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NUCLEAR REGULATORY COMMISSION

In the matter of: COMMISSION MEETING
BRIEFING ON SALEM

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TAYLOE ASSOCIATES
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1625 I Street, N.W. Suite 1004
Washington, D.C. 20006
(202) 293-3950

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BRIEFING ON SALEM

PUBLIC MEETING

Nuclear Regulatory Commission
Room 1130
1717 H Street, N. W.
Washington, D. C.

Wednesday, April 20, 1983

The Commission convened, pursuant to notice, at 9:35 a.m.

COMMISSIONERS PRESENT:

NUNZIO PALLADINO, Chairman of the Commission
VICTOR GILINSKY, Commissioner
JOHN AHEARNE, Commissioner
THOMAS ROBERTS, Commissioner
JAMES ASSELSTINE, Commissioner

STAFF AND PRESENTERS SEATED AT COMMISSION TABLE:

S. CHILK
M. MALSCH
J. ZUPKO
H. MIDURA
R. SMITH
R. UDERITZ
J. BOETTGER

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DISCLAIMER

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P R O C E E D I N G S

CHAIRMAN PALLADINO: I wonder if we could please come to order.

The Sunshine Act requires the following vote for today's meeting, a vote to hold on less than one week's notice a briefing on Salem by members of Public Service Electric and Gas Company.

May I have the vote of the Commission?

COMMISSIONER ROBERTS: Aye.

COMMISSIONER AHEARNE: Aye.

COMMISSIONER ASSELSTINE: Aye.

CHAIRMAN PALLADINO: Aye.

Today we are meeting with members of the Public Service Electric and Gas Company of New Jersey to discuss issues related to the Salem facility. This meeting was requested by the Chairman of the Board of the utility, Mr. Robert Smith, after the Commission's meeting with the Staff last Friday.

Mr. Smith informed us that he was interested in going over some of the matters discussed at Friday's meeting and to inform the Commissioners directly about what the utility is doing at Salem.

We welcome Mr. Smith and other members of Public Service Electric and Gas Company. I hope that they can provide us with additional information that will help us in

our Salem restart decision.

I will ask my fellow Commissioners if they have any additional remarks at this time.

(No comment)

CHAIRMAN PALLADINO: I propose to turn the meeting over to Mr. Smith, and I will ask him to introduce his colleagues.

MR. SMITH: Thank you, Mr. Chairman.

As you stated, I am Robert I. Smith, Chairman of the Board and Chief Executive Officer of Public Service. I would like to indicate that Richard Uderitz, Vice President, Nuclear; Henry Midura, General Manager, Nuclear Services; John Zupko, General Manager, Salem Operations; and John Boettger, General Manager, Nuclear Support, are here at the table with me. All have planned, or had planned, to present additional information following my remarks, but to expedite the meeting, Mr. Uderitz will summarize their statements.

Also present in the audience are Harold Sonn, the President of our company; Richard Eckert, Senior Vice President; John Driscoll, Assistant General Manager, Salem Operations; and Edwin Sellover, Vice President and General Counsel. All are here to answer any questions you may have.

(Whereupon, at 9:40 a.m. Commissioner Gilinsky arrived and joined his fellow Commissioners at the table.

MR. SMITH: Good morning.

I understand that a closed enforcement meeting relative to Salem has been scheduled for today. We have asked for this meeting with the Commission prior to the enforcement meeting in order to clear up what we believe are some significant incorrect impressions with regard to Public Service and its management.

At the outset I must repeat that we fully recognize that the failure of the basic automatic safety system, heretofore considered extremely reliable, is a serious matter. The fact that the failure was not detected on February 22nd and was not reported until revealed by the investigation of the second failure on February 25th is also a serious matter. However, I must emphasize that the health and safety of the public was never threatened by either of these events, which Harold Denton has described as benign, because the operators tripped units promptly and no damage to equipment or release of radiation resulted.

I do not want to minimize the importance of the automatic reactor trip system failure, but from the general public's point of view, it was or should have been a non-event.

From the beginning, our nuclear power plant design has been based on safety as the ultimate criteria. Redundance of systems plus the redundance of equipment within individual systems has complicated operation of the plants, but everything has been justified on the basis of increased

safety.

Further, operator training has been improved over the years, particularly since Three Mile Island, and operators are, in my opinion, uniquely qualified to back up the automatic system if failure does occur. The actions of the operators at Salem justified that opinion.

I think all of us must recognize that equipment failures will occur. We live in an imperfect world, and therefore, nuclear plants are designed with redundant safety systems and procedures. We recognize that safety comes before production, and our written policy states so in no uncertain terms. This policy is stressed during training of personnel. I can unequivocally state that we operate in accordance with that policy, in spite of what some people have publicly stated.

Much of the investigation following the failures on February 22nd and 25th centered on the undervoltage attachments which failed on both occasions. Initial reports attributed the failures to lack of maintenance and, more specifically, lack of proper lubrication. The details of this investigation are fairly well known.

It appears that these trip devices can be upgraded so performance can be improved. While it is clear lubrication, maintenance and replacement of the relays will keep the system operable, we believe further improvements can be made. We

are now engaged in searching for a better device to replace the present undervoltage relays. Westinghouse is now advocating periodic replacement, although this equipment was installed on the basis that it was reliable with an unlimited life.

This incident has shown us that there is an opportunity for improvement in this particular device, and we intend to pursue it vigorously.

The record shows that Salem 1 has experienced more trips than we consider reasonable. We are concentrating our efforts on reducing the number of trips. One of the basic causes of unit trips on both Salem units is associated with the control of water level in the steam generators, particularly during startup. This problem initiated the trips on both February 22nd and February 25th.

We have been pursuing a satisfactory solution to this complicated problem. The problem was exacerbated several years ago when we were required to narrow the control band range on level control equipment.

During the last refueling outage of Salem 1, we made modifications to the level control system which should improve our ability to control levels at low load. We were in the process of tuning up the modified equipment during plant startup when the events of February 22nd and 25th took place.

Further changes which will allow us to expand the control band range are also under way. Again, we had already recognized the problem and we are doing something about it.

We are gratified to learn that the NRC Staff evaluation of the Salem control room "was one of the best control rooms we had done." The record indicates the company has been innovative in the design of the control rooms at Salem. We have provided instrumentation to facilitate operation which is unique to the industry. Control room modifications have been suggested. We are anxious to make any changes which will improve operations or contribute to greater assurance of safety.

We designed the control rooms ourselves with our own people. They weren't designed by Westinghouse or some outside architect engineer. We are proud of the design but certainly not to proud to recognize that perfection is the goal. While it may never be achieved, our efforts to update and make improvements where possible will always continue.

Statements made by the Commissioners and Staff representatives in the area of management issues are the ones which disturb me most. Public statements accusing the company employees of neglect of duty, talk of organization failure and the failure of basic discipline are statements which we do not take lightly,and I sincerely hope that those who made them realize the implications of what they have

said.

Talk of management breakdown and of a rating down near the bottom when compared to other utilities seems to conflict with the facts on the basis of published reports by the NRC and INPO. It is also inconsistent with assessments of our management capabilities made by other management consultants in other areas. While not directly related to Salem, the findings of these consultants shed some light on the competence of Public Service management.

In 1981 Theodore Berry & Associates did a complete nine-month audit of our management of the Hope Creek nuclear plant construction project. They said, "The PSE&G Project Management Group has high levels of experience in the three areas of engineering, construction and cost scheduling." In 1977, after a complete management of all the PSE&G's operations, McKinsey & Company said, "In our judgment, PSE&G ranks high among comparable urban utilities in overall management effectiveness."

In addition, I have no hesitation in stating that I believe the management of PSE&G would receive high marks from the New Jersey Board of Public Utilities and the New Jersey Department of Energy for its competence, initiative, cooperation and thoroughness.

It should also be pointed out that PSE&G remains one of only 24 AA bond credit rated utilities in the United

States. In today's utility investment climate, such a credit rating for a nuclear utility can only be maintained by strong, effective and competent management.

General statements made throughout the Commission's meeting give the impression that the management is not aggressive in pursuing the solution of problems, that proper procedures are in place, that there is a lack of follow-up to be sure that the procedures are being followed, that there is lack of attention to detail, that errors are countenanced, and that no corrective or punitive action is taken against employees who make mistakes.

I guess when you feel you have been unjustly accused, the normal tendency is to counter with some uncomplimentary statements perhaps concerning your accusers. That is not my management style nor is it the management style of Public Service Electric and Gas Company. Our company has conscientiously and successfully served the people of New Jersey for 80 years. We feel that we know how to operate in all regulatory environments. We know that the regulators, acting in the public interest, hold the fate of our company in their hands, whether it be for a rate increase or the return of nuclear unit to service.

Our basic policy is to cooperate to the fullest extent. We do not publicly criticize the Commission, the NRC Staff or the equipment manufacturer, and we do not intend to

do so. However, we do not think that the all-encompassing criticism to which we have been subjected is justified. It is clear, however, that we are being perceived by the NRC differently than we are being perceived by others who deal with us. I believe the apparent NRC view of our management performance is a misperception.

Our management style is aggressive in areas where we believe aggressiveness is required. In the design and engineering of Salem, we displayed initiative and a capacity for innovation such as the control room design, which we believe produced a superior plant design. We built one of the finest nuclear training centers without any urging from anyone because we believed it was the right thing to do. We took a major step late in 1981 when we organized a separate nuclear department and began relocation of the entire department, including the vice president responsible for its operation, to the artificial island site adjacent to the Salem and Hope Creek plants. That was a massive operation, both logistically and financially, to uproot families from the northern New Jersey area and transfer them to an unfamiliar area in southern New Jersey. The move is almost complete. We now have several hundred relocated people on site, and we are actively working to coordinate the activities of our engineering and administrative people with the operating people who were originally there.

I know of no other nuclear utility who has the engineering people responsible for the design of the plant permanently located within a stone's throw of those who operate it. That move was an aggressive action which should result in improved operation. Later in our presentation you will hear more about some of the innovative actions we have taken at Salem.

With regard to our treatment of employees, some NRC Staff comments may have generated the impression that we seldom, if ever, discharge an employee. Let me assure you that that impression is false. We do treat every employee as an individual. There are policies in place which call for automatic discharge, but our general approach is to reprimand and counsel on an individual basis. Repeated offenses or flagrant errors certainly call for discharge, and those situations are dealt with appropriately.

PSE&G does not operate in a vacuum in this area. Under the present Federal and State laws, as well as the union bargaining agreements under which we operate, any discharge has to be fully justified and documented.

Perhaps a specific case will serve to illustrate our attitude toward management employees. Early this year, prior to the February events at Salem, in order to get the benefit of fresh ideas and approaches, we decided to rotate the general manager of Salem Generating Station and the

general manager of nuclear services. This job change came up before the Operating Committee for approval just after the incidents at Salem. I personally stopped the change, for two reasons.

First, it would appear to be an ill-considered, knee-jerk reaction, although it was in fact a well-considered move; and second, I felt that nochanges should be made until the investigation was completed. With the investigation essentially complete, that management personnel change was made effective April 18th.

The lack of follow-up to assure that established procedures are in fact being carried out and lack of attention to detail are problems, I am sure, with any large organization, and this probably includes the NRC and its staff. You have my assurance that we will be more aggressive in these areas. Our internal auditors have routinely checked adherence to policies and procedures at Salem. We are expanding their operation to perform audits in greater depth. We also plan to assign a company systems expert to Salem to examine all of the paperwork systems and make recommendations for improvements.

Even prior to the Salem events, we have been talking to a management analysis company about an overall assessment of our QA program where we ourselves believe there are opportunities for improvement. This, again, was on our initiative without a suggestion from anyone else.

Subsequently, MAC was engaged in response to a suggestion from the NRC Staff to perform a management overview, including an assessment of the capability and performance of personnel in key positions. When that study is completed, we intend to strengthen any management weaknesses which this report reveals.

Concerning on-site management capability, I believe our managers in the Nuclear Department are the equal of any in the country. This contention is supported by a member of the NRC Staff who stated, in the meeting on April 14th, "We in fact have an awful lot of experience with the licensed operators at this plant. During a six-week strike that they had last year, our experience there showed they handled the plant very well. There were no trips, no severe transients. They were doing the maintenance themselves. So it is to their credit they have a good staff. They can run a safe plant."

During this six-week period, I should emphasize, the plant was being operated and maintained by managers. Again, this experience does not seem to square with the impression that management is not aggressive or capable.

Further, Salem 2 had an outstanding performance record from the time of initial startup October 18th, 1981 until it was taken out of service this January. It operated with an 81.7 percent capacity factor. Again, not exactly an indication of "sloppy operation."

Even though Salem 1's operating performance has been below that which we think it should be, it has for the most part been caused by Westinghouse's turbine blade problems, over which we had no control. If the turbine repair outage time is eliminated from Salem 1's performance, it has a life-time capacity factor of over 60 percent.

I have worked for Public Service Electric and Gas Company for 43 years, starting in the generating station and working my way up through the ranks. I was in charge of the engineering and design of the Salem units during much of the period when they were being planned and constructed. Public Service has long been a leader in the electric utility industry, with a distinguished record of accomplishment in many areas. The NRC Staff is aware that the Salem plant has design differences that it make it safer in some respects than many other plants with pressurized water reactors.

Staff members have attempted to point out these differences in public meetings, but these attempts have been lost in the media coverage. Reports on the events at Salem have created in the minds of many people the perception that the plant was on the verge of a disaster. This perception was fueled by remarks made by the NRC Staff and misinterpreted or misunderstood by the media.

The only thing close to a disaster resulting from

the events at Salem is the damage to the reputation of a conscientious and respected company and the effect on the morale of its talented and dedicated employees.

We recognize the concern of the NRC and the pressures placed upon it from outside sources, yet the NRC is the one single agency that the industry and the country can look to for a balanced viewpoint. Without that balanced viewpoint, actions can be taken which are counter-productive to the public interest objectives of the NRC and the industry: loss of morale, resentment, a reduction in the ability to attract the best personnel, and a reduction in the ability to attract needed capital to carry out objectives.

I want to reiterate that although the Salem failures were serious, the attention they received and the resulting criticism of the company and its management were out of proportion, I believe, to the importance of the events. The bottom line is that the health and safety of the public were never threatened.

I thank you for being able to present that this morning. Dick Uderitz will present some brief remarks on some other initiatives taken.

MR. UDERITZ: Good morning. My name is Dick Uderitz, Vice President, Nuclear, PSE&G.

During the meetings held with the Commission involving the failure of reactor trip breakers to operate on

February 22nd and 25th, 1983 at Salem, there have been several statements made indicating PSE&G does not take positive, aggressive action without external stimuli. We would like to take this opportunity to present to the Commission significant items that we consider to be self-initiated, positive, aggressive action on the part of our nuclear effort.

The writeups that have been passed out include more detail on each of the items I will mention.

May I have the first slide, please?

The first item under aggressive actions with regard to organization is the Nuclear Department. That has been touched on by Mr. Smith and I do not intend to go into any more detail on that.

The second item, quality assurance. As a part of PSE&G's plan to consolidate functions and resources for its operating nuclear plants into one organization at the site, the responsibility for the operational QA program was transferred to the Nuclear Department in early January 1983, and that is in the process of being located at the site now.

Under nuclear assurance and regulation, upper management's access to independent evaluations of safety, quality, regulatory compliance and reliability was further enhanced in January 1983 by the establishment of an independent

major department reporting to the senior vice president of energy supply and engineering.

Nuclear Review Board. The Nuclear Review Board was established on site with a full-time staff consisting of a chairman and a technical secretary to the Board. In January 1983, the membership was reconstituted with a provision for participation by persons from outside organizations in order to enhance the independence of the NRB and to benefit from their experience.

COMMISSIONER AHEARNE: What kind of outside organizations?

MR. UDERITZ: I'm sorry?

COMMISSIONER AHEARNE: What type of outside organizations?

MR. UDERITZ: We have a representative from Philadelphia Electric, and then we are also going to use somebody who is with a consulting firm.

INPO. PSE&G was involved in the formation of INPO and continues to be an active participant of the various programs, workshops and evaluation teams.

May I have the second slide, please?

The first item on this slide deals with unit performance in 1982. Number 1 unit, between refueling outages in 1982, was available 97.8 percent of the time with a capacity factor of 88.3. Number 2 unit during the calendar

year 1982 had an availability of 97.3 percent with a capacity factor of 81.7. Number 2 unit was second in the nation in power production.

As Mr. Smith indicated, we also had a six-week labor strike in 1982. During that time, the plant was operated by management personnel. Number 1 was available 100 percent of the time with a capacity factor of 89.4 percent. Number 2 was available 100 percent of the time with a capacity factor of 98 percent.

While we are proud of this operating record, it is also an indication of good management resulting in safe power operation.

The next item we have listed is steam generator chemistry. Tube denting at Salem has been arrested by the following actions: the installation of full-flow demineralizers, superior analysis, restrictive chemistry limits. EPRI has stated that the denting mitigation is exceptional at Salem. Westinghouse has stated that the best PWR steam generator chemistry in the world is at Salem.

CHAIRMAN PALLADINO: Who said that?

MR. UDERITZ: Westinghouse.

COMMISSIONER AHEARNE: In the world?

MR. UDERITZ: In the world.

COMMISSIONER AHEARNE: Is this a documented finding of Westinghouse? I am not challenging your operation.

That is such a sweeping statement, I wondered whether there was --

MR. UDERITZ: I believe they can document that.

MR. SMITH: I think we were pioneers in zero salts chemistry treatment boiler water and we carry that over into the nuclear side. We have had a fine record in that particular type.

COMMISSIONER AHEARNE: I guess I would like, just aside from this, I would like to find some more about that.

MR. UDERITZ: Surely.

Can I have the next slide, please?

COMMISSIONER AHEARNE: Particularly what it is that you people are doing, because that has been a question of some interest.

MR. UDERITZ: Certainly.

In the next slide, we have innovative control room design. We have low voltage pushbutton controls, we have cockpit-type control console, we have a safety system status panel, and a full-sized model was used to evaluate the design. And we have had excellent human factor reviews.

In regard to our nuclear training center, it provides training to establish a high level of nuclear ethics. The training areas include supervisory and technical skills, apprenticed and advanced training for IBEW personnel, and management development. The facility was operational in

August 1982. A simulator for Salem will be operational in July of 1983, a simulator for Hope Creek in 1984, and that is consistent with our startup requirements.

Accreditation. We have 30 courses that have been accredited by the New York State Program of Non-collegiate Sponsored Education, and INPO accreditation review has been completed and results are expected in August 1983.

COMMISSIONER AHEARNE: In your management chain, where does the director of the Nuclear Training Center report?

MR. UDERITZ: He reports to the general manager of nuclear services. He reports directly to me.

Next slide, please.

On the next slide we have preventative maintenance. A program was established at the time of initial operation. It involves a continuous review and improvement, and has been cited by INPO as a beneficial practice.

In July of 1982 we signed a contract with Westinghouse to initiate a management maintenance program. It's a comprehensive, integrated program. ALARA has given high priority, and it includes all safety-related systems.

Next we have a computerized safety tagging system. This system reduces operator errors, improves safety and improves compliance with tech specs, decreases operator drudgery. PSE&G is the sole designer of this system.

Next slide, please.

With regards to plant design focused on safety, safety sytems are not shared between units. Shielding is designed to minimize radiation exposure. Separate control rooms are utilized for each unit. We had ALARA before the term was invented. It was always a part of our considerations.

In-house engineering capability. We have a large, experienced on-site engineering support team comprised of personnel who are involved in Salem engineering and design.

In conclusion, I would like to emphasize that the areas of self-motivated effort presented here today are in the interest of brevity, only highlights of our aggressive and innovative pursuit of all opportunities to improve our nuclear operations. PSE&G considers the breaker failures to be a very serious safety matter; however, we must also emphasize that the control room operators exercised good judgment and took timely action to shut down the reactor, thereby preventing any further problems.

As a result, there was no threat to the health and safety of the or any equipment damage. We have evaluated the circumstances surrounding the breaker failures and have developed a detailed corrective action program. The action items to be accomplished prior to restart have been completed as of April 13th, 1983. We are confident that Salem Units 1 and 2 can safely be returned to power operation.

Thank you.

CHAIRMAN PALLADINO: Thank you.

Did you have others to speak?

MR. SMITH: No, this concluded our presentation. We are ready to answer any questions you might have.

CHAIRMAN PALLADINO: If I may make a couple of comments. I do appreciate your bringing to our attention evidence of aggressiveness that perhaps some of us weren't aware of, and for that, we are pleased. However, I don't think that all of the comments that were made are necessarily mitigated by those other evidences of aggressiveness because we did find, at least in connection with this incident, that some of the follow-through could have been much better. As a matter of fact, I think we have identified, several of us, have used words like disciplined intellectual curiosity would have led to better understanding of the events; and also I think that during the course of presentations, we have seen evidence where Public Service has been very good in responding to comments made by outside organizations, but we have not necessarily seen the same resolve in the things that were under way, at least with regard to this incident.

So I think there is balance on both sides, and we appreciate the comments you made but I think it is important to understand the context from which other comments were made by people in the NRC.

I will open it to questions or comments from other

members of the Commission.

COMMISSIONER AHEARNE: I have a question. I do not know whether you have had a chance to look at the April 8th SER.

MR. UDERITZ: We have.

COMMISSIONER AHEARNE: You have. I am not asking your conclusion with respect to the conclusions the Staff has drawn, but could you comment on the accuracy of the substantive description? That is, in general are the statements that these are the facts as they existed factually correct?

MR. UDERITZ: I would say in general, yes.

COMMISSIONER AHEARNE: Thank you.

COMMISSIONER ROBERTS: No question, just a comment. I think under a very difficult circumstance, you made a thoughtful and reasoned presentation.

COMMISSIONER GILINSKY: I have a comment that almost follows along what the Chairman said. I am pleased to hear the various things that you presented, but somehow, despite all of these favorable factors and various initiatives you have taken, something pretty serious went wrong, even granting that operators responded properly and competently. I don't think that has been in question here.

I wonder if we could get your assessment of what it was that went wrong.

MR. SMITH: Well, I think there are perhaps several

things. Operating a nuclear plant, as you know, is a very complicated thing to do, with extensive paperwork systems. It was pointed out, I think, at the initial INPO review that we had weaknesses in that area. We perhaps didn't have enough people in the right places. We weren't keeping our records in good enough detail. We are still working on that. That is a weakness, I think, of our system, of our operation, an area that we still have to concentrate on, although we have reviewed a lot of the paperwork as a result of this investigation, and we do find occasional errors in that paperwork which lead to perhaps the improper maintenance of the relays, if you want to carry it to an extreme.

We intend to improve those procedures. I think we have set out what we are going to do to do it. We will do it. We have not spared either the financial resources or the human resources that can be justified, we believe, on this operation. Our people know that they have the support of management and they have access to whatever they need to do the job properly.

I think we are also still in a bit of a shakedown with respect to the coordination of our Nuclear Department. This department was organized initially, started the end of '81. Prior to that we had a production department which operated steam units as well as our nuclear units. We had an engineering department which did engineering for all operations

in the company, and we have taken the engineering people, the nuclear engineering people out of the Engineering Department, and the nuclear operating people out of what was our production or generation department and put them together.

I don't think they are working quite as well together as we expect them to eventually, and we are working now to get that coordination up to a higher degree. We have had some personnel problems. I think we have needed people that we haven't been able to find. Many of these areas, although they appear to be clerical-type operations, you need people with nuclear knowledge who know what they are doing to make classifications and to follow through on some of these systems that just have to be maintained.

We had weaknesses in those areas. We think we know what we have to do to correct them. I think we have answered all the questions the Staff has raised with regard to them. I am here to assure you that we will follow through and follow through promptly.

One of the criticisms, I think, that has been made of us is that perhaps we don't act fast enough sometimes. I think perhaps it is a characteristic of our company that perhaps we take too much time making decisions because we look at too many angles before we make a decision. We have had people in our organization who will engineer the hell out of something, to spend time trying to find a better

mousetrap; and as a result, perhaps you don't get the answer to your problem as fast as you might if you went along with a satisfactory but perhaps not the best solution to the problem.

When I was in the Engineering Department, we bought equipment, and there was an industry standard for equipment and then there was a Public Service standard, which cost more than the industry standard but it had certain features to it which we thought were better. Now, that is displayed, I think, in the way we build our plants and our facilities. I think we have to get that standard down in the areas involved in nuclear, which are involved with the maintenance systems, not only in the design and engineering. But the company is capable of doing that and we will do that.

COMMISSIONER GILINSKY: You know, I made some of the harsh statements that you quoted there, and --

MR. SMITH: Yes, I know.

COMMISSIONER GILINSKY: -- let me tell you why I felt the way I did, and still do. You talked about a tremendous amount of paperwork. There's no question there is a terrific amount of work that people have to cope with in a plant, both the operators and the maintenance people. There's just no question about it. Probably too much. But still, this concerned a vital system. This wasn't a glitch in a marginal system, that somehow you got caught up failing to

cross t's and dot i's somewhere. It really is a system that is central, perhaps the most important safety system.

To have that overlooked, I can understand it not being on a list, but it gets harder to understand why a lot of people failed to notice, well, gee, it ought to be handled differently. And it isn't just the maintenance aspect of it; it is the way that equipment was handled, the way it was replaced when it was faulty, and the way the company reacted to the fact that there were some individual failures.

I have to say that shakes my confidence.

MR. SMITH: Well, I have worked in a generating station, and if you looked at that equipment, that standard industrial-type equipment, that looks just like anything you might find in a factory on a steam-generating station, not safety-related. I think the error, perhaps, is that we don't color code breakers or equipment to indicate that they are safety-related so that they do get more attention, to make it obvious. But to a maintenance supervisor who has worked in a steam generating station, this was just the same type of breaker and relay he worked on in the steam generating station, and I am afraid he gave it the same kind of treatment he gave it in a steam generating station, and that was an error. We admit it.

But physically, as far as I know, there is no difference between the undervoltage relay that is safety-related

and one that isn't. Now, I agree --

COMMISSIONER GILINSKY: Maybe we ought to have a different kind of equipment in there all together, which is what you seemed to be saying at the outset. I think that was probably right. I don't want to use this occasion to berate you, but still, it seems to me it was someone's responsibility to be sure that people don't treat these things like equipment in --

MR. SMITH: I agree. That was our error.

COMMISSIONER GILINSKY: And it isn't just, as I said, the business of the maintenance. I'm troubled about the way these breakers were replaced when faulty, if I understand what the Staff is telling us and if the responses I have received are correct. It seems to me they were replaced with breakers that were bypass breakers and were at that point not known to be operable breakers. I don't know if that is correct or not, and if it isn't, I would certainly like to hear a response on that.

MR. SMITH: The one occasion I heard of, it was not correct. You indicate, somebody had indicated they had not been tested after put in the new position? Can you enlighten me on that?

COMMISSIONER GILINSKY: We would certainly like to hear about that.

MR. MIDURA: In August the breaker that did not

pass during the surveillance was replaced with a breaker, and that breaker was surveillance-tested before it was placed in service. In January the breaker that failed on number 2 unit was replaced with another breaker and that breaker was surveillance-tested to prove its operability. That was two cases on Number 2 unit.

On Number 1 unit --

COMMISSIONER GILINSKY: Was it tested out of the cubicle or in place?

MR. MIDURA: It was tested in the cubicle, and with the shunt and undervoltage trips. On Number 1 unit, early on February 22nd, I believe it was, where there was a question of a bypass breaker put into the regular position, that was shunt tested. It was not undervoltage tested, however.

COMMISSIONER GILINSKY: This is on which date, now?

MR. MIDURA: I believe it was February 22nd. Is that -- excuse me. Yes, it was the morning of the 22nd, the first trip we had on that calendar date, where the bypass breaker from one position was put into the regular trip breaker position. That was tested with a shunt trip, not with the undervoltage trip at that time in the cubicle. So that is the one time it was not tested in --

COMMISSIONER GILINSKY: Let me ask you this. After you experienced two individual failures, why weren't they all

looked at at that point, including the Unit 2 breakers?

MR. MIDURA: The way we approached that, we had a failure in August, the first failure that did not pass during surveillance like that, so we replaced it with an operable breaker, as we determined at that time, and there was work to be done and that fix was made. However, when you get a second failure like we did on January 6th, we figured, okay, we better be looking at that, and the approach was -- again, we replaced that breaker with an operable breaker, and we took the one that had failed and put it into Number 1 unit position. Number 1 unit was out of service. We figured we better look at all of these breakers on Number 1 unit, which we did. We also better look at Number 2 unit breakers. Number 2 unit is coming out of service in about a week and a half, and we will put that on our work list.

Like the Chairman said, we have had prior experience in other plants. You get something that fails, you correct it. You fix it. You get a second occurrence, you should be thinking about what is wrong here, we should be looking into it a little more. And it's that type of thinking that prevailed and we carried it out.

COMMISSIONER GILINSKY: Well, why wouldn't you at a second failure look at all of them? I realize it would have meant bringing Unit 2 down. Or I don't know that it would have, necessarily.

MR. MIDURA: No, we could have --

COMMISSIONER GILINKY: You could have --

MR. MIDURA: That's right.

COMMISSIONER GILINSKY: You must have at that point, certainly in mid-January when they were looked at in Unit 1, known that here they were, full of dust and hadn't been looked at in a long time. It would seem to me that --

MR. MIDURA: Well, I don't think, looking back, we made -- as we thought about it at that time --

COMMISSIONER GILINSKY: We are all operating with hindsight here and it is clear that everyone would have liked to have looked at it --

MR. MIDURA: Based on today's situation --

COMMISSIONER GILINSKY: Sure.

MR. MIDURA: -- we could have done a lot of things differently, but at the time, I think reasonable people would think that was a reasonable action, the way we looked at it.

COMMISSIONER ROBERTS: And it ought to be said that the NRC Staff, and I think it was Harold Denton, and he is here and he will correct me if I'm misquoting, but nobody conceived of these as being unreliable pieces of equipment. That may have been an incorrect assumption. It is a very simple device. This is not a complicated, exotic piece of equipment.

MR. MIDURA: Again, at the time, looking back, I

believe it was a reasonable decision at that time. Under today's circumstances, itshould have been done differently. We should have pursued this with intellectual curiosity.

CHAIRMAN PALLADINO: Jim, did you have questions?

COMMISSIONER ASSELSTINE: I just had one question. Mr. Smith, you mentioned in your statement the difficulties that have been created by the incident, the events on February 22nd and 25th and what has transpired since then. I wonder if you think there are lessons to be learned both for the industry and for us in terms of how we should go about responding to this kind of a situation in dealing with it in a manner that puts both you-all and us in the best possible position of having corrected the difficulties as soon as possible and putting both you and us in the position of carrying out the public interest goals and objectives that I think we both share.

MR. SMITH: I think the emphasis should have been, yes, we had a safety system that failed, but here we have designed plants with redundancy in systems, we have trained operators, that safety system failed and there was no danger or threat of danger to the health and safety of the public.

Three Mile Island was thrown into initial statements, and the headline that appears is "Worst Accident Since Three Mile Island." Well, in our way of thinking, there wasn't an accident. If you have a failure of one system and

another system operates, there is no damage to equipment, nobody is hurt, there is no release of radiation, you didn't have an accident, you shut the unit down with an optional method, although I think you have certainly, and we certainly admit that we had a safety shutdown system, a reactor trip system we thought was reliable, a lot of us have looked at it, and I have looked at it a lot closer now in the last few months than I certainly did before, but basically it's a very simple system.

Now, what came out of the news media, of course, and the thing that frightened people to death was that this accident, worst accident since Three Mile Island, got built upon, that if so and so had happened, if four more other things had happened, then you would have had -- well, one newspaper likes to write that the reactor would have blown and spread lethal radiation over the area and killed a hundred thousand people.

To associate that kind of a catastrophe with what happened I think has hurt all of us.

COMMISSIONER GILINSKY: I don't think we were going on that sort of thing. It's true when you say if you make any kind of comparison with Three Mile Island, you tend to get a certain reaction in the press, but Harold Denton was the author of that, and I think what he said was, if I remember correctly --

MR. SMITH: His words are perfectly fine.

COMMISSIONER GILINSKY: -- I believe he said it was --

MR. SMITH: Precursor --

COMMISSIONER GILINSKY: -- of the most safety significance since then, or something like that. I don't think --

MR. SMITH: But Three Mile Island was in the statement.

COMMISSIONER GILINSKY: Yes, it was. But the significance here in the Commission, certainly in my own mind, was that you are dealing with a centrally important safety system.

MR. SMITH: No question.

COMMISSIONER GILINSKY: And there are just a lot of things that can go wrong on a nuclear plant. We don't track everything. We don't watch everything. We spot-check things. And despite the fact that it seems like a pretty onerous system, we are really operating largely a system of self-regulation with a government audit.

What is of concern is that when you get problems in something this important, you start to worry, well, what about all the things that you're not looking at in detail. So it does have very large implications here.

CHAIRMAN PALLADINO: Related to this, there was one aspect of your statement that I would like to ask you to

clarify because if it is left as it is said without clarification, it could have some misleading implications. You said, speaking of this event, it was or should have been a non-event. The reason I ask that is because you did say that you recognize the importance of the failure to scram on the part of these breakers or these undervoltage coils, but I'm not quite sure I understood what you meant by it was or should have been a non-event.

MR. SMITH: Let's see. I think I refer to the public, don't I, saying from the general public's point of view, is what I'm trying to say.

CHAIRMAN PALLADINO: Well, I wasn't following the written part. I was listening.

MR. SMITH: From the general public's point of view, I think, is the point of emphasis. Certainly from an industry point of view, from your point of view, from our point of view, it was a serious event, but as far as the general public is concerned and their health and safety, it wasn't threatened; yet, they feel it was because of what came out.

CHAIRMAN PALLADINO: Well, I had a '56 car, and I better not say what kind of was, and I lost my brakes on it twice. I thought they were very significant events. I went back to get them corrected and then eventually bought another car. But I still remember those, and they did pose, the fact that I lost them, posed a threat to me and the people that I

might have struck. Fortunately, using backup systems, I got it stopped.

(Laughter)

But I do want to make sure that we understand that this was not a non-event, at least in terms of potential safety significance. I think it does reflect well on the backup systems and the personnel that the plant was shut down, and I don't deny that; but I do want to make sure that we emphasize the importance of the event.

MR. SMITH: I think I told you the last time I was here that the Office of the Governor and the Board of Public Utilities called us in, we gave them complete explanations. They were concerned about frightened people, that supposedly because of what they had read about the potential for a tremendous accident here, were frightened. This is a case where I think we should have admitted we had a failure of a safety system but assure them that other things worked so that there was no real threat to the public.

COMMISSIONER ROBERTS: Is it a non-event to your ratepayers that that plant continues to stay down? I'm sorry, don't answer that.

MR. SMITH: I had the annual meeting of stockholders yesterday afternoon, and I'm bloody but unbowed. No, actually our shareholders have been very understanding. I shouldn't say that about them. I think we have gotten the message to

them. We did write a letter to our shareholders trying to explain the situation to them. But we are suffering in the financial community. We are certainly going to suffer when we get into our next rate case. We are going to pay some penalties.

CHAIRMAN PALLADINO: Can I ask you one other question that I think bears on the deliberations on this subject. You have management consultants now working for you. Do you see the possibility that they can help identify areas by which management might improve the operation, and what do you think about the extent to which you will be able to pick up on any suggestions they make?

MR. SMITH: Well, certainly this is the reason for having the consultants. We have had consultants in in the past. We haven't always adopted all of their suggestions, but we certainly have adopted some. There is no sense going to the doctor if you're not going to take his advice. As I indicated today, we have rotated Hank Midura and John Zupko. We now have a new operations manager at the Salem station. We rotate management people in our organization from time to time. Sometimes we do it to strengthen the organization, sometimes we do it to give people additional experience. If we need more people, we will certainly get them; if we need different people in certain areas, we will see if we don't have them in our organization, and if not, we will go outside.

We are an organization that is constantly in a state of flux, and anything we can do to improve it, we certainly want to do.

COMMISSIONER GILINSKY: I wonder if you could sum up what one should place one's confidence in that things will work better in the future than they did in the past.

MR. SMITH: Yes. I think every cloud has a silver lining. We have learned things from this investigation that might have taken us a little longer to learn, and we have had a concentrated learning experience. We know that -- I guess we knew that we had some weaknesses in procedures in our systems, perhaps not paying enough attention to detail. We know now what we are going to do to correct those shortcomings. I think we have a group of managers and, I hope, a group of employees other than managers who also have to take part in this operation who have been affected by this last couple months' experience, and I think the overall effect will be they will do a little better job, a little more thorough job than they have done in the past. So that I'm confident that we are going to come out of this a better-operating company than we were two or three months ago.

The fact that we have moved our engineering and administrative people to the site, that we have organized a separate department, I think is going to result in overall better operation. We still have to get them to work closer

together, perhaps, than they have been in the past, but that is under way. I think they understand it. On last Monday -- when was that, two days ago -- Harold Sonn and I went down to Salem, had three meetings with all of the employees on site, that is, the managers, all except the bargaining unit people, the managers of both the operating and engineering and administrative functions. We spoke to them about what had happened and what we expected to happen in the future, that we were counting on them, that we knew they were affected by what had happened. I have not had any feedback from the people that were there, but I think we had a group of people that we spoke to, I guess a total of what, 600 people or so?

MR. UDERITZ: Six hundred.

MR. SMITH: Who understand what the problems are and have a determination to solve them. We have got good people.

COMMISSIONER GILINSKY: Thank you.

CHAIRMAN PALLADINO: Any other questions?

COMMISSIONER ASSELSTINE: I had just one other question. Mr. Smith, you and also Mr. Uderitz outlined a number of the aggressive actions that you-all have taken in the past, and that was real helpful to me to get a sense of your organization. I wonder if you would also characterize your response to the February 22nd and 25th events as aggressive actions and if you could highlight some of the steps

that you have taken in responding to those problems that you think point out that aggressive commitment to deal with those problems.

MR. SMITH: Well, I think you have to rely first on what we have said we are going to do. Until we do it, I can't display any more aggressive action than the words. I, of course, was not with the Staff people and our management people when they were going through the details of the investigation. I don't know whether all of the questions were raised by the Staff or whether some were raised by our people. Dick?

MR. UDERITZ: I think it was a combination. We recognized certain shortcomings that became issues, and certainly the Staff recognized a lot, and we had an awful lot of conversation between us and it wound up that we had something like 17 issues when we combined equipment, operator response and management issues, and those basically, I think, came from both sides, both the NRC Staff and Public Service.

MR. SMITH: Does that satisfy your question?

COMMISSIONER ASSELSTINE: Yes.

CHAIRMAN PALLADINO: Any more?

(No response)

Okay. Well, thank you, gentlemen. We appreciate your coming by, and I hope the information will be useful to us. Thank you.

We will stand adjourned.

(Whereupon, at 10:35 a.m., the meeting was concluded.)

CERTIFICATE OF PROCEEDINGS

This is to certify that the attached proceedings before the NRC COMMISSION

In the matter of: Commission Meeting On Salem

Date of Proceeding: April 20, 1983

Place of Proceeding: Washington, D.C.

were held as herein appears, and that this is the original transcript for the file of the Commission.

Mary C. Simons
Official Reporter - Typed

Mary C. Simons
Official Reporter - Signature

APRIL 20, 1933

SCHEDULING NOTES

TITLE: BRIEFING ON SALEM

SCHEDULED: 9:30 A.M., WEDNESDAY, APRIL 20, 1983

DURATION: 1 HOUR

SPEAKERS:

1. ROBERT I. SMITH, CHAIRMAN OF THE BOARD AND CEO, PSE&G
2. RICHARD A. UDERITZ, VICE PRESIDENT NUCLEAR, PSE&G
3. HENRY MIDURA, GENERAL MANAGER NUCLEAR SERVICES, PSE&G
4. JOHN ZUPKO, GENERAL MANAGER SALEM OPERATIONS, PSE&G
5. JOHN BOETTGER, GENERAL MANAGER NUCLEAR SUPPORT, PSE&G

DOCUMENTS: PREPARED STATEMENTS TO BE DISTRIBUTED AT MEETING.

AGGRESSIVE ACTIONS INITIATED BY PSE&G

ORGANIZATION

- NUCLEAR DEPARTMENT
- NUCLEAR OPERATIONS QA
- NUCLEAR ASSURANCE AND REGULATION
- NUCLEAR REVIEW BOARD
- INPO

AGGRESSIVE ACTIONS INITIATED BY PSE&G

UNIT PERFORMANCE - 1982

		AVAIL	CAP. FACTOR
No. 1	(BETWEEN REFUELING OUTAGES)	97.8%	88.3%
No. 2	(CALENDAR YEAR)	97.3%	81.7%

SECOND IN NATION IN POWER PRODUCTION

SIX-WEEK LABOR STRIKE

PLANT OPERATED BY MANAGEMENT PERSONNEL

No. 1 AVAIL - 100% CAP FACTOR - 89.4%

No. 2 AVAIL - 100% CAP FACTOR - 98%

STEAM GENERATOR CHEMISTRY

DENTING ARRESTED BY

- FULL FLOW DEMINERALIZERS
- SUPERIOR ANALYSIS
- RESTRICTIVE CHEMISTRY LIMITS
- EPRI - DENTING MITIGATION SUCCESSFUL
- WEST - BEST PWR STEAM GENERATOR CHEMISTRY

AGGRESSIVE ACTIONS INITIATED BY PSE&G

INNOVATIVE CONTROL ROOM DESIGN

- Low Voltage Pushbutton Controls
- "Cockpit" Type Control Console
- Safety Systems Status Panel
- Full Size Model to Evaluate Design
- Excellent Human Factors Review

NUCLEAR TRAINING CENTER

- Provides Training to Establish a High Level of Nuclear Ethics
  - Supervisory and Technical Skills
  - Apprentice and Advanced Training for IBEW
  - Management Development
- Facility
  - Operational August 1982
  - Simulator for Salem July 1983
  - Simulatory for Hope Creek 1984 (Consistent with Start of Requirements)
- Accreditation
  - 30 Courses Have Been Accredited by New York State Program of Non-Collegiate Sponsored Education
  - INPO Accreditation Review Completed Results Expected in August 1983

AGGRESSIVE ACTIONS INITIATED BY PSE&G

PREVENTIVE MAINTENANCE

PROGRAM ESTABLISHED - INITIAL OPERATION

CONTINUOUS REVIEW AND IMPROVEMENT CITED BY INPO AS A BENEFICIAL PRACTICE

JULY 1982 - MANAGEMENT MAINTENANCE (PS/WESTINGHOUSE)

- COMPREHENSIVE, INTEGRATED
- ALARA - HIGH PRIORITY
- INCLUDES ALL SAFETY RELATED SYSTEMS

COMPUTERIZED SAFETY TAGGING SYSTEM

- REDUCES OPERATOR ERRORS
- IMPROVES SAFETY
- IMPROVES COMPLIANCE TO TECH SPECS
- DECREASES OPERATOR DRUDGERY
- PSE&G SOLE DESIGNER

AGGRESSIVE ACTIONS INITIATED BY PSE&G

PLANT DESIGN FOCUS ON SAFETY

- Safety Systems Not Shared Between Units
- Shielding Design to Minimize Radiation Exposure
- Separate Control Rooms for Each Unit
- We had ALARA Before the Term was Invented

IN-HOUSE ENGINEERING CAPABILITY

- Large Experienced On-Site Engineering Support Team Comprised of Personnel who are Involved in Salem Engineering and Design

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

PRESENTATION TO

NUCLEAR REGULATORY COMMISSION

APRIL 20, 1983

THANK YOU FOR THE OPPORTUNITY TO ADDRESS YOU TODAY. AS YOU KNOW, I AM ROBERT I. SMITH, CHAIRMAN OF THE BOARD AND CHIEF EXECUTIVE OFFICER OF PUBLIC SERVICE. BEFORE MAKING MY REMARKS, I WOULD LIKE TO INDICATE THAT RICHARD UDERITZ, VICE PRESIDENT - NUCLEAR, HENRY MIDURA, GENERAL MANAGER - NUCLEAR SERVICES, JOHN ZUPKO, GENERAL MANAGER - SALEM OPERATIONS, AND JOHN BOETTGER, GENERAL MANAGER - NUCLEAR SUPPORT, ARE ALL WITH ME TODAY AND WILL FOLLOW ME IN PRESENTING INFORMATION TO THE COMMISSION. ALSO PRESENT IN THE AUDIENCE ARE HAROLD SONN, PRESIDENT, RICHARD ECKERT, SENIOR VICE PRESIDENT, JOHN DRISCOLL, ASSISTANT GENERAL MANAGER - SALEM OPERATIONS, AND EDWIN SELOVER, VICE PRESIDENT AND GENERAL COUNSEL.

I UNDERSTAND THAT A CLOSED ENFORCEMENT MEETING RELATIVE TO SALEM HAS BEEN SCHEDULED TODAY. WE HAVE ASKED FOR THIS MEETING WITH THE COMMISSION PRIOR TO THE ENFORCEMENT MEETING IN ORDER TO CLEAR UP WHAT WE BELIEVE ARE SOME SIGNIFICANT INCORRECT IMPRESSIONS WITH REGARD TO PUBLIC SERVICE AND ITS MANAGEMENT.

AT THE OUTSET, I MUST REPEAT THAT WE FULLY RECOGNIZE THAT THE FAILURE OF A BASIC AUTOMATIC SAFETY SYSTEM, HERETOFORE CONSIDERED EXTREMELY RELIABLE, IS A SERIOUS MATTER. THE FACT THAT THE FAILURE WAS NOT DETECTED ON FEBRUARY 22, AND WAS NOT REPORTED UNTIL REVEALED BY THE INVESTIGATION OF THE SECOND FAILURE ON FEBRUARY 25, IS ALSO A SERIOUS MATTER. HOWEVER, I MUST EMPHASIZE THAT THE HEALTH AND SAFETY OF THE PUBLIC WAS NEVER THREATENED BY EITHER OF THESE EVENTS, WHICH

HAROLD DENTON DESCRIBED AS "BENIGN," BECAUSE THE OPERATORS TRIPPED THE UNIT PROMPTLY, AND NO DAMAGE TO EQUIPMENT OR RELEASE OF RADIATION RESULTED. I DO NOT WANT TO MINIMIZE THE IMPORTANCE OF THE AUTOMATIC REACTOR TRIP SYSTEM FAILURE, BUT FROM THE GENERAL PUBLIC'S POINT OF VIEW, IT WAS, OR SHOULD HAVE BEEN, A NON-EVENT. FROM THE BEGINNING, OUR NUCLEAR POWER PLANT DESIGN HAS BEEN BASED ON SAFETY AS THE ULTIMATE CRITERIA. THE REDUNDANCE OF SYSTEMS, PLUS THE REDUNDANCE OF EQUIPMENT WITHIN INDIVIDUAL SYSTEMS, HAS COMPLICATED OPERATION OF THE PLANTS; BUT EVERYTHING HAS BEEN JUSTIFIED ON THE BASIS OF INCREASED SAFETY. FURTHER, OPERATOR TRAINING HAS BEEN IMPROVED OVER THE YEARS, PARTICULARLY SINCE THREE MILE ISLAND, AND OPERATORS ARE, IN MY OPINION, UNIQUELY QUALIFIED TO BACK UP THE AUTOMATIC SYSTEM IF FAILURE DOES OCCUR. THE ACTIONS OF THE OPERATORS AT SALEM JUSTIFIED THAT OPINION. ALL OF US MUST RECOGNIZE THAT EQUIPMENT FAILURE WILL OCCUR. WE LIVE IN AN IMPERFECT WORLD, AND THEREFORE NUCLEAR PLANTS ARE DESIGNED WITH REDUNDANT SAFETY SYSTEMS AND PROCEDURES. WE RECOGNIZE THAT SAFETY COMES BEFORE PRODUCTION, AND OUR WRITTEN POLICY SO STATES IN NO UNCERTAIN TERMS. THIS POLICY IS STRESSED DURING TRAINING OF PERSONNEL. I CAN UNEQUIVOCALLY STATE THAT WE OPERATE IN ACCORDANCE WITH THAT POLICY, IN SPITE OF WHAT SOME PEOPLE HAVE PUBLICLY STATED.

UNDERVOLTAGE ATTACHMENTS

MUCH OF THE INVESTIGATION FOLLOWING THE FAILURES ON FEBRUARY 22 AND FEBRUARY 25, 1983 CENTERED ON THE UNDERVOLTAGE ATTACHMENTS WHICH FAILED ON BOTH OCCASIONS. INITIAL REPORTS ATTRIBUTED THE FAILURES TO LACK OF MAINTENANCE, AND, MORE SPECIFICALLY, LACK OF PROPER LUBRICATION. THE DETAILS OF THIS INVESTIGATION ARE FAIRLY WELL KNOWN. IT APPEARS THAT THESE TRIP DEVICES CAN BE UPGRADED SO PERFORMANCE CAN BE IMPROVED. WHILE IT IS CLEAR LUBRICATION, MAINTENANCE AND REPLACEMENT OF THE UNDERVOLTAGE ATTACHMENTS WILL KEEP THE SYSTEM OPERABLE, WE BELIEVE FURTHER IMPROVEMENTS CAN BE MADE. WE ARE NOW ENGAGED IN SEARCHING FOR A BETTER DEVICE TO REPLACE THE PRESENT UNDERVOLTAGE RELAYS. WESTINGHOUSE IS NOW ADVOCATING PERIODIC REPLACEMENT. THIS EQUIPMENT WAS INSTALLED ON THE BASIS THAT IT WAS RELIABLE WITH AN UNLIMITED LIFE. THIS INCIDENT HAS SHOWN US THERE IS AN OPPORTUNITY FOR IMPROVEMENT IN THIS DEVICE, AND WE INTEND TO PURSUE IT VIGOROUSLY.

WHEN WE DO COME UP WITH A BETTER DEVICE, I AM SURE THE NRC WILL REQUIRE EXTENSIVE AND EXHAUSTIVE TESTING BEFORE IT IS APPROVED FOR SERVICE. WE INTEND TO WORK CLOSELY WITH THE NRC AND THE INDUSTRY TO MAKE THIS IMPROVEMENT A REALITY.

UNIT TRIPS

THE RECORD SHOWS THAT SALEM I HAS EXPERIENCED MORE TRIPS THAN WE CONSIDER REASONABLE AND WE ARE CONCENTRATING OUR EFFORTS ON REDUCING THE NUMBER OF TRIPS.

ONE OF THE BASIC CAUSES OF UNIT TRIPS ON BOTH SALEM UNITS IS ASSOCIATED WITH THE CONTROL OF WATER LEVEL IN THE STEAM GENERATORS, PARTICULARLY DURING STARTUP. THIS PROBLEM INITIATED TRIPS ON BOTH FEBRUARY 22 AND FEBRUARY 25, 1983. WE HAVE BEEN PURSUING A SATISFACTORY SOLUTION TO THIS COMPLICATED PROBLEM. THE PROBLEM WAS EXACERBATED SEVERAL YEARS AGO WHEN WE WERE REQUIRED TO NARROW THE CONTROL BAND RANGE ON LEVEL CONTROL EQUIPMENT. DURING THE LAST REFUELING OUTAGE OF SALEM I, WE MADE MODIFICATIONS TO THE LEVEL CONTROL SYSTEM, WHICH SHOULD IMPROVE OUR ABILITY TO CONTROL LEVEL AT LOW LOADS. WE WERE IN THE PROCESS OF TUNING UP THE MODIFIED EQUIPMENT DURING PLANT STARTUP WHEN THE EVENTS OF FEBRUARY 22 AND 25 TOOK PLACE. FURTHER CHANGES WHICH WILL ALLOW US TO EXPAND THE CONTROL BAND RANGE ARE ALSO UNDERWAY. AGAIN, WE HAD ALREADY RECOGNIZED THE PROBLEM AND WERE DOING SOMETHING ABOUT IT.

CONTROL ROOM

WE ARE GRATIFIED TO LEARN THAT THE NRC STAFF EVALUATION OF THE SALEM CONTROL ROOM "WAS ONE OF THE BEST CONTROL ROOMS WE HAD DONE." THE RECORD INDICATES THAT THE COMPANY HAS BEEN INNOVATIVE IN THE DESIGN OF THE CONTROL ROOMS AT SALEM. WE HAVE PROVIDED INSTRUMENTATION TO FACILITATE OPERATION WHICH IS UNIQUE TO THE INDUSTRY.

CONTROL ROOM MODIFICATIONS HAVE BEEN SUGGESTED. WE ARE ANXIOUS TO MAKE ANY CHANGES WHICH WILL IMPROVE OPERATIONS OR CONTRIBUTE TO A GREATER ASSURANCE OF SAFETY. WE DESIGNED

THESE CONTROL ROOMS OURSELVES WITH OUR OWN PEOPLE. THEY WEREN'T DESIGNED BY WESTINGHOUSE OR SOME OUTSIDE ARCHITECT-ENGINEER. WE ARE PROUD OF THE DESIGN, BUT CERTAINLY NOT TOO PROUD TO RECOGNIZE THAT PERFECTION IS THE GOAL. WHILE IT CAN NEVER BE ACHIEVED, OUR EFFORTS TO UPDATE AND MAKE IMPROVEMENTS WHERE POSSIBLE WILL ALWAYS CONTINUE.

MANAGEMENT ATTITUDE AND CAPABILITY

THE STATEMENTS MADE BY THE COMMISSIONERS AND STAFF REPRESENTATIVES IN THE AREA OF "MANAGEMENT ISSUES" ARE THE ONES WHICH DISTURB ME MOST. PUBLIC STATEMENTS ACCUSING COMPANY EMPLOYEES OF "NEGLECT OF DUTY" AND TALK OF "ORGANIZATION FAILURE" AND "A FAILURE OF BASIC DISCIPLINE" ARE STATEMENTS WHICH WE DO NOT TAKE LIGHTLY, AND I SINCERELY HOPE THAT THOSE WHO MADE THEM REALIZE THE IMPLICATIONS OF WHAT THEY HAVE SAID. TALK OF "MANAGEMENT BREAKDOWN" AND OF A RATING "DOWN NEAR THE BOTTOM" WHEN COMPARED TO OTHER UTILITIES SEEMS TO CONFLICT WITH THE FACTS ON THE BASIS OF PUBLIC REPORTS BY THE NRC AND INPO.

IT IS ALSO INCONSISTENT WITH ASSESSMENTS OF OUR MANAGEMENT CAPABILITIES MADE BY OTHER MANAGEMENT CONSULTANTS IN OTHER AREAS. WHILE NOT DIRECTLY RELATED TO SALEM, THE FINDINGS OF THESE CONSULTANTS SHED SOME LIGHT ON THE COMPETENCE OF PSE&G MANAGEMENT.

IN 1981, THEODORE BARRY AND ASSOCIATES DID A COMPLETE NINE-MONTH AUDIT OF OUR MANAGEMENT OF THE HOPE CREEK NUCLEAR PLANT CONSTRUCTION PROJECT. THEY SAID:

"IN TBA'S EXPERIENCE, THE MANAGEMENT OF HOPE CREEK COMPARES FAVORABLY WITH OTHER LARGE POWER PLANT DESIGN AND CONSTRUCTION PROJECTS."

"PSE&G'S OVERSIGHT AND DIRECTION OF BECHTEL IS MANAGED THROUGH THE PSE&G PROJECT MANAGEMENT GROUP. ITS CAPABILITIES AND STRONG 'HANDS-ON' INVOLVEMENT TO MANAGE HOPE CREEK IS APPROPRIATE AND EFFECTIVE."

"THE PSE&G PROJECT MANAGEMENT GROUP HAS HIGH LEVELS OF EXPERIENCE IN THE THREE KEY AREAS OF ENGINEERING, CONSTRUCTION AND COST SCHEDULE."

IN 1977, AFTER A COMPLETE MANAGEMENT AUDIT OF ALL OF PSE&G'S OPERATIONS, MCKINSEY AND COMPANY SAID:

"IN OUR JUDGEMENT, PSE&G RANKS HIGH AMONG COMPARABLE URBAN UTILITIES IN OVERALL MANAGEMENT EFFECTIVENESS."

IN ADDITION, I HAVE NO HESITATION IN STATING THAT I BELIEVE THE MANAGEMENT OF PSE&G WOULD RECEIVE HIGH MARKS FROM THE NEW JERSEY BOARD OF PUBLIC UTILITIES AND THE NEW JERSEY

DEPARTMENT OF ENERGY FOR ITS COMPETENCE, INITIATIVE, COOPERATION AND THOROUGHNESS.

IT SHOULD ALSO BE POINTED OUT THAT PSE&G REMAINS ONE OF ONLY 24 "AA" BOND CREDIT RATED ELECTRIC UTILITIES IN THE UNITED STATES. SUCH A CREDIT RATING FOR A NUCLEAR UTILITY IN TODAY'S UTILITY INVESTMENT CLIMATE CAN ONLY BE MAINTAINED BY STRONG, EFFECTIVE, AND COMPETENT MANAGEMENT.

GENERAL STATEMENTS MADE THROUGHOUT THE COMMISSION'S MEETING GIVE THE IMPRESSION THAT THE MANAGEMENT IS NOT AGGRESSIVE IN PURSUING THE SOLUTION OF PROBLEMS, THAT PROPER PROCEDURES ARE IN PLACE BUT THERE IS A LACK OF FOLLOW-UP TO ASSURE THAT THE PROCEDURES ARE BEING FOLLOWED, THAT THERE IS A LACK OF ATTENTION TO DETAIL, THAT ERRORS ARE COUNTENANCED AND THAT NO CORRECTIVE OR PUNITIVE ACTION IS TAKEN AGAINST EMPLOYEES WHO MAKE MISTAKES.

WHEN YOU FEEL YOU HAVE BEEN UNJUSTLY ACCUSED, THE NORMAL TENDENCY IS TO COUNTER WITH SOME UNCOMPLIMENTARY STATEMENTS CONCERNING YOUR ACCUSER. THAT IS NOT MY MANAGEMENT STYLE, NOR IS IT THE MANAGEMENT STYLE OF PUBLIC SERVICE ELECTRIC AND GAS COMPANY. OUR COMPANY HAS CONSCIENTIOUSLY AND SUCCESSFULLY SERVED THE PEOPLE OF NEW JERSEY FOR 80 YEARS. WE FEEL THAT WE KNOW HOW TO OPERATE IN ALL REGULATORY ENVIRONMENTS. WE KNOW THAT THE REGULATORS ACTING IN THE PUBLIC INTEREST HOLD THE FATE OF OUR COMPANY IN THEIR HANDS -- WHETHER IT BE FOR A RATE INCREASE OR THE RETURN OF A NUCLEAR UNIT TO SERVICE. OUR BASIC POLICY IS TO COOPERATE TO THE FULLEST EXTENT POSSIBLE. WE DO NOT PUBLICLY

CRITICIZE THE COMMISSION OR THE NRC STAFF AND WE DO NOT INTEND TO DO SO. HOWEVER, WE DO NOT THINK THE ALL-ENCOMPASSING CRITICISM TO WHICH WE HAVE BEEN SUBJECTED IS JUSTIFIED. IT IS CLEAR, HOWEVER, THAT WE ARE BEING PERCEIVED BY THE NRC DIFFERENTLY THAN WE ARE BEING PERCEIVED BY OTHERS WHO DEAL WITH US. I BELIEVE THIS IS A MISPERCEPTION BY THE NRC, BUT I GUARANTEE YOU IT IS OUR GOAL THAT THIS WILL BE THE LAST TIME THE NRC HAS THAT IMPRESSION OF PUBLIC SERVICE.

OUR MANAGEMENT STYLE IS AGGRESSIVE IN AREAS WHERE WE BELIEVE AGGRESSIVENESS IS REQUIRED. IN THE DESIGN AND ENGINEERING OF SALEM, WE DISPLAYED INITIATIVE AND A CAPACITY FOR INNOVATION, SUCH AS THE CONTROL ROOM DESIGN, WHICH WE BELIEVE PRODUCED A SUPERIOR PLANT DESIGN. WE BUILT ONE OF THE FINEST NUCLEAR TRAINING CENTERS WITHOUT ANY URGING FROM ANYONE BECAUSE WE BELIEVED IT WAS THE RIGHT THING TO DO. WE TOOK A MAJOR STEP LATE IN 1981 WHEN WE ORGANIZED A SEPARATE NUCLEAR DEPARTMENT AND BEGAN RELOCATION OF THE ENTIRE DEPARTMENT, INCLUDING THE VICE PRESIDENT RESPONSIBLE FOR ITS OPERATION, TO THE ARTIFICIAL ISLAND SITE ADJACENT TO THE SALEM AND HOPE CREEK PLANTS. THAT WAS A MASSIVE OPERATION, LOGISTICALLY AND FINANCIALLY, TO UPROOT FAMILIES FROM THE NEWARK AREA AND TRANSFER THEM TO AN UNFAMILIAR AREA IN SOUTHERN NEW JERSEY. THE MOVE IS ALMOST COMPLETE. WE NOW HAVE SEVERAL HUNDRED RELOCATED PEOPLE ON SITE, AND WE ARE ACTIVELY WORKING TO COORDINATE THE ACTIVITIES OF OUR ENGINEERING AND ADMINISTRATIVE PEOPLE WITH THE OPERATING PEOPLE

WHO WERE ORIGINALLY THERE. I KNOW OF NO OTHER NUCLEAR UTILITY WHO HAS THE ENGINEERING PEOPLE RESPONSIBLE FOR THE DESIGN OF THE PLANT PERMANENTLY LOCATED WITHIN A STONE'S THROW OF THOSE WHO OPERATE IT. THAT MOVE WAS AN AGGRESSIVE ACTION WHICH SHOULD RESULT IN IMPROVED OPERATION. LATER IN OUR PRESENTATION, YOU WILL HEAR MORE ABOUT SOME OF THE INNOVATIVE ACTIONS WE HAVE TAKEN AT SALEM.

WITH REGARD TO OUR TREATMENT OF EMPLOYEES, SOME NRC STAFF COMMENTS MAY HAVE GENERATED THE IMPRESSION THAT WE SELDOM, IF EVER, DISCHARGE AN EMPLOYEE. LET ME ASSURE YOU THAT IMPRESSION IS FALSE. WE TREAT EVERY EMPLOYEE AS AN INDIVIDUAL. THERE ARE POLICIES IN PLACE WHICH CALL FOR AUTOMATIC DISCHARGE, BUT OUR GENERAL APPROACH IS TO REPRIMAND AND COUNSEL ON AN INDIVIDUAL BASIS. REPEATED OFFENSES OR FLAGRANT ERRORS CERTAINLY CALL FOR DISCHARGE, AND THOSE SITUATIONS ARE DEALT WITH APPROPRIATELY. PSE&G DOES NOT OPERATE IN A VACUUM. UNDER THE PRESENT FEDERAL AND STATE LAWS, AS WELL AS THE UNION BARGAINING AGREEMENTS UNDER WHICH WE OPERATE, ANY DISCHARGE HAS TO BE FULLY JUSTIFIED AND DOCUMENTED.

PERHAPS A SPECIFIC CASE WILL SERVE TO ILLUSTRATE OUR ATTITUDE TOWARD MANAGEMENT EMPLOYEES. EARLY THIS YEAR, PRIOR TO THE FEBRUARY EVENTS AT SALEM, IN ORDER TO GET THE BENEFIT OF FRESH IDEAS AND APPROACHES, WE DECIDED TO ROTATE THE GENERAL MANAGER OF SALEM GENERATING STATION AND THE GENERAL MANAGER OF NUCLEAR SERVICES. THIS JOB CHANGE CAME UP BEFORE THE OPERATING COMMITTEE FOR APPROVAL JUST AFTER

THE INCIDENTS AT SALEM. I PERSONALLY STOPPED THE CHANGE FOR TWO REASONS. FIRST, IT WOULD APPEAR TO BE AN ILL-CONSIDERED KNEE-JERK REACTION, ALTHOUGH IT WAS, IN FACT, A WELL-CONSIDERED MOVE; AND, SECOND, I FELT THAT NO CHANGES SHOULD BE MADE UNTIL THE INVESTIGATION WAS COMPLETED. WITH THE INVESTIGATION ESSENTIALLY COMPLETE, THAT MANAGEMENT PERSONNEL CHANGE WAS MADE EFFECTIVE APRIL 18, 1983.

LACK OF FOLLOW-UP TO ASSURE THAT ESTABLISHED PROCEDURES ARE IN FACT BEING CARRIED OUT AND LACK OF ATTENTION TO DETAIL ARE PROBLEMS I AM SURE, WITH ANY LARGE ORGANIZATION, AND THIS PROBABLY INCLUDES THE NRC AND ITS STAFF. YOU HAVE MY ASSURANCE THAT WE WILL BE MORE AGGRESSIVE IN THESE AREAS. OUR INTERNAL AUDITORS HAVE ROUTINELY CHECKED ADHERENCE TO POLICIES AND PROCEDURES AT SALEM. WE ARE EXPANDING THEIR OPERATIONS TO PERFORM AUDITS IN GREATER DEPTH. WE ALSO PLAN TO ASSIGN A COMPANY SYSTEMS EXPERT TO SALEM TO EXAMINE ALL OF THE PAPERWORK SYSTEMS AND MAKE RECOMMENDATIONS FOR IMPROVEMENTS.

EVEN PRIOR TO THE SALEM EVENTS, WE HAD BEEN TALKING TO MANAGEMENT ANALYSIS COMPANY (MAC) ABOUT AN OVERALL ASSESSMENT OF OUR QA PROGRAM WHERE WE OURSELVES BELIEVED THERE WERE OPPORTUNITIES FOR IMPROVEMENT. THIS AGAIN, WAS ON OUR OWN INITIATIVE WITHOUT SUGGESTION FROM ANYONE ELSE. SUBSEQUENTLY, MAC WAS ENGAGED, IN RESPONSE TO A SUGGESTION FROM THE NRC STAFF, TO PERFORM A MANAGEMENT OVERVIEW, INCLUDING AN ASSESSMENT OF THE CAPABILITY AND PERFORMANCE OF PERSONNEL IN KEY POSITIONS. WHEN THE STUDY IS COMPLETED, WE INTEND TO

STRENGTHEN ANY MANAGEMENT WEAKNESSES WHICH THIS REPORT REVEALS.

CONCERNING ON-SITE MANAGEMENT CAPABILITY, I BELIEVE OUR MANAGERS IN THE NUCLEAR DEPARTMENT ARE THE EQUAL OF ANY IN THE COUNTRY. THIS CONTENTION IS SUPPORTED BY A MEMBER OF THE NRC STAFF WHO STATED IN THE MEETING ON APRIL 14:

> "WE, IN FACT, HAVE AN AWFUL LOT OF EXPERIENCE WITH THE LICENSED OPERATORS AT THE PLANT. DURING A SIX-WEEK STRIKE THEY HAD LAST YEAR, OUR EXPERIENCE THERE SHOWED THEY HANDLED THE PLANT VERY WELL. THERE WERE NO TRIPS, NO SEVERE TRANSIENTS. THEY WERE DOING THE MAINTENANCE THEMSELVES. SO IT IS TO THEIR CREDIT THEY HAVE A GOOD STAFF. THEY CAN RUN A SAFE PLANT."

DURING THIS SIX-WEEK PERIOD, I SHOULD EMPHASIZE, THE PLANT WAS BEING OPERATED AND MAINTAINED BY MANAGERS. AGAIN, THIS EXPERIENCE DOES NOT SEEM TO SQUARE WITH THE IMPRESSION THAT MANAGEMENT IS NOT AGGRESSIVE OR CAPABLE.

FURTHER, SALEM II HAD AN OUTSTANDING PERFORMANCE RECORD FROM THE TIME OF INITIAL STARTUP IN OCTOBER 1981 UNTIL IT WAS TAKEN OUT OF SERVICE THIS JANUARY. IT OPERATED WITH AN 81.7% CAPACITY FACTOR. AGAIN, NOT EXACTLY AN INDICATION OF "SLOPPY OPERATION."

EVEN THOUGH SALEM I'S OPERATING PERFORMANCE HAS BEEN BELOW THAT WHICH WE THINK IT SHOULD BE, IT HAS FOR THE MOST PART BEEN CAUSED BY TURBINE BLADE PROBLEMS OVER WHICH WE HAD NO CONTROL. IF THE TURBINE REPAIR OUTAGE TIME IS ELIMINATED FROM SALEM'S PERFORMANCE, IT HAS A LIFETIME CAPACITY FACTOR OF OVER 60%.

I HAVE WORKED FOR PUBLIC SERVICE ELECTRIC AND GAS COMPANY FOR 43 YEARS, STARTING IN A GENERATING STATION AND WORKING MY WAY UP THROUGH THE RANKS. I WAS IN CHARGE OF ENGINEERING AND DESIGN OF THE SALEM UNITS DURING MUCH OF THE PERIOD WHEN THEY WERE BEING PLANNED AND CONSTRUCTED. PUBLIC SERVICE HAS LONG BEEN A LEADER IN THE ELECTRIC UTILITY INDUSTRY, WITH A DISTINGUISHED RECORD OF ACCOMPLISHMENT IN MANY AREAS. THE NRC STAFF IS AWARE THAT THE SALEM PLANT HAS DESIGN DIFFERENCES THAT MAKE IT SAFER THAN MANY OTHER PLANTS WITH PRESSURIZED WATER REACTORS. STAFF MEMBERS HAVE ATTEMPTED TO POINT OUT THESE DIFFERENCES AT PUBLIC MEETINGS, BUT THESE ATTEMPTS HAVE BEEN LOST IN THE MEDIA COVERAGE.

REPORTS ON THE EVENTS AT SALEM HAVE CREATED IN THE MINDS OF MANY PEOPLE THE PERCEPTION THAT THE PLANT WAS ON THE VERGE OF A DISASTER. THIS PERCEPTION WAS FUELED BY REMARKS MADE BY THE NRC STAFF AND MISINTERPRETED OR MISUNDERSTOOD BY THE MEDIA. THE ONLY THING CLOSE TO A DISASTER RESULTING FROM THE EVENTS AT SALEM IS THE DAMAGE TO THE REPUTATION OF A CONSCIENTIOUS AND RESPECTED COMPANY AND THE EFFECT ON THE MORALE OF ITS TALENTED AND DEDICATED EMPLOYEES.

WE RECOGNIZE THE CONCERN OF THE NRC AND THE PRESSURES PLACED UPON IT FROM OUTSIDE SOURCES, YET THE NRC IS THE ONE SINGLE AGENCY THAT THE INDUSTRY AND THE COUNTRY CAN LOOK TO FOR A BALANCED VIEWPOINT. WITHOUT THAT BALANCED VIEWPOINT, ACTIONS CAN BE TAKEN WHICH ARE COUNTERPRODUCTIVE TO THE PUBLIC INTEREST OBJECTIVES OF THE NRC AND THE INDUSTRY -- LOSS OF MORALE AND RESENTMENT. A REDUCTION IN THE ABILITY TO ATTRACT THE BEST PERSONNEL AND A REDUCTION IN THE ABILITY TO ATTRACT NEEDED CAPITAL TO CARRY OUT OBJECTIVES.

I WANT TO REITERATE THAT ALTHOUGH THE SALEM FAILURES WERE SERIOUS, THE ATTENTION THEY RECEIVED AND THE RESULTING CRITICISM OF THE COMPANY AND ITS MANAGEMENT WERE OUT OF PROPORTION TO THE IMPORTANCE OF THE EVENTS. THE BOTTOM LINE IS THAT THE HEALTH AND SAFETY OF THE PUBLIC WERE NEVER THREATENED.

SUPPORTING INFORMATION

RELATED TO THE

PUBLIC SERVICE ELECTRIC AND GAS COMPANY

PRESENTATION TO

NUCLEAR REGULATORY COMMISSION

APRIL 20, 1983

DURING THE MEETINGS HELD WITH THE COMMISSION INVOLVING THE FAILURE OF REACTOR TRIP BREAKERS TO OPERATE ON FEBRUARY 22 AND 25, 1983 AT SALEM, THERE HAVE BEEN SEVERAL STATEMENTS MADE INDICATING PSE&G DOES NOT TAKE POSITIVE, AGGRESSIVE ACTION WITHOUT EXTERNAL STIMULI. WE WOULD LIKE TO TAKE THIS OPPORTUNITY TO PRESENT TO THE COMMISSION SIGNIFICANT ITEMS THAT WE CONSIDER TO BE SELF-INITIATED, POSITIVE, AGGRESSIVE ACTION ON THE PART OF OUR NUCLEAR EFFORT.

IN OCTOBER 1981, PSE&G EMBARKED ON A MAJOR ORGANIZATIONAL CHANGE BY COMBINING ITS NUCLEAR OPERATIONS AND SUPPORT FUNCTIONS INTO A CENTRALIZED, INTEGRATED NUCLEAR DEPARTMENT TO BE LOCATED ON ARTIFICIAL ISLAND, THE SITE OF SALEM GENERATING STATION AND HOPE CREEK GENERATING STATION. IN ADDITION TO IMPROVING THE DEDICATION AND RESPONSIVENESS OF SUPPORT PERSONNEL TO PLANT OPERATIONS, THE FORMATION OF THE NUCLEAR DEPARTMENT ALSO ENHANCES OUR STATE OF EMERGENCY PREPAREDNESS WITH RESPECT TO TECHNICAL AND ADMINISTRATIVE SUPPORT.

THE NUCLEAR DEPARTMENT CONCEPT WAS APPROVED BY PSE&G SENIOR MANAGEMENT IN THE FALL OF 1981, AND WAS FOLLOWED BY AN AGGRESSIVE EFFORT TO FINALIZE THE ORGANIZATIONAL STRUCTURE, DEVELOP DETAILED POSITION ANALYSES AND SEARCH FOR AND SELECT QUALIFIED PERSONNEL. CONCURRENTLY, THE DESIGN AND CONSTRUCTION OF OFFICE FACILITIES

AT ARTIFICIAL ISLAND WAS INITIATED TO ACCOMMODATE THE RELOCATION OF PERSONNEL THAT WOULD BE NECESSARY TO SUPPORT THE 1982 FALL REFUELING OUTAGE SCHEDULED FOR SALEM UNIT NO. 1. IN LESS THAN ONE CALENDAR YEAR FROM A CONCEPTIONAL POINT IN TIME, THE DEPARTMENT'S STRUCTURE WAS FINALIZED, SELECTIONS HAD BEEN MADE FOR A MAJORITY OF THE POSITIONS AND OVER 150 PEOPLE HAD BEEN RELOCATED TO THE SITE IN A NEW OFFICE BUILDING. ORGANIZATIONAL DEVELOPMENT CONSULTANTS INFORM US THAT TO COMPLETE THIS TYPE OF EFFORT NORMALLY WOULD HAVE TAKEN 3-5 YEARS.

ONE OF THE MORE SIGNIFICANT ASPECTS OF THIS ORGANIZATIONAL CHANGE I'S THAT IT RELIEVES STATION MANAGEMENT OF CERTAIN NON-OPERATING RESPONSIBILITIES AS PLANT OPERATING AND SUPPORT FUNCTIONS ARE COMBINED INTO A SINGLE, CENTRALIZED INTEGRATED STRUCTURE. UNDER THE DIRECTION OF THE VICE PRESIDENT - NUCLEAR AS THE SENIOR NUCLEAR MANAGER, RESPONSIBILITY FOR SAFE AND EFFICIENT OPERATION OF OUR NUCLEAR FACILITIES HAS BEEN CLEARLY ASSIGNED. ADDITIONALLY, THE ORGANIZATIONAL STRUCTURE AND LOCATION PROVIDES FOR UNAMBIGUOUS MANAGEMENT AUTHORITY AND EFFECTIVE LINES OF COMMUNICATION BETWEEN RESPONSIBLE GROUPS INVOLVED IN THE OPERATIONS, TECHNICAL AND ADMINISTRATIVE SUPPORT OF OUR NUCLEAR UNITS.

THE NUCLEAR REVIEW BOARD WAS ESTABLISHED ON-SITE WITH A FULL-TIME STAFF CONSISTING OF THE CHAIRMAN AND A TECHNICAL SECRETARY TO THE BOARD. IN JANUARY 1983, THE MEMBERSHIP WAS RECONSTITUTED

WITH A PROVISION FOR PARTICIPATION BY PERSONS FROM OUTSIDE ORGANIZATIONS IN ORDER TO ENHANCE THE INDEPENDENCE OF THE NRB AND TO BENEFIT FROM THEIR EXPERIENCE. WE HAVE AGREED WITH A NEIGHBORING UTILITY TO EXCHANGE MEMBERS ON EACH OTHER'S REVIEW BOARD, WHICH FURTHER ENHANCES NRB INDEPENDENCE.

UPPER MANAGEMENT'S ACCESS TO INDEPENDENT EVALUATIONS OF SAFETY, QUALITY, REGULATORY COMPLIANCE AND RELIABILITY WAS FURTHER ENHANCED IN JANUARY 1983 BY THE ESTABLISHMENT OF AN INDEPENDENT MAJOR DEPARTMENT REPORTING TO THE SENIOR VICE PRESIDENT - ENERGY SUPPLY AND ENGINEERING. A GENERAL MANAGER - NUCLEAR ASSURANCE AND REGULATION HAS BEEN DESIGNATED TO PROVIDE MANAGEMENT WITH AN INDEPENDENT BASIS FOR EVALUATING THE EFFECTIVENESS OF NUCLEAR SAFETY AND QUALITY PROGRAMS. STAFFING OF THIS ORGANIZATION IS TO BE COMPLETED BY JANUARY 1984.

AS PART OF PSE&G'S PLAN TO CONSOLIDATE FUNCTIONS AND RESOURCES FOR ITS OPERATING NUCLEAR PLANTS INTO ONE ORGANIZATION AT THE SITE, THE RESPONSIBILITY FOR THE OPERATIONAL QA PROGRAM WAS TRANSFERRED TO THE NUCLEAR DEPARTMENT IN EARLY JANUARY 1983. DURING EARLIER PRESENTATIONS TO THE COMMISSION, THERE APPEARED TO BE SOME MISUNDERSTANDING AS TO WORK LOCATION FOR OPERATIONAL QA PERSONNEL PRIOR TO THE 1983 REORGANIZATION. WE HAVE ALWAYS HAD OPPERATIONAL QA PERSONNEL ASSIGNED TO THE SALEM SITE WITH PORTIONS OF THEIR MANAGEMENT LOCATED IN NEWARK. THE REORGANIZATION

RESULTS IN ALL OPERATIONAL QA PEOPLE INCLUDING THEIR MANAGEMENT BEING LOCATED AT THE SITE. IN ADDITION, THE DECISION TO REORGANIZE THE QA EFFORT AS PRESENTLY CONSTITUTED WAS MADE IN DECEMBER 1982, NOT AT THE TIME THE NUCLEAR DEPARTMENT REORGANIZATION COMMENCED IN OCTOBER 1981. AN INDEPENDENT ASSESSMENT OF THIS NEW ORGANIZATION'S PROGRAM IS NOW UNDERWAY. THIS ASSESSMENT BY AN OUTSIDE CONSULTANT WILL INCLUDE A REVIEW OF (1) THE QA ORGANIZATIONAL STRUCTURE AND STAFFING, (2) THE QA PROGRAM CONTENT AND PROCEDURES, AND (3) THE EFFECTIVENESS OF IMPLEMENTATION OF THOSE PROGRAMS AND PROCEDURES. THE FINDINGS AND RECOMMENDATIONS RESULTING FROM THIS ASSESSMENT WILL BE EVALUATED BY PSE&G AND AN ACTION PLAN WILL BE PREPARED TO IMPROVE THE NUCLEAR OPERATIONS QA PERFORMANCE, AS NECESSARY.

IN-HOUSE ENGINEERING

PSE&G COMPANY HAS TRADITIONALLY PERFORMED ITS OWN ENGINEERING AND DESIGN FOR ALL ITS MAJOR ELECTRIC PRODUCTION UNITS INCLUDING SALEM GENERATING STATION. THIS ALLOWED A CAREFUL DESIGN DEVELOPMENT THAT WAS ORIENTED TOWARD SAFE, EFFICIENT, OPERATIONS-ORIENTED PLANT DESIGN. THIS IN-HOUSE ENGINEERING CAPABILITY PROVIDED THE CORE FOR AN EXPERIENCED ON-SITE TECHNICAL SUPPORT TEAM TO DEAL WITH ISSUES AND PROBLEMS THAT ARISE DURING THE OPERATING LIFE OF THE PLANT. THE DEPENDENCE ON OUTSIDE ORGANIZATION IS ALSO MINIMIZED BY HAVING AN EXPERIENCED IN-HOUSE ENGINEERING DEPARTMENT.

OVERALL PLANT DESIGN

THE DESIGN PHILOSOPHY AT SALEM FOCUSED ON NUCLEAR SAFETY, AS WELL AS EFFICIENCY. ALTHOUGH SALEM IS A TWO-UNIT PLANT, THE USE OF SHARED SYSTEMS BETWEEN THE TWO UNITS IS MINIMIZED, WITH NO SHARING OF SAFETY SYSTEMS. THE DESIGN (EQUIPMENT LAYOUT) RECOGNIZED THE NEED FOR FUTURE EXPANSION AND/OR IMPROVEMENTS. EQUIPMENT REMOVAL AND SPECIAL MAINTENANCE REQUIREMENTS WERE IDENTIFIED AND THESE AREAS CLEARLY RESERVED FOR SUCH USE.

THE PLANT INCORPORATED A CAREFULLY DEVELOPED SHIELDING DESIGN WHICH PROVIDED FOR SEPARATION OF EQUIPMENT, LABYRINTH ENTRANCES TO COMPARTMENTS, REACH RODS, AND OTHER FEATURES TO MINIMIZE RADIATION EXPOSURE DURING OPERATION AND MAINTENANCE ACTIVITIES.

SPENT FUEL POOL RERACKING

IN 1975, PSE&G RECOGNIZED THAT THE REPROCESSING OF SPENT NUCLEAR FUEL WOULD NOT BE A VIABLE OPTION. AT THAT TIME, AN INVESTIGATION

WAS INITIATED INTO THE EXTENT TO WHICH THE SALEM SPENT FUEL POOLS COULD BE RERACKED TO EXPAND STORAGE CAPACITY. A DECISION WAS REACHED TO PROCEED WITH A "POISONED" RACK DESIGN THAT WOULD PROVIDE A MAXIMUM STORAGE CAPACITY IN THE EXISTING POOLS. THIS RERACKING HAS EXTENDED ON-SITE STORAGE CAPACITY UNTIL THE LATE 1990'S. THIS TOOK ADVANTAGE OF THE LATEST TECHNOLOGY AND WAS ACCOMPLISHED WELL BEFORE SALEM REACHED A CRITICAL STAGE OF STORAGE CAPACITY.

COMPUTER AIDED DRAFTING

SEVERAL YEARS AGO, PUBLIC SERVICE EXPANDED ITS ENGINEERING DESIGN CAPABILITIES WITH THE INSTALLATION OF COMPUTER GRAPHICS EQUIPMENT WHICH AUTOMATICALLY PREPARED WIRING DIAGRAMS AND STANDARDIZED DESIGN OF SUBSTATIONS. FURTHER ENHANCEMENTS RESULTED IN COMPUTER AIDED DRAFTING TECHNIQUES FOR PREPARATION AND UPDATING OF DESIGN DRAWINGS.

IN CONJUNCTION WITH THE NUCLEAR ENGINEERING ORGANIZATION'S MOVE TO ARTIFICIAL ISLAND, A COMPUTER GRAPHICS SYSTEM WAS INSTALLED AT THE SITE OFFICE FACILITIES IN JANUARY, 1983. THIS EQUIPMENT WILL ENHANCE OUR ABILITY TO PROVIDE UPDATED KEY DRAWINGS TO OPERATIONS PERSONNEL IN A TIMELY FASHION.

A COMPUTERIZED INTERFERENCE ELIMINATION PROGRAM IS ALSO UTILIZED TO MINIMIZE SPATIAL CONFLICTS DURING THE DESIGN OF PLANT MODIFICATIONS.

CONTROL ROOM

WHEN PSE&G MADE THE DECISION TO BUILD ITS FIRST NUCLEAR STATION, STUDIES WERE MADE OF CONTROL ROOM DESIGNS WHICH WOULD INCORPORATE

A DESIGN CONCEPT PSE&G HAD DEVELOPED FOR AND USED IN FOSSIL UNITS. THIS CONCEPT WAS BASED UPON USE OF A COMPARATIVELY SMALL, COCKPIT TYPE, CONTROL CONSOLE WHERE ALL ESSENTIAL CONTROLS ARE WITHIN EASY REACH OF THE OPERATOR.

THE OBJECTIVES WERE TO MINIMIZE THE AREA OVER WHICH THE OPERATOR HAD TO MAINTAIN SURVEILLANCE AND CONTROL, TO IMPROVE THE FORM OF INFORMATION PROVIDED TO THE OPERATOR AND TO INCREASE THE RELIABILITY AND SAFETY OF OPERATIONS.

PSE&G FIRST PURSUED THE PROPOSED CONTROL ROOM DESIGN WITH THE NSSS MANUFACTURER TO ENSURE THAT THE PROPOSED DESIGN WOULD NOT VIOLATE ANY OF HIS DESIGN CRITERIA AND THAT A PROPER DESIGN INTERFACE COULD BE DEVELOPED BETWEEN THE LOW VOLTAGE PUSHBUTTON CONTROL SYSTEM AND THE VENDOR'S EQUIPMENT.

PSE&G ALSO PROPOSED THE DESIGN TO THE REGULATORY STAFF AND AN EXTENSIVE LICENSING REVIEW TOOK PLACE TO ASSURE THAT THE DESIGN MET ALL APPLICABLE REGULATORY REQUIREMENTS.

BOTH THE STAFF LICENSING REVIEW AND THE VENDOR DESIGN REVIEW ARE NOTED BECAUSE, AT THAT TIME, NEITHER WAS SPECIALLY RECEPTIVE - NOT BECAUSE THEY WERE NOT INTERESTED IN THE CONCEPT OR THOUGHT IT WAS UNWORTHY OF CONSIDERATION. RATHER IT WAS BECAUSE THERE ALREADY WERE APPROVED STANDARD DESIGNS AND THE SALEM CONCEPT REPRESENTED EXTRA EFFORT. PSE&G HAD INITIATED THE DESIGN CONCEPT, BELIEVED THAT IT REPRESENTED AN ENHANCEMENT TO THE SAFETY AND RELIABILITY OF OPERATIONS, AND THEREFORE AGGRESSIVELY PURSUED THE DESIGN WITH

BOTH THE VENDOR AND THE REGULATORY STAFF. PSE&G COMPLETED THE DETAILED DESIGN, WORKED WITH VENDORS TO ENSURE THAT QUALIFICATION REQUIREMENTS WERE MET AND PARTICIPATED IN THE SHOP TESTING OF THE EQUIPMENT AS WELL AS THE STARTUP TESTING IN THE FIELD.

THE CONTROL ROOM PROVIDES THE NECESSARY CONTROLS AND INDICATION TO START, OPERATE AND SHUTDOWN THE UNIT WITH SUFFICIENT REDUNDANT INFORMATION DISPLAYS AND ALARM INDICATIONS TO ENSURE SAFE AND RELIABLE OPERATION UNDER NORMAL AND ABNORMAL CONDITIONS.

THE MOST IMPORTANT UNIT CONTROLS ARE LOCATED ON THE CONTROL CONSOLE, WHICH IS A FREE-STANDING, HORSESHOE-SHAPED DESIGN. THE FRONT HORIZONTAL PORTION CONTAINS THE MOST FREQUENTLY USED OPERATING CONTROLS, WHILE THE REAR VERTICAL PORTION CONTAINS LESS FREQUENTLY USED CONTROLS AND INDICATION. CONTROLS AND INDICATORS ARE FUNCTIOINALLY GROUPED ON A SYSTEM BASIS TO FACILITATE SAFE, RELIABLE OPERATION OF THE UNIT DURING TRANSIENTS AS WELL AS NORMAL OPERATION. THOSE SYSTEMS REQUIRING MORE FREQUENT OPERATOR ATTENTION ARE LOCATED IN THE CENTRAL AREA, WHILE LESS FREQUENTLY USED CONTROLS ARE LOCATED ON EITHER SIDE.

THE CONSOLE INSTRUMENTS CONSIST OF PLUG-IN, BACK LIGHTED PUSHBUTTON STATIONS AND VERTICAL SCALE INDICATORS. OPERATOR ACTION CONSISTS OF THE INITIATION OF A MOMENTARY PUSHBUTTON. THE LIGHTS IN THE BUTTONS ARE USED FOR STATUS INFORMATION AND ALARM INDICATION.

A FULL SIZE MODEL WAS BUILT IN ORDER TO EVALUATE THE DESIGN AND ARRANGEMENT OF THE CONTROL ROOM EQUIPMENT BY BOTH ENGINEERING AND PLANT OPERATIONS PERSONNEL.

A COMPREHENSIVE STATUS PANEL, EMPLOYING THE SAME TYPE OF ILLUMINATED WINDOWS AS THE CONSOLE, INDICATES THE CONDITION OF TRIP CHANNELS AND ALARMS. BY MEANS OF A "MIMIC BUS" ARRANGEMENT, THE INTERACTION OF TRIP CONDITIONS AND PERMISSIVES CAN BE QUICKLY ANALYZED. DIESEL GENERATOR AUTOMATIC LOAD SEQUENCING, CRITICAL VALVE STATUS, AND OTHER IMPORTANT INFORMATION IS ALSO CLEARLY DISPLAYED.

A COMPUTER IS EMPLOYED TO ASSIST THE OPERATOR AND TO MONITOR THE UNIT. SELECTED PARAMETER TRENDS CAN BE RECORDED WHILE ALARM CONDITIONS ARE INDICATED TO THE OPERATOR. THE COMPUTER OUTPUT CONSISTS OF A VIDEO DISPLAY MOUNTED ON THE CONSOLE AND LOGGING TYPEWRITERS LOCATED AT THE COMPUTER OUTPUT TERMINAL ON THE OTHER SIDE OF THE ROOM.

RELIABILITY AND EASE OF SERVICE HAVE BEEN DESIGNED INTO THE CONTROL ROOM. THE MAJORITY OF THE CONSOLE INSTRUMENTS ARE PLUG-IN MODULES WHICH CAN READILY BE REMOVED AND REPLACED FROM THE FRONT OF THE CONSOLE.

IN MARCH 1977, AN EPRI REPORT NO. NP-309, "HUMAN FACTORS REVIEW OF NUCLEAR POWER PLANT CONTROL ROOM DESIGN" WAS PUBLISHED. ITS PURPOSE WAS TO DEVELOP A PROGRAM TO IMPROVE THE HUMAN ENGINEERING FOR POWER PLANT CONTROL ROOMS AND THEREBY PROMOTE MORE EFFECTIVE AND RELIABLE OPERATOR PERFORMANCE IN NUCLEAR PLANTS. MANY OF THE REPORT'S RECOMMENDATIONS HAD ALREADY BEEN INCLUDED IN THE DESIGN OF THE SALEM NUCLEAR GENERATING STATION'S CONTROL ROOMS.

AS PART OF THE LICENSING OF UNIT 2 IN 1979, A HUMAN FACTORS REVIEW OF THE CONTROL ROOM WAS CONDUCTED BY AN NRC CONTRACTOR. A FEW CHANGES WERE RECOMMENDED, BUT OVERALL, THE STUDY CONCLUDED THAT THE CONTROL ROOM DESIGN WAS AMONG THE BEST.

FIRE RETARDANT CABLE

IN 1966, PSE&G INITIATED AN EXTENSIVE TESTING PROGRAM TO ANALYZE THE CHARACTERISTICS OF THE VARIOUS COMMERCIALLY AVAILABLE CABLE INSULATIONS. FIRE PERFORMANCE WAS ONE OF SEVERAL PARAMETERS CONSIDERED IN THE TEST PROGRAM, AND WE PIONEERED THE DEVELOPMENT OF A SCREENING TEST WHICH WAS LATER INSTRUMENTAL IN DEVELOPING THE INDUSTRY STANDARD. BASED ON THE RESULTS OF THESE TESTS, AN ETHYLENE PROPYLENE RUBBER (EPR) WITH A NEOPRENE JACKET WAS CHOSEN AS THE INSULATION SYSTEM WITH THE BEST BALANCE OF PROPERTIES.

ALL CABLES UTILIZED AT SALEM HAVE FIRE RETARDANT INSULATION AND MEET THE REQUIREMENTS OF IEEE STANDARD 383. IN ADDITION TO VERTICAL SCREENING TESTS, MANY FULL-SCALE FIRE TESTS WERE PERFORMED TO ESTABLISH THE SALEM CABLE TRAY SPACINGS, TWO FULLY LOADED CABLE TRAYS, STACKED HORIZONTALLY AND SEPARATED IN ACCORDANCE WITH THE MINIMUM ALLOWABLE SPACINGS, WERE SUBJECTED TO A 100,000 BTU PER HOUR BURNER UNDER THE BOTTOM TRAY FOR TWENTY MINUTES WITH EXCELLENT RESULTS.

DURING THE COURSE OF THE FIRE HAZARDS ANALYSIS CONDUCTED AT SALEM, OUR FIRE PROTECTION CONSULTANT IDENTIFIED AN "S" SHAPE CABLE TRAY CONFIGURATION AS THE MOST CRITICAL ARRANGEMENT WITH RESPECT TO FIRE PROPAGATION. THIS TRAY ARRANGEMENT WAS REPRODUCED IN AN OUTSIDE TEST FACILITY AND FIRE TESTS CONDUCTED TO VERIFY THE DESIGN.

IN ADDITION TO THE EPR - NEOPRENE INSULATION, TEFLON "FEP" INSULATION IS ALSO USED IN THE CONTROL ROOM AT SALEM. THIS CABLE WAS SELECTED FOR ITS SMALL DIAMETER, SUPERIOR FLAME RESISTANCE, AND COMPATIBILITY WITH THE COMPACT CONTROL CONSOLE INSTRUMENTS. TEFLON "FEP IS INHERENTLY A NON-COMBUSTIBLE MATERIAL.

TMI TASK FORCE

AFTER THE ACCIDENT AT THREE MILE ISLAND, PSE&G WAS ONE OF THE FIRST UTILITIES TO ASSIGN A FULL TIME TASK FORCE TO REVIEW THE CAUSES OF THE ACCIDENT AND THEIR POTENTIAL APPLICABILITY TO THE DESIGN AND OPERATION AT SALEM. ALTHOUGH MANY OF OUR FINDINGS WERE ALSO IDENTIFIED BY THE NRC'S INVESTIGATION, THIS REVIEW ALSO RESULTED IN CHANGES AT SALEM WHICH WERE NOT ADDRESSED BY THE NRC'S GENERIC REVIEW.

PROJECT MANAGEMENT

IN 1981, PSE&G ENGAGED AN OUTSIDE CONSULTANT TO CONDUCT AN INDEPENDENT AUDIT TO ASSESS THE EFFECTIVENESS OF THE MANAGEMENT OF ALL MAJOR ASPECTS OF THE HOPE CREEK PROJECT, THE BOILING WATER REACTOR BEING CONSTRUCTED ADJACENT TO SALEM. INCLUDED IN THE ASSESSMENT WERE PROJECT MANAGEMENT, CONSTRUCTION, ENGINEERING, QUALITY ASSURANCE AND COST/SCHEDULE. THE CONCLUSIONS REGARDING OVERALL MANAGEMENT WERE VERY FAVORABLE. SPECIFICALLY, THE CONSULTANT CONCLUDED THAT (1) THERE WAS A PSE&G COMMITMENT TO IDENTIFY AND FACE THE REALITIES OF THE PROJECT IN LIGHT OF FINANCIAL AND REGULATORY UNCERTAINTIES, (2) THERE WAS GOOD VISIBILITY OVER THE PROJECT AT THE MOST SENIOR LEVELS OF PSE&G MANAGEMENT, (3) PSE&G HAD TAKEN A PRO-ACTIVE APPROACH TO SUPPORTING QUALITY ASSURANCE. THIS IS INDICATIVE OF A CAPABLE CORPORATE MANAGEMENT RATHER THAN WHAT HAS

BEEN SOMETIMES REFERRED TO IN RECENT WEEKS AS BAD MANAGEMENT.

AS RECENT AS EARLY THIS MONTH WHEN NRC CONDUCTED ITS CASELOAD FORECAST AT HOPE CREEK, PSE&G WAS INFORMED THAT THE PROJECT APPEARED TO BE ONE OF THE BEST MANAGED SITES VISITED.

TRAINING

PSE&G HAS ALWAYS RECOGNIZED THE IMPORTANCE OF AND IS COMMITTED TO A VIGOROUS TRAINING PROGRAM AS EVIDENCED BY THE VARIETY OF COURSES PRESENTED TO ITS EMPLOYEES SUCH AS: VARIOUS TYPES OF SUPERVISORY SKILLS PROGRAMS, APPRENTICE AND ADVANCED TRAINING FOR TECHNICAL DISCIPLINES WITHIN THE GENERATING STATIONS, AND MANAGEMENT DEVELOPMENT PROGRAMS CONDUCTED THROUGH RUTGERS UNIVERSITY, HARVARD SCHOOL OF BUSINESS, UNIVERSITY OF MICHIGAN, AND THE AMERICAN MANAGEMENT ASSOCIATION. CONTINUED RECOGNITION BY THE COMPANY OF THE VALUE OF TRAINING, COUPLED WITH OUR OPERATIONAL EXPERIENCE AND INCREASED TRAINING REQUIREMENTS, LED TO A FORMAL REVIEW OF OUR TRAINING EFFORTS AND THE DEVELOPMENT OF A MASTER PLAN IN 1979. THE PLAN ESTABLISHED A NUCLEAR TRAINING CENTER TO BE LOCATED WITHIN 10 MILES OF SALEM GENERATING STATION WHICH ULTIMATELY BEGAN OPERATION IN AUGUST OF 1982.

THE NUCLEAR TRAINING CENTER IS STAFFED BY PSE&G EMPLOYEES AND CONSULTANTS WITH SPECIAL BACKGROUNDS IN THE FIELDS OF NUCLEAR ENERGY, POWER PLANT OPERATIONS, VOCATIONAL TRAINING, EDUCATION, AND MANAGEMENT SKILLS. IT IS AMONG THE FIRST PRIVATELY ESTABLISHED NUCLEAR TRAINING OPERATIONS OF ITS KIND AND SCOPE IN THE NATION. THE CENTER WILL HAVE A STAFF OF APPROXIMATELY 100 QUALIFIED PERSONNEL TO SUPPORT THE FOLLOWING FIVE (5) MAJOR DEPARTMENTS: PROGRAM AND PROFESSIONAL DEVELOPMENT, TECHNICAL TRAINING, SALEM NUCLEAR OPERATIONS TRAINING, HOPE CREEK NUCLEAR OPERATIONS TRAINING, AND SAFETY AND SKILLS TRAINING. THE PRIMARY OBJECTIVES OF THE NUCLEAR TRAINING CENTER ARE TO INSTRUCT, DEVELOP AND MAINTAIN EMPLOYEES'

SUPERIOR SKILLS IN THE SAFE, EFFICIENT OPERATION OF OUR NUCLEAR UNITS AS WELL AS, TO DEVELOP AND MAINTAIN A HIGHLY QUALIFIED TECHNICAL STAFF IN THE SUPPORT ORGANIZATIONS WITHIN THE NUCLEAR DEPARTMENT. ALL COURSES OF TRAINING MEET OR EXCEED THE REQUIREMENTS OF PSE&G'S JOB SPECIFICATIONS, NRC CRITERION AND THE GUIDELINES OF THE INDUSTRY'S OWN INSTITUTE OF NUCLEAR POWER OPERATIONS. MANY OF THE COURSES OFFERED BY THE NUCLEAR TRAINING CENTER ARE APPROVED FOR COLLEGE CREDIT. TO DATE, THIRTY (30) COURSES HAVE BEEN EVALUATED BY THE REGIONALLY ACCREDITED NEW YORK STATE PROGRAM OF NON-COLLEGIATE SPONSORED EDUCATION. CREDIT RECOMMENDATIONS HAVE BEEN GRANTED FOR THESE COURSES. ADDITIONAL COURSES ARE EXPECTED TO BE REVIEWED IN MAY AND NOVEMBER OF 1983. PSE&G HAS APPLIED TO INPO TO HAVE ITS TRAINING PROGRAMS REVIEWED FOR ACCREDITATION. THE INPO ACCREDITATION TEAM HAS COMPLETED ITS INITIAL REVIEW AND TRAINING CENTER VISIT WITH RESULTS EXPECTED IN AUGUST. PSE&G IS ONE OF THE FIRST UTILITIES TO BE INVOLVED WITH THE INPO ACCREDITATION PROGRAM.

IN AN EFFORT TO DEVELOP AND MAINTAIN A HIGH CALIBER OF SUPERVISORY PERSONNEL AT OUR NUCLEAR GENERATING STATIONS, WE HAVE DEVELOPED A TECHNICAL SKILLS SUPERVISORY PROGRAM. TRAINING FOR FIRST LEVEL SUPERVISORS AS WELL AS FOR NEWLY HIRED SUPERVISORS WILL BEGIN IN SEPTEMBER 1983. A NEEDS ANALYSIS INCLUDING INTERVIEWS HAS BEEN COMPLETED AND INSTRUCTIONAL OBJECTIVES ARE BEING DEVELOPED AT THIS TIME. THE BASIC FOUNDATION OF THIS FIRST LEVEL TRAINING WILL CENTER AROUND TECHNICAL SKILLS, SUPERVISORY SKILLS, NUCLEAR ETHICS AND PRACTICES, ADMINISTRATIVE PROCEDURES AND PROGRAMS, AND QUALITY ASSURANCE. SIMILAR PROGRAMS ADDRESSING TRAINING FOR SENIOR SUPERVISORY AND MANAGEMENT PERSONNEL WILL BE DEVELOPED

BY OCTOBER 1983. A PROGRAM ADDRESSING THE ISSUE OF CONTINUED PERIODIC OR REQUALIFICATION TRAINING FOR THESE SUPERVISORY AND MANAGEMENT PERSONNEL WILL BE DEVELOPED IN THE SPRING OF 1984. TECHNICAL TRAINING PROGRAMS TO SUPPORT THE PROFESSIONAL STAFF IN NON-STATION POSITIONS WITHIN THE NUCLEAR DEPARTMENT WILL BE ADDRESSED IN THE SPRING OF 1984.

THE NUCLEAR TRAINING CENTER WILL CONTAIN TWO SIMULATORS - ONE DUPLICATING THE SALEM STATION CONTROL ROOMS AND ONE FOR THE HOPE CREEK STATION CONTROL ROOM. THE SIMULATORS WILL BE UTILIZED TO PROVIDE TRAINING FOR NEW OPERATORS, REQUALIFICATION TRAINING FOR LICENSED AND EXPERIENCED PERSONNEL, NRC LICENSING EXAMINATIONS, AND FOR NON-STATION TECHNICAL AND MANAGEMENT PERSONNEL. THE SALEM SIMULATOR HAS BEEN INSTALLED AND IS PRESENTLY UNDERGOING QUALIFICATION AND ACCEPTANCE TESTING. THE SIMULATOR WILL BE AVAILABLE TO SUPPORT OPERATOR TRAINING AND LICENSING EXAMINATIONS BY JULY 1983. THE HOPE CREEK SIMULATOR IS EXPECTED TO BE DELIVERED AND OPERATIONAL IN 1984.

AN AGGRESSIVE TRAINING APPROACH FOR NEW OPERATORS WILL RESULT IN APPROXIMATELY 50 PERSONS QUALIFYING FOR THE INITIAL COLD LICENSE EXAMINATIONS FOR HOPE CREEK STATION. THIS EFFORT DIFFERS FROM PAST PRACTICES IN THE INDUSTRY FOR NEW UNITS WHERE MINIMAL COLD LICENSES ARE ACHIEVED WITH THE MAJORITY OF OPERATORS BEING LICENSED UNDER THE HOT LICENSE PROGRAM. IT IS EXPECTED THIS PROGRAM WILL YIELD A MORE HIGHLY QUALIFIED AND KNOWLEDGEABLE STAFF OF LICENSED PERSONNEL.

OUR GOAL OF "COMPETENCE AND SAFETY IN NUCLEAR ENERGY THROUGH TRAINING EXCELLENCE" WILL RESULT IN A WELL TRAINED AND DEVELOPED TECHNICAL, SUPERVISORY AND MANAGEMENT STAFF WITHIN THE NUCLEAR DEPARTMENT.

INPO

PSE&G WAS NOT ONLY INVOLVED IN THE FORMATION OF INPO, BUT CONTINUES TO BE AN ACTIVE PARTICIPANT WITH RESPECT TO ITS ORGANIZATION AND PROGRAMS. OUR SENIOR VICE PRESIDENT - ENERGY SUPPLY AND ENGINEERING, MR. ECKERT, WAS A MEMBER OF THE ORIGINAL TASK FORCE ESTABLISHING THE FRAMEWORK FOR INPO. HE ALSO SERVED AS INPO'S FIRST CHAIRMAN FOR THE EVALUATION AND ASSISTANCE DIVISION INDUSTRY REVIEW GROUP (IRG). PSE&G'S VICE PRESIDENT - ENGINEERING AND CONSTRUCTION, MR. MARTIN, WAS AN ORIGINAL MEMBER OF THE AD HOC COMMITTEE ESTABLISHING THE CONSTRUCTION EVALUATION PROGRAM. PRESENTLY HE IS A MEMBER OF THE CONSTRUCTION PROJECTS EVALUATION DIVISION INDUSTRIAL REVIEW GROUP.

FOR THE PAST 2½ YEARS, WE HAVE ASSIGNED MANAGEMENT PERSONS TO INPO TO PARTICIPATE ON THEIR PERFORMANCE EVALUATION TEAMS AND WE EXPECT TO CONTINUE WITH SIMILAR ASSIGNMENTS IN THE FUTURE. THEIR INVOLVEMENT TO DATE, WITH 18 PLANT EVALUATIONS, BRINGS NEW KNOWLEDGE AND EXPERIENCES TO PSE&G. WE WILL CONTINUE TO PARTICIPATE IN THE MANY MANAGEMENT AND TECHNICAL WORKSHOPS SPONSORED BY INPO. RECENTLY WE HOSTED A REGIONAL WORKSHOP FOR THE NUCLEAR PLANT RELIABILITY DATA SYSTEM (NPRDS) AT OUR NUCLEAR TRAINING CENTER.

TO DATE, INPO HAS CONDUCTED TWO PERFORMANCE EVALUATIONS FOR SALEM GENERATING STATION. ADDITIONALLY, OUR HOPE CREEK CONSTRUCTION PROJECT SERVED AS A PILOT FOR INPO'S NEWLY ESTABLISHED CONSTRUCTION EVALUATION PROGRAM. THESE EVALUATIONS HAVE RESULTED IN SOME NEW AND IMPROVED PROGRAMS AS WE CONTINUE TO STRIVE FOR OVERALL EXCELLENCE IN OUR NUCLEAR EFFORTS. RECENTLY, WE HAVE ARRANGED WITH INPO TO HAVE KEY MANAGEMENT PERSONNEL ATTEND SELECTED EVALUATION TEAM

VISITS AT OTHER SITES IN ORDER TO STRENGTHEN OUR STAFF'S OVERALL KNOWLEDGE AND EXPERIENCE. OUR PARTICIPATION IN THE VARIOUS INPO ACTIVITIES HAS AND WILL CONTINUE TO MANIFEST ITSELF IN NEW AND IMPROVED PROGRAMS AND GOOD PRACTICES THAT ULTIMATELY ENHANCE OUR NUCLEAR EFFORTS.

UNIT AVAILABILITY:

DURING THE YEAR OF 1982, SALEM GENERATING STATION UNITS 1 AND 2 ACHIEVED AN OUTSTANDING RECORD OF ELECTRICAL PRODUCTION. BETWEEN THE TWO REFUELING OUTAGES ON UNIT 1, THE PLANT WAS AVAILABLE AN AVERAGE OF 97.85% OF THE PERIOD AND RUNNING AT AN AVERAGE CAPACITY OF 88.3%. UNIT TWO WAS SECOND IN THE NATION IN POWER PRODUCTION FOR 1982. THE UNIT WAS AVAILABLE FOR 97.3% OF THE CALENDAR YEAR WITH AN AVERAGE CAPACITY OF 81.7% DURING ITS FIRST FUEL CYCLE. PARTICULARLY NOTEWORTHY IS THE 100% AVAILABILITY AND A CAPACITY FACTOR OF 89.4% OF UNIT 1 AND THE 100% AVAILABILITY AND 98% CAPACITY FACTOR FOR UNIT 2 DURING A SIX WEEK LABOR STRIKE WHEN THE PLANT WAS OPERATED BY MANAGEMENT PERSONNEL.

STEAM GENERATOR LEVEL CONTROLS:

DUE TO THE MORE RESTRICTIVE SETPOINT ESTABLISHED ON THE STEAM GENERATOR LOW/LOW LEVEL TRIP IN 1979, THE NUMBER OF REACTOR TRIPS DRAMATICALLY INCREASED DUE TO DIFFICULTY IN MAINTAINING CONTROL OF LEVELS AT LOW POWER IN THE MANUAL MODE, I.E., STARTUP. SEVERAL ENGINEERING STUDIES WERE PERFORMED ON THE SYSTEM AND THE FOLLOWING CORRECTIVE ACTIONS WERE MADE ON UNIT 1 AND ARE BEING COMPLETED DURING THE PRESENT FIRST REFUELING OUTAGE ON UNIT 2. THESE CHANGES REQUIRED EXTENSIVE ENGINEERING EFFORT AND A UNIT OUTAGE FOR INSTALLATION.

SIMULTANEOUS CONTROL OF A FEEDWATER CONTROL VALVE AND ITS FEEDWATER BYPASS CONTROL VALVE HAS BEEN PROVIDED ON THE CONTROL CONSOLES.

FULL SCALE INDICATION OF FEEDWATER AND STEAM FLOW AT LOW POWER AND FULL RANGE OF POSITION INDICATION OF THE FEEDWATER BYPASS CONTROL VALVE HAVE BEEN PROVIDED ON THE CONTROL CONSOLES.

ENVIRONMENTALLY QUALIFIED LEVEL TRANSMITTERS HAVE BEEN INSTALLED.

A LICENSE CHANGE REQUEST IS BEING SUBMITTED TO THE NUCLEAR REGULATORY COMMISSION TO TAKE CREDIT FOR THE ABOVE IMPROVEMENTS. APPROVAL OF THIS REQUEST WILL ALLOW THE LOW/LOW LEVEL TRIP SETPOINT TO BE CHANGED TO A LESS RESTRICTIVE VALUE.

IN ADDITION, STRAINERS ON THE CONDENSATE PUMPS WERE REPLACED WITH A LARGER MESH SCREEN TO PRECLUDE THE HIGH INCIDENCE OF LOW SUCTION

PRESSURE TO THE FEED PUMPS. THE LARGER MESH STRAINERS WERE PROVEN ACCEPTABLE FOR USE AFTER AN EXTENDED PERIOD OF OPERATION WHICH ASSURED A CLEAN PIPING SYSTEM.

ALSO, PIPING MODIFICATIONS ARE BEING MADE ON UNIT 2 TO IMPROVE HYDRAULIC STABILITY OF THE CONDENSATE AND HEATER DRAIN SYSTEMS. WE HAVE EXPERIENCED FEED PUMP TRIPS DUE TO HYDRAULIC INSTABILITY IN THE PAST. THE EFFECT OF THESE MODIFICATIONS WILL BE EVALUATED DURING OPERATION. ENGINEERING STUDIES AND ADDITIONAL MODIFICATIONS WILL BE MADE IF DEEMED NECESSARY.

IT IS FELT THAT COMPLETION OF THE ABOVE ACTIONS WILL SIGNIFICANTLY REDUCE THE NUMBER OF STEAM GENERATOR LOW/LOW LEVELS TRIPS EXPERIENCED AT THE STATION.

STEAM GENERATOR CHEMISTY:

DURING THE FIRST CYCLE OF POWER OPERATIONS, SALEM UNIT 1 (LIKE OTHER PRESSURIZED WATER REACTOR FACILITIES) EXPERIENCED THE ONSET OF STEAM GENERATOR TUBE DENTING. THIS WAS PRIMARILY THE RESULT OF CONDENSER TUBE LEAKS ALLOWING THE FORWARDING OF CONTAMINANTS TO THE STEAM GENERATORS AND CAUSING TUBE-TO-TUBE SUPPORT PLATE CORROSION (DENTING).

PRIOR TO AND DURING THE COURSE OF SALEM UNIT 1 FIRST REFUELING OUTAGE AND THE SUBSEQUENT CYCLE 1 POWER OPERATION, PSE&G PLANNED AND INITIATED A NUMBER OF CORRECTIVE ACTIONS TO FURTHER ARREST THE PROGRESSION OF THE DENTING PROCESS. BRIEFLY, THESE CORRECTIVE ACTIONS CAN BE SUMMARIZED AS FOLLOWS:

1. THE RETROFIT INSTALLATION OF A FULL-FLOW CONDENSATE POLISHING UNIT WITH THE ADDITIONAL CAPABILITY OF SECONDARY SIDE CLEANUP DURING STARTUP.

2. RETUBED THE MAIN TURBINE CONDENSER WITH A NEW TUBE MATERIAL.

3. REDUCE AIR IN-LEAKAGE (OXYGEN) THROUGH MAINTENANCE CORRECTIVE ACTIONS AND IMPROVED OXYGEN MONITORING.

4. EXPANDED CHEMICAL LABORATORY SAMPLING AND ANALYSIS.

ADDITIONALLY, PSE&G STRENGTHENED THE PLANT CHEMISTRY ORGANIZATION BY SEPARATING RADIATION PROTECTION FUNCTIONS FROM CHEMISTRY FUNCTIONS.

THE ADDITION OF A DEDICATED DEPARTMENT HEAD AND STAFF ENGINEERS FURTHER STRENGTHENED THE CHEMISTRY ORGANIZATION. PSE&G SELF-IMPOSED LIMITING CONDITIONS OF OPERATION SHOULD SECONDARY PLANT CHEMISTRY PARAMETERS EXCEED SPECIFIED VALUES. PSE&G OPERATES WITH SECONDARY CHEMISTRY LIMITS THAT ARE TYPICALLY 50% MORE RESTRICTIVE THAN THOSE RECOMMENDED BY EPRI OR WESTINGHOUSE. PSE&G PROVIDED STATE-OF-THE-ART ANALYTICAL INSTRUMENTATION FOR IMPROVED CHEMICAL MONITORING.

SINCE CYCLE ONE OPERATION IN 1979 THROUGH TODAY, PSE&G HAS PREVENTED THE FURTHER PROGRESSION OF STEAM GENERATOR TUBE DENTING. SALEM UNIT 2 HAS EXPERIENCED NO DENTING SINCE STARTUP IN 1981 BASED UPON THE MOST RECENT EDDY CURRENT EXAMINATIONS CONCLUDED DURING THE PRESENT UNIT 2 OUTAGE.

SALEM STATION ENJOYS A ENVIABLE POSITION IN THE NUCLEAR INDUSTRY WITH EXCELLENT STEAM GENERATOR CHEMISTRY. AN EPRI STUDY CONDUCTED IN 1981 DREW THE CONCLUSION THAT THE DENTING MITIGATION PROGRAM IN PROGRESS AT SALEM UNIT 1 IS SUCCESSFUL. EDDY CURRENT RESULTS AND VERY LOW CORROSION RATES ARE REFLECTIVE OF A SOUND SECONDARY CHEMISTRY PROGRAM. FURTHERMORE, IN 1982, WESTINGHOUSE CONDUCTED A CONTINUOUS, SIX WEEK ON-LINE MONITORING OF STEAM GENERATOR CHEMISTRY CONDITIONS UTILIZING THEIR OWN INSTRUMENTATION AND PERSONNEL. WESTINGHOUSE CONCLUDED, FOLLOWING THE PROGRAM, THAT TO THE BEST OF THEIR KNOWLEDGE SALEM UNIT 1 HAS THE BEST STEAM GENERATOR CHEMISTRY OF ANY WESTINGHOUSE PRESSURIZED WATER REACTOR IN THE WORLD.

BY INVITATION, PSE&G HAS BEEN REQUESTED TO REPORT THESE ACCOMPLISH-MENTS AT VARIOUS RECOGNIZED CONFERENCES AND MEETINGS SUCH AS THE

THE AMERICAN POWER CONFERENCE AND THE INTERNATIONAL WATER CONFERENCE.

WE BELIEVE OUR CORRECTIVE ACTIONS AND ACCOMPLISHMENTS TO ARREST STEAM GENERATOR TUBE DENTING AND MAINTAIN AN EXCELLENT STEAM GENERATOR CHEMISTRY PROGRAM ARE REFLECTIVE OF SELF-DIRECTIVE LONG TERM COMMITMENTS BY PSE&G TO ASSURE THE INTEGRITY OF OUR STEAM GENERATORS.

TAGGING REQUEST AND INQUIRY SYSTEM:

A COMPUTERIZED TAGGING REQUEST AND INQUIRY SYSTEM (TRIS) WAS DEVELOPED ABOUT 2 YEARS AGO TO IMPROVE ADMINISTRATIVE CONTROL OVER THE SYSTEM USED TO APPLY SAFETY BLOCKING TAGS.

PRIOR TO TRIS, VALVE POSITION AND ELECTRICAL EQUIPMENT STATUS WAS TRACKED USING A MANUAL SYSTEM OF VALVE AND EQUIPMENT LISTS, TO WHICH OPERATORS MADE NOTATIONS WHEN STATUS CHANGED. CONSIDERING THE LARGE VOLUME OF TAGGING THAT IS PERFORMED AT SALEM, THE SYSTEM WAS VERY CUMBERSOME AND PRONE TO ERROR. IN ADDITION, IT WAS VERY DIFFICULT FOR THE OPERATORS TO ACQUIRE A STATUS REPORT OF ALL SYSTEMS IN THE PLANT IN A TIMELY MANNER. FURTHERMORE, THE EXACT LOCATION OF VALVES WAS NOT IDENTIFIED ANYWHERE, SO THAT WHEN AN EQUIPMENT OPERATOR WAS REQUIRED TO MANIPULATE A COMPONENT HE HAD TO EITHER KNOW WHERE THE COMPONENT WAS LOCATED OR TRACE THE SYSTEM TO FIND IT. THIS WAS A TIME CONSUMING AND INEFFICIENT PROCESS.

SINCE THE TRIS HAS BEEN PLACED IN SERVICE, MANY IMPROVEMENTS IN CONTROL OF TAGGING AND EQUIPMENT STATUS HAVE BEEN REALIZED. THE SYSTEM PROVIDES READY ACCESS TO THE LOCATION OF A COMPONENT SO THAT AN OPERATOR CAN QUICKLY OPERATE IT WHEN DIRECTED. THE SYSTEM PRINTS OUT ON A LINE PRINTER ALL PAPERWORK NECESSARY TO PERFORM A TAGGING OPERATION. THIS INCLUDES AN OPERATOR WORKSHEET WHICH SPECIFIES TAGGED POSITION, NORMAL POSITION FOR THE MODE THAT THE PLANT IS IN, AND ANY SPECIAL INSTRUCTIONS UNIQUE TO THAT COMPONENT, SUCH AS "LOCKED" OR "THROTTLED". THE TAGS THEMSELVES ARE ALSO PRINTED, MAKING THE TAG INFORMATION CONSISTENT AND LEGIBLE.

EACH MANIPULATION IS CAREFULLY RECORDED AND TRACKED ON THE COMPUTER TO ASSURE THAT ALL STEPS IN THE TAGGING PROCESS ARE COMPLETED AS REQUIRED. THESE TAGGING EVOLUTIONS CREATE A FILE IN THE COMPUTER THAT GIVES THE OPERATORS A READILY ACCESSIBLE STATUS OF PLANT EQUIPMENT. AT THE OPERATOR'S REQUEST, THE SYSTEM PROVIDES HARD COPY OF THIS STATUS IN A NUMBER OF FORMATS, ALL OF WHICH SPECIFY THE POSITION THE COMPONENT SHOULD BE IN FOR A GIVEN PLANT STATUS. AVAILABLE ALSO IS A HISTORY OF TAGGING OPERATIONS THAT ALLOWS THE OPERATORS TO LOOK BACK OVER PREVIOUS SHIFTS IF NECESSARY.

THIS SYSTEM WAS DESIGNED SOLELY BY PSE&G AND HAS HAD MANY CHANGES INCORPORATED BASED UPON FEEDBACK FROM THE OPERATORS. IT CONTINUES TO BE A DYNAMIC SYSTEM THAT IS RESPONSIVE TO OPERATOR NEEDS. WE FEEL THE SYSTEM HAS CONTRIBUTED SIGNIFICANTLY TO OPERATOR KNOWLEDGE OF PLANT STATUS AND HAS MADE THE SAFETY TAGGING SYSTEM MUCH MORE THOROUGH AND EFFICIENT.

PREVENTIVE MAINTENANCE:

A PREVENTIVE MAINTEANCE PROGRAM HAS BEEN IN EFFECT SINCE THE INITIATION OF PLANT OPERATION. IT IS DESCRIBED IN AN ADMINISTRATIVE PROCEDURE ENTITLED "INSPECTION ORDER SYSTEM", WHICH WAS NOTED BY INPO AS A BENEFICIAL PRACTICE. THE PROGRAM IS REVIEWED AND IMPROVED CONTINUOUSLY. PREVENTIVE MAINTENANCE ACTIVITIES ARE BASED UPON TECHNICAL SPECIFICATION REQUIREMENTS, NRC AND OTHER REGULATORY REQUIREMENTS, EQUIPMENT VENDOR AND NUCLEAR ENGINEERING DEPARTMENT RECOMMENDATIONS, AND PREVIOUS OPERATING EXPERIENCE.

WE RECENTLY COMPLETED A REVIEW OF ALL MAINTENANCE DEFICIENCY REPORTS, LICENSEE EVENT REPORTS, AND WORK ORDERS/WORK SHEETS, TO ESTABLISH EQUIPMENT FAILURE PATTERNS. FROM THE REVIEW, APPROXIMATELY 80 ITEMS WERE IDENTIFIED FOR ADDITIONAL PREVENTIVE MAINTENANCE ACTIVITY. THESE ITEMS ARE BEING INCORPORATED INTO THE INSPECTION ORDER SYSTEM.

IN JULY 1982, PSE&G EMBARKED UPON A MANAGED MAINTENANCE PROGRAM WITH THE SUPPORT OF WESTINGHOUSE ELECTRIC CORPORATION. IT IS A TWO-PART EFFORT: TO DEVELOP A COMPREHENSIVE, INTEGRATED PREVENTIVE MAINTENANCE ROUTINE, AND TO UPDATE PLANT SYSTEM DESCRIPTIONS BASED ON DESIGN CHANGES INCURRED SINCE INITIAL PLANT STARTUP. THIS PROGRAM GIVES HIGH PRIORITY TO THE ALARA CONCEPT. ACTIVITY FREQUENCIES AND TYPES OF REPAIR ACTIVITIES ARE ESTABLISHED BASED ON RADIATION EXPOSURES INVOLVED. THIS PRACTICE WILL RESULT IN REDUCED PERSONNEL EXPOSURE.

THE PROCESS FOR GENERATING COMPONENT MAINTENANCE RECOMMENDATIONS INVOLVES A REVIEW OF APPLICABLE DRAWINGS AND TECHNICAL MANUALS. A MANAGEMENT REVIEW IS THEN CONDUCTED FOR COMMENT AND CONTRIBUTION. THE RECOMMENDATIONS DEVELOPED ARE IN THE FORM OF A COMPUTER PRINTOUT WHICH INCLUDES COMPONENT IDENTIFICATION, THE PRIORITY ASSIGNED, PROCEDURES REQUIRED, TECHNICAL SPECIFICATION REQUIREMENTS, FREQUENCY OF PERFORMANCE, AND PLANT/SYSTEM STATUS. FOLLOWING THE MANAGEMENT REVIEW, NECESSARY CHANGES ARE MADE PRIOR TO IMPLEMENTATION.

THE PROGRAM INCLUDES THE REACTOR TRIP SYSTEM, EMERGENCY CORE COOLING SYSTEMS, AUXILIARY FEEDWATER SYSTEM, CONTAINMENT ISOLATION SYSTEM, AND ALL OTHER SAFETY-RELATED SYSTEMS. THIS PROGRAM WILL BE COMPLETED BY JANUARY 1, 1984. WE BELIEVE OUR PREVENTIVE MAINTENANCE PROGRAM, AND THE ONGOING IMPROVEMENTS TO IT, PROVIDE AN OVERALL ENHANCEMENT TO NUCLEAR SAFETY.

IN CONCLUSION, I WOULD LIKE TO EMPHASIZE THAT THE AREAS OF SELF-MOTIVATED EFFORT PRESENTED HERE TODAY ARE, IN THE INTEREST OF BREVITY, ONLY HIGHLIGHTS OF OUR AGGRESSIVE AND INNOVATIVE PURSUIT OF ALL OPPORTUNITIES TO IMPROVE OUR NUCLEAR OPERATIONS. PSE&G CONSIDERS THE BREAKER FAILURES TO BE A VERY SERIOUS SAFETY MATTER. HOWEVER, WE MUST ALSO EMPHASIZE THAT THE CONTROL ROOM OPERATORS EXERCISED GOOD

JUDGMENT AND TOOK TIMELY ACTION TO SHUT DOWN THE REACTOR THEREBY PREVENTING ANY FURTHER PROBLEMS. AS A RESULT, THERE WAS NO THREAT TO THE HEALTH AND SAFETY OF THE PUBLIC NOR ANY EQUIPMENT DAMAGE. WE HAVE EVALUATED THE CIRCUMSTANCES SURROUNDING THE BREAKER FAILURES AND HAVE DEVELOPED A DETAILED CORRECTIVE ACTION PROGRAM. THE ACTION ITEMS TO BE ACCOMPLISHED PRIOR TO RESTART HAVE BEEN COMPLETED AS OF APRIL 13, 1983. WE ARE CONFIDENT THAT SALEM UNITS 1 AND 2 CAN SAFELY BE RETURNED TO POWER OPERATION.

THANK YOU.

12/82

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