TENNESSEE VALLEY AUTHORITY
CHATTANOOGA, TENNESSEE 37401
5B Lookout Place

JAN 23 1991

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

TENNESSEE VALLEY AUTHORITY - SEQUOYAH NUCLEAR PLANT (SQN) - NRC ENFORCEMENT CONFERENCE AND MANAGEMENT MEETING (INSPECTION REPORT 50-327, 328/90-34)

The subject enforcement conference was conducted on November 27, 1990, to discuss issues related to two recent NRC violations concerning control of overtime at SQN. A management meeting requested by TVA was conducted immediately following the enforcement conference to discuss additional areas of current TVA performance. Copies of the attendance list and presentation packages are provided in Enclosures 1, 2, and 3.

TVA's presentation (Enclosure 2) to address the overtime violations focused on the actions taken in response to the initial violation, why those actions were not effective in preventing recurrence, the implications for the noted problems concerning overtime and controls, and the corrective action plan being implemented to prevent further problems. TVA indicated that the previous corrective action plan was unrealistic in consideration of the extent of the culture regarding overtime use at SQN, the short timeframe initially proposed for accomplishment of significant change, and the magnitude of the Unit 2 Cycle 4 refueling outage, which was scheduled to begin just prior to completion of the initial corrective actions. Management reinforcement of expectations was insufficient to ensure effectiveness of the initial corrective actions, and inconsistencies in management perspectives regarding overtime use were identified. Based on a review of personnel errors over the subject period, no obvious link between those errors and overtime use was identified. Extensive additional corrective actions were outlined to address minimizing overtime use and ensuring effective administration of overtime when required.

In the management meeting held subsequent to the enforcement conference, TVA provided details regarding several targeted areas receiving increased management focus to achieve overall performance improvements. TVA noted that the completion of the Cycle 4 refueling outages marked a critical milestone for SQN with the associated accomplishments providing long-term safety and reliability benefits. However, the magnitude of the outage efforts and competing priority to ensure successful performance of those efforts diminished focus in some areas, with a decline in critical self-assessment being observed. TVA described ongoing self-assessment initiatives and performance improvement efforts in areas that included (1) as low as reasonably achievable (ALARA), (2) incident investigations and plant events, (3) implementation of corrective actions and major work initiatives, (4) personnel errors, and (5) Operations' departmental performance. In the ALARA area, both effectiveness of previous initiatives and planned actions for further improvements were discussed.

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Issues and comprehensive action plans for addressing the remaining areas were discussed in detail. In general, TVA noted that efforts were being focused on continued upgrading of standards of performance and reinforcing a rigorous and systematic approach to execution of activities. Recent recruitment of a permanent Site Vice President and near-term organization alignment and changes were noted as positive steps to facilitate overall focusing of site resources. TVA noted that management oversight and involvement were considered key in ensuring effective implementation of the described improvement initiatives and continued critical self-assessment.

Commitments made in the subject meetings are summarized in Enclosure 4. Enclosure 5 contains a list of completed actions.

If you have any questions concerning this submittal, please telephone M. A. Cooper at (615) 843-8422.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

E. G. Wallace, Manager
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Enclosures
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ENCLOSURE 1

ENFORCEMENT CONFERENCE/MANAGEMENT MEETING

NAME	ORGANIZATION/POSITION
J. B. Brady	NRC/Project Engineer
P. E. Harmon	NRC/Sequoyah Resident Inspector
C. A. Vondra	TVA/SQN Plant Manager
M. T. Sullivan	TVA/SQN Radiological Control Manager
M. A. Cooper	TVA/SQN Site Licensing Manager
R. L. Lumpkin, Jr.	TVA/SQN Site Quality Manager
J. L. Wilson	TVA/SQN Site Vice President
M. O. Medford	TVA/Vice President, Nuclear Assurance, Licensing and Fuels
J. R. Bynum	TVA/Vice President, Nuclear Operations
O. D. Kingsley, Jr.	TVA/Senior Vice President, Nuclear Power
W. S. Little	NRC/Section Chief
G. R. Jenkins	NRC/Director, EICS
J. L. Milhoan	NRC/RII-DRA
B. A. Wilson	NRC/Chief, TVA Projects
S. D. Ebneter	NRC/Region Administrator
B. Uryc	NRC/Senior Enforcement Coordinator

Enclosure 2

TVA/NRC ENFORCEMENT CONFERENCE

IR 50-327,328/90-34

NOVEMBER 27, 1990

TVA/NRC ENFORCEMENT CONFERENCE

AGENDA

I.	INTRODUCTION	O. D. KINGSLEY
II.	HISTORICAL SEQUENCE	C. A. VONDRA
III.	POST UNIT 1 CYCLE 4 REFUELING OUTAGE CORRECTIVE ACTIONS	C. A. VONDRA
IV.	QA MONITORING RESULTS AND TVA FINDINGS	C. A. VONDRA
V.	ROOT AND CONTRIBUTING CAUSES	J. L. WILSON
VI.	INTEGRATED CORRECTIVE ACTION PLAN	J. L. WILSON
VII.	CONCLUSION	O. D. KINGSLEY

I. INTRODUCTION

- WEAKNESSES IDENTIFIED IN ADMINISTRATIVE CONTROLS, CLARITY OF EXPECTATIONS AND CULTURE REGARDING OVERTIME USE
- PREVIOUS CORRECTIVE ACTION PLAN UNREALISTIC IN CONSIDERATION OF TIMEFRAME, MAGNITUDE OF IMMINENT WORKLOAD, AND EXTENT OF OVERTIME CULTURE
- INSUFFICIENT MANAGEMENT OWNERSHIP AND REINFORCEMENT OF EXPECTATIONS TO ENSURE EFFECTIVELY IMPLEMENTED
- TVA MONITORING OF EFFECTIVENESS OF PREVIOUS CORRECTIVE ACTION IDENTIFIED NEED FOR ADDITIONAL CORRECTIVE ACTION
- ADVERSE SAFETY CONSEQUENCES WERE NOT IDENTIFIED AS A RESULT OF DEFICIENCIES IN AUTHORIZING OVERTIME
- SPECIFIC AND BROAD CORRECTIVE ACTIONS BEING TAKEN TO INSTITUTIONALIZE PROCESSES, CONTROLS AND PHILOSOPHY REGARDING OVERTIME USE

II. HISTORICAL SEQUENCE

MARCH 14/24, 1988	VIOLATION EXAMPLES CITED FOR FAILURE TO FOLLOW ADMINISTRATIVE PROCEDURES; PROCEDURE CLARIFIED, EMPHASIS PROVIDED, INDIVIDUAL COUNSELLED
DECEMBER 1988	QA MONITORING DID NOT IDENTIFY ANY PROBLEMS INVOLVING OVERTIME USE OR ADMINISTRATION OF REQUIREMENTS
FEBRUARY 1990	QA MONITORING OF OVERTIME USAGE RELATIVE TO FIRE PROTECTION PROGRAM IMPLEMENTATION DID NOT IDENTIFY PROBLEMS
MARCH 15, 1990	U1C4 REFUELING OUTAGE BEGINS; OPERATIONS' PERSONNEL LOANED FOR OUTAGES
MAY 1990	OPERATIONS SUPERINTENDENT DIRECTS SOSs TO ENSURE OVERTIME GUIDELINES TAKE PRECEDENCE OVER UNION LETTER OF AGREEMENT
MAY 15, 1990	LETTER FROM VP, NUCLEAR OPERATIONS TO INFORM INTERNATIONAL IBEW REPRESENTATIVE OF INTENT TO NO LONGER USE GUIDELINES FOR SIX-GROUP OPERATOR WORK SCHEDULE
JUNE 1, 1990	QA MONITORING INITIATED AS RESULT OF EMPLOYEE CONCERN

II. HISTORICAL SEQUENCE (CONTINUED)

JUNE 2, 1990	END OF U1C4 REFUELING OUTAGE
JUNE 5, 1990	NRC RESIDENT INSPECTOR IDENTIFIES CONCERNS REGARDING OVERTIME USE AND APPROVAL DOCUMENTATION
JUNE 18, 1990	QA MONITORING RESULTS IN CAQR DOCUMENTING EXAMPLES OF FAILURE TO FOLLOW PROCEDURES
JULY 1990	OVERTIME MONITORING ENHANCED AND ESCALATED TO VP, NUCLEAR OPERATIONS
JULY 26, 1990	IR 90-22 AND NOV 90-22-01 ISSUED
AUGUST 10, 1990	SENIOR VP, NUCLEAR POWER DISCUSSES OVERTIME CORRECTIVE ACTION PLAN IN SITE STAFF MEETING
AUGUST 24, 1990	SENIOR VP, NUCLEAR POWER DISCUSSES OVERTIME CONTROLS WITH SITE MANAGEMENT
AUGUST 31, 1990	TVA RESPONSE TO NOV 90-22-01
AUGUST - SEPTEMBER 1990	TVA INITIATES CORRECTIVE ACTIONS IN PREPARATION FOR U2C4 REFUELING OUTAGE

II. HISTORICAL SEQUENCE (CONTINUED)

SEPTEMBER 7, 1990	U2C4 REFUELING OUTAGE BEGINS; MANPOWER INCREASED OVER U1C4 (RADCON, QA, MODIFICATIONS)
SEPTEMBER 14-19, 1990	UNIT 1 REACTOR TRIPS AND MAIN TRANSFORMER SWAPOUT
SEPTEMBER 17-28, 1990	NRC LICENSED OPERATOR REQUALIFICATION EXAMS
SEPTEMBER 27, 1990	QA BEGINS PREPARATION FOR MONITORING ACTIVITY
OCTOBER 4, 1990	QA MONITORING OF SITE IMPLEMENTATION FOR WEEK OF SEPTEMBER 24 BEGINS
OCTOBER 8, 1990	MAIN STEAM CHECK VALVE UNIT 1 FOURTEEN DAY FORCED OUTAGE BEGINS
OCTOBER 15, 1990	QA DISCUSSES MONITORING RESULTS WITH PLANT MANAGER AND VP, NUCLEAR OPERATIONS
OCTOBER 17, 1990	QA MONITORING REPORT APPROVED; ORGANIZATIONAL REVIEWS TO VERIFY EXTENT AND CAUSE
OCTOBER 17, 1990	REVISION INITIATED TO PROCEDURE TO DISALLOW ANY "BLANKET" APPROVALS

II. HISTORICAL SEQUENCE (CONTINUED)

OCTOBER 1990	PLANT MANAGER MEETS WITH OPERATIONS AND MAINTENANCE MANAGEMENT REGARDING IDENTIFIED PROBLEMS
OCTOBER 22, 1990	VP, NUCLEAR OPERATIONS AND PLANT MANAGER DISCUSS PROBLEMS IN STAFF MEETINGS; "BLANKET" APPROVALS DISALLOWED
OCTOBER 24, 1990	NIGHT ORDER ISSUED TO PROVIDE ADDITIONAL DOCUMENTATION GUIDANCE
OCTOBER 25, 1990	PLANT MANAGER ISSUES MEMORANDUM ADDRESSING USE OF EXCESSIVE OVERTIME AND IMPLEMENTING CORRECTIVE ACTION PLAN
OCTOBER 26, 1990	QA DISCUSSES RESULTS OF MONITORING ACTIVITY WITH NRC RESIDENT INSPECTOR
OCTOBER 30, 1990	MEMORANDUM SUMMARIZING QA MONITORING RESULTS SENT FROM SITE QUALITY MANAGER TO THE MANAGER, NUCLEAR QUALITY ASSURANCE
NOVEMBER 2, 1990	NIGHT ORDER ISSUED TO FURTHER CLARIFY DOCUMENTATION REQUIREMENTS

II. HISTORICAL SEQUENCE (CONTINUED)

NOVEMBER 3, 1990	REVISED RESPONSE TO NRC INITIATED IDENTIFYING NEED FOR ADDITIONAL CORRECTIVE ACTION; ADDITIONAL CORRECTIVE ACTIONS INITIATED
NOVEMBER 5, 1990	NRC MONTHLY EXIT IDENTIFIES POTENTIAL VIOLATION 90-34-01
NOVEMBER 6, 1990	TVA OFFICIALLY NOTIFIES NRC OF ADDITIONAL CORRECTIVE ACTION PLAN
NOVEMBER 16, 1990	TVA REVISES RESPONSE TO NOV 90-22-01
NOVEMBER 19, 1990	VP, NUCLEAR OPERATIONS MEETS WITH INTERNATIONAL UNION REPRESENTATIVE REGARDING PRECEDENCE OVER UNION AGREEMENT

III. POST UNIT 1 CYCLE 4 REFUELING OUTAGE CORRECTIVE ACTIONS

- EXPECTATIONS AND REQUIREMENTS REINFORCED TO MANAGEMENT
  - MINIMIZE THE USE OF OVERTIME
  - FULL COMPLIANCE WITH PROCEDURES
- CONTROLS FOR APPROVAL OF OVERTIME IMPROVED
  - OUTAGE AND NON-OUTAGE LIMITS ESTABLISHED
  - WEEKLY PERFORMANCE AGAINST LIMITS MONITORED BY SITE MANAGEMENT
- TRACKING/CONTROL PROCESSES REVIEWED
  - EVALUATION OF ADEQUACY OF ADMINISTRATIVE PROCESSES FOR CONTROLLING AND APPROVING OVERTIME
  - EVALUATION OF ADEQUACY OF ADMINISTRATIVE PROCESSES FOR ENSURING EMPLOYEES ARE FAMILIAR WITH POLICIES AND REQUIREMENTS
  - UPGRADE OF ADMINISTRATIVE PROCESSES AS NECESSARY

III. POST UNIT 1 CYCLE 4 REFUELING OUTAGE CORRECTIVE ACTIONS (CONTINUED)

- GOVERNING PROCEDURES ENHANCED
  - CLARIFIED THE DOCUMENTATION FOR AUTHORIZING OVERTIME
  - CLARIFIED APPLICABILITY OF REGULATORY LIMITS
  - DESCRIBED TVA'S OVERTIME POLICY FOR ALL SITE PERSONNEL
- MEETINGS CONDUCTED WITH EMPLOYEES TO CLARIFY EXPECTATIONS AND REQUIREMENTS
  - ENSURED EMPLOYEE FAMILIARITY WITH OVERTIME POLICY AND SPECIFIC REQUIREMENTS
  - CLEARLY DEFINED ACCOUNTABILITY FOR REQUIREMENTS
  - SITE-WIDE DISPATCH ISSUED TO APPRISE EMPLOYEES OF CHANGES TO THE OVERTIME POLICY
- QA MONITORING TO BE CONDUCTED TO ASSESS EFFECTIVENESS OF CORRECTIVE ACTIONS
  - TO IDENTIFY DEFICIENCIES AND FACILITATE FURTHER CORRECTIVE ACTIONS
  - TO IDENTIFY AREAS FOR IMPROVEMENTS
  - TVA UNDERESTIMATED EXTENT OF OVERTIME PROBLEM

IV. QA MONITORING RESULTS AND TVA FINDINGS

- LACK OF APPROVAL DOCUMENTATION
- APPROVAL DOCUMENTATION DEFICIENCIES
- CONFUSION REGARDING DOCUMENTATION REQUIREMENTS
- COMPLEXITY OF MANUAL TRACKING UNDER HEAVY WORKLOAD
- INTENT OF OVERTIME POLICY NOT TOTALLY UNDERSTOOD
- OVERTIME POLICY NOT TOTALLY ACCEPTED
- MANAGEMENT DID NOT ENSURE POLICY AND REQUIREMENTS EFFECTIVELY IMPLEMENTED
- EXTENT OF OVERTIME CULTURE NOT FULLY RECOGNIZED BY MANAGEMENT
- INCONSISTENCIES IN DUTY PLANT MANAGER APPROVAL OF OVERTIME

IV. QA MONITORING RESULTS AND TVA FINDINGS (CONTINUED)

BREAKDOWN OF OVERTIME BY OPERATOR GROUP

NOTE: DATA IS SHOWN IN PERCENT OVERTIME PER INDIVIDUAL IN THAT CATEGORY. EXCLUDES HOLIDAY PAY. SHIFT TURNOVER IS NOT INCLUDED.

	SOS	ASOS[4]	RO[4]	AUO
PRE U1C4 OUTAGE	2%	2%	7%	5.7%
U1C4 OUTAGE	7.4%	20%	17.2%	11%
PRE U2C4 OUTAGE[1]	10.3%	6.7%	16.2%[2]	13%
U2C4 OUTAGE	5.6%	22%	28%[2]	24%[3]
ESTIMATE THROUGH FY91	2-3%	4%	15-20%	10-15%

RANGE OF OVERTIME (THROUGH 11-11-90)

SHIFT	580-750 HOURS	480-1060 HOURS
OUTAGE SUPPORT	900-1200 HOURS (30% MORE THAN SHIFT SRO)	670-1120 HOURS (15% MORE THAN SHIFT RO)

[1] 5 SOSs AND THREE WEEK PERIOD TWO CREWS IN REQUALIFICATION TRAINING.

[2] 5 ROs PULLED FOR SRO UPGRADE TRAINING.

[3] LOST 8 AUOs BETWEEN OUTAGES.

[4] NOT INCLUDED ARE SROs AND ROs REQUIRED FOR OUTAGES.
OUTAGE SROs AVERAGED 36% OVERTIME FOR 24 WEEKS
OUTAGE ROs AVERAGED 34% OVERTIME FOR 24 WEEKS

IV. QA MONITORING RESULTS AND TVA FINDINGS (CONTINUED)

CURRENT AND FUTURE STAFFING INCLUDING LOSS OF EMPLOYEES

	SOS	ASOS	RO	AUO
CURRENT	6	18	20	61
DURING U2C4 OUTAGE	6	14	16	69
FUTURE NON-OUTAGE	6	24	30	60

- 6 SROs LOST THIS CALENDAR YEAR: 2 TO WBN, 1 TO MAINTENANCE, 1 TO TRAINING, 1 TO QA, AND 1 LEFT TVA
- 3 ROs LOST THIS CALENDAR YEAR; ALL LEFT TVA
- 5 ROs CURRENTLY OFF SHIFT FOR SRO UPGRADE TRAINING
- 8 AUOs ON LOAN FROM BROWNS FERRY RETURNED

V. ROOT AND CONTRIBUTING CAUSES

- ROOT: ISSUES REGARDING USE OF OVERTIME WERE EMBEDDED IN CULTURE; MANAGEMENT DID NOT RECOGNIZE THE MAGNITUDE OF THE TASK

- CONTRIBUTING:
  - INSUFFICIENT TIME TO EFFECTIVELY TRAIN MANAGEMENT AND WORKFORCE
  - WEAKNESSES IN TRACKING MECHANISMS AND APPROVAL FORM
  - HEAVY WORKLOAD STRAINED CAPABILITIES OF OVERTIME CONTROL PROCESSES AND RESOURCES
  - REINFORCEMENT AND OVERSIGHT INSUFFICIENT
  - INSUFFICIENT MANAGEMENT PRIORITY ON OVERTIME LIMITATION

VI. INTEGRATED CORRECTIVE ACTION PLAN

- OVERTIME USE:
  - PREAPPROVAL REQUIREMENTS STRENGTHENED
  - CAP PLACED ON MAXIMUM OVERTIME HOURS
  - OPERATORS REMOVED FROM CONTROL BOARD POSITIONS IF POSSIBLE WHEN GUIDELINES EXCEEDED
  - SITE VP REVIEW OF EACH EXCEPTION TO GUIDELINES
  - MANLOADING TARGETS FOR OUTAGES TO BE REEVALUATED (MAY 1991)
  - SCHEDULE EVALUATIONS TO BE PERFORMED FOR TARGET AREAS (MARCH 1991)
  - STAFFING COMPOSITION STUDIES TO BE PERFORMED FOR TARGET AREAS (MARCH 1991)
  - SCHEDULES TO BE REEVALUATED AS EMERGENT ISSUES OCCUR (IMMEDIATE)
  - ASSESSMENT OF PERSONNEL ERRORS VERSUS OVERTIME USE CONDUCTED

VI. INTEGRATED CORRECTIVE ACTION PLAN (CONTINUED)

- OVERTIME ADMINISTRATION:
  - BLANKET APPROVALS DISALLOWED
  - DISCIPLINARY ACTION TAKEN FOR NON-COMPLIANCE
  - PROCEDURE/FORM ENHANCEMENTS INITIATED (DECEMBER 7, 1990)
  - ADDITIONAL TRAINING PLANNED (DECEMBER 21, 1990)
  - COMPUTERIZED TRACKING SYSTEM INITIATED (JANUARY 31, 1991)
  - UNION AGREEMENT DISCUSSIONS ONGOING
  - TECHNICAL SPECIFICATION BEING SUBMITTED (DECEMBER 14, 1990)
  - QA MONITORING SCHEDULED (JANUARY 1991, U1C5, AND AS NEEDED)

VII. CONCLUSION

- PREVIOUS CORRECTIVE ACTION PLAN WAS UNREALISTIC DUE TO:
  - EXTENT OF PROBLEM
  - INSUFFICIENT MANAGEMENT FOCUS
- TVA IDENTIFIED THE NEED FOR ADDITIONAL CORRECTIVE ACTION
- NO SPECIFIC ADVERSE SAFETY CONSEQUENCES WERE IDENTIFIED
- BOTH SPECIFIC AND BROAD CORRECTIVE ACTIONS BEING TAKEN TO PROPERLY IMPLEMENT CONTROLS AND CHANGE CULTURE

UNIT 2 CYCLE 4 REFUELING OUTAGE
MANPOWER AND WORK LOADING

PROJECTED	ACTUAL
- REQUALIFICATION EXAMS PRIOR TO OUTAGE START	- EARLY OUTAGE START JUST PRIOR TO REQUALIFICATION EXAMS DUE TO BETTER THAN EXPECTED UNIT PERFORMANCE
- UNIT 1 CONTINUOUS OPERATION	- UNIT 1 RX TRIPS SEPTEMBER 14 AND 19 - 14-DAY UNIT 1 FORCED OUTAGE FOR MSCVs
- 60/40 MANLOADING	- 60/60 MANLOADING

CONDITIONS IMPACTING OPERATIONS DEPARTMENT OVERTIME USE

- TURNOVER IN SENIOR REACTOR OPERATORS RESULTED IN SHORTAGE
- UPGRADE TRAINING FINITELY CONSTRAINED
- DECISION LARGER SHIFT COMPLEMENT
- PROCEDURE UPGRADE EFFORT
- UNION AGREEMENT

Enclosure 3

TVA/NRC MANAGEMENT MEETING

NOVEMBER 27, 1990

TVA/NRC MANAGEMENT MEETING

AGENDA

I.	INTRODUCTION	J. R. BYNUM
II.	ALARA	C. A. VONDRA
III.	INCIDENT INVESTIGATIONS AND PLANT EVENTS	C. A. VONDRA
IV.	IMPLEMENTATION OF CORRECTIVE ACTIONS AND MAJOR WORK INITIATIVES	C. A. VONDRA
V.	PERSONNEL ERRORS	C. A. VONDRA
VI.	OPERATIONS DEPARTMENTAL PERFORMANCE	J. R. BYNUM
VII.	CONCLUSION	O. D. KINGSLEY

I. INTRODUCTION

- COMPLETION OF CYCLE 4 OUTAGES MARKS A CRITICAL POINT FOR SEQUOYAH
- CRITICAL SELF-ASSESSMENT HAS DECLINED
- TARGETED AREAS FOR IMPROVEMENT HAVE BEEN IDENTIFIED
  - ALARA
  - INCIDENT INVESTIGATIONS AND PLANT EVENTS
  - IMPLEMENTATION OF CORRECTIVE ACTIONS AND MAJOR WORK INITIATIVES
  - PERSONNEL ERRORS
  - OPERATIONS DEPARTMENTAL PERFORMANCE
- ORGANIZATION ALIGNMENT AND NEW SITE VP TO BETTER FOCUS RESOURCES
- MANAGEMENT INVOLVEMENT TO ENSURE EFFECTIVE IMPLEMENTATION OF IMPROVEMENTS AND CONTINUED SELF-ASSESSMENT

II. SQN ALARA PROGRAM PERFORMANCE

UNIT 1 CYCLE 4 REFUELING OUTAGE

- EXPOSURE: GOAL - 585 MANREM (715 MANREM PREPLAN)
  ACTUAL - 868 MANREM
- EXTENSIVE POST-OUTAGE CRITIQUES - INHOUSE, NSRB, INPO, NRC
- EXTENSIVE PRE-UNIT 2 CYCLE 4 OUTAGE INITIATIVES
  - ADDITIONAL SHIELDING AND CRITICAL PATH TIME TO INSTALL
  - PLASMA ARC IMPROVEMENT
  - MOCK UP TRAINING INITIATIVES
  - ADDITIONAL VIDEO AND COMMUNICATIONS EQUIPMENT
  - NEW NOZZLE DAMS
  - EXTENSIVE DEPARTMENTAL AND CREW ALARA MEETINGS
  - RESCHEDULING OF ACTIVITIES FOR ALARA CONSIDERATIONS (E.G., 69 HOURS ADDED TO OUTAGE DURATION)

II. SQN ALARA PROGRAM PERFORMANCE (CONTINUED)

OUTAGE SUMMARY COMPARISON

	U1C4	U2C4
RWP ENTRIES	44348	44778
GOAL (PREPLAN)	585 (715)	800
ACTUAL (TOTAL)	868	685
UHI REMOVAL	46.7	50.1
RTD MOD	141.7	89.1
STEAM GENERATORS	152.7	118.8
RCP MAINTENANCE	31.9	18.9
HANGERS	50.1	28
POST ACCIDENT MONITORING	58.3	49.2

HIGHLIGHTS:

C-ZONE GOAL OF < 10 PERCENT CONTAMINATED AREA ACHIEVED
RTD WORK WAS INDUSTRY BEST FOR 4 LOOP PLANT
RESPIRATOR USAGE REDUCED BY 40 PERCENT
COMPLETED PHOTOGRAPHY OF UNIT 2 FOR SURROGATE TRAVEL
MEASUREMENTS COMPLETED FOR PROCUREMENT OF REACTOR HEAD SHIELD
SIGNIFICANT IMPROVEMENT IN LINE "BUY-IN"
SIGNIFICANT IMPROVEMENT IN PERSONNEL EXIT INTERVIEWS

II. SQN ALARA PROGRAM PERFORMANCE (CONTINUED)

LESSONS LEARNED FROM U2C4:

- IMPROVE VENTING PROCEDURES FOR HEPA SYSTEMS
- IMPROVE SCHEDULING OF ALARA/RWP BRIEFINGS
- IMPROVE COORDINATION OF SHIELDING/INSULATION ACTIVITIES
- REQUIRE SKILLED CRAFT FOR SHIELDING INSTALLATION
- IMPROVE TIMELINESS OF DESIGN CHANGE ISSUANCE
- IMPROVE CAVITY DECONTAMINATION METHODS
- REEVALUATE OPTIMUM JOB CREW SIZE
- DETAILED IN PROGRESS CRITIQUE ADDRESSING TASK SPECIFIC ITEMS

II. SQN ALARA PROGRAM PERFORMANCE (CONTINUED)

CURRENT INITIATIVES (ACTION PLAN SUMMARY):

- HEAD SHIELDING
- SURROGATE TRAVEL
- SOURCE TERM REDUCTION AND DOSE RATE STUDY
- ALARA TRAINING IMPROVEMENTS
- ADMINISTRATIVE DOSE LIMITATIONS

III. INCIDENT INVESTIGATIONS AND PLANT EVENTS

ISSUES:

- INADEQUATE MANAGEMENT OVERSIGHT AND PRIORITY
- INAPPROPRIATE DEDICATION OF RESOURCES
- UNTIMELY INVESTIGATIONS AND CORRECTIVE ACTIONS
- NARROWLY FOCUSED ROOT CAUSE AND CORRECTIVE ACTIONS
- INAPPROPRIATE THRESHOLD FOR INVESTIGATIONS

ACTIONS BEING TAKEN:

- HEIGHTEN MANAGEMENT ATTENTION, OVERSIGHT AND PRIORITY
  - WEEKLY REVIEWS WITH SITE VP FOR ONGOING OR OPEN INVESTIGATIONS
- ENSURE APPROPRIATE SELECTION OF MEMBERS AND DEDICATION OF RESOURCES
  - LIST OF QUALIFIED MEMBERS BEING ESTABLISHED TO PROMOTE CONSISTENCY
  - RULES BEING ESTABLISHED FOR ASSIGNMENT AND DEDICATION TO TEAM

III. INCIDENT INVESTIGATIONS AND PLANT EVENTS (CONTINUED)

- IMPLEMENTATION OF NEW CORPORATE STANDARD
  - SCREENING CRITERIA ADDED FOR CATEGORY 1 AND 2 EVENTS
  - IMMEDIATE RESPONSE FOR CATEGORY 1 EVENTS
  - EMPHASIS ON MAINTAINING PHYSICAL CONDITIONS
  - TIMEFRAME FOR REPORT TIED TO CATEGORY OF EVENT
  - INCORPORATES ROOT CAUSE ANALYSIS METHODS
  - INCORPORATES POST-TRIP REVIEWS FOR CONSISTENCY
- EVALUATE BROADNESS OF INVESTIGATION AND CORRECTIVE ACTION EFFORTS
  - INCREASE USE OF NUCLEAR EXPERIENCE REVIEW
  - EXPAND CONSIDERATION OF SIMILAR EVENTS
  - ESTABLISH GUIDANCE REGARDING BROADNESS REVIEWS
  - ASSIGN RESPONSIBILITY FOR BROADNESS REVIEW
- CONDUCT ANALYSIS OF EVENTS INVOLVING PERSONNEL ERROR
  - OVERALL EVALUATION OF COMMON CAUSE
  - EVALUATION FOR COMMON ORGANIZATIONS, DISCIPLINES, SPECIFIC INDIVIDUALS, ETC.
- INCORPORATE RESULTS OF ONGOING ASSESSMENTS

IV. IMPLEMENTATION OF CORRECTIVE ACTIONS AND MAJOR WORK INITIATIVES

ISSUES:

- RESOLUTION OF PROBLEMS NOT WELL DEFINED AND EXECUTED
- CORRECTIVE ACTIONS NOT TIMELY OR COMPREHENSIVE
- COMMUNICATIONS AND ORGANIZATIONAL INTERFACES INEFFECTIVE

IV. IMPLEMENTATION OF CORRECTIVE ACTIONS AND MAJOR WORK INITIATIVES (CONTINUED)

SEPTEMBER 19, 1990 UNIT 1 REACTOR TRIP

EVENTS:

SEPTEMBER 14, 1990 - REACTOR TRIP FROM 98 PERCENT ON LOW-LOW S/G LEVEL DUE TO FEEDWATER TRANSIENT CAUSED BY AN INVERTER FAILURE

- DECISION MADE TO PLACE SPARE TRANSFORMER IN SERVICE

SEPTEMBER 16, 1990 - TURBINE TRIP FROM 13 PERCENT FROM TRANSFORMER SUDDEN PRESSURE RELAY ACTUATION DUE TO COOLER SHUTDOWN

SEPTEMBER 19, 1990 - REACTOR TRIP FROM 60 PERCENT ON TURBINE TRIP DUE TO CORRODED AND SHORTED TERMINALS ON TRANSFORMER GAS RELAY

FINDINGS:

- SPARE TRANSFORMER PLACED IN SERVICE FOLLOWING FIRST TRIP WITHOUT ADEQUATE CHECKOUT
- CORRODED SPARE TRANSFORMER RELAY CONTACTS IDENTIFIED PRIOR TO PLACING IN SERVICE FOLLOWING FIRST TRIP BUT NOT CORRECTED OR COMMUNICATED TO PLANT MANAGEMENT
- TRANSFORMER CONDITION AND CHECKOUT PLAN NOT EFFECTIVELY COMMUNICATED
- DEFINITION OF RESPONSIBILITIES BETWEEN PLANT MAINTENANCE AND TRANSMISSION AND CUSTOMER SERVICES NOT WELL DEFINED
- OVERALL ACTION PLAN NOT CLEARLY DEFINED OR COMMUNICATED

IV. IMPLEMENTATION OF CORRECTIVE ACTIONS AND MAJOR WORK INITIATIVES (CONTINUED)

ACTIONS BEING TAKEN:

- LETTER FROM VP, NUCLEAR OPERATIONS, ISSUED DEFINING REQUIREMENTS FOR ACTIONS PLANS
  - WHO INITIATES
  - WHEN INITIATED
  - SPECIFIC WRITTEN ASSIGNMENTS WITH DUE DATES
  - PERIODIC STATUS CHECKS
  - METHOD TO VERIFY ACTIONS COMPLETE
  - COMMUNICATIONS/INTERFACE PLAN
- MANAGEMENT INVOLVEMENT REQUIRED IN DEVELOPMENT, STATUS AND VERIFICATION OF COMPLETED ACTIONS
  - DUTY PLANT MANAGER APPROVAL OF INITIAL ACTION PLANS
  - PERIODIC STATUS BRIEFINGS WITH DUTY PLANT MANAGER AND/OR SITE VP
  - LINE MANAGERS ASSIGNED RESPONSIBILITY FOR VERIFICATION OF COMPLETED ACTIONS

V. PERSONNEL ERRORS

ISSUES:

- UNACCEPTABLE RATE OF OCCURRENCE
- INCONSISTENT INTERPRETATION OF PERSONNEL PERFORMANCE
- LACK OF SYSTEMATIC AND RIGOROUS APPROACH TO ACTIVITIES
- INSUFFICIENT SEL' ,HECKING
- WEAKNESSES IN WRITTEN COMMUNICATIONS

V. PERSONNEL ERRORS (CONTINUED)

UNIT 1 CYCLE 4 NIS MISCALIBRATION

EVENT: INTERMEDIATE RANGE AND POWER RANGE DETECTORS NONCONSERVATIVELY CALIBRATED DURING STARTUP DUE TO ERRORS IN THE PREDICTION METHODOLOGY

FINDINGS:

- EQUATION USED FOR POWER RANGE PREDICTION INAPPROPRIATELY UTILIZED MIX OF LOL AND EOL DETECTOR CURRENTS AND POWER FRACTIONS
- EQUATION HAD BEEN UTILIZED FOR SEVERAL YEARS AND REVIEWED ON MULTIPLE OCCASIONS
- QUESTION WAS RAISED CONCERNING METHODOLOGY DURING U1C4 OUTAGE BUT NOT PURSUED
- METHODOLOGY USED FOR INTERMEDIATE RANGE PREDICTION WAS TECHNICALLY INACCURATE
- CONCERNS WERE RAISED REGARDING OBSERVED ERRORS BUT WERE INITIALLY ATTRIBUTED TO INHERENT MEASUREMENT INACCURACIES AT LOW POWER
- NONCONSERVATISMS WERE CORRECTED BY 24 PERCENT POWER
- CONSEQUENCES OF MISCALIBRATION BOUNDED BY UFSAR ACCIDENT ANALYSIS

V. PERSONNEL ERRORS (CONTINUED)

UNIT 1 CYCLE 4 NIS MISCALIBRATION (CONTINUED)

CORRECTIVE ACTIONS AND PREPARATIONS FOR UNIT 2 CYCLE 4 STARTUP

- CHANGES MADE IN REACTOR ENGINEERING MANAGEMENT AND PERSONNEL; SPECIALIZED TRAINING CONDUCTED
- EXPERIENCED WBN AND WESTINGHOUSE PERSONNEL UTILIZED TO SUPPLEMENT SQN STAFFING DURING STARTUP
- EVALUATION OF PREDICTION METHODOLOGY WITH WESTINGHOUSE AND INPO
- REVISION OF PROCEDURES TO INCORPORATE IMPROVED METHODOLOGY AND CONSERVATISM FACTORS
- REVISION OF PROCEDURES TO PROMOTE IDENTIFICATION AND CORRECTION OF NIS ANOMOLIES
- REVIEW OF REACTOR ENGINEERING PROCEDURES FOR POWER ASCENSION BY WESTINGHOUSE AND INPO

V. PERSONNEL ERRORS (CONTINUED)

UNIT 1 CYCLE 4 NIS MISCALIBRATION (CONTINUED)

- TABLE TOP REVIEWS OF ADMINISTRATIVE PROCESSES, CONTROLS, RESPONSIBILITIES, AND INTERFACES
- VP NUCLEAR OPERATIONS PROGRAMMATIC REVIEW: NIS CALIBRATION PROCESS
  CONDUCT OF REACTOR PHYSICS TESTING
  ADMINISTRATIVE CONTROLS
  ORGANIZATIONAL INTERFACES
  VERIFICATION METHODS
  MANAGEMENT OVERSIGHT OF PROCESS
- PRESENTATION OF REVIEW RESULTS TO SENIOR VP, NUCLEAR POWER
- REDUCTION OF TRIP SETPOINTS AND APPLICATION OF ADDITIONAL CONSERVATISM DURING INITIAL STARTUP
- EXTENSIVE PREJOB BRIEFINGS FOR INVOLVED PERSONNEL

UNIT 2 CYCLE 4 NIS MISCALIBRATION

EVENT: INTERMEDIATE RANGE DETECTORS NONCONSERVATIVELY CALIBRATED DURING STARTUP DUE TO FAILURE TO IMPLEMENT STARTUP CALIBRATION PROCEDURE

FINDINGS:

- INTERMEDIATE RANGE DETECTORS INAPPROPRIATELY CONSIDERED OPERABLE FOLLOWING GAMMAMETRIC WORKPLAN IMPLEMENTATION
- COMMUNICATIONS/INTERFACES BETWEEN REACTOR ENGINEERING AND INSTRUMENTATION PERSONNEL INEFFECTIVE
- PROCEDURAL VERIFICATION PROCESS NOT FOLLOWED
- ERRORS NOT DETECTED DURING INITIAL CRITICALITY
- OPERATION LIMITED TO POINT OF ADDING HEAT
- POWER RANGE DETECTORS CORRECTLY SET AND FULLY OPERABLE
- CONSEQUENCES BOUNDED BY UFSAR ACCIDENT ANALYSIS; NO CREDIT TAKEN FOR INTERMEDIATE RANGE TRIP

LACK OF DISCIPLINE BY LINE MANAGEMENT IN CONDUCTING PERSONAL FOLLOWUP AND VERIFICATION

UNIT 2 CYCLE 4 NIS MISCALIBRATION (CONTINUED)

CORRECTIVE ACTIONS TAKEN:

- DIRECTION PROVIDED BY VP NUCLEAR OPERATIONS FOR ACTION PLAN DEVELOPMENT WITH EMPHASIS ON PLAN ADEQUACY, CHECK POINTS, CLEAR ASSIGNMENTS AND RESPONSIBILITIES, CLEAR COMMUNICATION CHANNELS AND VERIFICATION THAT ACTIONS ARE COMPLETE
- INTERMEDIATE RANGE DETECTORS CALIBRATED AND POWER RANGE DETECTOR CALIBRATION VERIFIED
- STARTUP AND POWER ASCENSION PROCEDURES REVIEWED FOR OPEN-ENDED ACTIONS; PROCEDURES BEING REVISED TO INCORPORATE SIGNOFFS FOR VERIFICATION OF COMPLETED ACTIONS
- WORKPLANS PROCESS REVIEWED FOR CLOSEOUT AND BASIS FOR DETERMINATION OF OPERABILITY
- WORKPLANS AFFECTING TECHNICAL SPECIFICATIONS SETPOINTS OR CRITICAL PLANT PARAMETERS REVIEWED FOR PROPER POST MODIFICATION CALIBRATION OR PROCEDURE/DRAWING CHANGE
- INCIDENT INVESTIGATION AND HPES EVALUATION CONDUCTED
- LESSONS LEARNED TO BE DISCUSSED IN LINE ORGANIZATION PRESENTATIONS
- COMMUNICATION OF LINE MANAGEMENT'S RESPONSIBILITY FOR FOLLOWUP AND VERIFICATION

ACTIONS BEING TAKEN:

- ANALYSIS OF PERSONNEL ERROR DISTRIBUTION
  - OVERALL EVALUATION FOR COMMON CAUSES
  - EVALUATION FOR COMMON ORGANIZATIONS, DISCIPLINES, SPECIFIC INDIVIDUALS, ETC.
- CLARIFICATION OF BASIS FOR UNACCEPTABLE PERSONNEL PERFORMANCE
  - PROVIDE ILLUSTRATIVE GUIDELINES
  - ENSURE CONSISTENT BASIS AND APPLICATION OF DISCIPLINARY ACTION
- IMPROVEMENT IN WORK PRACTICES AND REINFORCEMENT OF PERFORMANCE AND EXECUTION STANDARDS
  - LINE ORGANIZATION PRESENTATIONS DEVELOPED BY HPES COORDINATOR AND SITE MANAGEMENT INVOLVING
    - LESSONS LEARNED FROM RECENT EVENTS
    - EMPHASIS ON SELF CHECKING
    - ACTION PLAN DEVELOPMENT AND IMPLEMENTATION
    - DISCUSSION OF HPES AND PERSONNEL ERROR PANEL (PEP) IMPLEMENTATION
    - PROCEDURAL ADHERENCE
  - BROADEN IMPLEMENTATION OF HPES
    - ADDITIONAL TRAINING OF HPES EVALUATORS
    - HPES EVALUATORS ASSIGNED TO INCIDENT INVESTIGATION TEAMS
    - TARGET EVALUATIONS FOR COMPLETION WITHIN 7 DAYS (PRIOR TO PEP)

V. PERSONNEL ERRORS (CONTINUED)

ACTIONS BEING TAKEN (CONTINUED):

- IMPROVEMENT AND STANDARDIZATION OF WRITTEN COMMUNICATIONS
  - STANDARDIZE WORKPLANS (MODIFICATIONS)
  - STANDARDIZE WORK PACKAGES (WORK PLANS, WORK ORDERS, SIs, TIs)
- ASSESSMENT OF ADEQUACY OF PREJOB BRIEFINGS
  - ASSESSMENT BY LINE MANAGERS TO PLANT MANAGER/SITE VP
- INCREASED SUPERVISORY INVOLVEMENT IN FIELD ACTIVITIES
  - ACTION PLANS BY LINE MANAGERS TO PLANT MANAGER/SITE VP

VI. OPERATIONS DEPARTMENTAL PERFORMANCE

ISSUES:

- COMMAND AND CONTROL
- PACE OF OPERATOR RESPONSE
- FORMALITY OF COMMUNICATIONS
- SELF-CHECKING
- CONSISTENCY IN PROCEDURE UTILIZATION
- SELF ASSESSMENT

VI. OPERATIONS DEPARTMENTAL PERFORMANCE (CONTINUED)

ACTIONS BEING TAKEN:

- REINFORCEMENT AND MONITORING OF EXPECTATIONS
  - ADDITIONAL TRAINING EMPHASIS
  - SPECIFIC MANAGEMENT EVALUATION DURING TRAINING
  - WEEKLY MANAGEMENT CONTROL ROOM OBSERVATION
- CONDUCT OF OPERATIONS BRIEFINGS
  - LESSONS LEARNED FROM RECENT EVENTS
  - COMMAND AND CONTROL
  - SELF-CHECKING
  - OPERATOR INDEPENDENT ACTIONS
  - OFF-NORMAL PROCEDURE IMPLEMENTATION STANDARDS

VI. OPERATIONS DEPARTMENTAL PERFORMANCE (CONTINUED)

ACTIONS BEING TAKEN (CONTINUED):

- ANALYSIS OF OPERATING PERSONNEL - CHANGES WILL BE MADE
  - QUALIFICATION FOR ROLES
  - PROPER CREW MIX
  - UNDERSTANDING OF AND BUY-IN TO MANAGEMENT EXPECTATIONS
  - OWNERSHIP OF PLANT
  - INTERFACE WITH WORK CONTROL AND MAINTENANCE
- RECRUITMENT OF EXPERIENCED OPERATIONS PERSONNEL FROM BEST OPERATING PLANTS
- REVIEW OF AND ENHANCEMENT TO CONDUCT OF OPERATIONS PROCEDURE
- COMMUNICATIONS EQUIPMENT EVALUATION
- PROCUREMENT OF DISTINCTIVE CLOTHING

VII. CONCLUSION

- ACCOMPLISHMENTS OF CYCLE 4 REFUELING OUTAGES WILL RESULT IN LONG-TERM SAFETY AND RELIABILITY BENEFITS
- THE MAGNITUDE OF THE OUTAGE EFFORTS AND COMPETING PRIORITY TO ENSURE SUCCESSFUL PERFORMANCE OF THOSE EFFORTS DIMINISHED FOCUS IN SOME AREAS
- SELF ASSESSMENT INITIATIVES AND PROCESS IMPROVEMENT EFFORTS ARE IDENTIFIED: ALARA, INCIDENT INVESTIGATIONS, IMPLEMENTATION OF CORRECTIVE ACTIONS AND MAJOR WORK INITIATIVES, PERSONNEL ERRORS, AND OPERATIONS DEPARTMENTAL PERFORMANCE
- EFFORTS FOCUSED AT UPGRADING STANDARDS OF PERFORMANCE AND REINFORCING A RIGOROUS AND SYSTEMATIC APPROACH TO EXECUTION OF ACTIVITIES
- HEIGHTENED MANAGEMENT OVERSIGHT AND INVOLVEMENT TO REINFORCE EXPECTATIONS AND PROVIDE ADDITIONAL VERIFICATION

ENCLOSURE 4
List of Commitments

1. A review of methods for establishing man-hour loadings for outages will be conducted. A memorandum summarizing the review conducted and results achieved will be issued by May 31, 1991.

2. Evaluation of scheduling methodology and staffing composition studies will be performed for target areas (Operations and Instrument Maintenance). A memorandum summarizing the evaluation conducted and results achieved will be issued by March 31, 1991.

3. A computerized overtime tracking system has been initiated. TVA will obtain required terminals and software; implement software changes as necessary to meet requirements; and establish capabilities to effectively utilize system for outage and nonoutage periods, i.e., resources to load data and process to obtain data at necessary frequency. This will be completed by January 31, 1991.

4. To ensure appropriate selection of incident investigation team members and dedication of resources, a list of qualified members is being established to promote consistency. Rules are being established for assignment and dedication to the team. The appropriate site procedure will be revised by February 1, 1991.

5. TVA will (1) establish guidance regarding broadness reviews to increase use of Nuclear Experience Review (NER) and expand consideration of similar events and (2) assign responsibility for broadness review to ensure consistency in conduct. The appropriate site procedure will be revised by February 1, 1991.

6. TVA will review results, develop recommendations, and revise corporate standards and site standard practices, as appropriate, to incorporate results of ongoing assessments into the Incident Investigation Program by February 1, 1991.

7. TVA will issue procedure revisions to provide clarification of basis for unacceptable personnel performance to provide illustrative guidelines and ensure consistent basis and application of disciplinary actions by March 1, 1991.

8. Line organizations' presentations developed by the Human Performance Enhancement System (HPES) coordinator and site management involving: lessons learned from recent events, emphasis on self-checking, action plan development and implementation, discussion of HPES and Problem Evaluation Panel implementation, and procedural adherence will be conducted by February 1, 1991.

9. SSP 12.7, "Incident Investigations and Root Cause Analysis," will be revised by February 1, 1991, to require an HPES evaluator on incident investigation teams as appropriate.

10. Revision to applicable governing procedures to provide improvement and standardization of written communications, workplans, work orders, surveillance instructions, and technical instructions will be complete by April 1, 1991.

ENCLOSURE 5
Completed Actions

The following actions have been completed:

1. To heighten management attention, oversight, and priority for incident investigations, weekly reviews are being conducted with the Site Vice President for ongoing and open investigations.

2. Conduct of Operations' briefings were conducted that included: (1) lessons learned from recent events, (2) command and control, (3) self-checking, (4) operator independent actions, and (5) off-normal procedure implementation standards.

3. A review of Administrative Instruction 30, "Conduct of Operations," was conducted to determine if changes were warranted; no changes were required.

4. TVA issued a new corporate standard for incident investigations, which was implemented through SSP-12.7, "Incident Investigations and Root Cause Analysis," on December 7, 1990.

5. Conduct of weekly management control room observation was started the week of December 10, 1990. TVA has provided to the Operations' personnel reinforcement and monitoring of expectations through (1) additional training emphasis, and (2) specific management evaluation during training. These activities will continue until the standards are consistently observed.

6. TVA submitted a technical specification change to NRC implementing overtime requirements on December 14, 1990.

7. Site Standard Practice (SSP) 32.53, "Administration of Overtime," was revised to include (1) guidance for the removal of operators from the control board positions, if possible, when overtime guidelines are exceeded and (2) review of each exception to the overtime guidelines by the Site Vice President.

8. TVA has conducted an analysis of events involving personnel error to identify common organizations, common disciplines, specific individuals, etc. The results of this analysis have been provided to the Site Vice President.

9. Broader implementation of HPES through additional training of HPES evaluators and assignment of HPES evaluators as appropriate to incident investigation teams have been initiated.

10. Operations' communication equipment evaluation has been conducted and the results provided to the Operations' manager.

11. TVA has ordered distinctive clothing for Operations' personnel.

12. Additional training has been performed on the revised Overtime Limitation Exception Report, Appendix A, of SSP-32.53.

13. Quality assurance monitoring has been performed to determine effectiveness of corrective action and compliance with SSP-32.53. Recommendations for improving the computer software were identified. Monitoring will continue and will be performed during the Unit 1 Cycle 5 refueling outage as committed to in TVA's revised response to NRC Inspection Report Nos. 50-327, 328/90-22 dated November 16, 1990.

14. Action plans for increasing supervisory involvement in field activities have been developed by line management and provided to the Plant Manager.

15. Assessments of the adequacy of prejob briefings have been completed by line management and results provided to the Plant Manager.

16. TVA has conducted analysis of operating personnel for qualification for roles, proper crew mix, understanding and "buy-in" to management expectations, ownership of plant, and interface with Work Control and Maintenance. Personnel changes are being made as appropriate.

17. TVA has initiated the recruitment of experienced operations personnel from the best operating plants.