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JOHN H. AUSTIN, JR
PRESIDENT

January 29, 1988
Docket Nos. 50-277
50-278

Mr. William T. Russell
Administrator, Region I
U.S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Document Control Desk

Dear Mr. Russell:

Transmitted herewith is a letter, dated January 11, 1988, with attachments, from Zack T. Pate, President of the Institute of Nuclear Power Operations (INPO). Although we believe the letter raises no new substantive issues, it refers to the history of INPO's evaluation of the Peach Bottom Nuclear Generating Station and to what it terms "serious performance problems." It also contains recommendations for actions aimed at improving the situation.

As Mr. Pate's letter indicates, Peach Bottom has indeed had a record of problems. They have been a growing concern to our Company's management, as well as to the NRC and to INPO. While we have aggressively addressed these problems dating back to 1984, and while progress seemed to be evident in the spring of 1986, our actions obviously did not correct the root causes for the operator behavior that led to the NRC shutdown order. The Chief Executive Officer, the Chief Operating Officer, and the senior management of our nuclear operations accept full responsibility for the inadequacy of the Company's responses to the problems observed by the NRC, as well as to problems outlined in INPO evaluations.

In 1985, as a result of NRC actions and INPO criticisms, we developed a comprehensive plan, the Peach Bottom Improvement Program, which addressed all the issues identified at that time as needing correction. Progress seemed evident by the spring of 1986; but new problems were identified in mid-1986 by the NRC and INPO, and some previously identified problems persisted.

After a meeting with NRC's Executive Director for Operations, his staff, and staff from Region I in August of 1986, the Company developed a more comprehensive plan of action to address the problems, the Peach Bottom Enhancement Program. In addition, the Plant Manager for the Limerick Nuclear Plant, a plant which has achieved very good ratings, was put in charge of the operation of both the Company's nuclear plants, with the specific assignment of strengthening the management oversight at Peach Bottom and making certain that all the problems were being addressed.

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At the end of 1986, following the retirement of the Senior Vice President for Nuclear Power and the Vice President for Electric Production, who was responsible for the operation of all the Company's power plants, including nuclear, the Company reorganized the management of its nuclear operations. A Vice President was put in charge of the operation of the two nuclear plants exclusively, and a Senior Vice President position was created to be responsible for all engineering and construction, and for the operations of all the Company's power plants. These changes, which were made just a few months prior to the NRC shutdown of Peach Bottom, were designed to strengthen line management and accountability for our nuclear plants and to place the support functions for operations under one senior officer.

In spite of the organizational changes that responded to NRC criticisms and INPO-identified problems, we were not successful in changing the attitudes and the environment at Peach Bottom to prevent the behavior that led to shutdown.

The management of our Company has accepted full responsibility for the inadequacy of past programs, and is committed to take whatever actions are necessary at the corporate and plant levels to address the root causes and correct the problems, and to achieve operational excellence.

We have already made major changes in our corporate organization, designed to further strengthen the management of our nuclear operations and to provide the foundation for a new corporate culture; and further changes are anticipated. We are totally dedicated to making any and all changes necessary to provide a new foundation for excellence in our nuclear operations.

Of highest priority is a professionally conducted search, which is in progress and moving expeditiously, to find from outside the Company a senior corporate officer with outstanding credentials to lead the reorganization of the Company's nuclear activities.

To date 29 persons have been hired from outside the Company for our new nuclear organization, including twelve in management and supervisory positions. A seasoned veteran of the Navy's nuclear program has been installed as Vice President and site manager for Peach Bottom; and the plant manager for Limerick Station, which has achieved excellent ratings, has been moved to Peach Bottom as its manager. New shift operating teams have been formed, trained, and have been given their initial training on the Company's nuclear plant simulator.

The physical conditions of the plant and its equipment are being vigorously addressed. Preventive maintenance programs are being updated, and all critical systems are being inspected and put in good condition.

All past improvement programs have been incorporated in our restart planning; and past and current findings by INPO evaluations are being addressed, incuding the recommendations in Mr. Pate's letter.

Our Company's management believes the programs and changes that have been made, and those that are underway, will provide the basis for safely restarting Peach Bottom and lead us to operational excellence. To that end, and with a mandate from our Board of Directors, we are totally committed.

We will be happy to discuss these matters with you in detail at your convenience.

Sincerely,

cc: Addressee
R. E. Martin, Project Manager
T. P. Johnson, Resident Inspector

INPO

Institute of
Nuclear Power
Operations

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January 11, 1988

PRIVATE & CONFIDENTIAL

Mr. Robert D. Harrison
Chairman, Special Committee
Philadelphia Electric Company
Board of Directors
326 Grays Lane
Haverford, PA 19041

Dear Mr. Harrison:

Thank you for taking the time to visit with us in Atlanta on December 16, 1987 to discuss the Philadelphia Electric situation. Please also extend our thanks to Dr. Levit and Mr. Wilkinson.

The purpose of this letter is to recap some of the history that led to and that continues to contribute to serious performance problems at Peach Bottom, and within the Philadelphia Electric Corporate organization, and to offer recommendations and outline actions aimed at improving the situation. The letter covers the same historical material that was discussed with the Special (Nuclear Oversight) Committee on August 28, 1987, and with you and Dr. Levit and Mr. Wilkinson on December 16, 1987.

The following is a chronology of key events, from an INPO perspective. Most of the events in the chronology are stated or summarized briefly, but details are provided in the attachments or references listed. The events are numbered for ease of reference later in this letter.

CHRONOLOGY

1. In December 1984 the INPO plant evaluation at Peach Bottom found clear evidence of declining performance. Concern over corporate support of Peach Bottom, supervision, standards, accountability, and "culture" were communicated to the CEO and COO at the exit meeting following this evaluation. See ATTACHMENT A
A copy of Attachment A was provided to the CEO at the exit meeting.

2. The next INPO evaluation was scheduled earlier than normal, due to the performance concerns, and was conducted in December 1985. A January 3, 1986 letter from me to the CEO, soon after the evaluation was completed, pointed out that "standards of performance at the station are unacceptably low," and furnished supporting details in advance of the exit meeting. These details included a number of indications of attitude problems and problems with the relationship between management and operational personnel. See ATTACHMENT B
INPO's overall assessment of plant performance placed Peach Bottom in

G14

the MARGINAL (5) category following this evaluation. The serious nature of the problems at Peach Bottom were again communicated to the CEO and COO at the exit meeting that followed the evaluation. See ATTACHMENT C

A copy of attachment C was provided to the CEO at the exit meeting.

3. Because of the defensive posture of PECo management at the January 1986 exit meeting for the December 1985 evaluation, a special letter was sent to the CEO. See ATTACHMENT D
Attachment D includes the CEO's response.

4. In April 1986, in follow up to the December 1985 evaluation, a small INPO team conducted a "progress check" visit to Peach Bottom. (Progress check visits are conducted by INPO when a plant is assessed in the lower performance categories.) Concerns resulting from that visit were communicated to the CEO by my letter of May 7, 1986. Details furnished with this letter provide further evidence of problems with the operational personnel. See ATTACHMENT E

5. On April 14, 1986, I met privately in Philadelphia with the CEO and COO to express concern over a March 18, 1986 control rod misoperation event at Peach Bottom and the lack of training for their operators on earlier similar events (precursors) at other plants. See ATTACHMENT F

6. An NRC SALP report, covering the period April 1, 1985 to January 31, 1986 was issued to PECo in June 1986. The first paragraph of the Summary of Results for this report reads as follows:

> "During this assessment period performance problems continued to manifest themselves at Peach Bottom. Management involvement and effectiveness toward improving operating activities have not been evident. Indications of the lack of adequate management involvement and effectiveness include: poor dissemination of management goals and policies; poor communication between the different departments and divisions; and a focus on compliance concerns rather than acknowledgement and correction of the root causes of problems."

A later paragraph on the same page states:

> "Further, it is not clear that those who have responsibility are being held accountable. Recent events associated with control rod withdrawal errors during a startup, although outside the assessment period, are another indication of management not effectively assuring that the responsibility and accountability for proper operations are sufficiently understood, resulting in many instances of sloppy work practices and a sense of complacency."

This same summary calls attention to "...the defensive attitude of management...."

7. On June 12, 1986, the NRC Executive Director for Operations (EDO) wrote to the PECo CEO concerning this SALP report and expressed his personal concern over the Peach Bottom situation, requesting "that the PECo CEO and his senior corporate officers" meet with EDO in Washington.

8. In early November 1986, evidently in further follow-up to this same SALP report, the Chairman and the Executive Director of the Nuclear Regulatory Commission met privately with the CEO in Atlanta to express concern over performance at Peach Bottom.

9. An INPO evaluation was conducted at Peach Bottom in October 1986 (again scheduled earlier than normal), with the exit meeting on November 12, 1986. Improvement in some areas had occurred and the overall assessment improved slightly to the (4) category.

   See ATTACHMENT G

   Note particularly (in attachment G) the large number of plant events attributed to "inadequate management guidance and supervisory oversight of plant operators."

10. On March 31, 1987 Peach Bottom was ordered shutdown by NRC as a result of reports of operators sleeping on shift.

11. In April 1987, at the PECo CEO's request, INPO formed a five member Industry Panel to assist in the Peach Bottom recovery. The panel was to be informed of the details that led to the shutdown, and would then serve as advisors as a recovery plan was developed.

    See ATTACHMENT H

12. In May 1987, after an internal investigation by PECo, it was reported to the Industry Panel, and to INPO, that essentially all control room operators were alleged to have been inattentive or sleeping at one time or another during the months preceding the March 31 shutdown. It was also reported that some operators had been playing video games in the control room, and that some had read unauthorized reading material while on shift.

13. On July 6, 1987 a change in PECo drug testing policy was announced to employees at Peach Bottom by the posting of a letter from the Vice President of Personnel to the President of the Independent Group Association (IGA), an employee bargaining unit. Line management was not properly involved. The last sentence of this letter casts serious doubt on the durability and management support for the new policy.

    See ATTACHMENT I

    On July 27, 1987 two additional policy changes were announced to Peach Bottom employees in a similar manner. See ATTACHMENTS J&K

14. On August 7, 1987 PECo submitted a recovery plan, the Peach Bottom Commitment to Excellence Action Plan, to the NRC. The plan was not appropriately reviewed with the Industry Panel in advance.

15. In a letter dated August 24, 1987 to PECo, the NRC Region I Administrator raised many questions about the recovery plan.

16. On August 28, 1987 I briefed the Special (Nuclear Oversight) Committee of the Philadelphia Electric Company Board of Directors, at the committee's request. The principal conclusion drawn by INPO was as follows: "although the Peach Bottom Commitment to Excellence Action Plan has many needed and desirable action steps, and may well lead to NRC approval to restart:

> **The fundamental approach to nuclear operational management at Philadelphia Electric Company has not changed, and is unlikely to change noticeably in the foreseeable future.** The underlying problems at Peach Bottom will be slow to change because of the absence of fundamental changes at corporate. Changes that do occur as a result of the Action Plan are not likely to be sustained."

For Additional details .....See ATTACHMENT L
A copy of this attachment was provided to the PECo CEO and COO.

17. On June 24, 1987 and September 24, 1987, the Industry Panel met with PECo senior management, including the CEO and COO. On each occasion the panel expressed strong reservations concerning PECo management's failure to acknowledge corporate responsibility for the Peach Bottom situation. Additionally, the Industry Panel reported agreement with the conclusions in ATTACHMENT L to PECo management shortly after the August 28 briefing.

18. On September 10, 1987 the PECo COO and I met in Atlanta. The principal thrust of the COO's conversation was to rebut the points INPO made in its report to the Special Committee of the PECo Board (ATTACHMENT L). In particular, the COO stated that PECo had specifically requested that an outside consultant, Management Analysis Company (MAC), determine whether the problems at Peach Bottom were unique to Peach Bottom, or were due to problems with corporate oversight and support. The COO stated that MAC, after an in-depth review, had reported that the problems were unique to Peach Bottom, and were not rooted in the corporate organization.

19. On the following day, September 11, in a conversation originated by the President of MAC, he stated that he was concerned because the problems at Peach Bottom had their roots in the PECo corporate organization and that management corrective actions were aimed principally at the plant. I asked if this message had been communicated to the PECo CEO and COO, and he assured me that it had been clearly communicated some weeks ago.

NOTE: In items 18 and 19, the intent is not to imply that either party is being less than honest. Rather, this is another example of PECo senior management's inability or refusal to face up to and deal with problems in their corporate nuclear program.

20. On September 11, 1987 a member of the Industry Panel received a phone call from a senior NRC official, expressing concern with the Peach Bottom recovery plan as submitted to the NRC. The principal concern expressed was that the PECo plan attempted to lay the blame for all

problems on the Peach Bottom operators, rather than accept responsibility at corporate. This information was relayed to senior PECo management on Septembe. 11 by the panel member.

21. On September 14, 1987 PECo management met with the NRC Commissioners in a public meeting. In disregard of the information provided as described in items (16), (17), (19), and (20) above, PECo portrayed the impression to NRC that the problems at Peach Bottom were primarily plant and not corporate related. The NRC did not accept this premise. See ATTACHMENT M

22. Shortly after the NRC hearing, the COO reported to a member of the Industry Panel that the NRC's reaction (at the September 14 meeting) was about as expected ---- just one of the necessary hurdles. In actuality, the NRC's reaction had been highly unusual and was a strong rejection of the company's approach to date.

23. On September 9, 1987 the President of the IGA sent a letter to the PECo Vice President of Personnel that severely criticized the new manager of the Peach Bottom Station, and accused him of employee intimidation. During an INPO visit to the plant in late September 1987, copies of this letter were posted at various places around the plant. Some members of the plant staff, and others in the PECo corporate staff, indicated that this letter could be the undoing of the new station manager. In any event, the letter serves to undermine the authority of the station manager during a time when he needs strong corporate backing and the authority that this implies. See ATTACHMENT N

24. In September 1987 INPO conducted a plant evaluation at Peach Bottom. The evaluation team found many of the same problems that have existed for some time. They were summarized for the CEO in the exit meeting. See ATTACHMENT O

    A copy of Attachment O was provided to the CEO. Note particularly the table that illustrates the many recurring issues in 1984, 1985, 1986, and 1987. INPO's overall assessment of plant performance placed Peach Bottom again in the lowest category, (5).

25. On October 9, 1987 PECo announced a reorganization plan designed to strengthen corporate support of its nuclear units.

26. In October, just after the plant evaluation, a corporate assistance visit was conducted. Two executives from other utilities accompanied the INPO team as advisors. The results are shown in....ATTACHMENT P.

    Many troublesome problems are summarized in this report. Some of the more noteworthy are "side-barred" in the right hand margin of Attachment P.

    One of the most disturbing aspects of the corporate and plant visits was the PECo CEO's remark to the INPO team early in the October 29, 1987 exit meeting, with virtually all of the PECo senior (nuclear) management team present. He asked, in effect, why are you (INPO)

telling me about all these problems; don't you realize we have just reorganized? This comment set an improper tone for the meeting from the outset and continued to reflect the defensive posture that has been evident for several years. (In our view, a reorganization solves few problems, particularly ones in which the same personnel are just moved to new positions.)

27. In November 1987, after the INPO plant evaluation and corporate assistance visits, both of which identified serious problems, as well as a continuation of longstanding problems, senior PECo management reported to outside groups, including the Industry Panel, that things were going well at Peach Bottom.

28. In November 1987 an INPO team conducted a maintenance assistance and review team (MART) visit to Peach Bottom. Again this team found widespread and fundamental problems --- problems that go well beyond the operational areas that led to shutdown. See ATTACHMENT Q

29. In November and early December 1987, reports were received that improper actions by operators and others at Peach Bottom in the months preceding shutdown were more widespread or more serious than had been conveyed by management. On December 4, 1987, a member of the Industry Panel telephoned the PECo COO about this, and requested that INPO and the panel be provided access to PECo's internal investigation material covering the "sleeping on shift" issue. The request for INPO review of this material was denied. It was agreed that a panel member would be allowed to review the material at PECo headquarters during the panel's next scheduled visit in January.

30. On December 7, 1987 I called the COO to request that INPO be allowed to review their internal investigation material. This request met with strong resistance. After a lengthy conversation, and my insistence that as a safety organization INPO has an inherent right to know the relevant facts, the COO agreed that the INPO corporate team manager could review this material at PECo headquarters on December 10.

31. The December 10, 1987 review of PECo's internal investigation material revealed the following:

- Rather than a report, the material consisted of some seven inches of documentation covering interviews of many personnel, including:
  - licensed shift operators
  - six General Electric engineers with operational experience who were on shift with the Peach Bottom operators
  - Bechtel personnel (rad-waste technicians and cleaners)
  - shift technical advisors and junior technical assistants
  - shift clerks

  No written analysis, summary, or conclusions resulting from the internal investigation exists according to the PECo Associate General Counsel who had custody of the material. There was a tabular listing of allegations against each licensed operator.

- The problems identified or suggested through the interview process were more widespread/serious than had been reported earlier to either INPO or the Industry Panel. For example, one or more of the persons interviewed reported the following:

  - occasions when the control room was not manned as required by technical specifications

  - one occasion when only one person was in the control room, with the units at power

  - another occasion when all personnel in the control room were asleep

  - licensed operators played video games on computers in the control room and in the computer room

  - rubber band fights and paper ball fights were carried on by licensed operators in the control room

  - one instance where a GE engineer (assigned on a shift with the operator) was not permitted in the "controls" area and another instance where a PECo QA Inspector (assigned to monitor shift turnover) was "kicked out" of the control room by the shift operator crew for no just reason, and with laughter afterward in the control room

  - reading of non-technical material was pervasive. This observation applied not only to control room operators but to non-licensed and rad-waste operators as well

  - operators displayed a hostile attitude toward management

  - operators were disrespectful of plant procedures (i.e., operating procedures were viewed only as guidelines)

  - a radwaste shift operator was asleep on a table in the radwaste control room, covered with a coat

  - one comment stated that non-licensed operators locked themselves in their "shack" in the turbine building (that had its windows covered so that activity inside could not be observed) and were asleep

  - other non-control room shift personnel (shift clerks and shift technical advisors) were observed sleeping

In general, the allegations applied not just to control room operators, but to a number of other shift personnel including non-licensed operators, radwaste operators, shift clerks, and shift technical advisors.

CONCLUSIONS AND RECOMMENDATIONS

Most of the conclusions and recommendations are based on the above chronology, including the supporting attachments. Some draw on other information that is readily available; primarily the Peach Bottom Commitment to Excellence Action Plan, submitted to the NRC on August 7, 1987, and the Plan for Restart of Peach Bottom Atomic Power Station--Section I, Corporate Action, as submitted to the NRC on November 25, 1987.

CONCLUSIONS

I. The situation that existed at Peach bottom in the months preceding the March 31, 1987 shutdown was worse than had been conveyed to the Industry Panel and to INPO by P' management. See item 31. The grossly unprofessional behavior of a wide range of shift personnel, involving all shifts, and condoned by the shift superintendents reflects a major breakdown in the management of a nuclear facility. It is an embarrassment to the industry and to the nation.

II. PECo management had more than ample warning/advance notice that serious problems were developing at Peach Bottom and specifically with the non-professional conduct and lack of supervision of the shift crews. See items 1 through 9 above and Attachments A through G.

III. A corporate culture had been allowed to develop, from the top down, that down played, rejected, or ignored problems. Management was defensive from the top down. Problems frequently were not reported up the line organization, and those that were often were not dealt with effectively. The climate for this organizational behavior was set from the highest levels of corporate management. See items 3, 6, 16, 18, 19, 21, 22, and 26 and Attachments D and L.

IV. The lack of accountability in the corporate organization and at Peach Bottom is pervasive, and this situation has existed for several years. Weak accountability has been repeatedly identified as a key concern by NRC and INPO. See Attachments A, B, C, and G and the NRC SALP report for the period ending January 31, 1986. The complex, highly matricized corporate structure undoubtedly contributed to the poor accountability. While the recent reorganization should be helpful in strengthening accountability (The Plan for Restart of Peach Bottom Atomic Power Station--Section I, Corporate Action, as submitted to the NRC on November 25, 1987, addresses the need to improve accountability in several places.), success ultimately depends on the individual managers in key line positions. Since, for the most part, the same managers who have been ineffective in this area for years are in the key line positions in the new organization, substantial improvement is unlikely. Additionally, as the new organization is implemented, other measures are being taken that tend to weaken line accountability. These measures establish or expand various groups or committees that operate outside the line organization called for in the Plan for Restart of Peach Bottom, Atomic Power Station--Section I, Corporate Action (hereafter referred to as the "Restart Plan--Section I"). Apparently some, or perhaps most, of these measures are in reaction to NRC's expressed view that PECo

needs to strengthen independent assessment of station performance. The measures described in the recovery plans include:

- o A wide range of independent assessment methods to provide monitoring, assessment and assistance in the conduct of plant activities. Examples include the following:
  - the assignment of QC personnel to each operating shift full time to monitor the operators and operational activities (see pages 1-7 of the Peach Bottom Commitment to Excellence Action Plan) (subsequently discontinued in December 1987).
  - the establishment of a "Management Assistance Staff" -- see page 16 of the Restart Plan--Section I.
  - an expanded role for the QA organization as discussed in the Restart Plan--Section I (see pages 15, 16, and 39 - 42).
  - the establishment of a "Commitment Management Program Manager" (see pages 44 and 45 of the Restart Plan--Section I).
  - an expanded "independent assessment and oversight" role for the Nuclear Review Board (see pages 54-58 of the Restart Plan--Section I), and the hiring of outside senior technical/management personnel to serve on this Board.
  - the planned hiring of outside technical experts to review management and technical programs and to advise the new Nuclear Committee of the Board of Directors (see pages 58-61 of the Restart Plan--Section I).
- o Establishment of additional programs or groups to oversee the effectiveness of the independent assessments. These include periodic meetings of the managers responsible for the independent assessments, and increased company management oversight of nuclear operations by the Nuclear Review Board.
- o Accountability for ensuring organizational management, supervisory, and professional development needs is assigned to the manager, nuclear training. (see pages 31, 48 of the Restart Plan--Section I)
- o Quality Assurance has accountability for overall assessment of the effectiveness of the Performance Management Program that is being implemented to achieve and maintain excellence. (see pages 15, 16 of the Restart Plan--Section I).

While some of these measures are appropriate or even necessary, in the aggregate they are excessive and are likely to be perceived by PECo personnel as an indication that top management does not have faith in the new line organization. Also, in the aggregate, these measures are likely to undermine efforts to strengthen accountability in the new line organization, and to foster a continuation of the corporate culture that has led to serious problems.

It is ironic to note that the company's current dilemma stems directly from an effort to improve professionalism in the control room by measures outside the line organization. Specifically, the six General Electric engineers that were hired under contract in late 1986 were assigned to each shift by PECo management to assist in upgrading operator professionalism. The operators strongly resented these "outsiders," and their resentment probably exacerbated their unprofessional behavior (Ultimately the GE engineers "blew the whistle" by reporting operator conduct to the NRC, after attempts to improve the situation by informing PECo management were unsuccessful.)

V. Overall responsibility for the serious situation that developed at Peach Bottom rests with the PECo corporate nuclear organization. The company argued (until recently) that Limerick has done well and therefore the PECo corporate nuclear organization is satisfactory, and that the Peach Bottom situation is an anomaly. Our view is just the opposite. Limerick's performance as a start up plant has been about average, perhaps a bit above average. New plants placed in operation in recent years by utilities with older operating plants have done well without exception. We attribute this to the assignment of personnel who were proven performers to the new plant by the utility, and in Limerick's case, to successful team building by plant management. Thus, if there is an anomaly, it is Limerick. Peach Bottom reflects an unsatisfactory corporate nuclear organization while, for the present, Limerick's operational performance surpasses what would be expected from a close examination of the corporate organization. (See Attachment P)

VI. The situation that management has allowed to develop with the Independent Group Association (IGA) is unsatisfactory. INPO pointed out to PECo senior management in 1985 that the situation with the IGA was worse than that in any U.S. utility with a national bargaining unit. From all indications, the situation has improved little (and may be worse) since the March 31, 1987 shutdown. See items 13 and 23 and Attachments I, J, K. and N. These letters bypassed the line organization and continue to undermine line authority at a time when the company should be exercising every opportunity to strengthen the line. The IGA letter of September 9, 1987 (Attachment N) is potentially crippling to the new Peach Bottom station manager. That such a matter could be handled in this manner some five months after shutdown, with the company in crisis, shows an unacceptable lack of unity and teamwork. Responsibility for allowing this unsatisfactory situation to develop, over a period of years, falls squarely in the office of the CEO.

VII. Through virtually the end of 1987, some eight months after the shutdown, INPO continues to find widespread performance problems at virtually every level at Peach Bottom and in the corporate nuclear organization. See Attachments O, P, and Q.

VIII. Senior management accountability for the overall situation at PECo has not been exercised. The shift superintendents, shift supervisors, control room operators, operations supervisors, plant

manager, and some others at Peach Bottom have been held accountable through relief from their jobs and other measures. No criticism of these steps is intended. By contrast, however, no one in the corporate organization appears to have been held accountable.

It is clear to us that the problems at Peach Bottom are the direct result of the low standards and lack of accountability accepted by corporate, and, in fact, fostered on the plant by a lethargic and defensive corporate organization. This situation existed over a long period of time, and became a way of life --- a culture --- in the PECo corporate nuclear organization and at Peach Bottom.

Actions by the company to date send the message to operators that they have been made the scapegoats --- that others who clearly share the responsibility have not been held accountable. As the facts in this overall situation become more widely known (and if no further actions are taken) operators at Peach Bottom and Limerick will live with this conclusion for years to come. Even worse, managers and operators at other plants around the country will draw the same conclusion.

RECOMMENDATIONS

I. Conduct a detailed analysis of the internal investigation material developed by PECo. Develop a report with an appropriate executive summary, findings, conclusions, and recommendations based on this analysis. Experience shows that a full recovery from a situation such as the one that developed at Peach Bottom cannot be assured unless all the relevant facts are carefully analyzed. To our knowledge this has not been done.

II. Review and minimize the actions being taken or planned that bypass or work outside (and tend to undermine) the line organization. It is recognized that some in the NRC may press the company to set up measures outside the line to detect future problems. Strong management can achieve this in a balanced way, while preserving line integrity. If the approach is sound, NRC will accept it. In our view the present approach is not balanced, and perceived NRC desires are being used as a crutch.

III. Major changes in the corporate culture at PECo are required. The recently announced reorganization will not achieve this. Experience shows that the same managers, placed in a different organizational arrangement, are usually unable (or unwilling) to effect major changes in standards, accountability, etc. Acquiring and installing a single outsider as "Senior Nuclear Officer" in the existing (new) PECo organization is insufficient action to bring about the necessary change.

Coincident with the acquisition of sufficient outside talent to properly upgrade the PECo nuclear situation, accountability should be exercised for the unsatisfactory situation that has been allowed to develop over a period of years.

OTHER ACTIONS

By separate correspondence, the Chief Executive Officer of Philadelphia Electric Company is being requested to provide or show copies of this letter report to certain outside organizations. These actions are necessary because of the seriousness of the situation, including the longstanding and recurring nature of the problems, and the disappointing and unacceptable conditions found during recent INPO visits (see Attachments O, P, and Q concerning the recent Peach Bottom plant evaluation, corporate assistance visit, and Maintenance Assistance Review Team visits). The following actions are being requested:

- o that a copy of this letter report, with attachments, be provided to Nuclear Electric Insurance Limited (NEIL). (As a condition of insurance, NEIL requested that Philadelphia Electric Company direct INPO to provide NEIL with a copy of each evaluation report for its nuclear units, and PECo did so in correspondence to INPO dated November 13, 1984.) The information in this letter report, and the supporting attachments, is directly relevant to INPO's ongoing evaluation of PECo units.

- o that a copy of this letter report, with attachments, be provided to each Peach Bottom co-owner (each of the co-owners is a member of INPO).

- o that a copy of this letter, with attachments, be made available to appropriate senior management of the Nuclear Regulatory Commission for their review. As a minimum, these managers should include:

  - the Chairman
  - the Executive Director for Operations
  - the Regional Administrator (Region I)

It is requested that copies of this letter and the supporting attachments be provided to each member of the PECo Board of Directors, and copies are provided for that purpose. I am willing to meet again, at any time, with the Special (Nuclear Oversight) Committee, or the full Board of the Philadelphia Electric Company to discuss this matter, should you desire.

With the company's support, INPO will plan a plant evaluation at Peach Bottom and a coincident corporate evaluation after adequate measures are taken to upgrade the plant and corporate, and prior to start-up of the first Peach Bottom unit.

Sincerely,

Zack T. Pate
President

Attachments (A - Q)
ZTP:das
cc/w: Mr. James L. Everett III
(via separate correspondence)

January 2, 1985

Attachment A

PEACH BOTTOM

POST-EXIT DISCUSSION

This exit has reported the results of INPO's fourth evaluation of Peach Bottom. Attached is a brief comparison of the issues from this visit with previous visits we have made to Peach Bottom. In this comparison, we checked to see if the basic problems identified had existed in the previous evaluation reports. This review shows that many of the findings from this year's visit are indicative of long-standing problems. Some of these problems were reflected in the selected observations previously furnished to you by memorandum.

Also, attached is a copy of our Exit Representative's summary comments from the exit meeting. This summary is our assessment of the underlying causes for many of the problems discussed.

Although we do not provide subjective comments in the exit package or evaluation report there are some issues of this nature that I feel should be brought to your attention. These include:

1. It appears to us that improvement in overall performance at Peach Bottom, relative to the rest of the industry, is slow.

2. The station has a number of long standing problems as described in the exit package, including Appendix I (items carried forward from previous evaluations).

3. In order to implement needed improvements, managers, supervisors, and workers need to establish and insist on higher standards of performance in many areas.

4. Accountability needs to be strengthened at many levels. There is a pervasive unwillingness by managers and supervisors to confront, correct, counsel, or take other appropriate actions to stress and enforce standards of expected performance.

5. A perception of lack of corporate support in implementing needed changes has resulted in a reluctance by plant management to address some issues, including setting higher standards and holding people accountable in many areas. Plant management perceives that strong action to enforce high standards may be overturned or otherwise undermined by higher authority.

6. Long standing company practices (or company tradition) or the perception of this is an impediment to change or improvement to a considerably greater degree than normally seen. The tendency not to take action if it goes against long standing practice (or perceived practice) is widespread. It appears to us that this is often used as a crutch to maintain the status quo.

These subjective observations are based on a series of interactions with PECO and Peach Bottom going back over four evaluations, with emphasis on the most recent evaluation.

INPO

Institute of
Nuclear Power
Operations

1100 Circle 75 Parkway
Suite 1500
Atlanta, Georgia 30339
Telephone 404 953-3600

Attachment B

PRIVATE & CONFIDENTIAL

January 3, 1986

Mr. James L. Everett, III
Chairman and CEO
Philadelphia Electric Company
2301 Market Street
Philadelphia, PA 19101

Dear Mr. Everett:

An INPO evaluation team recently completed our fifth evaluation of Peach Bottom Atomic Power Station. I am pleased that both you and John Austin plan to attend the exit meeting on January 7 at 1:00 PM.

In preparation for that meeting, I have enclosed extracts from the INPO evaluation team's observations of station activities along with selected preliminary findings. We have marked some examples of recurring and otherwise noteworthy problems with "side bars" in the right hand margin.

My review of the observations, preliminary findings, and supporting details from this evaluation, in conjunction with our notes from previous evaluations, indicates that long-standing problems in operations, maintenance, and radiological protection continue to exist. The lack of progress in these key areas is disturbing. Standards of performance at the station are unacceptably low.

Your review of this material prior to the exit meeting is respectfully requested. Following the exit, I would appreciate the opportunity to meet privately with you and John to discuss INPO's overall assessment. In the meantime, please feel free to call me at (404) 980-3200.

Sincerely,

Zack T. Pate
President

ZTP:tk

Enclosures: (as stated above)

cc/w: John H. Austin, Jr.
Shields L. Daltroff

INPO FIELD NOTES

PLANT EVALUATION SUMMARY

PLANT Peach Bottom EVALUATION NO. 85-44

AREA MANAGEMENT ASSESSMENT OBJECTIVE NO. OA.3

PAGE

EVALUATOR(S) J. Maciejewski

1. PERFORMANCE OBJECTIVE

Management and supervisory personnel should monitor and assess station activities to improve performance in all aspects of nuclear plant operation.

2. SUMMARY OF PERFORMANCE ACHIEVEMENT

RELATED FINDING - OA.3-1, 1984

FINDING OA.3-1

Managers and supervisors are not sufficiently involved in day-to-day monitoring and coaching of personnel performance. Some areas of concern identified during the evaluation indicate a need to convey higher performance expectations to personnel working on site. Problems were noted in the conduct of operations and maintenance, radiological protection work practices, material condition, and housekeeping.

RECOMMENDATION

Increase management and supervisory involvement in daily plant activities. Managers and supervisors should frequently observe operations and maintenance activities and plant conditions to identify deficiencies and stress uniform adherence to plant policies and management expectations. Follow up to ensure corrective action is completed for identified problems.

3/7/85

Dec 85

INPO FIELD NOTES

. PLANT EVALUATION SUMMARY

PLANT PEACH BOTTOM EVALUATION NO. 85-44

AREA Operations Organization & Administration OBJECTIVE NO. OP-1

EVALUATOR(S) B. Link, J. D. Johnson plus M. Sutton and R. Huntapillar, SRO peer evaluators

1. PERFORMANCE OBJECTIVE

Operations organization and administration should ensure effective implementation and control of operations activities.

2. SUMMARY OF PERFORMANCE ACHIEVEMENT

FINDING OP. 1-1: Recurring problems with operating practices indicate a need to upgrade and enforce the standards applied to these areas. Many problems were observed with operator performance, control of operator aids, station housekeeping, and early identification and correction of in leakage to the radwaste systems. In some areas, clear standards need to be developed.

REC.: Establish high standards for operating practices, communicate these standards to the working level, and hold workers and supervisors accountable for their performance when conducting plant activities. Periodically evaluate the effectiveness of the operations programs and practices and upgrade, as appropriate. INPO "Guidelines for the Conduct of Operations at Nuclear Power Stations" (INPO 85-017) could be of assistance in this effort.

Dec 85

INPO FIELD NOTES

PLANT EVALUATION SUMMARY

PLANT PEACH BOTTOM EVALUATION NO. 85-44

AREA Conduct of Operations OBJECTIVE NO. OP-1

EVALUATOR(S) R. Link, J. D. Johnson plus M. Sutton and R. Hunkapiller, SRO peer evaluators

1. PERFORMANCE OBJECTIVE

Operational activities should be conducted in a manner that achieves safe and reliable plant operation.

2. SUMMARY OF PERFORMANCE ACHIEVEMENT

FINDING OP. 2-1

Shift supervisory personnel need to be more effectively involved in operational activities. The following are examples of areas where increased supervisory attention is needed:

a. non-licensed operator watchstanding practices
b. control room activities
c. plant material and housekeeping conditions

REC.

Strengthen the involvement of Operations Department supervisors in routine shift activities. Supervisors should monitor plant conditions and operator activities and provide direction that reinforces station policies and good operating practices. Consider reducing the administrative work load on the outside shift supervisor so that he can more effectively supervise activities outside the control room.

Dec 85

2/1/86

PLANT EVALUATION SUMMARY

PLANT PEACH BOTTOM EVALUATION NO. 85-44

AREA Conduct of Operations OBJECTIVE NO. OP-2

EVALUATOR(S) B. Link, J. D. Johnson plus M. Sutton and R. Hunkapillar, SRO peer evaluators

1. PERFORMANCE OBJECTIVE

Operational activities should be conducted in a manner that achieves safe and reliable plant operation.

2. SUMMARY OF PERFORMANCE ACHIEVEMENT

FINDING OP. 2-2 Operator adherence to shift turnover procedures needs improvement. The following deficiencies were noted:

a. Some control room supervisors (CRS) and operators were not fully aware of equipment status at shift turnover.
b. Control board walkdowns and reviews of operating log books were not normally performed by the CRSs.
c. Some non-licensed operators conducted shift turnover in unauthorized locations and with the wrong oncoming operator.

REC. Conduct shift turnovers in accordance with plant procedures. Perform periodic assessments to check that the shift turnover process is thorough. Ensure non-licensed operators conduct proper turnovers in authorized locations.

Dec 85

INPO FIELD NOTES

PLANT EVALUATION SUMMARY

PLANT PEACH BOTTOM EVALUATION NO. 85-44

AREA Operator Knowledge and Performance OBJECTIVE NO. OP-4

EVALUATOR(S) B. Link, J. D. Johnson plus H. Sutton and R. Hunkapillar, SRO peer evaluators

1. PERFORMANCE OBJECTIVE

Operator knowledge and performance should support safe and reliable plant operation.

2. SUMMARY OF PERFORMANCE ACHIEVEMENT

Related Finding (84-41, OP-2

FINDING OP. 4-1 Non-licensed operator (NLO) performance needs upgrading in several areas. The following problems were noted:

a. Some NLOs did not routinely check operating equipment for abnormal temperatures, vibration, or oil levels.
b. Areas and equipment not listed on the round sheets were not routinely inspected to detect abnormalities.
c. Appropriate action was seldom taken to identify and correct abnormal equipment conditions and material deficiencies.
d. Some NLOs were observed reading unauthorized material.

REC. Upgrade NLO performance in the areas noted above. Provide additional guidance reflecting management's expectations for NLO performance. Direct the outside shift supervisor to routinely observe operator activities to provide guidance and coaching to improve NLO performance. INPO Good Practice OP-206, "Generic Round Sheets and Shift Operating Practices," could be of assistance in this effort.

Dec 85

INPO FIELD NOTES

8. SHIFT TURNOVER

SCOPE

Shift turnovers involving four auxiliary operators, four plant operators (PO), five reactor operators, five control room supervisors (CRS), and one shift superintendent were observed.

OBSERVATIONS

1. One PO completed his shift turnover sheet and waited for his relief in the Operations Support Center. When the telephone rang, he told his relief that "he would have to come up to the shack because INPO was here." The PO then stated that shift turnovers were normally done in the locker room and that shift supervision is aware of this.

2. The PO assigned to rounds discussed plant status and turned the shift over to the first PO who reported to the Operation Support Center. However, this oncoming PO was assigned to "Fire Detector" duty that shift, and not to the rounds. The second oncoming operator, who was assigned to rounds that shift, stated he had just talked with the off going PO assigned to "Fire Detectors" in the locker room.

3. Four of five CRSs did not inspect the control panels or review the Reactor Operator log books within the first hour of shift turnover as required by station procedures.

4. One CRS, following shift turnover, did not know if residual heat removal pump 2C was run the previous evening. The entry in the CRS log book stated, "Ran Unit 2C RHR Sal. test." There was no entry concerning the successful completion of the Pump, Valve, Flow and Unit Cooling Functional Test also performed on RHR pump 2C.

5. A CRS was not aware that High Pressure Service Water Pump 3C was in service shortly after shift turnover. He stated it was out of service due to high bearing or motor temperatures, but he wasn't sure which problem existed.

CONCLUSIONS

1. Some CRSs and POs did not conduct shift turnovers in accordance with station procedures (1, 2, 3).

2. Some CRSs were not aware of plant status information following shift turnover (4, 5).

INPO FIELD NOTES

PLANT EVALUATION SUMMARY

PLANT PEACH BOTTOM EVALUATION NO. 85-44

AREA Operator Knowledge and Performance OBJECTIVE NO. OP-4

EVALUATOR(S) B. Link, J. D. Johnson plus M. Sutton and R. Hunkapillar, SRO peer evaluators

1. PERFORMANCE OBJECTIVE

Operator knowledge and performance should support safe and reliable plant operation.

2. SUMMARY OF PERFORMANCE ACHIEVEMENT

Related Areas (84-41 or

FINDING OP. 4-1 Non-licensed operator (NLO) performance needs upgrading in several areas. The following problems were noted:

a. Some NLOs did not routinely check operating equipment for abnormal temperatures, vibration, or oil levels.
b. Areas and equipment not listed on the round sheets were not routinely inspected to detect abnormalities.
c. Appropriate action was seldom taken to identify and correct abnormal equipment conditions and material deficiencies.
d. Some NLOs were observed reading unauthorized material.

REC. Upgrade NLO performance in the areas noted above. Provide additional guidance reflecting management's expectations for NLO performance. Direct the outside shift supervisor to routinely observe operator activities to provide guidance and coaching to improve NLO performance. INPO Good Practice OP-206, "Generic Round Sheets and Shift Operating Practices," could be of assistance in this effort.

Attachment C

PEACH BOTTOM
POST-EXIT DISCUSSION
JANUARY 7, 1986

During the two weeks our team spent at Peach Bottom, we assembled a considerable amount of information about the station's overall operation. Since the conclusion of the station visit, this information has been developed into the package we provided you today. The exit package provides specific findings and recommendations supported by details. A copy of each of the 21 related findings from last year's evaluation is included in the exit package behind the finding for this year.

The written observations previously furnished to you provide first-hand descriptions of activities in the plant along with conclusions drawn by the INPO observers. The findings in the exit package are based, in many cases, on the observations. However, additional detail is provided for each finding.

Attachment 1 is a summary listing of the issues from this visit as compared to the four previous visits we have made to Peach Bottom and one visit to Limerick. In this listing, we tracked the problems identified in the previous INPO reports. As discussed in my letter prior to the exit and as shown by Attachment 1, the problems in key areas such as operations, maintenance, and radiological protection are long-standing.

Recurring deficiencies observed in operating practices, shift supervisory involvement, coordination and control of maintenance activities, radiological protection, material condition, and component labeling represent an unacceptable pattern of performance. Experience shows that such conditions can combine to reduce the margin of safety against a serious plant event, and can create a situation that is difficult for the plant operators to successfully control.

In the post-exit discussion following the December 1984 evaluation (on January 3, 1985), we discussed several subjective observations based on a series of interactions with Philadelphia Electric going back over a period of four years (see Attachment 2). In this discussio we emphasized, as we have today, the need to establish higher standards of performance and hold personnel accountable to those standards. Our perception was that several institutional problems were impeding change or improvement.

The observations and findings from this evaluation, along with the exit representative's closing remarks (provided as Attachment 3), indicate that management actions to overcome institutional barriers and instill higher performance standards have been ineffective. In this regard, there are several issues that we think warrant your attention, as follows:

1. The tendency to make excuses for performance problems, defend current practices, and maintain the status quo persists. Standards of performance at the station are unacceptably low.

2. While some attempts to establish higher performance standards have been documented (e.g., programs or memos concerning the Nuclear Professionalism Program, supervisory responsibilities, operator aids, equipment deficiency tags, vendor manual control), efforts to implement these higher standards at the working level have been unsuccessful.

3. There is a continuing need to get management and supervisory personnel more effectively involved, particularly in operational, maintenance, and radiological protection activities.

4. Some communications with plant personnel, such as the writeup on supervisory responsibilities at nuclear sites or the preparation for the INPO evaluation, convey the impression that key performance standards may be driven

more by outside forces than by an internal corporate desire, or commitment to excellence.

5. Additionally, we see little evidence that items one through six in our post-exit summary of January 1985 have been effectively addressed. (See Attachment 2; we recognize that some of these items are discussed above.)

Our overall assessment places Peach Bottom in the MARGINAL category of plant performance.

Membership in INPO carries with it the commitment to strive for excellence. Striving to meet INPO performance objectives and criteria and being responsive to INPO evaluation recommendations are implicit in this commitment. The summary of recurring problems provided as Attachment 1 and the record of interactions between INPO and Philadelphia Electric over the past four years raise substantial questions as to the extent Philadelphia Electric is fulfilling its commitment to the industry.

In summary, top management action is needed to establish, communicate, and achieve the necessary standards of performance at Peach Bottom. Attention is needed now to ensure that the conditions that collectively reduce the margin of plant safety are promptly upgraded.

With your support, we will work out arrangements with your staff for a corporate evaluation of Philadelphia Electric in conjunction with the Limerick Station evaluation in April 1986. At that time, we will review your plans and progress in upgrading performance at Peach Bottom. In addition, we will plan to conduct the next Peach Bottom evaluation within nine months of today.

INPO

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Attachment D

January 13, 1986

PRIVATE & CONFIDENTIAL

Mr. James L. Everett, III
Chairman and Chief Executive Officer
Philadelphia Electric Company
2301 Market Street
Philadelphia, PA 19101

Dear Mr. Everett:

This is in follow up to our conversation of January 7, 1986, after the Peach Bottom exit meeting. In retrospect, I am worried that we may not have adequately conveyed to you our concern regarding nuclear operations at Peach Bottom. In part, that is our fault because my team at the exit did not have some facts at the "tips of their tongues". The PECo/Peach Bottom management team does have impressive experience, and they are not unaware of many of the conditions at Peach Bottom. At the exit meeting, it was evident that they had studied the exit package--and were ready to challenge any INPO items where a challenge could be successful. And, they were successful on four or five items as I recall. The exit discussions then tended to dwell on those four or five items or areas.

This is a recurring pattern over the past several INPO evaluations. Your organization is using its knowledge to defend the status quo--to demonstrate to you that things are okay--rather than using its extensive experience to analyze the INPO material with the goal of upgrading the station's performance.

A review of the observation package, provided by our team, shows over 431 individual deficiencies or shortfalls, with 141 of these involving personnel performance. Even if 20 percent of these 431 items were dropped from the package, there are still a significantly greater number of observed performance deficiencies than in most other plants we have evaluated. It would be a disservice to allow a few items that are debatable (or in error) to discredit the large body of information that the observation package represents.

Since the previous evaluation at Peach Bottom in December 1984, we have evaluated 44 plants, and only 3 others have been assessed in the lowest category. Peach Bottom's performance is marginal. Our assessment is based on the numerous on-going deficiencies that can combine over time to reduce the margin of safety against a serious plant event. We also have considerable concern that the station's substandard radiological control practices may lead to the spread of contamination off-site, or some other serious radiological event.

We are aware that it is more difficult to ensure high standards of performance in an outage situation and that your staff believes the conditions we reported were exacerbated by the outage. However, the pattern of our observations has been consistent throughout the past three evaluations, and one or both units were operating during the previous two evaluations.

From my assessment, this pattern will not change, and personnel performance at Peach Bottom will not improve, until you personally acknowledge the need, and communicate the need, for real change to your organization.

I was pleased to learn that our exit representative and team managers had a constructive discussion with your senior nuclear managers following the exit. As Joe Cooney noted in that meeting, if even 15 percent of the problems in the exit package are valid, there is ample opportunity for achieving improved performance. Shields Daltroff also emphasized the need to build a more cooperative working relationship between INPO and Philadelphia Electric. I agree wholeheartedly, and we are committed to assist you in your efforts.

Lee, it is vitally important that you let your organization know that, from your perspective, a substantial upgrade is necessary, and that you and John become personally involved in formulating the action plan to achieve such an upgrade.

Sincerely,

Zack T. Pate
President

adw

PHILADELPHIA ELECTRIC COMPANY
2301 MARKET STREET
P.O. BOX 8699
PHILADELPHIA, PA. 19101
(215) 841-4221

J. L. EVERETT
CHAIRMAN
AND CHIEF EXECUTIVE OFFICER

cc INPO
Board of Directors

cc EPNB
PWL
RAS
SLR
JTC
ASH

January 22, 1986

for info Dave
Respectfully,
Zack
1/23/86

Mr. Zack T. Pate, President
Institute of Nuclear Power Operations
1100 Circle 75 Parkway
Suite 1500
Atlanta, GA 30339

Dear Zack:

This is in response to your letter of January 13. I believe you misread our response to the exit interview with you and the other members of the INPO team when we met on January 7. There is no question in our minds that we have much to do to improve the management of our Peach Bottom operations. Our responses to some of your findings that we considered debatable were for your benefit, and will hopefully be taken in the spirit in which they were offered--for the improvement of your inspection process.

We fully accept that our management of the operations at Peach Bottom needs significant improvement, and we are already embarked on that process. John and I have met with our nuclear engineering team, and an extensive program has been drafted for improvement in every area. John and I will continue to meet with this group frequently to monitor and support the improvement program. We will not rest until the Peach Bottom operations are rated among the highest by future INPO teams.

We appreciate your offer of support and help, and we expect to call on you to provide it in depth.

We look forward to future meetings and can assure you that this problem is being given the very highest priority.

Sincerely,

Lee

JLE:jab
cc: J. H. Austin, Jr.
S. L. Daltroff
M. J. Cooney
W. T. Ullrich
R. S. Fleischmann, II
198624j

INPO

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Attachment E

May 7, 1986

Mr. James L. Everett III
Chairman and CEO
Philadelphia Electric Company
2301 Market Street
P.O. Box 8699
Philadelphia, Pennsylvania 19101

Dear Mr. Everett:

Following the Peach Bottom plant exit meeting in January 1986, we arranged for a follow-up visit in April. Our team conducted this visit on April 14-18, 1986. A copy of the team's report and private field notes are enclosed.

Our review of the report and discussions with the team indicate that while improvements are being made in several areas, activities were observed that indicate a continuation of a number of the kinds of problems we saw during the December 1985 evaluation. I have "side barred" selected items of this nature in the attached field notes.

Should you have any questions on this matter, please contact me or have your staff contact Pat Beard (404/980-3214).

Sincerely,

Zack T. Pate
President

Enclosure

cc: John H. Austin, Jr.
Shields L. Daltroff

tripped twice that morning and the operator was attempting a third startup. The outside SS did not stop to offer any guidance or direction and in fact stated that he wouldn't have known about the trips if he didn't read the logs.

- The outside SS re-entered the power block through the north entrance stating that he had never used this entrance before.
- When questioned about the heat damage to 2B instrument air compressor the outside SS pointed out that the operators often close the air compressor outlet valve even though it is not listed on the blocking permit. He stated that in the past when removing the blocking permit, the operators frequently forgot to reopen the compressor discharge valve because it was not tagged. This results in the lifting of safeties and may have contributed to the event that damaged the compressor.

4. The outside SS stated that there were several responsibilities listed in procedure A.7, "Shift Operations" that are frequently not accomplished. Examples include the following items:

   - monitor performance of operators and provide direction as required,
   - make daily inspection rounds at random locations for equipment problems, safety, and housekeeping
   - direct activities outside the control room

CONCLUSIONS:

1. Outside shift supervisors are not providing the technical guidance and supervision required outside the control room. (1, 3, and 4)
2. The emergency plan notification telephone numbers in the monthly surveillance did not agree with the posted numbers. (2)

D. CONTROL ROOM ACTIVITIES

SCOPE:

Several licensed operators, non-licensed operators, plant operations supervisors, and shift technical advisors were observed performing various activities in the control room over a two day period.

OBSERVATIONS:

1. While conducting ST 6.6.1, "Core Spray Surveillance" procedure, the control operator was not able to locate the auxiliary operator (AO) performing the test outside the control room. The control operator used the public address system to contact the AO by announcing "depressurize it, depressurize A loop." Industry experience has shown that use of the public address system to issue operational directions has resulted in misoperation due to misinterpretation of the directions. This is especially true when the announcement does not identify who should take the action, and the equipment is not uniquely identified.

2. The Operations Department keeps all logbooks and log sheets in pencil. Since these are legal documents, good operating practice is to make entries in black ink.

3. While performing ST 6.6.1, the AO depressurized the region between the inboard and outboard discharge valves before the control operator stroked valve MO-14-12A as required by procedure. The control operator directed the AO to re-pressurize the required region and then asked the AO, "Are you reading the procedure?"

4. When ST 6.6.1 was complete, the AO had to be called back to sign the cover sheet of the procedure, which indicated that he had completed the procedure.

5. The outside shift supervisor stated that he seldom gets outside the control room to assist the non-licensed operators. When questioned, he stated that he is tied up in the control room approving blocking orders and entering maintenance request forms into the computer. When he does leave the control room, it is just to sign the non-licensed operator logs.

6. The shift technical advisor (STA) on duty came up behind the control operator on the running unit and kicked him behind the knee causing the control operator's legs to buckle. On another occasion, the STA threw a pad of yellow note paper at the operating unit's control operator. Neither the shift superintendent, nor the control room supervisor who observed the horseplay counselled the STA on the need to maintain a professional atmosphere in the control room.

7. The operations engineer stated that he was not sure what surveillances were required to meet the technical specification limiting condition for operation action statement with one emergency diesel generator inoperable and one startup transformer out of service. This was approximately fifteen hours after the above components were declared inoperable. Subsequent investigation revealed that the other three emergency diesel generators, the unit 2 core spray systems, the unit 2 residual heat removal (RHR) systems and the unit 2 high pressure service water system had to be verified operable immediately and every twenty-four hours thereafter. The 2B and 2D RHR pumps were verified to be operable 23 hours and 40 minutes after the components were declared inoperable. This does not meet the intent of the technical specification definition of immediate which is that the required action will be initiated as soon as practicable considering the safe operation of the unit and the importance of the required action.

CONCLUSION:

1. Operating activities are not consistently conducted in a manner that ensures reliable plant operation. (1, 2, 3, 6, and 7)

INPO

institute of
Nuclear Power
Operations

Attachment F

Date: April 18, 1986

Memorandum

To: FILE -- PHILADELPHIA ELECTRIC COMPANY

From: Zack T. Pate

Subject: Trip Report: PECo.

1. Visited wtih John Austin, Shields Daltroff, and Lee Everett on April 9-10, 1986. Discussed seriousness of 3/18/86 rod misoperation event with Austin and Daltroff, including importance of utilizing operating experience at other utilities in training operators. Made particular reference to the attached, stressing side-barred bullets on page 2 of Newton trip report and recommendation #3 of 12/28/83 letter to industry.

2. Will brief on other aspects of visit at 4/16 staff meeting.

Zack T. Pate

adw
Attachment

cc: P. M. Beard
W. F. Conway
S. L. Rosen
K. A. Strahm

INPO

Institute of
Nuclear Power
Operations

Memorandum

Date: March 27, 1986

To: K. A. Strahm via W. W. Wigley

From: S. L. Newton

Subject: Event Evaluation at Peach Bottom Atomic Power Station

Purpose

A visit to Peach Bottom Atomic Power Station was made on March 25, 1986, by S. L. Newton to evaluate the training implications of a recent rod mispositioning event.

Discussion

The accredited initial and continuing training programs for reactor operators and senior reactor operators were reviewed to determine if the appropriate training material is included in the training programs. The training records of the individuals involved in the incident were also reviewed to determine whether or not they had received the training and whether they had been evaluated on the material.

The following facts are considered pertinent:

- None of the four operators involved are graduates of the accredited initial training programs.

- The initial training program lesson plans on the Rod Worth Minimizer (RWM) and Rod Sequence Control System (RSCS) contain pertinent information, including technical specification requirements. Initial training also includes simulator training utilizing the pertinent procedures and check off lists for a reactor startup. However, the simulator training does not normally include conducting startups with the RWM out of service; such an option is not identified in the simulator exercise guide. On the other hand, discussion with the training coordinator indicates that it would be of dubious value due to differences between the plant and the simulator.

- The initial training program OJT manual also contains discussion topics and practical factors associated with the RWM and RSCS, including functional tests and actions required if the systems are out of commission.

- A recent continuing training cycle (85-3 in the September 1985 time frame) was devoted to rod control and included lessons on control rod worth, control rod hydraulics, Reactor Manual Control System, Rod Worth Minimizer, Rod Sequence Control System, Nuclear Instrumentation input to Rod Blocks, and technical specifications associated with the above topics. The shift supervisor and the reactor operator attended this training and achieved scores of 82% and 93%, respectively, on the associated test. The control room supervisor (SRO) and second reactor operator did not attend the training but took makeup examinations in December 1985 and achieved scores of 91.8% and 85% respectively.

- There was no specific training conducted on INPO SOER 84-02. The training coordinator had identified it as part of the monthly required reading package for licensed operators, but the operations engineer had deleted it. The plant's response to 84-02 was that the operator training program adequately includes the elements discussed. The visit confirmed this to be the case, at least for the programs as they exist today.

Recommendation

- Ensure that the plant specific simulator currently under construction for Peach Bottom has the capability to duplicate conditions such as existed during the rod mispositioning event. Include startups with RWM out of service as part of initial and continuing training programs when the simulator is available.

Summary

Training, or lack of it does not appear to have been a major factor in the recent event. The accredited training programs contain the appropriate training material and requirements such that operators should be able to perform correctly under the system conditions that existed.

SLN:saj

Institute of
Nuclear Power
Operations

1100 Circle 75 Parkway
Suite 1500
Atlanta, Georgia 30339
Telephone 404 953-3600

December 28, 1983

SAMPLE

EXAMPLE OF COPY SENT TO ALL UTILITIES

Mr. R. Patrick McDonald
Vice President
Nuclear Generation
Alabama Power Company
P. O. Box 2641
Birmingham, Alabama 35291

Dear Mr. McDonald:

The purpose of this letter is to call your attention to a series of recent events involving improper manipulations of control rods. In our judgment, the nature and recurring pattern of these events warrant a special notification of members by letter.

In recent months, several events involving improper operations of reactor control rods and associated protective circuitry have occurred. These events have involved both PWRs and BWRs. INPO Significant Event Report (SER) 86-83, issued via NUCLEAR NOTEPAD on December 22, 1983, contains a preliminary summary of such events. A copy is attached for your convenience (Attachment A).

Improper operation of control rods and associated protective circuitry can lead to fuel cladding damage or, in a worse case scenario, to core damage. INPO is continuing to investigate the events and will develop a Significant Operating Experience Report (SOER). However, the nature and recurring pattern of the operator actions discussed in the attached SER and in the referenced documents indicate a need for prompt attention to this area to avoid a recurrence of similar or potentially more serious events.

Attachment B is a brief set of recommendations that supplement the comments section of the SER. In the forthcoming SOER, after additional dialogue with the affected utilities and NSSS vendors, we will refine these recommendations. In the interim, we recommend use of the attached SER and recommendations in implementing appropriate utility or site-specific measures that address this area.

Pat Balicua this one is worthy of attention by top management. Zack

Sincerely,

Zack T. Pate
Executive Vice President

ZTP:dp
Attachments

cc: Mr. Joseph M. Farley
INPO Board of Directors

COPY WENT TO ALL CEO's

SIMILAR NOTE ON EACH

RECOMMENDED ACTIONS

1. Review current corporate and station policies and procedures to ensure that they adequately address the potential adverse situation caused by improper control rod manipulations. Such policies and procedures should specify conservative actions by operating personnel to prevent possible fuel cladding damage that can result from control rod misalignment or misoperation.

2. Review policies and procedures for recovery from control rod misalignment to ensure that recovery actions do not result in a violation of power or flux distribution or heat generation rate limits. For example, a reduction in reactor power and prompt notification of cognizant reactor engineering personnel should be considered prior to recovery from a control rod misalignment condition.

3. Hold discussions of recent industry events involving improper control rod operation with each operating shift.

4. Verify that training and retraining programs for licensed operators include appropriate coverage of material related to these events.

PEACH BOTTOM
POST-EXIT POINT PAPER
NOVEMBER 12, 1986

The details of our recent evaluation of Peach Bottom were provided to you at the exit meeting on November 7, 1986. An important package of related follow-up material was mailed to you on November 10, 1986. This paper summarizes the information previously provided.

Although progress has been noted in a number of areas, there are still long-standing issues on which corrective action is not yet complete. The number of open issues has not decreased significantly over recent years. By way of illustration, the October 1986 INPO evaluation has a total of 23 related and Appendix I findings, compared to a total of 25 in the December 1985 evaluation and to 26 in the December 1984 evaluation.

The overall indicators of plant performance at Peach Bottom continue to compare unfavorably with the industry as a whole.

The station has experienced several significant events in 1986. These events are of particular concern. The station has also reported a large number of other events that are indicative of a need for more effective management and supervisory oversight of plant operations.

While higher performance standards are being established by corporate and station management, there are also indications that further effort is needed to communicate and enforce these standards at the worker level. Increased management emphasis on improving worker performance is also needed to demonstrate to the work force that high performance standards are being set by Philadelphia Electric Company rather than by outside forces.

Our overall assessment places Peach Bottom in Category (4) of plant performance.

In summary, continued top management attention is needed at Peach Bottom to ensure that the improvement trend is maintained and to instill a sense of ownership of and commitment to these improvements within the Peach Bottom work force.

With your support, we will schedule a follow-up progress check in 6 months and the next Peach Bottom evaluation in 10 - 12 months.

HUMAN PERFORMANCE EVENTS HISTORY FOR PAST 22 MONTHS

Human performance-related events reported in Licensee Event Reports were reviewed and categorized according to selected key concerns identified during the 1986 INPO evaluation. This review covers the period from January 1985 through October 1986. The results can be summarized as follows:

Category	Number of Events
Inadequate management guidance and supervisory oversight of plant operators (1986 INPO Finding OP.2-2)	20
Deficient operational procedures or poor operating practices (1986 INPO Finding OP.5-1)	4
Lack of proper labeling of plant equipment and components (1985 INPO Finding OP.6-1, 1986 Appendix I)	5
Deficient station maintenance procedures and failure to follow procedures (1986 INPO Finding MA.6-1)	10

The events involving human performance related problems are summarized by category below:

RECURRING PROBLEMS IDENTIFIED BY INPO AT PEACH BOTTOM

ISSUE	10/86	12/85	12/84	1/84
Organization & Administration:				
Goals and objectives not used to focus station efforts	OA.2-1	OA.2-1		OA.2-1
Management/supervisory involvement in day-to-day activities, procedure adherence	OP.2-2 MA.4-1	OA.3-1	OA.3-1	OA.1-3 OP.2-1 MA.4-1
Management support of radiation protection program	RP.9-1	OA.3-2	RP.1-1	RP.1-1
Vendor manual control and use	TS.6-1	OA.6-1	App. I	OA.6-1
Fitness-for-duty policy	App. I	OA.9-1	OA.9-1	
Operations				
Shift supervisory involvement in operations activities	OP.2-2	OP.2-1		OP.2-1
Radwaste operations need improvement	OP.2-1	OP.2-3	OP.6-2 RP.7-1	RP.7-1
Component labeling incomplete	App. I	OP.6-1	App. I	App. I

Attachment H

INPO

Institute of
Nuclear Power
Operations

Date April 9, 1987

Memorandum

To Messrs. Utley, Hintz, Hampton, Kenyon

From Zack T. Pate

Subject:

Gentlemen:

Thank you for agreeing to serve on an industry review panel for Philadelphia Electric Company (PECo). Members of the panel include, in alphabetical order:

Claude Cross	Assistant to the President Institute of Nuclear Power Operations
Jim Hampton	Manager, Catawba Nuclear Station Duke Power Company
Don Hintz	Vice President, Nuclear Power Wisconsin Public Service Corporation
Bruce Kenyon	Senior Vice President, Nuclear Pennsylvania Power & Light Company
Ed Utley	Senior Executive Vice President Power Supply, Engineering & Construction Carolina Power & Light Company

From my discussions and agreement with Lee Everett, chief executive officer of PECo, the panel is expected:

1. To be made aware of the facts leading to and surrounding the "sleeping on shift" situation that led to NRC's shutdown order (an internal PECo team assisted by consultants will ascertain the facts).

2. To review the recovery plan developed by PECo

3. To make recommendations for modifications or enhancements to the recovery plan.

Lee Everett, Claude Cross, and I estimate that three visits to Philadelphia will be necessary to do the thorough job that we all desire. Thus, I estimate that about a man week of effort will be necessary, exclusive of travel time.

Panel members were chosen with great care to ensure that we provide PECo with the best possible assistance. Claude Cross will have INPO resources at his disposal, as necessary, and you may want to call on expertise from within your own organizations as the panel's work proceeds.

(The attachments to this memo are the same as those mailed to the Board of Directors on April 2, 1987.)

We have not sought to provide you with a "charter" or other detailed guidance, or to designate a chairman. From my own experience on a similar panel, I believe you will find that your desired course of action will be readily apparent as you review the situation and that your work will lead naturally to recommendations that will be useful and valuable to PECo.

Claude will be mailing you material shortly that provides background on the situation from an INPO perspective.

Thank you again for agreeing to this important assignment.

Zack

Zack T. Pate

ZTP:vpm
cc: J. L. Everett, III
C. C. Cross

Attachment I

2301 Market Street
522-1

July 6, 1987

FROM: C. L. Fritz

TO: J. M. Lange, President, IGA

SUBJECT: Drug Testing

Presently, our Company is screening all job applicants to detect those who may be using illegal drugs. This procedure has proven to be effective. Also, employees may be tested if there is sufficient justification based on cause.

As you know, as part of the Peach Bottom Restart Plan, all policies are being reviewed in order to assure the best possible operation of our nuclear facilities. In the course of that review, we have learned that several other nuclear utilities have instituted random drug testing of nuclear employees. You may be assured that our Company has no plans of instituting such a policy. We also have learned, however, that other nuclear utilities are requiring a drug screen of urine collected at the time of the annual physical exam.

With this in mind, we plan on instituting a trial program for drug screening as a part of the next series of annual physicals for all employees who are regularly assigned to a nuclear station and who are in progressions which lead to the nuclear premium, or who are in those job classifications which have been receiving a higher rate of base pay due to their assignment at a nuclear facility. If after a period of time, it can be demonstrated that there is no value to the Company nor to employees, you can be assured that the annual physical drug testing will not be continued.

Vice President

Copies to: J. H. Austin, Jr.
J. W. Gallagher
Dr. W. F. Hushion
J. J. McGinley

Attachment J

2301 Market Street
S22-1

CONFIDENTIAL

July 27, 1987

FROM: C. L. Fritz

TO: J. M. Lange, President, I.G.A.

SUBJECT: Grievance Procedure in Nuclear Operations

As a result of recent discussions with you, it has been agreed that our existing Grievance Procedure, as applied to employees in Nuclear Operations, should be modified as follows:

Employee problems or complaints should first be brought to the attention of immediate supervision for resolution. If the employee is not satisfied with the response, he or she or the IGA should submit the problem or complaint to successively higher levels of supervision up to the plant manager, who will give a prompt response. Where possible, this entire process should be completed within 20 days.

If the response is unsatisfactory, or if the above process is not completed within 20 days, the employee or the IGA may file a written statement of the grievance with the vice president of the employing department. IGA representatives may be involved in these steps, and a written response must be provided within 20 days.

If the employee and/or the IGA are still not satisfied by the response to the grievance, it may be submitted in accordance with the established procedure to the vice president - Personnel & Industrial Relations.

It is also agreed that this modified procedure will be reviewed periodically to insure that it represents an improvement to our existing procedure and as necessary, appropriate changes will be made.

Vice President

CC: J. H. Austin Jr.
J. S. Kemper
J. W. Gallagher
G. M. Leitch
D. M. Smith
J. F. Franz, Jr.
E. P. Fogarty

0235Q-2

Attachment K

CONFIDENTIAL

2301 Market Street
S22-1

July 27, 1987

FROM: C. L. Fritz

TO: J. M. Lange, President, I.G.A.

SUBJECT: Suspension Appeals

As you know, for a number of years, we have had a procedure whereby the I.G.A., for good cause, could request that a suspension of an employee be held up until a meeting to review the appropriateness of that suspension was held with a representative of the Personnel & Industrial Relations Department.

As a result of recent discussions with you concerning the Peach Bottom Restart Plan, it has been agreed that this procedure should be modified with respect to defined suspensions of employees who are regularly assigned to a nuclear station and who are in progressions which lead to the nuclear premium, or who are in those job classifications which have been receiving a higher rate of base pay due to their assignment at a nuclear facility.

The modification agreed upon is that, in order to provide for the timely imposition of a defined suspension for "major" infractions involving job performance and behavior under the disciplinary guidelines by such employees, appeals by the I.G.A. of such suspensions imposed on these employees by plant management will be considered during, and or after the suspension.

Vice President

CC: J. H. Austin, Jr.
J. S. Kemper
J. W. Gallagher
G. M. Leitch
D. M. Smith
J. F. Franz, Jr.
E. P. Fogarty

0235Q-1

BRIEFING FOR SPECIAL COMMITTEE OF PHILADELPHIA ELECTRIC COMPANY BOARD OF DIRECTORS

1. BACKGROUND ON INPO

-Cover from separate outline

2. INPO INTERACTIONS WITH PECO

-Cover from separate outline

3. SPECIAL INPO/INDUSTRY REVIEW PANEL REQUESTED BY PECO AND PREPARATIONS FOR THIS MEETING

-Shortly after receiving the NRC shutdown order on March 31, Mr. Lee Everett contacted me and asked that we form a special panel that would:

- o Be made aware of the facts leading to and surrounding the "sleeping on shift" situation that led to NRC's shutdown order (an internal PECo team assisted by consultants would ascertain the facts)
- o Review the recovery plan developed by PECo
- o Make recommendations for modifications or enhancements to the recovery plan

-Panel members include:

Claude Cross	Assistant to the President Institute of Nuclear Power Operations
Jim Hampton	Manager, Catawba Nuclear Station Duke Power Company
Don Hintz	Vice President, Nuclear Power Wisconsin Public Service Corporation
Bruce Kenyon	Senior Vice President, Nuclear Pennsylvania Power & Light Company
Ed Utley	Senior Executive Vice President Power Supply, Engineering & Construction Carolina Power & Light Company

Members of the panel were selected to provide a broad but diverse experience base in nuclear and utility management. Panel members were chosen from utilities with superior records of nuclear plant performance and the individuals selected are among the best in the industry. Exhibit 1 is a copy of an April 9, 1987 memo that formally established the panel. Over the past few months, the panel has devoted considerable effort to acquiring an understanding of the Peach Bottom and Philadelphia Electric situation, and to formulating recommendations to assist in the recovery effort. I mention this early because discussions with individual panel members comprised an important part of my preparations for this meeting. These preparations included:

- o A detailed review of INPO activities related to Peach Bottom and PECo over the last 5 years. Exhibit 2 is a list of the visits we have made to Peach Bottom or PECo headquarters during this time frame. Highlights of these interactions have been provided to this committee separately.

- o A brief review of NRC interactions with Peach Bottom, including recent SALP reports and the March 31, 1987 Shutdown Order.

- o A review of the "Peach Bottom Commitment to Excellence Action Plan" as submitted to NRC with John Austin's letter of August 7, 1987.

- o A review of the June 17, 1987 MAC Report (now included in the Action Plan).

- o Discussions with members of the special panel as described above, and selected other personnel outside INPO.

- o Discussions with senior INPO staff.

While we have drawn on the observations of others, as listed above, the conclusions, opinions and recommendations in this report are INPO's. Specifically, we do not claim to be speaking for the special panel and, in fact, will recommend later that you meet separately with the special panel for an update on their views.

4. PRINCIPAL CONCLUSION:

I will come right to the point on the principal conclusion that comes from INPO's review, and then provide a basis for that conclusion. Our principal conclusion is as follows; although the Peach Bottom Commitment to Excellence Action Plan has many needed and desirable action steps, and may well lead to NRC approval to restart:

> The fundamental approach to nuclear operational management at Philadelphia Electric Company has not changed, and is unlikely to change noticeably in the foreseeable future. The underlying problems at Peach Bottom will be slow to change because of the absence of fundamental changes at corporate. Changes that do occur as a result of the Action Plan are not likely to be sustained.

5. BASES FOR THE CONCLUSION

A. As related to the Operators

In our experience at INPO, and in my personal experience over a lifetime in the nuclear operational field, the operating crews at one nuclear plant are not very different from those at any other. By this I mean that the inherent aptitudes, intelligence, skills, and desire for pride in their work among operational personnel are about the same nationwide. I say this from observing the crews at every commercial light water plant in this country, and from observing many crews of operators over a 20-year career in the nuclear Navy. Thus, I start with the premise that the operators at Peach Bottom are not a unique exception, and that the problems with the behavior and the lack of professionalism among the Peach Bottom operators are the result of the total climate established by management.

With this premise in mind, I now refer to various sections of the Peach Bottom Action Plan:

(1) Page 1-2 of the Executive Summary cites four root causes that contributed to declining performance at Peach Bottom. One of the root causes listed is the . . ."station culture, which had its roots in fossil and pre-TMI operations, that had not adapted to changing nuclear requirements." In my view, this is not a root cause, but rather is the expected result of the climate established and accepted by management.

The other three root causes listed have to do with:

- o poor leadership by plant management
- o timeliness of training for replacement operators
- o slowness on the part of corporate management to recognize the developing problems at Peach Bottom

These root causes, taken in total context, place the responsibility for the Peach Bottom situation primarily on the station (with only an acknowledgement of "slowness" on the part of corporate). For those who are aware of INPO and NRC interactions with PECo over the past several years, this comes across as an abrogation of responsibility by PECo corporate management. We expect it will come across in the same manner to many personnel at Peach Bottom, including the operators.

(2) On Page 1-4, the Action Plan:

- outlines a course of training that will

  "...help licensed operators identify the underlying attitudes which promoted unacceptable behavior in the control room and change this behavior...."

  and

- sets forth conditions operators must accept, including

  "...undergo follow up independent psychological assessment..."

  "...be required to personally commit to a new code of professional conduct..."

Taken together, these statements further implicate the operators themselves as the "root cause" of Peach Bottom's problems. Once again, this is an incorrect conclusion and will send the wrong message to the company's operators, possibly for years to come.

(3) Page 1-7 of the Action Plan calls for a Shift Operator Monitoring Program. QC personnel will serve as shift operations inspectors and will report directly to the QC Supervisor. QC inspections of selected activities are one

thing---and are an accepted industry practice---but a QC person assigned to each shift full time is quite another matter. This policy will send a message to operations personnel that they are not trusted by senior management.

(4) Page 1-3 of the Action Plan calls for a new position of Shift Manager. The Action Plan states that the shift manager position:

> ...will be independent of the Shift Operator progression sequence...
>
> ...will hold a degree in relevant disciplines.
>
> ...will be rotated to and from other management positions.
>
> ...provides needed management development and career path opportunities for operations management personnel...

As written, this plan could effectively close the door of opportunity for shift operators. The we (operators)/they (management) syndrome that led to the Peach Bottom situation in the first place will be exacerbated by this policy unless clear provisions are added that allow and encourage the operators to progress to the shift manager position.

(5) The many other references to psychological screening in the report further communicate an undesirable message to the operator community. A logical question that the operators can (and surely will) ask is why not psychological screening for the managers who supervise nuclear operations?

B. As related to Management

In our view the approach taken in the Action Plan, of which the preceding are examples, is symptomatic of some of the real root causes of the situation at Peach Bottom. We conclude that the root cause analysis and corrective actions must include and address:

- o Leadership and management practices from the highest levels in the company to the plant manager, as manifested by:

  - The absence of an integrated approach to management of nuclear operations---an excessive reliance on a MATRIX approach. A capable nuclear line organization with clear and direct lines of authority and with strong accountability has not been developed.

  - The establishment and acceptance of a relationship with the Independent Group Association (IGA) that has weakened management's authority to deal with personnel and related issues. Over the years, efforts to avoid the formation of a formal bargaining unit have led to a situation that is generally much worse than that in other utilities with national bargaining units. — TOLD LEE & SOW 3 years ago

  - A protectionist and overly paternal culture within the corporate organization that dwells on past accomplishments, rejects the need for change, places excessive and undue emphasis on promotion from within, and tends to place the blame for problems on someone else.

Examples in support of this, and of the absence of real progress, include:

(1) The nuclear operations organization does not have adequate control over key activities that support Peach Bottom. These include:

- o Maintenance
- o Personnel
- o Security
- o Outage management
- o Engineering

(2) The number of layers in the management organization between the CEO and the Peach Bottom Station Manager is excessive. (The Action Plan states that the Station Manager "has direct access to the President on all matters related to the restart" but as worded, this method of bypassing several layers will terminate at restart.)

(3) The highlights of interactions with INPO, as previously furnished to the Committee.

(4) The MAC report includes a number of relevant statements:

- o On page 6: "Comprehensive attitudinal changes of all involved personnel, including management*, can provide the motivation for sustained behavioral changes which will lead to improved nuclear operations at Peach Bottom."

- o On page 4: "A lack of new managerial perspective from outside PECo and additionally at Peach Bottom, a lack of new perspective from inside the company."

---

*Page 2 defines Management, as used in the MAC report, as the management hierarchy as a whole.

- On page 13: "Many Peach Bottom employees and management personnel appear to use the matrix system as an excuse for lack of performance."

- On page 8: "There has been a lack of understanding and clarity about delegated authority and accountability for plant operations at different levels of the nuclear operations management chain down to the shift superintendent."

- On page 4: "Limited number of management role models to expand PECo's management effectiveness, especially in nuclear operations."

---and others in the list on the bottom of page 4 and the top of page 5.

(5) No evident management or significant organizational changes were made at corporate as a result of the situation at Peach Bottom (by comparison, extensive changes were made at the station). This reflects the attitude internally, and sends the message externally, that all was well at corporate all along.

6. SYMPTOMS OF CONTINUING PROBLEMS

Unlike the information or opinions just presented, much of the following is based on second- or third-hand reports. All, however, is recent. The next INPO evaluation, which will allow us an opportunity for a firsthand look, commences in late September.

a. Morale at the station has not changed much, if any. Many personnel are still in the "rejection" mode, rejecting new management initiatives and policies.

b. Shortcuts in efforts to prepare for the start-up are already being perceived by station personnel in some instances.

c. An enormous effort is still required to get the proper and necessary support for Peach Bottom from:

-Engineering
-Personnel
-Security

The prevailing attitude in these key support organizations can be characterized as:

"...that is a Peach Bottom problem and Peach Bottom should resolve it..."

d. A recent change in the Drug Policy governing station personnel was announced by IGA personnel posting a letter from PECo's Vice President of Personnel to the President of the IGA. This action bypassed line management and preempted the prerogative that line management should have had to inform Peach Bottom personnel of this important policy change.

e. The Action Plan describes an important change to the disciplinary policy governing Peach Bottom personnel (Page 3-15). Station personnel are learning of this policy through hearsay or from copies of the Action Plan, rather than through a proper line management notification. This same comment applies to changes to the grievance process (also on Page 3-15). The unwieldy organizational situation that exists between Nuclear Operations, Personnel, and the IGA leads to these situations.

f. Recent INPO Vice President participation in a training/orientation session for Peach Bottom operators---observed absence of line management participation.

7. RECOMMENDATIONS

a. Upgrade the Action Plan

-Consider comments in this paper

-The Action Plan should be a "living document" until considerable upgrade/refinement is achieved

b. Meet with Special INDUSTRY/INPO Panel. Obtain their critical review and comments on the Action Plan.

c. Establish a permanent Outside Nuclear Oversight Body, as done by many other utilities---examples provided.

d. Need fresh perspective on nuclear operations.

Culture at Peach Bottom cannot be expected to change with the existing and continuing culture at corporate.

e. Don't let the drive to meet a start-up date result in shortcuts or short shrift to important action items. Recall:

-Rancho Seco situation

-Pilgrim situation

f. Need an integrated corporate nuclear organizational approach, with clear, direct lines of responsibility, and with sufficient authority over all key functions that are necessary for the proper operation of a nuclear station.

ZECH TO PECO: 'I NEED TO SEE RESULTS' AT PEACH BOTTOM

Following are the comments of NRC Chairman Lando Zech at a September 14 commission briefing on Philadelphia Electric Co.'s (PECO) "commitment-to-excellence plan" for Peach Bottom, which was shut by NRC March 31 after the agency uncovered evidence that operators were sleeping on the job. Zech made his remarks following a presentation by PECO board Chairman James L. Everett and PECO President and Chief Executive Officer J.H. Austin Jr. Other PECO officials present were J.S. Kemper, senior vice president for engineering & production; J.S. Gallagher, vice president nuclear operations; and Dick Smith, Peach Bottom manager.

Let me just say from my standpoint, this is one of the most serious meetings we have had since I have been on this commission for the past three years. It is troubling, very troubling, at least to me, to realize that we could have such a breakdown in discipline and the respect for authority and understanding of their commitment to safety as you have had, Mr. Everett, at your Peach Bottom plant.

I have visited a lot of plants in our country, more than 80 of them. I have visited a lot of plants overseas. Whenever I visit the plants, I spend some time with the plant management. I spend some time with the operators. In my view, most of our operators are good across the country.

If there is any difference in the operators, it has been my experience it is because of management. When a plant is managed properly from the top down, your operators are generally pretty good, maybe a little better. When you have management problems, the operators have morale problems, there are problems of their understanding of their position in the organization. The operators reflect the management.

You are here today; you have told us about your problems "at the plant." I understand that. But I would submit that your corporate management problems are just as serious. I think that the fact that you didn't know what was going on is very serious. Either you knew it and you condoned it, which apparently you didn't, or you didn't know it at all. In any case, either one is serious.

The fact that we could have a situation like this existing in one of our plants in our country is very, very serious.

Now what are we going to do about it? What are you going to do about it?

You've told us here today some of your commitment-to-excellence plan. You've told us about a lot of things. I agree the root causes, you look at people and you look at management, but what does that really mean? You've got to get the next layer. What does that mean? What are your real commitments to excellence? What are your real commitments to turning this around?

Just because it's an old plant, that doesn't impress me. We have old plants that operate very well. We have new plants that operate some better than others. But the old plant has nothing to do with it.

You've had an attitudinal problem there, it looks like for a long time, and you didn't know anything about it. To me, it really is serious, and I don't know what to say here at this table today, except that we need to look at it very, very carefully. You need to convince this commission, give us the confidence that you, as a CEO, and your organization and your whole team should be able to operate this plant.

We are responsible to the American people, this commission, and I intend to carry out my responsibilities, and I know my fellow commissioners do, too. The public trusts us. We are their servants, and we're going to be the best servants to those people that we can.

And it seems to me that you, when we issue you a license, you accept the trust and confidence of the American people to operate that plant properly. You haven't done so. It's a very serious situation as far as I'm concerned, and I just don't know what else to say to you here today, except that I need personally to hear from you more than I've heard today. I need results.

You've got a commitment-to-excellence plan. Certainly some of the things you've told us appear to be the right things to do. But we need to see results. I need to see results. I'm not going to accept what you've told me today and be anywhere near authorizing your plant to restart. I don't know about my fellow commissioners, but I'm not ready to. I need results.

Part of the problem, as far as I can see, is leadership, right from the top down. I mean that. You've had a serious situation go on for a number of years, it looks like. There has been a concern about it, and now we find complete inattention to duty, as you have acknowledged yourself. It's just not acceptable.

There is no secret to much of this nuclear business, except for hard work, discipline, attention to duty, competent performance, follow procedures, a real honest-to-God commitment to safety. Those are the things that are kind of basic characteristics, as far as I can understand, a real interest in technical competence and following out your duties.

So just at the plant is not good enough for me. Your operators certainly made mistakes; there's no questions about that. And they have licenses by us, too, and I want to hear from our staff as to how they're going to handle that situation.

But you have a license, your company has a license from this commission on behalf of the American government and the American people, and we have a right, an obligation, a responsibility, to be confident that you will carry out that responsibility that you have. You are the plant operator; we're the regulator. We provide the framework of rules and regulations and do the best we can to provide protection of the public health and safety.

You operate the plant; you constructed it; you maintain it; you operate the plant. And we can't have plants where there is this much inattentiveness to anything.

So what confidence do we have that it's going to change? That's what I need to know.

trying to win permission to restart. "It means that any plant that gets in trouble better think about maintenance," the source said. "From now on it doesn't matter what the issue is, the commission is focusing on maintenance, and you'd better be prepared to talk about it."

Sources also said that remarks by Zech and Murley about the need for PECO to make management changes suggest that a utility, to win commission backing for a restart, many need to make high-level management changes—something that PECO has avoided so far. In fact, some sources wondered whether Zech was suggesting to top PECO officials present at the briefing that they should lose their jobs. "He may have been trying to imply that what would satisfy him would be a change at that level," one source said.

One source suggested that NRC and industry groups representing nuclear utilities—such as the Institute of Nuclear Power Operations (INPO)—may favor making PECO an example of how NRC and industry are taking a harder line on problem plants. One key feature of the reorganization of industry groups in Washington and the self-improvement initiatives that industry leaders said would accompany the reorganization was to be a push for improved operations at problem plants (INRC, 13 April, 1).

"It may be necessary for the industry, if it really wants to gain credibility and practice what it preaches, to find a sacrificial utility," the source said. "It's going to have to happen sooner or later."

Spokeswoman Angelina Howard said INPO would not comment on its findings from inspections at Peach Bottom and on whether any information had been shared with NRC regarding the plant. "We feel like we address the plants with problems directly and that is the most appropriate way," she said.

Zech's remarks may also reflect frustration over the difficulty that NRC and industry groups are having in trying to force improved performance at problem plants, one source said. Several industry representatives questioned that assertion, but noted that the issue of how tough a regulator NRC is has received an unusual amount of attention from Congress in recent months.

"I obviously can't speak for the chairman," said NUMARC President Lee. "But it's been a long, difficult summer for him."

Tom Price, NUMARC's director of industry and government relations, said Zech's statements reflect the importance he places on quality of operations and management. "I believe the chairman is looking at Peach Bottom to show his concern about management at all (nuclear) utilities, not just Philadelphia Electric," he said. "Peach Bottom is the tool the chairman has been looking for to implement his philosophy—excellence in operations."—*Brian Jordan, Washington*

Attachment

Independent Group Association
Representing the Employees of the Philadelphia Electric Co
2301 Market St. N1-13 Philadelphia PA 19101
(215) 841-6100

JAMES M LANGE
President

September 9, 1987

FROM: J. M. Lange

TO: C. L. Fritz, Vice President, Personnel & Industrial Relations

SUBJECT: Intimidation of IGA Members and Their Representatives by the Manager of Peach Bottom Station

Admiral D. M. Smith, Manager, Peach Bottom Station, has on several occasions, shown a disturbing tendency to attempt to coerce, intimidate, and restrain IGA members and their representatives, by means of threats both implied and direct, in the processing of grievances and the exercise of their right to representation. On three specific occasions he has made what appear to be retaliatory threats to the Executive Committeeman at Peach Bottom when discussing our members' problems which were then at the pre-grievance stage:

- On May 22, 1987, Admiral Smith issued a memorandum which, in direct violation of Company Policy, informed, "All Shift Operations Personnel" that he was placing a hold on all applications for transfer. Two months later, acting at my direction on a complaint from the operators, E. K. Tucker, Executive Committeeman, Peach Bottom, discussed this issue with Admiral Smith who, although admitting he had not reviewed the Company's transfer policy prior to issuing his memorandum, reacted in a negative and demonstratively angry fashion. He demanded to know who had complained, guessed at the name, and indicated that he would get rid of him and anyone else who did want to be part of the team, (i.e. anyone who disagreed with him).

- On August 10, 1987, F. W. Polaski, Operations Engineer, issued a written reprimand to a number of operators. Although Mr. Polaski signed the reprimand, it was actually given to the operators by an employee of the Management Analysis Company during the course of the, "People - The Foundation of Excellence" training program. In this reprimand, which is a form letter, the operators are advised that they must, "Sign this reprimand as acceptance of it."

When Mr. Tucker, again at my direction, discussed the impropriety of having PECO employees disciplined by contractors and the violation of the Disciplinary Guidelines engendered by the requirement that the operators sign the reprimand under threat of losing their jobs, Admiral Smith was visibly upset. He referred to the possibility of the press being right - i.e. that all of the operators should have been replaced, and by his demeanor and language attempted to intimidate Mr. Tucker.

- The most serious example of Admiral Smith's unacceptable behavior took place over the weekend of September 5 and 6 when he sought out Mr. J. W. Ballantyne and made remarks both threatening in tone and content regarding his submission of a grievance. He informed Mr. Ballantyne that, as a result of his grievance, Nuclear Operations Management was reevaluating your commitment to pay some of the senior Chief Operators a "personalized" supervisory rate with a view toward taking it away from them. This type of behavior had been previously displayed by the Admiral when Mr. Tucker had discussed Mr. Ballantyne's grievance with him. At that time he told Mr. Tucker that the IGA, by accepting this grievance, had lost all credibility with him.

There are other instances of Admiral Smith's overbearing and unprofessional behavior towards the IGA representatives and the IGA members at Peach Bottom that have had the same apparent intent. I must caution you that if he is permitted to continue in this manner, there could be very serious implications for the future of the IGA's relationship with Admiral Smith and the management of Nuclear Operations. Indeed if unchecked, Admiral Smith's behavior could lead to legal action being brought before the National Labor Relations Board.

I respectfully request that you take whatever steps necessary to apprise Admiral Smith of the proper way of dealing with the IGA and that you instruct him to refrain from any further attempts to interfere with the IGA members in their lawful exercise of their right to present grievances to management.

As always, I am aware of the possibility that I may be misinformed and that I have heard only one side of the story; therefore, let me renew my offer to meet with you and the appropriate management representatives from the Nuclear Operations Department to discuss this and related concerns.

Your prompt and careful attention to this matter will be greatly appreciated.

James M. Lange
President

gfs

cc: Executive Committee

3747L

PEACH BOTTOM

PERFORMANCE ASSESSMENT

OCT. 28, 1987
(date)

Based primarily on the recently completed evaluation, INPO's assessment of the overall performance of Peach Bottom Atomic Power Station places it in the 5 category.

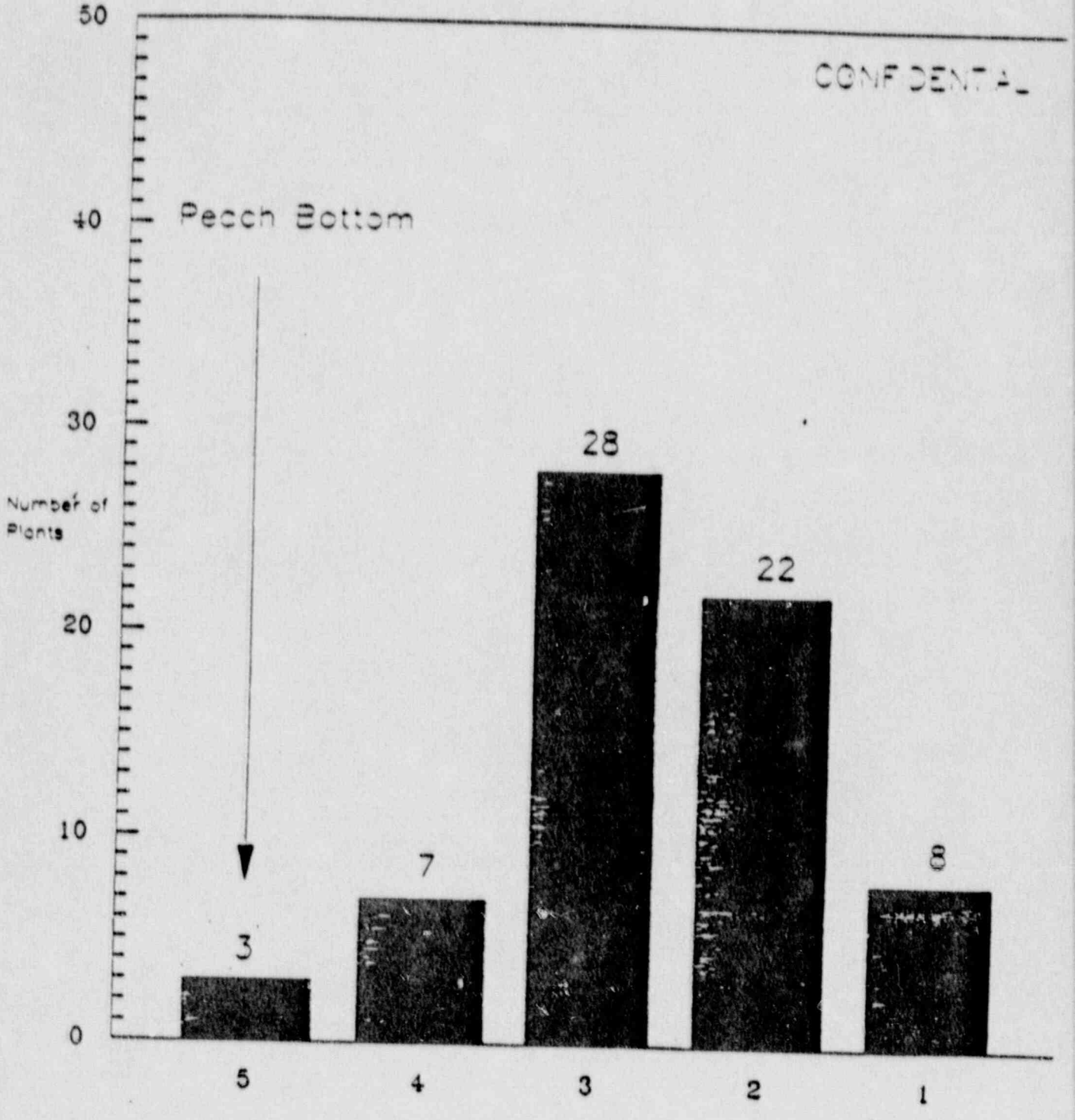
Attachment A is a histogram illustrating Peach Bottom Atomic Power Station comparison to the current INPO assessment of all other nuclear operating stations. Attachment B is a description of each assessment category.

Jack T. Pate

Jack T. Pate

In keeping with the INPO response and commitment to the UNPOC report, Leadership in Achieving Operational Excellence - The Challenge for all Nuclear Utilities, each CEO is strongly urged to furnish the attached information to his Board of Directors (or appropriate committee of the Board).

INPO EVALUATION ASSESSMENTS
All Operating Plants As Of 10/27/87



Attachment A

(1) **Excellent** - Overall performance is excellent. Industry standards of excellence are met in most areas. No significant weaknesses noted.

(2) - Overall performance is exemplary. Industry standards of excellence are met in many areas. No significant weaknesses noted.

(3) - Overall performance is in keeping with the high standards required in nuclear power. However, improvements are needed in a number of areas. A few significant weaknesses may exist.

(4) - Overall performance is generally in keeping with the high standards expected for nuclear power, but improvements are needed in a wide range of areas. Significant weaknesses are noted in several areas.

(5) - Overall performance does not meet the industry standard of acceptable performance. The margin of nuclear safety is measurably reduced. Strong and immediate management action to correct deficiencies is required. Special attention, assistance and follow-up are required.

NOTE: If a plant is found to be operating without an adequate margin of nuclear safety, INPO will request that the plant be shutdown, or not started up, as provided for in an INPO follow up procedure approved by its Board of Directors.

Attachment B

Private & Confidential

10/29/87

INPO EVALUATION OF PEACH BOTTOM

CEO PRIVATE REMARKS

The recently completed INPO evaluation of Peach Bottom revealed a number of significant deficiencies that need to be addressed on an urgent basis. These deficiencies are largely reflective of past management practices.

In those cases where a plant has been shut down for a considerable period of time, such as Peach Bottom, INPO sometimes defers making an assessment of overall performance until the plant can be observed in an operating status. However, in this case (recognizing that Peach Bottom has been shut down since April 1987) the team was able to observe sufficient activities, including a number that reflect serious shortfalls in performance, such that an overall assessment of plant performance could be made. This assessment places Peach Bottom in the "5" category, which is a degradation in performance from the previous "4" category. Key factors influencing this degraded assessment include the following:

- An ineffective operating experience program
- The absence of an effective preventive maintenance program
- Failure to implement and/or maintain some key elements of accredited training programs
- Inability to correct previously identified problems as reflected in the large number of recurring issues.

A factor influencing degraded performance in some areas observed may be the loss of plant technical knowledge and experience due to the turnover of key personnel in operations and station management.

Attachment 1 is a chronological list of recurring/ongoing issues. Attachment 2 is a summary of the key areas needing improvement. These need to be addressed to assure that the restart and operation of Peach Bottom are conducted in a safe and reliable manner. In this regard, we request written confirmation prior to startup that the following actions have been completed:

- Ensure that a stable plant operational line organization is established with sufficient technical expertise in the key line management positions and with clearly defined responsibilities.

- Ensure readiness of the control room crews to operate and to handle emergencies based on your management's assessment of their performance in the simulator.

- Verify that important plant systems and equipment are in the proper condition and configuration to support safe plant operation (see plant findings MA 5-1, MA 4-2, and TS 3-1; also corporate recommendation 2.1A). These actions should include:

    1. Completion of overdue preventive maintenance on key equipment.

    2. Checks of key systems to see that all changes have been properly evaluated and reflected in applicable procedures and drawings.

- Screen outstanding industry operating experience reports including reopened SOER recommendations. Accelerate implementation of corrective actions based on this information

- Implement corrective actions for each of the findings in the operations area.

Your in-depth review of the deficiencies in the evaluation report may determine additional actions that need to be completed prior to startup to ensure the safe resumption of plant operation.

Upon confirmation of the actions listed above, and with your support, INPO will return prior to plant startup to observe control room crew performance in the simulator and to conduct a follow-up visit to the plant to check progress in the above areas and readiness for operation. Also, with your support, we will plan to return for the next full evaluation within six months after plant startup.

Attachment 1

RECURRING PROBLEMS IDENTIFIED BY INPO AT PEACH BOTTOM

10/30/87

ISSUE	9/87	10/86	12/85	12/84
Organization & Administration:				
Goals and objectives not used to focus station efforts	OA.2-1	OA.2-1	OA.2-1	
Management/supervisory involvement in day-to-day activities, procedure adherence	OA.3-1 MA.4-1 OP.2-1	OP.2-2 MA.4-1	OA.3-1	OA.3-1
Management support of radiation protection program	OA.1-2	RP.9-1	OA.3-2	RP.1-1
Operations:				
Radwaste operations need improvement	App. I	OP.2-1	OP.2-3	OP.6-2 RP.7-1
Component labeling incomplete	App. I	App. I	OP.6-1	App. I
Ineffective communications system	OP.6-1	OP.6-1		
Housekeeping, material control, and cleanliness needs improvement	App. I	App. I	OP.6-2	OP.6-1
Maintenance:				
Plant material condition	MA.2-1	App. I	MA.2-1	MA.2-1
Maintenance work practice needs higher standards - mtg. & supv. involvement	MA.4-1	MA.4-1	MA.4-1	
Preventive maintenance program needs upgrading	MA.5-1	App. I	MA.5-1	
Radiological Protection:				
Unclear RP requirements for posting, frisking, RWPs, work practices	RP.1-1 RP.3-1	RP.9-1	RP.1-1	RP.3-1
Improve exposure control practices	RP.4-1	RP.4-1	RP.4-2	RP.4-1
Contamination not controlled at the source	RP.9-1	App. I	RP.9-1	RP.9-1
Minimize solid radwaste	RP.7-1	RP.7-1		

ATTACHMENT

EXIT REPRESENTATIVE CLOSING REMARKS

10/30/87

(PEACH BOTTOM)

The findings are the result of the team's evaluation as compared to the performance objectives. These findings were covered in more depth in dialogue between team members and your personnel.

I would like to emphasize the following key areas that need improvement. Many of these areas are recurring and reflect weaknesses in past management practices:

- Resolution of long-standing problems

  a. Personnel often did not adhere to operating procedures, maintenance procedures, or required industrial safety practices. This has been a recurring problem identified in previous INPO evaluations.

  b. The operational readiness of key equipment is adversely affected by the lack of an effective preventive maintenance program.

  c. Many examples of improper radiological practices by workers and health physics technicians continue to occur.

  d. Uncontrolled drawings, procedures, and unapproved operating instructions continue to exist in operating areas of the plant.

  e. Large portions of the power block remain contaminated or controlled as potentially contaminated.

- Effective implementation of some key station programs

a. **The operating experience program needs significant upgrading.** A high number of significant events have occurred at Peach Bottom, some of the events were similar to events previously occurring in the industry. Deficiencies identified during the evaluation include the following:

  - Twenty-five Significant Operating Experience Report recommendations were reopened during this evaluation because actions taken to date were unsatisfactory.

  - Industry operating experience pertinent to plant safety is not routinely disseminated to appropriate station personnel.

  - The reveiw and implementation of corrective actions identified for some General Electric Service Information Letters, Nuclear Regulatory Commission Information Notices, and INPO Significant Event Reports have not been timely.

b. **The training accreditation process is not effectively implemented.** Deficiencies noted during the evaluation include the following:

  - Continuing training for training instructors and health physics technicians and has not been effective in maintaining job-related knowledge and skills.

  - Industry operating experience is frequently not incorporated into initial and continuing training programs.

  - The initial and continuing general employee training programs have not been effective in correcting longstanding deficiencies in radiological work practices.

- o Lack of clearly defined responsibilities and assigned accountabilities for several important station functions. This is reflected in the following:

  a. Weaknesses were noted in the planning and coordination of major activities such as the unit 2 outage completion, maintenance, decontamination activities, and hydrogen water chemistry control program.

  b. Weaknesses were noted in station programs for minimizing radiation exposure and the volume of generated radioactive waste.

We hope you will analyze our findings in the exit package we will give you for possible indications of broad or generic problems. Corrective actions should address underlying causes, not just the specific details noted in the findings.

We plan to mail the first draft of the report by the end of next week. The findings and recommendations in the report will be little changed from those in the exit package. Thus, to assist in getting the final report out in a timely manner, we would appreciate receiving your responses by November 30 and suggest a response meeting during the week of December 7, 1987.

In accordance with INPO's evaluation release policy, the evaluation report is treated as confidential and we issue it only to the utility involved. A copy of the report is provided to our Board of Directors when the final report is mailed to the utility. In addition, for NEIL members, a copy of the final report is provided to NEIL as directed by the utility. We prefer that copies of the evaluation report not be furnished to outside organizations. If, however, you should decide to release a copy of the report, we would appreciate being informed in advance. A copy of our release policy is included in the exit package for your information.

We also want to stress the need for control of the distribution of the exit packages, particularly with regard to outside organizations. The exit package contains details that could be misinterpreted by those who are unfamiliar with the INPO process and the package is considered to be INPOs private field notes. Accordingly, each page is marked as such and we provide you with a limited number of serialized copies. We ask that you appropriately limit and control the distribution within your organization. INPO intends to destroy all field notes related to the evaluation within thirty days after the final report is issued. We request that you either return our field notes or destroy them within this same period.

Attachment P

INPO

Institute of
Nuclear Power
Operations

Suite 1500
1100 Circle 75 Parkway
Atlanta, Georgia 30339
Telephone 404 953-3600

November 13, 1987

Mr. James L. Everett, III
Chairman and CEO
Philadelphia Electric Company
P. O. Box 8699
Philadelphia, PA 19101

Dear Mr. Everett:

This letter forwards the recommendations developed during INPO's corporate assistance visit to Philadelphia Electric Company, conducted October 5 through 9, 1987. The attached letter report is a refined version of the material presented and discussed at the exit meeting on October 29, 1987.

We ask that you review this report and provide responses to the recommendations by December 4, 1987. Separate responses are requested for each recommendation noted in the report. Concise statements describing your actions are desired.

In accordance with INPO policy, this letter report is provided only to you. If you should decide to provide copies to the NRC, or to otherwise release the report outside your organization, we request that you notify INPO in advance.

We observed an open attitude and desire to address problems, and appreciate the cooperative response from all levels of your corporate staff.

Sincerely,

Zack T. Pate
President

ZTP/jjc

Attachment: (as listed above)

cc/w: J. S. Kemper

SUMMARY

The Institute of Nuclear Power Operations (INPO) conducted a corporate assistance visit to Philadelphia Electric Company from October 5 through 9, 1987. The visit was coincident with the INPO evaluation of Peach Bottom Atomic Power Station.

As a basis for the assistance visit, INPO used the August 1985 Performance Objectives and Criteria for Corporate Evaluations; these were applied in light of the experience of INPO's team members, INPO's observations, and good practices within the industry. Information was gathered from discussions, interviews, reviews of documentation, and the concurrent Peach Bottom plant evaluation. The team focused on corporate support and monitoring of nuclear station activities.

INPO's goal is to assist member utilities in achieving the highest standards of excellence in nuclear plant operation. The corporate recommendations are based on apparent plant needs and on best practices, rather than minimum acceptable standards or requirements. Accordingly, areas where improvements are recommended are not necessarily indicative of unsatisfactory performance.

Recommendations were made in a number of areas. The specific recommendations are listed in this report under the applicable performance objectives. The recommendations were presented to Philadelphia Electric management at an exit meeting on October 23, 1987. A number of the recommendations are particularly significant with the most important addressing the need to establish strong and supportive management throughout the nuclear organization to provide knowledgeable direction and effective monitoring and assessment of performance at the stations.

It is recognized that the recent reorganization of the nuclear functions at Philadelphia Electric provide a groundwork for addressing many of the issues in this report as well as problems at the plants; however, strong continuing effort will be needed to successfully implement needed long-term corrective actions.

PHILADELPHIA ELECTRIC COMPANY

Response Summary

MANAGEMENT INVOLVEMENT AND COMMITMENT

PERFORMANCE OBJECTIVE A: Corporate management monitors and assesses nuclear station operations and provides support, guidance, and assistance to ensure and enhance safe and reliable operation. Corporate managers assigned responsibilities for nuclear matters have direct involvement in significant decisions that could affect their responsibilities. Management commitment to the operation of the nuclear station(s) in a safe and proper manner is evident from personal involvement, interest, awareness, and knowledge.

Recommendation (1.2A-1) Establish strong and supportive line management throughout the nuclear organization. Concentrate improvement efforts at the stations and the corporate organization in the following areas:

a. management direction

b. management authority and accountability

c. monitoring and assessing performance

d. follow-up and determination of corrective action effectiveness

e. coordination, communication, and teamwork

f. managing change, setting priorities, and providing resources

The lack of effective performance in these areas detracts from establishment and maintenance of high standards of performance in nuclear operations. Examples of problems in each of the management areas listed above include the following:

a. Management direction

1. There has been a historical emphasis at Philadelphia Electric on strong technical competence but a lack of emphasis in providing personnel with managerial and supervisory skills training and coaching. Also, a reluctance to deal effectively with worker performance issues in order to improve station performance persists.

2. Management actions are too often driven by actual or perceived requirements of outside organizations rather than internal motivation to improve. For example, a corporate line

manager stated that the number of temporary modifications should be reduced at Limerick Generating Station because INPO does not like temporary modifications. Additionally, review of electrical loads was initiated because of an upcoming Appendix R audit.

3. The responsibilities of individuals and groups in various organizations are not clearly understood nor reinforced in day-to-day interactions by the management team. Also, some corporate standards have not as yet been issued or issued as an approved standard. For example, several requirements and guidelines remain in a "trial use" status: some of these were issued in 1985 and 1986, and one in May 1984.

4. The roles of some organizations or groups are not clearly defined. For example, the role of the quality assurance organization to conduct performance-based audits and reviews is unclear to most quality assurance and station personnel.

5. Recurring problems involving poor personnel performance continue to exist at Peach Bottom Atomic Power Station in areas such as radiological protection, coordination and scheduling of maintenance activities, implementation of a preventive maintenance program, material condition, and housekeeping.

6. Some key functions fall short of desired performance because, in part, responsibility is divided among managers which results in no one being responsible. For example, training is the responsibility of four independent organizations. As a result, some actions committed to as part of the accreditation process are not effectively implemented.

7. Relations and policy precedences established with the Independent Group Association have unduly influenced some management decisions. For example, selection of new supervisors considers longevity as a prime

qualification criterion with insufficient regard for individual performance and potential to be a good supervisor. Although it is recognized that Philadelphia Electric management has initiated improvements in this area, consideration should be given to determining the extent of actual or perceived problems as felt at all levels of management and supervision. Based on this determination, additional actions could be taken to supplement the initiated improvements.

b. Management authority and accountability

1. Peach Bottom Atomic Power Station has been shut down since April 1987. Over six months later, little clearly demonstrable action has been taken regarding corporate management's accountability for conditions at the station. As a result, root cause(s) at this level have not been fully addressed.

2. The responsibility and authority of the outage manager has not been established to ensure the manager in this position has the ability to control outage work and to effectively coordinate the efforts of all work groups. In addition, individuals normally assigned as outage manager do not have seniority over the various work group superintendents. Outages continue to exceed planned durations, yet no one is held accountable for this poor performance.

3. Approvals for purchasing (purchase orders above $100,000) and employment actions are held at the president/chief executive officer level implying mistrust or lack of accountability in the managers responsible for nuclear operations.

c. Monitoring and assessing performance

1. Methods of assessing operator activities at the stations are unclear, and no criteria have been developed to perform this function. As a result, corporate line managers and assessment groups have not been effective.

2. Monitoring of maintenance relies on inputs from the station staffs and some visits to the stations by corporate personnel. Continuing maintenance problems indicate that these monitoring activities and assessments have not been effective. A new program to assess the stations in this area was developed but is not yet implemented.

3. Personnel performance in radiological protection has rarely been addressed in radiological protection assessments or quality assurance audits. Problems in this area continue to exist at Peach Bottom Atomic Power Station as evidenced by the results of the recent INPO plant evaluation and to some extent at Limerick Generating Station.

4. Key indicators in material management are not monitored (e.g., percent stock not available on demand, amount of expedited material procurements, and amount of work backlogged awaiting spare parts and material).

5. Engineering and Research has no authority to audit design control activities performed by the station staffs. Engineering and Research quality assurance personnel stated that they attempt to coordinate activities with the nuclear operations quality assurance organization but do not perform any design control audits of nuclear operations activities. Plant changes have been installed at Peach Bottom Atomic Power Station that have bypassed the design control process.

6. Assessments of radiological protection, chemistry, and radioactive waste activities are being performed independently without management direction. As a result, the effectiveness of these assessments is limited, and methodology for monitoring performance using these assessments is inconsistent. For example, radiological protection assessments are sent to the station managers, chemistry assessments are sent to the station chemists, and radioactive waste assessments are not distributed.

7. The independent safety engineering group has been directed by management not to monitor or assess personnel performance at the stations. Personnel performance problems continue to exist in most areas at Peach Bottom Atomic Power Station.

8. The nuclear review board generally does not review management and worker performance problems. The board usually limits reviews to technical issues.

9. A commitment tracking mechanism is not in place that readily allows continual status monitoring of Philadelphia Electric commitments. As a result, some previous commitments are not tracked on a continuing basis, and compliance is not assured for as long as they are applicable.

d. Follow-up of activities and determination of corrective action effectiveness

1. Many problems have been identified at Peach Bottom Atomic Power Station; in many cases, corrective action has been initiated. However, determination of the effectiveness of corrective action by managers has been historically lacking and this contributes to problems persisting.

2. Some assessments done by the corporate organization have identified problems, but implementation of recommended corrective actions has not been timely or effective. For example, a 1986 self-assessment of the operating experience program identified significant problems, but the recommendations have not yet been implemented. Similar problems were identified in the recent INPO plant evaluation.

3. Follow through in carrying out activities is not always performed. For example, Engineering and Research provides preventive maintenance recommendations but does not assess the adequacy of implementing these recommendations.

e. Coordination, communication, and teamwork

1. Licensing personnel expressed difficulty in performing timely coordination of reviews of licensing documents such as licensing event reports due to varying priorities and sometimes due to the unresponsiveness of the group(s) assigned responsibility to perform the reviews.

2. Duplicate chemistry policies and standards are being developed by Nuclear Operations and Engineering and Research for no apparent reason and with limited coordination.

3. Coordination is lacking between Engineering and Research and the stations in the early phases of modification development to effectively address operability and maintainability considerations.

4. There is a lack of ownership between Engineering and Research, Maintenance, and the stations regarding activities for which there are overlapping responsibilities. For example, several maintenance supervisors stated that the material condition of the plant and the selection of work done is not the responsibility of maintenance personnel but rather the problem of the station staffs.

f. Managing change, setting priorities, and providing resources

1. There has been a reluctance by Philadelphia Electric management to believe or accept outside assistance or to investigate effective methods used by other utilities to resolve problems and to improve nuclear station performance. For example, although INPO has performed many visits to Peach Bottom Atomic Power Station, most recommendations from these visits have not been implemented.

2. Managers indicate that there has been a history of added workload imposed on the stations in response to corporate directives, but that overall priorities were rarely

considered at the corporate level and needed resources were rarely provided. Work imposed varies from physical changes to the plant to improvement initiatives in functional areas.

3. Employment of management personnel with utility experience outside the company has traditionally been minimized. This has contributed to a lack of new ideas and management styles within the company and a reluctance to change the status quo.

It is recognized that the reorganization announced on October 9, 1987 can alleviate some of these issues. However, this will require careful implementation of the new organization, persistence, fresh approaches using proven management principles, and significant management effort including monitoring and assessment to ensure that current problems, including those addressed above, are permanently resolved.

Recommendation (1.2A-2) Strengthen corporate management commitment to ensure effective and timely use of operating experience at the stations and in the corporate organization. Develop methods to confirm implementation of required actions resulting from operating experience information review, including dissemination of information to appropriate work groups. Track assigned actions and hold responsible organizations accountable for timely and effective implementation. Examples of problems noted include the following:

a. Inadequate or incomplete application of operating experience information at Peach Bottom Atomic Power Station is indicated by the following examples:

1. Nine events related to previously issued operating experience documents occurred between February 1985 and April 1987.

2. During the most recent plant evaluation, 25 previously closed Significant Operating Experience Report (SOER) recommendations were reopened because original actions taken were not effective in addressing the identified problem.

b. Timely action has not been taken to resolve operating experience information that may be significant. More than 80 General Electric Service

Information Letters dating back as far as 1975 are pending review or awaiting implementation. More than 140 INPO Significant Event Reports issued prior to 1986 are still pending review or awaiting implementation.

c. A self-assessment completed in 1986 identified a number of programmatic weaknesses with the operating experience program. A number of corrective actions were proposed. However, the most significant problem identified, a lack of accountability and assurance that corrective actions are performed and remain current, has not been resolved. In addition, the self-assessment did not determine the performance impact by reviewing the status of a sample of closed SOER recommendations to evaluate adequacy of the actions taken.

d. The recent plant evaluation at Peach Bottom Atomic Power Station identified that appropriate station personnel were not familiar with the information in a number of operating experience reports. In addition, numerous supervisors in various groups in the corporate organization were not familiar with how, or if, their personnel at corporate and at the station received operating experience information. Two corporate managers expressed that appropriate people will get the necessary information but that it might take up to three years. Neither expressed concern with the lack of timeliness.

e. Station representation at the Operating Experience Assessment Committee meetings is minimal. It was estimated by responsible corporate personnel that attendance by anyone from the stations, other than a shift technical advisor, was limited to once or twice a year. Upper level corporate management was not aware of this problem.

Recommendation (1.2A-3) Strengthen the implementation and use of goals and objectives to better focus corporate and station efforts to achieve desired improvements. It is recognized that a goals program was implemented in the Nuclear Operations Department in 1987. As the program matures, areas that should be upgraded include the following:

a. Long-range planning has not been performed to support the development of the Nuclear

cover the time period starting at mid-year and going to the following mid-year and the Nuclear Operations Department goals begin at the first of the year and conclude at the end of the year. The contents of each of these goals programs are developed independently. As a result, there is no direct tie between the goals programs, and action plans and supporting goals are not in place to support some department manager goals.

Recommendation (1.2A-4) Improve the chief operating officer trend report to provide a more useful tool for senior managers to evaluate trends in station performance and to direct corrective action where necessary. Some trend graphs in the report do not provide a clear or complete indication of actual station performance. Other graphs show deficient performance without indicating management corrective action. Examples of problems noted include the following:

a. The SOER recommendations trend graph is not useful and is difficult to read and interpret. The SOER recommendations are considered closed when assigned for action instead of when action is effectively implemented which would be more meaningful to senior managers since effective implementation of SOER recommendations is a problem. Additionally, the total number of recommendations, over 300, is not useful to senior managers and masks the trend of open actions on SOER recommendations, typically 20 to 50.

b. The graph of radwaste volume trends the amount of radwaste shipped. This value is not reflective of the large amount of radwaste stored on site at Peach Bottom Atomic Power Station nor the amount of radwaste generated. Including these indicators in the trend graph would provide better monitoring of actual radiological protection practices at Peach Bottom Atomic Power Station. Additionally, the industry median and quartile values shown on the graph are based on the volume of radwaste generated, not the amount of radwaste shipped. This inappropriate comparison can mislead reviewers.

c. The trend graphs for skin and clothing contamination incidents do not include information to explain the significance of the trends. There were about 150 skin and clothing contamination incidents at the Peach Bottom Atomic Power Station each month during March and April of

1987. The Limerick Generating Station experienced about 150 occurrences each month during June and July of 1987. The industry median value is 130 occurrences per unit per year. The fact that the stations exceeded the industry annual median value in less than two months is not reflected or explained in the report.

d. A trend graph of preventive maintenance activities is not included in the report to allow for senior management review of preventive maintenance work performed and deferred. During the Peach Bottom plant evaluation, it was determined that a significant number of preventive maintenance work requests have not been performed, and some issued in 1983 remain in a deferred status.

e. The trend graph of surface area contaminated at the Peach Bottom Atomic Power Station has been at a constant level for the last three months, although there have been significant efforts to reduce contaminated areas. This indicates a problem in the reduction efforts; however, no actions or explanations were noted based on the trend of the graph.

MAINTENANCE

PERFORMANCE OBJECTIVE A: Corporate management monitors and assesses maintenance activities at the nuclear station(s) and provides necessary guidance and support to ensure and enhance safe and reliable plant operation.

Recommendation (2.1A-1) Implement a program to verify that important plant equipment and systems are in the proper condition and configuration to support plant operation at Peach Bottom Atomic Power Station. This program should provide confidence that deterioration has not occurred to plant components due to uncorrected deficiencies and deferred preventive maintenance. The program should also confirm that systems or components have not been altered by changes implemented outside of established design controls. Examples of problems that underscore the need for this program are as follows:

a. Maintenance request forms and money tickets (minor maintenance requests) have been used to modify the plant without engineering review or application of other design controls. In addition, appropriate documents have not been updated to reflect all of these changes.

b. A large number of preventive maintenance tasks have been deferred or cancelled without engineering or management review to determine the impact on equipment reliability.

c. There is a large number of outstanding corrective maintenance activities in various stages of planning, scheduling, performance, or closeout. These items have not been clearly categorized by importance. In addition, many components have multiple corrective maintenance activities pending.

d. Many plant material deficiencies have not been identified, documented, or corrected. During the recent Peach Bottom plant evaluation, numerous examples of not identifying deficiencies and not correcting leaks and corrosion damage existed.

e. The level of detail provided to maintenance craft in work packages often does not sufficiently define the work scope, work instructions, or acceptable materials. This can result in inappropriate maintenance on plant equipment.

f. During the recent Peach Bottom plant evaluation, the motor-operated valve maintenance program was found to have several deficiencies that may affect motor-operated valve reliability. Identified deficiencies include lack of guidance for lubrication, failure to identify and correct the cause of several valve failures, and lack of post-maintenance testing that adequately duplicates operating conditions.

Recommendation (2.1A-2) Significantly upgrade corporate management involvement, including support and follow-up, in the correction of long-standing station problems in operations and maintenance. Actions to address identified problems in these areas have not been aggressive or timely. Several problems identified as early as 1980 are still not effectively resolved at the Peach Bottom Atomic Power Station. Additionally, increased corporate management involvement will enhance timely resolution of identified problems at Limerick Generating Station. Provide increased priority and resources, as necessary, to effect timely resolution.

Examples of long-standing problems in operations include the following:

a. Problems with adherence to station procedures and good operating practices were identified at Peach Bottom Atomic Power Station as early as 1984. During the recently completed plant evaluation, procedure adherence problems noted included a diesel generator cooldown that was not in accordance with procedure and intentional overfilling of a phase separator tank.

b. Control of drawings, procedures, and other documents used by operations personnel was identified as a problem at Peach Bottom Atomic Power Station in 1980. During the recent plant evaluation, 22 of 23 drawings reviewed in the radwaste control room were out of date by as many as 15 revisions. Outdated or unapproved drawings and procedures were also noted at various locations in the turbine building and the auxiliary boiler room.

c. Plant operating procedure deficiencies were noted as early as 1984. Problems identified included lack of procedure detail, failure to provide procedures for some evolutions, and presentation format that did not minimize human performance problems. Human performance problems in procedures were identified during the last Limerick plant evaluation. Procedures did not exist for some radwaste operations during the recent Peach Bottom plant evaluation.

d. Control room communication with operating personnel in the plant was identified as a problem in 1980 at Peach Bottom Atomic Power Station. Some planned corrective actions on the paging system have not been started. During the recent Peach Bottom plant evaluation, an operator who was paged in the plant could not contact the control room for more than ten minutes due to problems with the page and telephone systems.

Examples of areas with recurring problems in maintenance include the following:

a. Lack of adequate identification, documentation, and correction of material deficiencies was noted at Peach Bottom Atomic Power Station in 1984. Many material deficiencies noted during the recent evaluation were not in the work control system. In addition, corporate personnel stated that maintenance personnel were not responsible for identifying material deficiencies.

b. Prioritization, scheduling, and coordination of work activities were identified as deficient in 1984. During the recent Peach Bottom plant evaluation, there were more than 6000 open maintenance requests, 300 outstanding money tickets (minor maintenance requests), and 1200 additional items requiring maintenance on various lists. Numerous work scheduling and coordination problems were observed that prevented maintenance activities from being performed as scheduled.

c. Implementation of an effective preventive maintenance program and use of maintenance history was identified as lacking in 1985. The recent Peach Bottom plant evaluation identified 586 preventive maintenance activities that have been outstanding since June 1986. These activities were deferred without management concurrence. These activities have not been prioritized, and corporate management has not been apprised of the importance of each being performed prior to restart.

d. Conduct of maintenance activities, including radiological protection practices, industrial safety practices, and valve packing practices, were identified as deficient in 1985. During the recent Peach Bottom plant evaluation work practices by maintenance personnel that could spread contamination or result in personnel injury were observed. In addition, incorrect valve packing techniques were observed.

e. Lack of adequate procedure and work instruction detail was identified in 1986. In the recent Peach Bottom plant evaluation, 48 of 100 maintenance work request forms reviewed lacked detailed instructions that were needed. In addition, procedural guidance had not been provided for numerous maintenance tasks identified as lacking guidance.

Recommendation (2.1A-3) Place increased emphasis on improving the management of outage activities. Identified problems in controlling outage scope, coordinating work group interfaces, and implementing plant modifications need to be resolved. Strengthen the interface of station and corporate activities through increased senior management attention to and participation in outage preparation and execution. Long-standing problems that continue to exist include the following:

a. The responsibility and authority of the outage manager has not been defined to ensure that he can control outage work and effectively coordinate the efforts of all work groups. In addition, the persons normally assigned to manage the outage groups have not been able to exercise authority over the various work group superintendents.

b. The modification process does not always include thorough investigation of actual field conditions during the design phase. As a result, several modifications have been delayed or reworked during the outage due to plant equipment interferences.

c. Some engineering packages are not completed on a schedule that supports outage preparations. Special review and approval are not required for packages produced after the pre-outage deadline.

TECHNICAL SERVICES

PERFORMANCE OBJECTIVE A: Corporate management monitors nuclear station performance and ensures adequate technical support of programs necessary for safe and reliable station operation.

Recommendation (2.3A-1) Ensure the responsibility for reporting and trending the unavailability of key safety systems is clearly assigned and understood by involved station and corporate personnel. In addition, the responsibility for the identification and correction of root causes of safety system unavailability should be assigned and communicated to appropriate parties. Problems with the monitoring of key safety system unavailability are as follows:

a. For approximately one year, Philadelphia Electric has been participating in a pilot program to monitor safety system unavailability for the diesel generators, reactor core isolation cooling system, and high pressure coolant injection system for Peach Bottom Atomic Power Station. However, in the case of Limerick Generating Station, the station has not provided any data on system unavailability for these three systems although requested to do so by the corporate staff on several occasions.

b. The responsibility for the identification and correction of root causes of trends shown through the system unavailability graphs has not been formally assigned. As a result, the corporate staff has distributed the system unavailability trend graphs but has not followed up on trends to verify corrective actions are taken.

c. Results of the pilot program have not been evaluated to determine whether the program has served to aid in the identification of the causes of increases in system unavailability or whether a similar effort should be used to address the unavailability of other key systems.

LICENSING AND REGULATORY MATTERS

PERFORMANCE OBJECTIVE A: The corporate nuclear licensing group provides support necessary for the issuance and maintenance of nuclear stations operating license(s) and ensures compliance with its provisions and other regulatory commitments.

Recommendation (2.4A-1) Develop a method to track commitments and associated status until intended actions are completed. Also, develop a method to ensure completed commitment actions are not inadvertently changed. Although there has been some progress made toward developing a comprehensive commitment tracking system, section managers and licensing engineers are unable to maintain an accurate status of progress toward meeting committed actions. Additionally, the corporate and station staffs are unable to ensure that committed actions remain in place. Examples were noted where response actions to SOER recommendations were removed after having been incorporated into station work practices and training programs. Additionally, a major effort to reverify the installation of equipment attached to block walls in the plant was necessary because a previous commitment to complete a review of these installations was completed but not effectively maintained on a continuing basis.

DESIGN ENGINEERING

PERFORMANCE OBJECTIVE A: The corporate organization provides the design engineering functions necessary to ensure safe and reliable nuclear plant operation through in-house or contract capability.

Recommendation (2.5A-1) Implement the necessary controls to ensure effective configuration management of the nuclear stations. Aspects of configuration management needing particular attention include the following:

a. Design change controls do not ensure that minor modifications, temporary circuit alterations, and setpoint changes consider station design requirements. Problems noted in this area include the following:

1. Analyses performed in 1981 of the Peach Bottom Atomic Power Station masonry walls have been invalidated due to a significant number of items attached to the walls since the original analyses were performed. The analyses were not updated to reflect the attachments added during the implementation of minor modifications. This has required additional walkdowns and analyses to verify adequate stability of the walls under seismic loading. The walkdowns have also identified walls that were originally considered non-safety related but are now considered safety related due to the installation of safety-related attachments or the installation of safety-related equipment near a non-seismically supported wall.

2. Electrical load studies for Peach Bottom Atomic Power Station are being prepared for reanalysis following field walkdowns by an engineer from the Engineering and Research Department that identified instances of undocumented loads being applied to important electrical buses. Engineers in the electrical division indicated the additional electrical loads were the result of implementation of minor modifications and temporary circuit alterations.

3. Recent reviews of temporary circuit alterations at Limerick Generating Station have identified a number of instances where these temporary changes were used to implement permanent changes. As a result, the necessary analyses and document updates were not completed for future use in configuration management.

4. Instrument setpoints at Peach Bottom Atomic Power Station are not controlled systematically to ensure changes are evaluated against system and component design requirements. Conversely, the instrument setpoints at Limerick Generating Station are identified within an engineering-controlled index with changes approved by Engineering and Research to verify that any change to a setpoint is consistent with the methodology used to establish the previous instrument setpoint.

b. Controls to prevent unauthorized plant changes are needed. Unauthorized changes noted at Peach Bottom Atomic Power Station include the following:

1. replacement of the 480 volt motor operator on the 2A high pressure service water heat exchanger outlet valve with a 230/240 volt motor operator

2. removal of a portion of the counterweight arm on the "A" emergency service water pump discharge check valve to prevent interference with a protective housing

3. an undocumented setpoint change when an operator pumping the waste sludge tank into the "B" condensate phase separator tank adjusted the high level trip setpoint to above 100 percent tank level to maximize tank volume during the evolution

c. Design interface controls do not include adequate reviews of multidisciplinary designs to address the required design constraints. Problems noted in this area included the identification of some conduits and emergency lights attached to the masonry walls at Peach Bottom Atomic Power Station that were designed by the Engineering and Research electrical division but were not analyzed

by the civil section prior to installation. These additional attachments were identified during the walkdowns performed to address other concerns associated with the control of attachments to the masonry walls.

d. Some design information prepared by architect-engineers is not readily available and consistently used by the various sections in the mechanical and electrical divisions in Engineering and Research. Some sections have obtained calculations from the original architect-engineer, while other sections have not pursued this information. In addition, the use of this information varies from section to section with some sections using these original calculations as "information only" material while other sections consider the calculations sufficiently accurate for use as verified design input information.

e. Some design calculations and analyses are not controlled to identify those calculations that currently reflect the plant configuration. Specific problems were noted in verifying the recently obtained architect-engineer calculations to ensure they accurately reflect plant modifications. In addition, these recently obtained calculations have not been correlated with analyses performed to respond to more recent regulatory requirements, such as electrical load study calculations that were superseded by analyses performed to respond to degraded voltage concerns.

f. Evaluation and assessment methods are needed to ensure configuration controls are effective. The responsibility for the performance of design control audits that would address the effectiveness of the controls in both the engineering and the nuclear operations organizations is not defined. As a result, the audits and assessments have not adequately identified weaknesses in design interface controls, such as those noted above in the areas of minor modifications and temporary circuit alterations.

Recommendation (2.5A-2) Continue to improve project work controls and resource management to support both stations in the performance of engineering studies and modification activities. Some progress has been made in establishing an integrated living schedule and screening backlogged modification requests to prioritize actions. Also, some progress has been made in the

scheduling of modification packages to achieve the desired goal of supplying all modification designs to the sites at least four months prior to the scheduled outage start date. However, problems such as the following continue in these areas:

a. The prioritization and scheduling of engineering responses to requests that do not require the development of modification packages (i.e., spare parts substitutions, vendor manual updates, and support for inspection and test activities) do not always support outage schedules and day-to-day station work schedules.

b. The delivery of some modification designs is still not completed prior to the start of the outage. Approximately 30 percent of the modification packages were not complete one month before the Limerick Generating Station Unit 1 outage. Approximately 15 percent of the modification packages were not complete three weeks before the Peach Bottom Atomic Power Station Unit 2 outage.

c. The identification of modifications resulting from engineering reanalyses sometimes is not provided to the stations in a timely manner to support scheduled modification installation.

d. The engineering manpower needs to support the modification activities and to also adequately respond to station requests for related engineering assistance, such as equipment problems and follow-up for field changes to modifications have not been accurately determined. As a result, the mechanical division of Engineering and Research has contracted engineers in approximately 40 percent of its engineering positions, and the electrical division has contracted engineers in approximately 30 percent of its engineering positions.

Recommendation (2.5A-3) Continue to develop and more effectively use the process for coordinating and providing station inputs to modification designs. Specific problems that need to be addressed include the following:

a. The modification team approach is not consistently used, and, as a result, station staff inputs are not effectively used to develop modifications.

b. The responsibility for providing operability and maintainability considerations to the designers is not clearly identified to minimize the number of rejections of design packages by the plant operations review committees following final design development.

c. Station review and approval of conceptual designs are not conducted at a sufficient station management level to verify the proposed modification addresses the needs of the station.

HUMAN RESOURCES

PERFORMANCE OBJECTIVE B: Corporate management should provide for the career development of selected personnel, recognizing the importance of nuclear plant operational experience for nuclear managers.

Recommendation (2.7B-1) Implement a management development program to prepare prospective managers for nuclear management positions. Provide necessary supervisory skills training and career paths for supervisors within the nuclear departments. These programs should address the following problems:

a. The education, training, and experience requirements for key nuclear management positions have not been identified.

b. The development needs of prospective managers for the key nuclear positions have not been assessed, and action plans to address these individual needs have not been developed.

c. A program to broaden the experience of prospective managers by rotating individuals through various plant and corporate positions, including those in quality assurance and licensing, has not been developed.

d. The management and supervisory skills of prospective managers have not been enhanced, and existing company management training programs have not been used.

e. Supervisory training programs that consider the unique responsibilities of a supervisor at a nuclear generating station have not been developed.

Elements needed in supervisory training include adherence to procedures and policies, proper safety and radiological work practices, proper maintenance work practices, relationships with key station and corporate personnel, and the need for supervisors to set a professional example for workers.

f. Career paths have not been developed to provide opportunities for capable operators to fill key management positions such as shift manager, operations superintendent, maintenance superintendent, training manager, and site manager. Additionally, individuals have stagnated in operator positions (i.e., shift superintendent, shift supervisor, control room operator, plant operator, and auxiliary operator) which limits the rotation of other individuals into these positions to gain needed operating experience.

PERFORMANCE OBJECTIVE C: Corporate fitness-for-duty policies and activities should provide adequate guidance and support to ensure effective implementation of fitness-for-duty programs at the nuclear station(s). These policies and activities should result in a drug-free working environment.

Recommendation (2.7C-1) Upgrade Philadelphia Electric Company's fitness-for-duty policy to provide stronger assurance that a drug-free working environment is maintained. Differing management interpretations exist with the policy as it pertains to off-site use of illegal drugs. Elements of the policy that need to be strengthened are as follows:

a. The policy limits action taken to revoke vital area access for confirmed sale or distribution of illegal drugs off site or repeated drug use off site based on the person being unfit for duty while at the nuclear station.

b. Line management review and decision on the suitability for return to work of a person who undergoes rehabilitation for drug use is not specified in the policy.

c. The policy does not specify that an appropriate probationary period be established, with chemical testing, for those persons returned to duty following rehabilitation for drug use. The policy provides no general guidance but does indicate that action taken is considered on a case-by-case basis and decided upon by the medical department.

NUCLEAR SAFETY ASSESSMENT

PERFORMANCE OBJECTIVE A: The nuclear safety aspects of station activities are independently assessed at the corporate level. Typically, these assessments are performed by the corporate nuclear safety review committee.

Recommendation (2.8A-1) Provide the necessary management direction to maintain the Peach Bottom Atomic Power Station Independent Safety Engineering Group (ISEG) at its authorized staffing level. Provide an appropriate period of membership, considering the necessary initial training, to allow for a full contribution from each member assigned to the group. Since the establishment of the ISEG, about three and one-half years ago, the average period of membership has been 10 months. This is significantly less than the expectations of some senior managers. The ISEG staffing level is established at four members; however, it has been as low as one or two members for short periods of time. The lack of staffing and experience in the ISEG has contributed to difficulties in effectively implementing some aspects of the operating experience program. Furthermore, the lack of staffing and experience in the ISEG can impact its assigned function to provide quality information to the Nuclear Review Board. For example, the ISEG report for the Nuclear Review Board meetings has been most recently prepared by a senior corporate manager.

TRAINING AND QUALIFICATION

PERFORMANCE OBJECTIVE C: Corporate management monitors and assesses training and qualification activities and provides guidance and assistance to ensure and enhance safe and reliable plant operation.

Recommendation (2.11C-1) Review assigned training responsibilities to determine if the existing assignments of responsibility and accountability for training are adequate to maintain accredited training programs. This review should consider the advisability of having a clearly designated single point accountability for nuclear training as compared to the present assignment of accountability that is diversified through four divisions within the company. The review should also consider how the elements of accredited training can be maintained through stronger monitoring and assessment by the existing Nuclear Training Review Committee.

Some of the training programs and standards established through accreditation that are not being fully or properly implemented include the following:

a. Post-training effectiveness evaluations are not being completed.

b. Instructor technical proficiency is not effectively maintained with structured in-plant time.

c. Instructor evaluations are not conducted.

d. Instructors have been assigned to instruct without having completed instructor certification.

e. Training modules (e.g., dosimetry clerk) were developed without using the elements of a systematic approach to training.

In addition to the above, develop and implement a plan of assignment to nuclear training staff positions that will provide and encourage rotation through these positions as an element of professional and career enhancement. Currently, some policies inhibit the desirability of accepting instructor positions by plant-experienced personnel.

RADIOLOGICAL PROTECTION

PERFORMANCE OBJECTIVE A: Corporate management ensures radiological protection activities at the nuclear station(s) are effective in minimizing occupational radiation exposure and controlling release of radioactivity and minimizing the generation of radioactive waste.

Recommendation (2.12A-1) Strengthen corporate efforts in monitoring and assessing radiological protection activities at the stations to provide assurance that worker performance problems are dealt with promptly and effectively by station managers. Worker performance problems such as improper frisking practices, inadequate control of contamination, and insufficient knowledge of work area radiological conditions were observed during the recent Peach Bottom Atomic Power Station evaluation. There are also indications that worker performance problems exist at Limerick Generating Station. Recent chief executive officer monthly reports indicate adverse performance trends at Limerick Generating Station in personnel and clothing contamination occurrences that have not been investigated by the corporate organization.

INPO

Institute of
Nuclear Power
Operations

Date December 21, 1987

Memorandum

To C. E. Moore

From L. J. Dugger

Subject TRIP REPORT - MAINTENANCE ASSISTANCE AND REVIEW TEAM VISIT TO PEACH BOTTOM ATOMIC POWER STATION

I. BACKGROUND AND PURPOSE

Mr. J. W. Gallagher, Vice President - Nuclear Operations, requested a Maintenance Assistance and Review Team visit to perform a maintenance overview at the Peach Bottom Atomic Power Station. The overview, using the Guidelines for the Conduct of Maintenance at Nuclear Power Stations (INPO 85-038), was to complement and substantiate the current efforts to upgrade the maintenance program at Peach Bottom Station. As a result of preliminary reviews at INPO and discussions held with Philidelphia Electric Company's Messrs. Gerry Rainey and Jim O'Mara, it was decided that the team should focus an in-depth review on the areas of organization and management, work control, conduct of maintenance, preventive maintenance, procedures, and motor-operated valves. The plan developed from the preliminary review is included as Attachment B.

The visit, held between November 2-13, 1987, was conducted by Larry Dugger, Jim Tills, Ernie Hayden, and Jack Kenney from INPO; Bill O'Dell from General Electric; a corporate peer evaluator Jim Frew, Director-Maintenance Construction and Facilities from General Public Utilities, Three Mile Island; and a maintenance peer evaluator Lou O'Neil, Supervising Engineer - Nuclear from Pennsylvania Power and Light, Susquehanna Nuclear Power Plant.

The Philadelphia Electric Company team members were Dick Smith, Vice President-Peach Bottom; Gerry Rainey, Superintendent-Maintenance/Instrumentation & Controls; and Jim O'Mara, Maintenance Superintendent-Limerick.

They played a vital role on the team by providing valuable insight and direction during the team's visit. Jean Pierre Mercier on loan from Electricite de France to EPRI accompanied the team as a technical observer during the first week of the visit.

II. ON-SITE ACTIVITIES

An entrance meeting was conducted on Monday, November 2, 1987 to introduce the team to members of the plant staff and discuss the purpose of the visit. Attendees are listed in Attachment C. Interviews were held with approximately 60 station personnel including managers, superintendents, planners, and craftsmen. Various corrective maintenance and other group activities were observed. In addition, vertical audits were performed in selected technical areas. Information obtained from those activities was used to identify areas and recommendations for improvement. Attachment D lists plant personnel contacted during the visit.

Daily team meetings were held. Philadelphia Electric Company team members participated in various interviews and observations. Other plant personnel were invited to attend sessions when problem areas were discussed and recommendations made. A final debrief was conducted with Dick Smith, Vice President - Peach Bottom; Marty McCormick, Plant Manager; and other members of the Peach Bottom staff on Friday, November 13, 1987. Attachment E lists those personnel attending the final debrief.

Station personnel openly discussed the issues and provided feedback as to areas of most benefit. Excellent cooperation and support was provided by Peach Bottom maintenance and supporting staffs.

III. SUMMARY

The Philadelphia Electric Company management clearly recognizes the importance of improving all aspects of the Peach Bottom maintenance programs. Site management noted that the team's work was helpful in identifying actions to improve maintenance at Peach Bottom Atomic Power Station.

Attachment A provides a discussion of all areas noted for improvement with details of existing conditions, desired conditions, and recommendations. Where possible, the appropriate supporting chapter from INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, is listed following the description of desired condition. The following is a summary of the issues in need of improvement:

A. MANAGEMENT ISSUES

The most important areas needing attention are as follows:

- o Significant effort is needed to define the final organization structure, specify responsibilities, and establish the effective group interfaces necessary for performance of maintenance activities.

- o Expected standards have not been formalized and promulgated to facilitate effective supervisory involvement and personal accountability during the performance of maintenance activities.

- o Goals, objectives, action plans, and performance indicators have not yet been formulated to guide the efforts of the new organization.

- o Better horizontal and vertical communication is needed to encourage team work and assist station personnel in understanding their role in the current site improvement initiatives.

Refer to Attachment A, pages 1 through 9 for details.

B. WORK CONTROL SYSTEM

Maintenance planning, scheduling, and coordination need significant improvement.

- o Scheduling of outage and non-outage work is not always effective, integrated, or coordinated.

- o An effective maintenance backlog management plan is not in place. Many backlogged items are awaiting prioritization and some have been designated as high priority for several years.

- o Work package preparation is not being performed consistently. Many packages do not contain important information such as descriptions of intended work scope, detailed work instructions, drawings, or tool and material lists. No station guideline exists for the planner to use when assembling a work package.

- o A systematic, consistently applied post-maintenance test program is not established at the station.

- o Data needed to support scheduling, maintenance history, and purchasing efforts is being collected in eight different data bases. Equipment information is often incomplete and not consistent among data bases.

- o Health physics support of maintenance is not well coordinated resulting in work delays. Workers often do not understand or support the radiological protection controls.

Refer to attachment A, pages 10 through 25 for details.

C. CONDUCT OF MAINTENANCE

High standards for industrial safety and work practices have not been enforced. Station personnel and contractors frequently do not exercise good industrial safety practices and radiological control work practices were observed that could result in the spread of contamination. In addition, maintenance work practices in the areas of proper tool use, foreign material exclusion, and work site restoration and cleanup are not always in keeping with good industry practices. (Refer to Attachment A, pages 26 through 30, for details.)

D. MOTOR-OPERATED VALVES

Preventive maintenance tasks have not been generated for balance-of-plant motor-operated valves and existing procedures lack needed technical detail. Post-maintenance test requirements based on the maintenance performed have not been established. A controlled setpoint data base covering torque switch and limit switch settings has not been developed. In addition, technical training on motor-operated valve construction, operation, and industry experience is still needed for many craftsmen and foremen. (Refer to Attachment A, pages 31 through 37, for details.)

E. PREVENTIVE MAINTENANCE

Management has not established their expectations for the content and control of the preventive maintenance program. An integrated equipment list identifying the equipment and tasks to be performed, along with the bases for these tasks, has not been established. The predictive maintenance program is not sufficiently integrated with the preventive maintenance program to predict equipment failures or minimize the performance of preventive maintenance tasks where equipment performance is good. In addition, the lubrication program does not provide for timely lubrications, justification of substituted lubricants, and timely retrieval of lubrication history. (Refer to Attachment A, pages 38 through 44, for details).

F. PROCEDURES

Many of the existing maintenance procedures contain human factor deficiencies that can lead to performance problems. A uniform station process for procedure development and writing has not been established. Procedures are frequently not verified or validated prior to final approval and field use. (Refer to Attachment A, pages 45 through 49, for details.)

G. MATERIALS MANAGEMENT

The spare parts improvement program needs significant emphasis in the areas computer support, expediting of purchases, and maintenance of stocking levels. Maintenance work is often delayed because spare parts are not in stock or have not been established as store items. Improved interfacing is needed between the work planning and scheduling process and the parts procurement effort to coordinate delivery dates with need dates and expedite overdue deliveries. The various computer data bases used to support the procurement effort are not well documented, contain incomplete or inconsistent information, and cannot be used in an integrated manner. (Refer to Attachment A, pages 50 through 51, for details.)

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G. MATERIALS MANAGEMENT

ATTACHMENT A

A. MANAGEMENT ISSUES

1. ORGANIZATION/RESPONSIBILITIES

Existing Condition

The final organizational structure and responsibilities for the new maintenance/instrumentation and controls organization have not been defined and goals and expectations have not been established. As a result, the interfaces and responsibilities for maintenance/instrumentation and controls and related support groups are not clearly understood.

Desired Condition

Organizational structure and responsibility assignments for all maintenance personnel should be clearly defined, issued, and implemented. Maintenance personnel should understand their roles and responsibilities as Peach Bottom team members in supporting integrated station maintenance activities. Personnel should be motivated to "buy-in" on performance expectations in areas such as housekeeping, cleanliness, procedure compliance, and work accomplishment. Individuals should be held accountable for their responsibilities. The newly defined organization should be staffed with qualified personnel. The responsibilities and interfaces of groups supporting and directing maintenance should be clearly defined, agreed to, and issued. (INPO 86-009, Guidelines for the Organization and Administration of Nuclear Power Stations, Chapter I and INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter I.)

Recommendations

a. Clearly define the maintenance/instrumentation and controls organizational structure. Establish a plan for transition to the new organization and issue an approved maintenance organization chart.

b. Define the responsibility assignments for maintenance/instrumentation and controls. Obtain concurrence from the Peach Bottom staff

managers and issue the approved assignments. Structure the responsibility assignments as listed below:

- Affirm that the responsibility for implementation and control of station maintenance rests with the Superintendent-Maintenance/ Instrumentation and Controls.

- Define the role of engineers to support the conduct of daily maintenance. Engineering expertise in technical areas such as pumps, valves, valve actuators, bolting, ASME code, welding, and electrical equipment should be included within the maintenance organization.

  Train the System Engineers and ensure that they are actively involved in work on their system(s). The engineers should provide guidance and support to maintenance on problems which are system related, provide feedback to maintenance on the priorities of backlogged work, coordinate system outage windows, and provide input on the significance and priority of needed maintenance identified as a result of performance monitoring or failure analysis.

- Assign the following programs and activities as the direct responsibility of the Superintendent-Maintenance/Instrumentation and Controls.

  Work Control
  Corrective Maintenance
  Preventive/Predictive Maintenance
  Work Planning
  Maintenance Backlog
  Ignition Source Control
  Heavy Loads
  Maintenance Training
  Root Cause Analysis/NPRDS

- Assign the following programs/activities to support organizations:

  Inservice Inspection Program
  Parts Procurement
  Snubber Program
  Pump & Valve Program
  Local Leak Rate Test Program
  Environmental Qualification Program
  Welding Program
  Integrated Plant Scheduling
  Outage Scheduling

- Structure the organization below the Superintendent-Maintenance/Instrumentation and Controls along five major activity lines; mechanical maintenance, electrical maintenance, instrumentation and control, maintenance work package planning, internal scheduling, and maintenance services. Ensure each segment of the organization has sufficient engineering support and staff capability to conduct its day to day activities consistent with assigned accountabilities and responsibilities.

- Define the responsibilities assigned to the Project Manager in the areas of outage scheduling and station planning and scheduling as a coordination function to support the conduct of maintenance at the station.

- Clarify that the Maintenance Department has primary responsibility for receiving, investigating, approving, and planning maintenance request forms (MRFs), as well as managing the maintenance request form backlog.

- Evaluate and establish appropriate ratio of first line supervision to craft. A proposed ratio would be one supervisor for six to eight workers.

- o Evaluate and establish the appropriate the ratio of daily work planners to craft. A proposed ratio would be one planner for two first line supervisors.

- o Reduce supervisor administrative burden. Identify both directed and assumed responsibilities and re-assign to appropriate departments as necessary. Streamline the maintenance work process where possible.

c. Staff the maintenance department to support the newly developed maintenance organization chart.

d. Develop an administrative procedure addressing the "Conduct of Maintenance" which establishes the authority, responsibility, and accountability for performing maintenance. Include standards of performance in such areas as work practices, use of procedures, personnel safety, quality control, radiological practices, and housekeeping. Responsibility for conducting activities in accordance with these standards should clearly rest with the line organizations.

e. Conduct training to inform all maintenance personnel of the approved responsibility assignments and "Conduct of Maintenance" standards so they understand their roles and responsibilities in supporting station maintenance activities.

f. Conduct a periodic check of performance against the approved responsibility assignments and maintenance performance expectations. Provide feedback to station management for program refinement as necessary.

2. ACCOUNTABILITY/OWNERSHIP

Existing Condition

Maintenance craftsmen, lower level supervision, and staff have not yet experienced significant organizational change within their immediate organization. Changes that have been made are perceived as largely adminis-

trative rather than needed for improved standards of conduct with regards to work practices, use of procedures, radiological practices, and identification of plant deficiencies. In the past, supervisors had not always been charged with long-term improvement of employees due to rotational assignments. Many supervisors and craft are not familiar with the commitment to excellence plans or the extent that improvement efforts apply directly to them.

Desired Condition

Maintenance personnel should be held accountable for assigned tasks. Management and supervisory standards should be complementary to and in agreement with the Commitment to Excellence Plan. Maintenance management should be involved in day-to-day maintenance activities to establish and upgrade standards and observe performance. Maintenance management and supervisory personnel should routinely make field inspection tours of work in progress and evaluate plant conditions relative to the performance of maintenance. Maintenance personnel should be expected to identify and report noted problems. (INPO 85-083, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapters I, VII, and XIV and INPO 86-009, Guidelines for the Organization and Administration of Nuclear Power Stations, Chapters I and III.)

Recommendations

a. Hold maintenance personnel accountable for their responsibility assignments and the implementation of the "Conduct of Maintenance" standards, that are discussed above in section 1.

b. Establish the practice of daily first line supervisor field checks of jobs in progress.

c. Establish the practice of first line supervisor walk-downs of completed jobs.

d. Train maintenance supervisors in observation techniques to be used during plant tours and reviews of work in progress.

e. Consider adding the "Conduct of Maintenance" performance standards into the Peach Bottom employee performance evaluation process. The performance review should address areas such as teamwork, radiological work practices, exposure control, material control, and housekeeping, in addition to procedural compliance and safety.

3. GOALS AND OBJECTIVES

Existing Condition

The reorganization now in progress at Peach Bottom involves a rearrangement of functional reporting responsibilities for craftsmen, staff, engineering support, and supervision involved in maintenance activities. Work groups that previously reported to separate corporate officers and operated under their own guidelines have now been consolidated under the authority of plant management. Goals and objectives have not yet been developed for the new maintenance organization. As a result, implementing action plans are not in place to guide the achievement of maintenance objectives.

Desired Condition

Goals should be established that clearly communicate the intended future direction of the organization. Goals should be quantifiable and challenging but also achievable. Objectives and strategies should state the desired end result with milestones and a time dimension defined to measure progress. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapters I and XIV and INPO 86-009, Guidelines for the Organization and Administration of Nuclear Power Stations, Chapter III.)

Recommendations

a. Develop goals, objectives, and appropriate implementing action plans for the maintenance organization that incorporate the objectives of the Commitment to Excellence Plan. Consolidate these goals, objectives, and action plans into a specific document for use within the maintenance organization. This document should be presented as a maintenance enhancement program.

b. Prepare indicators to monitor progress in accomplishing the maintenance goals. Specify indicators that are meaningful to personnel in the course of their daily activities. Indicators should be used as a management tool for involving all station groups in maintenance improvement and for measuring maintenance effectiveness. Establish quantifiable goals in areas such as the following:

- o number of forced outages
- o number of unplanned challenges to safety-related systems
- o lost-time accident rate
- o station and equipment downtime
- o personnel errors
- o radiation exposure
- o repeat maintenance request forms (rework)
- o completion ratio of scheduled activities
- o completion ratio of scheduled surveillance and preventive maintenance activities
- o corrective maintenance backlog
- o Commitment to Excellence Plan obligations
- o overtime percentages
- o budget objectives and deviations
- o staffing level and the percentage of completed training for the maintenance department

c. Ensure appropriate personnel, who have a part in achieving the goals, are involved in formulation of the objectives and indicators. All personnel should understand their role in supporting and achieving the goals and objectives of the organization.

d. Review the developed plan with maintenance and supporting organizations and provide routine feedback on status and progress toward the goals.

4. COMMUNICATIONS/TEAMWORK

Existing Condition

Horizontal and vertical communication is not always effective resulting in a lack of teamwork between and among station organizations. Additionally, the implementation of the new organization on site has led to confusion regarding the proper lines of communication.

Desired Condition

Effective communications should exist horizontally and vertically throughout the organization to facilitate teamwork, implement management guidance, and provide feedback on personnel concerns and ideas. The lines of communication should be defined and free of organizational obstacles. (INPO 86-009, Guidelines for the Organization and Administration of Nuclear Power Stations, Chapter I).

Recommendations

a. Identify opportunities to enhance communications at all levels. Initiate meetings, presentations, and other forums to address subjects such as the Commitment To Excellence Plan, plant goals, maintenance goals, maintenance performance indicators, current problems and successes.

b. Ensure maintenance personnel understand their role in the Peach Bottom Atomic Power Station, their involvement with the Commitment to Excellence Plan, and the part that they are expected to play in the successful implementation of current site initiatives.

c. Help personnel to see the benefits to them and the organization from improved communications and teamwork. Explain why and how things are to be accomplished and reinforce positive results.

d. Encourage teamwork and communication through the use of inter-group activities such as plant tours by maintenance and maintenance support counterparts. Encourage interactions among work groups at the various

functional levels of the organization.

e. Publish a schedule of station meetings. Define the purpose, agenda, anticipated duration, required attendance, chairman, time, and location for each meeting.

f. Conduct in-house training of appropriate personnel in the proper manner to organize and control a meeting.

g. Establish mechanisms to disseminate clarifications to site policies and practices that are not appropriate for inclusion in administrative or technical procedures. Develop an administrative policy manual for station level directives approved by the site vice president. Issue a policy manual for directives approved by the Superintendent-Maintenance/Instrumentation and Control to complement the vice president's manual.

h. Establish a consistent maintenance shift turnover policy that facilitates effective communication between work crews. Consider using a shift turnover log to aid supervisors and craftsmen. Turnover information should be documented for job tracking, post job review, and future planning. The turnover mechanism should ensure that the oncoming crew is aware of current job status, procedure concerns, personnel safety, radiological changes, parts problems, or special conditions at the job site.

B. WORK CONTROL

1. SCHEDULING

Existing Condition

Scheduling of outage and non-outage work at the station is not always effective, integrated, or comprehensive. The schedules established and used are driven by corrective maintenance tasks and do not normally include preventive maintenance or surveillance tests. Some maintenance groups do not develop daily schedules for their work and many jobs are not included in the published schedules. In addition, the schedules normally reflect only corrective maintenance tasks that require health physics support or operations permits.

The present schedules do not coordinate and integrate all the outstanding tasks that may be performed within the boundaries of a system being isolated. This could result in multiple isolations of a system to perform maintenance and tests that could be performed during the same period. In addition, the scheduled work is frequently abandoned by the various maintenance groups in response to urgent work directed to the groups during the day.

Desired Condition

Daily work scheduling should be comprehensive and coordinate the work of all groups at the station. The published schedule should be a short duration rolling plan and should reflect the involvement of operations and other support groups such as health physics and security. The schedule should have the commitment of maintenance and operations personnel. The schedules should be driven by surveillance and preventive maintenance tasks and integrated with associated corrective maintenance activities. Each group should have a short duration rolling schedule that accurately supports and reflects the station schedule as well as the group's present activities and resource commitments.

The schedules should allow for unexpected emergency work; however, appropriate designated managers should approve postponements and work stoppages to accommodate the new tasks. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter VI).

Recommendations

a. Establish a central scheduling group. This group should develop and maintain the quarterly and daily schedules for plant activities. Assigned personnel to this group should include operations, maintenance, instrumentation and control, and health physics experience. The group should also act as a central point for task coordination and resolution of delays.

b. Develop a quarterly schedule driven by preventive maintenance and surveillance tests that will ensure coordination of all work on related equipment, trains, and systems.

c. Clearly define the authority structure for scheduling work and resolving schedule conflicts.

d. The schedule development process should reflect the operational requirements of the plant based on a structured review of available work by representatives of the operations department. This review and endorsement of the schedule should commit operations to have equipment available for maintenance. Ensure that the approved schedule includes both proper consideration of the ability to accomplish the work as scheduled and consistent application of the priority system.

e. Incorporate routine maintenance and plant change modification work into the quarterly schedule at least three months in advance of the required start date.

f. Clearly identify the schedules for each unit and identify work that affects both units in common.

g. Base a rolling five day schedule on the quarterly schedule. In addition to the practices listed above, features of the rolling five day schedule should include the following items:

- o The schedule should encompass all significant maintenance work on plant equipment including corrective maintenance, preventive maintenance, and surveillance tests. The schedule should also include work requiring inter-group coordination beyond health physics and operations.

- o The schedule should be sufficiently stable to permit effective coordination between operations, maintenance, and maintenance support groups.

- o The schedule should integrate all work for related equipment, trains, and systems.

- o The schedule should be reviewed and agreed to by all groups supporting plant operations and maintenance and be approved by the plant manager.

h. Require each maintenance and maintenance support group to develop a rolling five day schedule that reflects and complements the station's rolling schedule and includes all of the group's present activities and resource commitments (e.g., shop work).

i. Designate the managers and supervisors who may approve postponement and stoppage of work to accommodate unexpected emergency work.

j. Routinely assess scheduling accuracy and deviations. Initiate appropriate corrective action to improve operational and maintenance effectiveness.

k. Closely monitor schedule performance and take corrective action for schedule deviations.

l. Prevent excessive preventive maintenance deferrals. Consider establishing a plant policy permitting removal of equipment from service during plant operation to perform preventive maintenance activities. Ensure that the policy properly considers the risk of plant transients and is consistently enforced.

m. Review the station's forced outage scheduling program. Compare the present program to INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter VI, and INPO 85-025, Good Practice MA-308, Unscheduled Outage Planning. Consider such items as distribution of the outage plan, parts support and pre-staging, and outage schedule review and approval.

2. MAINTENANCE BACKLOG

Existing Condition

A well defined and scheduled backlog management plan is not in place. Over 2300 maintenance requests for corrective maintenance and minor modifications are in the backlog for both units. Of the backlog, almost 400 maintenance requests are awaiting prioritization and over 300 maintenance requests designated Priority 1 date back to April 1984. Other maintenance requests may not be appropriately prioritized. The present backlog includes items that are not corrective maintenance and do not reflect actual equipment deficiencies. Additionally, the backlog is not easily sorted to identify the reasons a work request is on hold. It should be noted that a draft plan for backlog reduction exists, but has not been approved for implementation.

Desired Condition

The work control system should provide to station management and supervision a means for identifying, trending, and statusing all valid maintenance requests. Management of the backlog should include trending of the maintenance request backlog and developing plans and objectives for effectively maintaining backlog at a controlled and manageable level. The maintenance request backlog should be reviewed periodically to ensure the maintenance requests are still valid and appropriately prioritized. In addition,

maintenance requests on hold (i.e., lack of spare parts, engineering input) should be easily categorized for tracking, trending, and identifying areas for emphasis. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapters VI and VII).

Recommendations

a. Issue the draft Backlog Reduction Plan. Ensure the plan includes objectives, schedules, and milestones. Include controls to manage, review, and effectively prioritize the maintenance requests and equipment trouble tags developed. Also, be sure the plan provides and defines the appropriate authority and responsibility for implementation.

b. Review the present maintenance request prioritization codes and revise as necessary. Define and communicate the revised codes to the appropriate personnel to ensure priorities are correctly applied and reflect the true urgency for repair.

c. Closely examine the present maintenance request backlog. Reprioritize and cancel maintenance requests as appropriate.

d. Screen maintenance requests on hold, (e.g., parts, engineering, etc). Assign the proper status delay computer code for each maintenance request. Ensure future maintenance requests on hold include the proper status delay codes and are tracked and trended.

e. Examine the use of maintenance request forms for non-maintenance activities such as housekeeping. Develop a program to remove these non-maintenance tasks from the backlog list.

3. QUALITY OF WORK PACKAGES

Existing Condition

Work package preparation is not being performed consistently for maintenance activities. There is no station guideline for the planners to use when

assembling a work package. Many work packages do not contain important information such as intended work scope, detailed work instructions, tools and material lists, drawings, and manpower requirements. Many outage work requests are not provided to the planning group in time to provide adequate planning.

Desired Condition

Work planning should consistently identify the required support and detailed scoping needed to accomplish maintenance activities. Effective planning consists of accurate definition of required work, provision of appropriate instructions to reduce errors, and minimization of delays due to unavailable tools, parts, and materials. (INPO, 85-038, Guidelines for Conduct of Maintenance at Nuclear Power Stations, Chapter VI).

Recommendations

a. Establish a centralized maintenance and instrumentation and control work planning group to prepare work packages for outage and non-outage work. A centralized group offers the benefit of improving coordination of planning activities and provides a central point for obtaining planning and scheduling information.

b. Develop a station guideline that specifies the information and work scope requirements necessary for the work package. This guideline should contain job planning functions such as:

- o definition of the problem and identification of the work scope including field investigation if necessary
- o identification of necessary parts, materials, tools, and equipment
- o provision of applicable procedures, instructions, and technical references
- o specification of pre-job ALARA planning

- o review of component maintenance history
- o identification of required special plant conditions, initial conditions, or prerequisites
- o identification of quality, code, and technical specification requirements
- o assessment of required resources

c. Train personnel to prepare and review the work packages according to the requirements of the new guidelines.

d. Incorporate a review of the prepared work packages by supervision to verify adequacy of work package instructions and content.

e. Provide work requests to the planning group as work is identified to allow maximum time to plan work and procure parts.

f. Include parts identification, verification, and reservation in the work package development process.

g. Train planners on the full capabilities of the CHAMPS system.

h. Consider expanding the planned corrective action section of the maintenance request form or add additional sheets to allow for detailed planning.

4. WORK REQUEST PROBLEM DESCRIPTION

Existing Condition

Work request problem descriptions are not always accurate and clear. Verification of problem descriptions is not performed for all work requests. Incomplete problem descriptions inhibit the planner's ability to specify the scope of work to be performed. Significant delays are encoun-

tered when maintenance requests are routed to the technical group for investigation.

Desired Condition

Work request problem descriptions should be clear and accurate. The problem description should provide accurate information relative to the deficiency description and the work being requested. Investigation of problems should be processed in a timely manner to allow scheduling of repair work. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter VI).

Recommendations

a. Train plant personnel on the requirements of administrative procedure A-26A, "Procedure for Corrective and Preventive Maintenance using CHAMPS", for identification of plant deficiencies.

b. Emphasize to plant personnel the importance of providing accurate problem descriptions on work requests.

c. Expand the responsibility for verification of the problem description to include designated licensed plant staff engineers.

d. Expedite the transfer of the maintenance request form from problem identification to work package planning.

e. Provide feedback to the maintenance request initiator when a maintenance request is cancelled.

f. Eliminate the use of money tickets to perform maintenance.

g. Ensure maintenance request forms are again reviewed for adequacy of section requirements if any changes are made to the maintenance request.

5. POST-MAINTENANCE TEST PROGRAM

Existing Condition

A systematic, consistently applied post-maintenance testing program is not established at the station. Inconsistencies exist when specifying post-maintenance tests on the maintenance request forms. A procedure or guide to ensure appropriate and consistent application of post-maintenance tests is not available. Post-maintenance tests are also specified for "troubleshoot and repair" maintenance request forms before the problem and corrective actions are identified. Baseline data to aid in determining the acceptance of a post-maintenance test is frequently not provided with the maintenance request form or work package.

Desired Condition

Safety-related equipment and equipment that is important to reliable station operation should be tested in accordance with approved procedures and in a manner that ensures the deficiency has been corrected. Post-maintenance test procedures should contain acceptance criteria that aid in measuring the performance of required equipment. Baseline data should be provided if applicable. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter VIII).

Recommendations

a. Develop and implement a post-maintenance testing guideline that specifies required testing and acceptance criteria for equipment following maintenance. INPO Good Practice, MA-305, Post-Maintenance Testing, could be of assistance in this effort.

b. Designate responsibilities for determining post-maintenance test requirements and reviewing results for acceptability.

c. Train personnel designated to specify and review post-maintenance testing on the requirements of the guideline.

d. Review post-maintenance test results against previous baseline data for safety-related equipment and equipment important to reliable station operation. Ensure all tests have demonstrated acceptable results. Establish new baseline data when appropriate.

e. Defer specifying post-maintenance testing requirements until the extent of the repairs are determined when specific repairs are unknown at the time of technical review.

6. CONTRACTOR CONTROL

Existing Condition

Contractor personnel are relied on to perform routine plant maintenance activities. Maintenance personnel provide contractor coordination for work activities but are not specifically trained in contract administration or advised as to the commercial considerations affecting the work. Engineers do not throughly understand the Philidelphia Electric Company authorization and charge system, especially as it pertains to contractor (consultant) personnel. Foremen are not well informed as to the scope of annual service contracts and as a result, frequent misapplications occur.

Desired Condition

Contract personnel should not normally be relied on for routine activities to the extent that permanant staff does not develop required experience. When used, they should perform maintenance under the same controls and high work standards as expected of station maintenance personnel. Utility personnel responsible for implementation of contractor work should be trained to a level that contributes to effective work control and precludes misapplication of the utility contracting format. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter VII).

Recommendations

a. Establish training requirements for personnel who interface with contractors. Contractor interface training should include items such as work authorization, annual service contracts, claims avoidance, work documentation, and safety practices.

b. Review the areas where contractor personnel have been utilized for routine maintenance activities. Reevaluate staffing practices to determine where revisions are appropriate.

7. DAILY PLANNING AND SCHEDULING MEETINGS

Existing Condition

Daily meetings are held to discuss the Unit 2 and Unit 3 outage schedules, plans, and work to be done. The meetings frequently begin late. Personnel often arrive late and depart before the end of the meetings. The meeting agendas are not specifically defined in writing. Also, when the agenda is initially established at the beginning of the meeting, the agenda is not always followed.

The meetings often address status of work but do not always properly communicate priorities, current problems, job interferences, and requests for support among station departments. Not all groups at the station are routinely represented at the meetings. Some representatives at the meetings are not always prepared to discuss issues and may not be able to commit resources or recognize the impact of station maintenance and modification activities on the overall schedule.

Desired Condition

Meetings involving routine job scheduling need to be held frequently to properly communicate priorities, current problems, job interferences, and requests for support among station departments. Meeting agendas should be established and closely followed for both the daily and weekly planning and scheduling meetings. These meetings should he chaired by a designated individual with authority in the work control process. Supervisors or

responsible spokespersons from all maintenance disciplines, operations, quality control, radiological protection, technical support, and the warehouse should attend the meetings. Other personnel should be invited as needed. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter VI).

Recommendations

a. Begin meetings on time. Initiate the meeting formally and close the door to the room to reduce distractions.

b. Emphasize to all meeting participants the importance of meeting attendance and management's expectations for meeting conduct. Expectations should include the requirements that personnel be prepared to discuss their areas in the meeting agenda, prohibit side conversations, and discourage late arrival and early departure from the meetings.

c. Establish written objectives and generic agendas for all recurring station meetings. Begin all meetings by briefly stating the meeting objectives and reviewing the agenda. Ensure the meeting is run in accordance with the agenda.

d. Ensure that planning, scheduling, and coordination meetings are oriented towards communicating the performance of work rather than discussing status of work satisfactorily in progress. This would include addressing priorities, current problems, job interferences, and requests for support among station departments.

e. Ensure that all maintenance disciplines, operations, quality control, radiological protection, technical support, and warehouse supervisors or their designated representatives are in attendance at the daily planning, scheduling, and coordination meetings. Require that the personnel in attendance represent the appropriate disciplines for the

meeting. Individuals attending the meeting should be experienced and have the authority to commit resources and make decisions as required.

f. Place meeting handouts in bins or on the meeting table where people can pick up the documents instead of handing out paper to everyone in the room at the beginning of the meeting. This approach will save paper, and everyone can reference the document they desire to use.

g. During the course of the meetings, be sure that everyone is aware of which schedule/paper is being referenced and the specific line items being addressed. Frequently, this is not accomplished and there is some confusion as to which paper and where on the document the reader is.

h. Use one comprehensive checklist rather than segmented checklists when preparing for and discussing a project. Use of independent checklists to address various portions of one major activity increases the potential that activities involving group interface will be overlooked. The use of independent checklists also makes coordination more difficult.

8. PLANT DATA BASES

Existing Condition

Data needed to support scheduling, maintenance history, and purchasing is being collected in eight different data bases. Equipment information is often incomplete and not consistent among data bases. User unfamiliarity with the systems limits accessibility to data. Formal data base controls are not in effect.

Desired Condition

The data collection program should clearly define those data elements that need to be captured and the department responsible for the quality of the data. A single integrated data base management system should be used to consolidate various computer files. The system information should include

error checking on all data input. Employees should know how to use the system for daily planning and scheduling.

Recommendations

a. Assess the accuracy of existing data bases for their intended use and specify requirements for updating data bases in a timely manner.

b. Consider establishing a data collection program using the "Integrated Data Base Management" technology. The program should include all data elements used in nuclear plant operations. Relationships between these elements should be clearly defined and documented in the program.

c. Establish responsibility for administration of data. Duplication of data elements should be minimized.

d. Establish standards for specifying equipment identification numbers and descriptions. These standards should be used for error checking during data input.

e. Review the existing equipment identification data bases. Resolve discrepancies in information provided and complete the loading of missing data.

f. Develop a user training program for all levels of users. Include continuing training in the program. For certain positions, such as planners, make the training program mandatory.

g. Control the input and revisions to the CHAMPS data base. Consider using engineering staff to input and revise the data base information.

h. Review the present computer terminal availability and use. Expand the number and location of terminals available to the users if necessary.

i. Modify the CHAMPS program to highlight or automatically identify repetitive failures or work on similar components.

9. HEALTH PHYSICS SUPPORT OF MAINTENANCE ACTIVITIES

Existing Condition

Health physics support of maintenance activities is not always well coordinated and sometimes results in work delays. Workers do not always understand or support the radiological protection controls. Maintenance personnel perceive a lack of health physics support for work. Problems with health physics support for maintenance activities frequently occur. Radiological Work Permits (RWPs) must be requested at least 24 hours in advance and are difficult to expedite. The use and application of RWPs is not always consistent and results in frequent delays.

Desired Condition

Maintenance activities requiring health physics support should be coordinated to minimize delays and ensure exposure is as low as reasonably achievable. Work groups should clearly understand and support the radiological protection requirements. Health physics management and supervision should actively ensure their personnel support their customers, maintenance and operations, and observe the published schedule. Health physics support should be planned and provided expeditiously in advance of the scheduled work. RWPs should be consistently applied to ensure they are correct for the job, support planning, and reduce delays. Unavailability of health physics personnel should be minimized during normal maintenance work activities. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter VI and INPO 85-004, Guidelines for Radiological Protection at Nuclear Power Stations, Chapter VIII.)

Recommendations

a. Review the maintenance/health physics interface and develop recommendations for improvement in this area. Consider assigning a senior maintenance worker and health physics technician to conduct this review.

b. Develop and communicate station health physics procedures that clearly identify the responsibilities of radiation workers and plant supervision. Emphasize personnel awareness of the reasons for the radiological protection requirements and the importance of properly implementing the programs.

c. Ensure RWPs are coordinated to support work scheduled on the five day rolling schedule. Monitor the delays associated with health physics support and determine the root cause. Identify and implement corrective action.

d. Establish guidelines to ensure RWPs are applied consistently and correctly. Communicate these guidelines to the RWP preparers, authorizers, and users. Monitor implementation of the RWP program.

e. Review and monitor the process for access into and egress from areas requiring RWPs. Incorporate and communicate changes to plant radiological control procedures.

f. Review the present health physics staffing and experience level. Ensure adequate health physics resources are available and properly allocated to support present and future work at the station.

g. Include a field on the maintenance request form for the supporting RWP number. Consider modifying the maintenance request from processing so that Health Physics is automatically notified of pending work when the "RWP Required" field is marked "Yes" on the screen.

C. CONDUCT OF MAINTENANCE

1. INDUSTRIAL SAFETY

Existing Condition

Station personnel and contractors working on site frequently do not exercise good industrial safety practices. Examples of industrial safety problems include the following:

- o Hard hats and safety glasses with side shields are often not used as required.
- o Proper foot protection and protective clothing are not always worn.
- o "Hearing protection required" signs are not posted where such protection would normally be expected.
- o Observations indicate that supervisors often do not correct industrial safety problems in the field and sometimes do not wear specified protective equipment.

Desired Condition

Station management should routinely endorse good industrial safety practices during routine communication with all employees. Managers and supervisors (first line supervisors in particular) should set the tone for safety by consistently providing a good example for employees to follow. All station personnel should be held accountable for their safety performance. Deficient performance should be reflected in performance appraisals. In some instances disciplinary action may be appropriate. Industrial safety policies should be clearly written, readily available, and adhered to by all personnel including contractors and visitors. (INPO 86-009, Guideline for the Organization and Administration of Nuclear Power Stations, Chapter VI).

Recommendations

a. The corporate safety group should review current industrial safety standards in effect on site for adequacy, and communicate a policy regarding the standards to be applied to all Phildelphia Electric Company nuclear stations. Supplement the standards where necessary.

b. Train station personnel on the new policy and related standards.

c. Conduct routine monthly safety meetings for all station groups. Improve teamwork and consistency by selecting working-level representatives from various work groups and assigning them to attend the safety meetings of other work groups. Require the representatives to provide structured feedback to their own respective work groups.

d. Ensure all vendors comply with the safe work rules outlined in the Philadelphia Electric Company "Vendor Safety Manual".

e. Review existing maintenance department administrative guidelines for vendor control (Mag.- 9 Rev. 2) and revise as required. Establish the guidelines as a station standard for vendor control.

2. RADIATION PROTECTION PRACTICES

Existing Condition

Observed radiological work practices could result in the spread of contamination. These practices included non-adherence to radiation work permit requirements, reaching across contamination boundaries, not containing potentially contaminated fluid, improper opening of doors for secondary containment, and improper handling of anti-contamination clothing.

Desired Condition

Control of work involving radiological protection is consistently accomplished by establishing radiological standards and responsibilities, utilizing first line supervision and radiological protection personnel to monitor performance of radiological work, and by adherence to procedures or permits

that contain necessary radiological protection measures and controls. (INPO 85-004, Guidelines for Radiological Protection at Nuclear Power Stations, Chapter VIII).

Recommendations

a. Communicate radiological protection standards in General Employee Training and ALARA briefings. Emphasize individual accountability for proper radiological practices.

b. Review the radiological protection program relative to INPO 85-004, Guidelines for Radiological Protection at Nuclear Power Stations, Chapter VIII. Develop or revise the program to ensure the intent of the guidelines is satisfied.

c. Perform routine line supervisor observations of maintenance, operations, test engineering, and instrumentation and controls work in progress to emphasize weaknesses and opportunities for improvement of radiological work practices.

d. Review the implementing procedures for controlling work in radiological controlled areas to ensure the procedures reflect the proper radiological protection practices specified in the radiation protection program.

e. Increase teamwork and encouragement of ALARA principles by requiring health physics and line supervisors to jointly participate in ALARA job briefings and review meetings. Assign higher level supervision to attend critical meetings.

f. Provide opportunities for health physics technician and maintenance personnel interface during training sessions held on site or at the Barbadoes Training Center.

g. Simulate actual radiological conditions with health physics technician involvement during mock-up training exercises.

3. MAINTENANCE WORK PRACTICES

Existing Condition

Maintenance work practices are often not in accordance with good industry practices. Improper tool use is evident. Foreign material exclusion controls are frequently not established for open systems and components. Restoration of the work site to pre-job conditions is often not accomplished.

Desired Condition

All personnel performing maintenance at the station should conform to clearly specified standards for maintenance. The standards should clearly delineate management's expectations for maintenance in the areas of high quality work performance, attention to detail, equipment and system protection, tool use, and use of procedures. Work sites should be clean and orderly. Supervisors and foreman should monitor work in progress to ensure maintenance activities are conducted in accordance with station policies and procedures and provide timely feedback to workers on deficiencies and work well done. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter VII).

Recommendations

a. Specify and enforce management's expectations for the following:

- o pre-job briefings
- o proper component train and system verification prior to work
- o verifications of isolation/blocking
- o quality of workmanship
- o use of procedures, including sign-offs, and work hold points
- o practices for foreign material exclusion practices for open systems and components
- o tool use
- o work site cleanliness and order
- o post-job reporting, critiques, and paperwork

b. Conduct training for all maintenance personnel on expected standards for the conduct of maintenance.

D. MOTOR-OPERATED VALVES

1. PREVENTIVE MAINTENANCE

Existing Condition

Preventive maintenance activities are inadequate to ensure continued motor-operated valve (MOV) reliability. Station MOV failures and industry experience have not been used to update the preventive maintenance program. Predictive maintenance techniques have not been developed. Responsibility for developing an overall MOV maintenance and testing philosophy has not been assigned.

Desired Condition

Predictive and periodic maintenance should be used to effectively monitor equipment performance and assist in prevention of failures. Industry experience indicates that substantial reliability gains can be made by employing predictive techniques on MOVs. These valves should be tested and parameters such as running current, voltage, and switch timing checks should be analyzed. Knowledgeable individuals must review and analyze test data if the predictive maintenance program is to be successfully used to identify incipient failures. Industry experience such as NPRDS, Significant Event Evaluation and Information Network Program products, vendor, and NRC documents are important elements of an expanded information base for use in the analysis. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter IV and XVI).

Recommendations

a. Place all safety-related and reliability-related MOVs into the preventive maintenance program. Review NRC bulletin 85-03 inspection results to determine if current preventive maintenance tasks are adequate to minimize the problems found. Establish priorities for preventive maintenance program implementation and frequencies based on MOV application and environment.

b. Consider the use of the plant's "MOVATS" or other diagnostic equipment

to trend the performance of these MOVs. The equipment must be capable of measuring stem thrust and provide current signatures that can be compared to baseline data. Establish acceptance criteria for all predictive maintenance data, including maximum current allowed, switch timing, and stem thrust.

c. Assign an individual overall responsibility for establishing and controlling the MOV program. This individual should be involved in predictive and corrective maintenance information review, update of preventive maintenance activities, review of procedures, review of training plans, and incorporation of industry experience.

2. CORRECTIVE MAINTENANCE

Existing Condition

Formal post maintenance MOV test requirements have not been established. Testing is not always performed under maximum system differential pressure or by the use of "MOVATS". Limit switch settings are not recorded or verified using a strip chart recorder. Troubleshooting procedures have not been generated to aid craftsmen.

Desired Condition

Troubleshooting methods should be developed to address all motor-operated valve failure modes and causes currently known by the industry. Troubleshooting procedures should be developed for each MOV model, where appropriate, to properly guide craftsman efforts toward identification and correction of underlying causes of failures. Diagnostic test equipment should have the capability to measure stem thrust and current signatures. Post-maintenance testing should be performed after any maintenance activity that could affect valve operation to ensure operability of the valve during maximum system differential pressure and flow conditions. (INPO SOER 83-9, Valve Inoperability Caused By Motor-Operator Failures).

Recommendations

a. Generate troubleshooting procedures and/or conduct troubleshooting training covering the various models of MOVs.

b. Utilize the plant's "MOVATS" for troubleshooting motor-operated valve problems where torque switches require adjustment, motors require replacement, or internal operator gear damage is noted.

c. Include specific retest requirements into a post-maintenance test guideline. Ensure that proper consideration is given to the plant system conditions required for the test. The specified testing should ensure the MOV will operate under conditions of maximum pressure and flow. The results of post-maintenance testing should also be used to make needed preventive maintenance program changes.

d. Consider the use of specific teams including craftsmen, foremen, and/or technical staff engineers, for performing MOV maintenance. This practice will accelerate the development of technical expertise and provide additional consistency during MOV maintenance.

e. Verify limit switches are set correctly by monitoring switch actuation and motor current on a strip chart recorder and comparing the times of switch actuations to critical points on the motor current trace.

3. PROCEDURES

Existing Condition

Motor-operated valve procedures lack some needed technical detail. Generally, the problems involve lack of acceptance criteria, unclear lubrication requirements, insufficient torque switch installation details, and lack of guidance on setting limit switches. In addition, site and corporate procedures exist for similar maintenance activities. These procedures vary greatly in the detail provided.

One notable procedure problem involves the allowance of electrical backseat-

ing of motor-operated valves. The technique involves manually activating the "open" contactor at the motor control center until amperage increases to slightly above normal running current. This end point is difficult to achieve since amperage peaks the instant back seating occurs. Industry experience has shown that damage to the valve stem, disc, or back seat may result.

Desired Condition

Procedures should be written for corrective and preventive maintenance. Information provided in procedures should be clear and concise, should provide appropriate detail, and should minimize the need for interpretation. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter V).

Recommendations

a. Minimize the electrical back seating of motor-operated valves. If electrical back seating is required, evaluate the technique of using reduced voltage during back seating to reduce the torque applied by the operator. This will minimize the potential for stem, disc, and back seat damage.

b. Combine the site and corporate procedures into one set of site approved procedures.

c. Provide acceptance criteria for test data and require all as-found and as-left data be recorded.

d. Incorporate additional technical direction for tasks such as limit switch settings, lubrication requirements, and torque switch installation.

4. DESIGN CONTROL

Existing Condition

A controlled setpoint data base has not been developed for motor-operated valves. Torque switch setpoints for non-safety related MOVs are obtained from an uncontrolled design document. A controlled drawing for torque switch settings on safety-related MOVs is being developed as part of the current testing program. Setpoints have not been established or documented for MOV limit switches. Nameplate data is being recorded during maintenance activities, but has not been placed into a controlled document. In addition, final resolution on INPO SOER 86-2, Incorrect Closed Position Indication on Motor-operated Valves has not been obtained.

Desired Condition

Controlled design information should be maintained on all motor-operated valves. A setpoint list should include torque switch setting and range, limit switch setting including percentage of total valve travel, and stem thrust requirements. Other information that should be controlled includes the type of grease to be used, nameplate data, and other information necessary to procure or replace operator parts and materials. (INPO SOER 83-9, Valve Inoperability Caused by Motor-Operator Failures).

Recommendations

a. Establish and control setpoint data for all motor-operated valves. Include setpoints related to torque switch settings, limit switch settings, and stem thrust requirements.

b. Generate additional controlled procedures or a controlled data base where other pertinent valve information can be documented. Information to be documented should include the type of grease to be used, operator nameplate data and other information necessary to procure or replace operator parts and materials. Additional information that could be documented includes specific information on internal switch materials and environmental service conditions for each valve.

c. Evaluate the modification of MOV wiring to allow the torque switch bypass contacts to be adjusted separately from valve position indication as referenced in SOER 86-2.

5. TRAINING

Existing Condition

Formal technical training has been provided to craftsmen and foremen, but additional training is still needed. Initial training consisted of one to two days of instruction several years ago. Additional training was provided to approximately forty percent of the craftsmen during recent training given by an outside firm. However, the technical knowledge of the craftsmen involved with MOV maintenance still varies greatly.

Training lesson plans are not updated in a timely manner based on industry operating experience. Site specific procedures are not referenced in the lesson plans. In addition, lessons learned from inspections of safety-related MOVs have not been incorporated.

Industry operating experience is not consistently communicated to craftsmen and foremen.

Training in the use of "MOVATS" is only provided to contract personnel directly involved with NRC bulletin 85-03 testing.

Desired Condition

Training should develop and maintain the knowledge and skills needed by maintenance and operations personnel to effectively perform plant activities and prevent occurrences experienced elsewhere in the industry. Plant personnel and feedback should be used to identify initial and continuing training program enhancements. Continuing training should include plant procedures and contain applicable industry experience from INPO SEE-IN documents, NRC bulletins, and other sources. (INPO 85-038, Guidelines for

the Conduct of Maintenance at Nuclear Power Stations, Chapter II).

Recommendations

a. Continue MOV technical training, such as that recently provided for all craftsmen, foremen, engineers, and operators involved in MOV related activities. Provide refresher training on a periodic basis.

b. Review available industry operating experience information for needed revisions to training lesson plans. Ensure future revisions are timely.

c. Incorporate lessons learned from recent inspections of safety-related MOVs into the training programs and valve maintenance procedures.

d. Use site procedures during formal training. This increases craftsmen familiarity with the procedures needed for work at the station and provides additional procedure validation.

e. Ensure industry operating experience is being effectively discussed during routine craftsmen meetings. Route this information to those that could not attend the meetings.

f. Consider the use of Philadelphia Electric Co. MOV experts during formal training sessions.

E. PREVENTIVE MAINTENANCE

1. INTEGRATED EQUIPMENT LIST

Existing Condition

An integrated equipment list has not been established to identify all equipment, components, and structures to be included in the preventive maintenance program. The basis for existing preventive maintenance tasks and their frequencies is normally not recorded and often not known by personnel. Many tasks are no longer performed and cannot be assessed as to cost effectiveness. In addition, procedures often do not exist for many preventive maintenance activities.

Desired Condition

An integrated equipment list should be developed that includes the basis for inclusion or exclusion of an item from the preventive maintenance program. Included in this effort should be the analysis of failure modes and frequencies, the determination of failure causes, and identification of preventive maintenance actions that could improve station reliability and reduce operating costs. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter IV).

Recommendations

a. Generate an integrated list of equipment to be included in the preventive maintenance program. Record the basis for inclusion or exclusion of equipment from this list.

b. Establish or revise preventive maintenance tasks for the listed equipment. Specify frequencies for performance of these tasks. The basis for the specific task and frequency should be recorded. This practice will provide justification for future program revisions. This review is currently being performed on fifteen critical systems and should be extended later to all other plant systems. Consider incorpo-

rating reliability centered maintenance techniques into the program. EPRI reports NP-3416 on preventive maintenance and NP-4271, NP-4795, and NP-5430 on reliability centered maintenance may be of use in this effort.

c. Generate or revise procedures for all preventive maintenance activities and ensure that the as-found and as-left information is required to be recorded to allow analysis of preventive maintenance program effectiveness and revisions to the program. (Efforts are currently underway in this area).

2. PREDICTIVE MAINTENANCE

Existing Condition

The scope and implementation of the predictive maintenance program are not sufficient to predict equipment failure and minimize corrective maintenance activities. Oil analysis, thermography, vibration monitoring, and motor insulation testing are examples of techniques that are either not performed or not integrated into the preventive maintenance program to maximize overall maintenance program effectiveness.

Desired Condition

Preventive maintenance includes predictive, periodic, and planned maintenance actions performed prior to equipment failure or to prevent equipment failure. Predictive maintenance trends and monitors representative parameters of equipment performance and uses techniques such as vibration analysis, infrared surveys, and motor-operated valve testing. Periodic maintenance is action taken on a routine basis. Planned maintenance is performed based on predictive and periodic maintenance results. Effective monitoring and diagnostic methods are normally preferred to periodic internal inspection or equipment overhauls. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter IV).

Recommendations

a. Identify predictive maintenance techniques currently in use in the

industry. Utilize this information to specify preventive maintenance tasks and frequencies. Consider expanding the use of techniques such as oil analysis, thermography, and diesel engine performance analyzer. (A maintenance guideline is in place to control the vibration monitoring program.)

b. Use predictive maintenance prior to and following corrective maintenance to help troubleshoot equipment problems and assess the effectiveness of corrective actions. Post-maintenance predictive tests should also be used to establish new baseline data for comparison with future testing. Consider integrating personnel from the acoustic and dynamic monitoring groups into corrective maintenance activities.

c. Integrate predictive maintenance activities into the preventive maintenance program to minimize equipment overhauls and oil change outs. This practice will also provide a mechanism for comparing predictive results against actual equipment degradation so that the predictive techniques can be refined over a period of time.

d. During performance of predictive maintenance activities, record applicable environmental and system conditions to allow predictive maintenance data to be effectively trended.

e. Train work planners and engineers on predictive technique capabilities and when they are to be used for troubleshooting or as a post-maintenance test following corrective maintenance.

3. LUBRICATION PROGRAM - OPERATIONS

Existing Condition

The lubrication program does not provide for timely equipment lubrications, justification of substituted lubricants, or documentation of results in a readily accessible history program. In addition, the scope of required lubrication activities is not consistently understood throughout the

organization. For example, personnel do not have a consistent understanding as whether an oil change is required, or whether credit can be taken for an oil level check.

Desired Condition

Equipment is lubricated in accordance with vendor recommendations for the installed service and environment. All substituted lubricants are evaluated for suitability. Lubrication activities are documented and excessive oil usage or lubricant breakdown is investigated.

Recommendations

a. Identify all equipment currently requiring lubrication. This should include a review of existing lubrication sheets in addition to identification of equipment not covered by the current program.

b. Develop a controlled lubrication manual that lists all equipment requiring lubrication, the points to be lubricated, and the amount and type of lubricant to be used.

c. Establish lubrication tasks in CHAMPS to implement the requirements of the lubrication manual. Remove obsolete tasks currently loaded in CHAMPS.

d. Develop a lubricant cross reference appendix to the lubrication manual. Equivalent lubricants must have a documented engineering analysis that justifies the lubricants' use and any restrictions to be followed such as radiation or mixing precautions.

e. Require update of the lubrication manual and preventive maintenance tasks when modifications are made to systems or equipment. This includes minor modifications such as replacement of bearings requiring lubrication with sealed bearings.

f. Train operations and maintenance personnel on the use of the lubrication manual and good lubrication practices.

g. Update the CHAMPS system if lubrications are performed as part of corrective maintenance.

h. Trend oil usage on critical plant equipment to identify the severity of oil leaks or other lubrication problems.

4. PROGRAM CONTROL

Existing Condition

Management has not established their philosophy and expectations for the content and control of the preventive maintenance program. Followup to ensure effective program implementation has not been effective. The CHAMPS computer system is not consistently used by all groups and the scheduling of preventive maintenance tasks is not integrated to minimize equipment out of service. In addition, the program is not revised through structured and consistent craftsmen feedback or as a result of system modifications.

Desired Condition

Management must set the overall philosophy and goals for the program and commit the necessary resources to meet them. Administrative and implementing procedures should direct the program and gauge its effectiveness. Performance measures or reports should be established to inform management of program implementation status and to help identify needed program changes. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter XIV).

Recommendations

a. Establish a station guideline the lists what types of equipment should be included in the preventive maintenance program. Decisions for equipment inclusion should be based on considerations such as nuclear safety, plant availability, personnel safety, regulatory and code requirements, station experience and cost benefit.

b. Update CHAMPS software to allow rescheduling of preventive maintenance

tasks without artifically changing the frequency or last completion date. In addition, update CHAMPS software, if required, to support management reports needed to assess preventive maintenance program effectiveness.

c. Develop guidelines and provide training to users on the use of the CHAMPS program. Examples of information to be provided should include items such as the following:

- o list of mandatory information to be included in the program such as RWPs, equipment location, and procedure references
- o methods for grouping preventive maintenance tasks to minimize the number of times equipment must be removed from service for maintenance
- o method to take credit for preventive maintenance activities completed during corrective maintenance
- o method to identify upcoming preventive maintenance activities that should be scheduled with planned corrective maintenance
- o method for revising preventive maintenance tasks when changes are needed
- o method for obtaining management reports (Examples of useful information may include preventive maintenance manhours versus corrective maintenance manhours and preventive maintenance task deferrals.)

d. Record justifications for deferrals of all preventive maintenance tasks. The maintenance manager or his designee should approve all deferrals. Generate reports on task deferrals for management review.

e. Ensure craftsmen are aware of their vital responsibility to recommend

changes to the program based on their work in the field. When craftsmen recommend changes, feedback the results of these recommendations to the individual making the recommendation. A method to accomplish this may utilize a standard comment form to be included with preventive maintenance packages.

f. Ensure the preventive maintenance program is updated when required due to modifications of systems or equipment. This is currently required by administrative procedures, but is not effectively accomplished.

g. When permanently installed plant instrumentation is found out of calibration, review previous tests that were performed using this instrumentation. Document the analysis made concerning the validity of the previously performed tests.

h. Assign a management individual overall administrative responsibility for the preventive maintenance program. This control should include mechanical/electrical, and instrumentation and control disciplines. His responsibilities should include the following:

- o evaluation of preventive maintenance program effectiveness by reviewing preventive maintenance deferral reports and equipment failure reports
- o revision of administrative guidelines where appropriate
- o control of the CHAMPS preventive maintenance program
- o assurance of consistency of approaches oetween groups
- o review justification of preventive maintenance task and frequency changes

i. Include preventive maintenance in both station goals and department goals.

F. MAINTENANCE PROCEDURES

1. PROCEDURES DEVELOPMENT AND WRITING

Existing Condition

A uniform station process for procedure development and writing has not been established. There are four writers guides being used for the development of procedures. Station maintenance procedures are written by engineers, professional procedure writers, and in one group, experienced craft personnel. These personnel have not all received training on the requirements of the writers guides. Recently written maintenance procedures do not contain all the information specified in the writers guide. In addition, clear guidance does not exist on the use of procedures and instructions by station personnel to accomplish maintenance activities.

Desired Condition

Maintenance procedure development should be accomplished in accordance with an approved writers guide. The writers should be trained to write maintenance procedures and use technical input from craftsmen and engineers experienced with the activity. Procedures should be written for and used in all safety-related work and for all non-safety-related work that could result in a station transient, degraded station reliability, or a personnel or equipment hazard. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter V).

Recommendations

a. Develop and approve a station procedure writers' guide. This guide should be used as the overall administrative control for developing procedures and instructions for the various disciplines. The guide should contain guidelines and criteria for human factor considerations consistent with INPO 85-026, Writing Guideline for Maintenance, Test, and Calibration Procedures. Use appendices to incorporate special requirements for the various disciplines.

b. Train engineers, writers, and craftsmen involved in procedure writing, on the guide's proper use and application.

c. Involve craftsmen during the planning phase of procedures to ensure the necessary topics and details are included in the procedure. In addition, use craftsmen during the validation process.

d. Consider establishing a point of contact to facilitate and [illegible] the preventive maintenance programs.

e. [illegible] the requirements for the use of procedures or work instructions in maintenance activities.

2. [illegible] VERIFICATION

Existing Condition

Maintenance procedure verification frequently is not performed. Formal processes for procedure verification have not been established.

Desired Condition

Procedure verification should be performed to ensure the incorporation of proper format and technical accuracy in new or revised procedures. The review should ensure that the format incorporates human factors principles and other appropriate administrative controls. Verification should be done by one or more reviewers who were not involved in writing the procedure. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter V).

Recommendations

a. Establish a formal [illegible] verification of new and revised procedures. INPO [illegible] ncy Operating Procedures Verification Guidelines, should be used as a guide in this effort.

b. Train engineers, supervisors, craftsmen, and contractors on the verification process.

3. PROCEDURE VALIDATION

Existing Condition

Mairtenance procedure and instruction validation is not performed prior to final approval. A formal program for procedure validation has not been established.

Desired Condition

Procedures should be validated to ensure their usability and correctness. The validation process should demonstrate that the procedure provides sufficient and understandable direction to the craftsmen and that the procedure is compatible with the equipment or system being maintained. The validation may be done in a shop, training environment, mock-up, simulator, or during the first time use of the procedure. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter V).

Recommendations

a. Establish and promulgate a formal procedure for maintenance procedure and instruction validation. The procedure should include the validation method selected, assessment and resolution of identified deviations, and documentation of the validation. INPO 83-006, Emergency Operating Procedure Validation Guidelines, should be used as a guide.

b. Train maintenance engineers, supervisors, and craftsmen on the validation process.

c. Establish a plan and a schedule to validate all maintenance procedures as they are written and revised.

d. Utilize craftsmen to perform validation of maintenance procedures.

4. PROCEDURE REVIEW AND REVISION

Existing Condition

The station administrative procedure on periodic review of procedures does not include a requirement to perform a human factors review against the guidance in the writers guide. Many existing maintenance procedures contain human factor deficiencies that can lead to performance problems.

Desired Condition

All procedures should be periodically reviewed to identify content changes necessary to enhance format, human factors, or management philosophy. A method should exist to ensure that technical specifications and other licensing commitments are not changed or deleted during the procedure revision and review process. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapter V).

Recommendations

a. Establish the biennial review program for maintenance procedures specified in the Commitment To Excellence Plan.

b. Convert all procedures used by maintenance personnel to the format and style specified in the writers guide.

c. Incorporate a mechanism to ensure licensing or other commitments are adequate and not inadvertantly changed or deleted during procedure review and revision.

d. Include a human factors review according to the procedure writers guide as part of the procedure review and revision process.

e. Change administrative forms and practices so that the revisions to procedures are identified in the body and the reason for the revision is stated on the revision forms.

G. MATERIALS MANAGEMENT

1. SPARE PARTS

Existing Condition

Many maintenance request forms are on hold awaiting parts. Maintenance personnel report that out-of-stock parts are a frequent problem and that a significant number of supply problems involve parts that have not been established as store items. Significant maintenance department resources are dedicated to parts procurement. Establishment of stocking levels and release of parts held in the emergency category often does not include management review or oversight. Additionally, order tracking and expediting delivery dates are not effectively coordinated with plant need dates.

The computer data bases that support procurement efforts (CHAMPS, ADABAS and MAX III) are not functionally integrated, contain incomplete or conflicting equipment information, and are not well documented. Users are sometimes not familiar with the capabilities of the existing systems.

Specific actions are planned to improve the implementation of the spare parts program and establish relational data bases; however, the time table for accomplishing these tasks is approximately three years and efforts are dependent upon updating the CHAMPS and ADABAS data bases to the latest software revisions.

Desired Condition

Procurement activities should ensure proper parts, materials, and services are purchased to support maintenance activities and meet the requirements for safe and reliable station operation. Parts stocking and issue problems should be closely monitored and trended. Spare parts should be ordered and staged in a coordinated manner to support present and future work activities. Spare parts data bases should be accurate, complete, and well documented. (INPO 85-038, Guidelines for the Conduct of Maintenance at Nuclear Power Stations, Chapters VI and IX).

Recommendations

a. Review the process for identifying, procuring, staging, and issuing spare parts to ensure adequate support of maintenance. Provide management direction and the necessary engineering resources to correct identified weaknesses.

b. Continue the Spare Parts Improvement Program Phases I to IV with particular emphasis on in-plant equipment verification, data entry verification, and controlling the process for establishing stock levels.

c. Update CHAMPS and ADABAS software to the latest software revision and document the revised system design and capabilities.

d. Provide formal training to planners and engineers on the use of the spare parts programs.

e. Revise the station procedure for the material control system to clarify use of non-conforming materials and provide instruction on completion of the required documentation. Train personnel on the procedure changes.

f. Provide a method of feedback from buyers to maintenance planners regarding delivery dates which do not meet requisition need dates. Also, develop a method to identify and expedite past due deliveries of spare parts on order.

g. Consider incorporating spare parts purchasing activities with the modification process for new equipment installations. Cost savings would be achieved by combining spare part orders with the initial order. This would also ensure part availability during startup testing and future maintenance activities.

PEACH BOTTOM ATOMIC POWER STATION

MAINTENANCE ASSISTANCE AND REVIEW TEAM VISIT PLAN

NOVEMBER 2-13, 1987

TOPIC LIST	RESPONSIBILITY
1. MANAGEMENT ISSUES	Dugger Frew O'Neil Rainey
a. Resolution of Long-Standing Problems	
b. Goals/Objectives	
c. Supervisory/Management Involvement	
d. Defining/Enforcing Standards	
e. Responsibility/Accountability	
f. Root Cause Analysis	
2. MATERIAL CONDITION	Hayden
a. Deficiency Identification/Tag Removal	
b. Leaks/Preservation	
3. WORK CONTROL	Hayden Kenney
a. Planning	
b. Coordination	
c. Scheduling	
d. Backlog Management	
e. Prioritization	
f. Post-Maintenance Testing	
g. CHAMPS Use/Control	

ATTACHMENT B

TOPIC LIST	RESPONSIBILITY
4. CONDUCT OF MAINTENANCE	Hayden O'Dell O'Mara
a. Industrial Safety	
b. Foreign Material Exclusion	
c. Post-Job Clean up	
d. Procedure Adherence	
e. Radiological Protection	
5. PREVENTIVE MAINTENANCE	Tills Mercier
a. Preventive Maintenance Program	
b. Deferrals	
c. Backlog	
6. PROCEDURES	Kenney O'Dell Rainey
a. Human Factors	
b. Development of Balance of Plant Procedures	
c. Vendor Manual Control	
d. Control/Authorization	
e. I&C Surveillance Test Rewrite	
g. Temporary Procedure Change	
h. QA Review of Procedures	
7. MOTOR-OPERATED VALVES	Tills Gruber
a. Troubleshooting	
b. Root Cause	
c. Post-Maintenance Testing	
d. Work Practices	

ATTACHMENT B

PEACH BOTTOM ATOMIC POWER STATION

MAINTENANCE ASSISTANCE AND REVIEW TEAM

NOVEMBER 2, 1987

ENTRANCE MEETING

NAME	TITLE	ORGANIZATION
C. ANDERSON	ASSISTANT SUPERINTENDENT - I&C	PECO
J. AUSTIN	SUPERINTENDENT - CONSTRUCTION	PECO
J. CLUPP	SHIFT MANAGER	PECO
J. DAVENPORT	ASST. SUPERINTENDENT - MAINTENANCE	PECO
G. DAWSON	SENIOR ENGINEER MAINTENANCE	PECO
A. FULVIO	TECHNICAL ENGINEER	PECO
M. McCORMICK	PLANT MANAGER	PECO
T. MITCHELL	ENGINEER - OPS SUPPORT	PECO
J. MITMAN	SENIOR ENGINEER - RADWASTE	PECO
D. OLTMANS	SENIOR CHEMIST	PECO
J. O'MARA	MAINTENANCE SUPERINTENDENT - LIMERICK	PECO
C. PATTON	SUPERVISOR ENGINEER	PECO
D. POTOCIK	SENIOR ENGINEER - HEALTH PHYSICS	PECO
G. RAINEY	SUPERINTENDENT - MAINTENANCE/I&C	PECO
M. RYAN	ENGINEER - OUTAGE PLANNING	PECO
D. SMITH	VICE PRESIDENT - PEACH BOTTOM	PECO
L. DUGGER	TEAM LEADER	INPO
E. HAYDEN	MAINTENANCE EVALUATOR	INPO
J. KENNEY	MAINTENANCE EVALUATOR	INPO

ATTACHMENT C

NAME	TITLE	ORGANIZATION
J. TILLS	PROJECT MANAGER	INPO
J. MERCIER	MAINTENANCE ADVISOR	EPRI/EDF
J. FREW	MC&F DIRECTOR	GPU NUCLEAR
L. O'NEIL	SUPERVISOR ENGINEERING	PP&L
W. O'DELL	PROJECT DIRECTOR	GE

ATTACHMENT C

PEACH BOTTOM ATOMIC POWER STATION

MAINTENANCE ASSISTANCE AND REVIEW TEAM

NOVEMBER 2-13, 1987

PERSONNEL CONTACTED

NAME	TITLE
G. ADAMS	SAFETY ENGINEER
N. ALEXAKOS	MAINTENANCE ENGINEERING
C. ANDERSON	ASST. SUPERINTENDENT - I&C
E. BAILEY	COORDINATOR - SPARE PARTS
D. BERTOCCHI	TECH. ASST. - COMPLIANCE ENGINEER
H. BIRCH	BECHTEL ENGINEER
R. BROWER	ENGINEER - INSTRUMENT & CONTROL
D. BUCKLEY	ENGINEER - PREVENTIVE MAINTENANCE
G. BURDSHALL	ADVISOR TO D. SMITH/G. LIPSCY
H. CARR	FOREMAN - INSTRUMENT & CONTROL
D. CIBROSKI	FOREMEN - MACHINIST
J. CLUPP	SHIFT MANAGER
J. COOK	TEST ENGINEER
J. COTTON	SUPERINTENDENT - OPERATIONS
J. CURRAN	PLANNER - FITTER
B. CURRY	FIELD ENGINEER
J. DAVENPORT	ASST. SUPERINTENDENT - MAINTENANCE
G. DAWSON	SENIOR ENGINEER MAINTENANCE
T. FARRINGTON	ASSISTANT FOREMEN - FITTER

ATTACHMENT D

NAME	TITLE
K. FENIMORE	SUB-FOREMAN - FITTER
A. FULVIO	TECHNICAL ENGINEER
T. GEYER	ASST. ENGINEER - MAINTENANCE
J. GRANEY	SHIFT ASSISTANT - MAINTENANCE
W. HEMPSTEAD	EMGINEER - BECHTEL
G. JACKMAN	TECHNICAL ASST. - SPARE PARTS
D. KEENE	ENGINEER - INSTRUMENT & CONTROL
K. LANGENMAYR	ENGINEER - CHAMPS
D. LEE	CONSULTANT - OUTAGE PLANNING
G. LENGYEL	FIELD ENGINEER
M. LIND	ENGINEER - ACOUSTIC & DYNAMIC ANAL
G. LIPSCY	SUPERINTENDENT - SCHEDULING
L. LOVEALL	CONSULTANT
D. MAXTON	SUB-FOREMAN - FITTER
P. MAYO	OUTAGE PLANNER
S. MELLOR	FOREMAN
J. MITMAN	SENIOR ENGINEER - RADWASTE
M. McCORMICK	PLANT MANAGER
J. NULL	SUB-FOREMAN - MACHINIST
A. PESARCHIK	SAFETY ENGINEER
D. POTOCIK	SENIOR ENGINEER - HEALTH PHYSICS
K. POWERS	PROJECT MANAGER
G. RAINEY	SUPERINTENDENT-MAINTENANCE/I&C
M. RASHID	TECH. ASST. - PREDICTIVE MAINT.

ATTACHMENT D

NAME	TITLE
J. ROGENMUSER	ENGINEER - PREVENTIVE MAINTENANCE
M. RYAN	ENGINEER - OUTAGE PLANNING
R. SHORTES	FOREMAN - ELECTRICAL
M. SMITH	TECHNICAL ENGINEER - I&C
D. SMITH	VICE PRESIDENT, PEACH BOTTOM
D. SPEAKMAN	SUB-FOREMAN - MACHINIST
D. STOTT	ENGINEER - INSTRUMENT AND CONTROL
D. THOMAS	ENGINEER - PREVENTIVE MAINTENANCE
G. TIERNEY	ASSISTANT FOREMAN - MACHINIST
P. TURTURICI	ASST. FOREMAN - FUEL FLOOR
M. WALK	BECHTEL PROJECT START UP SUPERVISOR
D. WHITE	ENGINEER - PREVENTIVE MAINTENANCE
J. WILSON	SUPERINTENDENT - OUTAGE PLANNING
P. YOUNG	SYSTEMS ENGINEER - HPCI
D. YOUNG	FOREMAN - ELECTRICAL

ATTACHMENT D

PEACH BOTTOM ATOMIC POWER STATION

MAINTENANCE ASSISTANCE AMD REVIEW TEAM

NOVEMBER 13, 1987

EXIT MEETING

NAME	TITLE	ORGANIZATION
C. ANDERSON	ASSISTANT SUPERINTENDENT - I&C	PECO
G. DAEBELER	CTE COORDINATOR	PECO
J. DAVENPORT	ASSISTANT SUPERINTENDENT - MAINTENANCE	PECO
G. DAWSON	SENIOR ENGINEER MAINTENANCE	PECO
G. LIPSCY	SUPERINTENDENT - SCHEDULING	PECO
M. McCORMICK	PLANT MANAGER	PECO
T. MITCHELL	ENGINEER - OPS SUPPORT	PECO
J. O'MARA	MAINTENANCE SUPERINTENDENT - LIMERICK	PECO
K. POWERS	PROJECT MANAGER	PECO
G. RAINEY	SUPERINTENDENT - MAINTENANCE/I&C	PECO
D. SMITH	VICE PRESIDENT - PEACH BOTTOM	PECO
J. WILSON	SUPERINTENDENT - OUTAGE PLANNING	PECO
L. DUGGER	TEAM LEADER	INPO
E. HAYDEN	MAINTENANCE EVALUATOR	INPO
J. KENNEY	MAINTENANCE EVALUATOR	INPO
T. SULLIVAN	VICE PRESIDENT ENGINEERING	INPO
J. TILLS	PROJECT MANAGER	INPO
J. FREW	MC&F DIRECTOR	GPU NUCLEAR
L. O'NEIL	SUPERVISOR ENGINEERING	PP&L
W. O'DELL	PROJECT DIRECTOR	GE

ATTACHMENT E