

## APPENDIX C

### NSRS PERCEPTIONS WITH REGARD TO WATTS BAR NUCLEAR PLANT

In December 1985, individual NSRS staff members expressed their perceptions regarding TVA's quality program and its compliance to Appendix B of 10 CFR 50. The perceptions were centered in the following 11 areas:

- Welding Program
- Electrical Cable
- Instrument Lines
- Construction Process
- Quality Records
- Quality Assurance
- Q-List
- Material Traceability
- Embedded Plate Load Control
- Nonconformance Reporting
- Design Control

The basis of the above perceptions was derived by the NSRS staff members from employee concerns and past NSRS reviews. These perceptions were that certain aspects of TVA's design, construction, and QA were weak.

In February 1986, TVA had begun taking corrective actions to ensure these perceptions were adequately resolved. The perceived areas of weakness were targeted for improvement and factored into the development of CNPP. Additionally, the ECSP was established to evaluate and resolve the specific employee concerns.

As noted below, these NSRS perceptions have also been targeted for resolution by the corrective actions and organizational and procedural improvements described in this WBNPP. Additionally, the ECSP has completed evaluations of the employee concerns in the various categories and, in doing that, addressed various aspects of the issues involved in the NSRS perceptions; see the attached index for a general cross-reference of NSRS perceptions to ECSP categories and subcategories. The attributes listed in the criteria column of this index are generally based on the description of the issues identified under each NSRS Perception in Reference 1. Due to similarity or broadness of subject matter, the cross-reference, however, should not be construed to be all encompassing.

The following provides a cross-reference of these 11 areas to the sections of this WBNPP where the issues identified by the perceptions are addressed. A brief statement of the issues involved in each perception is also included. These statements are based on Ref. 1.

- As-Constructed welding program is indeterminate

NSRS staff stated in the referenced memorandum, "Several key elements that are vital to a welding program that will result in a quality product are unacceptable," and it concluded, "Due to a pervasive nature and magnitude of program problems in the area of welding, our conclusion is that the end product is indeterminate."

Chapter III, Section 2.18 provides a brief discussion of TVA's Welding CAP and the TVA Welding Project review. The Welding CAP, and the numerous reports submitted to the NRC, e.g., EG&G's Weld Evaluation Project reports (Ref. 2), TVA Welding Project's Phase I and Phase II reports (Refs. 3 and 4), describe TVA's investigation of WBN welding activities as well as results to date of the completed actions.

- Electrical cable present qualification condition is indeterminate

NSRS staff stated:

"Due to the many substantiated concerns regarding cables, it has become obvious that many cables have been bent, stretched, cut, and possibly crushed during the process of installing them. In fact, some were subjected to so much tension they broke during the pulling process. It is therefore obvious that we have exceeded the manufacturer's 'normal' mechanical stress values during the installation process. This being the case, one can only conclude that the cables no longer meet the requirements of IEEE Standard 383-1974. Therefore, the plant's ability to withstand a DBE is indeterminate...Two other problems noted in this review concerned lack of cable tray separation and potential heating of cable due to Vimasco coating." (Ref. 1).

Chapter III, Sections 2.1 and 2.5 provide a discussion of Cable Issues and Electrical Issues CAPs, respectively. These CAPs describe in detail the issues, corrective actions and the recurrence control measures for the problems associated with electrical cables. The calculation activity of the DBVP, described in Chapter III, Section 2.3, will address the ampacity of cables. The Environmental Qualification Program described in Chapter III, Section 3.4, addresses the environmental qualification of cables.

- Instrument line inadequacies

NSRS staff stated that the instrument line construction process "is apparently flawed with some very elementary failures that cause the end product to be indeterminate. Basic controls for tube bending were not in place, ferrules put in backwards, incompatible vendor's fittings interchanged, line slopes not maintained, inspection documents forged, and line supports not identified."

Chapter III, Section 2.11 describes the Instrument Lines CAP, which addresses the issues related to instrument line inadequacies.

- Construction processes, in general, are loosely controlled

NSRS staff stated "In conclusion, the original installations were poorly controlled, often performed by untrained people and inadequately inspected resulting in an indeterminate end product that has deteriorated through time due to disregard for procedures."

The CNPP describes the significant improvements made in TVA nuclear organizations to address past deficiencies. The WBNPP describes the Systematic Evaluation of overall plant design and construction, including corrective actions taken to provide reasonable assurance that WBN will meet licensing requirements and TVA commitments. WBNPP Chapter V, Section 1 also describes the strengthening of the WBN management and organization. Chapter V, Section 2.8.3 describes the design change and modifications control measures.

- Records are of poor quality

NSRS staff stated "from a review of issued reports we have concluded that Quality Assurance records are inadequate and in some instances nonexistent."

Chapter III, Section 2.13 provides a discussion of QA Records CAP which addresses this issue.

- Quality Assurance problem area

NSRS staff stated that the organizational freedom, necessary to allow functioning of corrective action mechanisms, had not been demonstrated to be sufficient to satisfy 10 CFR 50, Appendix B, Criterion I.

The ECSP addressed the issues related to QA, as shown in the attached index. The CNPP describes the significant improvements made in the TVA QA Program. WBNPP Chapter V, Sections 1.2.3 and 2.6 describe the strengthening of Quality Assurance organization at WBN.

- Q-List is not in good shape and is inconsistent with "CSSC" List

NSRS staff stated, "For some years now, there has been two or three different lists in use by TVA. This has led to much confusion as to which list is the 'Q-List.' As a result there is the distinct possibility that some items that should have been designed, or constructed, or maintained in a 'Q' manner have not been handled as such, and have been, or are still outside the scope of the quality program. One accurate and authoritative 'Q-List' must be established."

Chapter III, Section 2.14 provides a discussion of Q-List CAP, which addresses this issue.

- Material traceability very poor, especially Seismic Category I supports

NSRS staff stated: "Material has been upgraded to a higher ASME class than when it was purchased and lower class components have been used in higher class systems. This would indicate a fundamental breakdown in the traceability program for th', to have occurred."

A much larger and all-inclusive area of traceability breakdown is in the area of Seismic Category I safety-related supports. Material for these supports has been traced only to warehouse storage. The material was not traced to the point of installation and use as required by 10 CFR 50, Appendix B, Criteria VIII, and ANSI N45.2."

The material traceability issue has been reviewed by the ECSP as shown in the attached index. Also, the Heat Code Traceability CAP, described in Chapter V, Section 2.9 partly addresses this issue.

- Field configuration of cables/supports has lost accumulated loading controls on embedded plates

NSRS staff stated:

"There is a program problem with drawing notes and construction specifications leading to confusion and inconsistent applications in the installation of hangers. There is also no accounting of cumulative loads on embedded strip plates to compare with the original design and acceptance criteria to show that the as-built configuration equals the as-designed configuration.

In the area of anchor installation, there are problems with installation procedures, inspection procedures and records, responses to requirements in IE Bulletin 79-02, and documentation that would identify faulty installations such as cut anchors. The as-built configuration using anchors is unknown."

The HAAUP CAP, described in Chapter III, Section 2.8, addresses the adequacy of pipe supporting embedment plates. Also, the calculation activity of the DBVP CAP described in Chapter III, Section 2.3 addresses the adequacy of the remaining embedment plates.

The ECSP addressed the issues related to the anchor installation, as shown in the attached index. Additionally, the HAAUP CAP addresses the design adequacy of the anchors as required by IE Bulletin 79-02.

- Nonconformance reporting does not address corrective action aspects appropriately

NSRS staff stated, "Due to management pressures neither IRNs, DCRs, or CARs have been effective in determining root cause and action to prevent recurrences of nonconforming conditions."

The CNPP describes the improvements made in the TVA QA Program. Chapters II and III of this WBNPP describe the Systematic Evaluation of overall plant design and construction and the corrective actions to comprehensively address past problems and prevent their recurrence. The improved CAQ process described in Chapter V, Section 2.5, and the strengthening of the WBN QA organization is described in Chapter V, Section 1.2.3.

- Design control is not initially specified up front nor is final configuration feedback given back to design - margins of safety are indeterminate.

Based on the above ten perceptions, NSRS staff concluded that the design control is not initially specified up front, nor is final configuration feedback given back to design, therefore, margins of safety are indeterminate.

Chapter V, Section 2.8, Design Control, describes the control program implemented at WBN to ensure that appropriate design controls are maintained. Also, Chapter III, Section 2.3 describes the DBVP CAP, which includes the configuration control as one of the activities.

### References

1. Tennessee Valley Authority, Memorandum from NSRS Staff Members, R. C. Sauer, J. D. Smith, and P. R. Washer to K. W. Whitt, Director, NSRS. Subject: NSRS Position Paper on Watts Bar Nuclear Plant (WBN) 10 CFR 50, Appendix B Compliance. February 3, 1986.
2. Tennessee Valley Authority, Letter from S. A. White to S. Ebnetter (NRC). Subject: Transmittal of EG&G Weld Evaluation Project Reports. February 17, 1988, RIMS No. L44 880217 808.
3. Tennessee Valley Authority, Letter from R. L. Gridley to NRC Document Control Desk. Subject: Transmittal of Welding Project Phase I Report. February 21, 1989, RIMS L44 890221 804.
4. Tennessee Valley Authority, Letter from C. H. Fox, Jr., to NRC Document Control Desk. Subject: Transmittal of Welding Project Phase II Report. April 10, 1989, RIMS No. L44 890410 807.

INDEX OF NSRS PERCEPTIONS  
TO WBN EMPLOYEE CONCERNS  
CATEGORY

<u>NSRS Perception</u>	<u>Criteria</u>	<u>Category</u>	<u>Subcategory</u>
Welding Program	- Fitup Inspection	WE	50400
		QA	80200
	- Acceptance Criteria	WE	50400
	- Rod Accountability	WE	50400
	- 45A050 Notes Not Accessible	CO	11100
		EN	22300
		EN	22000
	- Welder Certification Control	WE	50400
		QA	80500
	- Inspection Tool	WE	50400
	- Rod Ovens	WE	50400
	- Training of Weld Inspectors	WE	50400
		QA	80300
		QA	80200
		QA	80100
	- Lack of Independent QC Inspectors	QA	80200
	- Inspection through Carbo-Zinc Coating	WE	50400
	QA	80200	
- Sampling Inspection	QA	80200	
	QA	80400	
	QA	80300	
	WE	50400	
	QA	80100	

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<u>NSRS Perception</u>	<u>Criteria</u>	<u>Category</u>	<u>Subcategory</u>
	- Other	QA	80200
		QA	80500
		QA	80300
		WE	50400
Electrical Cable Installation		CO	10900
		OP	30400
		QA	80200
		QA	80400
		QA	80100
		QA	80600
		QA	80500
		CO	15100
		EN	24200
		EN	26600
		CO	19200
Instrument Line Inadequacies	- Tube Bending	CO	17300
	- Compression Fittings	CO	17300
	- FOS Traceability	CO	11100
	- Slope	CO	17300
	- Other	QA	80500
		EN	22800
		CO	17300

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CATEGORY**

<u>NSRS Perception</u>	<u>Criteria</u>	<u>Category</u>	<u>Subcategory</u>
Construction Processes	- Inspection		
	• QC Procedures	QA	80200
	• Expansion Anchors	CO	11300
		CO	10900
	• Concrete	CO	10200
		OP	31300
		QA	80100
		EN	25000
		CO	10100
		QA	80600
	• Conduit	CO	19200
		QA	80200
		QA	80500
		OP	30400
	• Support Installation Notes	CO	11100
		CO	10400
		QA	80200
		EN	22000
	• Unistrut Support Bolting	EN	22000
		EN	22800
		EN	22300
		CO	11100
		CO	10200
	CO	11300	
	CO	10900	
	MC	40400	
	QA	80600	
	CO	10600	
- Test Control	CO	10200	

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<u>NSRS Perception</u>	<u>Criteria</u>	<u>Category</u>	<u>Subcategory</u>
	- Training/Skills	CO QA	10000 80000
	- Other	WE OP CO CO CO	50400 30700 19200 15100 10600
Records are of Poor Quality	- Falsified Welder Certification	QA QA WE	80500 80100 50400
	- Concrete Pour Cards	CO	10200
	- Instrument Line Support Documentation	EN QA	22300 80200
	- Safeguards Drawings Accountability	OP QA	30700 80500
	- Other References	OP QA QA CO EN WE	30100 80200 80500 10200 24500 50400
QA/QC Independence		QA QA OP QA	80100 80400 30700 80500

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<u>NSRS Perception</u>	<u>Criteria</u>	<u>Category</u>	<u>Subcategory</u>
Q-List	- Conflicting Lists	EN	20900
	- Correctness	EN	20900
	- Two-level quality system	EN	20900
	- Other	EN MC	22800 40500
Material Traceability		MC	40300
		MC	40700
		MC	40500
		EN	22800
		WE	50400
		CO	17100
		QA MC	80100 40200
Cable/Embedded Plates	- Anchor Installation	CO	10400
		CO	11300
	- Embedded Plate Loading	CO	10400
		EN	25000
		EN	25500
		EN	22100
		CO	11300
	- Specification, etc.	CO	10400
		EN	25000
	- Anchor Inspection Activities	CO	11300
	- Configuration Control	CO	10400
		CO	11300
	- Quality Records	CO	10400
CO		11300	
Nonconformance C/A		WE	50400
		QA	80000
		CO	10000
		OP	30000
		MC	40000

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<u>NSRS Perception</u>	<u>Criteria</u>	<u>Category</u>	<u>Subcategory</u>
Design Control	- Not Specified Up Front	CO	10000
		EN	20000
		CO	11300
		WP	50400
	- Configuration Feedback	CO	10000
		EN	20000
	- Margins of Safety	EN	20000

NOTE: In cases where the issues may relate to multiple categories, it may be more meaningful to consider the category information first prior to the subcategory evaluations.

Required Completion  
O - Ongoing Activity  
L - Long Term programs  
C - Complete by TVA but not necessarily closed by NRC

APPENDIX D

Status of Corporate Nuclear Performance Plan  
(Vol. 1) Commitments Applicable to Watts Bar

<u>Commitment</u>	<u>Vol. 1</u> <u>Rev. 6</u>		<u>Required</u> <u>Completion</u>	<u>Summary of Progress</u>
<u>Item</u>	<u>Page</u>			
<b>III. <u>Hiring and Development of Senior Nuclear Managers</u></b>				
1	50	TVA will continue the recruitment of experienced managers as well as other experienced professionals from the nuclear industry to serve as permanent TVA employees.	C	A management position exists which has the responsibility to recruit experienced managers for Nuclear Power. From October 1985 to present, Nuclear Power has hired 311 M-5's or above in its effort to bring experienced managers into Nuclear Power.
2	51	NP plans to develop experienced nuclear managers from within its own organization.	C	The following steps have been taken to address the development of managers through systematic development and replacement of managerial talent in NP.  1. Issuance of a manager's instruction by the Senior Vice President of Nuclear Power establishing a program to broaden experience of high performing mid-level managers in preparation for greater responsibility in the organization. Complete September 10, 1987. (Reference Managers Instruction Number 002)  2. A management training program has been implemented which consists of Orientation to Nuclear Supervision (OTNS), Supervisor Development Course (SDC), and Managing for Excellence (MFE), as well as, other management training courses given on "as needed" basis.

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Summary of Progress

3. Establishment of a Human Resources Development (HRD) organization within Nuclear Human Resources (NHR) that has designed management development and replacement planning for use by line managers.
4. On going assistance from the HRD staff to assist line managers and NHR managers in implementing management development and succession planning activities.
5. Implementation of a Performance Planning and Evaluation System to assess management skills, provide performance feedback, and establish individual development plans.

In that these are on going processes, these commitments are considered to be met.

#### IV. Restructuring of TVA's Organization

3      62      NP will develop standard procedures to control interfaces with support organizations.

C

This effort is part of the long-term program as identified in commitments 5 and 15. The NP Standard establishing administrative requirements for Interoffice Agreements was approved in March 1987. The development of draft Interoffice Agreements in accordance with the Standard was completed in July 1987. The Interoffice Agreements were approved in February 1989.

4      66      Position descriptions will be written for each of TVA's nuclear vice presidents, duties and responsibilities for which an individual will be held accountable and which performance will be measured. These descriptions will be reviewed and subject to approval by a review team composed of senior TVA and consultant personnel who will report to the Senior Vice President of Nuclear Power.

C

Position descriptions have been written and issued for all management positions.

<u>Commitment Item</u>	<u>Vol. 1 Rev. 6 Page</u>		<u>Required Completion</u>	<u>Summary of Progress</u>
5	70	The Senior Vice President is providing guidance to the organization through the issuance of a Policy and Organization Manual that sets forth policy in major areas and defines the organizational structure (in command chart format) together with the organization description for each key functional component of the organization.	C	The Policy and Organization Manual (P&OM) was issued 12/31/86 to reflect the organization in effect at that time. The P&OM will be updated as necessary. This commitment is complete.
<u>E. Improvements in Specific Functional Areas</u>				
<u>1. Quality Assurance</u>				
6	72	The long-term program will result in a standardized Nuclear Quality Assurance Program for TVA.	C	<p>The interim NQAM was approved and issued in November 1986. The Topical Report Rev. 9 was released for NRC approval November 14, 1986 and subsequently approved by the NRC on January 30, 1987. The NQAM contains a corporate QA requirements volume defining generic requirements and procedures applicable to design, construction, and operations. As the Nuclear Procedures System is developed, QA requirements contained in the NQAM are being transferred to corporate-level Directives and Standards through a controlled transition process.</p> <p>The Topical Report Revision 10 was submitted to NRC on May 4, 1988 in accordance with 10 CFR 50.54(a) (3). TVA has developed a Nuclear Quality Assurance Program Plan which will be implemented upon review and approval by NRC. (Approval will be assumed by TVA 60 days after submittal to the Commission if no letter is received from the appropriate reviewing office.) This plan was submitted to NRC on March 30, 1989 and will replace the existing TVA Topical Report Revision 10, once approved and implemented. In addition, the NQAM will be transitioned into Directives, Standards, and site level procedures through the Nuclear Procedures System.</p>
			O WBN	WBN specific information concerning this is discussed in Volume 4, Chapter V, Section 1.2.3, Quality Assurance and Section 2.6, Quality Assurance.

<u>Commitment Item</u>	<u>Vol. 1 Rev. 6 Page</u>		<u>Required Completion</u>	<u>Summary of Progress</u>
7	75	Where required, additional QA or QC procedures will be written to cover new functions.	C	All QA and QC procedures identified to cover new functions have been written.
8	75	NQA internal QA and QC procedures will be consolidated into a single set of procedures. Functions that will be performed uniformly throughout NQA will be identified and the multiple procedures that now exist will be replaced by a single procedure applicable to all organizations.	C	The NQA internal procedures have been consolidated into a single set, and have been approved, issued and implemented. Functions that will be performed uniformly throughout NQA have been identified, and the multiple procedures that now exist are being replaced by a single procedure applicable to all organizations. All procedures have been approved.
9	75	As new procedures are developed throughout NP, NQA will review and concur in those that implement quality assurance requirements.	C	NP Directive 4.4 Rev 0 was approved on 11/5/86. It establishes the responsibility for NQA to review and concur with new NP procedures. QA Topical Report TVA-TR75-1A, Rev. 9 lists all manuals covering quality related activities during design, construction, and operation. This commitment is complete.
<b>V. <u>Restoring Employee Confidence in TVA Nuclear Management</u></b>				
<b>1. <u>Special Program at Watts Bar for Resolving Employee Concerns</u></b>				
10	96	After each review group identifies a generic condition, the review group will perform a root cause analysis of each such condition and will require TVA line management to evaluate the condition and recommend action to remedy the root cause of the condition.	C	This item is complete. All reports have been submitted to NRC (2/6/89). Root cause analysis of identified conditions are contained in those reports and recommended actions are either complete or in progress to correct these conditions.
11	97	TVA plans to make the results of the Watts Bar Employee Concern Special Program (WBECSP) available to all present TVA nuclear employees. The summary report will be available as requested to interested parties as well as to former TVA nuclear employees who left the nuclear program between March 31, 1985, and the date that the summary report is issued.	O	Anticipated completion date is 6/15/89. WBN specific information concerning this is discussed in Volume 4, Chapter II, Section 2.4.2, ECSP Results.

<u>Commitment Item</u>	<u>Vol. 1 Rev. 6 Page</u>		<u>Required Completion</u>	<u>Summary of Progress</u>
12	97	The Office of General Counsel or the Inspector General will investigate and report separately on cases involving wrongdoing, misconduct, intimidation, or harassment.	C	TVA Code of Conduct XIII and TVA Instruction, PM-7, defines the investigative role of the OIG. OGC has no investigative role in IH and wrongdoing. This commitment is complete.
13A, B	101	TVA will review the WBECSP concerns and the NPECP to identify any trends and the collective significance of the concerns, to identify the root causes of any adverse trends, and to develop appropriate corrective action.	C	<p>The ECTG has reviewed and identified all concerns for generic applicability to SQN. These trends have been evaluated for SQN restart and will be included within the ECTG and Category Reports. For the "new" Employee Concern Program (ECP), total data volume reached a point in August 1986, whereby meaningful trends were analyzed. These trends were reported on a monthly basis beginning in August 1986 to TVA higher level management and ECP site representatives. The enhanced computerized data base was made available to all ECP personnel on January 22, 1987. The data base is used for tracking and trending of employee concern information.</p> <p>The ECSP program summary report was sent to NRC on February 6, 1989.</p>
13C	101	The Site Representative will periodically determine employee understanding of and satisfaction with the ECP.	C	This activity is proceduralized. Various means have been utilized to determine employee understanding of and satisfaction with the program. Selected interviews have been conducted, mini surveys have been conducted. Formal survey was released November 1986. Audit reports concerning the program have demonstrated employee understanding. Employee Concern Program Instruction 1, sec. 5.5, requires the subject activity.

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Summary of Progress

**VI. Improvements in TVA's Nuclear Management Systems and Programs**

**C. Improving Management Systems and Controls**

**1. Improvements in Programs and Procedures**

- |    |     |  |       |  |
|----|-----|--|-------|--|
| 14 | 117 | In the short term, TVA will prepare standards for developing directives and procedures for each of the headquarters departments and sites and will assure that those corporate-level nuclear procedures required to control corporate-level activities which support the safe operation of each nuclear plant are in place. Also in the short-term, the existing nuclear procedures at each site will be revised to correct documented deficiencies, reflect the new organization and reflect installed plant modifications. | C SQN | <ul style="list-style-type: none"> <li>(1) An interim directive defining the interim procedure system for SQN was approved and issued September 5, 1986. Additionally the administrative Standards for developing Directives, Standards, Procedures, and Instructions for each of the headquarters departments and sites have been approved.</li> <li>(2) A list of corporate-level procedures that are required for SQN startup has been compiled and is maintained by the Nuclear Procedures Staff. The list identifies corporate-level procedures requiring revision before SQN unit 2 startup.</li> <li>(3) SQN site procedures required for the restart of SQN units 1 and 2 have been revised. Preparation and revision to corporate-level procedures required for BFN unit 2 restart will be completed by June 1989.</li> </ul> |
|    |     |  | O WBN | <p>WBN specific information concerning this is discussed in Volume 4, Chapter V, Section 2.4, Procedures.</p>  |
| 15 | 118 | In the long term, TVA is developing an integrated Nuclear Procedures System to aid the administration of the NP activities. The restructured NP procedure hierarchy will consist of five (5) levels of documentation designated as Policies, Directives, Standards, Procedures and Instructions.   | C     | <ul style="list-style-type: none"> <li>(1) Status of policies is reported under commitment item 5.</li> <li>(2) The Policy and Directive governing the new Nuclear Procedures System have been approved and issued. The administrative Standards for Directives, Standards, Procedures, and Instructions have also been approved and issued. Other program Directives and Standards are being developed.</li> </ul>  |

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Summary of Progress

2. Improvements in Planning and Integration of Nuclear Activities

16        121    Nuclear Business Operations provides the overall direction to nuclear sites and headquarters departments in the execution of business planning, scheduling, accounting, and budgeting activities of TVA's nuclear activities.

C

The Long Range Planning and Nuclear Budget and Cost Control organizations were formed under Nuclear Business Operations to provide overall direction for NP in business planning, and budgeting activities. Under the present nuclear organization, the Nuclear Finance and Planning organization under Nuclear Business Operations will continue to provide overall direction for Nuclear Power in business planning, accounting, and budgeting activities; and the new Special Projects organization under Nuclear Technical Direction will provide overall direction to nuclear sites and headquarters departments in the execution of planning, scheduling, and cost estimating activities for Nuclear Power projects.

The newly formed Special Projects organization is responsible for the development of the Integrated Living Schedule.

17        123    The Division of Nuclear Services will establish a system of data bases that can be utilized by the responsible NP department using the concept of sharing computer-stored data among cooperating organizations.

C

General

The Information Management Program is being restructured within NA&S to improve control of corporate information systems, based on experience during the past year.

Personnel

Candidates for top level managerial positions in this organization have been interviewed. The Information Systems Manager of Management Systems has been hired.

ADP

Centralized control of acquisition of software and equipment has been established, and the responsibility for software change control has been identified and instituted.

NQAM Part I, Section 2.2.1, Rev. 1, QA for Computer Software Systems has been implemented.

\*Function is now under the Vice President,  
Nuclear Assurance and Services

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Responsibility for defining the integration plan has been assigned to the Planning Staff. Initial high-level studies are complete and a project proposal is underway to scope the needed data bases and identify their interfaces.

By the end of March 1987 a plan was to be in place to identify the consensus strategy for this long term project. The plan was completed on time; however, execution of the plan has been deferred, pending restructuring of the Information Management Program.

The first implementation milestone is the creation of a list of TVA computer applications currently used to supply NP's information needs. The initial list was created on schedule. The information systems workplan No. 1 has been issued, showing NP priorities and objectives.

Responsibility for defining the requirements for an integrated CM system has been assigned to the CM Branch. The implementation of the master component part of the CM system has begun and the definition of the requirements for the Controlled Document System has been started.

**D. Improving TVA's Nuclear Corrective Action Program**

**1. Assuring Timely Corrective Action**

- |    |     |   |   |  |
|----|-----|---|---|--|
| 18 | 132 | The Tracking and Reporting of Open Items (TROI) computer system is being implemented as the single corporate system for tracking CAQs as specified by the NQA program and procedures. | C | Implementation is complete. (Administrative CAQ programs are tracked and trended by approved Procedures.)  |
| 19 | 132 | The analysis of trend data will be the responsibility of line managers. NQA identifies QA trend indicators and perform a corporate-wide QA trend analysis on an ongoing basis.        | C | Implementation is complete. QA is preparing monthly reports. The trend analysis program now includes all CAQRs. Adverse trends based on these CAQs will be evaluated to determine their root cause, and recommendations made to remedy the problem. This commitment is complete. |

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Summary of Progress

**2. Identification of the Root Cause of Problems**

20 132- Each significant CAQ will be individually analyzed C  
133 to determine its root cause and to recommend action to remedy that cause. CAQs will be categorized, such as, responsible group for cause, type of condition, type of matter or item which is deficient and if the CAQ is significant the root cause of the condition. Adverse trends will be evaluated to determine their root cause and to recommend action to remedy that cause, to enable management to perform its own assessment and ensure that appropriate remedial action is implemented.

A new CAQR procedure has been approved and issued and implementation throughout NP is complete. NQAM, Part I, Section 2.16, Rev. 4, Corrective Action, was issued 5/18/88. The program is in place and CAQs have been entered for trending. This commitment is complete.

**3. Identification of Problems Applicable to More than One Plant**

21 134 Licensing personnel, under the direction of the C  
Manager of Nuclear Licensing and Regulatory Affairs will be responsible for managing the TVA Nuclear Operating Experience Review program system for internally and externally identified problems or events. This system will be used to develop experience review reports, screen information for applicability to TVA, and develop corrective recommendations or positions to be provided to sites, engineering and training personnel to take immediate corrective action if necessary.

Existing NER program being managed by NLRA is being upgraded and restaffed. Information meetings have been held with NRC to include their methods and screening criteria into our program where feasible. Corporate and site schedules are being revised to strengthen the program by defining responsibilities and interfaces and developing a feedback mechanism for recommendations. Procedures for NER were issued in January 1987.

The TVA NER Program has developed the interim procedure PMP 0601.01, Nuclear Experience Review. Division procedure DNSL-DVP-6.1-2, Rev. 0, has been written and approved (1/13/87). Job descriptions and personnel interviews have been completed. PMP 0601.01 and DNSL-DVP-6.1-2, Rev. 0 were implemented March 30, 1987. As of July 20, 1987, all personnel were in place except for the secretarial position which was being filled on a temporary basis. This job was filled on 10/13/87.

This commitment is complete.

<u>Commitment Item</u>	<u>Vol. 1 Rev. 6 Page</u>	<u>Required Completion</u>	<u>Summary of Progress</u>
		O WBN	WBN specific information concerning this is discussed in Volume 4, Chapter V, Section 1.2.4, Licensing and Regulatory Compliance.
22	134	C	The NER database is established to track all NER items and provide a feedback mechanism to ensure recommendations are factored into the respective program for operation, design, construction, and training.
		O WBN	WBN specific information concerning this is discussed in Volume 4, Chapter V, Section 1.2.4, Licensing and Regulatory Compliance.
<b>E. <u>Programmatic Improvements</u></b>			
<b>1. <u>Improvements in Operations</u></b>			
23	136	C	QA policy issued. This commitment is complete.  WBN specific information concerning this is discussed in Volume 4, Chapter V, Section 1.2.7.1, Operations.
24	137	C	Plant-specific improvements for startup have been incorporated and the item is complete for SQN. PMP 0202.05 defines the nuclear plant operator training program. Functional training simulators to aid in operator development are now at BFN, SQN and WBN. An operator evaluation and assessment group has been organized.  WBN specific information concerning this is discussed in Volume 4, Chapter V, Section 1.2.8, Training, and Section 2.3.2, Operations Training.

<u>Commitment Item</u>	<u>Vol. 1 Rev. 6 Page</u>		<u>Required Completion</u>	<u>Summary of Progress</u>
25	138	The NP headquarters organizations will have personnel with expertise in operations, maintenance, chemistry, health physics, planning, scheduling, and other disciplines relevant to the overall operation and maintenance of nuclear plants. These personnel will assist management with the development of TVA policy, goals and objectives for operation and maintenance activities, will monitor implementation of policy through onsite assessments of plant programs and observation of work activities, and assess site performance through review of performance data.	C	<p>The Nuclear Power headquarters organizations are in place, functioning responsibilities have been defined, and staffed to authorized headcount levels continues.</p> <p>In that these core organizations are staffed to a functioning level this commitment has been met.</p> <p>NP-DIR.5.P defines the functions of the manager of Chemistry and Environmental. NP DIR.10.2 defines the responsibilities of Manager of Radiological Control.</p>
26	138	An expanded corporate nuclear performance reporting system is being developed to collect key performance indicators for trending and analysis	C	<p>The corporate-level performance report has been revised to include the INPO-suggested performance parameters and to include not only generation data but also data on compliance, health physics, safety, and cost. The performance reporting staff at SQN and BFN has been reorganized to allow it more convenient and ready access to pertinent performance data. This commitment has been completed.</p> <p>TVA has compared earlier versions with more recent Nuclear Performance Reports. Later versions show improvements and provide clearer more concise text with greater detail. Generation data has been enhanced in accordance with INPO Good Practice OA-102 guidelines. Sections were added to cover Compliance, Health Physics, Nuclear Safety, and Costs. TVA concludes that improvements meet the intent of the commitment.</p>
27	138	TVA will implement a system engineer program at each nuclear site.	O	<p>As of April 1, 1988, a Plant Systems Engineer and a design project systems engineer were assigned to each of the 72 systems at SQN. Discipline staffed systems engineering specialist were assigned to 84 of the 92 systems at SQN. A procedure has been implemented at SQN that defines the responsibilities of the plant systems engineer.</p>

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28 140 The NMRG was charged with the responsibility of conducting a comprehensive review of corrective and preventive maintenance at Sequoyah, Browns Ferry, and Watts Bar Nuclear Plants.

C SQN

BFN implementation is described in Volume 3. WBN specific information concerning this is discussed in Volume 4, Chapter V, Section 1.2.7.2, Technical Support.

The Nuclear Manager's Review Group (NMRG) completed work on a comprehensive review of maintenance at SQN, WBN, and BFN. The report of review results was submitted to NRC on Sept. 30, 1986. Report was resubmitted 12/27/86 with action items assigned. Findings from the report were evaluated and a comprehensive corrective action plan was submitted to S. A. White on April 28, 1987. All findings and corrective actions are being tracked on TROI. In an NRC exit meeting on July 31, 1987, all maintenance-specific findings with identified restart actions were closed for restart with the balance of corrective actions having long-term solutions. This commitment is complete for SQN.

BFN implementation is described in Volume 3. WBN specific information concerning this is discussed in Volume 4, Chapter V, Section 1.2.7.3, Maintenance.

2. Improvements in Maintenance

29 141 Improvements are being made in the nuclear site  
142 preventive maintenance. These improvements emphasize reducing recurring corrective maintenance requirements, improving use of predictive maintenance, and adherence to established preventive maintenance routines. Analysis of equipment performance history and maintenance history, including reliability and availability information from NPRDS and TVA sources, will be used, together with vendor recommendations, to develop optimum preventive maintenance routines.

O

A contract has been awarded for upgrade of the Sequoyah Nuclear Plant (SQN) Preventive Maintenance (PM) Program, and the contractor has begun mobilization. The work effort is being structured to provide a comprehensive, efficient method for selecting equipment for PM and identifying, evaluating, and documenting PM activities. The equipment will be systematically evaluated to determine appropriate activities and frequencies based on commitments, vendor recommendations, maintenance history, contribution to risk and availability, and engineering judgment. Activities will be identified for all equipment conditions; stored, operating, and laid up. The results of the evaluation shall be documented in a concise format and maintained in controlled files along with copies of reference materials used for the evaluation. The output of the process will describe actions necessary to ensure preservation of equipment.

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For SQN, the PM upgrade for critical equipment is scheduled to be complete by the end of September 1989.

BFN implementation is described in Volume 3. WBN specific information concerning this is discussed in Volume 4, Chapter V, Section 1.2.7.3, Maintenance.

30	142	<p>The planning and scheduling process for maintenance activities is being upgraded so that the full scope of significant maintenance activities will be defined in advance of performing the activity, will be coordinated with the appropriate organizations, including operations and quality assurance, and will be completed prior to closeout of the activity.</p> <p>Onsite planning and scheduling activities will continue to improve as additional improvements are made to the computerized data handling systems.</p>	C SQN	<p>The plant maintenance planning organization has been established and has daily coordination meetings with appropriate interface organizations to plan, schedule, and coordinate maintenance activities for the following day. The maintenance planning organization interfaces with Planning and Scheduling organizations to establish a priority for work, integrate the maintenance activities, and coordinate scheduling and tracking to completion. This commitment is complete for SQN.</p>
			O WBN	<p>BFN implementation is described in Volume 3. WBN specific information concerning this is discussed in Volume 4, Chapter V, Section 1.2.7.3, Maintenance.</p>
31	142	<p>Training of nuclear maintenance personnel is being upgraded at all sites. Accreditation of instrument technician, electrical, and mechanical maintenance training is being pursued. This long-term</p> <p>program will result in a system where maintenance activities which require specialized skills will be identified and only those personnel evaluated as possessing the required skills will be assigned responsibility for performing the work.</p>	C	<p>The Sequoyah, Browns Ferry, and Watts Bar maintenance training programs have been accredited by INPO.</p>
			O WBN	<p>WBN specific information concerning this is discussed in Volume 4, Chapter V, Section 2.3.1, Accreditation Status, and Section 2.3.3, Maintenance Training.</p>

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Summary of Progress

3. Improvements in Welding

32	145	The Welding Project will determine the adequacy of the nuclear welding program to control welding and identify any deficiencies in the program and propose corrective actions or improvements.	C SQN	<p>The Phase II Welding Project report for Sequoyah has been submitted to and reviewed by NRC. NRC's Final Safety Evaluation Report for SQN is complete. Response to SER, which completed this item, was submitted to NRC 1/30/87. This is complete for SQN.</p> <p>Inspection Report 50-327 and 50-328/87-21 documents closure of open welding issues for Sequoyah including programmatic improvements</p> <p>WBN specific information concerning this is discussed in Volume 4, Chapter III, Section 2.18, Welding.</p>
33	145	TVA is initiating appropriate changes to programs as the changes are identified by the welding projects at each site.	C SQN	<p>No further actions necessary for SQN restart.</p> <p>WBN specific information concerning this is discussed in Volume 4, Chapter III, Section 2.18, Welding.</p>
34	70	Future updates to organization descriptions will be made through submittal of, and change to, an organization description topical report.	L	Organization description topical report is being prepared.
35	124	The Configuration Management function will include a controlled master equipment list and a master design document list.	L	Planning is complete and compilation of input data has started.
36	123	Implementation of the Integrated Living Schedule (ILS) program will be an ongoing effort applied to each nuclear plant as it reaches operational status.	O	Policy Statement has been issued and planning is underway.

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<b>I. INTRODUCTION</b>				
<b>1.0 Purpose</b>				
1	I-1	It will be necessary to conduct an evaluation of results and conclusions drawn from the programs described in this volume at a later time to determine their applicability to unit 2.	L	
<b>3.0 Outline of TVA's Approach to Correcting WBN's Problems</b>				
2	I-5	As a final confirmation of the adequacy and implementation of the design, construction, and inspection processes and the adequacy and implementation of corrective action programs, Nuclear Quality Assurance (NQA) will perform an in-depth technical audit at WBN. The audit will be managed by an organization separate from the WBN line organization and will be performed by a team composed of experienced technical personnel. The audit will be similar to the NRC Integrated Design Inspection (IDI) performed at the Sequoyah Nuclear Plant (SQN), but expanded to include additional construction, installation, inspection, operations, and maintenance areas. The audit will be conducted approximately six months before fuel load and at or near completion of CAPs and Special Programs. The audit scope will include a safety system, support systems, and portions of other systems and structures as necessary to obtain adequate coverage. An audit plan will be prepared well in advance of the audit to define, in detail, the audit scope, its approach and the criteria for selection of systems and structures. The audit plan and report will be provided to the NRC.	F	

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## II. WATTS BAR ASSESSMENT

4.0 Watts Bar Program Team

- |   |       |  |   |
|---|-------|--|---|
| 3   | II-12 |  | F |
| The WBPT will remain onsite following the issuance of this WBNPP to provide advice and assistance to assure that the WBNPP is being effectively implemented. In fulfilling this role, the WBPT will review and approve changes to CAPs and Special Programs and will provide any necessary recommendations for changes to this WBNPP to the Senior Vice President of Nuclear Power. As the corrective action plans are implemented using the methods outlined in this WBNPP, the need for continued WBPT involvement will be evaluated by the Senior Vice President of Nuclear Power. |       |  |   |

5.0 Systematic Evaluation

- |   |       |  |   |
|---|-------|--|---|
| 4   | II-17 |  | F |
| Fewer than twenty of the more than 3,300 attributes require additional reviews. These reviews will be performed to provide an additional demonstration of adequacy of these attributes. Appropriate corrective actions will be developed for nonconforming issues identified. |       |  |   |

III. CORRECTIVE ACTIONS1.0 Introduction

- |   |       |  |   |
|---|-------|--|---|
| 5   | III-5 |  | F |
| Corrective actions will be taken in parallel with CAP implementation to correct identified damaged, loose, missing hardware deficiencies. |       |  |   |

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<b>III. CORRECTIVE ACTIONS (Continued)</b>				
<b>1.0 <u>Introduction</u> (Continued)</b>				
6	III-5		Also, walkdowns of systems, identified in the Prestart Test Program CAP will be performed before fuel load to identify and correct additional damaged, loose, or missing hardware.	F
<b>3.0 <u>Special Programs</u></b>				
7	III-31		The long-term temperature profile for lower containment will be determined for the duration of the design basis MSLB event using the Ice Condenser and Containment Spray Systems as the safety-grade systems for removing containment ambient heat post-MSLB.	F
8	III-31		The Lower Compartment Cooler (LCC) units and associated ducting will be upgraded to safety grade, with the exception of the LCC coils. This upgrade will provide a fully qualified means of providing air circulation via the LCC fans and ductwork to subcompartments of lower containment to prevent hot spots from forming in these compartments.	F
9	III-31		A containment coatings transport evaluation will be performed to confirm that the protective coatings inside containment will not affect sump screen performance.	F
10	III-32		The components in lower containment important to safety will be qualified to the revised calculated MSLB temperature profile.	F

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<b>III. CORRECTIVE ACTIONS (Continued)</b>				
<b>3.0 <u>Special Programs</u> (Continued)</b>				
11	III-35	NE will develop and issue an MFL for the Class 1E fuses. This list will be maintained as a design output document.		F
12	III-35	NE will issue design output to replace the existing Bussman KAZ actuator devices.		F
13	III-35	NE will evaluate the EPA protection fuses and perform calculations or rework as necessary to ensure adequacy of the installation.		F
14	III-35	These corrective actions are being implemented in accordance with existing design change processes and procedures. All corrective actions will be completed before fuel load.		F
15	III-35	The NEQ Program Analysis will be done on critical components prior to fuel load.		F

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III. CORRECTIVE ACTIONS (Continued)3.0 Special Programs (Continued)

- |    |        |  |   |
|----|--------|--|---|
| 16 | III-37 | Systems potentially affected by MIC will be identified by testing water samples, performing visual inspections, reviewing design and operating documents, and reviewing preexisting NDE results. If necessary, NDE methods, along with the appropriate acceptance criteria, will be developed in accordance with applicable code requirements to assess MIC-infested locations identified during the visual inspection phase of the program. The results of this subsequent evaluation will be used as a reference to establish criteria for future inspections and testing. Unacceptable damage will be repaired in accordance with existing code requirements. | 0 |
| 17 | III-37 | After completion of this discovery phase, specifications, DCNs, and procedures will be revised or developed as necessary to implement recurrence control measures. Implementation of this program will control or minimize the effects of MIC activity in raw water piping and components at WBN.  | 0 |

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<b>III. CORRECTIVE ACTIONS (Continued)</b>			
<b>3.0 <u>Special Programs</u> (Continued)</b>			
18	III-38		F
	As corrective action, including implementation of necessary plant-upgrades, TVA will perform a documented evaluation of the effects of flooding due to moderate energy pipe failures outside containment in Category I structures. This will verify that all essential elements and structures are either unaffected by any postulated flooding, or are designed, specified, and/or qualified for the environment caused by such flooding.		
19	III-39		O
	Corrective actions for the outstanding CAQs include: Evaluation of current RMS design, documentation, and installations against the updated design criteria to verify acceptability of the current installations or to identify required modifications.		
20	III-39		O
	Corrective actions for the outstanding CAQs include: Modification or reworking of existing installations and correcting documentations as necessary to correct deficiencies.		

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<b>IV. <u>IMPLEMENTATION, VERIFICATION, AND CLOSURE</u></b>			
<b>2.0 <u>Corrective Action Program Plans and Special Programs</u></b>			
21	IV-1		Proposed changes to the corrective actions of the CAP, Special Program, or the CAQs, employee concerns, NRC findings, and VSR discrepancies that form their basis will be controlled by site instructions. These site instructions define responsibility and authority for change approval and include requirements for appropriate licensing commitment revisions.
		0	
22	IV-2		Site QA will provide independent verification of CAP and Special Program activities. This will be done as part of the integrated verification plan.
		0	
23	IV-2		A final report will be issued providing the basis for closure of each CAP or Special Program. The report will include conclusions regarding the extent of program implementation, the closure of items that were the basis of the program, program revisions, and the accomplishment of program objectives.
		F	
24	IV-2		Therefore, CAQs referenced by RRs will be initiated or revised to identify the DRs they will resolve.
		0	
25	IV-2		Incomplete corrective actions will be coded so as to be readily identifiable as commitments related to the VSR. These incomplete corrective actions will then be tracked to completion.
		0	

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<b>IV. <u>IMPLEMENTATION, VERIFICATION, AND CLOSURE</u> (Continued)</b>				
<b>2.0 <u>Corrective Action Program Plans and Special Programs</u> (Continued)</b>				
26	IV-2		The organization responsible for resolving the DR with the VSRT will review the completed corrective actions and the original commitments in the RR and CR to determine whether or not they have been fulfilled.	F
<b>3.0 <u>Vertical Slice Review</u></b>				
27	IV-3		The VSR Final Report made several recommendations for which implementation plans will be prepared by the line organization for review for acceptance by the WBPT.	F
<b>3.0 <u>Vertical Slice Review</u> (Continued)</b>				
28	IV-3		A final closure report for the full scope of the VSR will be prepared by the Manager of Projects at the completion of all DR closure reports. The report will include conclusions regarding the extent of corrective action implementation. Verification of the implementation of the VSR recommendations will also be discussed in this report.	F

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IV. IMPLEMENTATION, VERIFICATION, AND CLOSURE (Continued)5.0 Quality Verification Process

29	IV-4		To perform these verification actions in a planned and systematic manner, the Site Quality Manager will implement the IVP. The IVP will coordinate the independent quality verification activities being performed at WBN by the different quality organizations. Through a dynamic, closed-loop process using feedback to vary the verification intensity and approach, the IVP will provide reasonable assurance that the appropriate levels of quality have been achieved for the required activities.	F
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<b>V. <u>WATTS BAR MANAGEMENT AND ORGANIZATION</u></b>				
<b>1.0 <u>Strengthening WBN Management and Organization</u></b>				
30	V-1	In the very near future the Site Director will report to the Vice President, New Projects. The Vice President, New Projects will have overall project-management responsibility for construction, engineering, startup testing, and plant operations required to support the completion and startup of the new projects, which include WBN. The Vice President, New Projects will be responsible for supporting the technical activities required to license the new projects.	O	
31	V-3	To enhance overall plant safety, an independent safety engineering group will be established and staffed independent of site management before fuel load. This group will perform independent safety reviews of plant activities including maintenance, modifications, operational problems, and operational analyses. TVA plans to merge the work of this group with that of the Nuclear Managers Review Group (NMRG) before fuel load.	F	
32	V-8	The Nuclear Experience Review Program (NERP) has been established as part of the TVA corporate program managed by Nuclear Licensing and Regulatory Affairs. Enhancements in this program will include the use of TVA and other utility experience when developing corrective or preventive action plans to address problems or issues at each of TVA's plants.	O	

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<b>V. <u>WATTS BAR MANAGEMENT AND ORGANIZATION</u> (Continued)</b>					
<b>1.0 <u>Strengthening WBN Management and Organization</u> (continued)</b>					
33	V-12	An upgrade of plant SIs to incorporate human factors improvements and field verification will be completed before fuel load.	F		
<b>2.0 <u>Management Control and Involvement</u></b>					
34	V-21	The Accreditation Self Evaluation Reports (ASER) for the remaining programs (three operator training programs, STA training, and TS&M training program) will be submitted to seek accreditation before fuel load of WBN unit 1.	F		
35	V-24	Procedures needed to support WBN unit 1 fuel load and safe operation will be upgraded or developed to accomplish the following:	F		
35a		Correct documented deficiencies or weaknesses. These deficiencies or weaknesses have been identified and documented by NRC, industry organizations (e.g., INPO), and internal TVA audits or inspections.	F/O		
35b		Account for completed plant modifications and the results of system walkdowns.	F		
35c		Reflect changes in responsibilities and authorities resulting from major plant reorganizations.	O		

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<b>V. <u>WATTS BAR MANAGEMENT AND ORGANIZATION</u> (Continued)</b>				
<b>2.0 <u>Management Control and Involvement</u> (Continued)</b>				
36	V-25	As stated in Chapter VI of the CNPP, WBN is initiating a procedure upgrade program.	F/L	
37	V-30	As WBN unit 1 approaches fuel loading, TVA will replace the ECN Modification Package with a change package termed the Plant Modification Package (PMP)	F	
<b>VI. <u>OPERATIONAL READINESS</u></b>				
<b>5.0 <u>Implementation</u></b>				
38	VI-2	Issue a report describing the findings and recommendations of the Operational Readiness Review (ORR) evaluation. The ORR will evaluate key performance objectives which are necessary to ensure that WBN site organizations function effectively and are prepared for plant fuel load and startup.	F	
<b>6.0 <u>Reporting</u></b>				
39	VI-5	Prepare a startup prerequisite checklist that consolidates hardware operability issues which must be completed before either fuel load or startup. Document completion of the startup prerequisite checklist.	F	

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VI. OPERATIONAL READINESS (Continued)7.0 Fuel Load Certification

40	VI-6		A fuel load certification letter will be provided to NRC when TVA determines that the design, construction, testing, and preparation for operation of WBN unit 1 are substantially completed in accordance with the FSAR and other appropriate licensing documents. This letter will document TVA corporate management's approval to proceed with loading fuel.	F
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