to resolve the ASME code compliance issue through a risk-informed submittal and indicated that it does not plan to install any modification to the penetrations. The licensee further stated that the long term resolution of thermally-induced overpressurization issue will be pursued as a risk-informed plant specific change to the licensing basis (LB), and committed to use the guidance outlined in Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant Specific Changes to the Licensing Basis."

The staff has considered the guidelines of the RG 1.174 in the review of the licensee's August 3, 1999, submittal for proposed LB change. Specifically, Subsection 2.2.1.2 of RG 1.174 states that an engineering evaluation should assess whether the impact of the proposed LB change is consistent with the principle that sufficient safety margins are maintained. Sufficient safety margins are maintained when Codes and standards or alternatives approved for use by the NRC are met. For resolving the thermally-induced overpressurization issue, the staff, in Supplement 1 to GL 96-06, approved the use of the acceptance criteria contained in the ASME Code, Section III, Appendix F. In its August 3, 1999, submittal, the licensee did not provide a quantitative engineering evaluation that would permit the staff to assess whether sufficient safety margins are maintained. In order for the staff to continue its review of the licensee's risk-informed LB change submittal, we request the licensee to provide the following engineering evaluation of all affected penetrations and valves for assessing whether sufficient safety margins are maintained.

1. For those penetrations that are susceptible to thermally-induced overpressure, provide the maximum-calculated temperature and pressure for the piping run. Describe in detail the method used to calculate these pressure and temperature values. This should include a discussion of the heat transfer model, and the basis for the heat transfer coefficients used in the analysis. Discuss any source of uncertainty associated with the calculated pressure and temperature.
2. Provide the results of piping and valve analysis based on the criteria contained in the ASME Code, Section III, Appendix F. For each component, provide a summary of the maximum faulted pressure, design load combination, calculated stress for design load combination including faulted pressure, and allowable stress based on the criteria contained in Appendix F. Also, you should include a reference to the specific provisions of Appendix F used as a basis in calculating the allowable stress (e.g., F-1331, F-1430, F-1420).

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2. Provide the results of piping and valve analysis based on the criteria contained in the ASME Code, Section III, Appendix F. For each component, provide a summary of maximum faulted pressure, design load combination, calculated stress for design load combination including faulted pressure, and allowable stress based on the criteria contained in Appendix F. We also request that the licensee include a reference to specific provisions of the Appendix F used as a basis in calculating the allowable stress (e.g., F-1331, F-1430, F-1420).

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