CERTIFIED 4-3-91 by C. Wylie.

ACRS-2745

PDR 9/20/91

ACRS SUBCOMMITTEE MEETING SUMMARY/MINUTES
FOR TVA PLANT LICENSING AND RESTART
MARCH 4-5, 1991
HUNTSVILLE, ALABAMA

PURPOSE

The ACRS Subcommittee on TVA Plant Licensing and Restart met on March 4-5, 1991, at the Amberley Suite Hotel in Huntsville, Alabama. The purpose of the meeting was to discuss the restart of Browns Ferry, Unit 2. Browns Ferry 2 is a BWR rated at 1098 MWe and has been shutdown since September 1984. Copies of the agenda and selected slides from the presentation are attached. The meeting was held from 2 p.m. until 6 p.m. on March 4, 1991 and from 8:30 a.m. until 2:55 p.m. on March 5, 1991, and was held entirely in open session. The principal attendees were as follows:

ATTENDEES

ACRS

C. Wylie, Chairman
J. Carroll, Member
C. Michelson, Member
D. Ward, Member
D. Houston, Staff
E. Igne, Staff

NRC Staff

T. Ross, NRR
P. Kellogg, Region II
P. Koltay, NRR
F. Hebdon, NRR
B. Wilson, Region II
C. Patterson, Res. Inspector
G. Lainas, NRR
A. Marinos, NRR
D. Terao, NRR

TVA

J. Bynum, VP
D. Nauman, VP
M. Medford, VP
O. Zeringue, Site Director
L. Myers, Plant Manager
P. Carier, Lic. Manager
J. Maddox
J. Hutson
J. Rupert
T. Temple
H. Jones
J. Thompson
M. Herrell
A. Sorrell
F. Blackburn
R. Simmons
T. Galbreth
W. Cobean
H. Weber
P. Eversole

RSO 1/1

DESIGNATED ORIGINAL

Certified By

DOCUMENTATION

The principal documents for discussion at this meeting were as follows:

1. U.S. Nuclear Regulatory Commission, NUREG-1232, Volume 3, April 1989, "Safety Evaluation Report on Tennessee Valley Authority, Browns Ferry Nuclear Performance Plan, Browns Ferry Unit 2 Restart," Supplement 1, October 1989; and Supplement 2, January 1991.

2. Tennessee Valley Authority, Corporate Nuclear Performance Plan, Volume 1, Rev. 6, May 5, 1989.

3. Tennessee Valley Authority, Browns Ferry Nuclear Performance Plan, Volume 3, Rev. 2, October 24, 1988.

ACTIONS, AGREEMENTS AND COMMITMENTS

1. The Subcommittee was in general agreement that the problems and deficiencies that led to the shutdown of Browns Ferry, Unit 2, are being addressed adequately.

2. The Subcommittee agreed on an agenda for the Full Committee Meeting on March 8, 1991. They requested TVA to address the problems that led to shutdown and the corrective actions taken to resolve the problems. The NRC staff was requested to address their review of the resolution of these issues, their

assessment of the plant readiness for restart, and their consideration of post-restart issues.

3. TVA agreed to provide written answers to some questions by Subcommittee members involving (a) the Cardox controls, (b) environmental impact to some solid state equipment, and (c) the review process for relevant industry information (e.g., sister plant LERs). Copies of the TVA responses are attached.

4. The NRC staff agreed to provide copies of the following: (a) a list of post-restart issues, (b) Manual Chapter 0350 - "Staff Guidelines for Restart Approval," and (c) the biographical information for a consultant who was used in the review of the adequacy of management during the operational readiness review. Copies of these were provided by the staff and are attached.

DISCUSSION

In his opening remarks, C. Wylie indicated that the purpose of the meeting was to discuss the NRC staff's resolution of safety issues related to the restart and operation of Browns Ferry, Unit 2, and to discuss the corrective actions taken by TVA. He asked the other subcommittee members to make note of those issues that should be presented to the Full Committee on March 8, 1991.

STAFF PRESENTATIONS

The NRC staff addressed three specific areas in regard to their reviews of TVA and Browns Ferry 2. These areas were as follows:

- Regulatory Safety reviews and Licensing actions
- Inspection program, SALP, and Power Ascension Test Program
- Operational Readiness Assessment Team Inspection Findings

T. Ross (NRR) discussed the historical background of actions by the NRC in 1985 that led to the prolonged shutdown of all TVA plants. He summarized the documents and corrective actions generated by TVA to resolve problem areas. He indicated all corrective action programs have been approved and that there are no unresolved safety concerns. The staff's confirmation of action letter has had a complete response. He further indicated that the licensee and plant had met the guidelines for restart approval. In response to a question concerning these guidelines, he agreed to provide a copy of them. He briefly discussed the status of licensing actions and listed post-restart issues. He agreed to furnish a more detailed list of these items in the next few days.

P. Kellogg (Region II) discussed the regional involvement in regard to operation qualifications, inspections, organizational and management matters, and SALP reviews. He indicated that all of the

operators had successfully passed requalification tests and that 40-50 inspections had been performed at the plant per year since the shutdown. He discussed how employee concerns were sometimes received through the region and forwarded on to the licensee. He described the process used to establish a baseline for the most recent SALP and presented the ratings for the January 1989 - March 1990 period. With the exception of two areas (maintenance and safety assessment), the licensee received a rating of 1 or 2.

P. Koltay (NRR) discussed the review conducted by the Operational Readiness Assessment Team and presented its preliminary findings. He indicated that the team had not identified any findings that would preclude a favorable recommendation for restart. In response to a concern about the qualifications of the team member who assessed management capability, he agreed to provide biographical information for that person.

TVA PRESENTATIONS

The TVA presentations can be divided into two distinct areas: (1) non-technical (i.e., history, management, personnel matters), and (2) technical (i.e., safety systems, design verification, and hardware).

NON-TECHNICAL DISCUSSIONS

J. Bynum discussed the TVA organizational structure and the nuclear power management at Browns Ferry. He introduced the senior management persons in attendance, notably D. Nauman, M. Medford, O. Zeringue, L. Myers, and H. Weber. He noted his past experience at Browns Ferry during its initial startup and operation and O. Zeringue's previous involvement with the initial startup of Brown Ferry 3 and the restart of Units 1 and 2 after the cable fire in Unit 2 during March 1975. He discussed the extent of management changes since January 1989 and described the nuclear experience that these new managers brought with them. In response to a question, he indicated that about 60% of the Browns Ferry workforce is a carryover from the preshutdown era.

J. Thompson and later, T. Galbreth, discussed the employee concerns program. They indicated that the number of concerns raised per month has diminished significantly, in the single digit values, with some increases noted at times of staff reductions. They indicated that there are currently 21 open issues on Browns Ferry but none are of safety significance and require resolution prior to restart. In response to a concern about cross-communication, T. Galbreth stated that he was the manager of the overall program at TVA and that allegations raised at any one given plant were quickly disseminated to all.

M. Medford discussed the key elements and the hierarchial structure of the self-assessment program at TVA. Among the key elements were standards for performance and a system of rewards rather than punishment. The hierarchial structure was composed of senior management teams, independent review groups, and numerous plant specific self-assessment activities.

M. Herrell discussed operator training, qualifications and procedures. He noted a number of improvement initiatives in the operations area from management involvement to increased training. He discussed the PRIDE program that has been put in place to minimize mistakes or errors. He indicated that the EOPs had been upgraded to Rev. 4 of the BWROG instructions and that procedures were being made "user friendly." He stated that all licensed operators had participated in plant operations for one week at Monticello and nonlicensed operators had been at Sequoyah for one week. In response to a question about the use of INPO's HPES, O. Zeringue indicated that twelve people are trained in HPES and that more will be. In response to a question about containment venting, P. Eversole indicated that containment venting procedures are the same in Rev. 3 and Rev. 4 of the BWROG guidelines. Without the hardened vent that is to be installed at the next refueling outage, any venting may result in problems based on personnel access to key areas. In response to a concern about reviewing sister plant

LERs, P. Carier indicated that TVA participates in the INPO SEE-IN program and has an in-house informal review by their NER group. TVA indicated that they would provide more details concerning this review in a written statement.

TECHNICAL ISSUES

J. Maddox discussed the design baseline and calculations program. The objective of this program was given as:

- Verify the functional adequacy of the plant configuration
- Ensure that plant configuration is supported by engineering analysis and documentation
- Provide confidence that plant configuration is in conformance with licensing commitments
- Identify essential calculations
- Ensure that essential calculations support the plant licensing commitments and design basis requirements
- Ensure that essential calculations are technically adequate and consistent with the plant configuration
- Implement a calculation cross reference index system

Included in the overall program are two other separate programs: (1) Drawing Improvement Program, and (2) Design Control Process. He discussed the key elements and status of each of the programs. In response to a question regarding component tracking, he indicated that there are about 80,000 components in the equipment

management system data base. In response to a question about updated control room drawings, he indicated that the operators had identified 1550 drawings that pertained to the control room and that these had all been updated to the current configuration.

J. Rupert discussed the civil engineering programs that had been implemented for the Browns Ferry 2 recovery effort. These programs addressed a number of seismic issues (e.g., cable trays, CRDs, small bore piping, secondary containments, masonry walls, and the torous) and a number of civil calculations (e.g., external flooding, dynamic analysis models, tornado evaluation, and thermal growth). The programs identified a number of deficiencies and at this time, all modifications or repairs to systems to overcome the deficiencies have been completed. In response to a question about the analysis of internal flooding, he indicated that it was addressed in another program.

J. Hutson discussed the resolution of electrical issues for the restart of Unit 2. These issues included cable installation, flexible conduit, cable ampacity, thermal overloads, cable splices and fuses. For each issue, he described the basis for the concern and the corrective action taken to resolve the concerns. In a discussion of the current status of these issues, he noted that all of the corrective actions had been completed except for flexible conduit and cable splices. These issues are to be completed upon

the return of those affected systems to service. He also discussed the station blackout analysis. He indicated that the analysis has been completed and that operating procedures for required load shedding are in progress. He stated that Unit 2 would be in full compliance with the station blackout requirements within one year after issuance of the staff's SER on this matter. In response to a question about the insulating effect of flamastic on cables, he indicated that the cable ampacity was affected and could be derated up to 28%. In response to a concern about the elevated room temperatures during station blackout and the possible effect on electronic equipment, he indicated that this issue had been looked at in the analysis and agreed to provide more information on this matter in a written summary.

T. Temple discussed the efforts undertaken to bring Unit 2 into compliance with Appendix R (Fire Protection). He described numerous modifications needed to achieve compliance and indicated that these modifications have been completed. He responded to a number of expressed concerns and questions briefly stated as follows:

- An analysis of the interaction of heat and smoke from a fire and water placed on the fire on mitigating systems and in areas outside the immediate fire area.

- The identification of attributes that actuate fire protection systems (e.g. smoke, heat or both).

- Specific issues relating to the qualification and functioning of the Cardox system for the CO_2 system.

- Specific details on the fire protection system in the cable spreading room.

- Effects of fires in Units 1 and 3 on Unit 2.

In regard to the Cardox system, he agreed to provide more detail in writing.

M. Herrell discussed the fire protection system in regard to system operability, procedures and organizational/management aspects. He indicated that an engineering study had been performed to identify deviations from NFPA codes and the NRC BTP 9.5-1. As a result of this study, numerous upgrades had been identified and hardware modifications made. TVA has also committed to some longer term upgrades. In response to a question about the makeup of the fire brigade, he indicated that it is made up of a Fire Captain, four fire fighters, an incident commander (SRO) and some security members.

H. Jones discussed the program for qualification of electrical equipment in accordance with 10 CFR 50.49. He indicated that 84 qualification packages have been completed and that 4 design changes required for Unit 2 restart are in progress. He expected to issue an EQ certification letter in April, 1991. In response to a question on whether TVA had considered environments harsher than those from the DBA, he indicated that they had not although some equipment is qualified for harsher environments. In response to a question about the effects of condensed water during temperature transients, he said that equipment was designed with weep holes, thus allowing any such water to exit.

J. Swindell presented an overview of the unit separation project at Browns Ferry. He discussed the physical and systems interactions between Units 1, 2 and 3 and the separation features for systems, secondary containment and building/areas. He showed examples of tags and color coding to be used in the plant to alert workers to which unit was involved. In response to a concern expressed about an apparent lack of redundancy in the crane sling arrangement, TVA provided an answer that there was a lack of redundancy but that the common ring for redundant slings had a large margin to failure.

J. Ruppert addressed a number of questions that had been raised during the discussions. In general terms, he discussed the following topics:

- Recirc pump seal leakage during SBO
- Environmental impact on solid state electrical equipment
- Effect of possible construction fires in Units 1 and 3
- Effect of heat and smoke to areas away from the fire location
- Water spray effectiveness in cable spreading room
- Release of CO_2 in EDG rooms
- Function of Mercoid switches in Cardox System

A. Sorrell discussed the maintenance program. He described the problem areas that existed in the program at the time of Unit 2 shutdown and the improvements that had been implemented to resolve these problems. The major improvements were related to training, staffing, interaction with the rest of the nuclear industry, planning and control, standards, and self assessment. As an example of the results of this program, he noted that rework was typically less than 1% and corrective maintenance work items had diminished from 5000 items to less than 800. In response to a question on reliability centered maintenance, he indicated that TVA had a corporate group spearheading this effort with a lead program at Sequoyah. Lessons learned at Sequoyah will be applied at Browns

Ferry. He also indicated that they were using a PRA approach to prioritize maintenance activities.

F. Blackburn discussed the program to prevent microbiologically influenced corrosion (MIC) in raw water piping systems. The elements of the program included water sampling, flow testing, weld inspections, and upgrading of the chlorination system. Other parts of the program addressed new types of biocides and stagnant systems. In response to a question on flow testing, he indicated that this was done by sonic flowmeters.

R. Simmons addressed the motor operated valve (MOV) program designed to ensure that MOVs will operate at design basis conditions. He described a dedicated MOV team as well as an aggressive MOV maintenance program. He discussed the enhancements that resulted from GL 89-10 and the status of the GL 89-10 program at Browns Ferry. For Unit 2, the design reviews are tentatively scheduled for early-1993 and testing by mid-1994. In response to a question about the calculation of margin, he noted the coefficient (0.4) and safety factor (1.2) used in the formula for thrust calculation. In response to a question about the NRC staff audit schedule for this program, the NRC staff indicated that guidance for auditing had just been issued and that schedules for auditing had not yet been developed. The NRC staff did indicate

that a preliminary review of the TVA response to GL 89-10 had not identified any concerns that had to be resolved prior to startup.

L. Myers discussed the plant restart readiness. He indicated that his operating philosophy is rooted in both accountability and professionalism. As such, he has focused on three areas: quality plant, quality staff and quality working environment. He summarized the plant performance improvements as well as the operating experience for both line managers and control room operations staff. He briefly discussed the power ascension program and indicated that he believes the plant is ready to operate.

O. Zeringue made the closing remarks for the TVA presentation. He indicated that TVA had experienced personnel, responsive management, organizational accountability and responsibility, resolved past problems and programs to prevent recurrence and an ongoing critical self-assessment program. He stated that they had replaced about a million feet of cable, 200,000 feet of conduit and several thousand pipe hangers. In summary, he indicated that he has a very positive feeling in regard to the attitude and ability of the staff to operate the plant safely. In response to a question about human factors personnel, D. Bradley was identified as an on-site human factors expert and it was indicated that there was also a corporate counterpart.

In closing, C. Wylie thanked TVA and the NRC staff for their presentations. The subcommittee members discussed the agenda for the Full Committee meeting on March 8, 1991. They requested TVA to address the problems that led to shutdown and the corrective actions taken to resolve the problems. The NRC staff was requested to address their review of the resolution of these issues, their assessment of the plant readiness for restart, and their consideration of post-restart issues.

FUTURE ACRS ACTION

On March 8, 1991, the ACRS will discuss the restart of Browns Ferry Unit 2. The EDO schedule indicates that the Committee should issue a report with its recommendations at that meeting.

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NOTE: Additional meeting details can be obtained from a transcript of this meeting available in the NRC Public Document Room, 2120 L Street, NW, Washington, DC 20006, (202) 634-3273, or can be purchased from Ann Riley and Associates, Ltd., 1612 K Street, NW, Suite 300, Washington, DC 20006, (202) 293-3950.

ACRS Sub-Committee Meeting on Restart of Browns Ferry, Unit 2

NRC PRESENTATION

March 5, 1991

Contact: Thierry M. Ross
Senior Project Manager
(301) 492-1313

U.S. NRC
Staff Presentation

- Regulatory safety reviews and Licensing actions
  - Thierry Ross, Project Manager NRR
- Inspection program, SALP, and Power Ascension Test program
  - Paul Kellogg, Section Chief RII
- Operational Readiness Assessment Team inspection findings
  - Peter Koltay, Team Leader

NRC Guidelines
For Restart Approval

- Root cause identification and correction
- Licensee management organization and oversight
- Plant and corporate staff
- Physical state of readiness of plant
- Regulatory requirements

Post-Restart

- NUREG-1232, Volume 3
- Hardened vent
- Individual Plant Examination
- Simulator Upgrade
- TMI Action items
- Regulatory Guide 1.97
- Station Blackout
- Control Room Emergency Ventilation

Inspection Program

- Objectives
  - Verify TVA completes Nuclear Performance Plan
  - Confirm programs for safe plant operation are implemented
  - Engineering and technical issues are resolved
- Major inspections remaining
  - Surveillance program
  - Final implementation of Environmental Qualification
  - Power Ascension Test program

SALP VI

January 3, 1989 - March 31, 1990

- Shutdown Operations - 2
- Radiological Controls - 1
- Emergency Preparedness - 2 *
- Maintenance and Surveillance - 3 *
- Security - 2
- Engineering and Tech Support - 2
- Safety Assessment and Quality Verification - 3 *

* Indicates improving trend

Operational Readiness Assessment Team Inspection

- Conducted from February 11-15, 1991 and February 25-March 1, 1991
- Independent team of inspectors from NRR and other Regions
- Exit meeting with TVA held March 1, 1991
- Findings and conclusions

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS MEETING

BROWNS FERRY NUCLEAR PLANT
MARCH 4-5, 1991
HUNTSVILLE, AL

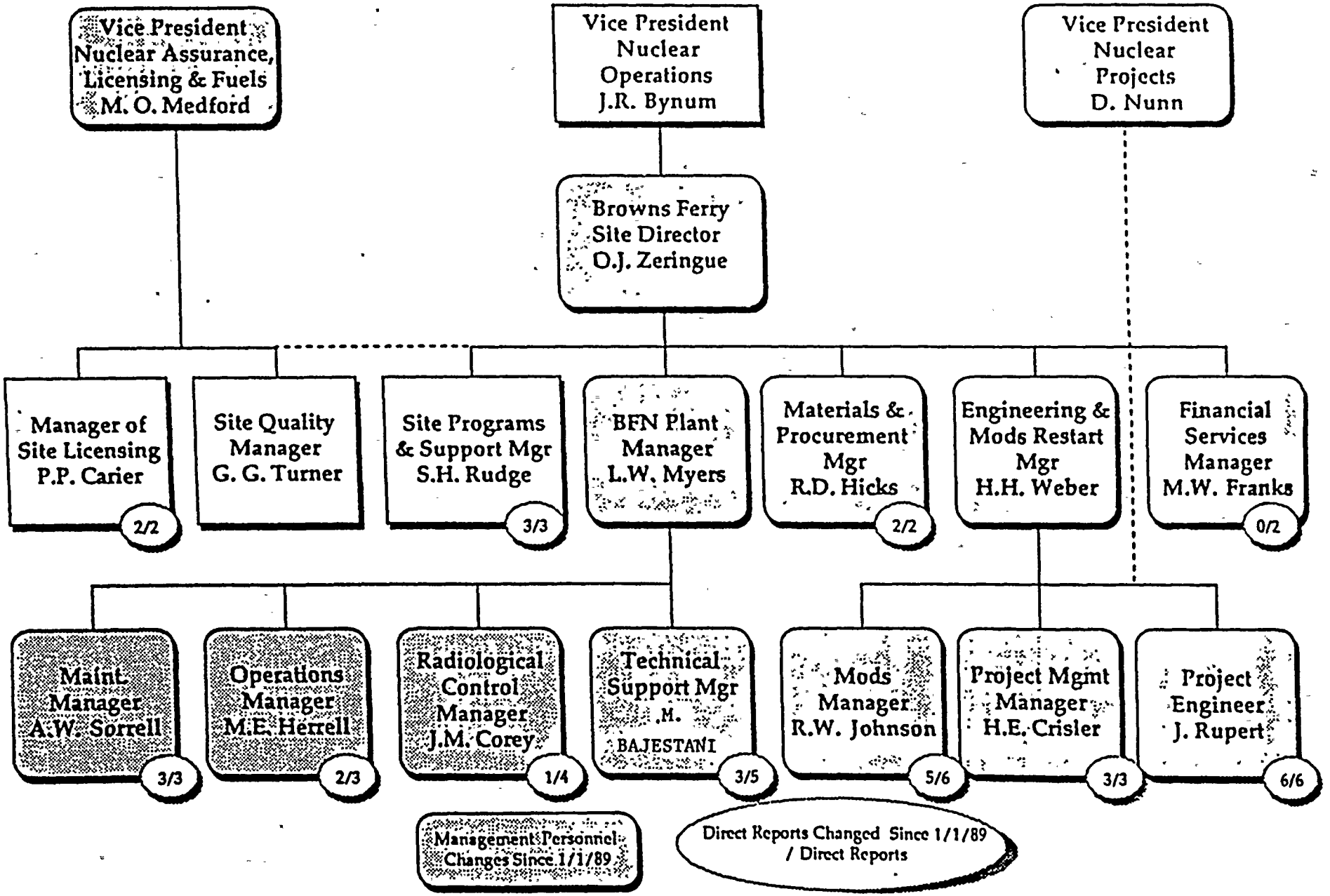
SELECTED SLIDES FROM

TVA PRESENTATION

NUCLEAR POWER MANAGEMENT
BROWNS FERRY NUCLEAR PLANT

OLIVER KINGSLEY	PRESIDENT, GENERATING GROUP
D. A. NAUMAN	SR VICE-PRESIDENT NUCLEAR GENERATION
J. R. BYNUM	VICE-PRESIDENT NUCLEAR OPERATIONS
O. J. ZERINGUE	SITE DIRECTOR
L. W. MYERS	PLANT MANAGER
H. H. WEBER	ENGINEERING & MODIFICATIONS RESTART MANAGER

BROWNS FERRY NUCLEAR PLANT
SUMMARY LEVEL ORGANIZATION CHART



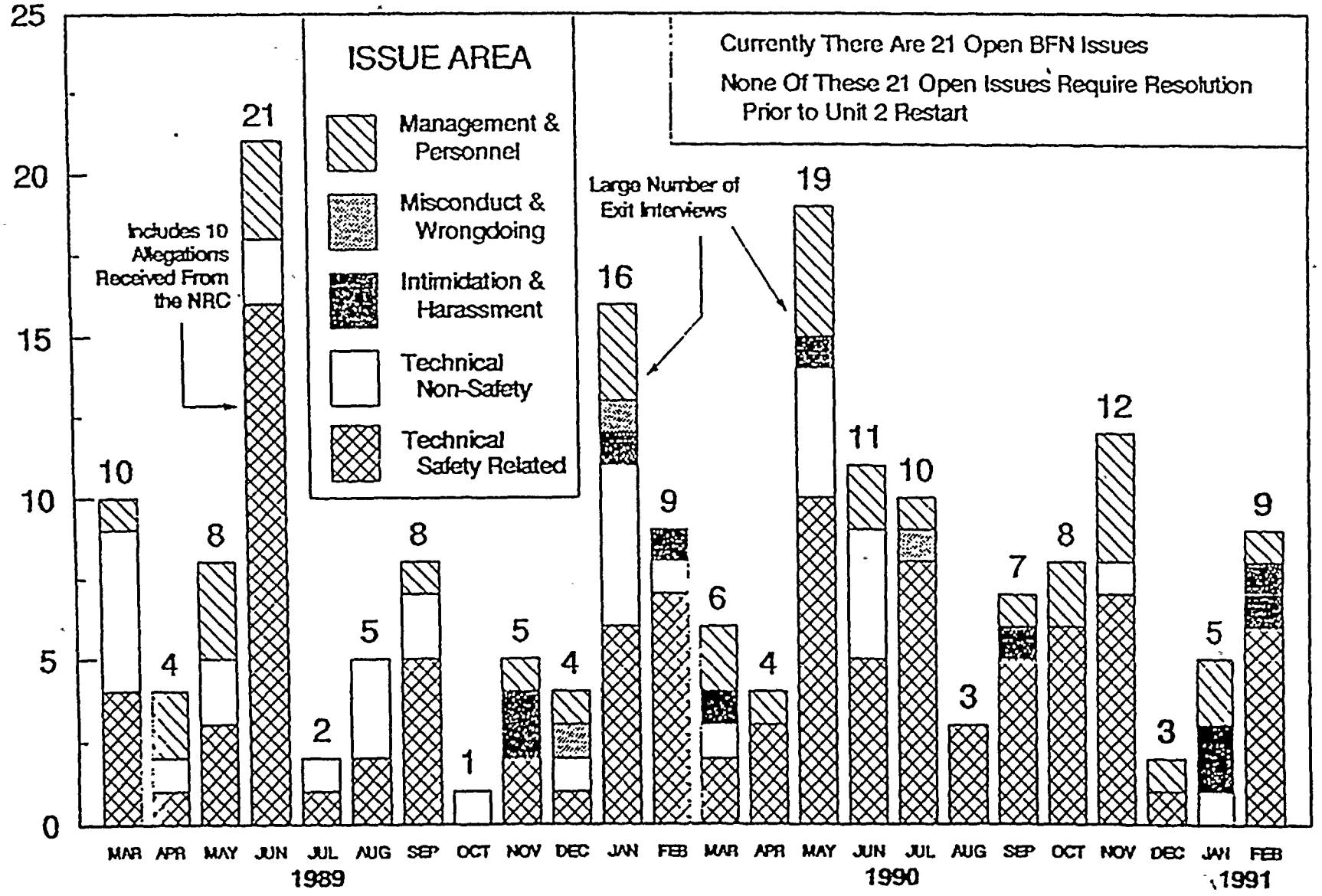
BFN ISSUES

- FAILURE TO ESTABLISH THE APPROPRIATE STANDARDS
- LACK OF FOCUS OF RESPONSIBILITY AND AUTHORITY TO ORGANIZATIONS AND THEIR MANAGERS AND ESTABLISHED ACCOUNTABILITY FOR PERFORMANCE
- FAILURE TO MAINTAIN CONSISTENTLY A DOCUMENTED DESIGN BASIS FOR THE PLANT AND TO CONTROL CONSISTENTLY THE PLANT CONFIGURATION WITH THAT BASIS

BROWNS FERRY

Employee Concern Program

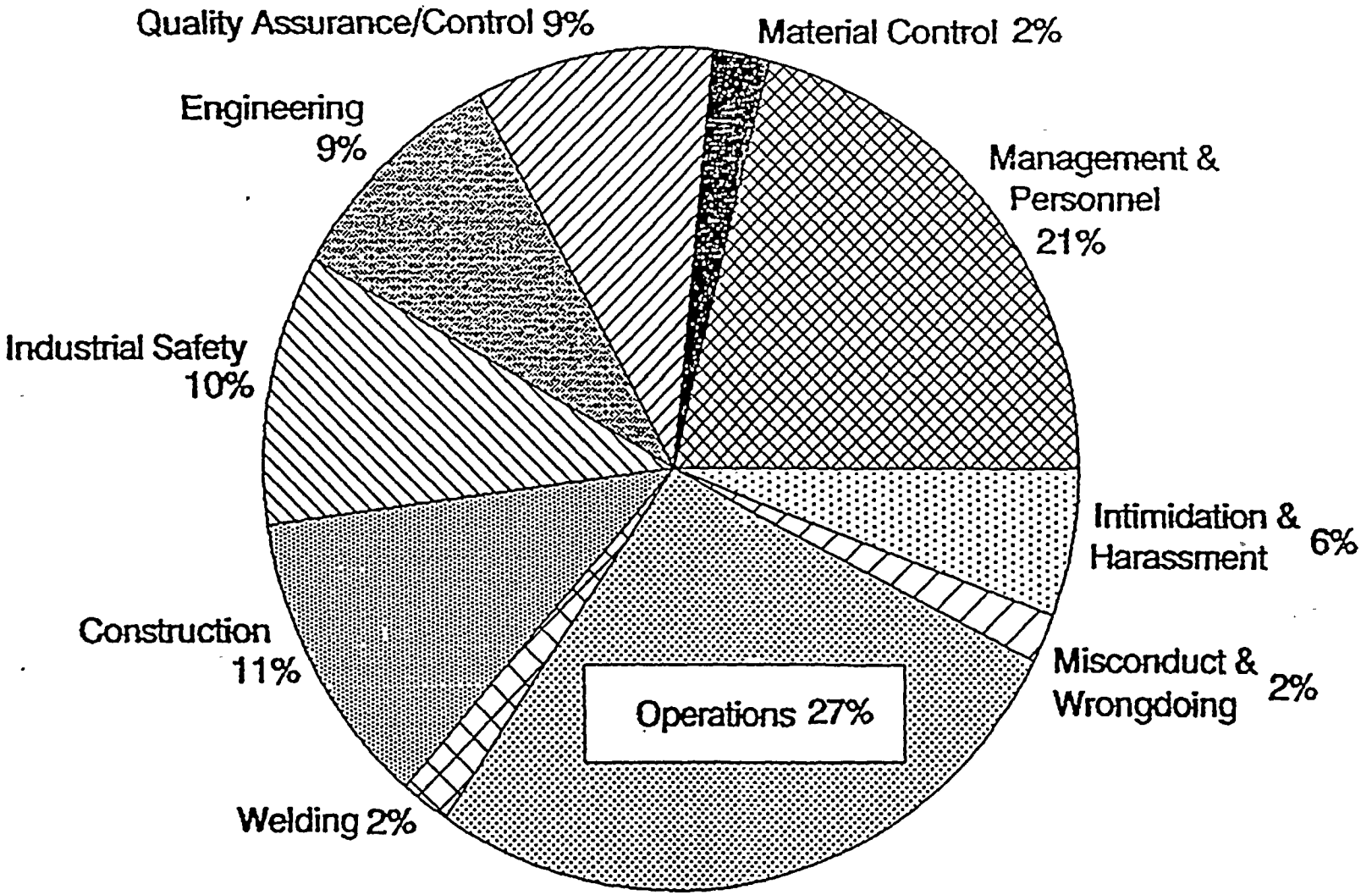
Issues Received 3/1/89 Through 2/28/91



BROWNS FERRY

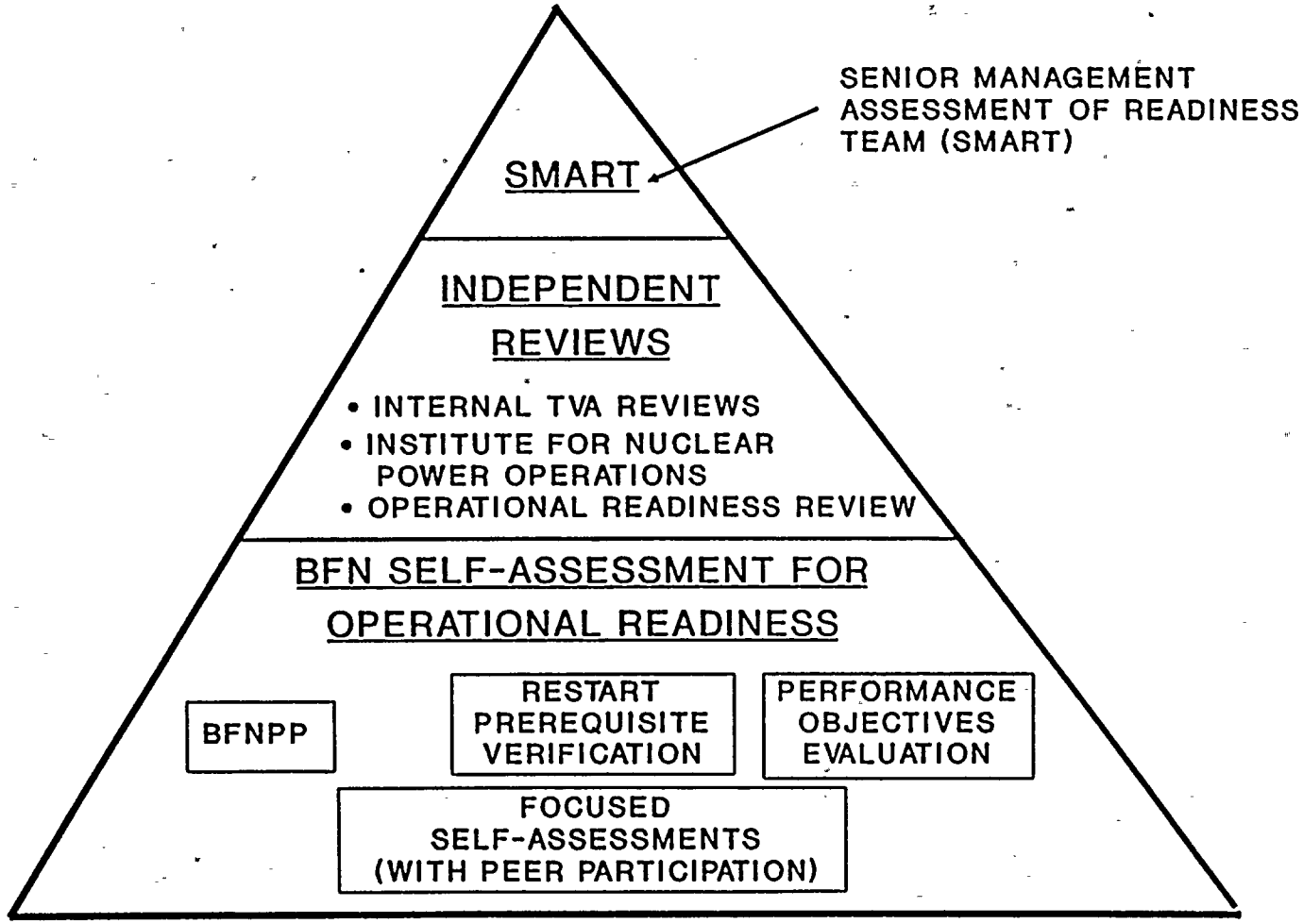
Employee Concern Program

Issues By Category - 1/1/89 Through 2/28/91



III. RESTART INITIATIVES

HIERARCHY OF RESTART READINESS SELF ASSESSMENT



SKC12

EOP'S (Everybody's Operating Procedures)

1.0 Do I really understand the work I'm being asked to perform?
- If yes, go to step **2.0**

2.0 Do I know what will happen if what I'm being asked to do does not work?
- If yes, go to step **3.0**

3.0 Do I know that the people supporting me have done everything they are supposed to do?
- If yes, go to step **4.0**

4.0 Do I have answers to all the "what if" questions related to the work to be performed?
- If yes, **proceed**

NOTE: *If the answer to any of these questions is* ***no. STOP!*** *Resolve the questions with your work team* ***and*** *see your supervisor before proceeding.*

Browns Ferry Nuclear Plant

P ERFORMANCE
R ESPONSIBILITY
I NVOLVEMENT
D EDICATION
E XCELLENCE

OPERATIONS

IMPROVEMENT INITIATIVES

- STRENGTHEN OPERATIONS MANAGEMENT
  - BOTH INSIDE TVA AND FROM THE OUTSIDE
- IMPROVED LINES OF COMMUNICATION
  - BI-WEEKLY SOS / OPS MGMT / SITE MGMT MEETINGS
  - WEEKLY OPS MGMT / CREW MEETINGS
  - WEEKLY OPS SUPT / CREW MEETINGS
- MANAGEMENT PARTICIPATION IN TRAINING
- MANAGEMENT OBSERVATION PROGRAM

OPERATIONS

IM*PROVEMENT INITIATIVES (cont)*

- REQUAL TRAINING INCREASED FROM 4 TO 8 WEEKS
- INITIAL LICENSE TRAINING CLASSES SCHEDULED YEARLY
- NON-LICENSED OPERATOR PROFICIENCY EXAMINATIONS
- MANAGEMENT OBSERVATION OF JOB PERFORMANCE
  - ANNUAL LICENSED OPERATOR REVIEW BOARDS
  - MANAGEMENT OBS PROGRAM
- CORRECTIVE ACTIONS FOR POOR PERFORMERS
- P.R.I.D.E. CARDS

OPERATIONS

IMPROVEMENT INITIATIVES (cont)

- ESTABLISHMENT OF DEDICATED INCIDENT INVESTIGATION TEAM
- FIND AND CORRECT ROOT CAUSES
- STANDARDS HAVE BEEN SIGNIFICANTLY INCREASED
- STRESS IMPORTANCE OF "LITTLE THINGS"
- DEDICATED CORRECTIVE ACTIONS MANAGER TO ENSURE DEFICIENCIES CORRECTED
- OPERATING PHILOSOPHY OF "NEVER MAKE SAME MISTAKE TWICE"

OPERATIONS

IMPROVEMENT INITIATIVES (cont)

- DEDICATED PROCEDURE SUPPORT GROUP
- EXTENSIVE TECHNICAL SUPPORT FOR PROCEDURES
- VALIDATION & VERIFICATION PROCESS FOR ALL PROCEDURES
- EMPHASIS ON "USER FRIENDLY" PROCEDURES
- STATE OF THE ART DESKTOP PUBLISHING TECHNIQUES BEING INCORPORATED INTO OPERATIONS PROCEDURES
- UPGRADE OF EOI TO BWROG REV4

SEISMIC ISSUES

- CABLE TRAY
- CONDUIT
- CONTROL ROD DRIVE HYDRAULICS (CRDH)
- HVAC
- INSTRUMENT TUBING
- SMALL BORE PIPING

SEISMIC ISSUES

- 79-02/14
- II/I - WATER SPRAY
- DRYWELL STEEL
- MISCELLANEOUS STEEL
- SECONDARY CONTAINMENT
- MASONRY WALLS
- TORUS VERIFICATION

ST026

SEISMIC RESULTS

ISSUE	CALCULATIONS	MODS	REPAIRS	STATUS
CABLE TRAYS	74	12	2	COMPLETE
ELECTRICAL CONDUIT	600	430	0	COMPLETE
CONTROL ROD DRIVE	24	150	650	COMPLETE
HVAC	579	205	0	COMPLETE
INSTRUMENT TUBING	150	230	120	COMPLETE
SMALL BORE PIPING	650	975	2600	COMPLETE
79-02/14 PROGRAM	3300	1580	1060	COMPLETE
CLASS II OVER I	105	31	0	COMPLETE
DRYWELL STEEL	56	300	0	COMPLETE
MISCELLANEOUS STEEL	200	40	0	COMPLETE
SECONDARY CONTAINMENT	20	0	0	COMPLETE
MASONRY WALLS	52	50	0	COMPLETE
TORUS VERIFICATION	150	0	80	COMPLETE

ST022

CIVIL CALCULATION RESULTS

ISSUE	CALCULATIONS	MODS	REPAIRS	STATUS
DYNAMIC ANALYSIS MODEL	15	2	0	COMPLETE
PRIMARY CONTAINMENT	8	0	0	COMPLETE
CONTROL ROD DRIVE HOUSING	6	1	0	COMPLETE
SETTLEMENT & SLOPE STABILITY	10	1	0	COMPLETE
CONCRETE VERIFICATION	16	0	0	COMPLETE
EXTERNAL FLOODING	5	0	0	COMPLETE
TORNADO EVALUATIONS	8	0	0	COMPLETE
THERMAL GROWTH	25	8	0	COMPLETE

BFN UNIT 2
ELECTRICAL STATUS

ISSUES	STATUS
FLEXIBLE CONDUIT	★
CABLE AMPACITY	COMPLETE
THERMAL OVERLOADS	COMPLETE
CABLE SPLICES	★
FUSES	COMPLETE

★ REMAINING MODIFICATIONS TO BE PERFORMED VIA EACH SYSTEM RETURN TO SERVICE PROCESS

ACRS07B

FIRE PROTECTION
I. APPENDIX R (MODIFICATIONS)

- CABLE REROUTES
- EMERGENCY LIGHTING
- COMPARTMENTATION
  - DOORS
  - DAMPERS
  - PENETRATION SEALS
  - STRUCTURAL STEEL FIRE PROOFING
  - FIRE WRAPS (CABLE SEPARATION)
- HIGH PRESSURE FIRE PROTECTION IN UNIT 2 REACTOR BUILDING
  - PREACTION GENERAL AREA COVERAGE
  - DRAFT STOPS & WATER CURTAINS
  - FOAM SYSTEM UPGRADE
  - AIR SUPERVISION ON PREACTION & FOAM SYSTEMS
- UNIT 1, 2, & 3 BATTERY & BATTERY BOARD ROOMS PREACTION SYSTEMS UPGRADED

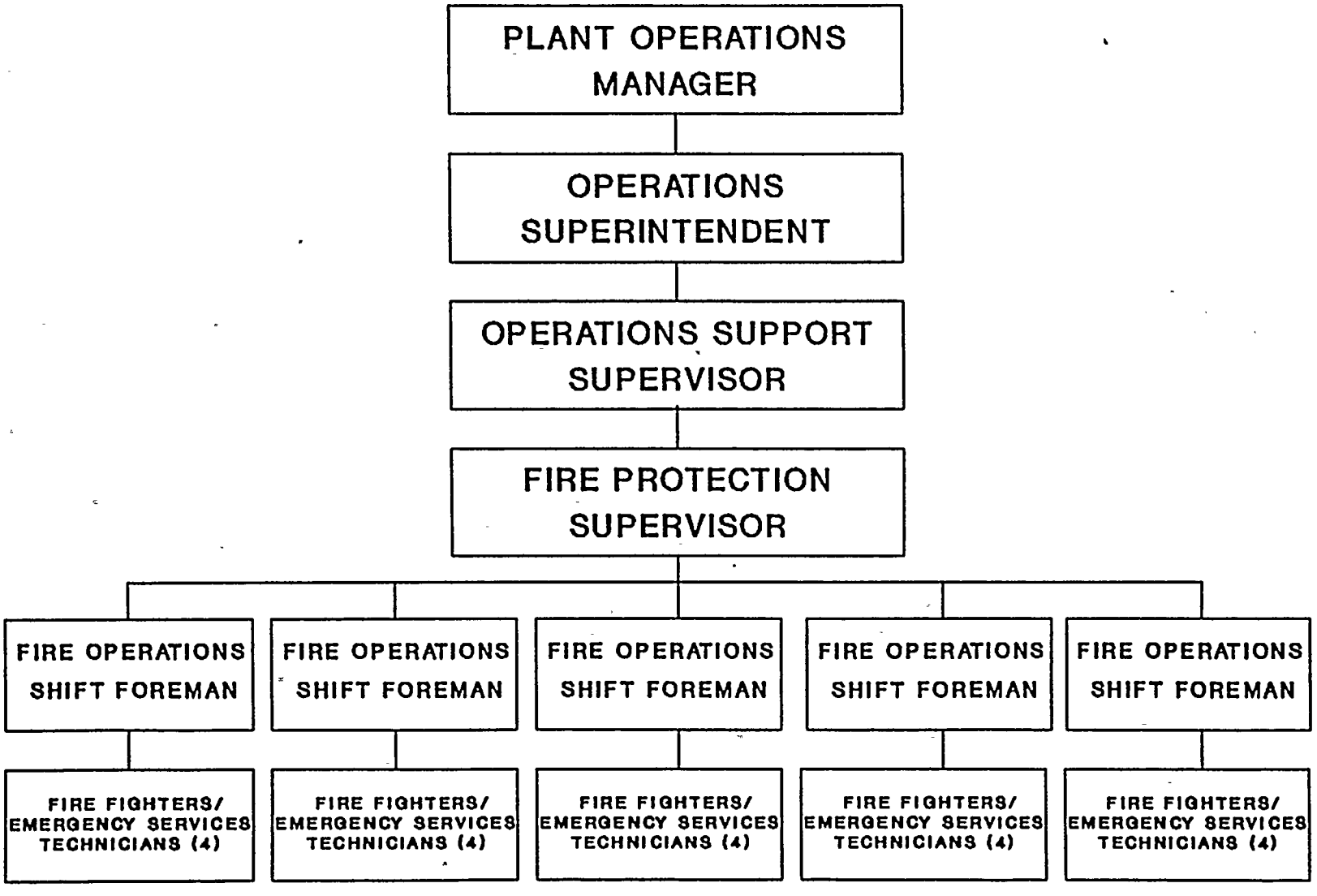
BDL04

FIRE PROTECTION

II. SYSTEM OPERABILITY (HARDWARE UPGRADES)

- CO_2 SYSTEM REFURBISHMENT
- ELECTRIC FIRE PUMP REBUILDS
- UNDERGROUND ISOLATION VALVE REPLACEMENT
- FIRE HYDRANT REPLACEMENT
- BUILDING ISOLATION VALVE REPLACEMENT
- TRANSFORMER DELUGE SYSTEM REFURBISHMENT
- DETECTION SYSTEM RETURN TO SERVICE

FIRE PROTECTION OPERATIONS



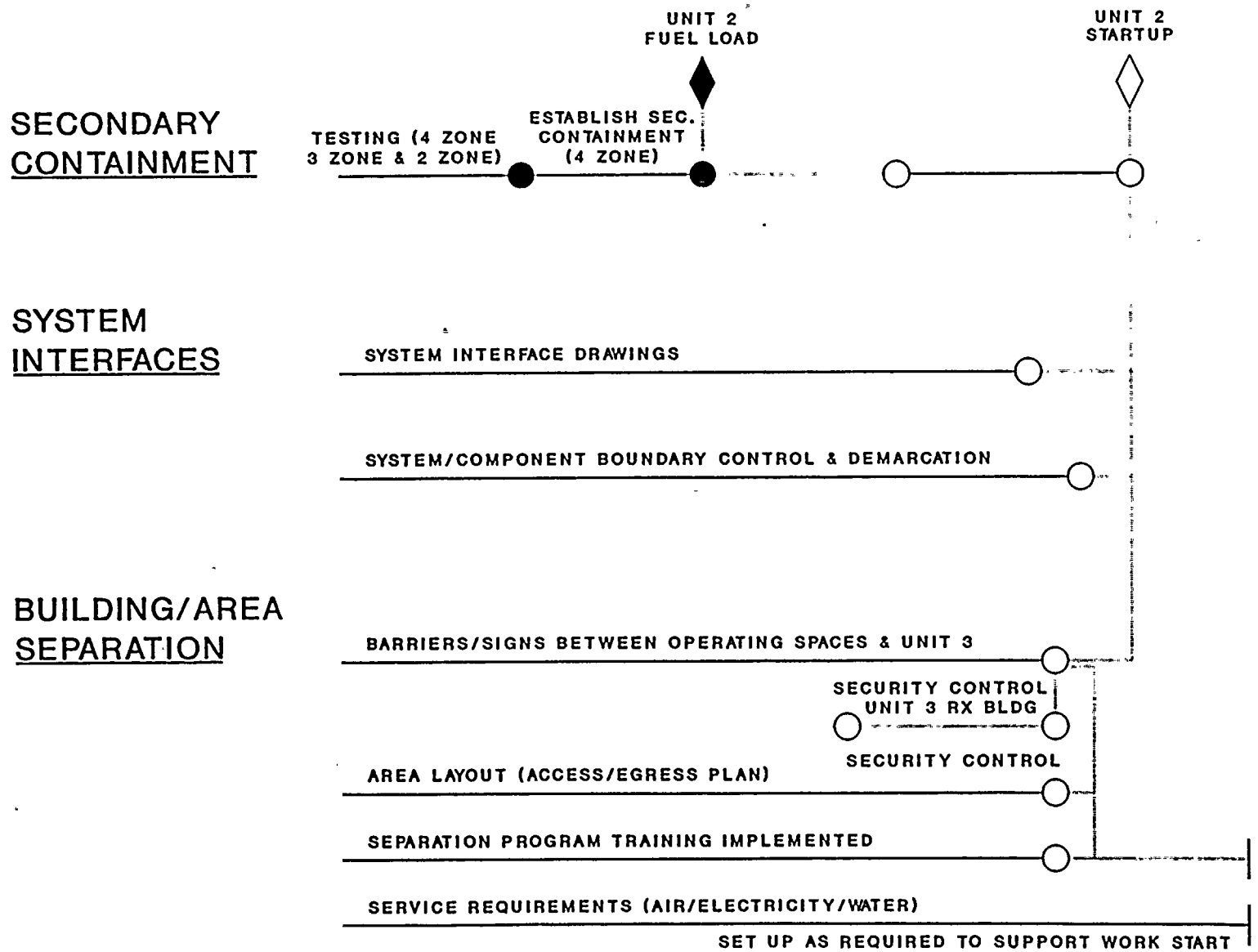
BDL13

ENVIRONMENTAL QUALIFICATION

STATUS

- DESIGN COMPLETE
  - ✓ 84 QUALIFICATION PACKAGES COMPLETE EXCEPT FOR CONFIRMATORY INFORMATION PLANNED AFTER RPV HYDRO TEST
- 4 DESIGN CHANGES REQUIRED FOR UNIT 2 RESTART ARE CURRENTLY IN WORK
- EQ CERTIFICATION LETTER SCHEDULED FOR APRIL 1991

UNIT SEPARATION



MAINTENANCE PROGRAM IMPROVEMENTS

- MAINTENANCE IMPROVEMENT PROGRAM

  - Initiation in 1987 as a result of poor maintenance program.
  - Expanded in 1989 from about 200 items to 346 actions due to INPO assist visit.
  - Formal program to upgrade entire maintenance program and includes such areas as:

    Engineering - upgrade equipment

    Procedures

    Preventive maintenance

    Internal audit

MAINTENANCE PROGRAM IMPROVEMENTS

- STAFFING
  - 7 of 8 top managers changed during 1989.
  - No top management changes during 1990 or 1991.
  - Significant changes at the Foreman and General Foreman level.
  - Apprentice program.

- INTERACTION WITH THE REST OF THE NUCLEAR INDUSTRY
  - INPO Peer Evaluations.
  - Visits to other nuclear plants.
  - Outside training.

MIC Program Status

- Replaced 800 Ft. of Piping And Seven Valves
- Started Corrosion/Deposit Monitoring on Main Condenser And Fire Protection System
- Monitoring On Remaining Safety-Related Raw Water Systems Scheduled For Next Outage
- No Significant MIC Growth Found After Three Reinspections of Stainless Steel Welds

MIC Program
Status (Cont.)

- Structural Analysis Shows Piping Acceptable
- Chlorination Period Extended
- Laboratory Tests On New Type Biocide Complete
- Treatment For Stagnet Systems In Development

GENERIC LETTER 89-10 PROGRAM STATUS

- 3 CRITICAL SYSTEMS (SUPPLEMENT 3)
  - COMPLETE
  - VALVES ARE ADEQUATE
- PROGRAM IMPLEMENTATION
  - *UNIT 2*
    - ✓ DESIGN REVIEWS - EARLY 1993
    - ✓ TESTING - MID 1994
  - *UNIT 1 & 3*
    - ✓ BEFORE RESTART
  - FACTOR IN EPRI PROGRAM RESULTS

PLANT RESTART READINESS

- OPERATING PHILOSOPHY
  - ✓ ACCOUNTABILITY
  - ✓ PROFESSIONALISM

- PHILOSOPHY REQUIREMENTS
  - ✓ QUALITY PLANT
  - ✓ QUALITY STAFF
  - ✓ QUALITY WORKING ENVIRONMENT

QUALITY PLANT
PERFORMANCE IMPROVEMENTS

- BENEFITS FROM SHUTDOWN ISSUES
- SCRAM REDUCTION PROGRAM
  - ✓ RPS TRIP LOGIC IMPROVEMENT
  - ✓ FEEDWATER PUMP TRIP LOGIC IMPROVEMENT
- SECONDARY PLANT RELIABILITY PROGRAM
- VALVE IMPROVEMENT PROGRAMS
- FUEL INTEGRITY IMPROVEMENT
- INCIDENT INVESTIGATION PROGRAM

QUALITY PLANT
PROCEDURES UPGRADE

WEAKNESSES

- TECHNICAL CONTENT
- PROGRAMMATIC ISSUES
- PROCEDURE IMPLEMENTATION

RESOLUTION

- 3009 PROCEDURES UPGRADES
- 814 TECHNICAL PROCEDURES HAVE BEEN VALIDATED
- VERIFICATION
  - ✓ WALK THROUGHS
- VALIDATION PROCESS
  - ✓ SIMULATOR
  - ✓ FIRST USE

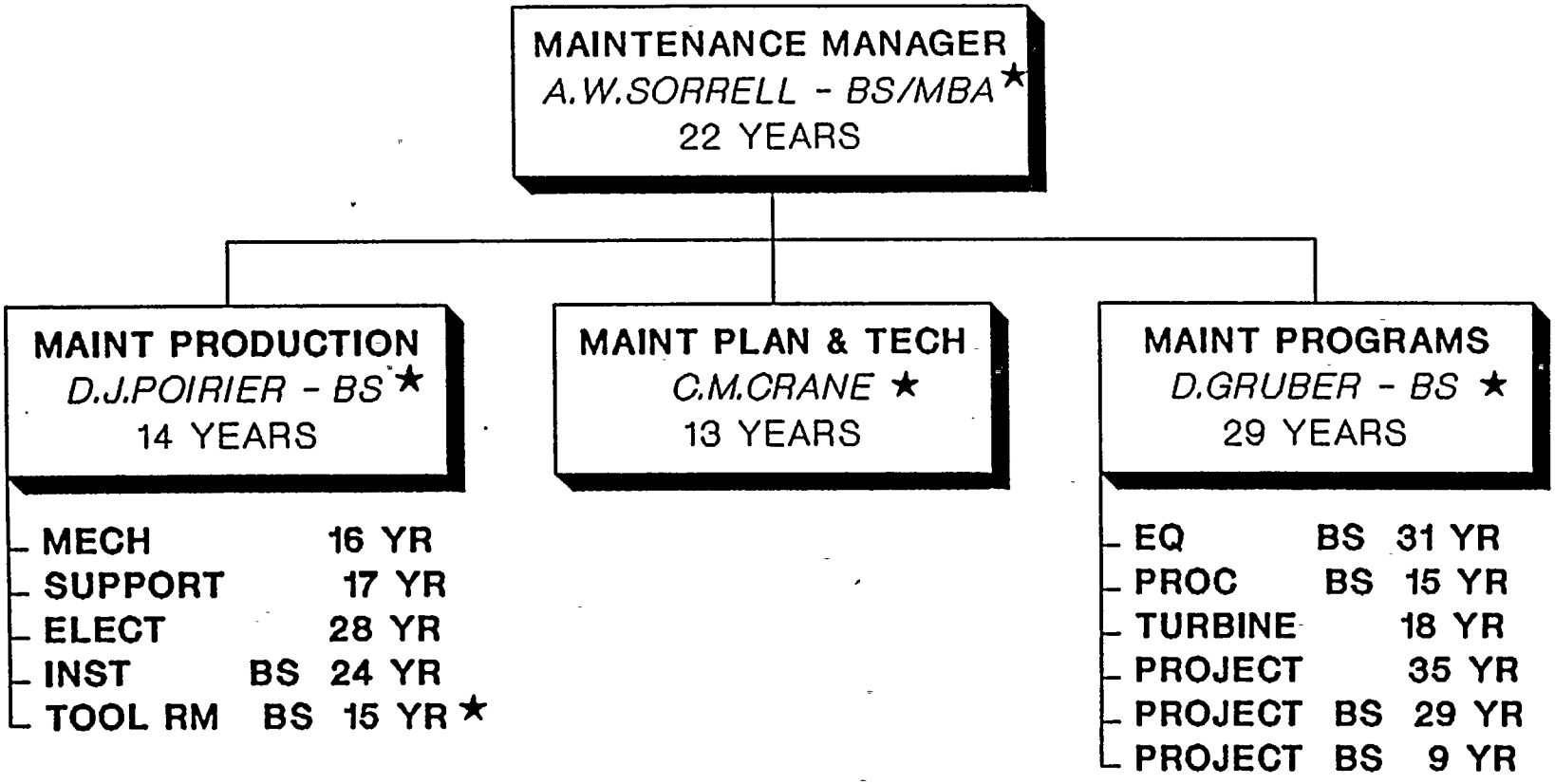
RR026

CONTROL ROOM STAFFING/OPERATOR CAPABILITY

BROWNS FERRY NUCLEAR PLANT
LICENSED OPERATOR EXPERIENCE SUMMARY

GROUP	SOS / ASOS LICENSE EXPERIENCE			UNIT OPERATOR LICENSE EXPERIENCE	SOS/ASOS/UO YRS EXPERIENCE AS AUO
	SRO	RO	TOTAL	RO	TOTAL
1	16.0	20.3	36.3	14.0	69.0
2	21.0	7.8	28.8	24.0	64.0
3	18.5	21.7	40.2	23.0	86.0
4	30.0	11.3	41.3	25.0	79.0
5	15.5	22.3	37.8	26.0	75.0
6	20.3	9.3	29.6	24.0	77.0
AVG / GROUP	20.2	15.4	35.7	22.7	75.0
AVG / PERSON	3.7	2.9	6.6	6.8	7.8

QUALITY STAFF
MAINTENANCE



★ ALSO HAS NON-TVA COMMERCIAL NUCLEAR POWER EXPERIENCE

RR028

WRITTEN SUBMITTALS BY

TVA AND NRC STAFF

ACRS QUESTIONS

1. Are Cardox controls seismically qualified? Yes
2. Does a seismic event actuate cardox? No
3. Does this interfere with D/G function? No
4. Affect of CO_2 discharge (snow or dry ice formation) on D/G operability None

Even if cardox inadvertently initiates and CO_2 is released into any diesel generator room, the D/G is not automatically tripped under this condition. Calculations performed for Appendix R shows that the Diesel Room with no ventilation and the diesel running will reach 113 F max in 30 minutes when outside ambient temperature is at the design basis temperature of 97 F. This calculation was based on input obtained from testing performed at an outside temperature of 88 F with the diesels running and HVAC isolated.

The combustion air intake is separately piped to the diesel engine from the outside of the diesel building. Therefore, the combustion air is ensured. Engine cooling is ensured by the EECW system. The generator is air cooled and has Class F insulation. Therefore, no derating of the diesel generator unit is required. The DG manufacture has certified that the DG control panel components will not experience any degradation up to its vendor certified temperature of 126 F.

An operator is dispatched to the diesel building any time a diesel starts (OI-82). The HVAC system is restored to normal operation once it has been confirmed that there is no fire (OI-39).

The initiation logic for the CO2 system does not contain any mercoid switches. However, there are mercoid switches in the tank level and pressure indication and compressor start/trip circuits. Inadvertent actuation of those switches would not cause release of CO_2.

Recently conducted full discharge tests in Unit 3 computer room, requiring similar CO_2 concentration, indicated no formation of snow flakes. The temperature in the room did drop to well below freezing and some frosting was noticed on equipment and piping.

A typical CO2 discharge lowers the room temperature, some water vapor will condense from the atmosphere creating fog which will persist for a time. CO2, as a gas, or as a finely divided solid called "snow" or "dry ice", will not conduct electricity. CO2 is normally the preferred extinguishing agent on energized equipment surface. Hence the operability of electrical equipment is not affected.

ACRS QUESTIONS

1. Blackout - what's the environmental impact to solid state equipment due to an SBO event and concurrent loss of HVAC?

HPIC and RCIC are the systems which are utilized to cope with a SBO. These are steam driven systems that are supplied with DC power. The temperatures at the end of the four hour period are 122 F and 115 F for the HPCI and RCIC areas, respectively. An evaluation for the effects of elevated temperatures has been performed to evaluate the HPCI and RCIC equipment, including the electronics, and concluded that the equipment will perform its intended function at the elevated temperatures. Both systems have similar electronic components including:

1. EGM speed controller
2. RAMP signal generator

Analysis has shown other areas of the plant required to support the operation of HPCI/RCIC, including the MCR, the battery room, battery board room, auxiliary instrument room, and board locations remain under 104 F. 104 F is below the electrical equipment's rating.

During a station blackout, the torus area reaches approximately 130 F within the four hour coping period. This heat source was considered in establishing the 122/115 F for the HPCI/RCIC rooms, respectively.

The temperatures in areas containing fire heat detectors remain significantly below the 170+F setpoints on these detectors. Thus, spurious operation of

sprinkler heads or deluge valves would not occur.

The space high temperature switches in the vicinity of the RCIC and HPCI equipment is analyzed and set sufficiently high enough to avoid spurious system isolation.. The normal non-accident lower limit for the switches in the HPCI room is 181 F with highest expected max temperature of 122 degrees. The normal non-accident lower limit for the RCIC room switches is 153 degrees F with an expected max temperature of 115 F for the area. The torus area temperature switches for HPCI is 162 F and for RCIC is 140 F with the torus temperature determined not to exceed 130 degrees F.

In summary, the heat up of the HPCI/RCIC or torus areas will not cause a spurious isolation of HPCI or RCIC. The temperatures are sufficiently low to ensure no spurious actuation of fire protection in these areas.

QUESTION

How does BFN ensure that relevant industry information gets to the appropriate personnel.

RESPONSE:

TVA'S Nuclear Experience Review (NER) program ensures relevant industry information gets to appropriate site personnel. It meets the requirements of TMI Action Plan, Item I. C. 5.

TVA utilizes the Institute of Nuclear Power Operations' (INPO) Significant Event Evaluation and Information Network (See-In) program as an input to the NER program. SEE-IN obtains operating experience information from many different sources. These include: Licensee Event Reports (LERs), Nuclear Network operating experience data, preliminary notifications of event or unusual occurrence (PNO), NRC information notices, bulletins and generic letters, NRC daily plant status (PS), AEOD reports, supplier participant information, safety defect reports and construction deficiency reports. INPO then screens the documents for significance and applicability and issues output documents to the industry as appropriate.

NRC, in Generic Letter 82-04, endorsed the use of the SEE-IN program as a means to meet the intent of TMI Action Plan Item I. C. 5 by relieving individual nuclear plant operators of the necessity of setting up large staffs to obtain and screen industry operational experience.

TVA's NER program utilizes SEE-IN output documents as well as other industry information such as information notices, vendor information and TVA inhouse experiences as input. These documents are formally screened for significance and applicability to TVA nuclear plants. The documents are then assigned for formal evaluation or routed as information to appropriate site personnel.

The NER program also informally reviews other documents that provide timely notification of industry experience. NUCLEAR NETWORK contains a section on Plant Operating Experience (OE) prepared by utilities which describes plant events that may be of interest to other utilities. NETWORK also contains the NRC plant status (PS) which includes plant scrams and reportable event notifications to NRC. These documents are routinely reviewed by the Manager, NER and the BFN NER supervisor or a previous SRO. Items that are potentially applicable to TVA are added to the formal screening process and assigned or routed to the appropriate department for information.

A significant upgrade in the staff and level of qualification of NER personnel has occurred since the NER program was reorganized in mid-1989. A dedicated staff of three individuals is now located at each operating site. Additionally, the NER staffs have been strengthened by the addition of a previous BFN shift supervisor (SRO) at BFN and two previous SROs (including the Manager, NER) at corporate. Also, the BFN NER supervisor was SRO certified on two BWRs, including BFN. Because of their previous experience, these individuals have a better feel for what is significant and important for their plants.

The June 14,1989 letter alters the TVA commitment on performing a formal screening of sister plant LERs. This is an intensive search to determine significance and applicability to TVA plants. These searches generally take up to several hours and may require contacting another utility to obtain enough information to make a determination. Although TVA does not perform a formal screening of sister plant LERs, the Manager, NER does scan BFN sister plant LERs. The review is based on the knowledge and experience of the individual. If the item appears to be applicable to TVA, it is sent to the Site NER Supervisor. If he then determines that the item could be applicable to BFN, a more rigorous review, up to the full screening process, is performed and documented. The item is then assigned for action or distributed for information to appropriate site personnel.

TVA is also active in many utility programs that provide valuable sources of industry information. For example, the BFN Operations Manager attends the BWR Owners' Group, Scram Frequency Reduction subcommittee meetings and as a result receives copies of all LERs and scram trip reports for all BWRs.

TVAs use of SEE-IN, the informal review of sister plant LERs and participation in other industry programs meets the intent of the ACRS request.

FROM JCC — per your request @ BFN site mtg, 3/4-5

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

NRC INSPECTION MANUAL

ILPB

CHAPTER 0350

STAFF GUIDELINES FOR RESTART APPROVAL

0350-01 PURPOSE

To establish guidelines for approving restart of a nuclear power plant after a voluntary or involuntary shutdown as a result of a significant event, complex hardware problem, or serious management deficiency.

0350-02 OBJECTIVES

02.01 To ensure that NRC's restart review efforts are appropriate to the individual circumstances, are reviewed and approved by the appropriate NRC management level, and provide objective measures of the licensee's performance.

02.02 To provide more effective coordination of NRC resources.

02.03 To clarify responsibilities for the actions necessary to approve restart of a nuclear power plant.

02.04 To ensure that the Office of Nuclear Reactor Regulation (NRR) and regional management agree on the actions to be taken and provide a unified NRC position.

0350-03 RESPONSIBILITIES AND AUTHORITIES

03.01 Director, Office of Nuclear Reactor Regulation, NRR

Notifies the Executive Director for Operations (EDO) and the Commission, as appropriate, of the NRC actions taken concerning shutdown plants and the proposed followup plan.

03.02 Regional Administrator

a. Discusses with the Director of NRR any situation at a plant involving a significant event, complex hardware problem, or serious management deficiency and determines the appropriate immediate action to be taken by the NRC.

b. Discusses with the Deputy Executive Director for Nuclear Reactor Regulation, Regional Operations and Research, the Office of Enforcement (OE), and NRR, as appropriate, the need for an order

or confirmatory action letter (CAL) specifying the actions required by the licensee to receive NRC approval to restart the plant and the proposed followup plan.

c. Coordinates with the NRR Associate Director for Projects to develop a written followup plan to assign responsibilities and schedules for restart actions and interface with the licensee.

d. Coordinates and implements those actions prescribed in the followup plan that have been determined to be the region's responsibility.

e. In conjunction with NRR, reviews and determines the acceptability of licensee's corrective action program.

f. Approves restart of the shutdown plant, in coordination with the EDO and the Director of NRR.

03.03 NRR Associate Director for Projects

a. In coordination with the region's Director of Reactor Projects, acts as the focal point for discussions within NRR to establish the appropriate followup actions for a plant that has been shut down.

b. Coordinates participation in followup conference calls and management discussions to ensure that the Regional Administrator and the Director of NRR, are directly involved, where appropriate, in followup action.

c. Coordinates and implements actions prescribed in the followup plan that have been determined to be NRR's responsibility.

0350-04 BASIC REQUIREMENTS

04.01 Background

A licensed commercial nuclear power plant is shut down voluntarily or involuntarily, for a variety of reasons. When a plant is shut down for reasons stemming from license conditions or technical specifications, the licensee normally can develop and implement a clearly defined corrective action plan and the plant restarts without special approval from the NRC. However, plants occasionally are shut down as a result of safety concerns stemming from a significant event, complex hardware problem, or serious management deficiency. This chapter focuses on these significant cases.

Historically, the NRC has approached each situation individually, and an individual plan of action has evolved. Although the results have been satisfactory, there is a need to approach the process in a uniform manner. The guidelines presented in this chapter will ensure that (1) NRR and the regions will be appropriately involved in all restart decisions and (2) the NRC will respond in an appropriate manner with a unified position to the licensees. Restart actions for specific situations may address additional issues or may omit issues discussed below if such issues are determined not to be applicable to the situation.

The general guidelines for the NRC response to plant shutdowns resulting from a significant event, complex hardware problem, or a serious management deficiency are provided in two parts. Section 04.02 deals with the management of the staff's activities associated with the restart review efforts, and section 04.03 deals with the various issues that are typically considered in the restart review.

04.02 Restart Review Activities

a. Initial Response. When NRC staff members believe that a particular situation at a plant involves a significant event, complex hardware problem, or serious management deficiency warranting increased regulatory attention, the situation should be discussed promptly between NRR and the applicable region. The initial discussion is normally between the regional Director of Reactor Projects and the NRR Associate Director for Projects. For significant operating events, the Director, Division of Operational Events Assessment (DOEA) also will be included in the discussions. The discussion should include a description of the event or circumstances as well as the actions already taken by the region and those proposed for the future.

NRC action could include the establishment of an incident investigation team (IIT), an augmented inspection team (AIT), or a special inspection team. Such action could further include, as appropriate, the need for a confirmatory action letter or an order. All of these specific actions should be conducted in accordance with appropriate office policies, procedures, and manual chapters.

Special circumstances involving significant, rapidly occurring events, may require discussions to be initiated directly at the level of the Regional Administrator, the Director of NRR, or the Deputy Executive Director for Nuclear Reactor Regulation, Regional Operations and Research.

b. Coordination of Followup Actions. The focal point for discussions within the NRC for followup actions will be the appropriate projects division directors in the region and in NRR. They will coordinate participation in conference calls and management discussions to ensure that the Regional Administrator and the Director of NRR, are directly involved, where appropriate, in important decisions. The project divisions will coordinate and implement the actions prescribed in the followup action plan.

After the region and NRR management decide on a course of action, including notification of the EDO and the Commission as appropriate, the appropriate regional and NRR projects divisions should consider the need to establish a mechanism to control and coordinate the NRC's actions. Such mechanisms may include a task interface agreement (TIA) to document the assignment of responsibility for followup actions, or a restart review panel.

For events which would not lead to a prolonged shutdown of a plant, the coordination between the region and NRR may be accomplished orally. However, for cases that take more than several weeks to resolve, the use of a formal TIA or a restart assessment panel should be considered.

The followup action plan should include all expected NRC actions that will be required to be taken before a plant is approved to restart, including those actions not directly related to the initiating event. The plan also should define (a) what must be accomplished by the NRC, as a minimum, to approve plant restart, (b) who has lead responsibility for each action, and (c) who has responsibility for actual plant restart approval. The Regional Administrator in coordination with the Deputy Executive Director for Nuclear Reactor Regulation, Regional Operations and Research and Director of NRR, normally has the authority to approve restart. In some instances, Commission approval may be required for restart of the plant. Lead responsibility for interactions with the Commission, ACRS, media, and public officials also should be established. Typically, NRR will take the lead in interactions with the Commission, ACRS, and Congress and the region will typically deal with the local media and State and local officials.

c. Commission Involvement. The Commission must be kept adequately informed of the staff's restart actions on a continuing basis. The assigned office will inform the Commission of the staff's and licensee's restart actions through Commission papers, EDO highlights, or verbal communications through the EDO. Based on these interactions between the staff and the Commission, the need for Commission briefings will be determined by the circumstances and the Commission's wishes.

For those plants requiring Commission approval for restart, the staff should anticipate Commission briefings with licensee participation (1) after a corrective plan is agreed to and implemented and (2) about a month before plant restart is anticipated. At the final briefing, the NRC staff should provide its basis for recommending or not recommending restart. The Commission may express its views concerning restart at any time during the process. A formal vote after the last briefing may or may not be required.

d. Independent Review. The Advisory Committee on Reactor Safeguards (ACRS) may review the restart of plants to independently review the NRC's and the utility's actions. ACRS will normally review the restart of plants that have been shut down for more than a year because of substantive deficiencies in equipment, systems, or management. If a plant has been shut down for less than a year, ACRS will consider whether or not to review restart issues of the plant on a case-by-case basis. The NRR staff will keep ACRS informed of the NRC's actions involving plants shut down for more than a year and will coordinate briefing of the ACRS.

e. Public Participation. The need for public participation varies greatly from situation to situation and depends on the cause of the shutdown of the facility, local citizen interest, elected official interest, and other government agency concerns. Public meetings have proven to be a valuable vehicle for public participation in the restart process. These meetings, which are often transcribed, are held to receive comments on licensee plans and to describe the results of the NRC review of licensee activities. The need for and level of public participation will be determined by NRC management on a case-by-case basis and will be incorporated into the actions necessary for restart. Public meetings in the local area should be considered to

hear concerns and comments on the licensee's restart activities and to factor these concerns and comments into the restart review when these concerns and comments will contribute positively to the review.

f. Other Agencies and Government Organizations. The decision to restart should consider the need for involvement of staff from other Federal agencies such as the Federal Emergency Management Agency (FEMA), and the Department of Justice, and State and local government representatives. Briefings with elected officials and observations of NRC inspections by State representatives have been an effective way of enhancing NRC communication regarding problem plants.

04.03 Issues Considered in Restart Review

Restart review actions for specific situations may address additional issues or may omit issues discussed below if such issues are determined not to be applicable to the situation.

a. Root Cause Identification and Correction. The root cause(s) of the event or the conditions requiring the shutdown should be identified and corrected. A comprehensive licensee corrective action plan should be developed that addresses the root cause(s) and all applicable issues including corrective action, implementation, and verification. The corrective action plan should also include sufficient measures to prevent recurrence of problems. The NRC shall review the licensee's corrective action plan to verify its completeness and adequacy and to determine which corrective actions will be required to be implemented before restart and which can be deferred to some later date as long-term corrective actions.

The NRC staff will review the licensee's corrective action activities and use the tools available in the regulatory program to determine the acceptability of these actions with respect to safe operations. These tools include: staff reviews; the systematic assessment of licensee performance (SALP); inspections, including special team inspections; requests under 10 CFR 50.54(f); senior management meetings; enforcement conferences; and a restart review panel. The results of the staff's reviews will be documented by safety evaluations, license amendments, orders, confirmatory action letters, inspection reports, Commission meeting transcripts, and enforcement documents.

b. Licensee Management Organization and Oversight. The licensee's management organization is assessed by NRC staff to ensure that qualified personnel, the proper environment, and sufficient resources are provided to ensure that the problems and their root causes have been or are being rectified. The organization must demonstrate that it can coordinate, integrate, and communicate its objectives so that they are assigned appropriate priorities regarding safety significance and are completed in a timely manner. NRC reviews will determine if the licensee has effective corporate management oversight and involvement in plant operations and problem resolution.

The licensee management must appreciate the safety significance of certain issues and ensure that these issues are resolved. Personnel with adequate qualifications and experience should be assigned to all key management positions. The licensee's resulting organization should

(1) exhibit good teamwork among its subelements; (2) provide strong engineering and technical support for plant activities; (3) possess the internal ability to recognize safety problems, develop and implement adequate corrective actions and verify their effectiveness; (4) possess an independent self-assessment capability that can identify and correct performance problems; and (5) have adequate administrative and technical resources available to accomplish the stated goals and objectives.

c. Plant and Corporate Staff. The licensee staff must be capable of recognizing and carrying out their responsibilities to ensure public health and safety. An adequate number of fully qualified licensee staff shall be assigned. A proactive attitude towards safety issues should be demonstrated in all aspects of operations. In this regard, the licensee staff should display attentiveness to duty, fitness for duty, a disciplined approach to activities, a sensitivity for trends in the plant, security awareness, an openness of communications, and a desire for teamwork that supports effective relations between different groups (e.g., management, operations, health physics, maintenance, engineering, security, and contractors).

d. Physical State of Readiness of the Plant. The physical condition of the plant is of principal importance not only when a shutdown is based on a physical event or a hardware deficiency but in other types of shutdowns as well, especially following prolonged outages.

The causes of significant equipment problems should be identified and appropriate corrective actions taken. Operational testing should verify that each significant equipment problem has been resolved. As appropriate, the complete spectrum of preoperational and startup testing programs may need to be expanded to cover the more complex types of problems or the effects on plants that have been shut down for extended periods.

The licensee must be able to demonstrate that all needed safety equipment is operational before restart. Surveillance tests should also be up-to-date. The maintenance backlog should be at controllable levels and maintenance should not be hindered by unresolved chronic problems with equipment readiness. Procedures should be adequate and up-to-date.

e. Regulatory Requirements. The plant and its prospective operation must not be in conflict with any applicable regulations or requirements of any document authorizing restart (such as license amendments, orders, or a CAL). Restart should not conflict with any ongoing matter such as an Atomic Safety and Licensing Board hearing.

0350-05 REFERENCES

Memorandum of November 23, 1988, from V. Stello, Jr., to office directors and regional administrators entitled "Staff Guidelines Concerning Plant Restart Approval" (DCS microfiche 47707/220).

Memorandum of August 17, 1989, from R. Fraley to J. Taylor, entitled, "Proposed Plant Restart: Nine Mile Point Unit 1" (DCS microfiche 70006/326)

END

BECKMAN AND ASSOCIATES, INC.
RD#4 - 242A Route 136 ♦ Belle Vernon, PA 15012 ♦ 412-872-9157

HARRY B. KISTER

EDUCATION:

Engineering Technology, Napa College

EXPERIENCE:

Commonwealth Edison Co. - Participated as team member of technical and organizational effectiveness professionals in the conduct of an independent cultural assessment and root cause identification of the Zion Nuclear Station. The assessment was directed at the cultural issues impacting the performance of the Zion staff. Primary contributions included expert technical consulting in the areas of plant operations, management processes, management of change, regulatory relations, and procedures.

U.S. Department of Energy - Provided management consulting to the DOE Yucca Mountain, Nevada high level waste project. Conducted detailed management reviews of the adequacy of the project's technical and administrative processes in support of site characterization studies to determine suitability of the Yucca Mt. location.

U.S. Department of Energy - Conducted management seminar/briefing to Oak Ridge Operations Office staff regarding commercial nuclear plant "lessons learned" from troubled plants such as Peach Bottom, Pilgrim, and Nine Mile Point.

Niagara Mohawk Power Co. - Provided staff support to utility for restart of Nine Mile Point Unit 1 nuclear power plant. Participated in the performance of independent assessments of licensed operator requalification program. Assessment included the evaluation of training activities and development of a final report with recommendations. Provided oversight of the licensed operator requalification improvement program implementation and development of a plan to track the required actions. Participated in the development of a nuclear supervisor tiered training program. Designed, developed and presented a training module entitled "Supervising in a Regulated Environment." The training provided incumbent and prospective supervisors with an overview of external regulatory groups, how they interface with nuclear utilities, and a basic review of codes, standards, and regulations.

Houston Lighting & Power Company - Participated in witness preparation for the rate case and co-owner lawsuit proceedings

relating prudency in the construction of the South Texas Project. Evaluated management decisions and processes; assessed factors which caused the cost of nuclear plants to escalate, in particular, those factors relating to Nuclear Steam Supply Systems, NRC licensing and inspection policies and implementations; historical analysis of the evolving NRC enforcement strategies. Conducted analyses of case testimony and depositions, and prepared expert and fact witness rebuttal testimony.

Philadelphia Electric Company - Conducted an independent root cause analysis of the situation which led to the NRC shutdown order. Identified and assessed root causes and formulated recommendations. Primary contributions included expert regulatory consultation regarding current NRC environment, philosophy, and procedures; development of a regulatory history of PE's regulatory performance; recommendations for solving the problems identified by the root cause assessment; and the written report. Continued as a core member of "Commitment to Excellence" team to manage recovery effort. Specific contributions include the application of management and regulatory perspectives to development of the restart action plans; formulation of proposed actions to improve PE's relations with external oversight groups and improve its independent assessment capabilities. Served as a team member in reaching consensus on the acceptability of PE restart plan submittal to the NRC.

Public Service Electric and Gas Company - Conducted a Nuclear Training Department review which included an assessment of training management, instructor support, technical and engineering training, plant operations training, maintenance and access training, and administration.

U.S. Nuclear Regulatory Commission, Region I

As an NRC manager from 1978 - 86, was repeatedly assigned as the cognizant branch chief for NRC oversight of performance improvement and restart plans for plants with poor or troubled performance histories. Such assignments included Pilgrim, Nine Mile Point, Salem, Three Mile Island 1 Restart, and Oyster Creek.

Reactor Projects Branch Chief - Managed NRC inspection and enforcement programs for up to ten power reactors in all phases: construction, test and operations; assurance of safety; and compliance with NRC regulations. Oversaw the periodic analysis of licensee performance (SALP). Managed the operator licensing function for the NRC in Region I.

Reactor Projects Section Chief, Region I - Responsible for the NRC programs of inspection, investigations, and enforcement pertaining to several reactors in construction, test status and operation. Served as inspection team leader and participated on the TMI-2 accident recovery team.

Inspection Specialist, I & E Headquarters Office - Participated in the development and establishment of I & E's Performance Appraisal Branch. Assisted in the development of the draft performance appraisal
methodology and procedures for evaluating licensee performance from a national perspective, the effectiveness of I & E's inspection and investigation programs, and the consistency of program performance.

Reactor Inspector, Region III - As Operations Project Inspector, conducted and coordinated I & E inspection program at Duane Arnold Energy Center Reactor and La Cross BWRs. Participated in QA team inspections at several Region III reactor sites, and conducted operations inspections at most of reactor sites under Region III cognizance.

Bechtel Power Corporation

Senior Start-up Engineer - Directed and participated in start-up and test activities at Rancho Seco specifically, reactor and auxiliary system turnover and initial system start-up testing.

Mare Island Naval Shipyard

Refueling Manager - Managed refueling and core loading of ship's nuclear reactor.

Shipbuilding and Repair Superintendent - Responsible for administering nuclear requirements resulting in solution of major and complex problems associated with naval nuclear reactor plant construction and repair.