February 23, 2001

Mr. Norm Cohen
Coordinator, UNPLUG Salem Campaign
Coalition for Peace and Justice
321 Barr Avenue
Linwood, NJ 08221

Dear Mr. Cohen:

I am responding to your November 24, 2000, and January 6, 2001, letters submitted on behalf of the UNPLUG Salem Campaign. In the letters, you requested that the U.S. Nuclear Regulatory Commission (NRC) immediately release all the results of its recent inspection of the steam generators at the Salem Nuclear Generating Station (Salem), Unit No. 2, to the public by means of a public meeting at Artificial Island. We understand from your letters that you consider that a public meeting would help ensure public confidence that the Salem steam generators are safe, and show that the NRC is concerned about safety. You also stated that the release of this information in a public forum was necessary: (1) because of similarities in steam generators and alloys between Salem, Unit No. 2, and Indian Point, Unit No. 2 (IP2); (2) because of the NRC Office of the Inspector General's (OIG) report on the IP2 event that showed a laxness on the part of the NRC; and (3) because UNPLUG Salem was given confidential information that indicates that water chemistry at Salem has allowed impurities to be introduced in the steam generator water and that impurities are present in lubricating oil.

In the January 6, 2001, letter, you further requested that: (1) a special engineering and/or augmented inspection be performed as soon as possible to explore the concerns and claims raised in letters recently given to the UNPLUG Salem Campaign; (2) the NRC and PSEG Nuclear LLC, the owner and operator of Salem, release all correspondence associated with steam generator, water chemistry, alloys, Limitorque motor-operated valves, and snubber concerns at Salem, Unit No. 2; (3) the NRC and PSEG Nuclear explain (a) why the licensee chose to use "failed water chemistry and failed alloys at Salem 1 and 2 when better and safer alternatives were available," (b) why, in 1997, Salem did not use a "better and safer" lubricant in its Limitorque motor-operated valves, (c) why, in 1997, Salem, Unit No. 2, was allowed to operate with leaking snubbers; and (d) the NRC and PSEG Nuclear should provide the public with laboratory certificates for the heat treatment and copies of any procedures manuals relating to the steam generators and heat treatment. In addition, you also requested information on how whistleblower letters are factored into the current risk-informed Reactor Oversight Process.

Enclosed is our response to the issues you have raised. Regarding your specific request to obtain steam generator inspection results, we would like to emphasize that PSEG Nuclear retains the responsibility for actually examining steam generator tubes. The NRC conducts site inspections through its Reactor Oversight Process to review programs and procedures that the licensee uses to conduct these examinations. The licensee is further responsible for evaluating the data from these examinations to determine what, if any, actions are required to assure that the integrity of steam generator tubes is maintained.

We continue to strive to provide the public with the fullest information on NRC activities, and to conduct our business in an open manner. Public meetings are just one of the many ways we share information with local communities and interested citizens. At the same time, we must balance this with our regulatory and safety responsibilities without incurring an undue administrative burden. Our understanding of your request for a public meeting is that you seek detailed information regarding the results of the licensee's comprehensive examination of the Salem, Unit No. 2, steam generators and to question the associated inspectors. While it is our policy to conduct our business openly, we generally reserve public meetings of this type—which often require support from the licensee—for circumstances involving an unusual operating occurrence at a facility or an event involving a significant safety issue.

As discussed in the enclosure, we have already made public all the information related to our inspection efforts of the Salem, Unit No. 2, steam generators. The licensee retains the type of detailed information that your letter requests regarding the condition of the Salem, Unit No. 2, steam generators. The NRC does not hold additional information beyond that discussed in our inspection reports. In order to be responsive to your specific concerns, we are providing the enclosed information in response to your November 24, 2000, and January 6, 2001, letters. If, after reviewing this information, you believe that a meeting is still necessary in order for the NRC staff to further explain our programs related to licensee steam generator inspections, we will arrange to meet with you in conjunction with an appropriate meeting at the Salem site, such as the upcoming licensee assessment meeting scheduled for this summer.

For the reasons discussed in the enclosure, the NRC considers that Salem, Unit Nos. 1 and 2, are meeting current regulatory requirements associated with steam generators, and that the licensee is operating the facility in a manner that continues to reasonably assure that the public health and safety are not adversely affected.

I trust that this response adequately addresses your concerns. If you have any additional questions or need further information, please do not hesitate to contact me.

Sincerely,

/RA/

Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

Enclosure: As stated

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/RA/

Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

Enclosure: As stated
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RESPONSE TO CONCERNS RAISED BY
MR. NORM COHEN, UNPLUG SALEM CAMPAIGN
NOVEMBER 24, 2000 AND JANUARY 6, 2001

The following is our response to the issues raised in your November 24, 2000, and January 6, 2001, letters:

1. The NRC should immediately release all the results of its recent inspection of the steam generators at Salem Unit No. 2 to the public by means of a public meeting at Artificial Island. A public meeting would ensure public confidence that the Salem steam generators are safe, and show to the public that the NRC is concerned about safety.

The NRC conducts its inspection of a licensee's steam generator tubing examination effort using the inservice inspection (ISI) program inspection module that is a part of the overall Reactor Oversight Process. Our ISI program inspection typically includes a review of procedures and technical reports associated with the licensee's tubing examinations, interviews with licensee and contract personnel to assess licensee competence, and a review of a limited sample of eddy current (EC) nondestructive examination (NDE) data. The results are documented in an inspection report which is made available to the public. Details of the ISI and other inspection modules may be found on the NRC Web site, at http://www.nrc.gov/NRC/IM/index.html under the title of "Inspection Procedures."

While NRC inspectors look at a wide variety of information during on-site inspections, the NRC does not retain this material; rather, the licensee maintains the associated documents and detailed examination results in accordance with records retention requirements. Much of the information retained by the licensee involves "raw" EC data that consists of large amounts of digitized electronic data. Review of this data during a steam generator inspection requires a large number (a dozen or more) of highly specialized analysts working on the order of person-weeks, depending upon the scope and complexity of the inspection. There are NRC staff and specialized contractor personnel trained to review and interpret EC data. However, the responsibility for performing the comprehensive steam generator examination and full interpretation of the data remains with the licensee.

Salem Steam Generator Examination and Inspection Documents

(a) During the most recent Salem, Unit No. 2, October 2000 outage, PSEG Nuclear performed a detailed examination of the steam generator tubes in accordance with its ISI program. The licensee was aware of the lessons associated with the Indian Point 2 small radius U-bend leakage, and these lessons were factored into its recent tubing examinations at Salem. NRC inspectors also considered and incorporated this information into our on-site inspection of PSEG Nuclear's steam generator ISI program. The inspectors reviewed several procedures and reports associated with the EC inspection of the Salem steam generators, including the degradation assessment report, a signal/noise ratio study, and EC examination procedures. In addition, our inspectors interviewed PSEG Nuclear and contract personnel responsible for EC NDE. The NRC conducted these interviews to assess the licensee and contractor's knowledge of steam generator degradation phenomena. The inspectors also reviewed samples of EC NDE data obtained from several tubes, and verified that approved probes were used to acquire EC inspection data. This review included EC data obtained from 3 small radius U-bend tubes.

No documented findings nor any unresolved issues resulted from this inspection of the licensee's ISI program. A copy of NRC Inspection Report Nos. 05000272/2000-009 and 05000311/2000-009, dated December 8, 2000, can be found in the Agency-wide Documents Access and Management System (ADAMS) by referencing Accession No. ML003776007.

(b) As required by Salem Technical Specification (TS) Section 4.4.6.5.a, the licensee provided its Salem Unit No. 2 steam generator plugging report in a letter dated November 16, 2000. In that report, the licensee identified that it had plugged 31 tubes in Steam Generator #21, 33 tubes in Steam Generator #22, 17 tubes in Steam Generator #23, and 37 tubes in Steam Generator #24 during its most recent outage. As a result, the percentage of the total number of steam generator tubes plugged at Salem, Unit No. 2, is currently 6.43%. This value is roughly one-third of the average plugging limit of 20% (with a maximum of 25% tubes plugged in any one steam generator) for asymmetric plugging conditions, as documented in our Safety Evaluation to License Amendment No. 197, dated January 8, 1999. The percentage of tubes plugged at Salem indicates that there has been some tubing degradation; however, the number reported by the licensee is not unusual for this type and age of steam generator. While this information can be useful for trending overall tubing degradation over a period of time, there is other information, such as the margin of safety available for the most seriously degraded tubes at the end of the operating cycle, that we consider to be more meaningful indicators of steam generator structural integrity.

For further information, you may find the Salem, Unit No. 2, Steam Generator Plugging Report by referencing ADAMS Accession No. ML003770394.

(c) In accordance with the Salem license, the licensee submitted its most recent annual summary report on February 28, 2000. The report contains information associated with the Salem Unit Nos. 1 and 2 steam generator examinations performed in 1999. The document contains a description of the scope of tubing examinations, a summary of the EC results from refueling outages 1R13 and 2R10, information about tube plugging activities, and other inspection-related information. We anticipate that the licensee will submit its 2000 annual report, which will include information on the most recent Salem Unit No. 2 refueling outage steam generator examinations, in early 2001. A copy of the 1999 Salem Annual Report may be found in ADAMS by referencing Accession No. ML003691698.

The full text of these documents may be found electronically in the NRC Public Document Room (PDR), or from the Publicly Available Records (PARS) component of ADAMS. If you have Internet access, ADAMS is available from the NRC's Public Electronic Reading Room Web site at: http://www.nrc.gov/NRC/ADAMS/index.html. The ADAMS Public Library is available 24 hours a day with the exception of a shutdown for weekly maintenance between 6 and 8 p.m. Eastern time on Thursdays. You may also contact the NRC PDR Reference staff at 1-800-397-4209, 301-415-4737 or by email to pdr@nrc.gov . The PDR staff can assist you with arranging free ADAMS training (available at the PDR in Rockville, MD), ADAMS hardware and software issues, searching ADAMS and the Bibliographic Retrieval System (BRS), and obtaining paper copies of documents in the ADAMS library and microfiche copies of most documents in the Legacy Database.

Public Meeting

It is our longstanding practice to provide the public with the fullest information on NRC activities, and to conduct our business in an open manner. Public meetings are just one of the many ways we share information with local communities and interested citizens. At the same time, we must balance this with our regulatory and safety responsibilities without incurring an undue administrative burden. Our understanding of your request for a public meeting is that you seek detailed information regarding the results of the licensee's comprehensive examination of the Salem Unit No. 2 steam generators and to question the associated inspectors. While it is our policy to conduct our business openly, we generally reserve public meetings of this type—which often requires support from the licensee—for circumstances involving an unusual operating occurrence at a facility or an event involving a significant safety issue. As previously stated, the licensee is responsible for retaining the detailed information related to the steam generator examinations. The information and reports described above comprise the information that the NRC possesses related to its inspection activities. The NRC does not hold additional information beyond that discussed in our inspection reports. If, after reviewing the information in this enclosure, you believe that a meeting is still necessary in order for the NRC staff to further explain our programs related to licensee steam generator inspections, we will arrange to meet with you in conjunction with an appropriate meeting at the Salem site, such as the upcoming licensee assessment meeting scheduled for this summer.

2. There are similarities in the steam generators and alloys at Salem and IP2.

In your letters, you expressed a concern about the similarities between the original IP2 and the current Salem steam generators, specifically the use of Alloy 600 tubing. In our April 17, 2000, letter to you, we provided information that described various similarities and differences between the Salem and IP2 steam generators in response to similar concerns you raised in your February 22, 2000, letter to Chairman Meserve. The table below outlines some of the more important design features:

Characteristic	**Indian Point, Unit No. 2**	**Salem, Unit No. 1**	**Salem, Unit No. 2**
S/G Model	Westinghouse Model 44	Westinghouse Model F	Westinghouse Model 51
Began Operation	August 1974	1995* (*Replaced)	October 1981
Tubing Material/ Heat Treatment	Alloy 600 Mill-Annealed	Alloy 600 Thermally-Treated	Alloy 600 Mill-Annealed
Tubing Size Wall Thickness	7/8-inch O.D. 0.050-inch wall thickness	11/16-inch O.D. 0.043-inch wall thickness	7/8-inch O.D. 0.050-inch wall thickness
Low Radius U-Bend Heat Treatment	None	Yes	Yes
S/G Tubing to Tube Sheet Fabrication	Tubes are mechanically hard-rolled into the tube sheets.	Tubes are hydraulically expanded into the tube sheets.	Tubes are explosive expanded into the tube sheets.
S/G Support Structure	Tube support plates are made of carbon steel with drilled holes	Tube support plates are made of stainless steel with broached holes to reduce corrosion and denting.	Tube support plates are made of carbon steel with drilled holes.

As shown in the table, the original Westinghouse Model 51 steam generators at Salem Unit No. 1 were replaced in 1995. The newer tubing was thermally treated, and the U-bends in the first 10 rows were also stress relieved after bending. In addition, the tubes for the newer steam generator were hydraulically expanded into its tube sheet. This method introduces lower residual stresses than the roll expansion method, which lowers crack initiation and growth rates. Also, the tube support plates for the Salem Unit No. 1 steam generator were made of stainless steel with broached holes to reduce corrosion and denting. Furthermore, the first row of tubes in the Salem Unit 2 steam generators have been plugged as a preventive measure, and they also originally received a U-bend region heat treatment (stress relief) of the Row No. 2 tubes.

Alloy 600

Inconel Alloy 600 is a commonly used material for commercial nuclear power plant steam generator tubes. Alloy 600 is a corrosion-resistant high-nickel alloy; and, initially, steam generator fabricators predominately used mill-annealed Alloy 600 tubing. Most of the steam generator tubes which have required plugging over the years have been mill-annealed Alloy 600 tubes.

Alloy 600 degradation has had a considerable impact on the effective life of steam generators throughout the industry, and the NRC has focused significant attention on this issue. Industry experience has also shown that there are many factors, beyond age and component materials, that impact the effective life of steam generators. Some of these factors include: (1) design considerations such as the number, design, materials, and placement of tube supports; (2) techniques used to expand the tubes to lock them into the tubesheet; (3) operating history specific to each plant in controlling primary and secondary water chemistry during normal operation and lay-up conditions; (4) maintenance history (e.g., certain actions taken by individual licensees during refueling outages, such as cleaning the secondary side sludge, can greatly affect plant chemistry and thus, impact steam generator life); and (5) normal plant operating temperature.

In the early to mid-1970s, the dominant cause of tube degradation was thinning of steam generator tube walls due to the chemistry of water flowing through them. However, plants have changed their water chemistry control programs since that time, virtually eliminating the problem with tube thinning. Tube denting also became a concern, and this phenomenon results from the buildup of corrosion products in the crevices between tubes and the tube support plate. Many licensees have taken measures to control denting, including changes in the chemistry of the secondary (non-radioactive) side of the plant.

Some of the newer steam generators have features which make the tubes less susceptible to corrosion-related damage. These include using stainless-steel tube support plates, which use a lattice design to minimize the likelihood of denting; new fabrication techniques to minimize mechanical stress on tubes; and the use of more corrosion-resistant tube materials, such as thermally treated Alloy 600 and Alloy 690. Thermally treated Alloy 600 is more resistant to stress corrosion cracking than the mill annealed Alloy 600 because the thermal treatment reduces residual stresses and favorably modifies the material's micro-structure. Replacement steam generators used in nuclear plants since the early 1980s have used thermally-treated Alloy 600 tubing. Thermally treated Alloy 600 tubing has exhibited substantially increased resistance to corrosion-related degradation than mill-annealed Alloy 600 tubing. This tubing has experienced very little degradation, even in steam generators replaced nearly 20 years ago.

Salem Steam Generator Operating Experience

The degradation detected in the original Salem Unit No. 1 steam generators was due, in part, to early problems with secondary water chemistry control that ultimately led to significant tube denting from corrosion at the tube support plates and stress corrosion cracking of the tubes in these locations. The main feedwater (secondary water that is heated in the steam generator to make steam) was not treated using condensate polishers during the first two cycles of operation. Condensate polishing systems are designed to remove assorted impurities, and provide the plant with a feedwater system cleanup capability. This system helps to maintain the secondary water chemistry to within guidelines provided by the Electric Power Research Institute (EPRI). Because of the pervasive denting and cracking that had been observed in the original Salem Unit No. 1 steam generators, the licensee performed an augmented inspection at every tube to tube support plate intersection in each steam generator prior to their replacement. Based on the number of indications found and repairs needed, the licensee elected to replace the Salem Unit No. 1 steam generators rather than request a change to either increase the tube plugging limit or to implement alternate repair criteria.

At Salem Unit No. 2, condensate polishers were used from the start of initial plant operation. In addition to the polishers and the use of an all-volatile chemistry control to reduce corrosion, Salem Unit No. 2 has had less operating time than either Salem Unit No. 1 prior to its steam generator replacement, or Indian Point 2 steam generators prior to their steam generator tube leakage event. The IP2 steam generator tubing also had experienced pitting that was accelerated by copper deposits coming from the secondary side components. This has not occurred at Salem due to the minimal use of copper-based components. Further, the licensee at Salem has been using a chemical addition to control and minimize iron transport from the secondary system. Iron deposits in the steam generators act as a type of bonding agent for other impurities that can contribute to the potential for stress corrosion cracking. The licensee for Salem also has a sludge lancing program each refueling outage to remove deposits that may form in the area above the tubesheet to minimize the occurrence of tube pitting and cracking. During the spring 1999 outage at Salem Unit No. 2, the licensee chemically cleaned the secondary side of the steam generators prior to conducting the inservice inspection of the tubes.

The results of the inspection conducted during the spring 1999 outage were documented in an annual report to the NRC dated February 28, 2000. Of note, the licensee found and plugged four Row-2 tubes with indications in the U-bend region. Unlike at IP2, however, the indications were not in the higher stress apex region of the U-bend. The first inservice inspection of the replacement Salem, Unit No. 1, steam generators was performed during the fall 1999 outage. The licensee removed a total of 10 tubes from service in the 4 steam generators by plugging. The results of that examination are also documented in PSEG Nuclear's February 28, 2000, annual report.

Although a number of similarities in design and materials may exist between steam generators installed at separate plants, operating and maintenance histories may widely differ. As a result, the experience at IP2 would not automatically signify a similar concern at Salem. Rather, it highlights the importance that individual licensees implement an effective steam generator ISI program, and that tube examination frequencies are appropriate to ensure safe operation between inspections.

Furthermore, every licensee is required to inspect and repair or remove from use all tubes found to contain flaws exceeding certain limits. The plant's technical specifications describe the frequency and scope of these inspections and tube repair limits. Plants also typically have operational leakage limits to ensure that if any of the tubes leak beyond these limits, the licensee will quickly shut down the plant. In some instances, licensees have performed tube examinations at mid-operating cycle when analysis of their inspection results did not support operating for a full cycle before the next steam generator tubing inspection; that is, the licensees in question were not able to demonstrate that appropriate licensing basis margins would be satisfied for the entire operating cycle. The condition of the Salem steam generators are adequate, and do not require these additional mid-cycle examinations.

Therefore, on the basis of our assessment of PSEG Nuclear's ISI program, we have concluded that the Salem steam generators meet NRC regulations, and that there is reasonable assurance that the licensee is operating the facility in a manner that continues to ensure that public health and safety are not adversely affected.

3. The NRC Office of the Inspector General's (OIG) report on the IP2 event identified a laxness on the part of the NRC.

In your November 24, 2000, letter, you stated that the OIG identified a "laxness on the part of the NRC" in its report titled "NRC's Response to the February 15, 2000, Steam Generator (SG) Tube Rupture at Indian Point Unit 2 Power Plant," dated August 29, 2000 (ADAMS Accession No. ML003746663). When the report was issued, Chairman Meserve immediately directed a review and analysis of the issues raised in the OIG's report. He also directed that the NRC staff provide recommendations for improving the NRC's processes, where warranted, and provide a schedule for implementing the recommendations. The Office of Nuclear Reactor Regulation (NRR) issued its response to the OIG report on November 3, 2000 (ADAMS Accession No. ML003753067).

A significant finding in the OIG report states that "had the NRC staff or contractor's with technical expertise evaluated the 1997 results of the IP2 steam generator inspection, the NRC could have identified the flaw in the U-bend of row 2, column 5, in steam generator number 24." In our response to the OIG, we disagreed with that finding. The summary report submitted to the NRC did not provide information identifying the flaw in the U-bend of the row 2, column 5 tube in steam generator number 24 because the licensee's inspections did not identify the subject defect in 1997. The existence of the flaw that led to the tube failure was only discovered after the February 2000 tube failure when the licensee performed a detailed re-review of the 1997 EC test data at the location at which the failure occurred.

There has also been some discussion as to whether or not specially trained NRC staff or contractors could have identified the flaw that led to the February 2000 tube failure if they had reviewed and interpreted the actual or EC test data taken by the licensee during the 1997 examinations. We maintain that any conclusions in this regard must be recognized as purely speculative. A comprehensive review of the large volume of data acquired during the IP2 steam generator examinations is, and will always be, impractical for the NRC staff to perform. The licensee is, and should remain, responsible for performing effective detailed examinations and structural integrity assessments of its steam generators.

The OIG report also found that NRR's review of a 1999 IP2 license amendment request to extend the steam generator inspection interval was not adequate. Although the NRC review could have been more thorough, we disagreed that the review was inadequate because the scope and depth of the review conformed to staff guidance and was commensurate with the level of technical complexity and safety significance of the licensee's request.

Finally, in its response to the OIG, the NRC staff identified some areas where we believed the OIG findings in the subject report were not factually correct or were presented without complete context that could be misinterpreted. Although providing further context could result in improved perspective of the issues in the OIG report, the staff elected to limit its response to what we believe were factual misstatements and to significant issues requiring clarification. Our responses to issues that we considered in need of clarification were given in our response.

As discussed in more detail in our response to the OIG report, we do not believe NRR was lax in reaction to IP2 steam generator issues. Nevertheless, we take the OIG's conclusions seriously, and will take appropriate action to address the findings. To this end, NRR issued a steam generator action plan on November 16, 2000, in order to help focus the NRC's effort in addressing steam generator tube integrity issues that have arisen from the IP2 experience (ADAMS Accession No. ML003770259). Additional information on the steam generator action plan may be found on our Web site, at http://www.nrc.gov/NRC/REACTOR/SGAP/index.html.

4. UNPLUG Salem was given confidential information that indicates that water chemistry at Salem has allowed impurities to be introduced in the steam generator water and that impurities are present in lubricating oil.

In your November 24, 2000, letter, you stated that the UNPLUG Salem was given confidential information that indicates that water chemistry at Salem has allowed impurities to be introduced in the steam generator water and that impurities are present in lubricating oil. This concern appears to be similar to an issue you raised during a March 14, 2000, 10 CFR 2.206 Petition Review Board meeting wherein you stated:

> [W]e have a source that used to work at PSE&G Salem whose job was water chemistry and steam generators who will not speak directly to you without a subpoena, who has told us that he had recommended additional steps for water chemistry to more purify the water to rust and corrosion, and that these recommendations were rejected, as well as his recommendations on a different alloy for the replacement steam generator model.

At that time, the NRC requested additional information from you associated with the water impurities issues you raised since there was an insufficient basis to conclude that this matter constituted a safety concern. Had we received information that could possibly result in a regulatory concern, we would have duly pursued this issue at that time.

Moreover, in your January 6, 2001, letter, you provided excerpts from what you identified as whistleblower letters to the NRC. We understand your concerns to be that, since 1997, the Salem licensee has continued to use "failed water chemistry and failed alloys at Salem 1 and 2 when better and safer alternatives were available," that a "better and safer" lubricant is not being used in Salem's Limitorque motor-operated valves, and that Salem, Unit No. 2, was

allowed to operate with leaking snubbers in 1997. You stated that these concerns continue to exist today; however, you did not provide any new information that we could act on. If we receive information that would substantiate an existing concern, we will pursue it at that time.

5. A special engineering and/or augmented inspection be performed as soon as possible to explore the concerns and claims raised in letters recently given to the UNPLUG Salem Campaign.

As previously stated, our staff recently completed an inspection of the licensee's ISI program, and found the licensee's program acceptable for conducting examinations of its steam generators at Salem. There were no documented findings nor any unresolved issues that resulted from this inspection. Thus, we are confident that the Salem steam generators meet NRC regulations and provide a reasonable assurance of safety. The other concerns expressed in your January 6, 2001, letter are over 3 years old. We previously evaluated the issues raised in the attachment to your letter, and provided appropriate responses. Since you did not provide us any new information, we do not believe that additional inspections are warranted at this time.

6. The NRC and PSEG Nuclear LLC, the owner and operator of Salem, should release all correspondence associated with steam generator, water chemistry, alloys, Limitorque motor-operated valves, and snubber concerns at Salem, Unit No. 2. In addition, the NRC and PSEG Nuclear should explain (a) why the licensee chose to use "failed water chemistry and failed alloys at Salem 1 and 2 when better and safer alternatives were available," (b) why, in 1997, Salem did not use a "better and safer" lubricant in its Limitorque motor-operated valves, (c) why, in 1997, Salem, Unit No. 2, was allowed to operate with leaking snubbers; and (d) the NRC and PSEG Nuclear should provide the public with laboratory certificates for the heat treatment and copies of any procedures manuals relating to the steam generators and heat treatment .

(a) Regarding the licensee's alleged use of "failed water chemistry and alloys...when better and safer alternatives were available" referred to in your letters, we understand that you are concerned that the replacement steam generators for Salem, Unit No. 1, will perform no better that the ones that were removed in 1996. You are concerned that the new generators use Alloy 600 tubing instead of the better Alloy 690 tubing, and that the licensee has not changed its water treatment program for the new generators at Salem. The NRC staff has reviewed this matter and has determined that the Alloy 600 in the replacement steam generators is different than that of the original Salem, Unit No. 1, steam generators in that the replacement tubing uses an Alloy 600 material that is thermally treated to improve its resistance to degradation in service. The thermal treatment is designed to improve the metal's micro structure, rendering it less susceptible to stress corrosion cracking. Thermally-treated Alloy 600 tubing has demonstrated substantially increased resistance to corrosion-related degradation than mill-annealed Alloy 600 tubing, even in steam generators replaced nearly 20 years ago. In response to your water chemistry concern, the licensee has improved the plant water chemistry by reducing the amount of copper bearing heat exchanger alloys in the secondary side of the plant and by adopting industry (EPRI) standards for water chemistry that were developed after the original startup of Salem, Unit No. 1, to minimize steam generator tube degradation.

(b) In your January 6, 2001, letter, you expressed a concern that the maintenance and lubrication programs for the Limitorque valves are lacking in that grease had been found to have “failed” because it separated into its components of thickeners and oil, which may have further prevented the valves from performing their design function. We have reviewed this issue and have determined that this concern cannot be supported. Salem’s maintenance and lubrication programs for its Limitorque valves were found to be complete and in accordance with industry standards and manufacturer’s recommendations. While there may have been occurrences where a valve operator’s grease experienced some separation of its thickener and oil, we are not aware of any evidence that valve operators have failed due to grease breakdown.

(c) You are also concerned that Salem, Unit No. 2, was allowed to operate with leaking snubbers in 1997. The NRC has determined that the situation you described was partially correct. At that time, the licensee had reported minor oil leaks from snubber oil reservoir sightglasses at Salem, Unit No. 2; however, there were no indications that any snubber’s reservoirs were ever emptied. While minor leakage may have occurred, this condition would have no impact on snubber operation since the snubbers remain full of oil even if the reservoirs drain partially due to the sightglass leaks. This is possible since the oil reservoirs and their level-indicating sightglasses are physically located above the snubbers. Repairs to the reported leaks were subsequently made in accordance with Salem’s Corrective Action Program.

(d) In your January 6, 2001, letter you requested that the NRC and PSEG Nuclear provide the public with laboratory certificates for the heat treatment and copies of any procedures manuals relating to the steam generators and heat treatment. As previously stated, we do not maintain copies of detailed information such as laboratory reports and copies of heat treatment certificates. This kind of information is typically provided to us if it is necessary for a licensing action, or if we have sufficient justification to compel the licensee to furnish it. Therefore, since we do not have a regulatory basis to order PSEG Nuclear to provide us this information, it would have to be obtained directly from the licensee.

7. *How are whistleblower letters factored into the current risk-informed Reactor Oversight Process?*

The NRC endeavors to review all concerns brought to its attention to ensure the outcome is in compliance with NRC regulations, technically sound, and timely. We also ensure that safety-significant matters brought to our attention, including whistleblower letters, are promptly reviewed, and we will take whatever action is necessary to address any overriding safety issues. Our actions could include appropriate enforcement action if we determine that the licensee violated NRC regulations. In addition, if we determine that the licensee’s performance has impacted one of the seven specific "cornerstones" which support the safety of plant operations in the reactor safety, radiation safety, and plant security strategic areas, we would use the "Significance Determination Process" to determine the safety significance of our inspection findings. This more detailed assessment may also involve our risk experts. The final outcome of the assessment—evaluating whether the finding is green, white, yellow, or red (ascending in safety significance)—will be used to determine what further NRC action may be called for with regard to any valid safety concern brought to our attention.

Additional information on the Reactor Oversight Process may be found at the NRC's web site at: http://www.nrc.gov/NRR/OVERSIGHT/index.html. Information about the NRC's Allegation process may also be found at: http://www.nrc.gov/NRC/PUBLIC/ALLEGATION/.