REPORT ON THE RESTART REVIEW PANEL'S ASSESSMENT OF READINESS FOR RESTART

PEACH BOTTOM ATOMIC POWER STATION

OCTOBER 1988

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EXECUTIVE VICE PRESIDENT - NUCLEAR

October 12, 1988
Docket Nos. 50-277
50-278

Mr. William T. Russell,
Administrator, Region I
US Nuclear Regulatory Commission
Mail Station P1-137
Washington, DC 20555
ATTENTION: Document Control Desk

SUBJECT: Report on the Restart Review Panel's Assessment of Readiness for Restart, October, 1988 for Peach Bottom Atomic Power Station

Dear Mr. Russell:

Enclosed with this letter are fifteen copies of the Report on the Restart Panel's Assessment of Readiness for Restart for Peach Bottom Atomic Power Station (the Report).

As part of Philadelphia Electric Company's overall assessment philosophy and process, we established a Restart Review Panel to review line management's self-assessment of their readiness for the restart and safe operation of PBAPS. The primary task of the Panel was to critically review self-assessment by line management in eighteen functional areas and to recommend, where necessary, further improvements for restart. The enclosed Report provides an overview of the Panel's process, deliberations, and conclusions. The Panel concluded, subject to resolution of certain identified issues detailed in the Report, that PBAPS is ready for restart and safe operation.

If you have any questions or require further information, please do not hesitate to contact me or my staff.

Sincerely,

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cc: Addressee
T. P. Johnson, Resident Site Inspector (3 copies)
R. E. Martin, Licensing Project Manager, NRC

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I.

EXECUTIVE SUMMARY

Background

On March 31, 1987, the Nuclear Regulatory Commission (NRC) ordered Philadelphia Electric Company (PE) to shut down the Peach Bottom Atomic Power Station (PBAPS). The Shutdown Order stated that neither unit at PBAPS could be restarted until PE submitted a detailed, comprehensive plan and schedule to assure the NRC that Peach Bottom would be operated safely and in compliance with all requirements. In addition to the Shutdown Order, other deficiencies, weaknesses, and areas of needed improvement have been identified by NRC inspections, including the SALP process, INPO evaluations, and self assessments by PE. PE identified four root causes for the declining performance which had occurred at PBAPS:

(1) A lack of adequate personal leadership and management skills on the part of senior management at the plant.

(2) Failure to initiate timely licensed operator replacement training programs.

(3) The station culture, which had its roots in fossil and pre-TMI operations, had not adapted to changing nuclear requirements.

(4) Corporate management's failure to recognize the developing severity of the problems at PBAPS and, thus, failure to take sufficient corrective actions.

As part of its effort to restart the facility, PE submitted a Plan for Restart of Peach Bottom Atomic Power Station, Rev. 1, to the NRC on April 8, 1988. In that plan, PE stated that involvement of upper management in monitoring and solving problems was being enhanced. As part of that enhancement, PE's independent assessment process has been strengthened to increase upper management's involvement in timely problem solving.

The Nuclear Review Board (NRB) charter has been revised to improve the review processes to better encompass technical safety concerns. The reporting relationship of the NRB has been elevated to the Executive Vice President - Nuclear, with copies of reports to the Office of the Chief Executive Officer.

The PE Board of Directors has established a Nuclear Committee of the Board (NCB) to review and report to the full board on: the safety, reliability, and quality of nuclear operations; the effectiveness of the management of nuclear operations; and the effectiveness of management systems for the self-identification of problems and for prompt and complete corrective actions. The NCB uses outside technical experts as advisors to provide specialized technical and operating experience and independent objective evaluation. The NCB serves as the highest level of a structured independent assessment

process which will assure PE's ability to self identify problems and implement timely and effective corrective actions.

Establishment of the Restart Review Panel

As part of its overall assessment philosophy and process, senior management established the Restart Review Panel (Panel or RRP) to review line management's self-assessment of their readiness for the restart and safe operation of PBAPS. The Panel, along with the NRB, Nuclear Quality Assurance (NQA), and the line managers in the nuclear group conduct assessments of readiness for restart from different perspectives. As depicted in Figure I-1, the Panel reports to the NCB through the Executive Vice President - Nuclear. Philadelphia Electric Company's Board of Directors receives the report of the Panel from the NCB, and, from the Executive Vice President-Nuclear, an overview of the Panel's process, deliberations, and conclusions. The Board of Directors also receives written and oral reports on the Nuclear Review Board's review of readiness for restart, Nuclear Quality Assurance's self-assessment and verification of readiness for restart, and a summary of the Site's self-assessment from the Vice President - PBAPS.

SELF ASSESSMENT PROCESS

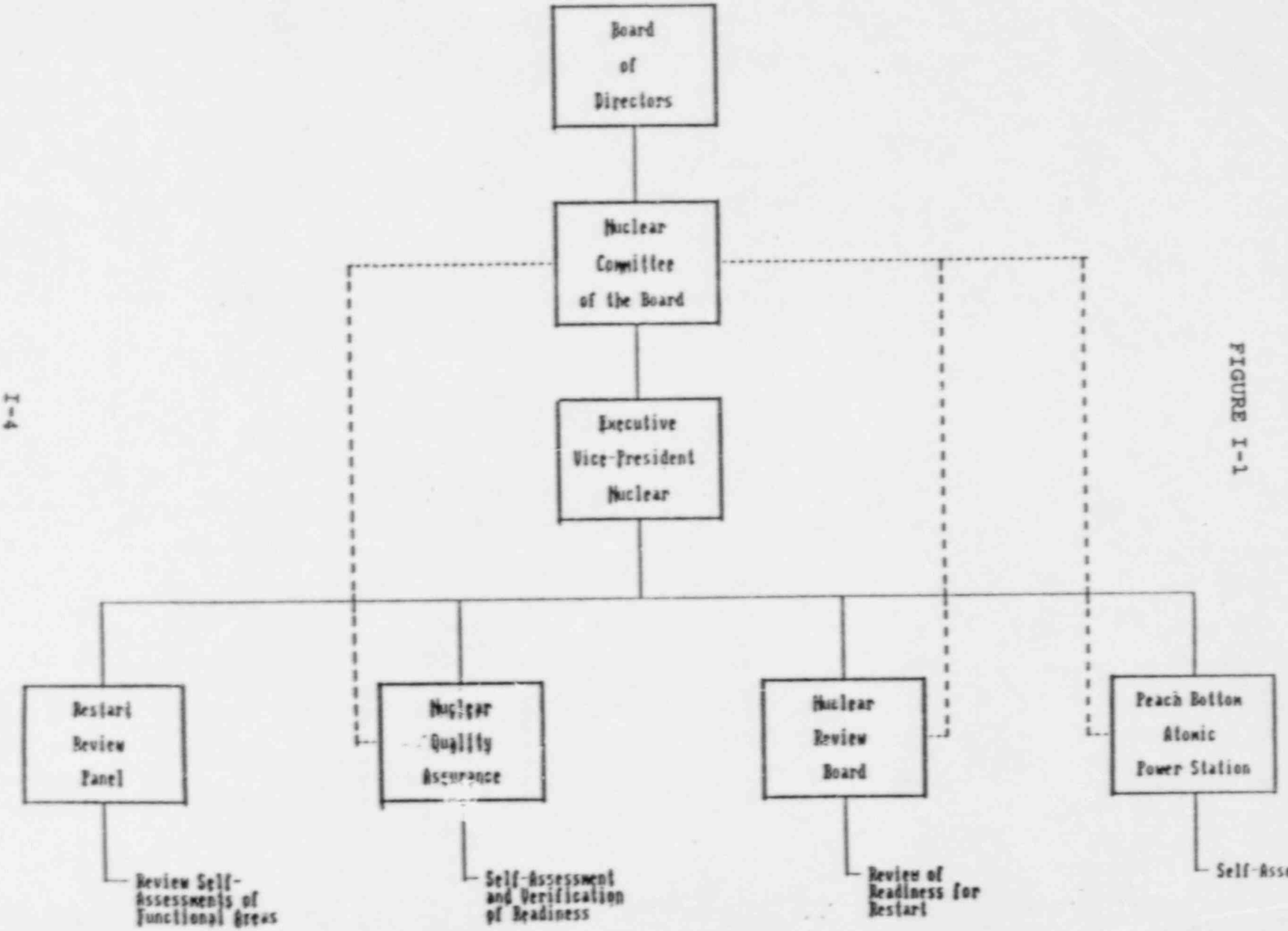

FIGURE I-1

The Panel's primary mission was to critically review line managements' self-assessment of their readiness to restart and safely operate PBAPS and to point out where further improvements were necessary or desirable, both in the short and long term.

The Panel consisted of the following members:

Corbin A. McNeill, Jr., Chairman
Executive Vice President - Nuclear

John S. Kemper
Senior Vice President, Nuclear Construction

Graham M. Leitch
Vice President, Limerick Generating Station

Edward C. Kistner
Chairman, Nuclear Review Board

David R. Helwig
General Manager. Nuclear Quality Assurance

E. P. Wilkinson, Consultant
Advisor to Nuclear Committee of the Board

Sol Levy, Consultant
Advisor to Nuclear Committee of the Board

Larry Burkhardt, Consultant

The Panel met for a total of six days at PBAPS with line management from the following eighteen functional areas:

Operations
Maintenance/I&C
Plant Services
Technical Support
Training and Qualifications
Industrial Safety/Fire Protection
Document Control
Design Engineering
Modifications
Configuration Management
Procurement and Material
Restart Power Testing
Outage Management
Nuclear Quality Assurance
Human Resources and Organization Development
Emergency Preparedness
Security
Licensing and Commitment Tracking

Overall Assessment of Readiness for Restart

In addition to the Panel, the NRB and NQA have substantial roles in the assessment of the readiness of PE to restart PBAPS. A brief summary of those efforts is necessary to place the Restart Review Panel's role in perspective.

The Nuclear Review Board, in accordance with the Peach Bottom Technical Specifications and the NRB charter, has reviewed the PBAPS readiness to restart from a nuclear safety viewpoint and recommended that the management, operations, support groups, procedures, structures, systems, and components of PBAPS are ready for restart. The NRB's review, which has been ongoing for

many months, was presented to the Executive Vice President - Nuclear, and the Nuclear Committee of the Board.

Nuclear Quality Assurance (NQA) has also performed extensive reviews of corporate and site activities and organizations. These reviews have included audits, surveillances, and assessments. In addition to this full scope coverage, NQA has identified fourteen specific areas for special review or verification to support restart of PBAPS Unit 2. Successful completion of these reviews is a prerequisite for NQA's verification that the plant is ready for startup. The following is a list of the areas NQA has identified for special review:

Open NQA Items (e.g., Audit findings and Nonconformances)
Restart Plan Tasks
Configuration Management Program Review
Operating Experience Assessment Program
Deferred Preventive Maintenance
Modification Completions
NUREG-1275
Procedure Revision Program
Operations Receptiveness of QA
Document Control
Startup Monitoring Plan
Safety Evaluations
Licensee Event Reports
Surveillance Test Verification

Line Management Self Assessment

Self-assessment of each functional area involved a six step process by line management. The first step was to identify all relevant, significant issues related to restart and/or

operation which had been identified in the Shutdown Order, by the NRC through routine inspections or the SALP process, by INPO, by other outside agencies, by NQA, or by self-assessment. Once those issues were identified, the tasks or corrective actions which had been taken to address the issues were identified as well as the status of those efforts.

Each functional area manager then had to demonstrate the positive results achieved. This was accomplished through various techniques, including walkdowns, field observations, data collection and analyses. Once obtained or observed, those results had to be shown by line management to be sufficient, i.e., the question, "how much is enough?" had to be addressed. This question was addressed by a variety of means, including comparisons with NRC, INPO, and industry guidelines or averages and the use of professional judgment. Finally, line management was required to show that the "sufficient results" were not simply an expediency, but rather, that the improvements had been institutionalized and would continue for the foreseeable future. Issues of line and field acceptance, management support, budget, and proceduralization are examples of the more common items examined in that regard.

Restart Review Panel Process

The line managers of the Nuclear Group functional areas presented the results of their self-assessments to the Panel during a series of three, two-day sessions at PBAPS. The results of the self assessments were done with the aid of overheads and, in addition to the oral presentations, the Panel was supplied with significant backup documentation. The Panel engaged the line managers in extensive question and answer sessions, probing where they believed additional information was needed or issues had not been adequately addressed or raised.

It must be noted that the Panel was confronted with a dynamic situation. A number of the changes which have been made in the Nuclear Group are in the early stages and all are at varying stages of implementation. The conclusions are based on what was presented to the Panel, the personal observations of Panel members, and observations and assessments performed by NQA and the NRB. The conclusions of the Panel are subject to changing conditions, some of which the Panel itself mandated and some of which are unforeseeable. It is recognized by PE that the business of self-assessment must be an ongoing process, continuing into the future. It must receive continued management attention and independent monitoring for the Nuclear Group to achieve its goals of excellence.

Restart Review Panel Deliberations and Conclusions

After deliberation, the Restart Review Panel reached the conclusion that the PBAPS facility is ready for restart and safe operation. The Panel did identify additional items which should be accomplished prior to restart and those tasks have been committed to by PE. One of the required tasks identified by the Panel was the creation of a single open item list for management oversight of the remaining tasks necessary for restart. That task was accomplished by the creation of the Master Open Item List attached to this report, which contains the remaining tasks to be completed prior to restart, except Maintenance Request Forms (MRFs) which are tracked separately, including tasks identified by the Panel.

A brief description of the issues presented to the Panel and the conclusions of the Panel for each functional area are presented below.

Operations

The Superintendent - Operations presented the status of Operations with respect to restart and the status of the many corrective actions taken in this area during the past eighteen months. The shutdown issues in Operations were primarily attitudinal in nature and included:

1. Operator Professionalism and Attitudes
2. Control Room Performance
3. Operations Management Involvement
4. Operations Standards and Expectations
5. Procedural Adherence by Operators

The Panel made a number of observations in this area. The Panel observed that as the Operations Manual had been recently issued and implementation had just begun, continued management and NQA monitoring of the performance of operators would be required. The Panel also questioned whether training in revised procedures was included in the operator training conducted following shutdown. The Operations Superintendent indicated that at the time of training, procedure revisions were continuing and therefore all changes were not included in the formal training. However, all operators will be trained in the revised procedures prior to restart.

The Panel members noted that the Shift Managers had reported specific concerns to the NRB. Discussion with Operations management indicated that additional work with Shift Managers was required to ensure proper understanding of their concerns and to clarify role expectations. Operations management agreed to accomplish this prior to restart.

The Panel concluded that shift staffing plans and related issues had been addressed satisfactorily and that Operations was proceeding as planned toward successful restart,

power testing and safe operations. It was noted that the operators were to receive additional simulator and other training during the coming months to strengthen operator skill levels. It was further concluded that improvements in Operations should be lasting because of emphasis on continuing training, monitoring, coaching and reinforcing the culture, values, and expectations now in place.

Maintenance/I&C

The Superintendent - Maintenance/I&C described to the Panel the status of five restart issues in the Maintenance/I&C functional area:

1. Organization
2. Procedure Content and Use
3. Work Control
4. Work Backlog
5. Preventive Maintenance (PM)

For each of these issues, the corrective actions taken, the status of those efforts, the results achieved, and the sufficiency and permanency of results were discussed.

The Panel concluded that Maintenance is capable of supporting restart and safe operation of PBAPS provided open work

orders are reduced to the target level and the backlog of overdue preventive maintenance tasks is essentially eliminated prior to restart.

The improvements such as reorganization, management oversight function, system upgrades for maintenance planning, and enhancements to work control processes appear permanent. While there is a perceived need for continued enhancement, the changes to date have resulted in substantial improvements. Improvements to work process controls, planning and scheduling, productivity measurement, and work standards are areas to be further addressed in the next three years as part of the Nuclear Group's strategic plan to further improve Maintenance.

Plant Services

This functional area includes Chemistry, Radwaste, and Health Physics. The Superintendent - Plant Services presented the status of initiatives taken to address five identified issues. In the Chemistry area, one issue, layup chemistry control, had been identified. In Radwaste, two issues had been identified: reduction of contaminated areas and reduction of radwaste volume. Two issues had also been identified in the Health Physics area: improvement of radiological work practices and a reduction of station personnel radiation exposure.

The Panel requested that the Superintendent - Plant Services return to discuss plans for power ascension, i.e., how to deal with water chemistry changes during restart. The Panel also suggested that the presentation include additional discussion of training, compliance with procedures, and more information on the efforts and accomplishments in reducing the generation of radwaste. In the third meeting these matters were presented to the Panel in a satisfactory manner. After consideration of the accomplishments to date and the plans to continue improvement, the Panel concluded that all issues which affected restart had been resolved.

Technical Support

Three Technical Support issues had been identified as requiring improvement prior to plant restart. Those issues included timely identification and dissemination of industry operating experience to appropriate plant personnel, timely surveillance testing, and consistent and accurate labeling of plant systems and equipment. The Panel received presentations on those issues as well as the work done to include systems specific engineering expertise and the overall ability of this functional area to support restart.

The Panel concluded that this functional area had done an adequate job of preparing to support restart and safe

operation. The Panel noted the recent increased emphasis on reduction of overdue surveillance tests (STs) but also noted that the rate of improvement to reduce overdue STs was not as good as it might be. The Panel also inquired as to the significance of overdue STs (less than 2%) and suggested that some additional mechanism be considered to increase management attention if STs continue to be performed late.

Training and Qualification

Although no training and qualification issues arose directly from the Shutdown Order, issues in this functional area were identified by INPO and self-assessment. The issues identified involved the organization and administration of the training and qualification function, relatively slow incorporation of operating experience information into training, a low level of plant participation in the development of training, and improvements needed in self-assessment of training programs.

The Panel inquired about the status of training as respects specific groups of individuals. The Panel explored whether the training of personnel was adequate given the recent incorporation of operating experience and changes in training procedures. The Panel also inquired about the status of the reaccreditation effort and requested a follow-up discussion on

long range plans to maintain accreditation. The Superintendent - Training presented additional information on these topics. The Panel concluded that the achievements and improvements in this functional area were sufficient for restart and that efforts underway and planned for reaccreditation appeared to be appropriate.

Industrial Safety/Fire Protection

In Industrial Safety, the need for a coordinated program was identified as an issue, as was completion of an existing list of specific safety items. The Fire Protection issues were to achieve compliance with Appendix R of 10CFR50 and to resolve open ANI items. The lack of a formal accountable organization for these functions was also identified as an issue.

The Panel inquired about the method for verification of compliance with Appendix R and the approach for assuring continued compliance, particularly for transient combustibles. The Panel further inquired about the status of fire protection alarm system drawings and requested a follow-up presentation on both of these subjects. It was reported that the alarm system drawings were controlled but that transient combustible controls remained to be improved. It was noted that the site Industrial

Safety program was still in the process of being formulated and improved. Continued management attention to this area is required.

The Panel cautioned the Support Manager that all elements of the organization must remain vigilant regarding safety and that the safety organizations should continue to stress that responsibility. Upon consideration the Panel concluded that no issues related to restart remained unresolved.

Document Control

Two issues related to document control were identified by INPO in its 1987 report:

- Distribution control of drawings and vendor manuals
- Systematic processing and distribution of procedures

The Panel inquired as to the mechanics of the document control program, the vendor manual update process, and the status of vendor manuals in the plant. It was noted that minor problems still existed as the new procedures and programs were being implemented. For example, a problem with a discrete number of vendor manuals was currently being dealt with. After deliber-tion, the Panel found that the programs and accomplishments ..ed in this area resolved the issues related to accuracy and availabili:y of documents raised by INPO, and that the

accomplishments were supported by internal PE findings as well as a NQA audit. No issues affecting restart remain to be resolved in this area.

Design Engineering

The Nuclear Engineering Department (NED) presented the status of its efforts to specifically support the restart of PBAPS and the continuing needs of the site project organization. The presentation was given by the NED Project Manager for PBAPS. The issues addressed were the question of timeliness in support of plant requirements, including modifications, studies, and general engineering support. These issues had been identified by indicators in INPO evaluations where it was indicated that engineering support to the plant needed to be strengthened. Most of the self-improvement tasks described to the Panel had been developed as a result of critical self-evaluation. Root causes for the issue appeared to be in three distinct areas: control systems governing the work, coordination of scheduling, and the level of NED resources.

The Panel also received information on the status of Engineering's work load in support of restart and NED's average response time in supporting PBAPS since early 1988. The Panel raised questions concerning NED's role in support of the Restart Power Testing Program, completion of modification work required

prior to restart, the continuity of support through changes as transition is made to the long term organizational structure, the definition of closure of modifications, and Engineering support of training requirements on modifications to existing systems. The Panel was satisfied with the information presented on these subjects and the presenter's assessment of NED's ability to support restart of the units. Those items identified as schedule impact issues were found to have been managed and resolved. The NED organization, processes, and resources are in place and functioning effectively. There are also long term efforts underway to maximize the potential of the recently implemented programs and to ensure weaknesses of the past are not repeated.

Modifications

The Superintendent - Modifications presented the status of the modification process at Peach Bottom as well as the results of corrective actions for two identified issues: the modification backlog and the adequacy of onsite design controls applied to modifications. The Panel also requested additional information on the status of engineering reviews and modifications to masonry walls.

After making a thorough inquiry as to the status of masonry wall issues, the Panel suggested that those issues should

be resolved prior to restart. The Panel was assured that the matter would be resolved prior to restart.

The Panel spent significant time with the question of modifications, inquiring in depth as to how the new modification process worked, what types of modifications were being done by on-site Engineering versus NED, how the Modification/Operation interface was being handled, the red-lining process, prioritization of modifications, the status of the modification work-off, and the details as to how unacceptable backlogs would be prevented in the future.

The Panel's examination of this functional area led it to conclude that the readiness of the Modification function for restart and safe operation has been adequately demonstrated, performance level is being adequately monitored, and sufficient management controls and resources are being applied. All issues presented and raised are closed, except for masonry wall issues, which will be completed prior to restart.

Configuration Management

This functional area was presented to the Panel by the NED's Manager of Electrical Engineering who also serves as Chairman of the Configuration Management Steering Committee (CMSC). Configuration Management was identified as an issue by

INPO in its 1987 Site and Corporate Evaluations and by PE in a subsequent internal self-assessment. Specific concerns included:

- Configuration Management had not been a defined policy.
- Potential deviations existed between Design Basis documentation and the plant as-built configuration.
- A disparity was evident between practices used in the 1960's and 70's in contrast with criteria and expectations of the 1980's.
- Unresolved findings relating to Configuration Management remained open for long periods of time.
- Keeping pace with basic industry-wide changes in Configuration Management.

The Panel raised a number of questions in the area of configuration management, inquiring into such diverse and detailed matters as: closure criteria for CMSC action items; configuration management of fire protection system drawings; interface agreements; site responsibility for configuration management, NRC requirements; and control of vendor manuals.

For the support of restart, the Panel agreed with the presenter's general conclusion that the efforts undertaken are systematic and conclusive in addressing the issues raised. It was recognized, however, that the issue of configuration management is an ongoing matter which will require continuing attention and a long term effort to fully achieve the high standard of performance desired. The items below required short term action.

(1) Review the nature and status of 21 vendor manuals classified currently uncontrolled to determine if a previous response to the NRC on the vendor manual program needs updating. The results of that review will be communicated to the Manager, Nuclear Support Division.

(2) Determine the adequacy of compensatory site procedures restricting the use of Category 2 drawings for certain purposes in the Control Room. This effort will include discussions with the Plant Manager of any actions he is undertaking as a result of the recent feedback from the Nuclear Review Board regarding this topic.

The Panel concluded the Configuration Management efforts have been demonstrated to be effective, the performance of related activities are adequately monitored, and evidence of sufficient management controls and resources is apparent. The Panel further concluded that the management of the Peach Bottom configuration will be maintained, further improved over time, and is currently adequate for restart and safe operation.

Procurement and Material

The Superintendent - Materials presented to the Panel the status of procurement and materials at Peach Bottom as well as the results of corrective actions taken for two issues identified during the shutdown period. These corrective actions dealt with: (1) quality verification of parts, and (2) adequacy of the spare parts inventory to support plant operation.

The Panel, having examined this functional area, concluded that the readiness of procurement and materials for

restart and safe operation had been adequately demonstrated, the performance level was being adequately monitored, and sufficient management controls and resources were being applied. The Panel believes the Materials Section will maintain its readiness, and necessary improvements will continue in the future.

Restart Power Testing

The Assistant Superintendent - Operations, presented a description of power ascension plans contained in the Restart Power Testing Program. Although startup and return to operating service were not shutdown issues, recovery from the Unit 2 outage is the first opportunity with a unit in service to assess the effectiveness of the revised organization, revised management programs, and plant improvements. Accordingly, Operations developed a detailed restart power testing program. That program defines an orderly scope of testing and hold points to confirm the safe, efficient operation of the unit and to confirm the adequacy of performance of people and programs. The Restart Power Testing Program was described in a letter submitted to the NRC on August 23, 1988.

The Panel asked for more information on operator performance assessment and control of Unit 2/Unit 3 interactions during restart testing. During the last Panel meeting, the Assistant Superintendent - Operations, presented the performance

characteristics believed sufficient to judge shift crew performance. Those characteristics were:

- Attentiveness to duty
- Adherence to procedures
- Professional manner and appearance
- Intra- and inter-group relationships
- Supervision
- Technical performance.

The evaluations during the Restart Power Testing Program will contain narrative observations of performance, noting strengths and weaknesses. Corrective action will be taken, as needed, to assist in altering behavior and improving individual and overall shift team performance. The evaluators will be Operations management including Shift Managers, site Organization Development staff, senior site management, and industry observers. The industry observers will be personnel with recent BWR operating experience at other utilities.

Information regarding interaction between Unit 2 and Unit 3 during restart testing were presented by the Superintendent - Outages with contributions and comments from Operations. Panel conclusions on this interaction are set forth in the Outage Management section of this report.

The Panel made suggestions for additions to the scope of operator performance assessment plans during restart testing which Operations agreed to make. The restart power testing

program procedure will include forms and guidance for those assessments. Assuming the operator performance plans will be completed prior to restart, the Panel concluded that the Restart Power Testing Program is reasonable and sufficient to accomplish its intended objective.

Outage Management

The Superintendent - Outages presented the current processes used at PBAPS for planning, scheduling, and coordinating work during outages. While Outage Management was not an identified issue or a restart item in and of itself, it is a significant consideration for the restart of Unit 2 which will occur in conjunction with the scheduled outage for Unit 3.

The Panel concluded the results of current Outage Management processes are sufficient to support the Unit 2 restart and complete the Unit 3 outage. These results are being demonstrated, tracked, and reviewed daily at the station. Various charts and other management information are published and reviewed by top station management weekly, or more frequently if needed. They are also reviewed in detail at monthly station review meetings with the Executive Vice President - Nuclear.

The Panel also concluded that Peach Bottom has plans and programs in place to ensure effective coordination and interfaces between Units 2 and 3. Station management is aware and sensitive to potential impacts and has thought about and planned interactions between Units 2 and 3. During restoration of Unit 3 to service, these interactions will be revisited by station management on a continuing basis.

Nuclear Quality Assurance

This functional area was presented to the Panel by the General Manager, Nuclear Quality Assurance. The primary issue was derived from the NRC Shutdown Order where it was stated that "[t]he Peach Bottom quality assurance program has failed to identify this condition which is adverse to safety."

This generic issue was expanded upon in the Problem Root Cause Assessment of Peach Bottom Shutdown where it was said that "[t]he Quality Assurance/Quality Control (QA/QC) Program has not been fully integrated into the plant operations" and "...management has not assured that an appropriate level of operations expertise has been established in the QA/QC organization...." That assessment also found that "[s]urveillance and monitoring are used by QA at Peach Bottom but the implementors do not appear to be sufficiently experienced or trained...."

As a result of the Shutdown Order and the Root Cause Assessment, PE undertook a self-evaluation of Nuclear Quality Assurance. The results of that self-evaluation were described to the Panel as well as the tasks undertaken and results obtained.

The Panel reviewed and considered the items presented and focused on the near-term readiness of NQA and NQA's verification of completion of items required prior to restart. In that regard, the Panel received a commitment from NQA that it would accomplish the following: (1) complete a Quality Verification Inspection and screening of the results for issues required for restart, (2) complete a re-review of category classification for existing outstanding items, (3) confirm Non-Conformance Report completion for those classified as required for restart, (4) define the monitoring of Control Room activities to be undertaken by NQA during the Power Ascension Program, (5) conduct sampling audits of selected programs related to completion of items on the PBAPS master open item list, (6) complete revision of the PBAPS QA Plan, and (7) NQA's endorsement of restart.

The Panel concluded that NQA had accomplished a number of substantive improvements and, upon completion of the above mentioned items, was ready to support restart and operation, but cautioned that continued assessment and improvement in this area is essential for the future success of PE's nuclear operations.

Human Resources and Organization Development

This functional area was presented to the Panel by the Manager, Organization Development and Human Resources. The NRC Shutdown Order, INPO evaluations, and the self-initiated root cause assessment of the PBAPS shutdown made it clear that many of the nuclear operations problems had roots in the Human Resources area. These included: the lack of a clear vision and mission; weak or ill-defined policies and practices, attitudinal and behavioral problems on the part of employees, poor supervisory selection processes, and an inefficient system for developing managers and supervisors.

The Panel raised a number of questions in the area of Organization Development and Human Resources, concerning the evidence of positive results, ongoing efforts, and the outlook for the future. The Panel inquired into areas such as:

- Training in the conduct of performance appraisals for appraisers and appraisees.
- The difficulty of definition, measurement, and communication of performance indicators in this area.
- The potential impact on Human Resources efforts of future NRC requirements for degreed operators.
- Scope of Training effort to expand and encompass interface and support groups.
- The need for greater role clarity among those involved with the new position of shift manager at the site.

The Panel noted the reported progress observed in operator behavior and reviewed results of a survey performed by on-site Organization Development personnel of team behavior in the Control Room. The Panel recognized that at this stage of implementation of Human Resources programs, not enough time had elapsed to gather sufficient data on indicators to show long term effectiveness. The Panel was assured NQA would take this into consideration in accomplishing tasks associated with compensatory monitoring during the Restart Power Testing Program. The issue of shift manager role clarification and completion of drug screening programs for all site personnel were also identified by the Panel as requiring completion prior to restart.

The Panel concluded that the Organization Development and Human Resources function demonstrated readiness for restart. Progress towards its goals has been adequate, and sufficient management attention and resources have been devoted to this area to ensure that it will continue to improve.

Emergency Preparedness

In addition to discussions of the overall status of emergency planning for PBAPS, seven Emergency Preparedness (EP) issues identified as needing improvement were discussed with the

Panel. Those issues had been identified as needing improvement as part of the ongoing emergency preparedness program.

1. Emergency Preparedness Staff Reorganization
2. Emergency Response Organization (ERO)
3. Emergency Response Procedures
4. Emergency Plan Training
5. Emergency Preparedness Open Items
6. Emergency Response Facilities
7. Full-Scale Emergency Response Exercise

The Panel noted that the division of EP responsibilities had been an area of difficulty in the past and recommended that oversight of this area continue. While the Panel noted a reduction in open items, it requested that any remaining items be reviewed to determine why they would not affect restart. The Panel also requested a brief follow-up discussion of the results of call-out drills and preparations for the graded exercise.

After consideration of the information provided and the follow-up discussion, the Panel determined that the status of EP for PBAPS was adequate. The Panel further found that the actions taken concurrent with restart activities and the results achieved should enhance the EP status of PBAPS. The Panel considered the plans for future improvements appropriate.

Security

In 1988 PE initiated a program to upgrade security services at PBAPS. The program included increased management involvement, transition to a new security contractor, upgrades of equipment and systems, improved training, and control of overtime levels worked by the guard force.

The Panel noted that oversight of the security contractor had been an issue in the past and recommended close scrutiny of contractor performance, with verification of performance against stated criteria. Continuation of augmented management and NQA monitoring of security was recommended, and it was noted that a formal NQA program assessment would be conducted after the new contractor had an opportunity to get established. After deliberation, the Panel concluded that the security improvements were appropriate and that, assuming performance assessment prior to restart would not indicate unacceptable performance, there were no issues affecting restart.

Licensing and Commitment Tracking

The Licensing area was presented to the Panel by the Licensing Section of the Nuclear Support Division of Nuclear Services. Two issues relevant to Licensing were discussed:

1) managing commitments and 2) timeliness and quality of submittals to the NRC.

The Panel reviewed and was eventually satisfied with the status of Technical Specification amendment application submittals to the NRC. The Panel did express concern over the implications of open Technical Specification Action Statements at the time of restart, specifically the Control Room Cardox specification. Licensing reported that the amendment application had been submitted to the NRC, but because of provisions within the Action Statement which allow reactor startup or continued operation, this amendment has been categorized by PE and the NRC as a non-restart amendment. The Panel, after explanation and discussion at its last meeting, was satisfied. The Panel recommended that entrance into Technical Specification Action Statements be monitored to assure that unexpected problems at restart be kept to a minimum.

The Panel concluded that Licensing has demonstrated its readiness to support restart and safe operation. Its performance level will be monitored, and sufficient management controls and resources have been allotted to ensure that LERs and responses to inspection reports will be filed with the NRC on a more timely basis in the future.

Although the process and database for the recently implemented commitment tracking program is still in a "startup" mode, the Panel concluded that it should further enhance PE's ability to manage its commitments.

II.

RESTART REVIEW PANEL PROCESS

The Restart Review Panel process is an integral part of Philadelphia Electric Company's overall self-assessment of its readiness for restart and continued safe operation of the Peach Bottom Atomic Power Station (PBAPS). The Restart Review Panel (RRP or Panel), along with the Nuclear Review Board (NRB), Nuclear Quality Assurance, and the senior and line management of PE have been conducting assessments of Peach Bottom's readiness for restart from several different perspectives. As depicted in Figure II-1, the Panel reviewed the self-assessment by line management of the functional areas of the Nuclear Group, reached conclusions, and furnished that information to PE's senior management. Philadelphia Electric Company's Board of Directors has received the report of the Panel, and, from the Executive Vice President - Nuclear, an overview of the Panel's process, deliberations, and conclusions. The Board of Directors also received written and oral reports on the Nuclear Review Board's review of readiness for restart, Nuclear Quality Assurance's self-assessment and verification of readiness for restart, and a summary of the Site's self-assessment from the Vice President - PBAPS.

The Panel was formed to give the Company a critical review of its readiness to restart PBAPS. In addition to senior

SELF ASSESSMENT PROCESS

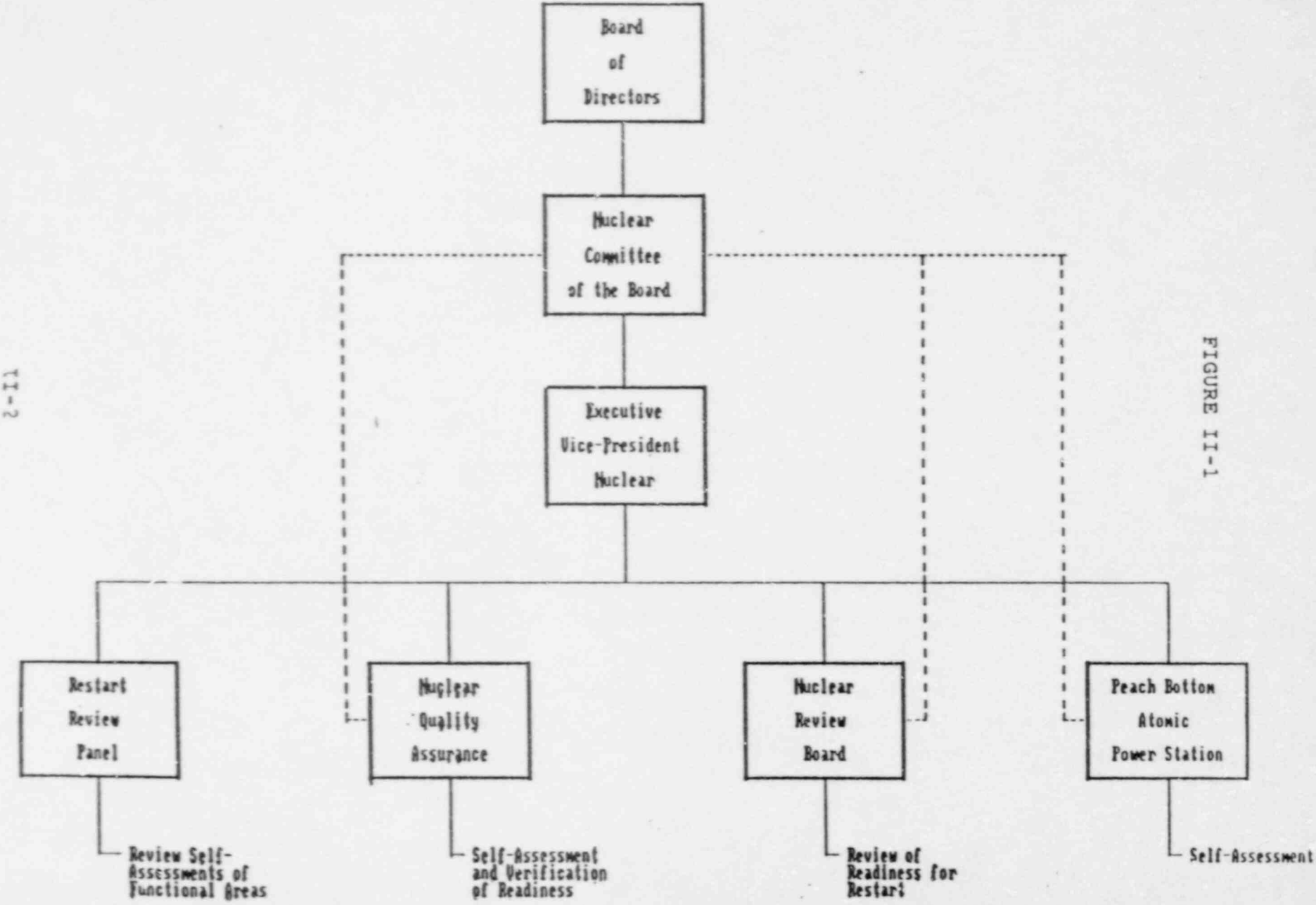

FIGURE II-1

management having direct responsibilities for PBAPS, senior management experienced in nuclear matters but not having line authority over the facility and outside consultants with extensive nuclear experience were included on the Panel. The Panel's primary mission was to critically review line managements' self-assessment of their readiness to restart and safely operate PBAPS and to point out where further improvements were necessary or desirable, both prior to restart and in the long term.

The Panel consisted of the following members:

Corbin A. McNeill, Jr., Chairman
Executive Vice President - Nuclear

John S. Kemper
Senior Vice President, Nuclear Construction

Graham M. Leitch
Vice President, Limerick Generating Station

Edward C. Kistner
Chairman, Nuclear Review Board

David R. Helwig
General Manager, Nuclear Quality Assurance

E. P. Wilkinson, Consultant
Advisor to Nuclear Committee of the Board

Sol Levy, Consultant
Advisor to Nuclear Committee of the Board

Larry Burkhardt, Consultant

The Panel met for a total of six days with the line managers of eighteen functional areas. The six days consisted

of a series of three, two-day sessions. The first session was an opportunity for each of the functional area managers to describe to the Panel how they were going about assessing themselves as to readiness for restart and operation, their preliminary findings, and for the Panel to discuss with them the kind of information the Panel would need for its deliberations.

Self-assessment of each functional area involved a six step process by the line managers. The first step was to identify all relevant, significant issues related to restart and/or operation which had been identified in the Shutdown Order, by the NRC through routine inspections or the SALP process, by INPO, by other outside agencies, by NQA audits, or by self-assessment. Once these issues were identified, the tasks or corrective actions which had been taken to address the issues were set forth as well as the status of those efforts.

Each functional area manager then had to demonstrate the positive results achieved. This was accomplished through various techniques, including walkdowns, field observations, data collection, and analyses. Once obtained or observed, those results had to be shown by line management to be sufficient, i.e., the question, "how much is enough?" had to be addressed. This was addressed by a variety of means, including comparisons with NRC, INPO, and industry guidelines or averages, and judgment. Finally, line management was required to show that the

"sufficient results" were not simply an expediency, but rather, that the improvements had been institutionalized and would continue for the foreseeable future. Issues of line and field acceptance, management support, budget, and proceduralization were examined in that regard.

Line managers presented the results of their self-assessment to the Panel for the following functional areas:

Operations
Maintenance/I&C
Plant Services
Technical Support
Training and Qualifications
Industrial Safety/Fire Protection
Document Control
Design Engineering
Modifications
Configuration Management
Procurement and Material
Restart Power Testing
Outage Management
Nuclear Quality Assurance
Human Resources and Organizational Development
Emergency Preparedness
Security
Licensing and Commitment Tracking

The Panel engaged the line managers in extended discussions, asking for additional information and follow-up materials. In addition to the verbal material presented, the Panel received significant backup documentation for each of the functional areas. The Panel, in addition to noting which items line management had identified as required prior to restart, suggested certain additional tasks be undertaken and completed

before restart. Those items have been added to the Master Open Items List (see Attachment A) and committed to by PE. A summary of the material presented to the Panel and the Panel's conclusions follows for each of the individual functional areas.

III.

DISCUSSION OF FUNCTIONAL AREAS

A. OPERATIONS

The Superintendent - Operations presented to the Panel the status of Operations with respect to restart and the status of the many corrective actions taken during the past eighteen months. These corrective actions had been undertaken primarily in response to issues identified from the NRC Shutdown Order for PBAPS and INPO evaluations of 1985, 1986, and 1987.

The shutdown issues in Operations were primarily attitudinal on the part of both operators and Operations management. These issues included professionalism, control room behavior, management involvement, performance standards, and expectations.

Although related to several other functional areas, the issues set forth below are within the purview of Operations. The origin of each issue is included in the following listing. The final two issues did not originate from external sources but, nevertheless, are described because they were deemed important to restart.

1. Operator Professionalism and Attitudes

   - Shutdown Order
   - 1985 INPO Evaluation, Items OP.1-1, 2-1

2. Control Room Performance

   - Shutdown Order

3. Operations Management Involvement

   - Shutdown Order
   - 1985 INPO Evaluation, Item OA.3-1

4. Operations Standards and Expectations

   - Shutdown Order
   - 1985 INPO Evaluation, Items OP.1-1, 2-1

5. Procedural Adherence by Operators

   - Shutdown Order
   - 1985 INPO Evaluation, Item OP. 1-1,
     1986 INPO Evaluation, Item OP. 5-1

6. Operations Personnel Readiness to Operate

   - Self-Initiated; Plan for Restart of PBAPS

7. Ongoing Improvements

   - Self-Initiated; Plan for Restart of PBAPS

1. Operator Professionalism and Attitudes

(a) PFE/MFE Training

All Reactor Operators (RO) and Senior Reactor Operators (SRO) completed six weeks of "People the Foundation of Excellence" (PFE) training which involved close monitoring and participation by line management, including the Vice President - PBAPS. The Shift Managers and Operations management received four weeks of "Managing for Excellence" (MFE) training.

Indications of positive, successful results from this training include:

- Evaluations conducted before and after the training
- Assistance by operators in developing and acceptance of the Commitment to Excellence Statement
- The increase in operator input into policies and procedures such as:
  - Operations Manuals
  - Procedure Suggestion Program and Procedure Re-Write effort
  - Improved relationships with other work groups as observed in the Control Room and [illegible]
  - Initiation of interface committees (Operations/Health Physics and Operations/Training) to identify and resolve work issues and Training needs
  - Increased involvement of Operations Management and supervisors in Operations meetings and problem solving

(b) Acceptance of License Responsibilities

Specific training sessions were held with all RO and SRO operators regarding individual responsibilities of their NRC operator's license. Successful results have been demonstrated by the outcome of the NRC Enforcement Conferences - the NRC appears to believe that each operator understands his license responsibilities. Questions and discussions by operators in topics such as permissible reading in the Control Room and emergency relief of Control Room personnel indicate an ongoing awareness and concern for individual license resporsibilities.

(c) On-Shift Leadership

The principles of leadership and accountability covered in PFE and MFE have been continued and reinforced in daily use by Operations Management, Shift Managers, Shift Supervisors, and the operators.

- An NRC inspection report documents the operators' support of the Shift Manager concept.
- Experience to date is that Shift Managers are taking action on operator concerns and removing barriers to improved performance. (It was recognized by line management that there is a continuing need to enhance communication and decision [illegible] processes, given realities of shift work.)
- Shift Supervisors are being encouraged to assume leadership roles:
  - The [illegible] solution for improving blocking mispositioned [illegible], and

- They lead Equipment Trouble Tag (ETT) walkdowns and guided repairs

o Floor Foreman have helped improve operator rounds, resolve interface problems and housekeeping concerns, fully support operator OJT, and have made the Operations Lubrication Program successful.

o Shift Teams have a clearer understanding of roles and coordination required. Utility shift meetings are used to clarify issues, solve problems and improve work relationships on an ongoing basis.

(d) Control Room Enhancements

The control room panel enhancements and control room rehabilitation are physical improvements in the work environment which contribute to the continuation of the new "professionalism" in the control room. Operators contributed directly in design, observation of installation, and preparation of the modification acceptance test (MAT) for the Control Room panel modifications.

Interviews with control room operators indicated the new control panel background, color padding, and labeling are much more user-friendly than the original panels. The new scheme is particularly beneficial to the new operators. After some time to learn the new arrangement, the older operators are also enthusiastic about the new arrangement. The new panel designs look better, and the operators have more confidence in them.

The new control room office designs are also being well received and should provide a permanent benefit. One of the

Shift Managers reported that "[t]he new office is very professional. The traffic flow is much lighter, and the office is much more conducive to work flow. The office is now very functional with a much better allocation of space."

(e) Operator Stress Reduction/Staffing Increase

Plant management is providing the proper environment for professionalism and teamwork, and eliminating part of the reason for the barrier which grew between operators and management. Reduced operator overtime is an ongoing goal. Overtime has been high during the outage to support permits and blocking work in support of the outage, to support procedure reviews, and to enable Operations' participation in testing and turnover of modifications. The addition of a fourth RO per shift will reduce permit and blocking overtime work. Additional non-licensed staffing has permitted assigning two persons per shift as Shift Blockers. This has reduced the need to schedule blocking on overtime while allowing the posted position operators to carry out their normal rounds and surveillance testing.

Operator shift rotation was changed to rotate forward. The new shift rotation schedule is perceived by both operators and managers as beneficial. This schedule change was arrived at using a task force consisting of operators, both supervisory and non-supervisory, individuals from other work groups, and a

management representative. The task force worked with a consultant to develop the schedule. An NRC Inspection Report in May 1988 stated that, "most of the operators interviewed agreed that the new shift schedule reflected the training they had received related to Circadian rhythms. There was also general agreement that they felt better and liked it better than the old schedule." This relatively simple change is seen as having a significant, positive benefit to the quality of life of personnel on shift.

Operator staffing levels are increasing. Eighteen helpers were hired in 1987; twenty in 1988. Helpers are the entry point for progression to RO and SRO licensing and on-shift supervisory positions. As these personnel become qualified, Operations will be able to provide off-shift rotational and permanent job assignments for licensed people. Operators have positive indication that the possibility of off-shift rotation is becoming a reality.

The Operations Support Group, formed after the shutdown, has served to reduce the "challenges-to-error" in the Control Room. The group reduces challenges by reviewing work plans, writing and reviewing procedures for upcoming evolutions, and communicating well with the Control Room.

There has been a significant effort to reduce the administrative workload of the operating shift teams. The development of the Work Control Center as an off-shift support function to generate blocking permits has reduced this burden on the licensed control room operators and also has removed from the Control Room proper a number of people and the attendant noise level. To further reduce congestion in the Control Room, shift turnover meetings have been split into two smaller meetings, one of them outside the main Control Room. The Shift Managers appear to be favorably impressed with their Administrative Assistants who are available two shifts per day, five days per week. These individuals take care of routine matters such as firewatch postings and other administrative requirements. They also follow up on commitments made at the daily planning meeting. In addition, the Dose Assessment Technician and Shift Technical Advisors are available for technical evaluations and other routine administrative matters to relieve licensed personnel of these burdens. During an interview, a Shift Manager reported getting good support from the recently expanded Operations Support Group. Payroll and shift scheduling, except for significant problems, are handled routinely by the Shift Clerks and an off-shift supervisor who does not fill a posted position.

After the shutdown, continuous control room monitoring was conducted by engineers under the direction of Nuclear Quality Assurance (NQA). This later became very frequent Quality Control

(QC) monitoring, which is now less frequent. Unannounced management tours of the Control Room have been performed at a rate of about two per week since the shutdown. The Superintendent - Operations spent 40 shifts in the control room in training for his SRO license at PBAPS. He reported that he observed no instances of inattentiveness or unprofessional behavior during these activities.

The Superintendent - Operations is personally satisfied with the improvements in operators' professionalism and attitude as observed from his interaction with them; by virtue of confirmatory reports from other work groups, management, ANI, INPO and NRC; and by reports from Shift Managers. He is focusing on developing systematic communications and decision making processes for use within the Operations management chain to sustain these improvements.

To evaluate the operator retraining program, the NRC performed a detailed inspection in May 1988 using a special team of Senior Resident Inspectors. They stated in the Inspection Report that "the staff has concluded that the program appears to have produced the desired results," and "the PFE training had provided licensed operators with useful communications skills which should help them improve their attitude and performance." The report further stated, "Operators have a relatively clear picture of what their roles and responsibilities are. A number

of them indicated that they always knew. Many felt that this subject area was addressed very well in the team training on the simulator." The report also indicated that the operators were very positive about the PFE course and very supportive of the Shift Managers individually and as a group.

Additional evidence of positive results can be found in reviewing the QC shift monitoring logs which contain the following references to shift operations: On January 13, 1988, "the situation was handled in a professional manner with a quick, prudent decision made which enabled the task to be accomplished according to procedure with only minor delay;" on January 26, 1988, "RO performed his portion of the surveillance test (ST) in a professional manner;" on February 28, 1988, "all work was done professionally and within accepted work practices;" and on July 12, 1988, "turnover was conducted in a professional manner." These are but a few of the many examples contained in the QC logs. Examples such as these continue to be documented to the present time.

Interviews with the Shift Managers revealed the following positive changes:

- "We are getting good support at 8:00 A.M. Daily Planning Meeting, from other groups."
- "The Operations Support group is very helpful."

- From other work groups: "Last year, I would have been thrown out of the control room with my request."
- "Work is better distributed among the three shifts."
- "Relationships with other groups are better than when I started this job, although we are not through improving."

Management is attempting to ensure permanence of changes and continued improvements by creating and supporting a culture which values professionalism, understands and endorses one's responsibilities, and believes that objectives are best attained through teamwork. Management and shift supervision live these expectations and assure proper behavior. Moreover, operators believe in the same principles and understand the expectations, so there is every reason for confidence in the permanence of the improved culture.

2. Control Room Performance (Observable Aspects)

The recently issued Operations Manual sets forth the expectations for operator attentiveness, performance of duties, supervisory responsibilities and communications.

Operators have been trained in proper communications techniques. The training included demonstrations of the value of properly understanding the benefits of formal communication, both "in the airline cockpit" and by video-taping operators' own performance. By direct observation of the Superintendent - Operations while on-shift and by written reports from the NQA

Performance Assessment Division, routine communications are effective and have become more formal (with order, repeat backs, and acknowledgements) during major evolutions and off-normal conditions. Hardware such as hand radios and remote wireless telephones have been provided to assist operators in communications required for their tasks.

Principles of good communicati: are codified in the Operations Manual and are standard critique areas for simulator exercises. Positive results in communications, for instance, were demonstrated in successful conduct of the following plant evolutions:

- Successful, coordinated performance of the hydrostatic test of the Unit 2 Reactor Pressure Vessel.
- A line trip event in August 1988, which led to compliments by the Load Dispatcher.
- Evaluations of performance and teamwork at the simulator by the Operations Organization Development Specialist.

Shift Turnover Meetings are being conducted for floor operators outside of the Control Room, and in the Control Room for Control Room personnel. This enables the Shift Manager to communicate in an atmosphere which is more conducive to question and answer. The outside meeting is more focu:ed on the information needs of the attendees, and its location eliminates Control Room crowding.

Positive results of operators' performance have been observed during several planned evolutions and unplanned events. Planned evolutions included:

- Unit 2 Reactor Pressure Vessel Hydrostatic Test
- Fuel Pool Cooling Outage - Leadership, coordination, and proper use of procedures were demonstrated.
- Unit 2 RCIC Turbine Overspeed Testing - From the operations view, this evolution went well; in addition, the operators observed Shift management and Operations management resolution of System Engineer differences.

Unplanned events included:

- Response to a potential loss of off-site power situation during a summer load peak in June 1988. Proper management attention and involvement, as well as contributions by several onsite groups were noted in the NRC's Inspection Report discussed later.
- Carbon dioxide injection in the Turbine Building.
- Motor bearing problem on the Unit 2"A" RHR pump demonstrated the "do it right" philosophy on the part of Maintenance.

As further evidence of these positive results, the NRC's Inspection Report dated July 28, 1988 references a critique meeting following an inadvertent shutdown cooling isolation on June 4, 1988, stating, "The station initiated a critique and root cause analysis and developed a corrective action in a cooperative and constructive framework." This NRC Inspection Report also stated that the Station's response to the potential loss of power during the heat wave in June 1988 was good and technically sound.

The NRC also reported that a conflict between Operations and Health Physics over control of locked, high radiation area doors was addressed by a committee consisting of representatives from both groups. The NRC Inspector was confident that resolution of key control is progressing adequately. These examples were cited as evidence of mutual intergroup problem-solving in a constructive atmosphere.

Further evidence of positive results includes completion during this outage of over 14,000 work orders and permits, performance of unique electrical bus preventive maintenance tasks including extensive blocking and restoration of electrical logics; and "MOVATS" testing of all safety-related motor operated valves. Some issues needing corrective action have arisen, but the number is not out of proportion to the amount and complexity of the work performed.

3. Operations Management Involvement

Reoccurrence of the barriers which grew up between operators and management should be prevented as a result of continued building on the PFE/MFE foundations. During his 40 shift training period, the Superintendent - Operations made a special effort to get to know the operators personally, to impart expectations, and to understand their concerns. This included his own standing of double-shifts and midnight shifts. The

Assistant Superintendent - Operations has been deeply involved in the PFE training processes and simulator work, including the teamwork training at Limerick. He also maintains routine contact and consultation with operators.

The Shift Managers and Shift Supervisors provide the continuous presence of management on shift. Shift management continues to work at developing cohesive shift teams and providing timely responses to operator needs. For example:

- The Shift Managers meet with their entire teams (Shift Supervisor (SSV) to Helper) each utility-week to identify and discuss concerns, goals, working relationships, etc. These team meetings were used to review the Operations Management Manual and the Operations Manual (OMM/OM).
- Site management from the Vice President down attend shift team meetings periodically.

The Shift Managers and SSVs meet with the Superintendent and Assistant Superintendent - Operations and the Operations Support staff on a monthly basis. This has been an opportunity to realign, calibrate, and formulate needed policies.

The Operations Support staff provides ongoing interface with Control Room personnel. For instance, Operations Support obtains input on new system procedures, procedure revisions, and Special Procedures to guide specific evolutions; they review individual permits and help coordinate multiple

permits; and they review daily work lists for all groups having an interface with Operations. Operation Support goals include: (1) to support use and quality of procedures, (2) to reduce the Control Room administrative burden, and (3) to reduce the challenges to error in the Control Room.

Improved involvement of Operations management in investigations of off-normal events and responses to unplanned conditions has been noted. The approach has been to get the proper onsite groups involved and to create a "support the power plant" attitude. Examples include diesel generator motoring, RPS overvoltage, damage to two RHR/Shutdown Cooling valves, and planning for a potential loss of off-site power. The NRC complimented the station on its response to these events.

The "search for blame" approach has been replaced by concentration on root cause. The Human Performance Evaluation System (HPES) process has been used on several occasions. HPES is an INPO-originated program for investigating performance problems. Operations has established the philosophy of following up on near-misses, small events, and situations which could adversely affect plant operations in order to prevent actual occurrences of larger problems. Examples include the following: root cause evaluation of shutdown cooling isolations, detailed review of the current Voltage Regulation Study, and walk-down of the T-200 series procedures (these are procedures for operating the plant in abnormal conditions).

The concepts introduced in PFE and MFE training (e.g., taking responsibility for one's own actions, providing timely constructive feedback, etc.) are reflected in shift team meetings, Shift Managers and SSV meetings with management, and continuing operator involvement in programs and plans (e.g., Position Guides, Training Interface Committee; procedure reviews; and the Procedure Suggestion Program). The Operations Management Manual and Operations Manual (OMM/OM) define responsibilities and expectations and codify the PFE/MFE philosophies, (e.g., the procedure suggestion process provides feedback to the suggestor, and the OMM contains a section on Operations Oversight). In addition, the new Operations organization contains sufficient staff to perform "operator support" functions and will allow time for Operations management to be personally involved "in-plant" on an ongoing basis.

4. Operations Standards and Expectations

Operators and management recognize the value of documenting and promulgating standards and expectations and evaluating performance using those standards and expectations.

- The recently issued OMM and OM codify standards and expectations for the Operations Section. These standards are not simply a statement of "what we were doing," but rather, they represent improved or new methods and creation of performance standards where none existed previously. While the manuals were written by Operations management, time was taken to explain the contents to operators and to obtain their reviews and comments. Training on the manuals is continuing and implementation is to be phased in.

- A Procedure Writer's Guide was written to guide preparation of procedures which are the responsibility of Operations. These procedures include System(S), General Procedures (GP), Operational Transients (OT), Off-Normal (ON), Transient Response Implementing Procedures (TRIPS), and Alarm Response Cards (ARC).

- Guidance has been drafted for developing blocking sequences and codifying the Operations Lubrication Program.

- Personnel policies covering overtime and position descriptions, which had gone for a long period without being updated, are being upgraded.

- All Operations personnel received a personnel performance evaluation in 1987. Operators now receive performance evaluations at each progression step and quarterly for temporary promotions. Performance evaluations of operators for 1988 are planned to be completed in October, 1988.

Conduct of these evaluations has had two very important and lasting effects: (1) it has assured each person knows what is expected and how well he or she is meeting the expectation, and (2) it has helped to solidify the Shift Managers as functioning leaders - you have to be and act like a supervisor to do the evaluation.

In addition to the formal, scheduled evaluations, it is now part of the culture to supervise - guide, coach, and correct departures from expected performance, and to "catch people doing

something right." The Shift Managers, Shift Supervisors, and Floor Foremen have been very effective in this regard.

5. Procedural Adherence by Operators

The policy and expectation, including demonstrating the need for adhering to procedures and obtaining "buy in" to the value of adherence, was established in PFE and MFE. The standard was communicated in a Vice President - PBAPS letter and in simulator training. Given the condition of the procedures at the time of PFE and MFE training, a procedural adherence policy was decided to be phased in. Succinctly stated, the policy is as follows for safety, take action; for routine functions, take action and then develop procedure; for complex operations where there is no procedure or the procedure is in error, don't do it.

Operations also created the Procedure Suggestion Program, put forms in the Control Room, and used the Temporary Procedure Change (TPC) process which allowed faster response for incorporating changes.

The Operator Aid process was used to capture "unofficial notes" in the plant. Site management eliminated the typing backlog and forced procedures to be typed before being

reviewed by the Plant Operations Review Committee. Documents were provided in locations of use, such as Diesel Generator and Radwaste areas.

Operations lived the expectation. If a procedure was needed by the expectation and it did not exist or was wrong, the evolution was not performed until the procedure was correct. This has caused schedule delays and impacts on others (System Engineers and Outage Planning), but the decisions by operators and Shift Managers were supported. Ultimately, this behavior has had a beneficial effect on other groups as well.

Lastly, Operations also started the process for upgrading procedures to include the proper level of detail and human factor considerations. This process involves capturing "unofficial notes" and Operator Aid information, and includes review by operators.

Some examples of the results observed in this area are:

(i) The standards are well known and are implemented.

(ii) Due to closer scrutiny of procedures, the volume of TPC's went up, and 242 Procedure Suggestions have been initiated from January through July 1988.

(iii) The standards are beneficial. Operations can live with the concepts of "safety first" and procedure compliance.

Permanence of these positive results is assured by the following:

(i) Codifying the expectation in the OMM/OM and monitoring their implementation

(ii) Providing a responsive TPC and Procedure Suggestion Program

(iii) Providing improved procedures through the rewrite program

(iv) Providing procedures in a timely fashion to the locations of use through improved administrative processes

(v) Continuing to live the expectation, both in-plant and on the PBAPS plant-specific simulator

6. Operator Ability to Handle Operating Plant

The operators' technical knowledge or operational skills were not brought into question by the Shutdown Order. However, the extended shutdown period makes it appropriate to reaffirm operational skills and to ensure that the Shift Manager-to-Shift Supervisor interface is effective, since the Shift Manager position is new. The Operations issues addressing cultural change are being resolved. While operating abilities with the plant at power have yet to be demonstrated, the next simulator cycle, placing plant systems back in service, and commencing the Restart Power Testing Program will allow an opportunity to further assess these abilities. Shift Control Room teams (Shift Manager, SSVs, and ROs) have provided a balance of technical and leadership capabilities.

Operations used the Limerick simulator in late 1987 for team technical and communication/teamwork training. The INPO and NRC evaluations, which focused on teamwork, were successful. As an example of team self-assessment and management support, two teams felt they were not ready for the INPO/NRC evaluation (one felt it would pass, but was not satisfied with just passing). Management respected their opinions and supported their decisions to prepare further, resulting in fully successful evaluations. The Assistant Superintendent - Operations was extensively involved with this training and the evaluation of it.

Two cycles of requalification training have been completed on the PBAPS-unique simulator. Use of the PBAPS simulator instead of Limerick's enables Operations to implement its procedure compliance policy. This has improved the quality of training. The Assistant Superintendent - Operations has been involved with the various teams during simulator training, and management up to and including the Vice President - PBAPS have observed training at the simulator. The Organization Development representative for Operations has evaluated each team for proficiency in teamwork and communication. The Superintendent - Operations reviewed these evaluation reports and, while perfection has not been attained, the teams are considered very good, and they continue to respond to suggestions for improvement. The Superintendent - Operations believes that there is still a need to offer additional practice in some key

equipment manipulations and to ensure SSV familiarity with TRIP sequences. These needs are planned to be satisfied during the October-November 1988 simulator training cycle.

Annual requalification exams were given in late 1987. All but four SSVs and five ROs passed the first written exam, and all passed their retake exams. All SSVs and ROs passed their oral exams.

As part of SRO license training, the Superintendent - Operations spent 40 shifts (X, Y and Z) under instruction of the SSV. His evaluation is that shift leadership and crews have an excellent understanding of the procedure compliance philosophy. Attention to detail and followup of off-normal conditions are ingrained in the operating culture, and there is a continuous desire to cooperate with and assist other groups.

The Shift Managers have a total of 32 years of licensed experience, and their Shift Supervisors have a total of 126 years of licensed experience. Chief Operators have an average of five years of licensed experience. The Reactor Operators average two years of licensed experience. While two of them received their licenses about three months before the shutdown, their on-shift training was "hot." Operations Support has three licensed SROs.

To ensure a continual capability to qualify reactor operators, Operations changed its hiring policy to include hiring two-year degreed personnel and nuclear experienced personnel.

As system outage windows are completed, plans are to put the systems into service where possible, perform Surveillance Testing, and keep Technical Specification systems OPERABLE. This will further strengthen the proper "operating mentality." In addition, the restart power testing program will contribute to renewed operating skills, while the recent simulator training has verified proper response to transients.

In the longer term, continuing use of the simulator in requalification, improved entry level qualifications, and prudent management of licensed operator resources will assure continued ability to operate the units at power.

7. Ongoing Improvements

(a) Operator Staffing Levels

The goal is to have four ROs per shift on all six shifts. This will reduce the overtime burden due to absences, provide for permit processing on a normal, non-overtime basis,

and facilitate on-shift relief. The improved new-hire selection process and the number of operators in the progression make this goal achievable.

(b) Off-Shift Opportunities

Both rotational and permanent off-shift positions for operators are planned. Operations expects to be able to rotate ROs into six-month off-shift assignments with the Permits and Blocking Group, which also has an off-shift position for a supervisor. The Operations Support Group and several other plant staff groups have positions which can be filled by permanent off-shift assignment of a Shift Supervisor.

(c) Procedures

The System Operation procedure rewrite program is progressing and is expected to be complete in the Spring of 1989.

(d) Other Planned Improvements

(i) Modification of Transient Response Implementing Procedures (TRIPS) to reflect Emergency Procedure Guidelines, Rev. 4

(ii) Permit Manager Upgrade

(iii) Completion of the formal Operations Lubrication Program

(iv) Shift Scheduler Program

Operations recognizes that to establish the permanency of positive results in all areas will require an on-going, strong management commitment. To illustrate this commitment, a quotation from the ANI Inspection Report of February, March and April 1988 for Peach Bottom Unit 2 is appropriate. The summary of this report states in part that, "it appears the Philadelphia Electric Company is committed to making its Peach Bottom Nuclear Station one of the best in the country. Morale seems to be on the upswing and in spite of the volume of maintenance items to be performed, it appears that Philadelphia Electric Company people are up to the task." The companion Unit 3 report from ANI similarly states "...however, Philadelphia Electric Company appears to be committed to making the plant excellent within the foreseeable future."

Panel Considerations and Conclusions

Panel members asked numerous questions covering a number of broad operational areas. They were particularly interested in (1) at power experience of Shift Managers, (2) status of operating procedures, (3) activity level in the Control Room on backshifts, weekends, and holidays, and (4) shift staffing plans. Summaries of the responses by the Superintendent - Operations to the Panel are as follows:

o At Power Experience of Shift Managers

Shift Managers were polled regarding spending a few days at Limerick Generating Station (LGS) to observe a shift team and getting ar appreciation for the need to make timely decisions at power. While not adverse to going to Limerick, most believed the priority of their needs were such that the time could be better spent in specific training they had requested at PBAPS. The Superintendent - Operations believed Shift Managers would get better experience at PBAPS during the early stages of the controlled Unit 2 startup. He also reiterated the depth of experience in each shift team at PBAPS and the decision to staff each shift team with two experienced Shift Supervisors. The Panel decided to leave a decision in this regard to the judgment of Station management.

Operations also discussed the depth of experience on shift because it complements Shift Manager experience and shows the whole picture. The following points were presented to the Panel:

- Shift Managers have an average of five years licensed experience.
- Shift Managers have all held responsible plant staff positions which provided close support for the shift. Two were on-shift as STAs.
- Control Room supervisors have an average of nine years licensed reactor operator experience and 5.5 years SRO experience.

- Shift Manager responsibilities extend beyond Control Room supervision.

- Two Shift Supervisors (SROs) are assigned per shift team.

- At-power experience of each Control Room team exceeds that generally found at new plants at start-up. At Limerick Unit 1, for instance, only four of the six Shift Supervisors were experienced. This resulted in Shift Advisors being used during startup to supplement shift experience.

- The Restart Power Testing Program provides a controlled and monitored environment for acquiring at-power experience.

- During the Restart Power Testing Program, shift test coordinators will also be assigned on shift.

o Status of Operating Procedures

Panel members were concerned that a procedure for each and every task during plant operation may not exist at restart and that the shift team would decide, based on judgement and familiarity with the task, whether a procedure must be written before performing a task.

In response, Operations stated that all Alarm Response Cards for Unit 2 and common areas will be done before restart. Also discussed were procedure upgrades completed during the outage. Readiness for restart and coverage and content of General Procedures have been confirmed by use in the plant and at the simulator. To confirm proper procedural coverage before restart, this Procedure Rewrite Project reviewed System (S)

procedures for scope and content and found no deficiencies requiring correction before restart. As system outage windows are closed, these S procedures are being used. Over the longer term, S procedures are being rewritten into "SO" procedures as part of the Procedure Rewrite Project.

Regarding adequacy of guidance for conditions in which a system procedure does not exist, Operations named several tasks covered by system procedures. They are:

- System check-off lists
- Venting, filling, draining
- System and major component startup
- System and major component shutdown
- Shifting major components
- Abnormal operations, and
- Response to system and major component upsets.

An operator expects to find procedures for these tasks, but in any event the following direction applies:

> "If...a procedure does not exist, he shall place the system/component in a stable and safe condition and inform shift management." (Operators Manual, Section 9)

Evidence of conservative judgement on shift teams includes 242 Procedure Suggestions received through July of this

year. For example an evolution was delayed while a procedure was written to place Fuel Pool Cooling on total bypass flow. This was not a configuration previously anticipated or used routinely during operation. The procedure before revision, however, did cover the normal evolution of shifting demineralizer trains and using partial bypass flow.

The Panel concluded that procedural coverage and guidance will be sufficient upon completion of Alarm Response Cards.

o Activity Level in the Control Room on Backshifts, Weekends and Holidays.

Specific actions described by the Superintendent - Operations to maintain operator-alertness are as follows:

- Shift Managers are on-shift management representatives.
- Shift Supervisors are providing on-shift leadership and support operator attentiveness as a cultural value.
- Reactor operators accept attentiveness as a license obligation and support it as a cultural value.
- Shifts rotate forward per Circadian recommendation.
- Operators are trained on eating and sleeping practices which contribute to alertness.
- I&C surveillance tests are scheduled for the afternoon (Y) shift.

- Operator surveillance tests are scheduled for the midnight (Z) shift.
- Plans for overtime reduction have been developed.

The Panel concluded that actions taken to schedule activity and maintain alertness on all shifts should ensure proper attentiveness of operators for all plant conditions.

o Shift Staffing Plans

The Panel requested additional information on long range shift staffing and rotation plans, a comparison of minimum required staffing with actual staffing levels, contingencies for unplanned losses and overtime planning. At the first meeting the Panel perceived that the staffing of licensed ROs and SROs was bare minimum.

During the second meeting, the Panel was assured that this was not the case. When Unit 2 is restarted, Operations would consider an acceptable minimum to be five shift teams, each meeting staffing required by Technical Specifications of three ROs, one SRO Shift Supervisor and one SRO Shift Manager. In excess of this minimum, PBAPS will have seven SRO Shift Supervisors, three ROs and one SRO Shift Manager.

In comparison to this minimum, when Unit 2 restarts, Operations will actually have six shift teams, each with three

ROs, two SRO Shift Supervisors (one more than Technical Specification requirements) and one SRO Shift Manager. The excess in this shift configuration is one SRO Shift Supervisor integrated in each shift team.

Regarding contingencies, loss of ROs can be accommodated by one or more of the following:

- Assign the excess Shift Supervisor to the RO position
- Drop to five-shift rotation for ROs
- Assign ROs from the utility shift
- Use limited overtime, or
- Recall any of several ROs from SRO training.

For loss of Shift Supervisors, contingent options include the following:

- Place outside Shift Supervisors on five-shift rotation
- Leave the outside Shift Supervisor position unstaffed on selected shifts
- Assign a Shift Supervisor from the utility shift, or
- Use limited overtime.

These contingency plans would accommodate any reasonably foreseeable loss of licensed operators.

Regarding overtime, PE has proposed changes to Technical Specifications for operator working hour limits. They are:

- 16 hours in 24 hours
- 24 hours in 48 hours
- 60 hours in one pay period
- 112 hours in two pay periods
- 220 hours in four pay periods
- 2400 hours in a calendar year.

Operations has analyzed Reactor Operator overtime for 1988 through July. Primary causes were preparing permits and blocking (48%) and covering absences (19%), including authorized absence for vacation, sick leave, jury duty, emergency preparedness drills, and exercises, etc. The average overtime during this period was ten hours per operator per week. To significantly reduce this in the future, Operations plans to improve permit production by establishing the Permits and Blocking Group, completing the Units 2 and 3 outages and attaining a fourth RO per shift team.

The Panel also asked Operations to present licensed operator goals through 1990 and beyond. Career planning and off-shift rotation goals are as follows:

- Twenty-four reactor operators on shift teams
- Develop additional reactor operator licenses to permit off-shift rotational assignments
- Maintain twelve SRO shift supervisors on shift teams
- Develop additional SRO licenses to permit off-shift assignments for shift supervisors.

Long term goals beyond 1990 are as follows:

- Assign eight ROs to the Permits and Blocking Group
- Assign six excess ROs on shift teams as plant operators
- Fill off-shift assignments for SRO shift supervisors.

For SROs, off-shift assignments include the following:

- Permits and Blocking Coordinator
- Chief Electrician
- Superintendent - Operations Support

An excess of eight SROs will be available for other assignments, such as:

- Emergency Planning
- Training
- Operations Support Group
- Outage scheduling and coordination
- Maintenance planning, etc.

There is a large demand for off-shift licensed operators. Several onsite groups would welcome licensed people as they become available.

The following charts summarize staffing well into 1991.

In addition to off-shift rotation onsite at PBAPS, technical degree programs are being planned. At present, arrangements are in progress with Widener University for a course load of one semester per year with a final one year sabbatical. The University of Maryland is offering computer-based instruction which operators may also select.

The Panel made several observations of a cautionary nature. As the Operations Manual had been recently issued and had not been fully implemented, continued management and NQA monitoring of performance is required. The Panel also questioned whether training in revised procedures was included in the operator training conducted following shutdown. The Operations Superintendent indicated that at the time of training, procedure revisions were continuing and therefore all changes were not included in the formal training. However, all operators will be trained in the revised procedures prior to restart.

FIGURE III.A-1

SHIFT STAFFING PLANS
PBAPS LICENSED OPERATOR STAFFING

	ROs				SRO Shift Supervisors			
	(1) Req'd	Goal	Actual	(2) Excess	(1) Req'd	Goal	Actual	(2) Excess
Tech Spec	18				6			
9/88	18	24	18(3)		6	12	12	6
1/89	18	24	24(4)	6	6	12	12	6
3/89	18	24	24(5)	6	6	12	12	6
4/89	18	24	22(6)	4	6	12	12	6
5/89	18	24	22(7)	4	6	12	12	6
1/90	18	24	32(8)	14	6	12	16(8)	10
3/90	18	24	32(9)	14	6	12	16	10
12/90	18	24	29(10)	11	6	12	19(10)	13
4/91	18	38	35(11)	17	6	23	19	13

(1) Assume 2 units fueled; 6 shift teams
(2) Excess: actual - req'd
(3) 4 cold licenses
(4) 10 cold licenses
(5) All hot licenses, based on Unit 2 restart in 12/88
(6) Release 2 temp. PECo ROs
(7) 4 ROs into SRO(T)
(8) Based on 14 out of 21 PASS RO(T) & 4 out of 4 PASS SRO(T)
(9) 4 ROs into SRO(T) & 4 into Permits & Blocking
(10) Based on 3 out of 4 PASS SRO(T)
(11) Based on 6 out of 9 PASS RO(T)

SHIFT STAFFING PLANS
REACTOR OPERATOR LICENSES

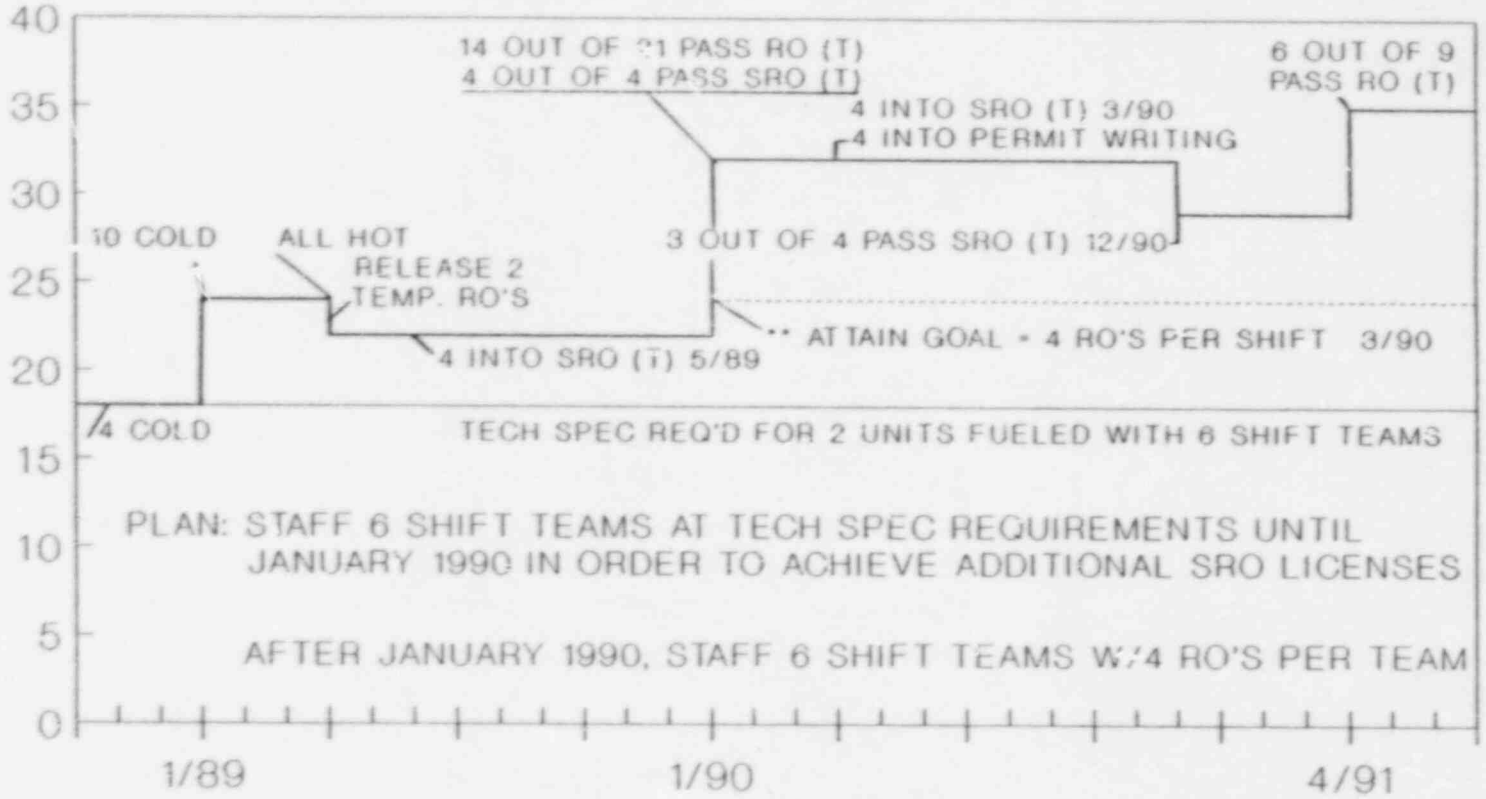

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FIGURE III.A-2

Further, it was stated that the operators would be brought up to date with regard to relevant operating experience input prior to restart through established training processes.

The Panel members noted that the Shift Managers had reported specific concerns to the NRB. Discussion with Operations management indicated that additional work with Shift Managers was required to ensure proper understanding of their concerns and to clarify role expectations. This was to be accomplished prior to restart.

The Panel concluded that shift staffing plans and related issues had been addressed satisfactorily and that Operations is proceeding as planned toward successful restart power testing and safe at-power operations. Operations issues in the NRC Shutdown Order and other conditions of restart have been resolved. It was noted however, that the operators were to receive additional simulator and other training during the coming months to strengthen operator skill levels. Performance of Operations shift teams and Operations management gave the Panel reasonable confidence that remedial actions have been effective. It was further concluded that improvements in Operations should be lasting because of continuing training, monitoring, coaching and reinforcing the culture, values, and expectations now in place.

B. MAINTENANCE/I&C

The Superintendent - Maintenance/I&C described to the Panel the status of five restart issues in the Maintenance/I&C functional area. These issues were:

1. Organization
2. Procedure Content and Use
3. Work Control
4. Work Backlog
5. Preventive Maintenance (PM)

For each of these issues, the corrective actions taken, the status of those efforts, the results achieved, and the sufficiency and permanency of results were discussed.

1. Organization

The goal for this self-identified issue was to reorganize the Maintenance function at PBAPS to provide increased management direction, control, authority and accountability for site work activities.

A new organization structure for Maintenance is in place. The Maintenance/I&C Section was reorganized to increase the focus on planning, scheduling, and coordination of work. To

support the backlog reduction, concentrated focus was placed on planning the work. Upgraded procedural requirements were placed in effect and staffing levels were augmented. The Maintenance function was consolidated with single point accountability for mechanical, electrical, and I&C areas under the Superintendent - Maintenance/I&C, who reports directly to the Plant Manager. The layers of management have been reduced and the span of control increased from the previous organization. The role of planning and scheduling has been elevated, and the role of Central Maintenance is being clearly defined and should reduce dependence on contract maintenance personnel.

Current maintenance personnel have been assigned to positions in the new organization. Overall staffing is approximately 90% complete. Continued development of the organization is planned in three one-year increments through 1991. All senior management positions in the Maintenance/I&C Section are filled by hand-picked people from Central Maintenance, Limerick, Quality Control, Nuclear Engineering, or the former PBAPS Maintenance Organization.

Future efforts as part of the Nuclear Group's strategic plan will build on improvements made thus far. Specifically, the role of Central Maintenance and Contractors, and Trade Specialization and Jurisdiction are among the areas planned to be worked on in the Maintenance Strategy.

2. Procedure Content and Use

This issue was identified as the result of self-assessment and the 1987 INPO evaluation. It was decided to develop a procedure control program to improve the quality of, and promote compliance with, Maintenance procedures.

As part of the Maintenance Procedures Control Program, a policy statement was issued describing the various types of Maintenance procedures and their controlling documents. Individual performance guidelines and responsibility for procedure compliance are specified. A procedure writer's guide was developed which addresses the human factors aspects of procedure preparation. Station craftsmen are an integral part of the procedure validation process.

New Maintenance procedures for "non-Q essential equipment" and other activities/areas are planned. Identifying the scope of new procedures to be generated is approximately 80% complete. A bid specification is being prepared to obtain contract assistance in preparing the procedures. Current forecast completion is December 31, 1989 based on the scope of procedures involved.

Selected existing Maintenance procedures have been revised. The I&C surveillance test revision project is well

underway and forecast completion is December 1988. This effort upgrades existing technically correct and in-use procedures. Its scope includes over 1,000 procedures and is currently 90% complete. Other procedure deficiencies identified by NRC, INPO, and PE have been corrected.

There has been a marked increase in the use and interest in Administrative (A) procedures by both workers and staff. The number of temporary procedure changes (TPCs) initiated by Maintenance/I&C personnel has shown a dramatic increase. This is viewed as an indicator of increased attention to detail and enhanced use of procedures by Maintenance/I&C personnel. Existing in-use Maintenance/I&C procedures are technically correct. There have been no significant findings related to these procedures. Increased attention to detail and clear communication of individual responsibilities has promoted procedural compliance by Maintenance/I&C personnel.

The procedural controls and procedure upgrades accomplished are all permanent changes. Additional work is ongoing to broaden the scope of Maintenance procedure coverage.

3. Work Control

This issue was also identified in the 1987 INPO evaluation. As a result, an initiative was undertaken to

improve the work control processes which support identification, planning, and implementation of Maintenance/I&C work.

The Maintenance planning function was upgraded. New procedural requirements for Maintenance work planning packages were established, and personnel were trained on these standards. Staffing levels were also increased significantly to plan the backlog workload.

Work control processes were streamlined by improving the process for identifying, planning and accomplishing the work. These include: improved integration of the planning and investigation phases for work orders, use of status delay codes to indicate job "holds", improved tracking of procurement and engineering actions to support Maintenance, and more effective identification of deficiencies using the Equipment Trouble Tag (ETT) system. In addition, use of special condition tags has improved the efficiency of work on Motor-Operated Valves (MOVs), Air-Operated Valves (AOs), and electrical equipment.

The Maintenance organization was consolidated with single point accountability for mechanical/electrical maintenance and I&C under one individual reporting to the Plant Manager. The layers of management have been reduced within the Maintenance organization from 7 to 5 from the Vice President through craft level. The span of control has also been increased.

Management reporting for the Maintenance backlog was also upgraded. Backlog information is monitored and reviewed weekly with Maintenance/I&C management and is formally presented and discussed at the monthly site review meeting chaired by the Executive Vice President - Nuclear.

Interfaces with support organizations have also been improved. In Health Physics (HP), use of the 5-day look ahead schedule has improved coordination with HP and resulted in timely availability of radiation work permits (RWPs). Routine interface meetings of work groups and HP are held to surface problem areas and take corrective action. Nuclear Engineering has assigned an individual as the focal point for Maintenance support, and he works directly with maintenance personnel full-time. In Operations, establishment of the Work Control Center to coordinate Maintenance work from outside the Control Room has improved the timeliness of issuing permits. Better definition of the procurement engineering function has clarified roles and resulted in improved, more timely procurement support.

Improvements to the work control systems and process have been a major contributor in reducing the backlog of preventive and corrective maintenance. The planning upgrades have improved the quality of work packages. The reorganization has reduced layers of management while increasing the span of control. Management oversight of Maintenance performance has

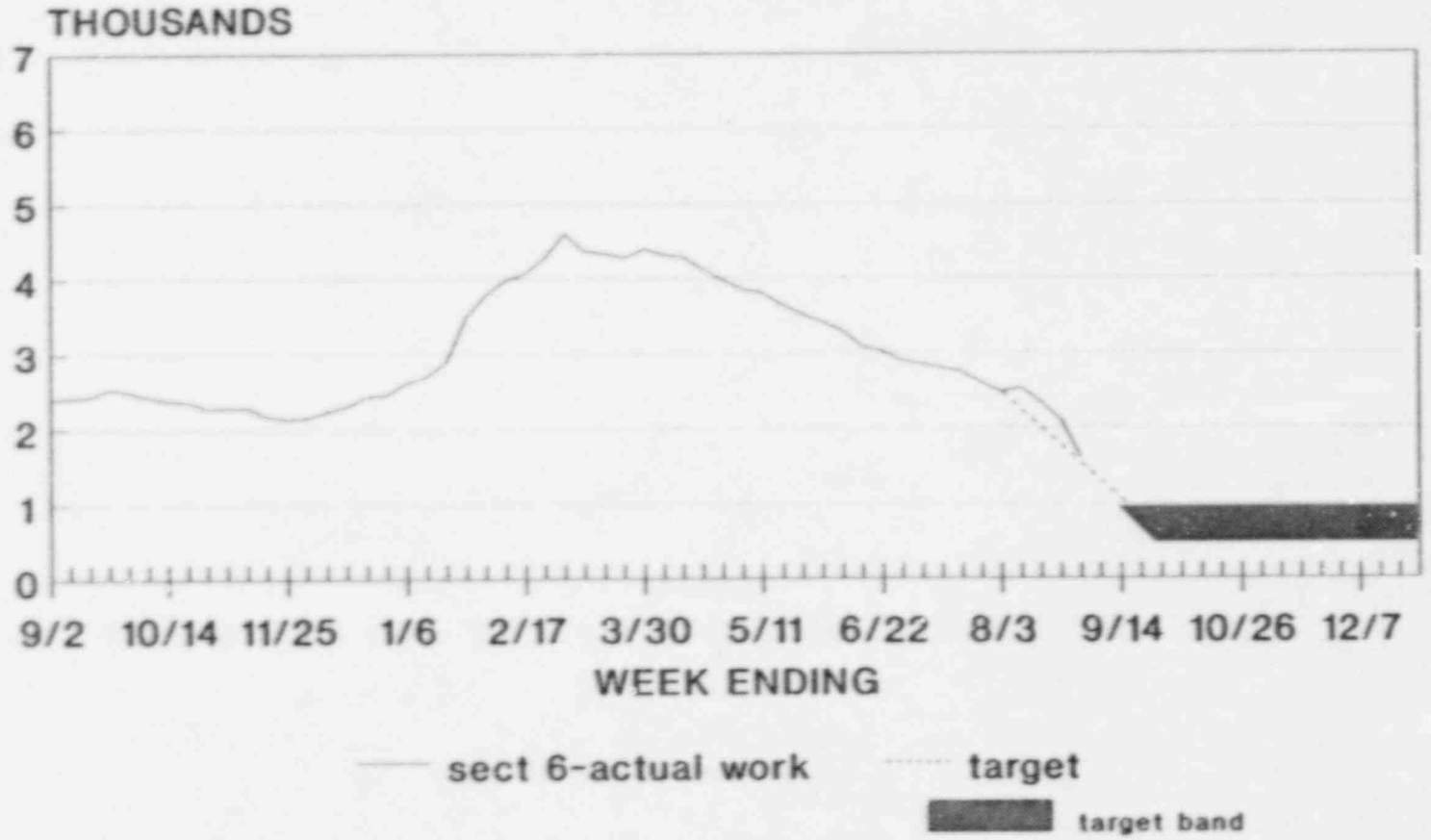
been increased with development of performance indicators and monthly reporting to site and corporate management. And finally, improvement of interfaces with support organizations has resulted in more timely and efficient performance of work.

4. Work Backlog

This issue was identified through self-assessment and the 1987 INPO evaluation. A goal was established to substantially reduce the backlog of Maintenance tasks to ensure the material condition of the plant supported safe and reliable operation. The outstanding work was reviewed, validated, and assigned priorities. Various lists of significant outstanding work were consolidated into the work order database (CHAMPS).

An aggressive Maintenance backlog reduction program was implemented. The work backlog had grown as system walkdowns were performed and the March 1988 Reactor Pressure Vessel hydrostatic test had constrained opening system outage "windows" to permit accomplishment of work. Since March 1988, a steady reduction in the backlog has been achieved (see Figure III.B-1 - Total Open Work Orders). Over 13,500 work orders had been completed since March 18, 1987 and there were approximately 1,600 open work orders remaining on Unit 2 at the time the Panel met (see Figure III.B-2 - Work Order Progress). The Unit 2 backlog of electrical breaker preventive maintenance (PM) had been reduced

ISSUE # 1 - WORK BACKLOG
TOTAL OPEN WORK ORDERS
UNIT 2 AND COMMON



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INCLUDES ALL CN, CM AND PM WORK ORDERS

FIGURE III.B-1 - Total Open Work Orders

ISSUE #1 - WORK BACKLOG
WORK ORDER PROGRESS
UNIT 2 AND COMMON

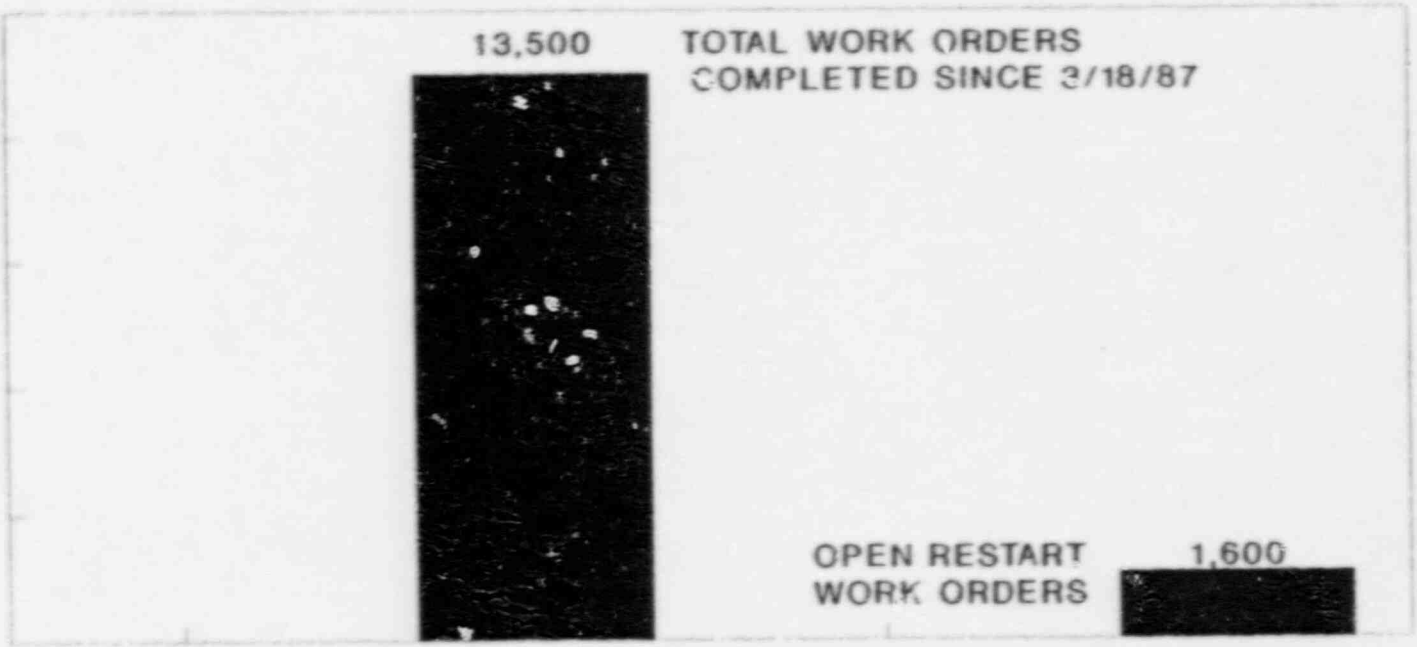

FIGURE III.B-2 - Work Order Progress

to less than 100 items as of August 3, 1988. All safety-related 480 volt AC Motor Control Center (MCC) breakers and substantially all of the non-Q MCC breakers will be completed prior to restart. The goal of between 600 and 1,000 non-outage corrective maintenance work orders has been established for restart and will be achieved by November 1988.

Maintenance implemented reporting mechanisms to ensure management oversight of the Maintenance backlog from the Executive Vice President - Nuclear, down to the Maintenance/I&C Supervisor level. Data on the backlog are monitored and reviewed weekly with Maintenance/I&C management and formally presented and discussed at the monthly station review meeting chaired by the Executive Vice President - Nuclear.

Roles and responsibilities were developed and clearly communicated to Maintenance/I&C personnel. The Maintenance Administrative Manual (MAM) describes the Objectives, Goals, and Responsibilities of Maintenance personnel. It also provides a Code of Ethics for the Conduct of Maintenance. In addition, performance indicators are provided for measuring accomplishments. These items have been communicated to personnel through a series of "all-hands" meetings and are reinforced by management and supervision on a daily basis.

In the future, the backlog will be better controlled. Improved routine reporting on the status of work backlog to Maintenance supervisors, plant and site management, and corporate executive management will ensure a continuing focus on this issue. In addition, structural improvements to work control processes already accomplished have improved the efficiency of performing work. Maintenance strategies being implemented in the next three years will ensure that current methods and systems become even more effective and efficient.

5. Preventive Maintenance (PM)

This issue was identified thru self-assessment and by the 1987 INPO evaluation. Goals were set to improve the state of operational readiness of plant components and equipment through timely implementation of PM and to establish central accountability for predictive maintenance in the Maintenance Section.

A review and upgrade of PM tasks for approximately 23 critical plant systems was implemented. The review was completed and the revised PM program requirements were incorporated into the CHAMPS data base. The CHAMPS data base is being used to generate work orders for the PM tasks.

Implementation of the new preventive maintenance program on remaining plant systems has been scheduled. A draft guideline on the process for performing the review of PM program requirements for the remaining systems has been developed. The process will involve evaluation of the existing PM tasks and adjustments based on equipment failure history and recommendations from the corporate Nuclear Maintenance group. The review of remaining systems is scheduled to be completed by December 1988 with incorporation of revised PM requirements into CHAMPS by March 1989.

Maintenance implemented an aggressive backlog reduction program to complete all overdue PMs on Unit 2 and common areas prior to restart. The backlog of overdue PM tasks for Unit 2 and Common has been reduced from approximately 2,500 tasks as of November 1, 1987, to 219 tasks as of August 31, 1988 (see Figure III.B-3, Overdue PM Work Orders).

Procedure A-25 (Preventive Maintenance Program) was revised to include management review and approval of deferred PMs based on appropriate technical justification.

Management reporting systems for the PM program were upgraded to incorporate monthly and quarterly reports to management. These reports include items such as: PM priority

PREVENTIVE MAINTENANCE
OVERDUE PM WORK ORDERS

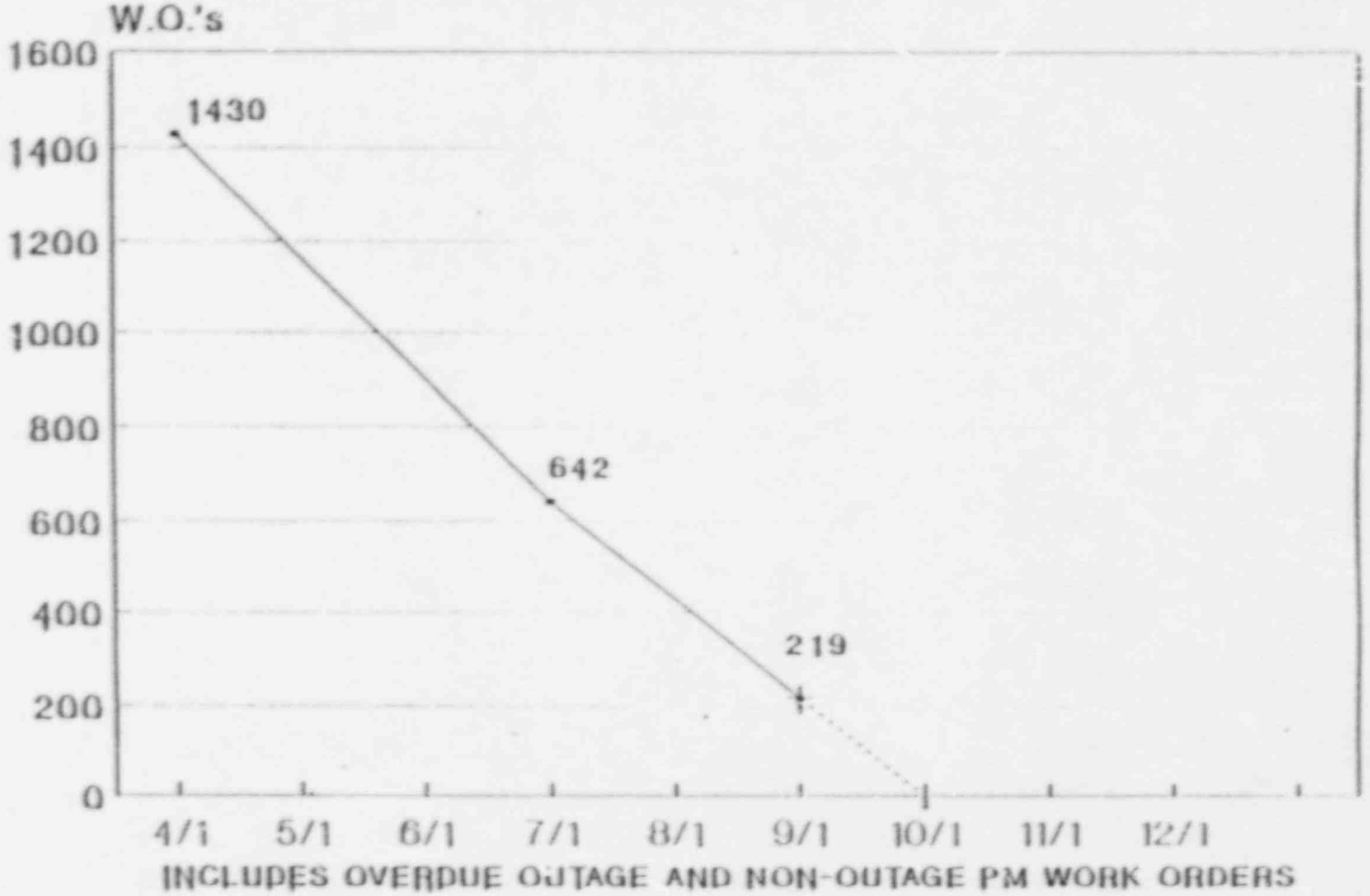

FIGURE III.B-3 - Overdue PM Work Orders

classification, PM tasks due/completed previous month as well as the current month, PM tasks in last month of grace period, and PM tasks delinquent.

The reports also classify PMs as outage or non-outage. In addition, reports also provide the ratio of preventive to corrective maintenance and age of backlog PM work orders. Goals have been established for several of these performance indicators.

The Work Order Control system (CHAMPS) is being upgraded to improve planning. Targeted for completion in September 1988, this enhancement will enable recording and collection of work order data for actual and estimated man-hours. This history will then be available to assist in planning future PMs.

A feedback process was implemented as part of reviewing completed PM work orders. It provides for Maintenance Engineering review of as-found condition information from Maintenance craft personnel. If warranted, this information is used to adjust the interval and/or scope of the PM tasks. Separately, failure analyses for significant failures and equipment history searches for corrective maintenance items also provide significant input into the PM program so that it remains dynamic, adjusting to the needs of the plant.

Planning for a comprehensive Reliability Centered Maintenance (RCM) Program is also in progress. Objectives have been established for a RCM evaluation. Development of the Reliability Centered Maintenance Program will begin in 1989.

Central accountability was established and a program under Maintenance Engineering was developed to address vibration monitoring analysis as a predictive maintenance technique. A vibration monitoring program has been developed. The organization has been approved and is currently being staffed. Investigations into other predictive maintenance techniques have been initiated. Thermography and lube oil analysis are being reviewed for broader application at PBAPS. A draft guideline has been developed for use of thermography as a predictive maintenance tool.

As a subset of preventive maintenance, a significant upgrade was made to the motor-operated valve (MOV) maintenance program. Comprehensive procedures were developed for MOV maintenance (incorporating industry experience), and post-maintenance testing was upgraded to ensure proper operation of equipment under all system conditions. A Maintenance MOV Engineer was assigned to be accountable for all MOV maintenance activities. Engineering reviews were incorporated into the MOV program to ensure plant configuration is maintained during MOV changeouts.

Maintenance implemented an aggressive MOV Rebuild Program to ensure that all MOVs required to support safe and reliable operation of the plant are tested and repaired or adjusted as necessary prior to plant restart. Motor Operated Valve Acceptance Tests (MOVATS) is being used as a diagnostic tool for testing the MOVs. Specifically, all safety-related MOVs which meet the following criteria were overhauled and tested: receive an accident initiated automatic operation signal, or are not normally accessible during an accident and are needed for long-term post-accident operation. There are 121 MOVs in the scope of work defined by the criteria for Unit 2 and Common, and all of these have been rebuilt and tested. An additional 31 Unit 2 MOVs have been rebuilt and tested and five other MOVs have been rebuilt and need testing (see Figure III.B-4 - MOV Work--Unit 2 and Common).

A MOV nameplate data base was developed. Nuclear Engineering issued controlled drawing E-3123 (MOV Operator Data Report) which contains nameplate data for safety-related MOVs. In addition, as MOV work progresses under the rebuild program, a more comprehensive data base is being compiled. It contains additional valve and operator information to facilitate planning and field work needs of Maintenance. This information has been collected on approximately 200 of the 478 MOVs at PBAPS.

ISSUE # 2 - PREVENTIVE MAINTENANCE
UNIT 2 AND COMMON - MOV WORK

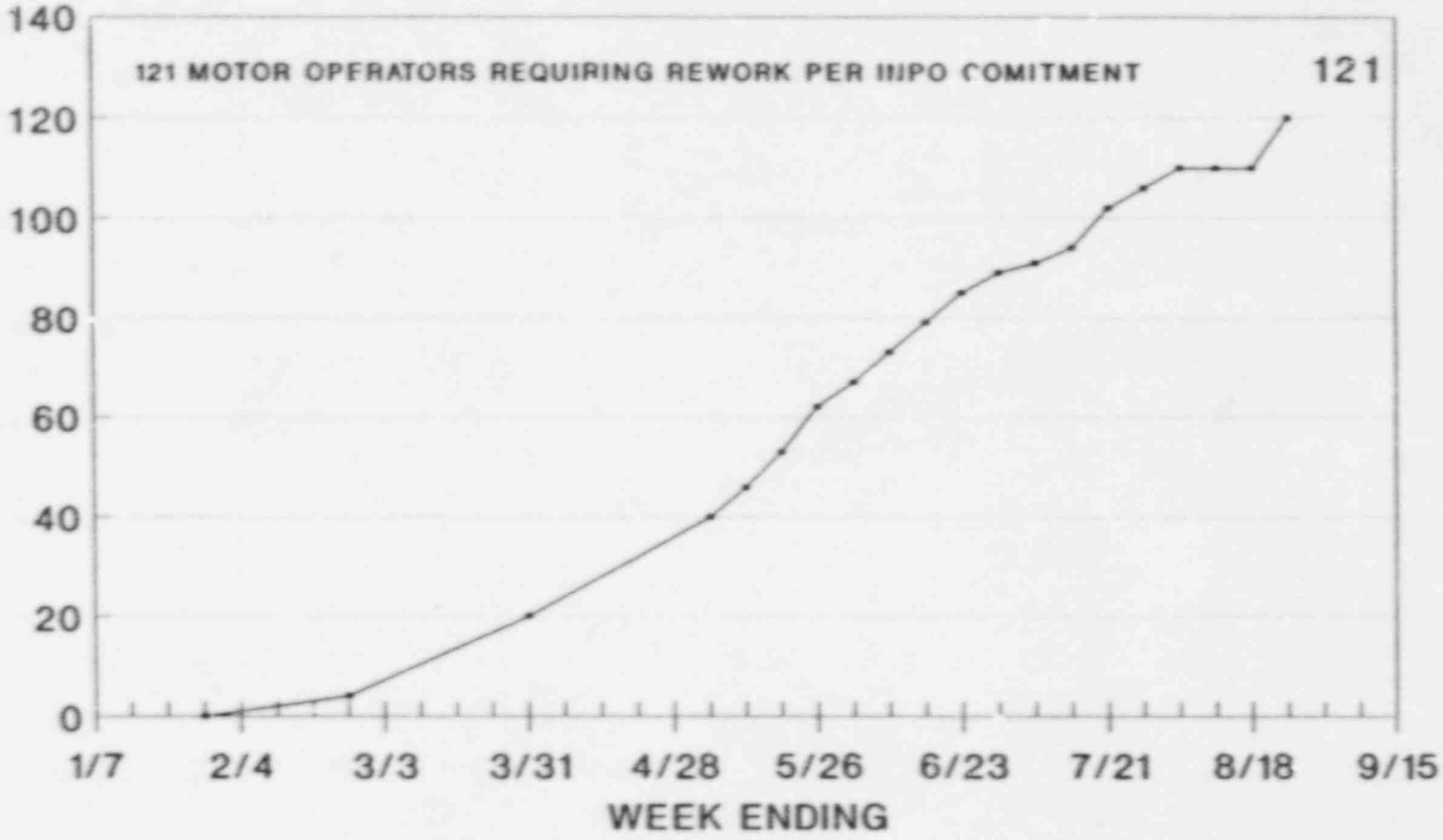

FIGURE III.B-4 - MOV Work (Unit 2 and Common)

III.B-17

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In summary, the aggressive PM backlog reduction program has resulted in completion of over 2,300 PM tasks since November 1987. As of August 31, 1988, there were 219 overdue PM tasks remaining. The backlog of overdue PM tasks will be reduced to essentially zero by restart. This goal is on track for completion in October 1988. Administrative controls now require management approval of deferred PMs. This process requires appropriate technical justification of proposed deferrals.

The entire MOV program has been reviewed by Bechtel, NRC, INPO, and other utilities. No major deficiencies were found, and all minor deficiencies have been corrected. A recent NQA assessment of the MOV program found: "The Limitorque MOV upgrade program, currently in progress, is one of the finest observed by this review team."

As part of the Nuclear Group's Maintenance Strategy, the PM program will be further enhanced to focus more on risk and reliability-based preventive maintenance and expand the use of additional predictive maintenance techniques.

Overall Sufficiency and Permanency of Results in Maintenance/I&C Area

The Panel was informed that the corrective actions taken to upgrade the Maintenance/I&C function were comprehensive

in nature. A new organization is in place and staffed with qualified personnel. Training and qualification of personnel is sufficient to support restart and safe operation. New or upgraded programmatic elements are documented with procedures and personnel have been trained in the new ways of doing business. Moreover, personnel have not only accepted but seemingly embraced the new culture. Further improvements are planned over the next three years as part of a strategic plan to upgrade PE's Maintenance effort. The Maintenance/I&C Section believes that the corrective actions taken to date indicate that the results obtained are sufficient for restart. The following results of recent independent assessments provided by industry, regulatory and company organizations would seem to confirm this.

The NRC conducted a team inspection of the Maintenance function July 11-22, 1988. This inspection provided a broad look at Maintenance encompassing overall plant performance related to Maintenance, management support of Maintenance, and Maintenance implementation. Each of 102 Maintenance elements were assessed. The following comments and results were received at the conclusion of the inspection:

(a) Several inspectors commented on the positive attitudes of people and the knowledgeable, effective involvement of Maintenance supervision.

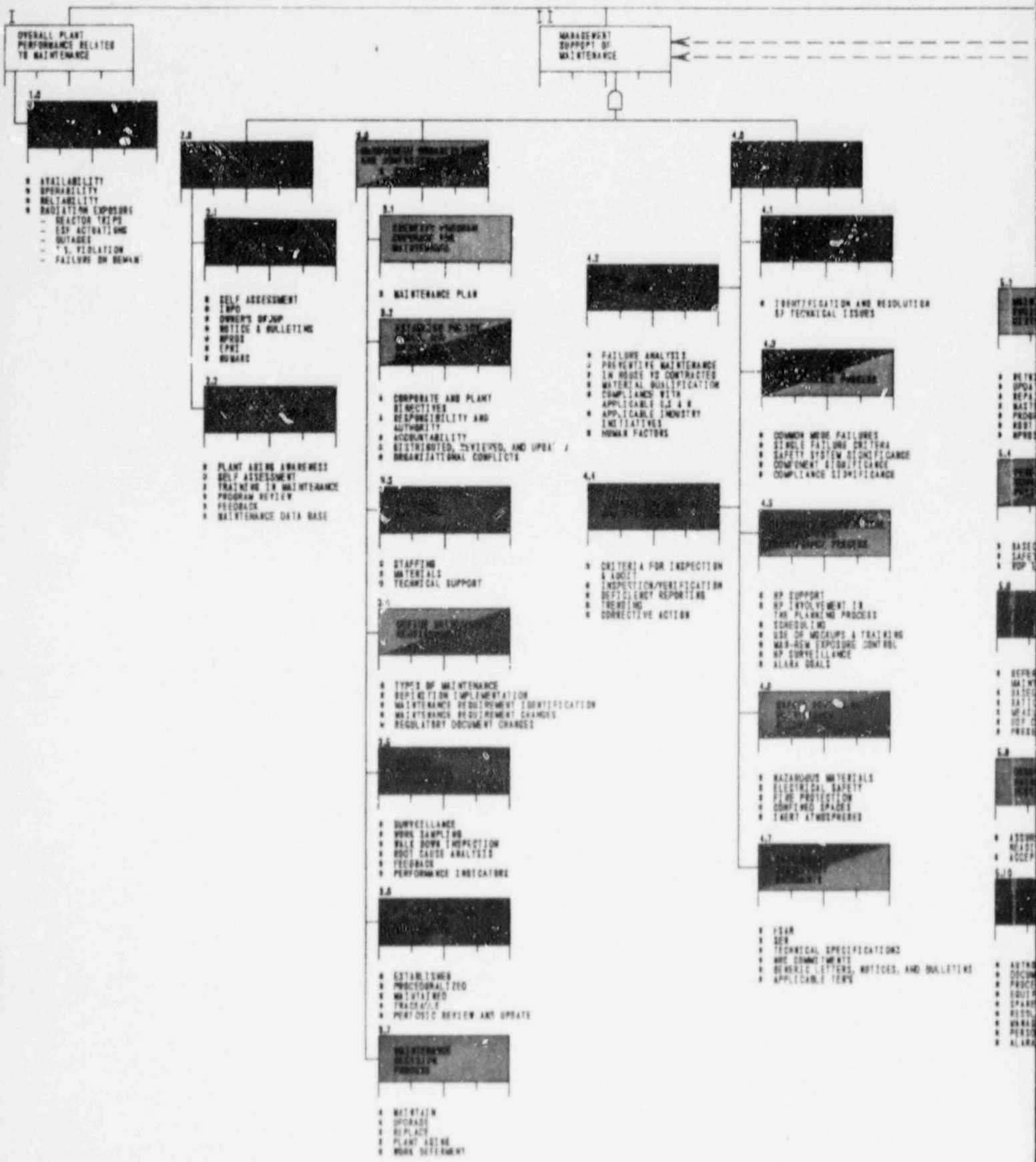
(b) Summary of element evaluations:

68 (Green) Well done
31 (Yellow) Acceptable
1 (Red) Missing
2 (Blue) Inconclusive

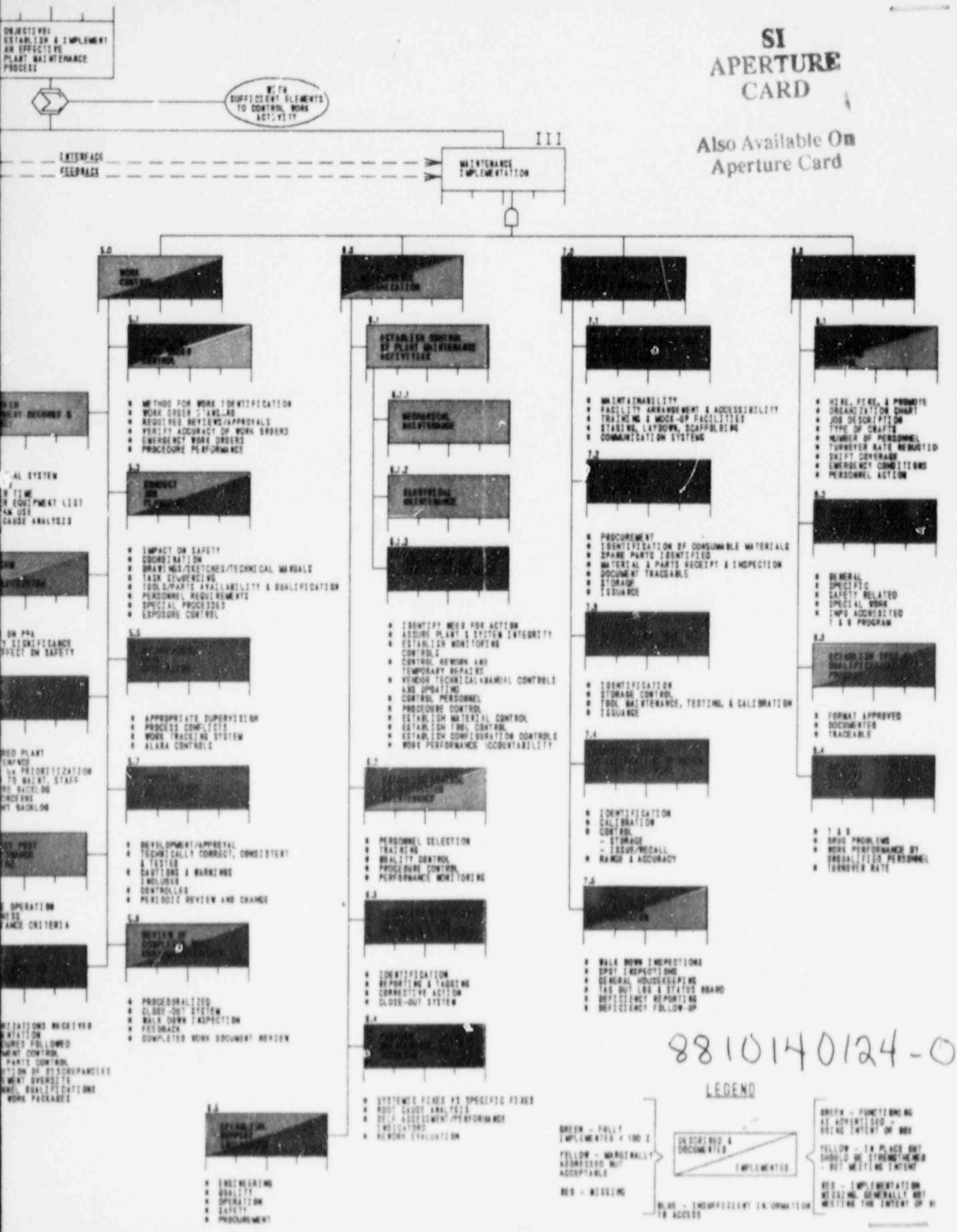
A copy of the color-coded inspection tree reflecting these results is attached as Figure III.B-5 - PBAPS Maintenance Inspection Tree.

At PE's request, an INPO Maintenance Assistance Review Team (MART) conducted an assessment of the Maintenance/I&C function in late 1987. Recommendations were provided for areas needing improvement. The MART team leaders have conducted three follow-up visits in 1988 to monitor progress toward implementation of the recommendations. During the last visit (August 1988), they stated they were satisfied that good progress was being achieved. Three areas were highlighted for attention, and actions are in progress in all three. The areas were post-maintenance testing, scheduling, and planning. INPO expects to close out its monitoring in the fall of 1988 if progress continues on track. In addition, INPO's Evaluation Team leaders for the forthcoming corporate and station evaluations noted the improvements in Maintenance/I&C area during their visits in July 1988.

FIGURE III.B-5 - PBAPS Maintenance Inspection Tree


I
OVERALL PLANT PERFORMANCE RELATED TO MAINTENANCE
1.0
AVAILABILITY
OPERABILITY
RELIABILITY
RADIATION EXPOSURE
- REACTOR TRIPS
- ESF ACTUATIONS
- OUTAGES
- T.S. VIOLATION
- FAILURE ON DEMAN
II
MANAGEMENT SUPPORT OF MAINTENANCE
2.0
2.1
SELF ASSESSMENT
INPO
OWNER'S GROUP
NOTICE & BULLETINS
NPRDS
EPRI
NUMARC
2.2
PLANT AGING AWARENESS
SELF ASSESSMENT
TRAINING IN MAINTENANCE
PROGRAM REVIEW
FEEDBACK
MAINTENANCE DATA BASE
3.0
3.1
MAINTENANCE PLAN
3.2
CORPORATE AND PLANT OBJECTIVES
RESPONSIBILITY AND AUTHORITY
ACCOUNTABILITY
DISTRIBUTED, REVIEWED, AND UPDA
ORGANIZATIONAL CONFLICTS
3.3
STAFFING
MATERIALS
TECHNICAL SUPPORT
3.4
TYPES OF MAINTENANCE
DEFINITION IMPLEMENTATION
MAINTENANCE REQUIREMENT IDENTIFICATION
MAINTENANCE REQUIREMENT CHANGES
REGULATORY DOCUMENT CHANGES
3.5
SURVEILLANCE
WORK SAMPLING
WALK DOWN INSPECTION
ROOT CAUSE ANALYSIS
FEEDBACK
PERFORMANCE INDICATORS
3.6
ESTABLISHED
PROCEDURALIZED
MAINTAINED
TRACKABLE
PERIODIC REVIEW AND UPDATE
3.7
MAINTAIN
UPGRADE
REPLACE
PLANT AGING
WORK DEFERRAL
4.0
4.1
IDENTIFICATION AND RESOLUTION OF TECHNICAL ISSUES
4.2
COMMON MODE FAILURES
SINGLE FAILURE CRITERIA
SAFETY SYSTEM SIGNIFICANCE
CONFINEMENT SIGNIFICANCE
COMPLIANCE SIGNIFICANCE
4.3
FAILURE ANALYSIS
PREVENTIVE MAINTENANCE
IN HOUSE VS CONTRACTED
MATERIAL QUALIFICATION
COMPLIANCE WITH APPLICABLE G.L & B
APPLICABLE INDUSTRY INITIATIVES
HUMAN FACTORS
4.4
CRITERIA FOR INSPECTION & AUDIT
INSPECTION/VERIFICATION
DEFICIENCY REPORTING
TRENDING
CORRECTIVE ACTION
4.5
RP SUPPORT
RP INVOLVEMENT IN THE PLANNING PROCESS
SCHEDULING
USE OF MOCKUPS & TRAINING
MAN-REM EXPOSURE CONTROL
RP SURVEILLANCE
ALARA GOALS
4.6
HAZARDOUS MATERIALS
ELECTRICAL SAFETY
FIRE PROTECTION
CONFINED SPACES
INERT ATMOSPHERES
4.7
FSAR
SER
TECHNICAL SPECIFICATIONS
NRC COMMITMENTS
GENERIC LETTERS, NOTICES, AND BULLETINS
APPLICABLE CODES

ER STATION MAINTENANCE INSPECTION TREE



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LEGEND

GREEN - FULLY IMPLEMENTED + 100 %

YELLOW - MARGINALLY ADDRESSED BUT ACCEPTABLE

RED - MISSING

DESCRIBED & DOCUMENTED / IMPLEMENTED

GREEN - FUNCTIONING AS ADVERTISED - MEETS INTENT OF BOX

YELLOW - IN PLACE BUT SHOULD BE STRENGTHENED - NOT MEETING INTENT

RED - IMPLEMENTATION MISSING, GENERALLY NOT MEETING THE INTENT OF B

BLUE - INSUFFICIENT INFORMATION TO ASSESS

PE's NQA Department recently conducted several audits of Maintenance programs. The following excerpts from the conclusions of NQA Audit OP-402, June 1988, provide additional indications that maintenance is being conducted in a quality manner and that program upgrades are achieving the desired results:

(a) MOV Rebuild Program

"The Limitorque MOV upgrade program, currently in progress, is one of the finest observed by this review team."

(b) Raychem Splice Rework Program

"An excellent RAYCHEM splice inspection and repair program is underway."

(c) Environmental Qualification Program

"There is excellent correlation between EQRRs (EQ Documents), CHAMPS maintenance requirements, and MRF files."

The corrective actions taken to upgrade the Maintenance programs have permanence. A new organization is in place and staffed with qualified personnel. Many program elements have been upgraded and documented with approved procedures. In addition, further improvements are in progress as part of the strategic plan for Maintenance.

Several specific programmatic improvements have been established to monitor program and personnel performance as well as maintain and strengthen management's involvement. Highlights include the following:

(a) Performance Monitoring

- Goals and objectives have been established for the Maintenance/I&C Section and good progress is being made toward achieving them. The goals and objectives are documented in the Maintenance Administrative Manual (MAM) Procedure 01.302 - 1988 Objectives and Goals.

- Performance Indicators have been established for Maintenance/I&C. These are well documented and formally reported at the monthly station review meetings to site and corporate management. These indicators include items such as:

  - PM items overdue (by unit)
  - Ratio of Preventive to Total Maintenance (by unit)
  - Unplanned Maintenance Activity Scrams (by unit)
  - Maintenance Accident Rate (total)
  - Maintenance Overtime Worked (total)
  - Maintenance Radiation Exposure (total)
  - Percentage of Non-outage Corrective MRFs greater than 3 months old (by unit)
  - MRF Priority Indicator (by unit)
  - Out-of-service Control Room Instruments (by unit)

(b) Problem Analysis

- o Trending of historical performance is used by Maintenance/I&C to review and analyze problem areas. Key elements monitored with this technique are LERs, maintenance rework, and maintenance history (work orders).

- o Enhanced root cause analysis capability has been developed. When significant failures or adverse trends related to Maintenance functions are identified through trending or other means, root cause analyses are conducted by Maintenance Engineering staff personnel; and many are cooperative efforts with station system engineers.

(c) Management Involvement

- o A clear and total commitment to Management by Walking Around (MBWA) is in place in Maintenance/I&C. As part of MBWA, the six senior Maintenance/I&C management staff each spend at least 4 hours per week in the plant monitoring work activities and meeting and discussing progress and problems with working level personnel. Reports of observations and follow-up actions are documented. Specific areas monitored include the following:

  - Housekeeping
  - Parts & material control
  - Procedure compliance
  - Documentation
  - Coordination
  - General knowledge of workmen
  - Industrial safety practices
  - Radiation protection

- o Improving teamwork has been another focus of Maintenance management. This includes management team-building sessions facilitated by Organization Development professionals and lunch-time sessions with first line supervision focused on improving communications and teamwork, both horizontally and vertically within the organization and across organizational interfaces. An extensive network of "All-hands" meetings has been established, and emphasis is placed on providing timely follow-up to questions raised at such meetings. As a

result of these efforts to improve teamwork, a real spirit of belonging and ownership has been developed within Maintenance/I&C.

(d) Self-Assessment

- Numerous self-assessments have been performed to lead Maintenance/I&C Section to excellence. These assessments resulted in Maintenance/I&C upgrade tasks that are scheduled and tracked to completion. As evidenced by the Maintenance/I&C Superintendent's position description, the section is committed to continued self-assessment using INPO, NRC and industry criteria. Subsequent to restart, a corporate self-assessment of Maintenance (including PBAPS, LGS, and Nuclear Maintenance) will be conducted to re-evaluate progress since the INPO MART assessment in late 1987. In addition, nine Maintenance Strategies spanning the next three years were developed to ensure continued improvement of Maintenance. These strategies include:

  - Role of Centralized Maintenance/Contractors
  - Permits and Blocking Methodology
  - Work Process Control
  - Spare Parts/Material
  - Planning and Scheduling
  - Productivity Measurement and Work Standards
  - Trade Specialization/Jurisdiction
  - Reliability Based Preventive Maintenance Program
  - Training and Qualification/Development.

Panel Considerations and Conclusions

The Panel asked for further discussion on (1) the makeup of the "acceptable backlog" after restart, (2) prevention of a large PM backlog in the future, (3) efforts to reduce

personnel errors, and (4) long range Maintenance Strategies. During the last Panel meeting, the Superintendent - Maintenance/I&C responded to these requests.

The target band of 600 to 1,000 backlog work orders at restart will consist of three categories:

(i) One hundred or so will be modification items which are not safety related or important to operations; e.g., scaffolding erection, etc.

(ii) About 600 will be non-cv ..ge corrective maintenance work orders. This number is consistent with INPO guidelines. In response to questions on open corrective maintenance work orders, the Superintendent - Maintenance/I&C described a committee consisting of himself, the Superintendent - Operations, Superintendent - Outages, who would review, screen and decide which work orders would not have to be completed before restart. The committee will be chaired by the Plant Manager. The criteria for this review are being developed.

(iii) The goal is to have no overdue PMs at restart. About 150 to 200 will be backlogged PMs. Backlogged PMs are not overdue, but rather open work orders scheduled for completion within their proper periodicity.

Prevention of a large number of overdue PMs in the future will be assured by high level management focus described earlier. Also, approval of deferrals with justification has been elevated to management in Maintenance. Finally, Maintenance is firmly committed to improved planning and scheduling to accommodate releases by Operations to complete PMs on time.

Maintenance personnel are sensitive to personnel errors and are committed to minimizing them. Several of the improvements; e.g., procedures implemented during this outage and emphasis on use of procedures, have been aimed at reducing probable causes of personnel errors during maintenance and I&C work. The Panel was assured that Maintenance personnel were aware of disciplinary actions that could be taken for failure to follow procedures. Trending, root cause analysis and experience review, in addition to good management, will enable early identification of adverse conditions, including personnel errors.

The Superintendent - Maintenance/I&C then described the long range Maintenance Strategies in more detail. They are summarized as follows:

- Role of Centralized Maintenance/Contractors. Compatible centralized maintenance and nuclear station organizations will be developed such that specialty Maintenance services and manpower are provided to nuclear stations as planned during outage and non-outage periods. Some specialized service contractors would be used; however, essentially no contractors would be used to perform regular maintenance outage work.

- Permits and Blocking. The PBAPS safety record is very good, which implies safe permit and blocking practices. Work in

confined spaces and radiation areas requiring permits has traditionally been done safely. However, alternative approaches to creating radiation and other work permits needed for maintenance work will be devised to reduce work delays and improve worker function, improve safety of personnel and equipment, simplify processes, reduce costs, and improve productivity.

- Work Process Control. Work process controls have been improved during the current outage. However, further improvements are planned to reduce delays, improve productivity, and simplify processes. This effort will involve development of a simplified and effective maintenance work flow for preventive, corrective, and surveillance type maintenance work from work initiation to equipment restoration to service.

- Spare Parts. Improved spare Parts/Materials support is also planned. An estimate of one-third of the jobs planned by Maintenance are not supported by spare parts in stock. This has been compensated for by advanced planning. The strategy is to improve this situation over the long term. Improvement efforts are underway for Diesel Generators, Residual Heat Removal, and Emergency Service Water Systems, as these must be available even with the plant shut down.

The section of this report on Procurement and Materials describes the long range Spare Parts Program.

- Planning and Scheduling is one of INPO's remaining concerns. The long term strategy here is to develop and implement a Company-wide planning and scheduling system.

- Productivity measurement and work standards will be developed as part of this strategy. Currently, productivity as defined at PBAPS can be paraphrased as the percentage of time a mechanic "has a wrench in his hand," meaning he or she is in the plant at work. Current levels are estimated around 20%. The strategic goal is over 50%, and the Panel suggested 65% as a target. Much of the streamlining and other improvements, e.g., spare parts, are expected to contribute to productivity improvements, as well as developing work standards in this strategy.

- Trade specialization/jurisdiction strategies involve developing the General Mechanic concept with attendant revisions to work rules. This strategy will also feed into higher productivity.

- Reliability based preventive maintenance program development is a strategy that will build on improvements already made during the shutdown. In addition, this strategy relates

closely to the spare parts and materials strategy by providing an engineered basis for stocking levels.

- Training and qualification/development of Maintenance resources embodies and supports all other strategies. PBAPS is fully committed to maximizing the benefits of all strategies through training and qualification and professional development of Maintenance personnel. This is the cornerstone of the Maintenance march to excellence.

Maintenance strategy development and implementation will be guided by a steering committee, chaired by the Executive Vice President - Nuclear, and individual task forces including representatives from several onsite and corporate organizations.

The Panel suggested inclusion of Probabilistic Risk Assessment (PRA) in the overall Maintenance Strategy. This will be added as either an additional strategy or incorporated in a Risk and Reliability Based Preventive Maintenance Program. The Panel also suggested that the Maintenance presentation given to the Panel be given to all station Maintenance personnel. This will be accomplished.

The Maintenance/I&C Section has two remaining tasks to be completed prior to restart of Unit 2:

- Reduce the backlog of non-outage corrective work orders to between 600 and 1,000 normal items, and
- Reduce the backlog of overdue PM tasks to essentially zero.

The Panel concluded that Maintenance is prepared and capable of supporting restart and safe operation of PBAPS provided open work orders are reduced to the target level and the backlog of overdue PMs is essentially eliminated. Line management was confident that these tasks could be accomplished prior to restart.

Improvements in areas such as the Maintenance/I&C organization, management oversight function, maintenance planning, and enhancements to work control processes appear permanent. They should continue to be enhanced over time, but the changes to date have resulted in substantial improvements. Improvements to work process controls, planning and scheduling, productivity measurement, and work standards are areas to be addressed in the next three years as part of the Nuclear Group's strategic plan to further improve Maintenance.

C. PLANT SERVICES

Plant services includes the Chemistry, Radwaste, and Health Physics functional areas at PBAPS. The Superintendent - Plant Services presented the status of initiatives taken to address five issues that had been raised by the NRC, INPO, and ANI.

In the Chemistry area only one issue, layup chemistry control, had been identified. This issue stemmed from a finding by INPO in 1987.

Two Radwaste issues had been identified: reduction of contaminated areas and reduction of radwaste volume. In both subjects PBAPS compared poorly with peers in the industry. The issue of reduction of contaminated areas had been identified by all three oversight organizations and had been a continuing concern of the NRC and INPO of long standing.

Two issues had also been identified in the Health Physics functional area: improvement of radiological work practices and a reduction of station exposure. The former had been identified by the NRC, INPO, and ANI and the latter by the NRC, INPO, and the PE Quality Assurance (QA) organization.

Corrective actions taken to resolve these issues included both administrative changes and actions more directly associated with the issues identified. Administratively, the visibility and accountability of these functional areas was increased by the appointment of a Superintendent - Plant Services in February 1988, responsible for Chemistry, Radwaste, and Health Physics. Previously, the span of control of these functional areas had been large and diminished the degree of management attention. The steps taken which were directed to correct specific issues are discussed separately in the following sections.

(1) Chemistry - Layup Chemistry Control

After the INPO finding in 1987, a comprehensive Layup Program was developed. The program, which included revisions to procedures, upgrades of laboratory facilities, improved monitoring, and improved training of chemistry technicians, was patterned on a model program jointly developed by INPO and the Electric Power Research Institute (EPRI). (See Multiple Dynamic Corporation Report PEC-12-7413, May 1988, and EPRI Report NP-5106, "Plant Layup and Equipment Preservation Source Book," March 1987.)

Implementation of the Layup Program was initiated in November 1987 and it was fully implemented and operational by May 1988. All major systems in the Layup Program were placed into layup status on the schedule established by the program. n August 1988 systematic monitoring of microbiological life forms and clam infestations in the circulating water systems began under new control procedures. Chemical injections to control asiatic clams were begun using the new procedures in August 1988.

The Layup Program was developed to meet the guidelines jointly developed by INPO and EPRI. Those guidelines embody substantial industry experience and constitute a state-of-the-art approach to layup chemistry control. Management sensitivity to the Layup Program has been increased and management holds the Chemistry organization accountable for maintaining the Layup Program. Regular reports to management include the monthly Plant Performance Indicators Report. These factors assure that the corrective actions taken will be continued.

(2) Reduction of Contaminated Areas

PE established a program to reduce contaminated areas of the plant guided by goals set by a Contamination Control Committee. This committee was formed with representatives of seven key organizations:

- Radwaste
- Health Physics
- Operations
- ALARA
- Maintenance
- Bechtel Engineering
- Outage Planning

In addition to setting goals for the plant, this committee also reviews the progress and determines corrective action which may be required. The committee began meeting in May 1988 and meets monthly.

The decontamination effort has been pursued aggressively and has resulted in a reduction in the contaminated areas at a faster rate than had been targeted. Figure III.C-1, abstracted from a regular monthly report, shows that the percentage of areas contaminated in Unit 2 and common has been reduced to a level below industry average in a period of about four months. Further reductions below industry average are planned (industry average was determined by a telephone survey of nine nuclear utilities). The program in Unit 3 has also proceeded ahead of schedule (Figure III.C-2) and is nearing the industry average level. This was accomplished despite the high level of work in this unit as the pipe replacement outage is completed.

UNIT 2 & COMMON DECONTAMINATION PROGRESS

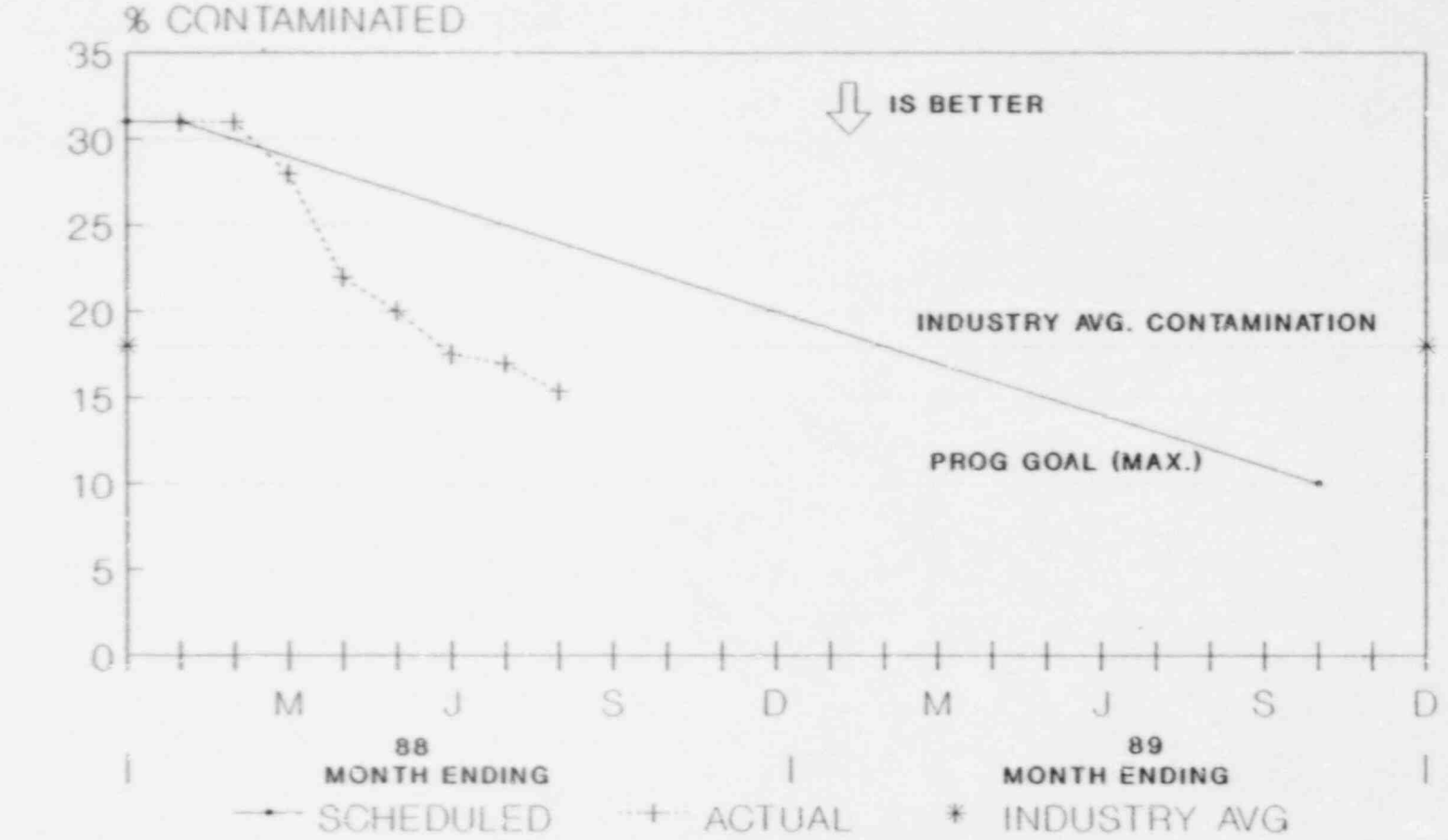

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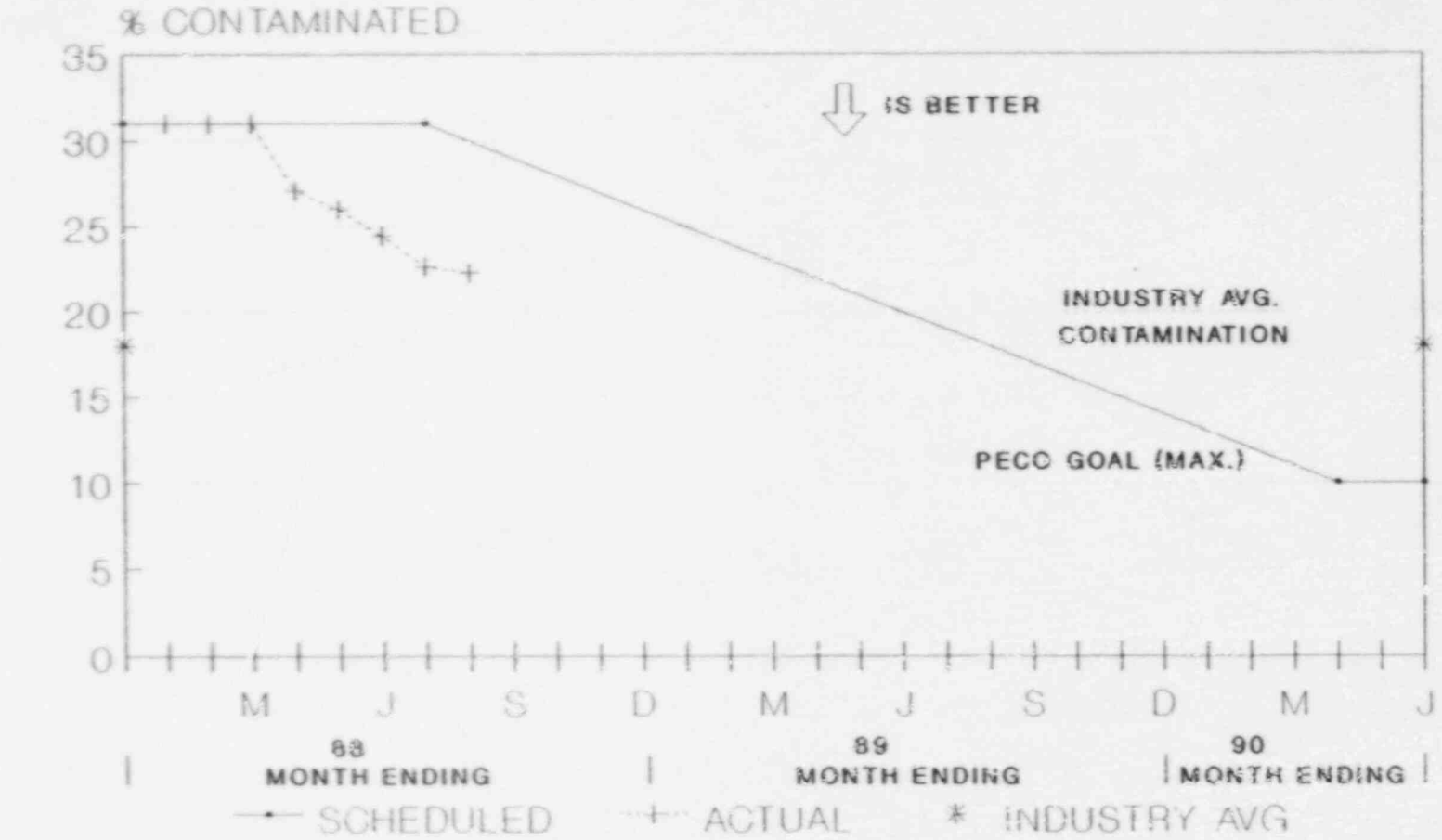
FIGURE III.C-1

UNIT 3
DECONTAMINATION PROGRESS



DLQ9

FIGURE III.C-2

A detailed plant cleaning and painting project was begun in early 1986 and is continuing. Over 75% of the plant has been detail cleaned and painted. This project will continue into 1989. The progress, indicated in Figure III.C-3, has slowed in 1988 while recovering from a Unit 2 outage and the Unit 3 pipe replacement project and, thus, cannot be fully implemented until the maintenance work is completed.

These decontamination and cleaning/painting actions have been sufficient to close NRC open items and various concerns of ANI. To maintain a clean and non-contaminated condition in the plant, several administrative actions were taken. Administrative Procedure A-30, "Plant Housekeeping Controls", was revised to provide improved housekeeping controls and to establish and set standards for the materials control program. The procedure also requires establishment of a compliance coordinator and a Housekeeping Compliance Group to assist the Senior Engineer - Radwaste in improving methods to obtain and preserve plant cleanliness. The responsibilities assigned by A-30 include daily plant walkdowns to identify housekeeping deficiencies, tracking of corrective actions, and the direction of housekeeping work. Another administrative action is the requirement in Routine Test Procedure RT-13.8 for the preparation of a monthly status report, including current levels of

STATION PAINTING
PROGRESS

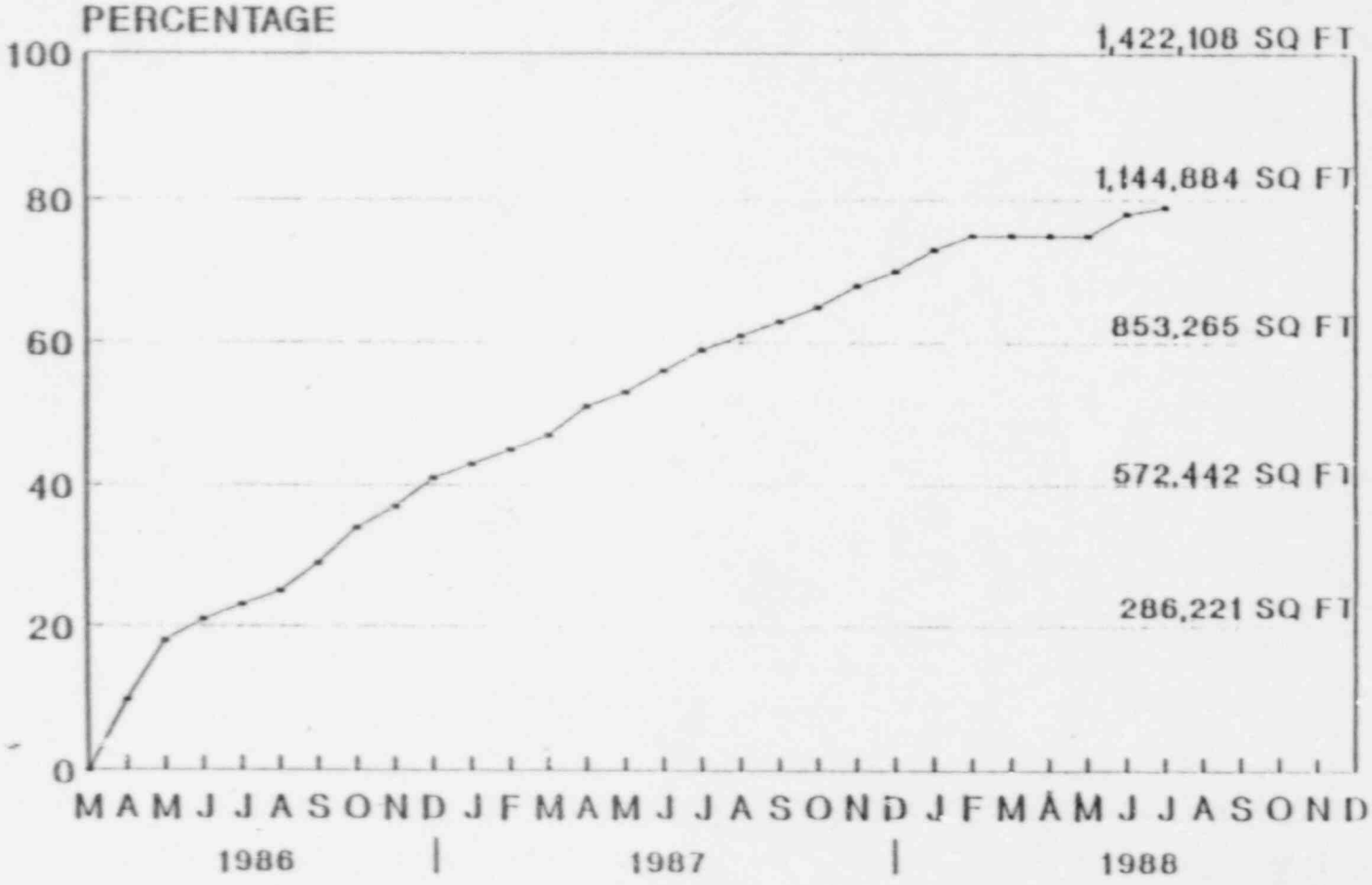


FIGURE III.C-3

contamination compared with industry levels and PBAPS goals, to senior plant management. This report assures high visibility for the condition of the contamination status of the plant. Beyond these actions, management has instituted a Management by Walking Around (MBWA) Program which is actively involving senior management and supervisors in reviewing and assessing the conditions of the plant.

(3) Reduction of Radwaste Volume

The issue of radwaste volume reduction involved concerns about the volume of dry active waste, wet waste, and liquid waste stored on-site. A number of actions were taken to minimize the storage of radioactive waste, to accelerate shipment off-site, and to improve the processing of radwaste.

The corrective actions t[illegible]n were initiated late in 1986 with an administrative change that formed the present radwaste organization. Accountability for radwaste control is placed with supervisory personnel in this organization as defined in their job descriptions.

A vendor (Quadrex) capable of processing the dry active waste to reduce its volume was contrac[illegible]n September 1987 to provide improved capability to segregate "dirty" from "clean" radwaste. This has resulted in nearly an 80% reduction

in burial volume. The amount of dry waste to be processed has been minimized by usage of reusable material (PCs, rags, bags, etc.) to the greatest extent practical. New procedures were developed and adopted for the processing of wet waste in March 1988. These procedures control improved methods of processing wet waste such as dewatering of ion exchange resin rather than using a centrifuge. Drying equipment for other liquid waste was ordered. Shipment of the drying equipment was received in July 1988 and installation was completed September 6, 1988. These facilities are operational.

In May 1988 a program to process liquid waste was initiated. The program is controlled by radwaste procedures RW-591, RW-622.3 and RW-625. The liquid wastes are processed by an epicor oil/water emulsion system that utilizes a charcoal filter to process oily waste water and mop water. The clean water is then sampled and released by the laundry waste system.

The actions taken to reduce the inventory of dry active waste have yielded a substantial reduction in the volume stored on-site. Figure III.C-4 shows the history of the volume of waste stored and the accomplishment of storage volumes substantially below the goals. Not only was the inventory of dry active waste reduced, the volume of low level solid waste produced was held to

UNIT 2 & 3
RADWASTE INVENTORY-DAW

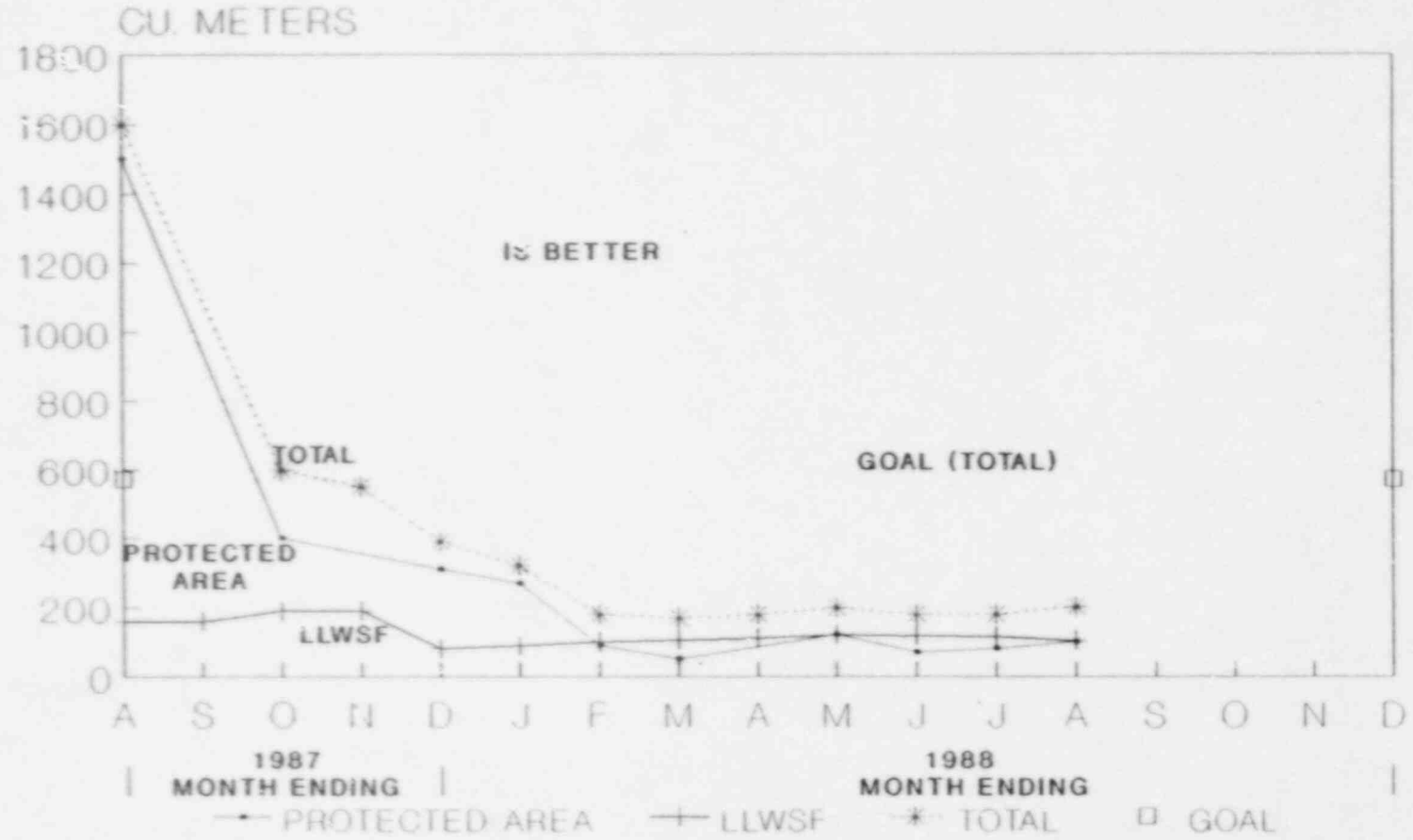


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FIGURE III.C-4

a level less than the INPO best quartile through the first eight months of 1988 (see Figure III.C-5). Liquid waste inventory also has been substantially reduced, as shown in Figure III.C-6, and although the rate of processing has diminished, it is expected to reach the goal by December 1988.

To maintain the improved level of performance in the radwaste area the Superintendent - Plant Services has set five-year goals and objectives for this organization. A five-year plan was prepared in April 1988 and the accomplishments are being tracked and compared with the goals and objectives so that any necessary corrective actions can be taken on a timely basis.

(4) Health Physics - Radiological Work Practices

To improve radiological work practices, the General Employee Training (GET) lesson plans were upgraded so that they conformed more closely with the recommendations of INPO. Administratively, the procedures listed in Table III.C-1 defining worker responsibilities, material control, and reporting were prepared and issued.

The Health Physics organization was strengthened by hiring an experienced Radiation Protection Manager and an Applied HP Supervisor in 1987. Seven new HP supervisory positions were established and filled in 1987. The organization was revised in

UNIT 2 & 3
VOLUME OF LOW-LEVEL SOLID WASTE PRODUCED

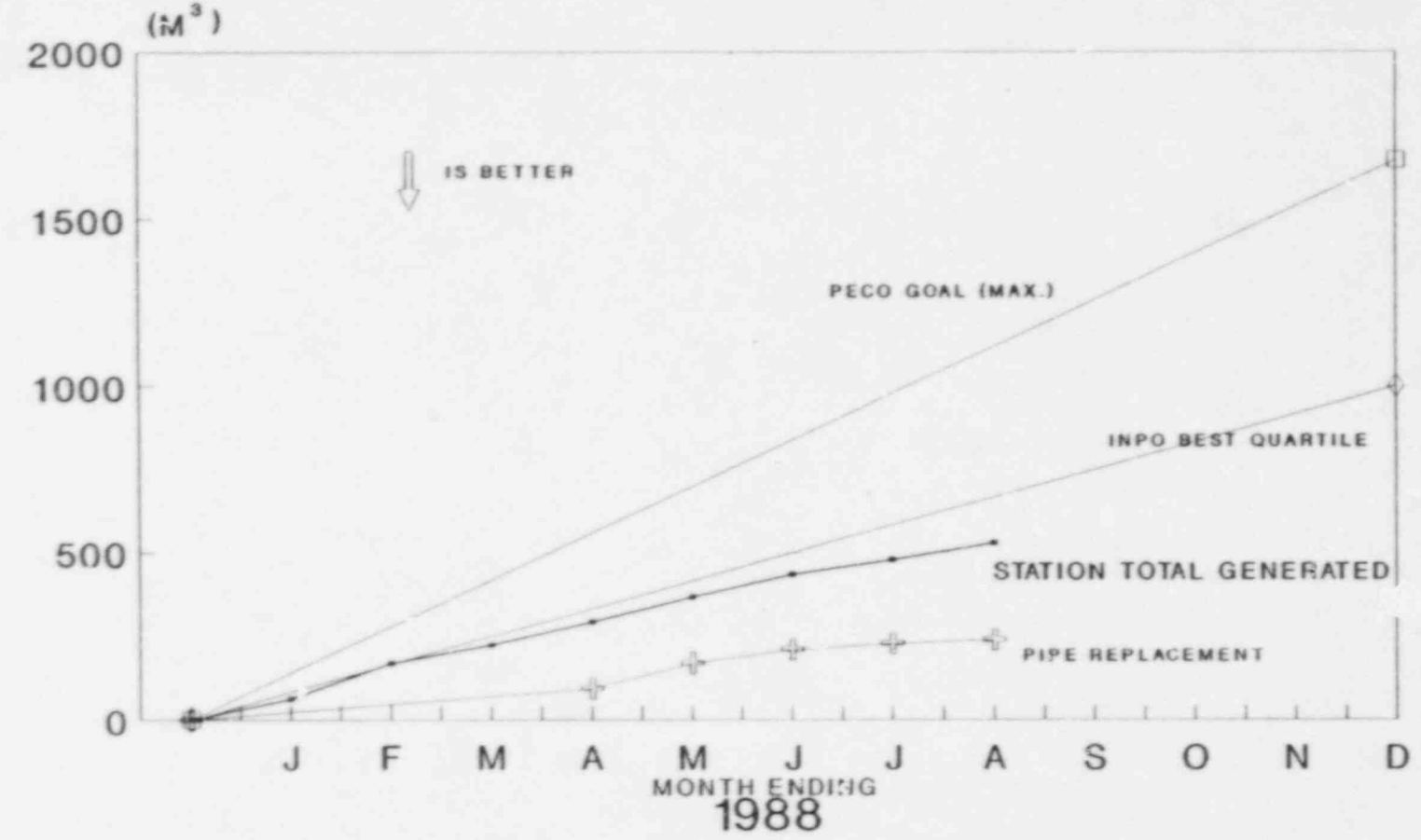

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FIGURE III.C-5

UNIT 2 & 3
RADWASTE INVENTORY--RAD DRUMS

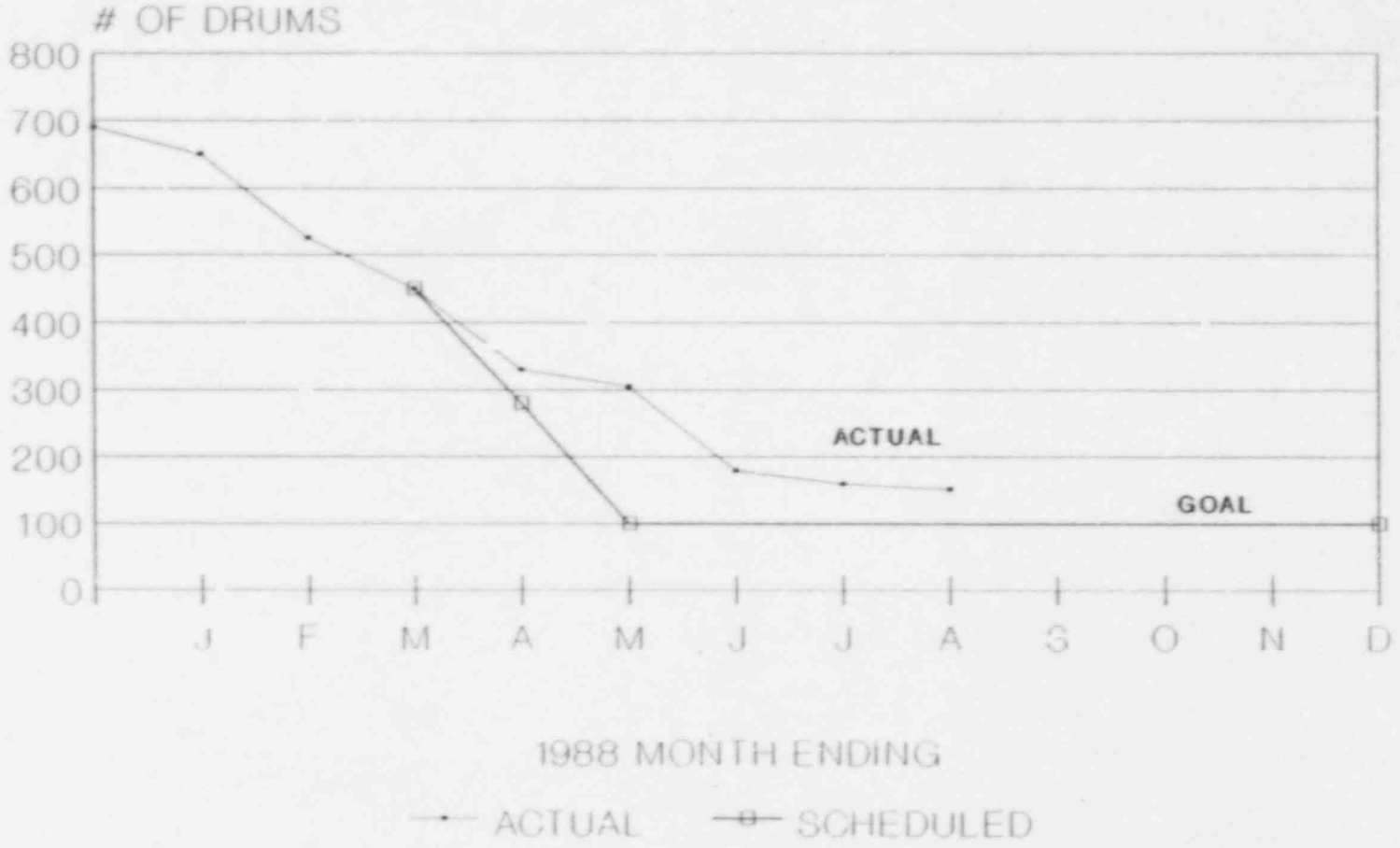

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FIGURE III.C-6

TABLE III.C-1

Procedure No.	Title
A108	Control of Radioactive Material
A110	Radiological Occurrence Reports
A116	Radiation Worker Responsibilities

1988 to clarify responsibilities spelled out in new position descriptions also prepared in 1988.

Since March 1987, all of the 129 HP Procedures have been revised and confirmed as effective by field testing. All procedures have been tested by field use at least once and many have been used for work in the plant several times.

Because relationships among HP and other station personnel had become strained, an effort was mounted to improve the involvement of HP personnel with the rest of the station work force. This is being accomplished by regularly scheduled meetings of HP personnel with Maintenance and Operations which have led to a greater sense of teamwork. To enhance this teamwork, the efforts of three HP technicians have been dedicated to working with the Maintenance, Construction, and the Planning Departments to assist in achieving improved radiological work practices. The improved communications achieved have resulted in better planning of work from an exposure/contamination standpoint.

The consequence of these actions has been an improvement in radiological work practices. As of September 1988, 13 of 19 open items from NRC Inspections have been closed. Six others have been submitted and are currently under review for closure. There has been a steady reduction in Reports of Radiological

Occurrences as shown in Figure III.C-7 and Personnel Contaminations, shown in Figure III.C-8 on a per 10,000 entry basis, have a decreasing trend.

To assure that the gains accomplished are continued, the Radiation Protection function is assessed by senior management in the MBWA program. This program requires management to be in the plant, observing, and communicating with the workers on a regular basis.

On an individual basis, personnel compliance with procedures has been strengthened through the performance appraisal process. Part of an individual's performance evaluation is his/her procedural compliance.

(5) Station Exposure

To reduce station exposure, the internal and external exposure programs have been reviewed and revised to improve their effectiveness. ALARA programs have also been implemented, and exposure accountability has been improved.

The review of internal and external exposure programs began in September 1987 and was completed on September 9, 1988. The review resulted in a number of changes, including new

REPORTS OF RADIOLOGICAL OCCURRENCES

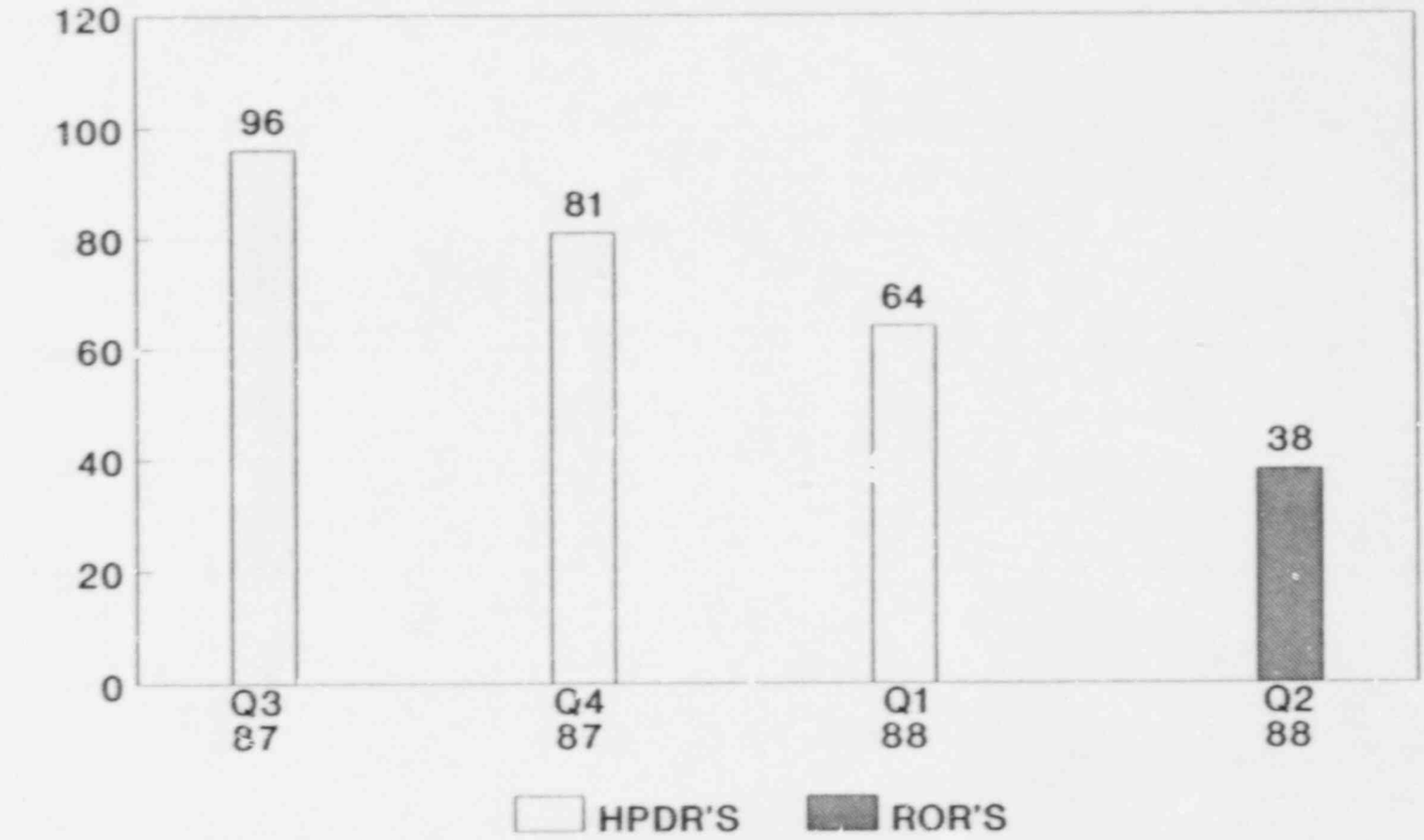

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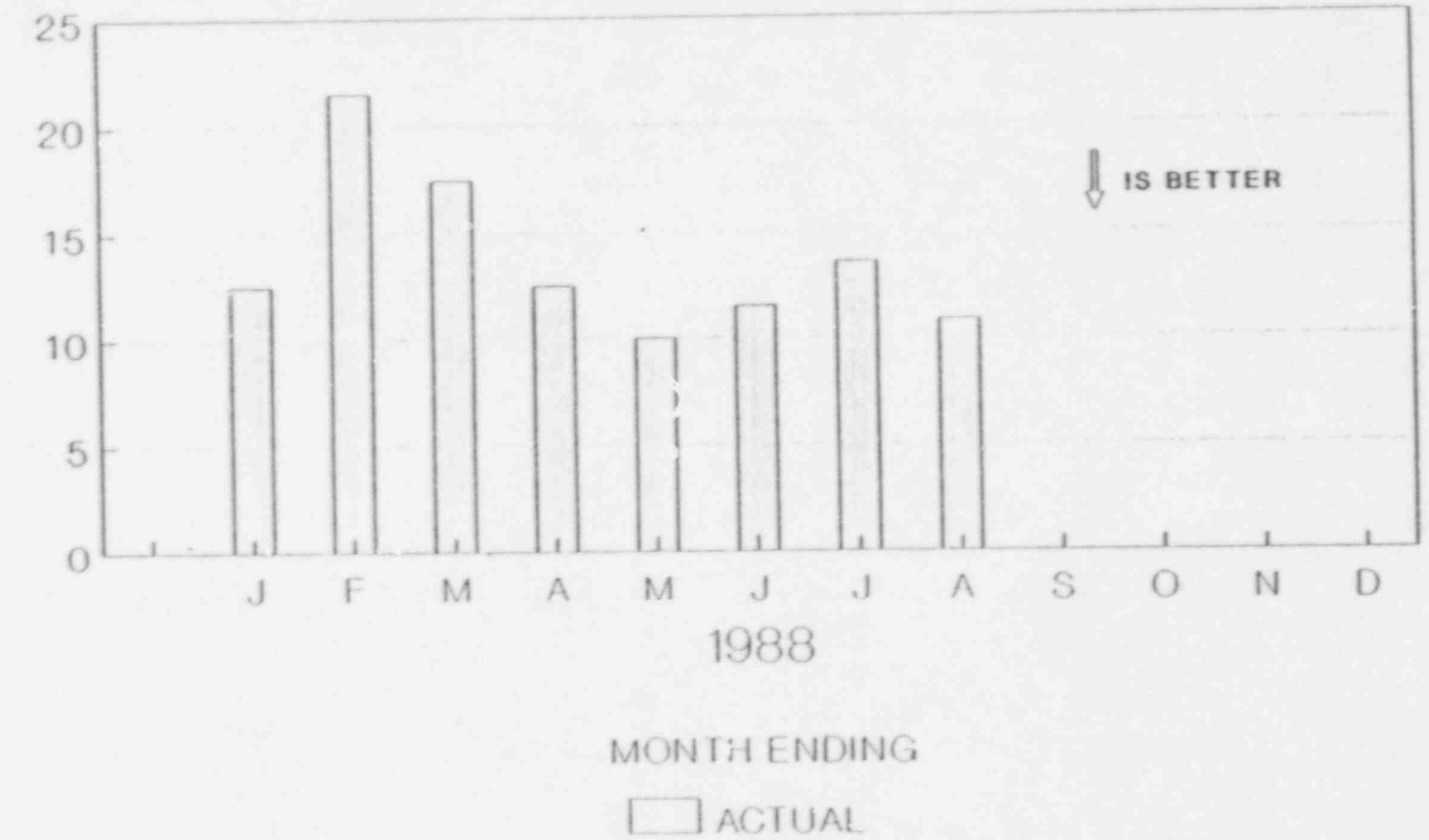
FIGURE III.C-7

UNIT 2 AND 3
CONTAMINATIONS PER 10,000 ENTRIES



III.C-19

FIGURE III.C-8

DLQ21

procedures and new equipment. The following administrative procedures were issued in 1988:

A105 "Respiratory Protection Program"

A106 "Dosimetry Program"

A103 "Peach Bottom ALARA Program"

A107 "Radiation Work Permit Program"

Previously, Health Physics procedures had not been station procedures and, in some instances, other departments had internal procedures that were intended to accomplish the purpose of HP procedures. This contributed to the strained relationships noted previously so the elevation of these procedures to station-wide applicability will have a beneficial effect on working relationships.

Procurement of new radiological monitoring instruments was initiated in March 1987. Since then, 800 new instruments have been procured. Continuous air monitoring was implemented in May 1988 under procedure HP-448 and radiological postings were improved to meet the requirements of procedure HP-215 in June 1988.

The ALARA program, implemented under a Company ALARA Manual and Station Procedure A103, has instituted an Executive ALARA Council, a Station ALARA Council, and an ALARA Suggestion

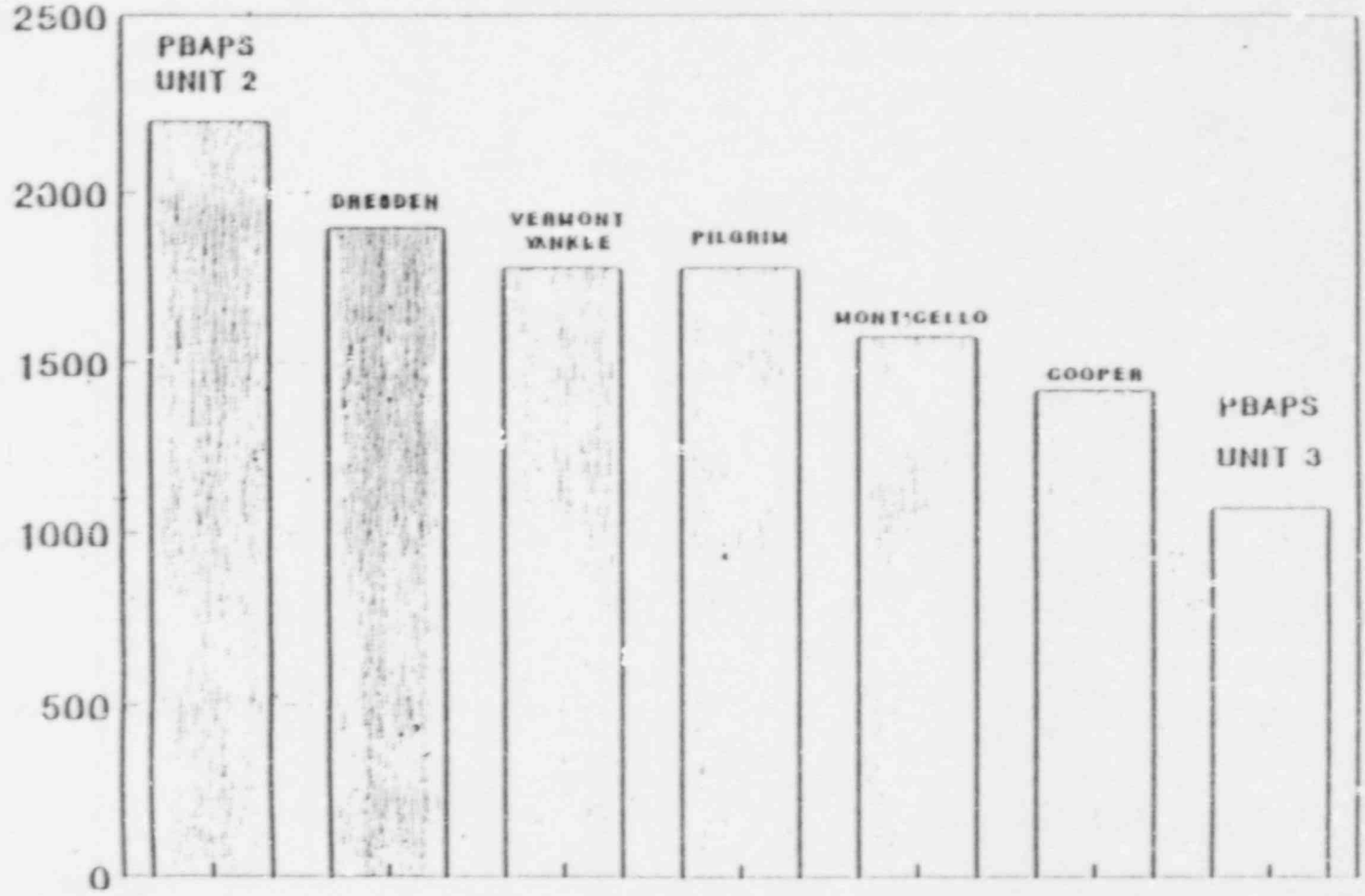
Program. The ALARA program also requires an ALARA review on all Radiation Work Permits (RWP) and has implemented a system for hot spot tracking and resolution.

Exposure accountability has been improved by requiring a RWP (Procedure A107) for all entries into radiologically controlled areas. Access control to radiologically controlled areas has been improved by installing better access facilities and by modifications of the flow paths for workers transiting to and from these areas. An upgrade to modify the access control to the ADEPT live-time access control system is in progress and Phase I completion is scheduled for October 1988.

The changes made have had a positive effect at the plant. The pipe replacement project in Unit 3 is illustrative. The exposure on Unit 3 is about half of that expended on the PBAPS Unit 2 piping outage and is less than the exposure for any pipe replacement project of comparable scope. As can be seen in the comparison given by Figure III.C-9, at completion the total exposure is likely to be a record low for a project of this magnitude.

As further evidence of improved HP performance, the station collective exposure is below the PE goal for 1988 (Figure III.C-10). The collective exposure goal will be reduced

PIPE REPLACEMENT
COMPARISON

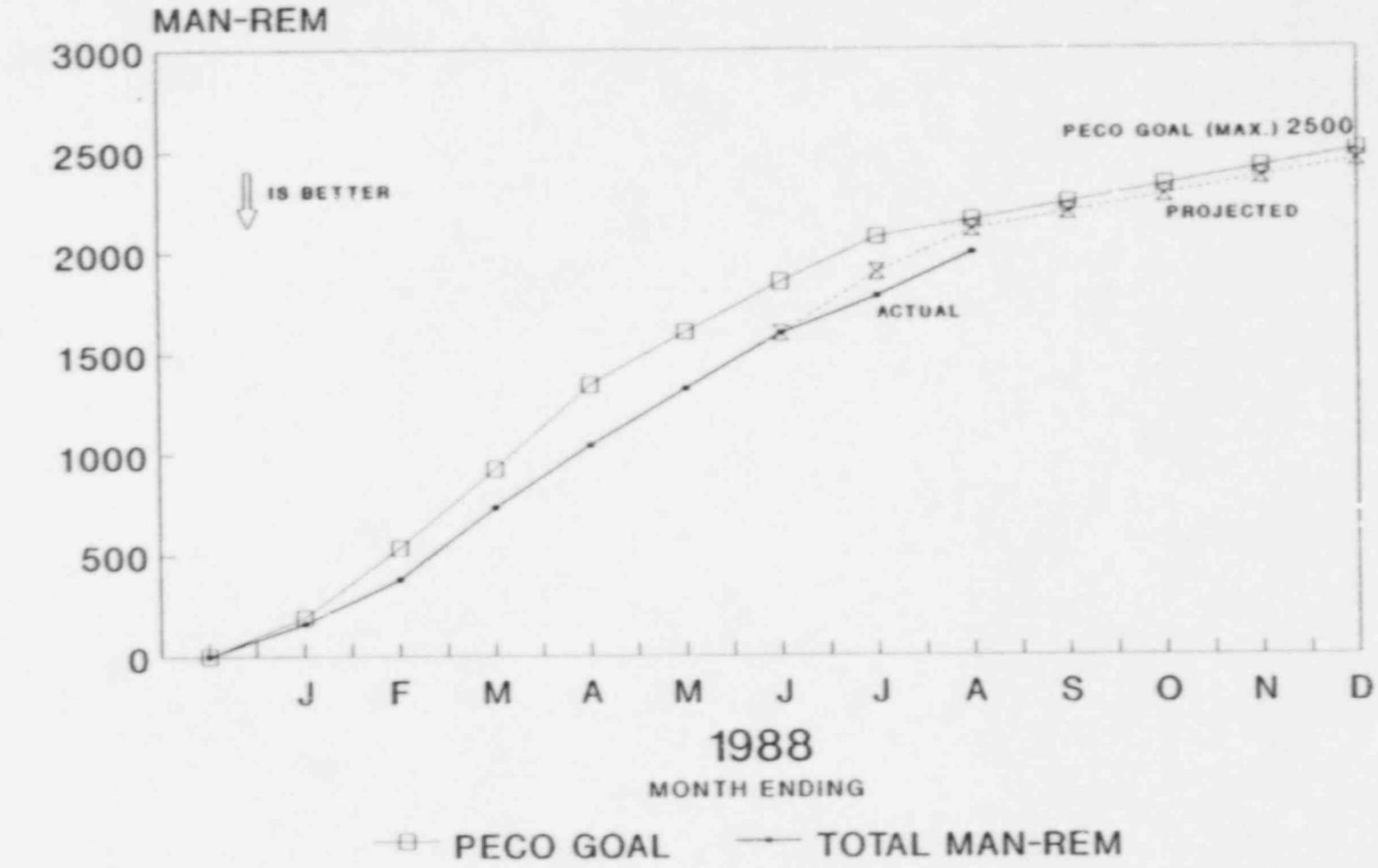


UNIT 3 99% COMPLETE

DLQ19

FIGURE III.C-9

UNIT 2 & 3
COLLECTIVE RADIATION EXPOSURE



DLQ20

FIGURE III.C-10

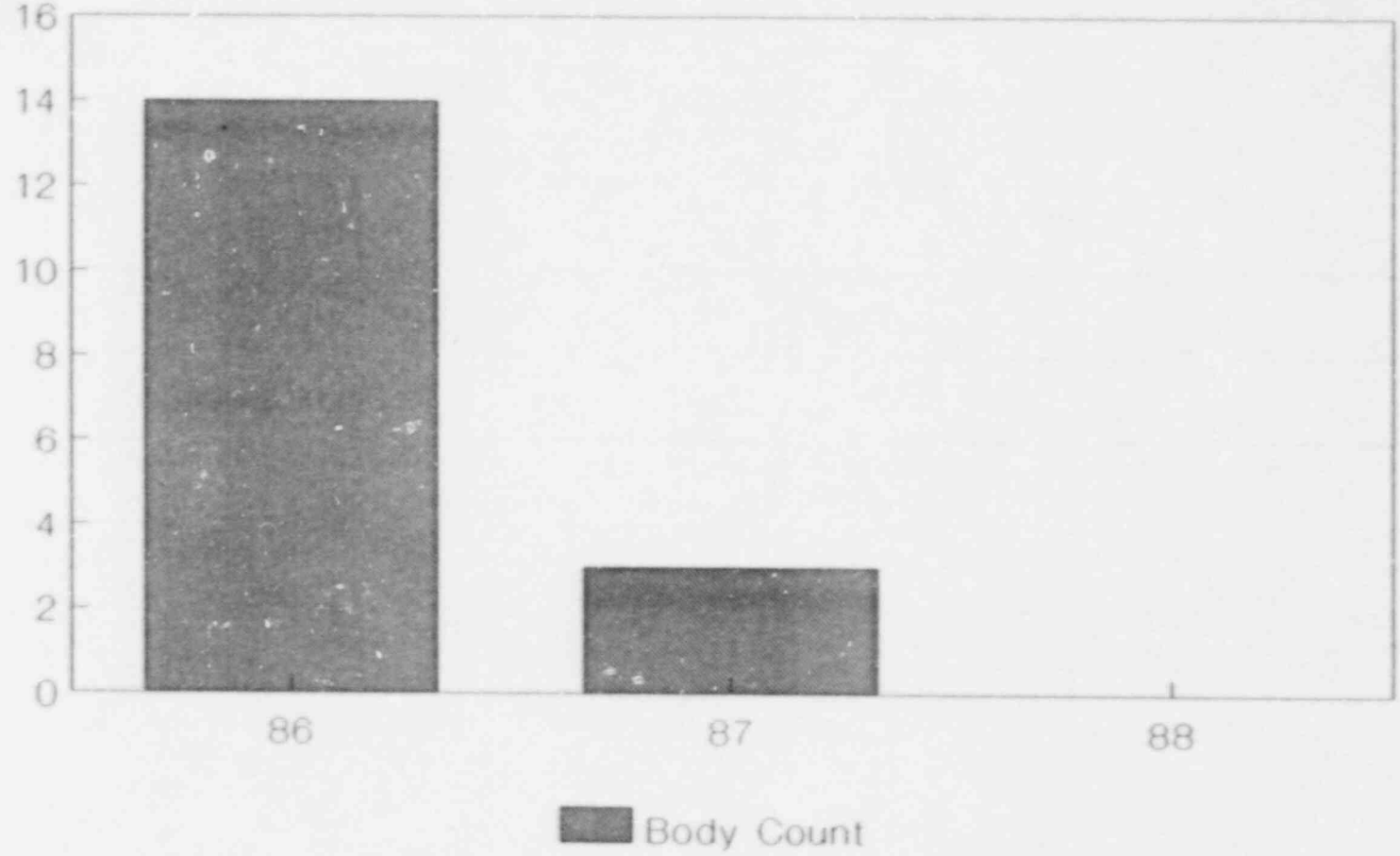
for 1989 and is higher in 1988 because of the Unit 3 pipe replacement outage. If the exposure were adjusted by deleting the amount related to the pipe replacement outage, the total would be comparable with the INPO average for two-unit plants.

Reportable uptakes of radioactive material (positive whole body counts) have been minimized. As of August, no positive whole body counts have occurred at Peach Bottom in 1988. This is an improvement over 1986 and 1987 which are shown for comparison in Figure III.C-11, and was accomplished with 100% dose accountability achieved.

The accomplishments and improvements in the HP area have led to closure of 20 open NRC items mentioned previously and all ANI open items. The radiation exposure has been limited to the levels established as goals and are now comparable with other BWR plants, and have been held to among the lowest for piping replacement work.

To assure that the improvements are retained, management and supervision participate in the MBWA program, Executive and Station ALARA Councils review performance against group and station exposure goals, and permanent physical modifications have been made for better access controls.

POSITIVE WHOLE BODY COUNTS



DLQ26

FIGURE III.C-11

Scheduled exposure tracking upgrades will enhance the ability of management to detect trends and take corrective actions should adverse trends appear.

Panel Consideration and Conclusion

The Panel requested that the Superintendent - Plant Services return to discuss plans for power ascension, i.e., how to deal with water chemistry changes during the physical restart. The Panel also suggested that the presentation include additional discussion of training, compliance with procedures, and more information on the efforts and accomplishments in reducing the generation of radwaste. In the third meeting these matters were presented to the Panel in a satisfactory manner. During that presentation the Panel suggested that the Superintendent - Plant Services obtain a test that had been used recently in Nebraska in which a large percentage of transient HP technicians failed and compare that test with the test used at PBAPS and the Superintendent agreed to do so. After consideration of the accomplishments to date and the plans to continue improvement, the Panel concluded that all issues which affected restart had been resolved.

D. TECHNICAL SUPPORT

Three Technical Support issues had been identified as requiring improvement prior to plant restart. Those issues included timely identification and dissemination of industry operating experience to appropriate plant personnel, timely surveillance testing, and consistent and accurate labeling of plant systems and equipment. The Panel received presentations on those issues, the work done to include systems specific engineering expertise, and the overall ability of this functional area to support restart.

(1) Operating Experience

The timely identification and dissemination of industry operating experience to appropriate plant personnel was identified as an issue in the 1987 INPO Evaluation Report. PE addressed the operating experience issue through an upgrade of the Operating Experience Assessment Program (OEAP) and through significant reductions in the backlog of operating experience items for which review is required.

A goal of achieving timely dissemination and review of operating experience and determination of appropriate corrective action was established. To accomplish the goal a two-tiered approach was taken.

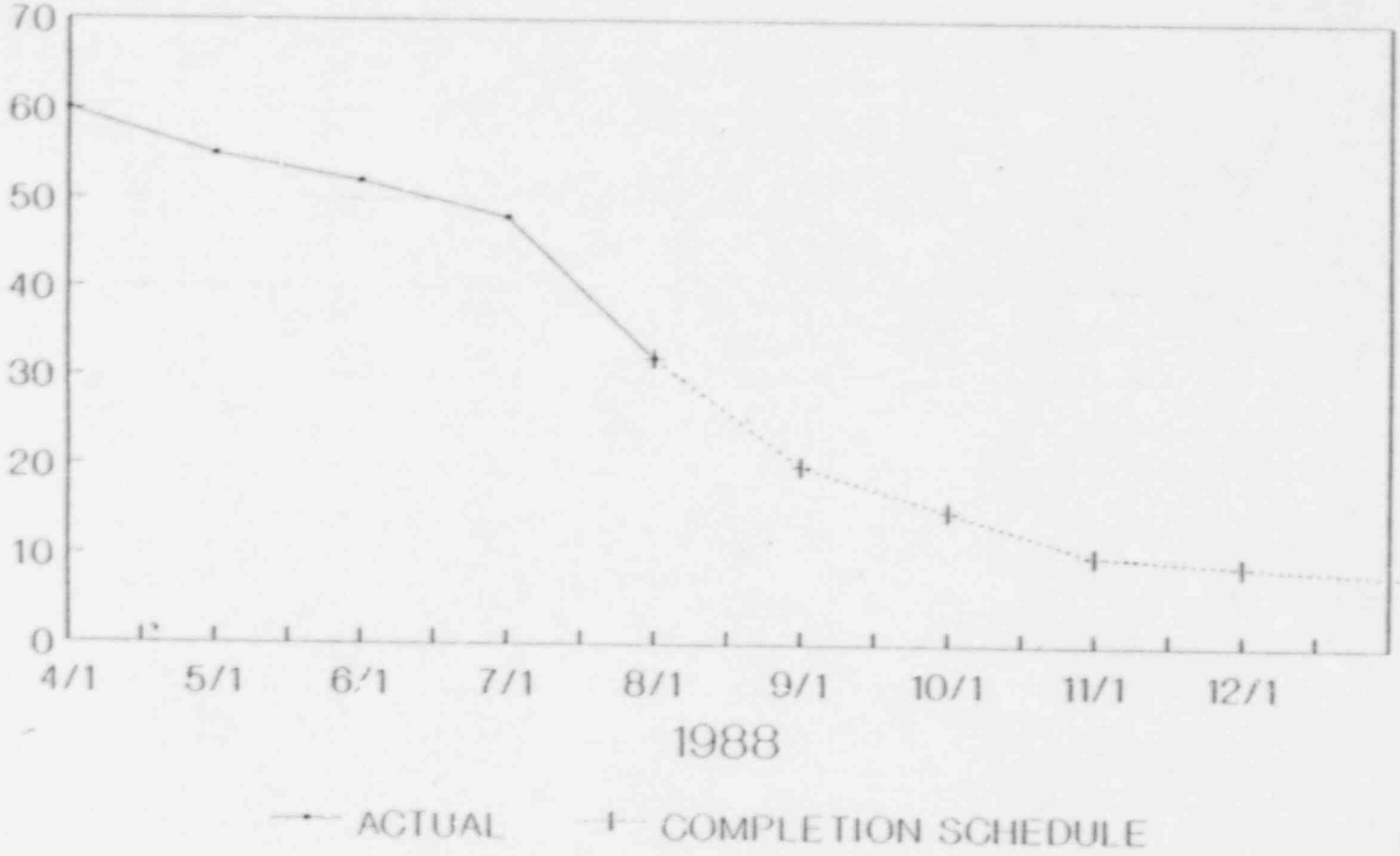
First, an enhanced OEAP was developed and documented by an interim Nuclear Group Administrative Procedure for Operating Experience Assessment Program (NGAP-NS-0XX.Y) and Administrative Guideline (AG) AG-35 entitled "Guideline for PBAPS Operating Experience Assessment Program." The enhanced OEAP provides for the systematic receipt, screening, assignment, and review with line management of operating experience documents from the NRC, INPO, General Electric (GE), and other vendors. The enhanced OEAP also provides for tracking and management status reporting.

Second, a backlog reduction group was formed in March 1988 to:

- Identify open operating experience (OE) items
- Ensure that the OE document is disseminated and reviewed
- Determine appropriate corrective actions
- Assemble closure documentation

For the work off of Significant Operating Experience Report (SOER) recommendations, it is planned to achieve a low level of unreviewed items by year end. Actual progress has been substantial and the projected schedule shown in Figure III.D-1 indicates a level of less than 10 SOER recommendations outstanding by year end with the current level being approximately 33.

SOER RECOMMENDATIONS WORK OFF



GFD3B

III.D-3

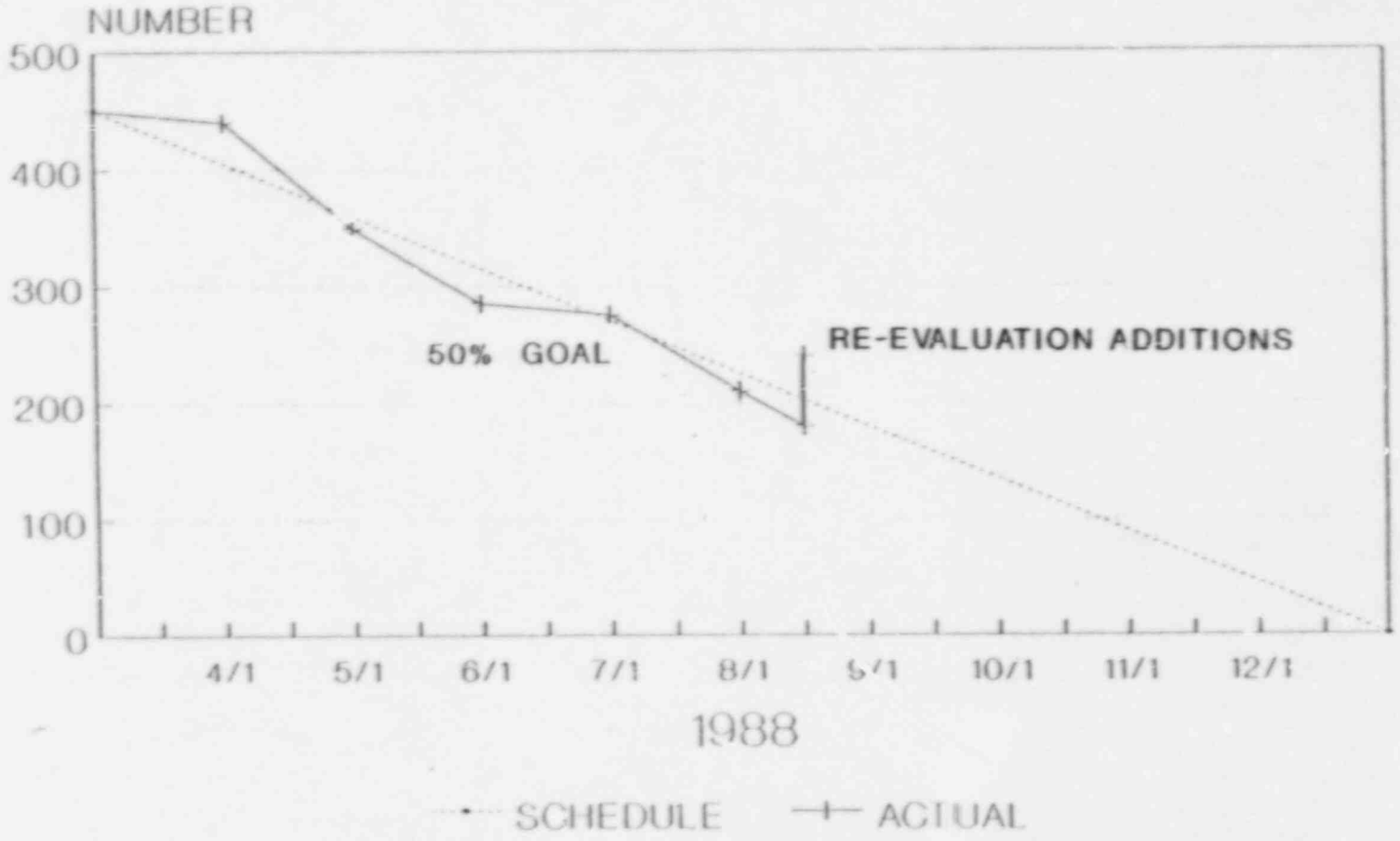
FIGURE III.D-1

The work off of SILs, SERs and IE notices, shown in Figure III.D-2, also has shown significant steady progress. The increase in the backlog in August resulted from a re-evaluation of operating experience items from the previous operating experience program. The increase resulted in a slightly higher workoff rate for the balance of 1988 to achieve the goal but it is still planned to reduce this backlog to zero by year end.

PE's Independent Safety Engineering Group (ISEG) conducted a review in May 1988 to determine the status of open SILs and SERs. The purpose was to assure that the backlog reduction effort was progressing and to identify any SILs/SERs that might require action prior to restart. All operating experience items identified as requiring resolution before restart by ISEG have been resolved.

During July 1988, the Performance Assessment Division of NQA conducted an effectiveness review of the Peach Bottom Operating Experience Program. The backlog reduction program was found to be progressing satisfactorily. It was observed that the OEAP process had been reformulated to address previously identified problems but it was too early to judge its effectiveness.

SILS, SERS AND IE NOTICES BACKLOG



GFD3A

III.D-5

FIGURE III.D-2

(2) Timely Surveillance Testing

Surveillance testing (ST) timeliness was identified as an issue both through self assessment and by the NRC. PE identified the need for improvements in the scheduling and implementation of surveillance tests as part of the planning for power ascension. One specific need identified was for a weekly shift-by-shift schedule. Also, the NRC identified the need for improved scheduling of partially completed surveillance tests as part of Inspection Report 87-17.

To improve the accuracy of tracking surveillance testing, partially completed tests were added to the ST tracking system. This task was implemented as part of the revision of Administrative Procedure A-43 "Surveillance Testing System". In August 1988, the tracking mechanism, the STARS database, was updated and put into use to accurately track completion of partially completed tests. In addition, other improvements were made in A-43 including:

- Emphasis on completion of tests by the scheduled completion date.

- Institution of reportability of overdue Technical Specification required surveillance tests to the NRC.

A weekly shift by shift schedule has been in place since July 1988. This scheduling technique permits STs to be planned for specific shifts for the entire week. Consequently, the adherence to the test schedule is improved.

Procedure A-43 defines the steps to be taken prior to the expiration of the ST grace period, to ensure that testing is timely. In addition, the A-43 procedure defines a more stringent reporting procedure. A "Management Summary Report" is generated weekly through the STARS system and is distributed to upper management by the Surveillance Testing Coordinator. Greater visibility of overdue Technical Specifications required STs is achieved by reporting to the NRC. This ensures maximum visibility to the tracking and performance of STs. Reporting of overdue Technical Specifications required STs to the NRC began on August 2, 1988.

(3) Consistent and Accurate Plant Labeling

PE has undertaken a major plant labeling effort in response to NRC, INPO and internal evaluations dating from 1986 which found the labeling at PBAPS to be inadequate. Inspectors found (1) a lack of complete and consistent labeling/identification of plant equipment, and (2) a schedule for timely completion had not been developed.

The Plant Labeling Program which was instituted was a major effort which included the development of guidelines to ensure that the nomenclature for a component on the field installed label, in plant procedures, on control/instrumentation panels, and on P&IDs would be consistent. In addition, staffing was increased to accomplish the labeling and milestones established.

As a result of these efforts the plant was 95% labeled as of early September 1988. A verification program to enhance consistency of nomenclature is currently underway.

The Plant Labeling Program includes provisions to ensure:

- Consistency exists between operating procedures and the applied label; and

- Identification and correction of discrepancies between field installed piping and P&IDs.

To establish consistency between the plant, drawings, and procedures, a program has been developed to create a data base which includes noun descriptions for use in preparing and correcting drawings and procedures in the future.

An effort is underway to rewrite all system operating procedures. To ensure consistency between the check-off list and the field installed label, procedures are walked down prior to approval. Labeled systems will be consistent with operating procedures lists prior to restart of Unit 2.

A labeling verification program is underway using the CEMS guideline for Independent Verification, approved August 22, 1988. The label maintenance program will be implemented prior to completion of the first system being verified.

Drawing corrections have been made on Unit 2 and Common P&IDs to show the as-built condition. Drawing issuance was pending final NED approval and was scheduled to be completed by the end of September 1988.

In addition to the issues described above as those requiring improvement prior to restart, PE considered it desirable to upgrade the expertise available in System Engineering.

In order to accomplish this upgrade, PE formed a group to focus the supervision and efforts of Systems Engineers at the plant to provide better technical support to Operations, Maintenance, and Outage Planning. Enhanced Systems Engineering expertise will result in faster answers to questions and better accountability.

An increase in the level of supervision resulted from the reorganization, completed May 1988, which provides first and second level supervision for Systems Engineers. Technical Staff and Management Training is continuing for System Engineers until a specific System Engineer training program is developed.

These changes have enhanced the systematic review of operating procedures, surveillance tests, modifications and set point changes. The Systems Engineers have been increasingly involved in the review and development of these items, reflecting their increased expertise.

The Systems Engineers have noted increased reliance by Operations, Outage Planning, and Maintenance to resolve problems. System Engineers were involved in the successful NRC maintenance inspection conducted July 1988.

Panel Consideration and Conclusion

The Panel concluded that this functional area had done an adequate job of preparing to support restart and safe operation. The Panel noted the recent increased emphasis on reduction of overdue surveillance tests (STs) but also noted that the rate of improvement to reduce overdue STs was not as good as it might be. The Panel also inquired as to the significance of the number of overdue STs (less than 2%) and suggested that some

additional mechanism be considered to increase management attention if STs continue to be performed late. After deliberation the Panel found no issues affecting restart remained to be resolved.

E. TRAINING AND QUALIFICATION

Although no training and qualification issues arose directly from the Shutdown Order, issues in this functional area were identified by INPO and PE self-assessment. The issues identified involved the organization and administration of the training function, relatively slow incorporation of operating experience information into training, a low level of plant participation in the development of training, and improvements needed in self-assessment evaluations of training programs.

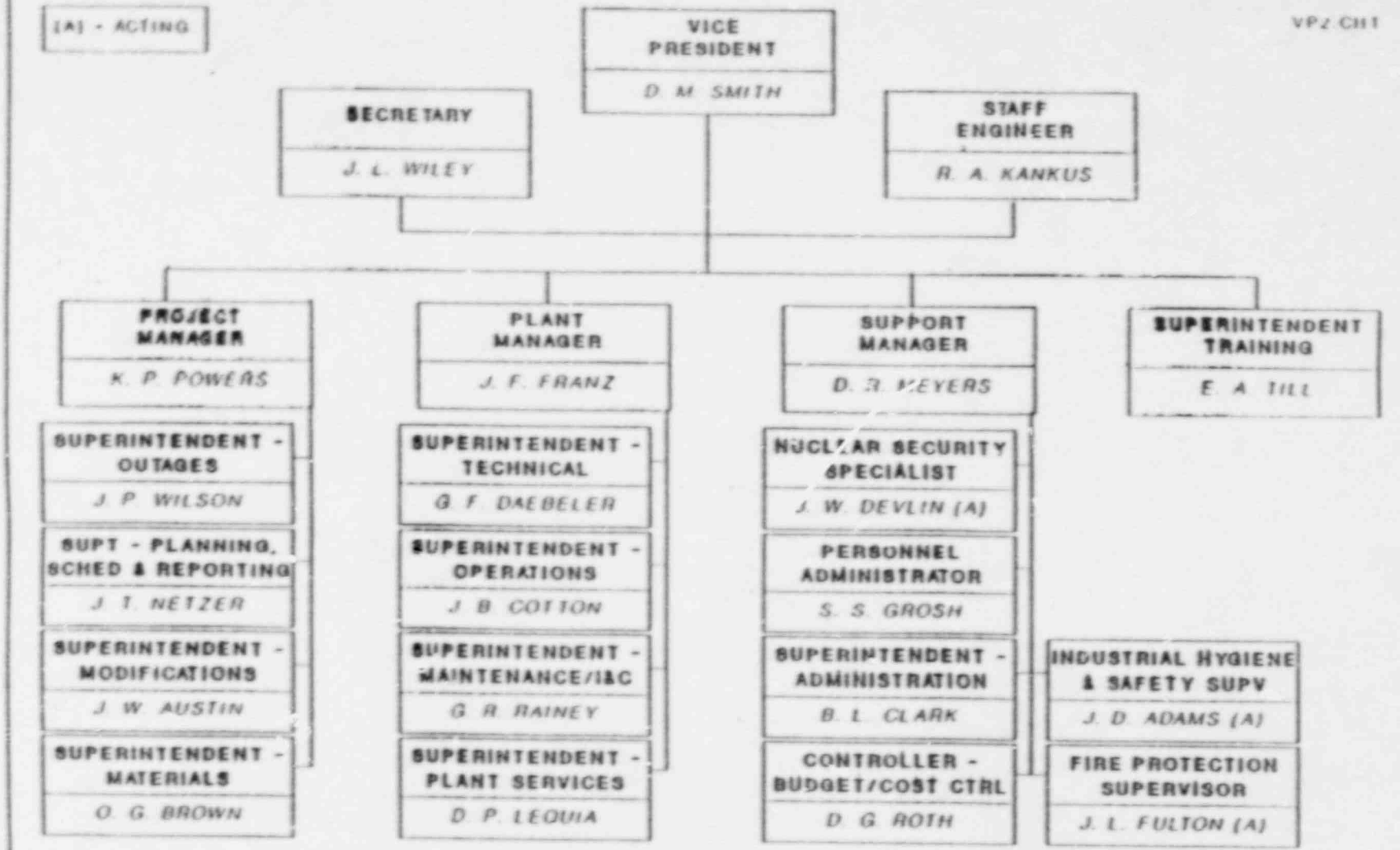
Subsequent to the shutdown, a self-assessment of the organization resulted in a corrective action intended to correct perceived deficiencies in the organizational structure. The action item required development of an organizational structure that would provide increased management direction, control, authority, and accountability for site work activities.

A 1987 evaluation by INPO noted that significant industry operating experience events reported in SOERs were not incorporated into initial and continuing training programs in a timely manner. Nor were there procedures in place to ensure that industry experience would be factored into the training programs.

The INPO evaluation also cited a need for closer coordination of training staff with plant supervision in Operations, Health Physics, Chemistry and Technical Staff to ensure that training in the accredited programs conforms to the Training System Development (TSD) model. The same finding also related a need for improved self-assessment by performing periodic evaluations of training programs and job task lists to validate program content, sequence and administration. The results of trainee performance should also serve as feedback for corrections to training programs.

To improve the organization, the site workforce was changed to the organization shown in Figure III.E-1. This change in structure assigned responsibility for the Station to a corporate officer, the Vice President - PBAPS. This change also instituted the position of Superintendent - Training reporting directly to the on-site corporate officer.

The nuclear and management experience of the Training Division was upgraded by creating the Superintendent - Training position and hiring a highly experienced and qualified individual to fill this position. In addition, seven experienced individuals were hired or transferred into the Training Division to supplement the staff.



PEACH BOTTOM ATOMIC POWER STATION

ORGANIZATION CHART

VICE PRESIDENT - PBAPS

PHILADELPHIA ELECTRIC COMPANY
SEPTEMBER 8, 1988

EXECUTIVE V.P. - NUCLEAR

VICE PRESIDENT - PBAPS

FIGURE III.E-1

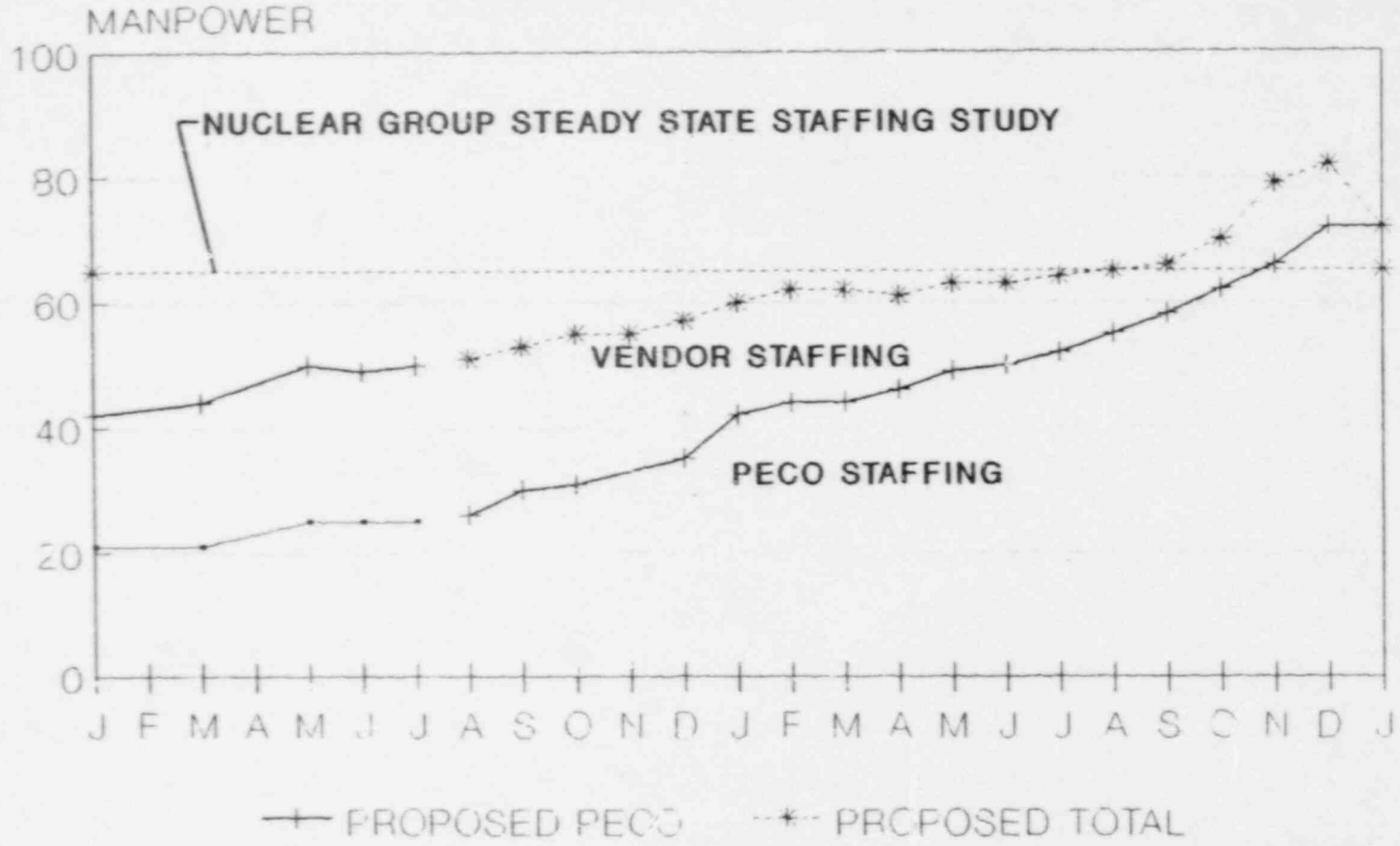
To reduce the dependence of PE on contractors/ vendors, the proportion of PE staff has been increased as the staff size was increased. The changes in staffing, illustrated in Figure III.E-2, are intended to improve PE's control of training development and implementation and better align the goals of training personnel with those of the Company.

To assure that the reorganization did not result in inadvertent failure to comply with procedures, training procedures were created or rewritten to conform to the revised management structure. The improved procedures were prepared so that adherence to the new procedures would be assured by "ownership" of the procedures by all site organizations. The procedures already written or rewritten are listed in Table III.E-1. Additional procedures scheduled to be completed prior to reaccreditation are listed in Tables III.E-2 and III.E-3.

To improve communications and increase the effectiveness of the training organization, a central PBAPS training facility has been planned. The schedule for the facility, to be constructed in the Unit 1 Administrative Building, includes the following milestone events:

- Capital authorization for preliminary engineering design: approved

PBAPS
TRAINING MANPOWER



III.E-5

FIGURE III.E-2

TABLE III.E-1

TP Procedures Completed 9/1/88		Approved by
TP-001	Preparation, Review and Approval of Training Division Procedures	Admin. Supt.
TP-051	Request for Training	Plant Manager
TP-052	Job Analysis	Trg. Supt.
TP-053	Task Analysis	Trg. Supt.
TP-056	Program Plans and Course Plans	Trg. Supt.
TP-059	Lesson Plans and Laboratory Exercise Guides	Trg. Supt.
TP-430	Training Impact	Plant Mgr.
TP-431	Coordinating Immediate Training	Plant Mgr.
TP-450	Instructor Qualification and Certification	Trg. Supt.

TABLE III.E-2

TP Procedures to be Completed 11/1/88		Approved by
*TP-054	Training Objectives and Job Performance Measures	Trg. Supt
TP-056	Training Plan	Trg. Supt.
TP-057	Test Construction	Trg. Supt.
TP-060	Simulator SEGs	Trg. Supt.
TP-061	OJT/Qualification Manual	Trg. Supt.
*TP-064	Conduct of Training	Trg. Supt.
*TP-068	Program Revision Action	Trg. Supt.
*TP-069	Interface Organization	Plant Mgr.
*TP-421	Documentation	Admin. Supt.
*TP-440	Training Evaluation and Feedback Administration	Plant Mgr.

TABLE III.E-3

TP Procedures to be Completed 2/1/89		Approved by
TP-055	Training Settings	Trg. Supt.
TP-062	Training Cross-Reference Matrix	Trg. Supt.
TP-100	Operations Group - General	Trg. Supt.
TP-160	Simulator Training Support	Trg. Supt.
TP-200	Maintenance and Technical Groups - General	Trg. Supt.
TP-300	General Group - General	Trg. Supt.
TP-400	Training Services Group - General	Trg. Supt.
TP-410	Training Resources - General	Trg. Supt.
TP-420	Training Administrative Support	Trg. Supt.
TP-470	Training Library Document Index	Trg. Supt.
TP-471	Training Library Document Control	Trg. Supt.

- Request for proposal for preliminary engineering design issued in August: contract awarded in September 1988
- Preliminary engineering design available: Late October 1988
- Bid and award design/construct contract: January 1989
- Target completion: December 1989

These changes have led to better definition of the responsibilities of the training organization to other site organizations and of the responsibilities within the training organization. As a result, the Training Division is better meeting plant training needs. The reorganization has also resulted in improved management visibility of training performance. Communications have been improved and the Superintendent - Training now meets on a regular basis with the Vice President - PBAPS and with the other direct reports to the Vice President.

The staffing plan of the Training Division is consistent with industry norms and with the Nuclear Group Steady State Staffing Study. Previously, the planned staffing was relatively low and relied extensively on contractor support.

To assure and improve incorporation of operating experience, a new system was developed for incorporating operating experience into training at PBAPS. The system provides for coordination with the Operating Experience Assessment

Program (OEAP), positive tracking of INPO, SOERs, Radiological Occurrence Reports (RORs) and PBAPS Licensee Event Reports (LERs) and computerized tracking of action items. Thus far the system has been used to track about 100 revisions to training attributable to SOERs in 1988.

To assure that operating experience was captured and assessed for PBAPS training, a staff position was established specifically to assess the training impact of operating experience. The operating experience system and other changes have led to incorporation of applicable industry experience into the simulator exercise guides and lesson plans. The results obtained will meet or exceed the accreditation criteria published by INPO.

Plant Participation in training was established by interface agreement and continued participation will be assured by establishing plant interface committees in accredited programs during the third quarter of 1988. Similar interfaces will be set up in non-accredited programs during 1989. The activities of the interface committees are governed by TP-069 which required the agreement of the Plant Manager. The plant interface organization among other duties selects the content of licensed operator requalification and continuing training courses for accredited programs.

Plant participation will be essential to ensure that the training provided covers tasks actually assigned by plant management and supervision. This work includes:

o	Validation of the task inventory for licensed operators and integration with NRC knowledges and abilities	To Be Complete 2/1/89
o	Validation of the task inventory and training cross-reference matrix for non-licensed operator positions	Substantially complete
o	Validation of the task inventories, knowledges, abilities, and cross-reference matrices for other accredited programs.	To Be Complete 1/1/90

Training on the plant-referenced simulator has provided significant improvement in the fidelity of PBAPS simulation. This training involves close coordination with Operations management.

Training has established and will maintain files of Plant Operations Review Committee meeting minutes which identify procedure changes plant modifications and PBAPS LERs. These sources, coupled with improved handling of operating experience, allow the Training Division to assist plant supervisors in selecting training activities for incorporation into initial and continuing training.

Self-assessment in the Training Division is accomplished principally through a disciplined self-assessment required for reaccreditation of PBAPS training programs. The

reaccreditation process has begun, and a draft report on the self-assessment was essentially completed in June 1988. Weaknesses noted in that work are being addressed and will continue to be addressed throughout the remainder of this year and through January 1989. The final draft report is scheduled to be submitted to the Vice President - PBAPS in October 1988, with submission to INPO that same month.

The self-assessment process will also establish a formal, comprehensive system for assessing the following: (1) trainee performance in training, (2) trainee performance after assignment to a new position, (3) instructor technical knowledge, (4) instructor instructional ability, (5) training material technical content, (6) training course effectiveness, and (7) training system effectiveness.

Panel Consideration and Conclusion

The Panel inquired about the status of training as respects specific groups of individuals. The Panel explored whether the training of personnel was adequate given the recent incorporation of operating experience and changes in training procedures. The Panel also inquired about the status of the reaccreditation effort and requested a follow-up discussion on long range plans to maintain accreditation. The Superintendent - Training presented additional information relating to

maintenance of accreditation. The Panel concluded that the achievements and improvements in this functional area were sufficient for restart and that efforts underway and planned for reaccreditation appeared to be appropriate.

F. INDUSTRIAL SAFETY/FIRE PROTECTION

The lack of a formal organization, accountable for these functions, had been identified as an issue for both of these functional areas. In Industrial Safety, the need for a coordinated program was identified, as was completion of an existing list of specific safety items. The Fire Protection issues were to achieve compliance with Appendix R of 10CFR50 and to resolve open ANI items.

In a 1987 evaluation, INPO questioned the approach being taken in the Industrial Safety area by PE. INPO did not consider that the approach would be effective, as indicated by Finding MA.4-1:

> "Increased management and supervisory involvement in defining and enforcing standards in industrial safety was not considered effective in resolving problems associated with the conduct of maintenance."

The need for a formal organization to address day-to-day safety concerns was determined by PE in response to findings by INPO in the 1987 review. In response to those findings, the Industrial Safety organization has been reorganized.

The Industrial Safety organization is responsible for developing and overseeing a coordinated program that includes safety guidelines and procedures, site inspection to assure safe

work practices, sufficient inventories of safety protection devices and posting of hazardous areas. The Industrial Safety Supervisor, who reports to the Support Manager, is held accountable for the accomplishment of these responsibilities.

The need for a coordinated program was observed because some aspects of the industrial safety program were not clearly defined or effectively implemented. Specific weaknesses noted included:

> Continue general employee training (GET) to address performance deficiencies in the plant in areas of safety practices (1987 INPO Finding TQ.4-1).
>
> Improve and ensure adherence to procedures (Effectiveness Assessment B.1.a).

To accomplish improvements, a number of actions were taken to strengthen the industrial safety program. An Industrial Safety Supervisor was appointed to supervise the development of safety program guidelines and procedures and to lead the safety program. A safety program has been drafted and approved in September 1988. The Industrial Safety Supervisor has assured the accomplishment of site inspections for safe work, safe placement of equipment, inventories of safety protection devices, and posting "hazardous area" signs where appropriate.

Another Industrial Safety concern was a list of safety items identified in a 1986 INPO assessment. The finding (OA.5-1)

stated that policies regarding head and hearing protection were not clearly defined, that high noise areas (greater than 85 db) were not posted and workers were observed without hearing protection, that adequate emergency eye wash and shower facilities were not provided at some locations deemed appropriate, and that some departments frequently were not represented at monthly Safety Committee meetings.

To resolve these items PECo has clearly defined and enforced requirements for head and hearing protection and has implemented posting of high noise areas. PECo has also provided additional emergency eye wash and shower facilities. Further, the Vice-President, PBAPS has directed each department to ensure that they are represented at monthly safety meetings.

The responses in the Industrial Safety area have resulted in a comprehensive plant survey concerning head and hearing protection. The sound survey performed resulted in over 100 signs being posted to warn of the need for hearing protection in high noise areas.

Attendance at safety meetings is now monitored and recorded. The safety program, which is in the early stages of implementation, institutes an increase in participation by management and supervision in station safety meetings. The

program specifies the following monthly safety meetings for high level management, supervisors and management, and employees and supervisors.

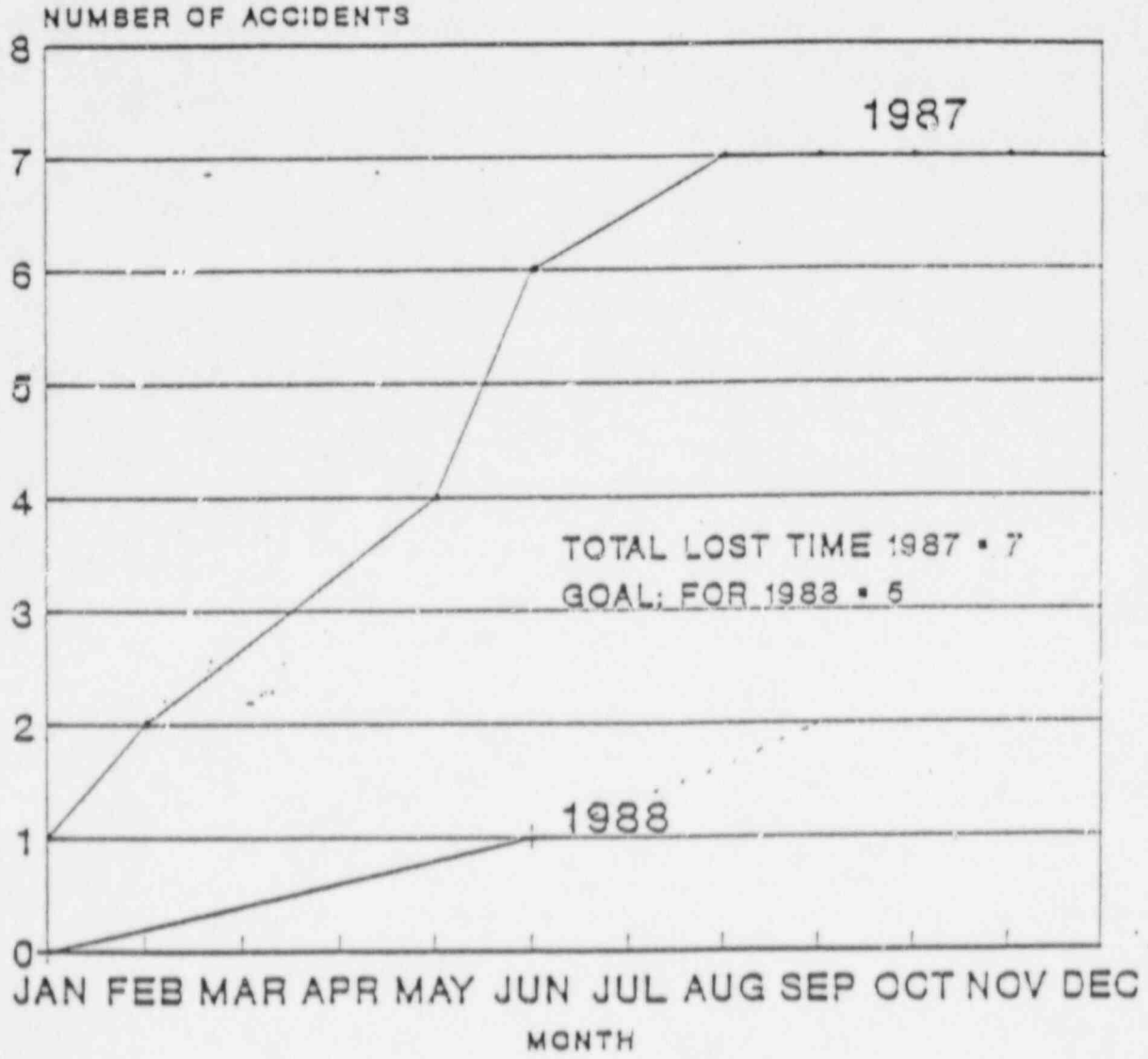
The actions taken have resulted in a substantial improvement in lost time accidents measured either in terms of accidents (Figure III.F-1) or on a unit basis. In terms of accidents per 200,000 man-hours worked, the experience in 1988, shown in Figure III.F-2, is below the PECo goal and below the INPO median.

The corporate statement of values places safety, which includes personnel safety, as a priority of the company. The company is committed to safe operations at PBAPS. Although safety of the public is top priority, the company values its employees and places a high priority on personnel safety. This is evidenced by the issuance of the Safe Work Rules booklet to all personnel. This concern extends to vendor employees as spelled out by the Vendor Safety Guideline Manual.

In the Fire Protection functional area the need for a formal organization was a self-identified issue. The issue of compliance with Appendix R of 10CFR50, however, resulted from the following findings of the NRC during 1987:

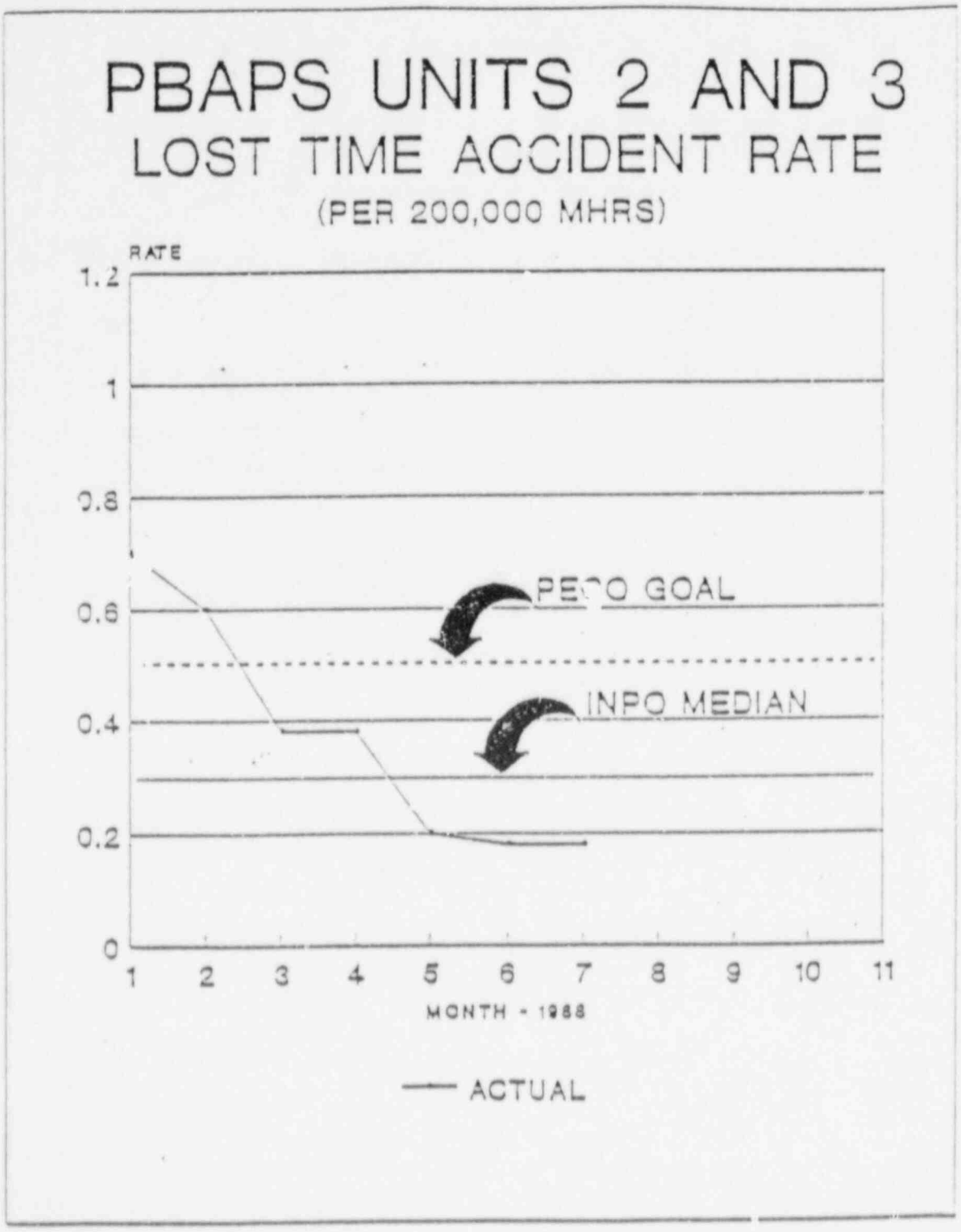
FIGURE III.F-1

LOST TIME ACCIDENTS



SOURCE: Data compiled from OSHA 200 Logs, 1987 and 1988.

FIGURE III.F-2



SOURCE: Data compiled from OSHA 200 Log, Jan. - July 1988

(1) An NRC Inspection Report dated May 6, 1987 stated: "Based on this review, the NRC has determined that you do not currently satisfy all of the applicable requirements of 10CFR50, Appendix R.' The violation identified in this report related to a hardware item (failure to maintain at least one safe shutdown train free from fire damage) identified by PE.

(2) An NRC Notice of Violation and Proposed Imposition of Civil Penalty, July 29, 1987 stated: "The violation described in the enclosed Notice of Violation and Proposed Imposition of Civil Penalty (Notice) involves numerous examples of the failure to satisfy the fire protection requirements set forth in 10CFR50, Appendix R." This notice of violation relates to the violation identified by PE that was noted in the inspection report discussed previously.

(3) NRC Inspection Report 50-277/87-30 and 50-278/87-30, December 4, 1987 which discussed noncompliance with fire brigade training requirements.

The third issue was a group of open items resulting from inspections by American Nuclear Insurers (ANI). The outstanding ANI open items were summarized in an ANI Insurance Report dated January 5-7, 1988 and a cover letter dated January 21, 1988, from ANI forwarding the January 5-7, 1988 Inspection Report.

PECo responded to these issues by defining and staffing a Fire Protection organization, by making hardware and software modifications to rectify Appendix R violations, and prepared a three year action plan to close out ANI issues. In addition, PECo has initiated a self-assessment to identify additional areas where program improvements may be made.

A site fire protection organization was proposed to the Executive Vice President, Nuclear, in August 1988. Funding and staffing of the PBAPS fire protection organization was approved by the Executive Vice-President at that meeting.

The implementation of the revised organization heightens the management visibility of this functional area and shortens the chain of command as shown in Figure III.F-3. The revised organization shown in greater detail in Figure III.F-4, provides a sharper focus on the functions which must be accomplished and the accountability for those functions.

Appendix R non-compliance involved hardware modifications and fire brigade training deficiencies. Modifications are in progress to be completed prior to restart. Fire brigade training has been brought into compliance with Appendix R requirements as of August, 1988. To continue this compliance a full-time fire protection training position has been approved and staffed. Further, enhanced lesson plans have been

FIGURE III.F-3

FIRE PROTECTION

PEACH BOTTOM ATOMIC POWER STATION
CHAIN OF COMMAND

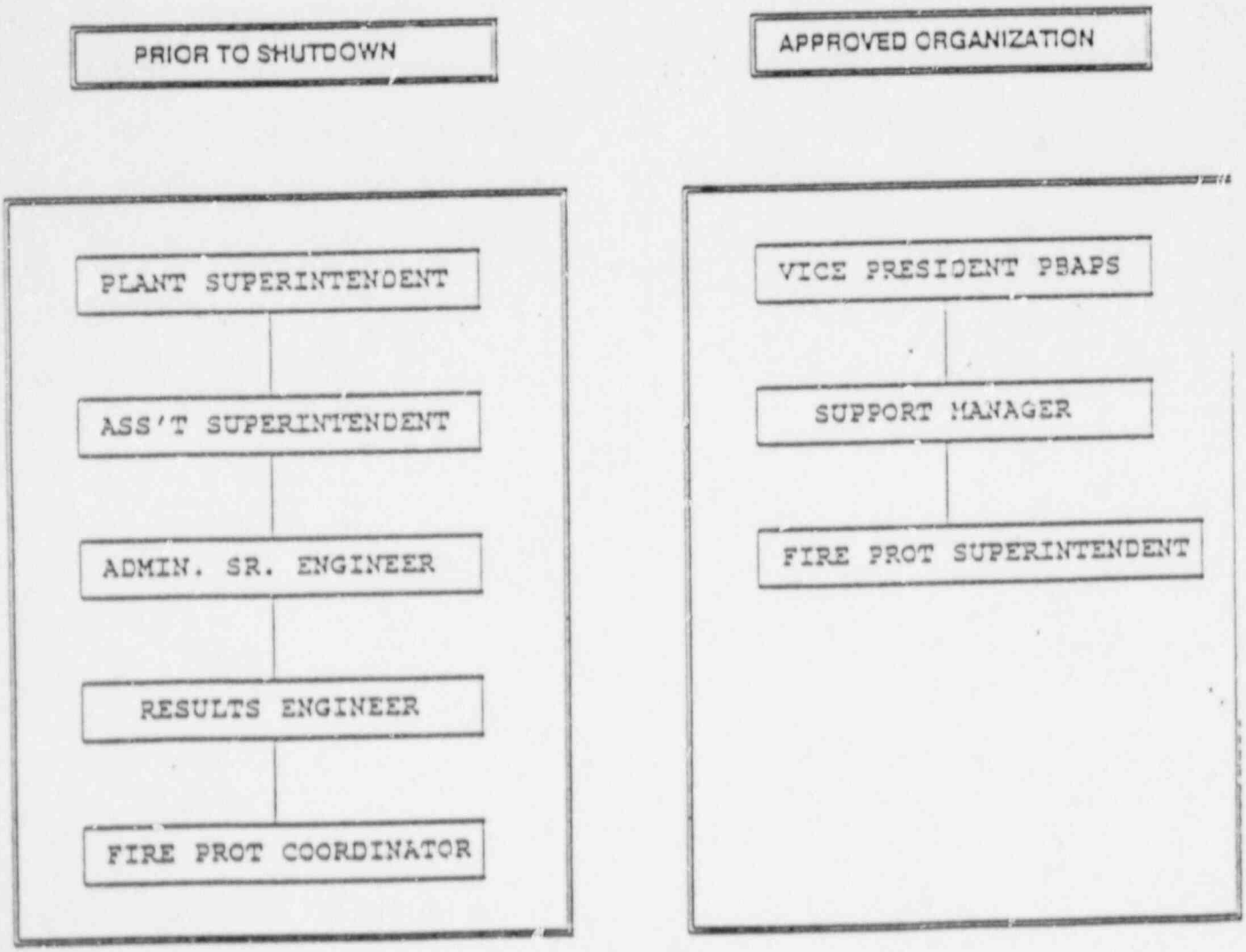
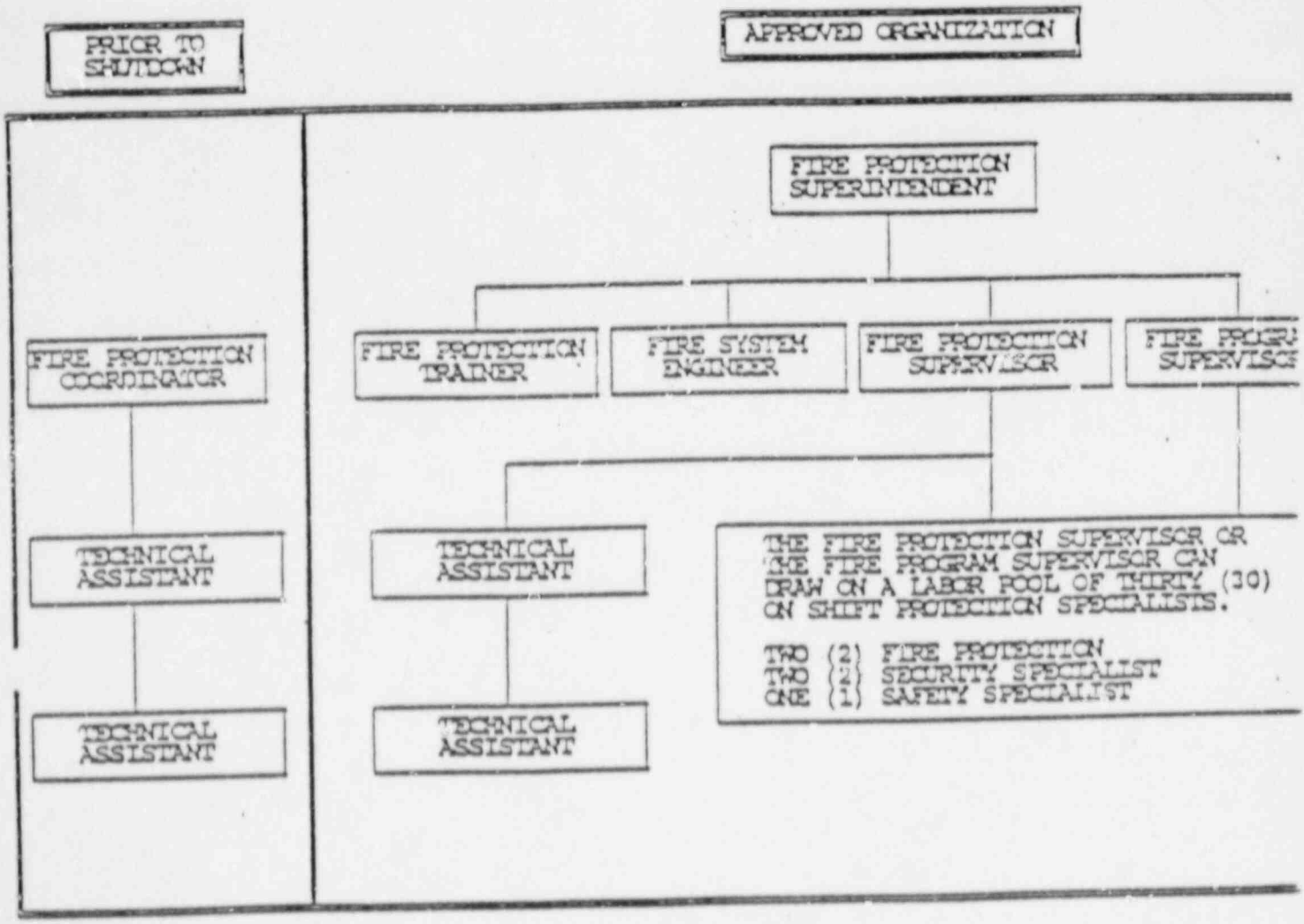


FIGURE III.F-4

FIRE PROTECTION
PEACH BOTTOM ATOMIC POWER STATION



prepared which embody the requirements of various regulatory agencies by incorporation of NRC 10CFR50, Appendix R; Branch Technical Position 9.5-1, Appendix A; OSHA 29 CFR 1910.150 subpart L; and NFPA 1001 Standard for Fire Fighter Professional Qualification."

In some instances in the past, qualifications have inadvertently been permitted to lapse. To assure that qualifications do not lapse in the future, a computerized system for tracking training and qualification status has been developed and will be used to identify personnel requiring continuing or requalification training.

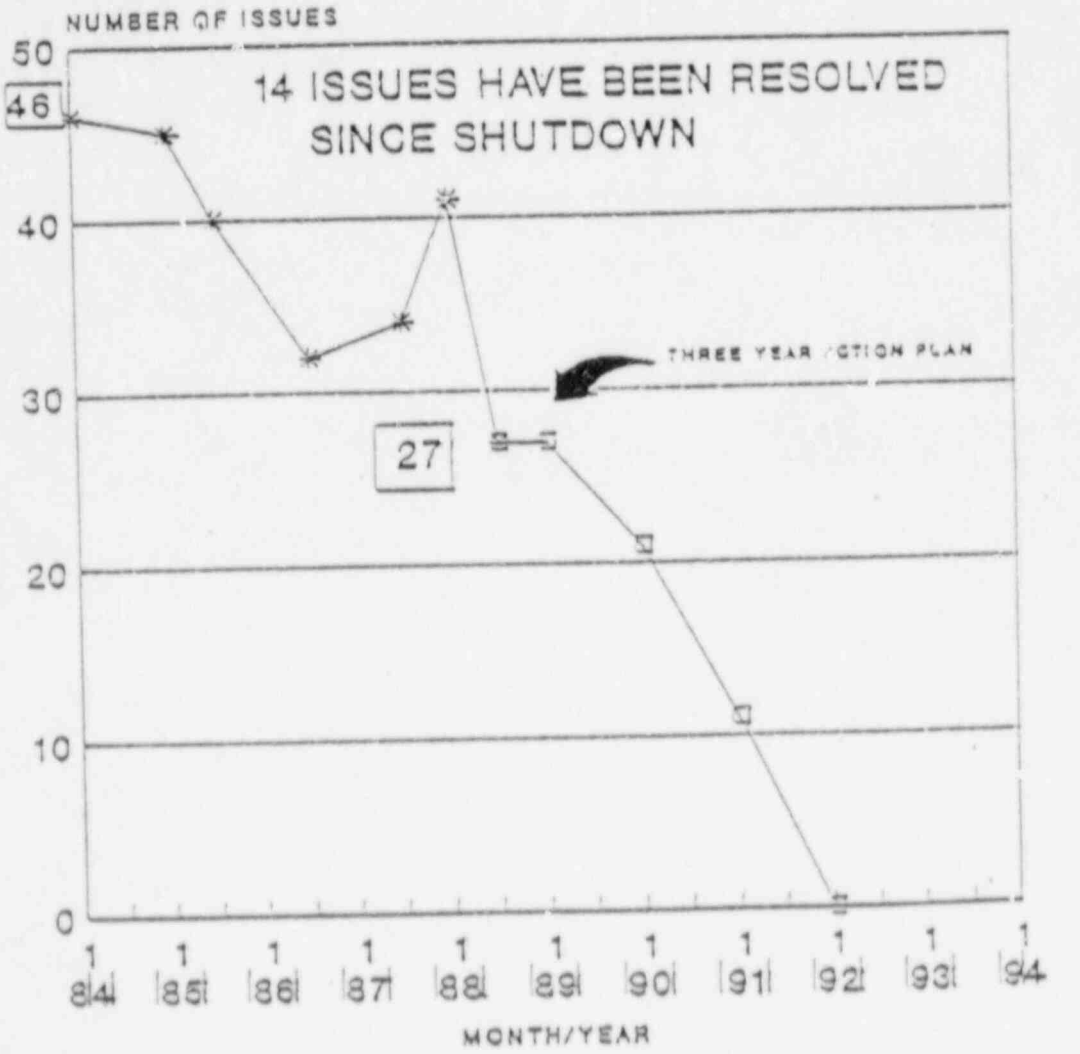
The issue involving ANI open items is being resolved with a three-year plan of action that ANI has agreed is appropriate. The work-off of open items is tracked as shown in Figure III.F-5. Since shutdown 14 ANI issues have been resolved and 27 remain to be worked-off over the three year action plan period. None of the remaining ANI issues are restart items.

A self-assessment of the fire protection area resulted in 310 findings. Of these, 163 were identified as enhancements to the program that should be completed before restart. Since February 1988, all but nine of these 163 items have been closed out (See Figure III.F-6) and all except those requiring nuclear steam are scheduled to be completed by the end of September 1988.

FIGURE III.F-5

AMERICAN NUCLEAR INSURER

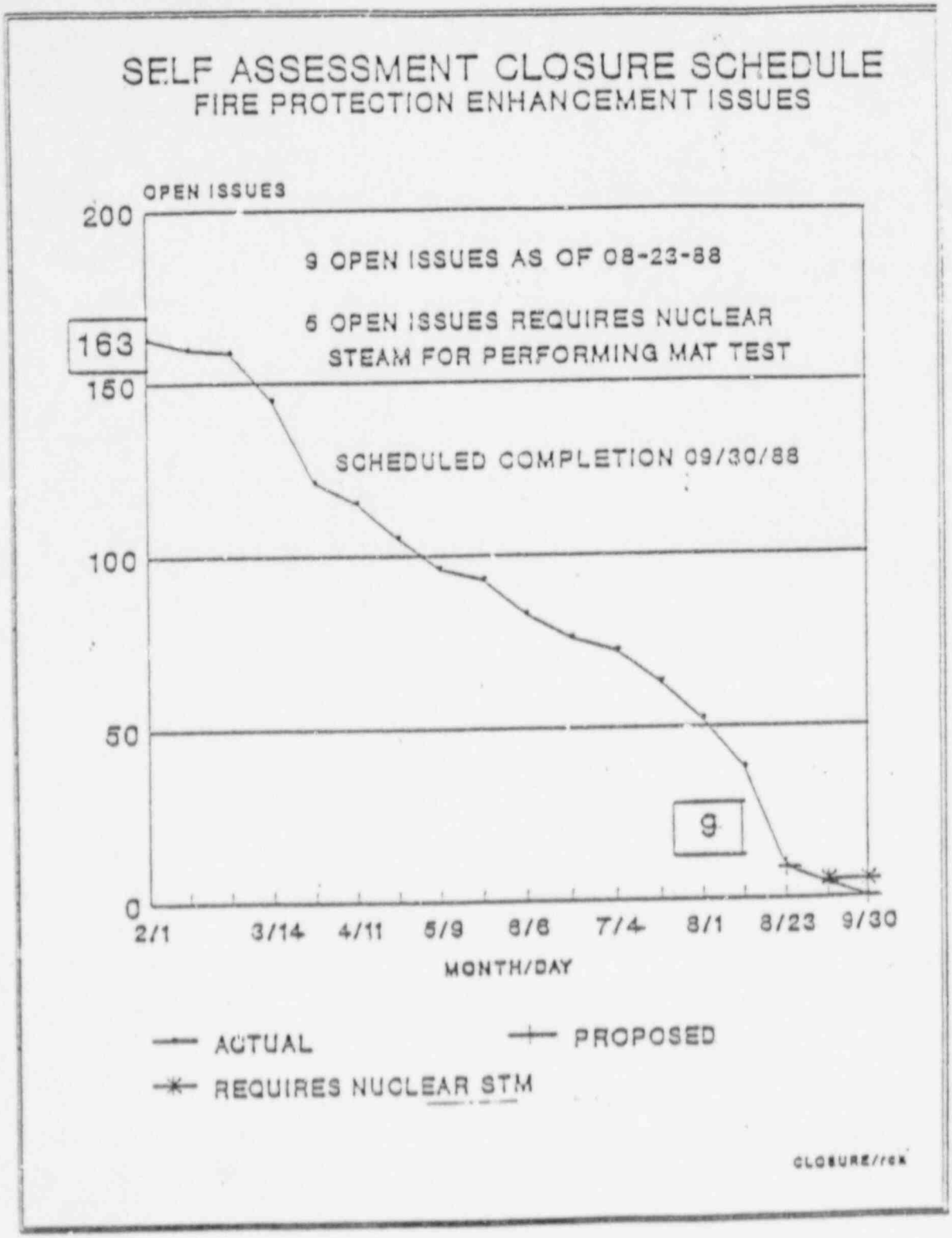
PEACH BOTTOM ATOMIC POWER STATION



IMPROVED TREND WILL CONTINUE, DUE TO 3 YEAR ACTION PLAN AND A NEW FIRE PROTECTION ORGANIZATION

RNE/rck

FIGURE III.F-6



To summarize, weaknesses in the fire protection organization have been corrected and training and qualification of fire brigade members meets the requirements of 10CFR50, Appendix R. The fire training program has been upgraded by rewriting Fire Brigade and Firewatch lesson plans. Hardware modifications required to comply with modifications required to comply with Appendix R requirements and correct items from the NRC March 17-21, 1986 inspection are in the final stages of completion. Hardware for Unit 2 has been installed. Several I&C tests still remain before four modification acceptance tests (MATs) can be completed. These tests are scheduled for completion by October 10, 1988. One modification for Unit 2 requires Nuclear Steam for closure. All open issues on the NRC March 17-21, 1986 inspection Appendix-R modifications are scheduled for completion by October 31, 1988. ANI action items are in progress in a satisfactory fashion and self-identified corrective actions have been substantially completed.

Panel Consideration and Conclusion

It was noted that the site Industrial Safety program was still in the process of being formulated and improved. Continued management attention to this area is required.

The Panel inquired about the method for verification of compliance with Appendix R and the approach for assuring continued compliance, particularly for transient combustibles. The Panel further inquired about the status of fire protection alarm system drawings status and requested a brief follow-up presentation on both of these subjects. It was reported that transient combustible controls remained to be improved as information previously provided by Engineering could not be located. Subsequent to the follow-up presentation the Panel cautioned the Support Manager, noting that all elements of the organization must remain vigilant regarding safety and that the safety organizations should continue to stress that responsibility. Upon consideration the Panel concluded that no issues related to restart remained unresolved.

G. DOCUMENT CONTROL

Issues related to document control were identified by INPO in their 1987 report (Finding OP.5-1).

- Distribution control of drawings and vendor manuals
- Systematic processing and distribution of procedures

An analysis of the findings identified by INPO led to the conclusion that two substantive organizational changes were necessary to assure that correct documents were readily available for plant work. One was the formation of a site controlled Document Control Center (DCC) and the other was the creation of a centralized Procedure Control Group (PCG).

To assure positive distribution control of drawings and vendor manuals, PE first planned and then implemented a program designed to provide the necessary organization, facilities, and personnel. Initially, this work included the writing of Administrative Procedures A-6, "Procedure for Control of Drawings and Drawing Logs", and A-92, "Control of Vendor Manuals, the formation of the DCC, staffing the DCC, and training the DCC personnel."

Procedures A-6 and A-92 ensure positive control of drawings and vendor manuals by trained Document Control

personnel. The process has been in place since the A-92 procedure was approved in July, 1988. The fully equipped DCC was created by an expansion of the previous station library and was completed in May 1988.

The Master Station Library, containing drawings and vendor manuals, is about 80% complete. Category I drawings are about 90% complete; Category II about 20%. Completed Category I drawings include all required updates and changes attached physically to each changed drawing. Vendor manuals include required updates and changes.

As the DCC became functional, the activities focused on assuring the availability of controlled drawings and vendor manuals. More recently, during June, 1988, all drawing change documents backlogged for processing, or in possession of plant personnel, were collected and processed. Seven satellite drawing libraries were installed at appropriate locations around the plant. The satellite libraries are about 90% complete and are to be completed during September 1988.

To assure positive control, trained Document Control personnel make all distribution of drawings and vendor manuals with Administrative Procedures A-6 and A-92 and desk notes controlling the day-to-day activities of the Document Control personnel.

Systematic processing and distribution of procedures was accomplished with a planned program of administrative procedures, formation of the PCG, new facilities and equipment, and training of Procedure Control personnel. The PCG was formed in November 1987. Its function is to track procedures from the approval by the Plant Operations Review Committee (PORC) through distribution and to positively track all procedure changes. Issuance of new procedures includes physically inserting and removing pages from procedure documents and providing weekly status updates to management.

Acquisition of equipment and facilities to provide a fully equipped PCG was completed in December 1987. PCG personnel have been trained by instruction by supervisors and lead personnel, by required reading, and by visits to Limerick and Hope Creek centers.

Since the PCG became operational, Document Control personnel have actively sought out uncontrolled copies of documents and implemented controls in accordance with Administrative Procedure A-2. These actions ensure timely (See Figure III.G-1) and accurate distribution of controlled copies of PORC-approved procedures. Unauthorized copies are systematically removed and regular audits ensure accuracy, as shown in Figure III.G-2. A tracking system is also in place that permits the PCG to track and control procedures directly from PORC to

WEEKLY PROCEDURE EFFECTIVENESS

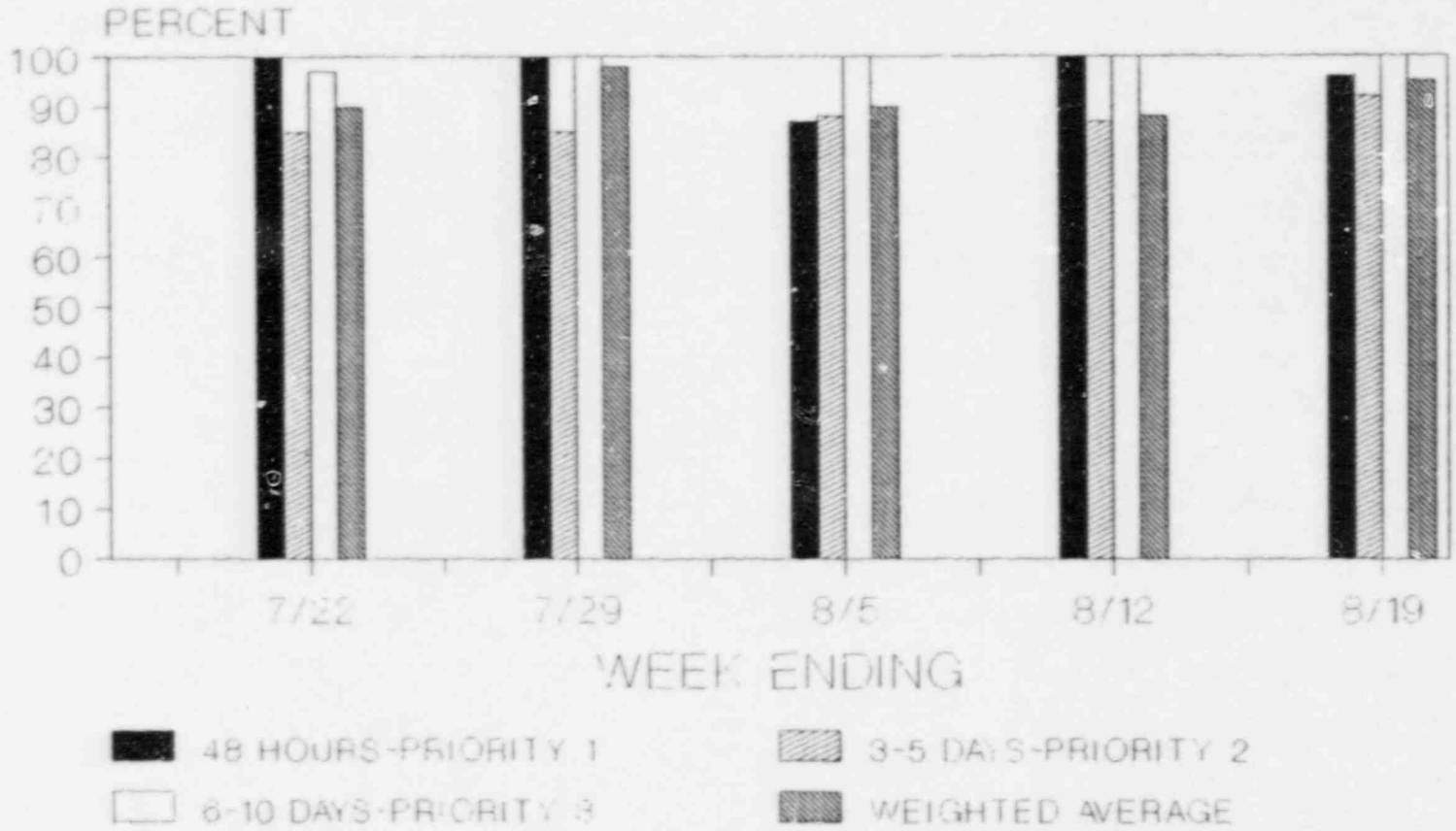
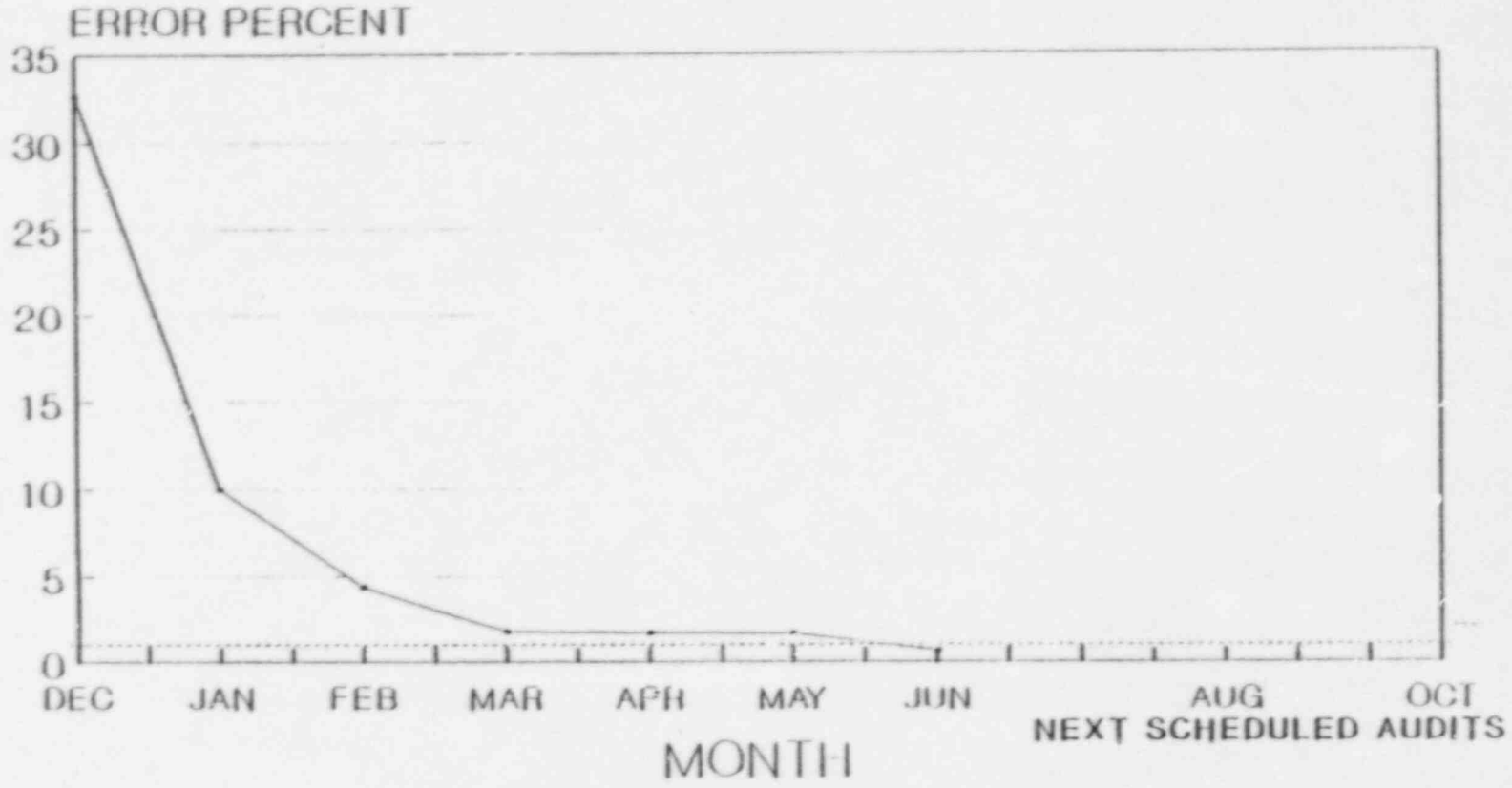


FIGURE III.G-1

III.G-4

BC6

CONTROLLED PROCEDURE AUDIT RESULTS



III.G-5

FIGURE III.G-2

BC7

distribution, and to provide weekly performance reporting to management. A periodic review of procedure content is provided by Administrative Procedure A-36, "Periodic Review of Procedures."

Panel Consideration and Conclusion

The Panel inquired as to the mechanics of the document control program and the vendor manual update process and the status of vendor manuals in the plant. After deliberation, the Panel found that the programs and accomplishments outlined in this area resolved the issues related to accuracy and availability of documents raised by INPO, that the accomplishments were supported by internal PCG findings as well as an NQA audit. No issues affecting restart remain to be resolved in this area.

H. DESIGN ENGINEERING

The Nuclear Engineering Department (NED) presented the status of its efforts to specifically support the restart of PBAPS and the continuing needs of the site project organization. The presentation was given by the Nuclear Engineering Peach Bottom Project Manager. The issues addressed were the question of timeliness in support of plant requirements, including modifications, studies, and general engineering support. These issues had been identified by indicators in INPO evaluations that engineering support to the plant needed to be strengthened. Most of the self-improvement tasks described to the Panel had been developed as a result of critical self-evaluation. Root causes for the issue appeared to be in three distinct areas: control systems governing the work, coordination of scheduling, and the level of NED resources.

The presentation to the Panel covered each of these issues. In the area of control systems, it was a matter of adequacy. Systems had not been in place to assure that commitments were identified and met, priority questions resolved, and that completion of work was tracked as needed. In addition, there was an insufficient engineering focal point with the necessary authority and responsibility. There was also not enough effort made to coordinate schedules and obtain station requirements and concurrence for engineering matters; therefore,

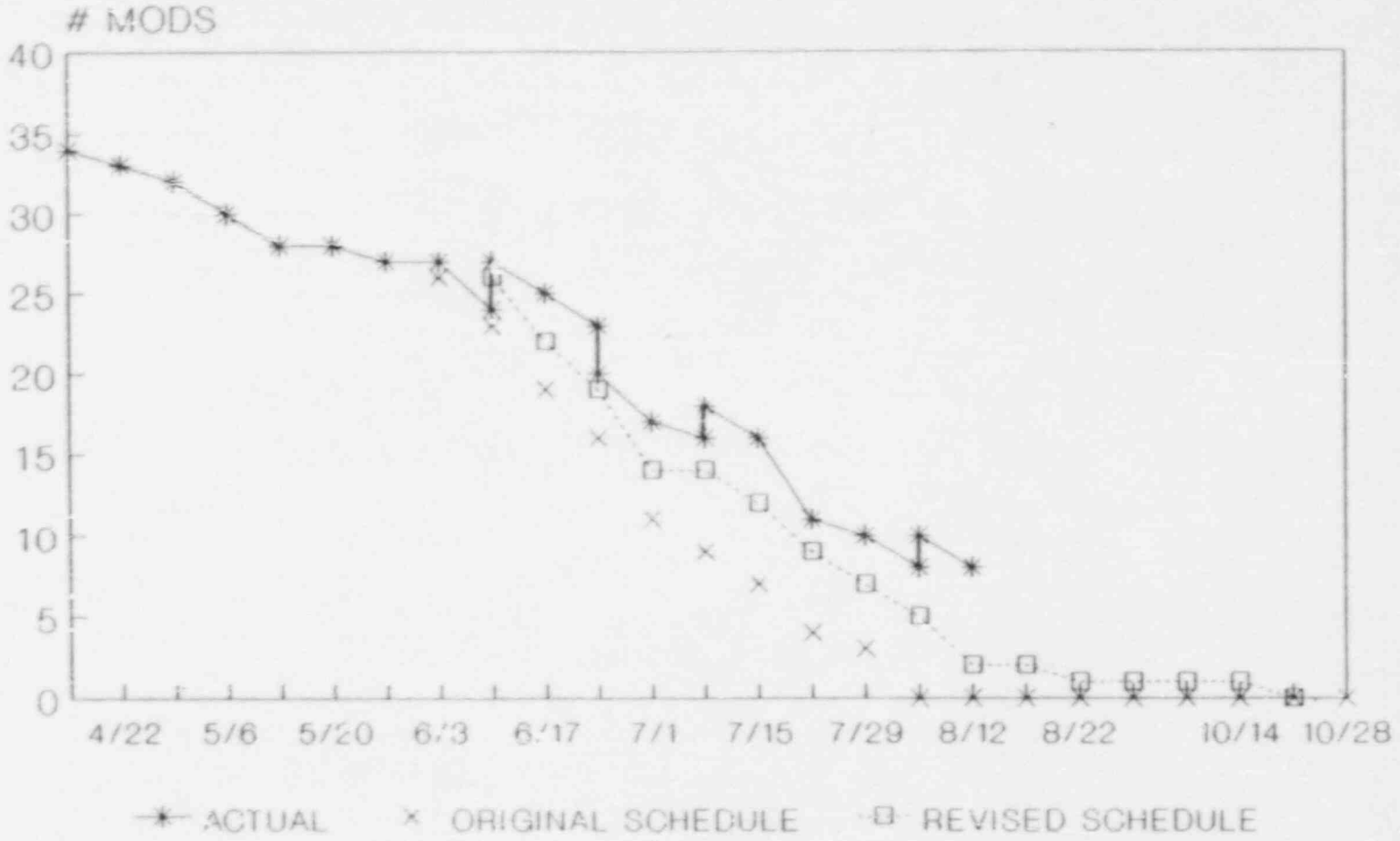
the planning activity was not as effective as desired. Finally, there was a shortage of Engineering personnel to cover all the tasks assigned to Engineering.

The presentation described the corrective actions undertaken to address these matters. The Engineering Division divested itself of non-nuclear work and reorganized as the NED. Within NED, a dedicated Project Manager and team were assigned to PBAPS. Schedules were developed consistent with construction and station requirements and regular interface meetings were established to facilitate cooperation and communication among the various organizations. NED resources were added in the main office and at the site.

The results of these efforts are evidenced in the following:

- Completion of Engineering for Unit 2 restart modifications is complete.
- Completion of Engineering for Unit 3 restart modifications projected for October 15, 1988. (Figure III.H-1)
- The implementation of programs developed for managing Non-Conformance Reports (NCRs), Engineering Review Request Forms (ERRFs) and Site Questions for Engineering (SQEs). (Figures III.H-2, III.H-3, III.H-4)
- Completion of material evaluation programs. (Figure III.H-5 and III.H-6)
- The NED Peach Bottom Project Manager concludes that restart schedule impact issues were essentially resolved. (Figure III.H-7)

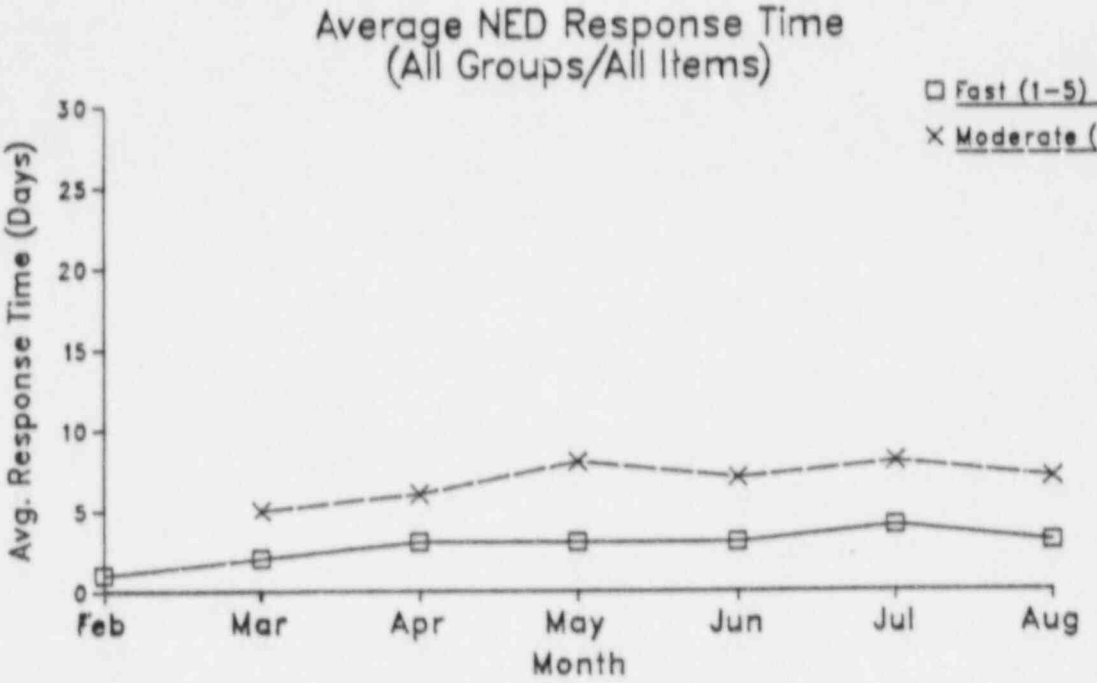
PEACH BOTTOM UNIT 3
RESTART MODS WITH OUTSTANDING ENG'G



NED6

Figure III.H-1

Figure III.H-2



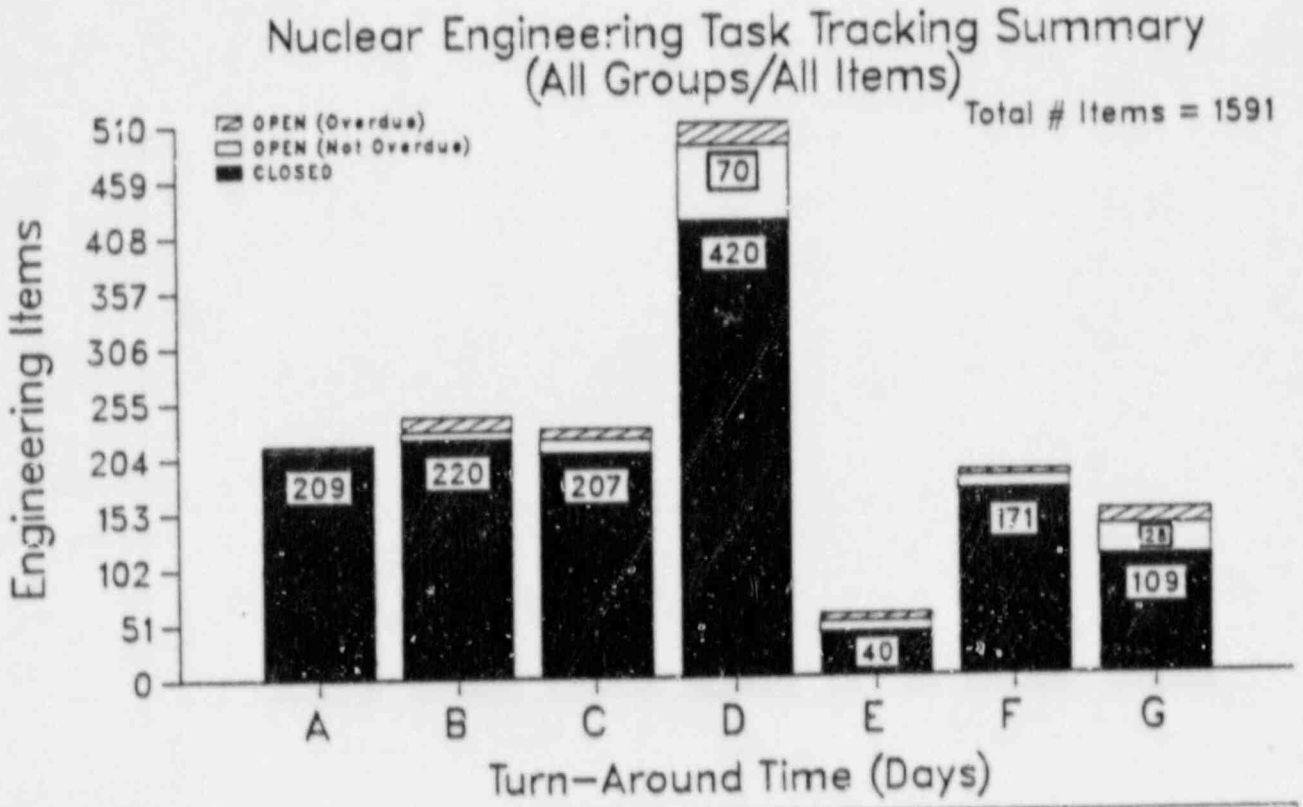
Total Number of Items Closed

Fast	5	46	79	89	139	159	112
Moderate	0	35	51	58	95	222	163
Slow	0	0	18	28	27	7	27
Total	5	81	148	175	261	388	302

Feb. 16, 1988 to Aug. 23, 1988

Printed: Aug. 23, 1988 0906

Figure III.H-3



Requested Turn-Around	01	03	05	10	15	20	21+
Average Turn-Around	1.5	3.4	5.0	7.1	9.1	6.5	26.8

Printed: Aug. 23, 1988 0918

Report for Period:
Feb. 16, 1988 to Aug. 23, 1988

Figure III.H-4

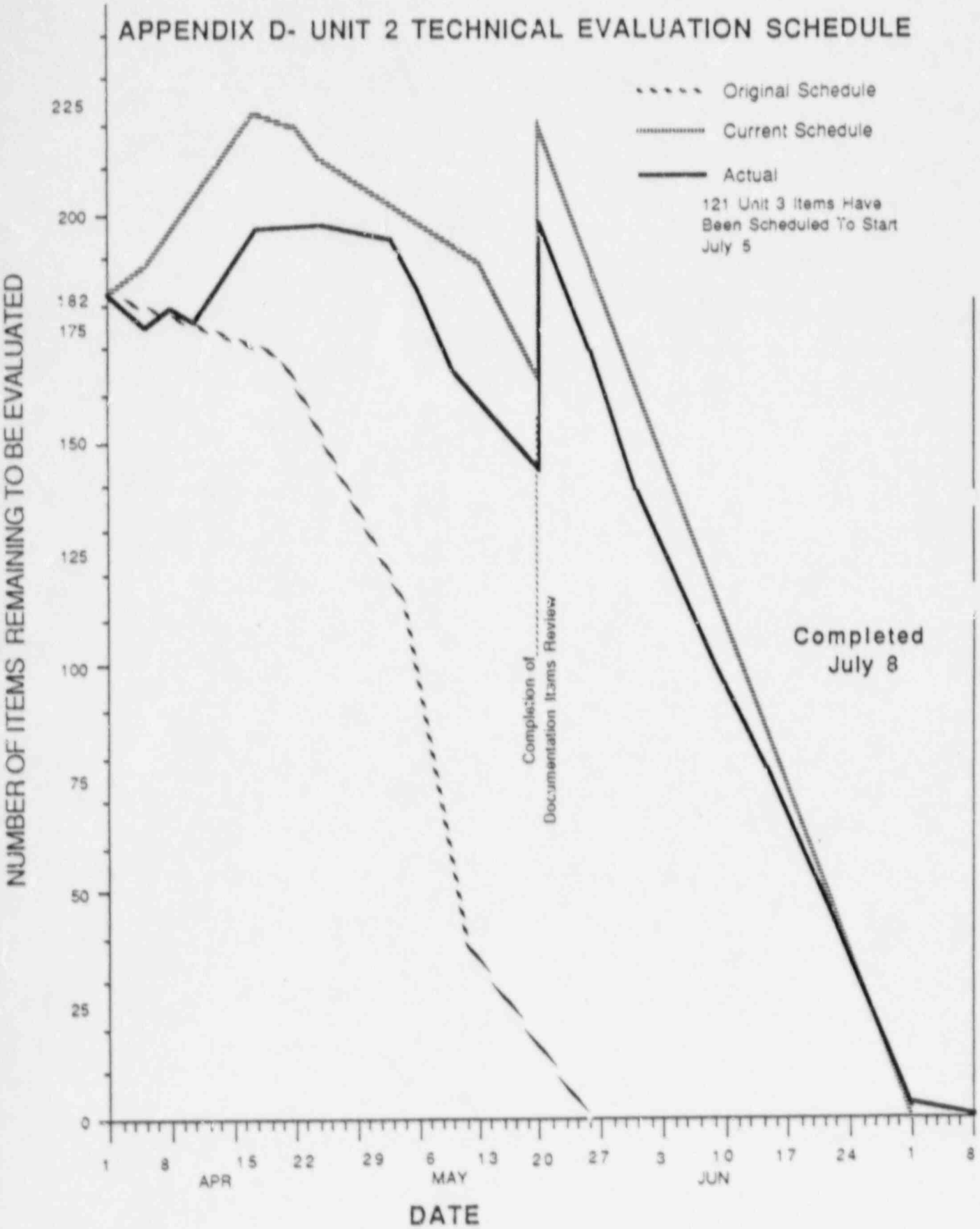
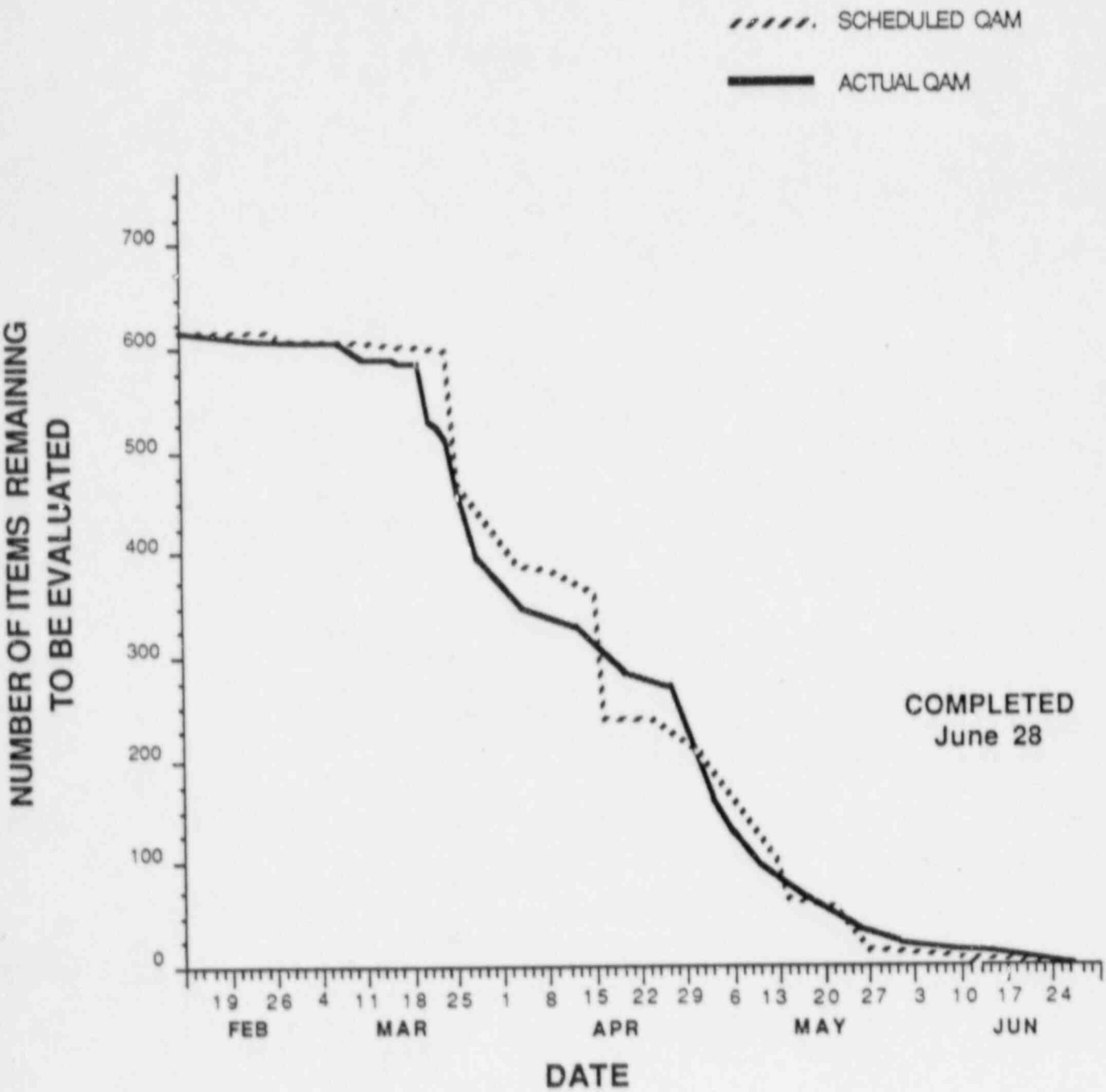


Figure III.H-5

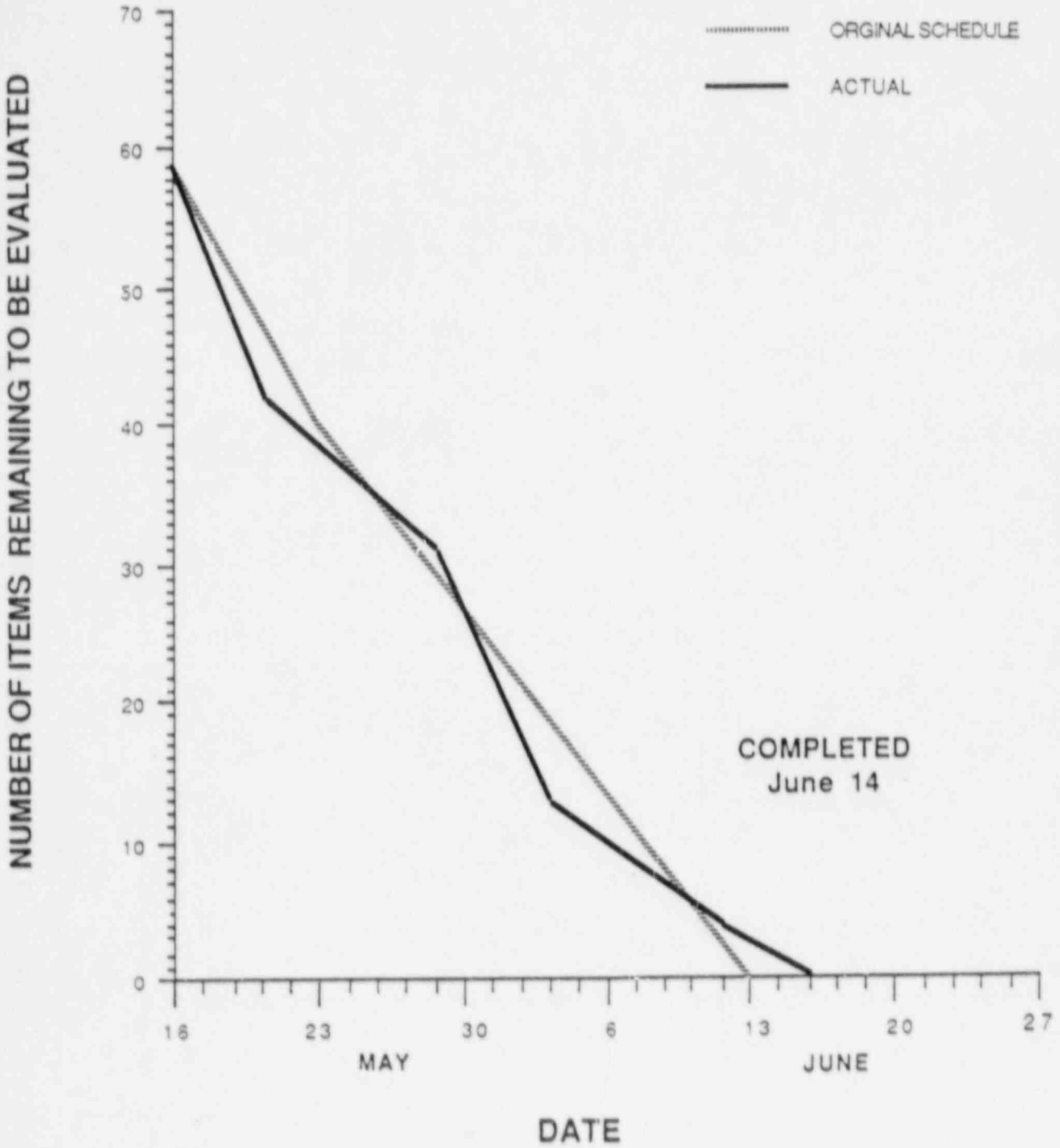
NON CONFORMING QAM TECHNICAL EVALUATIONS



QAM = Quality Assured Material; Those Q items for which the Vendor will not accept 10CFR21 (This includes Commerical Grade Items)

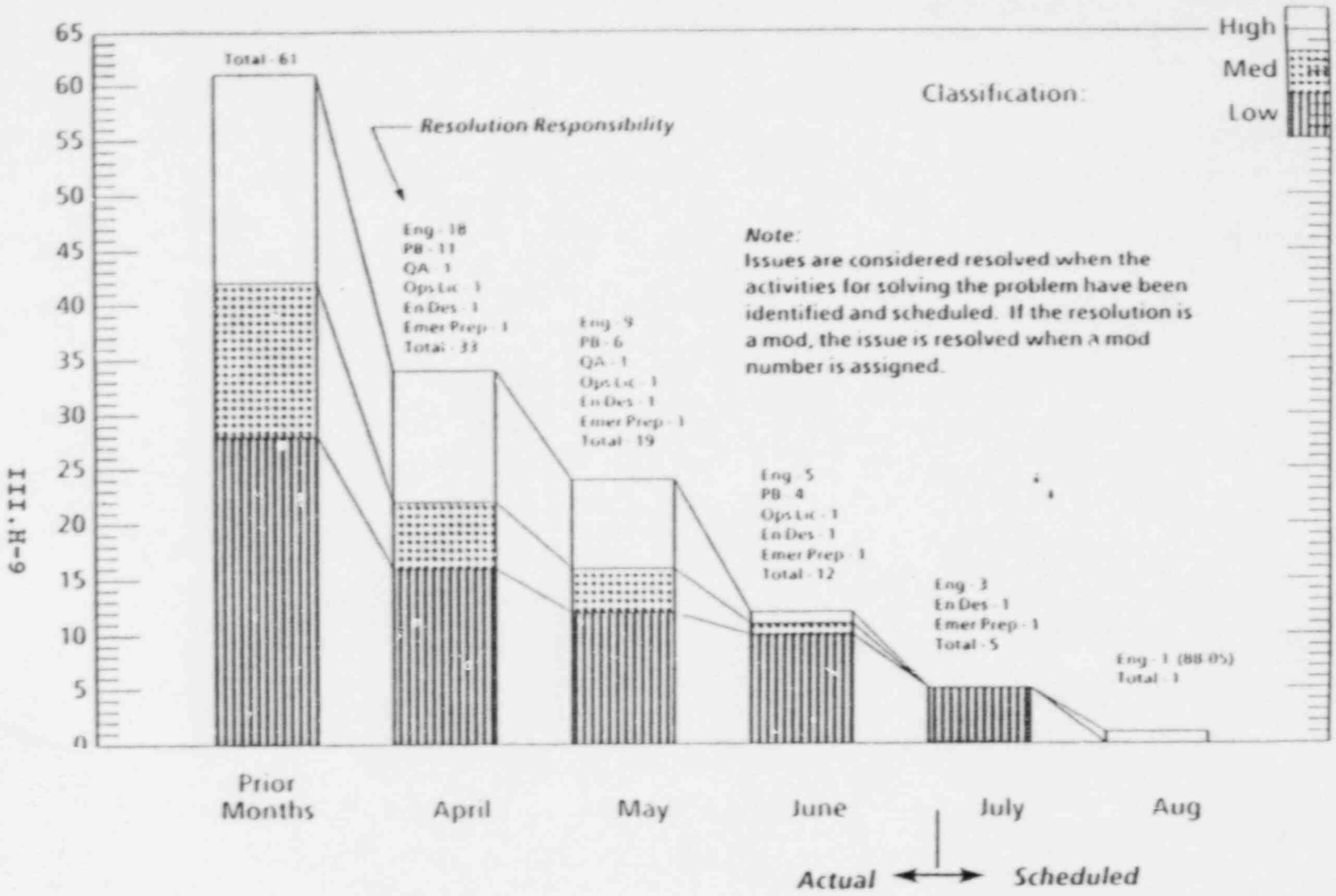
NON-CONFORMING MATERIAL CORRECTIVE ACTION PROGRAM

PRE-1987 QAI TECHNICAL EVALUATION SAMPLE PLAN SCHEDULE



QAI = Quality Assured Item; Nuclear Safety Related Basic Component

UNRESOLVED RESTART SCHEDULE IMPACT ISSUES - SCHEDULE BY SEVERITY CLASSIFICATION



Data Date: 7129188

III.H-9

Figure III.H-7

The presentation made it evident that a new spirit of cooperation has been established between the "Engineering" and "Station" organizations. Efficient reporting systems are in place to provide management with the tools required to identify issues and take prompt corrective action as necessary. A corporate commitment has been made to support continuation of the programs. The presentation concluded that programs within NED were monitored to assess and enhance as required and that NED was positioned to fully support Peach Bottom restart and continued operation.

Panel Consideration and Conclusion

The Panel also received information on the status of Engineering's work load in support of restart and NED's average response time in supporting PBAPS since early 1988. The Panel raised questions concerning NED's role in support of the Power Ascension Program, completion of modification work required prior to restart, the continuity of support through changes as transition is made to the long term organizational structure, the definition of closure of modifications, and Engineering support of training requirements on modifications to existing systems. The Panel was satisfied with the information presented on these subjects and the presenters assessment of NED's ability to support restart of the units. Those items identified as schedule impact issues were found to have been managed and resolved. The

NED organization, processes, and resources are in place and functioning effectively. There are also long term efforts underway to maximize the potential of the recently implemented programs and to ensure weaknesses of the past are not repeated.

The Panel was satisfied that the efforts of NED evidenced strong support of Peach Bottom activities, that measures to assess the level of that support were available and showed positive trends. The Panel agreed with the conclusion that NED is positioned to fully support Peach Bottom restart and continued operation. With the Corporate commitment and transition plans in place, there is assurance that there will be continued progress and improvements in Design Engineering.

I. MODIFICATIONS

The Superintendent - Modifications presented to the Panel the status of the modification process at Peach Bottom as well as the results of corrective actions for two issues identified during the shutdown period. The two issues discussed with the Panel were the modification backlog and the adequacy of onsite design controls applied to modifications. The Panel also requested additional information on the status of engineering reviews and modifications to masonry walls.

The modification backlog issue originated from NRC findings that important plant improvements, notably Appendix R requirements, had not been completed in timely manner. The station developed initiatives to substantially reduce the backlog of important plant modifications that had not been completed. The work list was defined and priorities were established. The modification list was reviewed by Nuclear Engineering, Operations, Technical Staff, and Modification Coordination engineers to determine which modifications were required prior to restart.

To improve modification coordination and workoff, the Modifications Section was reorganized. On January 1, 1988, all on-site modification functions including installation, field engineering, materials, outage planning, and modification

coordination were reorganized under the on-site Project Manager. To enhance planning and accountability, an installation planning group was also formed. It conducts daily progress reviews and follows up on action items.

The Integrated Management Process (IMP) was implemented. The IMP is used to screen and rank modifications in priority order. This is accomplished by systematic reviews by the Plant Manager, Operations, Maintenance, Technical Staff, Modification Engineers, and Nuclear Engineering. The program guidelines and screening model were developed in 1987. The process was introduced to PBAPS Site Management in early 1988. On August 1, 1988, new modification requests began to be processed
through the IMP. The process is being phased-in and is planned for full implementation for the next refueling cycle.

The backlog of important plant improvement modifications has been and continues to be worked-off. Figures III.I-1 and III.I-2, "Open Restart Modifications," and "Restart Modifications," show status and projections for completion of the 166 restart modifications. Redlining of drawings follows installation by approximately two days. Compliance with regulatory requirements and regulatory commitments for Unit 2 restart will have been satisfied prior to restart. Plant improvements beyond compliance have been accomplished in the

areas of reliability, personnel safety, ALARA, and security.

UNIT 2 AND COMMON
OPEN RESTART MODIFICATIONS
(TOTAL - 166)

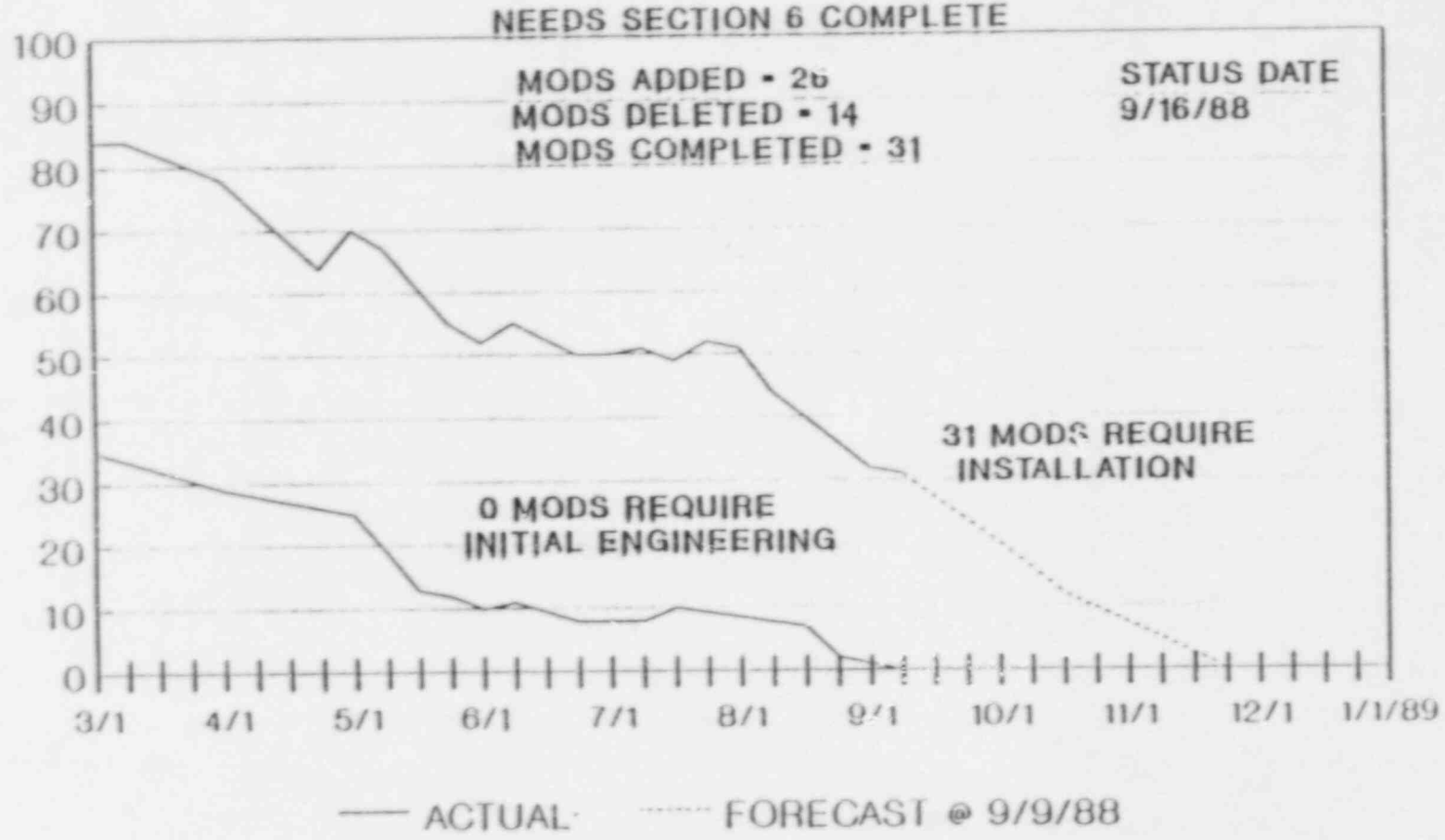
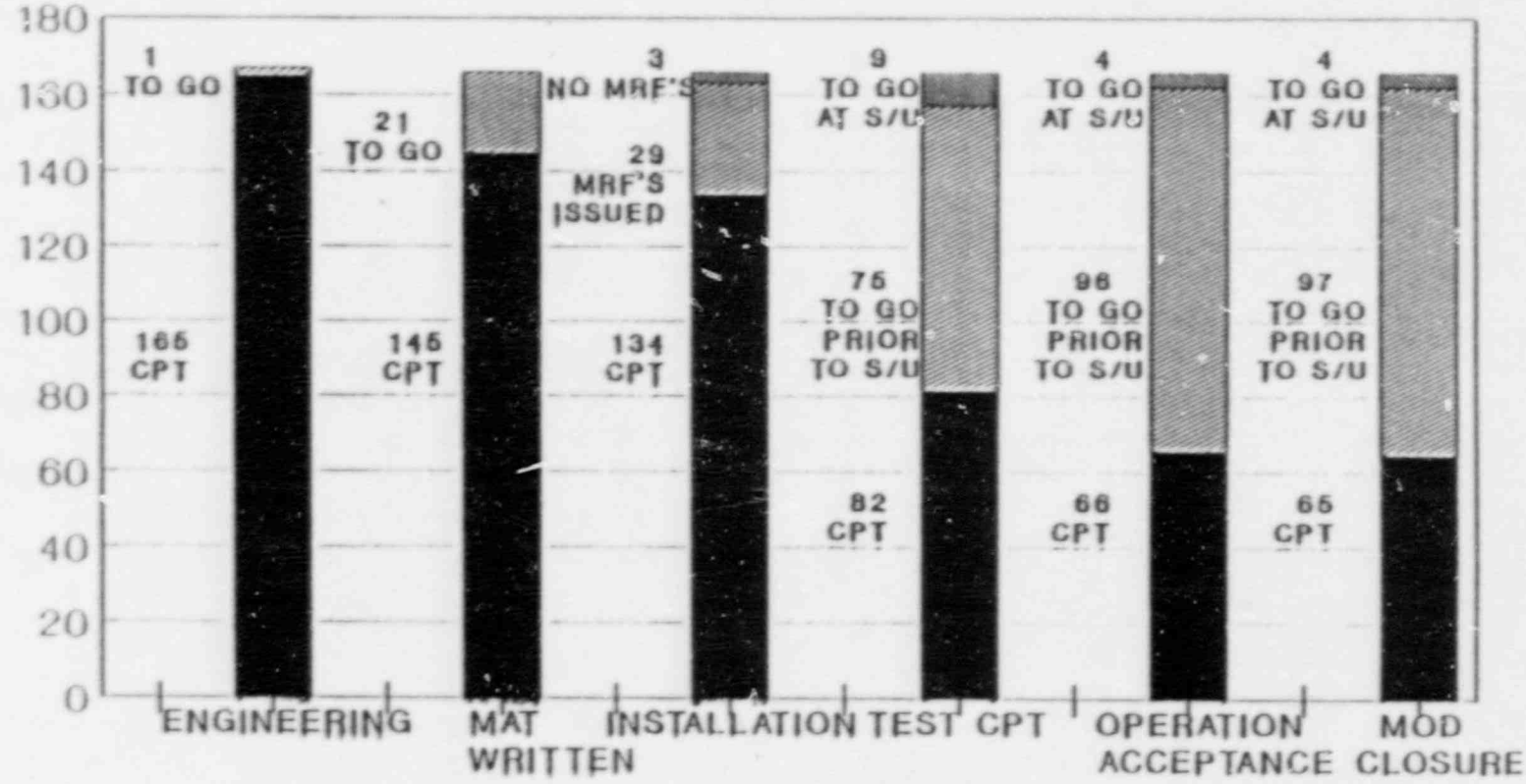


FIGURE III.I-1

III.I-4

UNIT 2 AND COMMON
RESTART MODIFICATION
(TOTAL 166)



STATUS AS OF 9/9/88

FIGURE III.I-2

Open items are being assessed and will have no adverse effects on plant safety or operability. New work is being evaluated and assigned appropriate priority.

Procedures governing the modification process are in place and will help assure avoidance of the sort of backlog problems which occurred in the past. Improvements accomplished in other station areas such as Health Physics and Document Control will support the modification process. The IMP will provide a systematic method for setting priorities and planning to assure that a backlog of important plant improvement modifications does not develop. Improvements in commitment tracking will assure that commitments receive attention and are factored into modification work lists. Management has demonstrated a commitment to performance improvement as evidenced by the reorganization and Performance Improvement Project (PIP).

The issue of adequacy of on-site design concerned whether design controls applied to modifications designed on-site were commensurate with those applied to modifications designed in the corporate office. Temporary modifications lacked proper control and were not closed out in a timely manner. The modification process was sometimes bypassed by the maintenance process which utilized "money tickets" to accomplish minor work items. This issue originated from INPO concerns relative to

temporary modifications and from PE's configuration management concerns relative to design control.

The station undertook an initiative to assure that modifications designed on-site do not compromise the safety of the plant, and that minor changes and temporary changes are processed with proper controls. The on-site Modifications Section stopped work on design of safety related site modifications. No safety-related design work has been performed on-site as of June 1, 1988.

The effects of completed safety-related site modifications were also assessed. An independent review of modifications designed on-site was conducted by Nuclear Engineering and completed on July 1, 1988. The results of that assessment are there were no adverse impacts from those modifications.

In addition, capabilities of the on-site Design Group were improved. The on-site Design Group was reorganized on March 7, 1988 into a discipline-based organization consisting of Mechanical Engineering, Mechanical Design, Electrical Engineering, and Electrical Design. That reorganization is complete. Staffing was increased from six engineers to a present level of twenty-seven, including eight registered professional engineers. The average experience level increased from four to

fourteen years. Three electrical engineers were added to enhance capabilities in the Electrical/I&C area.

Nuclear Engineering involvement was also increased. Senior Designers on assignment from Nuclear Engineering are on-site and are supervising the on-site Design/Drafting Groups. The Engineering Work Request system is in place and is being utilized to obtain Nuclear Engineering assistance as necessary. Further improvements in this area are planned as part of the ongoing reorganization for performance improvement.

To tighten control of temporary plant alterations (TPAs), Procedure A-42 was revised and issued for use in August, 1988. This procedure requires that TPAs be reviewed by the Plant Operations Review Committee, receive a safety evaluation if necessary, and be reviewed at regular intervals for close-out.

Training on the improved modification process is ongoing. All-hands meetings were conducted with the Maintenance engineers and with the System engineers to provide training on the modification process. Modification engineers have been working one-on-one with Maintenance engineers and system engineers using the new modification initiation forms. Maintenance has tightened control over the use of money tickets.

As a result of these initiatives, no safety-related design is being performed on-site, and there were no adverse plant impacts from completed site modifications. A discipline-based organization with adequate experienced staff is in place and is capable of performing non-safety-related work. Nuclear Engineering is supporting the on-site design process by providing experienced staff and assistance from the corporate office on request. Temporary plant alterations are under control, and all but two of the TPAs open as of September 15, 1988 are forecast to be closed before restart. Increased awareness of the modification process is evidenced by increasing numbers of telephone contacts and modification requests being processed by the modification engineers. Lastly, site management is aware of on-site design concerns and has addressed the issue as part of the reorganization for performance improvement.

The Modifications Section and Nuclear Engineering furnished information to the Panel in a joint presentation on masonry block walls. Modification package No. 2235 was initiated to resolve concerns identified in an NRC inspection in June, 1987. All masonry structures were surveyed to determine potential effects of a seismic event on Q-listed equipment. That survey resulted in decisions to modify some walls. In addition, grout excavation and core drilling work was completed to confirm original wall construction conformed to design. Where conformance could not be confirmed, Nuclear Engineering developed

and issued work packages to install additional structural steel members. Modifications to the last three walls to be modified will be completed and closed prior to restart.

Recent issues were raised in NRC Inspection Report No. 88-30. They related to torque on anchor bolt nuts, bolt hole tolerances, and justification of "use-as-is" disposition of a Nonconformance Report (NCR) on baseplate grouting. Resolution of these issues, including consultation with vendors, is in progress as PE develops its response to the NRC inspection report. Control of attachments in the past and control of future attachments by an engineering specification already issued are considered resolved by Nuclear Engineering. Remaining open when the Panel met was development of inspection criteria for surveillance of masonry wall integrity, assurance of comprehensiveness of the masonry wall program (i.e., were all walls evaluated) and identification of any root causes of masonry wall configurations that required modification.

Panel Consideration and Conclusion

After making a thorough inquiry as to the masonry wall issues, the Panel advised that those issues should be resolved prior to restart, even though they were not previously considered to be restart items. The Panel was assured that the matter would be resolved prior to restart.

The Panel spent significant time with the question of modifications, inquiring in depth as to how the new modification process worked, what types of modifications were being done by on-site Engineering versus Nuclear Engineering, how the Modification/Operation interface was being handled, the red-lining process, prioritization of modifications, the status of the modification work-off, and the details as to how unacceptable backlogs would be prevented in the future.

The Panel's examination of this functional area led it to conclude that the readiness of the Modification function for restart and safe operation has been adequately demonstrated, performance level is adequately monitored, and sufficient management controls and resources have been applied. All issues presented and raised are closed, except for the masonry wall issue, which will be completed prior to restart.

J. CONFIGURATION MANAGEMENT

This functional area was presented to the Panel by NED's Manager of Electrical Engineering who also serves as Chairman of the Configuration Management Steering Committee (CMSC). Configuration Management was identified as an issue by INPO in their 1987 Site and Corporate Evaluations and subsequent internal self assessment. Specific concerns included:

- Configuration Management had not been a defined policy.
- Potential deviations existed between Design Basis documentation and the plant as-built configuration.
- A disparity was evident between 1960's and 70's practices in use in contrast with 1980's criteria and expectations.
- Unresolved findings related to Configuration Management remained open for long periods of time.
- Keeping pace with basic industry wide changes in Configuration Management.

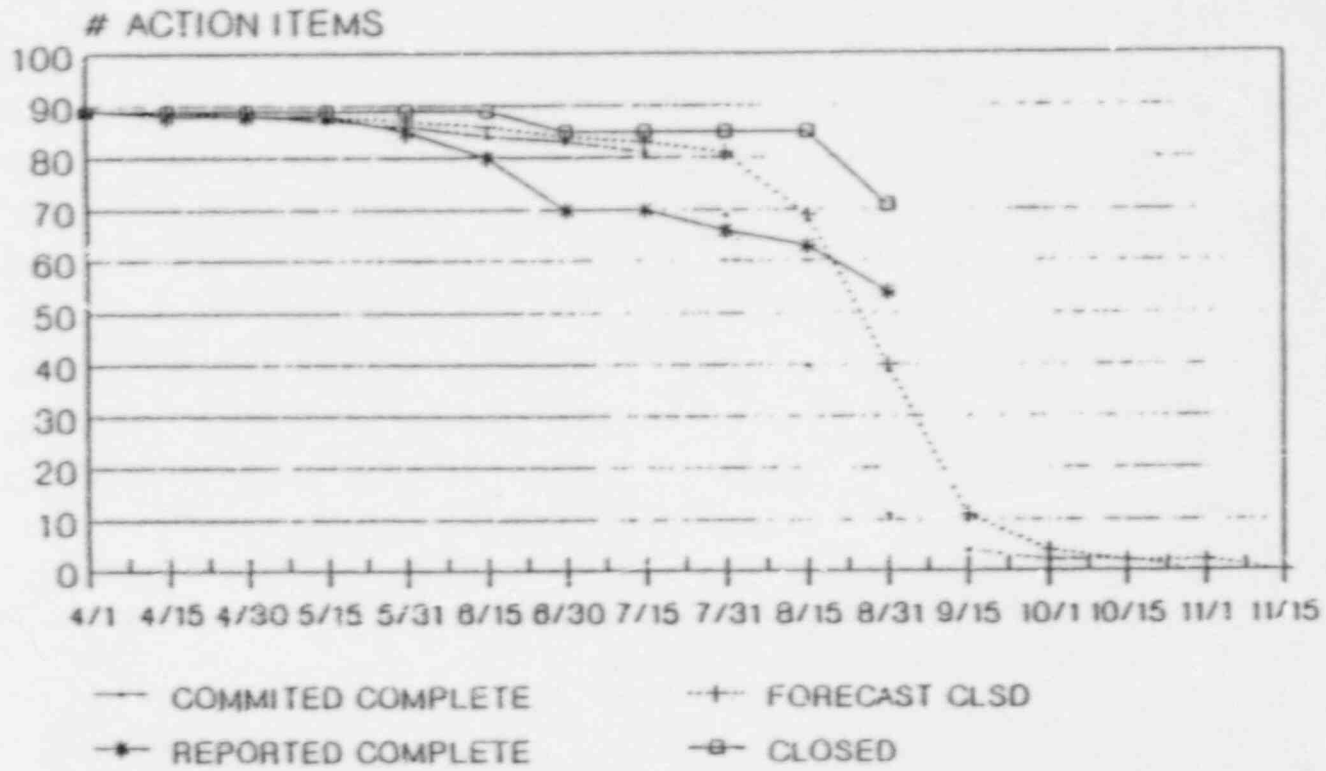
A comprehensive process was undertaken by the CMSC to evaluate the identified issues. Initially, criteria were developed to categorize specific actions as either "long term" or "required for restart." Following this breakdown, an action plan was developed and the issues prioritized for resolution The short term items were the primary focal point for the Restart Panel presentation.

Each item identified as a restart item was assigned to a responsible organization for resolution. Schedules were formulated and agreed to by those accountable and the CMSC. Once line management signed off on the completed action, the item was forwarded to the CMSC for final close-out. It should be noted that the close-out process was often iterative with the CMSC and responsible organization converging on an acceptable resolution over time. The aspect of the process provided consistent resolution and assured an appropriate level of checks and balances. A graph showing the progress of restart action items is included as Figure III.J-1. Positive feedback from the INPO assistance visit, management approval of the long term Configuration Management strategy, and full documentation of the Configuration Management program were provided as evidence of satisfactory completion.

Panel Considerations and Conclusion

The Panel raised a number of questions in the area of configuration management inquiring into such diverse and detailed matters as: closure criteria for CMSC action items, configuration management of fire protection system drawings, interface agreements, site responsibility for CM, NRC requirements, and control of vendor manuals.

89 RESTART ACTION ITEMS
SCHEDULE STATUS



HJL78

FIGURE III.J-1

For the support of restart, the Panel agreed with the presenter's general conclusion that the efforts undertaken are systematic and conclusive in addressing the issues raised. It was recognized that the issue of configuration management is an important matter which will require continuing attention and a long term effort to fully achieve the high standard of performance desired. The items below required short term action.

(1) Review the nature and status of 21 vendor manuals classified as currently uncontrolled to determine if a previous response to the NRC on the vendor manual program needs updating. The results of that review will be communicated to the Manager, Nuclear Support Division.

(2) The Configuration Management Steering Committee should determine the adequacy of compensatory site procedures restricting the use of Category 2 drawings for certain purposes in the Control Room. This effort will include discussions with the Plant Manager of any actions he is undertaking as a result of the recent feedback from the Nuclear Review Board regarding this topic.

The Panel concluded the Configuration Management efforts have been demonstrated to be effective, the performance of related activities are adequately monitored, and evidence of

sufficient management controls and resources is apparent. The Panel further concluded that the management of the Peach Bottom configuration will be maintained, further improved over time, and is currently adequate for restart and safe operation.

K. PROCUREMENT AND MATERIAL

The Superintendent - Materials presented to the Panel the status of procurement and materials at Peach Bottom as well as the results of corrective actions taken for two issues identified during the shutdown period. These corrective actions dealt with: (1) quality verification of parts, an NRC inspection finding and PE NQA audit finding, and (2) adequacy of the spare parts inventory to support plant operation, originating from an INPO evaluation.

NRC Inspection No. 87-23 identified concerns over the procurement methods being utilized by Peach Bottom for spare parts. These concerns fell into two categories: (1) commercial grade items for use in safety-related systems which were apparently procured without proper engineering evaluations, and (2) safety-related parts procured from vendors not on the current PE Evaluated Suppliers List.

Upon receipt of the NRC findings, a stop work order was issued by Nuclear Quality Assurance (NQA) to preclude issue of any suspect spare parts pending final disposition. In reviewing the inventory, the Quality Control (QC) organization identified commercial grade parts which did not have technical evaluations of their suitability and also identified material delivered from vendors who were not on the Evaluated Suppliers List. The

initial suspect materials list consisted of some 4,500 line items of spare parts. After additional review by QC, this list was reduced to some 1,300 parts which were further evaluated in necessary detail. QC holds were placed on each of these suspect items to preclude their installation into the plant until after disposition.

To evaluate the suspect parts, a corrective action program was jointly developed by Nuclear Engineering, Peach Bottom Materials Section, and NQA. This corrective action program provided the procedural direction for identifying parts and performing the proper engineering evaluations to allow disposition of the nonconforming items. At the same time, the administrative procedure on Material Management, A-27, was revised to preclude any continuation of the questionable procurements.

In order to provide technical resources for evaluations, Nuclear Engineering assigned a contractor force to work with the Materials Section, which was also increased in size considerably. This technical group was located at PBAPS and performed the parts evaluations. In dispositioning suspect items, 615 commercial grade item evaluations were performed to determine acceptability of suspect parts. In addition, a sampling program was initiated to verify that the 685

suspect safety-related parts (procured from vendors not on the 1987 Evaluated Suppliers List) were, in fact, procured properly.

Evaluations of the 615 commercial grade items resulted in a requirement to test 134 of the items and was eventually narrowed down to replacement requirements for 5 line items. The sampling program of the 685 safety-related items verified the acceptability of all of those items. No replacement was necessary in this area.

QA Findings had identified improper use of nonconforming materials in the plant without technical justification or closeout action. The then existing Materials Management Procedure A-27 allowed for utilization of nonconforming materials after receiving approval of a conditional release form, commonly referred to as Appendix D. Concerns fell into two areas. First, a number of conditional releases were given to parts which were received prior to receipt and acceptance of vendor quality documentation. The conditional release documentation did not indicate any closeout action to verify the required documentation had arrived at a later date. Second, a number of items of non-Q material had been conditionally released for use in safety-related systems. Again, there was a lack of documentation of the subsequent replacement of these nonconforming parts with proper safety-related parts. To address these concerns, a document review was made to identify

all Appendix D conditional releases. This document search included review of QC records, extensive review of old Maintenance Request Forms back to 1978, and a purchase order file review. The review identified 550 Appendix D conditional releases issued; 355 were installed in Unit 2 with the balance going to Unit 3. Dispositioning of these items was in one of two ways: conditional releases with questionable documentation were given a detailed documentation review, while hardware-related concerns required an individual technical evaluation of each item. As a result of the engineering evaluations of the 355 Unit 2 items, 33 items required testing and dedication to verify acceptability, and 32 items required replacement. Replacement parts are available for all but 3 line items and replacement of those items will be complete prior to restart. Evaluation of Unit 3 suspect items proceeded after the completion of the Unit 2 work and is ongoing.

As a result of these activities, the suspect items were properly identified, equipment reliability has been established both through evaluation and testing, and orderly replacement of nonconforming items is proceeding. The adequacy of this effort has been verified both through NRC inspections and PE NQA audit.

A 1985 INPO evaluation identified a concern about the adequacy of the spare parts inventory to support Maintenance activities and, as a consequence, plant operations. This concern

stemmed from difficulty that Maintenance found in relating spare parts to host equipment, inability to react quickly to parts needs and a low level of usable spare parts in inventory. To address these concerns, the station added significantly to the spare parts staff, established procedures for performing parts research and evaluation, and significantly improved the availability of the spare parts inventory at the station. In addition, the Materials Section established a plan for a major expansion of the spare parts inventory as a long range goal.

Staffing level of the Spare Parts Group increased from 2 to 26 people. The majority of these personnel presently are contractor staff, and the station is establishing a solid core group of PE personnel for a permanent Spare Parts Procurement Engineering organization. Procedures were developed to enable this group to perform systematic parts research and evaluation. This includes review of all preliminary requisitions, determination of quality classification of parts, parts substitution, permanent stock code assignment, and inventory level determination.

In the past, any engineering evaluation of part number changes, parts substitutions, or quality classifications required the assistance of the Nuclear Engineering organization located in Philadelphia. The present staff at the Station has the

capability of providing all of these technical services and can provide immediate turnaround in resolving technical questions on parts.

In addition, it was found that extensive vendor expediting had been required to support station needs for parts delivery. A ten-person expediting team has been established and will remain in place throughout the current outage. A permanent core of expediters will be retained with contractor personnel supplements during future outage periods. The station now has the ability to react to part delivery requirements.

In reviewing the existing inventory at Peach Bottom, a major weakness found was an inability to cross-reference subcomponent part numbers to the host equipment identification. This created problems in establishing material lists for items of equipment. To address this problem, a concerted effort was made in late 1987 and early 1988 to review existing files on spare parts procurements. Approximately 12,000 line items of spare parts in inventory have been evaluated. Parts identification was verified and updated to reflect current availability of parts from vendors. Appropriate cross-referencing between the subcomponents and their parent equipment has been established. This information was placed in a Material Management Program which allows cross-reference between two formerly non-communicating data systems used by the storeroom and by

Maintenance, now enabling Maintenance planners "on screen" access to inventory records when assigning parts to work in process. The 12,000 line items included in this program will be expanded to a target level of some 50,000 line items in a long term expansion program.

Actions which have taken place in managing the inventory level in recent months have expanded the capability of supporting Maintenance and Operations significantly. The 12,000 items of inventory are now available for ready use. The Materials Management organization is currently staffed to respond readily to needs for any identified parts which have not been currently coded into the inventory. Deliveries are being expedited, commercial grade item procurement dedication procedures have been developed and, as a long range program, a major expansion of the spare parts inventory is included in the overall Maintenance Strategy for Peach Bottom.

As a result of concern and corrective actions regarding the adequacy of the spare parts program at Peach Bottom, the station verified and strengthened the adequacy of quality-related controls over the inventory, developed procedures and organization to address parts problems, and made the existing inventory more usable. At the same time the inventory is being expanded as current procurements are coded and added to inventory. Audits, both by the NRC and PE NQA, have verified the

effectiveness of the current programs. The Materials Section is now fully capable of supporting plant operational requirements.

To insure permanency of positive results in the spare parts area, the old Materials Management Procedure (A-27) has been revised to correct existing deficiencies. In addition, a new set of procedures, A-129, covering "Procurement and Control of Items and Services," was developed to bring Peach Bottom parts procurement in line with current industry practice. This, coupled with the establishment of a dedicated Procurement Engineering Group at PBAPS and management commitment to support spare parts expansion, ensures continuing and improving spare parts support to Peach Bottom operations.

In addition to details of the long range program discussed above, other matters are also receiving attention. Warehouse upgrades include optimizing and increasing stocking capacity. Upgrading storage areas for parts requiring controlled environments is in progress, as well as relocating chemical storage areas. The results of Maintenance strategies on Spare Parts and Materials and Risk and Reliability Based Preventive Maintenance will contribute directly to stocking policy and guidance.

Over the long term, a stocking policy, including guidance on which parts need to be stocked, will be developed. Increased stocking of parts for critical systems needed for both operating and shutdown conditions is proceeding to test new procedures on procurement. These systems are Emergency Diesel Generators, Residual Heat Removal, and Emergency Service Water.

In summary, actions taken to resolve the Materials concerns have greatly increased the capacity of the Materials Section to support plant operations with required spare parts. Current capability is sufficient to support safe operation of Peach Bottom. Expansion plans for the inventory will enhance further the economic and reliability aspects of plant operation and will provide the long range growth needed to bring Peach Bottom up to World Class Standards.

Panel Consideration and Conclusion

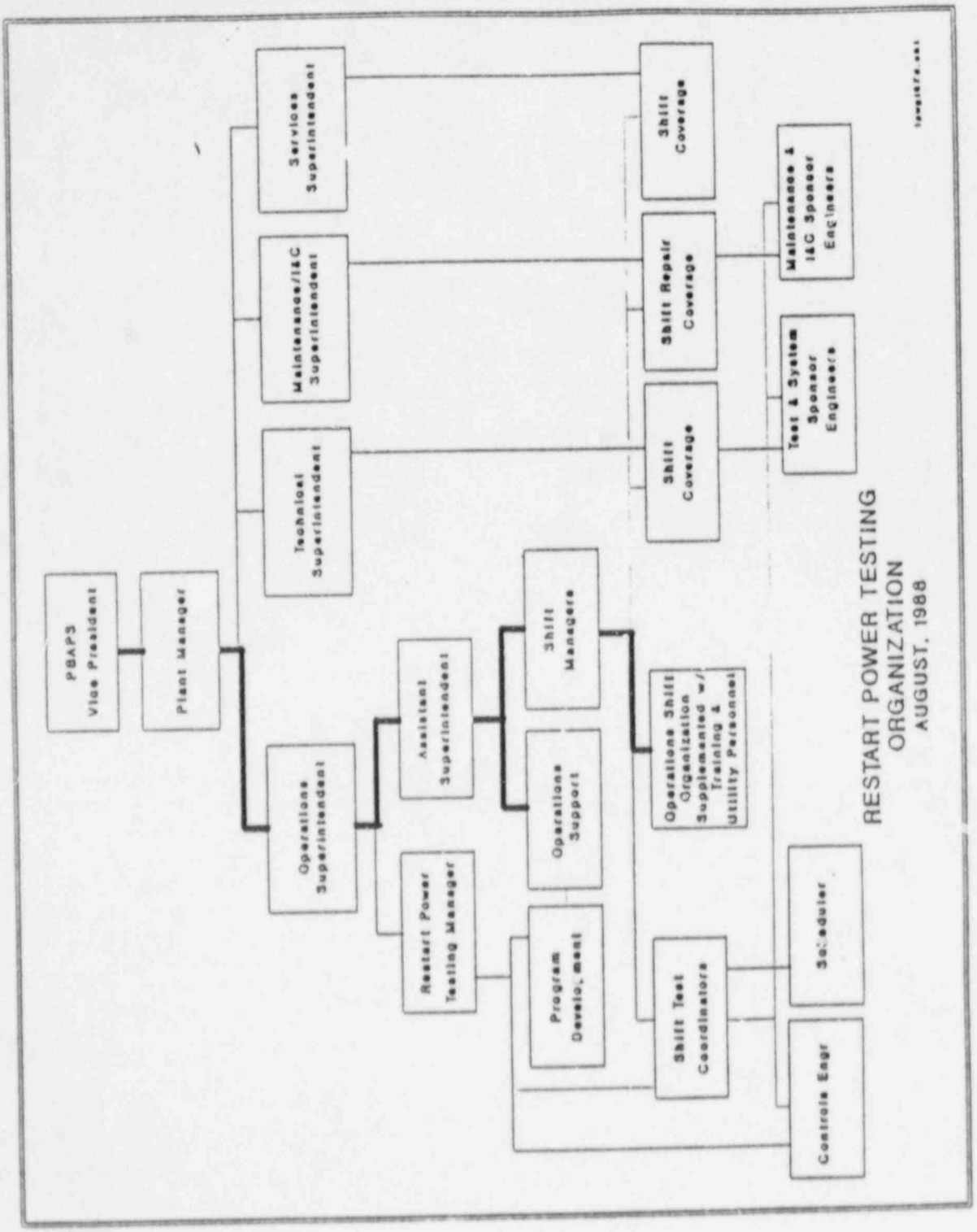
The Panel, having examined this functional area, concluded that the readiness of procurement and materials for restart and safe operation has been adequately demonstrated, the performance level is adequately monitored, and sufficient management controls and resources have been applied. The Panel believes the Materials Section will maintain its readiness, and necessary improvements will continue in the future.

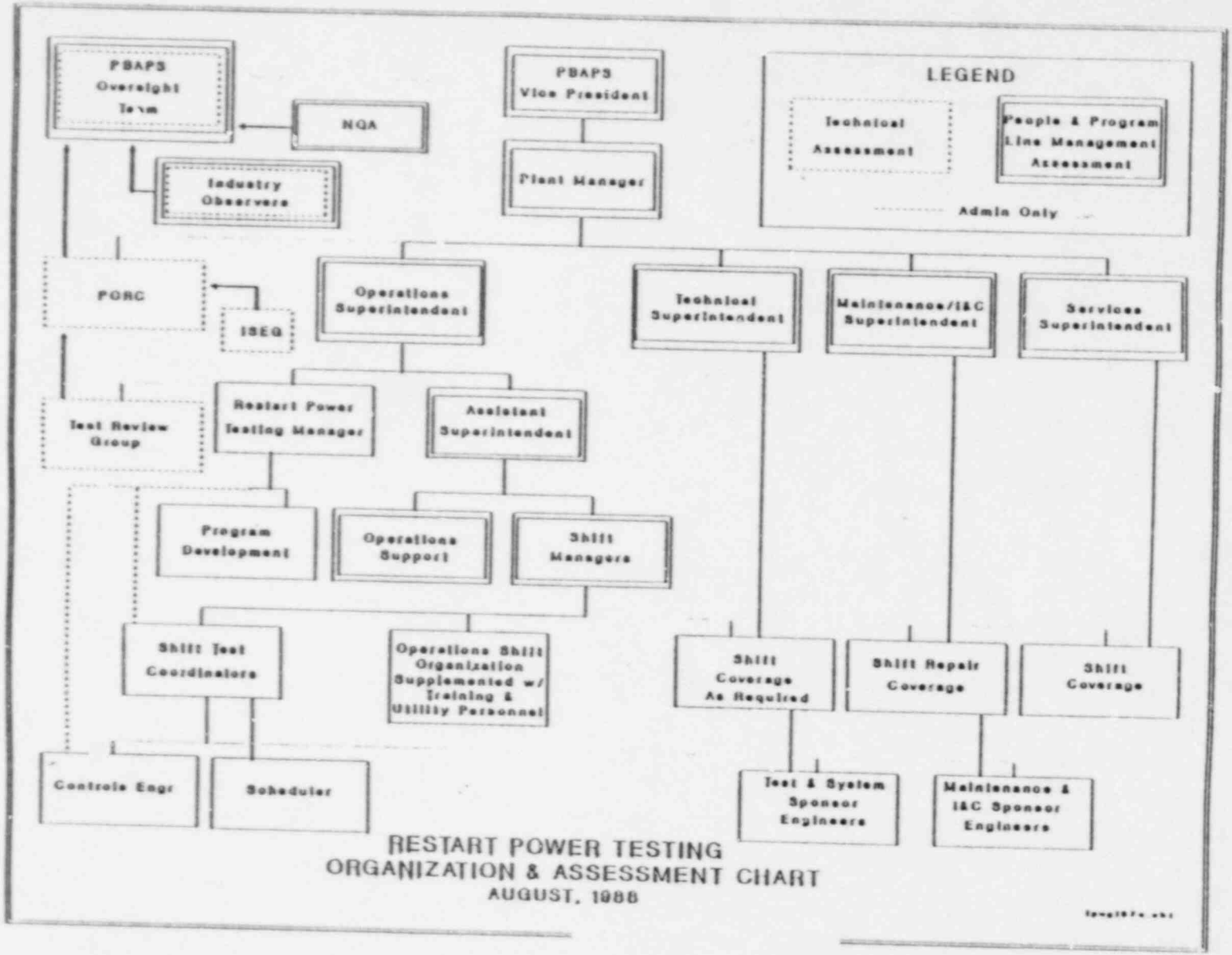
L. RESTART POWER TESTING

The Assistant Superintendent - Operations, presented a description of power ascension plans contained in the Restart Power Testing Program. Although startup and return to operating service were not shutdown issues, recovery from the Unit 2 outage is the first opportunity with a unit in service to assess the effectiveness of the revised organization, revised management programs, and plant improvements. Accordingly, Operations developed a detailed restart power testing program. That program defines an orderly scope of testing and hold points to confirm the safe, efficient operation of the unit and to confirm the adequacy of performance of people and programs. The Restart Power Testing Program was described in a letter submitted to the NRC on August 23, 1988 as supplemented by letter dated September 7, 1988.

The Assistant Superintendent - Operations covered the scope, schedule, organization, and performance assessment aspects of the program. Operations line management, including on-shift support by experienced shift test coordinators, is accountable for the restart power testing program. The Restart Power Testing Organization, see Figure III.L-1, was presented, with emphasis on line management from the Vice President - PBAPS to the shift teams. The performance assessment organization is shown in the Restart Power Testing Organization and Assessment chart, see Figure III.L-2.

FIGURE III.L-1





RESTART POWER TESTING
ORGANIZATION & ASSESSMENT CHART
AUGUST, 1988

FIGURE III.C-2

C-3:III-4

The Restart Power Testing Program incorporates experience from previous plant startups, and emphasizes orderly transition from shutdown to operations. Restart power testing utilizes an overall program procedure and detailed schedules, and it includes careful consideration and minimization of any potential impact of the Unit 3 outage on Unit 2 operation. More detail on Unit 2/Unit 3 interaction was presented to the Panel in the Outage Management presentation.

A sequence of power ascension steps, associated tests and assessments will bring the plant from shutdown to 100% power. The detailed logic sequence is summarized in Figure III.L-3. The sequence will begin with a normal startup from a refueling outage. Special procedures will guide plant readiness checks using General Plant Procedures. Required surveillance testing of safety-related systems and routine testing non-safety related equipment will be performed. Operations noted that the previous refueling outage recovery had included comprehensive design verification testing after recirculation piping was replaced. Such testing will only be repeated as required to verify modifications completed during this outage.

Acceptance testing will be performed for modifications whose final testing requires nuclear steam. This includes verification of: new vessel level instrumentation, off-gas system modifications, feedwater heater replacement, alternate

PBAPS RESTART POWER TESTING

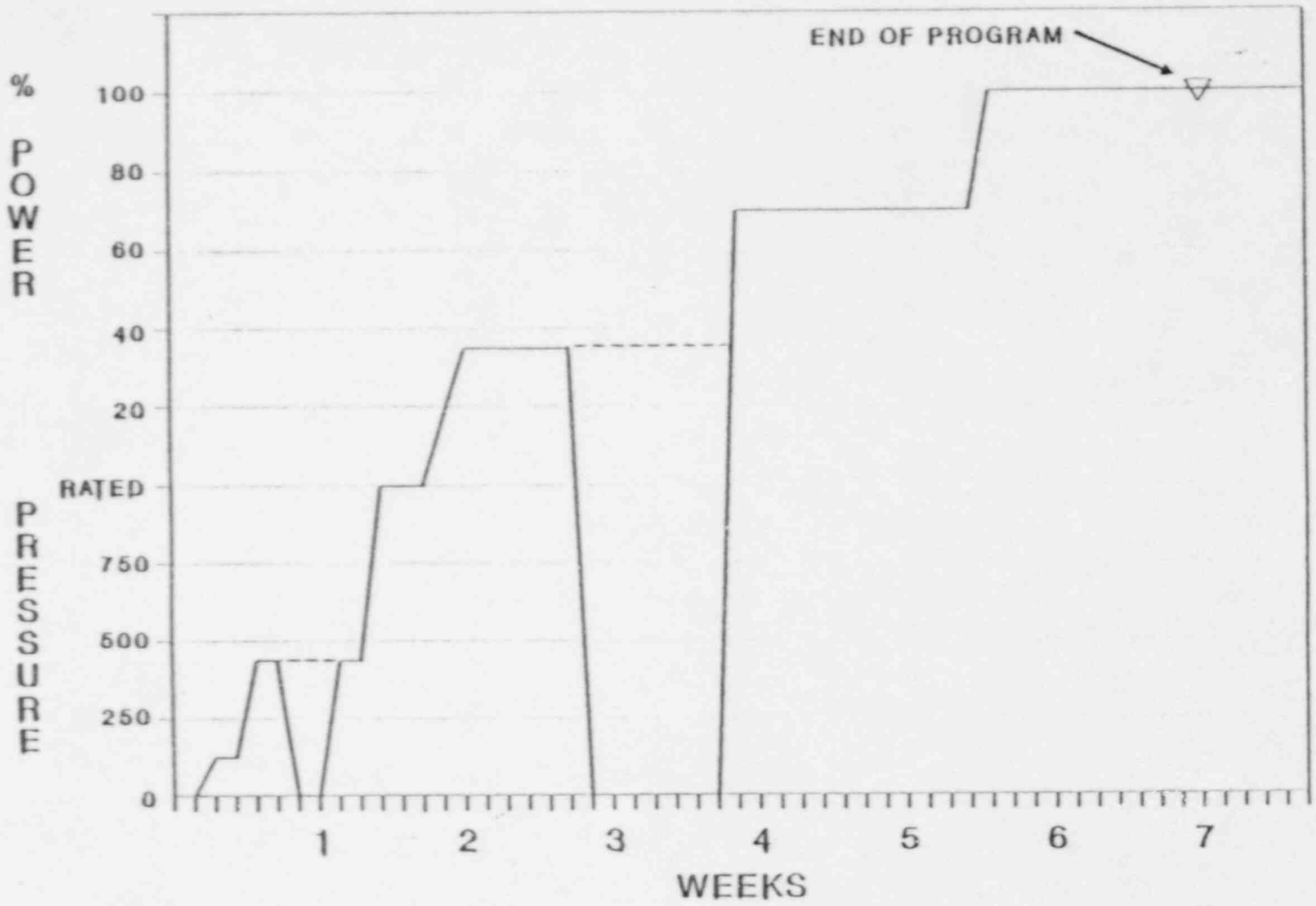


FIGURE III.L-3

shutdown controls and motor operated valve differential pressure testing among others. Pre-operational testing of those modifications will have been completed to the extent possible prior to use of nuclear steam.

Post-maintenance testing where the final verification requires nuclear steam is principally associated with operating steam systems at pressures or flow rates in excess of the capacity of the installed auxiliary boilers or where auxiliary boiler steam cannot be provided. Overspeed trip testing of the HPCI and RCIC steam turbines is being completed prior to startup.

Two contingent shutdowns have been scheduled into the power ascension sequence. The first is scheduled after a drywell and system leakage inspection at approximately 500 psig. An outage will be initiated only if leakage is found which requires a shutdown to repair. The second contingent outage is scheduled at approximately 35% power to provide a window to perform repairs or correct problems that may be identified during the post-synchronization review of plant performance. This contingent outage will be initiated only if necessary.

Three management assessment points have been included in the logic plan. These are discussed later. Seven days are planned at each power plateau to assess readiness to proceed.

Control system stability testing and tuning of the major control loops (feedwater flow, feedwater heater level control, steam pressure and recirculation flow) will be performed at various power levels to verify the overall response characteristics are acceptable and to preclude unnecessary challenges to safety systems during operational transients.

Following completion of the control system tuning checks, several transient tests will be performed to confirm the capability of the controls to respond to transients without a reactor scram occurring. This testing will include a feed pump trip, a recirculation pump runback, and a recirculation pump trip. This testing will be performed at approximately 70% power. A turbine trip is scheduled concurrent with the contingent outage from 35%, if required.

Two special procedures, SP-1166, "Program Controls for Restart Power Testing-Post Cycle Seven," and SP-1167, "Unit 2 Post Cycle Seven Restart Power Testing," are being written to describe the power ascension program process.

In addition to testing the plant, the restart power testing program enables confirmation of revised organizations and procedures. It also enables line management to exercise techniques developed during the past 18 months for monitoring, controlling, and assessing performance in an operating plant

environment. The program specifies characteristics, methods and organization for evaluating performance of the plant, programs, and personnel from startup through operation at rated power. The program includes assessment points where a management oversight team will assess overall readiness to proceed.

The oversight team is composed of site line management, non-Peach Bottom independent oversight, and industry observer support. Members of the team will be PBAPS management, including the Vice President - PBAPS, Plant Manager, Project Manager, Support Manager, Training Superintendent and Manager, Site Quality. Off-site members will include the Limerick Operations Superintendent, and from the Main Office, the Manager - Performance Assessment Division and Manager, Nuclear Engineering Division. The two industry observers will also be members of the team.

As shown on the Restart Power Testing Organization and Assessment chart, plant equipment and systems performance (test results) will be reviewed by a Test Review Group and then presented to the Plant Operations Review Committee. Root cause analyses of events and off-normal conditions will also be reviewed, as will plant performance indicators to date in the test program. The status of maintenance activities and technical review action items to support continued operation and power escalation will be reviewed. These reviews will encompass plant

problems encountered, corrective actions and a determination of appropriateness to proceed. The plant performance standards defined in the Operations Manual will be used as guidance in this assessment.

Line management assessments of the people and programs will consider results from the Management-By-Walking-Around program, housekeeping inspections, reporting and corrective action programs, human performance evaluations, maintenance programs, radiological occurrences, quality findings, procedure suggestions and programmatic performance indicators.

Decisions by the management oversight team to (1) proceed to the next power plateau, (2) remain at the present power level, (3) reduce power or (4) remove the plant from service will be based on the results of plant, people, and program performance assessments.

Upon completion of the Restart Power Testing Program, the team will assemble a final report for corporate and NRB review and to assist plant management in applying lessons learned to the Unit 3 startup and future operation of both units. After testing is complete, line management will continue to assess performance using the permanent programs now in place.

Panel Considerations and Conclusions

The Panel asked for more information on operator performance assessment and Unit 2/Unit 3 interactions during restart testing. During the last Panel meeting, the Assistant Superintendent - Operations presented the performance characteristics Operations believed sufficient to judge shift crew performance. Those characteristics were:

- Attentiveness to duty
- Adherence to procedures
- Professional manner and appearance
- Intra- and inter-group relationships
- Supervision
- Technical performance.

The evaluations during the Power Ascension Program will contain narrative observations of performance, noting strengths and weaknesses. Corrective action will be taken, as needed, to assist in altering behavior and improving individual and overall shift team performance. The evaluators will be Operations management including Shift Managers, site Organization Development staff, senior site management, and industry observers. The industry observers will be personnel with recent BWR operating experience at other utilities. Two such observers

will be used through the first power plateau and assessment point and one observer will remain through test program completion.

Information regarding interaction between Unit 2 and Unit 3 during restart testing were presented by the Superintendent - Outages with contributions and comments from Operations. Panel conclusions on this interaction are set forth in the Outage Management section of this report.

The Panel made suggestions for additions to the scope of operator performance assessment plans during restart testing which Operations agreed to make. The restart power testing program procedure will include forms and guidance for those assessments. Assuming the operator performance plans will be completed prior to restart, the Panel concluded that the Restart Power Testing Program is reasonable and sufficient to accomplish its intended objective.

M. OUTAGE MANAGEMENT

The Superintendent - Outages presented the current processes used at PBAPS for planning, scheduling, and coordinating work during outages. While Outage Management was not an identified issue or a restart item in and of itself, it is a significant consideration for the restart of Unit 2 which will occur in conjunction with the scheduled outage for Unit 3.

PE has recently hired an experienced nuclear plant outage manager and augmented the Outage Management staff. Outage and non-outage plant work orders now go through Outage Management for review, scheduling and work coordination, which occurs at a daily meeting. Work orders are integrated into system outage or maintenance "windows" to maximize completion of separate work orders on a system within its window. The scope of these work orders is then used in permits and blocking planning, proper work boundaries are set, and post-maintenance testing, such as leak checks, are combined.

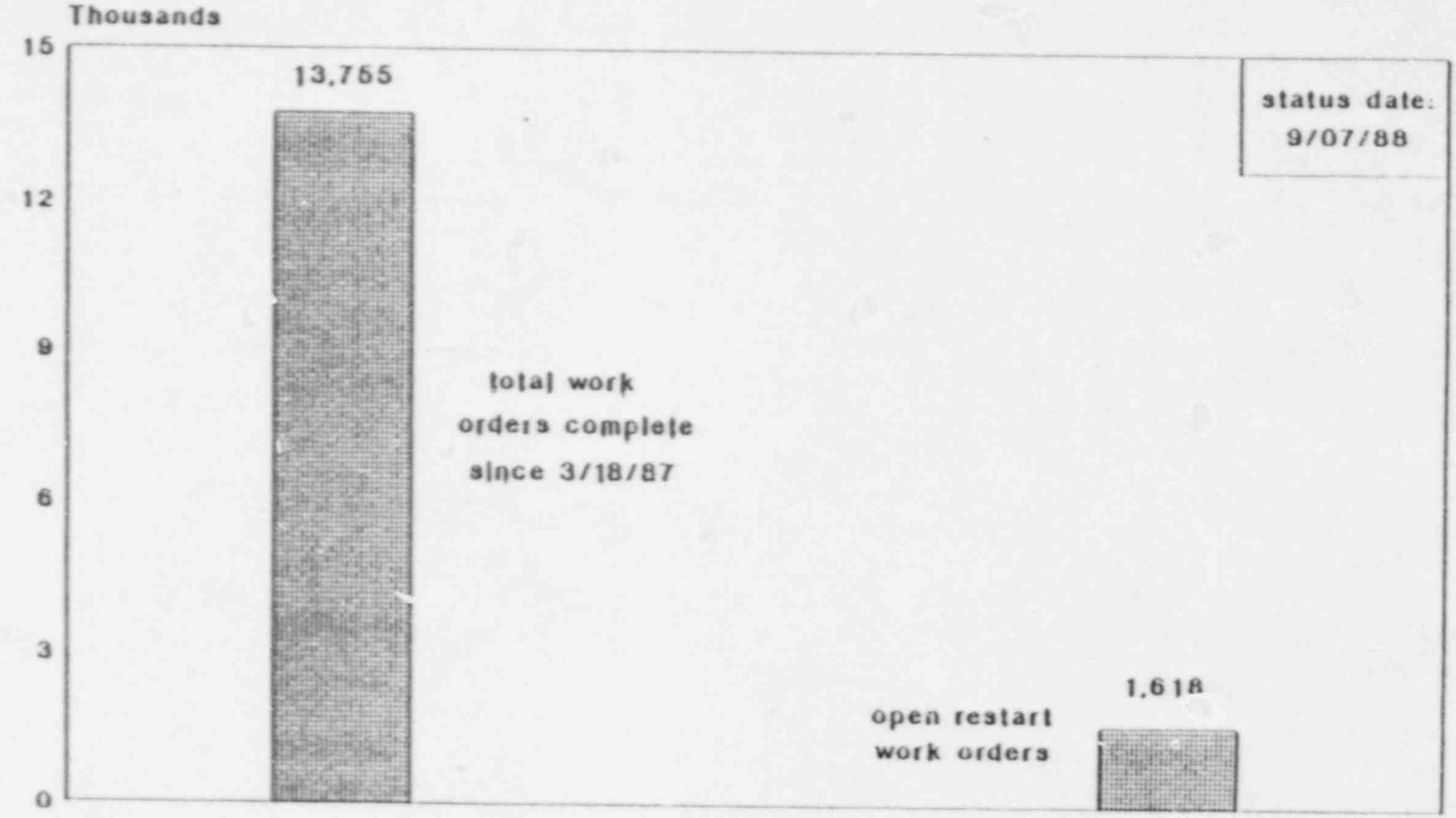
Station personnel have accepted the improved Outage Management process and it appears to be running smoothly. The daily outage meeting is well attended by station staff because it is a control and coordination point for work that each of several different groups needs to accomplish. "Look ahead" schedules are discussed and decided upon, enabling work groups (Maintenance,

I&C, and Construction) and support groups (Plant Services, Health Physics, Operations, etc.) to know what work to expect and to plan resources accordingly. These resources include supervision and work crews, and also include Health Physics, Quality Assurance, and Operations personnel for monitoring, checking, and operating systems as needed to accomplish the work. The improved Outage Management process also provides a vehicle for improved communication, coordination, and cooperation.

The Station has managed and completed an enormous amount of work during this outage, due in significant part to improved Outage Management. Since the Shutdown Order, over 13,500 work orders had been completed on Unit 2 and common systems, structures, and components.

Figure III.M-1, "Work Order Progress," shows current number of completed and open restart work orders. Figure III.M-2, "Restart New/Worked Work Orders," shows weekly results of the workoff effort. Historical totals of restart work orders for the past year are shown in Figure III.M-3, "Restart Open Work Orders." PE management recognizes these accomplishments and the positive results achieved. As such, the Outage Management group has become a permanent part of PBAPS Projects, complete with staffing and budgeting for the future. With the Unit 2 outage coming to completion, Outage Management is turning its focus to the Unit 3 outage. In August, 1988, a draft Unit 3

WORK ORDER PROGRESS
unit 2 and common

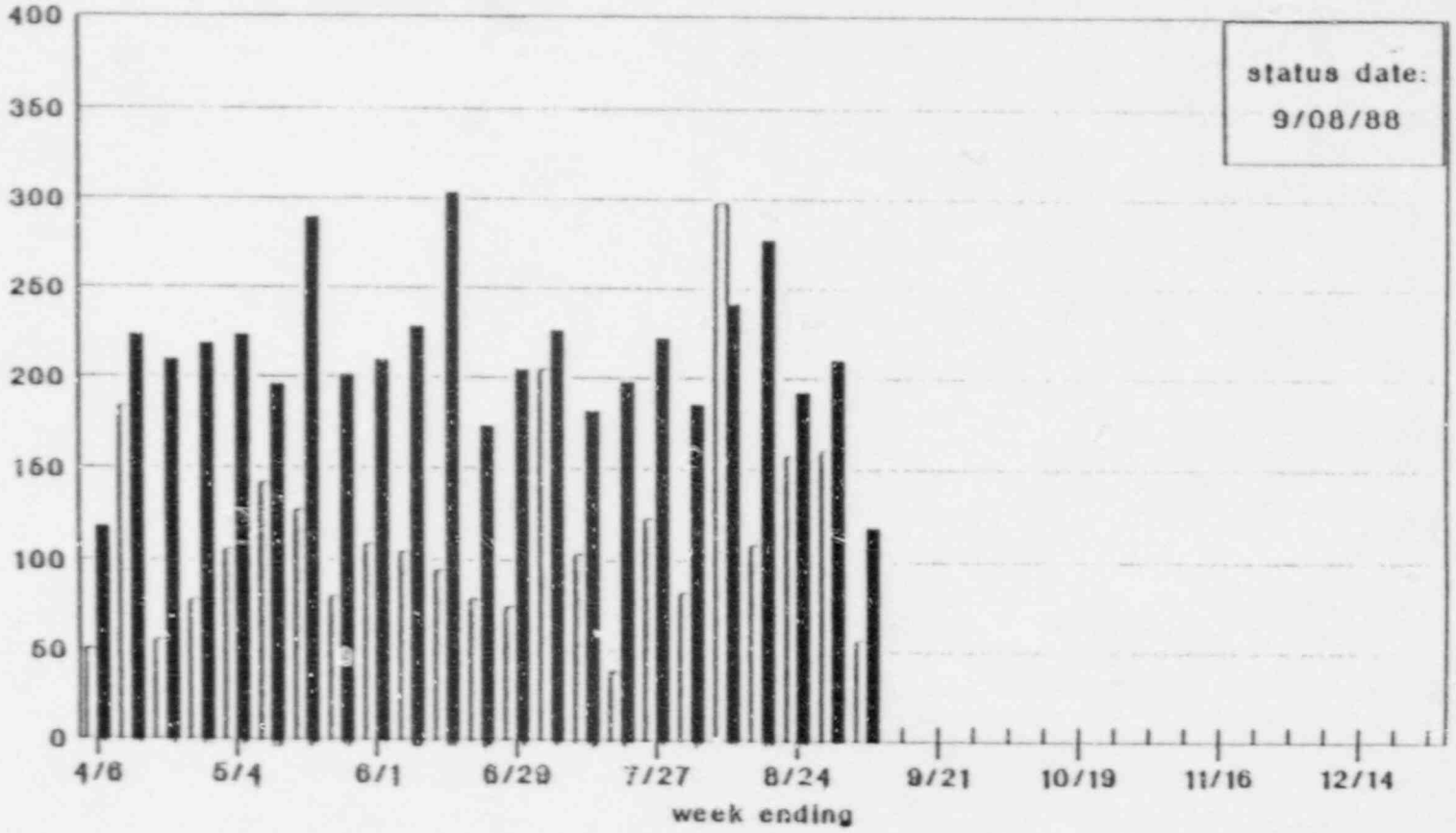


Includes CN, CM, and PM section 6 work orders

FIGURE III.M-1

RESTART NEW/WORKED WORK ORDERS

unit 2 and common



net new WO's (new WO's minus cancelled and deferred)

actual WO workoff (section 6)

includes all CN, CM, and PM work orders

after 6/15/88-includes only work orders required for restart

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FIGURE III.M-2

RESTART OPEN WORK ORDERS
UNIT 2 AND COMMON

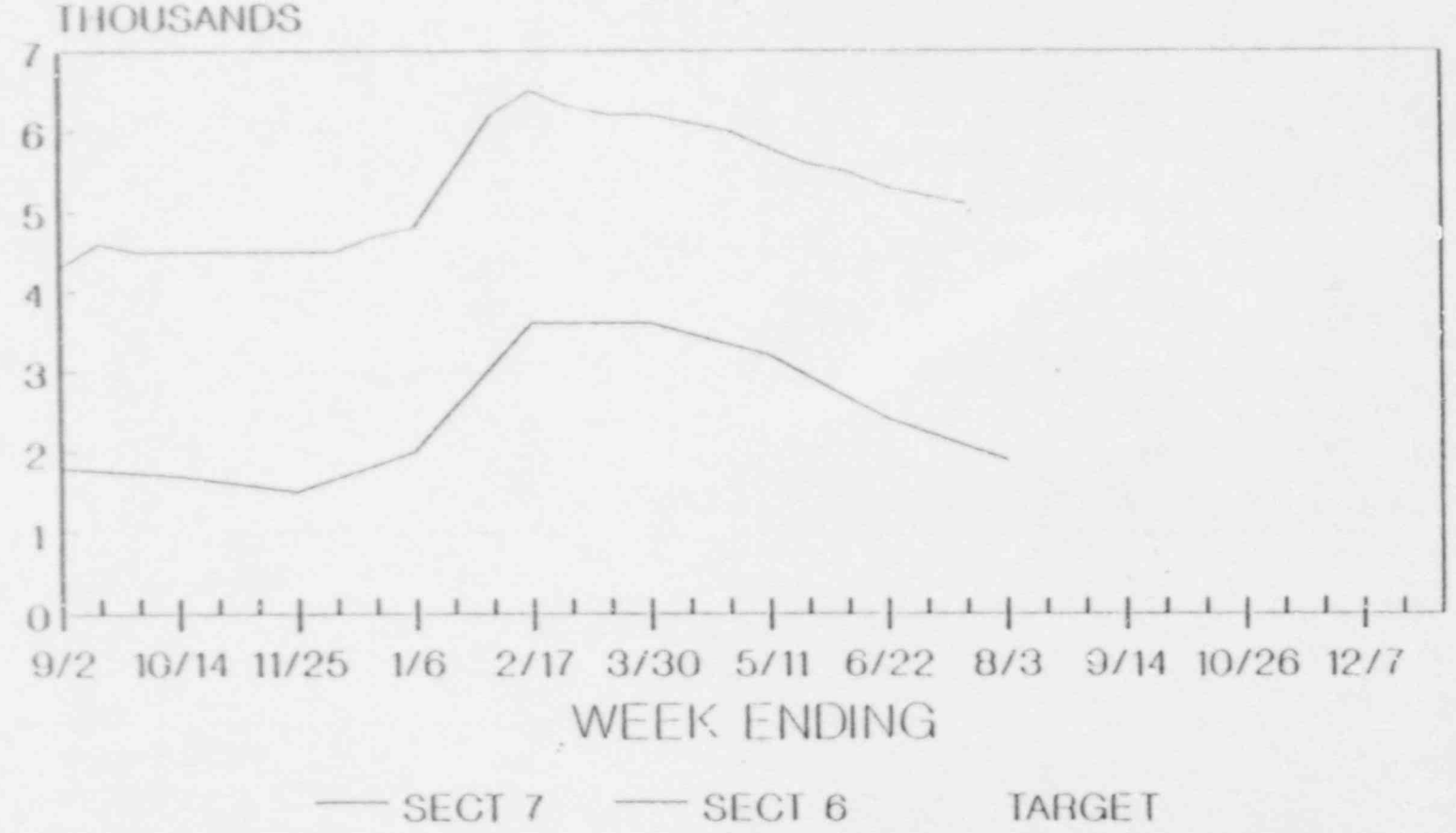

FIGURE III.M-3

outage schedule was sent out, and should be finalized in September, 1988, after comments are received and incorporated.

Panel Consideration and Recommendation

The Panel requested that the management processes and controls needed to prevent safety impacts on the Unit 2 restart be described in detail. They were described at the final Panel session as follows:

- Systems work that could affect Unit 2 is done or scheduled to be completed before Unit 2 restarts. This includes diesel generators, electrical panels, and Control Room facility improvements.

- During Unit 2 restart power testing, Unit 3 outage work will include jobs having no impact on Unit 2 as well as system window closure on only certain systems critical to continuing the Unit 3 outage. These include some cooling water systems and limited instrumentation and control systems.

- During the Unit 2 restart power testing, boundaries between Units 2 and 3 will be clearly identified with signs and barrier tape to heighten people's awareness of Unit 2 spaces.

- Routine work on Unit 2 will be done by PE Station personnel. Work by contractor and PE mobile Maintenance crews will be minimized as far as possible on Unit 2 while it is operating.

- On a daily basis, Station line management will make decisions on how much and what Unit 3 work will be done to avoid an adverse impact on the level of Control Room activity, especially when Unit 2 is operating. If Control Room activity can support bringing back a Unit 3 system, Operations and Station management could decide to do it.

- Station philosophy is to use real time management decisions to guide and control Unit 3 work while keeping proper attention on Unit 2 safety.

The Panel concluded the results of current Outage Management processes are sufficient to support the Unit 2 restart and complete the Unit 3 outage. These results are demonstrated, being tracked, and reviewed daily at the station. Various charts and other management information are published and reviewed by top Station management weekly, or more frequently as needed. They are also reviewed in detail at monthly station review meetings with the Executive Vice President - Nuclear.

The Panel also concluded that Peach Bottom has plans and programs in place to ensure effective coordination and interfaces between Units 2 and 3. Station management is aware and sensitive to potential impacts and has thought about and planned interactions between Units 2 and 3. During restoration of Unit 3 to service, these interactions will be revisited by station management on a continuing basis.

N. NUCLEAR QUALITY ASSURANCE

This functional area was presented to the Panel by the General Manager, Nuclear Quality Assurance. The primary issue was derived from the NRC Shutdown Order where it was stated that "[t]he Peach Bottom quality assurance program has failed to identify this condition which is adverse to safety."

This generic issue was expanded upon in the Problem Root Cause Assessment of Peach Bottom Shutdown where it was said that "[t]he Quality Assurance/Quality Control (QA/QC) Program, has not been fully integrated into the plant operations..." and "...management has not assured that an appropriate level of operations expertise has been established in the QA/QC organization...." That assessment also found that "[s]urveillance and monitoring are used by QA at Peach Bottom but the implementors do not appear to be sufficiently experienced or trained...."

As a result of the Shutdown Order and the Root Cause Assessment, PE undertook a self-evaluation of Nuclear Quality Assurance. The results of that self-evaluation were described to the Panel as well as the tasks undertaken and results obtained.

In essence, the improvements sought could be collected under the single phrase of "strengthening the NQA function".

The perceived needs included: consolidation and upgrading of the organization, upgrading of the reporting relationships, and assurance of senior managements' attention to quality assurance related evaluations and reports. The self-evaluation identified the following specific areas as needing improvement:

- Scope and Structure
- Personnel/Experience
- Processes
- Reports
- Roles and Interfaces

The tasks undertaken to achieve improvement in these areas were the following:

- Establishing the reporting structure for a centralized Nuclear Quality Assurance (NQA) function within the Nuclear Organization.
- Assigning personnel to all NQA management positions.
- Clarifying and documenting the roles and responsibilities for each NQA function.
- Clarifying and documenting the reporting responsibilities of NQA with line managers, the Executive Vice-President - Nuclear, and the NRB.
- Clarifying and documenting the role, responsibilities and reporting relationships of the Manager - Quality, PBAPS with line management and the Vice President - PBAPS.

- Assessing the site QA Audit and surveillance programs and develop goals for improving programs during 1988.
- Initiating improved Nuclear QA reporting practices.
- Establishing Nuclear QA reporting as a routine agenda item at Executive Vice President - Nuclear meetings.

The Panel was informed that recommended changes to NQA have been completed and NQA is a significantly different organization today than it was at the time of the Peach Bottom shutdown. The General Manager reports directly to the Executive Vice President - Nuclear; the organization has been consolidated; orientation of the mission has become more "performance" than "compliance" based; new, experienced managers have been selected to assume leadership roles; the Independent Safety Engineering Group (ISEG) function was added to the NQA Department; key personnel are to receive license training; reports have been streamlined; and incorporation of improved monitoring techniques, which include new organization, procedures, and the adoption of special qualifications for personnel.

Quality Assurance reports which had been developed or streamlined and improved were also described to the Panel. In essence, the reports now present to management the information necessary to monitor the quality of performance of the Nuclear Group. The reports discussed were:

- Audit Reports
- QC Inspection/Monitoring Results

- Executive Problem Statements
- Quarterly Executive "Report Cards"
- Monthly Department Exceptions Reports
- Quarterly Department Trend Reports
- NRB Reports
- Performance Indicators

Improvements in role definition and interfaces were further discussed with the Panel in the following areas:

- Refocused ISEG
- Functional Organization Charts
- Interface Agreements
- Job Descriptions

Results of efforts undertaken by NQA were presented to the Panel in the following areas:

- Improved Responsiveness to Findings
- Improved NCR Trends
- Performance Assessments Accomplished
- Root Cause Analyses Performed
- Technical Monitoring Results

The results of recent critical assessments of the quality function by NRB, NCB, and NRC were presented in which the status of NQA was judged acceptable and improving.

The Panel was also given the status and scope of involvement of NQA in providing information on overdue findings, open nonconformances, Performance Assessments, Root Cause analyses, Technical Monitoring, status of procedural compliance, Operations Logkeeping, Equipment Status Control, and Procedure Control.

Panel Considerations and Conclusions

The Panel reviewed and considered the items presented and focused on the near-term readiness of NQA and NQA's verification of line completion of items required prior to restart. In that regard, the Panel received a commitment from NQA that it would accomplish the following: (1) complete a Quality Verification Inspection and screening of the results for issues required for restart, (2) complete a re-review of category classification for existing outstanding items, (3) confirm Non-Conformance Report completion for those classified as required for restart, (4) define the monitoring of Control Room activities to be undertaken by NQA during the Restart Power

Testing Program, (5) verify completion of Peach Bottom master open items list, (6) complete revision of the PBAPS QA Plan Manual, and (7) NQA's endorsement of restart.

The Panel concluded that NQA had accomplished a number of substantive improvements during the past eighteen months, and, upon completion of the above mentioned items, was ready to support restart and operation, but cautioned that continued assessment and improvement in this area is essential for the future success of PE's nuclear operations.

O. HUMAN RESOURCES AND ORGANIZATION DEVELOPMENT

This functional area was presented to the Panel by the Manager, Organization Development and Human Resources.

The NRC Shutdown Order, INPO evaluations, and the self-initiated root cause assessment of the PBAPS shutdown made it clear that many of the nuclear operations problems had roots in the Human Resources area. These included: the lack of a clear vision and mission; weak or ill-defined policies and practices, attitudinal and behavioral problems on the part of employees, poor supervisory selection processes, and an inefficient system for developing managers and supervisors.

The Organization Development and Human Resources presentation focused on the efforts undertaken and results achieved in moving toward an ultimate goal of developing a framework for successfully conducting business in the complex environment of nuclear operations. The Panel was informed that a nuclear vision, mission, and set of values had been developed. Existing policies, practices, and procedures had been reviewed and revised. In some cases, new policies and practices were developed and implemented. A Management Development Plan had been drafted and is in the process of being finalized. A long term strategic plan is being developed for the Nuclear Group. An

organizational unit dedicated to Organization Development, Human Resources, and Management and Professional Development has been created.

Specifically, the lack of a clear vision and mission was addressed by Organization Development practitioners through the development of a vision, mission and values, and strategic plan for the Nuclear Group. Ill-defined policies and practices were addressed at the station and at headquarters by the Human Resources staff. A "Management by Walking Around" (MBWA) practice was instituted at the site and, for the first time, all PBAPS employees received performance appraisals. Revised Nuclear Group discipline, grievance, and fitness for duty policies were issued on an interim basis. New policies which will cover the entire corporation are currently under development.

Unacceptable employee attitudes and behavior, poor supervisory selection processes, and the lack of a management and supervisory development system were addressed by the Management and Professional Development staff by developing and conducting a number of training modules for plant personnel. These included:

- People, the Foundation of Excellence (PFE)
- Personal Effectiveness (PE)
- Simulator Team Training

- Managing for Excellence (MFE)
- Individual and Organizational Effectiveness (IOE)

The development of a Management and Supervisory Development strategy led to the creation of a Management Development model for the Nuclear Group and a Nuclear Group Management Development Plan.

Panel Considerations and Conclusions

The Panel raised a number of questions in the area of Organization Development and Human Resources, concerning the evidence of positive results, ongoing efforts, and the outlook for the future. The Panel inquired into areas such as:

- Training in the conduct of performance appraisals for appraisers and appraisees.
- The difficulty of definition, measurement, and communication of performance indicators in this area.
- The potential impact on Human Resources efforts of future NRC requirements for degreed operators.
- Scope of Training effort to expand and encompass interface and support groups.
- The need for greater role clarity among those involved with the new position of shift manager at the site.

The Panel noted the reported progress observed in operator behavior and reviewed results of a survey performed by on-site Organization Development personnel of team behavior in

the Control Room. The lack of the ability of many of the programs at this stage of implementation to provide useful indicators of effectiveness for both Quality Control and Quality Assurance was recognized, and the Panel was assured NQA would accomplish tasks associated with compensatory monitoring during the Power Ascension Program (see Panel Conclusion of Section III.A, Nuclear Quality Assurance). The issue of shift manager role clarification and completion of drug screening programs for all site personnel were identified by the Panel as requiring completion prior to restart.

The Panel concluded that the Organization Development and Human Resources function demonstrated readiness for restart. Progress towards its goals has been adequate and sufficient management attention and resources seem to have been devoted to this area to ensure that it will continue to improve over time.

P. EMERGENCY PREPAREDNESS

In addition to discussions of the overall status of emergency planning for PBAPS, seven Emergency Preparedness (EP) issues identified as needing improvement were discussed with the Panel. Those issues had been identified as needing improvement as part of the ongoing emergency preparedness program.

(1) Emergency Preparedness Staff Reorganization

Clear accountability for specific EP functions was identified as an issue in the reorganization activities of PE's Nuclear Group undertaken during October 1987. To improve accountability, PE has reorganized so that the Site Emergency Planning Coordinator reports to the Site Support Manager. The Support Division Manager reports to the Vice President-PBAPS. The corporate EP Section has been reorganized to provide assistance to the Site (and to the Limerick Generating Station) as opposed to controlling Site EP activities. Accountabilities have been established as follows:

- PBAPS is held accountable for:
  - Procedures
  - Site facilities
  - Site training
  - Action item closure

- Off-site notifications
- Self-assessment
- Site assessment
- EP training for Site personnel

o Corporate is held accountable for:
  - Overall Conformance to Emergency Plans
  - Off-site interfaces
  - Exercise coordination
  - Scenario development
  - Action item tracking
  - Self-assessment
  - EP Training for Corporate Staff

Interim Nuclear Group Administrative Procedures (NGAP) were approved on August 19, 1988. These procedures assign responsibilities to the organizations responsible for EP activities. These organizations include the Corporate EP Section, Corporate Communications Department, Site Support Divisions, and Site Training Sections. These procedures will undergo regular review and will be maintained to assure that the improvements in accountability are sustained.

(2) Emergency Response Organization (ERO)

The October 1987 corporate reorganization led to a re-examination of the Emergency Response Organization (ERO). This re-examination resulted in a larger Site emergency response pool available due to additional personnel assigned to the Site payroll. These changes are designed to yield improved internal communication in addition to improving accountability. Although sufficient personnel were available to staff the ERO, additional personnel are available for relief due to the increased Site personnel. A more formalized method for appointing personnel to the ERO has been established to supplant the previous method for which the corporate EP Director was responsible.

The qualifications of newly assigned and reassigned personnel were reviewed against training requirements established by the Emergency Plan and the EP Training Course Plan. Training needs were identified and the majority of training has been completed.

Revised call-out procedures were issued on June 2, 1988. One of the more significant revisions was a change made to assure that individuals whose qualification status has lapsed, or who have not received the requisite training, are excluded from the call-out lists. The call-out process was also improved by the acquisition of new equipment. The new methods for

assignment and call-out will be modified as required to meet changing needs and to respond to results from drills and exercises.

(3) Emergency Response Procedures

In 1986 and 1987, PE identified improvements in emergency plan procedures necessary to make them consistent in format and content with other procedures used routinely by station personnel. The improvements in these procedures was classified as Category 2 in the 1987 evaluation. The rewrite of the procedures, initiated in 1987, made them more responsibility oriented and provided flow charts to improve their useability.

(4) Emergency Plan Training

A root cause analysis of items disclosed in self-evaluations of drills and exercises indicated that improvements in emergency plan training were necessary. To relate the training more closely to emergency response organization job performance, a job/task analysis (JTA) was performed which served as the basis for revision of emergency preparedness lesson plans. The JTA was prepared by an experienced contractor with participation of PE personnel, and reviewed and approved by the Director, Emergency Preparedness. The completed JTA was

transmitted to the PBAPS Nuclear Training Section on June 30, 1988, for incorporation into a revised training program.

The EP training program, although adequately addressing present training needs, is being further developed to improve the focus and effectiveness of the training. The training development work includes classroom, drill and hands-on training exercises.

(5) Emergency Preparedness Open Items

In 1988, a need for a formal mechanism to prioritize and track EP open items was identified. A data base for this purpose has since been developed and is maintained by the EP Section. Each item is assigned a priority and completion date. Responsibility for EP open items is assigned in accordance with Emergency Preparedness Nuclear Group Administrative Procedure. This procedure is the basis for determining whether the open items are to be assigned to corporate EP or to the Site for action. All EP open items related to PBAPS are tracked by the Site EP Section in addition to the Corporate EP Section. Responsibility for maintaining the tracking data base and reporting status has been assigned to an action item coordinator appointed in the EP Section. The data base enables the EP Section to issue reports to responsible individuals and to management. The reports indicate aging of open items, expected

completion dates, and the trend of the total number of open items. Progress in working off the open items has been substantial, as indicated in Figure III.P-1.

(6) Emergency Response Facilities

While the NRC has determined that the present facility locations for the Emergency Operations Facility (EOF) and the Technical Support Center (TSC) are acceptable, PE has identified upgrades to the facilities that would be beneficial, including relocation of the EOF outside of the PBAPS Emergency Planning Zone (EPZ).

PE plans to construct a new EOF to accommodate representatives of Maryland, Pennsylvania, and the NRC outside the EPZ. This facility will be constructed at Coatesville, Pennsylvania. The new EOF will be available for the biennial exercise of 1990 and will serve both PBAPS and Limerick.

(7) Full-Scale Emergency Response Exercise

The annual exercise required by NRC regulations and the biennial exercise required by FEMA guidance memorandum was conducted the week of September 26, 1988. This was an unannounced after hours (6:00 p.m. - 6:00 a.m.) exercise. The exercise involved representatives of the NRC, the Commonwealth of

PEACH BOTTOM
EP ACTION ITEMS

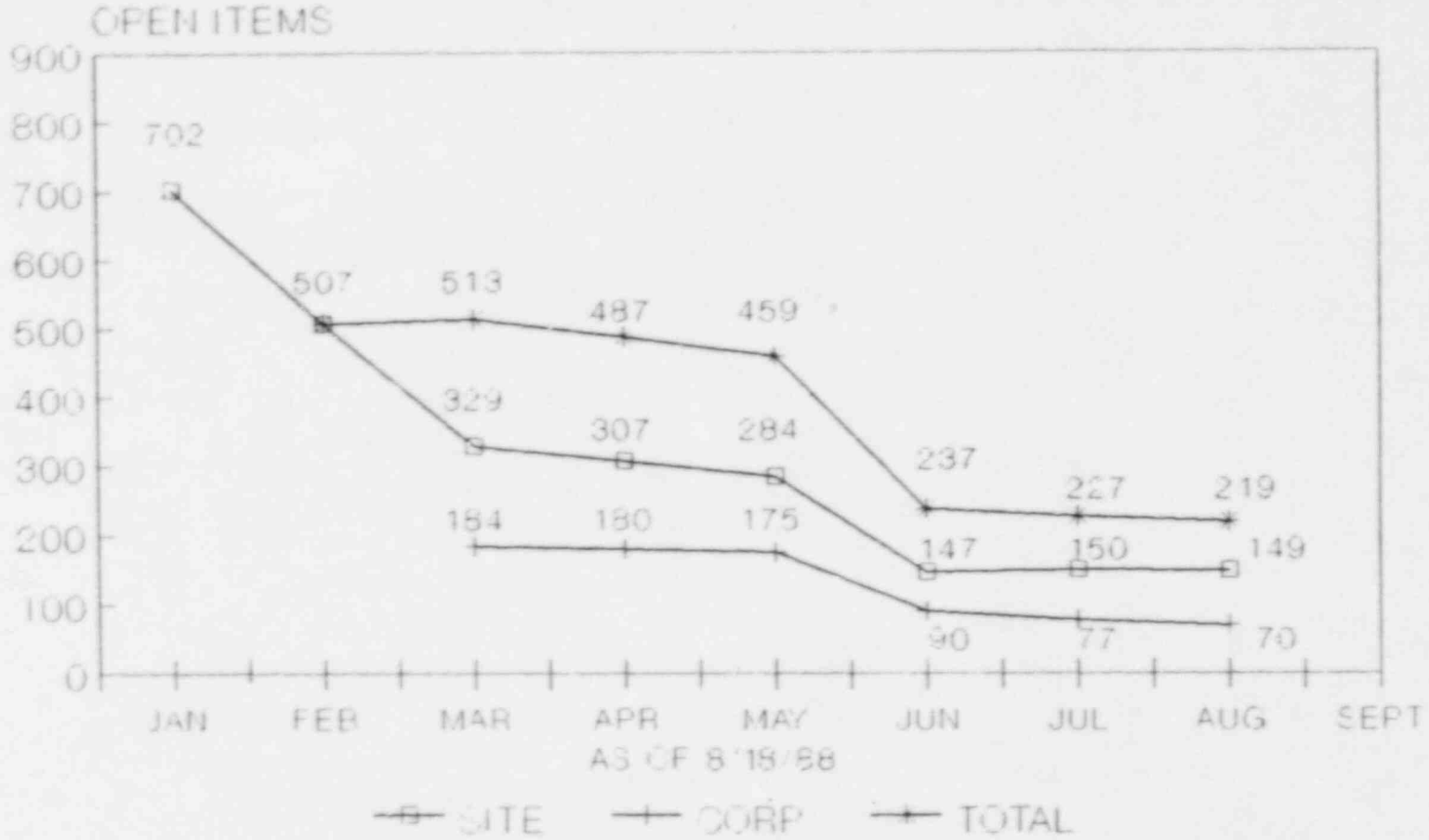

FIGURE III.P-1

Pennsylvania, the State of Maryland, and local governments. NRC had full scale participation with a Response Team and also observed the exercise as an annual announced inspection. FEMA observed the exercise.

To summarize, EP is presently capable of effectively responding to an emergency condition. A number of improvements in EP are in progress which will enhance that capability.

Panel Consideration and Conclusion

The Panel noted that the division of EP responsibilities had been an area of difficulty in the past and recommended that augmented oversight of this area continue. While the Panel noted the reduction of open items, it requested that each remaining item be specifically reviewed to determine why it would not affect restart and that the criteria used to make that determination be identified. The Panel also requested a brief follow-up discussion of the results of call-out drills and preparations for the graded exercise. The Panel expressed the conviction that the EP organization should take a positive, active role in coordination with off-site agencies, especially the states.

After consideration of the information provided and the follow-up discussion, the Panel determined that the EP status of PBAPS was adequate. The Panel further found that the actions taken concurrent with restart activities and the results achieved should enhance the EP status of PBAPS. The Panel considered the plans for future improvements necessary and appropriate.

Q. SECURITY

In 1988 PE initiated a program to upgrade security services at PBAPS. The program included increased management involvement, transition to a new security contractor, upgrades of equipment and systems, improved training, and control of overtime levels worked by the guard force.

The issue of management involvement in security was among the topics discussed with the NRC at a meeting in February 1988 and was also identified through NQA audits. Prior to April 1, 1988, security services at PBAPS were directed from corporate headquarters in Philadelphia.

An experienced Nuclear Security Consultant was retained from Asset Protection Resources (APR), on a contract basis on August 2, 1988. He had previously consulted at the Limerick Generating Station (LGS), was brought in as an advisor to a newly hired Security Specialist. The Security Specialist resigned from PE shortly after he was hired, so the consultant has since agreed to be the interim head of security at the station until a new Nuclear Security Specialist is selected for the vacant position. Following this, the consultant will resume his duties as an advisor/shadow manager. This consultant worked for sixteen years at the NRC, six years as Region I Chief of the

Security and Investigation Section, as well as four years at the Shoreham Nuclear Power Station in Long Island, New York.

Transition to a new security contractor, Protection Technology, Inc. (PTI), took place on August 27, 1988. NRC observers were present, and no violations were observed in the transition. PTI was selected as security contractor in large part because of the success attained at Limerick. Limerick security achieved a SALP 1 rating in its last SALP (February 1, 1987 to April 30, 1988).

During the transition, weekly meetings were held among key personnel to assure a smooth changeover. All PTI security force personnel also attended 12 hour orientation/enhancement training sessions developed by PTI stressing teamwork, attention to detail and resolution of mutual concerns. These sessions also discussed PTI corporate policies and PTI's performance expectations. PE management participated in these sessions with a focus on the need for team work among all personnel on site.

A three-year upgrade program for security cameras was planned, budgeted, and begun in 1988. The upgrade program is designed to reduce the number of compensatory posts by replacing some equipment with better equipment, by adding equipment, and by replacing some older equipment.

A new training module being developed by PE has been submitted to INPO for approval prior to inclusion in General Employee Training (GET). The module will cover the role of nuclear security in the safe operation of the plant. It is scheduled for inclusion in the training program by September 30, 1988. In addition, PTI will perform another 12 hours per person of enhanced training for the guard force to be completed by November 30, 1988.

Control of PTI overtime is being accomplished by requiring prior approval by PE security, by tracking overtime on an individual basis, by eliminating compensatory posts, and by increased staffing. As of July 1988, security force overtime was required to be authorized by PE's Chief Security Coordinator. PE also requires the contractor to report overtime on an individual basis. This information permits the PE Chief Security Coordinator to have better control of the overtime worked so that individual levels do not become excessive. Equipment upgrades will be eliminating compensatory posts to further reduce overtime. There is also a continuing program to assess and control overtime levels while assuring that the security needs at PBAPS are met.

The actions taken by PE have resulted in increased management attention to security matters through a new organization which reports to station management. This provides greater management visibility to the security program. The result will be greater awareness of security needs and a more effective program.

The retention of an experienced Nuclear Security Consultant has significantly increased the station management security experience level and should help to further ensure compliance with NRC requirements. The hiring of PTI, a known SALP-1 performer at Limerick, should improve the performance of security personnel and the overall security program at Peach Bottom. Finally, the three-year upgrade program for security cameras coupled with increased attention to maintenance needs will reduce compensatory posts, and reduce overtime.

Panel Considerations and Conclusions

The Panel noted that oversight of the security contractor had been an issue in the past and recommended close scrutiny of contractor performance, with verification of performance against stated criteria. Continuation of augmented management and NQA monitoring of security was recommended and it was noted that a formal NQA program assessment would be conducted

after the new contractor had an opportunity to adjust. After deliberation the Panel concluded that the security improvements were appropriate and that, assuming performance assessment would not indicate unacceptable performance, there were no issues affecting restart.

R. LICENSING AND COMMITMENT TRACKING

The Licensing area was presented to the Panel by the Licensing Section of the Nuclear Support Division of Nuclear Services. Two issues relevant to Licensing were discussed: 1) managing commitments and 2) timeliness and quality of submittals to the NRC.

The issue of managing commitments was raised by INPO during their 1987 Corporate Assistance Visit and by the Commonwealth of Pennsylvania in a letter dated June 16, 1988 to W. T. Russell (NRC). The second issue involves the timeliness and quality of Licensee Event Reports (LERs) and the timeliness of responses to NRC Inspection Reports. This issue was both self-identified and raised by the NRC in SALP Report 50-277/86-99 and 50-278/86-99 and in Inspection Report 50-277/88-10 and 50-278/88-10. Tasks undertaken to address these issues and results of these efforts were described to the Panel.

To address the issue of managing commitments, the following tasks were completed:

- A Steering Committee was established to recommend a program for managing commitments. The committee included representatives from Peach Bottom, Limerick, Nuclear Quality Assurance, Nuclear Engineering and Nuclear Services.

- The Commitment Tracking Program (CTP) was developed to address commitments made to or imposed by external organizations such as NRC, INPO, and ANI, and internal organizations such as NRB, NQA and OEAP.

- An interim procedure (NGAP-002.X) which included an Interface Agreement was approved.

- The CTP was implemented on July 1, 1988 and the first two monthly reports to management have been issued.

To address the issue of timeliness and quality of licensing submittals, the following tasks were completed:

- Licensing Section procedure LS-I-2, "Procedure for the Preparation, Review, and Issuance of Licensee Event Reports (LERs)" has been revised to incorporate comments resulting from NRC, NQA and Licensing Section assessments. The most recent revision (Rev. 4) was made to address an NQA finding.

- The responsibility for preparing and dispatching LERs was transferred to the site Regulatory group under the Superintendent-Technical. The change was effective August 22 1988.

- o A Reportability Coordinator Program was developed to ensure that potentially reportable items are promptly identified, evaluated, and reported, as appropriate. This Program is in the process of being implemented.

- o A draft procedure for responding to NRC inspection reports was developed.

- o Involvement with NRC inspections has increased by attending exit meetings and serving as the designated contact to respond to NRC inspectors' concerns.

The results obtained from these efforts were presented to the Panel as:

(1) A high level of line management and staff are involved in managing commitments. The CTP has horizontal applicability across the Nuclear Group. The Licensing Section administers the Program, but line management retains the responsibility for making and implementing commitments. A controlled data base is now available which allows the issuance of quantitative monthly reports to management. These monthly reports include the number of open and overdue commitments and listing of commitments due within the next 60 days.

(2) The quality and content of LERs is assessed regularly by the NRC Office of Analysis and Evaluation of Operational Data (AEOD) which assigns a numerical score to a utility's LERs. The Peach Bottom score increased slightly from 8.0 out of 10 to 8.5 out of 10. In addition, the LERs have been favorably reviewed by the NRC in the routine resident inspectors' Inspection Reports. In 1987, 10 out of 43 LERs (23%) were submitted beyond the 30 day reporting date. In 1988, 2 out of 28 LERs (7%) were submitted beyond the 30 day period. For Inspection Reports requiring responses, 7 out of 10 (70%) were beyond the 30 day due date in 1987 and none were late in 1988. These results are consistent or better than industry averages.

Panel Consideration and Recommendation

The Panel reviewed and was satisfied, with one exception, with the status of Technical Specification amendment application submittals to the NRC. The Panel expressed concern over the implications of open Technical Specification Action Statements at the time of restart, specifically the Control Room Cardox specification. Licensing reported that the amendment application had been submitted to the NRC, but because of provisions within the Action Statement which allow reactor startup or continued operation, this amendment has been categorized by PE and the NRC as a non-restart amendment. The

Panel, after explanation and discussion, was satisfied. The Panel recommended that entrance into Technical Specification Action Statements be monitored to assure that unexpected problems at restart be kept to a minimum.

The Panel concluded that Licensing has demonstrated its readiness to support restart and safe operation. Its performance level will be adequately monitored and that sufficient management controls and resources have been allotted to ensure that LERs and inspection reports will be filed with the NRC on a more timely basis in the future. Although the process and database for the recently implemented commitment tracking program is still in a "startup" mode, the Panel concluded that it should further enhance PE's ability to manage its commitments.

MASTER OPEN ITEM LIST
PBAPS UNIT 2 RESTART

TASK I.D.	TASK DESCRIPTION
** Category Title: 1987 INPO ITEMS	
5.7.208.02	REVIEW PLANT INFORMATION FOR CONTINUING APPLICABILITY, INCORPORATE INTO CONTROLLED DOCUMENTS, OR REMOVE
5.7.212.01	EMPHASIZE TO ALL PLANT PERSONNEL TO IDENTIFY, DOCUMENT, AND CORRECT MATERIAL DEFICIENCIES
5.7.216.02	ENSURE MOV ACTUATOR CHANGEOUTS RECEIVE ENGINEERING REVIEWS
5.7.216.04	REVIEW CURRENT POST-MAINT TEST PROGRAM FOR MOV
5.7.221.02	CONDUCT SYSTEM WALKDOWNS AND ST'S PRIOR TO RESTART (AWAITING SYSTEM OPERATION TO COMPLETE ST'S)
** Category Title: CATEGORY 1 5.1 THRU 5.5	
5.3.010.14	REDUCE UNIT 2 MRF BACKLOG PRIOR TO RESTART
** Category Title: CATEGORY 1 5.6 THRU 5.8	
5.6.310.01	ASSURE THAT SAFETY SYSTEM PARAMETERS ARE BEING PROPERLY SENSED (REQUIRES PCIS SYSTEM WINDOW)
** Category Title: CONFIGURATION MANAGEMENT	
DWG.02.2	PERFORM SURVEY OF AS-BUILT DRAWINGS FOR INSTALLED S-R MODIFICATIONS
DWG.03.7	INCORPORATE ALL INTERIM MSRs & AAFs INTO AS-BUILT DRAWINGS FOR CATEGORY 1 DWGS
DWG.03.8	UPDATE ALL DWGS TO WITHIN PROCEDURAL REQUIREMENTS.
DWG.05.3	ESTABLISH & IMPLEMENT PROCEDURE NQA-25, "CORRECTIVE ACTION REQUESTS"
LIC.01.3	REVISE REPORTABILITY PROCEDURE TO INCLUDE LICENSING PARTICIPATION IN DETERMINATION OF PART 21'S. NEED A SITE PROCEDURE.
MNT.03.2	INITIATE TRAINING ON REVISED A-30
MOD.03.5	INCORPORATE ALL "AGED" ERRFs PRIOR TO RESTART. NONE SHOULD EXCEED PROCEDURAL LIMITS.
MOD.04.1	SAMPLE PAST MAJOR S-R MODS TO DETERMINE ADEQUACY OF INTERDISCIPLINARY REVIEWS (GILBERT)
MOD.04.3	MAKE THE INTERIM GUIDANCE IG 3.1-1 APPLICABLE TO

MASTER OPEN ITEM LIST
PBAPS UNIT 2 RESTART

TASK I.D.	TASK DESCRIPTION
	PBAPS
MOD.06.1	REVIEW EMERG MODS. SAMPLING EFFORTS ADDRESSED THIS ISSUE
MOD.07.1	SAMPLE PAST S-R MODS REGARDING DESIGN BASIS USE & UPDATING (GILBERT)
MOD.08.4	REVIEW PAST QUALITY AUDITS ASSESS JUSTIFICATION FOR NON-MRF S-R MODS
MOD.08.5	ISSUE PROCEDURE MG-7.2-1, REV 0, AND REVISE PROCEDURE A-26 TO PRECLUDE USE OF MRFs & MONEY TICKETS TO PERFORM MODS
MOD.10.1	REVIEW S-R SETPOINTS TO ASSURE AGREEMENT W/DESIGN BASIS DOCUMENTS
MOD.11.1	CONDUCT TRAINING OF NED PERSONNEL INVOLVED WITH THE PLANT MODIFICATION PROCESS
MOD.11.2	CONDUCT TRAINING OF PBAPS PERSONNEL INVOLVED WITH THE PLANT MODIFICATION PROCESS
NEW.01.1	REVIEW AND RECONCILE BECHTEL AND GE SCHEMATIC DRAWINGS
SEC.01.1	REVISE MAINT. PROCEDURE A-26A TO CLARIFY SECURITY INVOLVEMENT IN THE MAINTENANCE PROCESS
SEC.01.3	REVISE PP-20 TO ADDRESS COMP. MEASURES FOR SEC. BARRIER, BOUNDARY, OR COMPONENT DURING MAINT. & MODS.

** Category Title: MATERIAL MANAGEMENT

269-01198	REPLACE 0AP188 AND 0BP188. SOURCING COMMERCIAL GRADE PUMPS.

** Category Title: MISC RESTART ITEMS

LER03-87-09	TEST PROCEDURE REVISION, PCIS LOGIC SYSTEM FUNCTION TEST
RS0015C	I.E. BULLETIN 80-11 RESPONSE "MASONRY WALL MODS", MOD 2235
RS0026	PECO SELF ASSESSMENT
RS0045	UPGRADE PBAPS PROCEDURE REVIEW CYCLE

MASTER OPEN ITEM LIST
PBAPS UNIT 2 RESTART

TASK I.D.	TASK DESCRIPTION
RS0047	RESOLUTION OF PA CONCERNS
RS6	DEVELOP ALCOHOL POLICY
RS7	DEVELOP ADMINISTRATIVE CONTROLS FOR WORKING HOURS

** Category Title: MODS REQD FOR RESTART

0580	POST-ACCIDENT SAMPLING SYSTEM UPGRADE
0603B	SEISMIC SPOTMOS PRINTER UPGRADE
0633	MODIFY ADS LOGIC
0959A	REPLACE DC HFA RELAY COILS
0967	OFF GAS SYSTEM IMPROVEMENTS
1007	PURGE AND VENT VALVES
1029E	CM ESW PRESSURE AND CST LEVEL INDICATOR (REQUIRES STARTUP TESTING)
1200	CONTROL ROOM RADIATION MONITORING SYSTEM FLOW TRANSMITTER
1273	REMOVAL OF UNIT 2 MSIV CONTROL CIRCUIT DIODES
1316	SAFETY GRADE AIR SUPPLY TO CONTAINMENT ISOLATION VALVES
1324	ADD 3" MANUAL BYPASS AROUND HPSW MO-89
1352B	ALTERNATE SHUTDOWN DIAG. INSTR.
1352H	ALTERNATE SHUTDOWN MOD.
1352I	ALTERNATE SHUTDOWN LIGHTING AND COMM.
1353A	ALTERNATE CONTROL STATION FOR UNIT 3 HPCI SYSTEM
1353H	PROCESS MONITOR INSTRUMENTATION - ALTERNATE CONTROL STATION
1353I	ALTERNATE SHUTDOWN MOD
1364	REPLACE DP SWITCHES EMERGENCY VENTILATION SYSTEM
1419A	REPLACE RPS AND RHR ROSEMOUNT ELECTRONIC TRANSMITTERS

MASTER OPEN ITEM LIST
PBAPS UNIT 2 RESTART

TASK I.D.	TASK DESCRIPTION
1449	RELOCATE TEST TAP DOWNSTREAM OF CORE SPRAY TESTABLE CHECK VALVE
1474	REMOVE FEEDWATER CONDENSER PROBLEM INITIATION FROM EHC RUNBACK LOGIC
1505	REPLACE STANDBY GAS TREATMENT SYSTEM DIFFERENTIAL PRESSURE SWITCHES
1548	MSIV PLUG STEAM ANTIROTATION EQUIPMENT MOD
1549C	CHEMISTRY SYSTEM MOD
1660	ADS/MSIV INSTR. NITROGEN ACCUMULATOR LEAKAGE LIMIT
1684	3RD & 4TH HEATER EXTRACTION STEAM LINE CVs
1695	REPLACE THE RX FEEDPUMP MIN. FLOW RECIRC VALVES
1729	CONTROL ROOM UPGRADE/FURNITURE/LIGHTING/VENTILATION
1744	REPLACE GLOBE VALVE M0-79 W/ANCHOR DARLING VALVE
1750B	INSTALL GE AZTECH SYSTEM AND EXTENSION BUILDING
1790	REPLACE 1-A FEEDWATER HEATER BUNDLES/INSTALL DRAIN
1834	REPLACEMENT PARTS FOR SEAL OIL VACUUM PUMP PARTS
1909	MOD. VALVES TO ACCEPT GRAPHITE TYPE PACKING
1916	RPS BREAKER CIRCUIT INTERLOCKS
1930	REPLACE TURBINE EMERG. BEARING OIL PUMP BATTERY
1958	(RSP) HUMAN FACTOR ENHANCEMENT
1964	SAFETY ITEMS/13KV DISCONNECT END FUSE COMPARTMENTS
1982	RX COOLANT PUMP SHAFT FAIL - INFO NOTICE 86-19
2006	DRYWELL TEMP. INDICATION REPLACEMENT
2122B	ASCO SOLENOID REPLACEMENT
2123	PERFORM BUS LOAD AND VOLTAGE REGULATION STUDY
2132	CONTROL ROOM PANEL ENHANCEMENTS
2189A	RHR MOTOR SPACE HEATER UPGRADE

MASTER OPEN ITEM LIST
PBAPS UNIT 2 RESTART

TASK I.D.	TASK DESCRIPTION
2231	MOVATS TESTING OF MOVS
2235	REINSPECTION OF MASONRY WALLS
2275	INVERTER FEED FOR SAS AND CAS SECURITY SYSTEM
2281	EVAL. MO-2663/MO-3663 FW LONG PATH RECIRC. VALVE
2318	FIRE DOOR MODIFICATIONS
2329	PACKING FOR ALL 4 HPSW PUMPS
2339	SEISMIC GAP FILL MATERIAL
2353	ADDITION OF TERMINAL BLOCKS TO THE SPOTMOS SYSTEM
2355	INSPECTION AND REWORK OF CLASS 1E IN-LINE SPLICES
2371	REPLACEMENT OF ESW PIPING WITHIN ECCS ROOMS
2383	MAIN STEAM RADIATION MONITOR CONNECTOR
2387	DG ROOM AIR EXHAUST PROTECTED OPENING
2388	ALT EMERGENCY S/D PANELS IN RX RECIRC. MG SET ROOMS
2390	INTERFACE BET. CARDOX SYSTEM AND THE DG AIR INTAKE
2391	FW LONG PATH RECIRC. ORIFICE REPLACEMENT
2489A	EQUIP. ACCESS LOCK DOORS
2517B	"SWING CABLE" BETWEEN MOTOR CONTROL CENTERS
2564	LOAD SEQUENCING ECCS-RHR AND CORE SPRAY
2578	MOD. START LOGIC FOR RHR COMPARTMENT COOLER FANS
2579	DELAY START OF DG VENT SUPPLY FAN
2580	COOLING TOWER LOADS ON LOCA
4102	PIPE HANGERS ON DUMP LINE TO CONDENSER
4112A	REPLACE NONQUAL. RELIEF VALVES
5001	REMOVE RCIC OVERSPEED CONTROL
5002	REPLACEMENT OF UNDERVOLTAGE RELAYS

MASTER OPEN ITEM LIST
PBAPS UNIT 2 RESTART

TASK I.D.	TASK DESCRIPTION
5004	REPLACEMENT OF SECONDARY CONTAINMENT DOOR
5007	MOTOR DRIVEN FIRE PUMP REPLACEMENT
79-016	N2 INSTRUMENT COMPRESSOR LOW LUBE OIL ALARM
80-155	RX FEEDPUMP TURBINE IMPROVEMENTS TO GREASE FITTINGS
85-132	THREADING/CAPPING OF STEM LEAK-OFF PORTS ON RHR/CS
86-004	EHC HYDRAULIC MOD. IN RESPONSE TO (TIL-841-3A)
86-006	EHC FILTER TELL-TALE MOD. ON THE T-BOX OF HYDRAULIC
86-055	ADMIN. BUILDING EF-11 EXHAUST FAN FILTER D/P ALARM
86-069	ADDITION OF RECIRC M/G LUBE OIL INSTRUMENTATION
87-020	INSTRUMENT N-2 BACK-UP SV-8 (9) 130 A,B BYPASS LINE
87-047	TEMP. REPLACEMENT OF S2-3893 FEEDER BREAKER TO 125V
87-087	INSTALL NFD/PC SOFTWARE (GE8) INTO O.C. PROCESS
88-010	REPLACEMENT OF DG FUEL CROSSOVER
88-017	PROVIDE ADDITIONAL FACILITIES FOR THE I&C GROUP
88-018	REPLACEMENT OF DG AIR COOLANT
88-041	PERMANENT INSTALLATION OF FIT-7341 AT OFFGAS
88-057	MODIFY RX FEEDPUMP DISCHARGE CHECK VALVE INTERNALS
88-061	E-FIELDS 5 AND 6 MODIFICATIONS

** Category Title: NCRS FOR MOIL

CDP1044	PENETRATION DETAIL NOT WITHIN SCOPE OF CD5.8
CDP1054	FOUR POINT TERM BLOCK MISSING FROM MCC BUCKET REF R-133
CDP1060	BOOTSEAL ON PENETRATION SEAL REF 8800352
CDP1083	PIPE & HANGERS WERE INSTALLED AT AN INCORRECT ELEVATION REF 1316
CDP [illegible]5	NCR CD-P-1085 CORRECTIVE ACTION DOES NOT SOLVE

MASTER OPEN ITEM LIST
PBAPS UNIT 2 RESTART

TASK I.D.	TASK DESCRIPTION
	PROBLEM REF 2318
CDP1170	PROCUREMENT REQUIREMENTS FOR FIRE RATED MATERIALS AND EQUIPMENT WERE REVISED AFTER THE MATERIAL HAD BEEN ORDERED REF 1729
CDP1188	FSAT SETPOINT 30 FT, FUEL HOISTS ARE SET HIGHER REF SQE 50093
CDP1208TO1352	ENSURE ACCURATE P&IDs ARE AVAILABLE
CDP1353TO1372	PERFORM ENG ANALYSIS & REVISE P&ID AS REQUIRED (15 ITEMS)
CDP1374	PERFORM ENG ANALYSIS & REVISE P&ID AS REQUIRED
CDP1380TO1381	SUPERCEDES NCR CDP1275 PLANT CONDITIONS SHOW DRAIN EXIST PER P&ID (2 ITEMS)
CDP1383	PERFORM ENG ANALYSIS & REVISE P&ID AS REQUIRED
CDP1470	WIRE INSULATION REF 2353
CDP1511	ENSURE PROPER GRADE BOLTING
CDP1516	INSTALL/REPLACE HANGER REF 4112A
CDP1519	REPAIR HANGER REF 4112A
CDP1524	NCR CDP1306 TO BE VOIDED
CDP1531	INSTALL EQ SEAL TERMINATIONS ON RAD MONITORS RE8103A & C REF R-147
CDP1532	REPLACE SPRING CAN REF R-206
CDP1539	REPAIR HANGER 32GB-S41 REF R-210
CDP919	PRESSURE TEST REF 1007
CDP949	CORRECT CENTER OF C.E.B. TO EDGE OF CONCRETE DISTANCE.

MASTER OPEN ITEM LIST
PBAPS UNIT 2 RESTART

TASK I.D.	TASK DESCRIPTION
	REF 1316
FEP014	S&C SHOULD REFLECT AS BUILT CONDITIONS REF 1915
FEP049	CONTACT F6-F7 OF SWITCH 13A-S44 NOT CLOSED IN NORMAL
FEP104	DWG-3-936, ALL SHEETS, REV 40 REF 1915
FEP123	REWORK SPLICE CONNECTION FOR "EQ" APPLICATION REF 2355
FEP126	REWORK SPLICE CONNECTION FOR "EQ" APPLICATION REF 2355
FEP135	REWORK SPLICE FOR E.Q. APPLICATION REF 2355
FEP137	REWORK SPLICE FOR E.Q. APPLICATION REF 2355
FEP138	REWORK SPLICE FOR E.Q. APPLICATION REF 2355
FEP139	REWORK SPLICE FOR E.Q. APPLICATION REF 2355
FEP140	REWORK SPLICES FOR E.Q. APPLICATION REF 2355
FEP155	REWORK RAYCHEM SPLICE REF 2355
FEP157	INSTRUMENTS ERRONEOUSLY BELIEVED TO BE DEFECTIVE REF 2355
FEP158	INSTRUMENTS ERRONEOUSLY BELIEVED TO BE DEFECTIVE REF 2355
FEP160	REPLACE COIL HOLD DOWN NUTS FOR MAIN STEAM RV'S REF 2355
FEP166	INSPECT/REWORK SPLICES REF 2355
FEP175	OPERATOR HAS SINGLE TORQUE SWITCH, SCHEMATIC SHOWS DUAL TORQUE SWITCH REF 2231
FEP181	SPLICES ARE NOT MEETING E.Q. REQUIREMENTS

MASTER OPEN ITEM LIST
PBAPS UNIT 2 RESTART

TASK I.D.	TASK DESCRIPTION
MEP150	REWORK SPLICE FOR E.Q. APPLICATION REF 2355
OEM0012	63-ISO-SA/6210-E-324-16, G.E. CR120A RELAY. LIMIT CURRENT THRU CONTACT 1-2 TO 1.0 AMP
P88-01	NO YEAR OF MANUFACTURE PRINTED ON CABLE
P88-012	115-4467, MOTOR, EMERSON ELECTRIC #64-17746-475, 2 HP.230/460 ACV, 1735 RPM .3PH QAD LIST M-834 VENTILATION RAD. MONITORING SYSTEM, PUMP IS NUCLEAR SAFETY RELATED, MECHANICAL ENGINEERING EVALUATION FILE #RES 25-1 (RAD. MON) CURRENT REVISION OF THE PBAPS QA PLAN. INSTALL QUALITY ASSURED RAD MON. SAMPLE PUMP MOTOR ON EQ# QAP 188.
P88-033	DRAWING M-1-5-42 SHEET 8 SHOWS 15 AMP FUSE FOR L1 AND L2 FOR 20D012 IN FIELD 35 AMP FUSE IS INSTALLED FOR L1 AND L2 FOR20D012
P88-034	M-1-S-40 AND E912 VALVES SCHEMATIC AND CONNECTION DRAWING DO NOT SHOW A LOCAL PUSH BUTTON
P88-036	TERMINAL BLOCK AT SV CORRODED
P88-039	MAKE Q-LISTED CONTROL PANEL REFERENCED DRAWINGS AND 6280-E5-72(2)-22, 6280-E5-73(2)-26, 6280-E5-56(2)-12 AS-BUILT CONFIGURATION CONSISTENT
P88-045	FOR MOTORS LISTED ON ATTACHED SHEET, WHEN MOD 2355 WAS PERFORMED A 3" LONG PIECE OF WCSF-500 TUBING WAS NOT INSTALLED
P88-046	MAKE ABOVE DRAWINGS AND AS-BUILT CONFIGURATION OF PANEL CONSISTENT
P88-047	BUSHING ON HPCI TURBINE EXHAUST SWING CHECK VALVE TO MEET ORIGINAL DESIGN SPECIFICATIONS
P88-05	MATERIALS FURNISHED DO NOT MEET PO REQUIREMENTS
P88-051	ACE RCK TRIP AND THROTTLE VALVE TRIP SOLENOID ELITE BACKSTOPS FOR THE CONTACT LIMITER
P88-052	RCIC SYSTEM QA REPLACEMENT SOLENOIDS
P88-058	MAKE AS-BUILT CONFIGURATION OF RELAY WIRING AND THE DRAWING CONSISTENT.

MASTER OPEN ITEM LIST
PBAPS UNIT 2 RESTART

TASK I.D.	TASK DESCRIPTION
P88-059	ACCUMULATOR GAS BAGS SCHRADER VALVE ASSEMBLY
P88-060	ACCUMULATOR GAS BAGS SCHRADER VALVE ASSEMBLY
P88-061	REPAIR GROUND STRAPS TO RESTORE ABILITY TO DETECT GROUND FAULT
P88-062	PROCESS SETPOINT
P88-064	MAKE UNIT 2 RPS SCRAM RESET RELAY DOCUMENTATION AND INSTALLED EQUIPMENT CONSISTENT
P88-067	MAKE FIELD INSTALLATION AND PED SHT.3, PRX-9617 (F-8), PRX-9618(E-8); Y STRAINER DRN (D-2) PIPE LAYOUT OF CROSSTIE BETWEEN SJAE MAIN STM WARM UP 1 & B HDRS; MARK NOS. ON VENT FILL TO PT-3864; PT-3865 (E-7) (F-7); BLOCK VLV TO MAIN STEM FOR PRESAGU CONSISTENT
P88-072	MOTOR COOLANT PIPING MODIFICATION
P88-073	INBOARD FLANGE OF THE MOTOR COOLANT PIPING
P88-074	INCORPORATE HANGER DETAIL FROM VOID DRAWING M1568 ON M1503
P88-085	GLOVE VALVES ON THE EXHAUST PARTS OF THE AIR OPERATOR AND SOLENOID VALVES TO ALL E.I.F. BUTTERFLY VALVES
P88-10	SHELF LIFE EXPIRATION
P88-11	NEED SPECS TO VERIFY ACCEPTABILITY OF CABLE

** Category Title: NQA FINDINGS

00-33-QC-040	PROPERLY CONTROL ZONE II HOUSE KEEPING ZONES
00-88-00-11	REVIEW GENERIC IMPLICATIONS OF LER 2-87-32
00-88-00-12	REVISE PROCEDURE TO ADDRESS LER GENERIC IMPLICATION
00-88-00-17	CONTROL OF OPERATOR'S MANUALS
00-88-QC-036	MAINTENANCE PERSONNEL BYPASSED PROCEDURE REQUIREMENTS ON Q MATERIAL
88-12-07	SURVEILLANCE TEST PROCEDURE SHOULD REFLECT EQ REQUIREMENTS

MASTER OPEN ITEM LIST
PBAPS UNIT 2 RESTART

TASK I.D.	TASK DESCRIPTION
8K-111	CONDITIONAL RELEASE AND INSTALLATION OF 100 AMP CIRCUIT BREAKER IN A LPCI SWING BUS
8K-407	CONDITIONAL RELEASE AND INSTALLATION OF RETAINING RING ON EMERGENCY COOLING WATER PUMP
8K-413	CONDITIONAL RELEASE AND INSTALLATION OF PIPING/TUBING FOR 2D HPSW MOTOR COOLING PIPING
AFP-87-87-01	CORRECT PAST EMERGENCY RESPONSE DRILL OPEN ITEMS
AFP-88-47-01	ASSIGN PROCEDURE REVIEWER
AFP-88-47-02	PERFORM 5 YEAR PROCEDURE REVIEW
AFP-88-59-03	PROCESS VENDOR MANUALS PER ERDP 8.4 & 6.2
AFP-88-59-04	DISTRIBUTE VENDOR MANUALS
D-192-01,02	MODS 2123, 2520, 2564
D-192-19	BECHTEL ENGINEERING REVIEW OF ERPF'S ASSOCIATED WITH MODS 2106 AND 2371
ISED-FW-OP-03	MAKE FEEDWATER SYSTEM OPERATING PROCEDURES, GENERAL PROCEDURES, AND ACTUAL PLANT OPERATIONS CONSISTENT
ISED-FW-OP-04	IMPROVE HOUSEKEEPING IN RFP TURBINE AND PUMP ROOM
ISED-FW-P-05	ENSURE FEEDPUMP/TURBINE RESPONSE TIME MEETS REQUIREMENTS OF GE TRANSIENT ANALYSES REPORT NO. NEDC-10996
OP-402-01	MAINTENANCE REQUIREMENT FOR TORQUING/LUBING O RINGS
OP-402-02	DOCUMENTATION DEMONSTRATING QUALIFICATION OF RTV SEALANT
RPA-P88-05-010	REVIEW TEMPORARY CLEARANCES FOR CORRECTNESS
RPA-P88-05-11	MONITOR TEMPORARY CLEARANCES FOR CURRENCY
RPA-P88-07-06	COMPLETE THE U2 PORTION OF MOD 1106B
RPA-P88-08-04	GENERATE A PROCEDURE FOR THE MAINTENANCE AND UPDATING OF THE FUEL PRECONDITIONING DATABASE
RPA-P88-08-08	UPDATE SYSTEM DATE BOOKS IN PREPARATION FOR RESTART
RPA-P88-08-10	SAFETY EVALUATION FOR MOD 1625

MASTER OPEN ITEM LIST
PBAPS UNIT 2 RESTART

TASK I.D.	TASK DESCRIPTION
** Category Title: NRC RESIDENT INSP. LIST	
87-11-01	MAINTAIN ONE SHUTDOWN TRAIN FREQUENCY FREE FROM FIRE DAMAGE
87-17-02	REVIEW SAFETY SYSTEM REGARDING CRVRM SYSTEM OPERABILITY
87-18-02	REVIEW PAST EQ REPLACEMENTS FOR REPLACEMENT REQUIREMENTS.
87-25-01	COMPLETE MOD 2390 OR USE FIRE WATCH AS NECESSARY
87-29-03	DETERMINE ROOT CAUSE OF DIESEL GENERATOR LUBE OIL FIRES, CORRECTIVE ACTIONS AND REPORTABILITY
87-32-07	ESTABLISH CRITERIA FOR TRENDING LEAK RATES OF CONTAINMENT ISOLATION VALVES
88-09-03	CONDUCT 1988 50.54t AUDIT AND RESOLVE RESULTING ISSUES FOLLOWING THE EXERCISE WEEK OF 9/26/88
88-10-04	RESOLUTION OF LICENSEE IDENTIFIED VIOLATIONS.
88-13-06	PROTECTED AREA BARRIER DRAWINGS AND SECURITY PLAN ADEQUACY.
88-BU-04	POTENTIAL SAFETY RELATED PUMP LOSS
** Category Title: NRC RESTART PLAN Q'S	
LTR880616P001	EVAL COMMENTS FOR POSSIBLE INCORP INTO RESTART PLAN ACTION
QII-18	INCLUDE EFFECTIVENESS OF WORK MANAGEMENT PROCESSES DISCUSSED IN THIS RESPONSE AS PART OF PE'S SELF ASSESSMENT FOR RESTART
QII-41	PERSONNEL WHO NEED TO EFFECT A PROCEDURE WILL BE TRAINED IN THE REVISION TO THAT PROCEDURE
QII-46	REVISE PROCEDURES TO INCORPORATE IMPROVED QA REPORTING PRACTICES
** Category Title: PROGRAM SOFTWARE	
PS12.1	EVALUATE LIMITING PLANT CONDS. - RECIRC. RUNBACK
PS12.2.1	CHANGE OP PROC. LIMIT RUNBACK CONDS FEATURE

MASTER OPEN ITEM LIST
PBAPS UNIT 2 RESTART

TASK I.D.	TASK DESCRIPTION
PS2.0	PWR ASCENSION - PROCEDURES, TUNEUP, TESTS & ADMIN.

** Category Title: QATTS DATABASE

LER03-87-009	PROCEDURE ST 1.3-3 AND THE CORRESPONDING PROCEDURE ST 1.3.2 WILL BE REVISED PRIOR TO STARTUP
LTN08078714	REVIEW, IDENTIFY, AND VERIFY CLOSE OUT OF EXISTING AND NEW CATEGORY 1 NUCLEAR QUALITY ASSURANCE FINDINGS
RNI8523231313	IMPLEMENT MODIFICATIONS (TURNING CONTAINMENT ISOLATION VALVES TO ENABLE TYPE C LEAKAGE TESTING OF VALVE STEM PACKING)
RNI8732322222	DEVELOP COMPUTER PROGRAM TO TRACK ALL IST TESTING ON A COMPONENT AND ON AN ST BASIS.

** Category Title: QATTS II

CFR88072901	REPLACE ALL OF THE 125VDC STATION BATTERY CELLS DISCOVERED TO HAVE THE RED DISCOLORATION ON UNIT 2 BY NOVEMBER 1, 1988
CFR88072902	ST 8.2 "STATION BATTERY AND WEEKLY CHECK AND ST 8.3 STATION BATTERY QUARTERLY CHECK" WILL BE REVISED TO INCLUDE A CHECK FOR SIGNS OF RED DISCOLORATION ON THE NEGATIVE PLATES DURING TESTING OF CELL VOLTAGE AND SPECIFIC GRAVITY.
INPC8721A104	DEVELOP DETAILS OF NUCLEAR MAINTENANCE'S INTERFACE AGREEMENT
INPP86TS.3-1C	PLANT WALKDOWNS HAVE RESULTED IN THE INITIATION OF 15 MODIFICATION PACKAGES TO REPLACE THESE TEMPORARY INSTALLATIONS WITH PERMANENT INSTALLATIONS OR REMOVE THESE ITEMS FROM THE PLANT.
INPP8712M201B	THE PRESENT PLANT HOUSEKEEPING CONTROLS PROCEDURE WILL BE UPGRADED TO EMPHASIZE MATERIAL DEFICIENCIES AND MATERIAL CONDITION STANDARDS
INPP87MA.4-2G	OVERHAUL AND TEST ALL MOVS AS DETERMINED BY THE CLASSIFICATION IN "NUCM INP P87MA.4-2F" TO BE REQUIRED PRIOR TO RESTART
LER02-88-05R1	FOR EACH CR PANEL AND EACH AFFECTED CABLE SPREADING ROOM PANEL, THE BASE CHANNEL WILL BE WELDED TO THE FLOOR EMBED ON THE OUTSIDE OF THE PANEL, OR BOLTED DIRECTLY TO THE CONCRETE FLOOR.

MASTER OPEN ITEM LIST
PBAPS UNIT 2 RESTART

TASK I.D.	TASK DESCRIPTION
RNI8706060505	PECO NUC PLANT SECURITY TO FORMALLY NOTIFY CONTRACTORS AND VENDORS THAT THEIR EMPLOYEES MUST ABIDE BY PECO'S DRUGS AND ALCOHOLIC BEVERAGES POLICIES.
RNI8732322727	IN 1988, AN IST AUDIT UTILIZING AN IST TECHNICAL SPECIALIST WILL BE PERFORMED
** Category Title: RESTART REVIEW PANEL	
RRP01	ASSURE THAT POWER TESTING PROGRAM PROCEDURES INCLUDE FORMS AND GUIDANCE FOR OPERATOR PERFORMANCE ASSESSMENTS PRIOR TO RESTART
RRP02	RESCREEN EMERGENCY PLAN OPEN ITEMS FOR RESTART ITEMS
RRP03	FORMAL NQA ASSESSMENT OF SECURITY CONTRACTOR PERFORMANCE
RRP04	RESOLVE MASONRY WALL ISSUES PRIOR TO RESTART
RRP05	REVIEW 21 VENDOR MANUALS CLASSIFIED AS UNCONTROLLED TO DETERMINE WHETHER REVISION TO A PREVIOUS RESPONSE TO THE NRC IS NEEDED.
RRP06	REVIEW THE ADEQUACY OF COMPENSATORY SITE PROCEDURES RESTRICTING THE USE OF CATEGORY 2 DRAWINGS IN THE CONTROL ROOM.
RRP07	SHIFT MANAGER ROLE CLARIFICATION TRAINING
RRP08	COMPLETION OF DRUG TESTING PROGRAM FOR ALL SITE PERSONNEL
RRP09	BACKLOG REDUCTION OF NON-OUTAGE RESTART RELATED CORRECTIVE WORK ORDERS TO BETWEEN 600 AND 1000 ITEMS
RRP11	COMPLETE A QUALITY VERIFICATION AND INSPECTION OF READINESS FOR RESTART
RRP15	CONDUCT SAMPLE AUDITS RELATED TO COMPLETION OF TASKS LISTED IN PBAPS MOIL
** Category Title: TECH. SPEC. ITEMS	
RS7	SOURCE RANGE MONITORS

MASTER OPEN ITEM LIST (MOIL)

The Master Open Item List (MOIL) was compiled at the direction of the Peach Bottom Restart Review Panel (RRP). The MOIL is comprised of open items required to be resolved prior to restart except Maintenance Request Forms (MRFs) which are tracked separately.

In some regards, the MOIL is internally redundant. For example, NCRs which are associated with modifications (MODS) are included in the MOIL even though the NCR must be closed out in order to close the MOD. This is being reported in this manner to ensure that all activities associated with a specific item are closed. In some instances, the MOIL represents a number of similar open items such as NCRs. The MOIL is intended as a management oversight tool and does not replace the normal tracking and closeout mechanisms.

The abbreviated MOIL listing included here was prepared for the RRP and includes task identifiers and a description of each task. The task identifier corresponds with the identifiers on separate tracking lists which are part of other routine plant programs that were combined to create the MOIL. Therefore, the MOIL can be cross-referenced to the initiating documents through the existing tracking systems. The MOIL data base also includes assignment of responsible individuals and planned completion

dates for each open item. However, for the purposes of the Panel, the abbreviated version was all that was required to represent all open restart items.

The MOIL is updated weekly and presented to management at a weekly meeting so they can track the status of these open items.