ENCLOSURE 1

BROWNS FERRY NUCLEAR PLANT (BFN)

COMPLETION STATUS OF NUCLEAR PERFORMANCE PLAN (NPP) PROGRAMS

REQUIRED FOR UNIT 2 RESTART

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SECTION I - INTRODUCTION

On September 17, 1985, the Executive Director for Operations of NRC issued a letter to the Chairman of the Board of Directors of TVA pursuant to 10 CFR Part 50.54(f), requesting information on the actions the licensee was taking to resolve NRC's concerns about TVA's nuclear power program. These concerns were divided into four categories: (1) corporate activities, (2) the Sequoyah Nuclear Plant, (3) the Browns Ferry Nuclear Plant, and (4) the Watts Bar Nuclear Plant.

TVA prepared separate plans to address the corporate and plant specific problems. NRC has reviewed these plans in NUREG 1232, Volumes 1, 2 and 3. Commitments contained in the Corporate Nuclear Performance Plan (CNPP) are addressed in TVA's letter dated April 5, 1991. The corporate commitments contained in this letter that are applicable to BFN are complete, except for Configuration Management which is a post restart action. The BFNPP was specifically tailored for activities to restart BFN Unit 2. Also, post-restart corrective actions are identified, which were required to resolve NRC concerns.

TVA conducted a critical review of the problems and issues identified at BFN and determined that the difficulties at the plant stemmed from three basic causes:

- Lack of clear assignment of responsibility and authority to managers and their organizations that clearly established accountability for performance.

- Insufficient management involvement and control in the work place, leading to a failure to adequately establish the highest quality of performance.

- Failure to maintain consistently a documented design basis for the plant and to control consistently the plant's configuration in accordance with that basis.

TVA defined special programs in a number of areas to ensure that integrated corrective action plans would deal with problems created by deficiencies in the past conduct of activities. The following special programs were identified as requiring resolution before restart of Unit 2 (BFNPP, Sections II and III):

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1. Establish environmental qualification of safety-related electrical equipment.

2. Establish and maintain a documented design basis.

3. Review suspended components for structural adequacy during a seismic design-basis event.

4. Review electrical, mechanical, nuclear, and civil design calculations for adequacy.

5. Review fire protection with respect to current NRC and general industrial requirements and recommendations.

6. Review past welding practices and installed welds for adequacy.

7. Review the current condition of the primary system pressure boundary and other structural components for adequacy relative to intergranular stress corrosion cracking.

8. Establish coordinated restart test and operational readiness programs.

9. Review installations of safety-related, instrument-sensing lines for slope, separation, material control, fabrication, and quality assurance.

10. Inspect suspect areas of piping to ensure that wall loss as a result of erosion and/or corrosion does not exceed allowable limits.

11. Develop a summary document that describes changes made in the Browns Ferry probabilistic risk assessment (PRA) and the bases for concluding that the revised PRA conservatively reflects the Browns Ferry configuration.

12. Review piece-part procurement to ensure that qualification of safety-related equipment is maintained.

13. Review electrical installations to ensure functionality to mitigate design-basis events described in Chapter 14 of the Final Safety Analysis Report (FSAR) and provide for safe shutdown.

NRC has evaluated the programs listed above, in Chapters 2 through 4 of the Safety Evaluation Report (SER), NUREG 1232, Volume 3, issued April 4, 1989, Supplement 1 dated October 24, 1989, and Supplement 2 dated January 23, 1991. TVA's closure of these programs is documented in this enclosure. For ease of reference, this enclosure follows the format of the BFNPP.

Section II - CONDUCT OF BROWNS FERRY ACTIVITIES

1.0 - Strengthening BFN Management and Organization

TVA committed to reorganize its Nuclear Power organization. This reorganization carries forward the programs established to correct organizational support and programmatic deficiencies. In a number of areas, BFN managers and their organizations lacked clear assignments of responsibility and authority.

Position descriptions have been revised and developed to clarify each manager's areas of responsibility and established accountability. As stated in BFNPP, the site support organizations were reorganized along functional lines that generally parallel the functional departments in TVA's Nuclear Power organization. The organizational structure was revised in March 1989, so that personnel on site report to the Site Director, except for QA, Site Licensing, Human Resources, Medical Services, Employee Concerns, Information System Services and Site Training organizations.

Further organizational enhancements are reflected in the Topical Report TVA-NPOD89-A "Nuclear Power Organization Description, submitted in June 1990, which is updated annually. The organizational structure and the management control systems are in place to support restart of Unit 2 and the safe operation of the plant. Based on TVA's implementation of these actions, this commitment is considered complete.

In an SER from the NRC dated July 31, 1990, the staff evaluated the authorities, responsibilities, and structure of the site organization and the position description for managers and supervisors as described on the organizational charts. Also examined were management control systems in place with respect to planning, release and tracking of work.

NRC concluded that the BFN onsite management organization and management control system were consistent with commitments made by the BFNPP. Additionally, NRC concluded that organization and management could support restart of Unit 2 and safe operation of the plant. This issue has been reviewed as part of the ORAT inspection with no significant problems. Based on the completion of these actions and NRC's acceptance of TVA's implementation, this issue is closed.

2.0 Management Control and Involvement

2.1 Management Goals and Objectives

There are no commitments contained in this section. Management responsibility and accountability is discussed in Section 1.0 - Strengthening BFN Management and Organization.

2.2 Communication with Employees

There are no commitments contained in this section. Management responsibility and accountability is discussed in Section 1.0 - Strengthening BFN Management and Organization.

2.3 - Training Program

Recognizing that effective training plays a vital role in maintaining high quality performance and in achieving needed improvements in performance, TVA undertook training initiatives in the areas of engineer training, technical training for nonlicensed plant personnel, accreditation of training programs by INPO, and upgrades to the site training facilities.

TVA has established training for technical staff and engineers. In October 1987, TVA became a member of the National Academy for Nuclear Training. BFN has achieved INPO accreditation for the eleven training areas, including certification of instructors. Nine of these programs have achieved accreditation renewal as required every four years. Since BFN was shutdown in 1985, a new training facility was built at Browns Ferry and has been in use for the last four years. Accordingly, based on the actions taken above, TVA's Unit 2 restart commitments are considered complete.

NRC has inspected BFN's training programs for nonlicensed personnel at various times (NRC IR 86-14, 86-32, 87-26, 88-08, 89-20, and 90-27) and concluded that TVA has implemented the commitments for an improved training program.

As a result of NRC requalification examinations, several programmatic weaknesses had been identified in the operator training program. TVA undertook a comprehensive training program to upgrade licensed operators. Beginning in 1987, TVA increased its annual requalification training for licensed operators from four to eight weeks. Weaknesses identified during NRC simulator examinations on utilization of Emergency Operating Instructions, use of uncontrolled reference material, and communications between operators have been corrected. The BFN simulator was moved onsite to improve operator access to the simulator and to allow for more effective overall training. The training program to improve the performance of operator requalification has been effective as demonstrated in BFN's performance in the 1990 examinations. Commitments specified in the Confirmation of Action Letter (CAL), dated January 2, 1986, have been satisfied.

With regard to operator training, one area unrelated to BFN restart activities remains open. NRC regulations require TVA to certify to NRC that the plant-referenced simulator has been upgraded to meet ANS/ANSI-3.5 and 10 CFR Part 55 requirements. By letter dated January 2, 1991, NRC granted TVA a temporary exemption (until December 31, 1991) from the simulator certification requirements in Part 55.

Based on the completion of the commitments contained in the CAL and NRC's acceptance of TVA's implementation, this issue is closed for Unit 2 restart.

2.4 Procedures Upgrade

Deficiencies were identified with the content and implementation of procedures that governed a large number of plant activities. TVA committed to upgrade BFN's procedures to correct these deficiencies. This effort is comprised of a near and long-term program. The near-term focused on procedures required to support the restart and operation of Unit 2. The post-restart program includes the procedures requiring development or upgrade, but not required for Unit 2 restart.

The scope of the near-term procedures upgrade includes standard practices, operating instructions, general operating instructions, abnormal operating instructions, surveillance instructions and maintenance instructions. While not all-inclusive, several key accomplishments of the restart program are listed below:

ENCLOSURE 1 (Cont'd)

1. A dedicated BFN site procedures group has been established to assist the line organizations in developing and revising procedures.

2. Writer's guides and style guides for providing format of BFN procedures for the upgrade program have been established.

3. A documented review of the Unit 2 and common Surveillance Instructions (SIs) required for restart has been performed to insure that technical specification requirements are fully satisfied, SIs are technically correct and acceptance criteria are clearly specified, and that the SIs are workable.

4. In order to ensure the technical adequacy of procedures at BFN, a verification process has been implemented and the review/approval process has been strengthened. The verification process has combined BFN review requirements and INPO good practice guidelines into one comprehensive checklist. This process also added a validation checklist which is used after the procedure is approved. Validation is performed during the first use of the procedure, use on the simulator or during a walkdown. This verification/validation process is applicable to man-machine interface procedures, including operating procedures and surveillance instructions.

5. An improved procedure control system has been developed to require prompt updates to procedures that are incorrect or contain discrepancies. The use of procedure non-intent changes has been greatly restricted.

The review and upgrade of the Unit 2 and common procedures and instructions required for Unit 2 restart, resulted in the upgrade of more that 2500 procedures. Accordingly, TVA's restart commitment for the Procedures Upgrade Program is complete.

The major task associated with the post-restart procedures upgrade program is the upgrade of the remaining maintenance instructions. Maintenance instructions selected through the use of the BFN Probabilistic Risk Assessment have been upgraded. The remainder of the maintenance instructions will be upgraded after Unit 2 restart. This program will be addressed in a letter 120 days after restart of Unit 2.

2.5 Corrective Action

TVA committed in the BFNPP, to take action to ensure that conditions adverse to quality (CAQ) are resolved in a timely manner. This commitment also required TVA to enhance upper level management involvement in the timely processing of CAQs.

ENCLOSURE 1 (Cont'd)

On August 31, 1989, BFN issued a bulletin to employees emphasizing their responsibility for identifying and promptly reporting CAQs. TVA provides additional assistance for employees who require additional guidance on writing and processing CAQ Reports (CAQRs) to ensure timely resolution. TVA has developed a corporate goal to monitor the reduction of CAQRs which will in turn put more focus on timeliness. Adverse trends are noted in a monthly report. Additionally, TVA revised the site procedure which addresses the CAQ reporting process. This revised procedure standardized CAQ reporting and the method used for determining significance. This procedure also addressed automatic escalation to higher levels of management when timeliness or responsiveness is inadequate to resolve the CAQ. BFN personnel have been trained on the new CAQ process.

TVA has taken the above corrective actions to address the programmatic QA issues including timeliness at TVA's nuclear facilities. Accordingly, based on the above, TVA's Unit 2 restart commitment for this issue is complete.

NRC reviewed the Corrective Action Program during Quality Verification Inspections conducted in April 1990, June 1990 and November 1990. Based on these inspections, NRC concluded that the CAQ program at BFN is being implemented effectively. In addition, site QA routinely monitors and audits the effectiveness of the corrective action program for identification, timeliness and resolution of issues. Site QA has not identified any adverse trends in these areas.

Based on the completion of the BFNPP commitments for the Corrective Action program and the verification and subsequent NRC acceptance of TVA's implementation of the corrective actions program, this issue is closed.

2.6 Quality Assurance Program

Commitments contained in the BFNPP, ensured that BFN organizations, managers and employees share the responsibility for implementing the QA program.

TVA reorganized the QA program to ensure a more consolidated QA organization at BFN. The Engineering Assurance group was reassigned to the BFN QA staff. Additionally, in June 1990, TVA implemented the new Nuclear Quality Assurance Plan (NQAP). TVA has found the NQAP is being implemented effectively. This ensures that through a graded approach, BFN QA resources monitor and report problem areas as they arise. TVA implemented generic QA management guidelines for the QA section as well as the plant organizations by consolidating QA activities at BFN. This program increased the visibility and importance of QA activities to top-level management. TVA upgraded BFN's QA Program in October 1990, to the integrated Verification Program. Based on the actions taken above, TVA's Unit 2 commitment for this issue is complete.

NRC conducted several quality verification team inspections during 1989 and 1990. These inspections reviewed quality activities in the areas of operations performance, system lineups, maintenance, surveillance testing, followup of operational events, and review of licensee identified programs.

ENCLOSURE 1 (Cont'd)

In summary, the NRC staff determined that the QA program at BFN is being implemented effectively. Furthermore, NRC determined that TVA successfully planned and monitored the transition from the old Nuclear Quality Assurance Manual (NQAM) to the new NQAP to ensure an acceptable QA program for the restart of Unit 2.

Based on the completion of the BFNPP commitments and NRC's acceptance of TVA's implementation of the QA program, this issue is closed.

2.7 Employee Concerns

In February 1986, TVA Employee Concerns Program (ECP) (referred to as the "new" ECP) was initiated. A key element of the new ECP is having a representative at BFN to receive the employee concerns. Concerns are received from interviews, telephone, and by written correspondence. The new ECP is firmly established at BFN to address concerns from employees which arise from ineffective resolution of problems through normal methods.

For employee concerns identified before February 1986 the Employee Concern Special Programs (ECSP) (referred to as the "old" ECP) was initiated to address those concerns. The ECSP issues were classified into nine functional categories which were separated further into 107 Subcategory Reports. Corrective Action Tracking Documents (CATDs) are used to identify the corrective actions for the concerns evaluated in the ECSP Subcategory Reports. Concerns in the old ECP have been investigated and followup reports completed. These concerns are being tracked on 359 CATDs with 137 CATDs identified as requiring closure before Unit 2 restart. As of April 10, 1991, 127 of the restart CATDs have been closed. The remaining 10 CATDs are scheduled to be closed by Unit 2 restart.

Both the "new" and "old" ECP have been evaluated and inspected by NRC. The safety evaluation report on the BFNPP, NUREG 1232, Volume 3, in April 1989 concluded that the ECP established on February 1, 1986 is an acceptable program for handling employee concerns. A May 1990 safety evaluation report concluded that TVA has sufficiently resolved the restart employee concerns in the ECSP to support the restart of BFN Unit 2. Additionally, two NRC followup inspections (NRC IR 88-22 and IR 90-31) verified that the new ECP is acceptable to support the restart of BFN Unit 2 and employee concerns addressed by ECSP in the old ECP were adequately resolved to support Unit 2 restart. Based on the above, TVA has programmatically completed the commitments contained in the ECP and therefore concludes that this issue is closed for Unit 2 restart.

2.8 Plant Performance Monitoring Program

As part of the overall corporate activity to improve reporting of activities and identification of problems, an expanded corporate nuclear performance reporting system was developed and implemented. This activity is described in the revised CNPP Volume 1. In support of this effort, the BFN Plant Performance Monitoring Program (PPMP) was revised.

ENCLOSURE 1 (Cont'd)

BFN PPMP provides a tool which is used by management to monitor how well the plant is meeting performance goals and to measure employee performance.

The reporting category contains performance indicators, such as the number of NRC violations, personnel errors, collective radiation exposure, plant heat rate, which are reported and trended monthly. The data is presented in graph format to allow trend analysis and problem identification.

These monitoring reports (presently called the Site Performance Report) are published monthly and trends activities at BFN. TVA has completed the commitments in the BFNPP, therefore this issue is closed.

2.9 Fitness for Duty Program

For several years, TVA has had an aggressive Fitness for Duty (FFD) program. This program ensured that those affected by the FFD program understood their obligations to promote a drug-free work place, the threat posed by illegal drug use, and the availability of help in the event of a drug or alcohol problem. The program has been upgraded several times, including a major enhancement effective October 1987 to provide for random drug testing. TVA upgraded the FFD Program to meet the requirements of 10 CFR Part 26 in December 1989. TVA's approach in implementing 10 CFR Part 26 has been to modify only those aspects of the existing program affected by this new rule. By letter dated January 3, 1990, TVA certified to NRC that the Nuclear Power Organization had implemented a FFD program meeting the requirements of 10 CFR Part 26. Therefore, TVA considers this commitment implemented and this issue closed.

2.10 Work Control

A Work Control Group was put in place in the Plant Managers organization under the Work Control/Outage Superintendent to see that plant work activities, including Maintenance, Engineering, Modification and testing activities that affect plant restart and operations are properly coordinated, integrated and scheduled.

The Work Control Group generates a twenty-eight day integrated schedule, which is further refined to a seven day look ahead schedule and a four day work schedule, that is used to authorize daily scheduled work activities.

The maintenance work schedule is reviewed daily and revised as required to support plant operations.

The outage planning section in the Work Control Group generates and maintains the overall outage schedule, which integrates individual and integrated activities into the system outages required to meet established milestones. Each work activity is tracked on the overall outage schedule and is scheduled for work as required to meet milestones and as constraints are removed, such as materials, procedures, etc. Based on TVA's implementation of these actions, this issue is considered closed.

ENCLOSURE 1 (Cont'd)

3.0 - Plant Operations

Poor operating practices in the past resulted in many NRC violations at BFN. These violations included failure to follow procedures, nonconservative actions by operators, failure to correct known equipment problems, nonconservative technical specifications interpretations, and inadequate procedures.

TVA determined that poor operations performance could be attributed to: inadequate management direction and leadership of operations activities; insufficient attention to detail; lack of operational support and followup to correct identified deficiencies; ambiguous and sometimes difficult-to-use procedures; and lack of adequate training and rigorous discipline in conduct of duties by operations personnel. TVA has taken corrective action for improving operational performance and correcting these identified causes.

Since BFN shutdown in 1985, the BFN Operations has initiated a number of improvement initiatives including: improved lines of communications, such as bi-weekly shift operations supervisor meetings with Operations management and site management; separate weekly crew meetings with Operations management and the operations superintendent; management participation in training and in development of a management observation program. These initiatives have strengthened the Operations management and its involvement in day-to-day operations activities.

Another area of improvement in the Operations area has been in establishment of a dedicated incident investigation team. The performance level of incident investigations has been significantly increased. Root causes of events are vigorously pursued and corrected.

To address problems with ambiguous and difficult-to-use procedures, TVA has significantly improved its procedures. Operators have a dedicated procedure support group consisting of senior reactor operators and reactor operators with technical support from nuclear engineering and system engineering. Additionally, a validation and verification process for the operating procedures has been implemented. TVA has increased the emphasis on user friendly procedures and is utilizing the "state of the art" desktop publishing techniques. Finally, BFN is in the process of a major upgrade of emergency operating instructions to the boiling water reactor owners group revision 4 guidelines.

Inadequate operator training and rigorous discipline in conduct of duties by operations personnel were also areas of concern. TVA has increased the requalification training program for licensed operators from four to eight weeks. Also, BFN currently schedules yearly initial license training classes. Nonlicensed operators take proficiency examinations patterned after the job performance measures for licensed operators. Senior management conducts an annual licensed operator review board. Based upon this review, individual corrective action plans are developed and implemented. As part of the management observation program the Shift Operations Supervisors (SOSs) observe their crews in the field, and any poor performers are identified and corrective actions taken.

ENCLOSURE 1 (Cont'd)

TVA has placed greater emphasis on plant ownership. BFN operators are required to participate in 10, 50, and 100 percent design review meetings. Before a design change is implemented, Operations prepares design impact evaluation sheets to identify any procedure changes and training requirements. Additionally, through the use of Design Change Control Management process, Operations personnel are also involved in drawing changes. To ensure that Operations have the most recent drawings to operate the plant, the "on-the-spot" drawing update process allows operations to get revised drawings in an expeditious manner.

TVA continues to take steps to ensure that the operators are prepared to operate BFN. Unlike a new power plant, the restart of BFN will be with operators who average greater than seven years experience at BFN. Senior licensed personnel have a significant amount of hot license experience. Additionally, a number of reactor operators also have a significant amount of hot license experience. To prepare operators better for the startup of BFN, Unit 2 licensed operators participated in a one week experience trip to Monticello (SALP 1 plant). Additionally, nonlicensed operators participated in a one week experience trip at Sequoyah Nuclear Plant. In order to broaden the SOSs experience level and to provide them with a different perspective of operating power plants, SOSs have participated in the INPO peer evaluation visit process. As a result of these initiatives, BFN operators are prepared and capable of operating BFN in a safe and competent manner.

Therefore, based on the improvement initiatives mentioned above, TVA considers the issue on operational deficiencies have been resolved for Unit 2 restart.

4.0 Maintenance Program

In the BFNPP, TVA concluded that weaknesses in maintenance were caused by insufficient management attention to the programmatic and management aspects of maintenance. To resolve these weaknesses, TVA committed to:

1. Conduct a comprehensive assessment of corrective and preventive maintenance practices at BFN.

2. Rewrite the administrative procedures governing the maintenance program.

3. Implement a structured preventive maintenance program to reduce equipment failures, provide data to aid in investigating component failures for root causes and improve the quality of maintenance in general.

4. Conduct an additional self assessment of maintenance to evaluate performance and progress toward the completion of the Maintenance Improvement Program (MIP).

ENCLOSURE 1 (Cont'd)

The following commitments have been completed. 1) An assessment of BFN's corrective and preventive maintenance practices was completed by the TVA Nuclear Manager's Review Group (NMRG) in October 1986. NMRG's final report identified 33 findings applicable to BFN. These findings have been addressed. 2) Maintenance administrative procedures have been rewritten as Plant Manager's Instruction (PMI) 6.2. This instruction clearly defines responsibilities and clarifies the point at which detailed written procedures are required for maintenance. The program improvements resulting from the MIP have also been incorporated into PMI 6.2. The MIP established a programmatic approach to maintenance based on the INPO Guideline 85-038, "Guidelines for the Conduct of Maintenance at Nuclear Power Stations." It defined the methodology whereby regulatory, industry, INPO and TVA bulletins, evaluations and findings are evaluated and used to make improvements in maintenance. Recommendations from both TVA and INPO assessments of the BFN maintenance program were incorporated into MIP. 3) The commitment to implement a structural preventive maintenance program was satisfied with the issue of Site Director's Standard Practice (SDSP) 6.2, "Preventive Maintenance Program". 4) Several additional self assessments of the maintenance program have been performed. Self-assessments were completed in August 1988, December 1989, and finally the TVA Operational Readiness Review completed their review in January 1991. Accordingly, based on the actions taken above, TVA considers these commitments complete.

NRC has conducted numerous inspections of the BFN maintenance program (NRC IR 86-32, 89-12, 89-16, 89-03, 89-08, 89-11, 89-12, 89-19, 89-20). In January 1990, a NRC performance based maintenance team inspection was conducted at BFN (NRC IR 89-56). The team's findings concluded that TVA's implementation of the maintenance program was satisfactory. Based on the completion of commitments as described above and NRC's conclusion that the program is being adequately implemented, this issue closed.

5.0 - Plant Surveillance Program

TVA has attributed the root causes of past surveillance deficiencies to unclear, difficult to use procedures, and insufficient attention to detail by the persons performing the surveillances and reviewing test results.

To correct these deficiencies TVA committed to implement an Surveillance Instruction (SI) upgrade effort for Unit 2 and common system SI's required for restart. Many of the program elements of the BFN procedures upgrade program were incorporated into the SI upgrade program as described in Section 2.4, Procedures Upgrade. These actions have resulted in clearer, more user-friendly SIs. The problems with insufficient attention to detail by persons performing SIs have been addressed in numerous meetings between BFN plant management and employees. The plant manager and site director have discussed management's expectations with employees in group meetings held from September 1989 to the present. The review of SI test results is now being performed by system engineers whose primary responsibility is the overall cognizance of their assigned systems. TVA considers its commitment to implement an SI upgrade program complete.

An additional cause of SI deficiencies was, in many cases, due to lack of vendor manual control resulting in inaccurate or outdated acceptance criteria. To correct this deficiency, TVA committed to incorporate Vendor Manual Control Program (VMCP) information into the review and upgrade of plant operating and maintenance instructions. PMI-2.5, "Surveillance Instruction Writer's Guide," requires vendor manual information to be included in the SI references and text. The VMCP, as covered by Site Director's Standard Practice 10.1, ensures that nuclear manuals are maintained accurately and up-to-date. TVA considers this commitment complete.

Since TVA's commitments related to the plant surveillance program, as described above, are complete and the corrective actions taken to address the NRC's concerns with program implementation are in place, TVA considers this issue closed.

NUREG 1232 OPEN ITEMS

In NUREG 1232 Volume 3, Supplement 2, the NRC staff identified one open item. This item was related to improved management practices to foster procedure compliance among personnel. TVA has completed the corrective actions for this issue and NRC is currently scheduled to perform a followup SI inspection prior to Unit 2 restart, which should close this issue.

6.0 - Radiological Control and Chemistry Improvement

As described by BFNPP, TVA committed to corrective actions to improve the performance in the areas of Radiological Control, Radwaste, and Chemistry. Section 6.1 through 6.5 below provide more detailed information on each area.

TVA has been routinely inspected in Radiological Controls and Chemistry since the commitments were made. NRC concluded that BFN management is involved in the three above programs and TVA improvement measures are acceptable to support Unit 2 restart. These improvements are also documented by the SALP 1 rating for Radiological Control, Chemistry and liquid and gaseous effluent programs during the period of January 1989 to March 1990.

Based on the completion of the BFNPP commitments required to support Radiological Control, Chemistry and Radwaste programs and the verification and subsequent NRC acceptance of TVA's implementation of corrective actions, these issues are closed.

6.1 - Radiological Control

As stated in BFNPP, TVA has taken steps to assure improved performance in Radiological Control. These include: replaced Radcon contract personnel with permanent TVA staff, improved Radcon technical training, increased salaries of Radcon technicians and supervisors to minimize personnel turnover, increased supervisory and engineer positions to enhance technical competence, accredited BFN dosimetry through National Voluntary Laboratory Accreditation Program, applied temporary shielding for reducing personnel exposure and assigned Radcon personnel to assist maintenance planners.

TVA has completed these commitments and considers this issue resolved.

6.2 Chemistry Improvement Plan Elements, 6.3 Laboratory Practices Improvements, and 6.4 Post-Accident Sampling System (PASS)

TVA committed in the BFNPP to develop a Chemistry Improvement Plan (CIP) to correct programmatic deficiencies. The CIP consisted of 12 areas for improvement and outlined an action plan for implementation. Key areas identified included staffing, facilities, instrumentation upgrades, representative sampling and system chemistry control. Chemistry upgrades in the areas of training and procedures took place in conjunction with the site-wide upgrades. These upgrades, coupled with implementation of a comprehensive laboratory quality assurance/quality control program resulted in improved laboratory practices at BFN. The upgraded Chemistry program focuses on ingress monitoring/control, corrosion control, and effluents monitoring. BFN has completed installation of a post accident sampling station for Unit 2. Additional detail on this commitment is provided in Section IV of this enclosure. TVA has completed these commitments and considers these issues resolved.

6.5 Liquid and Solid Radwaste

TVA committed in the BFNPP to reduce the volume of liquid and solid radwaste.

Radcon has taken responsibility to reduce the overall volume and the disposal of solid radioactive waste. A dedicated manager is assigned to this effort.

To reduce the overall volume of solid radioactive waste, TVA minimized its generation by strengthening control over materials entering the regulated area, improved monitoring efforts and increased employee awareness. Once the radwaste had been generated, effective volume-reduction techniques were applied. Radwaste-reduction techniques, such as trash segregation and compaction, were emphasized and reevaluated to pinpoint areas that require improvement. A contractor has been hired to achieve further radwaste volume reduction by using incineration.

The responsibility of reducing liquid waste has been assigned to Operations. A dedicated Operations manager has been assigned to this task. This Operations manager also monitors the amount of ground water in leakage for BFN.

TVA has completed the Radwaste commitments and considers this issue closed.

7.0 - Plant Security

TVA committed in BFNPP to implement several initiatives to improve security operations and management. These actions included improvement of vital area access controls, reorganization of security management for ensuring a single point of responsibility, accountability and authority, post rotation of nuclear security officers (NSOs) to minimize boredom and inattentiveness, and enhancement to the General Employee Training to ensure more sensitivity to security requirements. Finally, the pay scale for NSOs has been revised to provide for career advancement and to reduce turnover.

TVA committed by letter dated September 28, 1988, to test security emergency power, reduce the size of the protected area, improve alarm assessment capabilities, and reduce compensatory measures. NRC has conducted several inspections (NRC IR 89-09, 89-45, 90-04, 90-12, 90-17 and 90-34) of the BFN security program. In an inspection conducted April 9-11, 1991, NRC determined that BFN's restart security commitments had been completed.

In NUREG 1232, Volume 3, supplements 1 & 2, NRC concluded that BFN's physical security program was acceptable. Based on the completion of the commitments contained in NUREG 1232 regarding plant security and NRC acceptance of TVA's implementation, this issue is closed for restart.

BFN's post-restart security commitment provides for the completion of permanent security upgrade project to resolve longstanding deficiencies in BFN security systems. This project is currently scheduled to be completed by the end of 1992.

8.0 - Emergency Preparedness

TVA committed in the BFNPP to take action to ensure that three specific concerns identified in the 1984 exercise were resolved. These concerns were: 1) audible evacuation alarms in high noise areas (IEB 79-18), 2) improvement areas identified in the 1981 emergency preparedness implementation appraisal, and 3) weaknesses identified during the 1984 emergency exercise are resolved.

TVA took the following corrective actions to resolve the BFNPP commitments: On September 25, 1987, Emergency Plan Implementing Procedure was issued which required personnel to check high-noise areas during personnel assembly at BFN when an emergency mandates. Annual Emergency Preparedness training is being conducted which addressed communication/information flow. Card readers for personnel accountability have been installed in various places to enhance accountability. A radiax communication system has been installed in the plant to ensure adequate communications to field teams that are employed during and emergency situation.

NRC has monitored four full-scale exercises which TVA conducted in September 1988, May 1989, November 1989 and September 1990. NRC has concluded after the last exercise that no major items were identified which would affect the restart of Unit 2. Additionally, NRC noted that other issues identified have been corrected and the BFN emergency response is adequate to support plant operation.

Based on the completion of the BFNPP commitments required for Unit 2 in the Emergency preparedness and NRC acceptance of TVA's implementation of the corrective actions, this issue is closed for Unit 2 restart.

As a post-restart issue, TVA will install newly designed changes to the public address and evacuation systems. This issue will be addressed in the 120-day submittal after Unit 2 restart.

9.0 Site Scheduling

Past delays in Plant modifications, startup, and operations were caused partially by uncoordinated planning and scheduling by site organizations. The plant, modifications, and engineering organizations scheduled activities independently of each other. In January 1986, Site Planning and Scheduling Staff was created and given responsibility for coordinating site planning and scheduling.

Improvements include the use of a site master schedule for activities affecting restart and operation and acceleration of regulatory modifications to reduce future outage work. This change focused top management attention on key areas for both restart and plant operation. Presently, the site scheduling group has been incorporated into the work control organizations. These improvements are currently being implemented and TVA considers this issue closed for Unit 2 restart.

SECTION III - SPECIAL PROGRAMS

1.0 - Environmental Qualification (EQ) of Electrical Equipment

The 10 CFR Part 50.49 requires that each holder of a license to operate a nuclear power plant establish a program for qualifying electrical equipment and to maintain auditable files of that qualification. To verify compliance with 10 CFR Part 50.49, TVA conducted a review of the program at BFN in July and August of 1985. This review indicated that much of the qualification documentation was not fully retrievable and in some cases the documentation did not fully demonstrate qualification.

TVA has established a program and procedures with adequate controls to ensure that electrical equipment under 10 CFR Part 50.49 is qualified to those requirements and is maintained in a qualified status throughout the life in the plant. The major elements of the EQ program as described in BFNPP include:

1. Implementation procedures
2. 50.49 list
3. EQ documentation packages
4. Vendor information
5. Training
6. Warehouse inventory
7. Corrective action reviews
8. Field verifications
9. Procurement

In order to implement the EQ program at BFN Unit 2, TVA made several commitments. These commitments have been fully implemented with the exception of flex conduit. The commitment related to flex conduit is discussed in Section IV of this letter. In addition, the modifications related to EQ at BFN Unit 2 are essentially complete. However, additional work still remains in the areas of flex conduit and Raychem splices. This remaining work is associated with the main steam system and is scheduled for completion prior to Unit 2 restart. The EQ certification letter for BFN Unit 2 will be issued prior to restart and after the EQ related work is complete.

NRC has reviewed BFN's implementation of the requirements of 10 CFR Part 50.49, as documented in NRC IR 88-11, 89-16 and the 75 per cent complete inspection 90-22. In NRC IR 90-22 the NRC closed the open items associated with EQ, and concluded that TVA has a program in place to ensure compliance with 10 CFR Part 50.49. Based on the completion of the actions contained in the EQ program and NRC's acceptance of TVA's implementation, this issue is considered closed for Unit 2 restart.

NUREG 1232 OPEN ITEMS

NUREG 1232, Volume 3, Supplement 2 indicates that TVA is to certify that it's 10 CFR Part 50.49 list is complete and that electrical equipment and components within the scope of 10 CFR Part 50.49 are qualified to these requirements. TVA will submit this certification letter prior to the restart of Unit 2.

2.0 - Configuration Management Program

The Design Baseline and Verification Program (DBVP) was developed to ensure that the functional plant configuration is reflected on appropriate plant documents and conforms to the safe shutdown design basis requirements. TVA implemented DBVP at BFN in two phases. Phase I included the evaluation of systems required for safe shutdown and is required for startup. These systems were identified by evaluating the abnormal operational transients, design basis accidents, and special events addressed in Chapter 14 of BFN FSAR, to determine the safety functions necessary to mitigate design basis events. Major program elements of the DBVP included verification of plant functional configuration for flow, control, schematic, and single line drawings, reconciliation of the configuration to design documents, reconciliation of the configuration to the FSAR and Licensing commitments, system evaluation reports for system configuration, production of revised control room drawings including the flow, control, schematic and single line drawings and the implementation of an improved design control process to prevent recurrence of past design control problems. There are three remaining open restart items for Unit 2. The details of these remaining open items are described in Section IV.

Phase II will be completed by the end of the first refueling outage after Unit 2 startup and includes implementation of the remaining modifications of systems not required for safe shutdown, completion of system evaluations, and implementation of corrective actions to other systems as required. The schedule for Phase II of DBVP commitments will be addressed in a letter 120 days after restart of Unit 2.

NRC states in NUREG 1232, Volume 3, Supplement 2: "At this juncture, no outstanding programmatic issues must be resolved before the restart of Unit 2." NRC stated further, that they had conducted numerous individual and team inspections to verify that TVA was implementing these programs in a satisfactory manner. Specifically, implementation of DBVP was reviewed by NRC as documented in NRC IR 87-36, 88-07, and 89-07. NRC IR 89-07 confirmed that TVA was adequately implementing the DBVP at BFN for those essential systems required to safely shut down the plant. The NRC inspection team also concluded that upon TVA's successful completion of the DBVP, BFN Unit 2 will be in conformance with its design basis. However, NRC stated that due to problems identified with engineering calculations during a vertical slice team inspection (NRC IR 89-16), a followup inspection of BFN's control of design inputs for calculations would be conducted prior to restart of Unit 2. NRC conducted this followup inspection (NRC IR 91-06) during the week of March 15, 1991. No new open issues were identified. Upon completion of the three remaining open items, this program will be closed for Unit 2 restart.

3.0 - Seismic Design Program

3.1 - Torus Modifications

TVA initiated a program to perform torus modifications as a result of a generic recommendation from the Boiling Water Reactor Owners Group. The modifications were necessary to address hydrodynamic loads during the initial phases of a postulated Loss of Coolant Accident (LOCA) that were not previously accounted for in the Mark I containment design. TVA committed in BFNPP to implement NUREG 0661 which consisted of structural improvements to the interior and exterior structural components of the torus as well as torus attached piping supports. The program also included installation of a suppression pool temperature monitoring system and modification to the main steam relief valve and drywell to torus vacuum breakers.

During an NRC inspection (NRC IR 85-26) of modifications, discrepancies were identified between design drawings for torus attached piping supports and actual installations. Subsequently, TVA considered such supports suspect and initiated a complete reinspection of torus attached piping supports and torus internal and external structural modifications. Torus modification commitments have been completed and TVA notified NRC, by letter dated October 2, 1990, that torus modifications were complete for BFN Unit 2.

NRC concluded in its Long Term Torus Integrity Program safety evaluation, dated August 20, 1980, that TVA had adequately resolved the issues involved with Mark I containment designs. Additionally, NRC concluded in NUREG 1232, Volume 3, Supplements 1 and 2 that TVA had satisfactorily implemented the torus modifications. Based on the completion of the actions delineated in Torus Modification program and NRC's acceptance of TVA's implementation, this issue is closed for Unit 2.

ENCLOSURE 1 (Cont'd)

3.2 - Piping and Supports (IE Bulletins (IEB) 79-02 and 79-14)

TVA initiated programs in 1979 to comply with IEB 79-14/79-02 regarding the adequacy of piping system supports and anchor bolts. The IEB 79-14/79-02 piping program involved the reanalysis of pipe stress problems using the as-built configuration and amplified response spectra for Seismic Class I structures and evaluation of the acceptability of associated pipe supports. The scope of IEB 79-14/02 piping program included Unit 2 safety-related large bore (greater than 2-1/2 inches in diameter) piping and computer analyzed small bore piping not included in the Small Bore Piping Program.

Pipe stress analysis and pipe support evaluations were based on walkdown inspection data for safety-related piping systems. The walkdown inspections were instituted to determine the actual field configuration of Class I piping systems and supports.

TVA initially proposed the use of a vertical slice/horizontal slice concept to implement IEB 79-14/79-02 to support BFN Unit 2 restart. In the BFNPP, TVA committed to evaluate and qualify Unit 2 and common safety-related piping and supports to interim operability criteria. However, TVA submitted a program revision to NRC by letter dated June 16, 1989. TVA's program revision accelerated the implementation of IEB 79-14/79-02. The revised program plan completed the required pipe stress analyses (approximately 35,000 feet) and pipe support evaluations prior to restart. Resulting pipe support modifications (approximately 2,700) were prioritized as pre-restart and post-restart. Modifications were designed to comply with design criteria. Modifications required to satisfy operability criteria would be completed prior to restart. As a result of the extended Unit 2 outage, the modifications to piping system supports have been completed. Consequently, based on the above, TVA's Unit 2 commitment is complete.

NRC has reviewed this program in numerous inspections (NRC IRs 88-19, 89-15, 89-44, 89-57, 90-09, 90-26, 90-19, 90-38 and 91-11) with the open Unit 2 issues and the 79-14/79-02 Bulletins closed in NRC IR 91-11. NRC also determined in NUREG 1232, Volume 3, Supplement 2 that TVA's IEB 79-14/79-02 program had adequately addressed the technical issues. Based on the completion of the above commitment for IEB 79-14/79-02 and NRC acceptance of TVA's implementation this issue is considered closed for Unit 2.

3.3 - Cable Tray Supports

In order to address concerns with BFN cable tray overfill and excessive application of fire-retardant material, TVA developed an interim seismic qualification program for cable tray supports. This interim seismic qualification program was submitted to NRC by letter dated May 2, 1986. In BFNPP TVA committed to perform an interim seismic qualification and modifications as necessary, for Unit 2 and common cable tray supports. The interim criteria utilized a combination of code-allowable forces, stresses and displacements to ensure structural integrity of cable tray/support systems in the event of a Design Basis Earthquake. Those cable tray support modifications required to meet interim operability criteria have been completed for Unit 2. Accordingly, based on the above, TVA's Unit 2 restart commitments are complete.

NRC SER dated February 5, 1987, and NUREG 1232, Volume 3, Supplement 1 and 2, determined TVA's interim qualification criteria for cable tray supports was acceptable. Based on the completion of the actions taken and NRC's acceptance of TVA's implementation, this issue is closed for Unit 2 restart.

The post-restart evaluation of the cable tray/support seismic qualification will be addressed within the framework of the USI A-46 program. This issue will be discussed in TVA's submittal 120 days after Unit 2 restart.

3.4 - Conduit Supports

NRC IR 83-09 identified issues concerning the adequacy of BFN conduit supports. Additional concerns related to conduit supports were identified by TVA's quality assurance organization. As a result, TVA initiated a program to examine conduit supports. TVA committed in BFNPP to qualify Unit 2 conduit supports to interim operability criteria. Enveloping acceptance criteria were developed and supported by test data, calculations and earthquake experience. Modifications necessary for Unit 2 restart were determined based on inspections, application of interim operability criteria, and evaluations. Modifications required to satisfy interim operability criteria have been completed.

NRC concluded in IR 89-42 and NUREG 1232, Volume 3, Supplement 2, that TVA has resolved the issues regarding conduit supports required for Unit 2 restart.

Long-term qualification of conduit supports will be addressed within the framework of the USI A-46 program. Based on the completion of the above commitment for qualification of conduit supports, NRC acceptance of TVA's program and implementation, this issue is considered closed for Unit 2 restart.

3.5 - HVAC Ductwork

As a result of discrepancies identified in the as-configured versus as-designed HVAC ductwork, BFN developed a program for inspection and qualification of safety related ductwork. TVA letters of April 8, 1987, March 10, 1988, and May 26, 1988, delineated the BFN program for qualification of HVAC ductwork. TVA committed, in BFNPP, to qualify safety related ductwork to interim operability criteria. Operability criteria were developed using analyses performed on HVAC supports, comparisons of installed configuration to existing test data, performance of additional testing, and utilization of other analytical techniques. Those Unit 2 and common safety related ducts or supports not meeting design criteria were evaluated against interim operability criteria. Those not meeting the interim operability criteria were modified to meet design criteria. The required duct or support modifications have been completed for Unit 2 and common HVAC ductwork. Accordingly, based on the above, TVA's Unit 2 restart commitment is complete.

NRC conducted inspections related to BFN's HVAC seismic qualification program (NRC IR 88-38, 89-29, 89-32 and 89-42), concluding in NRC IR 89-42 that TVA has adequately addressed the HVAC seismic qualification issue for Unit 2 restart. NRC also determined in NUREG 1232, Volume 3, supplements 1 and 2, that TVA had adequately addressed the issue and resolved Unit 2 restart open items. Based on the completion of the actions contained in HVAC ductwork program and NRC's acceptance of TVA's implementation, this issue is closed for Unit 2 restart.

The post restart qualification of HVAC ductwork open items will be addressed in TVA's submittal 120 days after restart of Unit 2.

3.6 - Control Rod Drive (CRD) Insert and Withdrawal Piping

A concern was identified regarding the adequacy of CRD insert and withdrawal piping supports to carry design loads. CRD piping was found attached to a cable tray support structure which resulted in a concern with the overall configuration of the piping. TVA committed in BFNPP to qualify the CRD insert and withdrawal piping and supports to interim operability criteria. Qualification to design criteria would be performed after restart. TVA's program, submitted to NRC by letter dated April 8, 1987, involved the evaluation of piping and supports for 185 insert pipes (1-inch diameter) and 185 withdrawal lines (3/4-inch diameter). TVA's program initially utilized criteria different from that specified in the BFN FSAR. TVA subsequently revised its program by letter dated March 17, 1988, to incorporate the same restart criteria contained in the IEB 79-14/79-02 program. The revised program also used load factors to account for phasing of loads from individual pipes. TVA has accelerated its program by qualifying the piping and supports for the CRD insert and withdrawal piping program to long-term design criteria. Modifications have been completed. Accordingly, based on the above, TVA's Unit 2 commitment is complete.

NRC conducted inspections related to BFN's CRD insert and withdrawal piping program (NRC IR 89-15, 89-39, 89-44 and 89-62), concluding in NRC IR 89-44 that TVA had adequately implemented the program. NRC also determined in NUREG 1232, Volume 3, Supplement 2, that TVA had adequately addressed the issue and resolved Unit 2 open items. Based on the completion of the commitments contained in CRD insert and withdrawal piping program and NRC acceptance of TVA's implementation, this issue is closed for Unit 2.

3.7 - Safety Related Small Bore Piping Supports

TVA's Small Bore Piping program was developed to address concerns raised regarding criteria used to design and install pipe supports for seismic Class I (safety-related) small-bore (less than 2 1/2-inch diameter) piping at BFN. In BFNPP, TVA committed to implement an interim program to assure the structural adequacy of safety related small bore piping and supports prior to Unit 2 restart. TVA's program was submitted to NRC by letter dated April 29, 1988, and subsequently revised by letter dated June 30, 1989, to employ a two phase (pre-restart and post-restart) program.

The pre-restart scope of the program included safety related small-bore piping and supports within Design Baseline Program Safe Shutdown Restart Boundary (approximately 27,000 feet of pipe and 4,000 supports) not previously reviewed under the Long Term Torus Integrity Program, IEB 79-14/79-02 program and Control Rod Drive Piping Program. The program involves a detailed walkdown and rigorous analysis of a sample of the small bore piping scope. The results of the rigorous analysis were evaluated to identify attributes which cause qualification concerns with piping and supports. The remaining piping and support installations within this program scope were evaluated against these attributes through an engineering walkdown. Piping and supports exhibiting the attributes were further evaluated to ensure the ability of the piping or supports to meet the criteria. Those items not meeting interim operability criteria were modified prior to Unit 2 restart to meet the design criteria. Those items not meeting the design criteria but within the interim operability criteria will be modified after Unit 2 restart. Accordingly, based on the above, TVA's Unit 2 restart commitment is complete.

NRC has reviewed this program in various inspections (NRC IR 89-36, 89-37 and 89-44) with the open, Unit 2 restart issues closed in NRC IR 89-44. NRC also determined in NUREG 1232, Volume 3, supplements 1 and 2, that TVA has adequately addressed the issue and resolved open restart items. Based on the completion of the above commitment for Small Bore Piping and NRC's review and acceptance of TVA's implementation, this issue is considered closed for Unit 2 restart.

Post restart items for the Unit 2 Small Bore Piping program include the following:

1. Qualification of seismic Class I, Unit 2 and common small bore piping and supports outside the Design Baseline Program Safe Shutdown Restart Boundary to design criteria (approximately 8,000 feet of piping and 1,200 supports).

2. Qualification to design criteria, of seismic class I, Unit 2 and common small bore piping and supports, inside the DBVP restart boundary, previously qualified to interim operability criteria.

These issues will be addressed in TVA's submittal 120 days after restart of Unit 2.

3.8 - Drywell Steel Platforms

In 1984 TVA identified an unanalyzed attachment to one of the two lower drywell platforms. In 1986 a similar condition was discovered with the three upper drywell platforms. TVA committed in BFNPP to qualify the upper and lower drywell steel platforms to interim operability criteria for Unit 2 restart. A program was initiated to walkdown and analyze the platforms and modify the framing as required. Analyses and modifications have been completed for the lower drywell platforms to comply with interim operability criteria. The upper drywell steel platforms were qualified and modified, as necessary, to meet design criteria. Accordingly, based on the above, TVA's Unit 2 restart commitment is complete.

NRC has reviewed this program in various inspections (NRC IRs 88-38, 88-39, 89-29, 89-32 and 89-42) with the open, Unit 2 restart items closed in NRC IRs 89-32 and 89-42. NRC also determined in NUREG 1232, Volume 3, Supplement 2, that TVA had adequately addressed the issue and resolved open restart items. Based on the completion of the above commitment for Drywell Steel Platform qualification and NRC's acceptance of TVA's implementation, this issue is closed for Unit 2 restart.

The Unit 2 post-restart item for Drywell Platforms provides qualification to design criteria for those structural steel elements qualified to interim criteria for Unit 2 restart. The design criteria will be evaluated to address the adequacy of using the 1978 versus 1963 edition of the American Institute of Steel Construction (AISC) Specification. This issue will be discussed in TVA's submittal 120 days after restart of Unit 2.

3.9 - Miscellaneous Steel Evaluation

In 1985 TVA identified configuration problems with miscellaneous structural steel framing. This framing is installed throughout the reactor building and has various safety-related features, primarily pipe supports, attached. TVA committed in BFNPP to perform an evaluation and modify, as necessary, miscellaneous structural steel frames by selecting a sample of the most critical framing and performing a walkdown and qualification. TVA performed walkdowns to obtain as-built configuration of the steel frames. Generic calculations were then performed to develop capacities for the as-built steel framing. Finally, the frames were evaluated using the support loads derived from the piping analysis associated with the IEB 79-14 program. The scope of the program includes safety-related miscellaneous steel framing, associated primarily with large bore piping. This miscellaneous steel is also representative of other systems supports (HVAC, cable trays, etc.). Modifications resulting from the interim qualification of miscellaneous steel have been completed for Unit 2. Accordingly, based on the above actions, TVA's Unit 2 restart commitment is complete.

NRC has reviewed this program in several inspections (NRC IRs 88-38, 89-29, 89-32 and 89-42) with the open, Unit 2 restart issues closed in NRC IR 89-32 and 89-42. NRC also determined in NUREG 1232, Volume 3, Supplement 2, that TVA had adequately addressed the issue and resolved Unit 2 restart items. Based on the completion of the above commitment for miscellaneous structural steel framing qualification and NRC acceptance of TVA's implementation this issue is considered closed for Unit 2 restart.

The Unit 2 post-restart item for Miscellaneous Steel Evaluation provides qualification to design criteria for those structural steel elements qualified to interim criteria for Unit 2 restart. The design criteria will be evaluated to address the adequacy of using the 1978 versus 1963 edition of the AISC Specification. This issue will be discussed in TVA's submittal 120 days after restart of Unit 2.

ENCLOSURE 1 (Cont'd)

3.10 - Class II Features Over Class I Features

In 1986, TVA identified a concern related to the interaction of seismic class II (nonsafety related) systems with seismic Class I (safety related) systems. TVA committed to implement a two phase program to address Class II systems at BFN. The first phase, to be completed prior to Unit 2 restart, involved the evaluation of potential seismic-induced water spray effects of Class II systems on Class I systems. TVA has completed the Phase I evaluation which resulted in several modifications to Class II piping systems. These modifications typically required vertical rod hangers in overspan locations or lateral restraints to limit potential seismic movement and preclude proximity related seismic interactions. The second phase of the program involves the evaluation of potential seismic-induced, spatial interaction effects of Class II systems on seismic class I systems. This phase will be addressed after restart within the framework of the USI A-17 and USI A-46 programs. Accordingly, the restart commitment for seismic Class II systems over seismic Class I systems is complete.

NRC has determined in NUREG 1232, Volume 3 supplements 1 and 2, that TVA has adequately addressed the issue for Unit 2 restart. Based on the completion of the above commitment for evaluation of seismic-induced water spray effects of Class II systems on Class I systems (Phase I) and NRC acceptance of TVA's program this issue is considered closed for Unit 2 restart.

The post-restart evaluation of Seismic Class II systems over Seismic Class I systems Phase II will be addressed within the framework of USI A-17 and USI A-46 after Unit 2 restart. This issue will be discussed in TVA's submittal 120 days after Unit 2 restart.

3.11 - Secondary Containment Penetrations

TVA identified a noncompliance with an FSAR commitment requiring penetrations through secondary containment to be of seismic Class I design. Even though the building structure itself is seismic Class I, some of the plant features that penetrate the secondary containment were not designed and installed as Class I seismic features. TVA committed in BFNPP to resolve the seismic adequacy of secondary containment penetrations prior to restart. TVA's program was submitted to NRC by letter dated March 16, 1988. The program upgrades penetration seals for conduits, cable trays and nonseismic piping. Additionally tests were conducted to determine penetration post Design Basis Earthquake (DBE) leakage rates. Based on the measured penetration test leakage rates, the expected total post-DBE secondary containment inleakage rate was determined. This inleakage rate was then compared with the Standby Gas Treatment System (SGTS) DBE flow rate which determined the SGTS could maintain the required one-fourth inch of water negative pressure inside the secondary containment. These actions taken by TVA are done and the commitment contained in this program is complete.

NRC has concluded in NUREG 1232, Volume 3, supplements 1 and 2, that TVA's program to verify the adequacy of secondary containments is acceptable. Based on the commitment contained in secondary containment penetrations and NRC acceptance of TVA's implementation this issue is closed.

ENCLOSURE 1 (Cont'd)

3.12 - Miscellaneous Civil Issues

There were various civil related Significant Condition Reports (SCR) and Corrective Action Reports (CAR) that identified safety concerns. In general, these items related to "as-designed" versus "as-built" configuration of suspended system supports. TVA committed in BFNPP to resolve these issues prior to Unit 2 restart. As a result of revisions to the Quality Assurance (QA) program SCRs and CARs were deleted from the program. The Unit 2 CARs described above, were either carried to completion or converted to a Conditions Adverse to Quality Report (CAQR). CAQRs receive a technical and operability review to determine their relevance to restart. The Unit 2 SCRs were resolved and closed. Those SCRs applicable to Units 1 and 3 were closed and reopened as CAQRs. Accordingly, based on the above actions taken, TVA's restart commitment for this issue is complete.

NRC has conducted various implementation inspections for several civil programs, Design Baseline program, Quality Assurance program and Corrective Action program (NRC IR 89-42, 89-07, 89-44, 89-57, 88-21, 90-36, 90-27, 90-33 and 90-36) and concluded there were no open restart issues. NRC also concluded in NUREG 1232, Volume 3, Supplement 2, that TVA's program had adequately addressed Seismic Design issues, Configuration Management, Design Baseline and Verification, Design Calculations and Corrective Action issues. Based on the completion of the above commitment for miscellaneous civil issues and NRC's acceptance of TVA's program to control and track these items, this issue is closed for Unit 2.

4.0 - Design Calculation Review - Electrical, Mechanical, Nuclear, and Civil

This issue is addressed in the Configuration Management and Design Baseline Programs, refer to Section III.2.0.

5.0 - Fire Protection Improvement

TVA committed to upgrade the fire protection at Browns Ferry and bring Browns Ferry in compliance with 10 CFR Part 50.48 by complying with applicable sections of 10 CFR Part 50 Appendix R and the National Fire Protection Association (NFPA) codes.

In order to determine what would be necessary to bring Unit 2 in compliance with regulatory requirements for Appendix R an engineering evaluation of the facility was performed. From that evaluation it was determined that modifications would have to be implemented. Exemptions in five areas of Appendix R requirements were submitted by TVA and subsequently approved by NRC.

To implement the BFNPP commitments for Appendix R, TVA performed modifications on Unit 2 in areas of fire detection and suppression, compartmentation, circuit modifications cable wrap and separation, breaker and fuse upgrades, main steam relief valve redundant air supply, redundant power supply for communications and upgrades in emergency lighting. TVA has completed these modifications for Unit 2 restart and has closed the BFNPP commitments associated with these modifications.

The NRC staff evaluated BFN's compliance with the Appendix R requirements in two inspections conducted in May and July of 1989. NRC IRs 89-13 and 89-28 consisted of an NRC audit of BFN's compliance with sections III.G, III.J, and III.L of Appendix R to 10 CFR Part 50. Although several inspectors followup items and two unresolved items were identified, no serious programmatic deficiencies were identified.

NRC completed its evaluation of BFN's Appendix R issues, including deviations from the National Fire Protection code requirements and documented this in a supplement to the December 8, 1988 Appendix R "Safe Shutdown System Analysis", issued November 3, 1989.

TVA has upgraded the fire protection program at BFN through improvements in organization and procedures. BFN has a separate fire protection staff dedicated to fire fighting, maintaining and testing of fire protection systems. As a result, separate individuals are assigned responsibilities for compliance with the Fire Protection Program. Based on the actions taken above, TVA considers the restart commitments for Appendix R and fire protection complete.

NRC conducted two followup inspections in February and April 1990. NRC IR 90-06, was an inspection of the fire protection program and open Appendix R item closeout. NRC IR 90-11 was an inspection of completed modifications required to bring BFN's Unit 2 in compliance with Appendix R. Through these two reports the NRC identified no programmatic issues and closed the open items from the 1989 audits.

In NUREG 1232, Volume 3, Supplement 2, the staff concluded that BFN Unit 2 is in compliance with Appendix R. The BFNPP commitments associated with fire protection upgrades and Appendix R are completed for Unit 2 restart. Based on the completion of the actions contained in the Fire Protection program and NRCs acceptance of TVA's implementation, this issue is closed for Unit 2 restart.

6.0 - Plant Welding Program

TVA committed to investigate welding related concerns involving piping and structural welds at BFN. TVA established a Welding Projects Group to resolve these issues. TVA developed a two-phase approach to address welding deficiencies at its Nuclear Power facilities. The first phase was a review to verify that the written program reflected TVA's commitments and identify program problem areas through evaluation of employee concerns and to other quality indicators. The second phase of this program consisted of (1) an independent program implementation audit of construction and operations work, (2) independent review of Inservice Inspections (ISI) activities, (3) reinspection of piping structures, heating, ventilation and air conditioning duct, and (4) comprehensive review of specific and generic employee concerns and quality indicators related to hardware. At the completion of each phase the Welding Project issued a report. The Welding Project Phase I Report was issued February 6, 1987 and the Phase II was issued March 7, 1988. The plant welding program has been completed. TVA considers this commitment fully implemented.

NRC inspections (NRC IRs 87-19 and 88-13) have been performed at completion of each phase of the Welding Project. NRC findings are in agreement with the Welding Project Report. Additional inspections on the welding program have taken place with no significant problems identified. Based on the completion of the actions contained in the welding program and NRC's acceptance of TVA's implementation, this issue is closed.

7.0 - Intergranular Stress Corrosion Cracking (IGSCC)

IGSCC has been an identified problem throughout the Boiling Water Reactor industry for the past 15 years. Extensive industry studies have determined the root cause and several mitigation options. Industry studies have also confirmed the leak-before-failure mode of pressure boundary components, which places IGSCC as a plant availability issue rather than a safety issue.

TVA's IGSCC program submitted to NRC by letter dated August 1, 1988, addresses the issues identified in Generic Letter 88-01, "NRC Position on IGSCC in BWR Austentic Stainless Steel Piping". In general, the program provides:

1. Inspection of IGSCC susceptible welds,

2. Mitigation or repairs/replacement methods,

3. Incorporation of inspection program into, ASME Section XI, Inservice Inspection program by Technical Specification Revision,

4. Technical Specification Revision to comply with leak detection requirements stated in GL 84-11, "Inspections of BWR Stainless Steel Piping",

5. NRC notification of identified flaws.

TVA has implemented the guidelines provided in GL 88-01.

In addition, TVA made the following BFNPP, Unit 2 restart commitments:

1. Perform the remaining post Indication Heating Stress Improvement (IHSI) inspections
2. Examine the remaining welds that did not require post IHSI inspections
3. Replace Unit 2 recirculation inlet safe ends
4. Perform modifications to allow a mid-cycle implementation of Hydrogen Water Chemistry
5. Replace wear rings on Unit 2 crosstie RHR pumps
6. Perform various weld inspections for IGSCC susceptible welds
7. Inspect a selected number of control blades
8. Establish a program for periodic inspection of shroud head bolts

These IGSCC mitigation actions are done and the commitments contained in the program for Unit 2 restart are complete.

NRC reviewed TVA's IGSCC mitigation program in various inspections (NRC IRs 89-05, 88-06, 88-15, and 89-34). NRC concluded in Generic Letter 84-11 and 88-01 safety evaluation dated December 8, 1988, and revised December 21, 1989 that TVA's response to the Generic Letter was acceptable. NRC further concluded in NUREG 1232, Volume 3, that TVA's program had adequately addressed the issue with no open items identified for Unit 2 restart. Based on the completion of the above commitments for IGSCC mitigation and NRC's acceptance of TVA's implementation, this issue is closed for restart.

Post restart items for Unit 2 IGSCC mitigation include:

1. Implement hydrogen water chemistry by the next refueling outage.
2. Six welds in the core spray system with austentic stainless steel fittings will undergo IHSI.
3. The 4 inch and larger stainless steel piping in the reactor water cleanup system located outside containment will be replaced during the next refueling outage.

These issues will be discussed in TVA's submittal 120 days after restart of Unit 2.

8.0 - Restart Test Program

The operability of BFN's plant systems and their capability to perform their safety functions came under scrutiny due to the prolonged shutdown and extensive modifications to the facility. To address this issue, TVA committed to conduct a Restart Test Program to ensure that plant systems are capable of meeting their safe shutdown requirements. A system test specification and associated test instruction were developed for each plant system to define the scope of testing required, identify additional tests, track test completion and evaluate test results.

The BFN restart test program is essentially complete. TVA has completed those portions of the restart test program commitments necessary to support Unit 2 criticality. Approximately 20 restart test exceptions and six restart tests on safety related systems are scheduled to be completed prior to criticality. Nine restart tests will be continued into power ascension. The tests have not been completed because the required plant conditions will not be available until the power ascension test program is initiated. In a letter to NRC dated January 17, 1991, TVA provided a description of the power ascension test program, summarized TVA's previous correspondence and documented understandings with the staff on the scope and the content of the program.

The two restart test program commitments remaining open are the evaluation of test results and the performance of a special reactor vessel water level instrumentation test that will be completed after Unit 2 restart. The details of these two open commitments are described in Section IV.

The restart test program has been reviewed by NRC and documented in numerous inspection reports. Additionally, in NUREG-1232, NRC concluded that the restart test program for Unit 2 was acceptable. The staff also concluded that implementation of the program will ensure the proper verification of the functional integrity of the safety systems for Unit 2, and no issues remained unresolved for the restart of Unit 2.

9.0 - Instrument Sensing Lines

TVA initiated a corrective action plan to disposition three Conditions Adverse to Quality reports (CAQRs) that were issued for BFN pertaining to safety-related sensing line installations. These CAQRs expressed concerns related to instrument line slope, physical separation, and quality classification relating material control.

TVA's plan for resolving this issue was submitted by TVA letter dated October 19, 1988 and supplemented by letter dated August 14, 1989. The following actions were taken by TVA to resolve the instrument sensing line concerns:

1. Physical Separation of Redundant Components

   TVA evaluated instrument lines to ensure that they were adequately separated to prevent the consequences of accidents from impairing the functionality of redundant safety systems. No specific cases of inadequate separation were identified.

2. Slope

   TVA assessed the safety-related instrument lines to ensure the satisfactory performance of the instruments and their associated sensing lines during normal and accident conditions.

3. Quality Classification

   The adequacy of quality classification was assessed in the original design of instrument sensing lines and no specific cases of inadequate quality classification were identified.

The physical modifications related to the instrument sensing line slope issue have been completed. However, the procedure for backfilling the sensing lines has not been issued. This procedure is scheduled to be issued prior to Unit 2 restart. The details of this remaining open commitment are described in Section IV.

Implementation of the program was reviewed by NRC IR 89-36, 89-59 and 90-13. NRC IR 89-59 confirmed that TVA had taken sufficient measures to verify that instrument sensing line installations at BFN Unit 2 conformed to the design requirements. However, three open items were identified during the inspection. TVA responded to the open items identified in Inspection Report 89-59 by letters dated April 9, 1990 and October 4, 1990. NRC's followup inspection 90-13 closed these open items based on actions taken at BFN. NRC concluded in NUREG 1232, Volume 3, Supplement 2, that the instrument sensing line issue is resolved for BFN Unit 2. Upon issuance of the backfilling procedure, this program will be closed for Unit 2.

10.0 - Wall Thinning Assessment Program (Pipe Erosion/Corrosion)

In 1986 Surry Nuclear Plant's Unit 2 condensate-feedwater system experienced a catastrophic pipe rupture prompting the immediate shutdown of Unit 1. The cause of the rupture was identified as severe wall thinning due to erosion/corrosion damage. The errosion/corrosion phenomenon is characterized by the dissolution of protective magnetic film exposing unprotected base metal. The base metal is then eroded away by a fluid stream. Erosion/corrosion is a function of:

1. Material Composition
2. Water Chemistry
3. Flow Velocity
4. Flow Path Geometry
5. Fluid Temperature

As a result of the Surry Nuclear Plant incident NRC issued IEB 87-01, "Thinning of Pipe Walls in Nuclear Power Plants." TVA's response to IEB 87-01, dated September 18, 1987 described TVA's inspection and monitoring efforts to control pipe wall thinning for BFN. In general, TVA's response addressed the following:

1. Identification of codes and standards for piping design and fabrication.
2. Description of TVA's pipe wall thickness measurement program.
3. Criteria for selecting pipe wall thinning inspection points.
4. Summary of pipe wall thinning inspection results.
5. Description of future plans/programs.

TVA committed in BFNPP to perform an evaluation of Unit 2 piping locations which are suspect for erosion/corrosion damage. This evaluation was performed using TVA's IEB Bulletin 87-01 response described above. TVA's program examined turbine piping, moisture separators, heater drains, steam extraction, feedwater/condensate, and emergency equipment cooling water. The erosion/corrosion evaluation for Unit 2 is complete. The evaluation concluded that Unit 2 piping suspect to erosion/corrosion damage did not exceed minimum wall thickness. Further evaluations are scheduled for each unit once per operating outage. Accordingly, based on the actions taken above, this commitment is complete.

NRC concluded in NUREG 1232, Volume 3, that TVA's program to prevent catastrophic failure of piping from wall thinning, due to erosion/corrosion, was acceptable and resolved for Unit 2. Based on the completion of the actions/commitments contained in this program and NRC acceptance of TVA's implementation, this issue is closed.

ENCLOSURE 1 (Cont'd)

11.0 - Probabilistic Risk Assessment (PRA)

By letter dated June 17, 1986, NRC requested TVA submit the BFN PRA. TVA provided copies of the Browns Ferry PRA by letter dated November 20, 1986.

NRC audited the draft BFN PRA and provided, by letter dated March 29, 1989, a restart comment to TVA for resolution . TVA responded to the NRC's restart comment by letter, dated June 15, 1989. In NUREG-1232, Volume 3, Supplement 2, NRC stated that the restart concerns were adequately resolved and concurred with TVA's conclusion that the Browns Ferry facility was not an outlier with respect to core melt frequency and the draft BFN PRA results were acceptable for the restart of Unit 2. Based on NRC's acceptance of TVA's submittal this issue is resolved for Unit 2 restart.

NRC issued Generic Letter 88-20, Individual Plant Examination for Severe Accident Vulnerabilities, dated November 23, 1988. This letter requested licensees perform an Individual Plant Evaluation (IPE) of their Plant(s) for severe accident vulnerabilities and submit the results to NRC. Supplement 1 to Generic Letter 88-20 was issued on August 29, 1989, and requested licensees to provide their milestones and schedules for performing the IPE and submitting the results. TVA responded by letter, dated October 30, 1989, and committed to complete a Level 1 PRA and containment analysis and submit the results by September 1, 1992.

12.0 - Component and Piece Part Qualification

BFN's procurement program allowed previously qualified equipment to be degraded by purchasing replacement components and parts as commercial grade without proper documentation of its qualification and without adequate dedication of the items. To correct this deficiency TVA committed in the BFNPP to:

1. Verify that equipment certified previously as EQ has not been degraded through the use of spare and replacement parts, and

2. Establish programs and practices that will ensure equipment certified previously as seismically and environmentally qualified will not be degraded in the future.

In order to ensure that prior to Unit 2 restart, previously certified EQ equipment has not been degraded through the use of spare and replacement parts, BFN initiated the Items Evaluation Group (IEG) program. This program consisted of three primary elements:

1. Review the plant's maintenance history to identify the activities that have replaced safety related components or items.

2. Perform an evaluation of replacement items that have been installed in 10 CFR Part 50.49 systems.

3. Perform an evaluation of the 10 CFR Part 50.49 inventoried commercial grade spare parts to assure that their subsequent use will not degrade previously qualified equipment.

Approximately 14,000 CSSC-related maintenance documents and 226,000 replacement items were reviewed to identify past safety-related component or item replacements. These reviews resulted in identifying over 2,500 items which were 10 CFR Part 50.49 related and required further evaluation. Only 16 of these items required corrective actions as a result of nonconformances for use in 10 CFR Part 50.49 applications. The review of inventoried 10 CFR Part 50.49 replacement items identified 10 items which were considered unacceptable. The results of these efforts give reasonable assurance that BFN's past procurement of 10 CFR Part 50.49 items has been acceptable. Based on the actions taken by TVA, the commitments contained in this program are complete.

Additionally, NRC conducted a performance-oriented procurement inspection (NRC IR 90-36) and concluded BFN was adequately implementing its procurement program. Based on the completion of this commitment and NRC's acceptance of TVA's implementation this issue is closed for Unit 2 restart.

The establishment of the programs and practices that will ensure that equipment certified previously as seismically and environmentally qualified will not be degraded in the future through the use of spare and replacement items will be completed subsequent to the restart of Unit 2. This issue will be addressed in TVA's letter 120 days after restart.

13.0 - Electrical Issues

13.1 - Cable Installation Issues

As a result of concerns regarding cable installation practices at TVA's Watts Bar Nuclear Plant, BFN established a program to evaluate class 1E cable installation issues (sidewall bearing pressure, jamming, inadequate support of cables in long vertical runs, pulling through 90 degree condulets and mid-run flex conduits, bend radius, and pullbys). BFN's program consisted of performing extensive walkdowns, calculations, analysis, review of existing plant documentation and in situ high-potential dialectric (hi-pot) testing. The results of these reviews were submitted in TVA's letters to NRC dated July 18, 1988, September 29, 1988 and June 19, 1989. These reviews established a high degree of confidence in the installed cable systems at BFN.

Subsequent to the completion of those reviews, damage to cables was discovered while removing a conduit at the Watts Bar site. Additional engineering evaluations were performed to ensure that such damage had not occurred at BFN. The engineering evaluations included: 1) a program to identify a representative worst case sample of conduits where pullbys had been performed, and 2) hi-pot testing of these cables.

BFN selected the 10 "worst case" conduit segments (i.e., those that represented the most difficult pullby conditions) and conducted high-potential test of each one to verify overall installation integrity. TVA letters dated July 10, 1990, September 19, 1990, October 4, 1990, and January 23, 1991 provided the results of this testing program. In brief, although anomalies were identified in the testing of the 10 worst conduits, no pullby damage was identified at BFN. This program confirmed that the cable installation practices at BFN were adequate to ensure that pullby damage does not exist. Accordingly, based on the above, TVA's Unit 2 restart commitments are complete.

Implementation of the program was reviewed by NRC as documented in Inspection Reports 90-13. NRC stated in NRC IR 90-13 that the staff did not find any significant disagreements between the documentation and the installed conduits, and concluded the cable installation program was being properly implemented. NRC stated further in IR 90-13 that successful completion of the hi-pot test should demonstrate the integrity of the cable installation at BFN. As stated previously, these Hi-Pot tests performed at BFN did not identify cable pullby damage.

NUREG-1232 OPEN ITEMS

NRC concluded in NUREG 1232, Volume 3, Supplement 2 that TVA has adequately resolved the issues regarding cable installation practices at BFN Unit 2, except for completion of the remaining restart commitments. NRC requested to be notified when TVA has completed the following two commitments:

1. TVA identified the root cause of cable damage to be the use of condulets as pull points for large, 600-V cables. TVA will replace those cables susceptible to such damage before Unit 2 restart.

2. Cables from three of the harshest environmental areas of the plant will be replaced before Unit 2 restart.

The actions required to replace the large, 600-V cables affected by the use of condulets as pull points, as stated in item 1, are now complete and TVA considers this issue resolved. The physical work required to replace the cables in the three harshest environmental areas (drywell, steam tunnel, and heat exchanger room - RWCU), as stated in item 2, that could not be shown to meet the requirements of 10 CFR Part 50.49 is complete. However, there are three ECNs, which pertain to cable replacement in the drywell, remaining to be verified. This remaining verification work is scheduled to be complete by Unit 2 restart. The cables in the steam tunnel and heat exchanger rooms which could not be EQ qualified have been replaced and their respective ECN closed.

NRC requested in NUREG 1232, Volume 3, Supplement 2, for TVA to provide notification upon final completion of this work. TVA has committed to provide NRC with an EQ certification letter upon completion of EQ activities. Since this issue is within the scope of the EQ program, the EQ certification letter will ensure NRC that this activity has been completed.

The post-restart commitment contained in the BFNPP to perform corrective actions following Unit 2 restart will be addressed in the 120-day letter.

13.2 - Cable Ampacity

In 1986, an INPO audit finding at Bellefonte Nuclear Plant revealed inadequacies in TVA's electrical design standards. Since these standards were used for the initial design of cable installations at BFN, the potential existed for undersizing of safety related cable. TVA committed in BFNPP to perform calculations to determine the cable ampacity adequacy of the safety related auxiliary power cable installations prior to Unit 2 restart. TVA submitted additional information by letters dated January 25, 1988, July 7, 1988, September 30, 1988, February 21, 1989, March 17, 1989, April 18, 1989, April 27, 1989, July 7, 1989, October 6, 1989, April 9, 1990, and May 21, 1990.

The major elements of the Ampacity Program included:

1. Developing a new electrical standard (DS-E12.6.3) based on various industry standards and test reports and applied to cables installed in safety related circuits.

2. Developing and implementing a documented program to determine the extent of nonconformances to the current electrical design standards.

3. Performing calculations to determine limiting ampacity values based on environment and the requirements of nonconforming cable installations, including appropriate corrective actions, are documented and tracked through the CAQR program.

4. Ensuring that documentation exist for the application of DS-E12.6.3 to BFN cables and for corrective actions associated with nonconformance identified.

These actions are done and the commitments contained in the ampacity program are complete.

NRC verified the implementation of BFN's Ampacity Program and documented the results in NRC IRs 89-59 and 90-13. Additionally, NRC concluded in both NRC's Safety Evaluation which was issued by letter dated December 19, 1989, and NUREG 1232 Volume 3 Supplement 2 that there is reasonable assurance that Unit 2 cables will not be utilized above their rated temperature and will be capable of performing their intended safety functions under normal, abnormal, and accident conditions. However, NRC requested that TVA provide a technical basis for derating factors of cable tray covers between six and 10 feet long and to take necessary corrective actions by the end of the first refueling outage after restart of Unit 2.

Based on the completion of the actions contained in the Ampacity Program and NRC's acceptance of TVA's implementation, this issue is closed for Unit 2 restart.

NUREG-1232 Open Items:

As requested by NRC in NUREG 1232, Volume 3, Supplement 2, TVA will provide a technical basis for derating factors of cable tray covers between six and 10 feet long and take necessary corrective actions by the end of the first refueling outage after restart of Unit 2.

ENCLOSURE 1 (Cont'd)

13.3 - Flexible Conduit

Original construction specifications at BFN did not adequately address the requirements for minimum and maximum flexible conduit lengths to allow for thermal and seismic movement. As a result, some flexible conduits containing Class 1E cables were not installed at lengths necessary to ensure they would not be damaged during seismic and thermal movements. Based on this issue, TVA committed to evaluate a limited scope of 10 CFR Part 50.49 equipment installed with flexible conduits.

TVA's resolution of this issue included revision of the general construction specification and issuance of a civil calculation package. The civil calculation package addresses seismic and thermal movements of class 1E electrical conduits. In addition, TVA modified the original scope of the BFNPP commitment. This scope was revised to include inspection of flexible conduit installations associated with 10 CFR Part 50.49 end devices. Where inspections revealed that installations did not meet the general construction specifications, the installations were reworked to meet approved acceptance criteria or were technically justified.

TVA has concluded the program to address flexible conduit concerns is acceptable and meets the requirements of the BFNPP commitment. However, flexible conduit installations located in the drywell and associated with the main steam system are required to be installed prior to restart. These installations are scheduled for completion after Hydro Testing. The details of these commitments are addressed in Section IV.

NRC reviewed the flexible conduit program in NUREG 1232, Volume 3, Supplement 2, and stated that the program provides assurance that flexible conduits are adequately installed to accommodate seismic and thermal movements of the attached equipment, devices, and pipes. Upon completion of the open commitments, noted above, this issue will be closed for Unit 2 restart.

NUREG 1232 OPEN ITEMS:

NRC requested in NUREG 1232, Volume 3, Supplement 2, for TVA to provide notification upon final completion of this issue. TVA has committed to provide NRC with an EQ certification letter upon completion of the EQ activities. Since this issue is within the scope of the EQ program, the EQ certification letter will assure NRC that this activity has been completed.

In addition,as described in BFNPP, the post-restart evaluation of other safety related flexible conduits attached to safety related equipment for seismic adequacy will be addressed within the framework of the USI A-46 program in the 120 day letter.

13.4 - Thermal Overloads

BFN design drawings for 480V ac and 250V dc motor control centers did not specify thermal overload (TOL) ratings. As a result, there was no evidence that TOL as installed were selected or reviewed by qualified engineering personnel. TVA committed to inspect and modify the Unit 2 safety-related motor control center (MCC) TOLs and Units 1 and 3 safety-related TOLs required for Unit 2 safe shutdown prior to restart. TVA's corrective action program to resolve this lack of documentation was comprised of the following:

ENCLOSURE 1 (Cont'd)

1. Performed a plant walkdown by qualified teams, of 480V ac and 250V dc safety-related motor control centers (MCCs) to determine and document the installed TOL heater element sizes and the nameplate data for each load.

2. Performed calculations using design standards to specify the appropriate TOL heater for each application.

3. Replaced or adjusted the improperly sized TOL heater elements.

4. Documented on TVA-issued drawings the properly sized, replaced, or adjusted TOL heater elements to ensure that current and future installations of TOL heater elements are correct and documented.

These actions taken by TVA are done and the commitments contained in this program are complete.

NRC evaluated BFN's overload protection for motor control center circuits and documented the results in NUREG 1232, Volume 3. NRC concluded that TVA had identified the root cause of the MCC circuit protection problem and that TVA's corrective actions to prevent recurrence was acceptable. However, TVA should accomplish the following actions before Unit 2 restart:

1. Resolve the specific problems identified in CAQR BFN 880911.

2. Review and correct calculations.

3. If necessary, replace thermal-overload protection devices for the 480V ac and 250V dc MCC circuits.

TVA has completed these actions. TVA notified NRC of completion of item 2 in letter dated October 26, 1990. The CAQR referenced in item 1 has been closed. The Significant Condition Report (SCR) that was written to disposition item 3 has also been closed.

Implementation of the program was reviewed by NRC as documented in Inspection Reports 89-59, dated February 23, 1990. NRC stated in Inspection Report 89-59 that the staff did not find any disagreement between the documents reviewed nor with the installed thermal overload devices inspected, and therefore concluded that TVA had fulfilled the thermal overload program commitments.

Based on the completion of the commitments delineated in thermal overload program, the closure of NUREG 1232 open items and NRC's acceptance of TVA's implementation, TVA concludes that this issue is closed for BFN Unit 2.

13.5 - Cable Splices

As a result of Information Notice 86-53, and a site specific employee concern, TVA initiated a comprehensive splice program which included identification and inspection of installations of heat shrinkable tubing over electrical splices and terminations, which were required to conform to 10 CFR Part 50.49. The program also included the revision of standard drawings and upgrading of Raychem splice installer training. In addition, the splices identified as not conforming to the required installation requirements have been replaced. Accordingly, based on the actions taken above, the cable splice commitment is complete.

Implementation of the program was reviewed by NRC as documented in IR 90-22. This report confirmed that BFNPP is considered to be satisfactorily addressed, subject to completion of the splice program. Also, NRC concluded in NUREG 1232, Volume 3, Supplement 2 that TVA's cable splice program is acceptable and will provide adequate assurance that qualified electrical cable splices within the plant are installed properly. Based on the completion of the actions contained in the cable splice program and NRC's acceptance of TVA's implementation, this issue is closed for Unit 2.

NUREG 1232 OPEN ITEM

As requested in NUREG 1232, Volume 3, Supplement 2, TVA is to notify the staff of completion of this commitment. TVA concludes this commitment has been fully implemented and is resolved for Unit 2.

13.6 Fuse Program

TVA's corrective action to resolve the problem regarding protecting electrical circuits by using fuses that limit current is discussed in BFNPP. The fuse substitution list is the basis for the as-installed fuses in the plant equipment and was in conflict with Nuclear Engineering (NE) standard drawings. Major program elements included performing an engineering evaluation to determine the required fuses for the applications, and comparing this evaluation to the actual installation. The fuse requirement was documented from this evaluation and issued as design output in the form of a fuse tabulation drawing. The installation was then inspected to the tabulation and incorrect fuses were identified for replacement and/or further evaluation. These corrective actions resulted in the replacement of over 1500 fuses. Accordingly, based on the actions taken, TVA's restart commitments are complete.

NRC evaluated BFN's Fuse Program and documented the results in NUREG 1232, Volume 3. NRC concluded that TVA had identified the root cause of misapplication of current-limiting fuses and the program provided by TVA for corrective action is acceptable. NRC IR 89-59 verified TVA's implementation of the BFN Fuse Program and concluded that TVA has fulfilled the fuse program commitments. However, NRC requested that TVA provide two commitments to be performed after Unit 2 restart. TVA letter dated April 9, 1990 responded to this NRC request and committed to perform these actions prior to startup following the first refueling outage after Unit 2 restart. NRC acknowledged the commitments and TVA's schedule in NRC IR 90-13.

The following post Unit 2 commitments were made as a result of NRC's IR 89-59:

1. BFN will remove the reference to amperage from the drawings and replace them with the identification from the fuse tabulation controlled document, prior to startup from the Fuel Cycle 6 outage.

2. BFN will install permanent fuse labeling, prior to startup, from the Fuel Cycle 6 outage.

ENCLOSURE 1 (Cont'd)

These post restart commitments will be addressed in TVA's letter 120-days after restart.

NRC requested in NUREG 1232, Volume 3, Supplement 2, that TVA notify the staff when implementation for Unit 2 restart has been completed. TVA has completed of the actions contained in the Fuse Program and based on NRC's acceptance of TVA's implementation, this issue is closed for Unit 2 restart.

14.0 - Miscellaneous Programs

14.1 - Q-List Program

10 CFR Part 50, Appendix B, Criterion II requires that all structures, systems, and components covered by the Appendix B Quality Assurance Program be identified. In response to this requirement, TVA committed to establish a Q-List for BFN which identifies the safety-related systems, structures, and components necessary to ensure:

- The integrity of the reactor coolant pressure boundary,
- The capability to shutdown the reactor and maintain it in a safe shutdown condition,
- The capability to prevent or mitigate the consequences of accidents which could result in potential offsite radiation exposures comparable to the guideline exposures of 10 CFR Part 100.

The BFN Q-List is being developed in two phases. The Phase I Q-List contains and classifies the Unit 2 safety-related components and satisfies the requirements of NRC GL 83-28. Administrative procedures are in place to support the control and use of the Phase I Q-List. The implementation of the Phase I Q-List is complete and fulfills TVA's commitment for Unit 2 restart. The Phase II Q-List program will expand the Phase I Q-List and is ultimately intended to replace the BFN Critical Systems, Structures, and Components list. The Phase II Q-List program will not be fully implemented until after Unit 2 restart and will be addressed in TVA's letter 120 days after restart.

NRC's review of the BFN Q-List program is documented in NRC IR 89-16 and stated that the program was adequately implemented. In NUREG 1232, Volume 3, Supplement 2, the staff reviewed the Q-List program and concluded TVA has implemented its BFNPP commitments and that no outstanding Q-List Unit 2 restart issues remain open. Based on the completion of this commitment, as described above, and NRC's acceptance of TVA's implementation, this issue is closed for Unit 2 restart.

14.2 - Moderate Energy Line Break (MELB) Flooding

TVA committed in BFNPP to evaluate the effects of flooding due to breaks in moderate energy lines outside primary containment and identify any corrective actions prior to Unit 2 restart. The following corrective actions were identified in submittals to NRC dated September 23, 1988, November 29, 1988, and March 24, 1989 to be performed prior to restart of Unit 2:

ENCLOSURE 1 (Cont'd)

1. Waterproofing affected electrical boxes, hand switches, and instrumentation panels to minimize the effects of any water spray resulting from MELBs,

2. Reworking three RHRSW pump control cable splices to ensure their operation in a submerged condition,

3. Sealing conduit penetrations between compartments in the intake pumping station.

The actions contained in the MELB Program are done and these commitments are complete.

In NUREG 1232, Volume 3, Supplement 1, NRC concluded that the consequences of MELBs will not preclude the operator's ability to shut down the plant contingent upon the licensee completing these three modifications before restart of Unit 2. TVA letter dated October 26, 1990 confirmed completion of these three corrective actions. NUREG 1232, Volume 3, Supplement 2, acknowledges TVA's statement of completion. Based on the completion of the actions contained in the MELB program and NRC's acceptance of TVA's implementation, this issue is closed for Unit 2.

14.3 - Containment Coatings

TVA committed in BFNPP to perform walkdown inspections of unqualified coatings on components installed inside primary containment. The walkdown was performed to baseline the uncontrolled coating log and assess the general condition of existing qualified coatings. An analysis was performed to determine the maximum allowable quantity of coating debris which could be transported to the suction strainers without affecting the ability of the emergency core cooling system (ECCS) pumps to perform their function post-Loss of Coolant Accident (LOCA).

TVA's letter dated October 4, 1989 provided NRC the results of this walkdown. The results of the walkdown indicated that the existing unqualified coatings within primary containment is less than the amount which would adversely affect ECCS pump performance in a post-LOCA condition. In addition, corrective actions have been taken to ensure that the addition of unqualified coating quantities is maintained below the maximum allowable quantity. Accordingly, based on the actions taken above, TVA's Unit 2 restart commitment is complete.

NRC concluded in NUREG 1232, Volume 3, Supplement 2 that the amount of unqualified coating within primary containment is less than the amount that could adversely affect ECCS pump performance in a post-LOCA condition and is therefore acceptable.

Based on the completion of these actions taken on this issue, and NRC's acceptance of TVA's evaluation, this issue is closed for Unit 2.

14.4 - Platform Thermal Growth

During a review of a potentially generic issue related to thermal growth of structural steel platforms, TVA determined that a similar condition existed at BFN. In BFNPP, TVA committed to review loading of platforms due to thermal growth and perform the necessary modifications prior to Unit 2 restart. To resolve this issue TVA determined which features may be subjected to large temperature differentials and then performed an evaluation to determine whether the applicable calculation had addressed thermal growth. Those structural members not meeting design criteria requirements were redesigned and requalified as necessary. The required modifications to those structural platforms as a result of thermal growth are done and the commitment for this issue is complete.

NRC reviewed TVA's implementation of this program as documented in NRC IRs 89-29 and 89-42 and concluded that the issues were resolved. NRC also stated in NUREG 1232, Volume 3, Supplement 2, that TVA's evaluations resolved the issue. Based on the completion of the above commitment for platform thermal growth and NRC acceptance of TVA's implementation, this issue is considered closed for Unit 2.

14.5 - Heat Code Traceability

Several issues identified by employee concerns have been investigated relative to material control involving design requirements and traceability relative to pressure boundary piping components. TVA committed in BFNPP to complete this investigation related to heat code traceability to assure satisfaction of FSAR commitments prior to Unit 2 restart. The results of these investigations were submitted to NRC by letter on January 4, 1988. As stated in the report, the problems identified primarily involved pressure boundary material (2 1/2-inch and under pipe and loose fittings). The problem was primarily one of documentation deficiencies with the potential for hardware deficiencies. Upper-tier documents required that certain pressure boundary material be marked in a manner to provide traceability to the reports of relevant specified test and examinations performed on the material. Positive controls are required to ensure proper handling and to maintain identification, either by markings on the material or by records traceable to the material, throughout fabrication, erection, installation, and use.

Additionally, the investigation stated that BFN met the codes and standards to which it was committed through construction, with only isolated discrepancies. However, for post-construction modifications, and maintenance activities, BFN is committed to 10 CFR Part 50, Appendix B, Criterion VIII, "Identification and Control of Material, Parts, and Components". The Nuclear Quality Assurance manual did not accurately define the requirements for material identification and control procedures necessary to ensure compliance with these commitments; therefore, site procedures were deficient. BFN's Design Criteria was unclear and contradictory in defining the Nondestructive Examination (NDE) requirements. This resulted in documentation discrepancies with respect to BFN's design output documents and materials.

ENCLOSURE 1 (Cont'd)

The corrective actions taken by BFN to resolve this issue was to review the post-construction material control documentation. The review found that even though site procedures had been inadequate during post construction, personnel had maintained identification and control during receipt, storage, and installation. Therefore, further review at BFN was found to not be required. As a result of this review, BFN redefined those requirements applicable to the BFN's Material Control Program where the design requirements regarding NDE were unclear. Accordingly, based on the actions taken above, the commitment contained in this program is complete.

TVA informed NRC in BFNPP that the heat code traceability investigation commitment had been completed and the concerns were found to not be applicable to BFN. Additionally, TVA letter dated June 29, 1989, notified NRC that this generic report was considered the final resolution of this issue for BFN. NRC's evaluation of this issue was documented in NUREG 1232, Volume 3, Supplement 2, and in the May 31, 1990 Safety Evaluation on the TVA Employee Concerns Subcategory Reports. NRC concludes in NUREG 1232, Volume 3, Supplement 2, that this issue was resolved adequately enough to support restart of BFN Unit 2. In addition, NRC IR 90-31 verified this conclusion. Based on the completion of the commitment for this issue and NRC's acceptance of TVA's implementation, this issue is closed.

SECTION IV - SUMMARY OF BROWNS FERRY COMMITMENTS

INTRODUCTION

The commitments for improving the performance of BFN are summarized in the BFNPP, Section IV, Attachments IV-1 through IV-4. These commitments represent a concise summary of the various programs supporting Unit 2 restart. Applicability of these restart commitments to Unit 1 and 3 have been provided in a letter to NRC dated January 9, 1991.

Attachment IV-1 "CNPP Volume 1 Commitments for BFN"

These commitments are exclusively from the revised CNPP Volume 1. TVA stated in a letter to NRC dated April 5, 1991, the Volume 1 commitments are complete, except for the following post-restart commitment:

VI.C.2.C - The configuration management function will include a controlled master equipment list and a master design document list.

STATUS: The master equipment list and master design document list is presently scheduled for completion in September 1991.

Attachment IV-2 "BFNPP Volume 3 Commitments"

This attachment contains a list of the of Unit 2 restart actions in BFNPP Volume 3. As of the date of this letter, 9 restart commitments remain open. These open commitments will be completed prior to Unit 2 restart. The open commitments are:

ENCLOSURE 1 (Cont'd)

1. Section III.2.0 - Configuration Management

Commitment No. 52, Page No. III-16 - Unimplemented and partially implemented change documents as described in Section III.2.2.2.4 that were included in the outstanding work item list or that have been initiated since operating license issuance, are being reviewed as part of the DBVP to ensure that the system's functional ability to meet the design basis is not compromised for those systems or portions of systems required for safe shutdown.

STATUS: Currently evaluating the local design change control report for impact on the functionality of the DBVP scope. This work is scheduled to be complete by restart.

Commitment No. 53b, Page No. III-19 - Configuration control drawings for the flow, control, and electrical single-line drawings associated with the systems or portions of systems identified in the pre-restart phase of the DBVP will be issued prior to restart.

STATUS: Configuration Control Drawings developed to document current plant configuration (617 of the 623 developed in Phase I are issued; the remaining 6 will be issued as systems are returned to service.

Commitment No. 78a, Page No. III-38 - The calculation review for essential calculations necessary to assure functionality of safe shutdown systems as defined in Section III.2.2.2.5 will be complete prior to restart of Unit 2.

STATUS: Work is complete, closure package is being developed to send to QA for independent verification.

2. Section III.8.0 - Restart Test Program

Commitment No. 99, Page No. III-61 - A system test specification and associated test instruction will be generated for each designated plant system to define the scope of testing required, identify additional tests, track test completion, and evaluate test results.

STATUS: Test to be completed after restart during the initial heatup to power operation. This testing is expected to be completed during the full power ascension testing at 55 percent.

Commitment No. 105, Page No. IV-20 - Special testing will be employed during restart heatup of vessel to ensure that the water level instruments are operating properly.

STATUS: This commitment is complete with the exception of the evaluation of the test results. Test results will be evaluated following the completion of the test program.

ENCLOSURE 1 (Cont'd)

3. Section III.9.0 - Instrument Sensing Lines

Commitment No. 99a, Page No. III-63 - A corrective action plan to disposition concerns related to instrument sensing lines will be implemented prior to Unit 2 restart. (CAQR BFP 870012, 13, 14) (Clarification: Restart related actions in the CAQRs (BFP 870012, 870013, 870014) will be completed prior to Unit 2 restart and a submittal to NRC similar in detail and content to the Sequoyah Nuclear Plant submittal, will be sent to NRC prior to Unit 2 restart containing scope and results.)

STATUS: The physical modifications related to the instrument sense line slope issue have been completed. However, the procedure for backfilling the sense lines has not been issued. This procedure is scheduled to be issued and commitment completed by Unit 2 restart.

4. Section III.13.3 - Flexible Conduit

Commitment No. 99i, Page No. III-69 - Actions necessary to disposition flexible conduit concerns for the 50.49 equipment will be complete prior to Unit 2 restart. (See August 18, 1989 letter to NRC for additional program details.)

STATUS: There are three ECN/DCN's open for installation of flexible conduit. These installations are associated with the main steam system and are located in the drywell. The conduit installations are scheduled to be completed prior to restart and BFN will certify that this work is complete upon submittal of the EQ certification letter.

5. Section V - Operational Readiness

Commitment No. 101, Page No. V-6 - A final BFN operational readiness report will be generated showing completion of actions that implement BFNPP restart commitments, requirements and associated criteria, and the completion of the performance objectives evaluation.

STATUS: The site managed operational readiness program has been completed and the report is in final draft. This report is scheduled to be issued shortly.

Commitment No. 102, Page No. V-6 - An independent review of BFN Unit 2 operational readiness will be directed by the Senior Vice President, Nuclear Power, findings and recommendations will be provided to the Senior Vice President, Nuclear Power, before restart, the licensee has committed that Browns Ferry Unit 2 will not restart until the senior Vice President, Nuclear Power, gives his approval for restart.

STATUS: The independent operational readiness review is complete. This item will close when the Senior Vice President of Nuclear Power gives approval for restart.

ENCLOSURE 1 (Cont'd)

Attachment IV-3 "Committed Regulatory Modifications Which Will Be Completed Before Restart of Unit 2"

These commitments are complete for Unit 2 restart.

Attachment IV-4 "Committed Regulatory Modifications Which Will Be Completed In The First Refueling Outage Following Unit 2 Restart"

This section listed post restart commitments. Several of which have been subsequently revised. Listed below is a revised status of those commitments:

1. NUREG-0737 - Item I.D.2 - Safety Parameter Display System (SPDS)

   In a letter dated December 19, 1989, TVA revised its commitments concerning SPDS. In this letter TVA committed to install the SPDS in two phases.

   The Phase I portion of the SPDS was installed by TVA and accepted by NRC on March 6, 1991, with two exceptions. The work to resolve the two exceptions has been completed and NRC plans to close these issues prior to Unit 2 restart.

   The Phase II of the SPDS will be completed during the next refueling outage and the SPDS will be full functional during the cycle 7 operations.

2. NUREG-0737 - Item II.B.3 - Implement Post-Accident Sampling System (PASS)

   In the letter dated December 28, 1989, TVA revised the commitment to fully implement PASS during this outage. Currently, the system has been installed and will be declared functional following testing at power.

3. NUREG-0737 - Item K.3.28 - Qualification of Automatic Depressurization System (ADS) Accumulators

   In the letter dated December 28, 1989, TVA revised it's commitment to fully implement modifications necessary to provide for the long term operations of the ADS accumulators. In the letter dated September 17, 1990, TVA notified NRC that this modification was complete.

4. Generic Letter 84-23 - Reactor Vessel Water Level Instrumentation in BWRs

   In a letter dated June 13, 1989, TVA revised the commitment to accelerate work on modifying the reactor water level reference columns outside the drywell. In a letter dated March 14, 1991, TVA reported that the reference columns had been moved outside containment. TVA's letter dated March 14, 1991 notified NRC that the required changes to emergency operating instructions and associated operator retraining were complete.

ENCLOSURE 1 (Cont'd)

5. I.E. Bulletin 79-02 - Pipe Support Base Plate Design Using Concrete Expansion Anchor Bolts

   In a letter dated June 16, 1989, TVA committed to accelerate the completion of the work to this outage. In a letter to NRC dated March 26, 1991, TVA reported the modifications required to meet this commitment were complete.

6. I.E. Bulletin 79-14 - Seismic Analysis For As-Built Safety-Related Piping Systems

   In a letter dated June 16, 1989, TVA committed to accelerate the completion of the work to this outage. In a letter to NRC dated March 26, 1991, TVA reported the modifications required to meet this commitment were complete.

7. NUREG-0737 - Item I.D.1 - Detailed Control Room Design Review (DCRDR)

   In a letter dated December 28, 1989, TVA accelerated the implementation of the commitments for the modifications for the Human Engineering Deficiencies (HED) found during the DCRDR process. In the letter dated June 13, 1989, TVA committed to implement the nine restart HEDs which met the restart criteria prior to restart. The letter also accelerated the safety significant HEDs (categories 1 and 2) that will be completed prior to restart from the next refueling outage (cycle 6). Non-safety significant HEDs (categories 3 and 4) will be implemented prior to restart from the second refueling outage (cycle 7) only if they are determined to have a positive cost/benefit ratio.

8. Fire Protection

   A number of fire protection system upgrades as described in TVA's April 4, 1988 submittal are scheduled following restart. This issue will be further described in TVA's letter 120 days after restart.

SECTION V - OPERATIONAL READINESS

The overall goal of the Operational Readiness (OR) assessment program is to establish a high degree of confidence that the plant and personnel are ready to restart and operate in a safe and reliable manner.

The OR program is described in letters submitted to NRC dated August 24, 1988 and December 23, 1988. It consists of three programs as follows: 1) A site managed OR program, 2) an independent Nuclear Power (NP) OR review, and 3) a NP-directed Senior Management Assessment of Readiness (SMART) for restart. The status and conclusions of the three programs follow below:

ENCLOSURE 1 (Cont'd)

A. Site Managed OR Program

The site managed program consists of three principal elements:

- BFNPP Implementation
- Performance Objectives Evaluation
- Restart Prerequisite Verification

The site managed OR program has been completed. The report is in final draft and will be issued shortly. The report concludes that the program has completed its objectives. In reference to the three elements:

1. An effective program has been established and implemented which provides a high degree of assurance that the restart commitments from the BFNPP have been completed. The few remaining open commitments are tracked in the Tracking and Reporting of Open Items system as restart items.

2. Each critical organization has completed a self-assessment of personnel, programs, practices, and management effectiveness using industry standards of excellence in a manner similar to that of an INPO evaluation. Identified deficiencies have been corrected or are being tracked to completion.

3. The Site Master Punchlist has been developed and is currently being used by TVA as part of the System Pre-operablity Checklist process. The prerequisite checklists described in Special Operating Instruction 2-SOI-100-1 were also used. These checklists have demonstrated their integrity in returning over 60 systems to service and to prepare for recently completed core reload. There is a high degree of assurance that the checklist process will continue to provide a well controlled method for returning BFN to service.

B. Independent OR Review

The independent corporate review of OR was conducted as a three phase assessment of the qualification and motivation of personnel at BFN and the necessary support for the safe and reliable testing, operation, and maintenance of Unit 2. The independent team consisted of senior level TVA and contractor personnel reporting directly to the Senior Vice President of Nuclear Power.

Three separate reviews were conducted by the OR team and formal reports were issued. Corrections to each report findings were formulated and tracked. The Nuclear Manager's Review Group (NMRG) followed up on the corrective actions on the Phase 1 and 2 reports. They will evaluate the third phase report prior to restart. Individual corrective actions will continue to be tracked to closure.

In their final report, the OR team concluded that BFN has the ability to safely resume operations.

ENCLOSURE 1 (Cont'd)

C. Senior Management Assessment of Readiness for Restart Team

The Senior Management Assessment of Readiness for Restart Team (SMART) was formulated in order to oversee the adequacy and quality of restart readiness preparations. SMART consisted of five individuals, four TVA Vice Presidents and a senior GE Manager with prior BFN and operating experience. SMART evaluated the plant against the acceptance bases and their associated criteria as contained in the Management Self-Assessment Plan submitted to NRC by letter, August 24, 1988.

SMART has made a determination that, with completion of work currently scheduled and with administrative controls and processes currently in place, BFN is in a state of readiness to successfully restart and safely operate Unit 2. This conclusion by SMART was based on reports from responsible management, independent evaluations and reviews, and personal observations. Independent evaluations were reviewed including the independent Operational Readiness Review. Based on completion of this review, the Unit 2 commitment for a SMART assessment has been completed.

Additionally, NRC Operational Readiness Assessment Team conducted an inspection (NRC IR-91-201) during January 1991, and concluded that there were no issues that would prevent them from recommending restart of Unit 2.

Based on the completion of the commitments contained in section IV, and NRC's OR Assessment Team acceptance of TVA's implementation, this issue is closed for Unit 2 restart.

ENCLOSURE 2

SUMMARY OF COMMITMENTS

Provide NRC a technical basis for derating factors of cable tray covers between six and ten feet long and to take necessary corrective actions by the end of the first refueling outage after Unit 2 restart.